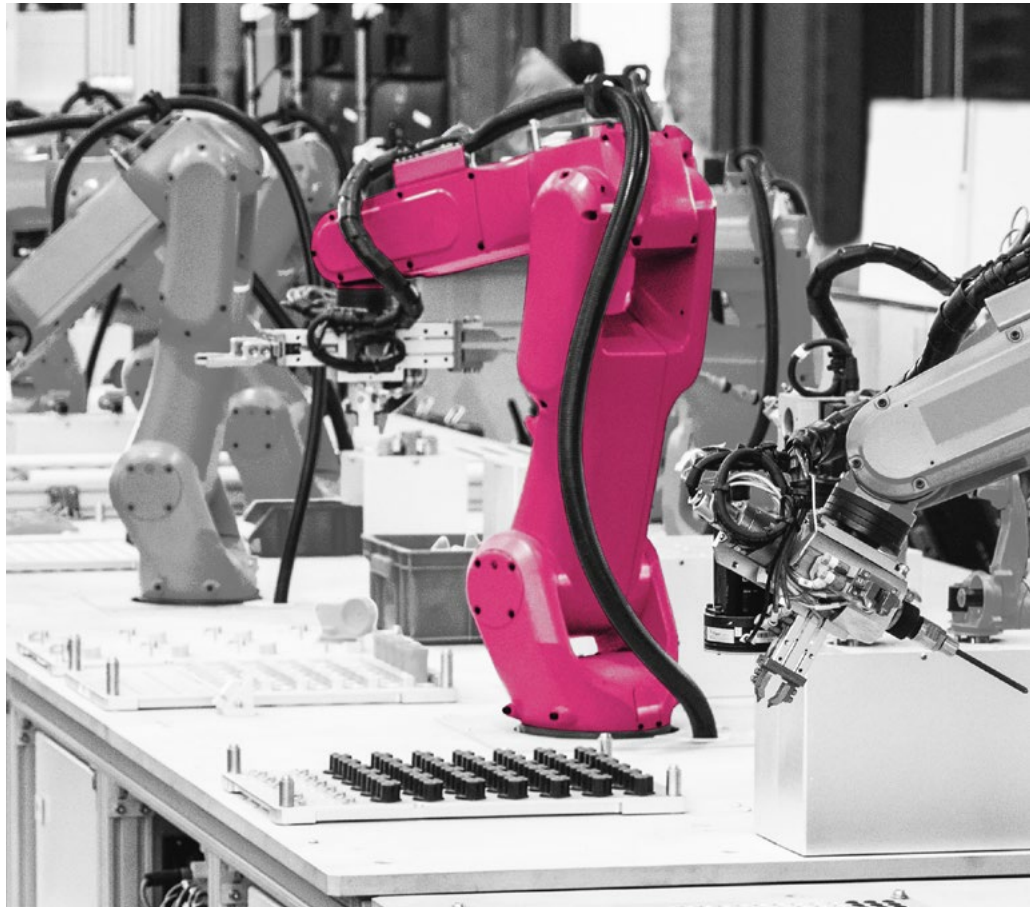
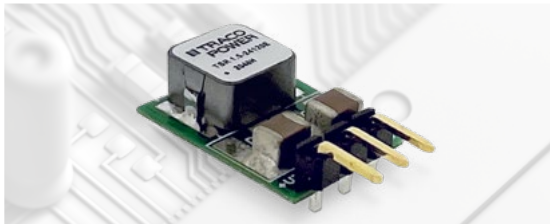
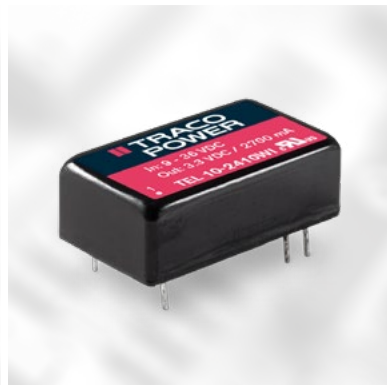
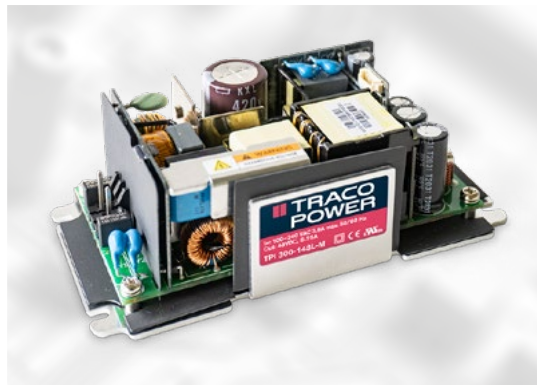




2023 | Industrial Power Solutions Product Portfolio



Company Profile

TRACO Electronic AG is a Swiss company with headquarters based in Baar, Switzerland. As a leading power supply specialist with more than 40 years experience we are dedicated to the design and manufacturing of high quality DC/DC and AC/DC power conversion products.

TRACO markets its products worldwide under the registered trademark TRACO POWER. Our mission is to provide our customers with optimal power supply solutions in terms of performance, quality and cost for their individual application.

The varying levels of industrial power supplies

All power supplies designed for use in non-medical application are required to meet the international safety standards of IEC/EN/UL 62368-1. Industrial grade power supplies are subjected to increased requirements which vary depending upon their operating environment, typically divided into 2 categories, one for office / manufacturing environments and another for harsh/hazardous environments.

For power supplies in household applications, there are virtually no differences when it comes to insulation and operational safety. However, stronger electromagnetic and conducted disturbances are expected to arise in industrial environments, and electrical power supplies must be resistant to these. EMC immunity tests according to the generic standard IEC 61000-6-2 „immunity for industrial environments“ is the common denominator for a power supply being classified as industrial-grade.

The right product for the application and environment / standard products

Traco Power offers a wide selection of standard industrial power supplies that are manufactured and tested according to the varying environments and applicable safety standards, allowing our customers to choose the power solution that is most cost-effective for their application and environmental requirements.

All our industrial rated power supplies provide following features as standard:

- Safety approval according IEC/EN/UL 62368-1 (for 3000 VAC I/O isolation)
- EMC immunity according IEC 61000-6-2
- EMC emission according EN 55032 class B
- Protection against short circuit, overload and output over-voltage

Customer specific applications / customized solutions

It is often not possible to find a standard power supply that fully complies with the respective requirements or without unnecessary features making the application more expensive. With our design company **TRACO POWER SOLUTIONS** we have a center of competence to develop and optimize power supplies for customer-specific requirements. The motto from our design team is “Reduced to the Max” and develop or modify a solution specific to your needs at the lowest cost of ownership.



INDUSTRY

TRACO POWER

DC/DC converter 1–300 Watt AC/DC power supplies 3–1000 Watt

Features

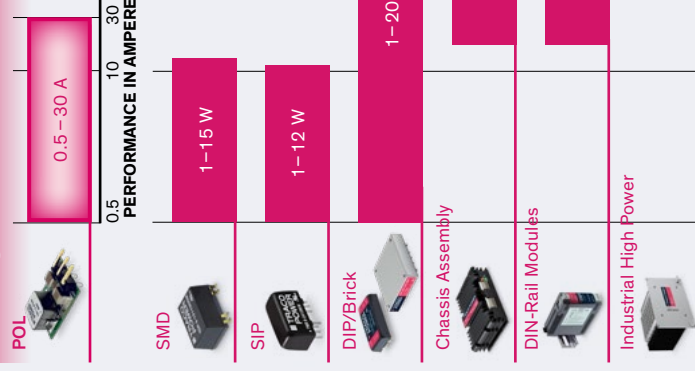
- Broad application range covering office, manufacturing, industrial, harsh and hazardous environments
- Industrial EMC immunity acc. to IEC 61000-6-2
- Various mounting types: PCB, Chassis-Mount and DIN-Rail

Standards and Directives

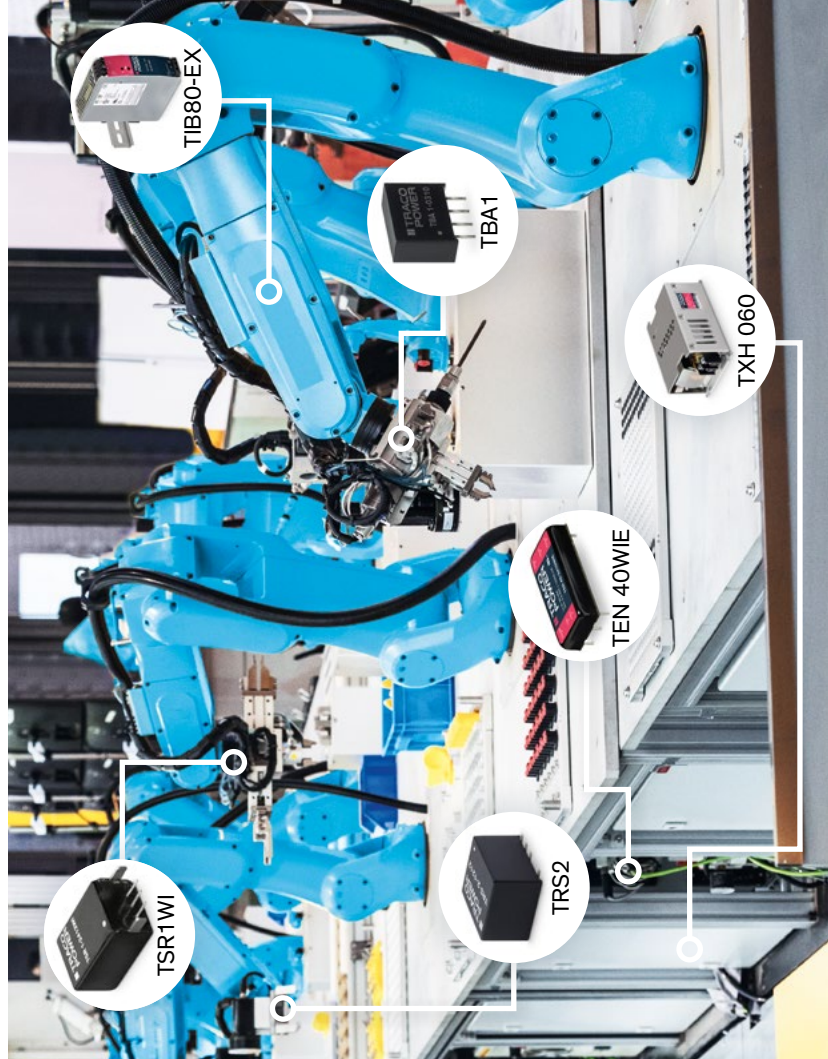
- IEC/EN/UL 62368-1
- IEC/EN 61010-1
- ATEX
- UL HazLoc
- UL508
- UL130
- EN50178

- Open-frame, encapsulated and encased package styles
- 3-year warranty

Industry DC/DC Converters



Industry AC/DC Power supplies



Non-Isolated Step Down DC/DC Converters (POL) in SIP Package

0.5 – 30 Amp

TSR 0.5	SIP-3 package, 4.75–32 VDC input, pos.-pos. circuit, LM78 compatible	0.5 A	12
TSR 0.6WI	SIP-3 package, 9–72 VDC input, pos.-pos. circuit, LM78 compatible	0.6 A	13
TSR 1	SIP-3 package, 4.6–36 VDC input, pos.-pos. circuit, LM78 compatible	1 A	13
TSR 1E	SIP-3 package, 6–36 VDC input, pos.-pos. circuit, cost efficient, LM78 compatible	1 A	14
TSR 1WI	SIP-3 package, 9–72 VDC input, pos.-pos. circuit, LM78 compatible	1 A	14
TSN 1	SIP-3 package, –7.0 to –32 VDC input, neg.-neg. circuit, LM78 compatible	1 A	15
TSRN 1	SIP-3 package, 4.6–42 VDC input, pos.-neg. circuit, LM78 compatible	1 A	15
TSR 1.5E	SIP-3 package, 7–36 VDC input, pos.-pos. circuit, open frame, LM78 compatible	1.5 A	16
TSR 2	SIP-3 package, 3.0–36 VDC input, pos.-pos. circuit, LM78 compatible	2 A	16
TSR 3	SIP-5 package, 2.5–30 VDC input, pos.-pos. circuit, open frame, LM78 compatible	3 A	17
TOS	SIP package, 2.4–14 VDC input, pos.-pos. circuit, open frame	6–30 A	17

Non-Isolated Step Down DC/DC Converters (POL) SMD Package

0.5 – 30 Amp

TSR 0.5SM	SMD (DIP-10) package, 4.75–32 VDC input, pos.-pos. circuit	0.5 A	18
TSR 1SM	SMD (DIP-10) package, 3.0–36 VDC input, pos.-pos. circuit	1 A	19
TSRN 1SM	SMD (DIP-10) package, 3.0–42 VDC input, pos.-neg. circuit	1 A	19
TOS	SMD package, 2.4–14 VDC input, pos.-pos. circuit, open frame	6–30 A	20

SMD DC/DC Converters

1 – 15 Watt

TES 1N	SMD (DIP-10) package, $\pm 10\%$ input, unregulated	NEW under development	1 W	21
TES 1	SMD (DIP-10) package, $\pm 10\%$ input, unregulated		1 W	22
TES 1V	SMD (DIP-12) package, $\pm 10\%$ input, unregulated, 3000 VDC I/O-isolation, plastic case		1 W	22
TRN 1SM	SMD package, 2:1 input, regulated, cost efficient, encapsulated		1 W	23
TDN 1WISM	SMD package, 4:1 input, regulated, high power density, encapsulated		1 W	23
TMR 1SM	SMD (DIP-14) package, 2:1 input, regulated		1 W	24
TRI 1SM	SMD package, $\pm 10\%$ input, regulated, 480 VAC working voltage, encapsulated	NEW	1 W	24
TES 2H	SMD (DIP-10) package, $\pm 10\%$ input, unregulated		2 W	25
TMR 2WISM	SSMD (DIP-14) package, 4:1 input, regulated		2 W	25
TDR 2SM	SMD (DIP-14) package, 2:1 input, regulated, overmold (washable)		2 W	26
TDR 2WISM	SMD (DIP-14) package, 4:1 input, regulated, overmold (washable)		2 W	26
TRS 2	SMD package, 2:1 input, regulated, cost efficient, encapsulated		2 W	27
TES 2M	SMD (DIP-16) package, $\pm 10\%$ input, unregulated, 4000 VAC I/O-isolation (reinforced)		2 W	27
TIM 2SM	SMD (DIP-16), 2:1 input, 5000 VAC I/O-isolation, 2 × MOPP, medical, encapsulated		2 W	28
TRN 3SM	SMD package, 2:1 input, regulated, cost efficient, encapsulated		3 W	28
TDN 3WISM	SMD package, 4:1 input, regulated, high power density, encapsulated		3 W	29
TMR 3WISM	SMD (DIP-14) package, 4:1 input, regulated		3 W	29
TDR 3SM	SMD (DIP-14) package, 2:1 input, regulated, overmold (washable)		3 W	30
TDR 3WISM	SMD (DIP-14) package, 4:1 input, regulated, overmold (washable)		3 W	30
TIM 3.5SM	SMD (DIP-16), 2:1 input, 5000 VAC I/O-isolation, 2 × MOPP, medical, encapsulated		3.5 W	31
TDN 5WISM	SMD package, 4:1 input, regulated, high power density, encapsulated		5 W	31
TON 15SM	SMD package, 2:1 input, regulated, open frame		15 W	32
TON 15WISM	SMD package, 4:1 input, regulated, open frame		15 W	32

SIP DC/DC CONVERTERS

1 – 12 Watt

TBA 1E	SIP-7 package, $\pm 10\%$ input, unregulated, short circuit protection, encapsulated		1 W	33
TEA 1E	SIP-7 package, $\pm 10\%$ input, unregulated, cost optimized design, encapsulated		1 W	34
TMA	SIP-7 package, $\pm 10\%$ input, unregulated, encapsulated		1 W	34
TBA 1	SIP-4 package, $\pm 10\%$ input, unregulated, short circuit protection, encapsulated		1 W	35
TEA 1	SIP-4 package, $\pm 10\%$ input, unregulated, cost optimized design, encapsulated		1 W	35
TME	SIP-4 package, $\pm 10\%$ input, unregulated, encapsulated		1 W	36
TMV	SIP-7 package, $\pm 10\%$ input, unregulated, 3000 VDC I/O isolation, encapsulated		1 W	36
TBA 1HI	SIP-7 package, $\pm 10\%$ input, unregulated, short circuit protection, 3000 VDC I/O iso.		1 W	37
TEA 1HI	SIP-7 package, $\pm 10\%$ input, unregulated, 4000 VDC I/O isolation, encapsulated		1 W	37
TMV-HI	SIP-7 package, $\pm 10\%$ input, unregulated, 5200 VDC I/O isolation, encapsulated		1 W	38
TMV-EN	SIP-7 package, $\pm 10\%$ input, unregulated, 3000 VAC I/O isolation (reinforced), encapsulated		1 W	38
TRI 1	SIP-7 package, $\pm 10\%$ input, regulated, 480 VAC working voltage, encapsulated	NEW	1 W	39
TRV 1	SIP-7 package, $\pm 10\%$ input, semi-regulated, 3000 VDC I/O isolation, encapsulated		1 W	39
TRV 1M	SIP-7 package, $\pm 10\%$ input, semi-regulated, 5000 VAC isolation, 2 $\times$ MOPP		1 W	40
TRN 1	SIP-5 package, 2:1 input, regulated, cost efficient, compact, encapsulated		1 W	40
TMR 1	SIP-6 package, 2:1 input, regulated, encapsulated		1 W	41
TMU 2	SIP-4 package, $\pm 10\%$ input, unregulated, encapsulated	NEW	2 W	41
TMV 2HI	SIP-7 package, 10% input, unregulated, 5200 VDC I/O-isolation, encapsulated		2 W	42
TBA 2	SIP-7 package, $\pm 10\%$ input, unregulated, short circuit protection, encapsulated		2 W	42
TMH	SIP-7 package, $\pm 10\%$ input, unregulated, encapsulated		2 W	43
TEC 2	SIP-8 package, 2:1 input, regulated, cost efficient, encapsulated		2 W	43
TEC 2WI	SIP-8 package, 4:1 input, regulated, cost efficient, encapsulated		2 W	44
TMR 2	SIP-8 package, 2:1 input, regulated, encapsulated		2 W	44
TMR 2WIN	SIP-8 package, 4:1 input, regulated, encapsulated		2 W	45
TRV 2M	SIP-9 package, $\pm 10\%$ input, semi-regulated, 5000 VAC isolation, 2 $\times$ MOPP	NEW	2 W	45
TMU 3	SIP-4 package, $\pm 10\%$ input, unregulated, encapsulated	NEW	3 W	46
TRN 3	SIP-5 package, 2:1 input, regulated, cost efficient, compact, encapsulated		3 W	46
TEC 3	SIP-8 package, 2:1 input, regulated, cost efficient, encapsulated		3 W	47
TEC 3WI	SIP-8 package, 4:1 input, regulated, cost efficient, encapsulated		3 W	47
TMR 3	SIP-8 package, 2:1 input, regulated, encapsulated		3 W	48
TMR 3WI	SIP-8 package, 4:1 input, regulated, encapsulated		3 W	48
TMR 3HI	SIP-8 package, 2:1 input, regulated, 3000 VDC I/O-isolation (functional), encapsulated		3 W	49
TVN 3	SIP-8 package, 2:1 input, regulated, ultra low ripple & noise, metal case		3 W	49
TMR 3WIR	SIP-8 package, 2:1 input, regulated, 3000 VDC I/O-isolation, railway, metal case		3 W	50
TMR 4	SIP-8 package, 2:1 input, regulated, encapsulated		4 W	50
TMR 4WI	SIP-8 package, 4:1 input, regulated, encapsulated		4 W	51
TMR 6	SIP-8 package, 2:1 input, regulated, encapsulated		6 W	51
TMR 6WI	SIP-8 package, 4:1 input, regulated, encapsulated		6 W	52
TMR 6WIR	SIP-8 package, 2:1 input, regulated, 3000 VDC I/O-isolation, railway, metal case		6 W	52
TMR 9	SIP-8 package, 2:1 input, regulated, ultra compact, encapsulated		9 W	53
TMR 9WI	SIP-8 package, 4:1 input, regulated, ultra compact, encapsulated		9 W	53
TMR 12WI	SIP-8 package, 4:1 input, regulated, ultra compact, encapsulated, metal case	NEW	12 W	54

High Performance DC/DC Converters

1 – 80 Watt

TDU 1	DIP-8 package, $\pm 10\%$ input, unregulated, encapsulated	NEW	1 W	55
-------	--	-----	-----	----

TDN 1WI	DIP package, 4:1 input, regulated, encapsulated		1 W	56
TDL 2	DIP package, 2:1 input, regulated, compact design, encapsulated		2 W	56
TDR 2	DIP-14 package, 2:1 input, regulated, overmold (washable), plastic case		2 W	57
TDR 2WI	DIP-14 package, 4:1 input, regulated, overmold (washable), plastic case		2 W	57
TEL 2	DIP-16 package, 2:1 input, regulated, encapsulated		2 W	58
THI 2M	DIP-16 package, $\pm 10\%$ input, unregulated, 2 $\times$ MOOP, encapsulated		2 W	58
TIM 2	DIP-16 package, 2 :1 input, regulated, 5000 VAC I/O-isolation, 2 $\times$ MOPP medical, encapsulatedl		2 W	59
TDL 3	DIP package, 2:1 input, regulated, compact design, encapsulated		3 W	59
TDN 3WI	DIP package, 4:1 input, regulated, high power density, encapsulated		3 W	60
TDR 3	DIP-14 package, 2:1 input, regulated, overmold (washable), plastic case		3 W	60
TDR 3WI	DIP-14 package, 4:1 input, regulated, overmold (washable), plastic case		3 W	61
THL 3WI	DIP-16 package, 4:1 input, regulated, encapsulated		3 W	61
TEM 3N	DIP-24 package, $\pm 10\%$ input, regulated, cost efficient, encapsulated		3 W	62
TEN 3N	DIP-24 package, 2:1 input, regulated, cost efficient, encapsulated		3 W	62
TEN 3WIN	DIP-24 package, 4:1 input, regulated, cost efficient, encapsulated		3 W	63
TEN 3WIRH	DIP-24 package, 4:1 input, regulated, 3000 VAC isolation (reinforced), railway		3 W	63
TRI 3	DIP-24 package, 2:1 input, regulated, 1000 VAC working voltage, encapsulated		3.5 W	64
THR 3WI	DIP-24 package, 4:1 input, regulated, 3000 VAC isolation (reinforced), encapsulated		3 W	64
THI 3	DIP-24 package, 10% input, regulated, 4000 VAC isolation, 2 $\times$ MOPP , encapsulated		3 W	65
THP 3	DIP-24 package, 4:1 input, regulated, 3000 VAC isolation, 2 $\times$ MOPP encapsulated		3 W	65
THM 3	DIP-24 package, 2:1 input, regulated, 5000 VAC isolation, 2 $\times$ MOPP medical, encapsulated		3 W	66
THM 3WI	DIP-24 package, 4:1 input, regulated, 5000 VAC isolation, 2 $\times$ MOPP medical, encapsulated		3 W	66
TIM 3.5	DIP-16 package, 2 :1 input, regulated, 5000 VAC I/O-isolation, 2 $\times$ MOPP medical, encapsulated		3.5 W	67
TDN 5WI	DIP package, 4:1 input, regulated, highest power density, encapsulated		5 W	67
TVN 5WI	DIP-24 package, 4:1 input, regulated, ultra low ripple & noise, encapsulated, metal case		5 W	68
TEL 5	DIP-24 package, 2:1 input, regulated, cost optimized, encapsulated		5 W	68
TMDC 06	2.09" $\times$ 1.34", 4:1 input, harsh EMC capabilities, chassis mount		6 W	69
TMDC 06H	2.09" $\times$ 1.34", 2:1 input, harsh EMC capabilities, 3000 VAC isolation, chassis mount		6 W	69
TEL 6	DIP-16 package, 2:1 input, regulated, encapsulated, metal case	NEW	6 W	70
TEL 6WI	DIP-16 package, 4:1 input, regulated, encapsulated, metal case	NEW	6 W	70
TEN 6N	DIP-24 package, 2:1 input, regulated, cost efficient, encapsulated		6 W	71
TEN 6WIN	DIP-24 package, 4:1 input, regulated, cost efficient, encapsulated		6 W	71
TEN 6WIN-HI	DIP-24 package, 4:1 input, regulated, cost efficient, 3000 VDC isolation, encapsulated		6 W	72
TEN 6WIRH	DIP-24 package, 4:1 input, regulated, 3000 VAC isolation (reinforced), railway		6 W	72
TRI 6	DIP-24 package, 2:1 input, regulated, 1000 VAC working voltage, encapsulated		6 W	73
THM 6	DIP-24 package, 2:1 input, regulated, 5000 VAC isolation, 2 $\times$ MOPP medical, encapsulated		6 W	73
TIM 6	DIP-24 package, 2:1 input, regulated, 5000 VAC isolation, 2 $\times$ MOPP medical, encapsulated	NEW	6 W	74
THM 6WI	DIP-24 package, 4:1 input, regulated, 5000 VAC isolation, 2 $\times$ MOPP medical, encapsulated		6 W	74
TEL 8	DIP-16 package, 2:1 input, regulated, high power density, encapsulated, metal case		8 W	75
TEL 8WI	DIP-16 package, 4:1 input, regulated, high power density, encapsulated, metal case		8 W	75
TEN 8	DIP-24 package, 2:1 input, regulated, encapsulated, metal case		8 W	76
TEN 8WI	DIP-24 package, 4:1 input, regulated, encapsulated, railway, metal case		8 W	76
TEL 10	DIP-16 package, 2:1 input, regulated, high power density, encapsulated, metal case		10 W	77
TEL 10WI	DIP-16 package, 4:1 input, regulated, high power density, encapsulated, metal case		10 W	77
THD 10N	DIP-24 package, 2:1 input, regulated, encapsulated, metal case		10 W	78
THD 10WIN	DIP-24 package, 4:1 input, regulated, encapsulated, metal case		10 W	78
THL 10	1" $\times$ 1" package, 2:1 input, regulated, cost efficient, encapsulated, metal case		10 W	79

THN 10WIR	1" × 1" package, 4:1 input, regulated, 3000 VDC isolation, encapsulated, metal case		10 W	79
TEN 10WIRH	DIP-24 package, 4:1 input, regulated, 3000 VAC isolation (reinforced), railway		10 W	80
TRI 10	DIP-24 package, 2:1 input, regulated, 1000 VAC working voltage, encapsulated		10 W	80
THR 10WI	2 × 1" package, 4:1 input, regulated, 3000 VAC isolation (reinforced), encapsulated		10 W	81
THM 10	DIP-24 package, 2:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		10 W	81
THM 10WI	DIP-24 package, 4:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		10 W	82
TMDC 10	3.11" × 1.34", 4:1 input, harsh EMC capabilities, chassis mount		10 W	82
TMDC 10H	3.11" × 1.34", 2:1 input, harsh EMC capabilities, 3000 VAC isolation, chassis mount		10 W	83
TEL 12	DIP-16 package, 2:1 input, regulated, high power density, encapsulated, metal case	NEW	12 W	83
TEL 12WI	DIP-16 package, 4:1 input, regulated, high power density, encapsulated, metal case	NEW	12 W	84
THD 12	DIP-24 package, 2:1 input, regulated, encapsulated, metal case		12 W	84
THD 12WI	DIP-24 package, 4:1 input, regulated, encapsulated, metal case		12 W	85
THD 15N	DIP-24 package, 2:1 input, regulated, encapsulated, metal case		15 W	85
THD 15WIN	DIP-24 package, 4:1 input, regulated, encapsulated, metal case		15 W	86
THN 15N	1" × 1" package, 2:1 input, regulated, encapsulated, metal case		15 W	86
THL 15WI	1" × 1" package, 4:1 input, regulated, cost optimized, encapsulated, metal case		15 W	87
THN 15WI	1" × 1" package, 4:1 input, regulated, encapsulated, metal case		15 W	87
TEL 15N	DIP-16 package, 2:1 input, regulated, high power density, encapsulated, metal case	NEW	15 W	88
TEL 15N-HS	DIP-16 package, 2:1 input, regulated, great thermal performance, encapsulated, metal case	NEW	15 W	88
TEL 15WIN	DIP-16 package, 4:1 input, regulated, high power density, encapsulated, metal case	NEW	15 W	89
TEL 15WIN-HS	DIP-16 package, 4:1 input, regulated, great thermal performance, encapsulated, metal case	NEW	15 W	89
TRI 15	2" × 1" package, 2:1 input, regulated, 1000 VAC working voltage, encapsulated		15 W	90
THN 15WIR	1" × 1" package, 4:1 input, regulated, 3000 VDC isolation, railway, encapsulated, metal case		15 W	90
THM 15	1.6" × 1" package, 2:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		15 W	91
THM 15WI	1.6" × 1" package, 4:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		15 W	91
THN 20	1" × 1" package, 2:1 input, regulated, encapsulated, metal case		20 W	92
THN 20WI	1" × 1" package, 4:1 input, regulated, encapsulated, metal case		20 W	92
TEN 20WIN	2" × 1" package, 4:1 input, regulated, encapsulated, metal case		20 W	93
TRI 20	2" × 1" package, 2:1 input, regulated, 1000 VAC working voltage, encapsulated		20 W	93
THR 20WI	2" × 1" package, 4:1 input, regulated, 3000 VAC isolation (reinforced), encapsulated		20 W	94
THN 20WIR	1" × 1" package, 4:1 input, regulated, 3000 VDC isolation, railway, encapsulated		20 W	94
TEN 20WIR	2" × 1" package, 4:1 input, regulated, 2250 VDC isolation, railway, encapsulated		20 W	95
TEN 20WIRH	1.6" × 1" package, 4:1 input, regulated, 3000 VAC isolation (reinforced), railway		20 W	95
THM 20	1.6" × 1" package, 2:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		20 W	96
THM 20WI	1.6" × 1" package, 4:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		20 W	96
TMDC 20	3.78" × 1.81", 4:1 input, harsh EMC capabilities, chassis mount		20 W	97
TMDC 20H	3.78" × 1.81", 2:1 input, harsh EMC capabilities, 3000 VAC isolation, chassis mount		20 W	97
TEQ 20WIR	4" × 2.3" package, 4:1 input, regulated, 2250 VDC isolation, railway, encased, chassis mount		20 W	98
THL 25	1" × 1" package, 2:1 input, regulated, cost optimized, encapsulated, metal case		25 W	98
THL 25WI	1" × 1" package, 4:1 input, regulated, cost optimized, encapsulated, metal case		25 W	99
TEN 30	2" × 1" package, 2:1 input, regulated, encapsulated, metal case		30 W	99
TEN 30WIN	2" × 1" package, 4:1 input, regulated, encapsulated, metal case		30 W	100
THN 30	1" × 1" package, 2:1 input, regulated, encapsulated, metal case		30 W	100
THN 30WI	1" × 1" package, 4:1 input, regulated, encapsulated, metal case		30 W	101
THL 30WI	1" × 1" package, 4:1 input, regulated, cost efficient, encapsulated, metal case	NEW	30 W	101
THN 30WIR	1" × 1" package, 4:1 input, regulated, 3000 VDC isolation, railway, encapsulated		30 W	102
THM 30	2" × 1" package, 2:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		30 W	102

THM 30WI	2" × 1" package, 4:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical, encapsulated		30 W	103
THL 40WI	1" × 1" package, 4:1 input, regulated, high power density, encapsulated, metal case	NEW under development	40 W	103
TEN 40E	2" × 1" package, 2:1 input, regulated, cost efficient, encapsulated, metal case		40 W	104
TEN 40WIE	2" × 1" package, 4:1 input, regulated, cost efficient, encapsulated, metal case		40 W	104
THR 40WI	2" × 1" package, 4:1 input, regulated, 3000 VAC isolation (reinforced), encapsulated		40 W	105
TEN 40WIR	2" × 1" package, 4:1 input, regulated, 2250 VDC isolation, railway, encapsulated		40 W	105
TEN 40WIRH	2" × 1" package, 4:1 input, regulated, 3000 VAC isolation (reinforced), railway		40 W	106
TEQ 40WIR	4" × 2.3" package, 4:1 input, regulated, 2250 VDC isolation, railway, encased, chassis mount		40 W	106
TMDC 40	4.41" × 2.51", 4:1 input, harsh EMC capabilities, chassis mount		40 W	107
TMDC 40H	4.41" × 2.51", 2:1 input, harsh EMC capabilities, 3000 VAC isolation, chassis mount		40 W	107
TEN 50	2" × 1" package, 2:1 input, regulated, encapsulated, metal case		50 W	108
TEN 50WI	2" × 1" package, 4:1 input, regulated, encapsulated, metal case		50 W	108
TEN 60N	2" × 1" package, 2:1 input, regulated, encapsulated, metal case		60 W	109
TEN 60WIN	2" × 1" package, 4:1 input, regulated, encapsulated, metal case		60 W	109
TEN 60WIR	2" × 1" package, 4:1 input, regulated, 3000 VDC isolation, railway, encapsulated		60 W	110
THM 60WI	2.28" × 1.45" package, 4:1 input, regulated, 5000 VAC isolation, 2 × MOPP medical	NEW	60 W	110
TMDC 60	4.41" × 2.67", 4:1 input, harsh EMC capabilities, chassis mount		60 W	111
TMDC 60H	4.41" × 2.67", 2:1 input, harsh EMC capabilities, 3000 VAC isolation, chassis mount		60 W	111
TEN 80WI	2" × 1" package, 4:1 input, regulated, high power density, encapsulated, metal case	NEW under development	80 W	112

High Power DC/DC Converters / RIA12 Surge Filters

40 – 300 Watt

TFI	DIP-24/1.6" × 1" package, RIA 12, NF F01-510 surge filter		0–300 W	113
TEP 40UIR	1/4-Brick package, 12:1 input, 3000 VAC isolation, railway, PCB mount		40 W	114
TEP 60UIR	1/4-Brick package, 12:1 input, 3000 VAC isolation, railway, PCB mount		60 W	114
TEP 75WI	1/2-Brick package, 4:1 input, 2250 VDC isolation, railway, PCB- chassis mount		75 W	115
TEP 100	1/2-Brick package, 2:1 input, 2250 VDC isolation, PCB- chassis mount		100 W	115
TEP 100UIR	1/4-Brick package, 12:1 input, 3000 VAC isolation, railway, PCB mount		100 W	116
TEP 100WIR	1/2-Brick package, 4:1 input, 2250 VDC isolation, railway, PCB- chassis mount		100 W	116
TEQ 100WIR	3" × 4" × 3.5" package, 4:1 input, 2250 VDC isolation, rugged design, railway, chassis mount		100 W	117
TEP 150WI	3.9" × 2.1" package, 4:1 input, 2250 VDC isolation, rugged design, railway, chassis mount		150 W	117
TEP 150UIR	1/2-Brick package, 10:1 input, 3000 VAC isolation, railway, PCB mount	NEW	150 W	118
TEP 160	1/2-Brick package, 2:1 input, 2250 VDC isolation, PCB- chassis mount		160 W	118
TEP 160WIR	1/2-Brick package, 4:1 input, 2250 VDC isolation, railway, PCB- chassis mount		160 W	119
TEQ 160WIR	3" × 4" × 3.5" package, 4:1 input, 2250 VDC isolation, rugged design, railway, chassis mount		160 W	119
TEP 200WIR	1/2-Brick package, 4:1 input, 2250 VDC isolation, railway, PCB- chassis mount		200 W	120
TEP 200UIR	1/2-Brick package, 10:1 input, 3000 VAC isolation, railway, PCB mount	NEW	200 W	120
TEQ 200WIR	3" × 4" × 3.5" package, 4:1 input, 2250 VDC isolation, rugged design, railway, chassis mount		200 W	121
TEQ 300WIR	6" × 4" × 1.5" package, 4:1 input, 2250 VDC isolation, rugged design, railway, chassis mount		300 W	121

Industrial DIN-Rail Mount DC/DC Converters

24 – 60 Watt

TCL-DC	Slim plastic case, 4:1 input, 1500 VDC isolation, DIN-rail mount		24 – 60 W	122
--------	--	--	-----------	-----

Encapsulated AC/DC Power Modules

3 – 100 Watt

TMPS 03	1" x 1" package, 3000 VAC isolation, household, PCB mount		3 W	123
TMLM 04	1.44" x 1.06" package, 3000 VAC isolation, PCB mount		4 W	124
TMPS 05	1" x 1" package, 3000 VAC isolation, household, PCB mount		5 W	124
TMPW 5	1.46" x 1.08", 90–305 VAC input, 4000 VAC isolation, household, PCB mount		5 W	125
TMPW 5-J/-T	2.17" x 1.08", 90–305 VAC input, 4000 VAC isolation, household, chassis mount		5 W	125
TMPS 10	1.5" x 1" package, 3000 VAC isolation, household, PCB mount		10 W	126
TMPW 10	1.46" x 1.08", 90–305 VAC input, 4000 VAC isolation, household, PCB mount		10 W	126
TMPW 10-J/-T	2.17" x 1.08", 90–305 VAC input, 4000 VAC isolation, household, chassis mount		10 W	127
TMPS 15	2" x 1" package, 3000 VAC isolation, household, PCB mount	NEW	15 W	127
TPP 15-J	2.82" x 1.14" package, 4000 VAC isolation, medical/household, 2 x MOPP, chassis mount		15 W	128
TPP 15-D	1.65" x 1.14" package, 4000 VAC isolation, medical/household, 2 x MOPP, PCB mount		15 W	128
TIW	2.2" x 2.2" package, 4000 VAC isolation, household, flush box mounting (IP67)		4 – 24 W	129
TMPW 25	2.07" x 1.08", 90–305 VAC input, 4000 VAC isolation, household, PCB mount		25 W	129
TMPW 25-J/-T	3.48" x 1.08", 90–305 VAC input, 4000 VAC isolation, household, chassis mount		25 W	130
TMF	4000 VAC isolation, medical 2 x MOPP, PCB mount		5 – 30 W	130
TPP 30-J	3.95" x 1.50" package, 4000 VAC isolation, medical/household, 2 x MOPP chassis mount		30 W	131
TPP 30-D	2.89" x 1.50" package, 4000 VAC isolation, medical/household, 2 x MOPP, PCB mount		30 W	131
TMW	2.09" x 2.0", 4000 VAC isolation, household/medical, 2 x MOPP, flush box mount (IP68)		24 – 36 W	132
TPP 40E-J	4.3" x 2.2" package, 4000 VAC isolation, medical 2 x MOPP, encapsulated, chassis mount	NEW	40 W	132
TPP 40E-D	3.2" x 2.2" package, 4000 VAC isolation, medical 2 x MOPP, encapsulated, PCB mount	NEW	40 W	133
TMG	Compact design, 3000 VAC isolation, PCB mount		7 – 50 W	133
TMPW 50	2.92" x 1.85", 90–305 VAC input, 4000 VAC isolation, household, PCB mount		50 W	134
TMPW 50-J/-T	3.81" x 1.85", 90–305 VAC input, 4000 VAC isolation, household, chassis mount		50 W	134
TMP/TMP-C	PCB or Chassis mount packages, 3000 VAC isolation		7 – 60 W	135
TML/TML-C	PCB or Chassis mount packages, 3000 VAC isolation		20 – 40 W	135
TMM/TMM-C	Low profile case, 3000 VAC isolation, PCB or chassis mount versions		24 – 60 W	136
TMPW 60	2.92" x 1.85", 90–305 VAC input, 4000 VAC isolation, household, PCB mount	NEW under development	60 W	136
TMPW 60-J/-T	3.81" x 1.85", 90–305 VAC input, 4000 VAC isolation, household, chassis mount	NEW under development	60 W	137
TPP 65E-J	4.3" x 2.2" package, 4000 VAC isolation, medical 2 x MOPP, encapsulated, chassis mount	NEW	65 W	137
TPP 65E-D	3.2" x 2.2" package, 4000 VAC isolation, medical 2 x MOPP, encapsulated, PCB mount	NEW	65 W	138
TML 100C	5.5" x 2.36" package, 3000 VAC isolation, active PFC, chassis mount		100 W	138

Metal Enclosure and Open Frame Power Supplies

15 – 1000 Watt

TXM	Metal case, 3000 VAC isolation, cost efficient, without fan, encased, chassis mount		15 – 200 W	139
TXLN	Metal case, 3000 VAC isolation, high power, encased, chassis mount		18 – 960 W	140
TPP 15A-J	2.6" x 1.0" package, 4000 VAC isolation, medical/household, 2 x MOPP, chassis mount		15 W	140
TPP 15A-D	1.5" x 1.0" package, 4000 VAC isolation, medical/household, 2 x MOPP, PCB mount		15 W	141
TPI 30A-J	3.34" x 1.36" package, 3000 VAC isolation, cost efficient, chassis mount		30 W	141
TPP 30A-J	3.34" x 1.36" package, 4000 VAC isolation, medical/household, 2 x MOPP, chassis mount		30 W	142
TPP 30A-D	2.74" x 1.1" package, 4000 VAC isolation, medical/household, 2 x MOPP, PCB mount		30 W	142
TPP 40A	3" x 2" package, 4000 VAC isolation, medical, 2 x MOPP, open frame, chassis mount		40 W	143
TPP 40	3.53" x 2.38" package, 4000 VAC isolation, medical, 2 x MOPP, enclosed, chassis mount		40 W	143
TPI 50A-J	3" x 1.5" package, 3000 VAC isolation, cost efficient, open frame, chassis mount	NEW	50 W	144
TXH 060	3.1" x 2" package, 3000 VAC isolation, cost efficient, enclosed, chassis mount		60 W	144
TPI 65A-J	3" x 2" package, 3000 VAC isolation, cost efficient, open frame, chassis mount		65 W	145

TPP 65A	3" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount		65 W	145
TPP 65	3.53" × 2.38" package, 4000 VAC isolation, medical 2 × MOPP, encased, chassis mount		65 W	146
TOP 100	4" × 2" package, 3000 VAC isolation, open frame, chassis mount		100 W	146
TOP 100C	4.1" × 2.4" package, 3000 VAC isolation, encased, chassis mount		100 W	147
TPI 100A	3" × 2" package, 3000 VAC isolation, open frame, chassis mount		100 W	147
TPP 100A-J	3" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount		100 W	148
TPP 100	3.6" × 2.44" package, 4000 VAC isolation, medical 2 × MOPP, encased, chassis mount		100 W	148
TPI 125A-J	3" × 2" package, 4000 VAC isolation, cost efficient, open frame, chassis mount		125 W	149
TCI 130	3" × 2.35" package, 4000 VAC isolation, unique conduction cooled design, encased	NEW under development	130 W	149
TPI 150A	4" × 2" package, 3000 VAC isolation, open frame, chassis mount		150 W	150
TPP 150A-J	4" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount		150 W	150
TPP 150	4.6" × 2.44" package, 4000 VAC isolation, medical 2 × MOPP, encased, chassis mount		150 W	151
TPI 180A-M	3" × 2" package, 3000 VAC isolation, cost efficient, open frame, chassis mount	NEW	180 W	151
TPI 180-M	3.6" × 2.44" package, 3000 VAC isolation, cost efficient, encased, chassis mount	NEW	180 W	152
TPP 180A-M	3" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount	NEW	180 W	152
TPP 180-M	3.6" × 2.44" package, 4000 VAC isolation, medical 2 × MOPP, encased, chassis mount	NEW	180 W	153
TXH	Metal case, 3000 VAC isolation, compact design, encased, chassis mount		120–240 W	153
TOP 200	5" × 3" package, 3000 VAC isolation, open frame, chassis mount		200 W	154
TOP 200C	5" × 3" package, 3000 VAC isolation, encased, chassis mount		200 W	154
TCI 240	4.1" × 2.46" package, 4000 VAC isolation, unique conduction cooled design, encased	NEW under development	240 W	155
TPP 250A	4" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount	NEW	250 W	155
TPP 250A-FK	4" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame with fan-kit, chassis mount	NEW	250 W	156
TPI 300L-M	4" × 2" package, 3000 VAC isolation, open frame, chassis mount	NEW	300 W	156
TPI 300-M	4.6" × 2.44" package, 3000 VAC isolation, cost efficient, encased, chassis mount	NEW	300 W	157
TPP 300A-M	4" × 2" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount	NEW	300 W	157
TPP 300-M	4.4.6" × 2.44" package, 4000 VAC isolation, medical 2 × MOPP, encased, chassis mount	NEW	300 W	158
TPP 450BA	5 × 3" package, JST-connectors, open frame, 4000 VAC I/O-isolation		450 W	158
TPP 450B	5.83 × 3" package, JST-connectors, encased, 4000 VAC I/O-isolation		450 W	159
TCI 500	5.1" × 3.26" package, 4000 VAC isolation, unique conduction cooled design, encased	NEW under development	500 W	159
TCI 500U	4.1" × 2.46" package, 4000 VAC isolation, unique conduction cooled design, U-Bracket	NEW under development	500 W	160
TPP 600A	5" × 3" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount	NEW	600 W	160
TPP 600A-FK	5" × 3" package, 4000 VAC isolation, medical 2 × MOPP, open frame with fan-kit, chassis mount	NEW	600 W	161
TPI 700	6.7" × 3.66" package, 4000 VAC isolation, compact design, encased, chassis mount	NEW under development	700 W	161
TPP 850A	6" × 4" package, 4000 VAC isolation, medical 2 × MOPP, open frame, chassis mount	NEW	850 W	162
TPP 850A-FK	6" × 4" package, 4000 VAC isolation, medical 2 × MOPP, open frame with fan-kit, chassis mount	NEW	850 W	162
TPI 1000	7.66" × 4.02" package, 4000 VAC isolation, compact design, encased, chassis mount	NEW under development	1000 W	163

Outdoor Power Supply

120 Watt

TEX 120	6.9" × 3.7" package, 3000 VAC isolation, IP67 enclosure, dust- water- and oil proof		120 W	164
---------	---	--	-------	-----

DIN-Rail Power Supplies

15 – 600 Watt

TBL	Low profile case (55mm depth), 85–264 VAC input, UL 1310, UL 508		15 – 150 W	165
TBLC	Low profile case (55mm depth), 85–264 VAC input, high efficiency, EN 60355-1, UL 1310, UL 508		6 – 90 W	166
TCL	Slim profile case, 85–264 VAC input, UL 508		24 – 240 W	166

TPC	Slim profile case, 85–264 VAC input, robust design, ErP ready, UL 508	30 – 120 W	167
TIB	Rugged metal case, 85–264 VAC input, cost efficient, UL 508	80 – 480 W	167
TIB-EX	Rugged metal case, 85–264 VAC input, ATEX & UL HazLoc approvals, UL 508	80 – 480 W	168
TSPC	Slim metal case, 85–264 VAC input, UL 508	50 – 480 W	168
TSP	Rugged metal case, 85–264 VAC input, for harsh environments, UPS module options	72 – 600 W	169
TSP-WR	Rugged metal case, wide range 100/230–500 VAC input, UL 508	180 – 600 W	169
TIS	Low profile metal case, 85–264 VAC input, optional built in function modules	50 – 600 W	170

UPS Systems and Function Modules (DIN-Rail and Industrial Cabinets)

UPS System

TSPC 240UPS	Compact universal power supply for uninterruptable 24 VDC output voltage	240 W	171
-------------	--	-------	-----

Battery Controller Modules

TSP-BCMU360	Universal battery controller module for uninterruptable 24 VDC and 48 VDC bus voltage	360 W	172
TSP-BCM	Battery controller modules compatible with the TSP series	72 – 600 W	172
TIB-BCMU240	Universal battery controller module for uninterruptable 24 VDC bus voltage	NEW under development 240 W	173

Buffer Modul

TSP-BFM	Buffer module to increase hold-up time compatible with the TSP series	600 W	173
---------	---	-------	-----

Decoupling, Redundancy and Current Share Modules

TSPC-DCM	Decoupling module for redundant operation compatible with the TSPC series	600 W	174
TCL-REM	Redundancy module compatible with the TCL series	480 W	174
TPC-REM	Redundancy module compatible with the TPC series	240 W	175
TSP-REM	Redundancy module compatible with the TSP series	360 – 600 W	175
TIB-REM480	Redundancy module compatible with the TSP series	NEW under development 480 W	176

Non-Isolated Step Down DC/DC Converters (POL) in SIP Package

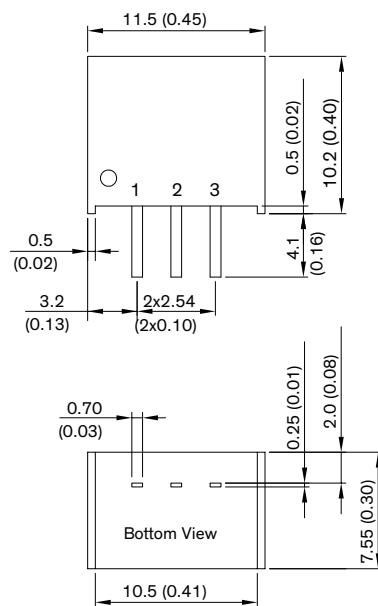
0.5 – 30 Amp

Our SIP-3 non-isolated/point-of-load regulators provide output currents up to 3 Amps with high-efficiency operation. Convection-cooled operation combined with the standard SIP 3/ TO-220 pinout, make these true alternatives to less efficient linear regulators.



TSR 0.5

0.5 Amp



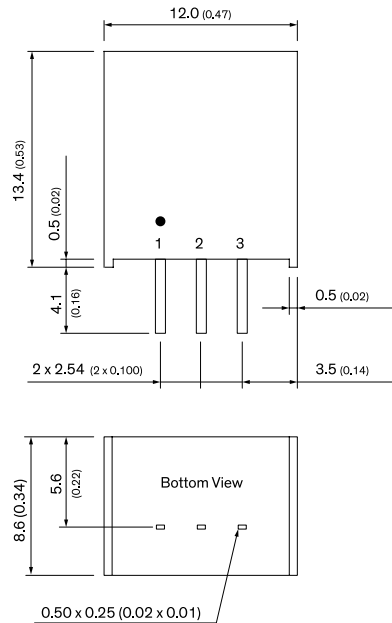
- Compact SIP package
- Very high efficiency up to 97%
- Excellent line/load regulation
- Low standby current
- Operating temperature range -40 to 90°C
- Over-temperature protection
- Short circuit protection
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	GND
3	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TSR 0.5-2415	4.75 – 32 VDC	1.5 VDC	500 mA	73%
TSR 0.5-2418		1.8 VDC		82%
TSR 0.5-2425		2.5 VDC		87%
TSR 0.5-2433		3.3 VDC		91%
TSR 0.5-2450	6.5 – 32 VDC	5 VDC		94%
TSR 0.5-2465	8 – 32 VDC	6.5 VDC		95%
TSR 0.5-2490	11 – 32 VDC	9 VDC		96%
TSR 0.5-24120	15 – 32 VDC	12 VDC		97%
TSR 0.5-24150	18 – 32 VDC	15 VDC		97%

TSR 0.6WI

0.6 Amp



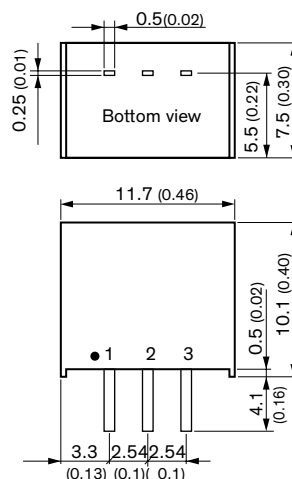
- Ultra wide 8:1 input voltage range: 9–72 VDC
- Covers a majority of standard bus- and battery voltages
- Up to 94% efficiency – No heatsink required
- Pin compatible with LMxx linear regulators (SIP-3)
- Operating temperature range –40 to +85°C
- Low standby current
- Excellent line/load regulation
- Protection against short circuit, overvoltage and overtemperature
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	GND
3	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TSR 0.6-4833WI	9 – 72 VDC	3.3 VDC	600 mA	85%
TSR 0.6-4850WI		5 VDC		89%
TSR 0.6-4865WI		6.5 VDC		91%
TSR 0.6-4890WI	14 – 72 VDC	9 VDC	400 mA	92%
TSR 0.6-48120WI	17 – 72 VDC	12 VDC		93%
TSR 0.6-48150WI	20 – 72 VDC	15 VDC		94%
TSR 0.6-48240WI	33 – 72 VDC	24 VDC	400 mA	94%

TSR 1

1 Amp



- Up to 96% efficiency – No heat-sink required
- Pin compatible with LMxx linear regulators
- SIP-package fits existing TO-220 footprint
- Built in filter capacitors
- Operation temp. range –40°C to +85°C
- Short circuit protection
- Wide input operating range
- Excellent line / load regulation
- Low standby current
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	GND
3	+Vout

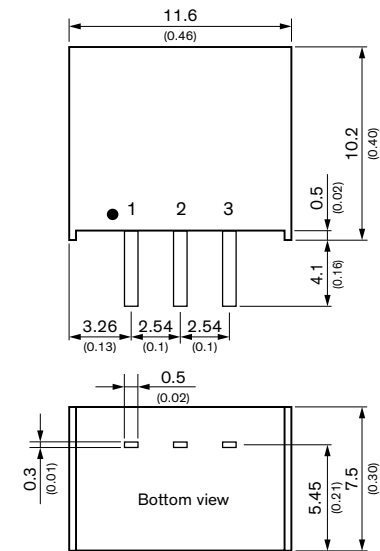
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TSR 1-2412	4.6 – 36 VDC	1.2 VDC	1000 mA	74%
TSR 1-2415		1.5 VDC		78%
TSR 1-2418		1.8 VDC		82%
TSR 1-2425	4.75 – 36 VDC	2.5 VDC	1000 mA	87%
TSR 1-2433		3.3 VDC		91%
TSR 1-2450		5 VDC		94%
TSR 1-2465	9 – 36 VDC	6.5 VDC	1000 mA	93%
TSR 1-2490	12 – 36 VDC	9 VDC		95%
TSR 1-24120	15 – 36 VDC	12 VDC		95%
TSR 1-24150	18 – 36 VDC	15 VDC	1000 mA	96%

TSR 1E

1 Amp



- Up to 92% efficiency – No heat-sink required
- Pin compatible with LMxx linear regulators
- Cost efficient design
- Built in filter capacitors
- Operation temp. range –40°C to +85°C
- Short circuit protection
- Wide input operating range
- Excellent line / load regulation
- Low standby current
- 3-year product warranty



Pinout	
Pin	Function
1	+ Vin
2	GND
3	+ Vout

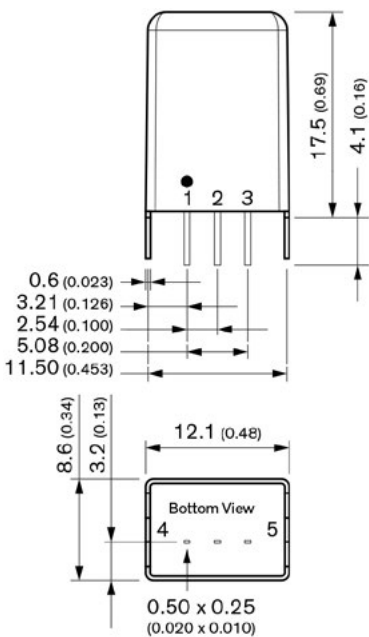
Model	Input Voltage Range	Output Voltage	Output Current max.	Efficiency
TSR 1-2433E	6–36 VDC	3.3 VDC	1000 mA	88%
TSR 1-2450E	7–36 VDC	5 VDC	1000 mA	92%

TSR 1WI

1 Amp



- Ultra wide 8:1 input voltage range: 9–72 VDC
- Covers a majority of standard bus- and battery voltages
- Up to 93% efficiency – No heatsink required
- Pin compatible with LMxx linear regulators (SIP-3)
- Operating temperature range –40 to +80°C
- Low standby current
- Excellent line/load regulation
- Protection against short circuit, overvoltage and overtemperature
- 3-year product warranty

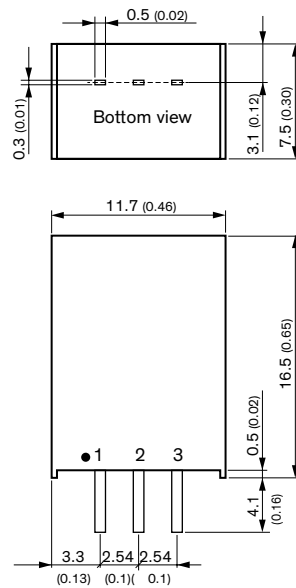


Pinout	
Pin	Function
1	+Vin
2	GND
3	+Vout
4	Case pin
5	Case pin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TSR 1-4833WI	9 – 72 VDC	3.3 VDC	1000 mA	83%
TSR 1-4850WI		5 VDC		87%
TSR 1-4865WI		6.5 VDC		88%
TSR 1-4890WI	14 – 72 VDC	9 VDC	700 mA	90%
TSR 1-48120WI	17 – 72 VDC	12 VDC		93%
TSR 1-48150WI	21 – 72 VDC	15 VDC		93%
TSR 1-48240WI	33 – 72 VDC	24 VDC	700 mA	92%

TSN 1

1 Amp



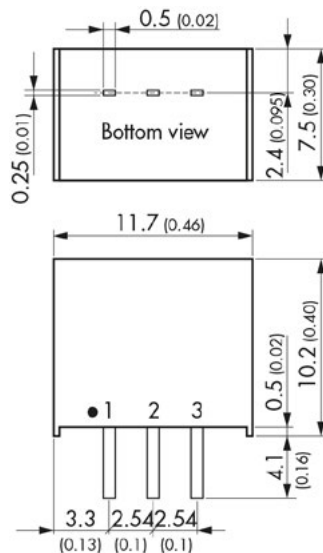
- Non-isolated converter for negative output
- Small size and low profile
- Pin compatible with LM79xx linear regulators
- No heatsink required
- High efficiency up to 96%
- Operation temp. range -40°C to $+85^{\circ}\text{C}$
- Protection against overload, short circuit and over-temperature
- Fixed switching frequency
- Wide input range up to -32 VDC
- Excellent line/load regulation
- Low standby current
- 3-year product warranty

Pinout	
Pin	Single
1	GND
2	$-V_{in}$
3	$-V_{out}$

Model	Input Voltage Range	Output V_{nom}	I_{max}	Efficiency
TSN 1-2450	$-7.0 - -32$ VDC	-5.0 VDC	-1.0 A	91.5%
TSN 1-2452	$-7.0 - -32$ VDC	-5.2 VDC		92.0%
TSN 1-2460	$-8.0 - -32$ VDC	-6.0 VDC		92.5%
TSN 1-2480	$-10.5 - -32$ VDC	-8.0 VDC		94.0%
TSN 1-2490	$-11.5 - -32$ VDC	-9.0 VDC		94.5%
TSN 1-24120	$-15 - -32$ VDC	-12.0 VDC		96.0%
TSN 1-24150	$-18 - -32$ VDC	-15.0 VDC		96.0%

TSRN 1

1 Amp



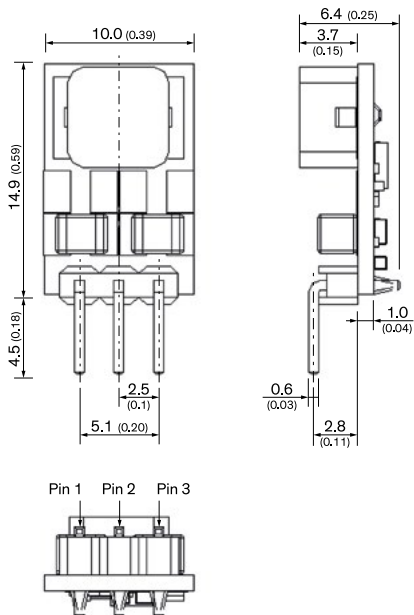
- SIP-package fits existing TO-220 footprint
- Suitable for positive & negative output circuit
- Pin compatible with LMxx linear regulators
- Built in filter capacitors
- Operation temp. range -40°C to $+85^{\circ}\text{C}$
- No heat-sink required
- Over-temperature & short circuit protection
- Wide input range up to 36 VDC
- Excellent line/load regulation
- 3-year product warranty

Pinout	
Pin	Function
1	$+V_{in}$
2	GND
3	$+V_{out}$

Model	Input Voltage Range	Output V_{nom}	I_{max}	Efficiency
TSRN 1-2415	4.6 – 36 VDC	1.5 VDC	1000 mA	77%
TSRN 1-2418		1.8 VDC		81%
TSRN 1-2425		2.5 VDC		84%
TSRN 1-2433		3.3 VDC		88%
TSRN 1-2450	6.5 – 36 VDC	5 VDC		92%
TSRN 1-2465	8 – 36 VDC	6.5 VDC		93%
TSRN 1-2490	10.5 – 36 VDC	9 VDC		95%
TSRN 1-24120	13.5 – 36 VDC	12 VDC		95%
TSRN 1-24150	16.5 – 36 VDC	15 VDC		96%

TSR 1.5E

1.5 Amp



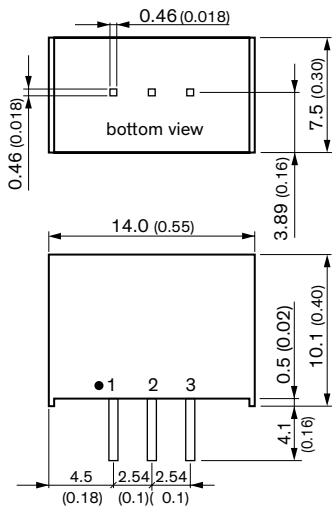
- Highly cost efficient design
- Pin compatible with LMxx linear regulators
- Operation temperature. range –40°C to +85°C
- Efficiency up to 97%
- Wide input operating range
- Short circuit protection
- Excellent line / load regulation
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	Common
3	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TSR 1.5-2433E	7 – 36 VDC (12 nom.)	3.3 VDC	1500 mA	93%
TSR 1.5-2450E	15 – 36 VDC (24 nom.)	5 VDC	1000 mA	95%
TSR 1.5-24120E	15 – 36 VDC (24 nom.)	12 VDC	1000 mA	97%

TSR 2

2 Amp



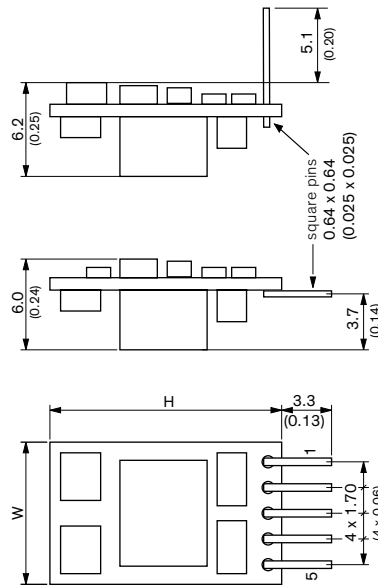
- Ultra compact SIP package 0.55 × 0.30 × 0.40 inch
- Up to 96% efficiency – No heat-sink required
- Pin compatible with LMxx linear regulators
- Built in filter capacitors
- Operating temperature range –40°C to +85°C
- Excellent line / load regulation
- Short circuit protection
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	GND
3	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TSR 2-0512	3 – 5.5 VDC	1.2 VDC	2000 mA	90%
TSR 2-0515		1.5 VDC		91%
TSR 2-0518		1.8 VDC		92%
TSR 2-0525	3.8 – 5.5 VDC	2.5 VDC		95%
TSR 2-2412	4.6 – 36 VDC	1.2 VDC		84%
TSR 2-2415		1.5 VDC		86%
TSR 2-2418		1.8 VDC		87%
TSR 2-2425		2.5 VDC		89%
TSR 2-2433	4.75 – 36 VDC	3.3 VDC		91%
TSR 2-2450	6.5 – 36 VDC	5 VDC		94%
TSR 2-2465	9 – 36 VDC	6.5 VDC		94%
TSR 2-2490	12 – 36 VDC	9 VDC		95%
TSR 2-24120	15 – 36 VDC	12 VDC		95%
TSR 2-24150	18 – 36 VDC	15 VDC		96%

TSR 3

3 Amp



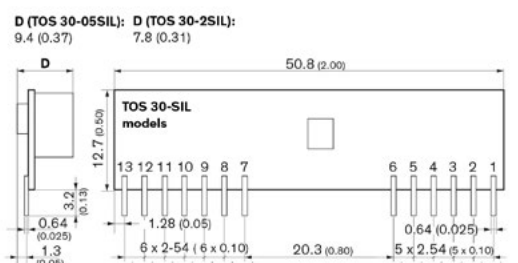
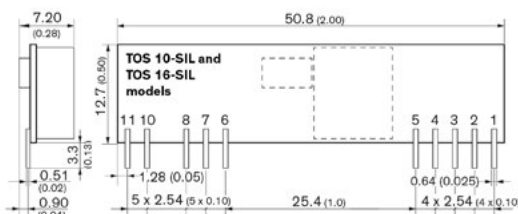
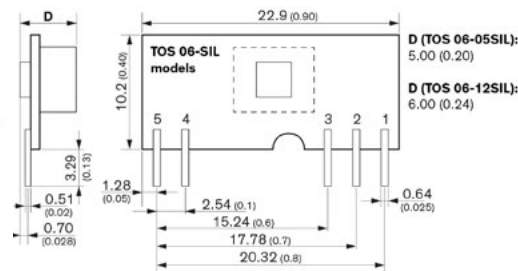
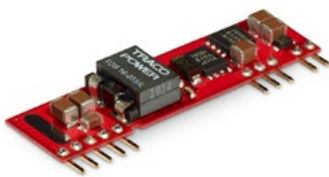
- High performance 3 Amp. switching regulator
- Suitable for positive & negative output circuit
- High efficiency up to 95%
- Adjustable output voltages
- Wide input voltage ranges 2.5–5.5, 4.5–14 and 10–30 VDC
- Short circuit protection
- Remote On/Off input
- Low output ripple & noise
- 3-year product warranty

Pinout		
Pin	positive	negative
1	Remote On/Off	
2	+Vin (Vcc)	
3	GND	–Vout
4	+Vout	GND
5	Trim	

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TSR 3-0533	2.5 – 5.5 VDC	0.6 VDC	3000 mA	95%
TSR 3-1250	4.5 – 14 VDC			93%
TSR 3-2450	10 – 30 VDC	3 VDC		91%
TSR 3-24150		5 VDC		95%

TOS

6–30 Amp



- Small size, low profile
- SIP version
- Cost-efficient open frame design
- Wide input voltage ranges
- Output voltages trim from 0.75 to 5.0 VDC
- Ultra high efficiency to 95%
- Fast transient response
- Remote On/Off control
- Wide temperature range –40°C to +85°C

Model	Input Voltage Range (VDC)	Output Voltage nom.	Output Current max.	Efficiency
TOS 06-05SIL	2.4–5.5 (5 nom.)	0.75 VDC	6000 mA	94%
TOS 06-12SIL	8.3–14 (12 nom.)	0.75 VDC	6000 mA	89%
TOS 10-05SIL	2.4–5.5 (5 nom.)	0.75 VDC	10000 mA	95%
TOS 10-12SIL	8.3–14 (12 nom.)	0.75 VDC	10000 mA	93%
TOS 16-05SIL	2.4–5.5 (5 nom.)	0.75 VDC	16000 mA	95%
TOS 16-12SIL	8.3–14 (12 nom.)	0.75 VDC	16000 mA	92%
TOS 30-05SIL	4.5–5.5 (5 nom.)	0.8 VDC	30000 mA	93%
TOS 30-12SIL	6–14 (12 nom.)	0.8 VDC	30000 mA	92%

Note (TOS 30) – 12 Vin model: 25 A output voltage higher than 2.75 VDC

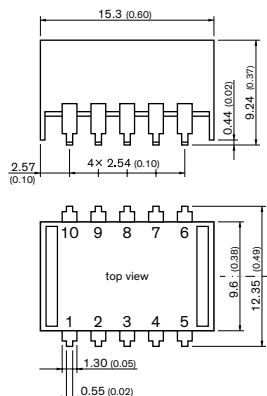
Pinout				
Pin	TOS 06-SIL	TOS 10-SIL	TOS 16-SIL	TOS 30-SIL
1	+Vout	+Vout	+Vout	+Vout
2	Trim	+Vout	+Vout	+Vout
3	GND	+Sense	+Sense	+Sense
4	+Vin	+Vout	+Vout	+Vout
5	Remote On/Off	GND	GND	GND
6	–	GND	GND	GND
7	–	+Vin	+Vin	Share (option)
8	–	+Vin	+Vin	GND
9	–	–	–	+Vin
10	–	Trim	Trim	+Vin
11	–	Remote On/Off	Remote On/Off	SEQ
12	–	–	–	Trim
13	–	–	–	Remote On/Off

0.5 – 30 Amp

Our SMD non-isolated/point of load regulators provide output currents up to 1 Amp with high efficiency operation. Convection-cooled operation surface mount packaging make these ideal power solutions for a broad range of applications.



0.5 Amp



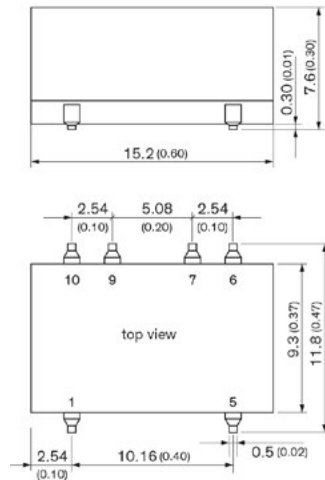
- Compact SMD package
- Very high efficiency up to 97%
- Excellent line / load regulation
- Low standby current
- Operating temperature range
-40 to 90°C
- Over-temperature and short
circuit protection
- Remote On/Off input
- Adjustable output voltage
- Moisture sensitivity level 2 as per
IPC J-STD-033C
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	+Vin
3	GND
4	+Vout
5	+Vout
6	Trim
7	GND
8	GND
9	GND
10	Remote On/Off

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TSR 0.5-2415SM	4.75 – 32 VDC	1.5 VDC	500 mA	73%
TSR 0.5-2418SM		1.8 VDC		82%
TSR 0.5-2425SM		2.5 VDC		87%
TSR 0.5-2433SM		3.3 VDC		91%
TSR 0.5-2450SM	6.5 – 32 VDC	5 VDC		94%
TSR 0.5-2465SM	8 – 32 VDC	6.5 VDC		95%
TSR 0.5-2490SM	11 – 32 VDC	9 VDC		96%
TSR 0.5-24120SM	15 – 32 VDC	12 VDC		97%
TSR 0.5-24150SM	18 – 32 VDC	15 VDC	97%	

TSR 1SM

1 Amp



- SMD-package
- Up to 96% efficiency
- No thermal layer required
- Built in filter capacitors
- Operation temp. range -40°C to $+85^{\circ}\text{C}$
- Short circuit protection
- Wide input operating range
- Excellent line/ load regulation
- Low standby current
- 3-year product warranty

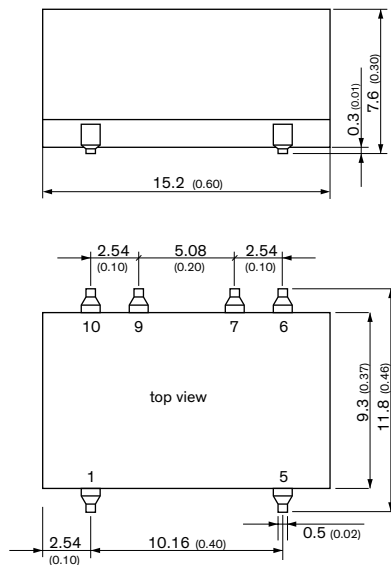
Pinout

Pin	Function
1	+Vin
5	+Vout
6	NC
7	GND
9	GND
10	NC

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TSR 1-0512SM	3 – 5.5 VDC	1.2 VDC	1000 mA	91%
TSR 1-0515SM		1.5 VDC		92%
TSR 1-0518SM		1.8 VDC		93%
TSR 1-0525SM	3.8 – 5.5 VDC	2.5 VDC		95%
TSR 1-2412SM		1.2 VDC		74%
TSR 1-2415SM	4.6 – 36 VDC	1.5 VDC		79%
TSR 1-2418SM		1.8 VDC		82%
TSR 1-2425SM		2.5 VDC		87%
TSR 1-2433SM	4.75 – 36 VDC	3.3 VDC		91%
TSR 1-2450SM	6.5 – 36 VDC	5 VDC		94%
TSR 1-2465SM	9 – 36 VDC	6.5 VDC		94%
TSR 1-2490SM	12 – 36 VDC	9 VDC		95%
TSR 1-24120SM	15 – 36 VDC	12 VDC		95%
TSR 1-24150SM	18 – 36 VDC	15 VDC		96%

TSRN 1SM

1 Amp



- Compact SMD package
- Suitable for positive & negative output circuit
- Adjustable output voltage
- Wide input up to 42 VDC
- Remote On/Off input
- Built in filter capacitors
- Operation temp. range -40°C to $+85^{\circ}\text{C}$
- Excellent line/load regulation
- Low standby current
- 3-year product warranty

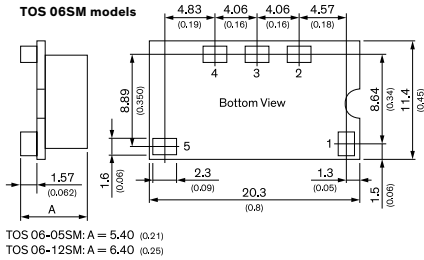
Pinout

Pin	Function
1	+Vin
5	+Vout
6	Trim
7	GND
9	GND
10	Remote On/Off

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TSRN 1-0525SM	3 – 5.5 VDC	2.5 VDC	1000 mA	96%
TSRN 1-2433SM	4.6 – 42 VDC	3.3 VDC		88%
TSRN 1-2450SM	6.5 – 42 VDC	5 VDC		92%
TSRN 1-2490SM	10.5 – 42 VDC	9 VDC		95%
TSRN 1-2490SM	13.5 – 42 VDC	12 VDC		95%
TSRN 1-24150SM	16.5 – 42 VDC	15 VDC		96%

TOS

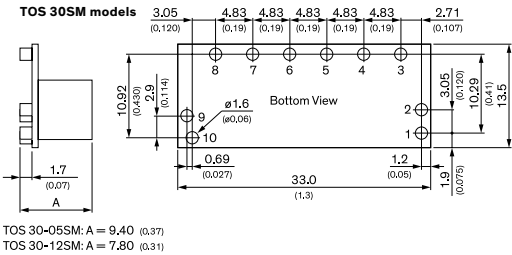
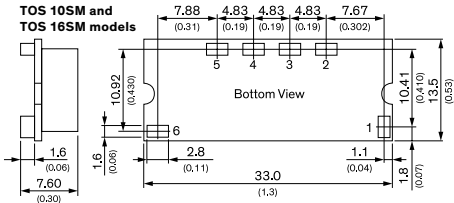
6–30 Amp



Model	Input Voltage Range (VDC)	Output Voltage nom.	Output Current max.	Efficiency
TOS 06-05SM	2.4–5.5 (5 nom.)	0.75 VDC	6000 mA	94%
TOS 06-12SM	8.3–14 (12 nom.)	0.75 VDC	6000 mA	89%
TOS 10-05SM	2.4–5.5 (5 nom.)	0.75 VDC	10000 mA	95%
TOS 10-12SM	8.3–14 (12 nom.)	0.75 VDC	10000 mA	93%
TOS 16-05SM	2.4–5.5 (5 nom.)	0.75 VDC	16000 mA	95%
TOS 16-12SM	8.3–14 (12 nom.)	0.75 VDC	16000 mA	92%
TOS 30-05SM	4.5–5.5 (5 nom.)	0.8 VDC	30000 mA	93%
TOS 30-12SM	6–14 (12 nom.)	0.8 VDC	30000 mA	92%

Note (TOS 30) – 12 Vin model: 25 A output voltage higher than 2.75 VDC

- Small size, low profile
- SMT package
- Cost-efficient open frame design
- Wide input voltage ranges
- Output voltages trim from 0.75 to 5.0 VDC
- Ultra high efficiency to 95%
- Fast transient response
- Remote On/Off control
- Wide temperature range –40°C to +85°C

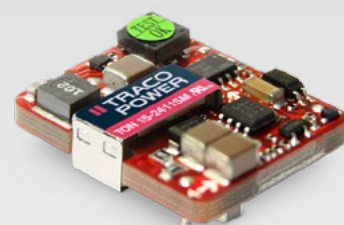


Pinout				
Pin	TOS 06-SIL	TOS 10-SIL	TOS 16-SIL	TOS 30-SIL
1	+Vout	Remote On/Off	Remote On/Off	Remote On/Off
2	Trim	+Sense	+Sense	GND (option)
3	GND	Trim	Trim	Share (option)
4	+Vin	+Vout	+Vout	+Sense
5	Remote On/Off	GND	GND	Trim
6	–	+Vin	+Vin	+Vout
7	–	–	–	GND
8	–	–	–	SEQ
9	–	–	–	GND (option)
10	–	–	–	+Vin

SMD DC/DC Converters

1 – 15 watt

TRACO POWER's range of isolated DC/DC converters in SMD package consists of products from 1 to 5 W with unregulated or regulated outputs. All models provide high pin accuracy and are qualified for automated pick-and-place machines and withstand lead-free reflow solder processes and comply with IPC J-STD-020D standard.



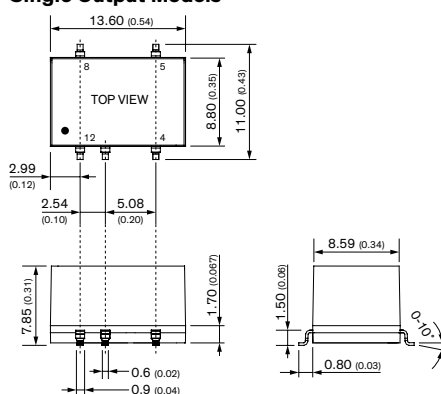
TES 1N

NEW – under development

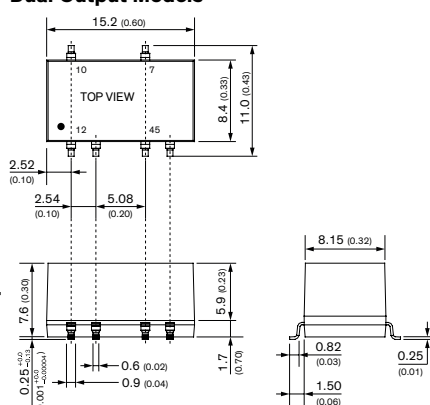
1 Watt



Single Output Models



Dual Output Models



- Cost efficient design
- Industry standard SMD package
- Unregulated device
- I/O isolation 1500 VDC
- Operation temperature range -40°C to +95°C without derating
- Efficiency up to 78%
- Input voltage 5, 12, 24 VDC
- Short circuit protection
- Qualified for leadfree reflow solder process acc. IPC/JEDEC J-STD-020C
- 3-year product warranty

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TES 1-0511N	5 VDC ±10% (nominal 5VDC)	5 VDC	200 mA	72%
TES 1-0519N		9 VDC	110 mA	77%
TES 1-0512N		12 VDC	83mA	78%
TES 1-0513N		15 VDC	67 mA	78%
TES 1-0521N		±5 VDC	±100 mA	72%
TES 1-0522N		±12 VDC	±42 mA	78%
TES 1-0523N		±15 VDC	±34 mA	78%
TES 1-1211N	12 VDC ±10% (nominal 12VDC)	5 VDC	200 mA	73%
TES 1-1219N		9 VDC	110 mA	75%
TES 1-1212N		12 VDC	83mA	77%
TES 1-1213N		15 VDC	67 mA	77%
TES 1-1221N		±5 VDC	±100 mA	73%
TES 1-1222N		±12 VDC	±42 mA	77%
TES 1-1223N		±15 VDC	±34 mA	77%
TES 1-2411N	24 VDC ±10% (nominal 24VDC)	5 VDC	200 mA	73%
TES 1-2419N		9 VDC	110 mA	75%
TES 1-2412N		12 VDC	83mA	77%
TES 1-2413N		15 VDC	67 mA	77%
TES 1-2421N		±5 VDC	±100 mA	73%
TES 1-2422N		±12 VDC	±42 mA	77%
TES 1-2423N		±15 VDC	±34 mA	77%

Pinout

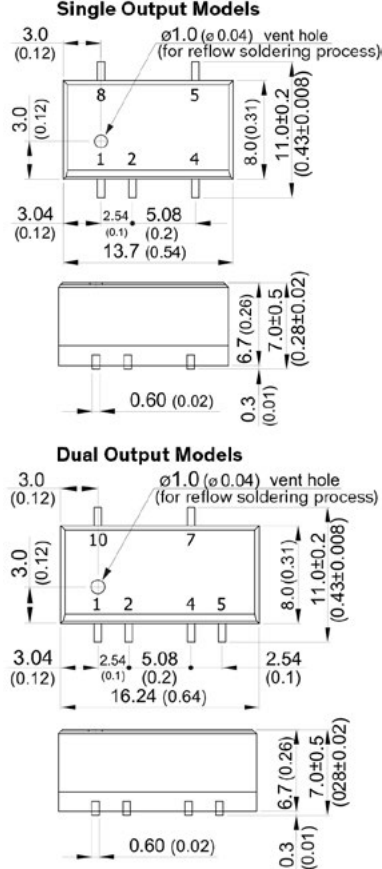
Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	no Pin	no Pin
4	-Vout	Common
5	+Vout	-Vout
6	no Pin	no Pin
7	no Pin	+Vout
8	NC	no Pin
9	-	no Pin
10	-	NC

* Pin to be isolated from circuitry

TES 1

1 Watt

- 
- Small SMD package with standard footprint
 - I/O isolation 1500 VDC
 - Unregulated device
 - Single and dual output models
 - Input voltage 5, 12 and 24 VDC
 - High efficiency up to 80%
 - Operating temperature range -40°C to +90°C
 - High accuracy of pin co-planarity
 - Qualified for leadfree reflow solder process according IPC/JEDEC J-STD-020D
 - Available in tape and reel package
 - 3-year product warranty



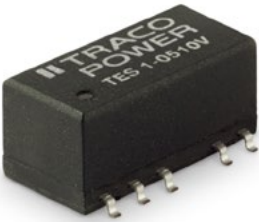
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TES 1-0510	5 VDC ±10% (nominal 5 VDC)	3.3 VDC	300 mA	73%
TES 1-0511		5 VDC	200 mA	78%
TES 1-0519		9 VDC	110 mA	78%
TES 1-0512		12 VDC	85 mA	78%
TES 1-0513		15 VDC	65 mA	79%
TES 1-0521		±5 VDC	±100 mA	74%
TES 1-0522	12 VDC ±10% (nominal 12 VDC)	±12 VDC	±40 mA	78%
TES 1-0523		±15 VDC	±35 mA	78%
TES 1-1211		5 VDC	200 mA	76%
TES 1-1219		9 VDC	110 mA	78%
TES 1-1212		12 VDC	85 mA	79%
TES 1-1213		15 VDC	65 mA	80%
TES 1-1221	24 VDC ±10% (nominal 24 VDC)	±5 VDC	±100 mA	74%
TES 1-1222		±12 VDC	±40 mA	78%
TES 1-1223		±15 VDC	±35 mA	79%
TES 1-2411		5 VDC	200 mA	78%
TES 1-2419		9 VDC	110 mA	77%
TES 1-2412		12 VDC	85 mA	77%
TES 1-2413		15 VDC	65 mA	79%
TES 1-2421		±5 VDC	±100 mA	73%
TES 1-2422		±12 VDC	±40 mA	78%
TES 1-2423		±15 VDC	±35 mA	78%

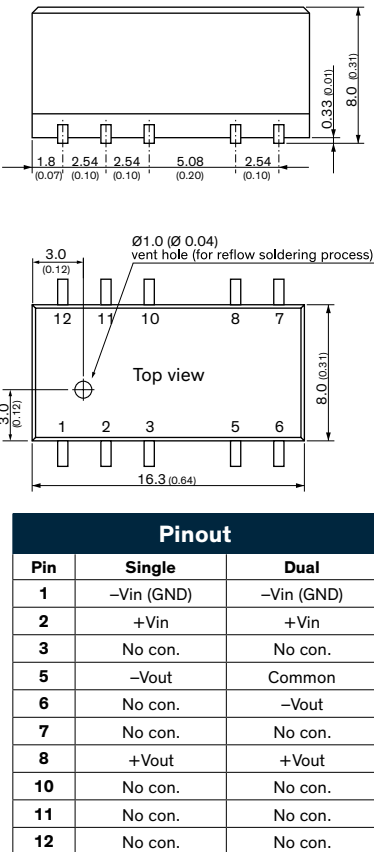
Pinout			
Pin	Single	Pin	Dual
1	–Vin (GND)	1	–Vin (GND)
2	+Vin (Vcc)	2	+Vin (Vcc)
4	–Vout	4	Common
5	+Vout	5	–Vout
8	*NC	7	+Vout
–		10	*NC

* Pin to be isolated from circuitry

TES 1V

1 Watt

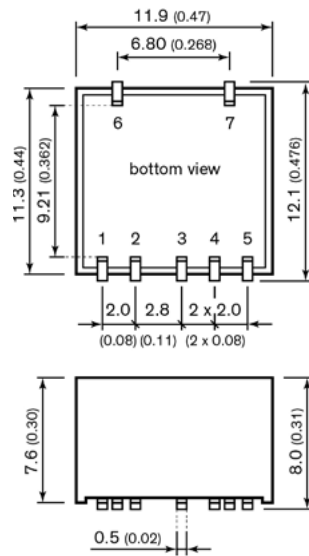
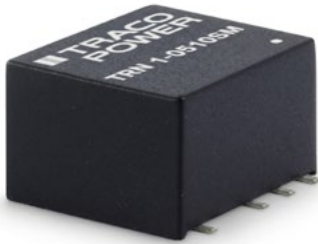
- 
- Small SMD package with standard footprint
 - I/O isolation voltage 3000 VDC
 - Unregulated device
 - Single- and dual output models
 - High efficiency up to 80%
 - Operating temperature range -40°C to +85°C
 - High accuracy of pin co-planarity
 - Qualified for leadfree reflow solder process according IPC/JEDEC J-STD-020D
 - Available in tape and reel package
 - 3-year product warranty



Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TES 1-0510V	5 VDC ±10% (nominal 5 VDC)	3.3 VDC	260 mA	72%
TES 1-0511V		5.0 VDC	200 mA	75%
TES 1-0512V		12 VDC	84 mA	79%
TES 1-0513V		15 VDC	67 mA	80%
TES 1-0521V		±5 VDC	±100 mA	75%
TES 1-0522V		±12 VDC	±42 mA	79%
TES 1-0523V	12 VDC ±10% (nominal 12 VDC)	±15 VDC	±34 mA	80%
TES 1-1210V		3.3 VDC	260 mA	73%
TES 1-1211V		5.0 VDC	200 mA	76%
TES 1-1212V		12 VDC	84 mA	80%
TES 1-1213V		15 VDC	67 mA	81%
TES 1-1221V		±5 VDC	±100 mA	76%
TES 1-1222V	24 VDC ±10% (nominal 24 VDC)	±12 VDC	±42 mA	80%
TES 1-1223V		±15 VDC	±34 mA	80%
TES 1-2410V		3.3 VDC	260 mA	70%
TES 1-2411V		5.0 VDC	200 mA	73%
TES 1-2412V		12 VDC	84 mA	79%
TES 1-2413V		15 VDC	67 mA	79%
TES 1-2421V		±5 VDC	±100 mA	73%
TES 1-2422V		±12 VDC	±42 mA	79%
TES 1-2423V		±15 VDC	±34 mA	79%

TRN 1SM

1 Watt



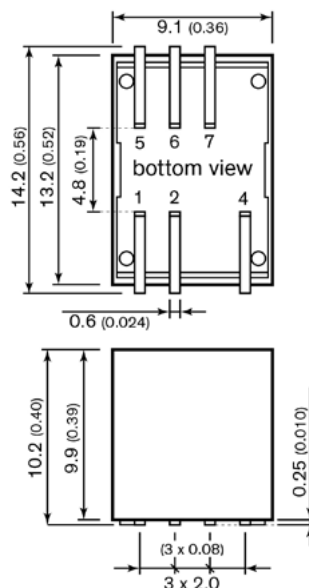
- Compact SMD package
11.9 × 11.3 × 8.0 mm
- Fully regulated outputs
- Input Voltage range 4.5–13.2, 9–18, 18–36, 36–75 VDC
- I/O-isolation 1600 VDC
- Operating temperature range
–40°C to +90°C without derating
- Short circuit protection
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	+Vout	+Vout
4	no pin	common
5	–Vout	–Vout
6	NC	NC
7	NC	NC

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TRN 1-0510SM	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	300 mA	77%
TRN 1-0511SM		5.0 VDC	200 mA	79%
TRN 1-0512SM		12 VDC	90 mA	81%
TRN 1-0513SM		15 VDC	70 mA	82%
TRN 1-0515SM		24 VDC	45 mA	83%
TRN 1-0521SM		± 5.0 VDC	±100 mA	79%
TRN 1-0522SM	9 – 18 VDC (12 VDC nominal)	±12 VDC	±45 mA	83%
TRN 1-0523SM		±15 VDC	±35 mA	80%
TRN 1-1210SM		3.3 VDC	300 mA	77%
TRN 1-1211SM		5.0 VDC	200 mA	80%
TRN 1-1212SM		12 VDC	90 mA	81%
TRN 1-1213SM		15 VDC	70 mA	83%
TRN 1-1215SM		24 VDC	45 mA	83%
TRN 1-1221SM	18 – 36 VDC (24 VDC nominal)	± 5.0 VDC	±100 mA	79%
TRN 1-1222SM		±12 VDC	±45 mA	83%
TRN 1-1223SM		±15 VDC	±35 mA	80%
TRN 1-2410SM		3.3 VDC	300 mA	77%
TRN 1-2411SM		5.0 VDC	200 mA	81%
TRN 1-2412SM		12 VDC	90 mA	82%
TRN 1-2413SM		15 VDC	70 mA	83%
TRN 1-2415SM		24 VDC	45 mA	82%
TRN 1-2421SM	36 – 75 VDC (48 VDC nominal)	± 5.0 VDC	±100 mA	79%
TRN 1-2422SM		±12 VDC	±45 mA	82%
TRN 1-2423SM		±15 VDC	±35 mA	80%
TRN 1-4810SM		3.3 VDC	300 mA	77%
TRN 1-4811SM		5.0 VDC	200 mA	78%
TRN 1-4812SM		12 VDC	90 mA	80%
TRN 1-4813SM		15 VDC	70 mA	81%
TRN 1-4815SM		24 VDC	45 mA	81%
TRN 1-4821SM		± 5.0 VDC	±100 mA	78%
TRN 1-4822SM		±12 VDC	±45 mA	81%
TRN 1-4823SM		±15 VDC	±35 mA	79%

TDN 1WISM

1 Watt



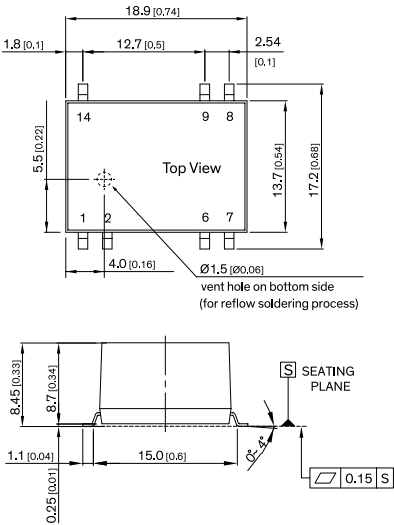
- Compact SMD package
13.2 × 9.1 × 10.2 mm
- Fully regulated outputs
- I/O-isolation 1600 VDC
- Operating temperature range
–40°C to +90°C without derating
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	On/Off	On/Off
5	no con.	–Vout
6	–Vout	Common
7	+Vout	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TDN 1-1210WISM	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	300 mA	77%
TDN 1-1211WISM		5.0 VDC	200 mA	79%
TDN 1-1219WISM		9.0 VDC	112 mA	79%
TDN 1-1212WISM		12 VDC	90 mA	81%
TDN 1-1213WISM		15 VDC	70 mA	81%
TDN 1-1215WISM		24 VDC	45 mA	80%
TDN 1-1221WISM	9 – 36 VDC (24 VDC nominal)	± 5.0 VDC	±100 mA	77%
TDN 1-1222WISM		±12 VDC	±45 mA	80%
TDN 1-1223WISM		±15 VDC	±35 mA	81%
TDN 1-2410WISM		3.3 VDC	300 mA	76%
TDN 1-2411WISM		5.0 VDC	200 mA	78%
TDN 1-2419WISM		9.0 VDC	112 mA	79%
TDN 1-2412WISM	18 – 75 VDC (48 VDC nominal)	12 VDC	90 mA	81%
TDN 1-2413WISM		15 VDC	70 mA	81%
TDN 1-2415WISM		24 VDC	45 mA	80%
TDN 1-2421WISM		± 5.0 VDC	±100 mA	77%
TDN 1-2422WISM		±12 VDC	±45 mA	80%
TDN 1-2423WISM		±15 VDC	±35 mA	81%
TDN 1-4810WISM		3.3 VDC	300 mA	75%
TDN 1-4811WISM		5.0 VDC	200 mA	78%
TDN 1-4819WISM		9.0 VDC	112 mA	79%
TDN 1-4812WISM		12 VDC	90 mA	81%
TDN 1-4813WISM		15 VDC	70 mA	81%
TDN 1-4815WISM		24 VDC	45 mA	80%
TDN 1-4821WISM		± 5.0 VDC	±100 mA	77%
TDN 1-4822WISM		±12 VDC	±45 mA	80%
TDN 1-4823WISM		±15 VDC	±35 mA	81%

TMR 1SM

1 Watt



- Wide 2:1 input voltage range
- Compact SMD package
- Fully regulated outputs
- Cost optimised design
- No minimum load required
- Continuous short circuit protection
- Temperature range -40°C to +85°C
- I/O isolation 1500 VDC
- Remote On/Off control
- 3-year product warranty

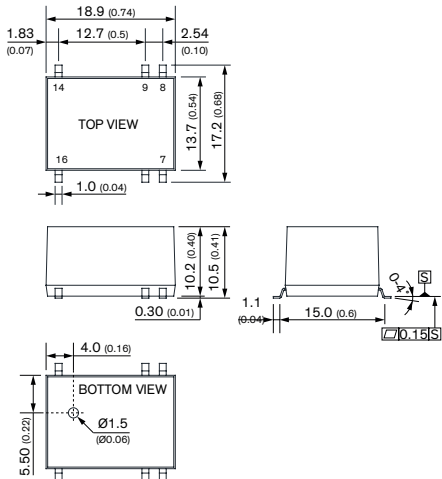
Pinout		
Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	Remote	Remote
6	NTC	Common
7	NTC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin	+Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 1-0511SM	4.5 – 9 VDC (5 VDC nom.)	5 VDC	200 mA	78%
TMR 1-0512SM		12 VDC	83 mA	79%
TMR 1-0513SM		15 VDC	67 mA	81%
TMR 1-0522SM		±12 VDC	42 mA	79%
TMR 1-0523SM	9 – 18 VDC (12 VDC nom.)	±15 VDC	33 mA	80%
TMR 1-1211SM		5 VDC	200 mA	79%
TMR 1-1212SM		12 VDC	83 mA	79%
TMR 1-1213SM		15 VDC	67 mA	82%
TMR 1-1222SM	18 – 36 VDC (24 VDC nom.)	±12 VDC	42 mA	81%
TMR 1-1223SM		±15 VDC	33 mA	80%
TMR 1-2411SM		5 VDC	200 mA	79%
TMR 1-2412SM		12 VDC	83 mA	82%
TMR 1-2413SM	36 – 75 VDC (48 VDC nom.)	15 VDC	67 mA	82%
TMR 1-2422SM		±12 VDC	42 mA	82%
TMR 1-2423SM		±15 VDC	33 mA	82%
TMR 1-4811SM		5 VDC	200 mA	79%
TMR 1-4812SM		12 VDC	83 mA	80%
TMR 1-4813SM		15 VDC	67 mA	80%
TMR 1-4822SM		±12 VDC	42 mA	81%
TMR 1-4823SM		±15 VDC	33 mA	81%

TRI 1SM

NEW!

1 Watt



- Reinforced I/O-isolation 3000 VAC rated for 480 VAC working voltage
- Ultra-high isolation peak voltage 8000 VDC (1s)
- Operating temperature range -40 to +85 °C without derating
- Unregulated device
- ±10% Input 5 to 24 VDC
- Efficiency up to 84%
- Short circuit protection
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin	-Vin
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin	+Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TRI 1-0511SM	5 VDC ±10% (nominal 5VDC)	5 VDC	200 mA	76%
TRI 1-0512SM		12 VDC	84 mA	80%
TRI 1-0513SM		15 VDC	68 mA	83%
TRI 1-0522SM		±12 VDC	±42 mA	80%
TRI 1-0523SM	12 VDC ±10% (nominal 12VDC)	±15 VDC	±33 mA	84%
TRI 1-1211SM		5 VDC	200 mA	76%
TRI 1-1212SM		12 VDC	84 mA	79%
TRI 1-1213SM		15 VDC	68 mA	80%
TRI 1-1222SM	24 VDC ±10% (nominal 24VDC)	±12 VDC	±42 mA	79%
TRI 1-1223SM		±15 VDC	±33 mA	80%
TRI 1-2411SM		5 VDC	200 mA	76%
TRI 1-2412SM		12 VDC	84 mA	80%
TRI 1-2413SM		15 VDC	68 mA	80%
TRI 1-2422SM		±12 VDC	±42 mA	80%
TRI 1-2423SM		±15 VDC	±33 mA	80%

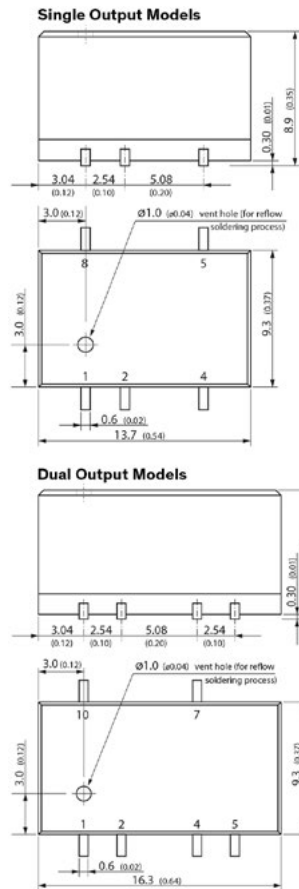
* Pin to be isolated from circuitry

TES 2H

2 Watt



- Small SMD package with standard footprint
- I/O isolation voltage 1500 VDC
- Unregulated device
- Single and dual output models
- Input voltage 5, 12 and 24 VDC
- High efficiency up to 80%
- Operating Temperature range –40 to +85°C
- High accuracy of pin co-planarity
- Qualified for leadfree reflow solder process according IPC/JEDEC J-STD-020D
- Available in tape and reel package
- 3-year product warranty



Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TES 2-0510H	5 VDC ±10% (5 VDC nominal)	3.3 VDC	500 mA	70%
TES 2-0511H		5.0 VDC	400 mA	73%
TES 2-0512H		12 VDC	165 mA	77%
TES 2-0521H		±5 VDC	±200 mA	74%
TES 2-0522H		±12 VDC	±83 mA	76%
TES 2-0523H		±15 VDC	±66 mA	76%
TES 2-1210H	12 VDC ±10% (12 VDC nominal)	3.3 VDC	500 mA	72%
TES 2-1211H		5.0 VDC	400 mA	75%
TES 2-1212H		12 VDC	165 mA	79%
TES 2-1222H		±12 VDC	±83 mA	80%
TES 2-1223H		±15 VDC	±66 mA	80%
TES 2-2410H	24 VDC ±10% (24 VDC nominal)	3.3 VDC	500 mA	72%
TES 2-2411H		5.0 VDC	400 mA	75%
TES 2-2412H		12 VDC	165 mA	79%
TES 2-2422H		±12 VDC	±83 mA	79%
TES 2-2423H		±15 VDC	±66 mA	79%

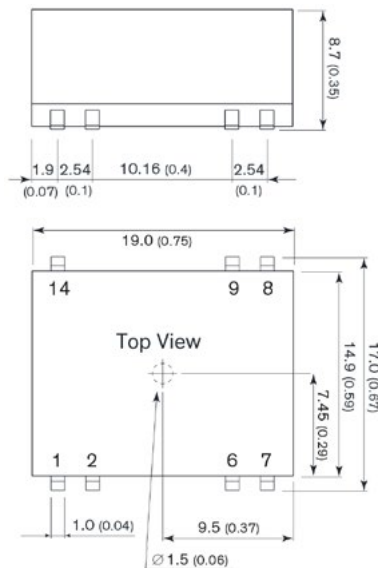
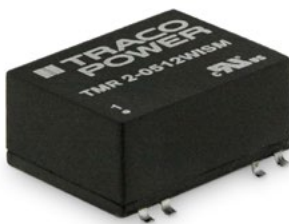
Pinout

Pin	Single	Pin	Dual
1	–Vin (GND)	1	–Vin (GND)
2	+Vin (Vcc)	2	+Vin (Vcc)
4	–Vout	4	Common
5	+Vout	5	–Vout
8	*NC	7	+Vout
–		10	*NC

* Pin to be isolated from circuitry

TMR 2WISM

2 Watt



- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1500 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Protection against short circuit and overload
- Remote On/Off
- 3-year product warranty

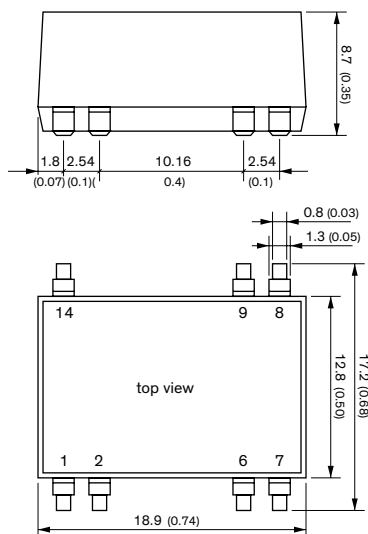
Pinout

Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	Remote	Remote
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TMR 2-0511WISM	4.5 – 12 VDC (9 VDC nom.)	5 VDC	400 mA	80%
TMR 2-0512WISM		12 VDC	167 mA	84%
TMR 2-0513WISM		15 VDC	134 mA	83%
TMR 2-0515WISM		24 VDC	83 mA	84%
TMR 2-0522WISM		±12 VDC	83 mA	83%
TMR 2-0523WISM	9 – 36 VDC (24 VDC nom.)	±15 VDC	67 mA	82%
TMR 2-2411WISM		5 VDC	400 mA	80%
TMR 2-2412WISM		12 VDC	167 mA	84%
TMR 2-2413WISM		15 VDC	134 mA	85%
TMR 2-2415WISM		24 VDC	83 mA	85%
TMR 2-2422WISM	18 – 75 VDC (48 VDC nom.)	±12 VDC	83 mA	83%
TMR 2-2423WISM		±15 VDC	67 mA	83%
TMR 2-4811WISM		5 VDC	400 mA	78%
TMR 2-4812WISM		12 VDC	167 mA	82%
TMR 2-4813WISM		15 VDC	134 mA	83%
TMR 2-4815WISM		24 VDC	83 mA	84%
TMR 2-4822WISM		±12 VDC	83 mA	82%
TMR 2-4823WISM		±15 VDC	67 mA	82%

TDR 2SM

2 Watt



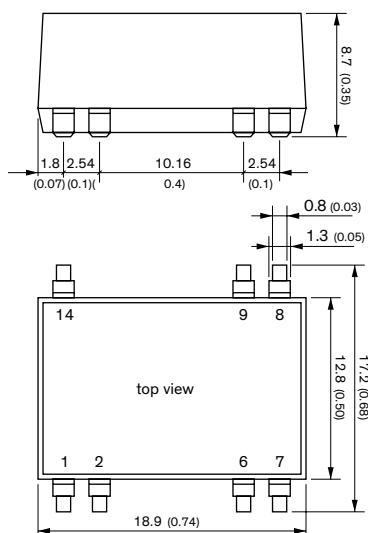
- Compact design in SMD or DIP package
- Wide 2:1 input voltage range
- Fully regulated outputs
- Low ripple and noise
- No minimum load required
- Temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 2-0511SM	4.5 – 9.0 VDC (5 VDC nominal)	5.0 VDC	400 mA	80%
TDR 2-0512SM		12 VDC	167 mA	81%
TDR 2-0513SM		15 VDC	134 mA	83%
TDR 2-0522SM		±12 VDC	±83 mA	81%
TDR 2-0523SM	9 – 18 VDC (12 VDC nominal)	±15 VDC	±67 mA	82%
TDR 2-1211SM		5.0 VDC	400 mA	81%
TDR 2-1212SM		12 VDC	167 mA	81%
TDR 2-1213SM		15 VDC	134 mA	84%
TDR 2-1222SM	18 – 36 VDC (24 VDC nominal)	±12 VDC	±83 mA	83%
TDR 2-1223SM		±15 VDC	±67 mA	82%
TDR 2-2411SM		5.0 VDC	400 mA	81%
TDR 2-2412SM		12 VDC	167 mA	84%
TDR 2-2413SM	36 – 75 VDC (48 VDC nominal)	15 VDC	134 mA	84%
TDR 2-2422SM		±12 VDC	±83 mA	84%
TDR 2-2423SM		±15 VDC	±67 mA	84%
TDR 2-4811SM		5.0 VDC	400 mA	81%
TDR 2-4812SM	36 – 75 VDC (48 VDC nominal)	12 VDC	167 mA	82%
TDR 2-4813SM		15 VDC	134 mA	82%
TDR 2-4822SM		±12 VDC	±83 mA	83%
TDR 2-4823SM		±15 VDC	±67 mA	83%

TDR 2WISM

2 Watt



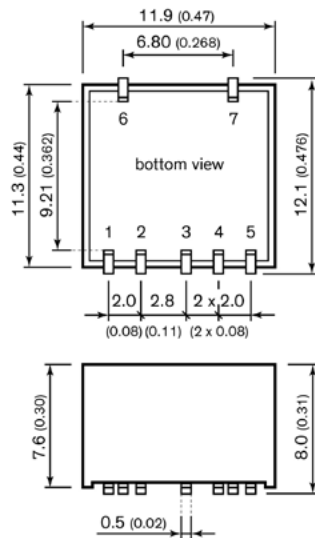
- Compact design in SMD or DIP package
- Ultra wide 4:1 input voltage range
- Fully regulated outputs
- Low ripple and noise 30mV pk-pk
- No minimum load required
- Temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 2-1211WISM	4.5 – 18 VDC (12 VDC nominal)	5.0 VDC	400 mA	79%
TDR 2-1212WISM		12 VDC	167 mA	80%
TDR 2-1213WISM		15 VDC	134 mA	81%
TDR 2-1222WISM		±12 VDC	±83 mA	81%
TDR 2-1223WISM	9 – 36 VDC (24 VDC nominal)	±15 VDC	±67 mA	81%
TDR 2-2411WISM		5.0 VDC	400 mA	79%
TDR 2-2412WISM		12 VDC	167 mA	80%
TDR 2-2413WISM		15 VDC	134 mA	82%
TDR 2-2422WISM	18 – 75 VDC (48 VDC nominal)	±12 VDC	±83 mA	81%
TDR 2-2423WISM		±15 VDC	±67 mA	81%
TDR 2-4811WISM		5.0 VDC	400 mA	78%
TDR 2-4812WISM		12 VDC	167 mA	81%
TDR 2-4813WISM	36 – 75 VDC (48 VDC nominal)	15 VDC	134 mA	82%
TDR 2-4822WISM		±12 VDC	±83 mA	81%
TDR 2-4823WISM		±15 VDC	±67 mA	81%

TRS 2

2 Watt



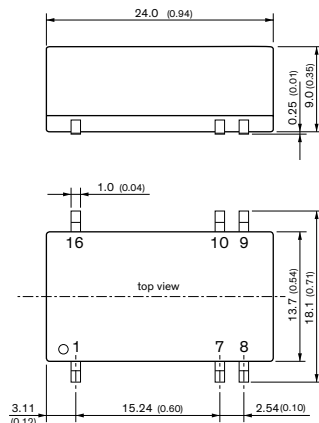
- Most compact 2 Watt SMD DC/DC converter: 11.9 mm × 11.3 mm × 8 mm (0.47 × 0.44 × 0.31 inch)
- Cost-efficient design
- 1600 VDC I/O isolation (functional)
- High efficiency for low thermal loss
- Operating temperature range –40°C to +90°C
- Designed to meet UL 62368-1
- No minimum load required
- Protection against short circuit
- 3 years product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (VCC)	+Vin (VCC)
3	+Vout	+Vout
4	No Pin	Common
5	–Vout	–Vout
6	NC	NC
7	NC	NC

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TRS 2-0910	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	500 mA	77%
TRS 2-0911		5.0 VDC	400 mA	80%
TRS 2-0919		9.0 VDC	222 mA	80%
TRS 2-0912		12 VDC	167 mA	83%
TRS 2-0913		15 VDC	134 mA	82%
TRS 2-0915		24 VDC	83 mA	82%
TRS 2-0921		±5.0 VDC	±200 mA	78%
TRS 2-0922	9 – 18 VDC (12 VDC nominal)	±12 VDC	±83 mA	82%
TRS 2-0923		±15 VDC	±67 mA	80%
TRS 2-1210		3.3 VDC	500 mA	77%
TRS 2-1211	18 – 36 VDC (24 VDC nominal)	5.0 VDC	400 mA	80%
TRS 2-1219		9.0 VDC	222 mA	80%
TRS 2-1212		12 VDC	167 mA	84%
TRS 2-1213		15 VDC	134 mA	83%
TRS 2-1215		24 VDC	83 mA	83%
TRS 2-1221		±5.0 VDC	±200 mA	79%
TRS 2-1222		±12 VDC	±83 mA	83%
TRS 2-1223		±15 VDC	±67 mA	81%
TRS 2-2410	36 – 75 VDC (48 VDC nominal)	3.3 VDC	500 mA	77%
TRS 2-2411		5.0 VDC	400 mA	78%
TRS 2-2419		9.0 VDC	222 mA	80%
TRS 2-2412		12 VDC	167 mA	84%
TRS 2-2413		15 VDC	134 mA	84%
TRS 2-2415		24 VDC	83 mA	82%
TRS 2-2421		±5.0 VDC	±200 mA	80%
TRS 2-2422	4.5 – 13.2 VDC (9 VDC nominal)	±12 VDC	±83 mA	83%
TRS 2-2423		±15 VDC	±67 mA	82%
TRS 2-4810		3.3 VDC	500 mA	76%
TRS 2-4811	18 – 36 VDC (24 VDC nominal)	5.0 VDC	400 mA	79%
TRS 2-4819		9.0 VDC	222 mA	80%
TRS 2-4812		12 VDC	167 mA	83%
TRS 2-4813		15 VDC	134 mA	83%
TRS 2-4815		24 VDC	83 mA	82%
TRS 2-4821		±5.0 VDC	±200 mA	78%
TRS 2-4822		±12 VDC	±83 mA	82%
TRS 2-4823		±15 VDC	±67 mA	80%

TES 2M

2 Watt



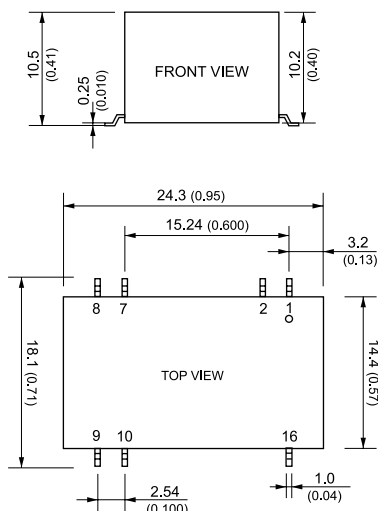
- Supplementary and reinforced insulation
- I/O isolation 4000 VACrms rated for 300 Vrms working voltage
- Unregulated device
- 2 × MOOP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- Industrial safety to UL/IEC/EN 60950-1
- Ultracompact SMD-package
- Operating temp. range –25°C to +80°C
- Qualified for leadfree reflow solder process
- Available in tape & reel package
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin	+Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TES 2-0511M	5.0 VDC ±10% (nominal 05 VDC)	5 VDC	400 mA	66%
TES 2-0512M		12 VDC	165 mA	66%
TES 2-0513M		15 VDC	133 mA	66%
TES 2-0522M		±12 VDC	±83 mA	72%
TES 2-0523M	12.0 VDC ±10% (nominal 12 VDC)	±15 VDC	±66 mA	73%
TES 2-1211M		5 VDC	400 mA	66%
TES 2-1212M		12 VDC	165 mA	66%
TES 2-1213M		15 VDC	133 mA	66%
TES 2-1222M	24 VDC ±10% (nominal 24 VDC)	±12 VDC	±83 mA	74%
TES 2-1223M		±15 VDC	±66 mA	75%
TES 2-2411M		5 VDC	400 mA	66%
TES 2-2412M		12 VDC	165 mA	66%
TES 2-2413M		15 VDC	133 mA	66%
TES 2-2422M	4.5 – 13.2 VDC (9 VDC nominal)	±12 VDC	±83 mA	74%
TES 2-2423M		±15 VDC	±66 mA	75%

TIM 2SM

2 Watt



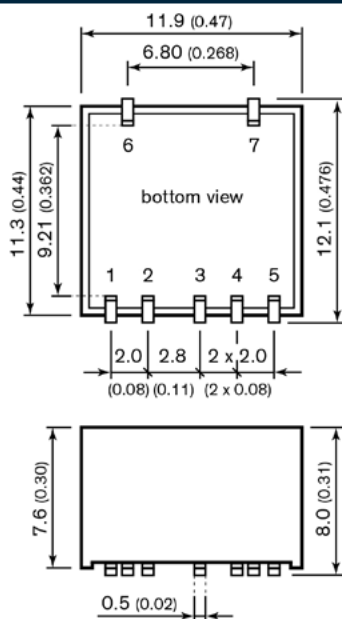
- Compact SMD-16-package
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP and operation to 5000 m altitude
- Low leakage current < 2 μ A
- Extended operation temperature range -40°C to 95°C.
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A

Pinout / Connection		
Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	Remote	Remote
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TIM 2-0910SM TIM 2-0911SM TIM 2-0919SM TIM 2-0912SM TIM 2-0913SM TIM 2-0915SM TIM 2-0922SM TIM 2-0923SM	4.5 – 12 VDC (9 VDC nom.)	3.3 VDC	600 mA	75%
		5 VDC	400 mA	78%
		9 VDC	222 mA	78%
		12 VDC	167 mA	82%
		15 VDC	134 mA	82%
		24 VDC	83 mA	82%
		± 12 VDC	83 mA	82%
		± 15 VDC	67 mA	80%
TIM 2-1210SM TIM 2-1211SM TIM 2-1219SM TIM 2-1212SM TIM 2-1213SM TIM 2-1215SM TIM 2-1222SM TIM 2-1223SM	9 – 18 VDC (12 VDC nom.)	3.3 VDC	600 mA	76%
		5 VDC	400 mA	78%
		9 VDC	222 mA	79%
		12 VDC	167 mA	82%
		15 VDC	134 mA	82%
		24 VDC	83 mA	81%
		± 12 VDC	83 mA	81%
		± 15 VDC	67 mA	81%
TIM 2-2410SM TIM 2-2411SM TIM 2-2419SM TIM 2-2412SM TIM 2-2413SM TIM 2-2415SM TIM 2-2422SM TIM 2-2423SM	18 – 36 VDC (24 VDC nom.)	3.3 VDC	600 mA	76%
		5 VDC	400 mA	79%
		9 VDC	222 mA	80%
		12 VDC	167 mA	81%
		15 VDC	134 mA	81%
		24 VDC	83 mA	81%
		± 12 VDC	83 mA	81%
		± 15 VDC	67 mA	81%
TIM 2-4810SM TIM 2-4811SM TIM 2-4819SM TIM 2-4812SM TIM 2-4813SM TIM 2-4815SM TIM 2-4822SM TIM 2-4823SM	36 – 75 VDC (48 VDC nom.)	3.3 VDC	600 mA	76%
		5 VDC	400 mA	78%
		9 VDC	222 mA	79%
		12 VDC	167 mA	80%
		15 VDC	134 mA	82%
		24 VDC	83 mA	81%
		± 12 VDC	83 mA	81%
		± 15 VDC	67 mA	81%

TRN 3SM

3 Watt



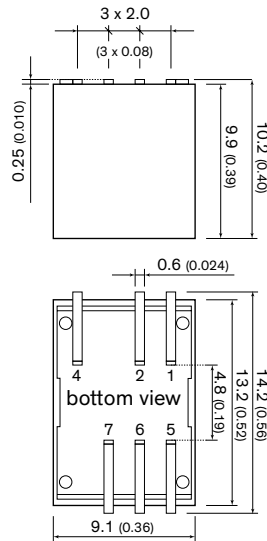
- Compact SMD package 11.9 x 11.3 x 8.0 mm
- Fully regulated outputs
- Input Voltage range 4.5-13.2, 9-18, 18-36, 36-75 VDC
- I/O-isolation 1600 VDC
- Operating temperature range -40°C to +85°C
- Short circuit protection
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	+Vout	+Vout
4	no pin	common
5	-Vout	-Vout
6	NC	NC
7	NC	NC

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TRN 3-0510SM TRN 3-0511SM TRN 3-0512SM TRN 3-0513SM TRN 3-0515SM TRN 3-0521SM TRN 3-0522SM TRN 3-0523SM	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	700 mA	75%
		5.0 VDC	600 mA	78%
		12 VDC	250 mA	82%
		15 VDC	200 mA	80%
		24 VDC	125 mA	80%
		± 5.0 VDC	± 300 mA	77%
		± 12 VDC	± 125 mA	80%
		± 15 VDC	± 100 mA	80%
TRN 3-1210SM TRN 3-1211SM TRN 3-1212SM TRN 3-1213SM TRN 3-1215SM TRN 3-1221SM TRN 3-1222SM TRN 3-1223SM	9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	76%
		5.0 VDC	600 mA	79%
		12 VDC	250 mA	84%
		15 VDC	200 mA	83%
		24 VDC	125 mA	82%
		± 5.0 VDC	± 300 mA	78%
		± 12 VDC	± 125 mA	82%
		± 15 VDC	± 100 mA	81%
TRN 3-2410SM TRN 3-2411SM TRN 3-2412SM TRN 3-2413SM TRN 3-2415SM TRN 3-2421SM TRN 3-2422SM TRN 3-2423SM	18 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	76%
		5.0 VDC	600 mA	78%
		12 VDC	250 mA	84%
		15 VDC	200 mA	84%
		24 VDC	125 mA	83%
		± 5.0 VDC	± 300 mA	79%
		± 12 VDC	± 125 mA	83%
		± 15 VDC	± 100 mA	82%
TRN 3-4810SM TRN 3-4811SM TRN 3-4812SM TRN 3-4813SM TRN 3-4815SM TRN 3-4821SM TRN 3-4822SM TRN 3-4823SM	36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	75%
		5.0 VDC	600 mA	79%
		12 VDC	250 mA	83%
		15 VDC	200 mA	83%
		24 VDC	125 mA	82%
		± 5.0 VDC	± 300 mA	77%
		± 12 VDC	± 125 mA	82%
		± 15 VDC	± 100 mA	80%

TDN 3WISM

3 Watt



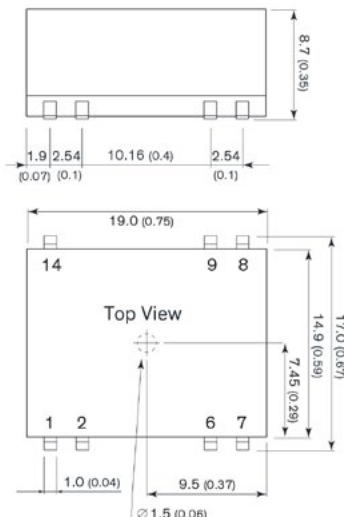
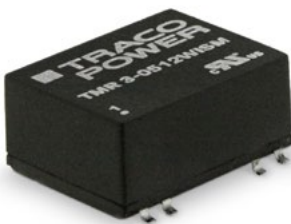
- Ultra compact SMD package
13.2 × 9.1 × 10.2 mm
- I/O-isolation 1600 VDC
- Fully regulated outputs
- Operating temperature range
–40°C to +70°C without derating
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	On/Off	On/Off
5	no con.	–Vout
6	–Vout	Common
7	+Vout	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TDN 3-1210WISM TDN 3-1211WISM TDN 3-1219WISM TDN 3-1212WISM TDN 3-1213WISM TDN 3-1215WISM TDN 3-1221WISM TDN 3-1222WISM TDN 3-1223WISM	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	76%
		5.0 VDC	600 mA	80%
		9.0 VDC	333 mA	81%
		12 VDC	250 mA	83%
		15 VDC	200 mA	84%
		24 VDC	125 mA	82%
		± 5.0 VDC	±300 mA	80%
		± 12 VDC	±125 mA	82%
		± 15 VDC	±100 mA	82%
TDN 3-2410WISM TDN 3-2411WISM TDN 3-2419WISM TDN 3-2412WISM TDN 3-2413WISM TDN 3-2415WISM TDN 3-2421WISM TDN 3-2422WISM TDN 3-2423WISM	9 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	77%
		5.0 VDC	600 mA	80%
		5.0 VDC	333 mA	81%
		12 VDC	250 mA	83%
		15 VDC	200 mA	83%
		24 VDC	125 mA	82%
		± 5.0 VDC	±300 mA	80%
		± 12 VDC	±125 mA	82%
		± 15 VDC	±100 mA	82%
TDN 3-4810WISM TDN 3-4811WISM TDN 3-4819WISM TDN 3-4812WISM TDN 3-4813WISM TDN 3-4815WISM TDN 3-4821WISM TDN 3-4822WISM TDN 3-4823WISM	18 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	77%
		5.0 VDC	600 mA	80%
		9.0 VDC	333 mA	81%
		12 VDC	250 mA	83%
		15 VDC	200 mA	83%
		24 VDC	125 mA	82%
		± 5.0 VDC	±300 mA	80%
		± 12 VDC	±125 mA	82%
		± 15 VDC	±100 mA	82%

TMR 3WISM

3 Watt



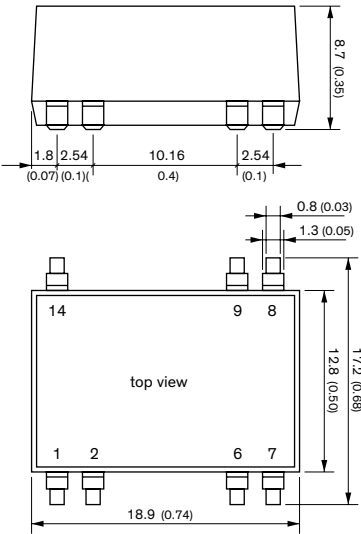
- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1500 VDC
- Fully regulated outputs
- Operating temperature range
–40°C to +80°C
- Protection against short circuit and overload
- Remote On/Off
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	Remote	Remote
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMR 3-0511WISM TMR 3-0512WISM TMR 3-0513WISM TMR 3-0515WISM TMR 3-0522WISM TMR 3-0523WISM	4.5 – 12 VDC (9 VDC nom.)	5 VDC	600 mA	81%
		12 VDC	250 mA	84%
		15 VDC	200 mA	84%
		24 VDC	125 mA	84%
		± 12 VDC	125 mA	83%
		± 15 VDC	100 mA	83%
TMR 3-2411WISM TMR 3-2412WISM TMR 3-2413WISM TMR 3-2415WISM TMR 3-2422WISM TMR 3-2423WISM	9 – 36 VDC (24 VDC nom.)	5 VDC	600 mA	80%
		12 VDC	250 mA	85%
		15 VDC	200 mA	85%
		24 VDC	125 mA	85%
		± 12 VDC	125 mA	84%
		± 15 VDC	100 mA	84%
TMR 3-4811WISM TMR 3-4812WISM TMR 3-4813WISM TMR 3-4815WISM TMR 3-4822WISM TMR 3-4823WISM	18 – 75 VDC (48 VDC nom.)	5 VDC	600 mA	80%
		12 VDC	250 mA	84%
		15 VDC	200 mA	84%
		24 VDC	125 mA	85%
		± 12 VDC	125 mA	83%
		± 15 VDC	100 mA	82%

TDR 3SM

3 Watt



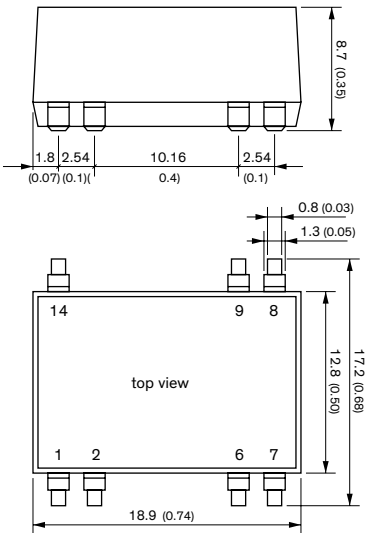
- Compact design in SMD or DIP package
- Wide 2:1 input voltage range
- Fully regulated outputs
- Low ripple and noise
- No minimum load required
- Temperature range -40°C to +85°C
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 3-0511SM	4.5 – 9.0 VDC (5 VDC nominal)	5.0 VDC	600 mA	79%
TDR 3-0512SM		12 VDC	250 mA	80%
TDR 3-0513SM		15 VDC	200 mA	81%
TDR 3-0522SM		±12 VDC	±125 mA	80%
TDR 3-0523SM	9 – 18 VDC (12 VDC nominal)	±15 VDC	±100 mA	81%
TDR 3-1211SM		5.0 VDC	600 mA	81%
TDR 3-1212SM		12 VDC	250 mA	82%
TDR 3-1213SM		15 VDC	200 mA	82%
TDR 3-1222SM	18 – 36 VDC (24 VDC nominal)	±12 VDC	±125 mA	82%
TDR 3-1223SM		±15 VDC	±100 mA	83%
TDR 3-2411SM		5.0 VDC	600 mA	81%
TDR 3-2412SM		12 VDC	250 mA	82%
TDR 3-2413SM	36 – 75 VDC (48 VDC nominal)	15 VDC	200 mA	83%
TDR 3-2422SM		±12 VDC	±125 mA	83%
TDR 3-2423SM		±15 VDC	±100 mA	83%
TDR 3-4811SM		5.0 VDC	600 mA	81%
TDR 3-4812SM		12 VDC	250 mA	82%
TDR 3-4813SM		15 VDC	200 mA	82%
TDR 3-4822SM		±12 VDC	±125 mA	83%
TDR 3-4823SM		±15 VDC	±100 mA	83%

TDR 3WISM

3 Watt



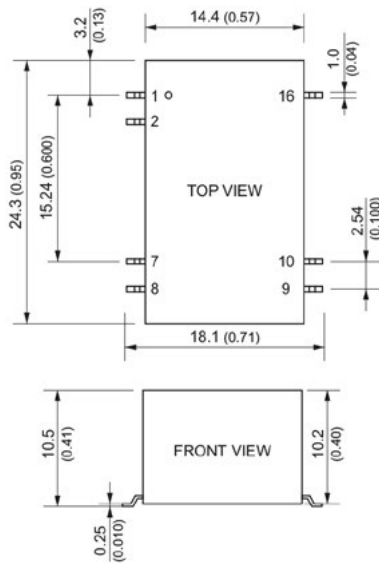
- Compact design in SMD or DIP package
- Ultra wide 4:1 input voltage range
- Fully regulated outputs
- Low ripple and noise
- No minimum load required
- Temperature range -40°C to +85°C
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 3-1211WISM	4.5 – 18 VDC (12 VDC nominal)	5.0 VDC	600 mA	81%
TDR 3-1212WISM		12 VDC	250 mA	82%
TDR 3-1213WISM		15 VDC	200 mA	82%
TDR 3-1222WISM		±12 VDC	±125 mA	82%
TDR 3-1223WISM	9 – 36 VDC (24 VDC nominal)	±15 VDC	±100 mA	81%
TDR 3-2411WISM		5.0 VDC	600 mA	80%
TDR 3-2412WISM		12 VDC	250 mA	82%
TDR 3-2413WISM		15 VDC	200 mA	82%
TDR 3-2422WISM	18 – 75 VDC (48 VDC nominal)	±12 VDC	±125 mA	82%
TDR 3-2423WISM		±15 VDC	±100 mA	81%
TDR 3-4811WISM		5.0 VDC	600 mA	80%
TDR 3-4812WISM		12 VDC	250 mA	83%
TDR 3-4813WISM		15 VDC	200 mA	82%
TDR 3-4822WISM		±12 VDC	±125 mA	82%
TDR 3-4823WISM		±15 VDC	±100 mA	81%

TIM 3.5SM

3.5 Watt



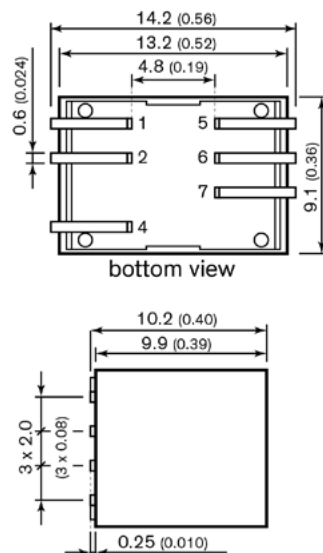
- Compact SMD-16-package
- I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP and operation to 5000 m altitude
- Low leakage current $< 2 \mu\text{A}$ for BF-applications
- Extended operating temperature range -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- 5-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	Remote	Remote
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TIM 3.5-0911SM	4.5 – 12 VDC (9 VDC nom.)	5 VDC	700 mA	77%
TIM 3.5-0919SM		9 VDC	389 mA	78%
TIM 3.5-0912SM		12 VDC	292 mA	82%
TIM 3.5-0913SM		15 VDC	234 mA	82%
TIM 3.5-0915SM		24 VDC	146 mA	82%
TIM 3.5-0922SM		±12 VDC	146 mA	82%
TIM 3.5-0923SM		±15 VDC	117 mA	81%
TIM 3.5-1211SM	9 – 18 VDC (12 VDC nom.)	5 VDC	700 mA	79%
TIM 3.5-1219SM		9 VDC	389 mA	79%
TIM 3.5-1212SM		12 VDC	292 mA	82%
TIM 3.5-1213SM		15 VDC	234 mA	82%
TIM 3.5-1215SM		24 VDC	146 mA	82%
TIM 3.5-1222SM		±12 VDC	146 mA	82%
TIM 3.5-1223SM		±15 VDC	117 mA	82%
TIM 3.5-2411SM	18 – 36 VDC (24 VDC nom.)	5 VDC	700 mA	79%
TIM 3.5-2419SM		9 VDC	389 mA	80%
TIM 3.5-2412SM		12 VDC	292 mA	83%
TIM 3.5-2413SM		15 VDC	234 mA	83%
TIM 3.5-2415SM		24 VDC	146 mA	82%
TIM 3.5-2422SM		±12 VDC	146 mA	82%
TIM 3.5-2423SM		±15 VDC	117 mA	82%
TIM 3.5-4811SM	36 – 75 VDC (48 VDC nom.)	5 VDC	700 mA	79%
TIM 3.5-4819SM		9 VDC	389 mA	80%
TIM 3.5-4812SM		12 VDC	292 mA	82%
TIM 3.5-4813SM		15 VDC	234 mA	82%
TIM 3.5-4815SM		24 VDC	146 mA	82%
TIM 3.5-4822SM		±12 VDC	146 mA	82%
TIM 3.5-4823SM		±15 VDC	117 mA	82%

TDN 5WISM

5 Watt



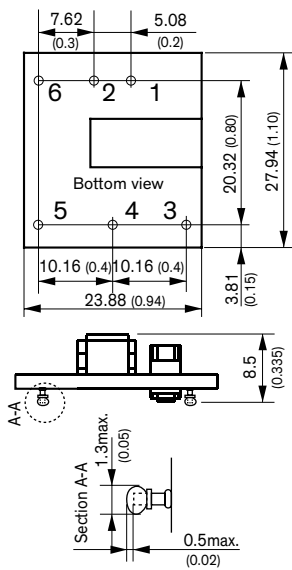
- Ultra compact SMD package 13.2 x 9.1 x 10.2 mm
- I/O-isolation 1600 VDC
- Fully regulated outputs
- Operating temperature range -40°C to $+75^{\circ}\text{C}$
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	On/Off	On/Off
5	NC	–Vout
6	–Vout	Common
7	+Vout	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TDN 5-0910WISM	4.5 – 13.2 VDC (9 VDC nom.)	3.3 VDC	1000 mA	76%
TDN 5-0911WISM		5.0 VDC	1000 mA	80%
TDN 5-0919WISM		9.0 VDC	555 mA	81%
TDN 5-0912WISM		12 VDC	420 mA	83%
TDN 5-0913WISM		15 VDC	333 mA	83%
TDN 5-0915WISM		24 VDC	210 mA	83%
TDN 5-0921WISM	9 – 36 VDC (24 VDC nom.)	±5.0 VDC	±500 mA	80%
TDN 5-0922WISM		±12 VDC	±210 mA	83%
TDN 5-0923WISM		±15 VDC	±168 mA	83%
TDN 5-2410WISM		3.3 VDC	1000 mA	76%
TDN 5-2411WISM		5.0 VDC	1000 mA	80%
TDN 5-2419WISM		9.0 VDC	555 mA	81%
TDN 5-2412WISM	18 – 75 VDC (48 VDC nom.)	12 VDC	420 mA	83%
TDN 5-2413WISM		15 VDC	333 mA	83%
TDN 5-2415WISM		24 VDC	210 mA	83%
TDN 5-2421WISM		±5.0 VDC	±500 mA	80%
TDN 5-2422WISM		±12 VDC	±210 mA	83%
TDN 5-2423WISM		±15 VDC	±168 mA	84%
TDN 5-4810WISM	18 – 75 VDC (48 VDC nom.)	3.3 VDC	1000 mA	76%
TDN 5-4811WISM		5.0 VDC	1000 mA	81%
TDN 5-4819WISM		9.0 VDC	555 mA	81%
TDN 5-4812WISM		12 VDC	420 mA	83%
TDN 5-4813WISM		15 VDC	333 mA	83%
TDN 5-4815WISM		24 VDC	210 mA	83%
TDN 5-4821WISM	18 – 75 VDC (48 VDC nom.)	±5.0 VDC	±500 mA	80%
TDN 5-4822WISM		±12 VDC	±210 mA	83%
TDN 5-4823WISM		±15 VDC	±168 mA	84%

TON 15SM

15 Watt



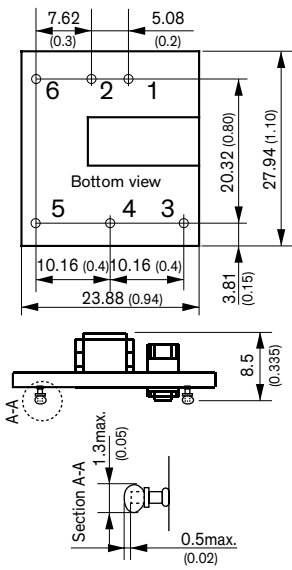
- Ultra compact 15 W converter
- Cost efficient open frame design with industry standard pin-out
- Surface-mount (SM) and through-hole version
- I/O isolation voltage 2250 V, rated for basic insulation
- Extended operating temperature range -40°C to $+85^{\circ}\text{C}$
- Remote On/Off
- Under voltage lockout
- Lead free design, RoHS compliant
- 3-years product warranty

Pinout	
Pin	Single
1	+Vin (Vcc)
2	-Vin (GND)
3	+Vout
4	Trim
5	-Vout
6	Remote On/Off

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TON 15-2410SM	18 – 36 VDC (nominal 24 VDC)	3.3 VDC	3500 mA	86%
TON 15-2411SM		5.0 VDC	3000 mA	87%
TON 15-2412SM		12 VDC	1250 mA	87%
TON 15-2413SM		15 VDC	1000 mA	88%
TON 15-4810SM	36 – 75 VDC (nominal 48 VDC)	3.3 VDC	3500 mA	85%
TON 15-4811SM		5.0 VDC	3000 mA	87%
TON 15-4812SM		12 VDC	1250 mA	87%
TON 15-4813SM		15 VDC	1000 mA	88%

TON 15WISM

15 Watt



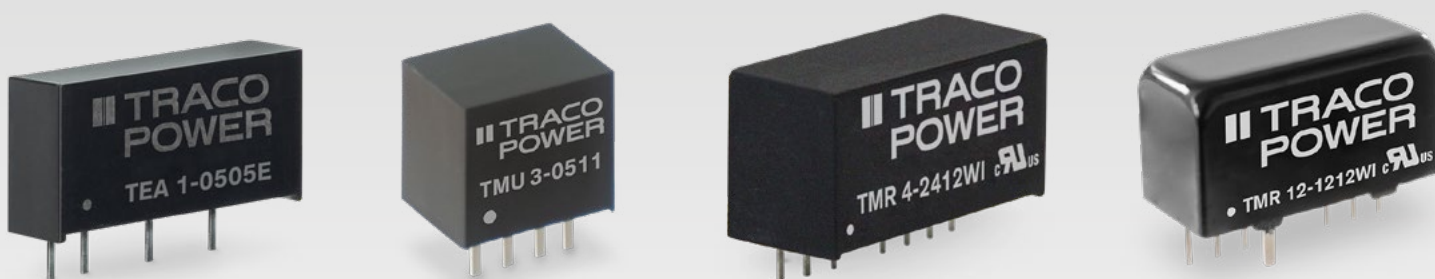
- Ultra compact 15 W converter
- Ultra wide 4:1 input voltage range
- Cost efficient open frame design with industry standard pin-out
- Surface-mount (SM) and through-hole version
- I/O isolation voltage 2250 V, rated for basic insulation
- Extended operating temperature range -40°C to $+85^{\circ}\text{C}$
- Remote On/Off
- Lead free design, RoHS compliant
- 3-years product warranty

Pinout	
Pin	Single
1	+Vin (Vcc)
2	-Vin (GND)
3	+Vout
4	Trim
5	-Vout
6	Remote On/Off

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TON 15-2410WISM	9 – 36 VDC (24 VDC nominal)	3.3 VDC	4000 mA	85%
TON 15-2411WISM		5.0 VDC	3000 mA	87%
TON 15-2412WISM		12 VDC	1300 mA	86%
TON 15-2413WISM		15 VDC	1000 mA	86%
TON 15-4810WISM	18 – 75 VDC (48 VDC nominal)	3.3 VDC	4000 mA	85%
TON 15-4811WISM		5.0 VDC	3000 mA	87%
TON 15-4812WISM		12 VDC	1300 mA	86%
TON 15-4813WISM		15 VDC	1000 mA	86%

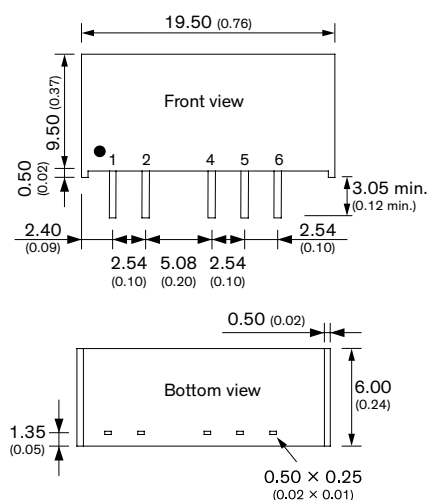
1 – 12 watt

TRACO POWER's SIP package isolated DC/DC Converters provides a complete range of compact products from 1 to 12 watts with non-regulated, semi-regulated and fully regulated outputs.



TBA 1E

1 Watt



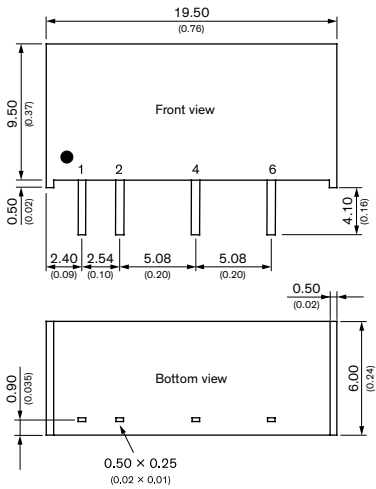
- Continuous short circuit protection
- I/O isolation: 1500 VDC
- Operating temperature range
-40 to +85°C without derating
- Input voltage ranges ($\pm 10\%$):
5, 12, 24 VDC
- High efficiency up to 82%
- SIP-7 package
- Unregulated outputs
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	−Vin (GND)	−Vin (GND)
4	−Vout	−Vout
5	No pin	Common
6	+Vout	+Vout

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TBA 1-0511E	4.5 – 5.5 VDC (5 VDC nom.)	5 VDC	200 mA	79%
TBA 1-0512E		12 VDC	84 mA	82%
TBA 1-0513E		15 VDC	66 mA	82%
TBA 1-0521E		±5 VDC	100 mA	79%
TBA 1-0522E		±12 VDC	41 mA	82%
TBA 1-0523E		±15 VDC	33 mA	80%
TBA 1-1211E	10.8 – 13.2 VDC (12 VDC nom.)	5 VDC	200 mA	79%
TBA 1-1212E		12 VDC	84 mA	80%
TBA 1-1213E		15 VDC	66 mA	80%
TBA 1-1221E		±5 VDC	100 mA	79%
TBA 1-1222E		±12 VDC	41 mA	80%
TBA 1-1223E		±15 VDC	33 mA	80%
TBA 1-2411E	21.6 – 26.4 VDC (24 VDC nom.)	5 VDC	200 mA	79%
TBA 1-2412E		12 VDC	84 mA	82%
TBA 1-2413E		15 VDC	66 mA	82%
TBA 1-2421E		±5 VDC	100 mA	79%
TBA 1-2422E		±12 VDC	41 mA	82%
TBA 1-2423E		±15 VDC	33 mA	82%

TEA 1E

1 Watt



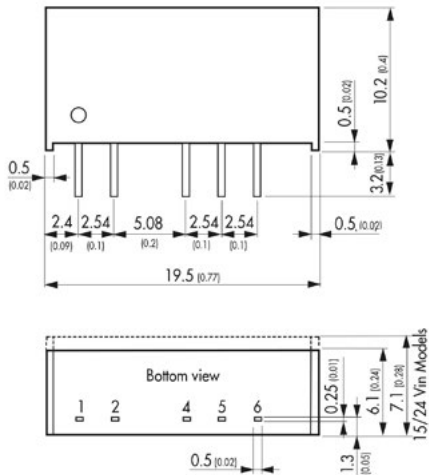
- I/O isolation: 1500 VDC
- Operating temperature range –40 to +85°C without derating
- Cost efficient design
- High efficiency up to 82%
- SIP-7 package
- Unregulated outputs
- 3-year product warranty

Pinout	
Pin	Single
1	+Vin
2	–Vin
4	–Vout
6	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEA 1-0505E	4.5 – 5.5 VDC	5 VDC	200 mA	78%

TMA

1 Watt



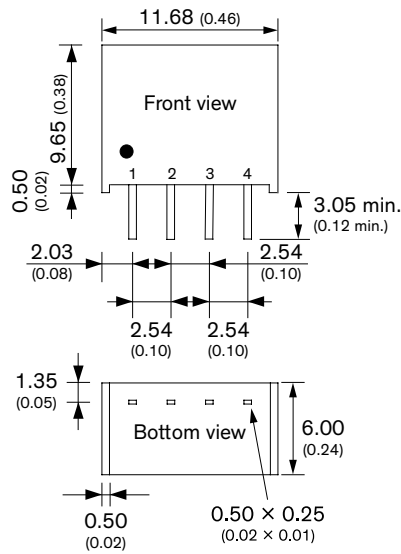
- Single-in-line (SIP) package
- Single and dual output models
- I/O isolation 1000 VDC
- Unregulated device
- High efficiency up to 81%
- Operating temp. range –40°C to +85°C
- Industry standard pinout
- 100% Burn-in (8 h)
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	–Vout	–Vout
5	No pin	Common
6	+Vout	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMA 0505S	5 VDC ± 10%	5 VDC	200 mA	71%
TMA 0512S		12 VDC	84 mA	78%
TMA 0515S		15 VDC	67 mA	78%
TMA 0505D		± 5 VDC	±100 mA	72%
TMA 0512D		±12 VDC	±42 mA	78%
TMA 0515D		±15 VDC	±34 mA	79%
TMA 1205S	12 VDC ± 10%	5 VDC	200 mA	73%
TMA 1212S		12 VDC	84 mA	80%
TMA 1215S		15 VDC	67 mA	80%
TMA 1205D		± 5 VDC	±100 mA	74%
TMA 1212D		±12 VDC	±42 mA	81%
TMA 1215D		±15 VDC	±34 mA	81%
TMA 1505S	15 VDC ± 10%	5 VDC	200 mA	72%
TMA 1512S		12 VDC	84 mA	79%
TMA 1515S		15 VDC	67 mA	79%
TMA 1505D		± 5 VDC	±100 mA	72%
TMA 1512D		±12 VDC	±42 mA	80%
TMA 1515D		±15 VDC	±34 mA	80%
TMA 2405S	24 VDC ± 10%	5 VDC	200 mA	71%
TMA 2412S		12 VDC	84 mA	78%
TMA 2415S		15 VDC	67 mA	79%
TMA 2405D		± 5 VDC	±100 mA	72%
TMA 2412D		±12 VDC	±42 mA	79%
TMA 2415D		±15 VDC	±34 mA	80%

TBA 1

1 Watt



- Continuous short circuit protection
- I/O isolation: 1500 VDC
- Operating temperature range
–40 to +85 °C without derating
- Input voltage ranges (±10%):
3.3, 5, 12, 24 VDC
- High efficiency up to 82%
- SIP-4 package
- Unregulated outputs
- 3-year product warranty

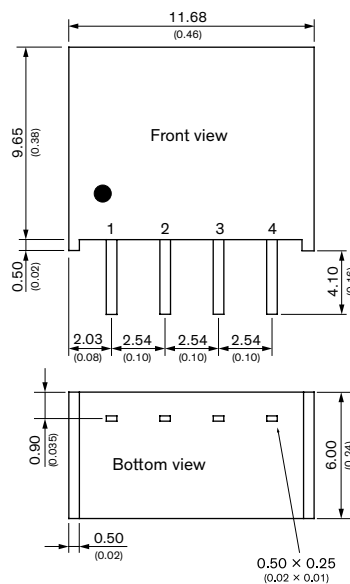
Pinout

Pin	Function
1	–Vin (GND)
2	+Vin (Vcc)
3	–Vout
4	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TBA 1-0310	2.97 – 3.63 VDC	3.3 VDC	260 mA	73%
TBA 1-0311	(3.3 VDC nom.)	5 VDC	200 mA	76%
TBA 1-0510	4.5 – 5.5 VDC	3.3 VDC	260 mA	75%
TBA 1-0511	(5 VDC nom.)	5 VDC	200 mA	79%
TBA 1-0519		9 VDC	110 mA	80%
TBA 1-0512		12 VDC	80 mA	82%
TBA 1-0513		15 VDC	65 mA	82%
TBA 1-1211	10.8 – 13.2 VDC	5 VDC	200 mA	79%
TBA 1-1219	(12 VDC nom.)	9 VDC	110mA	79%
TBA 1-1212		12 VDC	80 mA	80%
TBA 1-1213		15 VDC	65 mA	80%
TBA 1-2411	21.6 – 26.4 VDC	5 VDC	200 mA	79%
TBA 1-2419	(24 VDC nom.)	9 VDC	110mA	80%
TBA 1-2412		12 VDC	80 mA	82%
TBA 1-2413		15 VDC	65 mA	82%

TEA 1

1 Watt



Pinout

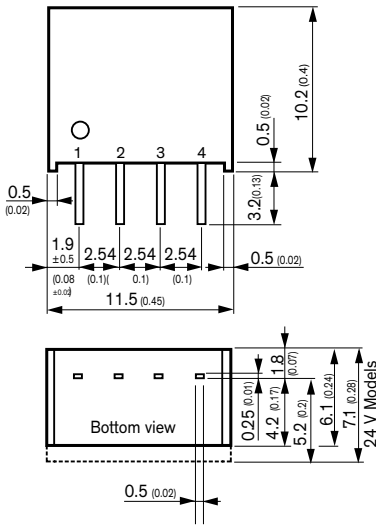
Pin	Single
1	–Vin
2	+Vin
3	–Vout
4	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEA 1-0505	4.5 – 5.5 VDC	5 VDC	200 mA	78%

- I/O isolation: 1500 VDC
- Operating temperature range
–40 to +85 °C without derating
- Cost efficient design
- High efficiency up to 78%
- SIP-4 package
- Unregulated outputs
- 3-year product warranty

TME

1 Watt



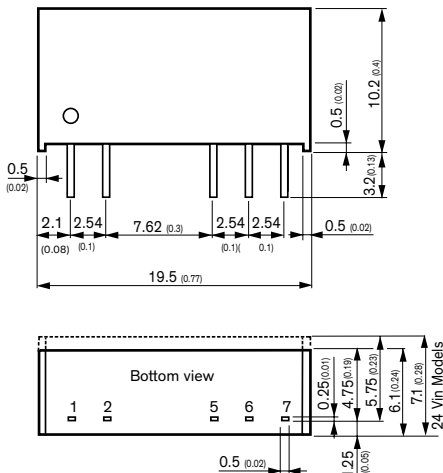
- Single-in-line package (SIP)
- I/O isolation 1000 VDC
- Unregulated device
- High efficiency up to 80%
- Operating temperature –40°C to +85°C
- Industry standard pinout
- 100% burn-in (8 h)
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout	
Pin	Single
1	–Vin (GND)
2	+Vin (Vcc)
3	–Vout
4	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TME 0303S	3.3 VDC ±10%	3.3 VDC	260 mA	74%
TME 0305S		5.0 VDC	200 mA	77%
TME 0503S	5 VDC ±10%	3.3 VDC	260 mA	72%
TME 0505S		5 VDC	200 mA	69%
TME 0509S		9 VDC	110 mA	76%
TME 0512S		12 VDC	84 mA	77%
TME 0515S		15 VDC	67 mA	78%
TME 1205S	12 VDC ±10%	5 VDC	200 mA	71%
TME 1209S		9 VDC	110 mA	77%
TME 1212S		12 VDC	84 mA	79%
TME 1215S		15 VDC	67 mA	80%
TME 2405S	24 VDC ±10%	5 VDC	200 mA	70%
TME 2409S		9 VDC	110 mA	76%
TME 2412S		12 VDC	84 mA	79%
TME 2415S		15 VDC	67 mA	79%

TMV

1 Watt



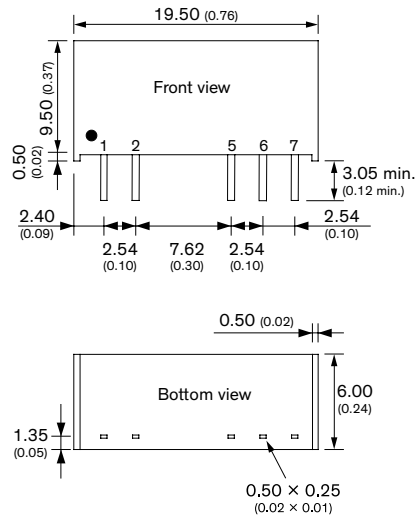
- Single-in-line (SIL) package
- Isolated single and dual output models
- I/O isolation 3000 VDC
- Unregulated device
- High Efficiency up to 81%
- Extended temperature range –40°C to +85°C
- Pin-compatible with other manufacturers
- 100% Burn-in (8 h)
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
5	–Vout	–Vout
6	No pin	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMV 0505S	5 VDC ±10%	5 VDC	200 mA	71%
TMV 0509S		9 VDC	110 mA	76%
TMV 0512S		12 VDC	84 mA	78%
TMV 0515S		15 VDC	67 mA	78%
TMV 0505D		± 5 VDC	±100 mA	72%
TMV 0512D	12 VDC ±10%	±12 VDC	±42 mA	78%
TMV 0515D		±15 VDC	±34 mA	79%
TMV 1205S		5 VDC	200 mA	73%
TMV 1212S		12 VDC	84 mA	80%
TMV 1215S		15 VDC	67 mA	80%
TMV 1205D	24 VDC ±10%	± 5 VDC	±100 mA	74%
TMV 1212D		±12 VDC	±42 mA	81%
TMV 1215D		±15 VDC	±34 mA	81%
TMV 2405S		5 VDC	200 mA	71%
TMV 2412S		12 VDC	84 mA	78%
TMV 2415S		15 VDC	67 mA	79%
TMV 2405D	24 VDC ±10%	± 5 VDC	±100 mA	72%
TMV 2412D		±12 VDC	±42 mA	79%
TMV 2415D		±15 VDC	±34 mA	80%

TBA 1HI

1 Watt



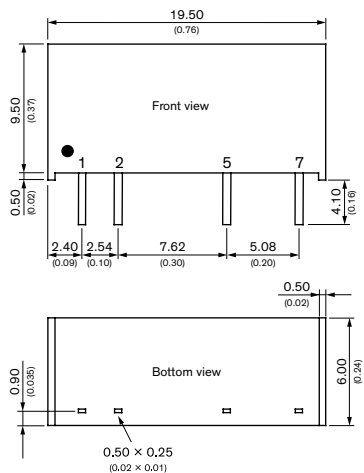
- Continuous short circuit protection
- I/O isolation: 3000 VDC
- Operating temperature range
–40 to +85 °C without derating
- Input voltage ranges ($\pm 10\%$):
5, 12, 24 VDC
- High efficiency up to 82%
- SIP-7 package
- Unregulated outputs
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
5	–Vout	–Vout
6	No pin	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TBA 1-0511HI	4.5 – 5.5 VDC (5 VDC nom.)	5 VDC	200 mA	79%
TBA 1-0519HI		9 VDC	111 mA	80%
TBA 1-0512HI		12 VDC	84 mA	82%
TBA 1-0513HI		15 VDC	66 mA	82%
TBA 1-0521HI		± 5 VDC	100 mA	79%
TBA 1-0522HI	10.8 – 13.2 VDC (12 VDC nom.)	± 12 VDC	41 mA	82%
TBA 1-0523HI		± 15 VDC	33 mA	82%
TBA 1-1211HI		5 VDC	200 mA	79%
TBA 1-1219HI	21.6 – 26.4 VDC (24 VDC nom.)	9 VDC	111 mA	79%
TBA 1-1212HI		12 VDC	84 mA	80%
TBA 1-1213HI		15 VDC	66 mA	80%
TBA 1-1221HI		± 5 VDC	100 mA	79%
TBA 1-1222HI		± 12 VDC	41 mA	80%
TBA 1-1223HI		± 15 VDC	33 mA	80%
TBA 1-2411HI	21.6 – 26.4 VDC (24 VDC nom.)	5 VDC	200 mA	79%
TBA 1-2419HI		9 VDC	111 mA	80%
TBA 1-2412HI		12 VDC	84 mA	82%
TBA 1-2413HI		15 VDC	66 mA	82%
TBA 1-2421HI		± 5 VDC	100 mA	79%
TBA 1-2422HI		± 12 VDC	41 mA	82%
TBA 1-2423HI		± 15 VDC	33 mA	82%

TEA 1HI

1 Watt



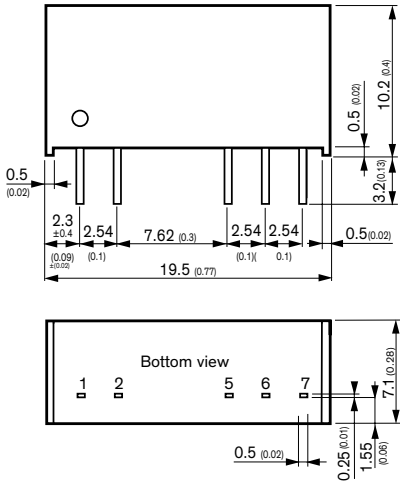
- I/O isolation: 4000 VDC
- Operating temperature range
–40 to +85 °C without derating
- High efficiency up to 78%
- SIP-7 package
- Unregulated outputs
- 3-year product warranty

Pinout	
Pin	Single
1	+Vin
2	–Vin
5	–Vout
7	+Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEA 1-0505HI	4.5 – 5.5 VDC	5 VDC	200 mA	78%

TMV-HI

1 Watt



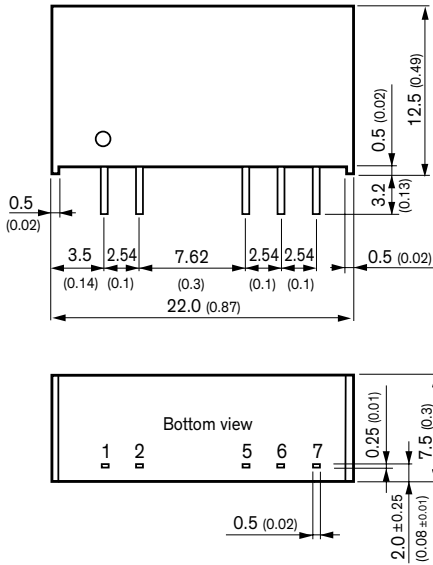
- Ultra compact SIP-7 package
- Very high I/O-isolation 5200 VDC
- Unregulated device
- Dedicated for IGBT applications
- Operating temperature range –40°C to +95°C
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
5	–Vout	–Vout
6	No pin	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMV 0503SHI	5 VDC ±10%	3.3 VDC	303 mA	70%
TMV 0505SHI		5.0 VDC	200 mA	70%
TMV 0509SHI		9.0 VDC	111 mA	75%
TMV 0512SHI		12 VDC	84 mA	77%
TMV 0515SHI		15 VDC	66 mA	78%
TMV 0505DHI		±5.0 VDC	±100 mA	71%
TMV 0509DHI		±9.0 VDC	±56 mA	75%
TMV 0512DHI		±12 VDC	±42 mA	77%
TMV 0515DHI		±15 VDC	±33 mA	78%
TMV 05159HI		+15/–9 VDC	+33/–55 mA	76%
TMV 1203SHI	12 VDC ±10%	3.3 VDC	303 mA	71%
TMV 1205SHI		5.0 VDC	200 mA	71%
TMV 1209SHI		9.0 VDC	111 mA	76%
TMV 1212SHI		12 VDC	84 mA	78%
TMV 1215SHI		15 VDC	66 mA	79%
TMV 1205DHI		±5.0 VDC	±100 mA	72%
TMV 1209DHI		±9.0 VDC	±56 mA	76%
TMV 1212DHI		±12 VDC	±42 mA	78%
TMV 1215DHI		±15 VDC	±33 mA	79%
TMV 12159HI		+15/–9 VDC	+33/–55 mA	77%
TMV 1503SHI	15 VDC ±10%	3.3 VDC	303 mA	70%
TMV 1505SHI		5.0 VDC	200 mA	70%
TMV 1509SHI		9.0 VDC	111 mA	75%
TMV 1512SHI		12 VDC	84 mA	75%
TMV 1515SHI		15 VDC	66 mA	79%
TMV 1505DHI		±5.0 VDC	±100 mA	71%
TMV 1509DHI		±9.0 VDC	±56 mA	75%
TMV 1512DHI		±12 VDC	±42 mA	78%
TMV 1515DHI		±15 VDC	±33 mA	79%
TMV 15159HI		+15/–9 VDC	+33/–55 mA	76%
TMV 2403SHI	24 VDC ±10%	3.3 VDC	303 mA	70%
TMV 2405SHI		5.0 VDC	200 mA	70%
TMV 2409SHI		9.0 VDC	111 mA	75%
TMV 2412SHI		12 VDC	84 mA	78%
TMV 2415SHI		15 VDC	66 mA	80%
TMV 2405DHI		±5.0 VDC	±100 mA	71%
TMV 2409DHI		±9.0 VDC	±56 mA	75%
TMV 2412DHI		±12 VDC	±42 mA	77%
TMV 2415DHI		±15 VDC	±33 mA	78%
TMV 24159HI		+15/–9 VDC	+33/–55 mA	75%

TMV-EN

1 Watt



- I/O isolation voltage 3000 VACrms
- Reinforced insulation, rated for 300 VAC working voltage
- Unregulated device
- Certified to IEC/EN/UL 62368-1 safety standards
- Safety barrier 100% production test
- Low coupling capacity
- Single-in-line package (SIP)
- Lead-free design, RoHS compliant
- 3-year product warranty

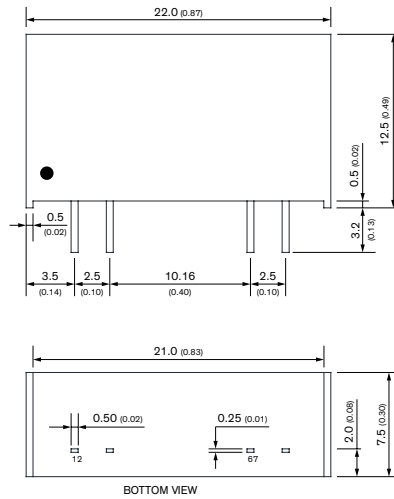
Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
5	–Vout	–Vout
6	No pin	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMV 0505 EN	5 VDC ±10%	5 VDC	200 mA	66%
TMV 0512 EN		12 VDC	80 mA	66%
TMV 0515 EN		15 VDC	65 mA	66%
TMV 0505D EN		±5 VDC	±100 mA	66%
TMV 0512D EN		±12 VDC	±40 mA	72%
TMV 0515D EN		±15 VDC	±35 mA	73%
TMV 1205 EN	12 VDC ±10%	5 VDC	200 mA	66%
TMV 1212 EN		12 VDC	80 mA	66%
TMV 1215 EN		15 VDC	65 mA	66%
TMV 1205D EN		±5 VDC	±100 mA	66%
TMV 1212D EN		±12 VDC	±40 mA	74%
TMV 1215D EN		±15 VDC	±35 mA	75%

TRI 1

NEW!

1 Watt



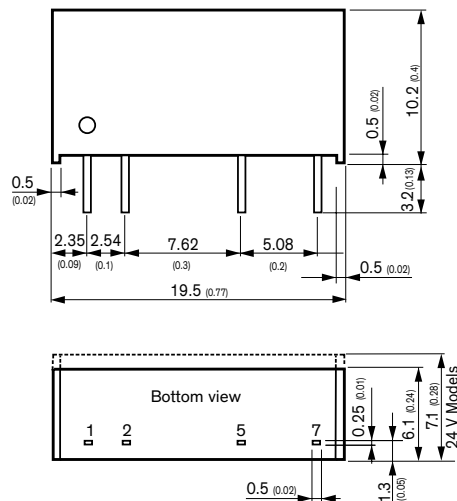
- Reinforced I/O-isolation 3000 VAC rated for 480 VAC working voltage
- Ultra-high isolation peak voltage 8000 VDC (1s)
- Operating temperature range –40 to +85 °C without derating
- Unregulated device
- ±10% Input 5 to 24 VDC
- Efficiency up to 81%
- Short circuit protection
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	–Vin
3	–Vout
4	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TRI 1-0511	5 VDC ±10% (nominal 5VDC)	5 VDC	200 mA	79%
TRI 1-0512		12 VDC	84 mA	80%
TRI 1-0513		15 VDC	68 mA	81%
TRI 1-1211	12 VDC ±10% (nominal 12VDC)	5 VDC	200 mA	79%
TRI 1-1212		12 VDC	84 mA	81%
TRI 1-1213		15 VDC	68 mA	79%
TRI 1-2411	24 VDC ±10% (nominal 24VDC)	5 VDC	200 mA	76%
TRI 1-2412		12 VDC	84 mA	79%
TRI 1-2413		15 VDC	68 mA	79%

TRV 1

1 Watt



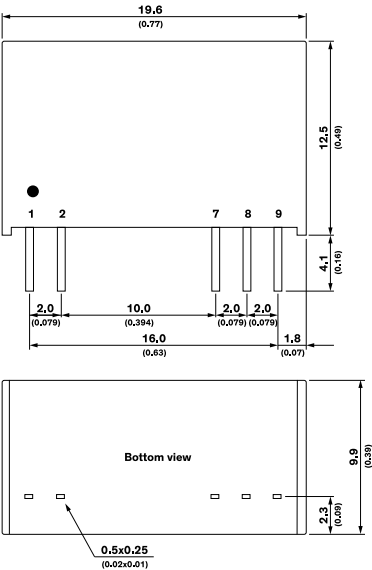
- Semi-regulated output (load)
- Industry standard pinout
- High efficiency up to 88%
- I/O isolation voltage 3000 VDC
- Operationally reliable up to 5000m altitude
- Operating temperature range –40°C to +85°C
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin (V _{cc})
2	–Vin (GND)
5	–Vout
7	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TRV 1-0511	5 VDC ±10%	5 VDC	200 mA	84%
TRV 1-0519		9 VDC	110 mA	86.5%
TRV 1-0512		12 VDC	84 mA	87%
TRV 1-0513		15 VDC	67 mA	87.5%
TRV 1-1211	12 VDC ±10%	5 VDC	200 mA	84%
TRV 1-1219		9 VDC	110 mA	86%
TRV 1-1212		12 VDC	84 mA	88%
TRV 1-1213		15 VDC	67 mA	88%
TRV 1-2411	24 VDC ±10%	5 VDC	200 mA	84%
TRV 1-2419		9 VDC	110 mA	86.5%
TRV 1-2412		12 VDC	84 mA	87.5%
TRV 1-2413		15 VDC	67 mA	87.5%

TRV 1M

1 Watt



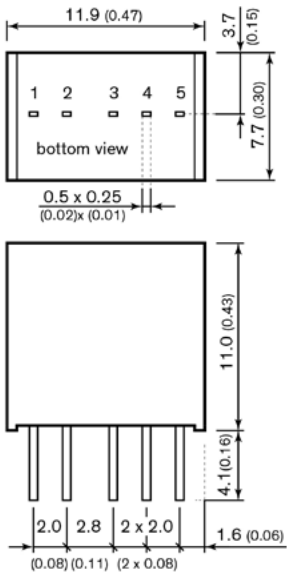
- Semi regulation
- Medical safety approval (2 × MOPP)
- 5000 VAC I/O-isolation (reinforced)
- Operating temperature:
–40°C to 95°C w/o derating
- ±10%/ ±20% Input 5 to 24 VDC
- 3.3 to 15 VDC output voltage
- 19.6 × 9.9 × 12.5 mm

Pinout / Connection		
Pin	Single Output	Dual Output
1	+Vin	+Vin
2	–Vin	–Vin
7	–Vout	–Vout
8	No pin	Common
9	+Vout	+Vout

Model	Input	Vout	Iout	Efficiency
TRV 1-0510M	4.5 – 5.5 VDC (5 VDC nom.)	3.3 VDC	303 mA	80%
TRV 1-0511M		5 VDC	200 mA	82%
TRV 1-0512M		12 VDC	83 mA	85%
TRV 1-0513M		15 VDC	67 mA	84%
TRV 1-0521M		±5 VDC	±100 mA	85%
TRV 1-0522M		±12 VDC	±42 mA	85%
TRV 1-0523M		±15 VDC	±34 mA	84%
TRV 1-1210M	9.6 – 14.4 VDC (5 VDC nom.)	3.3 VDC	303 mA	80%
TRV 1-1211M		5 VDC	200 mA	82%
TRV 1-1212M		12 VDC	83 mA	84%
TRV 1-1213M		15 VDC	67 mA	83%
TRV 1-1221M		±5 VDC	±100 mA	82%
TRV 1-1222M		±12 VDC	±42 mA	83%
TRV 1-1223M		±15 VDC	±34 mA	83%
TRV 1-1510M	12 – 18 VDC (5 VDC nom.)	3.3 VDC	303 mA	79%
TRV 1-1511M		5 VDC	200 mA	83%
TRV 1-1512M		12 VDC	83 mA	84%
TRV 1-1513M		15 VDC	67 mA	84%
TRV 1-1521M		±5 VDC	±100 mA	82%
TRV 1-1522M		±12 VDC	±42 mA	83%
TRV 1-1523M		±15 VDC	±34 mA	83%
TRV 1-2410M	19.2 – 28.8 VDC (5 VDC nom.)	3.3 VDC	303 mA	78%
TRV 1-2411M		5 VDC	200 mA	82%
TRV 1-2412M		12 VDC	83 mA	83%
TRV 1-2413M		15 VDC	67 mA	83%
TRV 1-2421M		±5 VDC	±100 mA	80%
TRV 1-2422M		±12 VDC	±42 mA	81%
TRV 1-2423M		±15 VDC	±34 mA	81%

TRN 1

1 Watt



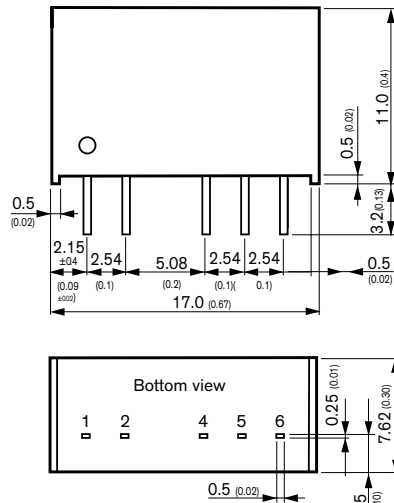
- Compact SIP package
11.9 × 7.7 × 11.0 mm
- Fully regulated outputs
- Input Voltage range 4.5–13.2,
9–18, 18–36, 36–75 VDC
- I/O-isolation 1600 VDC
- Operating temperature range
–40°C to +90°C without derating
- Short circuit protection
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	+Vout	+Vout
4	no pin	common
5	–Vout	–Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TRN 1-0510	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	300 mA	77%
TRN 1-0511		5.0 VDC	200 mA	79%
TRN 1-0512		12 VDC	90 mA	81%
TRN 1-0513		15 VDC	70 mA	82%
TRN 1-0515		24 VDC	45 mA	83%
TRN 1-0521		± 5.0 VDC	±100 mA	79%
TRN 1-0522	9 – 18 VDC (12 VDC nominal)	±12 VDC	±45 mA	83%
TRN 1-0523		±15 VDC	±35 mA	80%
TRN 1-1210		3.3 VDC	300 mA	77%
TRN 1-1211		5.0 VDC	200 mA	80%
TRN 1-1212		12 VDC	90 mA	81%
TRN 1-1213		15 VDC	70 mA	83%
TRN 1-1215		24 VDC	45 mA	83%
TRN 1-1221	18 – 36 VDC (24 VDC nominal)	± 5.0 VDC	±100 mA	79%
TRN 1-1222		±12 VDC	±45 mA	83%
TRN 1-1223		±15 VDC	±35 mA	80%
TRN 1-2410		3.3 VDC	300 mA	77%
TRN 1-2411		5.0 VDC	200 mA	81%
TRN 1-2412		12 VDC	90 mA	82%
TRN 1-2413	36 – 75 VDC (48 VDC nominal)	15 VDC	70 mA	83%
TRN 1-2415		24 VDC	45 mA	82%
TRN 1-2421		± 5.0 VDC	±100 mA	79%
TRN 1-2422		±12 VDC	±45 mA	82%
TRN 1-2423		±15 VDC	±35 mA	80%
TRN 1-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	300 mA	77%
TRN 1-4811		5.0 VDC	200 mA	78%
TRN 1-4812		12 VDC	90 mA	80%
TRN 1-4813		15 VDC	70 mA	81%
TRN 1-4815		24 VDC	45 mA	81%
TRN 1-4821		± 5.0 VDC	±100 mA	78%
TRN 1-4822	36 – 75 VDC (48 VDC nominal)	±12 VDC	±45 mA	81%
TRN 1-4823		±15 VDC	±35 mA	79%

TMR 1

1 Watt



- Wide 2:1 input voltage range
- Compact SIP-6 package
- Fully regulated outputs
- Cost optimised design
- No minimum load required
- Continuous short circuit protection
- Temperature range
–40°C to +95°C
- I/O isolation 1500 VDC
- 3-year product warranty

Pinout

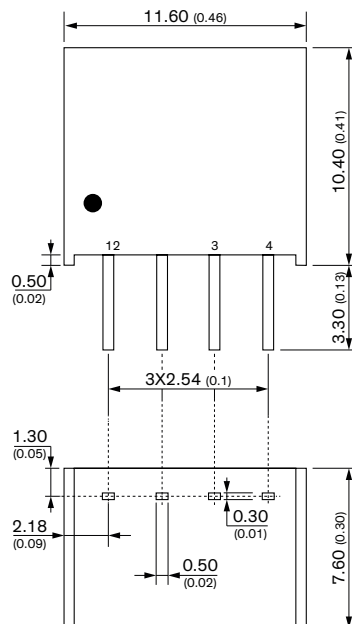
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
4	+Vout	+Vout
5	No pin	Common
6	–Vout	–Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMR 1-0511	4.5 – 9 VDC (5 VDC nom.)	5 VDC	200 mA	76%
TMR 1-0512		12 VDC	83 mA	77%
TMR 1-0513		15 VDC	67 mA	79%
TMR 1-0515		24 VDC	42 mA	76%
TMR 1-0522		±12 VDC	42 mA	77%
TMR 1-0523		±15 VDC	33 mA	78%
TMR 1-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	200 mA	77%
TMR 1-1212		12 VDC	83 mA	77%
TMR 1-1213		15 VDC	67 mA	80%
TMR 1-1215		24 VDC	42 mA	77%
TMR 1-1222		±12 VDC	42 mA	79%
TMR 1-1223		±15 VDC	33 mA	78%
TMR 1-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	200 mA	77%
TMR 1-2412		12 VDC	83 mA	80%
TMR 1-2413		15 VDC	67 mA	80%
TMR 1-2415		24 VDC	42 mA	77%
TMR 1-2422		±12 VDC	42 mA	80%
TMR 1-2423		±15 VDC	33 mA	80%
TMR 1-4811	36 – 75 VDC (48 VDC nom.)	5 VDC	200 mA	77%
TMR 1-4812		12 VDC	83 mA	78%
TMR 1-4813		15 VDC	67 mA	78%
TMR 1-4815		24 VDC	42 mA	76%
TMR 1-4822		±12 VDC	42 mA	79%
TMR 1-4823		±15 VDC	33 mA	79%

TMU 2

NEW!

2 Watt



Pinout

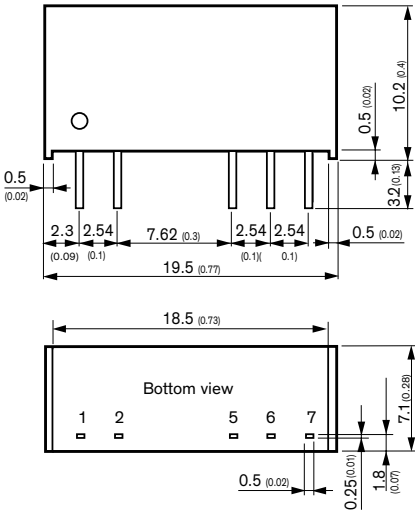
Pin	Function
1	–Vin
2	+Vin
3	–Vout
4	+Vout

- Continuous short circuit protection
- I/O isolation: 1500 VDC
- Operating temperature range
–40 to +85 °C without derating
- Input voltage ranges (±10%): 5, 12, 24 VDC
- High efficiency up to 83%
- SIP-4 package
- Unregulated outputs
- 3-year product warranty

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMU 2-0511	5 VDC ±10% (nominal 5 VDC)	5 VDC	400 mA	78%
TMU 2-0512		12 VDC	165 mA	82%
TMU 2-0513		15 VDC	130 mA	82%
TMU 2-0515		24 VDC	80 mA	83%
TMU 2-1211	12 VDC ±10% (nominal 12 VDC)	5 VDC	400 mA	78%
TMU 2-1212		12 VDC	165 mA	82%
TMU 2-1213		15 VDC	130 mA	82%
TMU 2-1215		24 VDC	80 mA	83%
TMU 2-2411	24 VDC ±10% (nominal 24 VDC)	5 VDC	400 mA	78%
TMU 2-2412		12 VDC	165 mA	82%
TMU 2-2413		15 VDC	130 mA	82%
TMU 2-2415		24 VDC	80 mA	83%

TMV 2HI

2 Watt



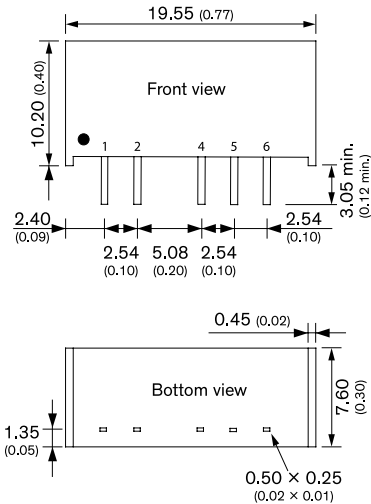
- Ultra compact SIP-7 package
- Very high I/O-isolation 5200 VDC (5700 Vpk)
- Unregulated device
- Dedicated for IGBT applications
- Operating temperature range –40°C to +85°C
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
5	–Vout	–Vout
6	No pin	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMV 2–0503SHI	5 VDC ±10%	3.3 VDC	500 mA	74%
TMV 2–0505SHI		5.0 VDC	400 mA	80%
TMV 2–0509SHI		9.0 VDC	222 mA	81%
TMV 2–0512SHI		12 VDC	168 mA	82%
TMV 2–0515SHI		15 VDC	132 mA	79%
TMV 2–0505DHI		±5.0 VDC	±200 mA	78%
TMV 2–0509DHI		±9.0 VDC	±112 mA	80%
TMV 2–0512DHI		±12 VDC	±84 mA	80%
TMV 2–0515DHI		±15 VDC	±66 mA	79%
TMV 2–05159HI		+15/–9 VDC	+66/–110 mA	80%
TMV 2–1203SHI	12 VDC ±10%	3.3 VDC	500 mA	76%
TMV 2–1205SHI		5.0 VDC	400 mA	79%
TMV 2–1209SHI		9.0 VDC	222 mA	81%
TMV 2–1212SHI		12 VDC	168 mA	83%
TMV 2–1215SHI		15 VDC	132 mA	82%
TMV 2–1205DHI		±5.0 VDC	±200 mA	79%
TMV 2–1209DHI		±9.0 VDC	±112 mA	81%
TMV 2–1212DHI		±12 VDC	±84 mA	82%
TMV 2–1215DHI		±15 VDC	±66 mA	83%
TMV 2–12159HI		+15/–9 VDC	+66/–110 mA	81%
TMV 2–1503SHI	15 VDC ±10%	3.3 VDC	500 mA	77%
TMV 2–1505SHI		5.0 VDC	400 mA	79%
TMV 2–1509SHI		9.0 VDC	222 mA	83%
TMV 2–1512SHI		12 VDC	168 mA	83%
TMV 2–1515SHI		15 VDC	132 mA	85%
TMV 2–1505DHI		±5.0 VDC	±200 mA	81%
TMV 2–1509DHI		±9.0 VDC	±112 mA	84%
TMV 2–1512DHI		±12 VDC	±84 mA	82%
TMV 2–1515DHI		±15 VDC	±66 mA	82%
TMV 2–15159HI		+15/–9 VDC	+66/–110 mA	83%
TMV 2–2403SHI	24 VDC ±10%	3.3 VDC	500 mA	76%
TMV 2–2405SHI		5.0 VDC	400 mA	77%
TMV 2–2409SHI		9.0 VDC	222 mA	81%
TMV 2–2412SHI		12 VDC	168 mA	82%
TMV 2–2415SHI		15 VDC	132 mA	82%
TMV 2–2405DHI		±5.0 VDC	±200 mA	77%
TMV 2–2409DHI		±9.0 VDC	±112 mA	81%
TMV 2–2412DHI		±12 VDC	±84 mA	81%
TMV 2–2415DHI		±15 VDC	±66 mA	80%
TMV 2–24159HI		+15/–9 VDC	+66/–110 mA	81%

TBA 2

2 Watt



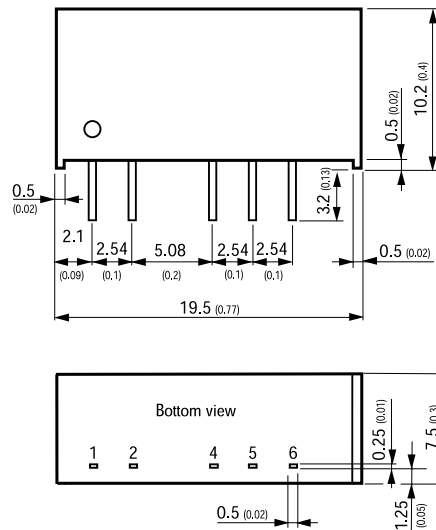
- Continuous short circuit protection
- I/O isolation: 1500 VDC
- Operating temperature range –40 to +80 °C without derating
- Input voltage ranges (±10%): 5, 12, 24 VDC
- High efficiency up to 84%
- SIP-7 package
- Unregulated outputs
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	–Vout	–Vout
5	No pin	Common
6	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TBA 2–0511	4.5 – 5.5 VDC (5 VDC nom.)	5 VDC	400 mA	78%
TBA 2–0512		12 VDC	165 mA	82%
TBA 2–0513		15 VDC	130 mA	82%
TBA 2–0521		±5 VDC	200 mA	79%
TBA 2–0522		±12 VDC	80 mA	82%
TBA 2–0523		±15 VDC	65 mA	82%
TBA 2–1211	10.8 – 13.2 VDC (12 VDC nom.)	5 VDC	400 mA	79%
TBA 2–1212		12 VDC	165 mA	82%
TBA 2–1213		15 VDC	130 mA	84%
TBA 2–1221		±5 VDC	200 mA	79%
TBA 2–1222		±12 VDC	80 mA	83%
TBA 2–1223		±15 VDC	65 mA	84%
TBA 2–2411	21.6 – 26.4 VDC (24 VDC nom.)	5 VDC	400 mA	78%
TBA 2–2412		12 VDC	165 mA	84%
TBA 2–2413		15 VDC	130 mA	84%
TBA 2–2421		±5 VDC	200 mA	80%
TBA 2–2422		±12 VDC	80 mA	84%
TBA 2–2423		±15 VDC	65 mA	84%

TMH

2 Watt



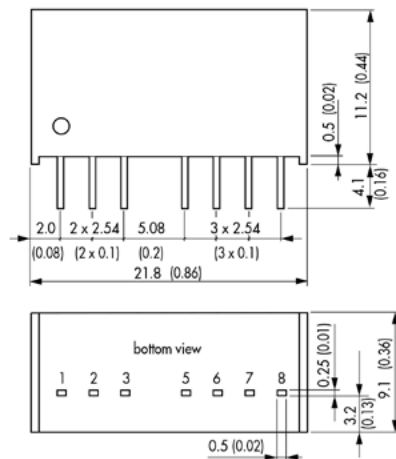
- Single-in-line package (SIP)
- Fully SMD-design
- Isolated single and dual output
- I/O isolation 1000 VDC
- Unregulated device
- High efficiency up to 83%
- Industry standard pinout
- 100% burn-in (8 h)
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
4	-Vout	-Vout
5	No pin	Common
6	+Vout	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMH 0505S	5 VDC ±10%	5 VDC	400 mA	76%
TMH 0512S		12 VDC	165 mA	80%
TMH 0515S		15 VDC	133 mA	80%
TMH 0505D		±5 VDC	±200 mA	77%
TMH 0512D		±12 VDC	±83 mA	79%
TMH 0515D		±15 VDC	±66 mA	79%
TMH 1205S	12 VDC ±10%	5 VDC	400 mA	78%
TMH 1212S		12 VDC	165 mA	82%
TMH 1215S		15 VDC	133 mA	83%
TMH 1205D		±5 VDC	±200 mA	79%
TMH 1212D		±12 VDC	±83 mA	82%
TMH 1215D		±15 VDC	±66 mA	82%
TMH 2405S	24 VDC ±10%	5 VDC	400 mA	77%
TMH 2412S		12 VDC	165 mA	81%
TMH 2415S		15 VDC	133 mA	82%
TMH 2405D		±5 VDC	±200 mA	79%
TMH 2412D		±12 VDC	±83 mA	81%
TMH 2415D		±15 VDC	±66 mA	82%

TEC 2

2 Watt



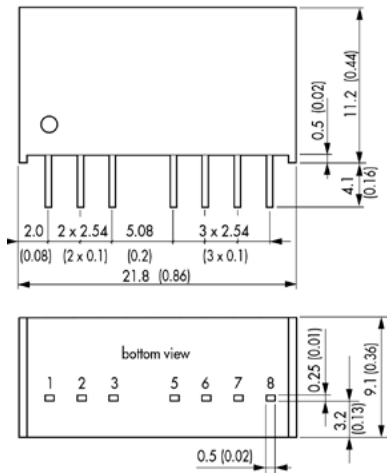
- Compact SIP-8 package
- I/O-isolation voltage 1600 VDC
- Fully regulated outputs
- Operating temperature range -40°C to +95°C
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	+Vin (VCC)	+Vin (VCC)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TEC 2-0910	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	500 mA	78%
TEC 2-0911		5.0 VDC	400 mA	81%
TEC 2-0919		9.0 VDC	222 mA	84%
TEC 2-0912		12 VDC	167 mA	84%
TEC 2-0913		15 VDC	134 mA	84%
TEC 2-0915		24 VDC	83 mA	85%
TEC 2-0921		±5.0 VDC	±200 mA	81%
TEC 2-0922		±12 VDC	±83 mA	85%
TEC 2-0923		±15 VDC	±67 mA	84%
TEC 2-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	500 mA	78%
TEC 2-1211		5.0 VDC	400 mA	82%
TEC 2-1219		9.0 VDC	222 mA	84%
TEC 2-1212		12 VDC	167 mA	85%
TEC 2-1213		15 VDC	134 mA	85%
TEC 2-1215		24 VDC	83 mA	85%
TEC 2-1221		±5.0 VDC	±200 mA	82%
TEC 2-1222		±12 VDC	±83 mA	85%
TEC 2-1223		±15 VDC	±67 mA	84%
TEC 2-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	500 mA	78%
TEC 2-2411		5.0 VDC	400 mA	83%
TEC 2-2419		9.0 VDC	222 mA	85%
TEC 2-2412		12 VDC	167 mA	86%
TEC 2-2413		15 VDC	134 mA	85%
TEC 2-2415		24 VDC	83 mA	85%
TEC 2-2421		±5.0 VDC	±200 mA	83%
TEC 2-2422		±12 VDC	±83 mA	85%
TEC 2-2423		±15 VDC	±67 mA	86%
TEC 2-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	500 mA	76%
TEC 2-4811		5.0 VDC	400 mA	80%
TEC 2-4819		9.0 VDC	222 mA	82%
TEC 2-4812		12 VDC	167 mA	84%
TEC 2-4813		15 VDC	134 mA	85%
TEC 2-4815		24 VDC	83 mA	85%
TEC 2-4821		±5.0 VDC	±200 mA	80%
TEC 2-4822		±12 VDC	±83 mA	85%
TEC 2-4823		±15 VDC	±67 mA	83%

TEC 2WI

2 Watt



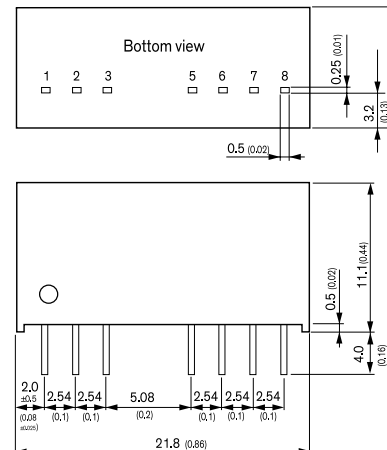
- Compact SIP-8 package
- I/O-isolation voltage 1600 VDC
- Ultra-wide 4:1 input voltage range
- Fully regulated outputs
- Operating temperature range -40°C to +93°C
- Continuous short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	+Vin (VCC)	+Vin (VCC)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEC 2-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	500 mA	75%
TEC 2-1211WI		5.0 VDC	400 mA	80%
TEC 2-1219WI		9.0 VDC	222 mA	81%
TEC 2-1212WI		12 VDC	167 mA	81%
TEC 2-1213WI		15 VDC	134 mA	82%
TEC 2-1215WI		24 VDC	83 mA	82%
TEC 2-1221WI		±5.0 VDC	±200 mA	80%
TEC 2-1222WI		±12 VDC	±83 mA	82%
TEC 2-1223WI		±15 VDC	±67 mA	81%
TEC 2-2410WI		3.3 VDC	500 mA	76%
TEC 2-2411WI	9 – 36 VDC (24 VDC nominal)	5.0 VDC	400 mA	80%
TEC 2-2419WI		9.0 VDC	222 mA	80%
TEC 2-2412WI		12 VDC	167 mA	82%
TEC 2-2413WI		15 VDC	134 mA	82%
TEC 2-2415WI		24 VDC	83 mA	82%
TEC 2-2421WI		±5.0 VDC	±200 mA	79%
TEC 2-2422WI		±12 VDC	±83 mA	82%
TEC 2-2423WI		±15 VDC	±67 mA	80%
TEC 2-4810WI		3.3 VDC	500 mA	74%
TEC 2-4811WI	18 – 75 VDC (48 VDC nominal)	5.0 VDC	400 mA	79%
TEC 2-4819WI		9.0 VDC	222 mA	81%
TEC 2-4812WI		12 VDC	167 mA	82%
TEC 2-4813WI		15 VDC	134 mA	81%
TEC 2-4815WI		24 VDC	83 mA	81%
TEC 2-4821WI		±5.0 VDC	±200 mA	79%
TEC 2-4822WI		±12 VDC	±83 mA	81%
TEC 2-4823WI		±15 VDC	±67 mA	81%

TMR 2

2 Watt

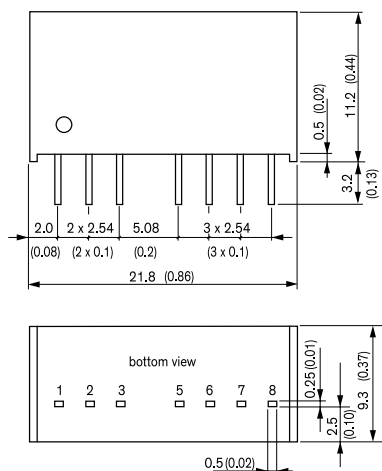


- Wide 2:1 input voltage range
- Compact SIP-8 package
- Small footprint
- Remote On/Off control
- Temperature range -40° to +92°C
- High efficiency
- Excellent load and line regulation
- Indefinite short-circuit protection
- I/O isolation 1500 VDC
- 3-year product warrenty

Pinout		
Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 0510	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	500 mA	76%
TMR 0511		5 VDC	400 mA	80%
TMR 0512		12 VDC	167 mA	81%
TMR 0521		±5 VDC	200 mA	79%
TMR 0522		±12 VDC	83 mA	82%
TMR 0523		±15 VDC	67 mA	81%
TMR 1210	9 – 18 VDC (12 VDC nom.)	3.3 VDC	500 mA	77%
TMR 1211		5 VDC	400 mA	81%
TMR 1212		12 VDC	167 mA	83%
TMR 1221		±5 VDC	200 mA	81%
TMR 1222		±12 VDC	83 mA	83%
TMR 1223		±15 VDC	67 mA	84%
TMR 2410	18 – 36 VDC (24 VDC nom.)	3.3 VDC	500 mA	78%
TMR 2411		5 VDC	400 mA	81%
TMR 2412		12 VDC	167 mA	83%
TMR 2421		±5 VDC	200 mA	80%
TMR 2422		±12 VDC	83 mA	83%
TMR 2423		±15 VDC	67 mA	82%
TMR 4810	36 – 75 VDC (48 VDC nom.)	3.3 VDC	500 mA	76%
TMR 4811		5 VDC	400 mA	78%
TMR 4812		12 VDC	167 mA	83%
TMR 4821		±5 VDC	200 mA	80%
TMR 4822		±12 VDC	83 mA	81%
TMR 4823		±15 VDC	67 mA	81%

2 Watt



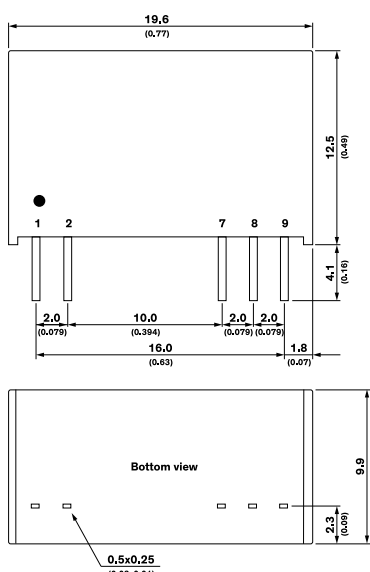
- Ultra-wide 4:1 input range
- Compact SIP-8 package
- Temperature range -40 to $+90^{\circ}\text{C}$ (up to $+75^{\circ}\text{C}$ at full load)
- High efficiency of 82%
- Excellent load and line regulation
- Continuous short-circuit protection
- Overload protection
- I/O isolation 1500 VDC
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	−Vin (GND)	−Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	−Vout	Common
8	NC	−Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 2-1210WIN	4.5 – 18 VDC (12 VDC nom.)	3.3 VDC	500 mA	75%
TMR 2-1211WIN		5 VDC	400 mA	80%
TMR 2-1212WIN		12 VDC	167 mA	82%
TMR 2-1213WIN		15 VDC	134 mA	82%
TMR 2-1221WIN		±5 VDC	200 mA	80%
TMR 2-1222WIN		±12 VDC	83 mA	82%
TMR 2-1223WIN		±15 VDC	67 mA	82%
TMR 2-2410WIN	9 – 36 VDC (24 VDC nom.)	3.3 VDC	500 mA	75%
TMR 2-2411WIN		5 VDC	400 mA	80%
TMR 2-2412WIN		12 VDC	167 mA	82%
TMR 2-2413WIN		15 VDC	134 mA	82%
TMR 2-2421WIN		±5 VDC	200 mA	80%
TMR 2-2422WIN		±12 VDC	83 mA	82%
TMR 2-2423WIN		±15 VDC	67 mA	82%
TMR 2-4810WIN	18 – 75 VDC (48 VDC nom.)	3.3 VDC	500 mA	74%
TMR 2-4811WIN		5 VDC	400 mA	80%
TMR 2-4812WIN		12 VDC	167 mA	82%
TMR 2-4813WIN		15 VDC	134 mA	82%
TMR 2-4821WIN		±5 VDC	200 mA	80%
TMR 2-4822WIN		±12 VDC	83 mA	82%
TMR 2-4823WIN		±15 VDC	67 mA	82%

NEW!

2 Watt



- I/O isolation 5000 VAC (reinforced)
- Wide 1.5:1 input voltage range
- Operating temperature range
-40 to +80°C without derating
- Certification according to IEC/EN/
ES 60601-1 3rd edition for
2 × MOPP and IEC/EN/UL 62368-1
- Short circuit protection
- Regulated outputs
- Low leakage current < 2 µA
- Efficiency up to 84%
- Operation up to 5000 m altitude
- 5-year product warranty

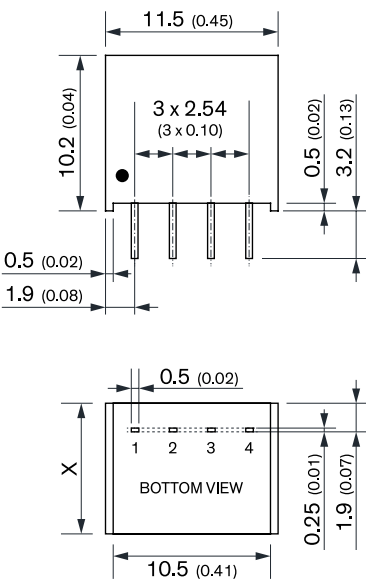
Pinout / Connection		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
7	-Vout	-Vout
8	No Pin	Common
9	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	Iout	
TRV 2-0510M	4.5 – 7 VDC (5 VDC nom.)	3.3 VDC	600 mA	78%
TRV 2-0511M		5 VDC	400 mA	81%
TRV 2-0512M		12 VDC	167 mA	83%
TRV 2-0513M		15 VDC	134 mA	83%
TRV 2-0521M		±5 VDC	± 200 mA	82%
TRV 2-0522M		±12 VDC	±83 mA	83%
TRV 2-0523M		±15 VDC	±67 mA	81%
TRV 2-1210M	9.6 – 14.4 VDC (12 VDC nom.)	3.3 VDC	600 mA	79%
TRV 2-1211M		5 VDC	400 mA	81%
TRV 2-1212M		12 VDC	167 mA	84%
TRV 2-1213M		15 VDC	134 mA	83%
TRV 2-1221M		±5 VDC	± 200 mA	81%
TRV 2-1222M		±12 VDC	±83 mA	83%
TRV 2-1223M		±15 VDC	±67 mA	82%
TRV 2-1510M	12 – 18 VDC (15 VDC nom.)	3.3 VDC	600 mA	79%
TRV 2-1511M		5 VDC	400 mA	81%
TRV 2-1512M		12 VDC	167 mA	84%
TRV 2-1513M		15 VDC	134 mA	83%
TRV 2-1521M		±5 VDC	± 200 mA	81%
TRV 2-1522M		±12 VDC	±83 mA	83%
TRV 2-1523M		±15 VDC	±67 mA	80%
TRV 2-2410M	19.2–28.8 VDC (24 VDC nom.)	3.3 VDC	600 mA	78%
TRV 2-2411M		5 VDC	400 mA	80%
TRV 2-2412M		12 VDC	167 mA	82%
TRV 2-2413M		15 VDC	134 mA	82%
TRV 2-2421M		±5 VDC	± 200 mA	81%
TRV 2-2422M		±12 VDC	±83 mA	81%
TRV 2-2423M		±15 VDC	±67 mA	80%

TMU 3

NEW!

3 Watt



X = 8.6 (0.34) for 5 Vin & 12 Vin models
X = 9.6 (0.38) for 24 Vin models

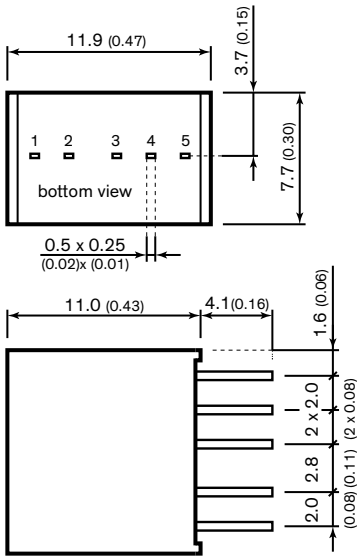
- Continuous short circuit protection
- I/O isolation: 1500 VDC
- Operating temperature range –40 to +80 °C without derating
- Input voltage ranges (±10%): 5, 12, 24 VDC
- High efficiency up to 86%
- SIP-4 package
- Unregulated outputs
- 3-year product warranty

Pinout	
Pin	Single
1	–Vin
2	+ Vin
3	– Vout
4	+ Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMU 3-0511	4.5 – 5.5 VDC (5 VDC nom.)	5 VDC	600 mA	79%
TMU 3-0512		12 VDC	250 mA	83%
TMU 3-0513		15 VDC	200 mA	84%
TMU 3-1211	10.8 – 13.2 VDC (12 VDC nom.)	5 VDC	600 mA	81%
TMU 3-1212		12 VDC	250 mA	85%
TMU 3-1213		15 VDC	200 mA	85%
TMU 3-2411	21.6 – 26.4 VDC (24 VDC nom.)	5 VDC	600 mA	82%
TMU 3-2412		12 VDC	250 mA	86%
TMU 3-2413		15 VDC	200 mA	86%

TRN 3

3 Watt



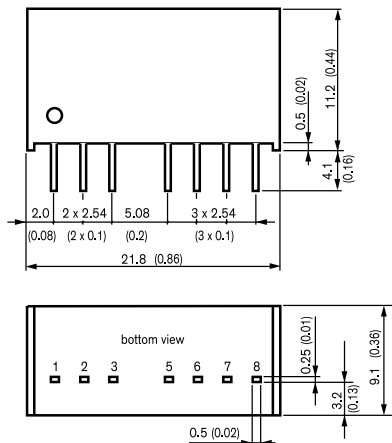
Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	+Vout	+Vout
4	no pin	common
5	–Vout	–Vout

- Compact SIP package
11.9 × 7.7 × 11.0 mm
- Fully regulated outputs
- Input Voltage range 4.5–13.2, 9–18, 18–36, 36–75 VDC
- I/O-isolation 1600 VDC
- Operating temperature range –40°C to +85°C
- Short circuit protection
- 3-year product warranty
- Designed to meet UL 62368-1

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TRN 3-0510	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	700 mA	75%
TRN 3-0511		5.0 VDC	600 mA	78%
TRN 3-0512		12 VDC	250 mA	82%
TRN 3-0513		15 VDC	200 mA	80%
TRN 3-0515		24 VDC	125 mA	80%
TRN 3-0521		± 5.0 VDC	±300 mA	77%
TRN 3-0522	9 – 18 VDC (12 VDC nominal)	±12 VDC	±125 mA	80%
TRN 3-0523		±15 VDC	±100 mA	80%
TRN 3-1210		3.3 VDC	700 mA	76%
TRN 3-1211		5.0 VDC	600 mA	79%
TRN 3-1212		12 VDC	250 mA	84%
TRN 3-1213		15 VDC	200 mA	83%
TRN 3-1215	18 – 36 VDC (24 VDC nominal)	24 VDC	125 mA	82%
TRN 3-1221		± 5.0 VDC	±300 mA	78%
TRN 3-1222		±12 VDC	±125 mA	82%
TRN 3-1223		±15 VDC	±100 mA	81%
TRN 3-2410		3.3 VDC	700 mA	76%
TRN 3-2411		5.0 VDC	600 mA	78%
TRN 3-2412	36 – 75 VDC (48 VDC nominal)	12 VDC	250 mA	84%
TRN 3-2413		15 VDC	200 mA	84%
TRN 3-2415		24 VDC	125 mA	83%
TRN 3-2421		± 5.0 VDC	±300 mA	79%
TRN 3-2422		±12 VDC	±125 mA	83%
TRN 3-2423		±15 VDC	±100 mA	82%
TRN 3-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	75%
TRN 3-4811		5.0 VDC	600 mA	79%
TRN 3-4812		12 VDC	250 mA	83%
TRN 3-4813		15 VDC	200 mA	83%
TRN 3-4815		24 VDC	125 mA	82%
TRN 3-4821		± 5.0 VDC	±300 mA	77%
TRN 3-4822		±12 VDC	±125 mA	82%
TRN 3-4823		±15 VDC	±100 mA	80%

TEC 3

3 Watt



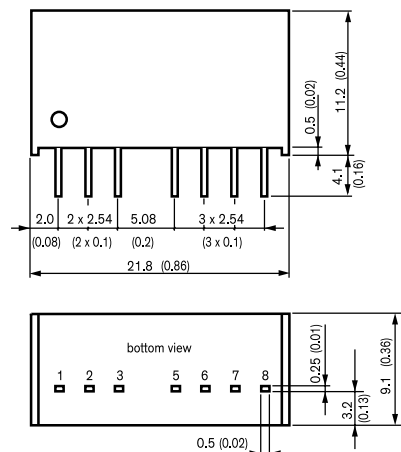
- Compact SIP-8 package
- I/O-isolation 1600 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +90°C
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (VCC)	+Vin (VCC)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TEC 3-0910	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	700 mA	75%
TEC 3-0911		5.0 VDC	600 mA	78%
TEC 3-0919		9.0 VDC	333 mA	81%
TEC 3-0912		12 VDC	250 mA	83%
TEC 3-0913		15 VDC	200 mA	84%
TEC 3-0915		24 VDC	125 mA	82%
TEC 3-0921		±5.0 VDC	±300 mA	79%
TEC 3-0922		±12 VDC	±125 mA	82%
TEC 3-0923		±15 VDC	±100 mA	82%
TEC 3-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	77%
TEC 3-1211		5.0 VDC	600 mA	81%
TEC 3-1219		9.0 VDC	333 mA	82%
TEC 3-1212		12 VDC	250 mA	84%
TEC 3-1213		15 VDC	200 mA	85%
TEC 3-1215		24 VDC	125 mA	85%
TEC 3-1221		±5.0 VDC	±300 mA	81%
TEC 3-1222		±12 VDC	±125 mA	85%
TEC 3-1223		±15 VDC	±100 mA	83%
TEC 3-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	77%
TEC 3-2411		5.0 VDC	600 mA	82%
TEC 3-2419		9.0 VDC	333 mA	83%
TEC 3-2412		12 VDC	250 mA	85%
TEC 3-2413		15 VDC	200 mA	86%
TEC 3-2415		24 VDC	125 mA	84%
TEC 3-2421		±5.0 VDC	±300 mA	82%
TEC 3-2422		±12 VDC	±125 mA	84%
TEC 3-2423		±15 VDC	±100 mA	85%
TEC 3-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	75%
TEC 3-4811		5.0 VDC	600 mA	80%
TEC 3-4819		9.0 VDC	333 mA	82%
TEC 3-4812		12 VDC	250 mA	84%
TEC 3-4813		15 VDC	200 mA	85%
TEC 3-4815		24 VDC	125 mA	86%
TEC 3-4821		±5.0 VDC	±300 mA	80%
TEC 3-4822		±12 VDC	±125 mA	86%
TEC 3-4823		±15 VDC	±100 mA	83%

TEC 3WI

3 Watt



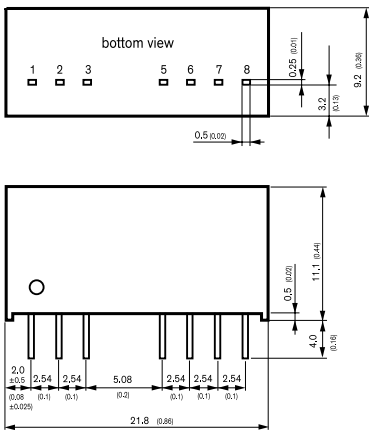
- Compact SIP-8 package
- I/O-isolation 1600 VDC
- Ultra-wide 4:1 input voltage range
- Fully regulated outputs
- Operating temperature range –40°C to +90°C
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (VCC)	+Vin (VCC)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TEC 3-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	75%
TEC 3-1211WI		5.0 VDC	600 mA	79%
TEC 3-1219WI		9.0 VDC	333 mA	81%
TEC 3-1212WI		12 VDC	250 mA	82%
TEC 3-1213WI		15 VDC	200 mA	83%
TEC 3-1215WI		24 VDC	125 mA	82%
TEC 3-1221WI		±5.0 VDC	±300 mA	80%
TEC 3-1222WI		±12 VDC	±125 mA	82%
TEC 3-1223WI		±15 VDC	±100 mA	81%
TEC 3-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	76%
TEC 3-2411WI		5.0 VDC	600 mA	80%
TEC 3-2419WI		9.0 VDC	333 mA	81%
TEC 3-2412WI		12 VDC	250 mA	83%
TEC 3-2413WI		15 VDC	200 mA	83%
TEC 3-2415WI		24 VDC	125 mA	81%
TEC 3-2421WI		±5.0 VDC	±300 mA	79%
TEC 3-2422WI		±12 VDC	±125 mA	81%
TEC 3-2423WI		±15 VDC	±100 mA	81%
TEC 3-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	74%
TEC 3-4811WI		5.0 VDC	600 mA	80%
TEC 3-4819WI		9.0 VDC	333 mA	81%
TEC 3-4812WI		12 VDC	250 mA	82%
TEC 3-4813WI		15 VDC	200 mA	83%
TEC 3-4815WI		24 VDC	125 mA	82%
TEC 3-4821WI		±5.0 VDC	±300 mA	80%
TEC 3-4822WI		±12 VDC	±125 mA	82%
TEC 3-4823WI		±15 VDC	±100 mA	82%

TMR 3

3 Watt



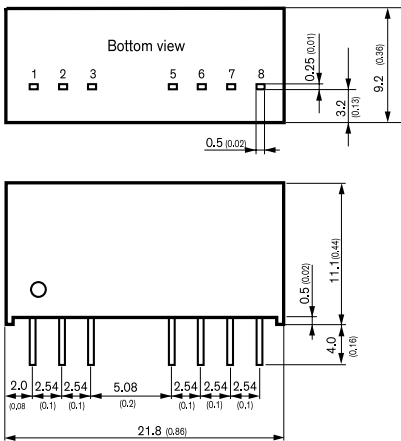
- Wide 2:1 input voltage range
- Fully regulated output voltage
- Compact SIP-8 package
- 1600 VDC I/O isolation (functional insulation)
- Small footprint
- Temperature range -40° to $+85^{\circ}\text{C}$
- High efficiency up to 85%
- Short-circuit protection
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 3-0510	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	700 mA	75%
TMR 3-0511		5 VDC	600 mA	79%
TMR 3-0512		12 VDC	250 mA	81%
TMR 3-0513		15 VDC	200 mA	82%
TMR 3-0521		±5 VDC	300 mA	78%
TMR 3-0522		±12 VDC	125 mA	81%
TMR 3-0523		±15 VDC	100 mA	81%
TMR 3-1210	9 – 18 VDC (12 VDC nom.)	3.3 VDC	700 mA	77%
TMR 3-1211		5 VDC	600 mA	81%
TMR 3-1212		12 VDC	250 mA	83%
TMR 3-1213		15 VDC	200 mA	83%
TMR 3-1221		±5 VDC	300 mA	82%
TMR 3-1222		±12 VDC	125 mA	83%
TMR 3-1223		±15 VDC	100 mA	83%
TMR 3-2410	18 – 36 VDC (24 VDC nom.)	3.3 VDC	700 mA	76%
TMR 3-2411		5 VDC	600 mA	82%
TMR 3-2412		12 VDC	250 mA	83%
TMR 3-2413		15 VDC	200 mA	84%
TMR 3-2421		±5 VDC	300 mA	80%
TMR 3-2422		±12 VDC	125 mA	83%
TMR 3-2423		±15 VDC	100 mA	85%
TMR 3-4810	36 – 75 VDC (48 VDC nom.)	3.3 VDC	700 mA	74%
TMR 3-4811		5 VDC	600 mA	79%
TMR 3-4812		12 VDC	250 mA	81%
TMR 3-4813		15 VDC	200 mA	82%
TMR 3-4821		±5 VDC	300 mA	79%
TMR 3-4822		±12 VDC	125 mA	82%
TMR 3-4823		±15 VDC	100 mA	83%

TMR 3WI

3 Watt



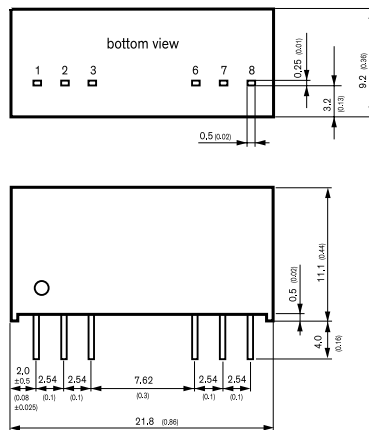
- Highest power density in SIP package
- Ultra wide 4:1 input range
- Small footprint: 21.8 × 9.2 mm
- Temperature range -40° to $+85^{\circ}\text{C}$
- High efficiency up to 82%
- Excellent load and line regulation
- Short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 3-1210WI	4.5 – 18 VDC (12 VDC nom.)	3.3 VDC	700 mA	74%
TMR 3-1211WI		5 VDC	600 mA	78%
TMR 3-1212WI		12 VDC	250 mA	80%
TMR 3-1213WI		15 VDC	200 mA	80%
TMR 3-1221WI		±5 VDC	300 mA	80%
TMR 3-1222WI		±12 VDC	125 mA	80%
TMR 3-1223WI		±15 VDC	100 mA	80%
TMR 3-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	700 mA	75%
TMR 3-2411WI		5 VDC	600 mA	80%
TMR 3-2412WI		12 VDC	250 mA	82%
TMR 3-2413WI		15 VDC	200 mA	82%
TMR 3-2421WI		±5 VDC	300 mA	79%
TMR 3-2422WI		±12 VDC	125 mA	81%
TMR 3-2423WI		±15 VDC	100 mA	81%
TMR 3-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	700 mA	74%
TMR 3-4811WI		5 VDC	600 mA	80%
TMR 3-4812WI		12 VDC	250 mA	81%
TMR 3-4813WI		15 VDC	200 mA	81%
TMR 3-4821WI		±5 VDC	300 mA	79%
TMR 3-4822WI		±12 VDC	125 mA	81%
TMR 3-4823WI		±15 VDC	100 mA	81%

TMR 3HI

3 Watt



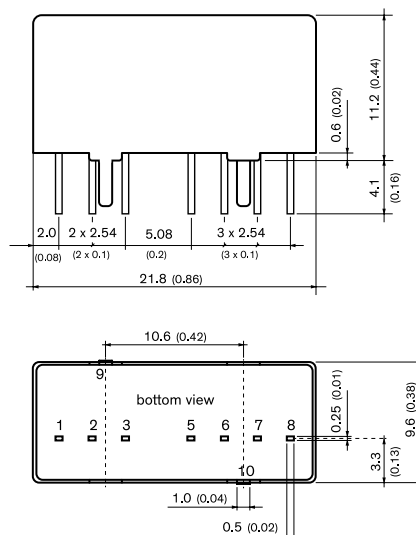
- Wide 2:1 input voltage range
- Fully regulated output voltage
- Compact SIP-8 package
- 3000 VDC I/O isolation (functional insulation)
- Small footprint
- Temperature range -40° to $+85^{\circ}\text{C}$
- High efficiency up to 85%
- Short-circuit protection
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMR 3-0510HI TMR 3-0511HI TMR 3-0512HI TMR 3-0513HI TMR 3-0521HI TMR 3-0522HI TMR 3-0523HI	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	700 mA	75%
		5 VDC	600 mA	79%
		12 VDC	250 mA	81%
		15 VDC	200 mA	82%
		±5 VDC	300 mA	78%
		±12 VDC	125 mA	81%
		±15 VDC	100 mA	81%
TMR 3-1210HI TMR 3-1211HI TMR 3-1212HI TMR 3-1213HI TMR 3-1221HI TMR 3-1222HI TMR 3-1223HI	9 – 18 VDC (12 VDC nom.)	3.3 VDC	700 mA	77%
		5 VDC	600 mA	81%
		12 VDC	250 mA	83%
		15 VDC	200 mA	83%
		±5 VDC	300 mA	82%
		±12 VDC	125 mA	83%
		±15 VDC	100 mA	83%
TMR 3-2410HI TMR 3-2411HI TMR 3-2412HI TMR 3-2413HI TMR 3-2421HI TMR 3-2422HI TMR 3-2423HI	18 – 36 VDC (24 VDC nom.)	3.3 VDC	700 mA	76%
		5 VDC	600 mA	82%
		12 VDC	250 mA	83%
		15 VDC	200 mA	84%
		±5 VDC	300 mA	80%
		±12 VDC	125 mA	83%
		±15 VDC	100 mA	85%
TMR 3-4810HI TMR 3-4811HI TMR 3-4812HI TMR 3-4813HI TMR 3-4821HI TMR 3-4822HI TMR 3-4823HI	36 – 75 VDC (48 VDC nom.)	3.3 VDC	700 mA	74%
		5 VDC	600 mA	79%
		12 VDC	250 mA	81%
		15 VDC	200 mA	82%
		±5 VDC	300 mA	79%
		±12 VDC	125 mA	82%
		±15 VDC	100 mA	83%

TVN 3

3 Watt



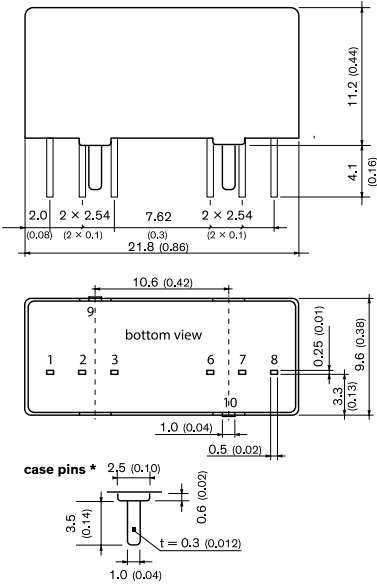
- Ultra low ripple and noise 10 mVp-p typ.
- Compact SIP-8 package
- Fully regulated outputs
- Input Voltage range 4.5–13.2, 9–18, 18–36, 36–75 VDC
- I/O-isolation 1600 VDC
- Operating temperature range -40°C to $+90^{\circ}\text{C}$
- Short circuit protection
- No minimum load required
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	On/Off	On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9/10	Case	Case

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TVN 3-0910 TVN 3-0911 TVN 3-0919 TVN 3-0912 TVN 3-0913 TVN 3-0915 TVN 3-0921 TVN 3-0922 TVN 3-0923	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	700 mA	75%
		5.0 VDC	600 mA	79%
		9.0 VDC	333 mA	80%
		12 VDC	250 mA	83%
		15 VDC	200 mA	83%
		24 VDC	125 mA	82%
		± 5.0 VDC	±300 mA	78%
		± 12 VDC	±125 mA	82%
		± 15 VDC	±100 mA	81%
TVN 3-1210 TVN 3-1211 TVN 3-1219 TVN 3-1212 TVN 3-1213 TVN 3-1215 TVN 3-1221 TVN 3-1222 TVN 3-1223	9 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	77%
		5.0 VDC	600 mA	81%
		9.0 VDC	333 mA	80%
		12 VDC	250 mA	85%
		15 VDC	200 mA	84%
		24 VDC	125 mA	84%
		± 5.0 VDC	±300 mA	82%
		± 12 VDC	±125 mA	84%
		± 15 VDC	±100 mA	83%
TVN 3-2410 TVN 3-2411 TVN 3-2419 TVN 3-2412 TVN 3-2413 TVN 3-2415 TVN 3-2421 TVN 3-2422 TVN 3-2423	18 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	76%
		5.0 VDC	600 mA	82%
		9.0 VDC	333 mA	82%
		12 VDC	250 mA	85%
		15 VDC	200 mA	85%
		24 VDC	125 mA	84%
		± 5.0 VDC	±300 mA	80%
		± 12 VDC	±125 mA	84%
		± 15 VDC	±100 mA	85%
TVN 3-4810 TVN 3-4811 TVN 3-4819 TVN 3-4812 TVN 3-4813 TVN 3-4815 TVN 3-4821 TVN 3-4822 TVN 3-4823	36 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	74%
		5.0 VDC	600 mA	80%
		9.0 VDC	333 mA	80%
		12 VDC	250 mA	84%
		15 VDC	200 mA	84%
		24 VDC	125 mA	84%
		± 5.0 VDC	±300 mA	79%
		± 12 VDC	±125 mA	84%
		± 15 VDC	±100 mA	83%

TMR 3WIR

3 Watt



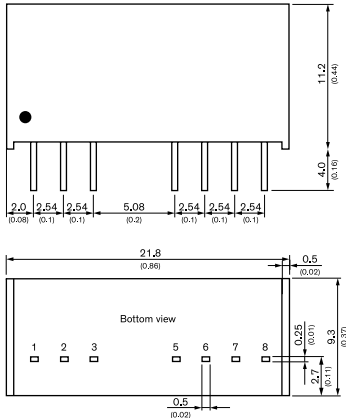
- Compact SIP-8 metal case
- EN 50155 railway approval
- Ultra wide 4:1 Input: 9–36, 18–75 and 43–160 VDC
- I/O-isolation 3'000 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +90°C
- Short circuit protection and current limitation
- Remote On/Off
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9, 10	Case	Case

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 3-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	700 mA	76%
TMR 3-2411WIR		5 VDC	600 mA	81%
TMR 3-2419WIR		9VDC	333 mA	81%
TMR 3-2412WIR		12 VDC	250 mA	83%
TMR 3-2413WIR		15 VDC	200 mA	83%
TMR 3-2415WIR		24 VDC	125 mA	82%
TMR 3-2421WIR		± 5 VDC	300 mA	80%
TMR 3-2422WIR		±12 VDC	125 mA	82%
TMR 3-2423WIR		±15 VDC	100 mA	82%
TMR 3-4810WIR	18 – 75 VDC (48 VDC nom.)	3.3 VDC	700 mA	75%
TMR 3-4811WIR		5 VDC	600 mA	81%
TMR 3-4819WIR		9VDC	333 mA	81%
TMR 3-4812WIR		12 VDC	250 mA	82%
TMR 3-4813WIR		15 VDC	200 mA	82%
TMR 3-4815WIR		24 VDC	125 mA	82%
TMR 3-4821WIR		± 5 VDC	300 mA	80%
TMR 3-4822WIR		±12 VDC	125 mA	82%
TMR 3-4823WIR		±15 VDC	100 mA	82%
TMR 3-7210WIR	43 – 160 VDC (110 VDC nom.)	3.3 VDC	700 mA	76%
TMR 3-7211WIR		5 VDC	600 mA	80%
TMR 3-7219WIR		9VDC	333 mA	81%
TMR 3-7212WIR		12 VDC	250 mA	82%
TMR 3-7213WIR		15 VDC	200 mA	83%
TMR 3-7215WIR		24 VDC	125 mA	83%
TMR 3-7221WIR		± 5 VDC	300 mA	80%
TMR 3-7222WIR		±12 VDC	125 mA	83%
TMR 3-7223WIR		±15 VDC	100 mA	81%

TMR 4

4 Watt



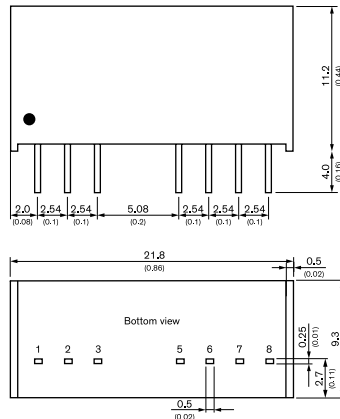
- Wide 2:1 input voltage range
- Fully regulated output voltage
- Compact SIP-8 package
- 1600 VDC I/O isolation (functional insulation)
- Small footprint
- Temperature range –40° to +85°C
- High efficiency up to 85%
- Short-circuit protection
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
3	Remote On/Off	Remote On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 4-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	800 mA	78%
TMR 4-1212		12 VDC	333 mA	82%
TMR 4-1213		15 VDC	266 mA	82%
TMR 4-1215		24 VDC	166 mA	82%
TMR 4-1222		±12 VDC	±166 mA	82%
TMR 4-1223		±15 VDC	±133 mA	82%
TMR 4-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	800 mA	79%
TMR 4-2412		12 VDC	333 mA	83%
TMR 4-2413		15 VDC	266 mA	83%
TMR 4-2415		24 VDC	166 mA	83%
TMR 4-2422		±12 VDC	±166 mA	83%
TMR 4-2423		±15 VDC	±133 mA	83%
TMR 4-4811	18 – 75 VDC (48 VDC nom.)	5 VDC	800 mA	78%
TMR 4-4812		12 VDC	333 mA	82%
TMR 4-4813		15 VDC	266 mA	82%
TMR 4-4815		24 VDC	166 mA	82%
TMR 4-4822		±12 VDC	±166 mA	82%
TMR 4-4823		±15 VDC	±133 mA	82%

TMR 4WI

4 Watt



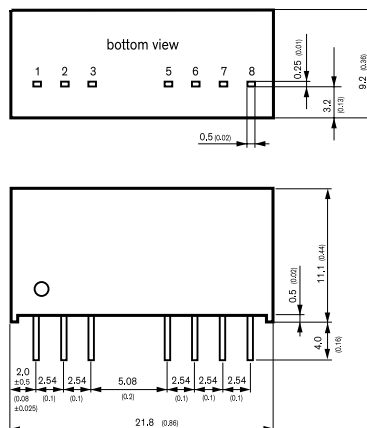
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMR 4-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	800 mA	79%
TMR 4-2412WI		12 VDC	333 mA	83%
TMR 4-2413WI		15 VDC	266 mA	83%
TMR 4-2415WI		24 VDC	166 mA	83%
TMR 4-2422WI		±12 VDC	166 mA	83%
TMR 4-2423WI		±15 VDC	133 mA	83%
TMR 4-4811WI	18 – 75 VDC (48 VDC nom.)	5 VDC	800 mA	78%
TMR 4-4812WI		12 VDC	333 mA	82%
TMR 4-4813WI		15 VDC	266 mA	82%
TMR 4-4815WI		24 VDC	166 mA	82%
TMR 4-4822WI		±12 VDC	166 mA	82%
TMR 4-4823WI		±15 VDC	133 mA	82%

- Highest power density in SIP package
- Ultra wide 4:1 input range
- Small footprint: 21.8 × 9.2 mm
- Temperature range –40° to +85°C
- High efficiency up to 82%
- Excellent load and line regulation
- Short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
3	Remote On/Off	Remote On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

TMR 6

6 Watt



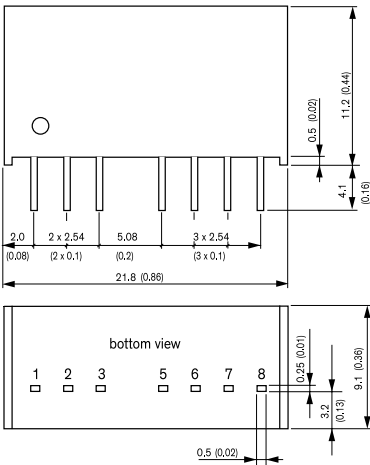
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMR 6-0510	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	1'300 mA	77%
TMR 6-0511		5 VDC	1'200 mA	81%
TMR 6-0519		9 VDC	666 mA	83%
TMR 6-0512		12 VDC	500 mA	84%
TMR 6-0513		15 VDC	400 mA	84%
TMR 6-0515	9 – 18 VDC (12 VDC nom.)	24 VDC	250 mA	84%
TMR 6-0521		±5 VDC	600 mA	81%
TMR 6-0522		±12 VDC	250 mA	84%
TMR 6-0523		±15 VDC	200 mA	84%
TMR 6-1210	18 – 36 VDC (24 VDC nom.)	3.3 VDC	1'300 mA	78%
TMR 6-1211		5 VDC	1'200 mA	83%
TMR 6-1219		9 VDC	666 mA	85%
TMR 6-1212		12 VDC	500 mA	85%
TMR 6-1213		15 VDC	400 mA	85%
TMR 6-1215	36 – 75 VDC (48 VDC nom.)	24 VDC	250 mA	84%
TMR 6-1221		±5 VDC	600 mA	82%
TMR 6-1222		±12 VDC	250 mA	84%
TMR 6-1223		±15 VDC	200 mA	85%
TMR 6-2410	9 – 18 VDC (12 VDC nom.)	3.3 VDC	1'300 mA	78%
TMR 6-2411		5 VDC	1'200 mA	83%
TMR 6-2419		9 VDC	666 mA	85%
TMR 6-2412		12 VDC	500 mA	86%
TMR 6-2413		15 VDC	400 mA	86%
TMR 6-2415	18 – 36 VDC (24 VDC nom.)	24 VDC	250 mA	85%
TMR 6-2421		±5 VDC	600 mA	82%
TMR 6-2422		±12 VDC	250 mA	85%
TMR 6-2423		±15 VDC	200 mA	85%
TMR 6-4810	9 – 18 VDC (12 VDC nom.)	3.3 VDC	1'300 mA	78%
TMR 6-4811		5 VDC	1'200 mA	82%
TMR 6-4819		9 VDC	666 mA	84%
TMR 6-4812		12 VDC	500 mA	85%
TMR 6-4813		15 VDC	400 mA	86%
TMR 6-4815	36 – 75 VDC (48 VDC nom.)	24 VDC	250 mA	84%
TMR 6-4821		±5 VDC	600 mA	82%
TMR 6-4822		±12 VDC	250 mA	84%
TMR 6-4823		±15 VDC	200 mA	85%

- Ultra-compact SIP-8 package
- Wide 2:1 input voltage range
- Continuous short-circuit protection
- Temperature range –40° to +78°C
- High efficiency up to 86%
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

TMR 6WI

6 Watt



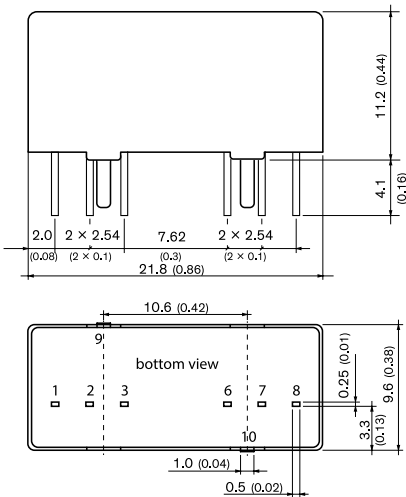
- Highest power density in SIP package
- Wide 4:1 input voltage range
- Ultra-compact SIP-8 package
- Smallest footprint 6 W converter
- Temperature range –40° to +84°C
- High efficiency up to 88%
- Indefinite short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 6-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	1'500 mA	81%
TMR 6-2411WI		5 VDC	1'200 mA	84%
TMR 6-2419WI		9 VDC	666 mA	86%
TMR 6-2412WI		12 VDC	500 mA	87%
TMR 6-2413WI		15 VDC	400 mA	88%
TMR 6-2415WI		24 VDC	250 mA	87%
TMR 6-2421WI		±5 VDC	600 mA	84%
TMR 6-2422WI		±12 VDC	250 mA	87%
TMR 6-2423WI		±15 VDC	200 mA	87%
TMR 6-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	1'500 mA	81%
TMR 6-4811WI		5 VDC	1'200 mA	84%
TMR 6-4819WI		9 VDC	666 mA	85%
TMR 6-4812WI		12 VDC	500 mA	87%
TMR 6-4813WI		15 VDC	400 mA	87%
TMR 6-4815WI		24 VDC	250 mA	87%
TMR 6-4821WI		±5 VDC	600 mA	84%
TMR 6-4822WI		±12 VDC	250 mA	87%
TMR 6-4823WI		±15 VDC	200 mA	87%

TMR 6WIR

6 Watt



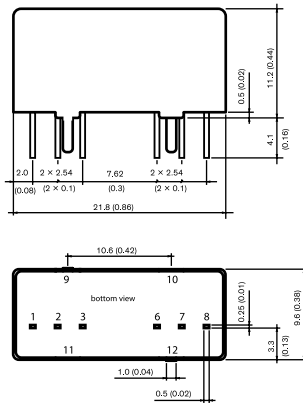
- Compact SIP-8 metal case
- EN 50155 railway approval
- Ultra wide 4:1 Input: 9–36, 18–75 and 43–160 VDC
- I/O-isolation 3'000 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Short circuit protection and current limitation
- Remote On/Off
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9, 10	Case	Case

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 6-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	1500 mA	81%
TMR 6-2411WIR		5 VDC	1200 mA	84%
TMR 6-2419WIR		9VDC	666 mA	86%
TMR 6-2412WIR		12 VDC	500 mA	87%
TMR 6-2413WIR		15 VDC	400 mA	88%
TMR 6-2415WIR		24 VDC	250 mA	87%
TMR 6-2421WIR		± 5 VDC	600 mA	84%
TMR 6-2422WIR		±12 VDC	250 mA	87%
TMR 6-2423WIR		±15 VDC	200 mA	87%
TMR 6-4810WIR	18 – 75 VDC (48 VDC nom.)	3.3 VDC	1500 mA	81%
TMR 6-4811WIR		5 VDC	1200 mA	84%
TMR 6-4819WIR		9VDC	666 mA	85%
TMR 6-4812WIR		12 VDC	500 mA	87%
TMR 6-4813WIR		15 VDC	400 mA	87%
TMR 6-4815WIR		24 VDC	250 mA	87%
TMR 6-4821WIR		± 5 VDC	600 mA	84%
TMR 6-4822WIR		±12 VDC	250 mA	87%
TMR 6-4823WIR		±15 VDC	200 mA	87%
TMR 6-7210WIR	43 – 160 VDC (110 VDC nom.)	3.3 VDC	1500 mA	80%
TMR 6-7211WIR		5 VDC	1200 mA	83%
TMR 6-7219WIR		9VDC	666 mA	85%
TMR 6-7212WIR		12 VDC	500 mA	86%
TMR 6-7213WIR		15 VDC	400 mA	86%
TMR 6-7215WIR		24 VDC	250 mA	86%
TMR 6-7221WIR		± 5 VDC	600 mA	83%
TMR 6-7222WIR		±12 VDC	250 mA	86%
TMR 6-7223WIR		±15 VDC	200 mA	86%

TMR 9

9 Watt



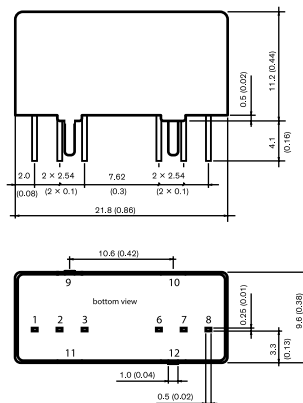
- Highest power density in SIP-8 metal package (optional plastic package)
- Wide 2:1 input voltage range
- Temperature range -40° to $+85^{\circ}\text{C}$
- High efficiency up to 89%
- Indefinite short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9	Case	Case
10	Stand Off	Stand Off
11	Stand Off	Stand Off
12	Case	Case

Model	Input Voltage Range	Vnom	Output I _{max}	Efficiency
TMR 9-1210	9 – 18 VDC (12 VDC nom.)	3.3 VDC	2'000 mA	81%
TMR 9-1211		5 VDC	1'600 mA	85%
TMR 9-1219		9 VDC	1'000 mA	87%
TMR 9-1212		12 VDC	750 mA	88%
TMR 9-1213		15 VDC	600 mA	89%
TMR 9-1215		24 VDC	375 mA	89%
TMR 9-1221		±5 VDC	800 mA	85%
TMR 9-1222	±12 VDC	±12 VDC	375 mA	88%
TMR 9-1223		±15 VDC	300 mA	89%
TMR 9-2410	18 – 36 VDC (24 VDC nom.)	3.3 VDC	2'000 mA	82%
TMR 9-2411		5 VDC	1'600 mA	85%
TMR 9-2419		9 VDC	1'000 mA	88%
TMR 9-2412		12 VDC	750 mA	89%
TMR 9-2413		15 VDC	600 mA	90%
TMR 9-2415		24 VDC	375 mA	90%
TMR 9-2421		±5 VDC	800 mA	86%
TMR 9-2422	±12 VDC	±12 VDC	375 mA	89%
TMR 9-2423		±15 VDC	300 mA	87%
TMR 9-4810	36 – 75 VDC (48 VDC nom.)	3.3 VDC	2'000 mA	82%
TMR 9-4811		5 VDC	1'600 mA	85%
TMR 9-4819		9 VDC	1'000 mA	88%
TMR 9-4812		12 VDC	750 mA	89%
TMR 9-4813		15 VDC	600 mA	89%
TMR 9-4815		24 VDC	375 mA	89%
TMR 9-4821		±5 VDC	800 mA	86%
TMR 9-4822	±12 VDC	±12 VDC	375 mA	87%
TMR 9-4823		±15 VDC	300 mA	87%

TMR 9WI

9 Watt



- Highest power density in SIP-8 metal package (optional plastic package)
- Ultra wide 4:1 input voltage range
- Temperature range -40° to $+85^{\circ}\text{C}$
- High efficiency up to 89%
- Indefinite short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

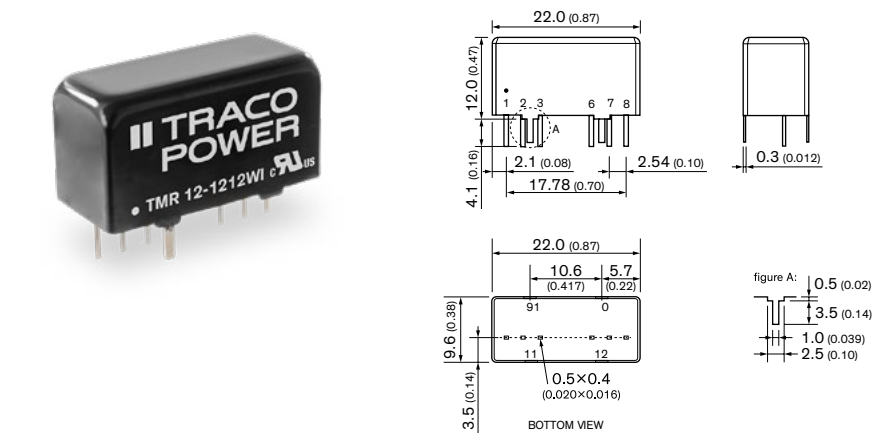
Pinout		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9	Case	Case
10	Stand Off	Stand Off
11	Stand Off	Stand Off
12	Case	Case

Model	Input Voltage Range	Vnom	Output I _{max}	Efficiency
TMR 9-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	2'000 mA	82%
TMR 9-2411WI		5 VDC	1'600 mA	85%
TMR 9-2419WI		9 VDC	1'000 mA	88%
TMR 9-2412WI		12 VDC	750 mA	88%
TMR 9-2413WI		15 VDC	600 mA	89%
TMR 9-2415WI		24 VDC	375 mA	89%
TMR 9-2421WI		±5 VDC	800 mA	86%
TMR 9-2422WI	±12 VDC	±12 VDC	375 mA	88%
TMR 9-2423WI		±15 VDC	300 mA	88%
TMR 9-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	2'000 mA	82%
TMR 9-4811WI		5 VDC	1'600 mA	85%
TMR 9-4819WI		9 VDC	1'000 mA	89%
TMR 9-4812WI		12 VDC	750 mA	89%
TMR 9-4813WI		15 VDC	600 mA	89%
TMR 9-4815WI		24 VDC	375 mA	89%
TMR 9-4821WI		±5 VDC	800 mA	85%
TMR 9-4822WI	±12 VDC	±12 VDC	375 mA	88%
TMR 9-4823WI		±15 VDC	300 mA	87%

TMR 12WI

NEW!

12 Watt



- Highest power density in SIP-8 metal package
- Ultra wide 4:1 input voltage range
- Temperature range –40° to +85°C
- High efficiency up to 90%
- Continuous short-circuit protection
- I/O isolation 3000 VDC
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

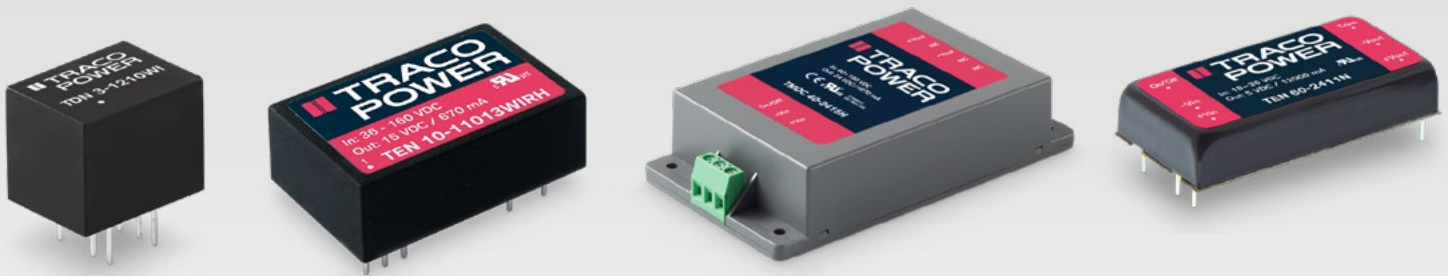
Pinout		
Pin	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout
9	Case	Case
10	Stand off	Stand off
11	Stand off	Stand off
12	Case	Case

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMR 12-1210WI	4.5 – 18 VDC	3.3 VDC	3'000 mA	87%
TMR 12-1211WI		5.1 VDC	2'400 mA	88.5%
TMR 12-1219WI		9 VDC	1'333 mA	87%
TMR 12-1212WI		12 VDC	1'000 mA	89%
TMR 12-1213WI		15 VDC	800 mA	89%
TMR 12-1215WI		24 VDC	500 mA	90%
TMR 12-1221WI		±5 VDC	±1'200 mA	85.5%
TMR 12-1222WI		±12 VDC	±500 mA	89%
TMR 12-1223WI		±15 VDC	±400 mA	89%
TMR 12-2410WI	9 – 36 VDC	3.3 VDC	3'000 mA	87%
TMR 12-2411WI		5.1 VDC	2'400 mA	89%
TMR 12-2419WI		9 VDC	1'333 mA	87%
TMR 12-2412WI		12 VDC	1'000 mA	89%
TMR 12-2413WI		15 VDC	800 mA	89%
TMR 12-2415WI		24 VDC	500 mA	80%
TMR 12-2421WI		±5 VDC	±1'200 mA	86%
TMR 12-2422WI		±12 VDC	±500 mA	89%
TMR 12-2423WI		±15 VDC	±400 mA	89%
TMR 12-4810WI	18 – 75 VDC	3.3 VDC	3'000 mA	87%
TMR 12-4811WI		5.1 VDC	2'400 mA	89%
TMR 12-4819WI		9 VDC	1'333 mA	87%
TMR 12-4812WI		12 VDC	1'000 mA	89%
TMR 12-4813WI		15 VDC	800 mA	89%
TMR 12-4815WI		24 VDC	500 mA	90%
TMR 12-4821WI		±5 VDC	±1'200 mA	86%
TMR 12-4822WI		±12 VDC	±500 mA	89.5%
TMR 12-4823WI		±15 VDC	±400 mA	89%

High Performance DC/DC Converters

1 – 80 watt

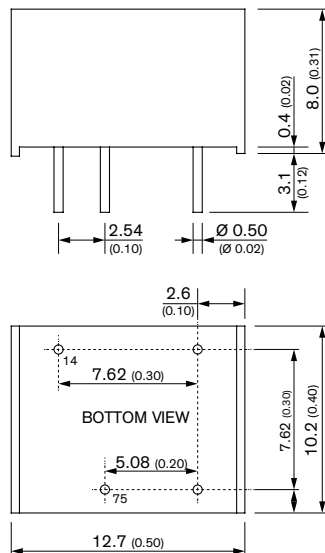
TRACO POWER's DIP package isolated DC/DC Converters provide a complete range of compact products from 1 to 60 watts with non-regulated, semi-regulated and fully regulated outputs.



TDU 1

NEW!

1 Watt



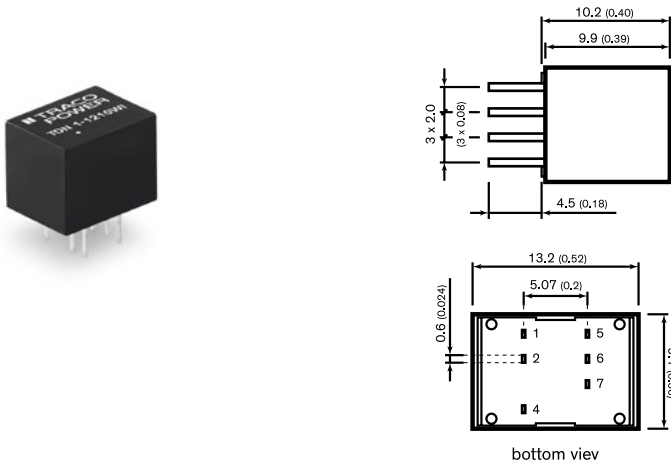
- Compact 1W Converter in DIP package
- Cost efficient design
- I/O-isolation 1500 VDC
- Unregulated device
- Input voltage ranges ($\pm 10\%$): 5, 12, 24 VDC
- Operating temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- Short circuit protection
- 3-year product warranty

Pinout	
Pin	Function
1	-Vin
2	+Vin
3	+Vout
4	-Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TDU 1-0511	5 VDC $\pm 10\%$ (nominal 5 VDC)	5 VDC	200 mA	80%
TDU 1-0512		12 VDC	84 mA	82%
TDU 1-0513		15 VDC	67 mA	83%
TDU 1-1211	12 VDC $\pm 10\%$ (nominal 12 VDC)	5 VDC	200 mA	79%
TDU 1-1212		12 VDC	84 mA	81%
TDU 1-1213		15 VDC	67 mA	82%
TDU 1-2411	24 VDC $\pm 10\%$ (nominal 24 VDC)	5 VDC	200 mA	78%
TDU 1-2412		12 VDC	84 mA	80%
TDU 1-2413		15 VDC	67 mA	81%

TDN 1WI

1 Watt



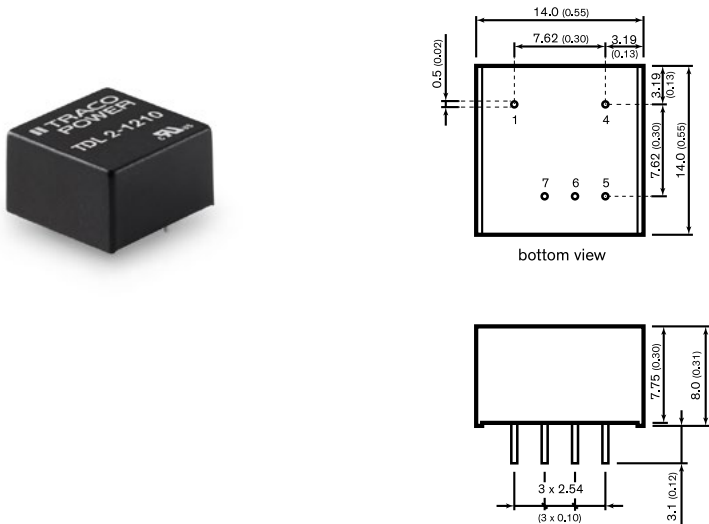
- Compact DIP package
13.2 × 9.1 × 10.2 mm
- Fully regulated outputs
- I/O-isolation 1600 VDC
- Operating temperature range
–40°C to +90°C without derating
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	On/Off	On/Off
5	no con.	–Vout
6	–Vout	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDN 1-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	300 mA	77%
TDN 1-1211WI		5.0 VDC	200 mA	79%
TDN 1-1219WI		9.0 VDC	112 mA	79%
TDN 1-1212WI		12 VDC	90 mA	81%
TDN 1-1213WI		15 VDC	70 mA	81%
TDN 1-1215WI		24 VDC	45 mA	80%
TDN 1-1221WI		± 5.0 VDC	±100 mA	77%
TDN 1-1222WI		±12 VDC	±45 mA	80%
TDN 1-1223WI		±15 VDC	±35 mA	81%
TDN 1-2410WI		3.3 VDC	300 mA	76%
TDN 1-2411WI	9 – 36 VDC (24 VDC nominal)	5.0 VDC	200 mA	78%
TDN 1-2419WI		9.0 VDC	112 mA	79%
TDN 1-2412WI		12 VDC	90 mA	81%
TDN 1-2413WI		15 VDC	70 mA	81%
TDN 1-2415WI		24 VDC	45 mA	80%
TDN 1-2421WI		± 5.0 VDC	±100 mA	77%
TDN 1-2422WI		±12 VDC	±45 mA	80%
TDN 1-2423WI		±15 VDC	±35 mA	81%
TDN 1-4810WI		3.3 VDC	300 mA	75%
TDN 1-4811WI	18 – 75 VDC (48 VDC nominal)	5.0 VDC	200 mA	78%
TDN 1-4819WI		9.0 VDC	112 mA	79%
TDN 1-4812WI		12 VDC	90 mA	81%
TDN 1-4813WI		15 VDC	70 mA	81%
TDN 1-4815WI		24 VDC	45 mA	80%
TDN 1-4821WI		± 5.0 VDC	±100 mA	77%
TDN 1-4822WI		±12 VDC	±45 mA	80%
TDN 1-4823WI		±15 VDC	±35 mA	81%

TDL 2

2 Watt



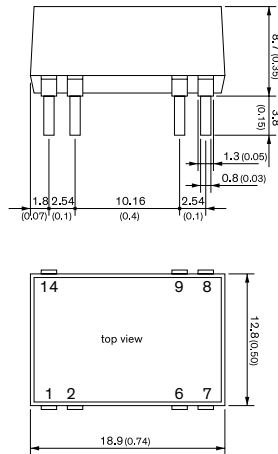
- Compact 2W Converter in
DIP package
- I/O-isolation 1500 VDC
- Fully regulated outputs
- Wide 2 : 1 input voltage range
- Operating temperature range
–40°C to +80°C
- Short circuit protection
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
4	+Vin (Vcc)	+Vin (Vcc)
5	+Vout	+Vout
6	no pin	Common
7	–Vout	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDL 2-0510	4.5 – 10 VDC (5 VDC nominal)	3.3 VDC	400 mA	79%
TDL 2-0511		5.0 VDC	400 mA	81%
TDL 2-0512		12 VDC	167 mA	85%
TDL 2-0513		15 VDC	134 mA	87%
TDL 2-0521		±5.0 VDC	±200 mA	83%
TDL 2-0522		±12 VDC	±83 mA	85%
TDL 2-0523		±15 VDC	±67 mA	85%
TDL 2-1210		3.3 VDC	400 mA	80%
TDL 2-1211		5.0 VDC	400 mA	83%
TDL 2-1212		12 VDC	167 mA	87%
TDL 2-1213	9 – 18 VDC (12 VDC nominal)	15 VDC	134 mA	87%
TDL 2-1221		±5.0 VDC	±200 mA	84%
TDL 2-1222		±12 VDC	±83 mA	86%
TDL 2-1223		±15 VDC	±67 mA	86%
TDL 2-2410		3.3 VDC	400 mA	79%
TDL 2-2411	18 – 36 VDC (24 VDC nominal)	5.0 VDC	400 mA	84%
TDL 2-2412		12 VDC	167 mA	86%
TDL 2-2413		15 VDC	134 mA	87%
TDL 2-2421		±5.0 VDC	±200 mA	84%
TDL 2-2422		±12 VDC	±83 mA	86%
TDL 2-2423		±15 VDC	±67 mA	86%
TDL 2-4810		3.3 VDC	400 mA	79%
TDL 2-4811	36 – 75 VDC (48 VDC nominal)	5.0 VDC	400 mA	83%
TDL 2-4812		12 VDC	167 mA	85%
TDL 2-4813		15 VDC	134 mA	86%
TDL 2-4821		±5.0 VDC	±200 mA	82%
TDL 2-4822		±12 VDC	±83 mA	84%
TDL 2-4823		±15 VDC	±67 mA	84%

TDR 2

2 Watt



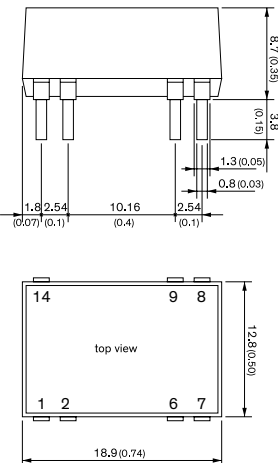
- Compact design in SMD or DIP package
- Wide 2:1 input voltage range
- Fully regulated outputs
- Low ripple and noise
- No minimum load required
- Temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 2-0511	4.5 – 9.0 VDC (5 VDC nominal)	5.0 VDC	400 mA	80%
TDR 2-0512		12 VDC	167 mA	81%
TDR 2-0513		15 VDC	134 mA	83%
TDR 2-0522		±12 VDC	±83 mA	81%
TDR 2-0523	9 – 18 VDC (12 VDC nominal)	±15 VDC	±67 mA	82%
TDR 2-1211		5.0 VDC	400 mA	81%
TDR 2-1212		12 VDC	167 mA	81%
TDR 2-1213		15 VDC	134 mA	84%
TDR 2-1222	18 – 36 VDC (24 VDC nominal)	±12 VDC	±83 mA	83%
TDR 2-1223		±15 VDC	±67 mA	82%
TDR 2-2411		5.0 VDC	400 mA	81%
TDR 2-2412		12 VDC	167 mA	84%
TDR 2-2413	36 – 75 VDC (48 VDC nominal)	15 VDC	134 mA	84%
TDR 2-2422		±12 VDC	±83 mA	84%
TDR 2-2423		±15 VDC	±67 mA	84%
TDR 2-4811		5.0 VDC	400 mA	81%
TDR 2-4812	36 – 75 VDC (48 VDC nominal)	12 VDC	167 mA	82%
TDR 2-4813		15 VDC	134 mA	82%
TDR 2-4822		±12 VDC	±83 mA	83%
TDR 2-4823		±15 VDC	±67 mA	83%

TDR 2WI

2 Watt



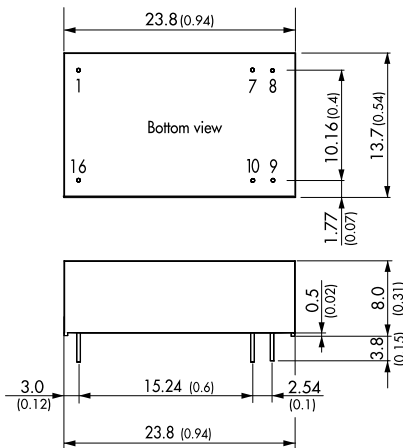
- Compact design in SMD or DIP package
- Ultra wide 4:1 input voltage range
- Fully regulated outputs
- Low ripple and noise 30mV pk-pk
- No minimum load required
- Temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 2-1211WI	4.5 – 18 VDC (12 VDC nominal)	5.0 VDC	400 mA	79%
TDR 2-1212WI		12 VDC	167 mA	80%
TDR 2-1213WI		15 VDC	134 mA	81%
TDR 2-1222WI		±12 VDC	±83 mA	81%
TDR 2-1223WI	9 – 36 VDC (24 VDC nominal)	±15 VDC	±67 mA	81%
TDR 2-2411WI		5.0 VDC	400 mA	79%
TDR 2-2412WI		12 VDC	167 mA	80%
TDR 2-2413WI		15 VDC	134 mA	82%
TDR 2-2422WI	18 – 75 VDC (48 VDC nominal)	±12 VDC	±83 mA	81%
TDR 2-2423WI		±15 VDC	±67 mA	81%
TDR 2-4811WI		5.0 VDC	400 mA	78%
TDR 2-4812WI		12 VDC	167 mA	81%
TDR 2-4813WI	18 – 75 VDC (48 VDC nominal)	15 VDC	134 mA	82%
TDR 2-4822WI		±12 VDC	±83 mA	81%
TDR 2-4823WI		±15 VDC	±67 mA	81%

TEL 2

2 Watt



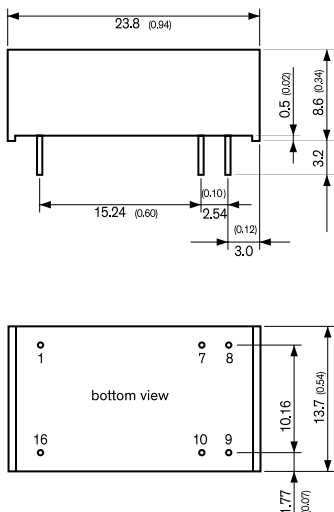
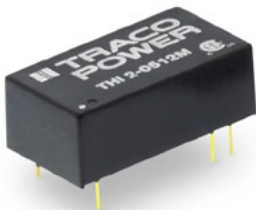
- Ultracompact DIP-16 plastic package
- Wide 2:1 input range
- Regulated output
- I/O isolation 1500V
- Input filter meets EN55032, class A without ext. components
- Low ripple and noise
- Indefinite shortcircuit protection
- Operating temperature range –40°C to +80°C
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
7	No con.	No con.
8	No con.	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin	+Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 2-0510	4.5 – 9 VDC (nominal 5 VDC)	3.3 VDC	500 mA	70%
TEL 2-0511		5 VDC	400 mA	73%
TEL 2-0512		12 VDC	165 mA	75%
TEL 2-0513		15 VDC	135 mA	73%
TEL 2-0521		±5 VDC	±200 mA	64%
TEL 2-0522		±12 VDC	±85 mA	69%
TEL 2-0523		±15 VDC	±65 mA	71%
TEL 2-1210	9 – 18 VDC (nominal 12 VDC)	3.3 VDC	500 mA	73%
TEL 2-1211		5 VDC	400 mA	77%
TEL 2-1212		12 VDC	165 mA	80%
TEL 2-1213		15 VDC	135 mA	80%
TEL 2-1221		±5 VDC	±200 mA	73%
TEL 2-1222		±12 VDC	±85 mA	78%
TEL 2-1223		±15 VDC	±65 mA	78%
TEL 2-2410	18 – 36 VDC (nominal 24 VDC)	3.3 VDC	500 mA	72%
TEL 2-2411		5 VDC	400 mA	77%
TEL 2-2412		12 VDC	165 mA	80%
TEL 2-2413		15 VDC	135 mA	81%
TEL 2-2421		±5 VDC	±200 mA	74%
TEL 2-2422		±12 VDC	±85 mA	78%
TEL 2-2423		±15 VDC	±65 mA	80%
TEL 2-4810	36 – 75 VDC (nominal 48 VDC)	3.3 VDC	500 mA	71%
TEL 2-4811		5 VDC	400 mA	73%
TEL 2-4812		12 VDC	165 mA	79%
TEL 2-4813		15 VDC	135 mA	79%
TEL 2-4821		±5 VDC	±200 mA	71%
TEL 2-4822		±12 VDC	±85 mA	77%
TEL 2-4823		±15 VDC	±65 mA	77%

THI 2M

2 Watt



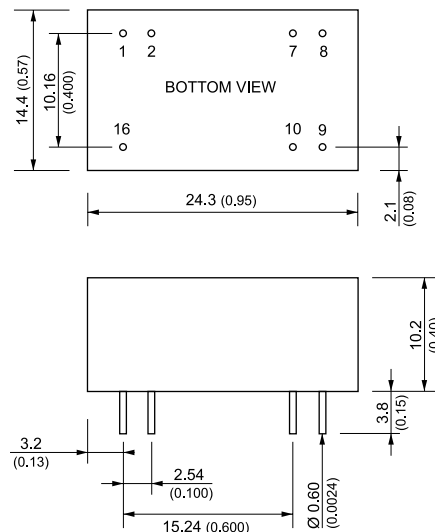
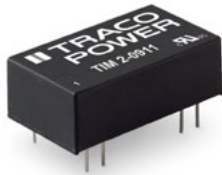
- Ultracompact DIP 16 package
- I/O isolation 3000 VACrms rated for 300 Vrms working voltage
- Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd edition, 2 × MOOP
- Industrial safety to IEC/EN/UL 60950-1
- Operating temp. range –40°C to +71°C
- 3-years product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
7	No con.	No con.
8	No con.	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin	+Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THI 2-0511M	5.0 VDC ± 10% (nominal 5 VDC)	5 VDC	400 mA	66%
THI 2-0512M		12 VDC	165 mA	66%
THI 2-0513M		15 VDC	133 mA	66%
THI 2-0522M		±12 VDC	±83 mA	72%
THI 2-0523M		±15 VDC	±66 mA	73%
THI 2-1211M	12.0 VDC ± 10% (nominal 12 VDC)	5 VDC	400 mA	66%
THI 2-1212M		12 VDC	165 mA	66%
THI 2-1213M		15 VDC	133 mA	66%
THI 2-1222M		±12 VDC	±83 mA	74%
THI 2-1223M		±15 VDC	±66 mA	75%
THI 2-2411M	24 VDC ± 10% (nominal 24 VDC)	5 VDC	400 mA	66%
THI 2-2412M		12 VDC	165 mA	66%
THI 2-2413M		15 VDC	133 mA	66%
THI 2-2422M		±12 VDC	±83 mA	74%
THI 2-2423M		±15 VDC	±66 mA	75%

TIM 2

2 Watt



- Compact DIP-16-package
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP and operation to 5000 m altitude
- Low leakage current $< 2 \mu\text{A}$
- Extended operation temperature range -40°C to 95°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A

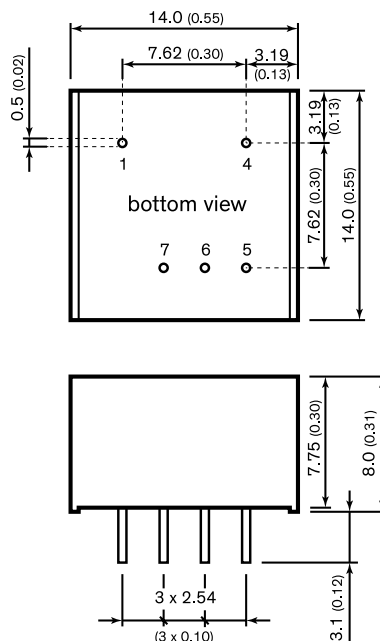
Pinout / Connection

Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	Remote	Remote
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TIM 2-0910	4.5 – 12 VDC (9 VDC nom.)	3.3 VDC	600 mA	75%
TIM 2-0911		5 VDC	400 mA	78%
TIM 2-0919		9 VDC	222 mA	78%
TIM 2-0912		12 VDC	167 mA	82%
TIM 2-0913		15 VDC	134 mA	82%
TIM 2-0915		24 VDC	83 mA	82%
TIM 2-0922	9 – 18 VDC (12 VDC nom.)	±12 VDC	83 mA	82%
TIM 2-0923		±15 VDC	67 mA	80%
TIM 2-1210		3.3 VDC	600 mA	76%
TIM 2-1211		5 VDC	400 mA	78%
TIM 2-1219		9 VDC	222 mA	79%
TIM 2-1212		12 VDC	167 mA	82%
TIM 2-1213		15 VDC	134 mA	82%
TIM 2-1215		24 VDC	83 mA	81%
TIM 2-1222	18 – 36 VDC (24 VDC nom.)	±12 VDC	83 mA	81%
TIM 2-1223		±15 VDC	67 mA	81%
TIM 2-2410		3.3 VDC	600 mA	76%
TIM 2-2411		5 VDC	400 mA	79%
TIM 2-2419		9 VDC	222 mA	80%
TIM 2-2412		12 VDC	167 mA	81%
TIM 2-2413		15 VDC	134 mA	81%
TIM 2-2415		24 VDC	83 mA	81%
TIM 2-2422	36 – 75 VDC (48 VDC nom.)	±12 VDC	83 mA	81%
TIM 2-2423		±15 VDC	67 mA	81%
TIM 2-4810		3.3 VDC	600 mA	76%
TIM 2-4811		5 VDC	400 mA	78%
TIM 2-4819		9 VDC	222 mA	79%
TIM 2-4812		12 VDC	167 mA	80%
TIM 2-4813		15 VDC	134 mA	82%
TIM 2-4815		24 VDC	83 mA	81%
TIM 2-4822		±12 VDC	83 mA	81%
TIM 2-4823		±15 VDC	67 mA	81%

TDL 3

3 Watt



Pinout

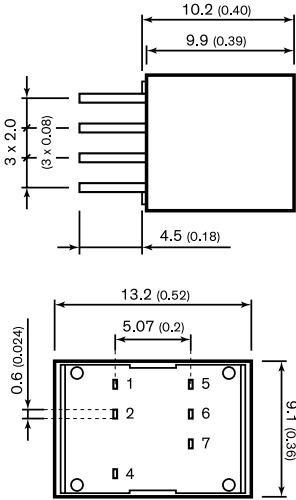
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
4	+Vin (Vcc)	+Vin (Vcc)
5	+Vout	+Vout
6	no pin	Common
7	–Vout	–Vout

- Compact 3W Converter in DIP package
- I/O-isolation 1500 VDC
- Fully regulated outputs
- Wide 2:1 input voltage range
- Operating temperature range -40°C to $+80^{\circ}\text{C}$
- Short circuit protection
- 3-year product warranty

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TDL 3-0510	4.5 – 10 VDC (5 VDC nominal)	3.3 VDC	600 mA	79%
TDL 3-0511		5.0 VDC	600 mA	81%
TDL 3-0512		12 VDC	250 mA	85%
TDL 3-0513		15 VDC	200 mA	85%
TDL 3-0521		±5.0 VDC	±300 mA	82%
TDL 3-0522		±12 VDC	±125 mA	84%
TDL 3-0523	9 – 18 VDC (12 VDC nominal)	±15 VDC	±100 mA	85%
TDL 3-1210		3.3 VDC	600 mA	80%
TDL 3-1211		5.0 VDC	600 mA	83%
TDL 3-1212		12 VDC	250 mA	87%
TDL 3-1213		15 VDC	200 mA	87%
TDL 3-1221		±5.0 VDC	±300 mA	84%
TDL 3-1222	18 – 36 VDC (24 VDC nominal)	±12 VDC	±125 mA	86%
TDL 3-1223		±15 VDC	±100 mA	87%
TDL 3-2410		3.3 VDC	600 mA	80%
TDL 3-2411		5.0 VDC	600 mA	83%
TDL 3-2412		12 VDC	250 mA	87%
TDL 3-2413		15 VDC	200 mA	87%
TDL 3-2421	36 – 75 VDC (48 VDC nominal)	±5.0 VDC	±300 mA	84%
TDL 3-2422		±12 VDC	±125 mA	86%
TDL 3-2423		±15 VDC	±100 mA	87%
TDL 3-4810		3.3 VDC	600 mA	79%
TDL 3-4811		5.0 VDC	600 mA	82%
TDL 3-4812		12 VDC	250 mA	86%
TDL 3-4813		15 VDC	200 mA	86%
TDL 3-4821		±5.0 VDC	±300 mA	82%
TDL 3-4822		±12 VDC	±125 mA	85%
TDL 3-4823		±15 VDC	±100 mA	85%

TDN 3WI

3 Watt



bottom view

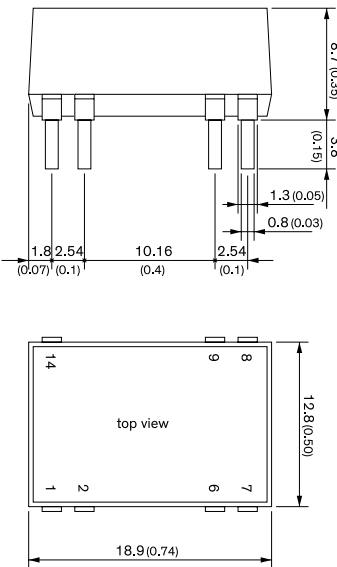
- Ultra compact DIP package
13.2 × 9.1 × 10.2 mm
- I/O-isolation 1600 VDC
- Fully regulated outputs
- Operating temperature range
–40°C to +70°C without derating
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	On/Off	On/Off
5	no con.	–Vout
6	–Vout	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDN 3-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	700 mA	76%
TDN 3-1211WI		5.0 VDC	600 mA	80%
TDN 3-1219WI		9.0 VDC	333 mA	81%
TDN 3-1212WI		12 VDC	250 mA	83%
TDN 3-1213WI		15 VDC	200 mA	84%
TDN 3-1215WI		24 VDC	125 mA	82%
TDN 3-1221WI		±5.0 VDC	±300 mA	80%
TDN 3-1222WI		±12 VDC	±125 mA	82%
TDN 3-1223WI		±15 VDC	±100 mA	82%
TDN 3-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	700 mA	77%
TDN 3-2411WI		5.0 VDC	600 mA	80%
TDN 3-2419WI		9.0 VDC	333 mA	81%
TDN 3-2412WI		12 VDC	250 mA	83%
TDN 3-2413WI		15 VDC	200 mA	83%
TDN 3-2415WI		24 VDC	125 mA	82%
TDN 3-2421WI		±5.0 VDC	±300 mA	80%
TDN 3-2422WI		±12 VDC	±125 mA	82%
TDN 3-2423WI		±15 VDC	±100 mA	82%
TDN 3-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	700 mA	77%
TDN 3-4811WI		5.0 VDC	600 mA	80%
TDN 3-4819WI		9.0 VDC	333 mA	81%
TDN 3-4812WI		12 VDC	250 mA	83%
TDN 3-4813WI		15 VDC	200 mA	83%
TDN 3-4815WI		24 VDC	125 mA	82%
TDN 3-4821WI		±5.0 VDC	±300 mA	80%
TDN 3-4822WI		±12 VDC	±125 mA	82%
TDN 3-4823WI		±15 VDC	±100 mA	82%

TDR 3

3 Watt



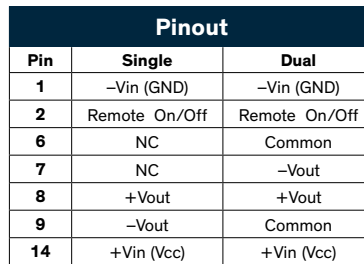
top view

- Compact design in SMD or DIP package
- Wide 2:1 input voltage range
- Fully regulated outputs
- Low ripple and noise
- No minimum load required
- Temperature range –40°C to +85°C
- I/O isolation 1600 VDC
- Continuous short-circuit protection
- Remote On/Off control
- Fully RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	–Vout
8	+Vout	+Vout
9	–Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

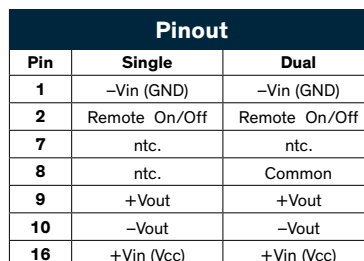
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 3-0511	4.5 – 9.0 VDC (5 VDC nominal)	5.0 VDC	600 mA	79%
TDR 3-0512		12 VDC	250 mA	80%
TDR 3-0513		15 VDC	200 mA	81%
TDR 3-0522		±12 VDC	±125 mA	80%
TDR 3-0523		±15 VDC	±100 mA	81%
TDR 3-1211	9 – 18 VDC (12 VDC nominal)	5.0 VDC	600 mA	81%
TDR 3-1212		12 VDC	250 mA	82%
TDR 3-1213		15 VDC	200 mA	82%
TDR 3-1222		±12 VDC	±125 mA	82%
TDR 3-1223	18 – 36 VDC (24 VDC nominal)	±15 VDC	±100 mA	83%
TDR 3-2411		5.0 VDC	600 mA	81%
TDR 3-2412		12 VDC	250 mA	82%
TDR 3-2413		15 VDC	200 mA	83%
TDR 3-2422		±12 VDC	±125 mA	83%
TDR 3-2423	36 – 75 VDC (48 VDC nominal)	±15 VDC	±100 mA	83%
TDR 3-4811		5.0 VDC	600 mA	81%
TDR 3-4812		12 VDC	250 mA	82%
TDR 3-4813		15 VDC	200 mA	82%
TDR 3-4822		±12 VDC	±125 mA	83%
TDR 3-4823		±15 VDC	±100 mA	83%

3 Watt



Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TDR 3-1211WI	4.5 – 18 VDC (12 VDC nominal)	5.0 VDC	600 mA	81%
TDR 3-1212WI		12 VDC	250 mA	82%
TDR 3-1213WI		15 VDC	200 mA	82%
TDR 3-1222WI		±12 VDC	±125 mA	82%
TDR 3-1223WI		±15 VDC	±100 mA	81%
TDR 3-2411WI	9 – 36 VDC (24 VDC nominal)	5.0 VDC	600 mA	80%
TDR 3-2412WI		12 VDC	250 mA	82%
TDR 3-2413WI		15 VDC	200 mA	82%
TDR 3-2422WI		±12 VDC	±125 mA	82%
TDR 3-2423WI		±15 VDC	±100 mA	81%
TDR 3-4811WI	18 – 75 VDC (48 VDC nominal)	5.0 VDC	600 mA	80%
TDR 3-4812WI		12 VDC	250 mA	83%
TDR 3-4813WI		15 VDC	200 mA	82%
TDR 3-4822WI		±12 VDC	±125 mA	82%
TDR 3-4823WI		±15 VDC	±100 mA	81%

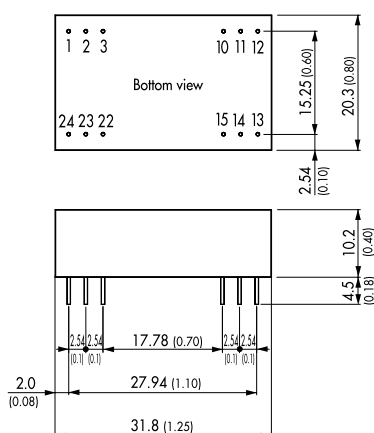
3 Watt



Model	Input Voltage Range	Output		
		Vnom	I _{max}	Efficiency
THL 3-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	600 mA	75%
THL 3-2411WI		5.0 VDC	600 mA	78%
THL 3-2412WI		12 VDC	250 mA	80%
THL 3-2413WI		15 VDC	200 mA	80%
THL 3-2415WI		24 VDC	125 mA	80%
THL 3-2421WI		±5 VDC	±300 mA	77%
THL 3-2422WI		±12 VDC	±125 mA	80%
THL 3-2423WI		±15 VDC	±100 mA	80%
THL 3-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	600 mA	75%
THL 3-4811WI		5.0 VDC	600 mA	78%
THL 3-4812WI		12 VDC	250 mA	80%
THL 3-4813WI		15 VDC	200 mA	80%
THL 3-4815WI		24 VDC	125 mA	80%
THL 3-4821WI		±5 VDC	±300 mA	77%
THL 3-4822WI		±12 VDC	±125 mA	80%
THL 3-4823WI		±15 VDC	±100 mA	80%

TEM 3N

3 Watt



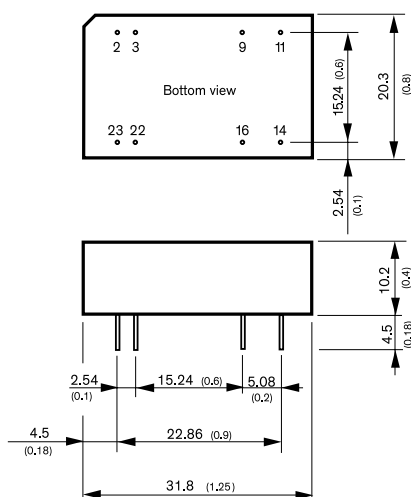
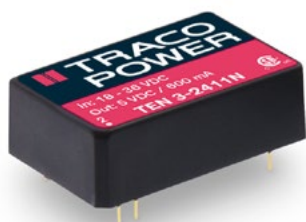
- Cost optimized design in DIP-24 package
- Fully regulated output
- Output ripple & noise 30 mVp-p typ.
- Short circuit protection
- Operating temperature range -40°C to +75°C at full load
- I/O isolation 1500 VDC
- Input filter meet EN 55032, class A
- No minimum load required
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	ntc.	-Vout
3	ntc.	Common
10	-Vout	Common
11	+Vout	+Vout
12	-Vin (GND)	-Vin (GND)
13	-Vin (GND)	-Vin (GND)
14	+Vout	+Vout
15	-Vout	Common
22	ntc.	Common
23	ntc.	-Vout
24	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEM 3-0511N	5 VDC ±10%	5 VDC	600 mA	70%
TEM 3-0512N		12 VDC	250 mA	78%
TEM 3-0513N		15 VDC	200 mA	78%
TEM 3-0522N		±12 VDC	±125 mA	78%
TEM 3-0523N	12 VDC ±10%	±15 VDC	±100 mA	78%
TEM 3-1211N		5 VDC	600 mA	74%
TEM 3-1212N		12 VDC	250 mA	80%
TEM 3-1213N		15 VDC	200 mA	80%
TEM 3-1222N		±12 VDC	±125 mA	81%
TEM 3-1223N		±15 VDC	±100 mA	82%
TEM 3-2411N	24 VDC ±10%	5 VDC	600 mA	75%
TEM 3-2412N		12 VDC	250 mA	80%
TEM 3-2413N		15 VDC	200 mA	80%
TEM 3-2422N		±12 VDC	±125 mA	81%
TEM 3-2423N		±15 VDC	±100 mA	82%

TEN 3N

3 Watt



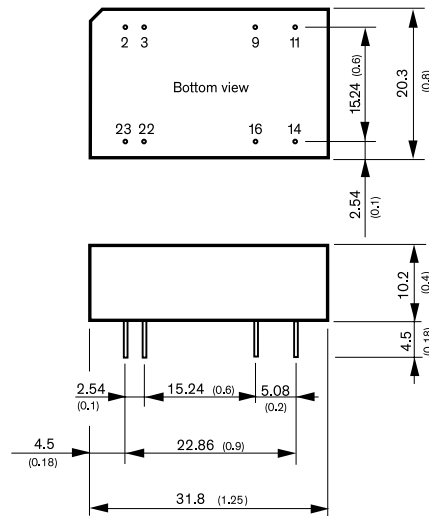
- Wide 2:1 input range
- Input filter to meet EN 55032, class A and FCC, level A without external components
- Extended operating temperature range -40°C to +85°C
- Models with 1500 VDC and 3000 VDC I/O isolation (functional insulation)
- High reliability, MTBF >1.0 Mio. h
- 3-year product warranty

Pinout		
Pin	Single	Dual
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	No pin	Common
11	ntc	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 3-0510N	4.5 – 9.0 VDC (nominal 5 VDC)	3.3 VDC	750 mA	77%
TEN 3-0511N		5.0 VDC	600 mA	80%
TEN 3-0512N		12 VDC	250 mA	82%
TEN 3-0513N		15 VDC	200 mA	82%
TEN 3-0515N	9 – 18 VDC (nominal 12 VDC)	24 VDC	125 mA	81%
TEN 3-0521N		±5.0 VDC	±250 mA	80%
TEN 3-0522N		±12 VDC	±125 mA	82%
TEN 3-0523N		±15 VDC	±100 mA	82%
TEN 3-1210N	18 – 36 VDC (nominal 24 VDC)	3.3 VDC	750 mA	79%
TEN 3-1211N		5.0 VDC	600 mA	81%
TEN 3-1212N		12 VDC	250 mA	85%
TEN 3-1213N		15 VDC	200 mA	85%
TEN 3-1215N	36 – 75 VDC (nominal 48 VDC)	24 VDC	125 mA	84%
TEN 3-1221N		±5.0 VDC	±250 mA	80%
TEN 3-1222N		±12 VDC	±125 mA	84%
TEN 3-1223N		±15 VDC	±100 mA	84%
TEN 3-2410N	36 – 75 VDC (nominal 48 VDC)	3.3 VDC	750 mA	79%
TEN 3-2411N		5.0 VDC	600 mA	81%
TEN 3-2412N		12 VDC	250 mA	85%
TEN 3-2413N		15 VDC	200 mA	85%
TEN 3-2415N	36 – 75 VDC (nominal 48 VDC)	24 VDC	125 mA	84%
TEN 3-2421N		±5.0 VDC	±250 mA	80%
TEN 3-2422N		±12 VDC	±125 mA	84%
TEN 3-2423N		±15 VDC	±100 mA	84%
TEN 3-4810N	36 – 75 VDC (nominal 48 VDC)	3.3 VDC	750 mA	79%
TEN 3-4811N		5.0 VDC	600 mA	81%
TEN 3-4812N		12 VDC	250 mA	85%
TEN 3-4813N		15 VDC	200 mA	85%
TEN 3-4815N	36 – 75 VDC (nominal 48 VDC)	24 VDC	125 mA	84%
TEN 3-4821N		±5.0 VDC	±250 mA	80%
TEN 3-4822N		±12 VDC	±125 mA	84%
TEN 3-4823N		±15 VDC	±100 mA	84%

TEN 3WIN

3 Watt



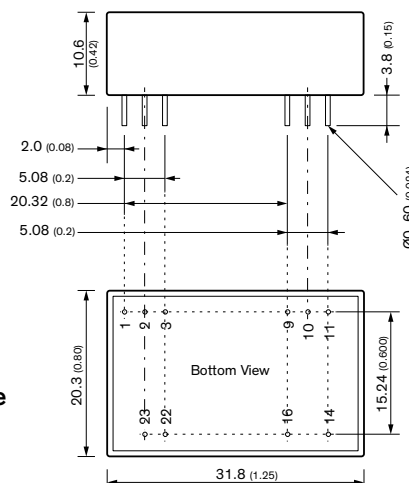
- Ultra wide 4:1 input range
- Input filter to meet EN 55032, Class A and FCC, level A without external components
- Extended operating temperature range -40°C to 85°C
- Models with 1500 VDC and 3000 VDC I/O isolation (functional insulation)
- DIP-24 package
- High reliability, MTBF >1.0 Mio. h
- 3-year product warranty

Pinout		
Pin	Single	Dual
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	ntc	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TEN 3-2410WIN	9.0 – 36 VDC (nominal 24 VDC)	3.3 VDC	750 mA	77%
TEN 3-2411WIN		5.0 VDC	600 mA	79%
TEN 3-2412WIN		12 VDC	250 mA	82%
TEN 3-2413WIN		15 VDC	200 mA	83%
TEN 3-2415WIN		24 VDC	125 mA	81%
TEN 3-2421WIN		±5.0 VDC	±250 mA	80%
TEN 3-2422WIN	18 – 75 VDC (nominal 48 VDC)	±12 VDC	±125 mA	82%
TEN 3-2423WIN		±15 VDC	±100 mA	82%
TEN 3-4810WIN		3.3 VDC	750 mA	77%
TEN 3-4811WIN		5 VDC	600 mA	80%
TEN 3-4812WIN		12 VDC	250 mA	83%
TEN 3-4813WIN		15 VDC	200 mA	84%
TEN 3-4815WIN		24 VDC	125 mA	82%
TEN 3-4821WIN		±5.0 VDC	±250 mA	80%
TEN 3-4822WIN		±12 VDC	±125 mA	82%
TEN 3-4823WIN		±15 VDC	±100 mA	82%

TEN 3WIRH

3 Watt



- Industrial standard DIP-24 package
- 3000 VAC reinforced I/O-isolation
- Wide 4:1 input voltage range: 36 – 160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- High efficiency up to 85%
- Operating temperature range -40°C to $+95^{\circ}\text{C}$
- Under voltage lock-out circuit
- Remote On/Off and Trim function
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Ctrl	Ctrl
2	–Vin	–Vin
3	–Vin	–Vin
9	NC	Common
10	Trim (option)	Trim (option)
11	NC	–Vout
14	+ Vout	+ Vout
16	–Vout	Common
22	+ Vin	+ Vin
23	+ Vin	+ Vin

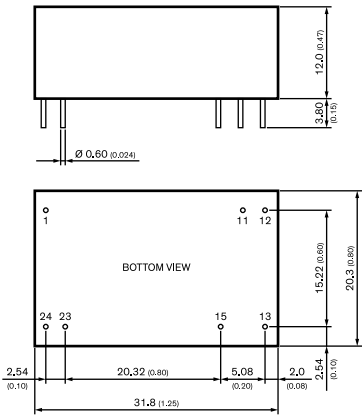
Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TEN 3-11010WIRH	36 – 160 VDC	3.3 VDC	1000 mA	80%
TEN 3-11011WIRH		5 VDC	600 mA	82%
TEN 3-11012WIRH		12 VDC	250 mA	85%
TEN 3-11013WIRH		15 VDC	200 mA	84%
TEN 3-11015WIRH		24 VDC	125 mA	85%
TEN 3-11021WIRH		±5 VDC	±300 mA	81%
TEN 3-11022WIRH		±12 VDC	±125 mA	84%
TEN 3-11023WIRH		±15 VDC	±100 mA	85%

TRI 3

3.5 Watt



- Reinforced I/O-isolation 7071 VDC rated for 1000 VAC working voltage
- Ultra-high isolation peak voltage 9000 VDC (1s)
- Common Mode Transient Immunity (dv/dt) 15 kV/μs
- Operating temperature range –40 to +90°C
- Low no-load power consumption 96 – 192 mW
- Internal EN 55032 class A filter
- High efficiency up to 87%
- 2:1 input voltage range: 4.5–9, 9–18, 18–36, 36–75 VDC
- Protection against overload, overvoltage and short circuit
- 3-year product warranty

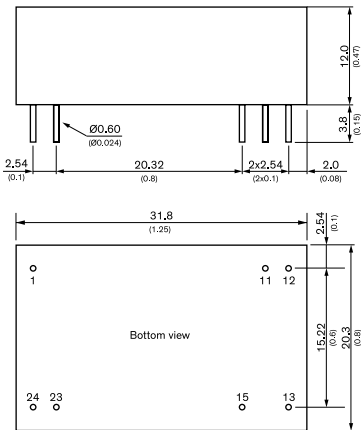


Pinout		
Pin	Single Output	Dual Output
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	–Vout	No pin
13	+Vout	–Vout
15	No pin	+Vout
23	–Vin (GND)	–Vin (GND)
24	–Vin (GND)	–Vin (GND)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TRI 3-0511	4.5 – 9 VDC (5 VDC nom.)	5 VDC	700 mA	82%
TRI 3-0512		12 VDC	290 mA	83%
TRI 3-0513		15 VDC	235 mA	84%
TRI 3-0515		24 VDC	146 mA	83%
TRI 3-0522		±12 VDC	145 mA	84%
TRI 3-0523	9 – 18 VDC (12 VDC nom.)	±15 VDC	115 mA	84%
TRI 3-1211		5 VDC	700 mA	82%
TRI 3-1212		12 VDC	290 mA	86%
TRI 3-1213		15 VDC	235 mA	87%
TRI 3-1215		24 VDC	146 mA	86%
TRI 3-1222	18 – 36 VDC (24 VDC nom.)	±12 VDC	145 mA	87%
TRI 3-1223		±15 VDC	115 mA	87%
TRI 3-2411		5 VDC	700 mA	82%
TRI 3-2412		12 VDC	290 mA	85%
TRI 3-2413		15 VDC	235 mA	87%
TRI 3-2415	36 – 75 VDC (48 VDC nom.)	24 VDC	146 mA	86%
TRI 3-2422		±12 VDC	145 mA	87%
TRI 3-2423		±15 VDC	115 mA	86%
TRI 3-4811		5 VDC	700 mA	82%
TRI 3-4812		12 VDC	290 mA	85%
TRI 3-4813		15 VDC	235 mA	85%
TRI 3-4815		24 VDC	146 mA	83%
TRI 3-4822		±12 VDC	145 mA	84%
TRI 3-4823		±15 VDC	115 mA	84%

THR 3WI

3 Watt



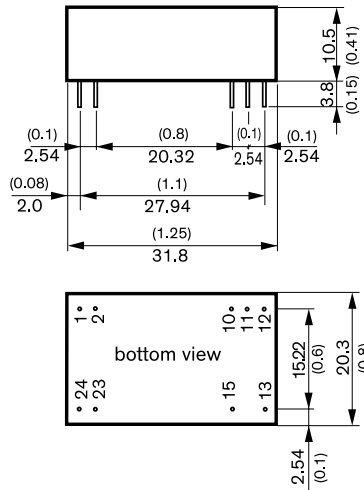
Pinout		
Pin	Single	Dual
1	+Vin	+Vin
11	No Pin	Common
12	–Vout	No Pin
13	+Vout	–Vout
15	No Pin	+Vout
23	–Vin	–Vin
24	–Vin	–Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THR 3-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	600 mA	80%
THR 3-2412WI		12 VDC	250 mA	84%
THR 3-2413WI		15 VDC	200 mA	85%
THR 3-2422WI		±12 VDC	±125 mA	83%
THR 3-2423WI		±15 VDC	±100 mA	84%
THR 3-4811WI	18 – 75 VDC (48 VDC nom.)	5 VDC	600 mA	80%
THR 3-4812WI		12 VDC	250 mA	83%
THR 3-4813WI		15 VDC	200 mA	84%
THR 3-4822WI		±12 VDC	±125 mA	83%
THR 3-4823WI		±15 VDC	±100 mA	83%
THR 3-7211WI	40 – 160 VDC (110 VDC nom.)	5 VDC	600 mA	80%
THR 3-7212WI		12 VDC	250 mA	84%
THR 3-7213WI		15 VDC	200 mA	84%
THR 3-7222WI		±12 VDC	±125 mA	83%
THR 3-7223WI		±15 VDC	±100 mA	85%

- Ultra wide 4:1 input range
- Reinforced I/O-isolation 3000 VAC
- Input filter to meet EN 55032, Class A
- High efficiency up to 85%
- Extended operating temperature range –40°C to 90°C
- DIP-24 package
- 3-year product warranty

THI 3

3 Watt



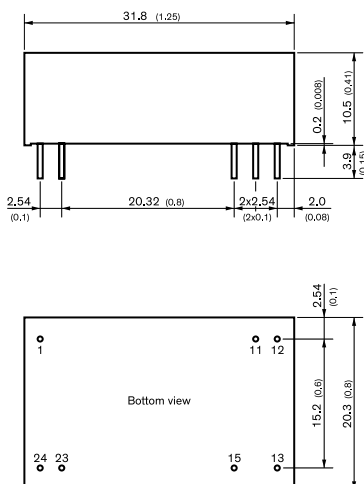
- Supplementary and reinforced insulation
- I/O isolation 4000 VACrms rated for 300 VACrms working voltage
- 2 × MOOP medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- Industrial safety to IEC/EN 60950-1
- Fully regulated output voltage
- Input filter meets EN 55032, class A and FCC, level A
- Operating temp. range -40°C to +75°C
- Low leakage current
- Low coupling capacitance
- Short circuit protection
- 3-years product warranty

Pinout		
Pin	Single	Dual
1	+Vin (VCC)	+Vin (VCC)
2	+Vin (VCC)	+Vin (VCC)
10	No pin	Common
11	No pin	Common
12	-Vout	No pin.
13	+Vout	-Vout
15	No pin	+Vout
23	-Vin (GND)	-Vin (GND)
24	-Vin (GND)	-Vin (GND)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THI 3-0511	5.0 VDC ± 10%	5 VDC	600 mA	60%
THI 3-0512		12 VDC	250 mA	62%
THI 3-0513		15 VDC	200 mA	62%
THI 3-0522		±12 VDC	±125 mA	60%
THI 3-0523		±15 VDC	±100 mA	60%
THI 3-1211	12.0 VDC ± 10%	5 VDC	600 mA	60%
THI 3-1212		12 VDC	250 mA	62%
THI 3-1213		15 VDC	200 mA	62%
THI 3-1222		±12 VDC	±125 mA	60%
THI 3-1223		±15 VDC	±100 mA	60%
THI 3-2411	24 VDC ± 10%	5 VDC	600 mA	60%
THI 3-2412		12 VDC	250 mA	64%
THI 3-2413		15 VDC	200 mA	64%
THI 3-2422		±12 VDC	±125 mA	60%
THI 3-2423		±15 VDC	±100 mA	60%

THP 3

3 Watt



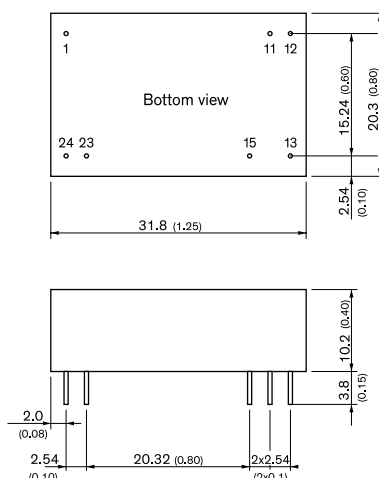
- Supplementary and reinforced insulation
- I/O isolation 3000 VACrms rated for 1000 Vrms working voltage
- Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd Edition, 2 × MOOP
- Industrial safety to IEC/EN/UL 60950-1
- 9–40 VDC, 18–80 VDC and 36–160 VDC
- Extended operating temperature range -40°C to 85°C max.
- Input filter meets EN 55032 class A without ext. components
- Continuous short circuit protection
- High reliability, MTBF >1 Mio. hours
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	-Vout	No pin
13	+Vout	-Vout
15	No pin	+Vout
23	-Vin (GND)	-Vin (GND)
24	-Vin (GND)	-Vin (GND)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THP 3-2411	9 – 40 VDC (24 VDC nominal)	5 VDC	600 mA	78%
THP 3-2412		12 VDC	250 mA	83%
THP 3-2422		±12 VDC	±125 mA	83%
THP 3-2423		±15 VDC	±100 mA	83%
THP 3-4811	18 – 80 VDC (48 VDC nominal)	5 VDC	600 mA	78%
THP 3-4812		12 VDC	250 mA	83%
THP 3-4822		±12 VDC	±125 mA	83%
THP 3-4823		±15 VDC	±100 mA	83%
THP 3-7211	36 – 160 VDC (72 VDC nominal)	5 VDC	600 mA	78%
THP 3-7212		12 VDC	250 mA	83%
THP 3-7222		±12 VDC	±125 mA	83%
THP 3-7223		±15 VDC	±100 mA	83%

THM 3

3 Watt



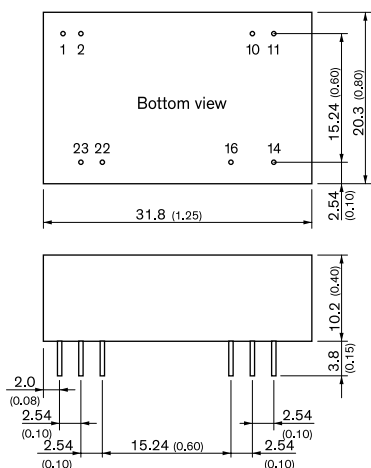
- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 μA
- Operating temperature: -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A

Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	-Vout	No pin
13	+Vout	-Vout
15	No pin	+Vout
23	-Vin (GND)	-Vin (GND)
24	-Vin (GND)	-Vin (GND)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THM 3-0510 THM 3-0511 THM 3-0512 THM 3-0513 THM 3-0515 THM 3-0521 THM 3-0522 THM 3-0523	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	81% 85% 86% 88% 86% 83% 86% 86%
THM 3-1210 THM 3-1211 THM 3-1212 THM 3-1213 THM 3-1215 THM 3-1221 THM 3-1222 THM 3-1223	9 – 18 VDC (12 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	82% 85% 87% 87% 87% 84% 88% 87%
THM 3-2410 THM 3-2411 THM 3-2412 THM 3-2413 THM 3-2415 THM 3-2421 THM 3-2422 THM 3-2423	18 – 36 VDC (24 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	82% 85% 87% 87% 87% 83% 87% 86%
THM 3-4810 THM 3-4811 THM 3-4812 THM 3-4813 THM 3-4815 THM 3-4821 THM 3-4822 THM 3-4823	36 – 75 VDC (48 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	81% 84% 87% 87% 87% 83% 86% 86%

THM 3WI

3 Watt



- Ultra wide 4:1 input voltage 3 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 μA
- Operating temp.: -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude

Pinout / Connection		
Pin	Single	Dual
1	No pin*/Remote	No pin*/Remote
2	-Vin (GND)	-Vin (GND)
10	No pin*/Trim	No pin*/Trim
11	No pin*/NC **	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THM 3-0510WI THM 3-0511WI THM 3-0512WI THM 3-0513WI THM 3-0515WI THM 3-0521WI THM 3-0522WI THM 3-0523WI	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	81% 85% 86% 88% 86% 83% 86% 86%
THM 3-2410WI THM 3-2411WI THM 3-2412WI THM 3-2413WI THM 3-2415WI THM 3-2421WI THM 3-2422WI THM 3-2423WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	82% 85% 87% 87% 87% 83% 87% 86%
THM 3-4810WI THM 3-4811WI THM 3-4812WI THM 3-4813WI THM 3-4815WI THM 3-4821WI THM 3-4822WI THM 3-4823WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC 5 VDC 12 VDC 15 VDC 24 VDC ± 5 VDC ± 12 VDC ± 15 VDC	1000 mA 600 mA 250 mA 200 mA 125 mA 300 mA 125 mA 100 mA	81% 84% 87% 87% 87% 83% 86% 86%

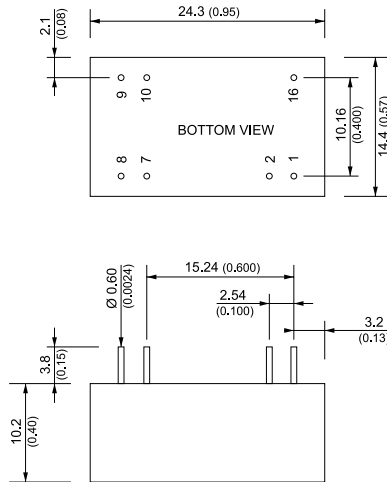
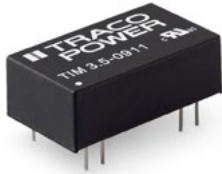
NC: No connection

* If Remote or Trim is not selected there is no pin on corresponding number.

** If Trim is selected there is no pin on the corresponding pin number.

TIM 3.5

3.5 Watt



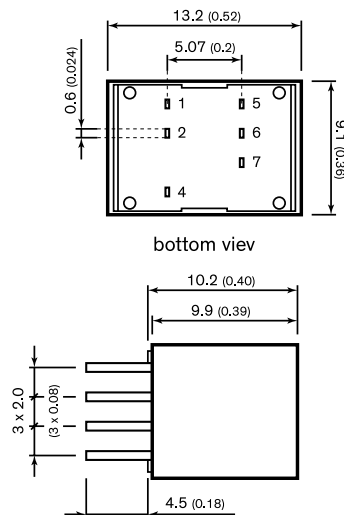
- Compact DIP-16-package
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP and operation to 5000 m altitude
- Low leakage current $< 2 \mu\text{A}$ for BF-applications
- Extended operation temperature range -40°C to 90°C .
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A

Pinout / Connection		
Pin	Single Output	Dual Output
1	–Vin (GND)	–Vin (GND)
2	Remote	Remote
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TIM 3.5-0911	4.5 – 12 VDC (9 VDC nom.)	5 VDC	700 mA	77%
TIM 3.5-0919		9 VDC	389 mA	78%
TIM 3.5-0912		12 VDC	292 mA	82%
TIM 3.5-0913		15 VDC	234 mA	82%
TIM 3.5-0915		24 VDC	146 mA	82%
TIM 3.5-0922		±12 VDC	146 mA	82%
TIM 3.5-0923		±15 VDC	117 mA	81%
TIM 3.5-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	700 mA	79%
TIM 3.5-1219		9 VDC	389 mA	79%
TIM 3.5-1212		12 VDC	292 mA	82%
TIM 3.5-1213		15 VDC	234 mA	82%
TIM 3.5-1215		24 VDC	146 mA	82%
TIM 3.5-1222		±12 VDC	146 mA	82%
TIM 3.5-1223		±15 VDC	117 mA	82%
TIM 3.5-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	700 mA	79%
TIM 3.5-2419		9 VDC	389 mA	80%
TIM 3.5-2412		12 VDC	292 mA	83%
TIM 3.5-2413		15 VDC	234 mA	83%
TIM 3.5-2415		24 VDC	146 mA	82%
TIM 3.5-2422		±12 VDC	146 mA	82%
TIM 3.5-2423		±15 VDC	117 mA	82%
TIM 3.5-4811	36 – 75 VDC (48 VDC nom.)	5 VDC	700 mA	79%
TIM 3.5-4819		9 VDC	389 mA	80%
TIM 3.5-4812		12 VDC	292 mA	82%
TIM 3.5-4813		15 VDC	234 mA	82%
TIM 3.5-4815		24 VDC	146 mA	82%
TIM 3.5-4822		±12 VDC	146 mA	82%
TIM 3.5-4823		±15 VDC	117 mA	82%

TDN 5WI

5 Watt



- Ultra compact DIP package 13.2 x 9.1 x 10.2 mm
- I/O-isolation 1600 VDC
- Fully regulated outputs
- Operating temperature range -40°C to $+75^{\circ}\text{C}$
- Short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1

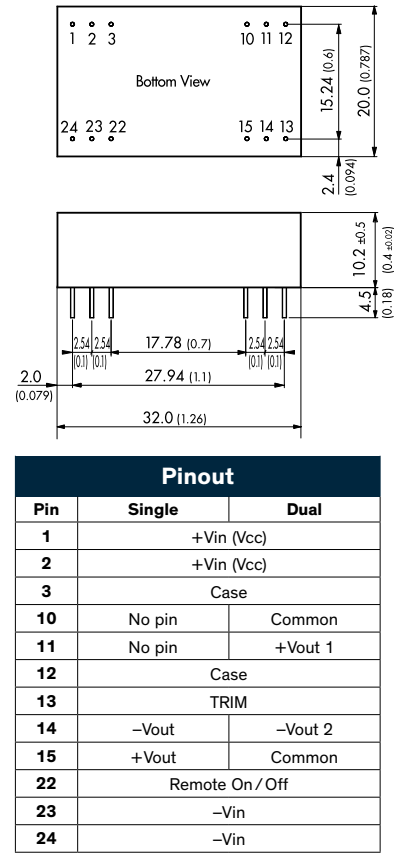
Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
4	On/Off	On/Off
5	no con.	–Vout
6	–Vout	Common
7	+Vout	+Vout

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TDN 5-0910WI	4.5 – 13.2 VDC (9 VDC nominal)	3.3 VDC	1000 mA	76%
TDN 5-0911WI		5.0 VDC	1000 mA	80%
TDN 5-0919WI		9.0 VDC	555 mA	81%
TDN 5-0912WI		12 VDC	420 mA	83%
TDN 5-0913WI		15 VDC	333 mA	83%
TDN 5-0915WI		24 VDC	210 mA	83%
TDN 5-0921WI	9 – 36 VDC (24 VDC nominal)	± 5.0 VDC	±500 mA	80%
TDN 5-0922WI		±12 VDC	±210 mA	83%
TDN 5-0923WI		±15 VDC	±168 mA	83%
TDN 5-2410WI		3.3 VDC	1000 mA	76%
TDN 5-2411WI		5.0 VDC	1000 mA	80%
TDN 5-2419WI		9.0 VDC	555 mA	81%
TDN 5-2412WI	18 – 75 VDC (48 VDC nominal)	12 VDC	420 mA	83%
TDN 5-2413WI		15 VDC	333 mA	83%
TDN 5-2415WI		24 VDC	210 mA	83%
TDN 5-2421WI		± 5.0 VDC	±500 mA	80%
TDN 5-2422WI		±12 VDC	±210 mA	83%
TDN 5-2423WI		±15 VDC	±168 mA	84%
TDN 5-4810WI		3.3 VDC	1000 mA	76%
TDN 5-4811WI		5.0 VDC	1000 mA	81%
TDN 5-4819WI		9.0 VDC	555 mA	81%
TDN 5-4812WI		12 VDC	420 mA	83%
TDN 5-4813WI		15 VDC	333 mA	83%
TDN 5-4815WI		24 VDC	210 mA	83%
TDN 5-4821WI		± 5.0 VDC	±500 mA	80%
TDN 5-4822WI		±12 VDC	±210 mA	83%
TDN 5-4823WI		±15 VDC	±168 mA	84%

TVN 5WI

5 Watt

- 
- Ultra low ripple and noise 10 mVp-p typ.
 - 6-side shielded DIP-24 metal package
 - Input filter to meet EN 55032, class B
 - Ultra wide 4:1 input voltage range 4.5–12, 9–36, 18–75 VDC
 - Operating temperature range –40°C to +90°C
 - Undervoltage lockout
 - I/O isolation 1600 VDC
 - Adjustable output voltage
 - No minimum load required
 - Remote On/Off
 - 3-year product warranty

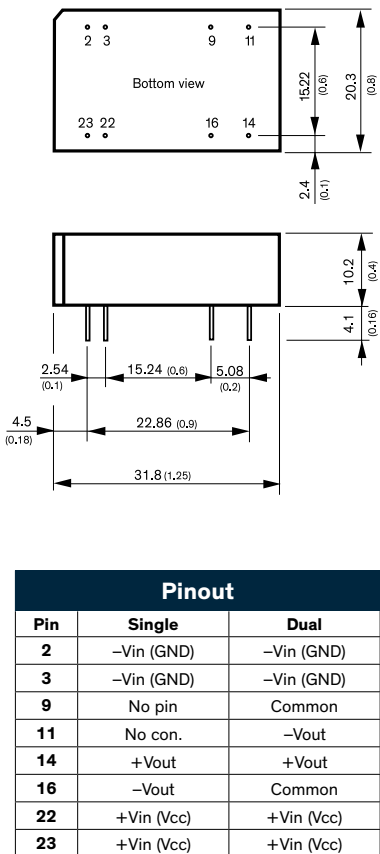


Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TVN 5-0910WI	4.5 – 12 VDC (9 VDC nominal)	3.3 VDC	1515 mA	79%
TVN 5-0911WI		5.0 VDC	1000 mA	82%
TVN 5-0912WI		12 VDC	416 mA	87%
TVN 5-0913WI		15 VDC	333 mA	87%
TVN 5-0915WI		24 VDC	208 mA	88%
TVN 5-0921WI		±5.0 VDC	±500 mA	84%
TVN 5-0922WI		±12 VDC	±208 mA	85%
TVN 5-0923WI	9 – 36 VDC (24 VDC nominal)	±15 VDC	±166 mA	86%
TVN 5-0925WI		±24 VDC	±104 mA	87%
TVN 5-2410WI		3.3 VDC	1515 mA	81%
TVN 5-2411WI		5.0 VDC	1000 mA	83%
TVN 5-2412WI		12 VDC	416 mA	88%
TVN 5-2413WI		15 VDC	333 mA	88%
TVN 5-2415WI		24 VDC	208 mA	89%
TVN 5-2421WI	18 – 75 VDC (48 VDC nominal)	±5.0 VDC	±500 mA	84%
TVN 5-2422WI		±12 VDC	±208 mA	85%
TVN 5-2423WI		±15 VDC	±166 mA	86%
TVN 5-2425WI		±24 VDC	±104 mA	87%
TVN 5-4810WI		3.3 VDC	1515 mA	80%
TVN 5-4811WI		5.0 VDC	1000 mA	83%
TVN 5-4812WI		12 VDC	416 mA	86%
TVN 5-4813WI		15 VDC	333 mA	87%
TVN 5-4815WI		24 VDC	208 mA	88%
TVN 5-4821WI		±5.0 VDC	±500 mA	83%
TVN 5-4822WI		±12 VDC	±208 mA	85%
TVN 5-4823WI		±15 VDC	±166 mA	86%
TVN 5-4825WI		±24 VDC	±104 mA	87%

TEL 5

5 Watt

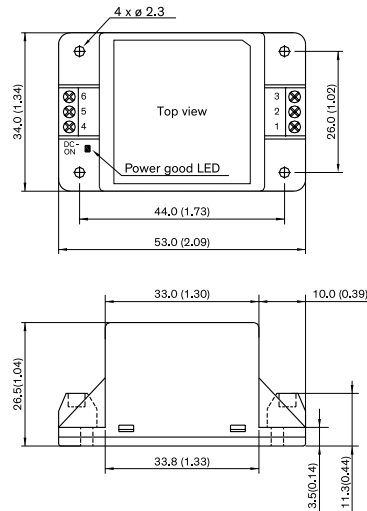
- 
- Wide 2:1 input range
 - Cost efficient SMD-design
 - High power density
 - High efficiency up to 86%
 - Regulated outputs
 - I/O isolation 1500 VDC
 - Input filter to meet EN 55032, Class A and FCC, level A without external components
 - Indefinite short-circuit protection 24-pin DIP with industry standard pinout
 - High reliability, MTBF >1 Mio. h
 - Lead free design, RoHS compliant
 - 3-year product warranty



Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 5-1210	9 – 18 VDC (nominal 12 VDC)	3.3 VDC	1200 mA	77%
TEL 5-1211		5 VDC	1000 mA	81%
TEL 5-1212		12 VDC	500 mA	84%
TEL 5-1222		±12 VDC	±250 mA	84%
TEL 5-1223	18 – 36 VDC (nominal 24 VDC)	±15 VDC	±200 mA	84%
TEL 5-2410		3.3 VDC	1200 mA	79%
TEL 5-2411		5 VDC	1000 mA	83%
TEL 5-2412		12 VDC	500 mA	86%
TEL 5-2422		±12 VDC	±250 mA	86%
TEL 5-2423		±15 VDC	±200 mA	86%

TMDC 06

6 Watt



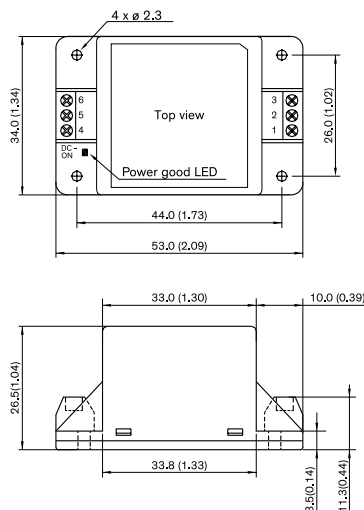
- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Ultra wide 4:1 input voltage range: 9–36 and 18–75 VDC
- Operating temperature range –40 to +80 °C without derating
- I/O-isolation 3000 VDC
- Protection against overload, undervoltage and short circuit
- DC-OK (LED) and Remote On/Off function
- IEC/EN/UL 62368-1 safety approvals
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	Remote	Remote
2	–Vin (GND)	–Vin (GND)
3	+Vin (Vcc)	+Vin (Vcc)
4	–Vout	–Vout
5	NC	Common
6	+Vout	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMDC 06-2411	9 – 36 VDC (24 VDC nom.)	5.1 VDC	1'200 mA	81%
TMDC 06-2412		12 VDC	500 mA	84%
TMDC 06-2413		15 VDC	400 mA	84%
TMDC 06-2415		24 VDC	250 mA	85%
TMDC 06-2418		48 VDC	125 mA	83%
TMDC 06-2422		±12 VDC	250 mA	84%
TMDC 06-2423	18 – 75 VDC (48 VDC nom.)	±15 VDC	200 mA	85%
TMDC 06-2425		±24 VDC	125 mA	84%
TMDC 06-4811		5.1 VDC	1'200 mA	80%
TMDC 06-4812		12 VDC	500 mA	84%
TMDC 06-4813		15 VDC	400 mA	84%
TMDC 06-4815		24 VDC	250 mA	85%
TMDC 06-4818		48 VDC	125 mA	83%
TMDC 06-4822		±12 VDC	250 mA	85%
TMDC 06-4823		±15 VDC	200 mA	85%
TMDC 06-4825		±24 VDC	125 mA	84%

TMDC 06H

6 Watt



- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Ultra wide 4:1 input range
- Operating temperature range –40 to +80 °C without derating
- I/O-isolation 3'000 VAC reinforced
- Protection against overload, undervoltage and short circuit
- 3-year product warranty

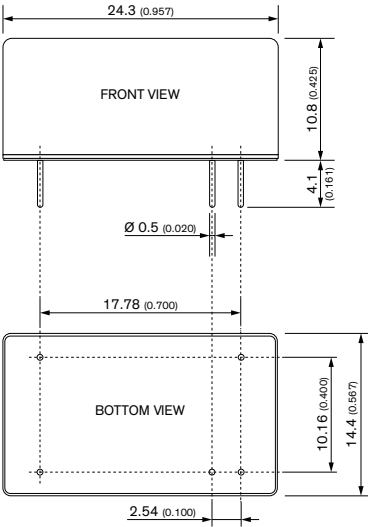
Pinout		
Pin	Single Output	Dual Output
1	Remote	Remote
2	–Vin (GND)	–Vin (GND)
3	+Vin (Vcc)	+Vin (Vcc)
4	–Vout	–Vout
5	NC	Common
6	+Vout	+Vout

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMDC 06-7211H	80 – 160 VDC (110 VDC nom.)	5.1 VDC	1'200 mA	79%
TMDC 06-7212H		12 VDC	500 mA	83%
TMDC 06-7213H		15 VDC	400 mA	83%
TMDC 06-7215H		24 VDC	250 mA	84%
TMDC 06-7218H		48 VDC	125 mA	82%
TMDC 06-7222H		±12 VDC	±250 mA	84%
TMDC 06-7223H		±15 VDC	±200 mA	84%
TMDC 06-7225H		±24 VDC	±125 mA	83%

TEL 6

NEW!

6 Watt



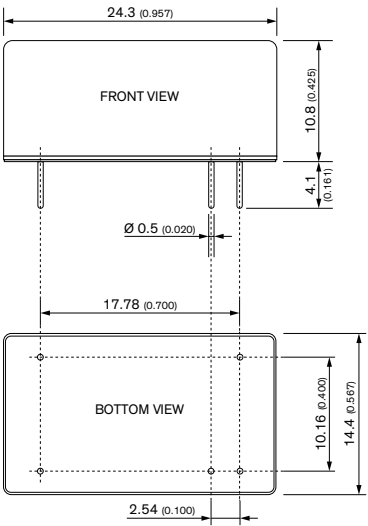
- Compact 6 Watt converter in DIP-16 metal casing
- 6-side shielded metal case with insulated base plate
- Wide 2:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of –40°C to +85°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 6-0911	4.5 – 12 VDC	5 VDC	1200 mA	82%
TEL 6-0912		12 VDC	500 mA	85%
TEL 6-0913		15 VDC	400 mA	86%
TEL 6-0915		24 VDC	250 mA	87%
TEL 6-0922		±12 VDC	±250 mA	85%
TEL 6-0923	9 – 18 VDC	±15 VDC	±200 mA	86%
TEL 6-1211		5 VDC	1200 mA	79%
TEL 6-1212		12 VDC	500 mA	83%
TEL 6-1213		15 VDC	400 mA	83%
TEL 6-1215		24 VDC	250 mA	85%
TEL 6-1222	18 – 36 VDC	±12 VDC	±250 mA	85%
TEL 6-1223		±15 VDC	±200 mA	86%
TEL 6-2411		5 VDC	1200 mA	81%
TEL 6-2412		12 VDC	500 mA	85%
TEL 6-2413		15 VDC	400 mA	85%
TEL 6-2415	36 – 75 VDC	24 VDC	250 mA	85%
TEL 6-2422		±12 VDC	±250 mA	85%
TEL 6-2423		±15 VDC	±200 mA	84%
TEL 6-4811		5 VDC	1200 mA	81%
TEL 6-4812		12 VDC	500 mA	85%
TEL 6-4813		15 VDC	400 mA	85%
TEL 6-4815		24 VDC	250 mA	85%
TEL 6-4822		±12 VDC	±250 mA	86%
TEL 6-4823		±15 VDC	±200 mA	86%

TEL 6WI

NEW!

6 Watt

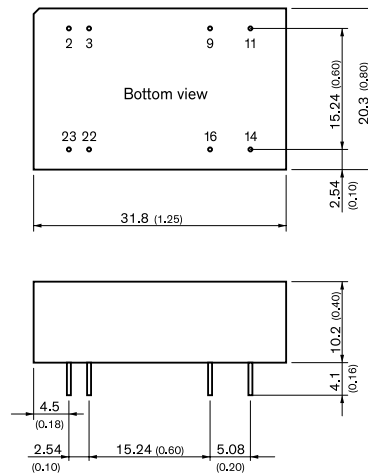


- Compact 6 Watt converter in DIP-16 metal casing
- 6-side shielded metal case with insulated base plate
- Wide 4:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of –40°C to +85°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 6-1211WI	4.5 – 18 VDC	5 VDC	1200 mA	82%
TEL 6-1212WI		12 VDC	500 mA	85%
TEL 6-1213WI		15 VDC	400 mA	86%
TEL 6-1215WI		24 VDC	250 mA	87%
TEL 6-1222WI		±12 VDC	±250 mA	85%
TEL 6-1223WI	9 – 36 VDC	±15 VDC	±200 mA	86%
TEL 6-2422WI		5 VDC	1200 mA	81%
TEL 6-2423WI		12 VDC	500 mA	84%
TEL 6-2411WI		15 VDC	400 mA	84%
TEL 6-2412WI		24 VDC	250 mA	85%
TEL 6-2413WI	18 – 75 VDC	±12 VDC	±250 mA	85%
TEL 6-2415WI		±15 VDC	±200 mA	84%
TEL 6-4822WI		5 VDC	1200 mA	81%
TEL 6-4823WI		12 VDC	500 mA	85%
TEL 6-4811WI		15 VDC	400 mA	85%
TEL 6-4812WI		24 VDC	250 mA	85%
TEL 6-4813WI		±12 VDC	±250 mA	86%
TEL 6-4815WI		±15 VDC	±200 mA	86%

TEN 6N

6 Watt



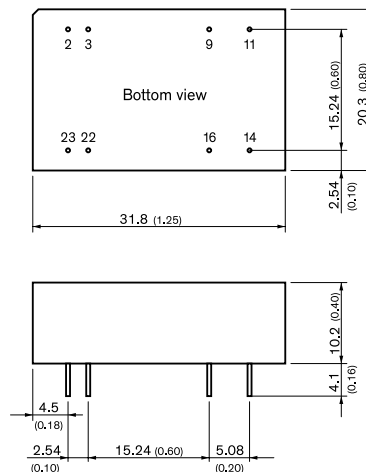
- 2:1 input voltage range
- High efficiency
- Operating temperature range –40°C to +85°C
- No minimum load required
- Input filter meets EN 55032, class A
- Overload protection
- I/O-isolation 1500 VDC
- DIP-24 plastic package
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	No function	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TEN 6-1210N	9 – 18 VDC (12 VDC nominal)	3.3 VDC	1200 mA	75%
TEN 6-1211N		5 VDC	1200 mA	78%
TEN 6-1212N		12 VDC	500 mA	82%
TEN 6-1213N		15 VDC	400 mA	82%
TEN 6-1215N		24 VDC	250 mA	84%
TEN 6-1221N		±5 VDC	±500 mA	78%
TEN 6-1222N	18 – 36 VDC (24 VDC nominal)	±12 VDC	±250 mA	82%
TEN 6-1223N		±15 VDC	±200 mA	82%
TEN 6-2410N		3.3 VDC	1200 mA	77%
TEN 6-2411N		5 VDC	1200 mA	80%
TEN 6-2412N		12 VDC	500 mA	84%
TEN 6-2413N		15 VDC	400 mA	84%
TEN 6-2415N		24 VDC	250 mA	84%
TEN 6-2421N	36 – 75 VDC (48 VDC nominal)	±5 VDC	±500 mA	80%
TEN 6-2422N		±12 VDC	±250 mA	84%
TEN 6-2423N		±15 VDC	±200 mA	84%
TEN 6-4810N		3.3 VDC	1200 mA	77%
TEN 6-4811N		5 VDC	1200 mA	80%
TEN 6-4812N		12 VDC	500 mA	84%
TEN 6-4813N		15 VDC	400 mA	84%
TEN 6-4815N		24 VDC	250 mA	84%
TEN 6-4821N		±5 VDC	±500 mA	80%
TEN 6-4822N		±12 VDC	±250 mA	84%
TEN 6-4823N		±15 VDC	±200 mA	84%

TEN 6WIN

6 Watt



- Wide 4:1 input voltage range
- High efficiency
- Operating temperature range –40°C to +85°C
- No minimum load required
- Models with 1500 VDC and 3000 VDC I/O isolation (functional insulation)
- Input filter meets EN 55032, class A
- Overload protection
- DIP-24 plastic package
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	No function	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

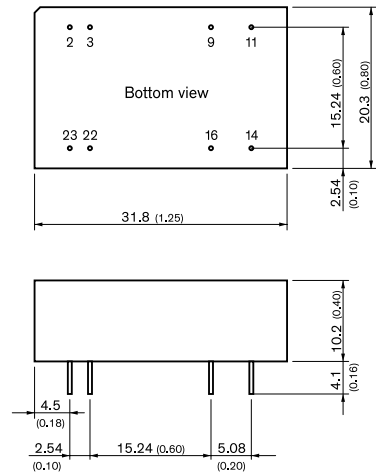
Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TEN 6-2410WIN	9 – 36 VDC (24 VDC nominal)	3.3 VDC	1200 mA	77%
TEN 6-2411WIN		5 VDC	1200 mA	80%
TEN 6-2412WIN		12 VDC	500 mA	84%
TEN 6-2413WIN		15 VDC	400 mA	84%
TEN 6-2415WIN		24 VDC	250 mA	84%
TEN 6-2421WIN		±5 VDC	±500 mA	80%
TEN 6-2422WIN	18 – 75 VDC (48 VDC nominal)	±12 VDC	±250 mA	84%
TEN 6-2423WIN		±15 VDC	±200 mA	84%
TEN 6-4810WIN		3.3 VDC	1200 mA	77%
TEN 6-4811WIN		5 VDC	1200 mA	80%
TEN 6-4812WIN		12 VDC	500 mA	84%
TEN 6-4813WIN		15 VDC	400 mA	84%
TEN 6-4815WIN		24 VDC	250 mA	84%
TEN 6-4821WIN		±5 VDC	±500 mA	80%
TEN 6-4822WIN		±12 VDC	±250 mA	84%
TEN 6-4823WIN		±15 VDC	±200 mA	84%

TEN 6WIN-HI

6 Watt



- Wide 4:1 input voltage range
- High efficiency
- Operating temperature range -40°C to +85°C
- No minimum load required
- 3000 VDC I/O isolation (functional insulation)
- Input filter meets EN 55032, class A
- Overload protection
- DIP-24 plastic package
- Industry standard pinout
- 3-year product warranty



Pinout		
Pin	Single	Dual
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	No pin	Common
11	No function	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

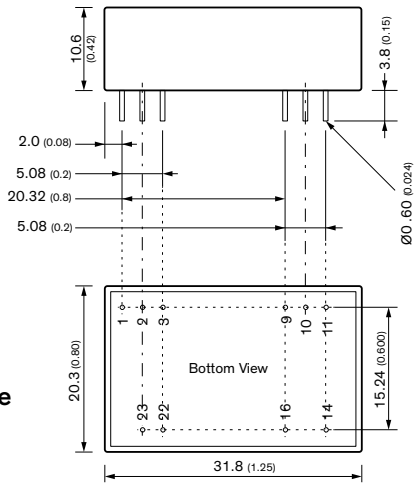
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 6-2410WIN-HI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	1200 mA	77%
TEN 6-2411WIN-HI		5 VDC	1200 mA	80%
TEN 6-2412WIN-HI		12 VDC	500 mA	84%
TEN 6-2413WIN-HI		15 VDC	400 mA	84%
TEN 6-2415WIN-HI		24 VDC	250 mA	84%
TEN 6-2421WIN-HI		±5 VDC	±500 mA	80%
TEN 6-2422WIN-HI		±12 VDC	±250 mA	84%
TEN 6-2423WIN-HI		±15 VDC	±200 mA	84%
TEN 6-4810WIN-HI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	1200 mA	77%
TEN 6-4811WIN-HI		5 VDC	1200 mA	80%
TEN 6-4812WIN-HI		12 VDC	500 mA	84%
TEN 6-4813WIN-HI		15 VDC	400 mA	84%
TEN 6-4815WIN-HI		24 VDC	250 mA	84%
TEN 6-4821WIN-HI		±5 VDC	±500 mA	80%
TEN 6-4822WIN-HI		±12 VDC	±250 mA	84%
TEN 6-4823WIN-HI		±15 VDC	±200 mA	84%

TEN 6WIRH

6 Watt



- Industrial standard DIP-24 package
- 3000 VAC reinforced I/O-isolation
- Wide 4:1 input voltage range: 36 – 160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- High efficiency up to 87%
- Operating temperature range -40°C to +85°C
- Under voltage lock-out circuit
- Remote On/Off and Trim function
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	Ctrl	Ctrl
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Common
10	Trim (option)	Trim (option)
11	NC	-Vout
14	+ Vout	+ Vout
16	-Vout	Common
22	+ Vin	+ Vin
23	+ Vin	+ Vin

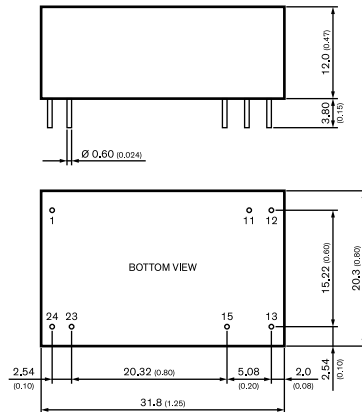
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 6-11010WIRH	36 – 160 VDC	3.3 VDC	1800 mA	83%
TEN 6-11011WIRH		5 VDC	1200 mA	86%
TEN 6-11012WIRH		12 VDC	500 mA	87%
TEN 6-11013WIRH		15 VDC	400 mA	86%
TEN 6-11015WIRH		24 VDC	250 mA	86%
TEN 6-11021WIRH		±5 VDC	±600 mA	83%
TEN 6-11022WIRH		±12 VDC	±250 mA	86%
TEN 6-11023WIRH		±15 VDC	±200 mA	86%

TRI 6

6 Watt



- Reinforced I/O-isolation 7071 VDC rated for 1000 VAC working voltage
- Ultra-high isolation peak voltage 9000 VDC (1s)
- Common Mode Transient Immunity (dv/dt) 15 kV/μs
- Operating temperature range –40 to +85°C
- Low no-load power consumption 120 – 240 mW
- Internal EN 55032 class A filter
- High efficiency up to 89%
- 2:1 input voltage range: 9–18, 18–36, 36–75 VDC
- Protection against overload, overvoltage and short circuit
- 3-year product warranty



Pinout		
Pin	Single Output	Dual Output
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	–Vout	No pin
13	+Vout	–Vout
15	No pin	+Vout
23	–Vin (GND)	–Vin (GND)
24	–Vin (GND)	–Vin (GND)

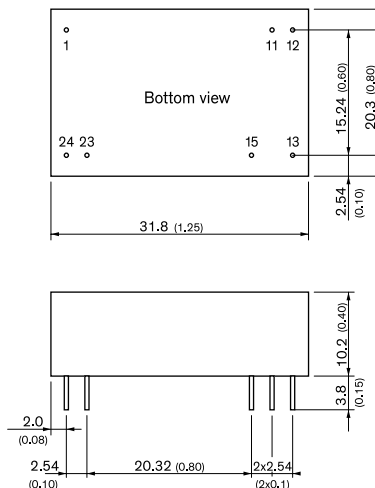
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TRI 6-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	1'200 mA	83%
TRI 6-1212		12 VDC	500 mA	86%
TRI 6-1213		15 VDC	400 mA	86%
TRI 6-1215		24 VDC	250 mA	86%
TRI 6-1222		±12 VDC	250 mA	87%
TRI 6-1223		±15 VDC	200 mA	87%
TRI 6-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	1'200 mA	83%
TRI 6-2412		12 VDC	500 mA	86%
TRI 6-2413		15 VDC	400 mA	87%
TRI 6-2415		24 VDC	250 mA	85%
TRI 6-2422		±12 VDC	250 mA	86%
TRI 6-2423		±15 VDC	200 mA	87%
TRI 6-4811	36 – 75 VDC (48 VDC nom.)	5 VDC	1'200 mA	83%
TRI 6-4812		12 VDC	500 mA	86%
TRI 6-4813		15 VDC	400 mA	89%
TRI 6-4815		24 VDC	250 mA	86%
TRI 6-4822		±12 VDC	250 mA	87%
TRI 6-4823		±15 VDC	200 mA	88%

THM 6

6 Watt



- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 μA
- Operating temp.: –40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A



Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	–Vout	No pin
13	+Vout	–Vout
15	No pin	+Vout
23	–Vin (GND)	–Vin (GND)
24	–Vin (GND)	–Vin (GND)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THM 6-0510	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	1800 mA	82%
THM 6-0511		5 VDC	1200 mA	86%
THM 6-0512		12 VDC	500 mA	86%
THM 6-0513		15 VDC	400 mA	88%
THM 6-0515		24 VDC	250 mA	87%
THM 6-0521	9 – 18 VDC (12 VDC nom.)	±5 VDC	600 mA	84%
THM 6-0522		±12 VDC	250 mA	87%
THM 6-0523		±15 VDC	200 mA	88%
THM 6-1210		3.3 VDC	1800 mA	84%
THM 6-1211		5 VDC	1200 mA	86%
THM 6-1212		12 VDC	500 mA	89%
THM 6-1213		15 VDC	400 mA	89%
THM 6-1215		24 VDC	250 mA	89%
THM 6-1221	18 – 36 VDC (24 VDC nom.)	±5 VDC	600 mA	85%
THM 6-1222		±12 VDC	250 mA	89%
THM 6-1223		±15 VDC	200 mA	88%
THM 6-2410		3.3 VDC	1800 mA	83%
THM 6-2411		5 VDC	1200 mA	86%
THM 6-2412		12 VDC	500 mA	89%
THM 6-2413		15 VDC	400 mA	89%
THM 6-2415		24 VDC	250 mA	89%
THM 6-2421	36 – 75 VDC (48 VDC nom.)	±5 VDC	600 mA	85%
THM 6-2422		±12 VDC	250 mA	89%
THM 6-2423		±15 VDC	200 mA	89%
THM 6-4810		3.3 VDC	1800 mA	83%
THM 6-4811		5 VDC	1200 mA	87%
THM 6-4812		12 VDC	500 mA	88%
THM 6-4813		15 VDC	400 mA	89%
THM 6-4815		24 VDC	250 mA	88%
THM 6-4821	36 – 75 VDC (48 VDC nom.)	±5 VDC	600 mA	85%
THM 6-4822		±12 VDC	250 mA	88%
THM 6-4823		±15 VDC	200 mA	87%

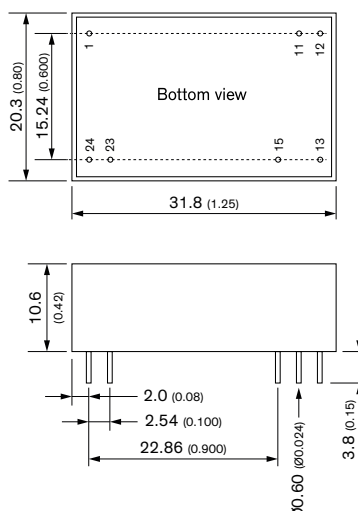
TIM 6

NEW!

6 Watt



- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 µA
- Operating temp.: -40°C to 95°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A



Pinout / Connection

Pin	Single	Dual
1	+Vin	+Vin
11	No Pin	Common
12	-Vout	No Pin
13	+Vout	-Vout
15	No Pin	+Vout
23	-Vout	-Vout
24	-Vout	-Vout

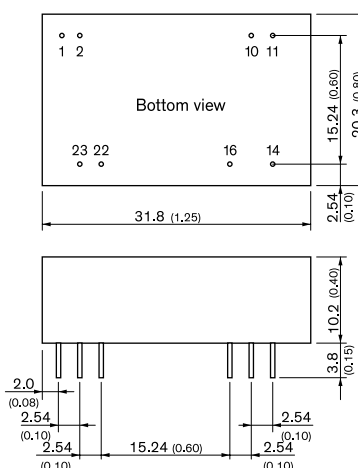
Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TIM 6-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	1200 mA	84%
TIM 6-1212		12 VDC	500 mA	87%
TIM 6-1213		15 VDC	400 mA	86%
TIM 6-1221		±5 VDC	±600 mA	83%
TIM 6-1222		±12 VDC	±250 mA	87%
TIM 6-1223		±15 VDC	±200 mA	86%
TIM 6-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	1200 mA	84%
TIM 6-2412		12 VDC	500 mA	87%
TIM 6-2413		15 VDC	400 mA	87%
TIM 6-2421		±5 VDC	±600 mA	84%
TIM 6-2422		±12 VDC	±250 mA	86%
TIM 6-2423		±15 VDC	±200 mA	86%
TIM 6-4811	36 – 75 VDC (48 VDC nom.)	5 VDC	1200 mA	84%
TIM 6-4812		12 VDC	500 mA	87%
TIM 6-4813		15 VDC	400 mA	86%
TIM 6-4821		±5 VDC	±600 mA	83%
TIM 6-4822		±12 VDC	±250 mA	87%
TIM 6-4823		±15 VDC	±200 mA	85%

THM 6WI

6 Watt



- Ultra wide 4:1 input voltage 6 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 µA
- Operating temp.: -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude



Pinout / Connection

Pin	Single	Dual
1	No pin*/Remote	No pin*/Remote
2	-Vin (GND)	-Vin (GND)
10	No pin*/Trim	No pin*/Trim
11	No pin/NC **	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THM 6-0510WI	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	1800 mA	82%
THM 6-0511WI		5 VDC	1200 mA	86%
THM 6-0512WI		12 VDC	500 mA	86%
THM 6-0513WI		15 VDC	400 mA	88%
THM 6-0515WI		24 VDC	250 mA	87%
THM 6-0521WI	9 – 36 VDC (24 VDC nom.)	±5 VDC	600 mA	84%
THM 6-0522WI		±12 VDC	250 mA	87%
THM 6-0523WI		±15 VDC	200 mA	88%
THM 6-2410WI		3.3 VDC	1800 mA	83%
THM 6-2411WI		5 VDC	1200 mA	86%
THM 6-2412WI		12 VDC	500 mA	89%
THM 6-2413WI		15 VDC	400 mA	89%
THM 6-2415WI		24 VDC	250 mA	89%
THM 6-2421WI	18 – 75 VDC (48 VDC nom.)	±5 VDC	600 mA	85%
THM 6-2422WI		±12 VDC	250 mA	89%
THM 6-2423WI		±15 VDC	200 mA	89%
THM 6-4810WI		3.3 VDC	1800 mA	83%
THM 6-4811WI		5 VDC	1200 mA	87%
THM 6-4812WI		12 VDC	500 mA	88%
THM 6-4813WI		15 VDC	400 mA	89%
THM 6-4815WI		24 VDC	250 mA	88%
THM 6-4821WI		±5 VDC	600 mA	85%
THM 6-4822WI		±12 VDC	250 mA	88%
THM 6-4823WI		±15 VDC	200 mA	87%

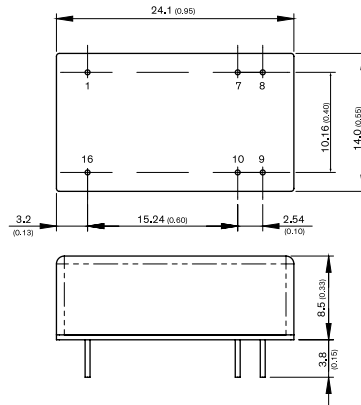
NC: No connection

* If Remote or Trim is not selected there is no pin on corresponding number.

** If Trim is selected there is no pin on the corresponding pin number.

TEL 8

8 Watt



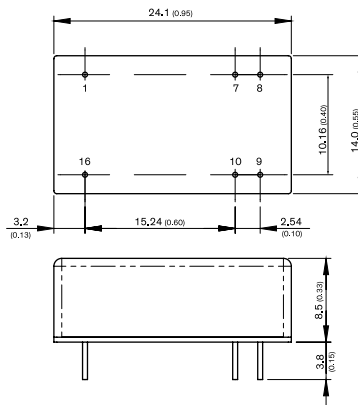
Model	Input Voltage Range	Vnom	Imax	Efficiency
TEL 8-1210	9 – 18 VDC (12 VDC nom.)	3.3 VDC	1'600 mA	78%
TEL 8-1211		5 VDC	1'600 mA	81%
TEL 8-1212		12 VDC	665 mA	84%
TEL 8-1213		15 VDC	535 mA	84%
TEL 8-1215		24 VDC	335 mA	85%
TEL 8-1222		±12 VDC	335 mA	85%
TEL 8-1223		±15 VDC	265 mA	84%
TEL 8-2410	18 – 36 VDC (24 VDC nom.)	3.3 VDC	1'600 mA	78%
TEL 8-2411		5 VDC	1'600 mA	82%
TEL 8-2412		12 VDC	665 mA	85%
TEL 8-2413		15 VDC	535 mA	85%
TEL 8-2415		24 VDC	335 mA	86%
TEL 8-2422		±12 VDC	335 mA	85%
TEL 8-2423		±15 VDC	265 mA	86%
TEL 8-4810	36 – 75 VDC (48 VDC nom.)	3.3 VDC	1'600 mA	78%
TEL 8-4811		5 VDC	1'600 mA	81%
TEL 8-4812		12 VDC	665 mA	85%
TEL 8-4813		15 VDC	535 mA	85%
TEL 8-4815		24 VDC	335 mA	86%
TEL 8-4822		±12 VDC	335 mA	86%
TEL 8-4823		±15 VDC	265 mA	86%

- Ultra compact 8 W converter in DIP-16 metal casing
- Operating temperature range –40°C to +80°C
- Wide 2:1 input range
- Built-in EN 55032 class A filter
- Protection against short circuit
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin (Vcc)	+Vin (Vcc)

TEL 8WI

8 Watt



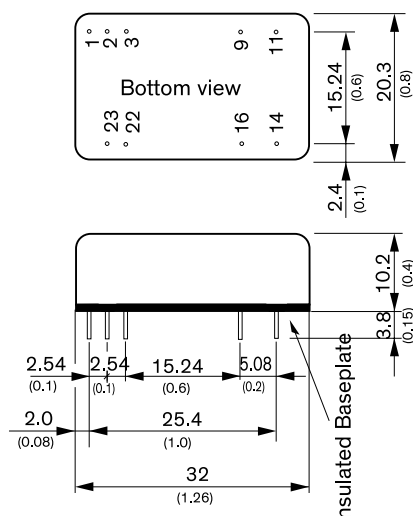
Model	Input Voltage Range	Vnom	Imax	Efficiency
TEL 8-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	2000 mA	78%
TEL 8-2411WI		5 VDC	1600 mA	82%
TEL 8-2412WI		12 VDC	665 mA	85%
TEL 8-2413WI		15 VDC	535 mA	85%
TEL 8-2415WI		24 VDC	335 mA	86%
TEL 8-2422WI		±12 VDC	335 mA	85%
TEL 8-2423WI		±15 VDC	265 mA	86%
TEL 8-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	2000 mA	78%
TEL 8-4811WI		5 VDC	1600 mA	81%
TEL 8-4812WI		12 VDC	665 mA	85%
TEL 8-4813WI		15 VDC	535 mA	85%
TEL 8-4815WI		24 VDC	335 mA	86%
TEL 8-4822WI		±12 VDC	335 mA	86%
TEL 8-4823WI		±15 VDC	265 mA	86%

- Ultra compact 8 W converter in DIP-16 metal casing
- Operating temperature range –40°C to +80°C
- Ultra wide 4:1 input range
- Built-in EN 55032 class A filter
- Protection against short circuit
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vin (Vcc)	+Vin (Vcc)

TEN 8

8 Watt



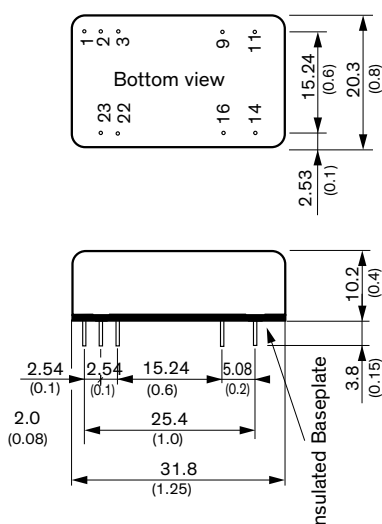
- DIP-24 package with industry standard footprint
- Wide 2:1 input voltage range
- Input filter meets EN 55032, class A
- Extended operating temperature range: -40°C to +85°C
- Remote On/Off
- Shielded metal casing with insulated baseplate
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	No con.	Common
11	No con.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 8-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	2000 mA	80%
TEN 8-1211		5 VDC	1500 mA	83%
TEN 8-1212		12 VDC	665 mA	88%
TEN 8-1213		15 VDC	535 mA	87%
TEN 8-1221		±5 VDC	±800 mA	83%
TEN 8-1222		±12 VDC	±335 mA	87%
TEN 8-1223		±15 VDC	±265 mA	85%
TEN 8-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	2000 mA	80%
TEN 8-2411		5 VDC	1500 mA	83%
TEN 8-2412		12 VDC	665 mA	86%
TEN 8-2413		15 VDC	535 mA	85%
TEN 8-2421		±5 VDC	±800 mA	82%
TEN 8-2422		±12 VDC	±335 mA	86%
TEN 8-2423		±15 VDC	±265 mA	85%
TEN 8-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	2000 mA	80%
TEN 8-4811		5 VDC	1500 mA	83%
TEN 8-4812		12 VDC	665 mA	86%
TEN 8-4813		15 VDC	535 mA	86%
TEN 8-4821		±5 VDC	±800 mA	85%
TEN 8-4822		±12 VDC	±335 mA	87%
TEN 8-4823		±15 VDC	±265 mA	87%

TEN 8WI

8 Watt



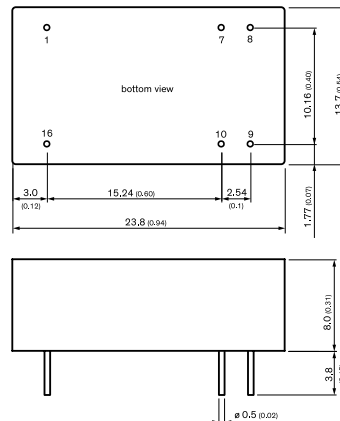
- DIP-24 metal package
- Ultra wide 4:1 input voltage range 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- High efficiency up to 88%
- No minimum load required
- Operating temperature range -40°C to +85°C
- Remote On/Off
- Under voltage lock-out circuit
- Shielded metal case with insulated base plate
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	NC	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 8-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	2400 mA	85%
TEN 8-2411WI		5 VDC	1600 mA	87%
TEN 8-2412WI		12 VDC	666 mA	86%
TEN 8-2413WI		15 VDC	533 mA	86%
TEN 8-2421WI		±5 VDC	±800 mA	84%
TEN 8-2422WI		±12 VDC	±333 mA	86%
TEN 8-2423WI		±15 VDC	±267 mA	86%
TEN 8-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	2400 mA	85%
TEN 8-4811WI		5 VDC	1600 mA	87%
TEN 8-4812WI		12 VDC	666 mA	87%
TEN 8-4813WI		15 VDC	533 mA	88%
TEN 8-4821WI		±5 VDC	±800 mA	84%
TEN 8-4822WI		±12 VDC	±333 mA	87%
TEN 8-4823WI		±15 VDC	±267 mA	87%
TEN 8-7210WI	43 – 160 VDC (110 VDC nom.)	3.3 VDC	2400 mA	84%
TEN 8-7211WI		5 VDC	1600 mA	85%
TEN 8-7212WI		12 VDC	666 mA	86%
TEN 8-7213WI		15 VDC	533 mA	86%
TEN 8-7221WI		±5 VDC	±800 mA	82%
TEN 8-7222WI		±12 VDC	±333 mA	85%
TEN 8-7223WI		±15 VDC	±267 mA	85%

TEL 10

10 Watt



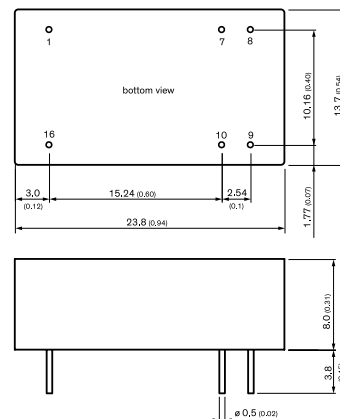
- Most compact 10 Watt converter in DIP-16 metal casing
- Highest power density of 3.83 W/cm³
- 6-side shielded metal case with insulated base plate
- Wide 2:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of -40°C to +88°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 10-1210	9 – 18 VDC (12 VDC nom.)	3.3 VDC	2'700 mA	79%
TEL 10-1211		5.1 VDC	2'000 mA	82%
TEL 10-1212		12 VDC	833 mA	86%
TEL 10-1213		15 VDC	666 mA	87%
TEL 10-1215		24 VDC	416 mA	87%
TEL 10-1222		±12 VDC	416 mA	86%
TEL 10-1223		±15 VDC	333 mA	86%
TEL 10-2410	18 – 36 VDC (24 VDC nom.)	3.3 VDC	2'700 mA	80%
TEL 10-2411		5.1 VDC	2'000 mA	83%
TEL 10-2412		12 VDC	833 mA	87%
TEL 10-2413		15 VDC	666 mA	88%
TEL 10-2415		24 VDC	416 mA	88%
TEL 10-2422		±12 VDC	416 mA	87%
TEL 10-2423		±15 VDC	333 mA	87%
TEL 10-4810	36 – 75 VDC (48 VDC nom.)	3.3 VDC	2'700 mA	80%
TEL 10-4811		5.1 VDC	2'000 mA	83%
TEL 10-4812		12 VDC	833 mA	87%
TEL 10-4813		15 VDC	666 mA	88%
TEL 10-4815		24 VDC	416 mA	88%
TEL 10-4822		±12 VDC	416 mA	87%
TEL 10-4823		±15 VDC	333 mA	87%

TEL 10WI

10 Watt



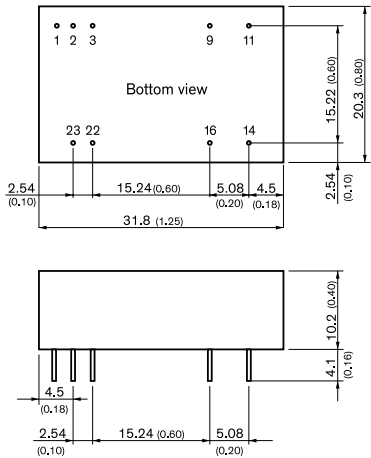
- Most compact 10 Watt converter in DIP-16 metal casing
- Highest power density of 3.83 W/cm³
- 6-side shielded metal case with insulated base plate
- Ultra wide 4:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of -40°C to +88°C
- Built-in EN 55032 class A filter
- Protection against short circuit and overload
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 10-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	2'700 mA	80%
TEL 10-2411WI		5.1 VDC	2'000 mA	83%
TEL 10-2412WI		12 VDC	833 mA	87%
TEL 10-2413WI		15 VDC	666 mA	88%
TEL 10-2415WI		24 VDC	416 mA	88%
TEL 10-2422WI		±12 VDC	416 mA	87%
TEL 10-2423WI		±15 VDC	333 mA	87%
TEL 10-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	2'700 mA	80%
TEL 10-4811WI		5.1 VDC	2'000 mA	83%
TEL 10-4812WI		12 VDC	833 mA	87%
TEL 10-4813WI		15 VDC	666 mA	88%
TEL 10-4815WI		24 VDC	416 mA	88%
TEL 10-4822WI		±12 VDC	416 mA	87%
TEL 10-4823WI		±15 VDC	333 mA	87%

THD 10N

10 Watt



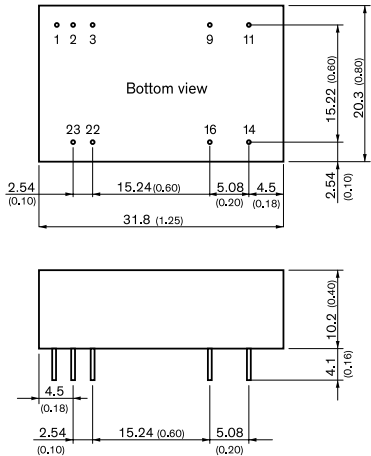
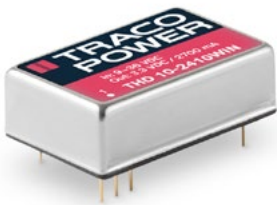
- Wide 2:1 input voltage range
- Internal EMI-filter meets EN 55032, class A without external components
- High efficiency up to 89%
- Operating temperature range –40°C to +85°C
- No minimum load required
- I/O isolation 1500 VDC
- Overload protection
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	No function	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THD 10-1210N	9 – 18 VDC (12 VDC nominal)	3.3 VDC	2700 mA	86%
THD 10-1211N		5.1 VDC	2000 mA	85%
THD 10-1212N		12 VDC	833 mA	88%
THD 10-1213N		15 VDC	666 mA	89%
THD 10-1222N		±12 VDC	±416 mA	88%
THD 10-1223N		±15 VDC	±333 mA	89%
THD 10-2410N	18 – 36 VDC (24 VDC nominal)	3.3 VDC	2700 mA	86%
THD 10-2411N		5.1 VDC	2000 mA	85%
THD 10-2412N		12 VDC	833 mA	89%
THD 10-2413N		15 VDC	666 mA	89%
THD 10-2422N		±12 VDC	±416 mA	88%
THD 10-2423N		±15 VDC	±333 mA	89%
THD 10-4810N	36 – 75 VDC (48 VDC nominal)	3.3 VDC	2700 mA	86%
THD 10-4811N		5.1 VDC	2000 mA	85%
THD 10-4812N		12 VDC	833 mA	87%
THD 10-4813N		15 VDC	666 mA	88%
THD 10-4822N		±12 VDC	±416 mA	87%
THD 10-4823N		±15 VDC	±333 mA	88%

THD 10WIN

10 Watt



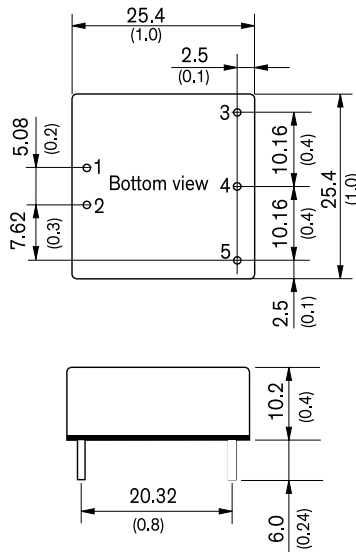
- Ultra wide 4:1 input voltage range
- Internal EMI-filter meets EN 55032, class A without external components
- High efficiency up to 87%
- Operating temperature range –40°C to +85°C
- No minimum load required
- I/O isolation 1500 VDC
- Overload protection
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	No function	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THD 10-2410WIN	9 – 36 VDC (24 VDC nominal)	3.3 VDC	2700 mA	86%
THD 10-2411WIN		5.1 VDC	2000 mA	85%
THD 10-2412WIN		12 VDC	833 mA	87%
THD 10-2413WIN		15 VDC	666 mA	87%
THD 10-2415WIN		24 VDC	416 mA	87%
THD 10-2422WIN	18 – 75 VDC (48 VDC nominal)	±12 VDC	±416 mA	87%
THD 10-2423WIN		±15 VDC	±333 mA	87%
THD 10-4810WIN		3.3 VDC	2700 mA	86%
THD 10-4811WIN		5.1 VDC	2000 mA	85%
THD 10-4812WIN		12 VDC	833 mA	87%
THD 10-4813WIN		15 VDC	666 mA	87%
THD 10-4815WIN		24 VDC	416 mA	87%
THD 10-4822WIN		±12 VDC	±416 mA	87%
THD 10-4823WIN		±15 VDC	±333 mA	87%

THL 10

10 Watt



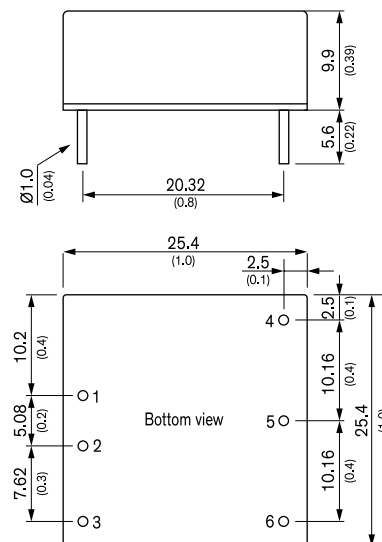
- 10 Watt in 1" × 1" package
- Shielded metal case with isolated baseplate
- Wide 2:1 input voltage ranges
- Operating temp. range -40°C to $+80^{\circ}\text{C}$ and up to $+85^{\circ}\text{C}$ with heat-sink
- I/O isolation voltage 1500 VDC
- Input filter meets EN 55032 class A without external components
- Cost optimized design
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+ Vout	+ Vout
4	No pin	Common
5	-Vout	-Vout

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THL 10-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	2500 mA	82%
THL 10-1211		5.1 VDC	2000 mA	85%
THL 10-1212		12 VDC	830 mA	87%
THL 10-1213		15 VDC	670 mA	88%
THL 10-1221		±5.0 VDC	±1000 mA	84%
THL 10-1222		±12 VDC	±416 mA	87%
THL 10-1223		±15 VDC	±333 mA	87%
THL 10-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	2500 mA	83%
THL 10-2411		5.1 VDC	2000 mA	85%
THL 10-2412		12 VDC	830 mA	87%
THL 10-2413		15 VDC	670 mA	89%
THL 10-2421		±5.0 VDC	±1000 mA	85%
THL 10-2422		±12 VDC	±416 mA	88%
THL 10-2423		±15 VDC	±333 mA	89%
THL 10-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	2500 mA	83%
THL 10-4811		5.1 VDC	2000 mA	85%
THL 10-4812		12 VDC	830 mA	89%
THL 10-4813		15 VDC	670 mA	89%
THL 10-4821		±5.0 VDC	±1000 mA	86%
THL 10-4822		±12 VDC	±416 mA	87%
THL 10-4823		±15 VDC	±333 mA	88%

THN 10WIR

10 Watt



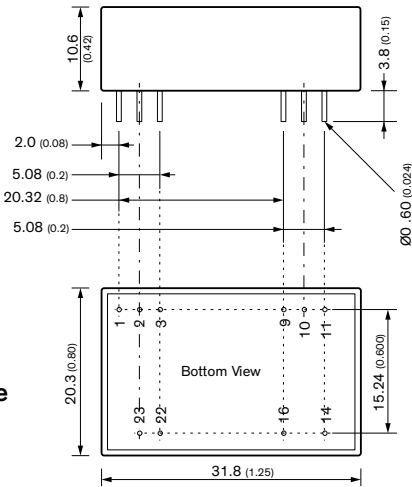
- Compact 1" × 1" × 0.4" standard package
- Wide 4:1 input voltage range 9–36, 18–75, 36–160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VDC
- High efficiency up to 90%
- Operating temperature range -40°C to $+90^{\circ}\text{C}$
- Under voltage lock-out circuit
- Adjustable output voltage & Remote On/Off

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THN 10-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	3000 mA	87%
THN 10-2411WIR		5 VDC	2000 mA	89%
THN 10-2412WIR		12 VDC	830 mA	89%
THN 10-2413WIR		15 VDC	670 mA	90%
THN 10-2415WIR		24 VDC	420 mA	90%
THN 10-2421WIR		±5 VDC	±1000 mA	86%
THN 10-2422WIR	18 – 75 VDC (48 VDC nom.)	±12 VDC	±416 mA	89%
THN 10-2423WIR		±15 VDC	±333 mA	89%
THN 10-2425WIR		±24 VDC	±210 mA	90%
THN 10-4810WIR		3.3 VDC	3000 mA	87%
THN 10-4811WIR		5 VDC	2000 mA	89%
THN 10-4812WIR		12 VDC	830 mA	89%
THN 10-4813WIR		15 VDC	670 mA	90%
THN 10-4815WIR		24 VDC	420 mA	90%
THN 10-4821WIR	36 – 160 VDC (110 VDC nom.)	±5 VDC	±1000 mA	86%
THN 10-4822WIR		±12 VDC	±416 mA	89%
THN 10-4823WIR		±15 VDC	±333 mA	89%
THN 10-4825WIR		±24 VDC	±210 mA	90%
THN 10-7210WIR		3.3 VDC	3000 mA	87%
THN 10-7211WIR		5 VDC	2000 mA	88%
THN 10-7212WIR	18 – 75 VDC (48 VDC nom.)	12 VDC	830 mA	89%
THN 10-7213WIR		15 VDC	670 mA	89%
THN 10-7215WIR		24 VDC	420 mA	89%
THN 10-7221WIR		±5 VDC	±1000 mA	85%
THN 10-7222WIR		±12 VDC	±416 mA	89%
THN 10-7223WIR		±15 VDC	±333 mA	89%
THN 10-7225WIR		±24 VDC	±210 mA	89%

TEN 10WIRH

10 Watt



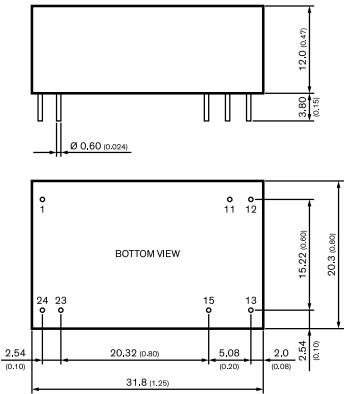
- Industrial standard DIP-24 package
- 3000 VAC reinforced I/O-isolation
- Wide 4:1 input voltage range: 36 – 160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- High efficiency up to 88%
- Operating temperature range –40°C to +85°C
- Under voltage lock-out circuit
- Remote On/Off and Trim function
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Ctrl	Ctrl
2	– Vin	– Vin
3	– Vin	– Vin
9	NC	Common
10	Trim (option)	Trim (option)
11	NC	– Vout
14	+ Vout	+ Vout
16	– Vout	Common
22	+ Vin	+ Vin
23	+ Vin	+ Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 10-11010WIRH	36 – 160 VDC	3.3 VDC	2500 mA	83%
TEN 10-11011WIRH		5 VDC	2000 mA	87%
TEN 10-11012WIRH		12 VDC	830 mA	88%
TEN 10-11013WIRH		15 VDC	670 mA	88%
TEN 10-11015WIRH		24 VDC	416 mA	88%
TEN 10-11021WIRH		±5 VDC	±1000 mA	84%
TEN 10-11022WIRH		±12 VDC	±416 mA	87%
TEN 10-11023WIRH		±15 VDC	±333 mA	87%

TRI 10

10 Watt



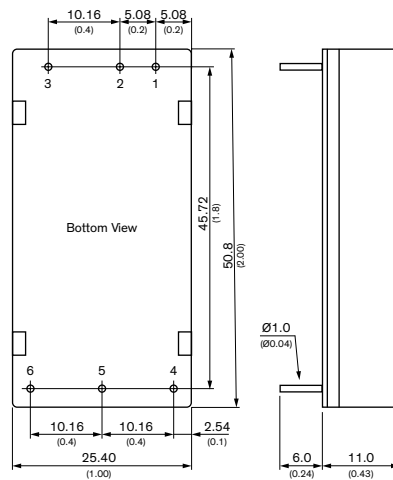
- Reinforced I/O-isolation 7071 VDC rated for 1000 VAC working voltage
- Ultra-high isolation peak voltage 9000 VDC (1s)
- Common Mode Transient Immunity (dv/dt) 15 kV/μs
- Operating temperature range –40 to +85°C
- Low no-load power consumption 144 – 288 mW
- Internal EN 55032 class A filter
- High efficiency up to 88%
- 2:1 input voltage range: 9–18, 18–36, 36–75 VDC
- Protection against overload, overvoltage and short circuit
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	–Vout	No pin
13	+Vout	–Vout
15	No pin	+Vout
23	–Vin (GND)	–Vin (GND)
24	–Vin (GND)	–Vin (GND)

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TRI 10-1210	9 – 18 VDC (12 VDC nom.)	3.3 VDC	2'700 mA	81%
TRI 10-1211		5.1 VDC	2'000 mA	83%
TRI 10-1212		12 VDC	833 mA	86%
TRI 10-1213		15 VDC	666 mA	88%
TRI 10-1215		24 VDC	416 mA	88%
TRI 10-1222		±12 VDC	416 mA	88%
TRI 10-1223	18 – 36 VDC (24 VDC nom.)	±15 VDC	333 mA	87%
TRI 10-2410		3.3 VDC	2'700 mA	81%
TRI 10-2411		5.1 VDC	2'000 mA	84%
TRI 10-2412		12 VDC	833 mA	87%
TRI 10-2413		15 VDC	666 mA	88%
TRI 10-2415		24 VDC	416 mA	88%
TRI 10-2422	36 – 75 VDC (48 VDC nom.)	±12 VDC	416 mA	88%
TRI 10-2423		±15 VDC	333 mA	87%
TRI 10-4810		3.3 VDC	2'700 mA	81%
TRI 10-4811		5.1 VDC	2'000 mA	84%
TRI 10-4812		12 VDC	833 mA	87%
TRI 10-4813		15 VDC	666 mA	88%
TRI 10-4815		24 VDC	416 mA	87%
TRI 10-4822		±12 VDC	416 mA	87%
TRI 10-4823		±15 VDC	333 mA	87%

THR 10WI

10 Watt



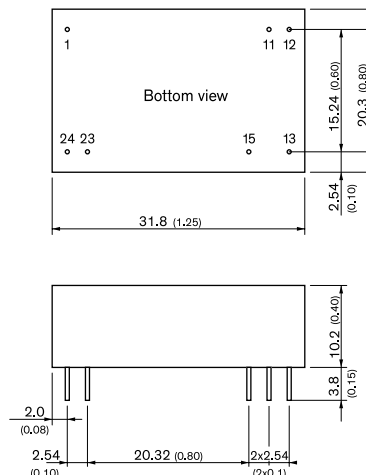
- Ultra wide 4:1 input range
- Reinforced I/O-isolation 3000 VAC
- Input filter to meet EN 55032, Class A
- High efficiency up to 85%
- Extended operating temperature range -40°C to 90°C
- 2" x 1" package
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THR 10-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	2000 mA	84%
THR 10-2412WI		12 VDC	835 mA	86%
THR 10-2413WI		15 VDC	670 mA	87%
THR 10-2415WI		24 VDC	417 mA	88%
THR 10-2422WI		±12 VDC	±417 mA	86%
THR 10-2423WI	18 – 75 VDC (48 VDC nom.)	±15 VDC	±335 mA	87%
THR 10-4811WI		5 VDC	2000 mA	85%
THR 10-4812WI		12 VDC	835 mA	87%
THR 10-4813WI		15 VDC	670 mA	87%
THR 10-4815WI		24 VDC	417 mA	86%
THR 10-4822WI	40 – 160 VDC (110 VDC nom.)	±12 VDC	±417 mA	89%
THR 10-4823WI		±15 VDC	±335 mA	88%
THR 10-7211WI		5 VDC	2000 mA	82%
THR 10-7212WI		12 VDC	835 mA	85%
THR 10-7213WI		15 VDC	670 mA	85%
THR 10-7215WI		24 VDC	417 mA	85%
THR 10-7222WI		±12 VDC	±417 mA	86%
THR 10-7223WI		±15 VDC	±335 mA	86%

THM 10

10 Watt



- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current $<2\ \mu\text{A}$
- Operating temp.: -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A

Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	-Vout	No pin
13	+Vout	-Vout
15	No pin	+Vout
23	-Vin (GND)	-Vin (GND)
24	-Vin (GND)	-Vin (GND)

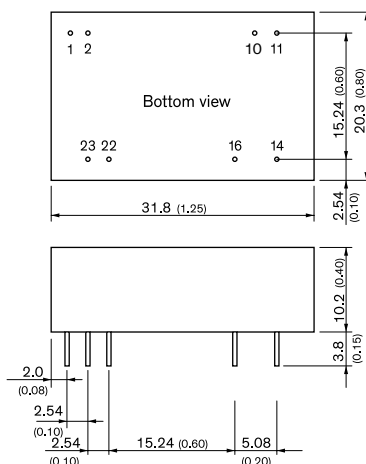
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THM 10-0510	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	2500 mA	80%
THM 10-0511		5 VDC	2000 mA	84%
THM 10-0512		12 VDC	830 mA	87%
THM 10-0513		15 VDC	670 mA	87%
THM 10-0515		24 VDC	416 mA	86%
THM 10-0521	9 – 18 VDC (12 VDC nom.)	±5 VDC	1000 mA	83%
THM 10-0522		±12 VDC	416 mA	86%
THM 10-0523		±15 VDC	333 mA	87%
THM 10-1210		3.3 VDC	2500 mA	83%
THM 10-1211		5 VDC	2000 mA	86%
THM 10-1212	18 – 36 VDC (24 VDC nom.)	12 VDC	830 mA	88%
THM 10-1213		15 VDC	670 mA	89%
THM 10-1215		24 VDC	416 mA	89%
THM 10-1221		±5 VDC	1000 mA	84%
THM 10-1222		±12 VDC	416 mA	89%
THM 10-1223	36 – 75 VDC (48 VDC nom.)	±15 VDC	333 mA	88%
THM 10-2410		3.3 VDC	2500 mA	83%
THM 10-2411		5 VDC	2000 mA	87%
THM 10-2412		12 VDC	830 mA	89%
THM 10-2413		15 VDC	670 mA	89%
THM 10-2415		24 VDC	416 mA	89%
THM 10-2421		±5 VDC	1000 mA	85%
THM 10-2422		±12 VDC	416 mA	89%
THM 10-2423		±15 VDC	333 mA	88%
THM 10-4810		3.3 VDC	2500 mA	83%
THM 10-4811		5 VDC	2000 mA	87%
THM 10-4812		12 VDC	830 mA	89%
THM 10-4813		15 VDC	670 mA	89%
THM 10-4815		24 VDC	416 mA	89%
THM 10-4821		±5 VDC	1000 mA	85%
THM 10-4822		±12 VDC	416 mA	88%
THM 10-4823		±15 VDC	333 mA	88%

THM 10WI

10 Watt



- Ultra wide 4:1 input voltage 10 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 µA
- Operating temp.: -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude



Pinout / Connection		
Pin	Single	Dual
1	No pin*/Remote	No pin*/Remote
2	-Vin (GND)	NC -Vin (GND)
10	No pin*/Trim	No pin*/Trim
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THM 10-0510WI	4.5 – 9 VDC (5 VDC nom.)	3.3 VDC	2500 mA	80%
THM 10-0511WI		5 VDC	2000 mA	84%
THM 10-0512WI		12 VDC	830 mA	87%
THM 10-0513WI		15 VDC	670 mA	87%
THM 10-0515WI		24 VDC	416 mA	86%
THM 10-0521WI		±5 VDC	1000 mA	83%
THM 10-0522WI	9 – 36 VDC (24 VDC nom.)	±12 VDC	416 mA	86%
THM 10-0523WI		±15 VDC	333 mA	87%
THM 10-2410WI		3.3 VDC	2500 mA	83%
THM 10-2411WI		5 VDC	2000 mA	87%
THM 10-2412WI		12 VDC	830 mA	89%
THM 10-2413WI		15 VDC	670 mA	89%
THM 10-2415WI		24 VDC	416 mA	89%
THM 10-2421WI	18 – 75 VDC (48 VDC nom.)	±5 VDC	1000 mA	85%
THM 10-2422WI		±12 VDC	416 mA	89%
THM 10-2423WI		±15 VDC	333 mA	88%
THM 10-4810WI		3.3 VDC	2500 mA	83%
THM 10-4811WI		5 VDC	2000 mA	87%
THM 10-4812WI		12 VDC	830 mA	89%
THM 10-4813WI		15 VDC	670 mA	89%
THM 10-4815WI		24 VDC	416 mA	89%
THM 10-4821WI		±5 VDC	1000 mA	85%
THM 10-4822WI		±12 VDC	416 mA	88%
THM 10-4823WI		±15 VDC	333 mA	88%

NC: No connection

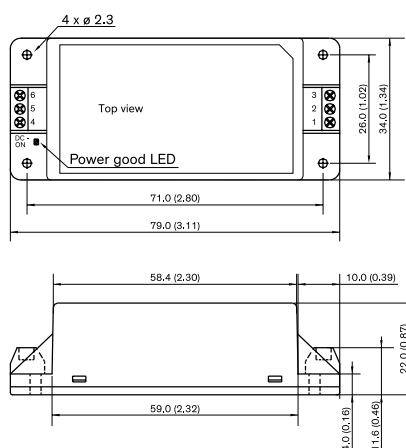
* If Remote or Trim is not selected there is no pin on corresponding number.

TMDC 10

10 Watt



- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Ultra wide 4:1 input voltage range: 9–36 and 18–75 VDC
- Operating temperature range -40 to +80°C without derating
- I/O-isolation 3000 VDC
- Protection against overload, undervoltage and short circuit
- DC-OK (LED) and Remote On/Off function
- IEC/EN/UL 62368-1 safety approvals
- 3-year product warranty

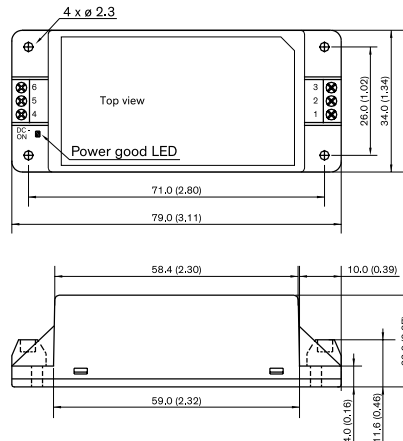


Pinout		
Pin	Single Output	Dual Output
1	Remote	Remote
2	-Vin (GND)	-Vin (GND)
3	+Vin (Vcc)	+Vin (Vcc)
4	-Vout	-Vout
5	NC	Common
6	+Vout	+Vout

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TMDC 10-2411	9 – 36 VDC (24 VDC nom.)	5.1 VDC	2'000 mA	84%
TMDC 10-2412		12 VDC	833 mA	86%
TMDC 10-2413		15 VDC	666 mA	86%
TMDC 10-2415		24 VDC	416 mA	86%
TMDC 10-2418		48 VDC	208 mA	84%
TMDC 10-2422		±12 VDC	416 mA	86%
TMDC 10-2423	18 – 75 VDC (48 VDC nom.)	±15 VDC	333 mA	86%
TMDC 10-2425		±24 VDC	208 mA	85%
TMDC 10-4811		5.1 VDC	2'000 mA	84%
TMDC 10-4812		12 VDC	833 mA	86%
TMDC 10-4813		15 VDC	666 mA	86%
TMDC 10-4815		24 VDC	416 mA	86%
TMDC 10-4818		48 VDC	208 mA	84%
TMDC 10-4822		±12 VDC	416 mA	86%
TMDC 10-4823		±15 VDC	333 mA	86%
TMDC 10-4825		±24 VDC	208 mA	85%

TMDC 10H

10 Watt



Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TMDC 10-7211H	80 – 160 VDC (110 VDC nom.)	5.1 VDC	2000 mA	83%
TMDC 10-7212H		12 VDC	833 mA	85%
TMDC 10-7213H		15 VDC	666 mA	85%
TMDC 10-7215H		24 VDC	416 mA	85%
TMDC 10-7218H		48 VDC	208 mA	83%
TMDC 10-7222H		± 12 VDC	± 416 mA	85%
TMDC 10-7223H		± 15 VDC	± 333 mA	85%
TMDC 10-7225H		± 24 VDC	± 208 mA	84%

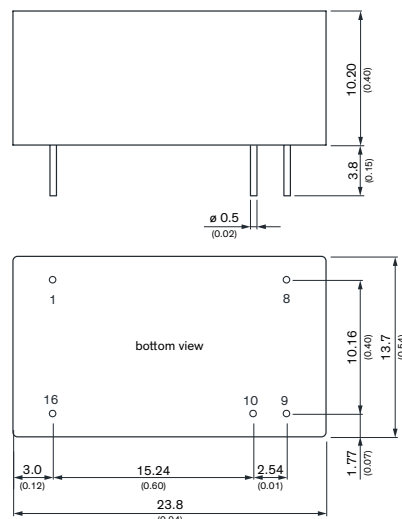
- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Wide 2:1 input range
- Operating temperature range -40 to $+87$ °C
- Reinforced I/O-isolation 3'000 VAC
- Protection against overload, under-voltage and short circuit
- 3-year product warranty

Pinout		
Pin	Single Output	Dual Output
1	Remote	Remote
2	$-V_{in}$ (GND)	$-V_{in}$ (GND)
3	$+V_{in}$ (Vcc)	$+V_{in}$ (Vcc)
4	$-V_{out}$	$-V_{out}$
5	NC	Common
6	$+V_{out}$	$+V_{out}$

TEL 12

NEW!

10 Watt



Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEL 12-1211	9 – 18 VDC (12 VDC nom.)	5.1 VDC	2400 mA	83%
TEL 12-1212		12 VDC	1000 mA	87%
TEL 12-1213		15 VDC	800 mA	88%
TEL 12-1215		24 VDC	500 mA	88%
TEL 12-1222		± 12 VDC	± 500 mA	87%
TEL 12-1223	18 – 36 VDC (24 VDC nom.)	± 15 VDC	± 400 mA	87%
TEL 12-2411		5.1 VDC	2400 mA	83%
TEL 12-2412		12 VDC	1000 mA	87%
TEL 12-2413		15 VDC	800 mA	88%
TEL 12-2415		24 VDC	500 mA	88%
TEL 12-2422	36 – 75 VDC (48 VDC nom.)	± 12 VDC	± 500 mA	87%
TEL 12-2423		± 15 VDC	± 400 mA	87%
TEL 12-4811		5.1 VDC	2400 mA	83%
TEL 12-4812		12 VDC	1000 mA	87%
TEL 12-4813		15 VDC	800 mA	88%
TEL 12-4815	36 – 75 VDC (48 VDC nom.)	24 VDC	500 mA	88%
TEL 12-4822		± 12 VDC	± 500 mA	87%
TEL 12-4823		± 15 VDC	± 400 mA	87%

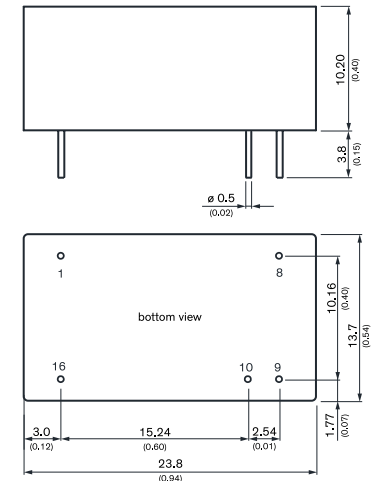
- Most compact 12 Watt converter in DIP-16 metal casing
- Highest power density of 3.61 W/cm^3
- 6-side shielded metal case with insulated base plate
- Wide 2:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of -40 °C to $+85$ °C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	$-V_{in}$	$-V_{in}$
8	NC	Common
9	$+V_{out}$	$+V_{out}$
10	$-V_{out}$	$-V_{out}$
16	$+V_{in}$	$+V_{in}$

TEL 12WI

NEW!

12 Watt



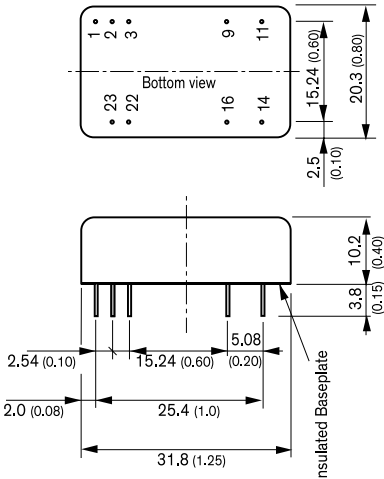
- Most compact 12 Watt converter in DIP-16 metal casing
- Highest power density of 3.61 W/cm³
- 6-side shielded metal case with insulated base plate
- Ultra wide 4:1 input range
- High efficiency for low thermal loss
- Operating temperature range of -40°C to +85°C
- Built-in EN 55032 class A filter
- Protection against short circuit and overload
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin	-Vin
8	NC	Common
9	+Vout.	+Vout
10	-Vout.	-Vout
16	+Vin	+Vin

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 12-2411WI	9 – 36 VDC (24 VDC nominal)	5.1 VDC	2400 mA	83%
TEL 12-2412WI		12 VDC	1000 mA	87%
TEL 12-2413WI		15 VDC	800 mA	88%
TEL 12-2415WI		24 VDC	500 mA	88%
TEL 12-2422WI		±12 VDC	±500 mA	87%
TEL 12-2423WI	18 – 75 VDC (48 VDC nominal)	±15 VDC	±400 mA	87%
TEL 12-4811WI		5.1 VDC	2400 mA	83%
TEL 12-4812WI		12 VDC	1000 mA	87%
TEL 12-4813WI		15 VDC	800 mA	88%
TEL 12-4815WI		24 VDC	500 mA	88%
TEL 12-4822WI		±12 VDC	±500 mA	87%
TEL 12-4823WI		±15 VDC	±400 mA	87%

THD 12

12 Watt



- High power density
- DIP-24 metal package
- Wide 2:1 input range
- Very high efficiency up to 88%
- I/O isolation 1500V
- Input filter to meet EN 55032, class A
- Remote On/Off
- Under voltage lock-out circuit
- Shielded metal case with insulated Baseplate
- Continuous short-circuit protection
- Operating temp. range -40°C to +85°C (with derating)
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	ntc.	Common
11	ntc.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

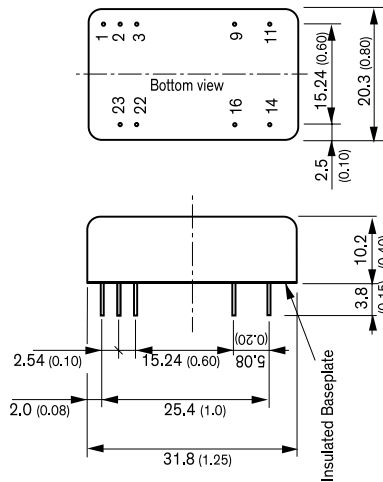
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THD 12-1209	9 – 18 VDC (nominal 12 VDC)	2.5 VDC	3500 mA	82%
THD 12-1210		3.3 VDC	3500 mA	84%
THD 12-1211		5.1 VDC	2400 mA	86%
THD 12-1212		12 VDC	1000 mA	86%
THD 12-1222		±12 VDC	±500 mA	87%
THD 12-1223	18 – 36 VDC (nominal 24 VDC)	±15 VDC	±400 mA	87%
THD 12-2409		2.5 VDC	3500 mA	83%
THD 12-2410		3.3 VDC	3500 mA	85%
THD 12-2411		5.1 VDC	2400 mA	87%
THD 12-2412		12 VDC	1000 mA	87%
THD 12-2422		±12 VDC	±500 mA	88%
THD 12-2423	36 – 75 VDC (nominal 48 VDC)	±15 VDC	±400 mA	88%
THD 12-4809		2.5 VDC	3500 mA	83%
THD 12-4810		3.3 VDC	3500 mA	85%
THD 12-4811		5.1 VDC	2400 mA	87%
THD 12-4812		12 VDC	1000 mA	87%
THD 12-4822		±12 VDC	±500 mA	88%
THD 12-4823		±15 VDC	±400 mA	88%

THD 12WI

12 Watt



- Highest power density: 12W in DIP 24 package!
- Ultra-wide 4:1 input range
- Very high efficiency up to 85%
- I/O isolation 1500V
- Input filter meets EN 55032A without ext. components
- Remote On/Off
- Under voltage lock-out circuit
- Shielded metal case with insulated baseplate
- Continuous short-circuit protection
- Operating temp. range -40°C to $+85^{\circ}\text{C}$
- Lead free design, RoHS compliant
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	ntc.	Common
11	ntc.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

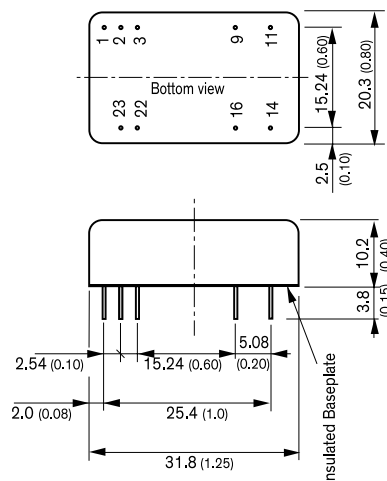
Model	Input Voltage Range	Vnom	I _{max}	Efficiency
THD 12-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	3500 mA	84%
THD 12-2411WI		5.1 VDC	2400 mA	85%
THD 12-2412WI		12 VDC	1000 mA	85%
THD 12-2413WI		15 VDC	800 mA	85%
THD 12-2421WI		±5 VDC	±1200 mA	82%
THD 12-2422WI		±12 VDC	±500 mA	85%
THD 12-2423WI		±15 VDC	±400 mA	85%
THD 12-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	3500 mA	84%
THD 12-4811WI		5.1 VDC	2400 mA	85%
THD 12-4812WI		12 VDC	1000 mA	85%
THD 12-4813WI		15 VDC	800 mA	85%
THD 12-4821WI		±5 VDC	±1200 mA	82%
THD 12-4822WI		±12 VDC	±500 mA	85%
THD 12-4823WI		±15 VDC	±400 mA	85%

THD 15N

15 Watt



- Highest power density in DIP 24 package
- Shielded metal case with isolated baseplate
- Very high efficiency up to 91%
- Wide 2:1 input ranges
- No minimum load required
- Input filter meets EN 55032 class A without external components
- I/O isolation voltage 1500 VDC
- Operating temp. range: -40°C to $+85^{\circ}\text{C}$
- Remote On/Off control
- Industry standard pinout
- 3-year product warranty

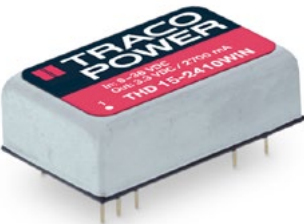


Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	NC	Common
11	NC.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

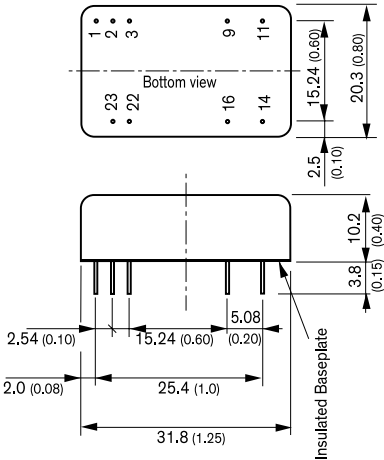
Model	Input Voltage Range	Vnom	I _{max}	Efficiency
THD 15-1210N	9 – 18 VDC (12 VDC nominal)	3.3 VDC	4000 mA	87%
THD 15-1211N		5.1 VDC	3000 mA	90%
THD 15-1212N		12 VDC	1250 mA	90%
THD 15-1213N		15 VDC	1000 mA	90%
THD 15-1221N		±5 VDC	±1500 mA	86%
THD 15-1222N		±12 VDC	±625 mA	90%
THD 15-1223N		±15 VDC	±500 mA	90%
THD 15-2410N	18 – 36 VDC (24 VDC nominal)	3.3 VDC	4000 mA	88%
THD 15-2411N		5.1 VDC	3000 mA	90%
THD 15-2412N		12 VDC	1250 mA	91%
THD 15-2413N		15 VDC	1000 mA	91%
THD 15-2421N		±5 VDC	±1500 mA	87%
THD 15-2422N		±12 VDC	±625 mA	90%
THD 15-2423N		±15 VDC	±500 mA	90%
THD 15-4810N	36 – 75 VDC (48 VDC nominal)	3.3 VDC	4000 mA	88%
THD 15-4811N		5.1 VDC	3000 mA	90%
THD 15-4812N		12 VDC	1250 mA	90%
THD 15-4813N		15 VDC	1000 mA	91%
THD 15-4821N		±5 VDC	±1500 mA	87%
THD 15-4822N		±12 VDC	±625 mA	90%
THD 15-4823N		±15 VDC	±500 mA	90%

THD 15WIN

15 Watt



- Highest power density in DIP 24 package
- Shielded metal case with isolated baseplate
- Very high efficiency up to 90%
- Ultra wide 4:1 input ranges
- No minimum load required
- Input filter meets EN 55032 class A without external components
- I/O isolation voltage 1500 VDC
- Operating temp. range: -40°C to +85°C
- Remote On/Off control
- Industry standard pinout
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	NC	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

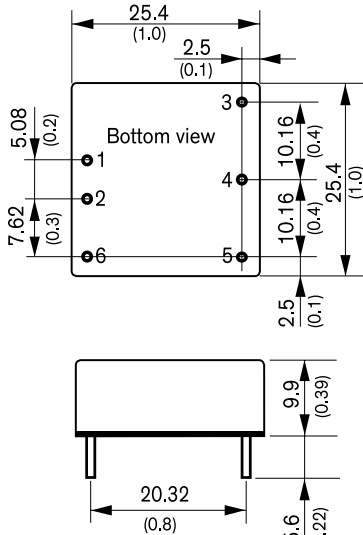
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THD 15-2410WIN	9 – 36 VDC (24 VDC nominal)	3.3 VDC	4000 mA	88%
THD 15-2411WIN		5.1 VDC	3000 mA	90%
THD 15-2412WIN		12 VDC	1250 mA	90%
THD 15-2413WIN		15 VDC	1000 mA	90%
THD 15-2421WIN		±5 VDC	±1500 mA	86%
THD 15-2422WIN		±12 VDC	±625 mA	89%
THD 15-2423WIN		±15 VDC	±500 mA	90%
THD 15-4810WIN	18 – 75 VDC (48 VDC nominal)	3.3 VDC	4000 mA	89%
THD 15-4811WIN		5.1 VDC	3000 mA	89%
THD 15-4812WIN		12 VDC	1250 mA	90%
THD 15-4813WIN		15 VDC	1000 mA	90%
THD 15-4821WIN		±5 VDC	±1500 mA	86%
THD 15-4822WIN		±12 VDC	±625 mA	89%
THD 15-4823WIN		±15 VDC	±500 mA	90%

THN 15N

15 Watt



- 15 Watt converter in a compact 1" x 1" metal package
- Wide 2:1 input voltage 9–18, 18–36, 36–75 VDC
- Internal EN 55032 class A filter
- Operating temperature range -40 to +70 °C without derating
- Low no-load power consumption 96 – 336 mW
- High efficiency up to 91%
- I/O-isolation voltage 1600 VDC
- Protection against overload, overvoltage and short circuit
- Remote On/Off and Trim function
- 3-year product warranty

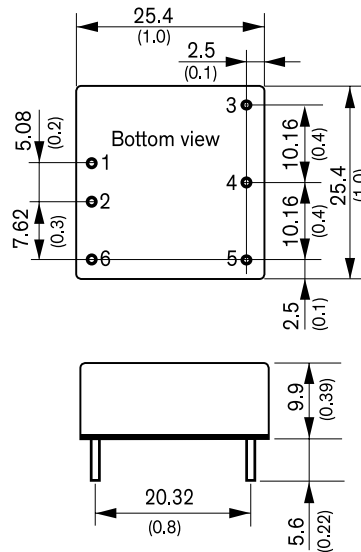


Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	Remote On/Off

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THN 15-1210N	9 – 18 VDC (nominal 12 VDC)	3.3 VDC	4500 mA	88%
THN 15-1211N		5 VDC	3000 mA	90%
THN 15-1212N		12 VDC	1300 mA	89%
THN 15-1213N		15 VDC	1000 mA	90%
THN 15-1215N		24 VDC	625 mA	91%
THN 15-1221N		±5 VDC	±1500 mA	86%
THN 15-1222N	18 – 36 VDC (nominal 24 VDC)	±12 VDC	±625 mA	89%
THN 15-1223N		±15 VDC	±500 mA	90%
THN 15-1225N		±24 VDC	±315 mA	90%
THN 15-2410N		3.3 VDC	4500 mA	88%
THN 15-2411N		5 VDC	3000 mA	90%
THN 15-2412N		12 VDC	1300 mA	89%
THN 15-2413N	36 – 75 VDC (nominal 48 VDC)	15 VDC	1000 mA	90%
THN 15-2415N		24 VDC	625 mA	91%
THN 15-2421N		±5 VDC	±1500 mA	86%
THN 15-2422N		±12 VDC	±625 mA	90%
THN 15-2423N		±15 VDC	±500 mA	90%
THN 15-2425N		±24 VDC	±315 mA	90%
THN 15-4810N	36 – 75 VDC (nominal 48 VDC)	3.3 VDC	4500 mA	87%
THN 15-4811N		5 VDC	3000 mA	89%
THN 15-4812N		12 VDC	1300 mA	89%
THN 15-4813N		15 VDC	1000 mA	89%
THN 15-4815N		24 VDC	625 mA	90%
THN 15-4821N		±5 VDC	±1500 mA	85%
THN 15-4822N	36 – 75 VDC (nominal 48 VDC)	±12 VDC	±625 mA	89%
THN 15-4823N		±15 VDC	±500 mA	89%
THN 15-4825N		±24 VDC	±315 mA	89%

THL 15WI

15 Watt



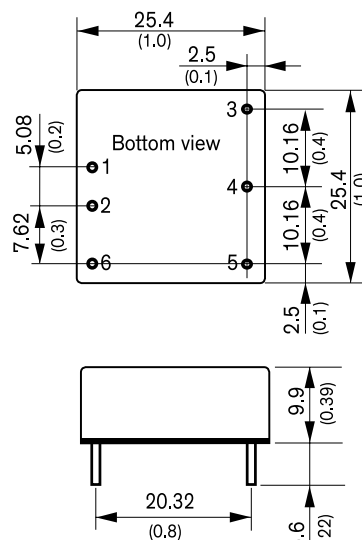
- 15 Watt converter in a 1" x 1" metal package
- Cost efficient design
- Ultra wide 4:1 input voltage range: 9–36 and 18–75 VDC
- Operating temperature range –40 to +70 °C without derating
- Internal EN 55032 class A filter
- 1500 VDC I/O-isolation
- Protection against overload, over-voltage and short circuit
- Remote On/Off and Trim function
- Optional heatsink for increased temperature capabilities
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+ Vout	+ Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THL 15-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	3400 mA	86%
THL 15-2411WI		5.0 VDC	3000 mA	88%
THL 15-2412WI		12 VDC	1250 mA	88%
THL 15-2413WI		15 VDC	1000 mA	89%
THL 15-2415WI		24 VDC	625 mA	91%
THL 15-2422WI		±12 VDC	±625 mA	89%
THL 15-2423WI		±15 VDC	±500 mA	89%
THL 15-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	3400 mA	86%
THL 15-4811WI		5.0 VDC	3000 mA	88%
THL 15-4812WI		12 VDC	1250 mA	88%
THL 15-4813WI		15 VDC	1000 mA	89%
THL 15-4815WI		24 VDC	625 mA	91%
THL 15-4822WI		±12 VDC	±625 mA	90%
THL 15-4823WI		±15 VDC	±500 mA	89%

THN 15WI

15 Watt



- Smallest encapsulated 15W Converter! Ultra compact size: 1.0" x 1.0" x 0.4"
- Shielded metal case with isolated baseplate
- Ultrawide 4:1 input ranges 9–36 VDC or 18–75VDC
- Output voltage Trim
- 5 Vout models with trim up to 6 VDC ideal for LDO applications
- I/O isolation voltage 1500 VDC
- Very high efficiency up to 87%
- Operating temp. range: –40°C to +85°C
- Remote On/Off control
- Industry standard pinout
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+ Vout	+ Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THN 15-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	4000 mA	86%
THN 15-2411WI		5.0 VDC	3000 mA	86%
THN 15-2411WI-A1		5.0 VDC ^{*1}	3000 mA	86%
THN 15-2412WI		12 VDC	1300 mA	87%
THN 15-2413WI		15 VDC	1000 mA	87%
THN 15-2415WI		24 VDC	625 mA	90%
THN 15-2421WI	18 – 75 VDC (48 VDC nominal)	±5 VDC	±1500 mA	85%
THN 15-2422WI		±12 VDC	±625 mA	87%
THN 15-2423WI		±15 VDC	±500 mA	88%
THN 15-2425WI		±24 VDC	±315 mA	91%
THN 15-4810WI		3.3 VDC	4000 mA	86%
THN 15-4811WI		5.0 VDC	3000 mA	87%
THN 15-4811WI-A1		5.0 VDC ^{*1}	3000 mA	87%
THN 15-4812WI		12 VDC	1300 mA	87%
THN 15-4813WI		15 VDC	1000 mA	87%
THN 15-4815WI		24 VDC	625 mA	91%
THN 15-4821WI	18 – 75 VDC (48 VDC nominal)	±5 VDC	±1500 mA	85%
THN 15-4822WI		±12 VDC	±625 mA	86%
THN 15-4823WI		±15 VDC	±500 mA	87%
THN 15-4825WI		±24 VDC	±315 mA	90%

*1 Adjustable output up to 6 VDC, suitable for low ripple & noise applications in conjunction with an LDO line regulator

*2 The outputs can also be used in serial circuit for single 48 VDC operation

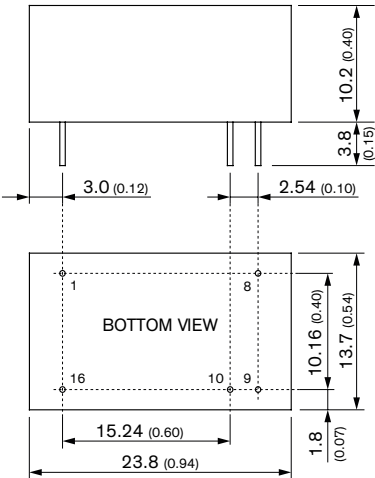
TEL 15N

NEW!

15 Watt



- Most compact 15 Watt converter in DIP-16 metal casing
- Highest power density of 4.51 W/cm³
- 6-side shielded metal case with insulated base plate
- Wide 2:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of –40°C to +85°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	–Vin (Vcc)	–Vin (Vcc)
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 15-1211N	9 – 18 VDC	5.1 VDC	2940 mA	86%
TEL 15-1212N		12 VDC	1250 mA	87%
TEL 15-1213N		15 VDC	1000 mA	87%
TEL 15-1215N		24 VDC	625 mA	87%
TEL 15-1222N		±12 VDC	±625 mA	87%
TEL 15-1223N	18 – 36 VDC	±15 VDC	±500 mA	87%
TEL 15-2411N		5.1 VDC	2940 mA	86%
TEL 15-2412N		12 VDC	1250 mA	87%
TEL 15-2413N		15 VDC	1000 mA	87%
TEL 15-2415N		24 VDC	625 mA	87%
TEL 15-2422N	36 – 75 VDC	±12 VDC	±625 mA	87%
TEL 15-2423N		±15 VDC	±500 mA	87%
TEL 15-4811N		5.1 VDC	2940 mA	86%
TEL 15-4812N		12 VDC	1250 mA	87%
TEL 15-4813N		15 VDC	1000 mA	87%
TEL 15-4815N		24 VDC	625 mA	87%
TEL 15-4822N		±12 VDC	±625 mA	87%
TEL 15-4823N		±15 VDC	±500 mA	87%

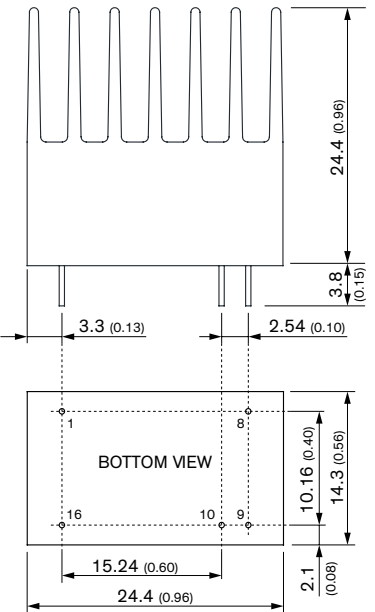
TEL 15N-HS

NEW!

15 Watt



- High temperature range up to +70°C without derating
- Compact 15 Watt converter in DIP-16 metal casing
- 6-side shielded metal case with insulated base plate
- Wide 2:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of –40°C to +85°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty



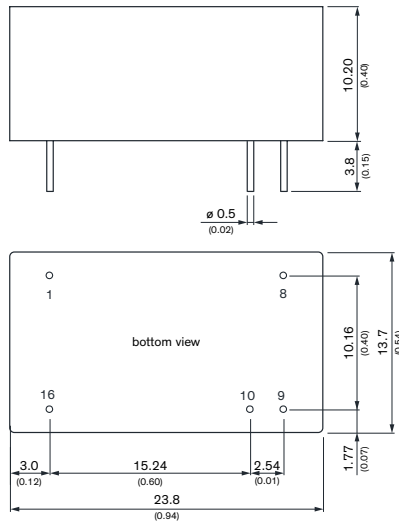
Pinout		
Pin	Single	Dual
1	–Vin (Vcc)	–Vin (Vcc)
8	NC	Common
9	+Vout	+Vout
10	–Vout	–Vout
16	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEL 15-1211N-HS	9 – 18 VDC	5.1 VDC	2940 mA	86%
TEL 15-1212N-HS		12 VDC	1250 mA	87%
TEL 15-1213N-HS		15 VDC	1000 mA	87%
TEL 15-1215N-HS		24 VDC	625 mA	87%
TEL 15-1222N-HS		±12 VDC	±625 mA	87%
TEL 15-1223N-HS	18 – 36 VDC	±15 VDC	±500 mA	87%
TEL 15-2411N-HS		5.1 VDC	2940 mA	86%
TEL 15-2412N-HS		12 VDC	1250 mA	87%
TEL 15-2413N-HS		15 VDC	1000 mA	87%
TEL 15-2415N-HS		24 VDC	625 mA	87%
TEL 15-2422N-HS	36 – 75 VDC	±12 VDC	±625 mA	87%
TEL 15-2423N-HS		±15 VDC	±500 mA	87%
TEL 15-4811N-HS		5.1 VDC	2940 mA	86%
TEL 15-4812N-HS		12 VDC	1250 mA	87%
TEL 15-4813N-HS		15 VDC	1000 mA	87%
TEL 15-4815N-HS		24 VDC	625 mA	87%
TEL 15-4822N-HS		±12 VDC	±625 mA	87%
TEL 15-4823N-HS		±15 VDC	±500 mA	87%

TEL 15WIN

NEW!

15 Watt



- Most compact 15 Watt converter in DIP-16 metal casing
- Highest power density of 4.51 W/cm³
- 6-side shielded metal case with insulated base plate
- Wide 4:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of -40°C to +85°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty

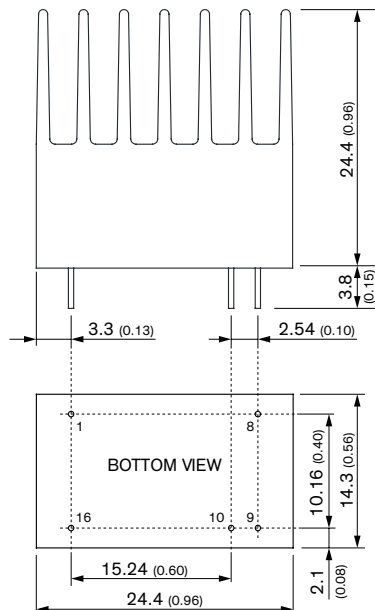
Pinout		
Pin	Single	Dual
1	-Vin	-Vin
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEL 15-2411WIN	9 – 36 VDC (24 VDC nom.)	5.1 VDC	3000 mA	86%
TEL 15-2412WIN		12 VDC	1250 mA	87%
TEL 15-2413WIN		15 VDC	1000 mA	87%
TEL 15-2415WIN		24 VDC	625 mA	87%
TEL 15-2422WIN		±12 VDC	±625 mA	87%
TEL 15-2423WIN	18 – 75 VDC (48 VDC nom.)	±15 VDC	±500 mA	87%
TEL 15-4811WIN		5.1 VDC	3000 mA	86%
TEL 15-4812WIN		12 VDC	1250 mA	87%
TEL 15-4813WIN		15 VDC	1000 mA	87%
TEL 15-4815WIN		24 VDC	625 mA	87%
TEL 15-4822WIN		±12 VDC	±625 mA	87%
TEL 15-4823WIN		±15 VDC	±500 mA	87%

TEL 15WIN-HS

NEW!

15 Watt



- High temperature range up to +70°C without derating
- Compact 15 Watt converter in DIP-16 metal casing
- 6-side shielded metal case with insulated base plate
- Wide 4:1 input voltage range
- High efficiency for low thermal loss
- Operating temperature range of -40°C to +85°C
- Built-in EN 55032 class A filter
- Current limitation and protection against short circuit
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	-Vin (Vcc)	-Vin (Vcc)
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vout	+Vout

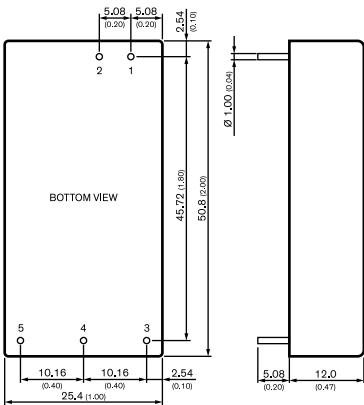
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEL 15-2411WIN-HS	9 – 36 VDC	5.1 VDC	2940 mA	86%
TEL 15-2412WIN-HS		12 VDC	1250 mA	87%
TEL 15-2413WIN-HS		15 VDC	1000 mA	87%
TEL 15-2415WIN-HS		24 VDC	625 mA	87%
TEL 15-2422WIN-HS		±12 VDC	±625 mA	87%
TEL 15-2423WIN-HS	18 – 75 VDC	±15 VDC	±500 mA	87%
TEL 15-4811WIN-HS		5.1 VDC	2940 mA	86%
TEL 15-4812WIN-HS		12 VDC	1250 mA	87%
TEL 15-4813WIN-HS		15 VDC	1000 mA	87%
TEL 15-4815WIN-HS		24 VDC	625 mA	87%
TEL 15-4822WIN-HS		±12 VDC	±625 mA	87%
TEL 15-4823WIN-HS		±15 VDC	±500 mA	87%

TRI 15

15 Watt



- Reinforced I/O-isolation 5940 VDC rated for 1000 VAC working voltage
- Ultra-high isolation peak voltage 8000 VDC (1s)
- Common Mode Transient Immunity (dv/dt) 15 kV/μs
- Operating temperature range –40 to +85°C
- Low no-load power consumption 240 – 480 mW
- Internal EN 55032 class A filter
- High efficiency up to 90%
- 2:1 input voltage range: 9–18, 18–36, 36–75 VDC
- Protection against overload, overvoltage and short circuit
- 3-year product warranty



Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TRI 15-1211	9 – 18 VDC (12 VDC nom.)	5.1 VDC	3'000 mA	85%
TRI 15-1212		12 VDC	1'250 mA	88%
TRI 15-1213		15 VDC	1'000 mA	88%
TRI 15-1215		24 VDC	625 mA	88%
TRI 15-1222		±12 VDC	625 mA	88%
TRI 15-1223		±15 VDC	500 mA	89%
TRI 15-2411	18 – 36 VDC (24 VDC nom.)	5.1 VDC	3'000 mA	87%
TRI 15-2412		12 VDC	1'250 mA	88%
TRI 15-2413		15 VDC	1'000 mA	89%
TRI 15-2415		24 VDC	625 mA	90%
TRI 15-2422		±12 VDC	625 mA	90%
TRI 15-2423		±15 VDC	500 mA	89%
TRI 15-4811	36 – 75 VDC (48 VDC nom.)	5.1 VDC	3'000 mA	87%
TRI 15-4812		12 VDC	1'250 mA	87%
TRI 15-4813		15 VDC	1'000 mA	90%
TRI 15-4815		24 VDC	625 mA	89%
TRI 15-4822		±12 VDC	625 mA	89%
TRI 15-4823		±15 VDC	500 mA	88%

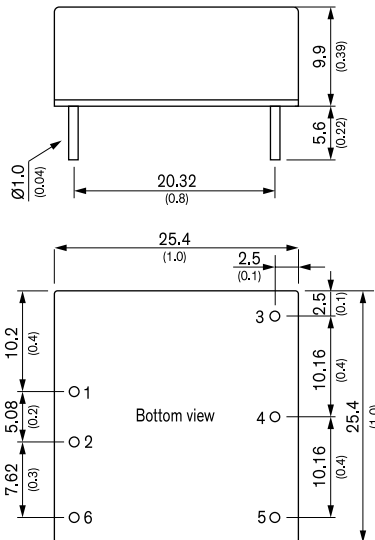
Pinout		
Pin	Single Output	Dual Output
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	No pin	Common
5	–Vout	–Vout

THN 15WIR

15 Watt



- Compact 1" × 1" × 0.4" standard package
- Wide 4:1 input voltage range 9–36, 18–75, 36–160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VDC
- High efficiency up to 91%
- Operating temperature range –40°C to +90°C
- Under voltage lock-out circuit
- Adjustable output voltage & Remote On/Off

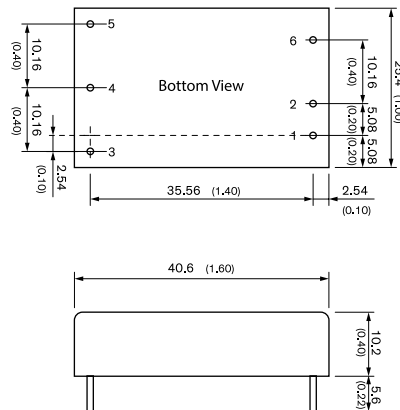


Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THN 15-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	4500 mA	88%
THN 15-2411WIR		5 VDC	3000 mA	90%
THN 15-2412WIR		12 VDC	1300 mA	89%
THN 15-2413WIR		15 VDC	1000 mA	90%
THN 15-2415WIR		24 VDC	625 mA	91%
THN 15-2421WIR		±5 VDC	±1500 mA	87%
THN 15-2422WIR		±12 VDC	±625 mA	90%
THN 15-2423WIR		±15 VDC	±500 mA	90%
THN 15-2425WIR		±24 VDC	±315 mA	91%
THN 15-4810WIR	18 – 75 VDC (48 VDC nom.)	3.3 VDC	4500 mA	88%
THN 15-4811WIR		5 VDC	3000 mA	90%
THN 15-4812WIR		12 VDC	1300 mA	89%
THN 15-4813WIR		15 VDC	1000 mA	90%
THN 15-4815WIR		24 VDC	625 mA	91%
THN 15-4821WIR		±5 VDC	±1500 mA	87%
THN 15-4822WIR		±12 VDC	±625 mA	90%
THN 15-4823WIR		±15 VDC	±500 mA	90%
THN 15-4825WIR		±24 VDC	±315 mA	90%
THN 15-7210WIR	36 – 160 VDC (110 VDC nom.)	3.3 VDC	4500 mA	88%
THN 15-7211WIR		5 VDC	3000 mA	89%
THN 15-7212WIR		12 VDC	1300 mA	89%
THN 15-7213WIR		15 VDC	1000 mA	89%
THN 15-7215WIR		24 VDC	625 mA	90%
THN 15-7221WIR		±5 VDC	±1500 mA	86%
THN 15-7222WIR		±12 VDC	±625 mA	89%
THN 15-7223WIR		±15 VDC	±500 mA	89%
THN 15-7225WIR		±24 VDC	±315 mA	90%

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
3	+Vout	+Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	Remote On/Off

THM 15

15 Watt



- Wide 2:1 input voltage 15 W DC/DC converter in a 1.6" × 1" plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Operating temp.: –40°C to 85°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude

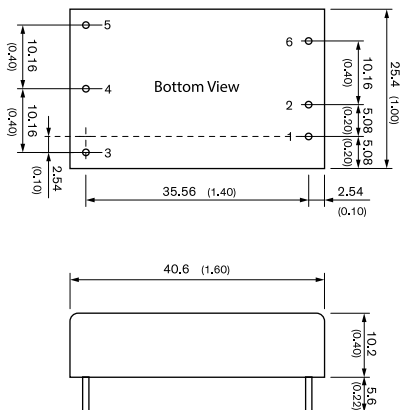
Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	–Vout	Common
5	Trim	–Vout
6	No pin*/Remote	No pin*/Remote

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THM 15-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	3000 mA	89%
THM 15-1212		12 VDC	1250 mA	89%
THM 15-1213		15 VDC	1000 mA	89%
THM 15-1215		24 VDC	625 mA	89%
THM 15-1221		± 5 VDC	1500 mA	86%
THM 15-1222		± 12 VDC	625 mA	89%
THM 15-1223		± 15 VDC	500 mA	89%
THM 15-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	3000 mA	90%
THM 15-2412		12 VDC	1250 mA	90%
THM 15-2413		15 VDC	1000 mA	90%
THM 15-2415		24 VDC	625 mA	90%
THM 15-2421		± 5 VDC	1500 mA	86%
THM 15-2422		± 12 VDC	625 mA	90%
THM 15-2423		± 15 VDC	500 mA	90%
THM 15-4811	36 – 75 VDC (48 VDC nom.)	5 VDC	3000 mA	90%
THM 15-4812		12 VDC	1250 mA	88%
THM 15-4813		15 VDC	1000 mA	89%
THM 15-4815		24 VDC	625 mA	89%
THM 15-4821		± 5 VDC	1500 mA	86%
THM 15-4822		± 12 VDC	625 mA	89%
THM 15-4823		± 15 VDC	500 mA	89%

* If Remote or Trim is not selected there is no pin on corresponding number.

THM 15WI

15 Watt



- Ultra wide 4:1 input voltage 15 W DC/DC converter in a 1.6" × 1" plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Operating temp.: –40°C to 85°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude

Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	–Vout	Common
5	Trim	–Vout
6	No pin*/Remote	No pin*/Remote

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THM 15-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	3000 mA	88%
THM 15-2412WI		12 VDC	1250 mA	89%
THM 15-2413WI		15 VDC	1000 mA	89%
THM 15-2415WI		24 VDC	625 mA	88%
THM 15-2421WI		± 5 VDC	1500 mA	86%
THM 15-2422WI		± 12 VDC	625 mA	88%
THM 15-2423WI		± 15 VDC	500 mA	89%
THM 15-4811WI	18 – 75 VDC (48 VDC nom.)	5 VDC	3000 mA	90%
THM 15-4812WI		12 VDC	1250 mA	88%
THM 15-4813WI		15 VDC	1000 mA	89%
THM 15-4815WI		24 VDC	625 mA	89%
THM 15-4821WI		± 5 VDC	1500 mA	86%
THM 15-4822WI		± 12 VDC	625 mA	89%
THM 15-4823WI		± 15 VDC	500 mA	89%

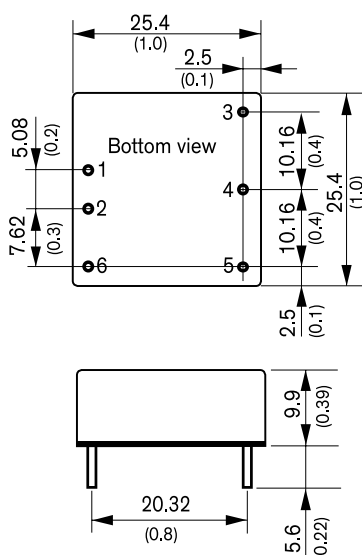
* If remote is not selected there will be no pin.

THN 20

20 Watt



- Smallest encapsulated 20W Converter! Ultra compact size: 1.0" × 1.0" × 0.4"
- Shielded metal case with isolated baseplate
- Wide 2:1 input voltage ranges
- Very high efficiency up to 90%
- Output voltage adjustable
- Remote On/Off control
- Operating temp. range -40°C to +75°C and up to 85 °C with heat-sink
- I/O isolation voltage 1500 VDC
- Input filter meets EN 55032 class A without external components
- No minimum load required
- Lead free design, RoHS compliant
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+ Vout	+ Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

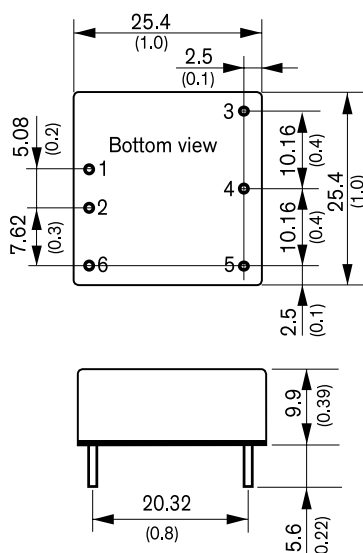
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THN 20-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	4500 mA	86%
THN 20-1211		5.0 VDC	4000 mA	90%
THN 20-1212		12 VDC	1670 mA	89%
THN 20-1213		15 VDC	1330 mA	89%
THN 20-1222		±12 VDC	±833 mA	89%
THN 20-1223	18 – 36 VDC (24 VDC nominal)	±15 VDC	±667 mA	89%
THN 20-2410		3.3 VDC	4500 mA	86%
THN 20-2411		5.0 VDC	4000 mA	90%
THN 20-2412		12 VDC	1670 mA	90%
THN 20-2413		15 VDC	1330 mA	90%
THN 20-2422	36 – 75 VDC (48 VDC nominal)	±12 VDC	±833 mA	90%
THN 20-2423		±15 VDC	±667 mA	90%
THN 20-4810		3.3 VDC	4500 mA	86%
THN 20-4811		5.0 VDC	4000 mA	90%
THN 20-4812		12 VDC	1670 mA	90%
THN 20-4813		15 VDC	1330 mA	90%
THN 20-4822		±12 VDC	±833 mA	90%
THN 20-4823		±15 VDC	±667 mA	90%

THN 20WI

20 Watt



- Ultra compact size: 1.0" × 1.0" × 0.4"
- Shielded metal case with isolated baseplate
- Ultrawide 4:1 input voltage ranges
- Very high efficiency up to 90%
- Output voltage adjustable
- Remote On/Off control
- Operating temp. range -40°C to +75°C and up to 85 °C with heat-sink
- I/O isolation voltage 1500 VDC
- Input filter meets EN 55032 class A without external components
- No minimum load required
- Lead free design, RoHS compliant
- 3-year product warranty



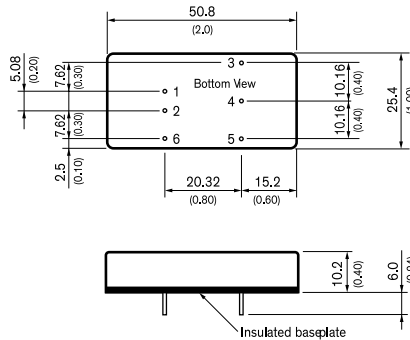
Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+ Vout	+ Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THN 20-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	4500 mA	86%
THN 20-2411WI		5.0 VDC	4000 mA	89%
THN 20-2411WI-A1		5.0 VDC ^{*1}	4000 mA	89%
THN 20-2412WI		12 VDC	1670 mA	89%
THN 20-2413WI		15 VDC	1330 mA	89%
THN 20-2415WI	18 – 75 VDC (48 VDC nominal)	24 VDC	833 mA	91%
THN 20-2422WI		±12 VDC	±833 mA	89%
THN 20-2423WI		±15 VDC	±667 mA	89%
THN 20-2425WI		±24 VDC	±417 mA	91%
THN 20-2425WI		(48 VDC) ^{*2}	±417 mA	91%
THN 20-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	4500 mA	86%
THN 20-4811WI		5.0 VDC	4000 mA	89%
THN 20-4811WI-A1		5.0 VDC ^{*1}	4000 mA	89%
THN 20-4812WI		12 VDC	1670 mA	89%
THN 20-4813WI		15 VDC	1330 mA	90%
THN 20-4815WI	36 – 75 VDC (48 VDC nominal)	24 VDC	833 mA	91%
THN 20-4822WI		±12 VDC	±833 mA	89%
THN 20-4823WI		±15 VDC	±667 mA	89%
THN 20-4825WI		±24 VDC	±417 mA	91%
THN 20-4825WI		(48 VDC) ^{*2}	±417 mA	91%

*1 Adjustable output up to 6 VDC

*2 The outputs can also be used in serial circuit for single 48 VDC operation

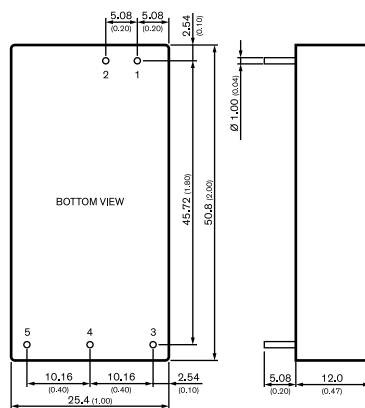
20 Watt



- | Pinout | | |
|--------|---------------|------------|
| Pin | Single | Dual |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | −Vin (GND) | −Vin (GND) |
| 3 | +Vout | +Vout |
| 4 | Trim | Common |
| 5 | −Vout | −Vout |
| 6 | Remote On/Off | |

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 20-2410WIN	9 – 36 VDC (24 VDC nominal)	3.3 VDC	5500 mA	85%
TEN 20-2411WIN		5 VDC	4000 mA	88%
TEN 20-2412WIN		12 VDC	1670 mA	86%
TEN 20-2413WIN		15 VDC	1330 mA	86%
TEN 20-2421WIN		±5 VDC	±2000 mA	88%
TEN 20-2422WIN		±12 VDC	±835 mA	87%
TEN 20-2423WIN		±15 VDC	±665 mA	87%
TEN 20-4810WIN	18 – 75 VDC (48 VDC nominal)	3.3 VDC	5500 mA	85%
TEN 20-4811WIN		5 VDC	4000 mA	88%
TEN 20-4812WIN		12 VDC	1670 mA	87%
TEN 20-4813WIN		15 VDC	1330 mA	87%
TEN 20-4821WIN		±5 VDC	±2000 mA	89%
TEN 20-4822WIN		±12 VDC	±835 mA	88%
TEN 20-4823WIN		±15 VDC	±665 mA	88%

20 Watt

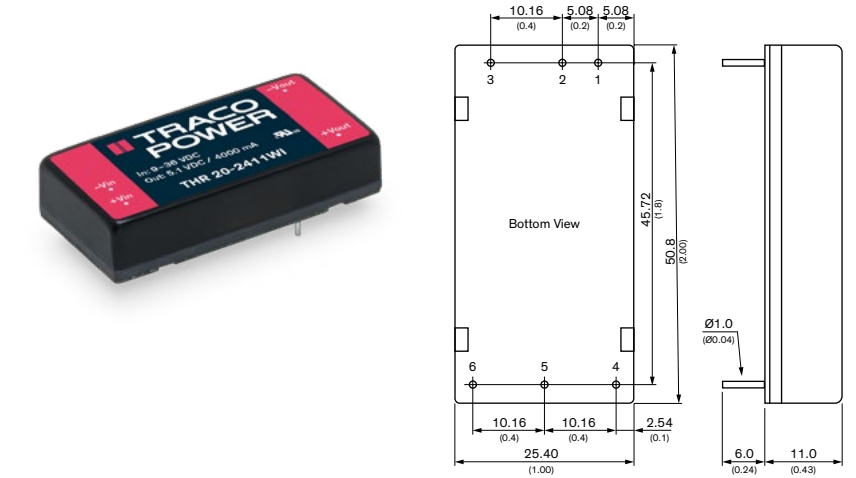


- | Pinout | | |
|--------|---------------|-------------|
| Pin | Single Output | Dual Output |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | -Vin (GND) | -Vin (GND) |
| 3 | +Vout | +Vout |
| 4 | No pin | Common |
| 5 | -Vout | -Vout |

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TRI 20-1211	9 – 18 VDC (12 VDC nom.)	5.1 VDC	4'000 mA	85%
TRI 20-1212		12 VDC	1'670 mA	88%
TRI 20-1213		15 VDC	1'333 mA	88%
TRI 20-1215		24 VDC	840 mA	89%
TRI 20-1222		±12 VDC	840 mA	89%
TRI 20-1223		±15 VDC	670 mA	89%
TRI 20-2411	18 – 36 VDC (24 VDC nom.)	5.1 VDC	4'000 mA	87%
TRI 20-2412		12 VDC	1'670 mA	88%
TRI 20-2413		15 VDC	1'333 mA	89%
TRI 20-2415		24 VDC	840 mA	90%
TRI 20-2422		±12 VDC	840 mA	90%
TRI 20-2423		±15 VDC	670 mA	90%
TRI 20-4811	36 – 75 VDC (48 VDC nom.)	5.1 VDC	4'000 mA	87%
TRI 20-4812		12 VDC	1'670 mA	88%
TRI 20-4813		15 VDC	1'333 mA	90%
TRI 20-4815		24 VDC	840 mA	89%
TRI 20-4822		±12 VDC	840 mA	89%
TRI 20-4823		±15 VDC	670 mA	90%

THR 20WI

20 Watt



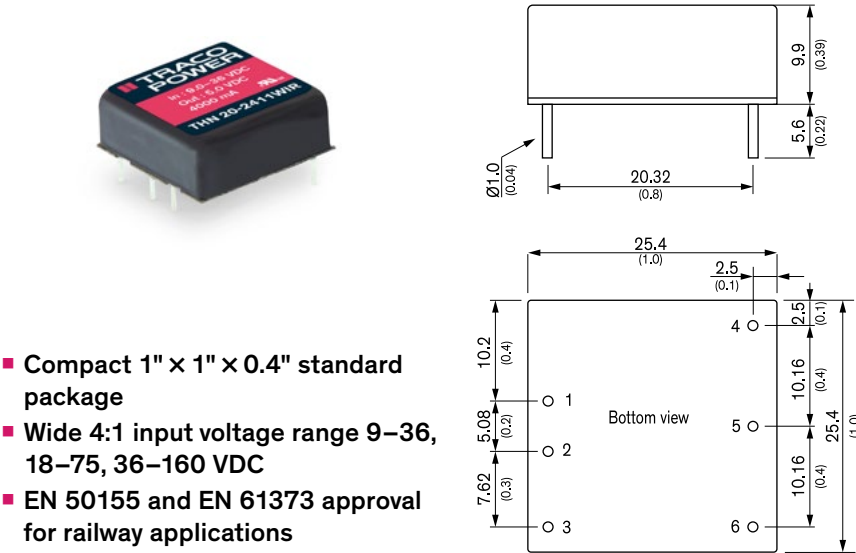
- Ultra wide 4:1 input range
- Reinforced I/O-isolation 3000 VAC
- Input filter to meet EN 55032, Class A
- High efficiency up to 85%
- Extended operating temperature range –40°C to 88°C
- 2" × 1" package
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Common
6	–Vout	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THR 20-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	4000 mA	87%
THR 20-2412WI		12 VDC	1670 mA	87%
THR 20-2413WI		15 VDC	1330 mA	87%
THR 20-2415WI		24 VDC	833 mA	87%
THR 20-2422WI		±12 VDC	±833 mA	86%
THR 20-2423WI		±15 VDC	±667 mA	86%
THR 20-4811WI	18 – 75 VDC (48 VDC nom.)	5 VDC	4000 mA	87%
THR 20-4812WI		12 VDC	1670 mA	88%
THR 20-4813WI		15 VDC	1330 mA	88%
THR 20-4815WI		24 VDC	833 mA	88%
THR 20-4822WI		±12 VDC	±833 mA	87%
THR 20-4823WI		±15 VDC	±667 mA	87%
THR 20-7211WI	40 – 160 VDC (110 VDC nom.)	5 VDC	4000 mA	84%
THR 20-7212WI		12 VDC	1670 mA	86%
THR 20-7213WI		15 VDC	1330 mA	86%
THR 20-7215WI		24 VDC	833 mA	86%
THR 20-7222WI		±12 VDC	±833 mA	86%
THR 20-7223WI		±15 VDC	±667 mA	86%

THN 20WIR

20 Watt



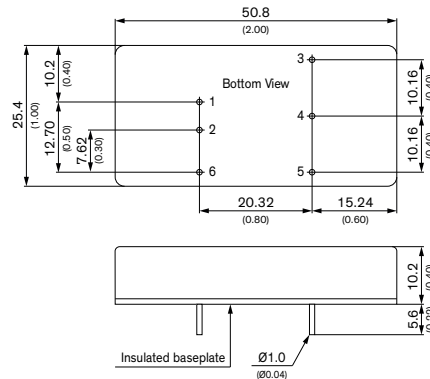
- Compact 1" × 1" × 0.4" standard package
- Wide 4:1 input voltage range 9–36, 18–75, 36–160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VDC
- High efficiency up to 91%
- Operating temperature range –40°C to +90°C
- Under voltage lock-out circuit
- Adjustable output voltage & Remote On/Off

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	Trim	Common
6	–Vout	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THN 20-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	5500 mA	88%
THN 20-2411WIR		5 VDC	4000 mA	89%
THN 20-2412WIR		12 VDC	1670 mA	89%
THN 20-2413WIR		15 VDC	1330 mA	89%
THN 20-2415WIR		24 VDC	833 mA	91%
THN 20-2422WIR	18 – 75 VDC (48 VDC nom.)	±12 VDC	±833 mA	89%
THN 20-2423WIR		±15 VDC	±667 mA	90%
THN 20-2425WIR		±24 VDC	±417 mA	91%
THN 20-4810WIR		3.3 VDC	5500 mA	89%
THN 20-4811WIR		5 VDC	4000 mA	90%
THN 20-4812WIR		12 VDC	1670 mA	89%
THN 20-4813WIR		15 VDC	1330 mA	90%
THN 20-4815WIR		24 VDC	833 mA	91%
THN 20-4822WIR	36 – 160 VDC (110 VDC nom.)	±12 VDC	±833 mA	89%
THN 20-4823WIR		±15 VDC	±667 mA	90%
THN 20-4825WIR		±24 VDC	±417 mA	91%
THN 20-7210WIR		3.3 VDC	5500 mA	89%
THN 20-7211WIR		5 VDC	4000 mA	90%
THN 20-7212WIR		12 VDC	1670 mA	90%
THN 20-7213WIR		15 VDC	1330 mA	90%
THN 20-7215WIR		24 VDC	833 mA	91%
THN 20-7222WIR	36 – 160 VDC (110 VDC nom.)	±12 VDC	±833 mA	90%
THN 20-7223WIR		±15 VDC	±667 mA	90%
THN 20-7225WIR		±24 VDC	±417 mA	91%

TEN 20WIR

20 Watt



- 2" x 1" metal package
- Ultra wide 4:1 input voltage range 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- Input filter meets EN 55032 class B without external components
- High efficiency up to 89%
- No minimum load required
- Operating temperature range –40°C to +85°C
- Under voltage lock-out circuit
- Remote On/Off
- Output voltage adjustable
- Lead free design, RoHS compliant
- 3-year product warranty

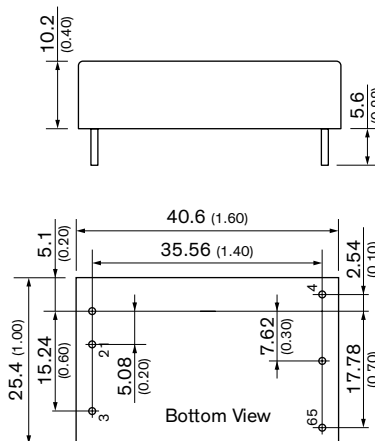
* For heat-sink option drawing see data sheet

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	Remote On/Off

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEN 20-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	4500 mA	85%
TEN 20-2411WIR		5 VDC	4000 mA	88%
TEN 20-2412WIR		12 VDC	1670 mA	89%
TEN 20-2413WIR		15 VDC	1330 mA	88%
TEN 20-2422WIR		±12 VDC	±833 mA	88%
TEN 20-2423WIR	18 – 75 VDC (48 VDC nom.)	±15 VDC	±667 mA	89%
TEN 20-4810WIR		3.3 VDC	4500 mA	85%
TEN 20-4811WIR		5 VDC	4000 mA	88%
TEN 20-4812WIR		12 VDC	1670 mA	89%
TEN 20-4813WIR		15 VDC	1330 mA	89%
TEN 20-4822WIR	43 – 160 VDC (110 VDC nom.)	±12 VDC	±833 mA	88%
TEN 20-4823WIR		±15 VDC	±667 mA	89%
TEN 20-7210WIR		3.3 VDC	4500 mA	85%
TEN 20-7211WIR		5 VDC	4000 mA	87%
TEN 20-7212WIR		12 VDC	1670 mA	88%
TEN 20-7213WIR		15 VDC	1330 mA	88%
TEN 20-7222WIR		±12 VDC	±833 mA	88%
TEN 20-7223WIR		±15 VDC	±667 mA	89%

TEN 20WIRH

20 Watt



- Compact 1.6" x 1" plastic package
- 3000 VAC reinforced I/O-isolation
- Wide 4:1 input voltage range: 36 – 160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- High efficiency up to 89%
- Operating temperature range –40°C to +85°C
- Under voltage lock-out circuit
- Remote On/Off and Trim function
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	–Vout	–Vout
6	Trim	–Vout

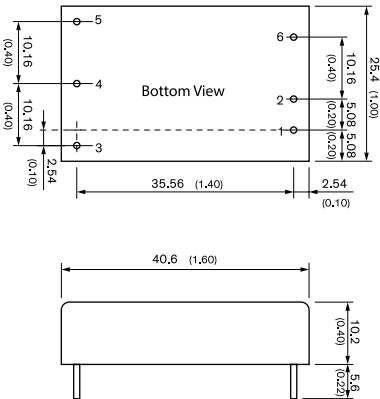
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEN 20-11011WIRH	36 – 160 VDC	5.1 VDC	4000 mA	89%
TEN 20-11012WIRH		12 VDC	1670 mA	88.5%
TEN 20-11013WIRH		15 VDC	1330 mA	89%
TEN 20-11015WIRH		24 VDC	833 mA	88.5%
TEN 20-11021WIRH		±5 VDC	±2000 mA	86%
TEN 20-11022WIRH		±12 VDC	±833 mA	88.5%
TEN 20-11023WIRH		±15 VDC	±667 mA	89%

THM 20

20 Watt



- Wide 2:1 input voltage 20 W DC/DC converter in a 1.6" × 1" plastic case
- I/O isolation 5000VAC rated for 250VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Operating temp.: –40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude



Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	–Vout	Common
5	Trim	–Vout
6	No pin*/Remote	No pin*/Remote

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THM 20-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	4000 mA	89%
THM 20-1212		12 VDC	1670 mA	89%
THM 20-1213		15 VDC	1330 mA	89%
THM 20-1215		24 VDC	833 mA	89%
THM 20-1221		± 5 VDC	2000 mA	86%
THM 20-1222		±12 VDC	833 mA	89%
THM 20-1223		±15 VDC	667 mA	89%
THM 20-2411	18 – 36 VDC (24 VDC nom.)	5 VDC	4000 mA	90%
THM 20-2412		12 VDC	1670 mA	90%
THM 20-2413		15 VDC	1330 mA	90%
THM 20-2415		24 VDC	833 mA	90%
THM 20-2421		± 5 VDC	2000 mA	86%
THM 20-2422		±12 VDC	833 mA	90%
THM 20-2423		±15 VDC	667 mA	90%
THM 20-4811	36 – 75 VDC (48 VDC nom.)	5 VDC	4000 mA	90%
THM 20-4812		12 VDC	1670 mA	89%
THM 20-4813		15 VDC	1330 mA	89%
THM 20-4815		24 VDC	833 mA	89%
THM 20-4821		± 5 VDC	2000 mA	86%
THM 20-4822		±12 VDC	833 mA	89%
THM 20-4823		±15 VDC	667 mA	89%

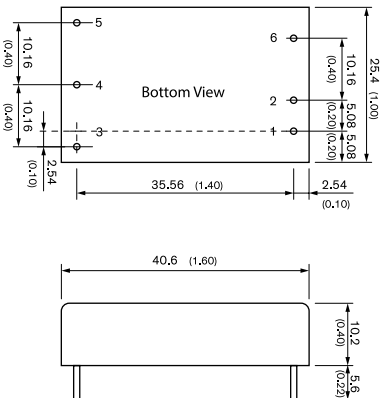
* If remote is not selected there will be no pin.

THM 20WI

20 Watt



- Ultra wide 4:1 input voltage 20 W DC/DC converter in a 1.6" × 1" plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Operating temp.: –40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude



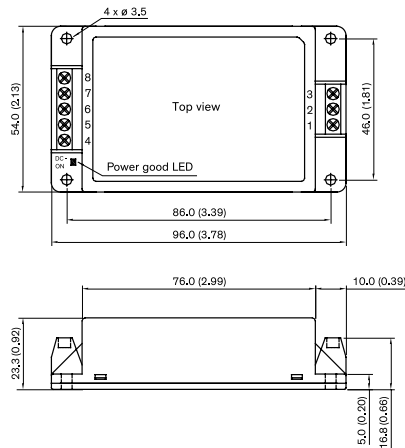
Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	–Vout	Common
5	Trim	–Vout
6	No pin*/Remote	No pin*/Remote

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THM 20-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	4000 mA	89%
THM 20-2412WI		12 VDC	1670 mA	89%
THM 20-2413WI		15 VDC	1330 mA	89%
THM 20-2415WI		24 VDC	833 mA	89%
THM 20-2421WI		± 5 VDC	2000 mA	86%
THM 20-2422WI		±12 VDC	833 mA	89%
THM 20-2423WI		±15 VDC	667 mA	89%
THM 20-4811WI	18 – 75 VDC (48 VDC nom.)	5 VDC	4000 mA	90%
THM 20-4812WI		12 VDC	1670 mA	89%
THM 20-4813WI		15 VDC	1330 mA	89%
THM 20-4815WI		24 VDC	833 mA	89%
THM 20-4821WI		± 5 VDC	2000 mA	86%
THM 20-4822WI		±12 VDC	833 mA	89%
THM 20-4823WI		±15 VDC	667 mA	89%

* If remote is not selected there will be no pin.

TMDC 20

20 Watt



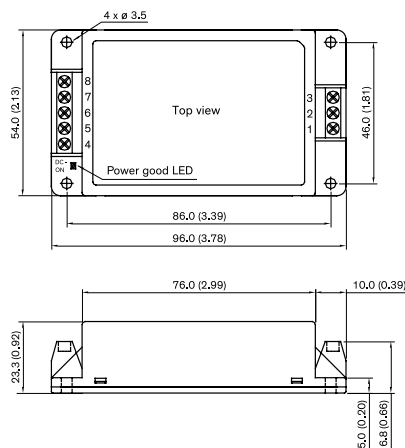
- Fully encapsulated low profile plastic case
- Ultra wide 4:1 input voltage range
- Operating temperature range –40°C to +90°C
- I/O isolation 2500 VDC
- Excellent efficiency up to 91%
- Input filter to meet EN 55032, class A
- Optional DIN-Rail mount adapter
- No minimum load required
- Power good LED indicator and remote on/off function
- 3-year product warranty

Pinout	
Pin	Function
1	Remote
2	–Vin (GND)
3	+Vin (Vcc)
4	NC
5	–Vout
6	NC
7	+Vout
8	NC

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMDC 20-2411	9 – 36 VDC (24 VDC nom.)	5.1 VDC	4'000 mA	90%
TMDC 20-2412		12 VDC	1'670 mA	91%
TMDC 20-2415		24 VDC	835 mA	91%
TMDC 20-2418	18 – 75 VDC (48 VDC nom.)	48 VDC	420 mA	89%
TMDC 20-4811		5.1 VDC	4'000 mA	90%
TMDC 20-4812		12 VDC	1'670 mA	91%
TMDC 20-4815		24 VDC	835 mA	91%
TMDC 20-4818		48 VDC	420 mA	89%

TMDC 20H

20 Watt



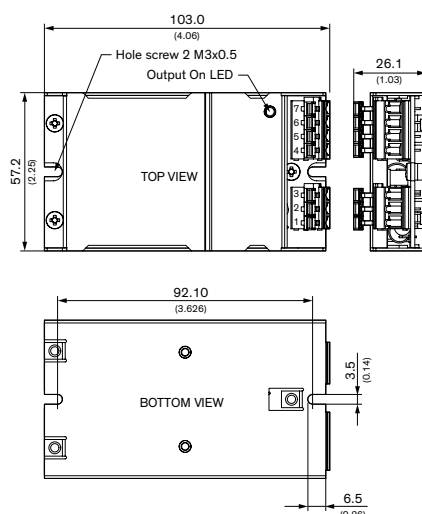
- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities:
- Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Wide 2:1 input range
- Operating temperature range –40 to +94 °C
- Reinforced I/O-isolation 3'000 VAC
- Protection against overload, under-voltage and short circuit
- 3-year product warranty

Pinout	
Pin	Function
1	Remote
2	–Vin (GND)
3	+Vin (Vcc)
4	NC
5	–Vout
6	NC
7	+Vout
8	NC

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMDC 20-7211H	80 – 160 VDC (110 VDC nom.)	5.1 VDC	4000 mA	87%
TMDC 20-7212H		12 VDC	1670 mA	88%
TMDC 20-7213H		15 VDC	1340 mA	88%
TMDC 20-7215H		24 VDC	830 mA	88%
TMDC 20-7218H		48 VDC	420 mA	86%
TMDC 20-7222H		±12 VDC	±830 mA	87%
TMDC 20-7223H		±15 VDC	±670 mA	87%
TMDC 20-7225H		±24 VDC	±420 mA	87%

TEQ 20WIR

20 Watt



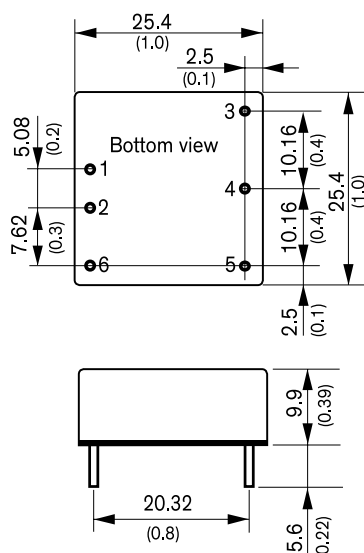
- High power block with excellent thermal convection
- Operating temperature -40°C to $+93^{\circ}\text{C}$
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 88%
- Input filter meet EN 55032 class B
- I/O isolation up to 2250 VDC
- Under voltage lock-out circuit
- Protection against overvoltage, overtemperature and short circuit
- Output LED indicator

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin (GND)	-Vin (GND)
3	NC	NC
4	NC	-Vout
5	-Vout	Common
6	+Vout	Common
7	NC	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEQ 20-2411WIR	9 – 36 VDC (24 VDC nom.)	5 VDC	4000 mA	87%
TEQ 20-2412WIR		12 VDC	1670 mA	88%
TEQ 20-2413WIR		15 VDC	1330 mA	87%
TEQ 20-2415WIR		24 VDC	833 mA	87%
TEQ 20-2422WIR		±12 VDC	833 mA	87%
TEQ 20-2423WIR	18 – 75 VDC (48 VDC nom.)	±15 VDC	667 mA	88%
TEQ 20-4811WIR		5 VDC	4500 mA	87%
TEQ 20-4812WIR		12 VDC	1670 mA	88%
TEQ 20-4813WIR		15 VDC	1330 mA	88%
TEQ 20-4815WIR		24 VDC	833 mA	87%
TEQ 20-4822WIR	43 – 160 VDC (110 VDC nom.)	±12 VDC	833 mA	87%
TEQ 20-4823WIR		±15 VDC	667 mA	88%
TEQ 20-7211WIR		5 VDC	4500 mA	86%
TEQ 20-7212WIR		12 VDC	1670 mA	87%
TEQ 20-7213WIR		15 VDC	1330 mA	87%
TEQ 20-7215WIR		24 VDC	833 mA	87%
TEQ 20-7222WIR		±12 VDC	833 mA	87%
TEQ 20-7223WIR		±15 VDC	667 mA	88%

THL 25

25 Watt



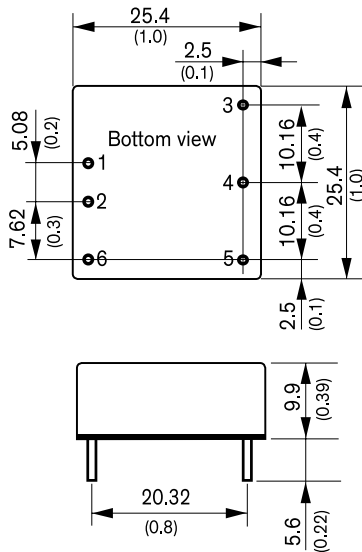
- Highest power density 25W converter! Ultra compact design: 1.0" x 1.0" x 0.4"
- Shielded metal case with isolated baseplate
- Wide 2:1 input voltage ranges
- Very high efficiency up to 90%
- Output voltage adjustable
- Remote On/Off control
- Operating temp. range -40°C to $+80^{\circ}\text{C}$ and up to $+85^{\circ}\text{C}$ with heat-sink
- I/O isolation voltage 1500 VDC
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THL 25-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	6000 mA	87%
THL 25-1211		5.0 VDC	5000 mA	89%
THL 25-1212		12 VDC	2090 mA	89%
THL 25-1213		15 VDC	1670 mA	89%
THL 25-1222		±12 VDC	±1040 mA	89%
THL 25-1223	18 – 36 VDC (24 VDC nominal)	±15 VDC	±840 mA	89%
THL 25-2410		3.3 VDC	6000 mA	88%
THL 25-2411		5.0 VDC	5000 mA	90%
THL 25-2412		12 VDC	2090 mA	90%
THL 25-2413		15 VDC	1670 mA	90%
THL 25-2422	36 – 75 VDC (48 VDC nominal)	±12 VDC	±1040 mA	89%
THL 25-2423		±15 VDC	±840 mA	89%
THL 25-4810		3.3 VDC	6000 mA	88%
THL 25-4811		5.0 VDC	5000 mA	90%
THL 25-4812		12 VDC	2090 mA	90%
THL 25-4813		15 VDC	1670 mA	90%
THL 25-4822		±12 VDC	±1040 mA	89%
THL 25-4823		±15 VDC	±840 mA	89%

THL 25WI

25 Watt



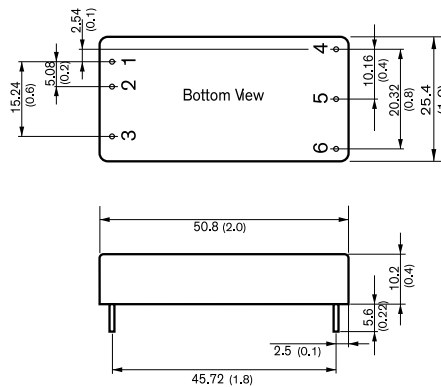
- Highest power density 25W converter! Ultra compact design: 1.0" x 1.0" x 0.4"
- Shielded metal case with isolated baseplate
- Ultra wide 4:1 input voltage ranges
- Very high efficiency up to 90%
- Output voltage adjustable
- Remote On/Off control
- Operating temp. range -40°C to $+80^{\circ}\text{C}$ and up to $+85^{\circ}\text{C}$ with heat-sink
- I/O isolation voltage 1500 VDC
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
THL 25-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	6000 mA	87%
THL 25-2411WI		5.0 VDC	5000 mA	89%
THL 25-2412WI		12 VDC	2090 mA	89%
THL 25-2413WI		15 VDC	1670 mA	90%
THL 25-2422WI		±12 VDC	±1040 mA	89%
THL 25-2423WI	18 – 75 VDC (48 VDC nominal)	±15 VDC	±840 mA	89%
THL 25-4810WI		3.3 VDC	6000 mA	88%
THL 25-4811WI		5.0 VDC	5000 mA	90%
THL 25-4812WI		12 VDC	2090 mA	90%
THL 25-4813WI		15 VDC	1670 mA	90%
THL 25-4822WI		±12 VDC	±1040 mA	89%
THL 25-4823WI		±15 VDC	±840 mA	89%

TEN 30

30 Watt



- Smallest encapsulated 30 W converter
- 2" x 1" x 0.4" shielded metal package with isolated baseplate
- Single- and dual output models
- I/O isolation voltage 1500 VDC
- Excellent efficiency up to 91%
- Operating temperature range -40°C to $+85^{\circ}\text{C}$
- Remote On/Off
- Over-temperature protection
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	Remote On/Off	
4	+ Vout	+ Vout
5	-Vout	Common
6	Trim	-Vout

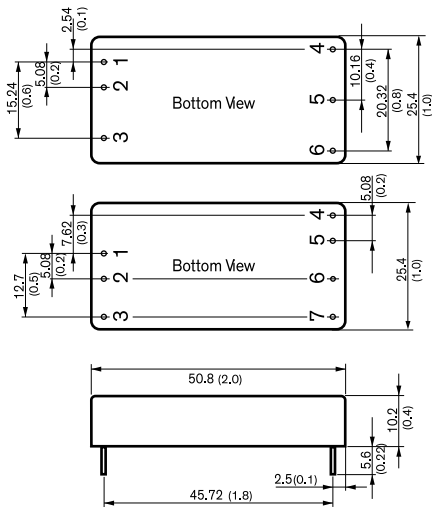
Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TEN 30-1210	9 – 18 VDC (nominal 12 VDC)	3.3 VDC	8000 mA	85%
TEN 30-1211		5.1 VDC	6000 mA	87%
TEN 30-1212		12 VDC	2500 mA	89%
TEN 30-1213		15 VDC	2000 mA	89%
TEN 30-1221		±5 VDC	±3000 mA	87%
TEN 30-1222	18 – 36 VDC (nominal 24 VDC)	±12 VDC	±1250 mA	87%
TEN 30-1223		±15 VDC	±1000 mA	87%
TEN 30-2410		3.3 VDC	8000 mA	87%
TEN 30-2411		5.1 VDC	6000 mA	90%
TEN 30-2412		12 VDC	2500 mA	91%
TEN 30-2413		15 VDC	2000 mA	91%
TEN 30-2421	36 – 75 VDC (nominal 48 VDC)	±5 VDC	±3000 mA	90%
TEN 30-2422		±12 VDC	±1250 mA	89%
TEN 30-2423		±15 VDC	±1000 mA	90%
TEN 30-4810		3.3 VDC	7500 mA	87%
TEN 30-4811		5.1 VDC	6000 mA	89%
TEN 30-4812		12 VDC	2500 mA	91%
TEN 30-4813		15 VDC	2000 mA	91%
TEN 30-4821		±5 VDC	±3000 mA	90%
TEN 30-4822		±12 VDC	±1250 mA	88%
TEN 30-4823		±15 VDC	±1000 mA	89%

TEN 30WIN

30 Watt



- Smallest encapsulated 30 W converter
- 2" x 1" x 0.4" shielded metal package with isolated baseplate
- Single- and dual output models
- I/O isolation voltage 1500 VDC
- Excellent efficiency up to 91%
- Operating temperature range -40°C to +85°C
- Remote On/Off
- Over-temperature protection
- 3-year product warranty



Pinout			
Pin	Single	Dual	Triple
1	+Vin (Vcc)	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)	-Vin (GND)
3	Remote On/Off	Remote On/Off	Remote On/Off
4	+Vout 1	Output 1	Output 2
5	-Vout 1	Common	Output 3
6	Trim	Output 2	Common
7	No pin	No pin	Output 1

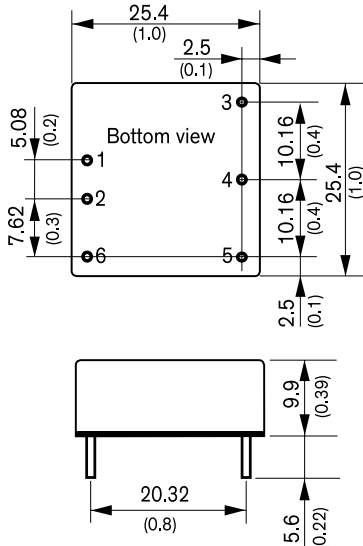
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEN 30-2410WIN	9 – 36 VDC (24 VDC nominal)	3.3 VDC	7.5 A	86%
TEN 30-2411WIN		5.1 VDC	6 A	88%
TEN 30-2412WIN		12 VDC	2.5 A	89%
TEN 30-2413WIN		15 VDC	2 A	89%
TEN 30-2421WIN		± 5 VDC	3 A	88%
TEN 30-2422WIN		± 12 VDC	1.25 A	87%
TEN 30-2423WIN		± 15 VDC	1 A	87%
TEN 30-2433WIN		3.3 / ± 12 VDC	5 / 0.416 A	86%
TEN 30-2434WIN		3.3 / ± 15 VDC	5 / 0.333 A	86%
TEN 30-2431WIN		5 / ± 12 VDC	4 / 0.416 A	88%
TEN 30-2432WIN		5 / ± 15 VDC	4 / 0.333 A	88%
TEN 30-4810 WIN	18 – 75 VDC (48 VDC nominal)	3.3 VDC	7.5 A	86%
TEN 30-4811WIN		5.1 VDC	6 A	88%
TEN 30-4812WIN		12 VDC	2.5 A	90%
TEN 30-4813WIN		15 VDC	2 A	91%
TEN 30-4821WIN		± 5 VDC	3 A	88%
TEN 30-4822WIN		± 12 VDC	1.25 A	88%
TEN 30-4823WIN		± 15 VDC	1 A	88%
TEN 30-4833WIN		3.3 / ± 12 VDC	5 / 0.416 A	86%
TEN 30-4834WIN		3.3 / ± 15 VDC	5 / 0.333 A	86%
TEN 30-4831WIN		5 / ± 12 VDC	4 / 0.416 A	88%
TEN 30-4832WIN		5 / ± 15 VDC	4 / 0.333 A	88%

THN 30

30 Watt



- Highest power density 30W converter! Ultra compact size: 1.0" x 1.0" x 0.4"
- Shielded metal case with isolated baseplate
- Wide 2:1 input voltage range
- Very high efficiency across full load range up to 92%
- Over temperature protection
- Operating temp. range -40°C to +80°C and up to 85 °C with heat-sink
- Ultra low no load input current
- Remote On/Off control
- Output voltage adjustable
- I/O isolation voltage 1500 VDC
- RoHS 2011/65/EU compliant
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

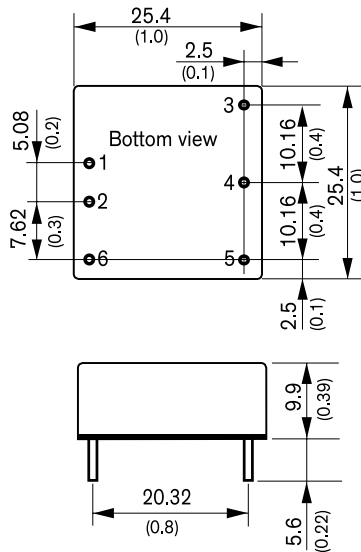
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THN 30-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	7000 mA	86%
THN 30-1211		5.0 VDC	6000 mA	89%
THN 30-1212		12 VDC	2500 mA	89%
THN 30-1213		15 VDC	2000 mA	89%
THN 30-1215		24 VDC	1250 mA	89%
THN 30-1222		± 12 VDC	± 1250 mA	89%
THN 30-1223	18 – 36 VDC (24 VDC nominal)	± 15 VDC	± 1000 mA	90%
THN 30-2410		3.3 VDC	7000 mA	87%
THN 30-2411		5.0 VDC	6000 mA	90%
THN 30-2412		12 VDC	2500 mA	91%
THN 30-2413		15 VDC	2000 mA	91%
THN 30-2415		24 VDC	1250 mA	91%
THN 30-2422	36 – 75 VDC (48 VDC nominal)	± 12 VDC	± 1250 mA	91%
THN 30-2423		± 15 VDC	± 1000 mA	91%
THN 30-4810		3.3 VDC	7000 mA	87%
THN 30-4811		5.0 VDC	6000 mA	89%
THN 30-4812		12 VDC	2500 mA	90%
THN 30-4813		15 VDC	2000 mA	91%
THN 30-4815		24 VDC	1250 mA	91%
THN 30-4822		± 12 VDC	± 1250 mA	91%
THN 30-4823		± 15 VDC	± 1000 mA	92%

THN 30WI

30 Watt



- Highest power density 30W converter! Ultra compact size: 1.0" × 1.0" × 0.4"
- Shielded metal case with isolated baseplate
- Ultrawide 4:1 input voltage range
- Very high efficiency across full load range up to 92%
- No minimum load required
- Remote On/Off control
- Operating temp. range –40°C to +80°C and up to 85 °C with heatsink
- Over temperature protection
- Output voltage adjustable
- I/O isolation voltage 1500 VDC
- RoHS 2011/65/EU compliant
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	+Vout	+Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THN 30-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	7000 mA	86%
THN 30-2411WI		5.0 VDC	6000 mA	89%
THN 30-2411WI-A1		5.0 VDC ^{*1}	6000 mA	89%
THN 30-2412WI		12 VDC	2500 mA	89%
THN 30-2413WI		15 VDC	2000 mA	89%
THN 30-2415WI		24 VDC	1250 mA	89%
THN 30-2425WI ^{*2}		48 VDC	625 mA	91%
THN 30-2422WI		±12 VDC	±1250 mA	89%
THN 30-2423WI		±15 VDC	±1000 mA	91%
THN 30-2425WI		±24 VDC	±625 mA	91%
THN 30-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	7000 mA	87%
THN 30-4811WI		5.0 VDC	6000 mA	90%
THN 30-4811WI-A1		5.0 VDC ^{*1}	6000 mA	90%
THN 30-4812WI		12 VDC	2500 mA	90%
THN 30-4813WI		15 VDC	2000 mA	91%
THN 30-4815WI		24 VDC	1250 mA	91%
THN 30-4825WI ^{*2}		48 VDC	625 mA	91%
THN 30-4822WI		±12 VDC	±1250 mA	91%
THN 30-4823WI		±15 VDC	±1000 mA	92%
THN 30-4825WI		±24 VDC	±625 mA	92%

*1 Adjustable output up to 6 VDC

*2 This dual ±24 VDC converter can be used as single 48 VDC converter (open common contact)

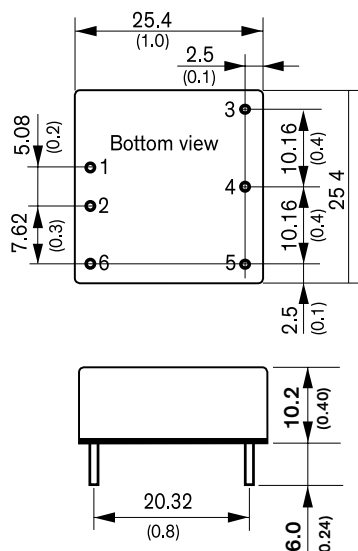
THL 30WI

NEW!

30 Watt



- 30 Watt converter in a 1" × 1" metal package
- Cost efficient design
- Wide 4:1 input voltage range: 9 – 36 and 18 – 75 VDC
- Operating temperature range –40 to +60 °C without derating
- Internal EN 55032 class A filter
- High efficiency up to 90%
- 1'500 VDC I/O-isolation
- Protection against overvoltage, overload and short circuit
- Remote On/Off and trim function
- 3-year product warranty



Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
3	+Vout	+Vout
4	Trim	Common
5	–Vout	–Vout
6	Remote On/Off	Remot On/Off

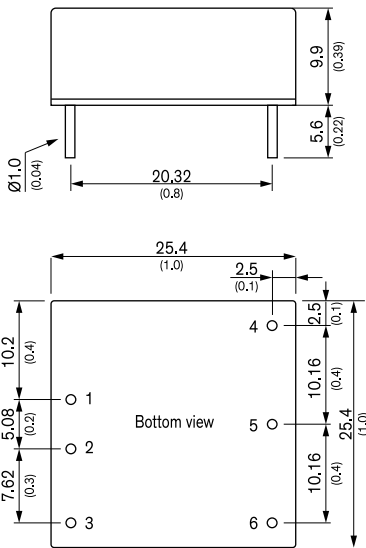
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
THL 30-2410WI	9 – 36 VDC (24 VDC nom.)	3.3 VDC	7000 mA	87%
THL 30-2411WI		5 VDC	6000 mA	88%
THL 30-2412WI		12 VDC	2500 mA	88%
THL 30-2413WI		15 VDC	2000 mA	88%
THL 30-2415WI		24 VDC	1250 mA	88%
THL 30-2422WI		±12 VDC	±1250 mA	88%
THL 30-2423WI		±15 VDC	±1000 mA	88%
THL 30-4810WI	18 – 75 VDC (48 VDC nom.)	3.3 VDC	7000 mA	87%
THL 30-4811WI		5 VDC	6000 mA	88%
THL 30-4812WI		12 VDC	2500 mA	90%
THL 30-4813WI		15 VDC	2000 mA	90%
THL 30-4815WI		24 VDC	1250 mA	90%
THL 30-4822WI		±12 VDC	±1250 mA	90%
THL 30-4823WI		±15 VDC	±1000 mA	90%

THN 30WIR

30 Watt



- Compact 1" × 1" × 0.4" standard package
- Wide 4:1 input voltage range 9-36, 18-75, 36-160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VDC
- High efficiency up to 92%
- Operating temperature range -40°C to +90°C
- Under voltage lock-out circuit
- Adjustable output voltage & Remote On/Off



Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

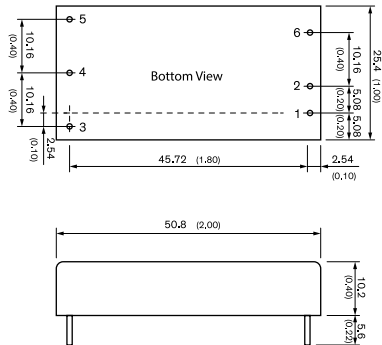
Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THN 30-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	7000 mA	88%
THN 30-2411WIR		5 VDC	6000 mA	89%
THN 30-2412WIR		12 VDC	2500 mA	89%
THN 30-2413WIR		15 VDC	2000 mA	89%
THN 30-2415WIR		24 VDC	1250 mA	90%
THN 30-2422WIR		±12 VDC	±1250 mA	89%
THN 30-2423WIR	18 – 75 VDC (48 VDC nom.)	±15 VDC	±1000 mA	91%
THN 30-2425WIR		±24 VDC	±625 mA	91%
THN 30-4810WIR		3.3 VDC	7000 mA	88%
THN 30-4811WIR		5 VDC	6000 mA	90%
THN 30-4812WIR		12 VDC	2500 mA	90%
THN 30-4813WIR		15 VDC	2000 mA	91%
THN 30-4815WIR		24 VDC	1250 mA	92%
THN 30-4822WIR	36 – 160 VDC (110 VDC nom.)	±12 VDC	±1250 mA	91%
THN 30-4823WIR		±15 VDC	±1000 mA	91%
THN 30-4825WIR		±24 VDC	±625 mA	92%
THN 30-7210WIR		3.3 VDC	7000 mA	88%
THN 30-7211WIR		5 VDC	6000 mA	90%
THN 30-7212WIR		12 VDC	2500 mA	90%
THN 30-7213WIR		15 VDC	2000 mA	90%
THN 30-7215WIR		24 VDC	1250 mA	91%
THN 30-7222WIR		±12 VDC	±1250 mA	90%
THN 30-7223WIR		±15 VDC	±1000 mA	90%
THN 30-7225WIR		±24 VDC	±625 mA	91%

THM 30

30 Watt



- Wide 2:1 input voltage 30 W DC/DC converter in a 2" × 1" plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 µA
- Operating temp.: -40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN 55032 class A
- Operating up to 5000m altitude



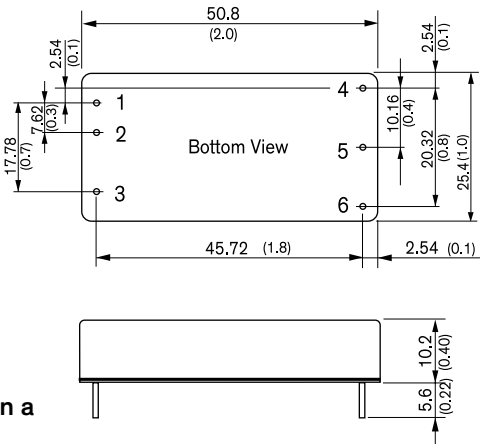
Pinout / Connection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout
6	No pin*/Remote	No pin*/Remote

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
THM 30-1211	9 – 18 VDC (12 VDC nom.)	5 VDC	6000 mA	89%
THM 30-1212		12 VDC	2500 mA	89%
THM 30-1213		15 VDC	2000 mA	90%
THM 30-1215		24 VDC	1250 mA	89%
THM 30-1221		±5 VDC	3000 mA	86%
THM 30-1222		±12 VDC	1250 mA	89%
THM 30-1223	18 – 36 VDC (24 VDC nom.)	±15 VDC	1000 mA	89%
THM 30-2411		5 VDC	6000 mA	89%
THM 30-2412		12 VDC	2500 mA	89%
THM 30-2413		15 VDC	2000 mA	91%
THM 30-2415		24 VDC	1250 mA	90%
THM 30-2421		±5 VDC	3000 mA	86%
THM 30-2422	36 – 75 VDC (48 VDC nom.)	±12 VDC	1250 mA	90%
THM 30-2423		±15 VDC	1000 mA	90%
THM 30-4811		5 VDC	6000 mA	89%
THM 30-4812		12 VDC	2500 mA	89%
THM 30-4813		15 VDC	2000 mA	90%
THM 30-4815		24 VDC	1250 mA	89%
THM 30-4821		±5 VDC	3000 mA	87%
THM 30-4822		±12 VDC	1250 mA	90%
THM 30-4823		±15 VDC	1000 mA	90%

* If remote is not selected there will be no pin.

TEN 40E

40 Watt



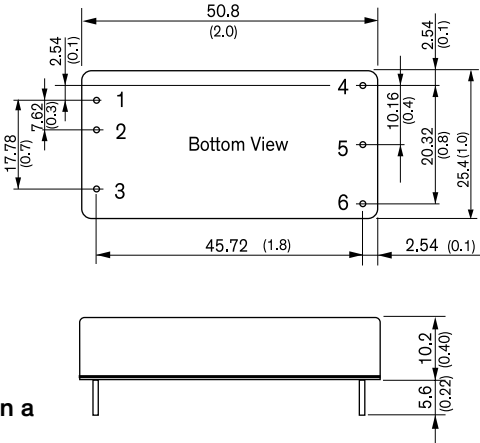
- Developed to maximize quality in a cost efficient design
- Excellent temperature capabilities
- 2" x 1" metal package (6-side shielded)
- Minimal heat development due to high efficiencies up to 93%
- Operating temperature range -40 to +85°C
- 1600 VDC I/O-isolation
- Remote On/Off and Trim function
- Protection against short circuit, overvoltage and overtemperature
- 3-year product warranty

Pinout / Conecction		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	Remote On/Off	
4	+Vout	+Vout
5	-Vout	Common
6	Trim	-Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 40-1210E	9 – 18 VDC (12 VDC nominal)	3.3 VDC	12'200 mA	89%
TEN 40-1211E		5 VDC	8'000 mA	90%
TEN 40-1212E		12 VDC	3'333 mA	91%
TEN 40-1213E		15 VDC	2'666 mA	91%
TEN 40-1215E		24 VDC	1'666 mA	90%
TEN 40-1222E		±12 VDC	1'666 mA	90%
TEN 40-1223E	18 – 36 VDC (24 VDC nominal)	±15 VDC	1'333 mA	90%
TEN 40-1225E		±24 VDC	833 mA	91%
TEN 40-2410E		3.3 VDC	12'200 mA	90%
TEN 40-2411E		5 VDC	8'000 mA	92%
TEN 40-2412E		12 VDC	3'333 mA	92%
TEN 40-2413E		15 VDC	2'666 mA	93%
TEN 40-2415E		24 VDC	1'666 mA	91%
TEN 40-2422E	36 – 75 VDC (48 VDC nominal)	±12 VDC	1'666 mA	91%
TEN 40-2423E		±15 VDC	1'333 mA	91%
TEN 40-2425E		±24 VDC	833 mA	91%
TEN 40-4810E		3.3 VDC	12'200 mA	90%
TEN 40-4811E		5 VDC	8'000 mA	91%
TEN 40-4812E		12 VDC	3'333 mA	92%
TEN 40-4813E		15 VDC	2'666 mA	92%
TEN 40-4815E		24 VDC	1'666 mA	92%
TEN 40-4822E		±12 VDC	1'666 mA	91%
TEN 40-4823E		±15 VDC	1'333 mA	91%
TEN 40-4825E		±24 VDC	833 mA	92%

TEN 40WIE

40 Watt



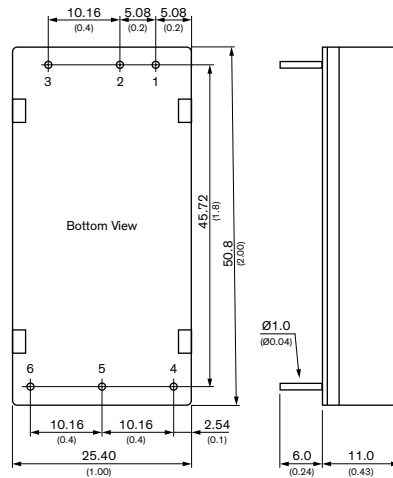
- Developed to maximize quality in a cost efficient design
- Excellent temperature capabilities
- 2" x 1" metal package (6-side shielded)
- Minimal heat development due to high efficiencies up to 93%
- Operating temperature range -40 to +85°C
- 1600 VDC I/O-isolation
- Remote On/Off and Trim function
- Protection against short circuit, overvoltage and overtemperature
- 3-year product warranty

Pinout / Conecction		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	Remote On/Off	
4	+Vout	+Vout
5	-Vout	Common
6	Trim	-Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 40-2410WIE	9 – 36 VDC (24 VDC nominal)	3.3 VDC	12'200 mA	90%
TEN 40-2411WIE		5 VDC	8'000 mA	92%
TEN 40-2412WIE		12 VDC	3'333 mA	92%
TEN 40-2413WIE		15 VDC	2'666 mA	93%
TEN 40-2415WIE		24 VDC	1'666 mA	91%
TEN 40-2422WIE		±12 VDC	1'666 mA	91%
TEN 40-2423WIE	18 – 75 VDC (48 VDC nominal)	±15 VDC	1'333 mA	91%
TEN 40-2425WIE		±24 VDC	833 mA	91%
TEN 40-4810WIE		3.3 VDC	12'200 mA	90%
TEN 40-4811WIE		5 VDC	8'000 mA	91%
TEN 40-4812WIE		12 VDC	3'333 mA	92%
TEN 40-4813WIE		15 VDC	2'666 mA	92%
TEN 40-4815WIE		24 VDC	1'666 mA	92%
TEN 40-4822WIE		±12 VDC	1'666 mA	91%
TEN 40-4823WIE		±15 VDC	1'333 mA	91%
TEN 40-4825WIE		±24 VDC	833 mA	92%

THR 40WI

40 Watt



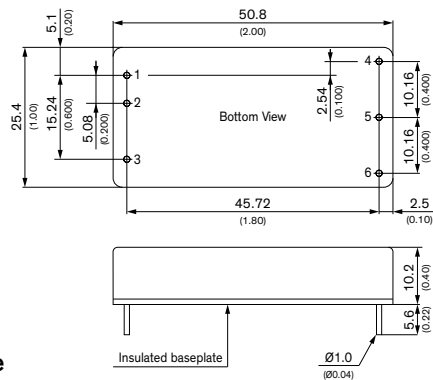
Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
THR 40-7211WI	36 – 160 VDC (110 VDC nom.)	5 VDC	8000 mA	88%
THR 40-7212WI		12 VDC	3330 mA	89%
THR 40-7213WI		15 VDC	2670 mA	89%
THR 40-7215WI		24 VDC	1670 mA	89%
THR 40-7222WI		±12 VDC	±1670 mA	89%
THR 40-7223WI		±15 VDC	±1330 mA	89%

- Ultra wide 4:1 input range
- Reinforced I/O-isolation 3000 VAC
- Input filter to meet EN 55032, Class A
- High efficiency up to 85%
- Extended operating temperature range –40°C to 90°C
- DIP-24 package
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	–Vout	Common
6	Trim	–Vout

TEN 40 WIR

40 Watt



- 2" x 1" metal package
- Ultra wide 4:1 input voltage range 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according to EN 61373
- High efficiency up to 92%
- No minimum load required
- Operating temperature range –40°C to +85°C
- Under voltage lock-out circuit
- Remote On/Off
- Output voltage adjustable
- Lead free design, RoHS compliant
- 3-year product warranty

* For heat-sink option drawing see data sheet

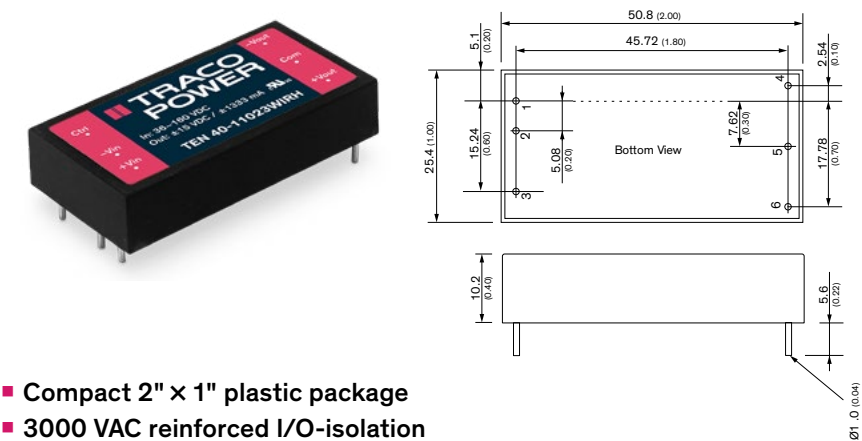
Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	–Vout	Common
6	Trim	–Vout

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TEN 40-2410WIR	9 – 36 VDC (24 VDC nom.)	3.3 VDC	10'000 mA	90%
TEN 40-2411WIR		5 VDC	8000 mA	91%
TEN 40-2412WIR		12 VDC	3333 mA	92%
TEN 40-2413WIR		15 VDC	2666 mA	92%
TEN 40-2415WIR		24 VDC	1666 mA	91%
TEN 40-2422WIR		±12 VDC	±1666 mA	90%
TEN 40-2423WIR	18 – 75 VDC (48 VDC nom.)	±15 VDC	±1333 mA	90%
TEN 40-2425WIR		±24 (48*) VDC	±833 mA	91%
TEN 40-4810WIR		3.3 VDC	10'000 mA	90%
TEN 40-4811WIR	43 – 160 VDC (110 VDC nom.)	5 VDC	8000 mA	91%
TEN 40-4812WIR		12 VDC	3333 mA	92%
TEN 40-4813WIR		15 VDC	2666 mA	92%
TEN 40-4815WIR		24 VDC	1666 mA	91%
TEN 40-4822WIR		±12 VDC	±1666 mA	90%
TEN 40-4823WIR		±15 VDC	±1333 mA	90%
TEN 40-4825WIR	43 – 160 VDC (110 VDC nom.)	±24 (48*) VDC	±833 mA	91%
TEN 40-7210WIR		3.3 VDC	10'000 mA	88%
TEN 40-7211WIR		5 VDC	8000 mA	89%
TEN 40-7212WIR		12 VDC	3333 mA	90%
TEN 40-7213WIR		15 VDC	2666 mA	91%
TEN 40-7215WIR		24 VDC	1666 mA	90%
TEN 40-7222WIR	18 – 75 VDC (48 VDC nom.)	±12 VDC	±1666 mA	89%
TEN 40-7223WIR		±15 VDC	±1333 mA	89%
TEN 40-7225WIR		±24 (48*) VDC	±833 mA	91%

*The outputs can also be used in serial circuit for single 48 VDC operation. Free-wheeling diodes are not necessary but recommended for increased performance for start-up with inductive/capacitive load and at dynamic load operation.

TEN 40WIRH

40 Watt



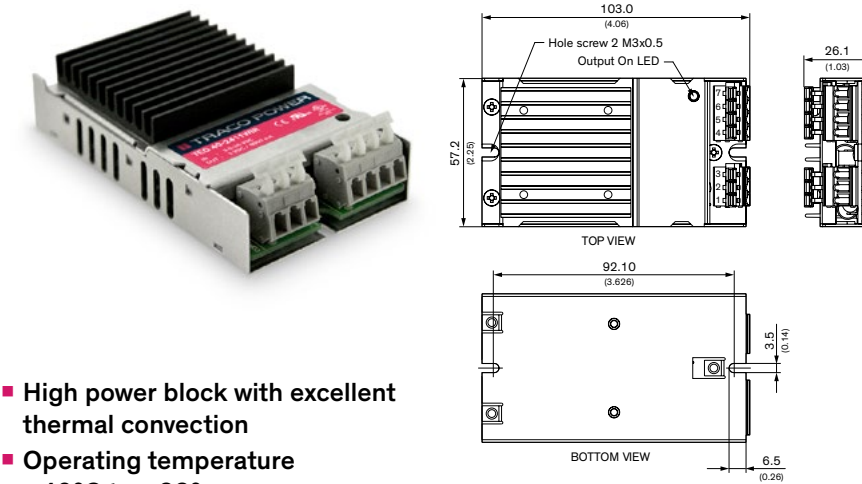
- Compact 2" x 1" plastic package
- 3000 VAC reinforced I/O-isolation
- Wide 4:1 input voltage range: 36 – 160 VDC
- EN 50155 approval for railway applications
- Thermal shock and vibration resistant according EN 61373
- High efficiency up to 90%
- Operating temperature range -40°C to +70°C
- Under voltage lock-out circuit
- Remote On/Off and Trim function
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	-Vout	-Vout
6	Trim	-Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 40-11011WIRH	36 – 160 VDC (110 VDC nom.)	5.1 VDC	8000 mA	88%
TEN 40-11012WIRH		12 VDC	3333 mA	89%
TEN 40-11013WIRH		15 VDC	2666 mA	90%
TEN 40-11015WIRH		24 VDC	1666 mA	89%
TEN 40-11022WIRH		±12 VDC	±1666 mA	88%
TEN 40-11023WIRH		±15 VDC	±1333 mA	89%

TEQ 40WIR

40 Watt



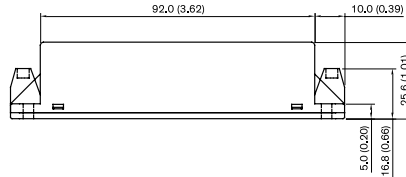
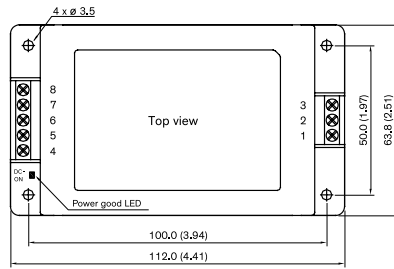
- High power block with excellent thermal convection
- Operating temperature -40°C to +92°
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 91%
- Input filter meet EN 55032, class B
- I/O isolation up to 3000 VDC
- Under voltage lock-out circuit
- Protection against overvoltage, overtemperature and short circuit
- Output LED indicator

Pinout		
Pin	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin (GND)	-Vin (GND)
3	NC	NC
4	NC	-Vout
5	-Vout	Common
6	+Vout	Common
7	NC	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEQ 40-2411WIR	9 – 36 VDC (24 VDC nom.)	5 VDC	8000 mA	90%
TEQ 40-2412WIR		12 VDC	3330 mA	91%
TEQ 40-2413WIR		15 VDC	2670 mA	91%
TEQ 40-2415WIR		24 VDC	1670 mA	90%
TEQ 40-2422WIR		±12 VDC	1670 mA	89%
TEQ 40-2423WIR	18 – 75 VDC (48 VDC nom.)	±15 VDC	1330 mA	89%
TEQ 40-2425WIR		±24 VDC	830 mA	90%
TEQ 40-4811WIR		5 VDC	8000 mA	90%
TEQ 40-4812WIR		12 VDC	3330 mA	91%
TEQ 40-4813WIR		15 VDC	2670 mA	91%
TEQ 40-4815WIR	43 – 160 VDC (110 VDC nom.)	24 VDC	1670 mA	90%
TEQ 40-4822WIR		±12 VDC	1670 mA	89%
TEQ 40-4823WIR		±15 VDC	1330 mA	89%
TEQ 40-4825WIR		±24 VDC	830 mA	90%
TEQ 40-7211WIR		5 VDC	8000 mA	88%
TEQ 40-7212WIR		12 VDC	3330 mA	90%
TEQ 40-7213WIR		15 VDC	2670 mA	90%
TEQ 40-7215WIR		24 VDC	1670 mA	89%
TEQ 40-7222WIR		±12 VDC	1670 mA	88%
TEQ 40-7223WIR		±15 VDC	1330 mA	88%
TEQ 40-7225WIR		±24 VDC	830 mA	90%

TMDC 40

40 Watt



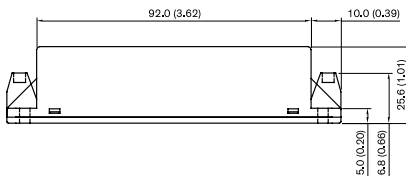
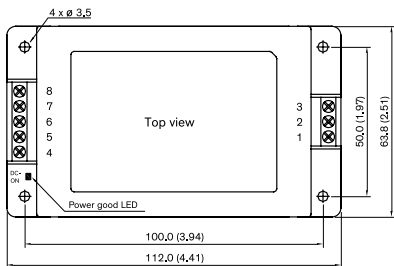
- Fully encapsulated low profile plastic case
- Ultra wide 4:1 input voltage range
- Operating temperature range -40°C to $+85^{\circ}\text{C}$
- I/O isolation 2500 VDC
- Excellent efficiency up to 92%
- Input filter to meet EN 55032, class A
- Optional DIN-Rail mount adapter
- No minimum load required
- Power good LED indicator and remote on/off function
- 3-year product warranty

Pinout	
Pin	Function
1	Remote
2	–Vin (GND)
3	+Vin (Vcc)
4	+Vout
5	NC
6	–Vout
7	NC
8	NC

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMDC 40-2411	9 – 36 VDC (24 VDC nom.)	5.1 VDC	8'000 mA	90%
TMDC 40-2412		12 VDC	3'330 mA	90%
TMDC 40-2415		24 VDC	1'670 mA	90%
TMDC 40-2418	18 – 75 VDC (48 VDC nom.)	48 VDC	835 mA	89%
TMDC 40-4811		5.1 VDC	8'000 mA	89%
TMDC 40-4812		12 VDC	3'330 mA	91%
TMDC 40-4815		24 VDC	1'670 mA	92%
TMDC 40-4818		48 VDC	835 mA	90%

TMDC 40H

40 Watt



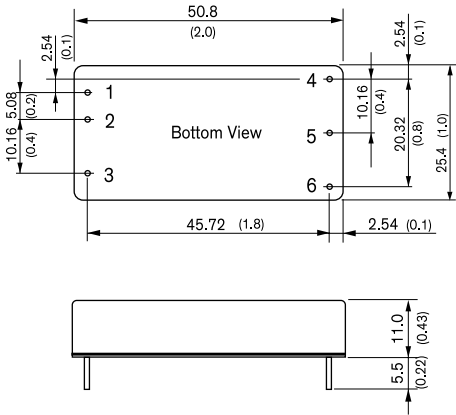
- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Wide 2:1 input range
- Operating temperature range -40 to $+90^{\circ}\text{C}$
- Reinforced I/O-isolation 3'000 VAC
- Protection against overload, under-voltage and short circuit
- 3-year product warranty

Pinout	
Pin	Function
1	Remote
2	–Vin (GND)
3	+Vin (Vcc)
4	+Vout
5	NC
6	–Vout
7	NC
8	NC

Model	Input Voltage Range	Vnom	I _{max}	Efficiency
TMDC 40-7211H	80 – 160 VDC (110 VDC nom.)	5.1 VDC	8000 mA	87%
TMDC 40-7212H		12 VDC	3330 mA	89%
TMDC 40-7213H		15 VDC	2670 mA	89%
TMDC 40-7215H		24 VDC	1670 mA	89%
TMDC 40-7218H		48 VDC	840 mA	87%
TMDC 40-7222H		±12 VDC	±1670 mA	89%
TMDC 40-7223H		±15 VDC	±1330 mA	89%
TMDC 40-7225H		±24 VDC	±830 mA	87%

TEN 50

50 Watt



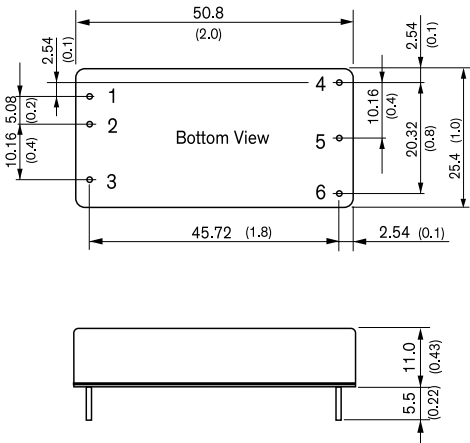
- Highest power density:
50 W in 1" × 2" × 0.4" package
- Excellent efficiency up to 92%
- Operating temperature range
–40°C to +85°C
- No minimum load required
- Output voltage adjustable
- Remote On/Off
- I/O isolation 1500 VDC
- 3-year product warranty

Pinout	
Pin	Single
1	+Vin (Vcc)
2	–Vin (GND)
3	Remote On/Off
4	+Vout
5	–Vout
6	Trim

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 50-1210	9 – 18 VDC (nominal 12 VDC)	3.3 VDC	10000 mA	89%
TEN 50-1211		5.0 VDC	10000 mA	90%
TEN 50-1212		12 VDC	4170 mA	91%
TEN 50-1213		15 VDC	3330 mA	91%
TEN 50-1215		24 VDC	2080 mA	91%
TEN 50-2410	18 – 36 VDC (nominal 24 VDC)	3.3 VDC	10000 mA	89%
TEN 50-2411		5.0 VDC	10000 mA	92%
TEN 50-2412		12 VDC	4170 mA	92%
TEN 50-2413		15 VDC	3330 mA	92%
TEN 50-2415		24 VDC	2080 mA	91%
TEN 50-4810	36 – 75 VDC (nominal 48 VDC)	3.3 VDC	10000 mA	89%
TEN 50-4811		5.0 VDC	10000 mA	92%
TEN 50-4812		12 VDC	4170 mA	92%
TEN 50-4813		15 VDC	3330 mA	92%
TEN 50-4815		24 VDC	2080 mA	91%

TEN 50WI

50 Watt



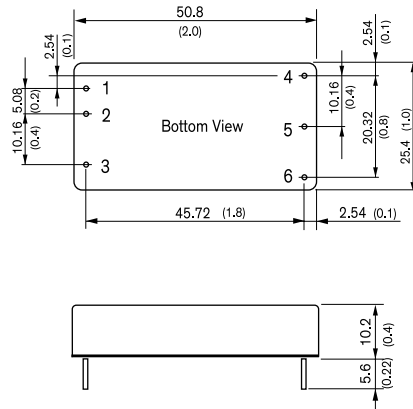
- Very high power density: 50 W
in 1" × 2" × 0.4" package
- Wide 4:1 input range
- Excellent efficiency up to 92%
- Operating temperature range
–40°C to +80°C
- Protection against
over-temperature
- No minimum load required
- Output voltage adjustable
- Remote On/Off
- I/O isolation 1500 VDC
- 3-year product warranty

Pinout	
Pin	Single
1	+Vin (Vcc)
2	–Vin (GND)
3	Remote On/Off
4	+Vout
5	–Vout
6	Trim

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 50-2410WI	9 – 36 VDC (nominal 24 VDC)	3.3 VDC	10000 mA	90%
TEN 50-2411WI		5.0 VDC	10000 mA	91%
TEN 50-2412WI		12 VDC	4170 mA	92%
TEN 50-2413WI		15 VDC	3330 mA	92%
TEN 50-2415WI		24 VDC	2080 mA	91%
TEN 50-4810WI	18 – 75 VDC (nominal 48 VDC)	3.3 VDC	10000 mA	90%
TEN 50-4811WI		5.0 VDC	10000 mA	91%
TEN 50-4812WI		12 VDC	4170 mA	92%
TEN 50-4813WI		15 VDC	3330 mA	92%
TEN 50-4815WI		24 VDC	2080 mA	91%

TEN 60N

60 Watt



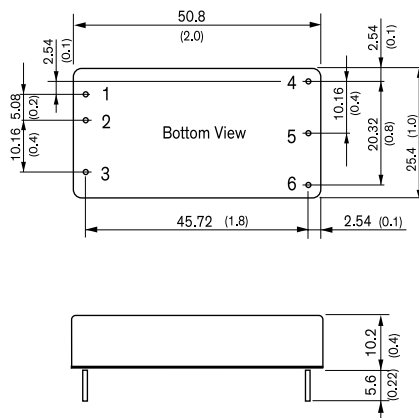
- 2" x 1" metal package
- Wide 2:1 input voltage range 9–18, 18–36, 36–75 VDC
- High efficiency up to 92%
- Adjustable output voltage
- No minimum load required
- Operating temperature range –40°C to +85°C
- Input filter to meet EN55032, class A
- Remote On/Off
- Under voltage lockout
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	Remote On/Off	
4	+Vout	+Vout
5	–Vout	Common
6	TRIM	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 60-1211N	9 – 18 VDC (12 VDC nominal)	5.0 VDC	12000 mA	90.5%
TEN 60-1212N		12 VDC	5000 mA	90.5%
TEN 60-1213N		15 VDC	4000 mA	91.5%
TEN 60-1215N		24 VDC	2500 mA	91.5%
TEN 60-1222N		±12 VDC	±2500 mA	90%
TEN 60-1223N	18 – 36 VDC (24 VDC nominal)	±15 VDC	±2000 mA	90%
TEN 60-1225N		±24 VDC	±1250 mA	91%
TEN 60-2411N		5.0 VDC	12000 mA	92%
TEN 60-2412N		12 VDC	5000 mA	92%
TEN 60-2413N		15 VDC	4000 mA	92%
TEN 60-2415N		24 VDC	2500 mA	92%
TEN 60-2422N	36 – 75 VDC (48 VDC nominal)	±12 VDC	±2500 mA	90%
TEN 60-2423N		±15 VDC	±2000 mA	90%
TEN 60-2425N		±24 VDC	±1250 mA	91%
TEN 60-4811N		5.0 VDC	12000 mA	92%
TEN 60-4812N		12 VDC	5000 mA	92%
TEN 60-4813N		15 VDC	4000 mA	92%
TEN 60-4815N		24 VDC	2500 mA	92%
TEN 60-4822N		±12 VDC	±2500 mA	91%
TEN 60-4823N		±15 VDC	±2000 mA	91%
TEN 60-4825N		±24 VDC	±1250 mA	91%

TEN 60WIN

60 Watt



- 2" x 1" metal package
- Wide 4:1 input voltage range 9–36, 18–75 VDC
- High efficiency up to 92%
- Adjustable output voltage
- No minimum load required
- Operating temperature range –40°C to +85°C
- Input filter to meet EN 55032, class A
- Remote On/Off
- Under voltage lockout
- Lead free design, RoHS compliant
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	Remote On/Off	
4	+Vout	+Vout
5	–Vout	Common
6	TRIM	–Vout

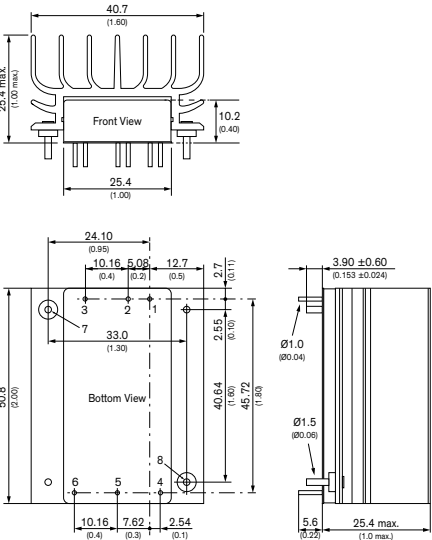
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 60-2411WIN	9 – 36 VDC (24 VDC nominal)	5.0 VDC	12000 mA	92%
TEN 60-2412WIN		12 VDC	5000 mA	92%
TEN 60-2413WIN		15 VDC	4000 mA	92%
TEN 60-2415WIN		24 VDC	2500 mA	92%
TEN 60-2422WIN		±12 VDC	±2500 mA	91%
TEN 60-2423WIN	18 – 75 VDC (48 VDC nominal)	±15 VDC	±2000 mA	91%
TEN 60-2425WIN		±24 VDC	±1250 mA	91%
TEN 60-4811WIN		5.0 VDC	12000 mA	92%
TEN 60-4812WIN		12 VDC	5000 mA	92%
TEN 60-4813WIN		15 VDC	4000 mA	92%
TEN 60-4815WIN		24 VDC	2500 mA	91%
TEN 60-4822WIN		±12 VDC	±2500 mA	91%
TEN 60-4823WIN		±15 VDC	±2000 mA	91%
TEN 60-4825WIN		±24 VDC	±1250 mA	91%

TEN 60WIR

60 Watt



- Compact 2" x 1" standard package
- Ultra-wide 4:1 input voltage range 9-36, 18-75, 36-160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VDC
- High efficiency up to 94%
- Operating temperature range -40°C to +85°C
- Under voltage lock-out circuit
- Adjustable output voltage & Remote On/Off



Pinout

Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	Remote On/Of	Remote On/Of
4	+Vout	+Vout
5	-Vout	Common
6	Trim	-Vout
7	NC	NC
8	NC	NC

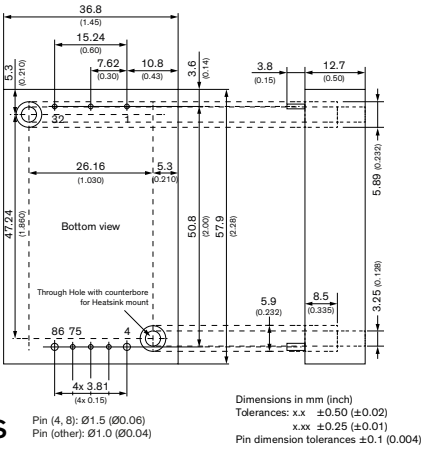
Model	Input Voltage Range	Output		Efficiency
		Vnom	Imax	
TEN 60-2411WIR	9 – 36 VDC (24 VDC nom.)	5 VDC	12 A	91%
TEN 60-2412WIR		12 VDC	5 A	93%
TEN 60-2413WIR		15 VDC	4 A	93%
TEN 60-2415WIR		24 VDC	2.5 A	91%
TEN 60-2418WIR		48 VDC	1.25 A	92%
TEN 60-2422WIR		±12 VDC	±2.5 A	91%
TEN 60-2423WIR	18 – 75 VDC (48 VDC nom.)	±15 VDC	±2 A	91%
TEN 60-2425WIR		±24 VDC	±1.25 A	92%
TEN 60-4811WIR		5 VDC	12 A	92%
TEN 60-4812WIR		12 VDC	5 A	93%
TEN 60-4813WIR		15 VDC	4 A	94%
TEN 60-4815WIR		24 VDC	2.5 A	92%
TEN 60-4818WIR	36 – 160 VDC (110 VDC nom.)	48 VDC	1.25 A	92%
TEN 60-4822WIR		±12 VDC	±2.5 A	92%
TEN 60-4823WIR		±15 VDC	±2 A	92%
TEN 60-4825WIR		±24 VDC	±1.25 A	92%
TEN 60-7211WIR		5 VDC	12 A	91%
TEN 60-7212WIR		12 VDC	5 A	92%
TEN 60-7213WIR	36 – 160 VDC (110 VDC nom.)	15 VDC	4 A	92%
TEN 60-7215WIR		24 VDC	2.5 A	91%
TEN 60-7218WIR		48 VDC	1.25 A	91%
TEN 60-7222WIR		±12 VDC	±2.5 A	91%
TEN 60-7223WIR		±15 VDC	±2 A	91%
TEN 60-7225WIR		±24 VDC	±1.25 A	91%

THM 60WI

60 Watt



- Wide 4:1 input voltage 60W DC/DC converter in a compact 2.3" x 1.45" plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <4.5 µA
- Operating temperature range: -40 to +75°C
- EMC compliance according to IEC 60601-1-2 4th edition
- Operating up to 5000m altitude
- 5 year product warranty



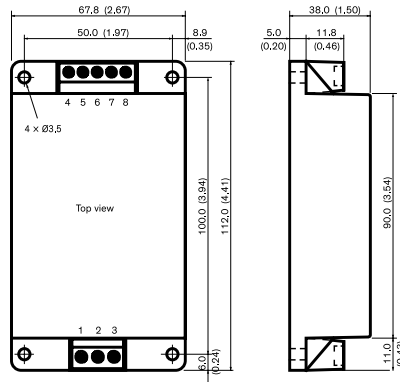
Pinout / Connection

Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	Remote On/Off	Remote On/Off
3	+Vin (Vcc)	+Vin (Vcc)
4	-Vout	-Vout
5	-Sense	-Sense
6	Trim	Common
7	+Sense	+Sense
8	+Vout	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	Imax	
THM 60-2411WI	9 – 36 VDC (24 VDC nom.)	5.1 VDC	12.0 A	90%
THM 60-2412WI		12.0 VDC	5.0 A	92%
THM 60-2413WI		15.0 VDC	4.0 A	90%
THM 60-2415WI		24.0 VDC	2.5 A	89%
THM 60-2422WI		±12.0 VDC	±2.5 A	89%
THM 60-2423WI		±15.0 VDC	±2.0 A	90%
THM 60-4811WI	18 – 75 VDC (48 VDC nom.)	5.1 VDC	12.0 A	90%
THM 60-4812WI		12.0 VDC	5.0 A	92%
THM 60-4813WI		15.0 VDC	4.0 A	93%
THM 60-4815WI		24.0 VDC	2.5 A	90%
THM 60-4822WI		±12.0 VDC	±2.5 A	90%
THM 60-4823WI		±15.0 VDC	±2.0 A	90%

TMDC 60

60 Watt



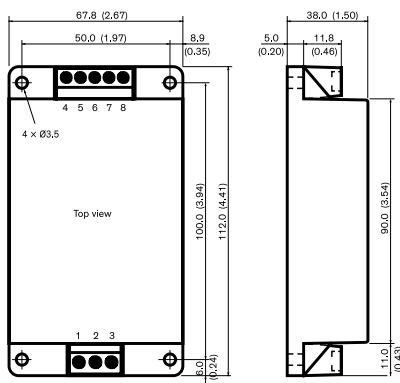
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMDC 60-2411	9 – 36 VDC (24 VDC nom.)	5.1 VDC	12'000 mA	90%
TMDC 60-2412		12 VDC	5'000 mA	91%
TMDC 60-2415		24 VDC	2'500 mA	91%
TMDC 60-2418		48 VDC	1'250 mA	91%
TMDC 60-4811	18 – 75 VDC (48 VDC nom.)	5.1 VDC	12'000 mA	91%
TMDC 60-4812		12 VDC	5'000 mA	92%
TMDC 60-4815		24 VDC	2'500 mA	91%
TMDC 60-4818		48 VDC	1'250 mA	91%

- Fully encapsulated low profile plastic case
- Ultra wide 4:1 input voltage range
- Operating temperature range –40°C to +85°C
- I/O isolation 2500 VDC
- Excellent efficiency up to 92%
- Input filter to meet EN 55032, class A
- Optional DIN-Rail mount adapter
- Power good LED indicator
- Remote on/off function
- 3-year product warranty

Pinout	
Pin	Function
1	Remote
2	–Vin (GND)
3	+Vin (Vcc)
4	NC
5	+Vout
6	NC
7	–Vout
8	NC

TMDC 60H

60 Watt



Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TMDC 60-7211H	80 – 160 VDC (110 VDC nom.)	5.1 VDC	12000 mA	88%
TMDC 60-7212H		12 VDC	5000 mA	89%
TMDC 60-7213H		15 VDC	4000 mA	89%
TMDC 60-7215H		24 VDC	2500 mA	88%
TMDC 60-7218H		48 VDC	1250 mA	88%
TMDC 60-7222H		±12 VDC	±2500 mA	88%
TMDC 60-7223H		±15 VDC	±2000 mA	88%
TMDC 60-7225H		±24 VDC	±1250 mA	88%

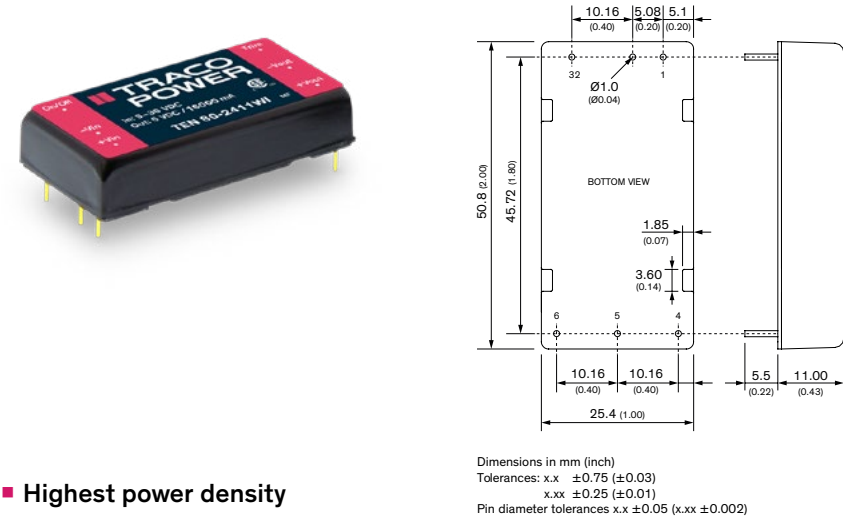
- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Wide 2:1 input range
- Operating temperature range –40 to +90°C
- Reinforced I/O-isolation 3'000 VAC
- Protection against overload, under-voltage and short circuit
- 3-year product warranty

Pinout	
Pin	Function
1	Remote
2	–Vin (GND)
3	+Vin (Vcc)
4	NC
5	+Vout
6	NC
7	–Vout
8	NC

TEN 80WI

NEW – under development

80 Watt



- Highest power density
- 2" x 1" metal package
- Wide 4:1 input voltage range 9 – 36, 18 – 75 VDC
- High efficiency up to 92%
- Adjustable output voltage
- Operating temperature range –40°C to +85°C
- Remote On/Off
- Under voltage lockout
- 3-year product warranty

Pinout		
Pin	Single	Dual
1	+Vin	
2	–Vin	
3	Remote On/Off	
4	+Vout	
5	–Vout	Common
6	Trim	–Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEN 80-2411WI	9 – 36 VDC (24 VDC nom.)	5 VDC	16'000 mA	92%
TEN 80-2412WI		12 VDC	6'600 mA	92%
TEN 80-2413WI		15 VDC	5'300 mA	92%
TEN 80-2415WI		24 VDC	3'300 mA	92%
TEN 80-2418WI		54 VDC	1'480 mA	90%
TEN 80-2422WI		±12 VDC	±3'300 mA	92%
TEN 80-2423WI		±15 VDC	±2'660 mA	92%
TEN 80-4811WI	18 – 75 VDC (48 VDC nom.)	5 VDC	16'000 mA	92%
TEN 80-4812WI		12 VDC	6'600 mA	92%
TEN 80-4813WI		15 VDC	5'300 mA	92%
TEN 80-4815WI		24 VDC	3'300 mA	92%
TEN 80-4818WI		54 VDC	1'480 mA	90%
TEN 80-4822WI		±12 VDC	±3'300 mA	92%
TEN 80-4823WI		±15 VDC	±2'660 mA	92%

High Power DC/DC Converters / RIA12 Surge Filters

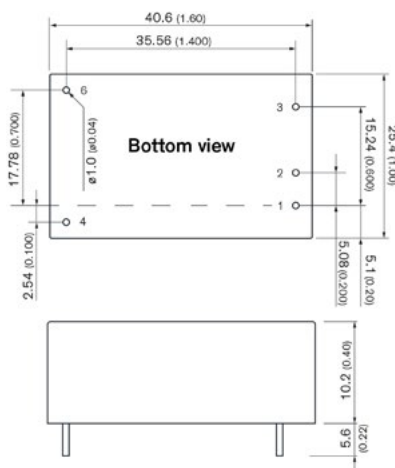
40 – 300 watt

The new TEP and TEQ series are ranges of compact high power DC/DC converter modules with 75 up to 240 Watt. They meet the stringent requirements for mobile and stationary railway applications in accordance to EN50155 Standard. The series comprise models with nominal 110 VDC input voltage (43-160 VDC). The rugged construction enables a reliable use in harsh industrial Environment and any transportation. Excellent efficiency and thermal management allow operation at high temperature without forced air cooling.



TFI

0–300 Watt



- Clamps over voltage transients (up to 385 VDC) at 168 VDC
- Universal use: Can be used with any DC/DC converter
- Complies with RIA12, NF F 01-510 Surge susceptibilities
- Wide input voltage range: 43 – 160 VDC
- Brownout voltage 36 VDC min.
- Operating temperature range –40 to +95°C
- 3-year product warranty

Pinout	
Pin	Function
1	+Vin
2	NC
3	– Vin
4	+Vout
6	– Vout

Note:
Dimension drawing and pinout is only for TFI 150 and TFI 300.
TFI 20 comes in a DIP-24 package

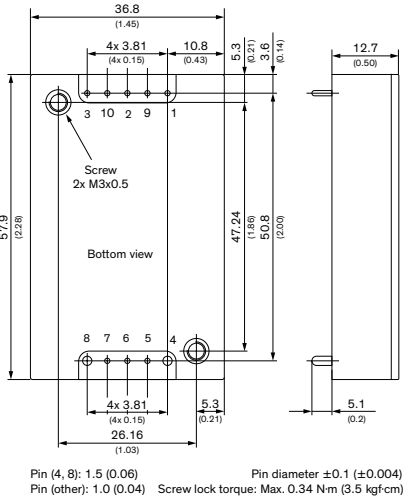
Model	Input voltage	Power max.
TFI 20*	43–160 VDC	20 W
TFI 150	43–160 VDC	150 W
TFI 300	43–160 VDC	300 W

* DIP-24 footprint

TEP 40UIR

40 Watt

- Compact 2.3" x 1.45" x 0.5" standard package
- Ultra-wide 12:1 input voltage range 9-75, 14-160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VAC
- High efficiency up to 91%
- Operating temperature range -40°C to +85°C
- Adjustable output voltage, Remote On/Off and adjustable under voltage lock-out



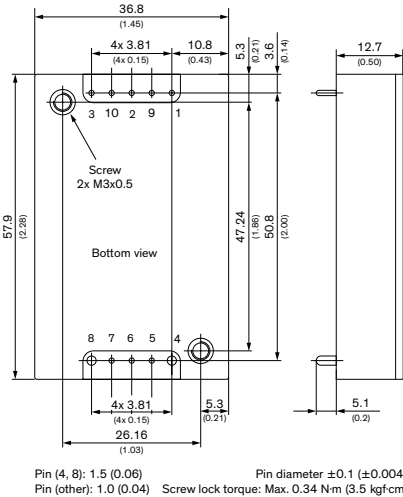
Pin Connection		
Pin	Function	Diameter
1	-Vin	0.04 Inch
2	Remote On/Off	0.04 Inch
3	+Vin	0.04 Inch
4	-Vout	0.06 Inch
5	-Sense	0.04 Inch
6	Trim	0.04 Inch
7	+Sense	0.04 Inch
8	+Vout	0.06 Inch
9	Bus	0.04 Inch
10	UVLO	0.04 Inch

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEP 40-3611UIR	9 – 75 VDC (36 VDC nom.)	5VDC	8 A	89%
TEP 40-3612UIR		12 VDC	3.33 A	91%
TEP 40-3613UIR		15 VDC	2.67 A	91%
TEP 40-3615UIR		24 VDC	1.67 A	90%
TEP 40-3618UIR	14 – 160 VDC (110 VDC nom.)	48 VDC	0.83 A	91%
TEP 40-7211UIR		5 VDC	8 A	89%
TEP 40-7212UIR		12 VDC	3.33 A	91%
TEP 40-7213UIR		15 VDC	2.67 A	91%
TEP 40-7215UIR		24 VDC	1.67 A	90%
TEP 40-7218UIR		48 VDC	0.83 A	90%

TEP 60UIR

60 Watt

- Compact 2.3" x 1.45" x 0.5" standard package
- Ultra-wide 12:1 input voltage range 9-75, 14-160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VAC
- High efficiency up to 91%
- Operating temperature range -40°C to +75°C
- Adjustable output voltage, Remote On/Off and adjustable under voltage lock-out

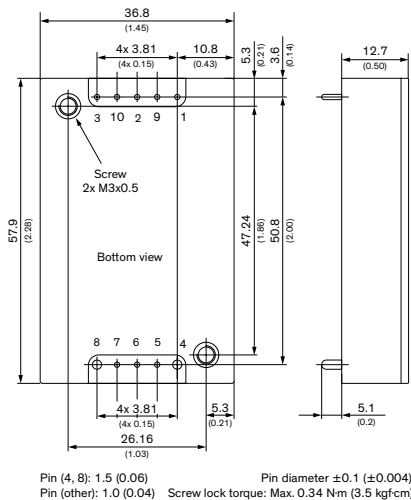


Pin Connection		
Pin	Function	Diameter
1	-Vin	0.04 Inch
2	Remote On/Off	0.04 Inch
3	+Vin	0.04 Inch
4	-Vout	0.06 Inch
5	-Sense	0.04 Inch
6	Trim	0.04 Inch
7	+Sense	0.04 Inch
8	+Vout	0.06 Inch
9	Bus	0.04 Inch
10	UVLO	0.04 Inch

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEP 60-3611UIR	9 – 75 VDC (36 VDC nom.)	5VDC	12 A	89%
TEP 60-3612UIR		12 VDC	5 A	89%
TEP 60-3613UIR		15 VDC	4 A	90%
TEP 60-3615UIR		24 VDC	2.5 A	90%
TEP 60-3618UIR	14 – 160 VDC (110 VDC nom.)	48 VDC	1.25 A	91%
TEP 60-7211UIR		5 VDC	12 A	89%
TEP 60-7212UIR		12 VDC	5 A	89%
TEP 60-7213UIR		15 VDC	4 A	89%
TEP 60-7215UIR		24 VDC	2.5 A	90%
TEP 60-7218UIR		48 VDC	1.25 A	90%

TEP 100UIR

100 Watt



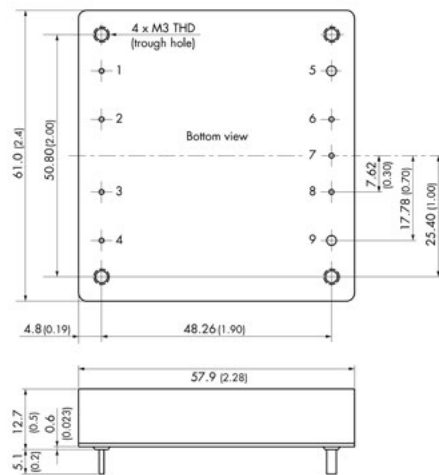
- Compact 2.3" × 1.45" × 0.5" standard package
- Ultra-wide 12:1 input voltage range 9–75, 14–160 VDC
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behaviour according to EN 45545-2
- I/O-isolation 3'000 VAC
- High efficiency up to 90%
- Operating temperature range –40°C to +85°C
- Under voltage lock-out circuit
- Adjustable output voltage & Remote On/Off

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEP 100-3611UIR	9 – 75 VDC (36 VDC nom.)	5VDC	20 A	88%
TEP 100-3612UIR		12 VDC	8.35 A	88%
TEP 100-3613UIR		15 VDC	6.7 A	89%
TEP 100-3615UIR		24 VDC	4.2 A	88%
TEP 100-3618UIR		48 VDC	2.1 A	90%
TEP 100-7211UIR	14 – 160 VDC (110 VDC nom.)	5 VDC	20 A	88%
TEP 100-7212UIR		12 VDC	8.35 A	88%
TEP 100-7213UIR		15 VDC	6.7 A	88%
TEP 100-7215UIR		24 VDC	4.2 A	88%
TEP 100-7218UIR		48 VDC	2.1 A	89%

Pin Connection		
Pin	Function	Diameter
1	–Vin	1.0 mm (0.04)
2	Ctrl	1.0 mm (0.04)
3	+Vin	1.0 mm (0.04)
4	–Vout	1.5 mm (0.06)
5	–Sense	1.0 mm (0.04)
6	Trim	1.0 mm (0.04)
7	+Sense	1.0 mm (0.04)
8	+Vout	1.5 mm (0.06)
9	Bus (option)	1.0 mm (0.04)
10	UVLO (option)	1.0 mm (0.04)

TEP 100WIR

100 Watt



- Compact metal package
- Ultra wide 4:1 input voltage ranges 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Very high efficiency up to 93%
- No minimum load
- Soft start
- Adjustable output voltage +10/–20%
- Sense line
- Remote On/Off input
- Under voltage lock-out circuit

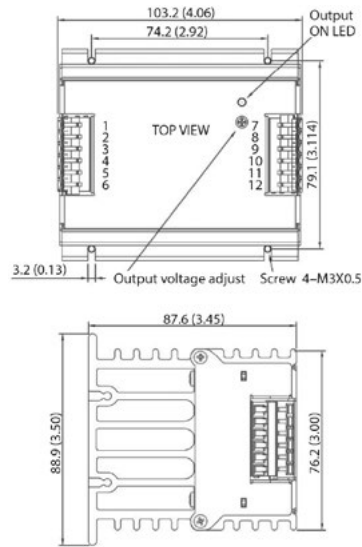
Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEP 100-2411WIR	9 – 36 VDC (24 VDC nom.)	5 VDC	20'000 mA	93%
TEP 100-2412WIR		12 VDC	8400 mA	90%
TEP 100-2415WIR		24 VDC	4200 mA	90%
TEP 100-2416WIR		28 VDC	3600 mA	90%
TEP 100-2418WIR		48 VDC	2100 mA	90%
TEP 100-4812WIR	18 – 75 VDC (48 VDC nom.)	12 VDC	8400 mA	90%
TEP 100-4815WIR		24 VDC	4200 mA	90%
TEP 100-4816WIR		28 VDC	3600 mA	92%
TEP 100-4818WIR		48 VDC	2100 mA	91%
TEP 100-7212WIR	43 – 160 VDC (110 VDC nom.)	12 VDC	8400 mA	90%
TEP 100-7215WIR		24 VDC	4200 mA	90%
TEP 100-7216WIR		28 VDC	3600 mA	90%
TEP 100-7218WIR		48 VDC	2100 mA	91%

Pinout	
Pin	Function
1	–Vin (GND)
2	Case
3	Remote
4	+Vin (Vcc)
5	–Vout
6	–Sense
7	Trim
8	+Sense
9	+Vout

The screw 1 locked torque (24 and 48Vout models): MAX 5.0kgf-cm/0.49N-m

TEQ 100WIR

100 Watt



- High power block with excellent thermal convection
- Operating temperature -40°C to $+85^{\circ}\text{C}$ without derating
- Increased shock & vibration resistance
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 90%
- Input filter meet EN 55032, class A
- I/O isolation 1591 VAC
- Under voltage lock-out circuit
- Soft start

Terminal connection

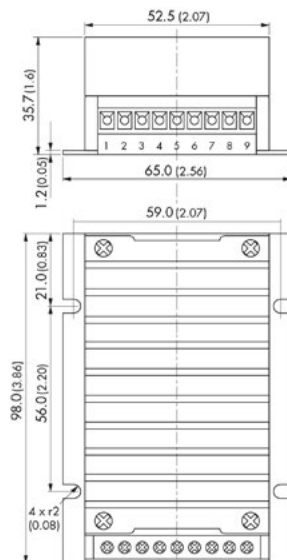
Terminal	Pin Function	Recommended Wire
1, 2	–Vin	12 AWG
3	NC	NC
4	On/Off Ctrl	14 – 18 AWG
5, 6	+Vin	12 AWG
7, 8	–Vout	12 AWG
9	–Sense*	14 – 18 AWG
10	+Sense*	14 – 18 AWG
11, 12	+Vout	12 AWG

Model	Input Voltage Range	Output Vnom	Imax	Efficiency typ.
TEQ 100-2412WIR	10 – 36 VDC (24 VDC nom.)	12 VDC	8400 mA	90%
TEQ 100-2415WIR		24 VDC	4200 mA	90%
TEQ 100-2416WIR		28 VDC	3600 mA	90%
TEQ 100-2418WIR	19 – 75 VDC (48 VDC nom.)	48 VDC	2100 mA	90%
TEQ 100-4812WIR		12 VDC	8400 mA	90%
TEQ 100-4815WIR		24 VDC	4200 mA	90%
TEQ 100-4816WIR	43 – 160 VDC (110 VDC nom.)	28 VDC	3600 mA	90%
TEQ 100-4818WIR		48 VDC	2100 mA	90%
TEQ 100-7212WIR		12 VDC	8400 mA	89%
TEQ 100-7215WIR	43 – 160 VDC (110 VDC nom.)	24 VDC	4200 mA	90%
TEQ 100-7216WIR		28 VDC	3600 mA	90%
TEQ 100-7218WIR		48 VDC	2100 mA	90%

* Sense line to be connected to the output either at the module or at the load under regard of polarity.
 • The current rating of the terminal block is 15 A/pole.
 • Using 2 poles in parallel if the peak output current can exceed 15 A.
 • Wire size shall be selected to withstand the peak output current (Iout max + Current limitation).

TEP 150WI

150 Watt



Pinout

Pin	Function	Recommended Wire
1	+ Vin	14 – 16 AWG
2	+ Vin	14 – 16 AWG
3	– Vin	14 – 16 AWG
4	– Vin	14 – 16 AWG
5	Remote	14 – 24 AWG
6	+ Vout	14 – 16 AWG
7	– Vout	14 – 16 AWG
8	Trim	14 – 24 AWG
9	Trim	14 – 24 AWG

- Shielded metal case with screw terminals
- Ultra wide 4:1 input voltage ranges
- 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Very high efficiency up to 89%
- Constant current output characteristic for battery load applications
- Optional with input filter to meet EN 55032 class B
- Wide Operating temperature range: -40°C to $+75^{\circ}\text{C}$
- Under voltage lock-out, overtemperature & reverse input protection
- Easy chassis and wall mounting
- 3-year product warranty

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEP 150-2412WI	9 – 36 VDC (24 VDC nom.)	12 VDC	12'500 mA	86%
TEP 150-2413WI		15 VDC	10'000 mA	86%
TEP 150-2415WI		24 VDC	6300 mA	87%
TEP 150-2416WI	18 – 75 VDC (48 VDC nom.)	28 VDC	5400 mA	87%
TEP 150-2418WI		48 VDC	3200 mA	86%
TEP 150-4812WI		12 VDC	12'500 mA	88%
TEP 150-4813WI	43 – 160 VDC (110 VDC nom.)	15 VDC	10'000 mA	89%
TEP 150-4815WI		24 VDC	6300 mA	89%
TEP 150-4816WI		28 VDC	5400 mA	89%
TEP 150-4818WI	43 – 160 VDC (110 VDC nom.)	48 VDC	3200 mA	88%
TEP 150-7212WI		12 VDC	12'500 mA	88%
TEP 150-7213WI		15 VDC	10'000 mA	89%
TEP 150-7215WI	43 – 160 VDC (110 VDC nom.)	24 VDC	6300 mA	89%
TEP 150-7216WI		28 VDC	5400 mA	89%
TEP 150-7218WI		48 VDC	3200 mA	88%

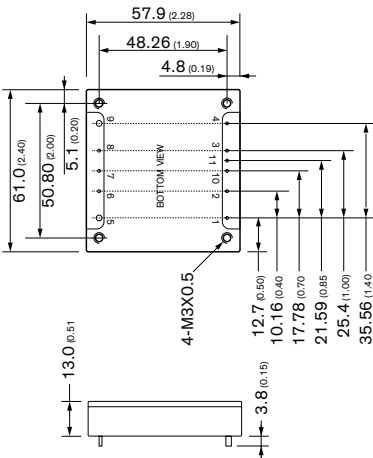
TEP 150UIR

NEW!

150 Watt



- Ultra-wide 10:1 input voltage range 16 – 160 VDC
- Compact 2.4" x 2.28" x 0.5" standard package (half brick)
- Bus pin to easily extend hold-up time
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behavior according to EN 45545-2
- Operating temperature range -40°C to +75°C
- I/O-isolation 3'000 VAC
- High efficiency up to 93%
- Adjustable output voltage, Remote On/Off and adjustable under voltage lock-out
- 3-year product warranty

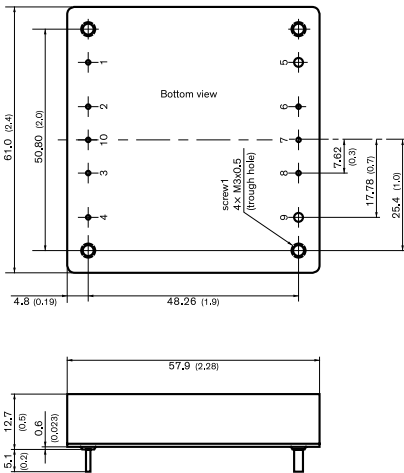


Pinout	
Pin	Single
1	-Vin
2	BUS
3	Ctrl
4	+Vin
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout
10	UVLO
11	Pulse Out

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TEP 150-7211UIR	16 – 160 VDC	5 VDC	30'000 mA	91%
TEP 150-7212UIR		12 VDC	12'500 mA	93%
TEP 150-7213UIR		15 VDC	10'000 mA	92%
TEP 150-7215UIR		24 VDC	6300 mA	89%
TEP 150-7218UIR		48 VDC	3200 mA	93%

TEP 160

160 Watt



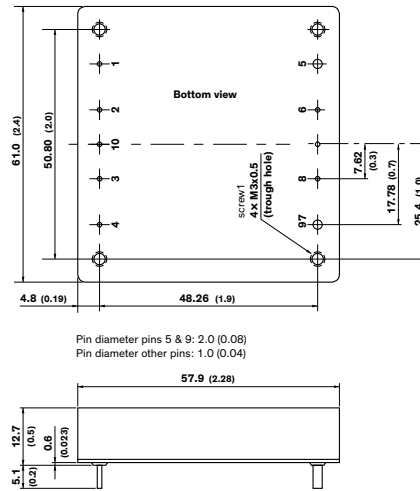
- Compact metal package
- Wide 2:1 input voltage ranges 16.5-36, 33-75 VDC
- Very high efficiency up to 93%
- No minimum load
- Soft start
- Ajustable output voltage +10/-20%
- Sense line
- Remote On/Off input
- Reverse input voltage protection
- Over temperature protection

Pinout	
Pin	Function
1	-Vin (GND)
2	Case
3	Remote
4	+Vin (Vcc)
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout
10	Sync (on demand)

Model	Input Voltage Range	Output Vnom	I _{max}	Efficiency
TEP 160-2412	16.5 – 36 VDC (24 VDC nom.)	12 VDC	13'000 mA	92%
TEP 160-2413		15 VDC	10'000 mA	92%
TEP 160-2415		24 VDC	6'500 mA	93%
TEP 160-2416		28 VDC	5'500 mA	93%
TEP 160-2418		48 VDC	3'300 mA	92%
TEP 160-4812	33 – 75 VDC (48 VDC nom.)	12 VDC	16'000 mA	92%
TEP 160-4813		15 VDC	13'000 mA	93%
TEP 160-4815		24 VDC	8'000 mA	92%
TEP 160-4816		28 VDC	7'000 mA	92%
TEP 160-4818		48 VDC	4'000 mA	92%
TEP 160-48153		53 VDC	3'700 mA	92%

TEP 160WIR

160 Watt



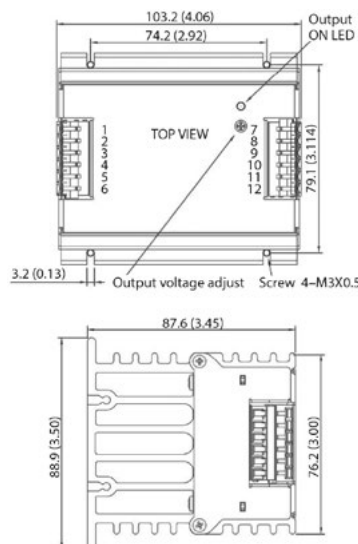
- Compact metal package
- Ultra wide 4:1 input voltage ranges 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Very high efficiency up to 91%
- No minimum load
- Soft start
- Adjustable output voltage +10/-20%
- Sense line
- Remote On/Off input
- Under voltage lock-out circuit

Pinout		
Pin	Function	Pin Diameter
1	–Vin (GND)	1 mm (0.04)
2	Case	1 mm (0.04)
3	Remote	1 mm (0.04)
4	+Vin (Vcc)	1 mm (0.04)
5	–Vout	2 mm (0.08)
6	–Sense	1 mm (0.04)
7	Trim	1 mm (0.04)
8	+Sense	1 mm (0.04)
9	+Vout	2 mm (0.08)
10	Sync (on demand)	1 mm (0.04)

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TEP 160-2412WIR	9 – 36 VDC (24 VDC nom.)	12 VDC	12'000 mA	90%
TEP 160-2413WIR		15 VDC	9500 mA	91%
TEP 160-2415WIR		24 VDC	6000 mA	90%
TEP 160-2416WIR		28 VDC	5000 mA	90%
TEP 160-2418WIR	18 – 75 VDC (48 VDC nom.)	48 VDC	3000 mA	90%
TEP 160-4812WIR		12 VDC	13'000 mA	91%
TEP 160-4813WIR		15 VDC	10'000 mA	91%
TEP 160-4815WIR		24 VDC	6500 mA	91%
TEP 160-4816WIR	43 – 160 VDC (110 VDC nom.)	28 VDC	5500 mA	91%
TEP 160-4818WIR		48 VDC	3200 mA	91%
TEP 160-7212WIR		12 VDC	15'000 mA	90%
TEP 160-7213WIR		15 VDC	12'000 mA	90%
TEP 160-7215WIR		24 VDC	7500 mA	90%
TEP 160-7216WIR		28 VDC	6500 mA	90%
TEP 160-7218WIR		48 VDC	3800 mA	90%

TEQ 160WIR

160 Watt



- High power block with excellent thermal convection
- Operating temperature –40°C to +75°C without derating
- Increased shock & vibration resistance
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 90%
- Input filter meet EN 55032, class A
- I/O insulation 1591 VAC
- Under voltage lock-out circuit
- Soft start

Pin Connection		
Terminal	Pin Function	Recommended Wire
1, 2	–Vin	12 AWG
3	NC	NC
4	On/Off Ctrl	14 – 18 AWG
5, 6	+Vin	12 AWG
7, 8	–Vout	12 AWG
9	–Sense*	14 – 18 AWG
10	+Sense*	14 – 18 AWG
11, 12	+Vout	12 AWG

Model	Input Voltage Range	Output Vnom	Imax	Efficiency typ.
TEQ 160-4812WIR	19 – 75 VDC (48 VDC nom.)	12 VDC	13'000 mA	90%
TEQ 160-4815WIR		24 VDC	6500 mA	90%
TEQ 160-4816WIR		28 VDC	5500 mA	90%
TEQ 160-4818WIR		48 VDC	3200 mA	90%
TEQ 160-7212WIR	43 – 160 VDC (110 VDC nom.)	12 VDC	15'000 mA	89%
TEQ 160-7215WIR		24 VDC	7500 mA	89%
TEQ 160-7216WIR		28 VDC	6500 mA	89%
TEQ 160-7218WIR		48 VDC	3800 mA	89%

* Sense line to be connected to the output either at the module or at the load under regard of polarity.

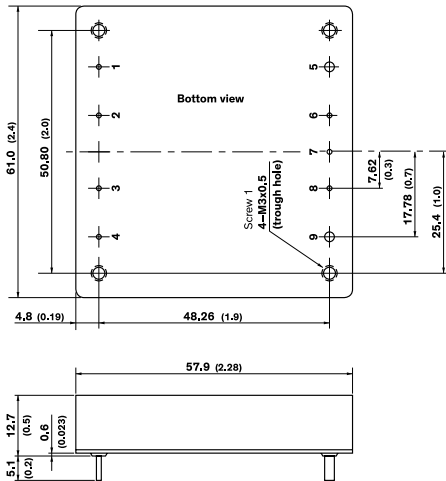
• The current rating of the terminal block is 15 A/pole.

• Using 2 poles in parallel if the peak output current can exceed 15 A.

• Wire size shall be selected to withstand the peak output current (Iout max + Current limitation).

TEP 200WIR

200 Watt



- Compact metal package
- Ultra wide 4:1 input voltage ranges 9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Very high efficiency up to 91%
- No minimum load
- Soft start
- Under voltage lock-out circuit
- Ajustable output voltage +10 / –20%
- Sense line

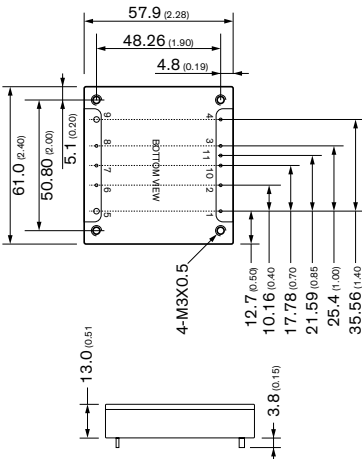
Pinout	
Pin	Function
1	–Vin (GND)
2	NC
3	Remote
4	+Vin (Vcc)
5	–Vout
6	–Sense
7	Trim
8	+Sense
9	+Vout

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEP 200-2412WIR	9 – 36 VDC (24 VDC nom.)	12 VDC	15'000 mA	89%
TEP 200-2413WIR		15 VDC	12'000 mA	90%
TEP 200-2415WIR		24 VDC	7500 mA	90%
TEP 200-2416WIR		28 VDC	6500 mA	90%
TEP 200-2418WIR	18 – 75 VDC (48 VDC nom.)	48 VDC	3700 mA	89%
TEP 200-4812WIR		12 VDC	18'000 mA	90%
TEP 200-4813WIR		15 VDC	14'000 mA	91%
TEP 200-4815WIR		24 VDC	9000 mA	90%
TEP 200-4816WIR	43 – 160 VDC (110 VDC nom.)	28 VDC	7500 mA	91%
TEP 200-4818WIR		48 VDC	4500 mA	90%
TEP 200-7212WIR		12 VDC	20'000 mA	89%
TEP 200-7213WIR		15 VDC	16'000 mA	90%
TEP 200-7215WIR		24 VDC	10'000 mA	89%
TEP 200-7216WIR		28 VDC	8500 mA	90%
TEP 200-7218WIR		48 VDC	5000 mA	89%

TEP 200UIR

NEW!

200 Watt



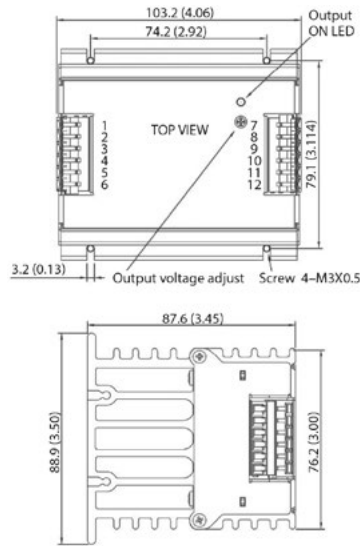
- Ultra-wide 10:1 input voltage range 16 – 160 VDC
- Compact 2.4" × 2.28" × 0.5" standard package (half brick)
- Bus pin to easily extend hold-up time
- EN 50155 and EN 61373 approval for railway applications
- Qualification for fire behavior according to EN 45545-2
- Operating temperature range –40°C to +70°C
- I/O-isolation 3'000 VAC
- High efficiency up to 92%
- Adjustable output voltage, Remote On/Off and adjustable under voltage lock-out
- 3-year product warranty

Pinout		
Pin	A-Type	B-Type
1	–Vin	–Vin
2	BUS	BUS
3	Ctrl	UVLO
4	+Vin	+Vin
5	–Vout	–Vout
6	–Sense	–Sense
7	Trim	Trim
8	+Sense	+Sense
9	+Vout	+Vout
10	UVLO	Ctrl
11	Pulse Out	Pulse Out

Model	Input Voltage Range	Output		Efficiency
		Vnom	I _{max}	
TEP 200-7211UIR	16 – 160 VDC	5 VDC	40'000 mA	90%
TEP 200-7212UIR		12 VDC	16'800 mA	92%
TEP 200-7213UIR		15 VDC	13'400 mA	91%
TEP 200-7215UIR		24 VDC	8400 mA	90%
TEP 200-7218UIR		48 VDC	4200 mA	92%

TEQ 200WIR

200 Watt



Pin Connection

Terminal	Pin Function	Recommended Wire
1, 2	-Vin	12 AWG
3	NC	NC
4	Remote	14 - 18 AWG
5, 6	+Vin	12 AWG
7, 8	-Vout	12 AWG
9	-Sense*	14 - 18 AWG
10	+Sense*	14 - 18 AWG
11, 12	+Vout	12 AWG

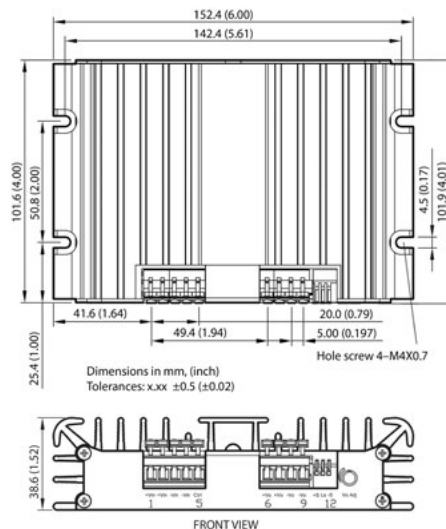
Model	Input Voltage Range	Output Vnom	Imax	Efficiency typ.
TEQ 200-4812WIR	19 - 75 VDC (48 VDC nom.)	12 VDC	18'000 mA	89%
TEQ 200-4815WIR		24 VDC	9000 mA	89%
TEQ 200-4816WIR		28 VDC	7500 mA	90%
TEQ 200-4818WIR	43 - 160 VDC (110 VDC nom.)	48 VDC	4500 mA	89%
TEQ 200-7212WIR		12 VDC	20'000 mA	88%
TEQ 200-7215WIR		24 VDC	10'000 mA	88%
TEQ 200-7216WIR		28 VDC	8500 mA	89%
TEQ 200-7218WIR		48 VDC	5000 mA	88%

- High power block with excellent thermal convection
- Operating temperature -40°C to $+70^{\circ}\text{C}$ without derating
- Increased shock & vibration resistance
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 90%
- Input filter meet EN 55032, class A
- I/O insulation 1591 VAC
- Under voltage lock-out circuit
- Soft start

* Sense line to be connected to the output either at the module or at the load under regard of polarity.
 • The current rating of the terminal block is 15 A/pole.
 • Using 2 poles in parallel if the peak output current can exceed 15 A.
 • Wire size shall be selected to withstand the peak output current (Iout max + Current limitation).

TEQ 300WIR

300 Watt



Pin Connection

Terminal	Pin Function	Recommended Wire
1, 2	+Vin	12 - 16 AWG
3, 4	-Vin (GND)	12 - 16 AWG
5	On/Off Ctrl	12 - 16 AWG
6, 7	+Vout	12 - 16 AWG
8, 9	-Vout	12 - 16 AWG
10	+Sense*	20 - 28 AWG
11	LS (Loadshare)	20 - 28 AWG
12	-Sense*	20 - 28 AWG

Model	Input Voltage Range	Output Vnom	Imax	Efficiency typ.
TEQ 300-4812WIR	19 - 75 VDC (48 VDC nom.)	12 VDC	25'000 mA	89%
TEQ 300-4815WIR		24 VDC	12'500 mA	92%
TEQ 300-4816WIR		28 VDC	10'800 mA	91%
TEQ 300-4818WIR	43 - 160 VDC (110 VDC nom.)	48 VDC	6300 mA	92%
TEQ 300-7212WIR		12 VDC	25'000 mA	89%
TEQ 300-7215WIR		24 VDC	12'500 mA	91%
TEQ 300-7216WIR		28 VDC	10'800 mA	91%
TEQ 300-7218WIR		48 VDC	6300 mA	92%

- High power block with excellent thermal convection
- Operating temperature -40°C to $+80^{\circ}\text{C}$
- Increased shock & vibration resistance
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 92%
- Constant current output characteristic for battery load applications
- Power sharing (up to 3 pcs in parallel)
- Input filter meet EN 55032, class A
- Under voltage lock-out circuit

* Sense line to be connected to the output either at the module or at the load under regard of polarity.
 • Wire size shall be selected to withstand the peak current (Iout max + Current limitation).

Industrial DIN-Rail DC/DC Converters

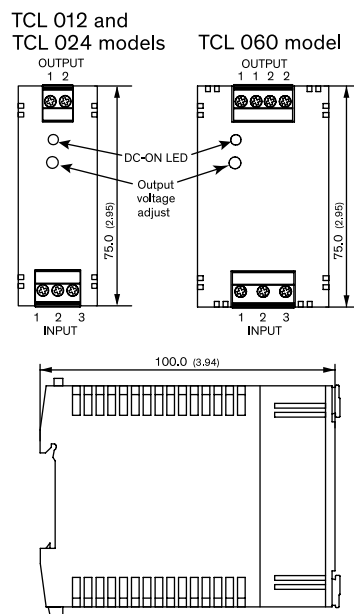
24 – 60 watt

In the TCL range of DIN-rail power supplies are 6 models for DC input voltage available. The wide input ranges of 9.5–18 VDC resp. 18–75 VDC means these models can be operated from all popular DC supply voltage systems. With tightly regulated output voltage these DC/DC converters provide a reliable power source for sensitive loads in industrial process controls, factory automation and other equipment exposed to a critical industrial environment. Further applications for these converters are isolation of a specific load or refreshing the 24 V bus voltage. Easy installation is provided with snap-on mounting on DIN-rails and detachable screw terminal block.



TCL-DC

24–60 Watt



Model	Input Voltage Range	Output Voltage	Output Current max.
TCL 012-124 DC	9.5 – 18.0 VDC	24 VDC	1.0 A
TCL 024-105 DC	18 – 75 VDC	5 VDC	5.0 A
TCL 024-112 DC		12 VDC	2.0 A
TCL 024-124 DC		24 VDC	1.0 A
TCL 060-112 DC	18 – 75 VDC	12 VDC	5.0 A
TCL 060-124 DC		24 VDC	2.5 A

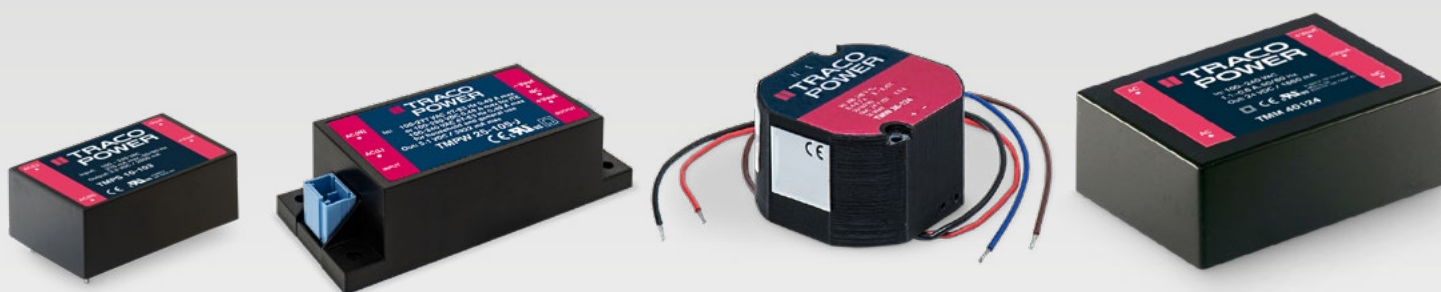
- Ultra-wide input voltage range
- Output voltage adjustable
- Overload and short circuit protection
- Low ripple and noise
- I/O isolation 1500 VDC
- Compact, slim plastic case
- Reliable snap-on mount on DIN-rail
- Bracket for wall mount included
- 3-year product warranty

Pinout		
Terminal	Output	Input
1	+ Vout	Functional Ground
2	- Vout	-Vin
3	-	+Vin

Encapsulated AC/DC Power Modules

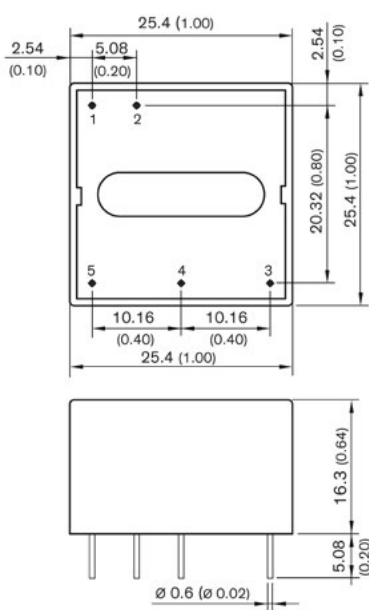
3 – 100 watt

Traco Power offers a large range of fully encapsulated power modules with more than 200 standard models. They are available for PCB mount, chassis mount with screw terminal block or blade connector or with flying leads for installation into standard flush boxes.



TMPS 03

3 Watt



- PCB Power module in 1" x 1" package
- No load input power <150 mW, to comply with ErP directive
- Operating temperature range -25°C to +70°C
- EMI meets EN 55032, class B
- Protection class II prepared
- 3-year product warranty

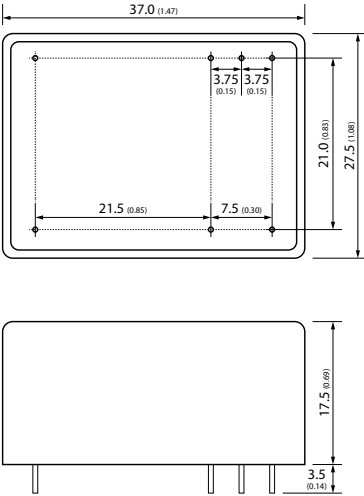
Pin Connections

Pin	Function
1	AC (N)
2	AC (L)
3	NC
4	-Vout
5	+Vout

Model	Output Voltage nom.	Output Current max.	Output Current peak	Efficiency typ.
TMPS 03-103	3.3 VDC	900 mA	1'170 mA	70%
TMPS 03-105	5 VDC	600 mA	780 mA	72%
TMPS 03-109	9 VDC	333 mA	430 mA	77%
TMPS 03-112	12 VDC	250 mA	320 mA	78%
TMPS 03-115	15 VDC	200 mA	260 mA	78%
TMPS 03-124	24 VDC	125 mA	160 mA	78%

TMLM 04

4 Watt



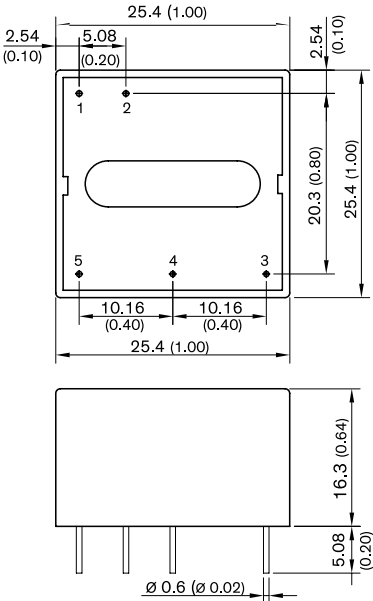
- 4 Watt AC/DC power module
- Fully encapsulated plastic case
- Universal input 90–264 VAC, 47–440 Hz
- EMI meets EN 55022, class B and FCC, level B
- Low ripple and noise
- Short circuit and overload protection
- 3-year product warranty

Pinout		
Pin	Single	Dual
Pin	Single	Dual
1	NC	NC
2	+ Vout	+ Vout 1
3	GND	Common
4	NV	+ Vout 2
5	AC (L)	AC (L)
6	AC (N)	AC (N)
7	NC	NC

Model	Output Voltage nom.	Output Current max.	Efficiency
TMLM 04103	3.3 VDC	1200 mA	67%
TMLM 04105	5 VDC	800 mA	69%
TMLM 04109	9 VDC	444 mA	72%
TMLM 04112	12 VDC	333 mA	70%
TMLM 04115	15 VDC	267 mA	74%
TMLM 04124	24 VDC	167 mA	73%
TMLM 04253	±5 VDC	600 mA	69%
TMLM 04225	±12 VDC	250 mA	69%

TMPS 05

5 Watt



- PCB Power module in 1" x 1" package
- Certified to EN 60335-1 for household appliance
- No load input power <300 mW to comply with ErP directive
- Operating temperature range -25°C to +70°C
- EMI meets EN 55032 class B and EN 55014-1
- Protection class II prepared
- 3-year product warranty

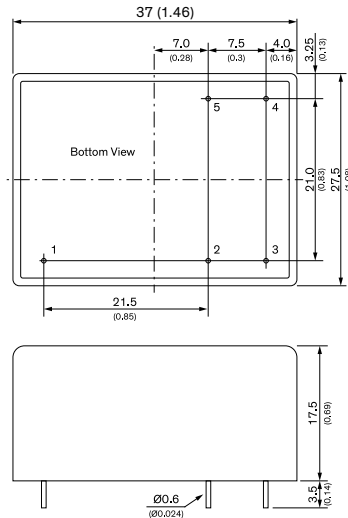
Pin Connections	
Pin	Function
1	AC (N)
2	AC (L)
3	NC*
4	-Vout
5	+Vout

* Internally not connected but keep it isolated from primary circuit

Model	Output Voltage nom.	Output Current max.	Output Current peak	Efficiency typ.
TMPS 05-103	3.3 VDC	1'515 mA	1'970 mA	74%
TMPS 05-105	5 VDC	1'000 mA	1'300 mA	80%
TMPS 05-109	9 VDC	555 mA	721 mA	82%
TMPS 05-112	12 VDC	416 mA	540 mA	82%
TMPS 05-115	15 VDC	333 mA	433 mA	83%
TMPS 05-124	24 VDC	208 mA	270 mA	83%
TMPS 05-148	48 VDC	104 mA	135 mA	85%

TMPW 5

5 Watt



- Compact PCB power module in 1.46" x 1.08" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 83%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

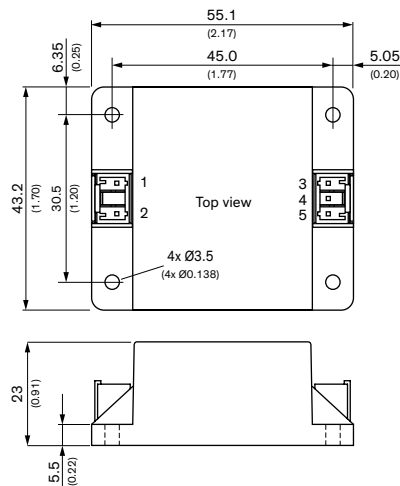
Pin Connections

Pin	Single
1	NC
2	+Vout
3	–Vout
4	AC (L)
5	AC (N)

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 5-103	3.3 VDC	1515 mA	73%
TMPW 5-105	5 VDC	1000 mA	77%
TMPW 5-112	12 VDC	420 mA	81%
TMPW 5-124	24 VDC	210 mA	83%

TMPW 5-J/-T

5 Watt



- Compact chassis mount power module in 2.17" x 1.70" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 83%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

Pin Connections

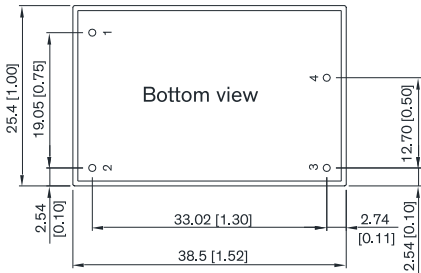
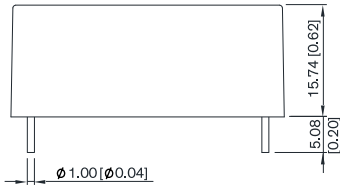
Pin	Single
1	AC (L)
2	AC (N)
3	–Vout
4	NC
5	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 5-103-J/-T*	3.3 VDC	1515 mA	73%
TMPW 5-105-J/-T*	5 VDC	1000 mA	77%
TMPW 5-112-J/-T*	12 VDC	420 mA	81%
TMPW 5-124-J/-T*	24 VDC	210 mA	83%

* -J = JST connector
 -T = Screw Terminal

TMPS 10

10 Watt



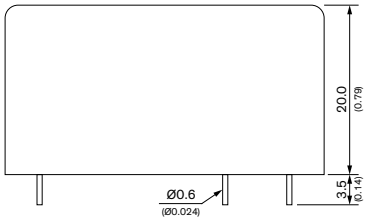
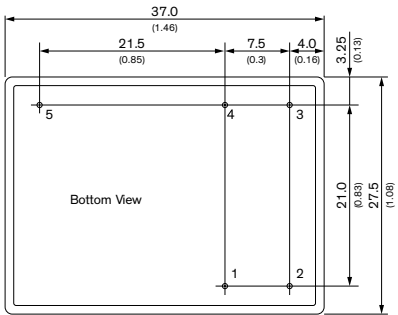
- Ultra Compact 10 Watt PCB Power module in 1" x 1.5" package
- Certified to EN 60335-1 and UL 62368-1 for household and industrial appliance
- Reinforced I/O isolation 4000 VAC
- Operating temperature range -25°C to +70°C
- 130% peak current up to 30 s
- No load input power <0.15 W to comply with ErP directive
- EMI meets EN 55032 class B and EN 55014-1
- Protection class II prepared
- 3-year product warranty

Pin Connections	
Pin	Function
1	AC (N)
2	AC (L)
3	-Vout
4	+Vout

Model	Output Voltage nom.	Output Current max.	Output Current peak	Efficiency typ.
TMPS 10-103	3.3 VDC	2'600 mA	3'380 mA	77%
TMPS 10-105	5 VDC	2'000 mA	2'600 mA	80%
TMPS 10-109	9 VDC	1'100 mA	1'440 mA	83%
TMPS 10-112	12 VDC	830 mA	1'080 mA	84%
TMPS 10-115	15 VDC	660 mA	860 mA	84%
TMPS 10-124	24 VDC	410 mA	530 mA	86%
TMPS 10-148	48 VDC	210 mA	270 mA	84%

TMPW 10

10 Watt



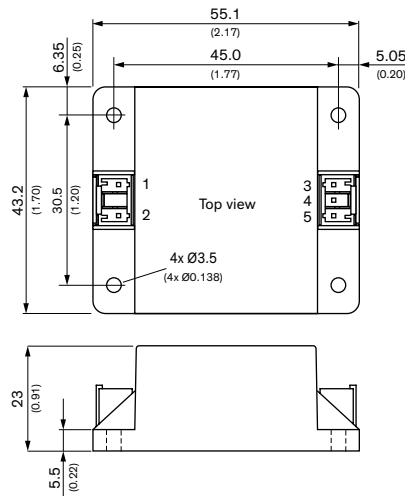
- Compact PCB power module in 1.46" x 1.08" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 an IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range -40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 86%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

Pin Connections	
Pin	Single
1	+Vout
2	-Vout
3	AC IN (L)
4	AC IN (N)
5	NC

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 10-105	5 VDC	2000 mA	81%
TMPW 10-112	12 VDC	833 mA	85%
TMPW 10-115	15 VDC	667 mA	86%
TMPW 10-124	24 VDC	417 mA	86%

TMPW 10-J/-T

10 Watt



- Compact chassis mount power module in 2.17" × 1.70" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 86%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

Pin Connections

Pin	Single
1	AC (L)
2	AC (N)
3	–Vout
4	NC
5	+Vout

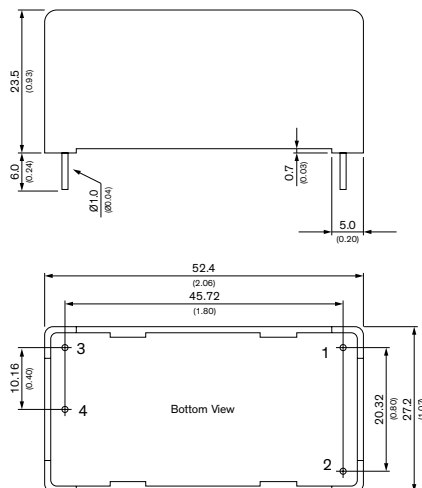
Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 10-105-J/-T*	5 VDC	2000 mA	81%
TMPW 10-112-J/-T*	12 VDC	833 mA	85%
TMPW 10-115-J/-T*	15 VDC	667 mA	86%
TMPW 10-124-J/-T*	24 VDC	417 mA	86%

* -J = JST connector
 -T = Screw Terminal

TMPS 15

NEW!

15 Watt



- Ultra Compact 15 Watt PCB Power module in 2.06" × 1.07" package
- Certified to EN 60335-1 and UL 62368-1 for household and industrial appliance
- I/O isolation 3000 VAC
- Operating temperature range –25°C to +70°C
- 130% peak current up to 30 s
- No load input power <0.15 W to comply with ErP directive
- EMI meets EN 55032 class B and EN 55014-1
- Protection class II prepared
- 3-year product warranty

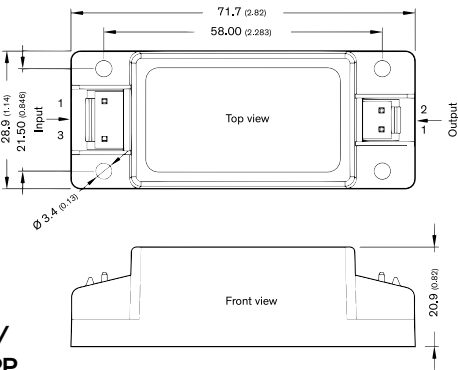
Pin Connections

Pin	Function
1	AC (N)
2	AC (L)
3	+Vout
4	–Vout

Model	Output Voltage nom.	Output Current max.	Output Current peak	Efficiency typ.
TMPS 15-105	5 VDC	3000 mA	3900 mA	79%
TMPS 15-112	12 VDC	1250 mA	1625 mA	82%
TMPS 15-115	15 VDC	1000 mA	1300 mA	82%
TMPS 15-124	24 VDC	625 mA	813 mA	84%
TMPS 15-148	48 VDC	313 mA	407 mA	82%

TPP 15-J

15 Watt



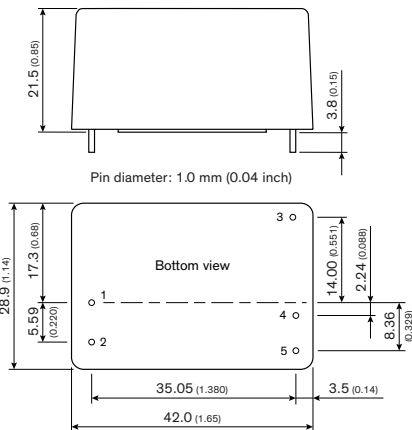
- High power density power supply (encapsulated)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <75 mW
- 5-year product warranty

Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	AC (L)	1	–Vout
3	AC (N)	2	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPP 15-103-J	3.3 VDC	4'000 mA	84%
TPP 15-105-J	5 VDC	3'000 mA	86%
TPP 15-109-J	9 VDC	1'670 mA	86%
TPP 15-112-J	12 VDC	1'250 mA	87%
TPP 15-115-J	15 VDC	1'000 mA	87%
TPP 15-124-J	24 VDC	625 mA	88%
TPP 15-136-J	36 VDC	417 mA	88%
TPP 15-148-J	48 VDC	313 mA	89%

TPP 15-D

15 Watt



- High power density power supply (encapsulated)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <75 mW
- 5-year product warranty

Pin Connections	
Pin	Function
1	AC (N)
2	AC (L)
3	Trim
4	–Vout
5	+Vout

Model	Output Voltage nom. *	*adjustable	Output Current max.	Efficiency typ.
TPP 15-103-D	3.3 VDC	2.97 – 3.63 VDC	4'000 mA	84%
TPP 15-105-D	5 VDC	4.5 – 5.5 VDC	3'000 mA	86%
TPP 15-109-D	9 VDC	8.1 – 9.9 VDC	1'670 mA	86%
TPP 15-112-D	12 VDC	10.8 – 13.2 VDC	1'250 mA	87%
TPP 15-115-D	15 VDC	13.5 – 16.5 VDC	1'000 mA	87%
TPP 15-124-D	24 VDC	21.6 – 26.4 VDC	625 mA	88%
TPP 15-136-D	36 VDC	32.4 – 39.6 VDC	417 mA	88%
TPP 15-148-D	48 VDC	43.2 – 52.8 VDC	313 mA	89%

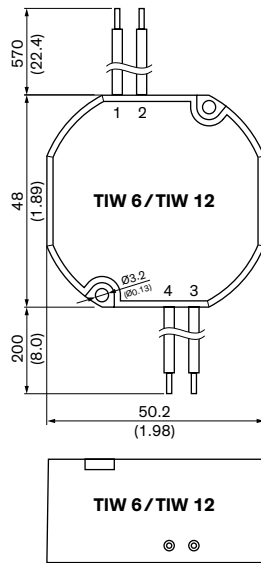
TIW

4–24 Watt

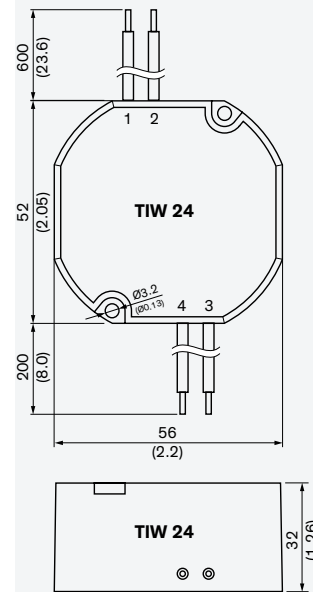


Pinout				
Pin	Wire TIW 6/12	Wire TIW 24	Color	Type
1	AC (N)	Vac IN (N)	Blue	20AWG/0.52mm ²
2	AC (L)	Vac IN (L)	Brown	20AWG/0.52mm ²
3	–Vout	–Vout	Black	20AWG/0.52mm ²
4	+Vout	+Vout	Red	20AWG/0.52mm ²

- High efficiency switching power supplies
- Easy installation into standard flush boxes
- Fully encapsulated plastic housing
- Dust and waterproof to IP 67
- Protection class II
- Safety approval to IEC/EN 60950-1 EN 50178, EN 60335-1, UL 1310 class 2
- Approved for mounting onto wood or materials with unknown flammability
- Ready to meet ErP directive
- Universal input range 93 to 264 VAC
- Operating temp. range –25°C to +50°C
- Short circuit and overload protection
- 3-year product warranty



Model	Output Voltage	Output Current	Efficiency typ.
TIW 06-103	3.3 VDC	1.2 A	75%
TIW 06-105	5 VDC	1.0 A	75%
TIW 06-106	6 VDC	1.0 A	80%
TIW 12-112	12 VDC	1.0 A	80%
TIW 12-115	15 VDC	0.8 A	80%
TIW 12-124	24 VDC	0.5 A	80%
TIW 24-112	12 VDC	2.0 A	83%
TIW 24-124	24 VDC	1.0 A	85%

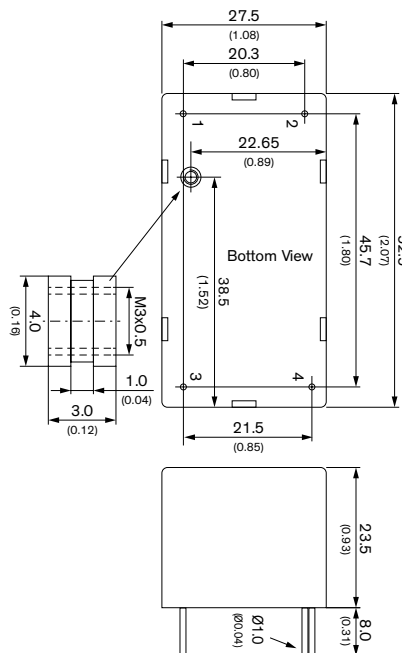


TMPW 25

25 Watt



- Compact PCB power module in 2.07" × 1.08" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 88%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

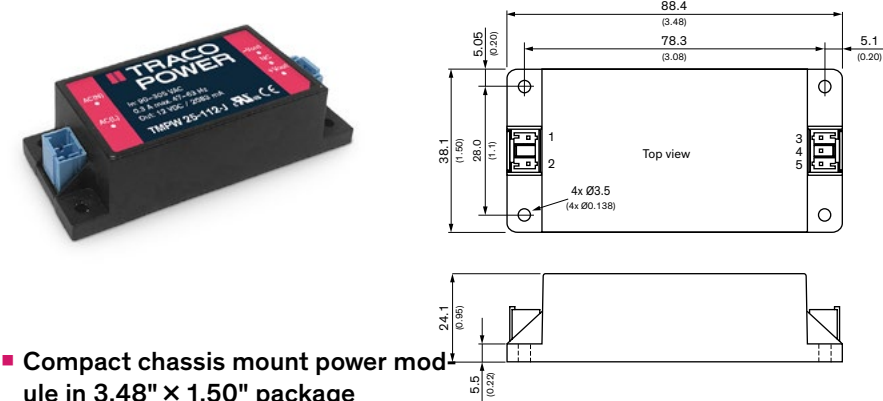


Pin Connections	
Pin	Function
1	AC (L)
2	AC (N)
3	+Vout
4	–Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 25-105	5.1 VDC	3922 mA	84%
TMPW 25-112	12 VDC	2083 mA	88%
TMPW 25-115	15 VDC	1666 mA	88%
TMPW 25-124	24 VDC	1042 mA	87%

TMPW 25-J/-T

25 Watt



- Compact chassis mount power module in 3.48" × 1.50" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 88%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

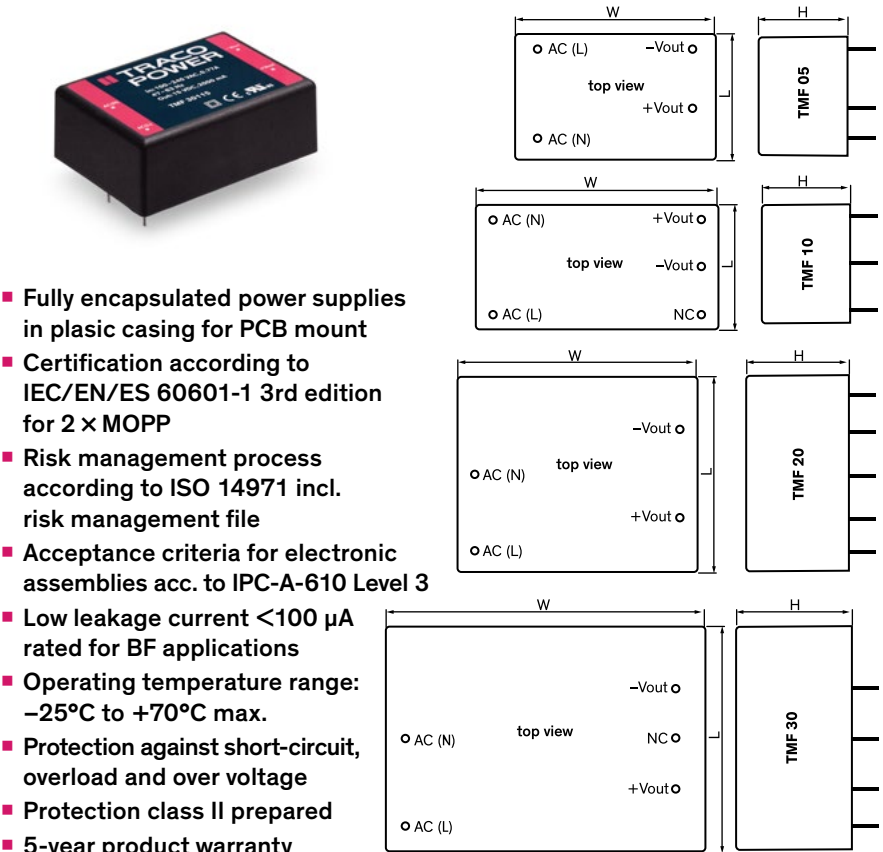
Pin Connections	
Pin	Single
1	AC IN (N)
2	AC IN (L)
3	–Vout
4	NC
5	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 25-105-J/-T*	5.1 VDC	3922 mA	84%
TMPW 25-112-J/-T*	12 VDC	2083 mA	88%
TMPW 25-115-J/-T*	15 VDC	1666 mA	88%
TMPW 25-124-J/-T*	24 VDC	1042 mA	87%

* -J = JST connector
-T = Screw Terminal

TMF

5–30 Watt



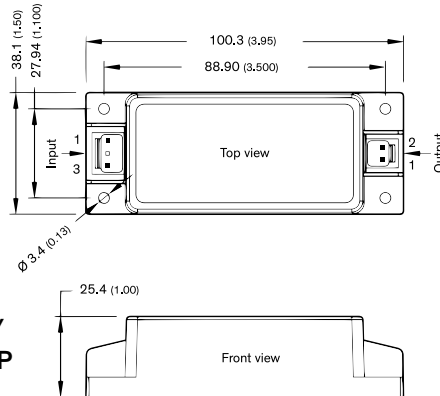
- Fully encapsulated power supplies in plastic casing for PCB mount
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <100 µA rated for BF applications
- Operating temperature range: –25°C to +70°C max.
- Protection against short-circuit, overload and over voltage
- Protection class II prepared
- 5-year product warranty

Model	Output Power max.	Output		Efficiency
		Vnom	I _{max}	
TMF 05105	5 Watt	5 VDC	1'000 mA	77%
TMF 05112		12 VDC	417 mA	82%
TMF 05115		15 VDC	333 mA	82%
TMF 05124		24 VDC	208 mA	82%
TMF 10105	10 Watt	5 VDC	2'000 mA	79%
TMF 10112		12 VDC	833 mA	84%
TMF 10115		15 VDC	666 mA	84%
TMF 10124		24 VDC	417 mA	84%
TMF 20105	18 Watt	5 VDC	3'600 mA	78%
TMF 20112	20 Watt	12 VDC	1'667 mA	84%
TMF 20115		15 VDC	1'333 mA	84%
TMF 20124		24 VDC	833 mA	84%
TMF 30105	25 Watt	5 VDC	5'000 mA	82%
TMF 30112	30 Watt	12 VDC	2'500 mA	88%
TMF 30115		15 VDC	2'000 mA	86%
TMF 30124		24 VDC	1'250 mA	85%

Dimensions				
Series	W	L	H	Ø Pin
TMF 05	41.2	27.2	19.1	1.0
TMF 10	52.2	26.8	19.0	1.0
TMF 20	54.7	44.9	23.5	1.0
TMF 30	64.1	45.6	23.5	1.0

TPP 30-J

30 Watt



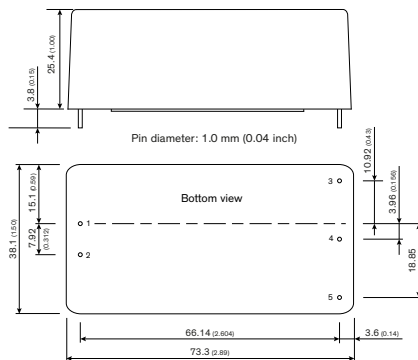
- High power density power supply (encapsulated)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <60 mW
- 5-year product warranty

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPP 30-103-J	3.3 VDC	6'000 mA	84%
TPP 30-105-J	5 VDC	6'000 mA	87%
TPP 30-109-J	9 VDC	3'340 mA	88%
TPP 30-112-J	12 VDC	2'500 mA	91%
TPP 30-115-J	15 VDC	2'000 mA	91%
TPP 30-124-J	24 VDC	1'250 mA	90%
TPP 30-136-J	36 VDC	840 mA	90%
TPP 30-148-J	48 VDC	630 mA	92%

Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	AC (L)	1	+Vout
3	AC (N)	2	-Vout

TPP 30-D

30 Watt



- High power density power supply (encapsulated)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <60 mW
- 5-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 30-103-D	3.3 VDC (2.97 – 3.63 VDC)	6'000 mA	84%
TPP 30-105-D	5 VDC (4.5 – 5.5 VDC)	6'000 mA	87%
TPP 30-109-D	9 VDC (8.1 – 9.9 VDC)	3'340 mA	88%
TPP 30-112-D	12 VDC (10.8 – 13.2 VDC)	2'500 mA	91%
TPP 30-115-D	15 VDC (13.5 – 16.5 VDC)	2'000 mA	91%
TPP 30-124-D	24 VDC (21.6 – 26.4 VDC)	1'250 mA	90%
TPP 30-136-D	36 VDC (32.4 – 39.6 VDC)	840 mA	90%
TPP 30-148-D	48 VDC (43.2 – 52.8 VDC)	630 mA	92%

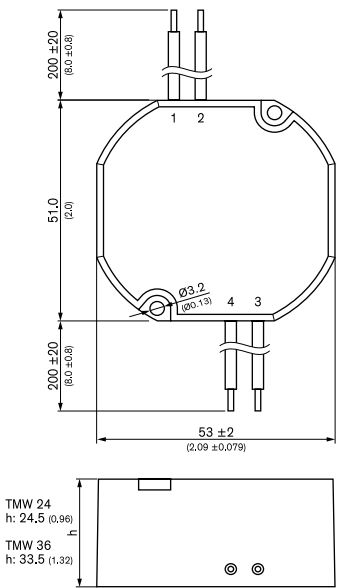
PCB Pinout	
Pin	Function
1	AC (N)
2	AC (L)
3	+Vout
4	-Vout
5	Trim

TMW

24–36 Watt



- Fully encapsulated power supplies in IP68 casing with flying leads
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2×MOPP
- Risk management process according to ISO 14971 including risk management file
- Effortless flush box mounting
- Fire safety for furniture
- Low leakage current <100 µA rated for BF applications
- Operating temperature range: -20°C to +80°C max.
- Protection against short-circuit, over load and over voltage
- Protection class II prepared
- 5 year product warranty



Pinout / Conecction			
Pin	Wire	Color	Type
1	Vac IN (N)	Blue	20AWG/0.52mm ²
2	Vac IN (L)	Brown	20AWG/0.52mm ²
3	-Vout	Black	20AWG/0.52mm ²
4	+Vout	Red	20AWG/0.52mm ²

Model *	Output Voltage nom.	Output Current max.	Efficiency typ.
TMW 24-105	5 VDC	4000 mA	85%
TMW 24-112	12 VDC	2000 mA	85%
TMW 24-124	24 VDC	1000 mA	90%
TMW 36-112	12 VDC	3.0 A	87%
TMW 36-124	24 VDC	1.5 A	88%

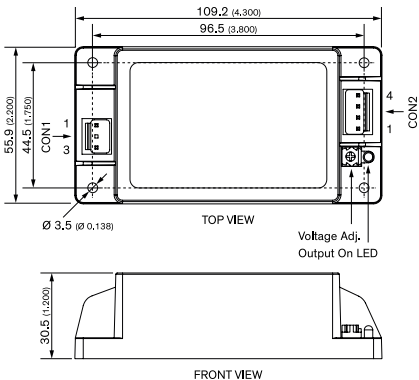
* Also available as pin version: suffix -P

TPP 40E-J

40 Watt



- Encapsulated Chassis mount module in 4.3" x 2.2" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current <75 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty

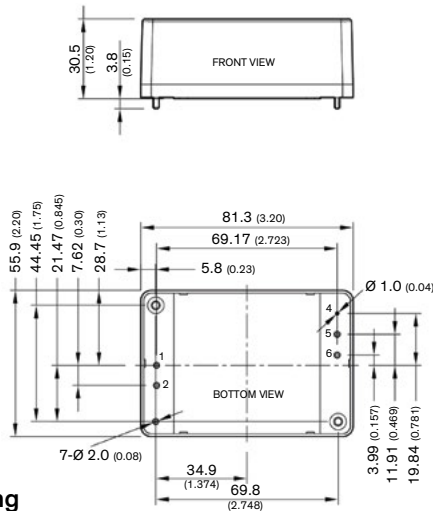


Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	Line	1, 2	-Vout
3	Neutral	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 40-105E-J	5 VDC (4.5 – 5.5 VDC)	8000 mA	90%
TPP 40-112E-J	12 VDC (10.8 – 13.2 VDC)	3340 mA	92%
TPP 40-115E-J	15 VDC (13.5 – 16.5 VDC)	2670 mA	92%
TPP 40-124E-J	24 VDC (21.6 – 26.4 VDC)	1670 mA	92%
TPP 40-136E-J	36 VDC (32.4 – 39.6 VDC)	1120 mA	92%
TPP 40-148E-J	48 VDC (43.2 – 52.8 VDC)	840 mA	93%

TPP 40E-D

40 Watt



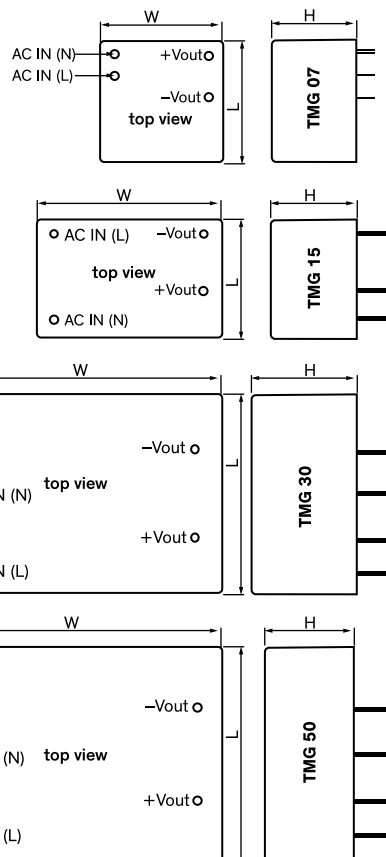
- Encapsulated PCB mount module in 3.2" x 2.2" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current <75 μ A rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty

Pinout	
Pin	Function
1	AC (N)
2	AC (L)
4	Trim
5	-Vout
6	+Vout

Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 40-105E-D	5 VDC (4.5 – 5.5 VDC)	8000 mA	90%
TPP 40-112E-D	12 VDC (10.8 – 13.2 VDC)	3340 mA	92%
TPP 40-115E-D	15 VDC (13.5 – 16.5 VDC)	2670 mA	92%
TPP 40-124E-D	24 VDC (21.6 – 26.4 VDC)	1670 mA	92%
TPP 40-136E-D	36 VDC (32.4 – 39.6 VDC)	1120 mA	92%
TPP 40-148E-D	48 VDC (43.2 – 52.8 VDC)	840 mA	93%

TMG

7–50 Watt



- Fully encapsulated power supplies in plastic casing for PCB mount
- Fully regulated outputs
- 4242 VDC I/O-isolation
- High efficiency up to 90%
- Universal input range 90 to 264 VAC
- Operating temperature range: -40°C to +70°C max.
- Safety class II prepared
- Short circuit over power and overvoltage limitation
- 3-year product warranty

Model	Output Power max.	Vnom	Output I _{max}	Efficiency
TMG 07105	6.3 Watt	5 VDC	1'260 mA	77%
TMG 07112		12 VDC	583 mA	80%
TMG 07115		15 VDC	466 mA	80%
TMG 07124	13.5 Watt	24 VDC	292 mA	80%
TMG 15105		5 VDC	2'700 mA	80%
TMG 15112		12 VDC	1'250 mA	84%
TMG 15115	15 Watt	15 VDC	1'000 mA	84%
TMG 15124		24 VDC	625 mA	85%
TMG 30103	16.5 Watt	3.3 VDC	5'000 mA	80%
TMG 30105		5 VDC	5'000 mA	84%
TMG 30112		12 VDC	2'500 mA	89%
TMG 30115	30 W	15 VDC	2'000 mA	86%
TMG 30124		24 VDC	1'250 mA	86%
TMG 50105	40 Watt	5 VDC	8'000 mA	86%
TMG 50112		12 VDC	4'167 mA	90%
TMG 50115		15 VDC	3'333 mA	87%
TMG 50124		24 VDC	2'083 mA	88%
TMG 50148	50 Watt	48 VDC	1'040 mA	89%

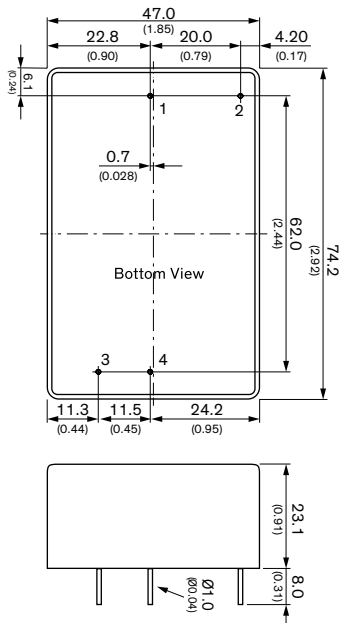
Dimensions				
Series	W	L	H	Ø Pin
TMG 07	27.4	27.4	18.7	0.6
TMG 15	41.2	27.2	19.1	1.0
TMG 30	64.0	45.0	23.5	1.0
TMG 50	74.1	54.1	21.8	1.0

TMPW 50

50 Watt



- Compact PCB power module in 2.92" × 1.85" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 89%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

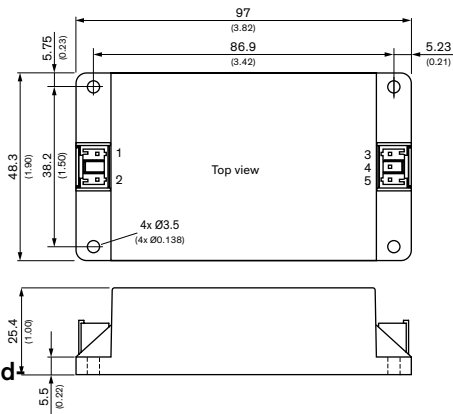


Pin Connections	
Pin	Single
1	AC (N)
2	AC (L)
3	–Vout
4	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 50-112	12 VDC	4167 mA	89%
TMPW 50-115	15 VDC	3333 mA	88%
TMPW 50-124	24 VDC	2083 mA	88%

TMPW 50-J/-T

50 Watt



- Compact chassis mount power module in 3.82" × 1.90" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 89%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

Pin Connections	
Pin	Single
1	AC (N)
2	AC (L)
3	–Vout
4	NC
5	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 50-112-J/-T*	12 VDC	4167 mA	89%
TMPW 50-115-J/-T*	15 VDC	3333 mA	88%
TMPW 50-124-J/-T*	24 VDC	2083 mA	88%

* -J = JST connector
-T = Screw Terminal

TMP/TMP-C

7–60 Watt



- Ultra compact, low profile plastic casing
- Fully encapsulated (pollution/dust)
- Single-, dual- and triple output models
- 2 standard package versions:
 - Screw terminal block for chassis mount
 - Solder pins for direct PCB mount
 - Optional pin-connector on request
- DIN-rail mount adaptor (optional)
- Universal input 85–264 VAC, 47–440 Hz
- Protection class II
- IEC/EN/UL 60950-1 approval, CB-report
- Over-temperature protection
- Protection against short circuit and overload
- 3-year product warranty

Model

For models and outline dimensions please visit our website and download

datasheet for **TMP** on:

<https://www.tracopower.com/products/browse-by-category/find/tmp-tmpm/3/>

datasheet for **TMP-C** on:

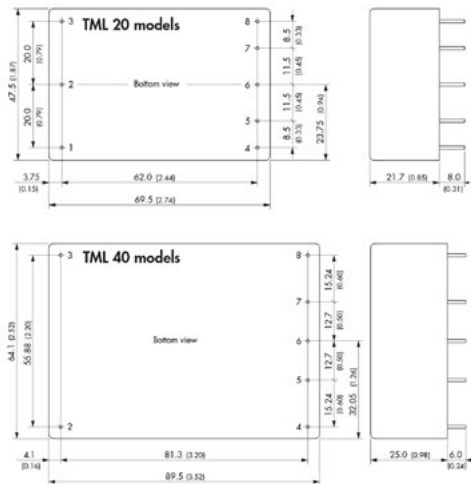
<https://www.tracopower.com/products/browse-by-category/find/tmp-c/3/>

Dimensions

	Type	Length	Width	Height
PCB mount	TMP 15×xx	74.0 (2.91)	54.0 (2.13)	19.3 (0.76)
	TMP 30×xx	89.0 (3.50)	63.5 (2.50)	21.5 (0.85)
	TMP 60×xx	89.0 (3.50)	67.5 (2.66)	34.0 (1.34)
	TMP 15×xxC	96 (3.78)	54.0 (2.13)	23.3 (0.88)
	TMP 30×xxC	112 (4.41)	63.8 (2.51)	25.6 (1.01)
	TMP 60×xxC	112 (4.41)	67.8 (2.67)	38.0 (1.50)

TML/TML-C

20–40 Watt



- Encapsulated power supplies with increased power density
- PCB mount or chassis mount with screw terminals
- Single, dual and triple output models
- Universal input 90–264 VAC, 47–440 Hz
- EMI meets EN 55032, class B and FCC, level B
- Protection class II for TML 40 models
- Short circuit and overload protection
- 3-year product warranty

Pinout

Pin	Single	Dual symmetric	Dual asymmetric	Triple
1	NC			
2	AC in (L)			
3	AC in (N)			
4	+Vout 1	Vout 1	+Vout 2	Vout 2
5	NC	NC	+Vout 1	+Vout 1
6	–Vout 1	com. 1/2	–Vout 2	com. 2/3
7	NC	NC	–Vout 1	–Vout 1
8	NC	Vout 2	NC	Vout 3

TML 20 Models *	Output Power max.	Output Vnom	I _{max}
TML 20103	14.9 W	3.3 VDC	4500 mA
TML 20105	20 W	5 VDC	4000 mA
TML 20112		12 VDC	1670 mA
TML 20115		15 VDC	1340 mA
TML 20124		24 VDC	840 mA
TML 20205		±5 VDC	2000 mA
TML 20212		±12 VDC	833 mA
TML 20215		±15 VDC	667 mA
TML 20512		*5/±12 VDC	2'800/250 mA
TML 20515		*5/±15 VDC	2'800/200 mA

TML 40 Models *	Output Power max.	Output Vnom	I _{max}
TML 40103	26.4 W	3.3 VDC	8000 mA
TML 40105	40 W	5 VDC	8000 mA
TML 40112		12 VDC	3333 mA
TML 40115		15 VDC	2666 mA
TML 40124		24 VDC	1667 mA
TML 40205		±5 VDC	4000 mA
TML 40212		±12 VDC	1666 mA
TML 40215		±15 VDC	1333 mA
TML 40252		*5/*12 VDC	5000/1250 mA
TML 40254		*5/*24 VDC	5000/625 mA
TML 40512		*5/±12 VDC	5000/600 mA
TML 40515		*5/±15 VDC	5000/500 mA

* Also available as chassis mount version

TMM / TMM-C

24–60 Watt



- Fully encapsulated low profile plastic casing in PCB or chassis mount version
- 2 × MOPP Medical safety according to
- AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- IT and industrial safety according to IEC/EN/UL 60950-1 and UL 508
- Ready to meet ErP directive <0.3 W no-load power consumption
- –40°C start-up temperature
- Safety class II prepared
- Protection against over-temperature, overload and short circuit
- 3-year product warranty

Model

For models and outline dimensions please visit our website and download

datasheet for **TMM 24/24C Series** on: <https://www.tracopower.com/products/browse-by-category/find/tmm-24/3/>

datasheet for **TMM 40/40C Series** on: <https://www.tracopower.com/products/browse-by-category/find/tmm-40/3/>

datasheet for **TMM 60/60C Series** on: <https://www.tracopower.com/products/browse-by-category/find/tmm-60/3/>

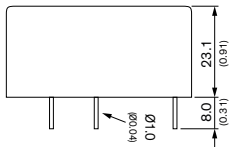
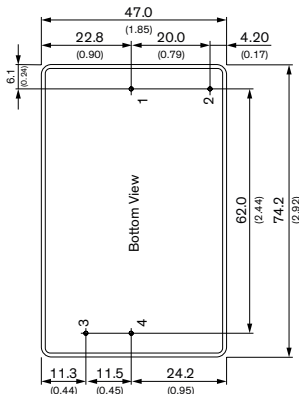
Dimensions

	Type	Length	Width	Height
	TMM 24×xx	74.0 (2.91)	54.0 (2.13)	19.3 (0.76)
	TMM 40×xx	88.9 (3.50)	63.5 (2.50)	30.0 (1.18)
	TMM 60×xx	89.0 (3.50)	67.5 (2.66)	34.0 (1.34)
	TMM 24×xxC	96.0 (3.78)	54.0 (2.13)	23.3 (0.92)
	TMM 40×xxC	112.0 (4.41)	63.8 (2.51)	34.1 (1.34)
	TMM 60×xxC	112.0 (4.41)	67.8 (2.67)	38.0 (1.50)

TMPW 60

NEW – under development

60 Watt



Dimensions in mm (inb)
Tolerances: x.x ±0.5 (±0.02)

- Compact PCB power module in 2.92" × 1.85" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 89%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

Pinout

Pin	Function
1	AC IN (N)
2	AC IN (L)
3	–Vout
4	+Vout

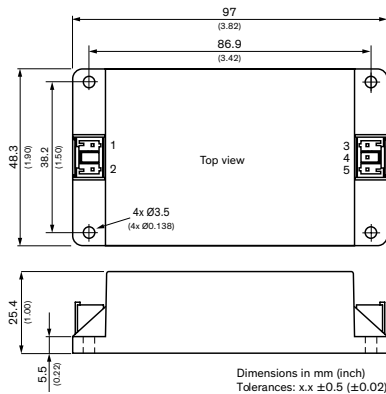
Model

	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 60-112	12 VDC	5000 mA	90%
TMPW 60-115	15 VDC	4000 mA	90%
TMPW 60-124	24 VDC	2500 mA	89%
TMPW 60-148	48 VDC	1250 mA	89%

TMPW 60-J/-T

NEW – under development

60 Watt



- Compact chassis mount power module in 3.82"× 1.90" package
- Wide input voltage range 90 – 305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range –40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 88%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty

Pinout

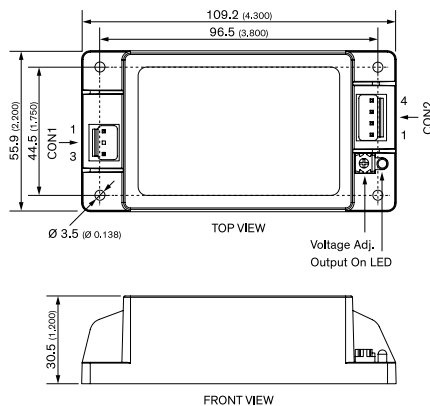
Pin	Function
1	AC IN (N)
2	AC IN (L)
3	–Vout
4	NC
5	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 60-112-J/-T*	12 VDC	5000 mA	90%
TMPW 60-115-J/-T*	15 VDC	4000 mA	90%
TMPW 60-124-J/-T*	24 VDC	2500 mA	89%
TMPW 60-148-J/-T*	48 VDC	1250 mA	89%

* -J = JST connector
-T = Screw Terminal

TPP 65E-J

65 Watt



- Encapsulated Chassis mount module in 4.3" × 2.2" package
- IEC/EN/ES 60601-1 3rd ed. 2 × MOPP and IEC/EN/UL 62368-1
- Low leakage current <75 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty

Pin connectors

Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	Line	1, 2	–Vout
3	Neutral	3, 4	+Vout

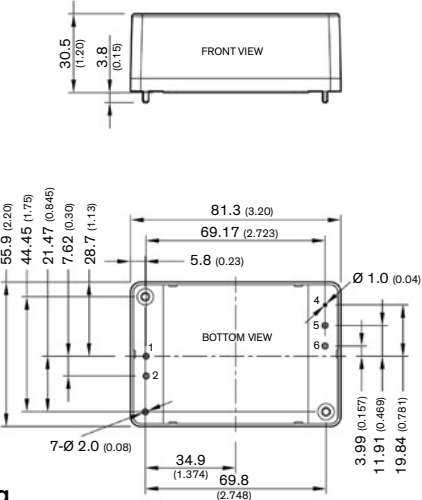
Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 65-105E-J	5 VDC (4.5 – 5.5 VDC)	10'000 mA	90%
TPP 65-112E-J	12 VDC (10.8 – 13.2 VDC)	5420 mA	93%
TPP 65-115E-J	15 VDC (13.5 – 16.5 VDC)	4340 mA	94%
TPP 65-124E-J	24 VDC (21.6 – 26.4 VDC)	2710 mA	94%
TPP 65-136E-J	36 VDC (32.4 – 39.6 VDC)	1810 mA	93%
TPP 65-148E-J	48 VDC (43.2 – 52.8 VDC)	1360 mA	93%

TPP 65E-D

65 Watt



- Encapsulated PCB mount module in 3.2" x 2.2" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current <75 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty



FRONT VIEW

BOTTOM VIEW

Pinout	
Pin	Function
1	AC (N)
2	AC (L)
4	Trim
5	-Vout
6	+Vout

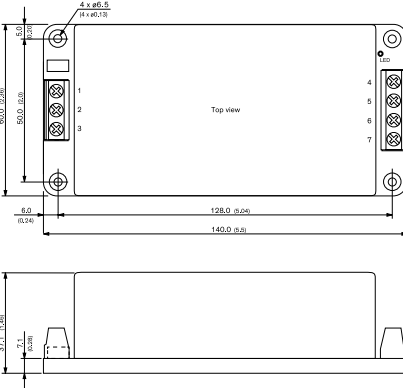
Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 65-105E-D	5 VDC (4.5 – 5.5 VDC)	10'000 mA	90%
TPP 65-112E-D	12 VDC (10.8 – 13.2 VDC)	5420 mA	93%
TPP 65-115E-D	15 VDC (13.5 – 16.5 VDC)	4340 mA	94%
TPP 65-124E-D	24 VDC (21.6 – 26.4 VDC)	2710 mA	94%
TPP 65-136E-D	36 VDC (32.4 – 39.6 VDC)	1810 mA	93%
TPP 65-148E-D	48 VDC (43.2 – 52.8 VDC)	1360 mA	93%

TML 100C

100 Watt



- Very compact power modules with screw terminal connection
- Active PFC, power factor >0.95 (230VAC), >0.99 (115 VAC)
- High efficiency up to 93% typ.
- Remote On/Off input
- Adjustable output voltage ±5%
- LED output indicator
- Universal input 100-240 VAC nominal
- Low leakage current
- EMI meets EN 55032, class B
- Protection class II prepared



Top view

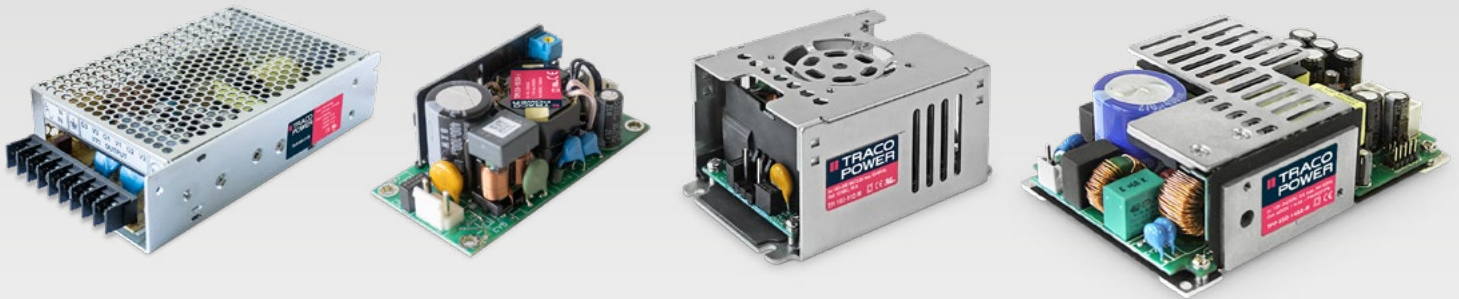
Pinout	
Pin	Output
1	AC in (L)
2	AC in (N)
3	FG
4	Remote On/Off
5	+Vout
6	-Vout
7	Trim

Model	Input Voltage Range	Output Vnom	Imax	Efficiency
TML 100-112C	85	12 VDC	7080 mA	90%
TML 100-115C	85	15 VDC	5660 mA	90%
TML 100-124C	100	24 VDC	4200 mA	92%
TML 100-148C	100	48 VDC	2100 mA	93%

Metal Enclosure and Open Frame Power Supplies

15 – 1000 watt

For general purpose applications we offer a range of cost-effective power supplies in low profile metal case with screw terminal block. There are models available with single-, dual-, or triple-output.

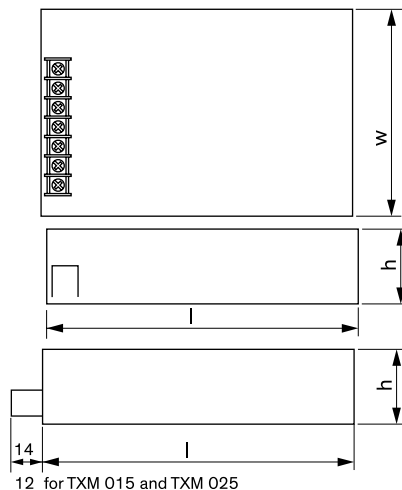


TXM

15–200 Watt



- Very compact metal cased power supplies
- High operating temperature up to 60°C
- Low no load power consumption <0.5W
- Screw terminal block
- No internal fan
- Universal AC input
- Active power factor correction >0.93
- Withstand 300 VAC surge input for 5 sec.
- Adjustable output voltage
- 3-year product warranty



Dimensions			
Type	Length l	Width w	Height h
TXM 015	79 (3.11)	51 (2.01)	29 (1.14)
TXM 025	79 (3.11)	51 (2.01)	29 (1.14)
TXM 035	102 (4.02)	64 (2.52)	33 (1.30)
TXM 050	99 (3.90)	82 (3.23)	35 (1.38)
TXM 075	129 (5.08)	99 (3.90)	38 (1.50)
TXM 100	179 (7.05)	99 (3.90)	50 (1.97)
TXM 150	160 (6.30)	98 (3.96)	38 (1.50)
TXM 200	199.0 (7.83)	99.0 (3.90)	50.3 (1.98)

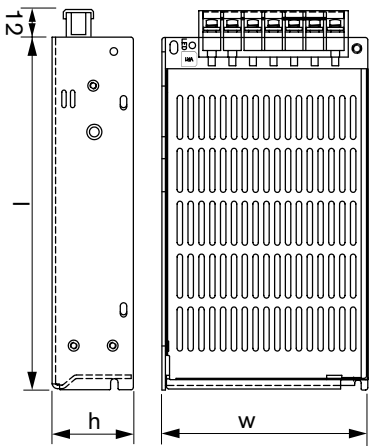
Model	Output Power max.	Vnom	I _{max}	Efficiency
TXM 015-103	15 Watt	3.3 VDC	4.0 A	71%
TXM 015-105		5 VDC	3.0 A	78%
TXM 015-112		12 VDC	1.3 A	82%
TXM 015-115		15 VDC	1.0 A	83%
TXM 015-124		24 VDC	0.7 A	85%
TXM 025-103	25 Watt	3.3 VDC	6.0 A	71%
TXM 025-105		5 VDC	5.0 A	77%
TXM 025-112		12 VDC	2.1 A	82%
TXM 025-115		15 VDC	1.7 A	83%
TXM 025-124		24 VDC	1.1 A	84%
TXM 035-105	35 Watt	5 VDC	6.0 A	80%
TXM 035-112		12 VDC	3.0 A	84%
TXM 035-115		15 VDC	2.4 A	86%
TXM 035-124		24 VDC	1.5 A	87%
TXM 035-148		48 VDC	0.75 A	88%
TXM 075-105	60 Watt	5 VDC	12.0 A	80%
TXM 075-112	75 Watt	12 VDC	6.0 A	85%
TXM 075-115		15 VDC	5.0 A	86%
TXM 075-124		24 VDC	3.2 A	88%
TXM 075-148		48 VDC	1.6 A	89%
TXM 100-105	100 Watt	5 VDC	20.0 A	84%
TXM 100-112		12 VDC	8.5 A	87%
TXM 100-115		15 VDC	7.0 A	87%
TXM 100-124		24 VDC	4.2 A	88%
TXM 100-148		48 VDC	2.2 A	88%
TXM 150-112	150 Watt	12 VDC	12.5 A	86%
TXM 150-115		15 VDC	10.0 A	87%
TXM 150-124		24 VDC	6.3 A	88%
TXM 150-148		48 VDC	3.2 A	88%
TXM 200-112	200 Watt	12 VDC	16.7 A	87%
TXM 200-124		24 VDC	8.4 A	88%
TXM 200-148		48 VDC	4.2 A	89%

TXLN

18 – 960 Watt



- Compact metal case with screw terminal block
- Single and multiple output models with isolated outputs
- Active power factor correction >0.95
- High efficiency up to 91%
- Up to 200 Watt all models without fan
- EMI/EMC compliance with EN 61000-6-3 and EN 61000-6-1
- Compliance to EN 61000-3-2
- Short circuit, overvoltage and overload protection
- IEC/ENUL 62368-1 safety approvals
- 3 year product warranty



Series	Output Power	Output Voltage	Efficiency
TXLN 018	18 Watt	3.3, 5, 12, 15, 24 VDC	73 – 85%
TXLN 025	25 Watt	3.3, 5, 12, 15, 24, 48 VDC	72 – 88%
TXLN 035	35 Watt	3.3, 5, 12, 15, 24, 48 VDC	74 – 86%
TXLN 060	60 Watt	3.3, 5, 12, 15, 24, 48 VDC	72 – 86%
TXLN 080	80Watt	dual/triple 5,12,15,24 VDC	79 – 82%
TXLN 110	110 Watt	5, 12, 15, 24, 48 VDC	83 – 87%
TXLN 150	150 Watt	5, 12, 24, 48 VDC	86 – 90%
TXLN 200	200 Watt	5, 12, 24, 48 VDC	83 – 89%
TXLN 320	320 Watt	12, 24, 48 VDC	86 – 89%
TXLN 500	500 Watt	12, 24, 48 VDC	88 – 91%
TXLN 750	750 Watt	12, 24, 48 VDC	88 – 90%
TXLN 960	960 Watt	12, 15, 24, 48 VDC	87 – 89%

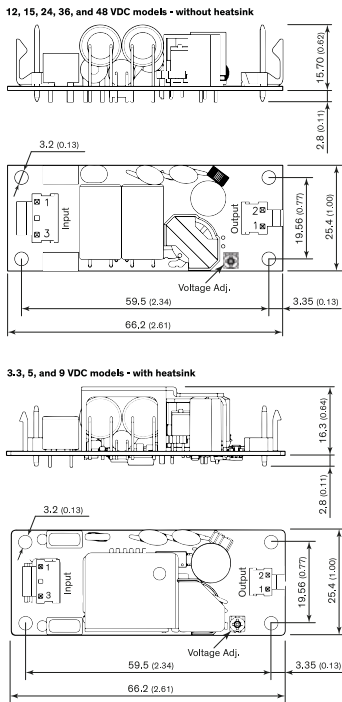
Dimensions			
Type	Length l	Width w	Height h
TXLN 018	62 (xx)	50.8 (xx)	28 (xx)
TXLN 025	79 (3.11)	51 (2.01)	29 (1.14)
TXLN 035	99 (3.90)	82 (3.23)	35 (1.38)
TXLN 060	99 (3.90)	82 (3.23)	35 (1.38)
TXLN 080	159 (xx)	95 (xx)	38 (xx)
TXLN 110	159 (xx)	95 (xx)	38 (xx)
TXLN 150	188 (xx)	99 (xx)	30 (xx)
TXLN 200	212 (xx)	115 (xx)	30 (xx)
TXLN 320	212 (xx)	115 (xx)	30 (xx)
TXLN 500	230 (xx)	127 (xx)	40.6 (xx)
TXLN 750	275 (10.83)	125 (4.92)	63 (2.48)
TXLN 960	275 (10.83)	125 (4.92)	63 (2.48)

TPP 15A-J

15 Watt



- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class I and II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <75 mW
- 5-year product warranty



Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	AC (L)	1	–Vout
3	AC (N)	2	+Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 15-103A-J	3.3 VDC (2.97 – 3.63 VDC)	4'000 mA	84%
TPP 15-105A-J	5 VDC (4.5 – 5.5 VDC)	3'000 mA	86%
TPP 15-109A-J	9 VDC (8.1 – 9.9 VDC)	1'670 mA	86%
TPP 15-112A-J	12 VDC (10.8 – 13.2 VDC)	1'250 mA	87%
TPP 15-115A-J	15 VDC (13.5 – 16.5 VDC)	1'000 mA	87%
TPP 15-124A-J	24 VDC (21.6 – 26.4 VDC)	625 mA	88%
TPP 15-136A-J	36 VDC (32.4 – 39.6 VDC)	417 mA	88%
TPP 15-148A-J	48 VDC (43.2 – 52.8 VDC)	313 mA	89%

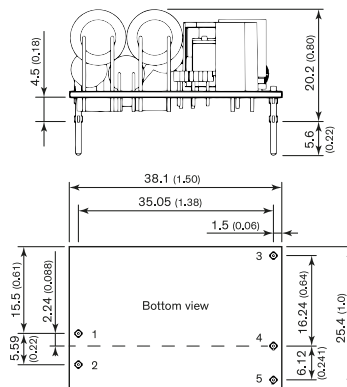
TPP 15A-D

15 Watt

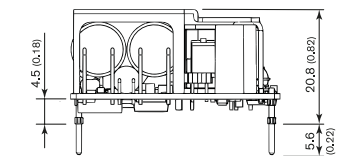


- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 μ A rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <75 mW
- 5-year product warranty

12, 15, 24, 36, and 48 VDC models - without heatsink



3, 3, 5, and 9 VDC models - with heatsink



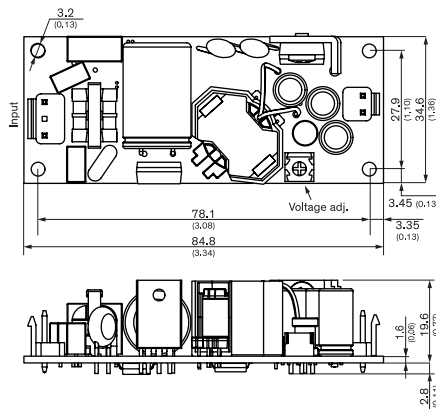
PCB Pinout

Pin	Function
1	AC (N)
2	AC (L)
3	Trim
4	-Vout
5	+Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 15-103A-D	3.3 VDC (2.97 – 3.63 VDC)	4'000 mA	84%
TPP 15-105A-D	5 VDC (4.5 – 5.5 VDC)	3'000 mA	86%
TPP 15-109A-D	9 VDC (8.1 – 9.9 VDC)	1'670 mA	86%
TPP 15-112A-D	12 VDC (10.8 – 13.2 VDC)	1'250 mA	87%
TPP 15-115A-D	15 VDC (13.5 – 16.5 VDC)	1'000 mA	87%
TPP 15-124A-D	24 VDC (21.6 – 26.4 VDC)	625 mA	88%
TPP 15-136A-D	36 VDC (32.4 – 39.6 VDC)	417 mA	88%
TPP 15-148A-D	48 VDC (43.2 – 52.8 VDC)	313 mA	89%

TPI 30A-J

30 Watt



Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPI 30-103A-J	3.3 VDC	6'000 mA	83%
TPI 30-105A-J	5 VDC	6'000 mA	86%
TPI 30-109A-J	9 VDC	3'340 mA	87%
TPI 30-112A-J	12 VDC	2'500 mA	88.5%
TPI 30-115A-J	15 VDC	2'000 mA	88.5%
TPI 30-124A-J	24 VDC	1'250 mA	88%
TPI 30-136A-J	36 VDC	840 mA	89%
TPI 30-148A-J	48 VDC	630 mA	90.5%

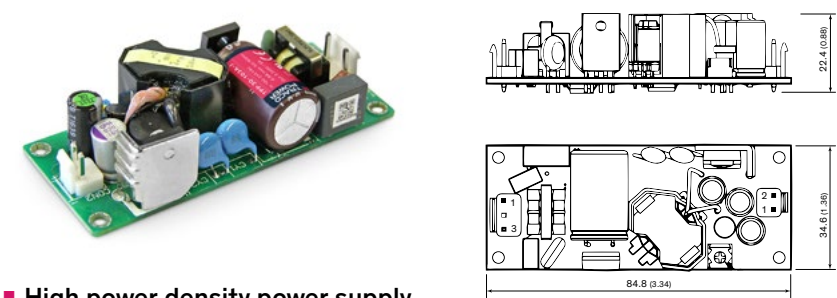
- Open frame power supply in 3.34" x 1.36" package
- I/O reinforced isolation 3000 VAC
- Ready to meet ErP directive, < 0.3 W no load power consumption
- Efficiency up to 90%
- Protection class II prepared
- Operating up to 5000 m altitude
- Adjustable output voltage
- 3-year product warranty

Connectors – Connection

CON1 – Input Connector	
Pin 1	Line
Pin 3	Neutral
CON2 – Output Connector	
Pin 1	+Vout
Pin 2	-Vout

TPP 30A-J

30 Watt



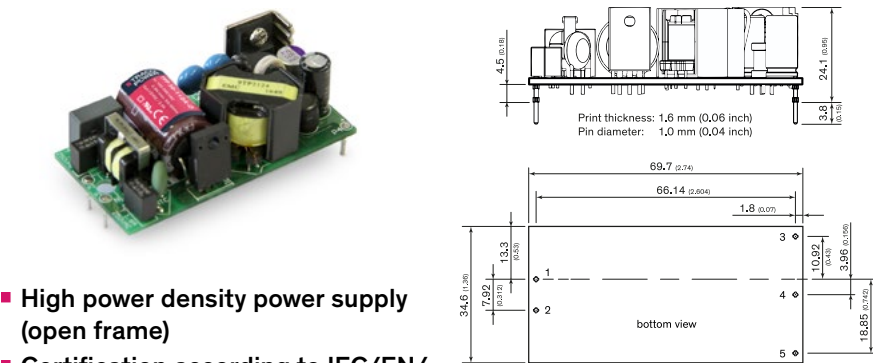
- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <60 mW
- 5-year product warranty

Pin Connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	AC (L)	1	+Vout
3	AC (N)	2	–Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 30-103A-J	3.3 VDC (2.97 – 3.63 VDC)	6'000 mA	84%
TPP 30-105A-J	5 VDC (4.5 – 5.5 VDC)	6'000 mA	87%
TPP 30-109A-J	9 VDC (8.1 – 9.9 VDC)	3'340 mA	88%
TPP 30-112A-J	12 VDC (10.8 – 13.2 VDC)	2'500 mA	91%
TPP 30-115A-J	15 VDC (13.5 – 16.5 VDC)	2'000 mA	91%
TPP 30-124A-J	24 VDC (21.6 – 26.4 VDC)	1'250 mA	90%
TPP 30-136A-J	36 VDC (32.4 – 39.6 VDC)	840 mA	90%
TPP 30-148A-J	48 VDC (43.2 – 52.8 VDC)	630 mA	92%

TPP 30A-D

30 Watt



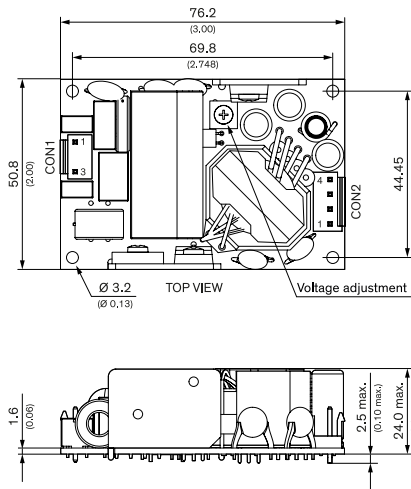
- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Protection class II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, no load power consumption <60 mW
- 5-year product warranty

PCB Pinout	
Pin	Function
1	AC (N)
2	AC (L)
3	+Vout
4	–Vout
5	Trim

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 30-103A-D	3.3 VDC (2.97 – 3.63 VDC)	6'000 mA	84%
TPP 30-105A-D	5 VDC (4.5 – 5.5 VDC)	6'000 mA	87%
TPP 30-109A-D	9 VDC (8.1 – 9.9 VDC)	3'340 mA	88%
TPP 30-112A-D	12 VDC (10.8 – 13.2 VDC)	2'500 mA	91%
TPP 30-115A-D	15 VDC (13.5 – 16.5 VDC)	2'000 mA	91%
TPP 30-124A-D	24 VDC (21.6 – 26.4 VDC)	1'250 mA	90%
TPP 30-136A-D	36 VDC (32.4 – 39.6 VDC)	840 mA	90%
TPP 30-148A-D	48 VDC (43.2 – 52.8 VDC)	630 mA	92%

TPP 40A

40 Watt



- Open frame power supply with pin connector
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 μ A rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

Pin connectors

Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1, 2	-Vout
3	AC (N)	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 40-105A-J	5 VDC (4.5 – 5.5 VDC)	8000 mA	90%
TPP 40-112A-J	12 VDC (10.8 – 13.2 VDC)	3340 mA	92%
TPP 40-124A-J	24 VDC (21.6 – 26.4 VDC)	1670 mA	92%
TPP 40-148A-J	48 VDC (43.2 – 52.8 VDC)	840 mA	93%

Note - Other output models are available on request.

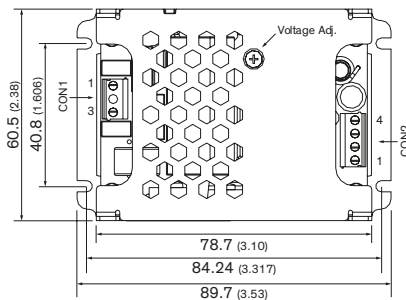
*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: JST series
mates with JST crimp terminal: BVH-21T-P1.1
and terminal housing: VHR-3N

CON2: JST series
mates with JST crimp terminal: BVH-21T-P1.1
and terminal housing: VHR-4N

TPP 40

40 Watt



- Enclosed power supply with screw terminal connection
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 μ A rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

Screw Terminal (Single Output Models)

Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1, 2	-Vout
3	AC (N)	3, 4	+Vout

Screw Terminal (Multi Output Models)

Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1	Vout 3
3	AC (N)	2, 3	COM
		4, 5	Vout 2
		6	Vout 1

Model	Vout	Iout	Efficiency
TPP 40-105	5 VDC	8.00 A	90%
TPP 40-112	12 VDC	3.34 A	92%
TPP 40-115	15 VDC	2.67 A	92%
TPP 40-124	24 VDC	1.67 A	92%
TPP 40-221	+12/+5 VDC	3.34/6.00 A	89%
TPP 40-231	+15/+5 VDC	2.67/6.00 A	89%
TPP 40-251	+24/+5 VDC	1.67/6.00 A	86%
TPP 40-321M2	+12/+5/-12 VDC	3.34/6.00/0.50 A	88%
TPP 40-331M3	+15/+5/-15 VDC	2.67/6.00/0.50 A	88%
TPP 40-3512	+24/+5/+12 VDC	1.67/6.00/0.50 A	86%

Note

- Total Power must not exceed 40 W.
- Other output models are available on request.
- Multi output models have a common ground.

Note (Dimensions)

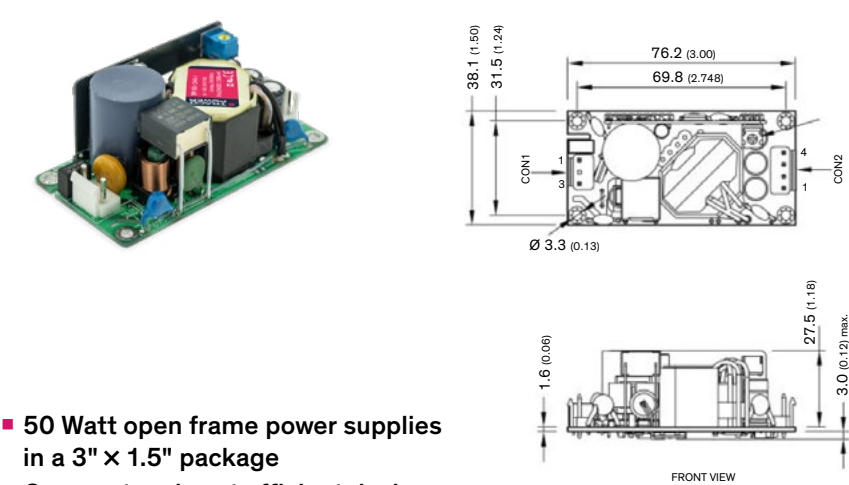
- Multi output models 102.4 (4.03) length, 34.5 (1.36) height

* Terminal rated for 10 A max. (at higher current connection has to be split)

TPI 50A-J

NEW!

50 Watt



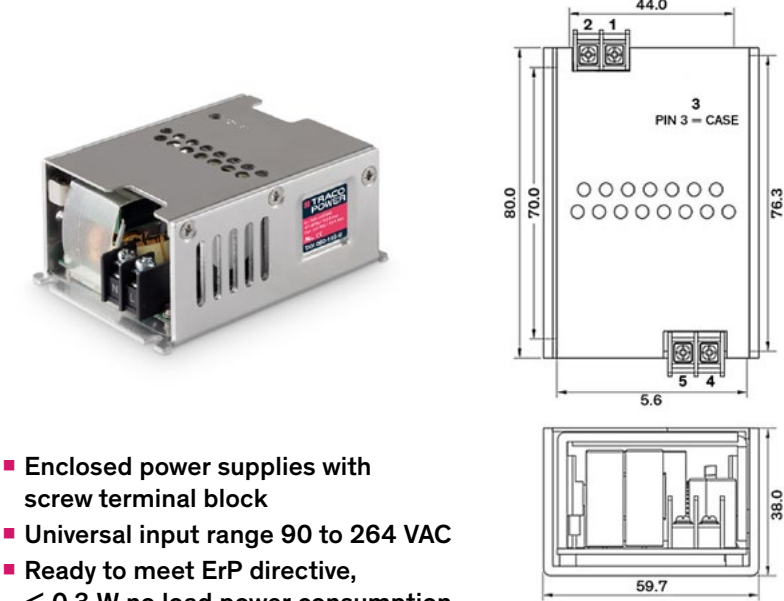
- 50 Watt open frame power supplies in a 3" x 1.5" package
- Compact and cost efficient design
- Peak power function up to 140%
- I/O reinforced isolation 3000 VAC
- Operating temperature range -40°C to +85°C
- No load input power < 0.3 W (acc. ErP directive)
- High efficiency up to 93%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty

Connectors – Connection			
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	AC (L)	1, 2	-Vout
3	AC (N)	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 50-105A-J	5 VAC (4.5 – 5.5 VAC)	8000 mA	90.5%
TPI 50-112A-J	12 VAC (9.6 – 14.4 VAC)	4170 mA	92.5%
TPI 50-115A-J	15 VAC (12 – 18 VAC)	3340 mA	92.5%
TPI 50-124A-J	24 VAC (19.2 – 28.8 VAC)	2085 mA	92.5%
TPI 50-136A-J	36 VAC (28.8 – 43.2 VAC)	1390 mA	91.5%
TPI 50-148A-J	48 VAC (38.4 – 57.6 VAC)	1045 mA	91.5%
TPI 50-153A-J	53 VAC (42.4 – 63.6 VAC)	950 mA	91.5%

TXH 060

60 Watt



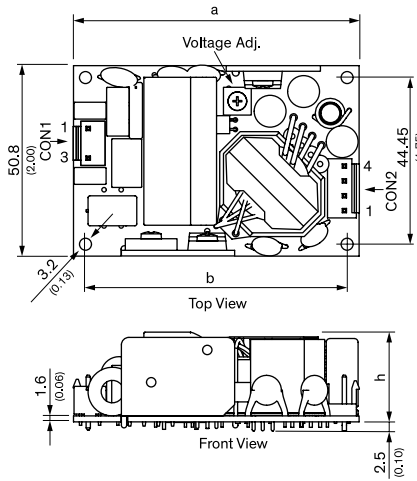
- Enclosed power supplies with screw terminal block
- Universal input range 90 to 264 VAC
- Ready to meet ErP directive, < 0.3 W no load power consumption
- Adjustable output voltage
- 4242 VDC I/O-isolation
- High efficiency up to 88%
- Operating temperature range: -30°C to +70°C max.
- Short circuit and over voltage protection

Pinout	
Pin	Function
1	AC IN (N)
2	AC IN (L)
3	PE
4	+Vout
5	-Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TXH 060-105	5 VDC (4.8 – 5.3 VDC)	10'000 mA	81%
TXH 060-112	12 VDC (11.4 – 12.6 VDC)	5'000 mA	87%
TXH 060-115	15 VDC (14.3 – 15.8 VDC)	4'000 mA	87%
TXH 060-124	24 VDC (22.8 – 25.2 VDC)	2'500 mA	88%
TXH 060-148	48 VDC (45.6 – 50.4 VDC)	1'250 mA	88%

TPI 65A-J

65 Watt



Single model	Multi model
h: 24.0 (0.94)	h: 24.9 (0.98)
a: 76.2 (3.00)	a: 88.9 (3.50)
b: 69.8 (2.748)	b: 82.50 (3.248)

- Open frame power supply in 3" x 2" package
- I/O reinforced isolation 3000 VAC
- Ready to meet ErP directive, < 0.3 W no load power consumption
- Efficiency up to 93%
- Protection class II prepared
- Operating up to 5000 m altitude
- Adjustable output voltage
- 3-year product warranty

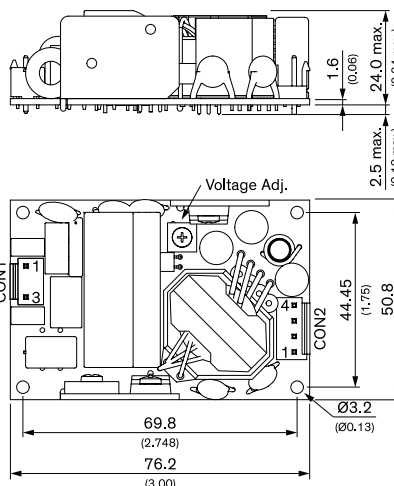
Connectors – Connection

Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1, 2	–Vout
3	Neutral	3, 4	+Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPI 65-105A-J	5 VDC	10 A	90%
TPI 65-109A-J	9 VDC	7.23 A	91%
TPI 65-112A-J	12 VDC	5.42 A	92.5%
TPI 65-115A-J	15 VDC	4.34 A	93.5%
TPI 65-124A-J	24 VDC	2.71 A	93.5%
TPI 65-136A-J	36 VDC	1.81 A	92.5%
TPI 65-148A-J	48 VDC	1.36 A	93%

TPP 65A

65 Watt



- Open frame power supply with pin connector
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

Pin connectors

Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1, 2	–Vout
3	AC (N)	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 65-105A-J	5 VDC (4.5 – 5.5 VDC)	10000 mA	90%
TPP 65-112A-J	12 VDC (10.8 – 13.2 VDC)	5420 mA	93%
TPP 65-124A-J	24 VDC (21.6 – 26.4 VDC)	2710 mA	94%
TPP 65-148A-J	48 VDC (43.2 – 52.8 VDC)	1360 mA	93%

Note

- Other output models are available on request.

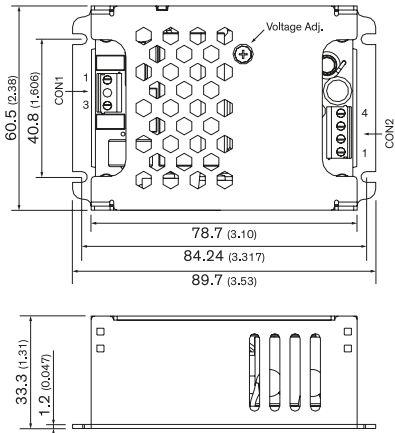
*Terminal rated for 10 A max. (at higher current connection has to be split)

CON1: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-3N

CON2: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-4N

TPP 65

65 Watt



- Enclosed power supply with screw terminal connection
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP
- Low leakage current <75 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

Screw Terminal (Single Output Models)			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1, 2	–Vout
3	AC (N)	3, 4	+Vout

Screw Terminal (Multi Output Models)			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1	Vout 3
3	AC (N)	2, 3	COM
		4, 5	Vout 2
		6	Vout 1

Model	Vout	Iout	Efficiency
TPP 65-105	5 VDC	10.00 A	90%
TPP 65-112	12 VDC	5.42 A	93%
TPP 65-115	15 VDC	4.34 A	94%
TPP 65-124	24 VDC	2.71 A	94%
TPP 65-221	+12/+5 VDC	5.42/8.00 A	90%
TPP 65-231	+15/+5 VDC	4.34/8.00 A	91%
TPP 65-251	+24/+5 VDC	2.71/8.00 A	89%
TPP 65-321M2	+12/+5/–12 VDC	5.42/8.00/0.60 A	89%
TPP 65-331M3	+15/+5/–15 VDC	4.34/8.00/0.60 A	90%
TPP 65-3512	+24/+5/+12 VDC	2.71/8.00/0.60 A	89%

Note

- Total Power must not exceed 65 W.
- Other output models are available on request.
- Multi output models have a common ground.

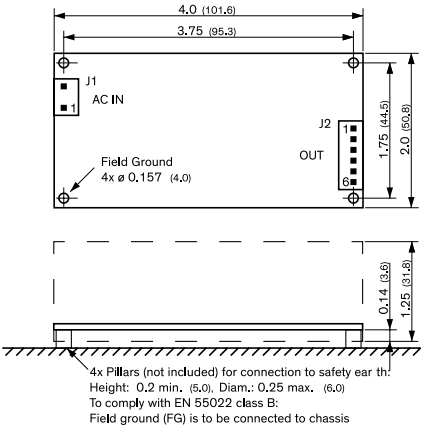
Note (Dimensions)

- Multi output models 102.4 (4.03) length, 34.5 (1.36) height

* Terminal rated for 10 A max. (at higher current connection has to be split)

TOP 100

100 Watt



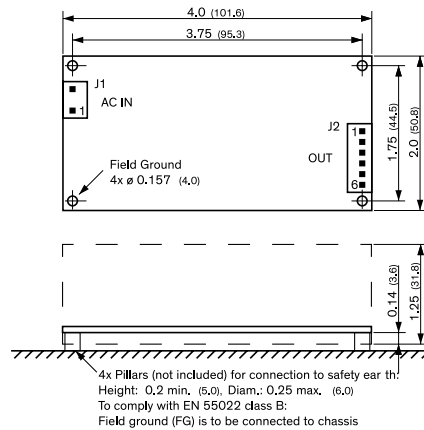
Model	Output Voltage (Adjustment Range)	Output Current max.
TOP 100-105	5.0 VDC (5.0 – 5.2)	20.0 A
TOP 100-112	12 VDC (12.0 – 13.0)	8.3 A
TOP 100-115	15 VDC (15.0 – 16.0)	6.7 A
TOP 100-124	24 VDC (24.0 – 26.0)	4.2 A
TOP 100-148	48 VDC (48.0 – 52.0)	2.1 A

- 100 W power supply in 2.0" × 4.0" footprint! openframe and enclosed version available
- Full load operation up to +50°C with convection cooling
- Highest efficiency, 90% typ.
- EMI filter meets EN 55032, level B
- Compliance with EN 61000-3-2
- Low leakage current
- Safety class I and class II operation
- 3-year product warranty

Output		Input	
Pin	J2	Pin	J1
1	– Vout	1	AC in
2	– Vout	2	AC in
3	– Vout		
4	+ Vout		
5	+ Vout		
6	+ Vout		

TOP 100C

100 Watt



Model	Output Voltage (Adjustment Range)	Output Current max.
TOP 100-105C	5.0 VDC (5.0–5.2)	20.0 A
TOP 100-112C	12 VDC (12.0–13.0)	8.3 A
TOP 100-124C	24 VDC (24.0–26.0)	4.2 A
TOP 100-148C	48 VDC (48.0–52.0)	2.1 A

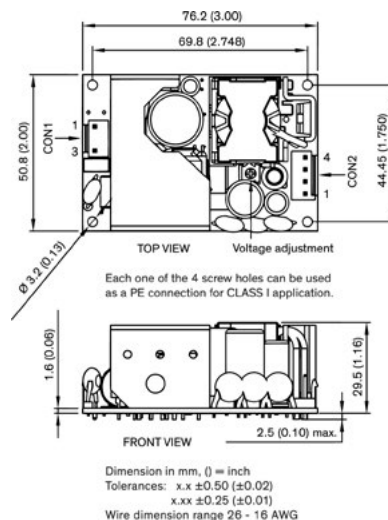
- 100 W power supply in 2.0" × 4.0" footprint! openframe and enclosed version available
- Full load operation up to +50°C with convection cooling
- Highest efficiency, 90% typ.
- EMI filter meets EN 55032, level B
- Compliance with EN 61000-3-2
- Low leakage current
- Safety class I and class II operation
- 3-year product warranty

Output	
Pin	J2
1	– Vout
2	– Vout
3	– Vout
4	+ Vout
5	+ Vout
6	+ Vout

Input	
Pin	J1
1	AC in
2	AC in

TPI 100A

100 Watt



Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 100-112A-J	12 VDC (10.8–13.2 VDC)	8'340 mA	91%
TPI 100-115A-J	15 VDC (13.5–16.5 VDC)	6'670 mA	92%
TPI 100-124A-J	24 VDC (21.6–26.4 VDC)	4'170 mA	92%
TPI 100-128A-J	28 VDC (25.2–30.8 VDC)	3'580 mA	92%
TPI 100-136A-J	36 VDC (32.4–39.6 VDC)	2'780 mA	91%
TPI 100-148A-J	48 VDC (43.2–52.8 VDC)	2'090 mA	91%

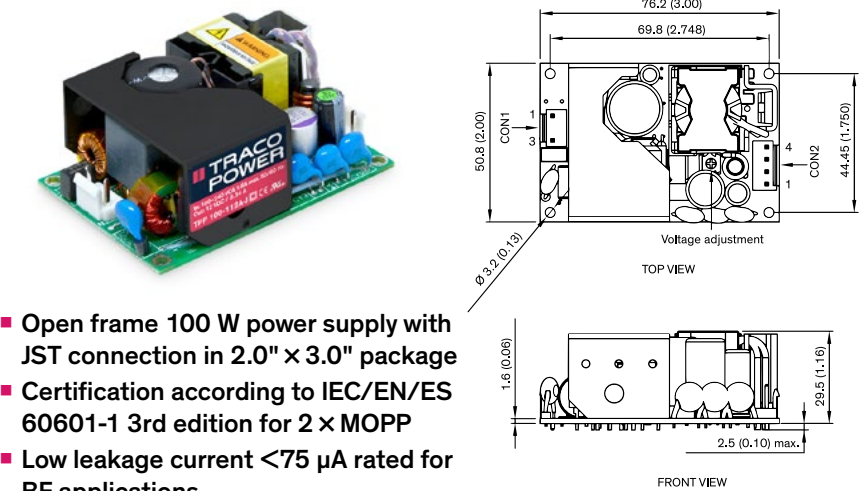
- Highest power density 100 W open frame power supply in 2" × 3" package
- I/O reinforced isolation 3000 VAC
- Ready to meet ErP directive, < 0.3 W no load power consumption
- Highest efficiency 91% – 92% across 10% – 100% load range
- Active power factor correction > 95
- Protection class II prepared
- Operating up to 5000 m altitude
- Adjustable output voltage
- 3-year product warranty

Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1,2	–Vout
3	Neutral	3,4	+Vout

*Terminal rated for 10 A max.
(at higher current connection has to be split)

TPP 100A-J

100 Watt



- Open frame 100 W power supply with JST connection in 2.0" x 3.0" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1, 2	–Vout
3	AC (N)	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 100-112A-J	12 VDC (10.8 – 13.2 VDC)	8340 mA	91%
TPP 100-115A-J	15 VDC (13.5 – 16.5 VDC)	6670 mA	92%
TPP 100-124A-J	24 VDC (21.6 – 26.4 VDC)	4170 mA	92%
TPP 100-128A-J	28 VDC (25.2 – 30.8 VDC)	3580 mA	92%
TPP 100-136A-J	36 VDC (32.4 – 39.6 VDC)	2780 mA	91%
TPP 100-148A-J	48 VDC (43.2 – 52.8 VDC)	2090 mA	91%

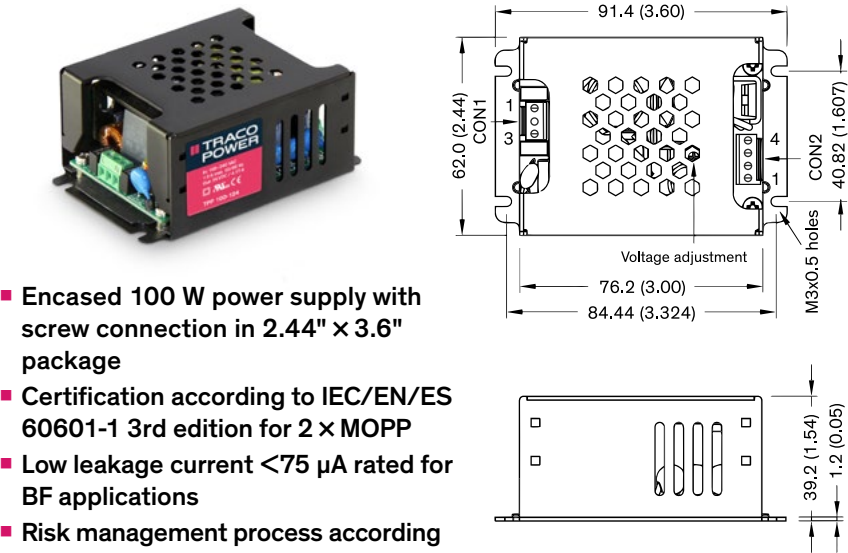
*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-3N

CON2: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-4N

TPP 100

100 Watt



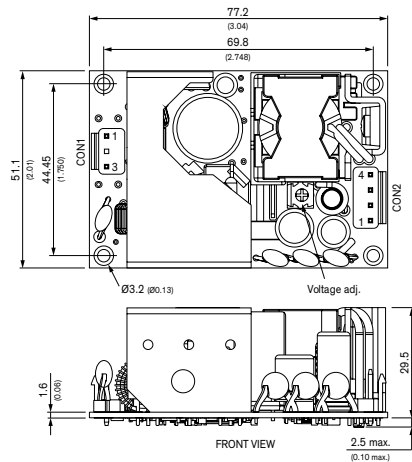
- Encased 100 W power supply with screw connection in 2.44" x 3.6" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

Screw Terminal			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1, 2	–Vout
3	AC (N)	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 100-112	12 VDC (10.8 – 13.2 VDC)	8340 mA	91%
TPP 100-115	15 VDC (13.5 – 16.5 VDC)	6670 mA	92%
TPP 100-124	24 VDC (21.6 – 26.4 VDC)	4170 mA	92%
TPP 100-128	28 VDC (25.2 – 30.8 VDC)	3580 mA	92%
TPP 100-136	36 VDC (32.4 – 39.6 VDC)	2780 mA	91%
TPP 100-148	48 VDC (43.2 – 52.8 VDC)	2090 mA	91%

TPI 125A-J

125 Watt



- 125 Watt open frame power supplies in a 3" × 2" package
- Compact and cost efficient design
- Peak power function up to 120%
- I/O reinforced isolation 3000 VAC
- Operating temperature range -40°C to +85°C
- No load input power < 0.3 W (acc. ErP directive)
- High efficiency up to 92%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty

Connectors – Connection

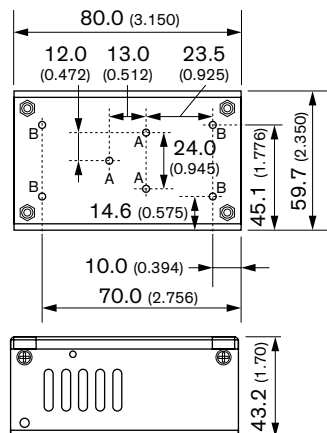
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	AC (L)	1, 2	-Vout
3	AC (N)	3, 4	+Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 125-112A-J	12 VDC (9.6 – 13.2 VDC)	8340 mA	91%
TPI 125-115A-J	15 VDC (12.0 – 16.5 VDC)	6670 mA	92%
TPI 125-124A-J	24 VDC (19.2 – 26.4 VDC)	4170 mA	92%
TPI 125-136A-J	36 VDC (28.8 – 39.6 VDC)	2780 mA	91%
TPI 125-148A-J	48 VDC (38.4 – 52.8 VDC)	2090 mA	91%

TCI 130

NEW – under development

130 Watt



Dimensions in mm (inch)
Tolerances: ±0.5 (±0.02)

Pin Connectors

Input		Output	
Pin	Function	Pin	Function
1	AC IN (N)	4, 5	+Vout
2	No Pin	6, 7	-Vout
3	AC IN (L)		

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TCI 130-112-J	12 VDC	10'833 mA	90%
TCI 130-124-J	24 VDC	5'417 mA	90%
TCI 130-148-J	48 VDC	2'708 mA	91%

- High power-density: 130 Watt in 3.15" × 2.35" package (encased)
- Unique conduction cooled design
- Over voltage category III
- I/O isolation 3000 VAC
- Certification according to IEC/EN/UL 62368-1
- Operating temperature -30°C to 80°C
- Active power factor correction > 0.9
- High efficiency up to 91%
- Protection class II prepared
- 3-year product warranty

Mating input connector:

JST housing: VHR-3N
JST crimp terminals: SVH-41T-P1.1

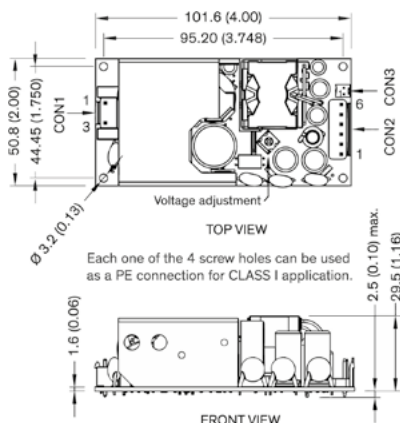
Mating output connector:

JST housing: VHR-4N
JST crimp terminals: SVH-41T-P1.1

Case	
Pin	Function
8	PE

TPI 150A

150 Watt



- Highest power density 150 W open frame power supply in 2" x 4" package
- I/O reinforced isolation 3000 VAC
- Ready to meet ErP directive, < 0.3 W no load power consumption
- Highest efficiency 91–92% across 10%–100% load range
- Active power factor correction > 95
- Protection class II prepared
- Operating up to 5000 m altitude
- Adjustable output voltage
- 3-year product warranty

Pin connectors

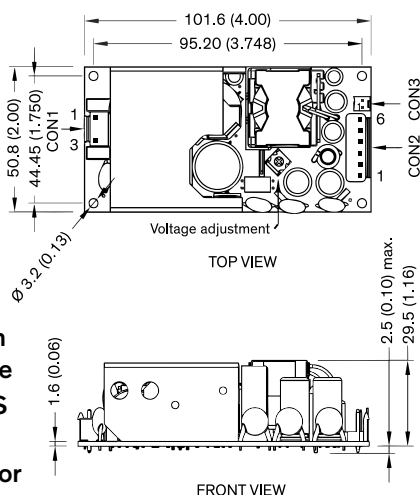
Input (CON1)		Output (CON2)		Fan (CON3)	
Pin	Function	Pin*	Function	Pin	Function
1	Line	1–3	–Vout	1	–Fan
3	Neutral	4–6	+Vout	2	+Fan

*Terminal rated for 10 A max.
(at higher current connection has to be split)

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 150-112A-J	12 VDC (10.8 – 13.2 VDC)	12'500 mA	91%
TPI 150-115A-J	15 VDC (13.5 – 16.5 VDC)	10'000 mA	92%
TPI 150-124A-J	24 VDC (21.6 – 26.4 VDC)	6'250 mA	92%
TPI 150-128A-J	28 VDC (25.2 – 30.8 VDC)	5'360 mA	92%
TPI 150-136A-J	36 VDC (32.4 – 39.6 VDC)	4'170 mA	92%
TPI 150-148A-J	48 VDC (43.2 – 52.8 VDC)	3'130 mA	92%

TPP 150A-J

150 Watt



- Open frame 150 W power supply with JST connection in 2.0" x 4.0" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <100 µA rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

Pin connectors

Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1–3	–Vout
3	AC (N)	4–6	+Vout

Fan (CON3)	
Pin	Function
1	–Fan
2	+Fan

Model	Output Voltage nom. (adjustable)	Output Current max. (Forced air cooling)	Efficiency typ.
TPP 150-112A-J	12 VDC (10.8 – 13.2 VDC)	12'500 mA	91%
TPP 150-115A-J	15 VDC (13.5 – 16.5 VDC)	10'000 mA	92%
TPP 150-124A-J	24 VDC (21.6 – 26.4 VDC)	6'250 mA	92%
TPP 150-128A-J	28 VDC (25.2 – 30.8 VDC)	5'360 mA	92%
TPP 150-136A-J	36 VDC (32.4 – 39.6 VDC)	4'170 mA	92%
TPP 150-148A-J	48 VDC (43.2 – 52.8 VDC)	3'130 mA	92%

Output Current max. (Natural convection):

8340 mA
7340 mA
4590 mA
3930 mA
3060 mA
2090 mA

*Terminal rated for 7 A max. (at higher current connection has to be split)

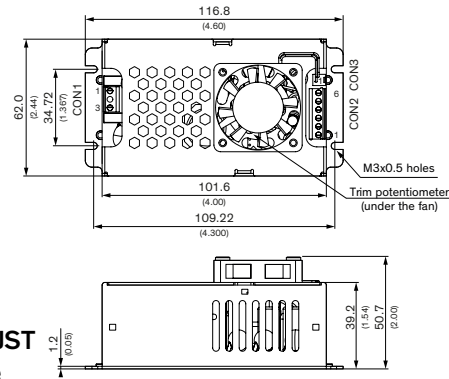
CON1: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-3N

CON2: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-6N

CON3: Molex series
mates with Molex crimp terminals: 2759
and Molex housing: 22-01-1022

TPP 150

150 Watt



- Encased 150 W power supply with JST connection in 2.44" x 4.6" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <100 μ A rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

Connections			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (L)	1-3	-Vout
3	AC (N)	4-6	+Vout

Fan (CON3)	
Pin	Function
1	-Fan
2	+Fan

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 150-112	12 VDC (10.8 – 13.2 VDC)	12500 mA	91%
TPP 150-115	15 VDC (13.5 – 16.5 VDC)	10000 mA	92%
TPP 150-124	24 VDC (21.6 – 26.4 VDC)	6250 mA	92%
TPP 150-128	28 VDC (25.2 – 30.8 VDC)	5360 mA	92%
TPP 150-136	36 VDC (32.4 – 39.6 VDC)	4170 mA	92%
TPP 150-148	48 VDC (43.2 – 52.8 VDC)	3130 mA	92%

*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: Screw Terminal

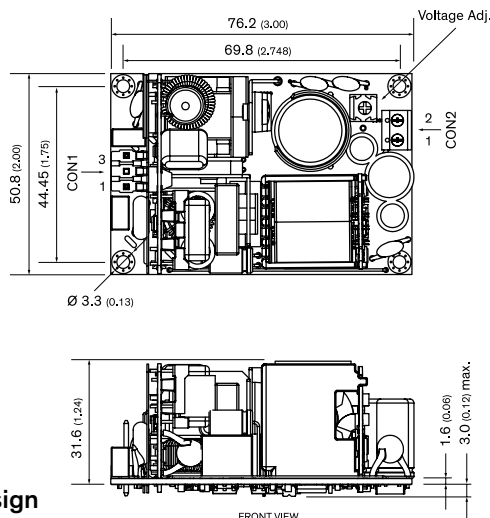
CON2: Screw Terminal

CON3: Molex series
mates with Molex crimp terminals: 2759
and Molex housing: 22-01-1022

TPI 180A-M

NEW!

180 Watt



- 180 Watt open frame power supplies in a 3" x 2" package
- Compact and cost efficient design
- I/O reinforced isolation 3000 VAC
- IEC/EN/UL 62368-1 approvals
- Operating temperature range -40°C to +85°C
- No load input power <0.3 W (acc. ErP directive)
- High efficiency up to 94%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty

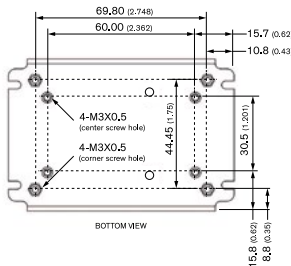
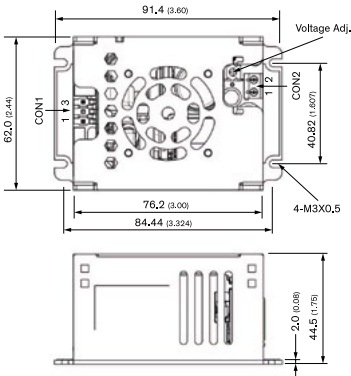
Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	AC (N) / DC-	1	+Vout
3	AC (L) / DC+	2	-Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 180-112A-M	12 VDC (11.0 - 13.0 VDC)	15 A	92%
TPI 180-115A-M	15 VDC (13.8 - 16.2 VDC)	12 A	92%
TPI 180-124A-M	24 VDC (22.1 - 25.9 VDC)	7.5 A	94%
TPI 180-136A-M	36 VDC (33.1 - 38.9 VDC)	5 A	93%
TPI 180-148A-M	48 VDC (44.2 - 51.8 VDC)	3.75 A	93%
TPI 180-153A-M	53 VDC (48.8 - 57.2 VDC)	3.40 A	93%

TPI 180-M

NEW!

180 Watt



- 180 Watt encased power supplies in a 3.6" x 2.44" package
- Compact and cost efficient design
- I/O reinforced isolation 3000 VAC
- IEC/EN/UL 62368-1 approvals
- Operating temperature range -40°C to +85°C
- No load input power < 0.3 W (acc. ErP directive)
- High efficiency up to 94%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty

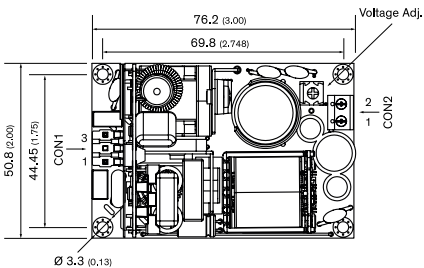
Pinout			
CON1		CON2	
Pin	Function	Pin	Function
1	AC (N) / DC-	1	+Vout
3	AC (L) / DC+	2	-Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 180-112-M	12 VDC (11.0 - 13.0 VDC)	15 A	92%
TPI 180-115-M	15 VDC (13.8 - 16.2 VDC)	12 A	92%
TPI 180-124-M	24 VDC (22.1 - 25.9 VDC)	7.5 A	94%
TPI 180-136-M	36 VDC (33.1 - 38.9 VDC)	5 A	93%
TPI 180-148-M	48 VDC (44.2 - 51.8 VDC)	3.75 A	93%
TPI 180-153-M	53 VDC (48.8 - 57.2 VDC)	3.40 A	93%

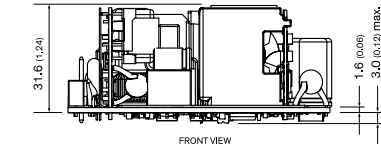
TPP 180A-M

NEW!

180 Watt



- 180 Watt open frame power supply in 3" x 2" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current <100 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty



Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	AC (N) / DC-	1	+Vout
3	AC (L) / DC+	2	-Vout

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPP 180-112A-M	12 VDC (11.0 - 13.0 VDC)	15 A	92%
TPP 180-115A-M	15 VDC (13.8 - 16.2 VDC)	12 A	92%
TPP 180-124A-M	24 VDC (22.1 - 25.9 VDC)	7.5 A	94%
TPP 180-136A-M	36 VDC (33.1 - 38.9 VDC)	5 A	93%
TPP 180-148A-M	48 VDC (44.2 - 51.8 VDC)	3.75 A	93%
TPP 180-153A-M	53 VDC (48.8 - 57.2 VDC)	3.40 A	93%

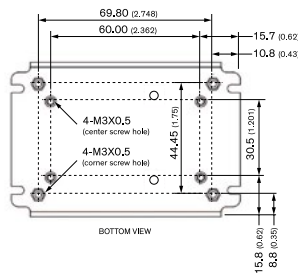
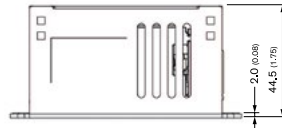
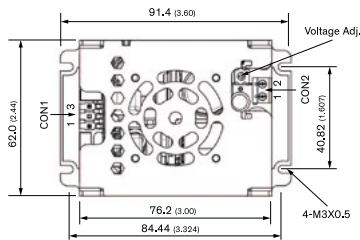
TPP 180-M

NEW!

180 Watt



- 180 Watt encased power supply in 3.6" x 2.44" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current <100 μ A rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty

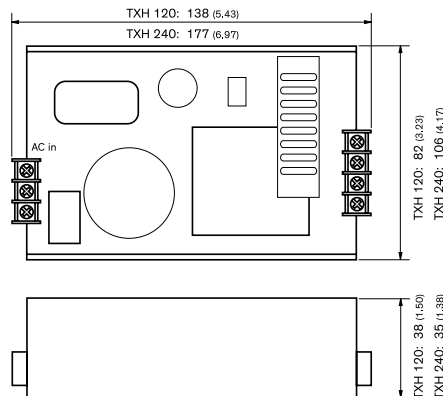
**Pinout**

Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	AC (N) / DC-	1	+Vout
3	AC (L) / DC+	2	-Vout

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 180-112-M	12 VDC (11.0 – 13.0 VDC)	15 A	92%
TPP 180-115-M	15 VDC (13.8 – 16.2 VDC)	12 A	92%
TPP 180-124-M	24 VDC (22.1 – 25.9 VDC)	7.5 A	94%
TPP 180-136-M	36 VDC (33.1 – 38.9 VDC)	5 A	93%
TPP 180-148-M	48 VDC (44.2 – 51.8 VDC)	3.75 A	93%
TPP 180-153-M	53 VDC (48.8 – 57.2 VDC)	3.40 A	93%

TXH

120–240 Watt

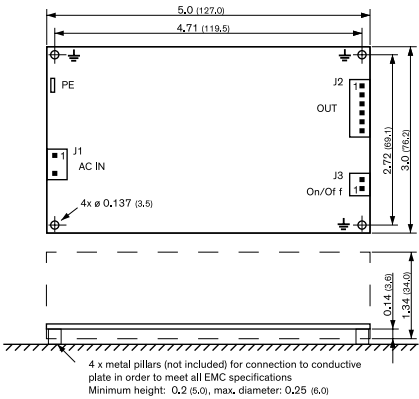


- Compact U-bracket power supplies with optional cover
- Universal input range 90 to 264 VAC
- 5656 VDC I/O-isolation
- High efficiency up to 93%
- Operating temperature range: -25°C to +70°C max.
- Features active power factor correction
- Current limitation, short circuit and over voltage protection

Model	Output Voltage nom.	Output Current max.	Efficiency
TXH 120-112	12 VDC	10'000 mA	90%
TXH 120-124	24 VDC	5'000 mA	93%
TXH 120-148	48 VDC	2'500 mA	93%
TXH 240-112	12 VDC	20'000 mA	90%
TXH 240-124	24 VDC	10'000 mA	92%
TXH 240-148	48 VDC	5'000 mA	93%

TOP 200

200 Watt



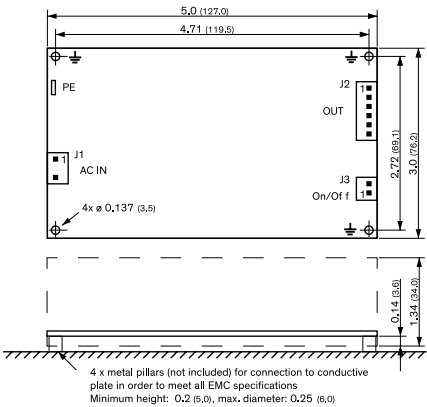
- Highest power density in 5.0" x 3.0" footprint
- Supplies 200 W (convection cooling!)
- Highest efficiency up to 95%
- Operating temperature range -25°C to +70°C
- Universal input 85 – 264 VAC
- Compliance with EN 61000-3-2
- Power Back immunity
- Low leakage current
- Protection class I and class II
- 3-year product warranty

J1		J2		J3	
Pin	Input	Pin	Output	Pin	Remote
1	AC in L	1	+ Vout	1	-
2	AC in N	2	+ Vout	2	+
		3	+ Vout		
		4	- Vout		
		5	- Vout		
		6	- Vout		

Model	Output Power max.	Output Voltage (fixed)	Output Current max.
TOP 200-112	200 W	12 VDC	16 A
TOP 200-115		15 VDC	13 A
TOP 200-124		24 VDC	8.3 A
TOP 200-148		48 VDC	4.2 A

TOP 200C

200 Watt



- Highest power density in 5.0" x 3.0" footprint
- Supplies 200 W (convection cooling!)
- Highest efficiency up to 95%
- Operating temperature range -25°C to +70°C
- Universal input 85 – 264 VAC
- Compliance with EN 61000-3-2
- Power Back immunity
- Low leakage current
- Protection class I and class II
- 3-year product warranty

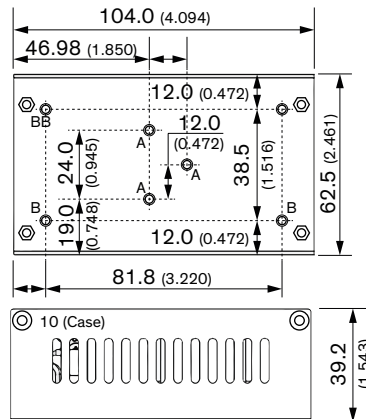
J1		J2		J3	
Pin	Input	Pin	Output	Pin	Remote
1	AC in L	1	+ Vout	1	-
2	AC in N	2	+ Vout	2	+
		3	+ Vout		
		4	- Vout		
		5	- Vout		
		6	- Vout		

Model	Output Power max.	Output Voltage (fixed)	Output Current max.
TOP 200-112C	200 W	12 VDC	16 A
TOP 200-115C		15 VDC	13 A
TOP 200-124C		24 VDC	8.3 A
TOP 200-148C		48 VDC	4.2 A

TCI 240

NEW – under development

240 Watt



- High power-density: 240 Watt in 4.1" x 2.46" package (encased)
- Unique conduction cooled design
- Over voltage category III
- I/O isolation 3000 VAC
- Certification according to IEC/EN/UL 62368-1
- Operating temperature -30°C to 80°C
- Active power factor correction > 0.9
- High efficiency up to 94%
- Protection class II prepared
- 3-year product warranty

Pin Connectors

Input		Output	
Pin	Function	Pin	Function
1	AC IN (N)	4, 5, 6	+Vout
2	No Pin	7, 8, 9	-Vout
3	AC IN (L)		

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TCI 240-112-J	12 VDC	20'000 mA	92.5%
TCI 240-124-J	24 VDC	10'000 mA	93%
TCI 240-148-J	48 VDC	5'000 mA	94%

Mating input connector:

JST housing: VHR-3N
JST crimp terminals: SVH-41T-P1.1

Mating output connector:

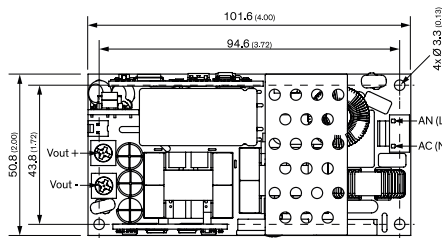
JST housing: VHR-4N
JST crimp terminals: SVH-41T-P1.1

Case	
Pin	Function
10	PE

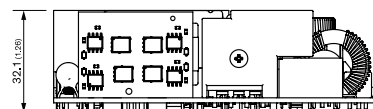
TPP 250A

NEW!

250 Watt



- 250 Watt open frame power supply in 4" x 2" package
- Industrial (62368-1), Medical (60601-1, 2 x MOPP) and Household (60335-1) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Operating temperature range -40°C to $+70^{\circ}\text{C}$
- Active PFC > 0.95
- High efficiency up to 94%
- Isolation (4000 VAC) and leakage current ($< 100 \mu\text{A}$) rated for BF applications
- Operating up to 5000 m altitude
- 5-year product warranty

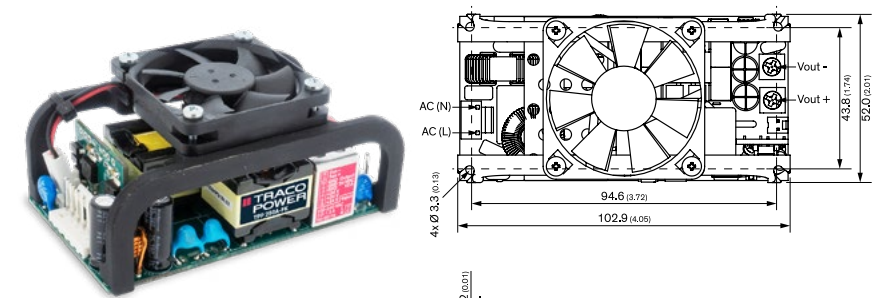


Model	Output Voltage nom. (ajustable)	Output Current max.	Efficiency typ.
TPP 250-112A	12 VDC (12 – 12.36 VDC)	20.8 A	tbd
TPP 250-124A	24 VDC (24 – 24.72 VDC)	10.4 A	tbd
TPP 250-128A	28 VDC (28 – 28.84 VDC)	8.9 A	tbd
TPP 250-136A	36 VDC (36 – 37.08 VDC)	7 A	tbd
TPP 250-148A	48 VDC (48 – 49.44 VDC)	5.2 A	tbd

TPP 250A-FK

NEW!

250 Watt



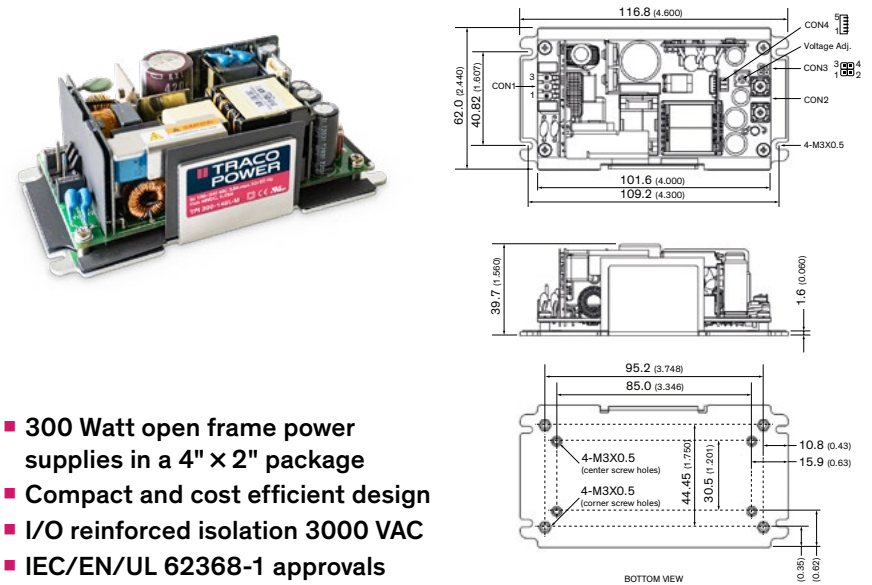
- 250 Watt open frame power supply in 4" x 2" package with Fan-Kit
- Industrial (62368-1), Medical (60601-1, 2 x MOPP) and Household (60335-1) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Operating temperature range -40°C to +70°C
- Active PFC > 0.95
- High efficiency up to 94%
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- Operating up to 5000 m altitude
- 5-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 250-112A-FK	12 VDC (12 – 12.36 VDC)	20.8 A	tbd
TPP 250-124A-FK	24 VDC (24 – 24.72 VDC)	10.4 A	tbd
TPP 250-128A-FK	28 VDC (28 – 28.84 VDC)	8.9 A	tbd
TPP 250-136A-FK	36 VDC (36 – 37.08 VDC)	7 A	tbd
TPP 250-148A-FK	48 VDC (48 – 49.44 VDC)	5.2 A	tbd

TPI 300L-M

NEW!

300 Watt



- 300 Watt open frame power supplies in a 4" x 2" package
- Compact and cost efficient design
- I/O reinforced isolation 3000 VAC
- IEC/EN/UL 62368-1 approvals
- Operating temperature range -40°C to +85°C
- No load input power < 0.3 W (acc. ErP directive)
- High efficiency up to 93%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 300-112L-M	12 VDC (10.8 – 13.2 VDC)	25 A	91%
TPI 300-115L-M	15 VDC (13.5 – 16.5 VDC)	20 A	92%
TPI 300-124L-M	24 VDC (21.6 – 26.4 VDC)	12.5 A	93%
TPI 300-136L-M	36 VDC (32.4 – 39.6 VDC)	8.3 A	93%
TPI 300-148L-M	48 VDC (43.2 – 52.8 VDC)	6.25 A	93%
TPI 300-153L-M	53 VDC (47.7 – 58.3 VDC)	5.67 A	93%

CON1:
Molex housing 09-50-8031
Molex crimp terminals 2478,6838,45570

CON2:
KST ring terminal RVS2-3.7

CON3:
Molex housing 90143-004
Molex crimp terminals 90119

CON4:
Molex housing 51021-0500
Molex crimp terminals 50058, 50078

Max. screw penetration depth: 3.3 (0.130)
Setup screw locked torque: max. 5 kgfcm / 0.49 Nm
CON2 screw locked torque: max. 16.8 kgfcm / 1.65 Nm
wires 24–14 AWG

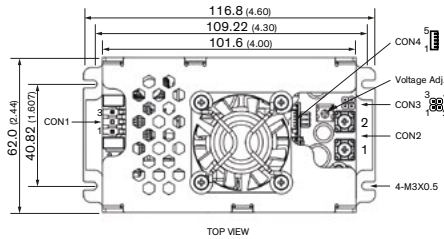
Connectors – Connection			
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	AC (L) / DC (+)	1	+Vout
3	AN (N) / DC (-)	2	-Vout

Auxiliary			
CON3		CON4	
Pin	Function	Pin	Function
1	+Fan	1	+Standby
2	-Fan	2	-Standby
3	+Sense	3	+PG
4	-Sense	4	-Remote
		5	+Remote

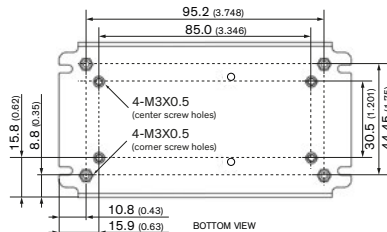
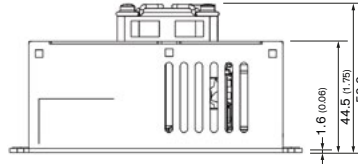
TPI 300-M

NEW!

300 Watt



TOP VIEW



BOTTOM VIEW

Input**CON1**

Pin	Function
1	AC (L) / DC (+)
3	AC (N) / DC (-)

Output**CON2**

Pin	Function
1	+Vout
2	-Vout

- 300 Watt encased power supplies in a 4.6" x 2.44" package
- Compact and cost efficient design
- I/O reinforced isolation 3000 VAC
- IEC/EN/UL 62368-1 approvals
- Operating temperature range -40°C to +85°C
- No load input power < 0.3 W (acc. ErP directive)
- High efficiency up to 93%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPI 300-112-M	12 VDC (10.8–13.2 VDC)	25 A	91%
TPI 300-115-M	15 VDC (13.5–16.5 VDC)	20 A	92%
TPI 300-124-M	24 VDC (21.6–26.4 VDC)	12.5 A	93%
TPI 300-136-M	36 VDC (32.4–39.6 VDC)	8.3 A	93%
TPI 300-148-M	48 VDC (43.2–52.8 VDC)	6.25 A	93%
TPI 300-153-M	53 VDC (47.7–58.3 VDC)	5.67 A	93%

Max. screw penetration depth: 3.3 (0.130)

Setup screw locked torque: max. 2.5 kgfcm / 0.25 Nm

CON2 screw locked torque: max. 16.8 kgfcm / 1.65 Nm wires 24–14 AWG

Auxiliary**CON3**

Pin	Function
1	+Fan
2	-Fan
3	+V Sense
4	-V Sense

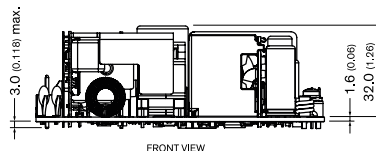
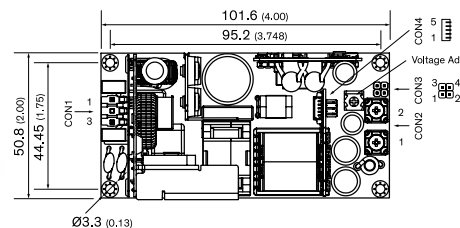
Auxiliary**CON4**

Pin	Function
1	+Standby
2	-Standby
3	+PG
4	-Remote
5	+Remote

TPP 300A-M

NEW!

300 Watt



FRONT VIEW

Input**CON1**

Pin	Function
1	AC (L) / DC (+)
3	AC (N) / DC (-)

Output**CON2**

Pin	Function
1	+Vout
2	-Vout

- 300 Watt open frame power supply in 4" x 2" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current < 100 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 300-112A-M	12 VDC (10.8–13.2 VDC)	25 A	91%
TPP 300-115A-M	15 VDC (13.5–16.5 VDC)	20 A	92%
TPP 300-124A-M	24 VDC (21.6–26.4 VDC)	12.5 A	93%
TPP 300-136A-M	36 VDC (32.4–39.6 VDC)	8.3 A	93%
TPP 300-148A-M	48 VDC (43.2–52.8 VDC)	6.25 A	93%
TPP 300-153A-M	53 VDC (47.7–58.3 VDC)	5.67 A	93%

Auxiliary**CON3**

Pin	Function
1	+Fan
2	-Fan
3	+Sense
4	-Sense

Auxiliary**CON4**

Pin	Function
1	+Standby
2	-Standby
3	PG
4	-Remote
5	+Remote

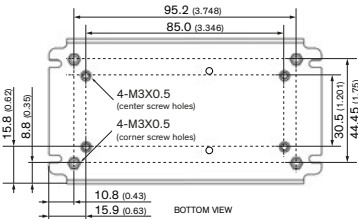
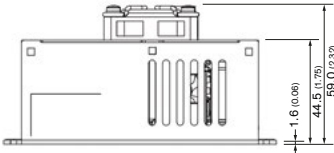
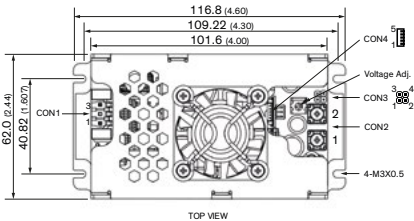
TPP 300-M

NEW!

300 Watt



- 300 Watt encased power supply in 4.6" x 2.44" package
- IEC/EN/ES 60601-1 3rd ed. 2 x MOPP and IEC/EN/UL 62368-1
- Low leakage current <100 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance according to IEC 60601-1-2 ed. 4
- Protection class II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive
- 5-year product warranty



Input		Output	
CON1		CON2	
Pin	Function	Pin	Function
1	AN (N)	1	+Vout
2	–	2	–Vout
3	AC (L)		

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 300-112-M	12 VDC (10.8 – 13.2 VDC)	25 A	91%
TPP 300-115-M	15 VDC (13.5 – 16.5 VDC)	20 A	91%
TPP 300-124-M	24 VDC (21.6 – 26.4 VDC)	12.5 A	93%
TPP 300-136-M	36 VDC (32.4 – 39.6 VDC)	8.3 A	93%
TPP 300-148-M	48 VDC (43.2 – 52.8 VDC)	6.25 A	93%
TPP 300-153-M	53 VDC (47.7 – 58.3 VDC)	5.67 A	93%

Max. screw penetration depth: 3.3 (0.130)

Setup screw locked torque: max. 2.5 kgfcm / 0.25 Nm

CON2 screw locked torque: max. 16.8 kgfcm / 1.65 Nm wires 24 – 14 AWG

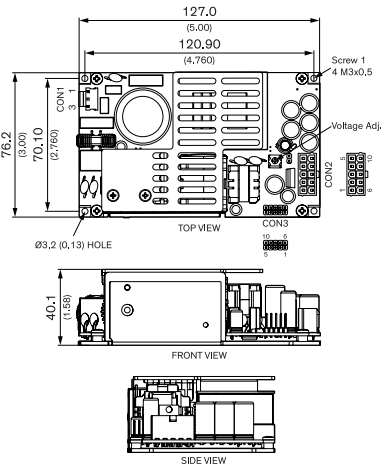
Auxiliary		Auxiliary	
CON3		CON4	
Pin	Function	Pin	Function
1	+ Fan	1	+ Standby
2	– Fan	2	– Standby
3	+ Sense	3	PG
4	– Sense	4	Control
		5	Remote

TPP 450BA

450 Watt



- 450 Watt open frame power supply in 5" x 3" package
- 450 Watt with forced air cooling, up to 320 Watt convection cooled without derating up to 50°C
- Industrial (62368-1) and Medical (60601-1, 2 x MOPP) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Protection Class II prepared
- Risk management process according to ISO 14971 incl. risk management file
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- 5 V standby output, Remote On/Off, DC-OK Signal, variable fan speed
- Operating up to 5000 m altitude
- 5-year product warranty



Input		Auxiliary	
CON1		CON3	
Pin	Function	Pin	Function
1	AC (L)	1	+ Fan
3	AC (N)	2	+ Sense
		3	+ Remote
		4	PG
		5	+ Standby
		6	– Fan
		7	– Sense
		8	– Remote
		9	No Pin
		10	– Standby

Output	
CON2	
Pin*	Function
1–5	+Vout
6–10	–Vout

Model	Output Voltage nom. (adjustable)	Output Current max. (Forced air cooling)	Efficiency typ.
TPP 450-112BA-M	12 VDC (11.0 – 13.0 VDC)	37'500 mA	91%
TPP 450-115BA-M	15 VDC (13.8 – 16.2 VDC)	30'000 mA	92%
TPP 450-124BA-M	24 VDC (22.1 – 25.9 VDC)	18'750 mA	93%
TPP 450-128BA-M	28 VDC (25.8 – 30.2 VDC)	16'100 mA	93%
TPP 450-136BA-M	36 VDC (33.1 – 38.9 VDC)	12'500 mA	93%
TPP 450-148BA-M	48 VDC (44.2 – 51.8 VDC)	9'400 mA	94%
TPP 450-153BA-M	53 VDC (48.8 – 57.2 VDC)	8'550 mA	94%

Output Current max. (Natural convection):

20'800 mA

16'600 mA

13'300 mA

11'400 mA

8'900 mA

6'650 mA

6'050 mA

*Terminal rated for 13 A max. (at higher current connection has to be split)

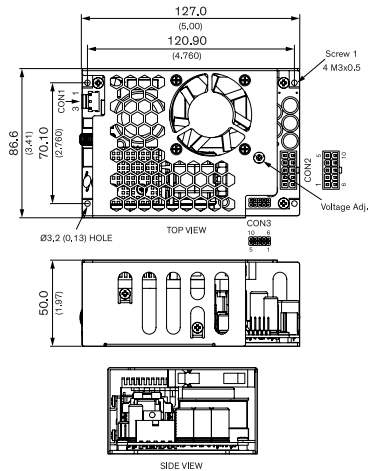
CON1:
Molex housing:
09-50-8031
Molex crimp terminals:
2478,6838,45570

CON2:
Molex housing:
39-01-2105
Molex crimp terminals:
5556,45750

CON3:
Molex housing:
90143-0010
Molex crimp terminals:
90119

TPP 450B

450 Watt



- 450 Watt encased power supply in 5.8" × 3" package
- 450 Watt with forced air cooling, up to 320 Watt convection cooled without derating up to 50°C
- Industrial (62368-1) and Medical (60601-1, 2 × MOPP) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Protection Class II prepared
- Risk management process according to ISO 14971 incl. risk management file
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- 5 V standby output, Remote On/Off, DC-OK Signal, variable fan speed
- Operating up to 5000 m altitude
- 5-year product warranty

Input	
CON1	
Pin	Function
1	AC (L)
3	AC (N)

Output	
CON2	
Pin*	Function
1–5	–Vout
6–10	+Vout

Auxiliary	
CON3	
Pin	Function
1	+Fan
2	+Sense
3	+Remote
4	PG
5	+Standby
6	–Fan
7	–Sense
8	–Remote
9	No Pin
10	–Standby

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 450-112B-M	12 VDC (11.0 – 13.0 VDC)	37'500 mA	91%
TPP 450-115B-M	15 VDC (13.8 – 16.2 VDC)	30'000 mA	92%
TPP 450-124B-M	24 VDC (22.1 – 25.9 VDC)	18'750 mA	93%
TPP 450-128B-M	28 VDC (25.8 – 30.2 VDC)	16'100 mA	93%
TPP 450-136B-M	36 VDC (33.1 – 38.9 VDC)	12'500 mA	93%
TPP 450-148B-M	48 VDC (44.2 – 51.8 VDC)	9'400 mA	94%
TPP 450-153B-M	53 VDC (48.8 – 57.2 VDC)	8'550 mA	94%

*Terminal rated for 13 A max. (at higher current connection has to be split)

CON1:

Molex housing:
09-50-8031
Molex crimp terminals:
2478,6838,45570

CON2:

Molex housing:
39-01-2105
Molex crimp terminals:
5556,45750

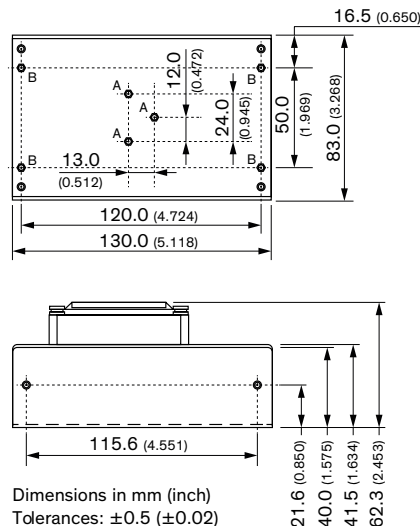
CON3:

Molex housing:
90143-0010
Molex crimp terminals:
90119

TCI 500

NEW – under development

500 Watt



Dimensions in mm (inch)
Tolerances: ±0.5 (±0.02)

Pinout			
Pin	Screw Terminals	Pin	Connector CN1
1	AC IN (N)	1	–5V Standby Power
2	No Pin	2	+5V Standby Power
3	AC IN (L)	3	GND
4	+Vout	4	Power Good
5	–Vout	5	–Remote On/Off
		6	+Remote On/Off
		7	–Sense
		8	+Sense

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TCI 500-112-T	12 VDC	41'500 mA	90%
TCI 500-124-T	24 VDC	20'800 mA	90.5%
TCI 500-148-T	48 VDC	10'410 mA	91.5%

NC: Not connected

Output Screw Terminals:

M3.5 Pan head screw, max. Torque: 0.9 Nm

Connector CN1: JST series

mates with JST crimp terminal: SPHD-001T-P0.5
and terminal housing: PHDR-08VS

Case	
Pin	Function
A, B	PE

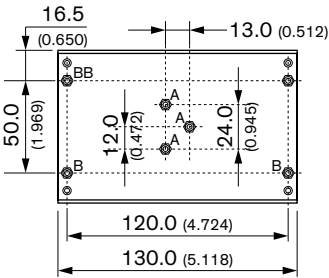
- High power-density: 500 Watt in 5.1" × 3.26" package (encased)
- Unique conduction cooled design
- Over voltage category III
- I/O isolation 3000 VAC
- Certification according to IEC/EN/UL 62368-1
- Operating temperature –30°C to 80°C
- Active power factor correction >0.9
- High efficiency up to 91.5%
- Protection class II prepared
- 3-year product warranty

TCI 500U

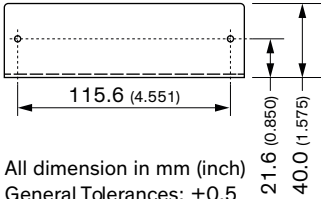
NEW – under development

500 Watt





16.5 (0.650)
13.0 (0.512)
50.0 (1.969)
12.0 (0.472)
24.0 (0.945)
120.0 (4.724)
130.0 (5.118)



115.6 (4.551)
21.6 (0.850)
40.0 (1.575)

All dimension in mm (inch)
General Tolerances: ± 0.5 (± 0.020)

- High power-density: 500 Watt in 5.1" × 3.26" package (U-Bracket)
- Unique conduction cooled design
- Over voltage category III
- I/O isolation 3000 VAC
- Certification according to IEC/EN/UL 62368-1
- Operating temperature -30°C to 80°C
- Active power factor correction >0.9
- High efficiency up to 92%
- Protection class II prepared
- 3-year product warranty

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TCI 500-112U-T	12 VDC	41'500 mA	90.5%
TCI 500-124U-T	24 VDC	20'800 mA	91%
TCI 500-148U-T	48 VDC	10'410 mA	92%

Output Screw Terminals:
M3.5 Pan head screw, max. Torque: 0.9 Nm

Input: JST series
mates with JST crimp terminal: SVH-41T-P1.1
and terminal housing: VHR-3N

Connector CN1: JST series
mates with JST crimp terminals: SPHD-001T-P0.5
and terminal housing: PHDR-08VS

Connector FAN: JST series
mates with JST crimp terminals: SXH-002T-P0.6
and terminal housing: XHP-2

Connector FAN	
Pin	+12V
A, B	GND

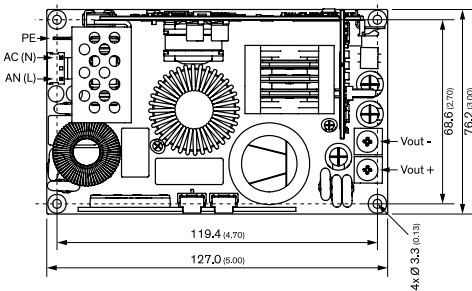
Case	
Pin	PE
A, B	

TPP 600A

NEW!

600 Watt





PE
AC (N)
AN (L)
Vout -
Vout +
119.4 (4.70)
127.0 (5.00)
68.6 (2.70)
76.2 (3.00)
4x $\varnothing 3.3$ (0.13)



38.1 (1.5)

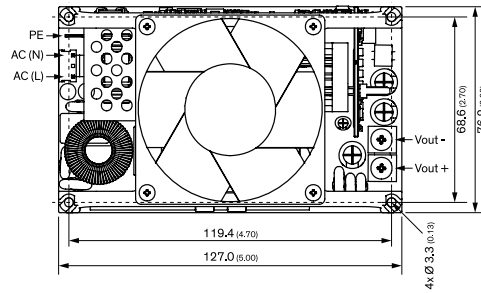
- 600 Watt open frame power supply in 5" × 3" package
- Industrial (62368-1), Medical (60601-1, 2 × MOPP) and Household (60335-1) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Operating temperature range -40°C to $+70^{\circ}\text{C}$
- Active PFC > 0.95
- High efficiency up to 94%
- Isolation (4000 VAC) and leakage current ($<100\ \mu\text{A}$) rated for BF applications
- Operating up to 5000 m altitude
- 5-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 600-124A	24 VDC (24 – 24.72 VDC)	25 A	tbd
TPP 600-128A	28 VDC (28 – 28.84 VDC)	21.4 A	tbd
TPP 600-136A	36 VDC (36 – 37.08 VDC)	16.7 A	tbd
TPP 600-148A	48 VDC (48 – 49.44 VDC)	12.5 A	tbd

TPP 600A-FK

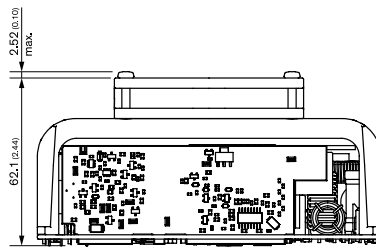
NEW!

600 Watt



Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 600-124A-FK	24 VDC (24 – 24.72 VDC)	25 A	tbd
TPP 600-128A-FK	28 VDC (28 – 28.84 VDC)	21.4 A	tbd
TPP 600-136A-FK	36 VDC (36 – 37.08 VDC)	16.7 A	tbd
TPP 600-148A-FK	48 VDC (48 – 49.44 VDC)	12.5 A	tbd

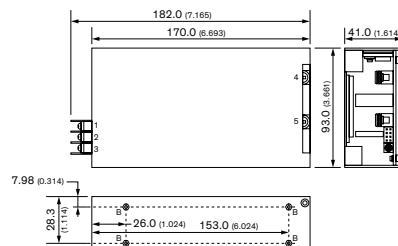
- 600 Watt open frame power supply in 5" x 3" package with Fan-Kit
- Industrial (62368-1), Medical (60601-1, 2 x MOPP) and Household (60335-1) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Operating temperature range –40°C to +70°C
- Active PFC > 0.95
- High efficiency up to 94%
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- Operating up to 5000 m altitude
- 5-year product warranty



TPI 700

NEW – under development

700 Watt



Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPI 700-112	12 VDC	52'080 mA	89%
TPI 700-115	15 VDC	41'660 mA	90%
TPI 700-124	24 VDC	29'160 mA	91%
TPI 700-148	48 VDC	14'580 mA	92%

- High power-density: 700 Watt in 6.7" x 3.66" package (encased)
- I/O isolation 4000 VAC
- Certification according to IEC/EN/UL 62368-1
- Operating temperature –30°C to 70°C
- Active power factor correction >0.9
- High efficiency up to 92%
- Load share function
- Standby power 5V / 1A
- Protection class II prepared
- 3-year product warranty

Pinout			
Pin	Screw Terminals	Pin	Connector CN1
1	FG	1	+Sense
2	AC IN (N)	2	–Sense
3	AC IN (L)	3	NC
4	+Vout	4	–5V Standby Power
5	–Vout	5	GND / –Remote On/Off
		6	Remote On/Off
		7	Power Good
		8	+5V Standby Power

NC: Not connected

Output Screw Terminals:

M5 Pan head screw, max. Torque: 0.9 Nm

Connector CN1: JST series

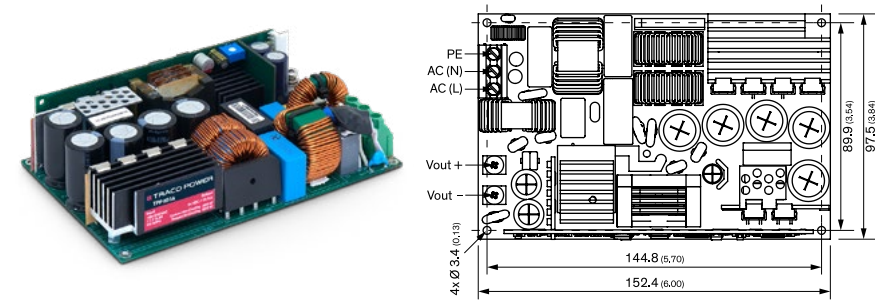
mates with JST crimp terminal: SPHD-001T-P0.5 and terminal housing: PHDR-08VS

Case	
Pin	Function
A, B	PE

TPP 850A

NEW!

850 Watt



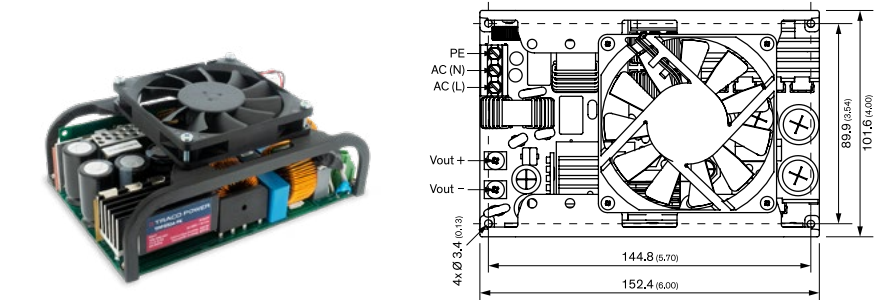
- 850 Watt open frame power supply in 6" × 4" package
- Industrial (62368-1), Medical (60601-1, 2 × MOPP) and Household (60335-1) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Operating temperature range –40°C to +70°C
- Active PFC > 0.95
- High efficiency up to 94%
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- Operating up to 5000 m altitude
- 5-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 850-124A	24 VDC (24 – 24.72 VDC)	35.4 A	tbd
TPP 850-128A	28 VDC (28 – 28.84 VDC)	30.4 A	tbd
TPP 850-136A	36 VDC (36 – 37.08 VDC)	23.6 A	tbd
TPP 850-148A	48 VDC (48 – 49.44 VDC)	17.7 A	tbd

TPP 850A-FK

NEW!

850 Watt



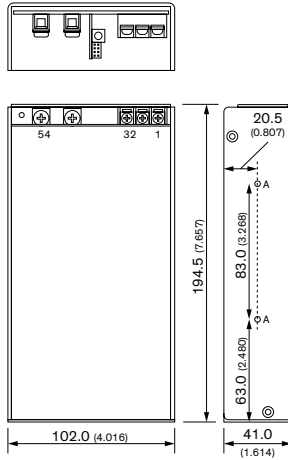
- 850 Watt open frame power supply in 6" × 4" package with Fan-Kit
- Industrial (62368-1), Medical (60601-1, 2 × MOPP) and Household (60335-1) approvals
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Operating temperature range –40°C to +70°C
- Active PFC > 0.95
- High efficiency up to 94%
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- Operating up to 5000 m altitude
- 5-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 850-124A-FK	24 VDC (24 – 24.72 VDC)	35.4 A	tbd
TPP 850-128A-FK	28 VDC (28 – 28.84 VDC)	30.4 A	tbd
TPP 850-136A-FK	36 VDC (36 – 37.08 VDC)	23.6 A	tbd
TPP 850-148A-FK	48 VDC (48 – 49.44 VDC)	17.7 A	tbd

TPI 1000

NEW – under development

1000 Watt



Dimensions in mm (inch)
Tolerances: ± 0.5 (± 0.02)

- High power-density: 1000 Watt in 7.67" x 4.02" package (encased)
- I/O isolation 4300 VAC
- Certification according to IEC/EN/UL 62368-1
- Operating temperature -20°C to 70°C
- Active power factor correction >0.9
- High efficiency up to 93%
- Over Voltage Category OVC III
- Standby power 5W/ 1A and load share function
- Protection class II prepared
- 3-year product warranty

Pinout			
Pin	Screw Terminals	Pin	Connector CN1
1	AN IN (N)	1	+Sense
2	AC IN (L)	2	-Sense
3	PE	3	NC
4	-Vout	4	-5V Standby Power
5	+Vout	5	GND / -RC
		6	Remote On/Off
		7	Power Good
		8	+5V Standby Power

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TPI 1000-112	12 VDC	66.67 A	89%
TPI 1000-124	24 VDC	41.67 A	92%
TPI 1000-148	48 VDC	20.84 A	93%

NC: Not connected

Output Screw Terminals:

M5 Pan head screw, max. Torque: 0.9 Nm

Connector CN1: JST series

mates with JST crimp terminal: SPHD-001T-P0.5 and terminal housing: PHDR-08VS

Outdoot Power Supply

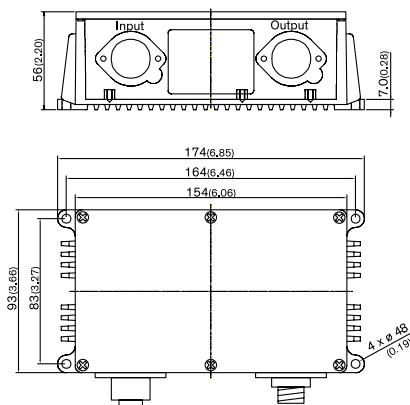
120 watt

The TEX series are industrial power supplies in a rugged die-cast aluminium enclosure. The design is water (incl. sea water), ice, oil and dust proof and complies with IP67 and NEMA 4X standards. They feature a high operating temperature range from -40°C up to 85°C . Safety approval includes ATEX 94/9/EC and IECEx for applications in hazardous locations.



TEX 120

120 Watt



- Rugged isolated power supplies for harsh outdoor environments
- Die-cast aluminium housing
- Dust, water (incl. salt water), ice and oil resistant enclosure
- IP67 and NEMA 4X rated
- Connection via waterproof I/O plug-connectors
- Shock & vibration proof construction
- Operating temp. range -40°C to $+85^{\circ}\text{C}$
- Universal input 85 to 264 VAC
- Output voltage adjustable
- DC-OK indicator
- Low ripple and noise
- Worldwide safety approvals
- Class I, zone 2 approval incl. ATEX certification (tested in accordance to IECEx)
- 3-year product warranty

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TEX 120-112	12 VDC	8.0 A	87%
TEX 120-124	24 VDC	5.0 A	87%

DIN-Rail Power Supplies

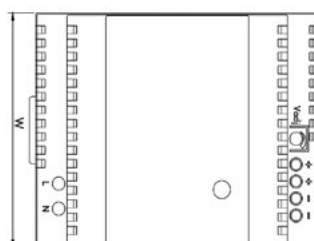
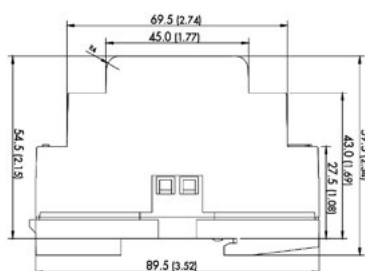
15 – 600 watt

Standard DIN-rail power supplies for Industrial, automotive, commercial and communications applications, from 6 Watt up to 600 Watt, worldwide safety approvals, hazloc models with limited power or ATEX certification.



TBL

15–150 Watt



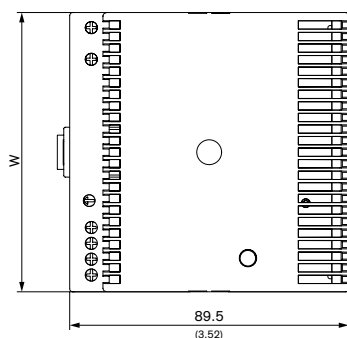
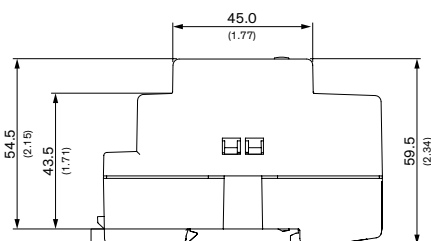
- Low profile, module depth only 55 mm
- Fits into flat control panels used in building automation
- Safety class II product
- UL 1310 class II, NEC class 2 compliance (models up to 90 W)
- UL 508 listed
- Universal input range 85 to 264 VAC (auto range for 150 Watt models)
- Operating temperature range: –25°C to +70°C max.
- Adjustable output voltage
- Short circuit and overload protection
- DC–OK indicator
- Easy snap-on mounting on DIN-rail or with wall mounting bracket (included)
- 3-year product warranty

Dimension Table		Weight
Model	Width [W]	[g]
TBL 015	26.3 mm (1.04)	100
TBL 030	52.5 mm (2.07)	160
TBL 060	70.0 mm (2.76)	230
TBL 090	105 mm (4.13)	340
TBL 150	175 mm (6.89)	625

Model	Output Power (max.)	Output Voltage* (nom.)(adjust.)	Output Current (max.)	Efficiency (typ.)
TBL 015-105	12 W	5.0 VDC	2.4 A	73%
TBL 015-112	15 W	12 VDC	1.25 A	79%
TBL 015-124	15 W	24 VDC	0.63 A	81%
TBL 030-112	30 W	12 VDC	2.5 A	81%
TBL 030-124	30 W	24 VDC	1.25 A	83%
TBL 060-112	54 W	12 VDC	4.5 A	83%
TBL 060-124	60 W	24 VDC	2.5 A	85%
TBL 090-112	72 W	12 VDC	6.0 A	84%
TBL 090-124	90 W	24 VDC	3.75 A	86%
TBL 150-112	120 W	12 VDC	10 A	84%
TBL 150-124	150 W	24 VDC	6.25 A	87%

TBLC

6–90 Watt



- Low profile, module depth only 55 mm
- Suitable for mounting in domestic installation panels
- Very high efficiency and low standby power -> compliance to ECO-Standard
- High power density
- Low output ripples and spikes
- For distributed power
- UL 1310 class II, NEC class 2 compliance
- UL 508 listed
- Universal input range 85 to 264 VAC
- Operating temperature range: -25°C to +70°C
- Adjustable output voltage
- Short circuit and overload protection
- DC-OK indicator LED
- 3-year product warranty

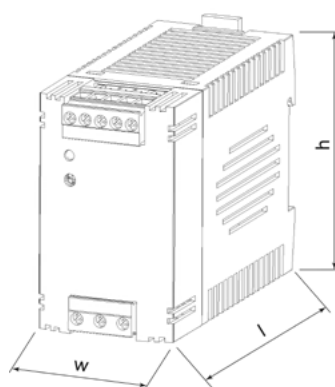
Dimension Table		Weight
Model	Width [W]	[g]
TBLC 06	18 mm (0.71)	60
TBLC 15	27 mm (1.08)	80
TBLC 25	36 mm (1.42)	110
TBLC 50	54 mm (2.13)	180
TBLC 75	72 mm (2.83)	220
TBLC 90	90 mm (3.54)	280

Model	Output Power (max.)	Output Voltage* (nom.)(adjust.)	Output Current (max.)	Efficiency (typ.)
TBLC 06-105	6 W	5.0 VDC	1.2 A	74%
TBLC 06-112	6 W	12 VDC	0.5 A	81%
TBLC 06-124	6 W	24 VDC	0.25 A	79%
TBLC 15-105	12 W	5.0 VDC	2.4 A	81%
TBLC 15-112	15 W	12 VDC	1.25 A	85%
TBLC 15-124	15 W	24 VDC	0.63 A	85%
TBLC 25-105	20 W	5.0 VDC	4.0 A	82%
TBLC 25-112	24 W	12 VDC	2.0 A	86%
TBLC 25-124	25 W	24 VDC	1.05 A	87%
TBLC 50-112	48 W	12 VDC	4.0 A	88%
TBLC 50-124	50 W	24 VDC	2.1 A	89%
TBLC 75-112	72 W	12 VDC	6.0 A	89%
TBLC 75-124	75 W	24 VDC	3.1 A	89%
TBLC 90-112	90 W	12 VDC	7.5 A	90%
TBLC 90-124	90 W	24 VDC	3.75 A	90%

* Output voltage can be adjusted as indicated. However, output power has to be maintained at nominal value. This means the output nominal current has to be reduced in accordance with the increase of output voltage.

TCL

24–240 Watt



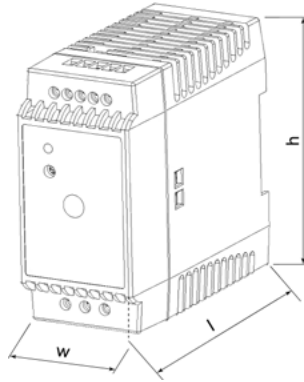
- For industrial, office and residential applications
- Ultracompact plastic housing
- Connection by spring clamp terminals or detachable screw terminal block
- Reliable snap-on mounting on DIN-rails
- Adaptor for wall mounting
- Universal input 85–264 VAC, 50/60 Hz
- Models with 5, 12, 24 & 48 VDC output
- Output voltage adjustable
- Power OK signal
- Low ripple and noise
- Overload and short-circuit protection
- Parallel operation possible
- Worldwide safety approvals
- Redundancy module
- 3-year product warranty

Dimension Table			
Model	Width [W]	Length [L]	Height [h]
TCL 024	27 mm (1.06)	100 mm (3.94)	75 mm (2.95)
TCL 60	45 mm (1.77)	100 mm (3.94)	75 mm (2.95)
TCL 120	85 mm (3.35)	100 mm (3.94)	75 mm (2.95)
TCL 240	85 mm (3.35)	125 mm (4.92)	110 mm (4.33)

Model	Input Voltage Ranges	Output Power max.	Output Voltage nom.	Output Current (max.)	Connection
TCL 024-105	85–264 VAC Universal Input 50/60 Hz	20 W	5 VDC	4.0 A	Detachable screw terminal blocks
TCL 024-112		24 W	24 VDC	2.0 A	
TCL 024-124		48 W	12 VDC	4.0 A	
TCL 060-112		60 W	24 VDC	2.5 A	
TCL 060-124	85–375 VDC	48 W	48 VDC	1.25 A	Spring clamp terminals
TCL 060-148		96 W	12 VDC	8.0 A	
TCL 120-112		120 W	24 VDC	5.0 A	
TCL 120-124		240 W	24 VDC	10.0 A	
TCL 240-124	85-132 / 187-264 VAC	24 W	24 VDC	1.0 A	Spring clamp terminals
TCL 024-124C	85–264 VAC Universal Input 50/60 Hz	48 W	12 VDC	4.0 A	
TCL 060-112C		60 W	24 VDC	2.5 A	
TCL 060-124C		48 W	48 VDC	1.25 A	
TCL 060-148C	85–375 VDC	96 W	12 VDC	8.0 A	
TCL 120-112C		120 W	24 VDC	5.0 A	

TPC

30–120 Watt



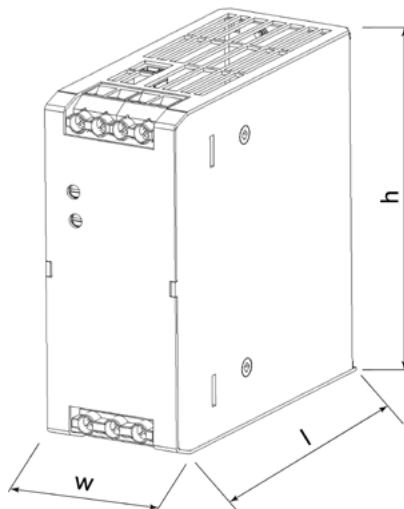
- For industrial, office and residential environments
- Meets European ErP directive (green mode), <0.3 W no load power consumption
- High efficiency across full load range
- Reliable snap-on mounting on DIN-rails or with wall mounting bracket (not included)
- Universal input 85–264 VAC, 47–63 Hz
- Output voltage adjustable
- Power good signal
- Low ripple and noise
- Overload and short-circuit protection
- Optional module for parallel and redundant operation
- 3-year product warranty

Dimension Table			
Model	Width [W]	Length [L]	Height [H]
TPC 30	26.5 mm (1.04)	96.5 mm (3.80)	90 mm (3.54)
TPC 55	45 mm (1.77)	96.5 mm (3.80)	90 mm (3.54)
TPC 80	63 mm (2.48)	96.5 mm (3.80)	90 mm (3.54)
TPC 120	72 mm (2.83)	110 mm (4.33)	90 mm (3.54)

Model	Input Voltage Ranges	Output Power max.	Output Voltage nom./adj. range	Output Current (max.)
TPC 030–105	85–264 VAC Universal Input 47/63 Hz	20 W	5.0 VDC / 5.0–6.0 VDC	4.0 A
TPC 030–112		26 W	12 VDC / 12–15 VDC	2.2 A
TPC 030–124		30 W	24 VDC / 24–28.8 VDC	1.25 A
TPC 030–148		30 W	48 VDC / 48–56 VDC	0.6 A
TPC 055–112	90–375 VDC	42 W	12 VDC / 12–15 VDC	3.5 A
TPC 055–124		55 W	24 VDC / 24–28.8 VDC	2.3 A
TPC 055–148		55 W	48 VDC / 48–56 VDC	1.15 A
TPC 080–112		72 W	12 VDC / 12–15 VDC	6.0 A
TPC 080–124	90–375 VDC	80 W	24 VDC / 24–28.8 VDC	3.3 A
TPC 080–148		80 W	48 VDC / 48–56 VDC	1.7 A
TPC 120–112		96 W	12 VDC / 12–15 VDC	8.0 A
TPC 120–124		120 W	24 VDC / 24–28.8 VDC	5.0 A
TPC 120–148		120 W	48 VDC / 48–56 VDC	2.5 A

TIB

80–480 Watt



- Slim profile, for DIN-rail mounting
- Alternative side-mounting for flat panels
- High power factor by active power correction
- Very high efficiency up to 94%
- Back power immunity
- 150% peak current for 4 s
- Operating temperature range: –40°C to +70°C max.
- Adjustable output voltage
- Short circuit and overload protection
- 3-year product warranty

Dimension Table			
Model	Width [W]	Length [L]	Height [H]
TIB 080	32 mm	99 mm	114 mm
TIB 120	36 mm	119 mm	125 mm
TIB 240	48 mm	119 mm	125 mm
TIB 480	82 mm	119 mm	125 mm

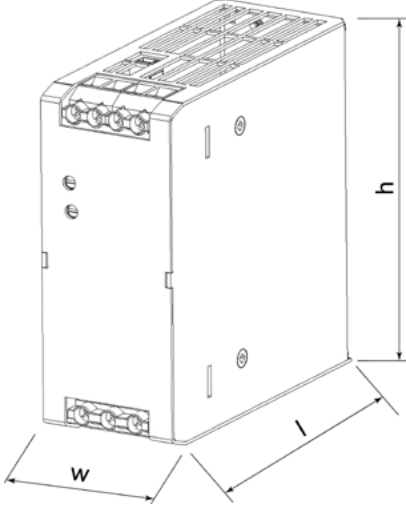
Model	Output Voltage nom. Range	Output Current max.	Output Current peak	Efficiency
TIB 080-112	12 VDC	6'700 mA	10'050 mA	88%
TIB 080-124	24 VDC	3'400 mA	5'100 mA	90%
TIB 080-148	48 VDC	1'700 mA	2'550 mA	90%
TIB 120-112	12 VDC	10'000 mA	15'000 mA	94%
TIB 120-124	24 VDC	5'000 mA	7'500 mA	94%
TIB 120-148	48 VDC	2'500 mA	3'750 mA	94%
TIB 240-124	24 VDC	10'000 mA	15'000 mA	95%
TIB 240-148	48 VDC	5'000 mA	7'500 mA	95%
TIB 480-124	24 VDC	20'000 mA	30'000 mA	95%
TIB 480-148	48 VDC	10'000 mA	15'000 mA	95%

TIB-EX

80–480 Watt



- UL Hazloc Class I, division 2 approval and ATEX certification
- SEMI F47 compliant for voltage sag immunity
- Rugged metal case with optional side-mounting
- Back power immunity
- 150% peak current for 4 s
- Operating Temp –40°C to +70°C (full load up to 60°C)
- Adjustable output voltage
- High Reliability: MTBF 1 mill. hrs per IEC 61709
- Short circuit and overload protection
- 5-year product warranty



Model	Width [W]	Length[l]	Height[h]
TIB 080-EX	32 mm	99 mm	114 mm
TIB 120-EX	36 mm	119 mm	125 mm
TIB 240-EX	48 mm	119 mm	125 mm
TIB 480-EX	82 mm	119 mm	125 mm

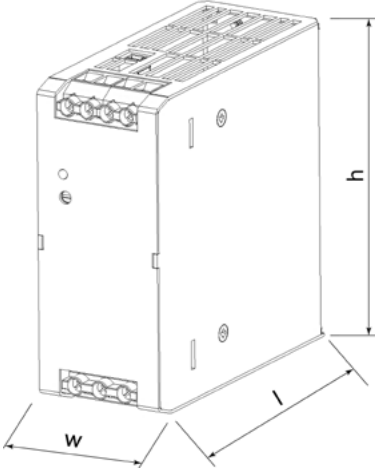
Model	Output Voltage	Output Current		Efficiency
	nom. Range	max.	peak	
TIB 080-112EX	12 VDC	6'700 mA	10'050 mA	88%
TIB 080-124EX	24 VDC	3'400 mA	5'100 mA	90%
TIB 080-148EX	48 VDC	1'700 mA	2'550 mA	90%
TIB 120-112EX	12 VDC	10'000 mA	15'000 mA	94%
TIB 120-124EX	24 VDC	5'000 mA	7'500 mA	94%
TIB 120-148EX	48 VDC	2'500 mA	3'750 mA	94%
TIB 240-124EX	24 VDC	10'000 mA	15'000 mA	95%
TIB 240-148EX	48 VDC	5'000 mA	7'500 mA	95%
TIB 480-124EX	24 VDC	20'000 mA	30'000 mA	95%
TIB 480-148EX	48 VDC	10'000 mA	15'000 mA	95%

TSPC

50–480 Watt



- Rugged metal case for harsh industrial environments
- Industrial operating temperature range: –25°C to +70°C
- Overload and and overtemperature protection
- Power boost up to 120%
- Power-Good signal
- Shock and vibration proof
- International safety approval package
- ATEX certification for hazardous locations
- Decoupling module for redundant operation (optional)
- Wall mounting (opt.)
- 3-year product warranty



Model	Width [W]	Length[l]	Height[h]
TSPC 050	35 mm	87 mm	110 mm
TSPC 080	40 mm	110 mm	110 mm
TSPC 120	46 mm	110 mm	110 mm
TSPC 240	60 mm	110 mm	110 mm
TSPC 480	150 mm	115 mm	115 mm

Model	Output power nominal	Output voltage nominal	Output Current max.
TSPC 050-112	50 W	12 VDC	4.0 A
TSPC 050-124HL*	50 W	24 VDC	2.1 A
TSPC 050-124	50 W	24 VDC	2.1 A
TSPC 080-112	80 W	12 VDC	6.6 A
TSPC 080-124	80 W	24 VDC	3.3 A
TSPC 120-124	120 W	24 VDC	5.0 A
TSPC 120-148	120 W	48 VDC	2.5 A
TSPC 240-124	240 W	24 VDC	10 A
TSPC 240-148	240 W	48 VDC	5.0 A
TSPC 480-124	480 W	24 VDC	20 A
TSPC 480-148	480 W	48 VDC	10 A

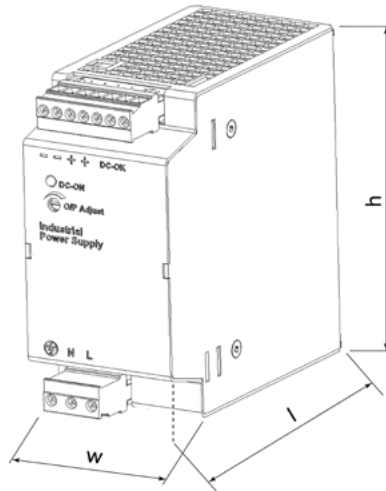
*Additionally complies with UL hazloc

TSP

72–600 Watt



- Rugged metal case for harsh industrial environments
- Shock and vibration proof
- Worldwide Safety approval package.
- ATEX certification tested in accordance to IECEx (opt. EX)
- Model TSP 090-124N meets NEC class 2
- Industrial operating temperature range: –25°C to +70°C
- Adjustable output voltage
- Protection against short-circuit, overvoltage and over-temperature
- Power OK signal, Remote On/Off
- Wall mounting (opt.)
- 3-year product warranty



Dimension Table

Model	Width [W]	Length[L]	Height[h]
TSP 070/090	35 mm	110 mm	110 mm
TSP 140/180	54 mm	110 mm	110 mm
TSP 360	80 mm	125 mm	125 mm
TSP 600	165 mm	125 mm	125 mm

Model	Output Power (Pmax)	**Output Voltage (Vnom)	***Output Current (Imax)
TSP 070–112*	72 W	12 VDC	6.0 A
TSP 090–124*	90 W	24 VDC	3.75 A
TSP 090–124N	90 W	24 VDC	3.75 A
TSP 090–148*	96 W	48 VDC	2.0 A
TSP 140–112*	144 W	12 VDC	12.0 A
TSP 180–124*	180 W	24 VDC	7.5 A
TSP 180–148*	192 W	48 VDC	4.0 A
TSP 360–124*	360 W	24 VDC	15.0 A
TSP 360–148*		48 VDC	7.5 A
TSP 600–124*		24 VDC	25.0 A
TSP 600–136	600 W	36 VDC	16.5 A
TSP 600–148*		48 VDC	12.5 A

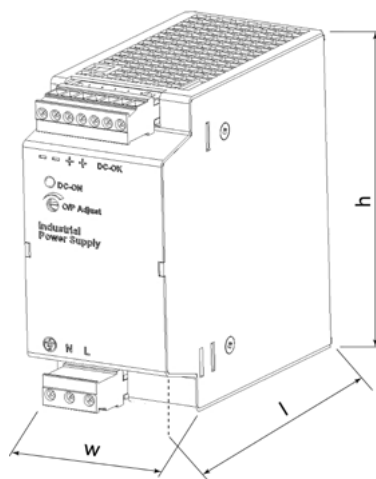
* For ATEX compliant models add appendix -EX to order code.

TSP-WR

180–600 Watt



- For global use with single- and two phase wide-range input 100/230–500 VAC
- Rugged metal case for harsh industrial environments
- Industrial operating temperature range: –25°C to +70°C
- Power OK signal
- Remote On/Off
- Shock and vibration-proof
- Indefinite short circuit, overvoltage and overtemperature protection
- Redundancy module
- Buffer module for power backup
- Battery controller module
- 3-year product warranty



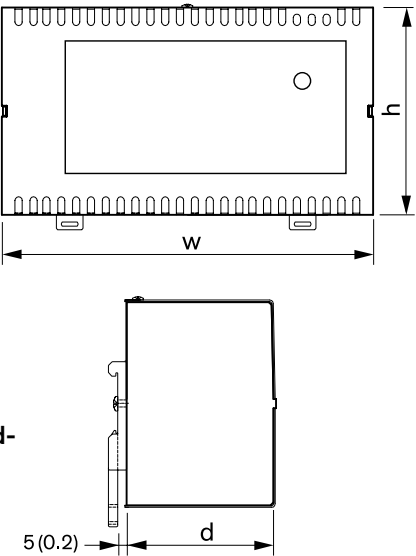
Dimension Table

Model	Width [W]	Length[L]	Height[h]
TSP 180-WR	54 mm	110 mm	110 mm
TSP 360-WR	80 mm	125 mm	125 mm
TSP 600-WR	190 mm	125 mm	125 mm

Model	Output Voltage (Vnom)	*Output Current (Imax)	Output Power (Pmax)
TSP 180-124WR	24 VDC	7.5 A	180 W
TSP 360-124WR	(adjustable 24–28 VDC)	15.0 A	360 W
TSP 600-124WR		25.0 A	600 W

TIS

50–600 Watt



- Switch mode power supplies for DIN-rail mount
- 6 power ranges with 2, 3, 6, 12, 20 and 24 A output current (24 VDC models)
- Selectable 115/230 VAC input
- Very low ripple and noise
- EMI complies with EN 61000-6-3 and EN 61000-6-4
- Operating temp. range –25°C to +70°C
- Worldwide safety approvals incl. class I, div. 2 location
- Easy snap-on mount on DIN-rails or chassis mount
- 3-year product warranty

Dimension Table			
Model	Width [W]	depth [d]	Heigth[h]
TIS 50	75 mm	56.7 mm	100.0 mm
TIS 75	90 mm	56.7 mm	114.6 mm
TIS 150	157 mm	56.7 mm	114.6 mm
TIS 300	207 mm	83 mm	114.6 mm
TIS 500	220 mm	83 mm	130 mm
TIS 600	243 mm	82.6 mm	177.2 mm

Model	Input Voltage nom.	Output Voltage nom.	Output Current max.
TIS 50-112	115–240 VAC	12 VDC	3.5 A
TIS 50-124	universal input	24 VDC	2.0 A
TIS 75-112	115/230 VAC selectable	12 VDC	6.0 A
TIS 75-124		24 VDC	3.0 A
TIS 75-148		48 VDC	1.5 A
TIS 150-124	115/230 VAC selectable	24 VDC	6.0 A
TIS 150-148		48 VDC	3.0 A
TIS 300-124	115/230 VAC selectable	24 VDC	12.0 A
TIS 300-148		48 VDC	6.0 A
TIS 300-172		72 VDC	4.2 A
TIS 500-124-115	115 VAC	24 VDC	20.0 A
TIS 500-124-230	230 VAC	24 VDC	20.0 A
TIS 600-124	115/230 VAC selectable	24 VDC	24.0 A
TIS 600-148		48 VDC	12.0 A
TIS 600-172		72 VDC	8.5 A

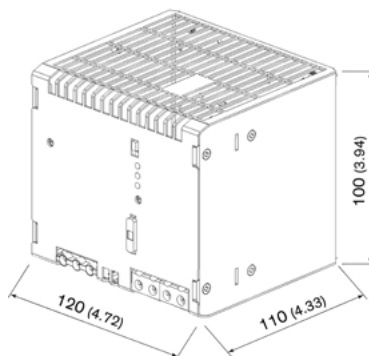
UPS Systems and Function Modules (DIN-Rail and Industrial Cabinets)

Standard DIN-rail power supplies for Industrial, automotive, commercial and communications applications, from 6 Watt up to 600 Watt, worldwide safety approvals, hazloc models with limited power or ATEX certification.



UPS SYSTEM TSPC 240UPS

240 Watt



- Compact universal power supply for uninterruptable 24 VDC output voltage
- Battery protection for over voltage, deep discharge, short circuit and reverse connection
- Alarm outputs for input, output and battery condition
- Remote On/Off for UPS function and power supply
- Controlled end of charge voltage by battery temperature sensor
- International safety approval package
- Suitable for various external 12 VDC lead acid batteries

Model	Input Voltage Range	Output Current max.*	Back up Battery
TSPC 240-124 UPS	Low Line: 85–132 VAC High Line: 187–264 VAC	24 VDC / 12 A	12V lead acid battery (to purchase on local market, or TRACO POWER battery pack)

* Maximum current at nominal Vout

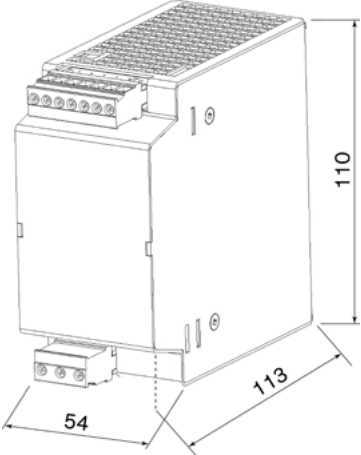
BATTERY CONTROLLER MODULES

TSP-BCMU360

360 Watt



- Universal battery controller module for uninterruptable 24 VDC and 48 VDC bus voltage
- Redundant inputs for two independent sources
- Battery protection for over voltage, deep discharge, short circuit and reverse connection
- Alarm outputs for input, output and battery condition
- Remote On/Off for battery
- Controlled end of charge voltage by temperature sensor
- International safety approval package



Dimensions: 54 mm width, 113 mm depth, 110 mm height.

Model	Inputs	Input Voltage Range	Output Current max.*	Back up Battery
TSP-BCMU360	2 × 360 W, for any single or two identical 24 VDC or 48 VDC sources	24–28 or 48–56 VDC (range selection with jumper)	24 VDC / 15 A 48 VDC / 7.5 A	12V lead acid battery (to purchase on local market, or TRACO POWER battery pack)

* Maximum current at nominal Vout

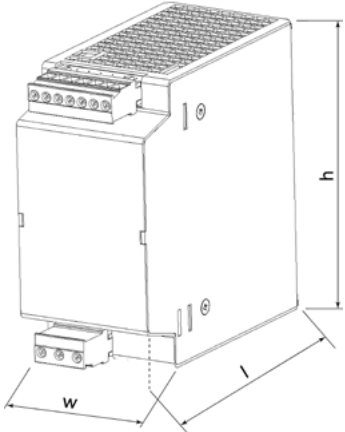
BATTERY CONTROLLER MODULES

TSP-BCM

12–48 VDC



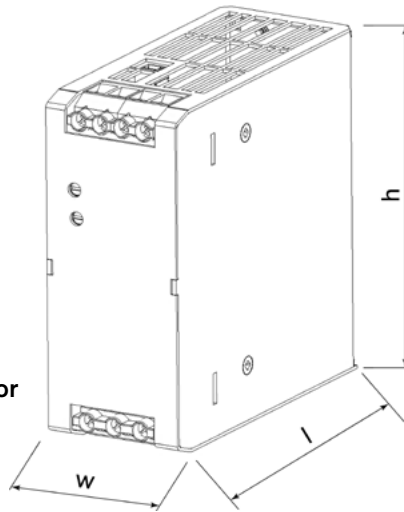
- Battery protection for over voltage, deep discharge, short circuit and reverse connection
- Alarm outputs for input, output and battery condition
- Remote On/Off for battery and power supply
- Controlled end of charge voltage by temperature sensor
- International safety approval package
- 3-year product warranty



Dimensions: w mm width, l mm depth, h mm height.

Dimension Table			
Model	Width [W]	Length[l]	Height[h]
TSP-BCM 144–360 Watt	35 mm	110 mm	110 mm
TSP-BCM 600 Watt	54 mm	110 mm	110 mm

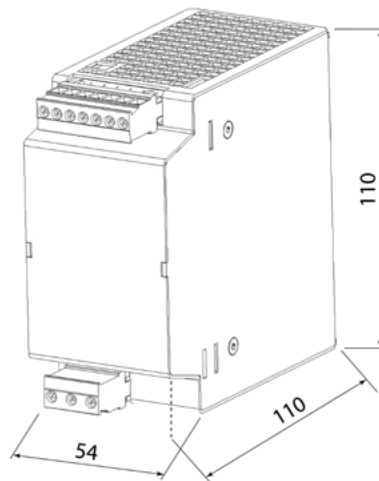
Model	Input	Max. Power per Input	Output Voltage	Output Current max.	Output Power max.
TSP-BCM12	12 VDC	144 W	12 VDC	12.0 A	144 W
TSP-BCM24	24 VDC	360 W	24 VDC	15.0 A	360 W
TSP-BCM48	48 VDC	360 W	48 VDC	7.5 A	360 W
TSP-BCM24A	24 VDC	600 W	24 VDC	25.0 A	600 W
TSP-BCM48A	48 VDC	600 W	48 VDC	12.5 A	600 W

BATTERY CONTROLLER MODULES TIB-BCMU240**240 Watt**

- Universal battery controller module for uninterruptable 24 VDC bus voltage
- Highest efficiency –96%
- Suitable for industrial and medical applications
- Short circuit and reverse inputs protection
- Battery temperature compensation
- High & low battery charging modes
- Stabilised output in discharge mode
- Input/Output battery status monitor
- DC OK Open collector signal, LEDs & Relays status signalling
- Low output noise

Dimension Table			
Model	Width [W]	Length [L]	Height [h]
TIB240-124UPS	48.0 mm	114.2 mm	124.2 mm

Model	Input Voltage nom.	Output Voltage nom.	Output Current max.
TIB240-124BCMU	24.0–28.0 VDC		10 A

BUFFER MODULE TSP-BFM**600 Watt**

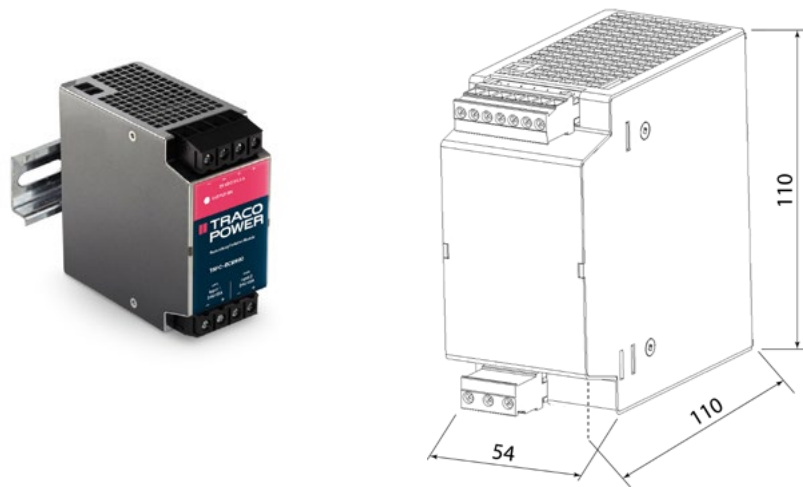
- Capacitor bank for energy storage, no battery needed!
- Guaranteed Hold-up-time 200 ms/25 A to 4 s/1.2 A max.
- Output 24 to 28 VDC, 600W max.
- Active ready and inhibit signals
- Maintenance free, long lifetime, performance also at low temperature
- 3-year product warranty

Model	Input	Buffer Time	Output Voltage adjust.	Output Current max.*	Output Power-max.
TSP-BFM24	24 VDC	200 ms typ. @ 25 A max. 4 s max. @ 1.2 A	24 VDC	25.0 A	600 W

* Maximum current at nominal Vout

DECOUPLING MODULE TSPC-DCM

600 Watt

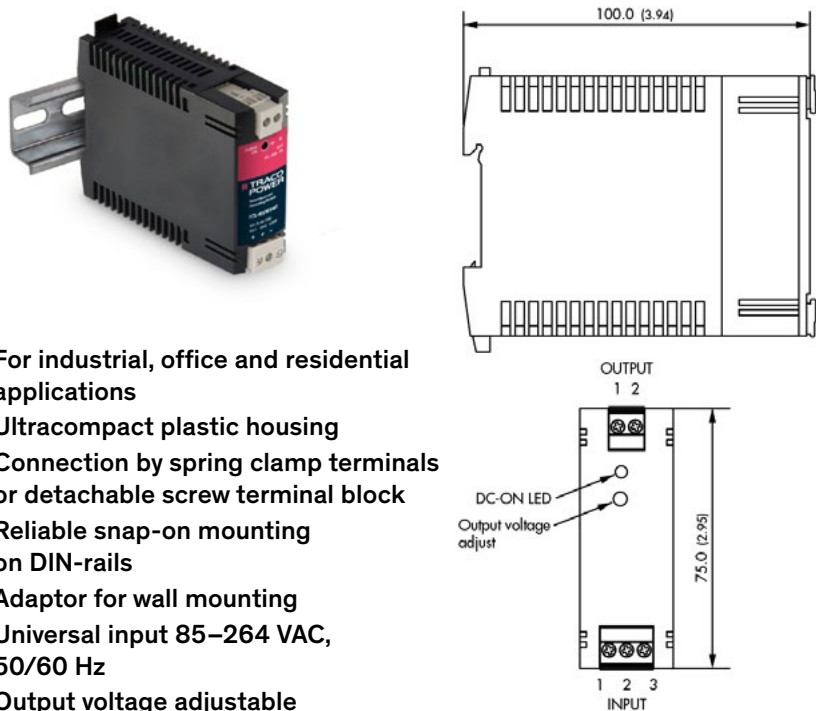


Model	Input Voltage	Input Current	Max reverse Voltage	Voltage drop across the diodes
TSPC-DCM600	5 – 28 VDC (24 VDC nom.)	20 mA min. 25 A max.	35 VDC	0.75 VDC typ. 1.2 VDC max.

- Decoupling module of two power supplies
- Hot swappable inputs
- International safety approval package
- 3-year product warranty

REDUNDANCY & CURRENT SHARE MODULES TCL-REM

480 Watt

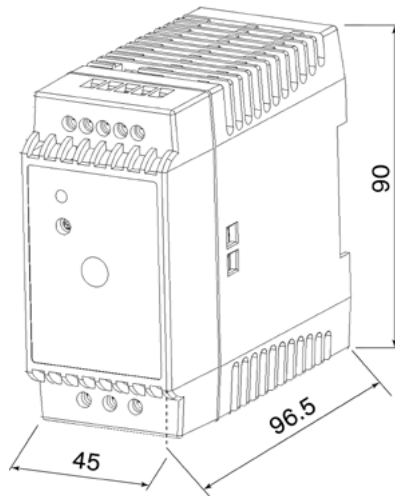


Model	Nominal Input Voltage	Input Voltage Range	Max Power per Input	Output Voltage	Output Current max.
TCL-REM240	5...48 VDC	5...60 VDC	200 W	V _{in} – 0.9 VDC	8 A

- For industrial, office and residential applications
- Ultracompact plastic housing
- Connection by spring clamp terminals or detachable screw terminal block
- Reliable snap-on mounting on DIN-rails
- Adaptor for wall mounting
- Universal input 85–264 VAC, 50/60 Hz
- Output voltage adjustable
- Power OK signal
- Overload and short-circuit protection
- Parallel operation possible
- 3-year product warranty

REDUNDANCY & CURRENT SHARE MODULES TPC-REM

240 Watt

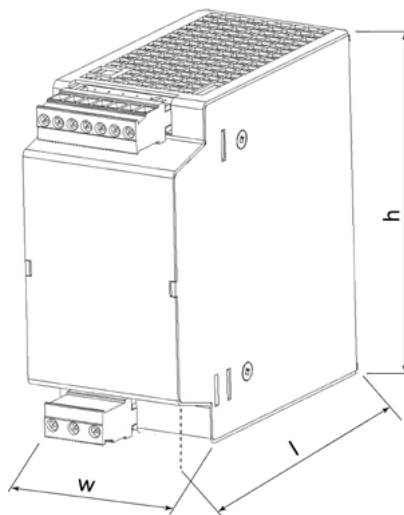


- For industrial, office and residential environments
- Meets European ErP directive (green mode), <0.3 W no load power consumption
- High efficiency across full load range
- Universal input 85–264 VAC, 47–63 Hz
- Output voltage adjustable
- Power good signal
- Overload and short-circuit protection
- Optional module for parallel and redundant operation
- 3-year product warranty

Model	Nominal Input Voltage	Max Power per Input	Output Voltage adjustable	Output Current max.
TPC-REM240-24	24 VDC	120 W	24–27 VDC	10 A
TPC-REM240-48	48 VDC	120 W	48–55 VDC	5 A

REDUNDANCY & CURRENT SHARE MODULES TSP-REM

360–600 Watt



- Module for true current sharing operation
- Alarm outputs, redundancy OK signal
- Hot swappable inputs
- Remote On/Off
- International safety approval package
- 3-year product warranty

Dimension Table			
Model	Width [W]	Length [L]	Height [h]
TSP-REM360	35 mm	110 mm	110 mm
TSP-REM600	54 mm	110 mm	110 mm

Model	Input Voltage Range	Max Power per Input	Output Voltage adjust.	Output Current max. **
TSP-REM360*	2 × 24 VDC	2 × 360 W	24 VDC	15.0 A
TSP-REM600*	2 × Control input	2 × 600 W	(24–27 VDC)	25.0 A

* For ATEX / IECEx compliant model add appendix -EX to order code.

** Maximum current at nominal Vout

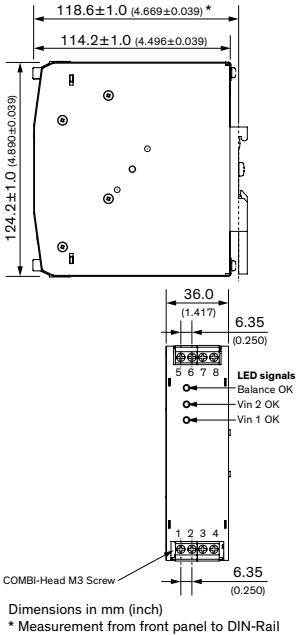
REDUNDANCY & CURRENT SHARE MODULES

TIB-REM480

480 Watt



- Compact 118.6 mm × 36 mm × 124.2 mm metal enclosure
- DIN-rail mounting bracket
- 60A boost current
- >99% efficiency
- Low standby power
- “Input OK” indicators
- “Balance OK” indicators
- Convection cooled
- UL/IEC/EN 606010-1 approvals
- Designed for use with Traco Power’s TIB line



Pin connectors			
Input		Output	
Pin	Function	Pin	Function
1	–Vin 1	5	–Vout
2	+Vin 1	6	
3	–Vin 2	7	+Vout
4	+Vin 2	8	

Model	Nominal Power	No-minal Current	Operating Voltage	Measurements (L × B × H)
TIB-REM480	1120 W	20 A	11 – 54 VDC	118.6 mm × 36 mm × 124.2 mm

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

TRACO POWER dedicated to design and production of high quality, state-of-the-art DC/DC&AC/DC power conversion products. Our mission is to provide optimal power supply solutions for specific applications with regard to performance, quality, cost and functionality.

TRACO POWER stocks an average of USD 25+ million in available finished goods inventory for immediate shipment through our distribution partners.

TRACO POWER offers extended product life-cycles, typically 10+ years, and our products are supported by a 3 or 5 year product warranty. We understand our customers require a high quality solution as well as a diverse product offering, availability from stock, extended life-cycles and a strong commitment to quality in the form of extended warranty to support their business.

Our other selection guides / catalogues



International Office

Traco Electronic AG
Sihlbruggstrasse 111
6340 Baar
Switzerland

P +41 43 311 45 11
F +41 43 311 45 45
info@tracopower.com

German Office

Traco Electronic GmbH
Oskar-Messter-Str. 20a
85737 Ismaning/München
Germany

P +49 89 96 11 82-0
F +49 89 96 11 82-20
info@tracopower.de

French Office

Traco Power France
2 rue du nouveau bercy
Bâtiment Le Levant
94220 Charenton Le Pont
France

P +33 (0)9 70 66 76 74
info@tracopower.fr

North America Office

Traco Power North America, Inc.
2025 Gateway Place #330
SAN JOSE, CA 95110
USA

P +1 (408) 916-4570
F +1 (408) 916-4571
salesusa@tracopower.com

Design & Development

Traco Power Solutions Ltd.
Whitemill Industrial Estate
Whitemill Road, Wexford
Y35 YH66, Ireland

P +353 53 9167 700
F +353 53 9167 701
info@tracopower.ie