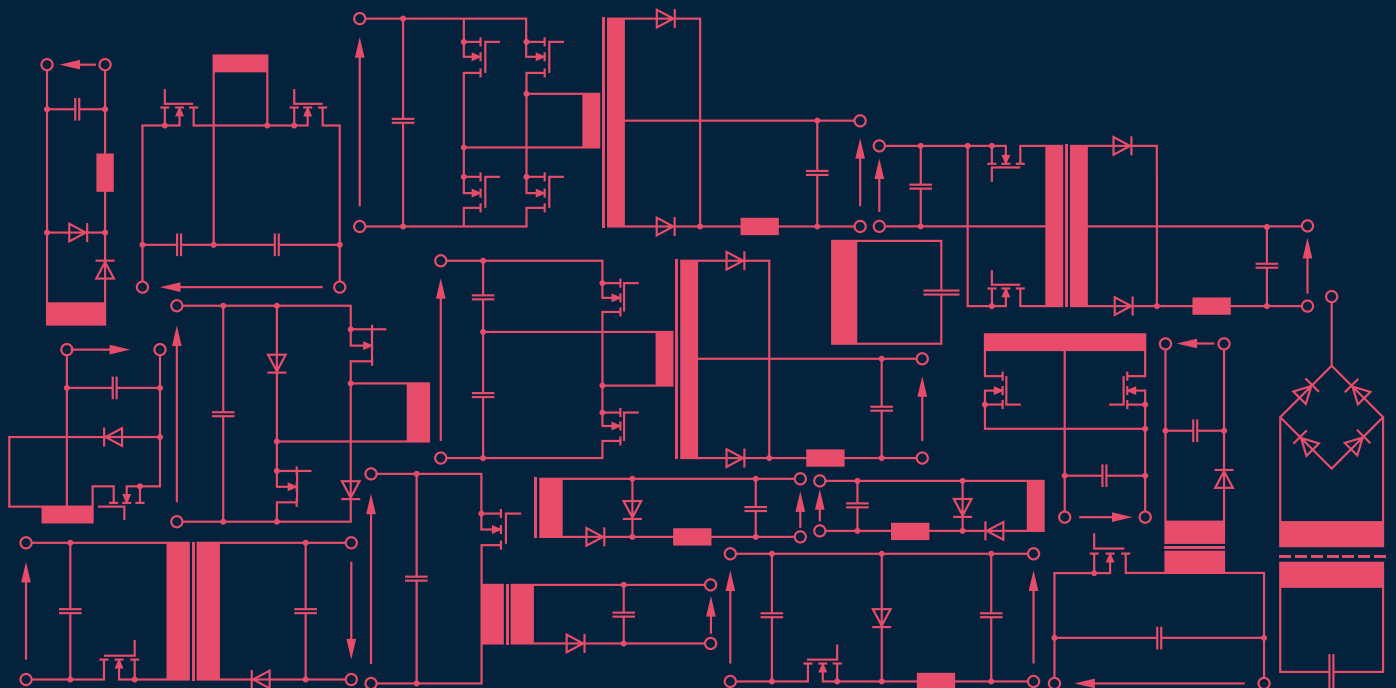


# Selection Guide 2015

## DC/DC Converters

## AC/DC Power Supplies



# Company Profile

TRACO Electronic AG is a Swiss company with headquarters based in Baar, Switzerland. As a leading power supply specialist with more than 35 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.

## Product Range

TRACO POWER product range focuses on the following markets:

Industrial & IT, Transportation & Railway, Medical & Healthcare, Automation & Control, Renewable Energy & Smart Grid.

Within these markets TRACO offers one of the most comprehensive programs for standard products:

- ▶ [DC/DC Converter Modules, 1–300 W](#)
- ▶ [Encapsulated AC/DC Power Modules, 2–100 W](#)
- ▶ [AC/DC Power Supplies \(open frame / encased\), 15–1000 W](#)
- ▶ [Power Supplies for DIN-Rail Mounting, 15–1000 W](#)
- ▶ [High Power Rack Converters and Inverters, up to 22 kW](#)

Detailed technical data of all our products can be downloaded from our website: **[www.tracopower.com](http://www.tracopower.com)**

## Compliance, Certification and Quality Management

TRACO has a high reputation for global compliance with applicable regulations and directives allowing easier implementation of our products in our customer's applications. Our products are 100% tested and burned-in prior to shipment to guarantee full compliance to the applicable published specifications. Our safety critical products are globally certified to current standards in accordance to the applicable market segments. TRACO's global manufacturing facilities are certified to ISO 9001/14000.

Our commitment to quality is supported by a full **3 year product warranty**.

## Commercial and Technical Support

Our experienced team of application engineers has the ability to assist on any question concerning product specifications, safety standards and application. Our customers highly value our reliable two working days dedicated response policy.

## Distribution, Availability and Sustainability

TRACO distributes its products through a global network of franchised distributors recognized in the industry for top-level design, stocking and supply chain services. The majority of products presented in our selection guide and on our web site are available ex-stock for dispatch from our central warehouse in Baar, Switzerland within 48 hours. With an extended product lifecycle TRACO provides a long-term disposability and maintenance.

# Product Index

DC/DC Converters	Non-isolated (POL) Converters			Page
<b>NEW</b>	TSR-0.5 Series	0.5 A	Pos.-pos. circuit, SIP-3 package, LM78xx pin compat.	6
<b>NEW</b>	TSR-0.5SM Series	0.5 A	Pos.-pos. circuit, SMD package	12
	TSR-1 Series	1 A	Pos.-pos. circuit, SIP-3 package, LM78xx pin compat.	7
<b>NEW</b>	TSR-1SM Series	1 A	Pos.-pos. circuit, SMD package	13
<b>NEW</b>	TSN-1 Series	1 A	Neg.-neg. circuit, SIP-3 package, LM79xx pin compat.	8
	TSRN-1 Series	1 A	Pos.-neg. circuit, SIP-3 package	9
	TSRN-1SM Series	1 A	Pos.-neg. circuit, SMD-package	14
	TSR-3 Series	3 A	Pos.-neg. circuit, SIP open frame	10
	TOS Series	6, 10, 16, 30 A	Pos.-pos. circuit, SMD or SIP-package	11
<b>SMD-Package 1 to 15 W</b>				
<b>NEW</b>	TSR-0.5SM Series	0.5 A	Non-isolated (POL), pos.-pos. circuit	12
<b>NEW</b>	TSR-1SM Series	1 A	Non-isolated (POL), pos.-pos. circuit	13
	TSRN-1SM Series	1 A	Non-isolated (POL), pos.-neg. circuit	14
	TES-1 Series	1 W	Unregulated	15
	TES-1V Series	1 W	Unregulated, I/O-isol. 3000 VDC	16
<b>NEW</b>	TMR-1SM	1 W	Regulated, 2:1 input	17
	TES-2H Series	2 W	Unregulated	18
	TES-2N Series	2 W	Regulated, 2:1 Input	19
	TES-2M Series	2 W	Unregulated, I/O-isol. 4000 VAC, medical safety	112
	TDR-2SM Series	2 W	Regulated, 2:1 input, compact overmold package	20
	TDR-2WISM Series	2 W	Regulated, 4:1 input, compact overmold package	21
	TDR-3SM Series	3 W	Regulated, 2:1 input, compact overmold package	22
	TDR-3WISM Series	3 W	Regulated, 4:1 input, compact overmold package	23
	THL-3WISM Series	3 W	Regulated, 4:1 input, EN55022 class A	24
	THL-6WISM Series	6 W	Regulated, 4:1 input, EN55022 class A	25
	TON-15 Series	15 W	Regulated, 2:1 input, open frame	26
	TON-15WI Series	15 W	Regulated, 4:1 input, open frame	27
<b>SIP-Package 1 to 9 W</b>				
	TMA / TME Series	1 W	Unregulated	28
	TRA-1 Series	1 W	Semi-regulated (load)	29
	TMV Series	1 W	Unregulated, I/O-isol. 3000 VDC	30
<b>NEW</b>	TMV-HI Series	1 W	Unregulated, I/O-isol. 5200 VDC	31
	TMV-EN Series	1 W	Unregulated, I/O-isol. 3000 VDC reinforced	111
	TRV-1 Series	1 W	Semi-regulated (load), I/O-isol. 3000 VDC	32
<b>NEW</b>	TMR-1 Series	1 W	Regulated, 2:1 input	33
	TMH Series	2 W	Unregulated	34
	TRA-3 Series	3 W	Semi-regulated (load)	35
	TMR-2E Series	2 W	Regulated, 2:1 input (cost optimized)	36
	TMR-2 Series	2 W	Regulated, 2:1 input	37
<b>NEW</b>	TMR-2WIN Series	2 W	Regulated, 4:1 input	38
	TMR-3E Series	3 W	Regulated, 2:1 input (cost optimized)	39
	TMR-3 Series	3 W	Regulated, 2:1 input, EN55022 class A	40
	TMR-3HI Series	3 W	Regulated, 2:1 input, I/O-isol. 3000 VDC, EN55022 A	41
	TMR-3WIE Series	3 W	Regulated, 4:1 input, (cost optimized)	42
	TMR-3WI Series	3 W	Regulated, 4:1 input	43
	TMR-6 Series	6 W	Regulated, 2:1 input	44
<b>NEW</b>	TMR-6WI Series	6 W	Regulated, 4:1 input	45
<b>NEW</b>	TMR-9 Series	8 W	Regulated, 2:1 input	46
<b>NEW</b>	TMR-9WI Series	8 W	Regulated, 4:1 input	47
<b>High Performance 2 to 60 W</b>				
	TEL-2 Series	2 W	DIP-16 package, 2:1 input	48
	TDR-2 Series	2 W	DIP-14 package, 2:1 input	49
	TDR-2WI Series	2 W	DIP-14 package, 4:1 input	50
	TDR-3 Series	3 W	DIP-14 package, 2:1 input	51
	TDR-3WI Series	3 W	DIP-14 package, 4:1 input	52
	THL-3WI Series	3 W	DIP-16 package, 4:1 input, EN55022 class A	53
<b>NEW</b>	TEM-3N Series	3 W	DIP-24 package, ±10% input (cost optimized)	54
	TEL-3 Series	3 W	DIP-24 package, 2:1 input, (cost optimized)	55
<b>NEW</b>	TEN-3N Series	3 W	DIP-24 package, 2:1 input, EN55022 class A	56
<b>NEW</b>	TEN-3WIN Series	3 W	DIP-24 package, 4:1 In., EN55022 A opt. 3000 VDC isol.	57
<b>NEW</b>	TVN-5WI Series	5 W	DIP-24 package, 4:1 input, low ripple & noise	58
	TEL-5 Series	5 W	DIP-24 package, 2:1 input, (cost optimized)	59

DC/DC Converters				
	TEN-6N Series	6 W	DIP-24 package, 2:1 input, EN55022 class A	60
	TEN-6WIN Series	6 W	DIP-24 package, 4:1 input, EN55022 class A	61
	TEN-6WIN-HI Series	6 W	DIP-24 package, 4:1 input, I/O isol. 3000 VDC	62
	TEN-8 Series	8 W	DIP-24 package, 2:1 input	63
	TEN-8WI Series	8 W	DIP-24 package, 4:1 input, EN50155 (railway)	64
NEW	THD-10N Series	10 W	DIP-24 package, 2:1 input, EN55022 class A	65
NEW	THD-10WIN Series	10 W	DIP-24 package, 4:1 input, EN55022 class A	66
NEW	THL-10 Series	10 W	1" x 1" package, 2:1 input, EN55022 class A	67
	THL-10WI Series	10 W	1" x 1" package, 4:1 input, EN55022 class A	68
	THD-12 Series	12 W	DIP-24 package, 2:1 input	69
	THD-12WI Series	12 W	DIP-24 package, 4:1 input, EN55022 class A	70
	THD-15N Series	15 W	DIP-24 package, 2:1 input, EN55022 class A	71
	THD-15WIN Series	15 W	DIP-24 package, 4:1 input, EN55022 class A	72
	TEL-15 Series	15 W	2" x 1" package, 2:1 input	73
	TON-15 Series	15 W	Open frame, 2:1 input, EN55022 class A	26
	TON-15WI Series	15 W	Open frame, 4:1 input, EN55022 class A	27
	THN-15 Series	15 W	1" x 1" package, 2:1 input	74
	THN-15WI Series	15 W	1" x 1" package, 4:1 input	75
	THN-20 Series	20 W	1" x 1" package, 2:1 input, EN55022 class A	76
	THN-20WI Series	20 W	1" x 1" package, 4:1 input, EN55022 class A	77
	THL-20WI Series	20 W	1" x 1" package, 4:1 input	78
	TEN-20 Series	20 W	2" x 1" package, 2:1 input, EN55022 class A	79
	TEN-20WIN Series	20 W	2" x 1" package, 4:1 input	80
	TEN-20WIR Series	20 W	2" x 1" package, 4:1 input, EN50155 (railway)	81
NEW	TMDC-20 Series	20 W	Chassis-mount, screw terminal, 4:1 input, EN55022 A	82
	THL-25 Series	25 W	1" x 1" package, 2:1 input	83
NEW	THL-25WI Series	25 W	1" x 1" package, 4:1 input	84
	TEN-30 Series	30 W	2" x 1" package, 2:1 input	85
	TEN-30WIN Series	30 W	2" x 1" package, 4:1 input	86
	THN-30 Series	30 W	1" x 1" package, 2:1 input	87
	THN-30WI Series	30 W	1" x 1" package, 4:1 input	88
	TEN-40 Series	40 W	2" x 2" package, 2:1 input	89
	TEN-40WI Series	40 W	2" x 2" package, 4:1 input	90
	TEN-40N Series	40 W	2" x 1" package, 2:1 input	91
	TEN-40WIN Series	40 W	2" x 1" package, 4:1 input	92
	TEN-40WIR Series	40 W	2" x 1" package, 4:1 input, EN50155 (railway)	93
NEW	TMDC-40 Series	40 W	Chassis-mount, screw terminal, 4:1 input, EN55022 A	94
	TEN-50 Series	50 W	2" x 1" package, 2:1 input	95
NEW	TEN-50WI Series	50 W	2" x 1" package, 4:1 input	96
NEW	TEN-60N Series	60 W	2" x 1" package, 2:1 input	97
NEW	TEN-60WIN Series	60 W	2" x 1" package, 4:1 input	98
NEW	TMDC-60 Series	60 W	Chassis-mount, screw terminal, 4:1 input, EN55022 A	99
<b>High Power Modules 75 to 300 W</b>				
	TEP-75WI Series	75 W	PCB / chassis / DIN-rail, 4:1 input, EN50155 (railway)	100
	TEP-100 Series	100 W	PCB, 2:1 input	101
NEW	TEP-100WIR Series	100 W	PCB / chassis / DIN-rail, 4:1 input, EN50155 (railway)	102
NEW	TEQ-100WIR Series	100 W	Chassis, 4:1 input, extend. temp., EN50155 (railway)	103
	TEP-150WI Series	150 W	Chassis, 4:1 input, CV/CC charact., EN50155 (railway)	104
	TEP-160 Series	150-196 W	PCB, 2:1 input	105
	TEP-160WIR Series	150-196 W	PCB, 4:1 input, EN50155 (railway)	106
NEW	TEQ-160WIR Series	144-182 W	Chassis, 4:1 input, extend. temp., EN50155 (railway)	107
	TEP-200WIR Series	180-240 W	Chassis, 4:1 input, EN50155 (railway)	108
NEW	TEQ-200WIR Series	180-240 W	Chassis, 4:1 input, extend. temp., EN50155 (railway)	109
NEW	TEQ-300WIR Series	180-240 W	Chassis, 4:1 input, CV/CC charact., EN50155 (railway)	110



Reinforced Insulation - Industrial (60950) / Medical Safety (60601)				
	TMV-EN Series	1W	SIP-package, unregulated	111
	TES-2M Series	2W	SMD-package, unregulated	112
	THI-2M Series	2W	DIP-16 package, unregulated	113
NEW	THI-3 Series	3W	DIP-24 package, ±10% input (regulated)	114
	THB-3 Series	3W	DIP-24 package, 2:1 input	115
	THP-3 Series	3W	DIP-24 package, 4:1 input	116
NEW	THM-3WI Series	3W	DIP-24 package, 4:1 input, 2 x MOPP	117
	THB-6 Series	6W	DIP-24 package, 4:1 input	118
NEW	THM-6WI Series	6W	DIP-24 package, 4:1 input, 2 x MOPP	119
	THB-10 Series	10W	2" x 1" package, 2:1 input	120
NEW	THM-10WI Series	10W	DIP-24 package, 4:1 input, 2 x MOPP	121
High Voltage Converters				
	THV/PHV Series	180 – 2000VDC	Shielded metal casing, remote voltage control	122
Industrial Converters, DIN-Rail Mount				
	TCL-DC Series	12 – 60 W	Slim plastic casing, EN55022 class B	123
NEW	TMDC-20 Series	20 W	Low profile casing, 4:1 input	82
NEW	TMDC-40 Series	40 W	Low profile casing, 4:1 input	94
NEW	TMDC-60 Series	60 W	Low profile casing, 4:1 input	99
Industrial Converters, High Power				
	TZL Series	60 – 300W	Metal casing	124
	TSC Series	150 – 5000W	19" Plug-in / chassis / DIN-rail modules	125
	TSC 19" Series	5 kW – 22 kW	19" Subracks	126
DC/AC Inverters				
Industrial Inverters				
	TSD Series	200 VA – 30 kVA	True sine wave output, 19" plug-in / subracks	127
AC/DC Power Supplies				
Open Frame Design 40 to 200 W				
	TOP-60 Series	60 W	2" x 4" format	128
	TOP-100 Series	100 W	2" x 4" format, opt. casing	129
NEW	TPI 100 Series	100 W	2" x 3" format, reinforced isolation, ErP-ready	130
NEW	TPI 150 Series	150 W	2" x 4" format, reinforced isolation, ErP-ready	131
	TOP-200 Series	200 W	3" x 5" format	132
Encapsulated Modules 2 to 100 W				
NEW	TMSB-2 Series	2W	PCB-mount, constant power, ErP-ready	133
NEW	TMPS 03 Series	3W	1" x 1" package PCB-mount, EN60335 (household)	134
NEW	TMPS 05 Series	5W	1" x 1" package PCB-mount, EN60335 (household)	135
	TMS Series	6 – 25 W	PCB / chassis	136
	TMP & TMPM Series	4 – 10 W	PCB-mount, ErP-ready	137
	TMP Series	15 – 60 W	PCB-mount	138
	TMP-C Series	15 – 60 W	Encapsulated Modules, Protection Class II	139
	TMLM Series	4 – 20 W	PCB-mount	140
	TML Series	20 – 40W	PCB / chassis	141
	TMT Series	10 – 50 W	PCB / chassis, medical safety 2 x MOOP, UL508	142
NEW	TMM Series	24 – 60 W	PCB-mount, medical safety 2 x MOPP, ErP-ready	143
NEW	TMM-C Series	24 – 60 W	Chassis-mount, medical safety 2 x MOPP, UL508	144
NEW	TML-100C Series	100 W	Chassis-mount, active PFC	145
	TIW Series	4 – 24 W	IP67 casing w. flying leads, EN60335 (household)	146
Metal Enclosure 40 to 1000 W				
NEW	TPP 40 Series	40 W	Medical safety 2 x MOPP, ErP-ready	147
NEW	TPP 65 Series	65 W	Medical safety 2 x MOPP, ErP-ready	148
NEW	TPP 100 Series	100 W	Medical safety 2 x MOPP, ErP-ready	149
NEW	TPP 150 Series	150 W	Medical safety 2 x MOPP, ErP-ready	150
	TXM Series	15 – 300 W	Cost optimized	151
	TXL Series	15 – 1000W	Wide model selection (single-, dual-, triple output)	152
	TXH Series	120 – 480 W	Compact low profile	153
NEW	TXH-600 Series	600 W	Universal, active PFC, IEC-C13 line socket	154
	TEX Series	120 W	Outdoor power supply, all weather proof enclosure	155
DIN-Rail Mount 15 to 960 W				
	TMP-C Series	15 – 60 W	Encapsulated low profile	139
NEW	TMM-C Series	24 – 60 W	Encapsulated low profile, medical safety 2 x MOPP	144
	TBL Series	15 – 150 W	Low profile plastic casing	156

TCL Series	24 – 240 W	Slim plastic casing	157
TPC Series	30 – 120 W	Compact plastic casing	158
TSPC Series	50 – 400 W	Rugged metal casing, basic	159
TSP Series	72 – 600 W	Rugged metal casing, high performance	160
TSP-3P Series	240 – 960 W	Rugged metal casing, 3-phase input	161
TSP-WR Series	180 – 600 W	Rugged metal casing, wide input (85 to 500 VAC)	162
TIS Series	50 – 600 W	Low profile metal casing, int. funct. modules	164
<b>NEW</b> TFP Series	250 – 750 W	Low profile metal casing, ErP ready	165

## DIN-Rail Mount System Solutions

<b>UPS Systems</b>			
<b>NEW</b> TSPC-240UPS Series	240 W	Power supply including battery controller	166
<b>NEW</b> TSP-BCMU360 Series	360 W	Universal controller for external power supply	166
TSP-BAT		Batteries for UPS systems	163
<b>Decoupling Modules</b>			
TCL-REM	240 W	Universal decoupling module, plastic casing	157
TSPC-DCM	600 W	Universal decoupling module, metal casing	159
<b>Buffer Module (capacitor bank)</b>			
TSP-BFM	600 W	Universal buffer module for black-outs/voltage dips	163
<b>Function Modules for TSP &amp; TPC series</b>			
TSP-BCM	12 – 48 VDC	Battery controller for TSP series power supplies	163
TPC-REM	360 – 600 W	Active current sharing for TPC series	163
TSP-REM	480 W	Active current sharing for TSP series	163

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# TSR-0.5 Series ▶ 0.5A

- ▶ Compact SIP package – LM 78xx pin-compatible
- ▶ Very high efficiency up to 97% – No heatsink required
- ▶ Excellent line / load regulation
- ▶ Low standby current
- ▶ Operating temperature range  $-40^{\circ}$  to  $90^{\circ}\text{C}$
- ▶ Wide input voltage range 4.75 – 32 VDC
- ▶ Output voltages from 1.5 – 15 VDC
- ▶ Over-temperature protection
- ▶ Short circuit protection



**NEW**  
Product

## Specifications

Line regulation	0.4 % max.
Load regulation	0.6 % max.
Ripple & noise (20 MHz BW)	<30 mVpk-pk for models up to 6.5 VDC output <40 mVpk-pk for models higher 6.5 VDC output
Short circuit protection	continuous, automatic recovery
Efficiency	94 % typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+90^{\circ}\text{C}$ above $80^{\circ}\text{C}$ derating 5%/K
I/O isolation voltage	non-isolated
No load input current	5 mA typ.
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsr05.pdf">www.tracopower.com/products/tsr05.pdf</a>

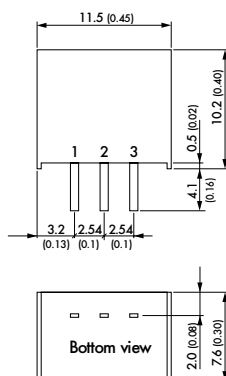
## Models

Order code	Input voltage range *	Output voltage	Output current max.
TSR 0.5-2415	4.75 – 32 VDC	1.5 VDC	500 mA
TSR 0.5-2418	4.75 – 32 VDC	1.8 VDC	500 mA
TSR 0.5-2425	4.75 – 32 VDC	2.5 VDC	500 mA
TSR 0.5-2433	4.75 – 32 VDC	3.3 VDC	500 mA
TSR 0.5-2450	6.5 – 32 VDC	5.0 VDC	500 mA
TSR 0.5-2465	8.0 – 32 VDC	6.5 VDC	500 mA
TSR 0.5-2490	11 – 32 VDC	9.0 VDC	500 mA
TSR 0.5-24120	15 – 32 VDC	12 VDC	500 mA
TSR 0.5-241150	18 – 32 VDC	15 VDC	500 mA

\* For an input voltage higher than 28VDC an input capacitor 22  $\mu\text{F}$  / 50V is required

Product as SMD version:  
See TSR-0.5SM series page 12

## Dimensions



## Pin

1	+Vin (Vcc)
2	GND
3	+Vout

# TSR-1 Series ▶ 1A

- ▶ Compact SIP package – LM 78xx pin-compatible
- ▶ Very high efficiency up to 96% – No heatsink required
- ▶ Excellent line / load regulation
- ▶ Built in filter capacitors
- ▶ Operating temp. range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ Short circuit protection
- ▶ Wide input operating range up to 36 VDC
- ▶ Low standby current



## Specifications

Line regulation	0.2 % max.
Load regulation	0.6 % max.
Ripple & noise (20 MHz BW)	<50 mVpk-pk for models up to 6.5 VDC output <75 mVpk-pk for models higher 6.5 VDC output
Short circuit protection	continuous, automatic recovery
Efficiency	94 % typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ above $60^{\circ}\text{C}$ derating 2.4%/K
I/O isolation voltage	non-isolated
No load input current	1 mA typ.
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsr1.pdf">www.tracopower.com/products/tsr1.pdf</a>

## Models

Order code	Input voltage range *	Output voltage	Output current max.
TSR 1-2412	4.6 – 36 VDC	1.2 VDC	1000 mA
TSR 1-2415	4.6 – 36 VDC	1.5 VDC	1000 mA
TSR 1-2418	4.6 – 36 VDC	1.8 VDC	1000 mA
TSR 1-2425	4.6 – 36 VDC	2.5 VDC	1000 mA
TSR 1-2433	4.75 – 36 VDC	3.3 VDC	1000 mA
TSR 1-2450	6.5 – 36 VDC	5.0 VDC	1000 mA
TSR 1-2465	9.0 – 36 VDC	6.5 VDC	1000 mA
TSR 1-2490	12 – 36 VDC	9.0 VDC	1000 mA
TSR 1-24120	15 – 36 VDC	12 VDC	1000 mA
TSR 1-24150	18 – 36 VDC	15 VDC	1000 mA

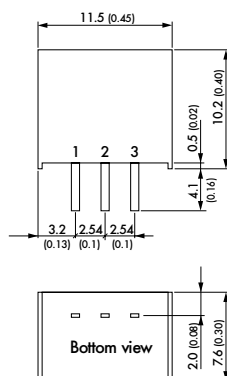
\* For an input voltage higher than 32VDC an input capacitor 22  $\mu\text{F}$  / 50V is required

Product suitable for negative output voltage:

See TSRN-1 series page 9 (through hole)

See TSRN-1SM series page 14 (SMD)

## Dimensions



## Pin

1	+Vin (Vcc)
2	GND
3	+Vout

() = Inches

# TSN-1 Series ▶ 1A

- ▶ Negative input to negative output
- ▶ Pin compatible with LM79xx linear regulators
- ▶ High efficiency up to 96% - No heatsink required
- ▶ Operating temp. range -40°C to +85°C
- ▶ Protection against overload, short circuit and over-temperature
- ▶ Wide input range up to -32 VDC
- ▶ Low standby current

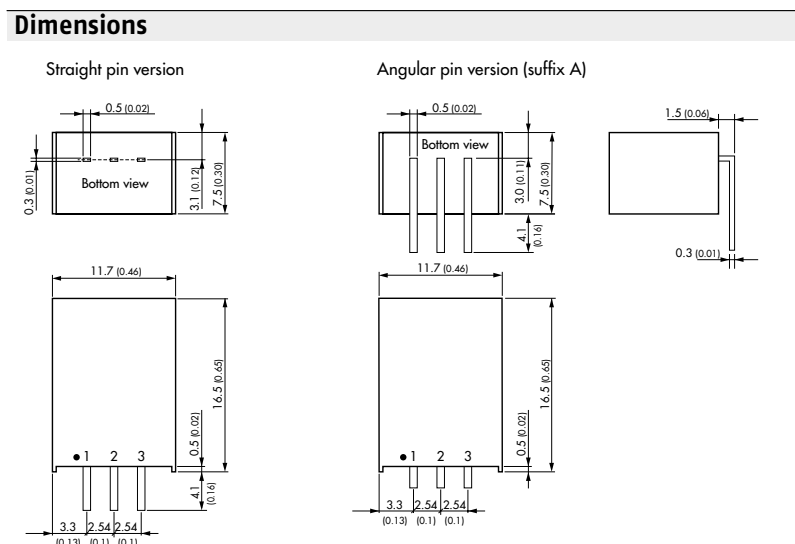


**NEW**  
Product

Specifications	
Line regulation	1.0 % max.
Load regulation	0.6 % max.
Ripple & noise (20 MHz BW)	<75 mVpk-pk for models up to 5.2 VDC output <100 mVpk-pk for models higher 5.2 VDC output
Short circuit protection	continuous, automatic recovery
Efficiency	92 % typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 2.7%/K
I/O isolation voltage	non-isolated
No load input current	-3 mA typ.
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsn1.pdf">www.tracopower.com/products/tsn1.pdf</a>

Models			
Order code	Input voltage range *	Output voltage	Output current max.
TSN 1-2450	-7.0 - -32 VDC	-5.0 VDC	1000 mA
TSN 1-2452	-7.0 - -32 VDC	-5.2 VDC	1000 mA
TSN 1-1260	-8.0 - -32 VDC	-6.0 VDC	1000 mA
TSN 1-2480	-10.5 - -32 VDC	-8.0 VDC	1000 mA
TSN 1-2490	-11.5 - -32 VDC	-9.0 VDC	1000 mA
TSN 1-24120	-15 - -32 VDC	-12 VDC	1000 mA
TSN 1-24150	-18 - -32 VDC	-15 VDC	1000 mA

\* Order code for angular-pin, add suffix -A



Pin	
1	GND
2	-Vin
3	-Vout

( ) = Inches

# TSRN-1 Series ▶ 1A

- ▶ Suitable for positive to negative output circuit
- ▶ SIP-package fits existing T0-220 footprint
- ▶ Pin compatible with LMxx linear regulators
- ▶ Built in filter capacitors
- ▶ Operation temp. range -40°C to +85°C
- ▶ No heat-sink required
- ▶ Over-temperature protection
- ▶ Short circuit protection
- ▶ Wide input range up to 42 VDC
- ▶ Excellent line / load regulation
- ▶ Low standby current



## Specifications

Line regulation	0.2% max.
Load regulation	1.0% typ.
Output voltage set accuracy	2.0 % typ.
Ripple & noise	1.5 – 6.5 VDC output models: <50 mVpk-pk (20 MHz BW) 9.0 – 15.0 VDC output models: <75 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	85 % typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 2.7%/K
I/O isolation voltage	non-isolated
No load input current	2.0 mA typ.
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsrn1.pdf">www.tracopower.com/products/tsrn1.pdf</a>

## Models

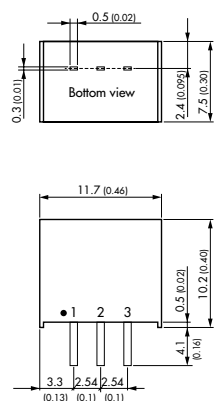
Order code <sup>1)</sup> straight pins	Input voltage range <sup>2)</sup>	Output voltage	Output current max.
<b>Negative output circuit</b>			
TSRN 1-2415	4.6 – 32 VDC	-1.5 VDC	600 mA
TSRN 1-2418	4.6 – 32 VDC	-1.8 VDC	600 mA
TSRN 1-2425	4.6 – 32 VDC	-2.5 VDC	600 mA
TSRN 1-2433	4.6 – 32 VDC	-3.3 VDC	600 mA
TSRN 1-2450	6.5 – 31 VDC	-5.0 VDC	400 mA
TSRN 1-2465	8.0 – 29 VDC	-6.5 VDC	300 mA
TSRN 1-2490	10.5 – 27 VDC	-9.0 VDC	300 mA
TSRN 1-24120	13.5 – 24 VDC	-12 VDC	300 mA
TSRN 1-24150	16.5 – 21 VDC	-15 VDC	200 mA
<b>Positive output circuit</b>			
TSRN 1-2415	4.6 – 42 VDC	1.5 VDC	1000 mA
TSRN 1-2418	4.6 – 42 VDC	1.8 VDC	1000 mA
TSRN 1-2425	4.6 – 42 VDC	2.5 VDC	1000 mA
TSRN 1-2433	4.6 – 42 VDC	3.3 VDC	1000 mA
TSRN 1-2450	6.5 – 42 VDC	5.0 VDC	1000 mA
TSRN 1-2465	8.0 – 42 VDC	6.5 VDC	1000 mA
TSRN 1-2490	10.5 – 42 VDC	9.0 VDC	1000 mA
TSRN 1-24120	13.5 – 42 VDC	12 VDC	1000 mA
TSRN 1-24150	16.5 – 42 VDC	15 VDC	1000 mA

1) Order code for angular pins model suffix A.

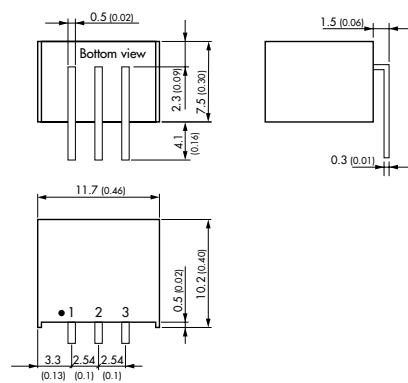
2) For input voltage higher 36 VDC an input capacitor 22 µF / 50 V is required.

## Dimensions

Straight pin version



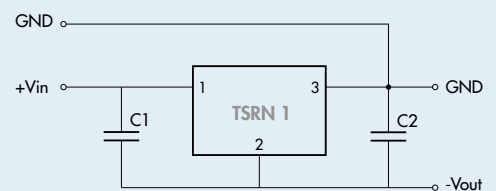
Angular pin version (suffix A)



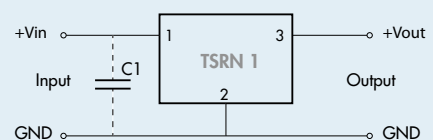
( ) = Inches

## Operation

Negative output operation:



Positive output operation:



# TSR-3 Series ▶ 3A

- ▶ High performance switching regulator
- ▶ Suitable for positive to negative output circuit
- ▶ Highest efficiency up to 95 %
- ▶ Adjustable output voltage
- ▶ Remote On/Off
- ▶ Wide input voltage range 2.5–5.5, 4.5–14 and 10–30 VDC
- ▶ Output voltages from 0.6 to 15 VDC and –0.6 to –15 VDC
- ▶ Short circuit protection
- ▶ Low output ripple & noise



## Specifications

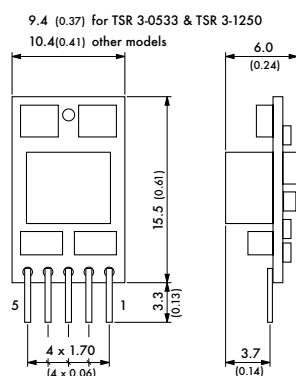
Line regulation	0.2 % max.
Load regulation	0.8 % max.
Output voltage adjustment	by external resistor.
Ripple & noise (20 MHz BW)	<75 mVpk-pk for models up to 6 VDC output <150 mVpk-pk for models higher 6 VDC output
Short circuit protection	continuous, automatic recovery
Efficiency	93 % typ.
Operating temperature range	–40 °C to +85 °C above 50 °C derating 1.5%/K
I/O isolation voltage	non-isolated
Standby input current	20 mA typ.
Remote On/Off	shutdown input for low input current in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsr3.pdf">www.tracopower.com/products/tsr3.pdf</a>

## Models

Order code	Input voltage	Output voltage adjustable <sup>6)</sup>	Output current max.
<b>Positive output circuit</b>			
TSR 3-0533	2.5 – 5.5 VDC <sup>1)</sup>	0.6 – 3.3 VDC	3000 mA
TSR 3-1250	4.5 – 14 VDC <sup>2)</sup>	0.6 – 6.0 VDC	3000 mA
TSR 3-2450	10 – 30 VDC <sup>3)</sup>	3.0 – 6.0 VDC	3000 mA
TSR 3-24150	10 – 30 VDC <sup>3)</sup>	5.0 – 15 VDC	3000 mA
<b>Negative output circuit</b>			
TSR 3-1250	4.7 – 13 VDC <sup>4)</sup>	–0.6 – –6.0 VDC	2200 mA
TSR 3-2450	10 – 27 VDC <sup>5)</sup>	–3.0 – –6.0 VDC	2200 mA
TSR 3-24150	10 – 25 VDC <sup>5)</sup>	–5.0 – –15 VDC	1200 mA

- 1) input voltage must be at least 0.5 V higher than output
- 2) input voltage must be at least 2.0 V higher than output
- 3) input voltage must be at least 3.0 V higher than output
- 4) max. input voltage = 14 – |Vout|
- 5) max. input voltage = 30 – |Vout|
- 6) open trim input = min. output voltage

## Dimensions

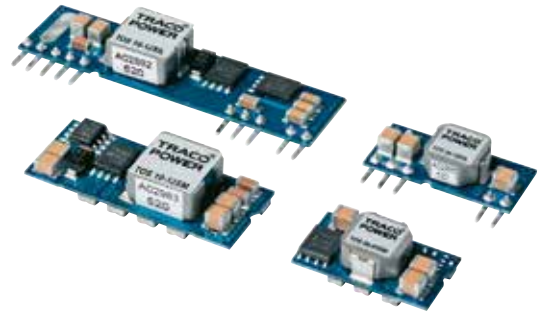


() = Inches

Pin	Positive output	Negative output
1	Remote On/Off	Remote On/Off
2	+Vin (Vcc)	+Vin (Vcc)
3	GND	–Vout
4	+Vout	GND
5	Trim	Trim

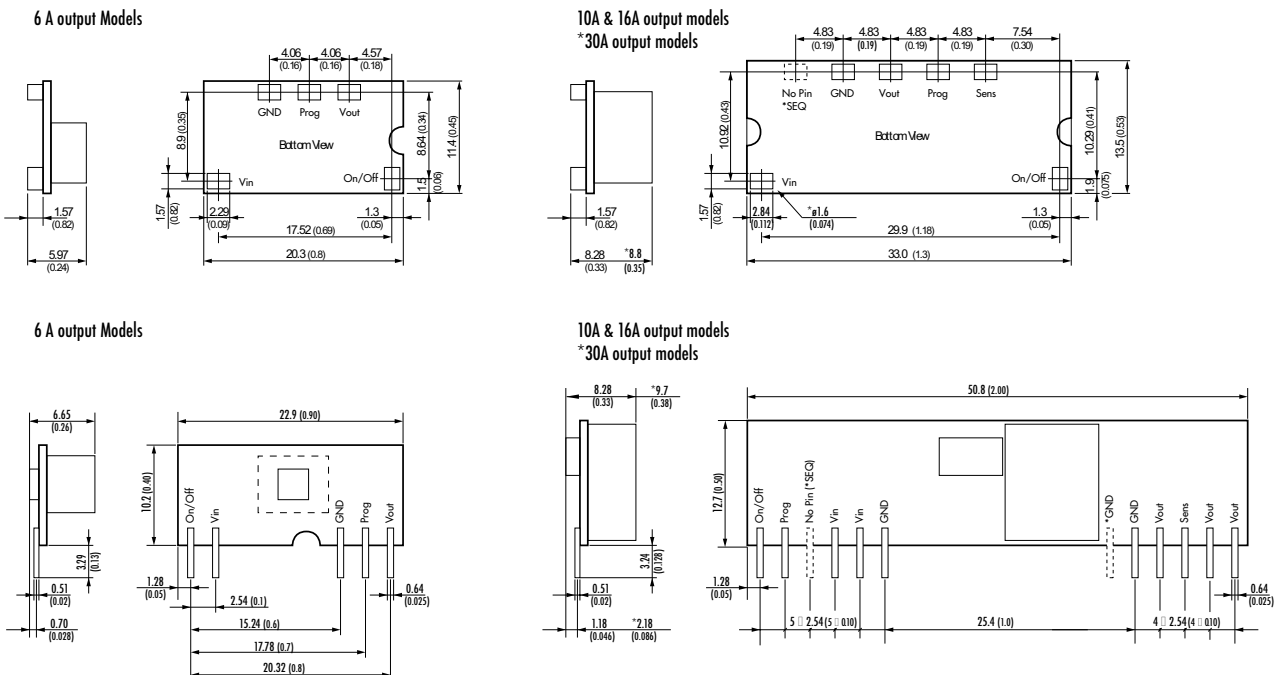
# TOS Series ▶ 6 – 30 A

- ▶ Models with 6, 10, 16 and 30 A
- ▶ Programmable output voltage from 0.75 to 5.5 VDC
- ▶ Very high efficiency up to 96 %
- ▶ Remote On/Off
- ▶ Under-voltage lockout
- ▶ Over temperature protection
- ▶ Surface mount (SM) or SIP-version
- ▶ Surface mount version fully compatible with DOSA standard



Specifications		Models			
Line regulation	0.3% max.	<b>Order code SMT-version</b>	<b>Input voltage range</b>	<b>Output voltage range</b>	<b>Output current max.</b>
Load regulation	0.4% max.	TOS 06-05SM	2.4 – 5.5 VDC	0.75 – 3.3 VDC	6 A
Output voltage	programmable by external resistor	TOS 10-05SM	2.4 – 5.5 VDC	0.75 – 3.3 VDC	10 A
Ripple & noise (20 MHz BW)	<50 mVpk-pk for 5 Vin output models <75 mVpk-pk for 12 Vin output models	TOS 16-05SM	2.4 – 5.5 VDC	0.75 – 3.3 VDC	16 A
Transient response time	50 µsec. typ. (50% load change)	TOS 30-05SM	4.5 – 5.5 VDC	0.80 – 3.6 VDC	30 A
Short circuit protection	continuous, automatic recovery	TOS 06-12SM	8.3 – 14.0 VDC	0.75 – 5.0 VDC	6 A
Efficiency	93% typ.	TOS 10-12SM	8.3 – 14.0 VDC	0.75 – 5.0 VDC	10 A
Operating temperature range	-40 °C to +85 °C (for derating see datasheet)	TOS 16-12SM	8.3 – 14.0 VDC	0.75 – 5.0 VDC	16 A
I/O isolation voltage	non-isolated	TOS 30-12SM	6.0 – 14.0 VDC	0.80 – 3.6 VDC	30 A*
Thermal protection	shutdown at 125 °C	* 20 A at output voltage higher than 2.75 VDC			
Remote On/Off	shutdown input for low input current (3 mA) in standby operation	<b>Order code SIP-version</b>	<b>Input voltage range</b>	<b>Output voltage range</b>	<b>Output current max.</b>
Full datasheet	<a href="http://www.tracopower.com/products/tos.pdf">www.tracopower.com/products/tos.pdf</a> <a href="http://www.tracopower.com/products/tos30.pdf">www.tracopower.com/products/tos30.pdf</a>	TOS 06-05SIL	2.4 – 5.5 VDC	0.75 – 3.3 VDC	6 A
		TOS 10-05SIL	2.4 – 5.5 VDC	0.75 – 3.3 VDC	10 A
		TOS 16-05SIL	2.4 – 5.5 VDC	0.75 – 3.3 VDC	16 A
		TOS 30-05SIL	4.5 – 5.5 VDC	0.80 – 5.5 VDC	30 A
		TOS 06-12SIL	8.3 – 14.0 VDC	0.75 – 5.0 VDC	6 A
		TOS 10-12SIL	8.3 – 14.0 VDC	0.75 – 5.0 VDC	10 A
		TOS 16-12SIL	8.3 – 14.0 VDC	0.75 – 5.0 VDC	16 A
		TOS 30-12SIL	6.0 – 14.0 VDC	0.80 – 5.5 VDC	30 A*
		* 25 A at output voltage higher than 2.75 VDC			

## Dimensions



( ) = Inches



# TSR-0.5SM Series ▶ 0.5A

- ▶ Compact SMD package
- ▶ High efficiency up to 97 % - No thermal layer required
- ▶ Excellent line / load regulation
- ▶ Low standby current
- ▶ Operating temperature range  $-40^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$
- ▶ Wide input voltage range 4.75-32 VDC
- ▶ Output voltages from 1.5 to 15 VDC
- ▶ Short circuit protection
- ▶ Low output ripple & noise
- ▶ Available in tape & reel package



**NEW**  
Product

## Specifications

Line regulation	0.4 % max.
Load regulation	0.6 % max.
Ripple & noise (20 MHz BW)	<30 mVpk-pk for models up to 6.5 VDC output <40 mVpk-pk for models higher 6.5 VDC output
Short circuit protection	continuous, automatic recovery
Efficiency	94 % typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ above $80^{\circ}\text{C}$ derating 5%/K
I/O isolation voltage	non-isolated
No load input current	5 mA typ.
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsr05sm.pdf">www.tracopower.com/products/tsr05sm.pdf</a>

## Models

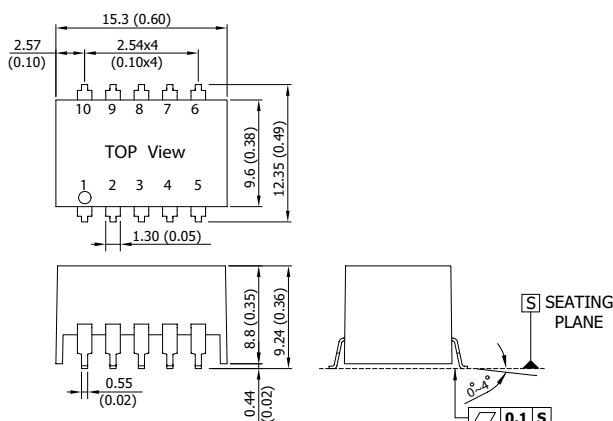
Order code	Input voltage range *	Output voltage	Output current max.
TSR 0.5-2415SM	4.75 – 32 VDC	1.5 VDC	500 mA
TSR 0.5-2418SM	4.75 – 32 VDC	1.8 VDC	500 mA
TSR 0.5-2425SM	4.75 – 32 VDC	2.5 VDC	500 mA
TSR 0.5-2433SM	4.75 – 32 VDC	3.3 VDC	500 mA
TSR 0.5-2450SM	6.5 – 32 VDC	5.0 VDC	500 mA
TSR 0.5-2465SM	8.0 – 32 VDC	6.5 VDC	500 mA
TSR 0.5-2490SM	11 – 32 VDC	9.0 VDC	500 mA
TSR 0.5-24120SM	15 – 32 VDC	12 VDC	500 mA
TSR 0.5-24150SM	18 – 32 VDC	15 VDC	500 mA

\* For an input voltage higher than 28VDC an input capacitor 22  $\mu\text{F}$  / 50V is required

Product as SIP version:

See TSR-0.5 series page 6

## Dimensions



() = Inches

## Pin

Pin	Description
1	+Vin (Vcc)
2	+Vin (Vcc)
3	GND
4	+Vout
5	+Vout
6	adj.
7	GND
8	GND
9	GND
10	remote On/Off

# TSR-1SM Series ▶ 1A

- ▶ Non-isolated (POL) converter
- ▶ Up to 96% efficiency - No thermal layer required
- ▶ Built in filter capacitors
- ▶ Operating temp. range -40°C to +85°C
- ▶ Short circuit protection
- ▶ Wide input operating range up to 36 VDC
- ▶ Low standby current
- ▶ Available in tape & reel package

**NEW**  
Product



## Specifications

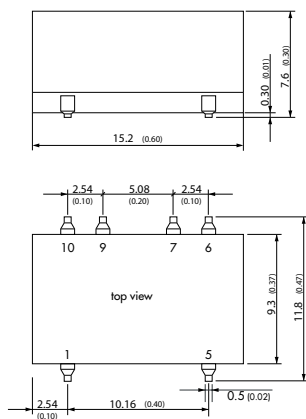
Line regulation	0.2 % max.
Load regulation	0.6 % max.
Ripple & noise (20 MHz BW)	50 mVpk-pk typ. for models up to 6.5 VDC output 75 mVpk-pk typ. for models higher 6.5 VDC output
Short circuit protection	continuous, automatic recovery
Efficiency	90 % typ.
Operating temperature range	-40 °C to +85 °C above 65 °C derating 2.5%/K
I/O isolation voltage	non-isolated
No load input current	1 mA typ.
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsr1sm.pdf">www.tracopower.com/products/tsr1sm.pdf</a>

## Models

Order code	Input voltage range *	Output voltage	Output current max.
TSR 1-0512SM	3.0 – 5.5 VDC	1.2 VDC	1000 mA
TSR 1-0515SM	3.0 – 5.5 VDC	1.5 VDC	1000 mA
TSR 1-0518SM	3.0 – 5.5 VDC	1.8 VDC	1000 mA
TSR 1-0525SM	3.8 – 5.5 VDC	2.5 VDC	1000 mA
TSR 1-2412SM	4.6 – 36 VDC	1.2 VDC	1000 mA
TSR 1-2415SM	4.6 – 36 VDC	1.5 VDC	1000 mA
TSR 1-2418SM	4.6 – 36 VDC	1.8 VDC	1000 mA
TSR 1-2425SM	4.6 – 36 VDC	2.5 VDC	1000 mA
TSR 1-2433SM	4.75 – 36 VDC	3.3 VDC	1000 mA
TSR 1-2450SM	6.5 – 36 VDC	5.0 VDC	1000 mA
TSR 1-2465SM	9.0 – 36 VDC	6.5 VDC	1000 mA
TSR 1-2490SM	12 – 36 VDC	9.0 VDC	1000 mA
TSR 1-24120SM	15 – 36 VDC	12 VDC	1000 mA
TSR 1-24150SM	18 – 36 VDC	15 VDC	1000 mA

\* For an input voltage higher than 32VDC an input capacitor 22 µF / 50V is required

## Dimensions



() = Inches

## Pin

1	-Vin
5	+Vout
6	No con.
7	GND
9	GND
10	No con.

# TSRN-1SM Series ▶ 1A

- ▶ Suitable for positive to negative output circuit
- ▶ Non-isolated (POL) converter
- ▶ Built in filter capacitors
- ▶ Remote On/Off and output trim
- ▶ Operation temp. range -40°C to +85°C
- ▶ Over-temperature protection
- ▶ Short circuit protection
- ▶ Excellent line / load regulation
- ▶ Wide input up to 42 VDC
- ▶ Low standby current
- ▶ Available in tape & reel package



## Specifications

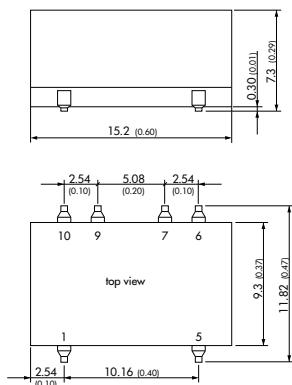
Line regulation	0.2% max.
Load regulation	0.6% max. (0-100%)
Output voltage adjustment	see table
Ripple & noise	1.2-8.0 VDC output models: <50 mVpk-pk (20 MHz BW) 8.1-15.0 VDC output models: <75 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	85% typ.
Operating temperature range	-40 °C to +85 °C above 60 °C derating 2.0%/K
I/O isolation voltage	non-isolated
Remote On/Off	shutdown input for low input current (1.2 mA) in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tsrn1sm.pdf">www.tracopower.com/products/tsrn1sm.pdf</a>

## Models

Order code <sup>1)</sup>	Input voltage range <sup>2)</sup>	Output voltage range (nominal) <sup>3)</sup>	Output current
<b>Negative output circuit</b>			
TSRN 1-2433SM	4.6-32 VDC	-1.5--5.5 (-3.3) VDC	600 mA
TSRN 1-2450SM	4.6-31 VDC	-2.5--8.0 (-5.0) VDC	400 mA
TSRN 1-2490SM	7.0-27 VDC	-4.5--12.6 (-9.0) VDC	300 mA
TSRN 1-24120SM	7.0-24 VDC	-4.5--13.5 (-12) VDC	300 mA
TSRN 1-24150SM	7.0-21 VDC	-4.5--15.5 (-15) VDC	200 mA
<b>Positive output circuit</b>			
TSRN 1-0525SM	3.0-5.5 VDC	1.2-3.6 (2.5) VDC	1000 mA
TSRN 1-2433SM	4.6-42 VDC	1.5-5.5 (3.3) VDC	1000 mA
TSRN 1-2450SM	6.5-42 VDC	2.5-8.0 (5.0) VDC	1000 mA
TSRN 1-2490SM	10.5-42 VDC	4.5-12.6 (9.0) VDC	1000 mA
TSRN 1-24120SM	13.5-42 VDC	4.5-13.5 (12) VDC	1000 mA
TSRN 1-24150SM	16.5-42 VDC	15.5-4.5 (15) VDC	1000 mA

- 1) Same order code for positive and negative output operation
- 2) For input voltage higher 36 VDC an input capacitor 22 µF / 50 V is required.
- 3) For positive output circuit, input voltage must be higher than output voltage set: >0.5V for TSRN1-0525SM and >1.5 V for other models. For negative output circuit, input voltage plus absolute output voltage set must not exceed 36 VDC (Vin + |Vout| <36 VDC)

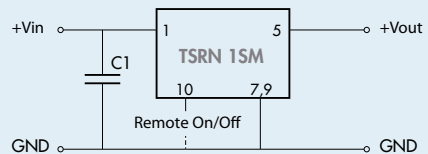
## Dimensions



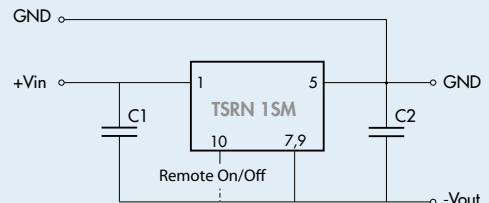
() = Inches

## Operation

### Positive output operation



### Negative output operation



# TES-1 Series ▶ 1 W

- ▶ SMD package with industry standard footprint
- ▶ Single and dual output models
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature Range -40 °C to +85 °C
- ▶ Available in tape & reel package



Specifications		Models			
Line regulation	non regulated	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	+10 %/ -5% max.	TES 1-0510		3.3 VDC	300 mA
Ripple & noise	<120mVpk-pk (20 MHz BW)	TES 1-0511		5 VDC	200 mA
Short circuit protection	limited 0.5 sec.	TES 1-0519		9 VDC	110 mA
Efficiency	80 % typ.	TES 1-0512	5 VDC ± 10 %	12 VDC	85 mA
Operating temperature range	-40 °C to +85 °C above 75 °C derating 4.0 %/K	TES 1-0513		15 VDC	65 mA
I/O isolation voltage	1500 VDC (60 sec.)	TES 1-0521		± 5 VDC	± 100 mA
Casing	plastic, insert mold (UL 94-0 rated)	TES 1-0522		± 12 VDC	± 40 mA
Full datasheet	<a href="http://www.tracopower.com/products/tes1.pdf">www.tracopower.com/products/tes1.pdf</a>	TES 1-0523		± 15 VDC	± 35 mA
		TES 1-1211		5 VDC	200 mA
		TES 1-1219		9 VDC	110 mA
		TES 1-1212		12 VDC	85 mA
		TES 1-1213	12 VDC ± 10 %	15 VDC	65 mA
		TES 1-1221		± 5 VDC	± 100 mA
		TES 1-1222		± 12 VDC	± 40 mA
		TES 1-1223		± 15 VDC	± 35 mA
		TES 1-2411		5 VDC	200 mA
		TES 1-2419		9 VDC	110 mA
		TES 1-2412		12 VDC	85 mA
		TES 1-2413	24 VDC ± 10 %	15 VDC	65 mA
		TES 1-2421		± 5 VDC	± 100 mA
		TES 1-2422		± 12 VDC	± 40 mA
		TES 1-2423		± 15 VDC	± 35 mA

Dimensions		Pin		
Single Output Models	Dual Output Models	Single output	Dual output	
		1	-Vin (GND)	-Vin (GND)
		2	+Vin (Vcc)	+Vin (Vcc)
		4	-Vout	Common
		5	+Vout	-Vout
		7		+Vout
		8	No con.	
		18		No con.
() = Inches				

# TES-1V Series ▶ 1 W

- ▶ SMD package with industry standard footprint
- ▶ I/O isolation 3000 VDC
- ▶ Single and dual output models
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Available in tape & reel package



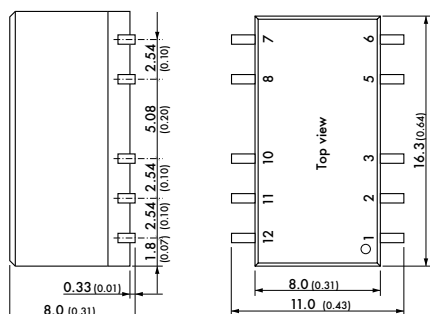
## Specifications

Line regulation	non regulated
Load regulation	+10 %/ -5% max.
Ripple & noise	<100mVpk-pk (20 MHz BW)
Short circuit protection	limited 0.5 sec.
Efficiency	80 % typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $75\text{ }^{\circ}\text{C}$ derating 4.0 %/K
I/O isolation voltage	3000VDC (60 sec.) functional isolation
I/O isolation capacitance	60 pF typ.
I/O isolation resistance	>10 GOhm
Casing	insert mold (UL 94-0 rated plastic)
Full datasheet	<a href="http://www.tracopower.com/products/tes1v.pdf">www.tracopower.com/products/tes1v.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TES 1-0510V		3.3 VDC	260 mA
TES 1-0511V		5 VDC	200 mA
TES 1-0512V		12 VDC	84 mA
TES 1-0513V	5 VDC $\pm$ 10 %	15 VDC	67 mA
TES 1-0521V		$\pm$ 5 VDC	$\pm$ 100 mA
TES 1-0522V		$\pm$ 12 VDC	$\pm$ 42 mA
TES 1-0523V		$\pm$ 15 VDC	$\pm$ 34 mA
TES 1-1210V		3.3 VDC	260 mA
TES 1-1211V		5 VDC	200 mA
TES 1-1212V		12 VDC	84 mA
TES 1-1213V	12 VDC $\pm$ 10 %	15 VDC	67 mA
TES 1-1221V		$\pm$ 5 VDC	$\pm$ 100 mA
TES 1-1222V		$\pm$ 12 VDC	$\pm$ 42 mA
TES 1-1223V		$\pm$ 15 VDC	$\pm$ 34 mA
TES 1-2410V		3.3 VDC	260 mA
TES 1-2411V		5 VDC	200 mA
TES 1-2412V		12 VDC	84 mA
TES 1-2413V	24 VDC $\pm$ 10 %	15 VDC	67 mA
TES 1-2421V		$\pm$ 5 VDC	$\pm$ 100 mA
TES 1-2422V		$\pm$ 12 VDC	$\pm$ 42 mA
TES 1-2423V		$\pm$ 15 VDC	$\pm$ 34 mA

## Dimensions



() = Inches

Pin	Single output	Dual output
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	No con.	No con.
5	-Vout	Common
6	No con.	-Vout
7	No con.	No con.
8	+Vout	+Vout
10	No con.	No con.
11	No con.	No con.
12	No con.	No con.

# TMR-1SM Series ▶ 1 W



- ▶ Wide 2:1 input voltage
- ▶ Low ripple and noise 30mVpk-pk
- ▶ Fully regulated outputs
- ▶ No minimum load required
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Continuous short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



**NEW**  
Product

Specifications		Models			
Line regulation	0.2 % max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1 % max.	TMR 1-0511SM		5 VDC	200 mA
Ripple & noise	30mVpk-pk typ. (20 MHz BW)	TMR 1-0512SM		12 VDC	83 mA
Short circuit protection	continuous, automatic recovery	TMR 1-0513SM	4.5 – 9.0 VDC	15 VDC	67 mA
Efficiency	80 % typ.	TMR 1-0522SM		± 12 VDC	±42 mA
Operating temperature range	-40 °C to +85 °C above 75 °C derating 6.7 %/K	TMR 1-0523SM		± 15 VDC	± 33 mA
I/O isolation voltage	1500VDC (60 sec.)	TMR 1-1211SM		5 VDC	200 mA
Casing	plastic, insert mold (UL 94-0 rated)	TMR 1-1212SM		12 VDC	83 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr1sm.pdf">www.tracopower.com/products/tmr1sm.pdf</a>	TMR 1-1213SM	9 – 18 VDC	15 VDC	67 mA
		TMR 1-1222SM		± 12 VDC	±42 mA
		TMR 1-1223SM		± 15 VDC	± 33 mA
		TMR 1-2411SM		5 VDC	200 mA
		TMR 1-2412SM		12 VDC	83 mA
		TMR 1-2413SM	18 – 36 VDC	15 VDC	67 mA
		TMR 1-2422SM		± 12 VDC	± 42 mA
		TMR 1-2423SM		± 15 VDC	± 33 mA
		TMR 1-4811SM		5 VDC	200 mA
		TMR 1-4812SM		12 VDC	83 mA
		TMR 1-4813SM	36 – 75 VDC	15 VDC	67 mA
		TMR 1-4822SM		± 12 VDC	± 42 mA
		TMR 1-4823SM		± 15 VDC	± 33 mA

Dimensions		Pin		
		<b>Single output</b>	<b>Dual output</b>	
		1	-Vin (GND)	-Vin (GND)
		2	Remote On/Off	Remote On/Off
		6	No con.	Common
		7	No con.	-Vout
		8	+Vout	+Vout
		9	-Vout	Common
		14	+Vin	+Vin

() = Inches

# TES-2H Series ▶ 2 W

- ▶ SMD package with industry standard footprint
- ▶ Single and dual output models
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Available in tape & reel package



## Specifications

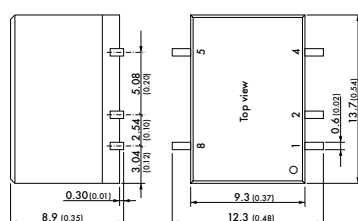
Line regulation	non regulated
Load regulation	+10 %/ -5% max.
Ripple & noise	<120mVpk-pk (20 MHz BW)
Short circuit protection	limited 0.5 sec.
Efficiency	80 % typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $75\text{ }^{\circ}\text{C}$ derating 4.0 %/K
I/O isolation voltage	1500VDC (60 sec.)
Casing	plastic, insert mold (UL 94-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tes2h.pdf">www.tracopower.com/products/tes2h.pdf</a>

## Models

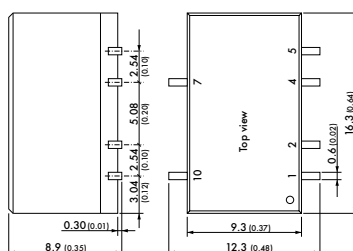
Order code	Input voltage	Output voltage	Output current max.
TES 2-0510H		3.3 VDC	500 mA
TES 2-0511H		5 VDC	400 mA
TES 2-0512H	5 VDC $\pm$ 10 %	12 VDC	165 mA
TES 2-0521H		$\pm$ 5 VDC	$\pm$ 200 mA
TES 2-0522H		$\pm$ 12 VDC	$\pm$ 83 mA
TES 2-0523H		$\pm$ 15 VDC	$\pm$ 66 mA
TES 2-1210H		3.3 VDC	500 mA
TES 2-1211H		5 VDC	400 mA
TES 2-1212H	12 VDC $\pm$ 10 %	12 VDC	165 mA
TES 2-1222H		$\pm$ 12 VDC	$\pm$ 83 mA
TES 2-1223H		$\pm$ 15 VDC	$\pm$ 66 mA
TES 2-2410H		3.3 VDC	500 mA
TES 2-2411H		5 VDC	400 mA
TES 2-2412H	24 VDC $\pm$ 10 %	12 VDC	165 mA
TES 2-2422H		$\pm$ 12 VDC	$\pm$ 83 mA
TES 2-2423H		$\pm$ 15 VDC	$\pm$ 66 mA

## Dimensions

Single output models



Dual output models



() = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
4	- Vout	Common
5	+ Vout	- Vout
7		+ Vout
8	No con.	
10		No con.

# TES-2N Series ▶ 2 W



- ▶ Low profile SMD package
- ▶ Wide 2:1 input range
- ▶ Fully regulated output
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ Available in tape & reel package

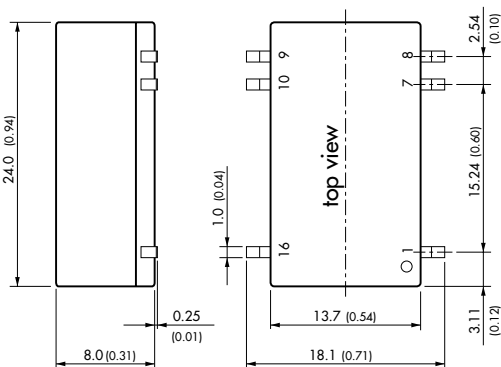


Specifications	
Line regulation	0.5 % max.
Load regulation	Single output models: 0.75 % max. Dual output models: 2.0 % max.
Ripple & noise	<50 mVpk-pk (20 MHz BW)
Conducted EMI	EN55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	78 % typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.5 %/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Casing	plastic, insert mold (UL 94-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tes2n.pdf">www.tracopower.com/products/tes2n.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TES 2N-0510		3.3 VDC	500 mA
TES 2N-0511		5 VDC	400 mA
TES 2N-0512		12 VDC	165 mA
TES 2N-0513	4.5 – 9.0 VDC	15 VDC	135 mA
TES 2N-0521		± 5 VDC	± 200 mA
TES 2N-0522		± 12 VDC	± 85 mA
TES 2N-0523		± 15 VDC	± 65 mA
TES 2N-1210		3.3 VDC	500 mA
TES 2N-1211		5 VDC	400 mA
TES 2N-1212		12 VDC	165 mA
TES 2N-1213	9 – 18 VDC	15 VDC	135 mA
TES 2N-1221		± 5 VDC	± 200 mA
TES 2N-1222		± 12 VDC	± 85 mA
TES 2N-1223		± 15 VDC	± 65 mA
TES 2N-2410		3.3 VDC	500 mA
TES 2N-2411		5 VDC	400 mA
TES 2N-2412		12 VDC	165 mA
TES 2N-2413	18 – 36 VDC	15 VDC	135 mA
TES 2N-2421		± 5 VDC	± 200 mA
TES 2N-2422		± 12 VDC	± 85 mA
TES 2N-2423		± 15 VDC	± 65 mA
TES 2N-4810		3.3 VDC	500 mA
TES 2N-4811		5 VDC	400 mA
TES 2N-4812		12 VDC	165 mA
TES 2N-4813	36 – 75 VDC	15 VDC	135 mA
TES 2N-4821		± 5 VDC	± 200 mA
TES 2N-4822		± 12 VDC	± 85 mA
TES 2N-4823		± 15 VDC	± 65 mA

Product with same electrical specifications available in DIP package.  
See TEL-2 series page 48

## Dimensions



() = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
7	No con.	No con.
8	No con.	Common
9	+ Vout	+ Vout
10	- Vout	- Vout
16	+ Vin (Vcc)	+ Vin (Vcc)



# TDR-2SM Series ▶ 2 W



- ▶ Compact design in SMD package
- ▶ Wide 2:1 input voltage range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  without derating
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

Line regulation	0.2% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.
Ripple & noise	30 mVpk-pk typ. (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	81% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ without derating
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	over mold (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tdr2.pdf">www.tracopower.com/products/tdr2.pdf</a>

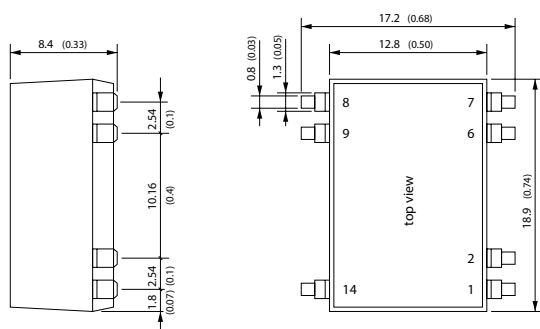
## Models

Order code	Input voltage	Output voltage	Output current max.
TDR 2-0511SM		5 VDC	400 mA
TDR 2-0512SM		12 VDC	167 mA
TDR 2-0513SM	4.5 – 9 VDC	15 VDC	134 mA
TDR 2-0522SM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-0523SM		$\pm 15$ VDC	$\pm 67$ mA
TDR 2-1211SM		5 VDC	400 mA
TDR 2-1212SM		12 VDC	167 mA
TDR 2-1213SM	9 – 18 VDC	15 VDC	134 mA
TDR 2-1222SM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-1223SM		$\pm 15$ VDC	$\pm 67$ mA
TDR 2-2411SM		5 VDC	400 mA
TDR 2-2412SM		12 VDC	167 mA
TDR 2-2413SM	18 – 36 VDC	15 VDC	134 mA
TDR 2-2422SM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-2423SM		$\pm 15$ VDC	$\pm 67$ mA
TDR 2-4811SM		5 VDC	400 mA
TDR 2-4812SM		12 VDC	167 mA
TDR 2-4813SM	36 – 75 VDC	15 VDC	134 mA
TDR 2-4822SM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-4823SM		$\pm 15$ VDC	$\pm 67$ mA

Product with same electrical specifications available in DIP package.

See TDR-2 series page 49

## Dimensions



() = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	Remote On/Off	Remote On/Off
6	No con.	Common
7	No con.	- Vout
8	+ Vout	+ Vout
9	- Vout	Common
14	+ Vin (Vcc)	+ Vin (Vcc)

# TDR-2WISM Series ▶ 2 W

- ▶ Compact design in SMD package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  without derating
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

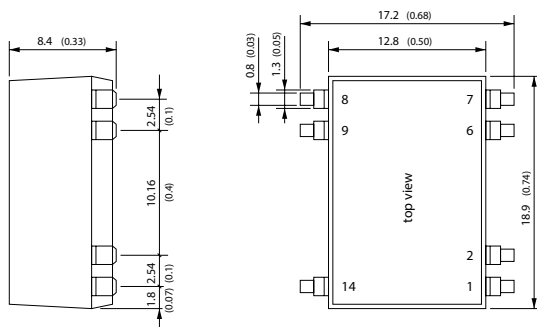
Line regulation	0.2% max.
Load regulation	– Single output models: 1.0% max. – Dual output models: 1.0% max.
Ripple & noise	30 mVp-p typ. (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	81% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ without derating
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	over mold (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tdr2wi.pdf">www.tracopower.com/products/tdr2wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TDR 2-1211WISM		5 VDC	400 mA
TDR 2-1212WISM		12 VDC	167 mA
TDR 2-1213WISM	4.5 – 18 VDC	15 VDC	134 mA
TDR 2-1222WISM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-1223WISM		$\pm 15$ VDC	$\pm 67$ mA
TDR 2-2411WISM		5 VDC	400 mA
TDR 2-2412WISM		12 VDC	167 mA
TDR 2-2413WISM	9 – 36 VDC	15 VDC	134 mA
TDR 2-2422WISM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-2423WISM		$\pm 15$ VDC	$\pm 67$ mA
TDR 2-4811WISM		5 VDC	400 mA
TDR 2-4812WISM		12 VDC	167 mA
TDR 2-4813WISM	18 – 75 VDC	15 VDC	134 mA
TDR 2-4822WISM		$\pm 12$ VDC	$\pm 83$ mA
TDR 2-4823WISM		$\pm 15$ VDC	$\pm 67$ mA

Product with same electrical specifications available in DIP package.  
See TDR-2WI series page 50

## Dimensions



() = Inches

Pin	Single output	Dual output
1	– Vin (GND)	– Vin (GND)
2	Remote On/Off	Remote On/Off
6	No con.	Common
7	No con.	– Vout
8	+ Vout	+ Vout
9	– Vout	Common
14	+ Vin (Vcc)	+ Vin (Vcc)

# TDR-3SM Series ▶ 3 W



- ▶ Smallest 3 Watt converter in SMD package
- ▶ Wide 2:1 input voltage range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O isolation 1500 VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



Specifications		Models			
Line regulation	0.2% max.	Order code	Input voltage	Output voltage	Output current max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.	TDR 3-0511SM	4.5 – 9 VDC	5 VDC	600 mA
Ripple & noise	30 mVpk-pk typ. (20 MHz BW)	TDR 3-0512SM		12 VDC	250 mA
Short circuit protection	continuous, automatic recovery	TDR 3-0513SM		15 VDC	200 mA
Efficiency	81% typ.	TDR 3-0522SM		$\pm 12\text{ VDC}$	$\pm 125\text{ mA}$
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $70\text{ }^{\circ}\text{C}$ derating 3.3%/K	TDR 3-0523SM		$\pm 15\text{ VDC}$	$\pm 100\text{ mA}$
I/O isolation voltage	1500 VDC (60 sec.)	TDR 3-1211SM		5 VDC	600 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	TDR 3-1212SM		12 VDC	250 mA
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TDR 3-1213SM	9 – 18 VDC	15 VDC	200 mA
Casing	over mold (UL 94 V-0 rated)	TDR 3-1222SM		$\pm 12\text{ VDC}$	$\pm 125\text{ mA}$
Full datasheet	<a href="http://www.tracopower.com/products/tdr3sm.pdf">www.tracopower.com/products/tdr3sm.pdf</a>	TDR 3-1223SM		$\pm 15\text{ VDC}$	$\pm 100\text{ mA}$
		TDR 3-2411SM		5 VDC	600 mA
		TDR 3-2412SM		12 VDC	250 mA
		TDR 3-2413SM	18 – 36 VDC	15 VDC	200 mA
		TDR 3-2422SM		$\pm 12\text{ VDC}$	$\pm 125\text{ mA}$
		TDR 3-2423SM		$\pm 15\text{ VDC}$	$\pm 100\text{ mA}$
		TDR 3-4811SM		5 VDC	600 mA
		TDR 3-4812SM		12 VDC	250 mA
		TDR 3-4813SM	36 – 75 VDC	15 VDC	200 mA
		TDR 3-4822SM		$\pm 12\text{ VDC}$	$\pm 125\text{ mA}$
		TDR 3-4823SM		$\pm 15\text{ VDC}$	$\pm 100\text{ mA}$

Product with same electrical specifications available in DIP package.  
See TDR-3 series page 51

Dimensions		Pin		
		Pin	Single output	Dual output
		1	- Vin (GND)	- Vin (GND)
		2	Remote On/Off	Remote On/Off
		6	No con.	Common
		7	No con.	- Vout
		8	+ Vout	+ Vout
		9	- Vout	Common
		14	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# TDR-3WISM Series ▶ 3 W



- ▶ Smallest 3 Watt converter in SMD package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off
- ▶ Available in tape & reel package



Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.	TDR 3-1211WISM		5 VDC	600 mA
Ripple & noise	30 mVp-p typ. (20 MHz BW)	TDR 3-1212WISM		12 VDC	250 mA
Short circuit protection	continuous, automatic recovery	TDR 3-1213WISM	4.5 – 18 VDC	15 VDC	200 mA
Efficiency	81% typ.	TDR 3-1222WISM		± 12 VDC	± 125 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3%/K	TDR 3-1223WISM		± 15 VDC	± 100 mA
I/O isolation voltage	1500 VDC (60 sec.)	TDR 3-2411WISM		5 VDC	600 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	TDR 3-2412WISM		12 VDC	250 mA
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TDR 3-2413WISM	9 – 36 VDC	15 VDC	200 mA
Casing	over mold (UL 94 V-0 rated)	TDR 3-2422WISM		± 12 VDC	± 125 mA
Full datasheet	<a href="http://www.tracopower.com/products/tdr3wi.pdf">www.tracopower.com/products/tdr3wi.pdf</a>	TDR 3-2423WISM		± 15 VDC	± 100 mA
		TDR 3-4811WISM		5 VDC	600 mA
		TDR 3-4812WISM		12 VDC	250 mA
		TDR 3-4813WISM	18 – 75 VDC	15 VDC	200 mA
		TDR 3-4822WISM		± 12 VDC	± 125 mA
		TDR 3-4823WISM		± 15 VDC	± 100 mA

Product with same electrical specifications available in DIP package.  
See TDR-3WI series page 52

Dimensions		Pin		
		<b>Single output</b>	<b>Dual output</b>	
		1	- Vin (GND)	- Vin (GND)
		2	Remote On/Off	Remote On/Off
		6	No con.	Common
		7	No con.	- Vout
		8	+ Vout	+ Vout
		9	- Vout	Common
		14	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# THL-3WISM Series ▶ 3 W

CB  
Scheme

 US  
UL 60950-1

- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+80\text{ }^{\circ}\text{C}$
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Available in tape & reel package



## Specifications

Line regulation	1.0% max.
Load regulation	1.2% max.
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	80 % typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$ above $60\text{ }^{\circ}\text{C}$ derating 2.5%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	UL 60950-1, IEC/EN 60950-1, CB report
Remote On/Off	shutdown input for low input current (5 mA) in standby operation
Casing	insert mold (UL 94 V-0 rated plastic)
Full datasheet	<a href="http://www.tracopower.com/products/thl3wism.pdf">www.tracopower.com/products/thl3wism.pdf</a>

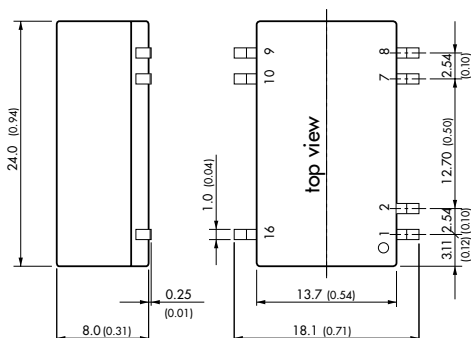
## Models

Order code	Input voltage	Output voltage	Output current max.
THL 3-2410WISM		3.3 VDC	600 mA
THL 3-2411WISM		5 VDC	600 mA
THL 3-2412WISM		12 VDC	250 mA
THL 3-2413WISM	9 – 36 VDC	15 VDC	200 mA
THL 3-2415WISM		24 VDC	125 mA
THL 3-2421WISM		$\pm 5$ VDC	$\pm 300$ mA
THL 3-2422WISM		$\pm 12$ VDC	$\pm 125$ mA
THL 3-2423WISM		$\pm 15$ VDC	$\pm 100$ mA
THL 3-4810WISM		3.3 VDC	600 mA
THL 3-4811WISM		5 VDC	600 mA
THL 3-4812WISM		12 VDC	250 mA
THL 3-4813WISM	18 – 75 VDC	15 VDC	200 mA
THL 3-4815WISM		24 VDC	125 mA
THL 3-4821WISM		$\pm 5$ VDC	$\pm 300$ mA
THL 3-4822WISM		$\pm 12$ VDC	$\pm 125$ mA
THL 3-4823WISM		$\pm 15$ VDC	$\pm 100$ mA

Product with same electrical specifications available in DIP package.

See THL-3WI series page 53

## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	Remote On/Off	Remote On/Off
7	No con.	No con.
8	No con.	Common
9	+ Vout	+ Vout
10	- Vout	- Vout
16	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# THL-6WISM Series ▶ 6 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated output
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ I/O isolation 1500 VDC
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Optional tape & reel package



Specifications		Models			
Line regulation	1.0 % max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.2 % max.	THL 6-2410WISM		3.3 VDC	1450 mA
Ripple & Noise	<100 mVpk-pk typ.(20 MHz BW)	THL 6-2411WISM		5 VDC	1200 mA
Input filter	EN 55022, class EN55022 class A without external components	THL 6-2412WISM		12 VDC	500 mA
Short circuit protection	continuous, automatic recovery	THL 6-2413WISM	9 – 36 VDC	15 VDC	400 mA
Efficiency	83 % typ.	THL 6-2415WISM		24 VDC	250 mA
Operating temperature range	-40 °C to +80 °C above 60°C derating 2.5%/K	THL 6-2421WISM		± 5 VDC	± 600 mA
I/O isolation voltage	1500 VDC (60 sec.)	THL 6-2422WISM		± 12 VDC	± 250 mA
Safety standards	UL 60950-1, IEC/EN 60950-1, CB report	THL 6-2423WISM		± 15 VDC	± 200 mA
Remote On/Off	shutdown input for low input current (10 mA) in standby operation	THL 6-4810WISM		3.3 VDC	1450 mA
Casing	insert mold (UL 94 V-0 rated plastic)	THL 6-4811WISM		5 VDC	1200 mA
Full datasheet	<a href="http://www.tracopower.com/products/thl6wism.pdf">www.tracopower.com/products/thl6wism.pdf</a>	THL 6-4812WISM		12 VDC	500 mA
		THL 6-4813WISM	18 – 75 VDC	15 VDC	400 mA
		THL 6-4815WISM		24 VDC	250 mA
		THL 6-4821WISM		± 5 VDC	± 600 mA
		THL 6-4822WISM		± 12 VDC	± 250 mA
		THL 6-4823WISM		± 15 VDC	± 200 mA

Dimensions		Pin		
	<p>Side view dimensions: 22.0 (0.871) height, 10.05 (0.4) width, 0.15 (0.01) offset.</p> <p>Top view dimensions: 25.4 (1.0) length, 20.3 (0.8) width, 1.5 (0.06) offset, 2.54 (0.10) offset, 2.11 (0.08) offset, 10.16 (0.40) offset, 5.08 (0.20) offset.</p>	Pin	Single output	Dual output
		1	Remote On/Off	Remote On/Off
2	- Vin (GND)	- Vin (GND)		
6	No con.	Common		
8	No con.	- Vout		
9	+ Vout	+ Vout		
11	- Vout	Common		
16	+ Vin (Vcc)	+ Vin (Vcc)		

() = Inches

# TON-15 Series ▶ 15 W



- ▶ Low profile, open frame
- ▶ SMD or trough hole version
- ▶ Wide 2:1 input voltage range
- ▶ High efficiency up to 88 %
- ▶ I/O-isolation 2250 VDC (planar transformer)
- ▶ Operating temperature range -40 °C to +90 °C
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

Line regulation	0.2 % max.
Load regulation	0.2 % max.
Output voltage adjustment	±10 % by external resistor
Ripple & noise (20 MHz BW)	<75 mVpk-pk <100 mVpk-pk for 12 & 15 VDC models
Conducted EMI	EN55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	86 % typ.
Operating temperature range	-40 °C to +85 °C above 75 °C derating 3.3 %/K
I/O isolation voltage	2250 VDC (60 sec.) basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC 60950-1, CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation. Negative remote function (forced On) on request.
Full datasheet	<a href="http://www.tracopower.com/products/ton15.pdf">www.tracopower.com/products/ton15.pdf</a>

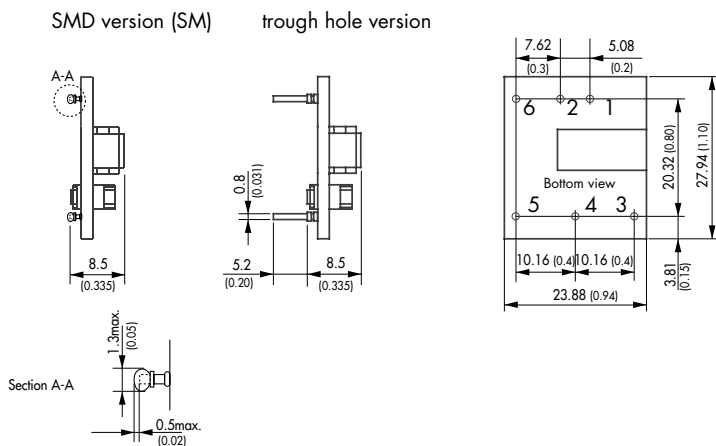
## SMD Models

Order code	Input voltage	Output voltage	Output current max.
TON 15-2410SM	18 – 36 VDC	3.3 VDC	3500 mA
TON 15-2411SM		5 VDC	3000 mA
TON 15-2412SM		12 VDC	1250 mA
TON 15-2413SM	36 – 75 VDC	15 VDC	1000 mA
TON 15-4810SM		3.3 VDC	3500 mA
TON 15-4811SM		5 VDC	3000 mA
TON 15-4812SM	12 VDC	1250 mA	
TON 15-4813SM	15 VDC	1000 mA	

## Trough Hole Models

Order code	Input voltage	Output voltage	Output current max.
TON 15-2410	18 – 36 VDC	3.3 VDC	3500 mA
TON 15-2411		5 VDC	3000 mA
TON 15-2412		12 VDC	1250 mA
TON 15-2413	36 – 75 VDC	15 VDC	1000 mA
TON 15-4810		3.3 VDC	3500 mA
TON 15-4811		5 VDC	3000 mA
TON 15-4812	12 VDC	1250 mA	
TON 15-4813	15 VDC	1000 mA	

## Dimensions



( ) = Inches

## Pin

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

# TON-15WI Series ▶ 15 W



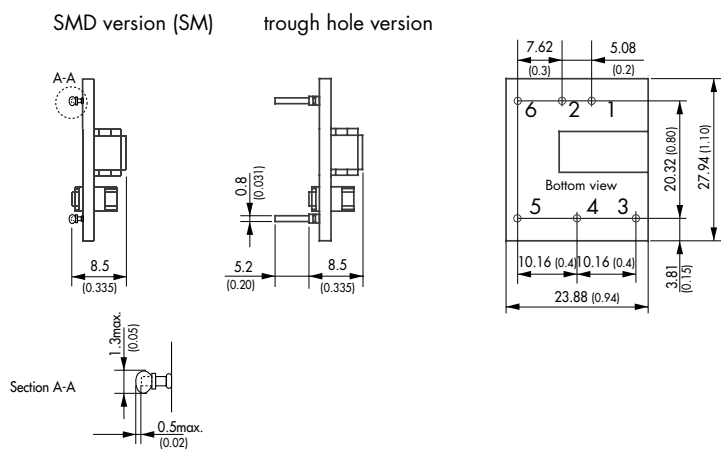
- ▶ Low profile, open frame
- ▶ SMD or trough hole version
- ▶ Ultra wide 4:1 input voltage range
- ▶ High efficiency up to 88 %
- ▶ I/O-isolation 2250 VDC (planar transformer)
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Remote On/Off
- ▶ Adjustable output voltage



Specifications		SMD Models			
Line regulation	0.2% max.	Order code	Input voltage	Output voltage	Output current max.
Load regulation	0.2 % max.	TON 15-2410WISM		3.3 VDC	4000 mA
Output voltage adjustment	±10 % by external resistor	TON 15-2411WISM	9 – 36 VDC	5 VDC	3000 mA
Ripple & noise (20 MHz BW)	<75 mVpk-pk <100 mVpk-pk for 12 & 15 VDC models	TON 15-2412WISM		12 VDC	1300 mA
Conducted EMI	EN55022, class EN55022 class A (with external capacitors)	TON 15-2413WISM		15 VDC	1000 mA
Short circuit protection	continuous, automatic recovery	TON 15-4810WISM		3.3 VDC	4000 mA
Efficiency	86 % typ.	TON 15-4811WISM	18 – 75 VDC	5 VDC	3000 mA
Operating temperature range	-40 °C to +85 °C above 60 °C derating 2.0 %/K	TON 15-4812WISM		12 VDC	1300 mA
I/O isolation voltage	2250 VDC (60 sec.) basic insulation	TON 15-4813WISM		15 VDC	1000 mA
Safety standards / approvals	cUL/UL 60950-1, IEC 60950-1, CB-report				
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation. Negative remote function (forced On) on request.				
Full datasheet	<a href="http://www.tracopower.com/products/ton15wi.pdf">www.tracopower.com/products/ton15wi.pdf</a>				

Trough Hole Models			
Order code	Input voltage	Output voltage	Output current max.
TON 15-2410WI		3.3 VDC	4000 mA
TON 15-2411WI	9 – 36 VDC	5 VDC	3000 mA
TON 15-2412WI		12 VDC	1300 mA
TON 15-2413WI		15 VDC	1000 mA
TON 15-4810WI		3.3 VDC	4000 mA
TON 15-4811WI	18 – 75 VDC	5 VDC	3000 mA
TON 15-4812WI		12 VDC	1300 mA
TON 15-4813WI		15 VDC	1000 mA

## Dimensions



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

() = Inches



# TMA/TME Series ▶ 1 W

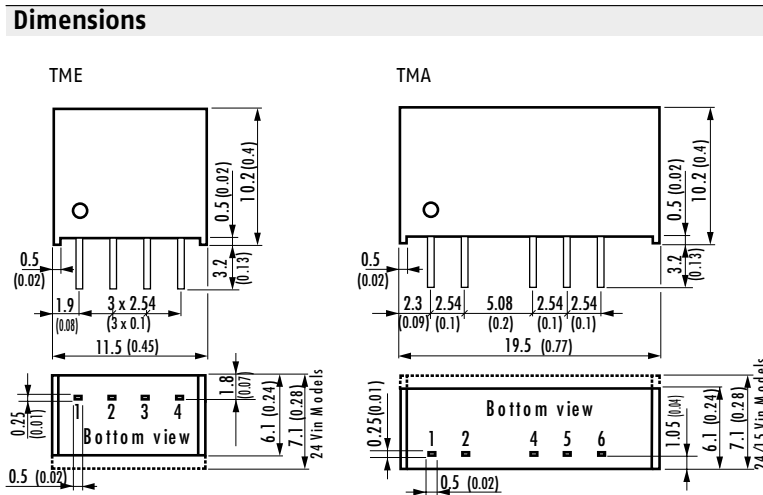
- ▶ Industry standard pinout
- ▶ Non-regulated output
- ▶ Single and dual output models
- ▶ I/O isolation voltage 1000VDC
- ▶ High efficiency
- ▶ Operating temperature range -40 °C to +85 °C



Specifications	
Line regulation	non regulated
Load regulation	10% max.
Ripple & Noise	- TMA <75 mVpk-pk (20 MHz BW) - TME <150 mVpk-pk (20 MHz BW)
Short circuit protection	limited 1 sec.
Efficiency	80% typ.
Operating temperature range	-40 °C to +85 °C (no derating)
I/O isolation voltage	1000VDC (60 sec.)
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tme.pdf">www.tracopower.com/products/tme.pdf</a> <a href="http://www.tracopower.com/products/tma.pdf">www.tracopower.com/products/tma.pdf</a>

Models				
Order code	Input voltage	Output voltage	Output current max.	
TME 0303S	3.3 VDC ±10%	3.3 VDC	260 mA	
TME 0305S		5 VDC	200 mA	
TME 0503S		3.3 VDC	260 mA	
TMA 0505S		5 VDC	200 mA	
TME 0509S		9 VDC	110 mA	
TMA 0512S		12 VDC	80 mA	
TMA 0515S	5 VDC ±10%	15 VDC	65 mA	
TMA 0505D		± 5 VDC	±100 mA	
TMA 0512D		± 12 VDC	± 40 mA	
TMA 0515D		± 15 VDC	± 35 mA	
TMA 1205S	TME 1205S	5 VDC	200 mA	
	TME 1209S	9 VDC	110 mA	
TMA 1212S	TME 1212S	12 VDC	80 mA	
TMA 1215S	TME 1215S	12 VDC ± 10%	15 VDC	65 mA
TMA 1205D		± 5 VDC	±100 mA	
TMA 1212D		± 12 VDC	± 40 mA	
TMA 1215D		± 15 VDC	± 35 mA	
TMA 1505S		5 VDC	200 mA	
TMA 1512S		12 VDC	80 mA	
TMA 1515S	15 VDC ± 10%	15 VDC	65 mA	
TMA 1505D		± 5 VDC	± 100 mA	
TMA 1512D		± 12 VDC	± 40 mA	
TMA 1515D		± 15 VDC	± 35 mA	
TMA 2405S	TME 2405S	5 VDC	200 mA	
	TME 2409S	9 VDC	110 mA	
TMA 2412S	TME 2412S	12 VDC	80 mA	
TMA 2415S	TME 2415S	24 VDC ±10%	15 VDC	65 mA
TMA 2405D		± 5 VDC	±100 mA	
TMA 2412D		± 12 VDC	± 40 mA	
TMA 2415D		± 15 VDC	± 35 mA	

For improved load regulation see TRA-1 series page 29



Pin	TMA Single output	TMA Dual output	TME Single output
1	+ Vin (Vcc)	+ Vin (Vcc)	- Vin (GND)
2	- Vin (GND)	- Vin (GND)	+ Vin (Vcc)
3	No Pin	No Pin	- Vout
4	- Vout	- Vout	+ Vout
5	No Pin	Common	
6	+ Vout	+ Vout	

() = Inches

# TRA-1 Series ▶ 1 W



- ▶ Semi-regulated output (load)
- ▶ Industry standard pinout
- ▶ Very high efficiency up to 88%
- ▶ Single and dual output models
- ▶ I/O isolation voltage 1000VDC
- ▶ Operating temperature range -40 °C to +85 °C



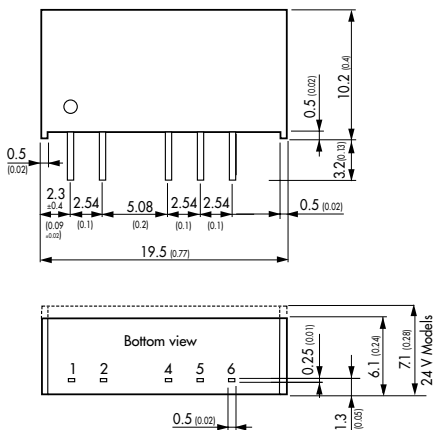
## Specifications

Line regulation	non regulated
Load regulation (20- 100% load)	5% typ for 5V input models 3.5% typ for 12V input models 2.5% typ for 24V input models
Ripple & Noise	<60 mVp-p (20 MHz BW)
Short circuit protection	limited 0.5 sec.
Efficiency	86 % typ.
Operating temperature range	-40 °C to +85 °C (no derating)
I/O isolation voltage	1000 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tra1.pdf">www.tracopower.com/products/tra1.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TRA 1-0511		5 VDC	200 mA
TRA 1-0519		9 VDC	110 mA
TRA 1-0512		12 VDC	84 mA
TRA 1-0513	5 VDC ± 10 %	15 VDC	67 mA
TRA 1-0521		± 5 VDC	± 100 mA
TRA 1-0522		± 12 VDC	± 42 mA
TRA 1-0523		± 15 VDC	± 34 mA
TRA 1-1211		5 VDC	200 mA
TRA 1-1219		9 VDC	110 mA
TRA 1-1212		12 VDC	84 mA
TRA 1-1213	12 VDC ± 10 %	15 VDC	67 mA
TRA 1-1221		± 5 VDC	± 100 mA
TRA 1-1222		± 12 VDC	± 42 mA
TRA 1-1223		± 15 VDC	± 34 mA
TRA 1-2411		5 VDC	200 mA
TRA 1-2419		9 VDC	110 mA
TRA 1-2412		12 VDC	84 mA
TRA 1-2413	24 VDC ± 10 %	15 VDC	67 mA
TRA 1-2421		± 5 VDC	± 100 mA
TRA 1-2422		± 12 VDC	± 42 mA
TRA 1-2423		± 15 VDC	± 34 mA

## Dimensions

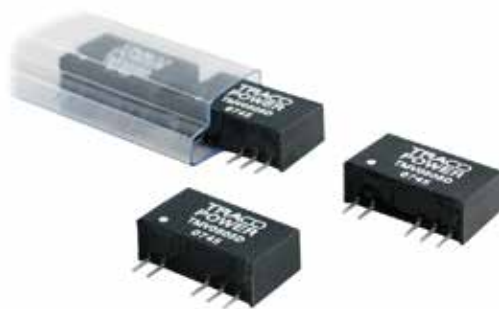


() = Inches

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

# TMV Series ▶ 1 W

- ▶ Industry standard pinout
- ▶ Single and dual output models
- ▶ I/O isolation voltage 3000 VDC
- ▶ Operating temperature range -40 °C to +85 °C



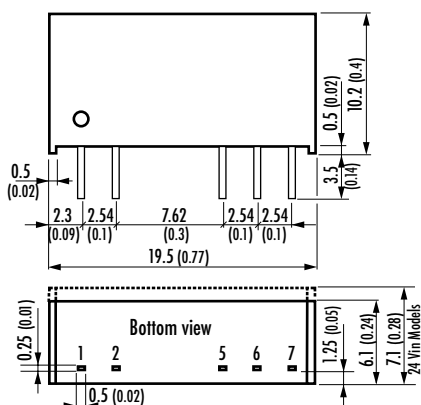
Specifications	
Line regulation	non regulated
Load regulation	10% max.
Ripple & noise	<100 mVpk-pk (20MHz BW)
Short circuit protection	limited 0.5 sec.
Efficiency	77% typ.
Operating temperature range	-40 °C to +85 °C above 80 °C derating 4%/K
I/O isolation voltage	3000 VDC (60 sec.) functional insulation
I/O isolation capacitance	60 pF typ.
I/O isolation resistance	>10 GOhm
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmv.pdf">www.tracopower.com/products/tmv.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TMV 0505S		5 VDC	200 mA
TMV 0509S		9 VDC	110 mA
TMV 0512S		12 VDC	80 mA
TMV 0515S	5 VDC ± 10 %	15 VDC	65 mA
TMV 0505D		± 5 VDC	± 100 mA
TMV 0512D		± 12 VDC	± 40 mA
TMV 0515D		± 15 VDC	± 30 mA
TMV 1205S		5 VDC	200 mA
TMV 1212S		12 VDC	80 mA
TMV 1215S	12 VDC ± 10 %	15 VDC	65 mA
TMV 1205D		± 5 VDC	± 100 mA
TMV 1212D		± 12 VDC	± 40 mA
TMV 1215D		± 15 VDC	± 30 mA
TMV 2405S		5 VDC	200 mA
TMV 2412S		12 VDC	80 mA
TMV 2415S	24 VDC ± 10 %	15 VDC	65 mA
TMV 2405D		± 5 VDC	± 100 mA
TMV 2412D		± 12 VDC	± 40 mA
TMV 2415D		± 15 VDC	± 30 mA

Product available with reinforced insulation  
See TMV-EN series page 111

For improved load regulation  
see TRV-1 series page 32

## Dimensions



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

() = Inches

# TMV-HI Series ▶ 1 W



- ▶ Industry standard pinout
- ▶ Very high 5200 VDC I/O-isolation
- ▶ Low coupling capacitance 7pF
- ▶ Suitable for IGBT applications
- ▶ Operating temperature range  
-40 °C to +85 °C without derating

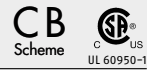


**NEW**  
Product

Specifications		Models			
Line regulation	1.2%	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	5.0 VDC models: 15% max. 3.3 VDC models 20% max. other models: 10% max.	TMV 0503SHI		3.3 VDC	303 mA
Ripple & noise	<100 mVpk-pk (20 MHz BW)	TMV 0505SHI		5.0 VDC	200 mA
Efficiency	76 % typ.	TMV 0509SHI		9.0 VDC	111 mA
Operating temperature range	-40 °C to +85 °C (without derating)	TMV 0512SHI		12 VDC	84 mA
I/O isolation voltage	5200 VDC (60 sec.)	TMV 0515SHI	5 VDC ± 10 %	15 VDC	66 mA
I/O isolation dV/dt	15kV/μs @ 100kHz max.	TMV 0505DHI		± 5.0 VDC	±100 mA
I/O isolation capacitance	7 pF typ.	TMV 0509DHI		± 9.0 VDC	± 56 mA
I/O isolation resistance	>10 GOhm	TMV 0512DHI		± 12 VDC	± 42 mA
Casing	plastic (UL 94 V-0 rated)	TMV 0515DHI		± 15 VDC	± 33 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmv-hi.pdf">www.tracopower.com/products/tmv-hi.pdf</a>	TMV 05159HI		± 15 / -9 VDC	± 33 / -55 mA
		TMV 1203SHI		3.3 VDC	303 mA
		TMV 1205SHI		5.0 VDC	200 mA
		TMV 1209SHI		9.0 VDC	111 mA
		TMV 1212SHI		12 VDC	84 mA
		TMV 1215SHI	12 VDC ± 10 %	15 VDC	66 mA
		TMV 1205DHI		± 5.0 VDC	±100 mA
		TMV 1209DHI		± 9.0 VDC	± 56 mA
		TMV 1212DHI		± 12 VDC	± 42 mA
		TMV 1215DHI		± 15 VDC	± 33 mA
		TMV 12159HI		± 15 / -9 VDC	± 33 / -55 mA
		TMV 1503SHI		3.3 VDC	303 mA
		TMV 1505SHI		5.0 VDC	200 mA
		TMV 1509SHI		9.0 VDC	111 mA
		TMV 1512SHI		12 VDC	84 mA
		TMV 1515SHI	15 VDC ± 10 %	15 VDC	66 mA
		TMV 1505DHI		± 5.0 VDC	±100 mA
		TMV 1509DHI		± 9.0 VDC	± 56 mA
		TMV 1512DHI		± 12 VDC	± 42 mA
		TMV 1515DHI		± 15 VDC	± 33 mA
		TMV 15159HI		± 15 / -9 VDC	± 33 / -55 mA
		TMV 2403SHI		3.3 VDC	303 mA
		TMV 2405SHI		5.0 VDC	200 mA
		TMV 2409SHI		9.0 VDC	111 mA
		TMV 2412SHI		12 VDC	84 mA
		TMV 2415SHI	24 VDC ± 10 %	15 VDC	66 mA
		TMV 2405DHI		± 5.0 VDC	±100 mA
		TMV 2409DHI		± 9.0 VDC	± 56 mA
		TMV 2412DHI		± 12 VDC	± 42 mA
		TMV 2415DHI		± 15 VDC	± 33 mA
		TMV 24159HI		± 15 / -9 VDC	± 33 / -55 mA
<b>Dimensions</b>					
<p>Top view dimensions: 19.5 (0.77) total length, 7.62 (0.3) distance between pins 1-2 and 5-6, 2.54 (0.1) distance between pins 2-3 and 6-7, 0.5 (0.02) pin width, 10.2 (0.4) total height, 3.2 (0.13) mounting hole diameter, 0.5 (0.02) mounting hole offset.</p> <p>Bottom view dimensions: 7.1 (0.28) total width, 0.5 (0.02) pin width, 2.0 (0.08) distance between pins 1-2 and 5-6, 0.25 (0.01) distance between pins 2-3 and 6-7.</p>					
<b>Pin</b>	<b>Single output</b>	<b>Dual output</b>			
1	+ Vin (Vcc)	+ Vin (Vcc)			
2	- Vin (GND)	- Vin (GND)			
5	- Vout	- Vout			
6	No pin	Common			
7	+ Vout	+ Vout			

( ) = Inches

# TRV-1 Series ▶ 1 W



- ▶ Semi-regulated output (load)
- ▶ Industry standard pinout
- ▶ Very high efficiency up to 88%
- ▶ I/O isolation voltage 3000VDC
- ▶ Operating temperature range -40 °C to +85 °C



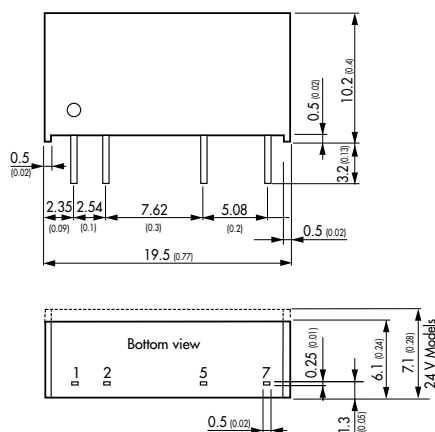
## Specifications

Line regulation	non regulated
Load regulation (20- 100% load)	5% typ for 5V input models 3.5% typ for 12 V & 24 V input models
Ripple & Noise	<50 mVp-p (20 MHz BW)
Short circuit protection	limited 0.5 sec.
Efficiency	86 % typ.
Operating temperature range	-40 °C to +85 °C (no derating)
I/O isolation voltage	3000 VDC (60 sec.) functional insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/trv1.pdf">www.tracopower.com/products/trv1.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TRV 1-0511		5 VDC	200 mA
TRV 1-0519	5 VDC ± 10 %	9 VDC	110 mA
TRV 1-0512		12 VDC	84 mA
TRV 1-0513		15 VDC	67 mA
TRV 1-1211		5 VDC	200 mA
TRV 1-1219	12 VDC ± 10 %	9 VDC	110 mA
TRV 1-1212		12 VDC	84 mA
TRV 1-1213		15 VDC	67 mA
TRV 1-2411		5 VDC	200 mA
TRV 1-2419	24 VDC ± 10 %	9 VDC	110 mA
TRV 1-2412		12 VDC	84 mA
TRV 1-2413		15 VDC	67 mA

## Dimensions



## Pin

1	+ Vin (Vcc)
2	- Vin (GND)
5	- Vout
7	+ Vout

( ) = Inches

# TMR-1 Series ▶ 1 W

- ▶ Fully regulated outputs
- ▶ Wide 2 : 1 input voltage range
- ▶ Operating temperature range  
-40°C to +85°C without derating
- ▶ No minimum load required
- ▶ I/O isolation voltage 1500VDC
- ▶ Short circuit protection

**NEW**  
Product



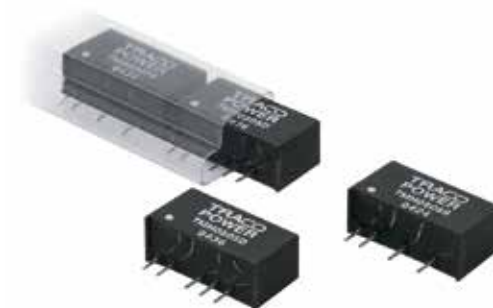
Specifications		Models			
Line regulation	0.2 % max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1 % max.	TMR 1-0511		5 VDC	200 mA
Ripple & noise	<110mVpk-pk (20 MHz BW)	TMR 1-0512		12 VDC	83 mA
Short circuit protection	continuous, automatic recovery	TMR 1-0513	4.5 – 9.0 VDC	15 VDC	67 mA
Efficiency	78 % typ.	TMR 1-0522		± 12 VDC	±42 mA
Operating temperature range	-40 °C to +85 °C (without derating)	TMR 1-0523		± 15 VDC	± 33 mA
I/O isolation voltage	1500VDC (60 sec.)	TMR 1-1211		5 VDC	200 mA
Casing	plastic (UL 94-0 rated)	TMR 1-1212		12 VDC	83 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr1.pdf">www.tracopower.com/products/tmr1.pdf</a>	TMR 1-1213	9 – 18 VDC	15 VDC	67 mA
		TMR 1-1222		± 12 VDC	±42 mA
		TMR 1-1223		± 15 VDC	± 33 mA
		TMR 1-2411		5 VDC	200 mA
		TMR 1-2412		12 VDC	83 mA
		TMR 1-2413	18 – 36 VDC	15 VDC	67 mA
		TMR 1-2422		± 12 VDC	± 42 mA
		TMR 1-2423		± 15 VDC	± 33 mA
		TMR 1-4811		5 VDC	200 mA
		TMR 1-4812		12 VDC	83 mA
		TMR 1-4813	36 – 75 VDC	15 VDC	67 mA
		TMR 1-4822		± 12 VDC	± 42 mA
		TMR 1-4823		± 15 VDC	± 33 mA

Dimensions		Pin		
<p>Top view dimensions: 17.0 (0.67) total width, 11.0 (0.41) total height, 0.5 (0.02) pin pitch, 0.5 (0.02) pin width, 2.3 (0.09) pin 1 offset, 2.54 (0.1) pin 2 offset, 5.08 (0.2) pin 4 offset, 2.54 (0.1) pin 5 offset, 2.54 (0.1) pin 6 offset, 0.5 (0.02) pin 6 offset from right edge, 3.2 (0.12) pin 6 height, 0.5 (0.02) pin 6 width.</p> <p>Bottom view dimensions: 7.62 (0.30) total width, 0.25 (0.01) pin 1 offset, 0.5 (0.02) pin 2 offset, 2.5 (0.10) pin 4 offset, 2.5 (0.10) pin 5 offset, 0.5 (0.02) pin 6 offset.</p>		<b>Single output</b>	<b>Dual output</b>	
1	- Vin (GND)	- Vin (GND)		
2	+ Vin (Vcc)	+ Vin (Vcc)		
4	+ Vout	+ Vout		
5	No pin	Common		
6	- Vout	- Vout		

( ) = Inches

# TMH Series ▶ 2 W

- ▶ Industry standard pinout
- ▶ Single and dual output models
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$



## Specifications

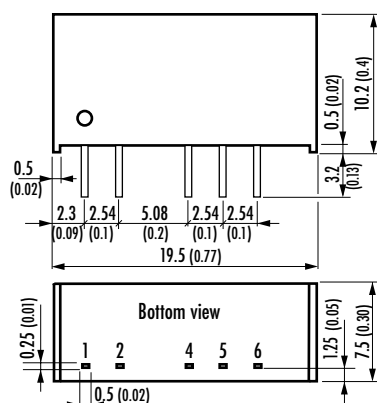
Line regulation	non regulated
Load regulation	10% max.
Ripple & noise (20 MHz BW)	< 75 mVpk-pk for 5 Vin models <150 mVpk-pk for 12/24 Vin models
Short circuit protection	limited 0.5 sec. max.
Efficiency	81% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $70\text{ }^{\circ}\text{C}$ derating 3%/K
I/O isolation voltage	1000VDC (60 sec.)
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmh.pdf">www.tracopower.com/products/tmh.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMH 0505S		5 VDC	400 mA
TMH 0512S		12 VDC	165 mA
TMH 0515S	5 VDC $\pm$ 10 %	15 VDC	130 mA
TMH 0505D		$\pm$ 5 VDC	$\pm$ 200 mA
TMH 0512D		$\pm$ 12 VDC	$\pm$ 80 mA
TMH 0515D		$\pm$ 15 VDC	$\pm$ 65 mA
TMH 1205S		5 VDC	400 mA
TMH 1212S		12 VDC	165 mA
TMH 1215S	12 VDC $\pm$ 10 %	15 VDC	130 mA
TMH 1205D		$\pm$ 5 VDC	$\pm$ 200 mA
TMH 1212D		$\pm$ 12 VDC	$\pm$ 80 mA
TMH 1215D		$\pm$ 15 VDC	$\pm$ 65 mA
TMH 2405S		5 VDC	400 mA
TMH 2412S		12 VDC	165 mA
TMH 2415S	24 VDC $\pm$ 10 %	15 VDC	130 mA
TMH 2405D		$\pm$ 5 VDC	$\pm$ 200 mA
TMH 2412D		$\pm$ 12 VDC	$\pm$ 80 mA
TMH 2415D		$\pm$ 15 VDC	$\pm$ 65 mA

For improved load regulation  
see TRA-3 series page 35

## Dimensions



() = Inches

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

# TRA-3 Series ▶ 3 W



- ▶ Semi-regulated output (load)
- ▶ Very high efficiency up to 89%
- ▶ Operating temperature range -40 °C to +85 °C



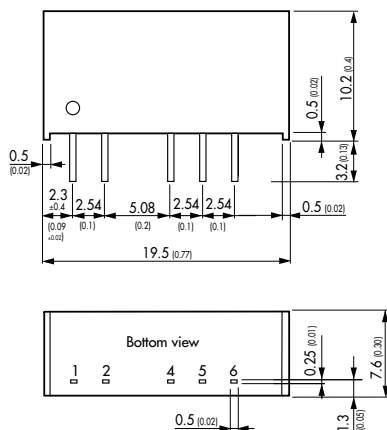
## Specifications

Line regulation	non regulated
Load regulation (20- 100% load)	7% typ for 5V input models 5% typ for 12V & 24V input models
Ripple & Noise	60 mVp-p typ. (20 MHz BW)
Short circuit protection	limited 0.5 sec.
Efficiency	86 % typ.
Operating temperature range	-40 °C to +85 °C (no derating)
I/O isolation voltage	1000VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, reports pending
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tra3.pdf">www.tracopower.com/products/tra3.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TRA 3-0511	5 VDC ± 10 %	5 VDC	600 mA
TRA 3-0519		9 VDC	333 mA
TRA 3-0512		12 VDC	250 mA
TRA 3-0513		15 VDC	200 mA
TRA 3-1211	12 VDC ± 10 %	5 VDC	600 mA
TRA 3-1219		9 VDC	333 mA
TRA 3-1212		12 VDC	250 mA
TRA 3-1213		15 VDC	200 mA
TRA 3-2411	24 VDC ± 10 %	5 VDC	600 mA
TRA 3-2419		9 VDC	333 mA
TRA 3-2412		12 VDC	250 mA
TRA 3-2413		15 VDC	200 mA

## Dimensions



() = Inches

## Pin

Pin	Description
1	+ Vin (Vcc)
2	- Vin (GND)
4	- Vout
5	No pin
6	+ Vout



# TMR-2E Series ▶ 2 W

- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ High quality/cost performance
- ▶ Short circuit protection
- ▶ Remote On/Off



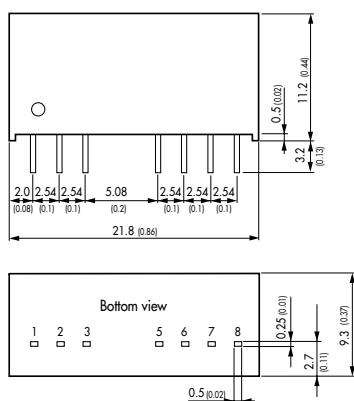
## Specifications

Line regulation	0.5% max.
Load regulation	0.75% max. (25 – 100% load)
Ripple & noise	<50 mVpk-pk (20 MHz BW) (no external output capacitor required)
Short circuit protection	continuous, automatic recovery
Efficiency	78% typ. 5 VDC input models: 73% typ.
Operating temperature range	-40 °C to +85 °C above 65 °C derating 2.8 %/K
I/O isolation voltage	1000 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 (no report)
Remote On/Off	shutdown input for low input current (1 mA) in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmr2e.pdf">www.tracopower.com/products/tmr2e.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMR 2-0510E		3.3 VDC	500 mA
TMR 2-0511E	4.5 – 9.0 VDC	5 VDC	400 mA
TMR 2-0512E		12 VDC	167 mA
TMR 2-1210E		3.3 VDC	500 mA
TMR 2-1211E	9 – 18 VDC	5 VDC	400 mA
TMR 2-1212E		12 VDC	167 mA
TMR 2-2410E		3.3 VDC	500 mA
TMR 2-2411E	18 – 36 VDC	5 VDC	400 mA
TMR 2-2412E		12 VDC	167 mA
TMR 2-4810E		3.3 VDC	500 mA
TMR 2-4811E	36 – 75 VDC	5 VDC	400 mA
TMR 2-4812E		12 VDC	167 mA

## Dimensions



Pin	Single output
1	- Vin (GND)
2	+ Vin (Vcc)
3	Remote On/Off
5	No con.
6	+ Vout
7	- Vout
8	No con.

() = Inches

# TMR-2 Series ▶ 2 W



- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ Single and dual output models
- ▶ Operating temperature range  
-40 °C to +85 °C without derating
- ▶ Low ripple and noise <50 mVpk-pk
- ▶ Short circuit protection
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.0% max.	TMR 0510		3.3 VDC	500 mA
Ripple & noise	<50 mVpk-pk (20 MHz BW) (no external output capacitor required)	TMR 0511		5 VDC	400 mA
Short circuit protection	continuous, automatic recovery	TMR 0512	4.5 – 9.0 VDC	12 VDC	165 mA
Efficiency	82% typ. 5 VDC input models: 80% typ.	TMR 0521		± 5 VDC	± 200 mA
Operating temperature range	-40 °C to +85 °C above 75°C derating 2 %/K	TMR 0522		± 12 VDC	± 85 mA
I/O isolation voltage	1000VDC (60 sec.)	TMR 0523		± 15 VDC	± 65 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	TMR 1210		3.3 VDC	500 mA
Remote On/Off	shutdown input for low input current (1mA) in standby operation	TMR 1211		5 VDC	400 mA
Casing	plastic (UL 94 V-0 rated)	TMR 1212	9 – 18 VDC	12 VDC	165 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr.pdf">www.tracopower.com/products/tmr.pdf</a>	TMR 1221		± 5 VDC	± 200 mA
		TMR 1222		± 12 VDC	± 85 mA
		TMR 1223		± 15 VDC	± 65 mA
		TMR 2410		3.3 VDC	500 mA
		TMR 2411		5 VDC	400 mA
		TMR 2412	18 – 36 VDC	12 VDC	165 mA
		TMR 2421		± 5 VDC	± 200 mA
		TMR 2422		± 12 VDC	± 85 mA
		TMR 2423		± 15 VDC	± 65 mA
		TMR 4810		3.3 VDC	500 mA
		TMR 4811		5 VDC	400 mA
		TMR 4812	36 – 75 VDC	12 VDC	165 mA
		TMR 4821		± 5 VDC	± 200 mA
		TMR 4822		± 12 VDC	± 85 mA
		TMR 4823		± 15 VDC	± 65 mA

Dimensions			
	<b>Pin</b>	<b>Single output</b>	<b>Dual output</b>
	1	- Vin (GND)	- Vin (GND)
	2	+ Vin (Vcc)	+ Vin (Vcc)
	3	Remote On/Off	Remote On/Off
	5	No con.	No con.
	6	+ Vout	+ Vout
	7	- Vout	Common
	8	No con.	- Vout

() = Inches

# TMR-2WIN Series ▶ 2 W

- ▶ Miniature SIP package
- ▶ Wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O-isolation 1500VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+90\text{ }^{\circ}\text{C}$
- ▶ Low ripple and noise
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off

**NEW**  
Product



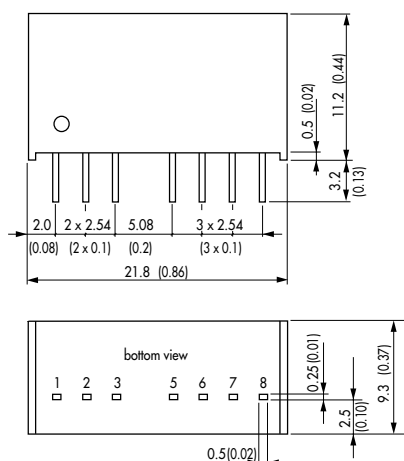
## Specifications

Line regulation	0.5% max.
Load regulation	1.0% max.
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	80% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+90\text{ }^{\circ}\text{C}$ above $75\text{ }^{\circ}\text{C}$ derating 3.3%/K
I/O isolation voltage	1500VDC (60 sec.)
Safety standards	UL 60950-1, IEC/EN 60950-1 (no report)
Remote On/Off	shutdown input for low input current (3mA) in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmr2win.pdf">www.tracopower.com/products/tmr2win.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMR 2-1210WIN		3.3 VDC	500 mA
TMR 2-1211WIN		5 VDC	400 mA
TMR 2-1212WIN		12 VDC	167 mA
TMR 2-1213WIN	4.5 – 18 VDC	15 VDC	134 mA
TMR 2-1221WIN		$\pm 5$ VDC	$\pm 200$ mA
TMR 2-1222WIN		$\pm 12$ VDC	$\pm 83$ mA
TMR 2-1223WIN		$\pm 15$ VDC	$\pm 67$ mA
TMR 2-2410WIN		3.3 VDC	500 mA
TMR 2-2411WIN		5 VDC	400 mA
TMR 2-2412WIN		12 VDC	167 mA
TMR 2-2413WIN	9 – 36 VDC	15 VDC	134 mA
TMR 2-2421WIN		$\pm 5$ VDC	$\pm 200$ mA
TMR 2-2422WIN		$\pm 12$ VDC	$\pm 83$ mA
TMR 2-2423WIN		$\pm 15$ VDC	$\pm 67$ mA
TMR 2-4810WIN		3.3 VDC	500 mA
TMR 2-4811WIN		5 VDC	400 mA
TMR 2-4812WIN		12 VDC	167 mA
TMR 2-4813WIN	18 – 75 VDC	15 VDC	134 mA
TMR 2-4821WIN		$\pm 5$ VDC	$\pm 200$ mA
TMR 2-4822WIN		$\pm 12$ VDC	$\pm 83$ mA
TMR 2-4823WIN		$\pm 15$ VDC	$\pm 67$ mA

## Dimensions



( ) = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No con.	No con.
6	+ Vout	+ Vout
7	- Vout	Common
8	No con.	- Vout

# TMR-3E Series ▶ 3 W



- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ Single and dual output models
- ▶ High quality/cost performance
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.0% max.	TMR 3-0510E		3.3 VDC	700 mA
Ripple & noise	<75 mVpk-pk (20 MHz BW)	TMR 3-0511E		5 VDC	600 mA
Short circuit protection	continuous, automatic recovery	TMR 3-0512E		12 VDC	250 mA
Efficiency	81% typ. 5 VDC input models: 76% typ.	TMR 3-0513E	4.5 – 9 VDC	15 VDC	200 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K	TMR 3-0521E		± 5 VDC	± 300 mA
I/O isolation voltage	1500VDC (60 sec.)	TMR 3-0522E		± 12 VDC	± 125 mA
Safety standards	UL 60950-1, IEC/EN 60950-1, CB report	TMR 3-0523E		± 15 VDC	± 100 mA
Remote On/Off	shutdown input for low input current (1mA) in standby operation	TMR 3-1210E		3.3 VDC	700 mA
Casing	plastic (UL 94 V-0 rated)	TMR 3-1211E		5 VDC	600 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr3e.pdf">www.tracopower.com/products/tmr3e.pdf</a>	TMR 3-1212E		12 VDC	250 mA
		TMR 3-1213E	9 – 18 VDC	15 VDC	200 mA
		TMR 3-1221E		± 5 VDC	± 300 mA
		TMR 3-1222E		± 12 VDC	± 125 mA
		TMR 3-1223E		± 15 VDC	± 100 mA
		TMR 3-2410E		3.3 VDC	700 mA
		TMR 3-2411E		5 VDC	600 mA
		TMR 3-2412E		12 VDC	250 mA
		TMR 3-2413E	18 – 36 VDC	15 VDC	200 mA
		TMR 3-2421E		± 5 VDC	± 300 mA
		TMR 3-2422E		± 12 VDC	± 125 mA
		TMR 3-2423E		± 15 VDC	± 100 mA
		TMR 3-4810E		3.3 VDC	700 mA
		TMR 3-4811E		5 VDC	600 mA
		TMR 3-4812E		12 VDC	250 mA
		TMR 3-4813E	36 – 75 VDC	15 VDC	200 mA
		TMR 3-4821E		± 5 VDC	± 300 mA
		TMR 3-4822E		± 12 VDC	± 125 mA
		TMR 3-4823E		± 15 VDC	± 100 mA

Dimensions		Pin Configuration		
		<b>Pin</b>	<b>Single output</b>	<b>Dual output</b>
		1	- Vin (GND)	- Vin (GND)
		2	+ Vin (Vcc)	+ Vin (Vcc)
		3	Remote On/Off	Remote On/Off
		5	No con.	No con.
		6	+ Vout	+ Vout
		7	- Vout	Common
		8	No con.	- Vout

() = Inches

# TMR-3 Series ▶ 3 W



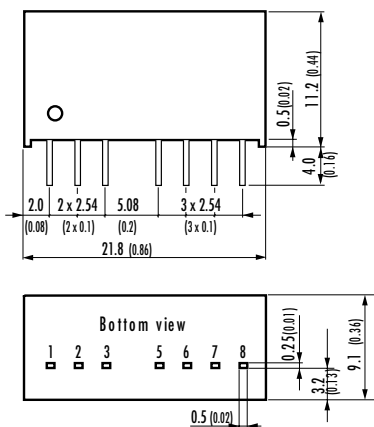
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Ripple & noise	<50 mVpk-pk (20 MHz BW) no external output capacitor required
Short circuit protection	continuous, automatic recovery
Efficiency	79% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K
I/O isolation voltage	1500VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmr3.pdf">www.tracopower.com/products/tmr3.pdf</a>

Models			
Order code *	Input voltage	Output voltage	Output current max.
TMR 3-0510	4.5 – 9.0 VDC	3.3 VDC	700 mA
TMR 3-0511		5 VDC	600 mA
TMR 3-0512		12 VDC	250 mA
TMR 3-0513	9 – 18 VDC	15 VDC	200 mA
TMR 3-0521		± 5 VDC	± 300 mA
TMR 3-0522		± 12 VDC	± 125 mA
TMR 3-0523	18 – 36 VDC	± 15 VDC	± 100 mA
TMR 3-1210		3.3 VDC	700 mA
TMR 3-1211		5 VDC	600 mA
TMR 3-1212	36 – 75 VDC	12 VDC	250 mA
TMR 3-1213		15 VDC	200 mA
TMR 3-1221		± 5 VDC	± 300 mA
TMR 3-1222	No con.	± 12 VDC	± 125 mA
TMR 3-1223		± 15 VDC	± 100 mA
TMR 3-2410		3.3 VDC	700 mA
TMR 3-2411	No con.	5 VDC	600 mA
TMR 3-2412		12 VDC	250 mA
TMR 3-2413		15 VDC	200 mA
TMR 3-2421	No con.	± 5 VDC	± 300 mA
TMR 3-2422		± 12 VDC	± 125 mA
TMR 3-2423		± 15 VDC	± 100 mA
TMR 3-4810	No con.	3.3 VDC	700 mA
TMR 3-4811		5 VDC	600 mA
TMR 3-4812		12 VDC	250 mA
TMR 3-4813	No con.	15 VDC	200 mA
TMR 3-4821		± 5 VDC	± 300 mA
TMR 3-4822		± 12 VDC	± 125 mA
TMR 3-4823	No con.	± 15 VDC	± 100 mA

## Dimensions



() = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No con.	No con.
6	+ Vout	+ Vout
7	- Vout	Common
8	No con.	- Vout

# TMR-3HI Series ▶ 3 W



- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ 3'000 VDC I/O isolation
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.2% max.	Order code	Input voltage	Output voltage	Output current max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.	TMR 3-0510HI		3.3 VDC	700 mA
Ripple & noise	<50 mVpk-pk (20 MHz BW) no external output capacitor required	TMR 3-0511HI		5 VDC	600 mA
Short circuit protection	continuous, automatic recovery	TMR 3-0512HI		12 VDC	250 mA
Efficiency	79% typ.	TMR 3-0513HI	4.5 – 9.0 VDC	15 VDC	200 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K	TMR 3-0521HI		± 5 VDC	± 300 mA
I/O isolation voltage	3000 VDC (60 sec.) functional insulation	TMR 3-0522HI		± 12 VDC	± 125 mA
I/O isolation capacitance	40 pF max.	TMR 3-0523HI		± 15 VDC	± 100 mA
I/O isolation resistance	>10 GOhm	TMR 3-1210HI		3.3 VDC	700 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	TMR 3-1211HI		5 VDC	600 mA
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TMR 3-1212HI		12 VDC	250 mA
Casing	plastic (UL 94 V-0 rated)	TMR 3-1213HI	9 – 18 VDC	15 VDC	200 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr3.pdf">www.tracopower.com/products/tmr3.pdf</a>	TMR 3-1221HI		± 5 VDC	± 300 mA
		TMR 3-1222HI		± 12 VDC	± 125 mA
		TMR 3-1223HI		± 15 VDC	± 100 mA
		TMR 3-2410HI		3.3 VDC	700 mA
		TMR 3-2411HI		5 VDC	600 mA
		TMR 3-2412HI		12 VDC	250 mA
		TMR 3-2413HI	18 – 36 VDC	15 VDC	200 mA
		TMR 3-2421HI		± 5 VDC	± 300 mA
		TMR 3-2422HI		± 12 VDC	± 125 mA
		TMR 3-2423HI		± 15 VDC	± 100 mA
		TMR 3-4810HI		3.3 VDC	700 mA
		TMR 3-4811HI		5 VDC	600 mA
		TMR 3-4812HI		12 VDC	250 mA
		TMR 3-4813HI	36 – 75 VDC	15 VDC	200 mA
		TMR 3-4821HI		± 5 VDC	± 300 mA
		TMR 3-4822HI		± 12 VDC	± 125 mA
		TMR 3-4823HI		± 15 VDC	± 100 mA

Dimensions		Pin		
		Single output	Dual output	
		1	- Vin (GND)	- Vin (GND)
		2	+ Vin (Vcc)	+ Vin (Vcc)
		3	Remote On/Off	Remote On/Off
		5	No Pin	No Pin
		6	+ Vout	+ Vout
		7	- Vout	Common
		8	No con.	- Vout

() = Inches

# TMR-3WIE Series ▶ 3 W



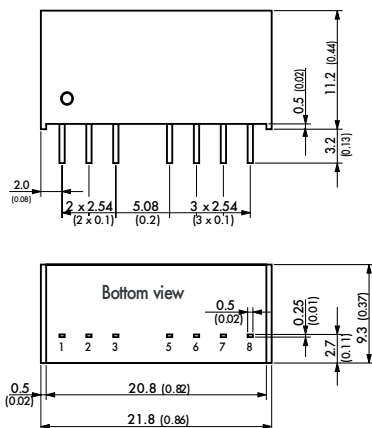
- ▶ Ultra wide 4:1 input range
- ▶ High quality/cost performance
- ▶ Fully regulated outputs
- ▶ I/O-isolation 1500VDC
- ▶ Short circuit protection
- ▶ Remote On/Off



Specifications	
Line regulation	0.5% max.
Load regulation	1.0% max. (25-100% load)
Ripple & noise	<75 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	78% typ. 5 VDC input models: 74% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K
I/O isolation voltage	1500VDC (60 sec.)
Safety standards	UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low input current (1 mA) in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmr3wie.pdf">www.tracopower.com/products/tmr3wie.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TMR 3-1210WIE		3.3 VDC	700 mA
TMR 3-1211WIE		5 VDC	600 mA
TMR 3-1212WIE		12 VDC	250 mA
TMR 3-1213WIE	4.5 – 18 VDC	15 VDC	200 mA
TMR 3-1221WIE		± 5 VDC	± 300 mA
TMR 3-1222WIE		± 12 VDC	± 125 mA
TMR 3-1223WIE		± 15 VDC	± 100 mA
TMR 3-2410WIE		3.3 VDC	700 mA
TMR 3-2411WIE		5 VDC	600 mA
TMR 3-2412WIE		12 VDC	250 mA
TMR 3-2413WIE	9 – 36 VDC	15 VDC	200 mA
TMR 3-2421WIE		± 5 VDC	± 300 mA
TMR 3-2422WIE		± 12 VDC	± 125 mA
TMR 3-2423WIE		± 15 VDC	± 100 mA
TMR 3-4810WIE		3.3 VDC	700 mA
TMR 3-4811WIE		5 VDC	600 mA
TMR 3-4812WIE		12 VDC	250 mA
TMR 3-4813WIE	18 – 75 VDC	15 VDC	200 mA
TMR 3-4821WIE		± 5 VDC	± 300 mA
TMR 3-4822WIE		± 12 VDC	± 125 mA
TMR 3-4823WIE		± 15 VDC	± 100 mA

## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No con.	No con.
6	+ Vout	+ Vout
7	- Vout	Common
8	No con.	- Vout

() = Inches

# TMR-3WI Series ▶ 3 W



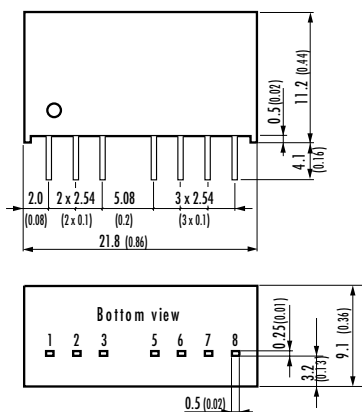
- ▶ Ultra wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500VDC
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



Specifications	
Line regulation	0.2% max.
Load regulation	1.0% max.
Ripple & noise	<75 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	80% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K
I/O isolation voltage	1500VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (1 mA) in standby operation
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tm3wi.pdf">www.tracopower.com/products/tm3wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TMR 3-1210WI	4.5 – 18 VDC	3.3 VDC	700 mA
TMR 3-1211WI		5 VDC	600 mA
TMR 3-1212WI		12 VDC	250 mA
TMR 3-1213WI	9 – 36 VDC	15 VDC	200 mA
TMR 3-1221WI		± 5 VDC	± 300 mA
TMR 3-1222WI		± 12 VDC	± 125 mA
TMR 3-1223WI		± 15 VDC	± 100 mA
TMR 3-2410WI	18 – 75 VDC	3.3 VDC	700 mA
TMR 3-2411WI		5 VDC	600 mA
TMR 3-2412WI		12 VDC	250 mA
TMR 3-2413WI	± 5 VDC	15 VDC	200 mA
TMR 3-2421WI		± 12 VDC	± 300 mA
TMR 3-2422WI		± 15 VDC	± 125 mA
TMR 3-2423WI		± 15 VDC	± 100 mA
TMR 3-4810WI	± 12 VDC	3.3 VDC	700 mA
TMR 3-4811WI		5 VDC	600 mA
TMR 3-4812WI		12 VDC	250 mA
TMR 3-4813WI	± 5 VDC	15 VDC	200 mA
TMR 3-4821WI		± 12 VDC	± 300 mA
TMR 3-4822WI		± 15 VDC	± 125 mA
TMR 3-4823WI		± 15 VDC	± 100 mA

## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No con.	No con.
6	+ Vout	+ Vout
7	- Vout	Common
8	No con.	- Vout

() = Inches



# TMR-6 Series ▶ 6 W



- ▶ High power density
- ▶ Smallest footprint 6 W converter
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500VDC
- ▶ No minimum load required
- ▶ Input under voltage lockout
- ▶ Optional metal case with case pin connection
- ▶ Short circuit protection
- ▶ Remote On/Off

**NEW**  
Models



## Specifications

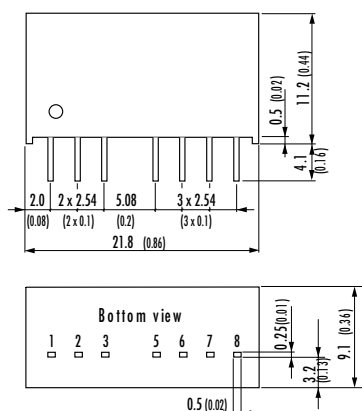
Line regulation	0.2% max.
Load regulation	1% max.
Ripple & noise	<50 mVpk-pk (20 MHz BW) no external output capacitor required
Short circuit protection	continuous, automatic recovery
Efficiency	83% typ.
Operating temperature range	-40 °C to +65 °C (without derating) above 65 °C derating 5 %/K
I/O isolation voltage	1500VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	plastic (UL 94 V-0 rated), Metal case on demand
Full datasheet	<a href="http://www.tracopower.com/products/tmr6.pdf">www.tracopower.com/products/tmr6.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMR 6-0510		3.3 VDC	1300 mA
TMR 6-0511		5 VDC	1200 mA
TMR 6-0519		9 VDC	666 mA
TMR 6-0512		12 VDC	500 mA
TMR 6-0513	4.5 – 9 VDC	15 VDC	400 mA
TMR 6-0515		24 VDC	250 mA
TMR 6-0521		± 5 VDC	± 600 mA
TMR 6-0522		± 12 VDC	± 250 mA
TMR 6-0523		± 15 VDC	± 200 mA
TMR 6-1210		3.3 VDC	1300 mA
TMR 6-1211		5 VDC	1200 mA
TMR 6-1219		9 VDC	666 mA
TMR 6-1212		12 VDC	500 mA
TMR 6-1213	9 – 18 VDC	15 VDC	400 mA
TMR 6-1215		24 VDC	250 mA
TMR 6-1221		± 5 VDC	± 600 mA
TMR 6-1222		± 12 VDC	± 250 mA
TMR 6-1223		± 15 VDC	± 200 mA
TMR 6-2410		3.3 VDC	1300 mA
TMR 6-2411		5 VDC	1200 mA
TMR 6-2419		9 VDC	666 mA
TMR 6-2412		12 VDC	500 mA
TMR 6-2413	18 – 36 VDC	15 VDC	400 mA
TMR 6-2415		24 VDC	250 mA
TMR 6-2421		± 5 VDC	± 600 mA
TMR 6-2422		± 12 VDC	± 250 mA
TMR 6-2423		± 15 VDC	± 200 mA
TMR 6-4810		3.3 VDC	1300 mA
TMR 6-4811		5 VDC	1200 mA
TMR 6-4819		9 VDC	666 mA
TMR 6-4812		12 VDC	500 mA
TMR 6-4813	36 – 75 VDC	15 VDC	400 mA
TMR 6-4815		24 VDC	250 mA
TMR 6-4821		± 5 VDC	± 600 mA
TMR 6-4822		± 12 VDC	± 250 mA
TMR 6-4823		± 15 VDC	± 200 mA

On demand: Modules with metal casing

## Dimensions



() = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No con.	No con.
6	+ Vout	+ Vout
7	- Vout	Common
8	No con.	- Vout

# TMR-6WI Series ▶ 6 W



- ▶ High power density
- ▶ Smallest footprint 6 W converter
- ▶ Ultra wide 4:1 input range
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ High efficiency up to 88%
- ▶ Short-circuit protection
- ▶ Remote On/Off



**NEW**  
Product

Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1% max.	TMR 6-2410WI		3.3 VDC	1500 mA
Ripple & noise	<125 mVpk-pk (20 MHz BW)	TMR 6-2411WI		5 VDC	1200 mA
Conducted EMI	EN55022, class A (internal filter)	TMR 6-2419WI		9 VDC	666 mA
Short circuit protection	continuous, automatic recovery	TMR 6-2412WI		12 VDC	500 mA
Efficiency	85% typ.	TMR 6-2413WI	9 – 36 VDC	15 VDC	400 mA
Operating temperature range	-40 °C to +71 °C (without derating) above 71 °C derating 3.5 %/K	TMR 6-2415WI		24 VDC	250 mA
I/O isolation voltage	1500VDC (60 sec.)	TMR 6-2421WI		± 5 VDC	± 600 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, reports pending	TMR 6-2422WI		± 12 VDC	± 250 mA
Remote On/Off	shutdown input for low input current (3 mA) in standby operation	TMR 6-2423WI		± 15 VDC	± 200 mA
Casing	plastic (UL 94 V-0 rated), Metal case on demand	TMR 6-4810WI		3.3 VDC	1500 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr6wi.pdf">www.tracopower.com/products/tmr6wi.pdf</a>	TMR 6-4811WI		5 VDC	1200 mA
		TMR 6-4819WI		9 VDC	666 mA
		TMR 6-4812WI		12 VDC	500 mA
		TMR 6-4813WI	18 – 75 VDC	15 VDC	400 mA
		TMR 6-4815WI		24 VDC	250 mA
		TMR 6-4821WI		± 5 VDC	± 600 mA
		TMR 6-4822WI		± 12 VDC	± 250 mA
		TMR 6-4823WI		± 15 VDC	± 200 mA

Dimensions		Pin Configuration		
		<b>Pin</b>	<b>Single output</b>	<b>Dual output</b>
		1	- Vin (GND)	- Vin (GND)
		2	+ Vin (Vcc)	+ Vin (Vcc)
		3	Remote On/Off	Remote On/Off
		5	No con.	No con.
		6	+ Vout	+ Vout
		7	- Vout	Common
		8	No con.	- Vout

() = Inches

# TMR-9 Series ▶ 9 W

- ▶ Highest power density in SIP package
- ▶ Smallest footprint 9 W converter
- ▶ Wide 2:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+71\text{ }^{\circ}\text{C}$
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off



**NEW**  
Product

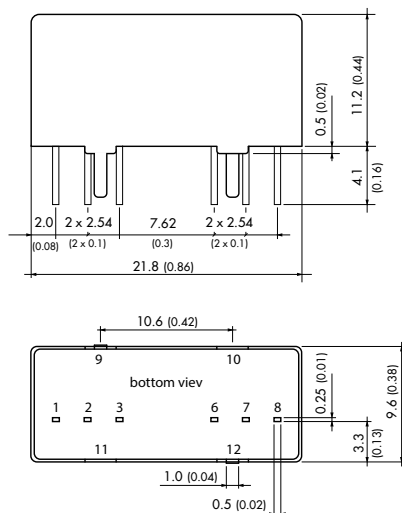
## Specifications

Line regulation	0.2% max.
Load regulation	1% max.
Ripple & noise	75 mVpk-pk typ. (20 MHz BW) no external output capacitor required
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+71\text{ }^{\circ}\text{C}$ above $60\text{ }^{\circ}\text{C}$ derating 4%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Casing	metal
Full datasheet	<a href="http://www.tracopower.com/products/tmr9.pdf">www.tracopower.com/products/tmr9.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMR 9-1210		3.3 VDC	1800 mA
TMR 9-1211		5 VDC	1600 mA
TMR 9-1219		9 VDC	1000 mA
TMR 9-1212		12 VDC	750 mA
TMR 9-1213	9 – 18 VDC	15 VDC	600 mA
TMR 9-1215		24 VDC	375 mA
TMR 9-1221		$\pm 5$ VDC	$\pm 800$ mA
TMR 9-1222		$\pm 12$ VDC	$\pm 375$ mA
TMR 9-1223		$\pm 15$ VDC	$\pm 300$ mA
TMR 9-2410		3.3 VDC	1800 mA
TMR 9-2411		5 VDC	1600 mA
TMR 9-2419		9 VDC	1000 mA
TMR 9-2412		12 VDC	750 mA
TMR 9-2413	18 – 36 VDC	15 VDC	600 mA
TMR 9-2415		24 VDC	375 mA
TMR 9-2421		$\pm 5$ VDC	$\pm 800$ mA
TMR 9-2422		$\pm 12$ VDC	$\pm 375$ mA
TMR 9-2423		$\pm 15$ VDC	$\pm 300$ mA
TMR 9-4810		3.3 VDC	1800 mA
TMR 9-4811		5 VDC	1600 mA
TMR 9-4819		9 VDC	1000 mA
TMR 9-4812		12 VDC	750 mA
TMR 9-4813	36 – 75 VDC	15 VDC	600 mA
TMR 9-4815		24 VDC	375 mA
TMR 9-4821		$\pm 5$ VDC	$\pm 800$ mA
TMR 9-4822		$\pm 12$ VDC	$\pm 375$ mA
TMR 9-4823		$\pm 15$ VDC	$\pm 300$ mA

## Dimensions



( ) = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Remote On/Off	Remote On/Off
6	+ Vout	+ Vout
7	- Vout	Common
8	No con.	- Vout
9	Case	Case
10	Stand off	Stand off
11	Stand off	Stand off
12	Case	Case

# TMR-9WI Series ▶ 9 W

- ▶ Highest power density in SIP package
- ▶ Smallest footprint 9W converter
- ▶ Wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ No minimum load required
- ▶ Short circuit protection
- ▶ Remote On/Off

**NEW**  
Product



Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1% max.	TMR 9-2410WI		3.3 VDC	1800 mA
Ripple & noise	75 mVpk-pk typ. (20 MHz BW) no external output capacitor required	TMR 9-2411WI		5 VDC	1600 mA
Short circuit protection	continuous, automatic recovery	TMR 9-2419WI		9 VDC	1000 mA
Efficiency	86% typ.	TMR 9-2412WI		12 VDC	750 mA
Operating temperature range	-40 °C to +71 °C above 60 °C derating 4 %/K	TMR 9-2413WI	9 – 36 VDC	15 VDC	600 mA
I/O isolation voltage	1500VDC (60 sec.)	TMR 9-2415WI		24 VDC	375 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	TMR 9-2421WI		± 5 VDC	± 800 mA
Remote On/Off	shutdown input for low input current (3 mA) in standby operation	TMR 9-2422WI		± 12 VDC	± 375 mA
Casing	metal	TMR 9-2423WI		± 15 VDC	± 300 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmr9wi.pdf">www.tracopower.com/products/tmr9wi.pdf</a>	TMR 9-4810WI		3.3 VDC	1800 mA
		TMR 9-4811WI		5 VDC	1600 mA
		TMR 9-4819WI		9 VDC	1000 mA
		TMR 9-4812WI		12 VDC	750 mA
		TMR 9-4813WI	18 – 75 VDC	15 VDC	600 mA
		TMR 9-4815WI		24 VDC	375 mA
		TMR 9-4821WI		± 5 VDC	± 800 mA
		TMR 9-4822WI		± 12 VDC	± 375 mA
		TMR 9-4823WI		± 15 VDC	± 300 mA

Dimensions		Pin		
		Single output	Dual output	
		1	- Vin (GND)	- Vin (GND)
		2	+ Vin (Vcc)	+ Vin (Vcc)
		3	Remote On/Off	Remote On/Off
		6	+ Vout	+ Vout
		7	- Vout	Common
		8	No con.	- Vout
		9	Case	Case
		10	Stand off	Stand off
		11	Stand off	Stand off
		12	Case	Case

( ) = Inches

# TEL-2 Series ▶ 2 W



- ▶ Low profile DIP-16 package
- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ Input filter to meet EN 55022, Class A



Specifications	
Line regulation	0.5 % max.
Load regulation	- Single output models: 0.75 % max. - Dual output models: 2.0 % max.
Ripple & Noise	<50 mVpk-pk (20 MHz BW)
Conducted EMI	EN55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	78 % typ.
Operating temperature range	-40 °C to +75 °C above 65 °C derating 2.8 %/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tel2.pdf">www.tracopower.com/products/tel2.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEL 2-0510		3.3 VDC	500 mA
TEL 2-0511		5 VDC	400 mA
TEL 2-0512		12 VDC	165 mA
TEL 2-0513	4.5 – 9.0 VDC	15 VDC	135 mA
TEL 2-0521		± 5 VDC	± 200 mA
TEL 2-0522		± 12 VDC	± 85 mA
TEL 2-0523		± 15 VDC	± 65 mA
TEL 2-1210		3.3 VDC	500 mA
TEL 2-1211		5 VDC	400 mA
TEL 2-1212		12 VDC	165 mA
TEL 2-1213	9 – 18 VDC	15 VDC	135 mA
TEL 2-1221		± 5 VDC	± 200 mA
TEL 2-1222		± 12 VDC	± 85 mA
TEL 2-1223		± 15 VDC	± 65 mA
TEL 2-2410		3.3 VDC	500 mA
TEL 2-2411		5 VDC	400 mA
TEL 2-2412		12 VDC	165 mA
TEL 2-2413	18 – 36 VDC	15 VDC	135 mA
TEL 2-2421		± 5 VDC	± 200 mA
TEL 2-2422		± 12 VDC	± 85 mA
TEL 2-2423		± 15 VDC	± 65 mA
TEL 2-4810		3.3 VDC	500 mA
TEL 2-4811		5 VDC	400 mA
TEL 2-4812		12 VDC	165 mA
TEL 2-4813	36 – 75 VDC	15 VDC	135 mA
TEL 2-4821		± 5 VDC	± 200 mA
TEL 2-4822		± 12 VDC	± 85 mA
TEL 2-4823		± 15 VDC	± 65 mA

Product with same electrical specifications available in SMD package.  
See TES-2N series page 19

Dimensions																						
	<table border="1"> <thead> <tr> <th>Pin</th> <th>Single output</th> <th>Dual output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>7</td> <td>No con.</td> <td>No con.</td> </tr> <tr> <td>8</td> <td>No con.</td> <td>Common</td> </tr> <tr> <td>9</td> <td>+ Vout</td> <td>+ Vout</td> </tr> <tr> <td>10</td> <td>- Vout</td> <td>- Vout</td> </tr> <tr> <td>16</td> <td>+ Vin</td> <td>+ Vin</td> </tr> </tbody> </table>	Pin	Single output	Dual output	1	- Vin (GND)	- Vin (GND)	7	No con.	No con.	8	No con.	Common	9	+ Vout	+ Vout	10	- Vout	- Vout	16	+ Vin	+ Vin
Pin	Single output	Dual output																				
1	- Vin (GND)	- Vin (GND)																				
7	No con.	No con.																				
8	No con.	Common																				
9	+ Vout	+ Vout																				
10	- Vout	- Vout																				
16	+ Vin	+ Vin																				

( ) = Inches

# TDR-2 Series ▶ 2 W



- ▶ Compact design in DIP-14 package
- ▶ Wide 2:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30mVpk-pk typ.
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C without derating
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.	TDR 2-0511		5 VDC	400 mA
Ripple & noise	30 mVpk-pk typ. (20 MHz BW) (no external output capacitor required)	TDR 2-0512		12 VDC	167 mA
Short circuit protection	continuous, automatic recovery	TDR 2-0513	4.5 – 9 VDC	15 VDC	134 mA
Efficiency	83% typ.	TDR 2-0522		± 12 VDC	± 83 mA
Operating temperature range	-40 °C to +85 °C without derating	TDR 2-0523		± 15 VDC	± 67 mA
I/O isolation voltage	1500 VDC (60 sec.)	TDR 2-1211		5 VDC	400 mA
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1	TDR 2-1212		12 VDC	167 mA
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TDR 2-1213	9 – 18 VDC	15 VDC	134 mA
Casing	plastic over mold (UL 94 V-0 rated)	TDR 2-1222		± 12 VDC	± 83 mA
Full datasheet	<a href="http://www.tracopower.com/products/tdr2.pdf">www.tracopower.com/products/tdr2.pdf</a>	TDR 2-1223		± 15 VDC	± 67 mA
		TDR 2-2411		5 VDC	400 mA
		TDR 2-2412		12 VDC	167 mA
		TDR 2-2413	18 – 36 VDC	15 VDC	134 mA
		TDR 2-2422		± 12 VDC	± 83 mA
		TDR 2-2423		± 15 VDC	± 67 mA
		TDR 2-4811		5 VDC	400 mA
		TDR 2-4812		12 VDC	167 mA
		TDR 2-4813	36 – 75 VDC	15 VDC	134 mA
		TDR 2-4822		± 12 VDC	± 83 mA
		TDR 2-4823		± 15 VDC	± 67 mA

Product with same electrical specifications available in SMD package.  
See TDR-2SM series page 20

Dimensions		Pin			
		<b>Single output</b>	<b>Dual output</b>		
		1	- Vin (GND)	- Vin (GND)	
		2	Remote On/Off	Remote On/Off	
		6	No con.	Common	
		7	No con.	- Vout	
		8	+ Vout	+ Vout	
		9	- Vout	Common	
		14	+ Vin (Vcc)	+ Vin (Vcc)	

() = Inches

# TDR-2WI Series ▶ 2 W



- ▶ Compact design in DIP-14 package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30 mVpk-pk typ.
- ▶ No minimum load required
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40 °C to +85 °C without derating
- ▶ Remote On/Off

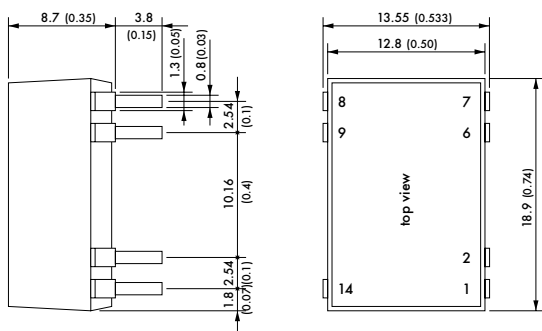


Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.
Ripple & noise	30 mVpk-pk typ. (20 MHz BW) (no external output capacitor required)
Short circuit protection	continuous, automatic recovery
Efficiency	81% typ.
Operating temperature range	-40 °C to +85 °C without derating
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	plastic over mold (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tdr2wi.pdf">www.tracopower.com/products/tdr2wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TDR 2-1211WI		5 VDC	400 mA
TDR 2-1212WI		12 VDC	167 mA
TDR 2-1213WI	4.5 – 18 VDC	15 VDC	134 mA
TDR 2-1222WI		± 12 VDC	± 83 mA
TDR 2-1223WI		± 15 VDC	± 67 mA
TDR 2-2411WI		5 VDC	400 mA
TDR 2-2412WI		12 VDC	167 mA
TDR 2-2413WI	9 – 36 VDC	15 VDC	134 mA
TDR 2-2422WI		± 12 VDC	± 83 mA
TDR 2-2423WI		± 15 VDC	± 67 mA
TDR 2-4811WI		5 VDC	400 mA
TDR 2-4812WI		12 VDC	167 mA
TDR 2-4813WI	18 – 75 VDC	15 VDC	134 mA
TDR 2-4822WI		± 12 VDC	± 83 mA
TDR 2-4823WI		± 15 VDC	± 67 mA

Product with same electrical specifications available in SMD package.  
See TDR-2WISM series page 21

## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	Remote On/Off	Remote On/Off
6	No con.	Common
7	No con.	- Vout
8	+ Vout	+ Vout
9	- Vout	Common
14	+ Vin (Vcc)	+ Vin (Vcc)

# TDR-3 Series ▶ 3 W



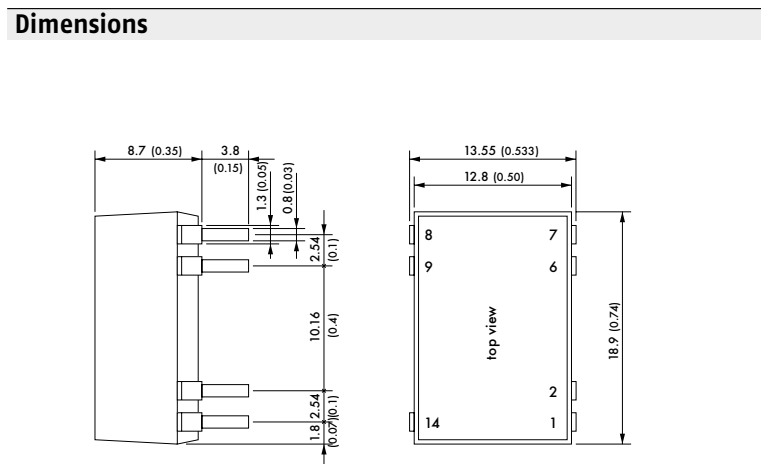
- ▶ Smallest 3 Watt converter in DIP-14 package
- ▶ Wide 2:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise 30mVpk-pk typ.
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Remote On/Off



Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.
Ripple & noise	30 mVpk-pk typ. (20 MHz BW) (no external output capacitor required)
Short circuit protection	continuous, automatic recovery
Efficiency	83% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.5%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	Epoxy molded (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tdr3.pdf">www.tracopower.com/products/tdr3.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TDR 3-0511	4.5 – 9 VDC	5 VDC	600 mA
TDR 3-0512		12 VDC	250 mA
TDR 3-0513		15 VDC	200 mA
TDR 3-0522	9 – 18 VDC	± 12 VDC	± 125 mA
TDR 3-0523		± 15 VDC	± 100 mA
TDR 3-1211	18 – 36 VDC	5 VDC	600 mA
TDR 3-1212		12 VDC	250 mA
TDR 3-1213		15 VDC	200 mA
TDR 3-1222	36 – 75 VDC	± 12 VDC	± 125 mA
TDR 3-1223		± 15 VDC	± 100 mA
TDR 3-2411	36 – 75 VDC	5 VDC	600 mA
TDR 3-2412		12 VDC	250 mA
TDR 3-2413		15 VDC	200 mA
TDR 3-2422	36 – 75 VDC	± 12 VDC	± 125 mA
TDR 3-2423		± 15 VDC	± 100 mA
TDR 3-4811	36 – 75 VDC	5 VDC	600 mA
TDR 3-4812		12 VDC	250 mA
TDR 3-4813		15 VDC	200 mA
TDR 3-4822	36 – 75 VDC	± 12 VDC	± 125 mA
TDR 3-4823		± 15 VDC	± 100 mA

Product with same electrical specifications available in SMD package.  
See TDR-3SM series page 22



() = Inches

Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	Remote On/Off	Remote On/Off
6	No con.	Common
7	No con.	- Vout
8	+ Vout	+ Vout
9	- Vout	Common
14	+ Vin (Vcc)	+ Vin (Vcc)



# TDR-3WI Series ▶ 3 W



- ▶ Smallest 3 Watt converter in DIP-14 package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ Low ripple & noise
- ▶ No minimum load required
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Remote On/Off

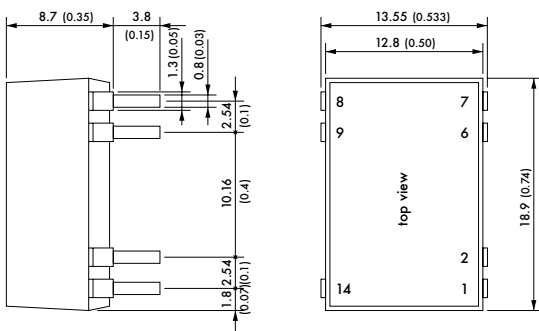


Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 1.0% max.
Ripple & noise	<30 mVpk-pk (20 MHz BW) (no external output capacitor required)
Short circuit protection	continuous, automatic recovery
Efficiency	82% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.5%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	plastic over mold (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tdr3wi.pdf">www.tracopower.com/products/tdr3wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TDR 3-1211WI		5 VDC	600 mA
TDR 3-1212WI		12 VDC	250 mA
TDR 3-1213WI	4.5 – 18 VDC	15 VDC	200 mA
TDR 3-1222WI		± 12 VDC	± 125 mA
TDR 3-1223WI		± 15 VDC	± 100 mA
TDR 3-2411WI		5 VDC	600 mA
TDR 3-2412WI		12 VDC	250 mA
TDR 3-2413WI	9 – 36 VDC	15 VDC	200 mA
TDR 3-2422WI		± 12 VDC	± 125 mA
TDR 3-2423WI		± 15 VDC	± 100 mA
TDR 3-4811WI		5 VDC	600 mA
TDR 3-4812WI		12 VDC	250 mA
TDR 3-4813WI	18 – 75 VDC	15 VDC	200 mA
TDR 3-4822WI		± 12 VDC	± 125 mA
TDR 3-4823WI		± 15 VDC	± 100 mA

Product with same electrical specifications available in SMD package.  
See TDR-3WISM series page 23

## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
2	Remote On/Off	Remote On/Off
6	No con.	Common
7	No con.	- Vout
8	+ Vout	+ Vout
9	- Vout	Common
14	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# THL-3WI Series ▶ 3 W



- ▶ DIP-16 package, low profile
- ▶ Ultra wide 4:1 input voltage range
- ▶ Fully regulated outputs
- ▶ I/O-isolation 1500VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.5% max.	THL 3-2410WI		3.3 VDC	600 mA
Ripple & noise	<60 mVpk-pk (20 MHz BW)	THL 3-2411WI		5 VDC	600 mA
Conducted EMI	EN55022 class A	THL 3-2412WI		12 VDC	250 mA
Short circuit protection	continuous, automatic recovery	THL 3-2413WI	9 – 36 VDC	15 VDC	200 mA
Efficiency	81 % typ.	THL 3-2415WI		24 VDC	125 mA
Operating temperature range	-40 °C to +85 °C above 65 °C derating 2.9%/K	THL 3-2421WI		± 5 VDC	± 300 mA
I/O isolation voltage	1500 VDC (60 sec.)	THL 3-2422WI		± 12 VDC	± 125 mA
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 CB-report	THL 3-2423WI		± 15 VDC	± 100 mA
Remote On/Off	shutdown input for low input current (5 mA) in standby operation	THL 3-4810WI		3.3 VDC	600 mA
Casing	plastic over mold (UL 94 V-0 rated)	THL 3-4811WI		5 VDC	600 mA
Full datasheet	<a href="http://www.tracopower.com/products/thl3wi.pdf">www.tracopower.com/products/thl3wi.pdf</a>	THL 3-4812WI		12 VDC	250 mA
		THL 3-4813WI	18 – 75 VDC	15 VDC	200 mA
		THL 3-4815WI		24 VDC	125 mA
		THL 3-4821WI		± 5 VDC	± 300 mA
		THL 3-4822WI		± 12 VDC	± 125 mA
		THL 3-4823WI		± 15 VDC	± 100 mA

Product with same electrical specifications available in SMD package.  
See THL-3WISM series page 24

Dimensions		Pin		
		<b>Single output</b>	<b>Dual output</b>	
		1	- Vin (GND)	- Vin (GND)
		2	Remote On/Off	Remote On/Off
		7	No con.	No con.
		8	No con.	Common
		9	+ Vout	+ Vout
		10	- Vout	- Vout
		16	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# TEM-3N Series ▶ 3 W



- ▶ Cost optimized design in DIP-24 package
- ▶ Operating temperature range  
-40 °C to +75 °C without derating
- ▶ short circuit protection
- ▶ Input filter to meet EN 55022, class A

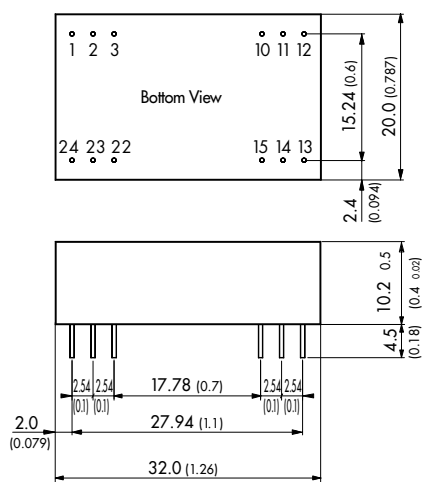
**NEW**  
Product



Specifications	
Line regulation	0.5 % max.
Load regulation	0.5 % max.
Ripple & Noise	60 mVpk-pk max. (20 MHz BW)
Input filter	EN 55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	79 % typ.
Operating temperature range	-40 °C to +85 °C above 75 °C derating 5 %/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tem3n.pdf">www.tracopower.com/products/tem3n.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEM 3-0511N		5 VDC	600 mA
TEM 3-0512N		12 VDC	250 mA
TEM 3-0513N	5 VDC ±10%	15 VDC	200 mA
TEM 3-0522N		± 12 VDC	±125 mA
TEM 3-0523N		± 15 VDC	±100 mA
TEM 3-1211N		5 VDC	600 mA
TEM 3-1212N		12 VDC	250 mA
TEM 3-1213N	12 VDC ±10%	15 VDC	200 mA
TEM 3-1222N		± 12 VDC	±125 mA
TEM 3-1223N		± 15 VDC	±100 mA
TEM 3-2411N		5 VDC	600 mA
TEM 3-2412N		12 VDC	250 mA
TEM 3-2413N	24 VDC ±10%	15 VDC	200 mA
TEM 3-2422N		± 12 VDC	±125 mA
TEM 3-2423N		± 15 VDC	±100 mA

## Dimensions



Pin	Single output	Dual output
1	+ Vin (Vcc)	+ Vin (Vcc)
2	No con.	- Vout
3	No con.	Common
10	- Vout	Common
11	+ Vout	+ Vout
12	- Vin (GND)	- Vin (GND)
13	- Vin (GND)	- Vin (GND)
14	+ Vout	+ Vout
15	- Vout	Common
22	No con.	Common
23	No con.	- Vout
24	+ Vin (Vcc)	+ Vin (Vcc)

( ) = Inches

# TEL-3 Series ▶ 3 W



- ▶ Wide 2:1 input range
- ▶ Cost optimized design
- ▶ I/O isolation 1500VDC
- ▶ Operating temperature range -40 °C to +85 °C



Specifications		Models			
Line regulation	0.5 % max.	Order code	Input voltage	Output voltage	Output current max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.	TEL 3-0511	4.5 – 9.0 VDC	5 VDC	600 mA
Ripple & Noise	60 mVpk-pk max. (20 MHz BW)	TEL 3-0512		12 VDC	250 mA
Input filter	Pi-filter	TEL 3-0513		15 VDC	200 mA
Short circuit protection	continuous, automatic recovery	TEL 3-0522		± 12 VDC	± 125 mA
Efficiency	80 % typ.	TEL 3-0523		± 15 VDC	± 100 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K	TEL 3-1211	9 – 18 VDC	5 VDC	600 mA
I/O isolation voltage	1500 VDC (60 sec.)	TEL 3-1212		12 VDC	250 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	TEL 3-1213		15 VDC	200 mA
Casing	plastic (UL 94 V-0 rated)	TEL 3-1222		± 12 VDC	± 125 mA
Full datasheet	<a href="http://www.tracopower.com/products/tel3.pdf">www.tracopower.com/products/tel3.pdf</a>	TEL 3-1223		± 15 VDC	± 100 mA
		TEL 3-2011	10 – 30 VDC	5 VDC	600 mA
		TEL 3-2012		12 VDC	250 mA
		TEL 3-2013		15 VDC	200 mA
		TEL 3-2022		± 12 VDC	± 125 mA
		TEL 3-2023		± 15 VDC	± 100 mA
		TEL 3-2411	18 – 36 VDC	5 VDC	600 mA
		TEL 3-2412		12 VDC	250 mA
		TEL 3-2413		15 VDC	200 mA
		TEL 3-2422		± 12 VDC	± 125 mA
		TEL 3-2423		± 15 VDC	± 100 mA
		TEL 3-4811	36 – 75 VDC	5 VDC	600 mA
		TEL 3-4812		12 VDC	250 mA
		TEL 3-4813		15 VDC	200 mA
		TEL 3-4822		± 12 VDC	± 125 mA
		TEL 3-4823		± 15 VDC	± 100 mA

Dimensions		Pin		
	<p>Bottom view</p>	Pin	Single output	Dual output
		1	+ Vin (Vcc)	+ Vin (Vcc)
		2	No con.	- Vout
		3	No con.	Common
		10	- Vout	Common
		11	+ Vout	+ Vout
		12	- Vin (GND)	- Vin (GND)
		13	- Vin (GND)	- Vin (GND)
		14	+ Vout	+ Vout
		15	- Vout	Common
		22	No con.	Common
		23	No con.	- Vout
		24	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# TEN-3N Series ▶ 3 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O-isolation 1500VDC or 3000 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Short-circuit protection
- ▶ No minimum load required
- ▶ Input filter to meet EN 55022, class A

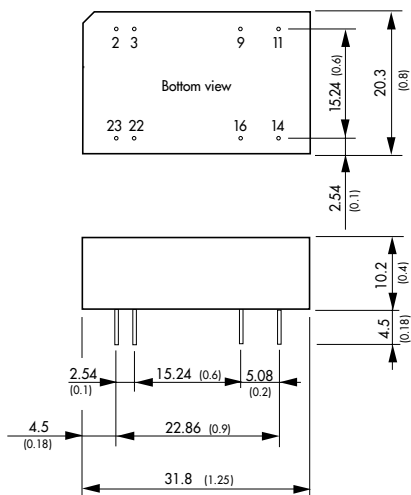


**NEW**  
Product

Specifications		Models			
Line regulation	1% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1% max.	TEN 3-0510N		3.3 VDC	750 mA
Ripple & noise	<70 mVpk-pk (20 MHz BW)	TEN 3-0511N*		5 VDC	600 mA
Conducted EMI	EN55022 class A	TEN 3-0512N*		12 VDC	250 mA
Short circuit protection	continuous, automatic recovery	TEN 3-0513N*	4.5 – 9.0 VDC	15 VDC	200 mA
Efficiency	82 % typ.	TEN 3-0515N*		24 VDC	125 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3%/K	TEN 3-0521N*		± 5 VDC	± 250 mA
I/O isolation voltage	1500 VDC (60 sec.) or 3000 VDC (functional isolation)	TEN 3-0522N*		± 12 VDC	± 125 mA
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 CB-report	TEN 3-0523N*		± 15 VDC	± 100 mA
Casing	plastic (UL 94 V-0 rated)	TEN 3-1210N		3.3 VDC	750 mA
Full datasheet	<a href="http://www.tracopower.com/products/ten3n.pdf">www.tracopower.com/products/ten3n.pdf</a>	TEN 3-1211N		5 VDC	600 mA
		TEN 3-1212N		12 VDC	250 mA
		TEN 3-1213N	9 – 18 VDC	15 VDC	200 mA
		TEN 3-1215N		24 VDC	125 mA
		TEN 3-1221N		± 5 VDC	± 250 mA
		TEN 3-1222N		± 12 VDC	± 125 mA
		TEN 3-1223N		± 15 VDC	± 100 mA
		TEN 3-2410N		3.3 VDC	750 mA
		TEN 3-2411N		5 VDC	600 mA
		TEN 3-2412N		12 VDC	250 mA
		TEN 3-2413N	18 – 36 VDC	15 VDC	200 mA
		TEN 3-2415N		24 VDC	125 mA
		TEN 3-2421N		± 5 VDC	± 250 mA
		TEN 3-2422N		± 12 VDC	± 125 mA
		TEN 3-2423N		± 15 VDC	± 100 mA
		TEN 3-4810N		3.3 VDC	7500 mA
		TEN 3-4811N		5 VDC	600 mA
		TEN 3-4812N		12 VDC	250 mA
		TEN 3-4813N	36 – 75 VDC	15 VDC	200 mA
		TEN 3-4815N		24 VDC	125 mA
		TEN 3-4821N		± 5 VDC	± 250 mA
		TEN 3-4822N		± 12 VDC	± 125 mA
		TEN 3-4823N		± 15 VDC	± 100 mA

\* for 3000 VDC I/O isolation add suffix -HI

## Dimensions



( ) = Inches

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

# TEN-3WIN Series ▶ 3 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O-isolation 1500 VDC or 3000 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Short-circuit protection
- ▶ No minimum load required
- ▶ Input filter to meet EN 55022, class A

**NEW**  
Product

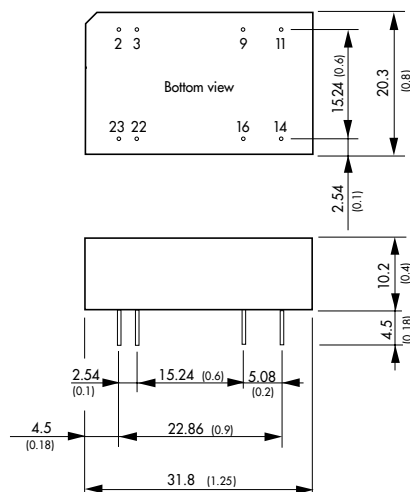


Specifications	
Line regulation	1% max.
Load regulation	1% max.
Ripple & noise	<70 mVpk-pk (20 MHz BW)
Conducted EMI	EN55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	81 % typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3%/K
I/O isolation voltage	1500 VDC (60 sec.) or 3000 VDC (functional isolation)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/ten3win.pdf">www.tracopower.com/products/ten3win.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEN 3-2410WIN		3.3 VDC	750 mA
TEN 3-2411WIN*		5 VDC	600 mA
TEN 3-2412WIN*		12 VDC	250 mA
TEN 3-2413WIN*	9.0 – 36 VDC	15 VDC	200 mA
TEN 3-2415WIN*		24 VDC	125 mA
TEN 3-2421WIN*		± 5 VDC	± 250 mA
TEN 3-2422WIN*		± 12 VDC	± 125 mA
TEN 3-2423WIN*		± 15 VDC	± 100 mA
TEN 3-4810WIN		3.3 VDC	750 mA
TEN 3-4811WIN*		5 VDC	600 mA
TEN 3-4812WIN*		12 VDC	250 mA
TEN 3-4813WIN*	18 – 75 VDC	15 VDC	200 mA
TEN 3-4815WIN*		24 VDC	125 mA
TEN 3-4821WIN*		± 5 VDC	± 250 mA
TEN 3-4822WIN*		± 12 VDC	± 125 mA
TEN 3-4823WIN*		± 15 VDC	± 100 mA

\* for 3000 VDC I/O isolation add suffix -HI

## Dimensions



() = Inches

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

# TVN-5WI Series ▶ 5 W



- ▶ Ultra low ripple & noise 10 mVpp typ.
- ▶ 6-side shielded metal casing
- ▶ Input filter to meet EN 55022 class B
- ▶ Ultra wide 4:1 input voltage range
- ▶ High efficiency up to 88%
- ▶ Operating temperature range  
-40 °C to +85 °C without derating
- ▶ I/O isolation 1500VDC
- ▶ No minimum load required
- ▶ Undervoltage lockout
- ▶ Remote On/Off

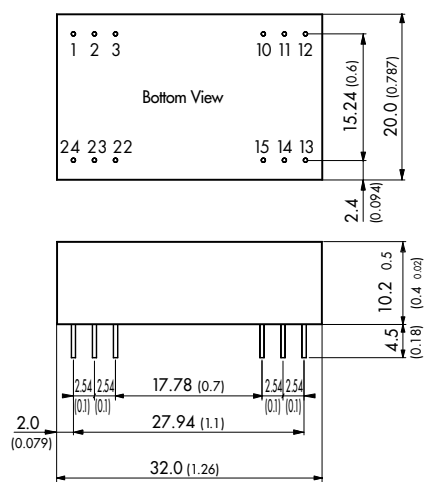
**NEW**  
Product



Specifications	
Line regulation	0.2% max.
Load regulation	1% max.
Ripple & noise	10 mVpk-pk typ. (20MHz BW) no external output capacitor required
Input filter	EN 55022, class B
Short circuit protection	continuous, automatic recovery
Efficiency	85% typ.
Operating temperature range	-40 °C to +85 °C (without derating)
I/O isolation voltage	1500VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Casing	6 side shielded metal casing
Full datasheet	<a href="http://www.tracopower.com/products/tvn5wi.pdf">www.tracopower.com/products/tvn5wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TVN 5-2410WI		3.3 VDC	1515 mA
TVN 5-2411WI		5 VDC	1000 mA
TVN 5-2412WI		12 VDC	416 mA
TVN 5-2413WI		15 VDC	333 mA
TVN 5-2415WI	9 – 36 VDC	24 VDC	208 mA
TVN 5-2421WI		± 5 VDC	± 500 mA
TVN 5-2422WI		± 12 VDC	± 208 mA
TVN 5-2423WI		± 15 VDC	± 166 mA
TVN 5-2425WI		± 24 VDC	± 104 mA
TVN 5-4810WI		3.3 VDC	1515 mA
TVN 5-4811WI		5 VDC	1000 mA
TVN 5-4812WI		12 VDC	416 mA
TVN 5-4813WI		15 VDC	333 mA
TVN 5-4815WI	18 – 75 VDC	24 VDC	208 mA
TVN 5-4821WI		± 5 VDC	± 500 mA
TVN 5-4822WI		± 12 VDC	± 208 mA
TVN 5-4823WI		± 15 VDC	± 166 mA
TVN 5-4825WI		± 24 VDC	± 104 mA

## Dimensions



( ) = Inches

Pin	Single output	Dual output
1	+ Vin (Vcc)	+ Vin (Vcc)
2	+ Vin (Vcc)	+ Vin (Vcc)
3	Case	Case
10	No pin	Common
11	No pin	+ Vout 1
12	Case	Case
13	Trim	Trim
14	- Vout	- Vout 2
15	+ Vout	Common
22	Remote On/Off	Remote On/Off
23	- Vin	- Vin
24	- Vin	- Vin

# TEL-5 Series ▶ 5 – 6 W



- ▶ Wide 2:1 input range
- ▶ High efficiency up to 86 %
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Industry standard pinout
- ▶ Cost optimized design



Specifications		Models			
Line regulation	0.3 % max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 1.0 % max. - Dual output models: 2.0 % max.	TEL 5-1210		3.3 VDC	1200 mA
Ripple & noise	<75 mVpk-pk (20 MHz BW)	TEL 5-1211		5 VDC	1000 mA
Input filter	Pi-filter	TEL 5-1212	9 – 18 VDC	12 VDC	500 mA
Short circuit protection	continuous, automatic recovery	TEL 5-1222		± 12 VDC	± 250 mA
Efficiency	84 % typ.	TEL 5-1223		± 15 VDC	± 200 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3 %/K	TEL 5-2410		3.3 VDC	1200 mA
I/O isolation voltage	1500 VDC (60 sec.)	TEL 5-2411		5 VDC	1000 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	TEL 5-2412	18 – 36 VDC	12 VDC	500 mA
Casing	plastic (UL 94V-0 rated)	TEL 5-2422		± 12 VDC	± 250 mA
Full datasheet	<a href="http://www.tracopower.com/products/tel5.pdf">www.tracopower.com/products/tel5.pdf</a>	TEL 5-2423		± 15 VDC	± 200 mA

Dimensions		Pin			
		<b>Single output</b>	<b>Dual output</b>		
		2	- Vin (GND)	- Vin (GND)	
		3	- Vin (GND)	- Vin (GND)	
		9	No pin	Common	
		11	No con.	- Vout	
		14	+ Vout	+ Vout	
		16	- Vout	Common	
		22	+ Vin (Vcc)	+ Vin (Vcc)	
		23	+ Vin (Vcc)	+ Vin (Vcc)	

( ) = Inches



## TEN-6N Series ▶ 6 W



- ▶ Wide 2:1 input range
- ▶ Operating temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Industry standard pinout



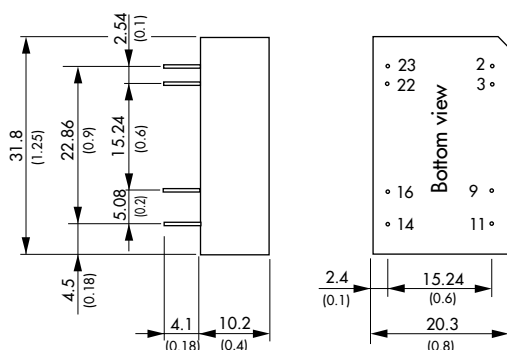
## Specifications

Line regulation	0.5 % max.
Load regulation	single output: 1.2% max. dual output: 2% max.
Ripple & noise	<80 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous
Efficiency	84% typ. 3.3 VDC models 77% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ 3.3 & 5.0 VDC models, above $60^{\circ}\text{C}$ derating 2.5 %/K other models, above $70^{\circ}\text{C}$ derating 3.3 %/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/ten6n.pdf">www.tracopower.com/products/ten6n.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 6-1210N		3.3 VDC	1200 mA
TEN 6-1211N		5 VDC	1200 mA
TEN 6-1212N		12 VDC	500 mA
TEN 6-1213N	9 – 18 VDC	15 VDC	400 mA
TEN 6-1215N		24 VDC	250 mA
TEN 6-1221N		$\pm 5$ VDC	$\pm 500$ mA
TEN 6-1222N		$\pm 12$ VDC	$\pm 250$ mA
TEN 6-1223N		$\pm 15$ VDC	$\pm 200$ mA
TEN 6-2410N		3.3 VDC	1200 mA
TEN 6-2411N		5 VDC	1200 mA
TEN 6-2412N		12 VDC	500 mA
TEN 6-2413N	18 – 36 VDC	15 VDC	400 mA
TEN 6-2415N		24 VDC	250 mA
TEN 6-2421N		$\pm 5$ VDC	$\pm 500$ mA
TEN 6-2422N		$\pm 12$ VDC	$\pm 250$ mA
TEN 6-2423N		$\pm 15$ VDC	$\pm 200$ mA
TEN 6-4810N		3.3 VDC	1200 mA
TEN 6-4811N		5 VDC	1200 mA
TEN 6-4812N		12 VDC	500 mA
TEN 6-4813N	36 – 75 VDC	15 VDC	400 mA
TEN 6-4815N		24 VDC	250 mA
TEN 6-4821N		$\pm 5$ VDC	$\pm 500$ mA
TEN 6-4822N		$\pm 12$ VDC	$\pm 250$ mA
TEN 6-4823N		$\pm 15$ VDC	$\pm 200$ mA

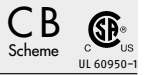
## Dimensions



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

() = Inches

# TEN-6WIN Series ▶ 6 W



- ▶ Ultra wide 4:1 Input Range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1'500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Industry standard pinout



Specifications		Models			
Line regulation	0.5 % max.	<b>Order code <sup>1)</sup></b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	single output: 1.2% max. dual output: 2% max.	TEN 6-2410WIN		3.3 VDC	1200 mA
Ripple & noise	<80 mVpk-pk (20 MHz BW)	TEN 6-2411WIN		5 VDC	1200 mA
Conducted EMI	EN 55022, class EN55022 class A (internal filter)	TEN 6-2412WIN		12 VDC	500 mA
Short circuit protection	continuous, automatic recovery	TEN 6-2413WIN	9 – 36 VDC	15 VDC	400 mA
Efficiency	84% typ. 3.3 VDC models 77% typ.	TEN 6-2415WIN		24 VDC	250 mA
Operating temperature range	-40 °C to +85 °C 3.3 & 5.0 VDC models, above 60°C derating 2.5 %/K other models, above 70°C derating 3.3 %/K	TEN 6-2421WIN		± 5 VDC	± 500 mA
I/O isolation voltage	1500 VDC	TEN 6-2422WIN		± 12 VDC	± 250 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	TEN 6-2423WIN		± 15 VDC	± 200 mA
Casing	plastic (UL 94 V-0 rated)	TEN 6-4810WIN		3.3 VDC	1200 mA
Full datasheet	<a href="http://www.tracopower.com/products/ten6win.pdf">www.tracopower.com/products/ten6win.pdf</a>	TEN 6-4811WIN		5 VDC	1200 mA
		TEN 6-4812WIN		12 VDC	500 mA
		TEN 6-4813WIN	18 – 75 VDC	15 VDC	400 mA
		TEN 6-4815WIN		24 VDC	250 mA
		TEN 6-4821WIN		± 5 VDC	± 500 mA
		TEN 6-4822WIN		± 12 VDC	± 250 mA
		TEN 6-4823WIN		± 15 VDC	± 200 mA

Dimensions		Pin		
		Single output	Dual output	
		- Vin (GND)	- Vin (GND)	
		- Vin (GND)	- Vin (GND)	
		No pin	Common	
		No con.	- Vout	
		+ Vout	+ Vout	
		- Vout	Common	
		+ Vin (Vcc)	+ Vin (Vcc)	
		+ Vin (Vcc)	+ Vin (Vcc)	

() = Inches

## TEN-6WIN-HI Series ▶ 6 W



- ▶ Ultra wide 4:1 Input Range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ I/O isolation 3'000 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Industry standard pinout



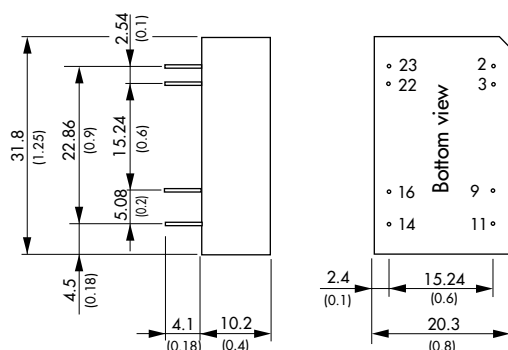
## Specifications

Line regulation	0.5 % max.
Load regulation	1.2% typ.
Ripple & noise	<80 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	84% typ. 3.3 VDC models 77% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ 3.3 & 5.0 VDC models, above $60\text{ }^{\circ}\text{C}$ derating 2.5 %/K other models, above $70\text{ }^{\circ}\text{C}$ derating 3.3 %/K
I/O isolation voltage	3000 VDC functional insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/ten6win.pdf">www.tracopower.com/products/ten6win.pdf</a>

## Models

Order code <sup>1)</sup>	Input voltage	Output voltage	Output current max.
TEN 6-2410WIN-HI		3.3 VDC	1200 mA
TEN 6-2411WIN-HI		5 VDC	1200 mA
TEN 6-2412WIN-HI		12 VDC	500 mA
TEN 6-2413WIN-HI	9 – 36 VDC	15 VDC	400 mA
TEN 6-2415WIN-HI		24 VDC	250 mA
TEN 6-2421WIN-HI		$\pm 5$ VDC	$\pm 500$ mA
TEN 6-2422WIN-HI		$\pm 12$ VDC	$\pm 250$ mA
TEN 6-2423WIN-HI		$\pm 15$ VDC	$\pm 200$ mA
TEN 6-4810WIN-HI		3.3 VDC	1200 mA
TEN 6-4811WIN-HI		5 VDC	1200 mA
TEN 6-4812WIN-HI		12 VDC	500 mA
TEN 6-4813WIN-HI	18 – 75 VDC	15 VDC	400 mA
TEN 6-4815WIN-HI		24 VDC	250 mA
TEN 6-4821WIN-HI		$\pm 5$ VDC	$\pm 500$ mA
TEN 6-4822WIN-HI		$\pm 12$ VDC	$\pm 250$ mA
TEN 6-4823WIN-HI		$\pm 15$ VDC	$\pm 200$ mA

## Dimensions



() = Inches

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

# TEN-8 Series ▶ 8 W



- ▶ Wide 2:1 input range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Industry standard pinout



Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.0% max.	TEN 8-1210		3.3 VDC	2000 mA
Ripple & noise	<50 mVpk-pk (20MHz BW)	TEN 8-1211		5 VDC	1500 mA
Conducted EMI	EN 55022, class EN55022 class A (internal filter)	TEN 8-1212		12 VDC	665 mA
Short circuit protection	continuous, automatic recovery	TEN 8-1213	9-18 VDC	15 VDC	535 mA
Efficiency	83% typ.	TEN 8-1221		± 5 VDC	± 800 mA
Operating temperature range	-40 °C to +85 °C above 70°C derating 3.3%/K	TEN 8-1222		± 12 VDC	± 335 mA
I/O isolation voltage	1500 VDC (60 sec.)	TEN 8-1223		± 15 VDC	± 265 mA
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1	TEN 8-2410		3.3 VDC	2000 mA
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TEN 8-2411		5 VDC	1500 mA
Casing	metal, with insulated baseplate	TEN 8-2412		12 VDC	665 mA
Full datasheet	<a href="http://www.tracopower.com/products/ten8.pdf">www.tracopower.com/products/ten8.pdf</a>	TEN 8-2413	18-36 VDC	15 VDC	535 mA
		TEN 8-2421		± 5 VDC	± 800 mA
		TEN 8-2422		± 12 VDC	± 335 mA
		TEN 8-2423		± 15 VDC	± 265 mA
		TEN 8-4810		3.3 VDC	2000 mA
		TEN 8-4811		5 VDC	1500 mA
		TEN 8-4812		12 VDC	665 mA
		TEN 8-4813	36-75 VDC	15 VDC	535 mA
		TEN 8-4821		± 5 VDC	± 800 mA
		TEN 8-4822		± 12 VDC	± 335 mA
		TEN 8-4823		± 15 VDC	± 265 mA

Dimensions		Pin	
<p>Side view dimensions: 32 (1.25) total height, 25.4 (1.0) to top pins, 15.24 (0.6) to bottom pins, 5.08 (0.2) to baseplate, 2.0 (0.08) top pin height, 2.54 (0.1) bottom pin height, 3.8 (0.15) baseplate width, 10.2 (0.4) to right edge.</p> <p>Bottom view dimensions: 2.4 (0.1) pin width, 15.24 (0.6) pin pitch, 20.3 (0.8) total width.</p> <p>Pinout (Bottom view): 1° (pin 1), 2° (pin 2), 3° (pin 3), 9° (pin 9), 11° (pin 11), 14° (pin 14), 16° (pin 16), 22° (pin 22), 23° (pin 23).</p>		<b>Single output</b>	<b>Dual output</b>
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)	

() = Inches

## TEN-8WI Series ▶ 8 W



- ▶ Ultra wide 4:1 input range and high input voltage up to 160VDC
- ▶ Certified for railway applications EN 50155
- ▶ Operating temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ Input under voltage lockout
- ▶ I/O isolation 1500VDC
- ▶ Remote On/Off
- ▶ Industry standard pinout



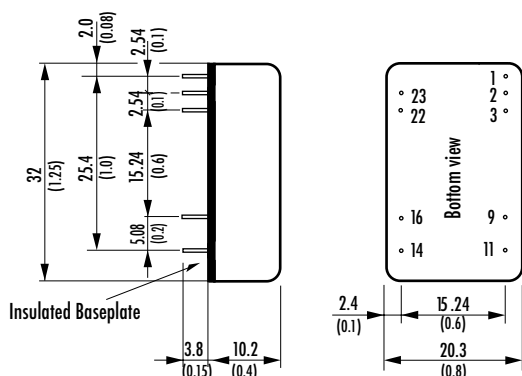
## Specifications

Line regulation	0.2% max.
Load regulation	– Single output models: 0.5% max. – Dual output models: 1.0% max.
Ripple & Noise	<50 mVpk-pk (20 MHz BW) <75 mVp-p (20 MHz BW) for 43–160 VDC input models
EMC	– Conducted noise: EN 55022, class EN55022 class A (with external capacitor) – Immunity: EN 50155
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ above $80^{\circ}\text{C}$ derating 4.0%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1, EN 50155
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten8wi.pdf">www.tracopower.com/products/ten8wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 8-2410WI		3.3 VDC	2400 mA
TEN 8-2411WI		5 VDC	1600 mA
TEN 8-2412WI		12 VDC	666 mA
TEN 8-2413WI	9–36 VDC	15 VDC	533 mA
TEN 8-2421WI		$\pm 5$ VDC	$\pm 800$ mA
TEN 8-2422WI		$\pm 12$ VDC	$\pm 333$ mA
TEN 8-2423WI		$\pm 15$ VDC	$\pm 267$ mA
TEN 8-4810WI		3.3 VDC	2400 mA
TEN 8-4811WI		5 VDC	1600 mA
TEN 8-4812WI		12 VDC	666 mA
TEN 8-4813WI	18–75 VDC	15 VDC	533 mA
TEN 8-4821WI		$\pm 5$ VDC	$\pm 800$ mA
TEN 8-4822WI		$\pm 12$ VDC	$\pm 333$ mA
TEN 8-4823WI		$\pm 15$ VDC	$\pm 267$ mA
TEN 8-7210WI		3.3 VDC	2400 mA
TEN 8-7211WI		5 VDC	1600 mA
TEN 8-7212WI		12 VDC	666 mA
TEN 8-7213WI	43–160 VDC	15 VDC	533 mA
TEN 8-7221WI		$\pm 5$ VDC	$\pm 800$ mA
TEN 8-7222WI		$\pm 12$ VDC	$\pm 333$ mA
TEN 8-7223WI		$\pm 15$ VDC	$\pm 267$ mA

## Dimensions



Pin	Single output	Dual output
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)

() = Inches

# THD-10N Series ▶ 10 W



- ▶ Wide 2:1 input range
- ▶ High efficiency up to 87%
- ▶ Operating temperature range -40°C to +85°C
- ▶ Internal EMI-filter meets EN 55022, class A
- ▶ I/O isolation 1500VDC
- ▶ Remote On/Off



**NEW**  
Product

Specifications		Models			
Line regulation	1 % max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.2% typ.	THD 10-1210N		3.3 VDC	2700 mA
Ripple & noise	100 mVpk-pk typ. (20 MHz BW)	THD 10-1211N		5.1 VDC	2000 mA
Conducted EMI	EN 55022, class EN55022 class A (internal filter)	THD 10-1212N	9 – 18 VDC	12 VDC	833 mA
Short circuit protection	continuous, automatic recovery	THD 10-1213N		15 VDC	666 mA
Efficiency	86% typ.	THD 10-1222N		±12 VDC	±416 mA
Operating temperature range	-40 °C to +85 °C above 70°C derating 2.5 %/K	THD 10-1223N		±15 VDC	±333 mA
I/O isolation voltage	1500 VDC	THD 10-2410N		3.3 VDC	2700 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, (report pending)	THD 10-2411N		5.1 VDC	2000 mA
Casing	metal	THD 10-2412N	18 – 36 VDC	12 VDC	833 mA
Full datasheet	<a href="http://www.tracopower.com/products/thd10n.pdf">www.tracopower.com/products/thd10n.pdf</a>	THD 10-2413N		15 VDC	666 mA
		THD 10-2422N		±12 VDC	±416 mA
		THD 10-2423N		±15 VDC	±333 mA
		THD 10-4810N		3.3 VDC	2700 mA
		THD 10-4811N		5.1 VDC	2000 mA
		THD 10-4812N	36 – 75 VDC	12 VDC	833 mA
		THD 10-4813N		15 VDC	666 mA
		THD 10-4822N		±12 VDC	±416 mA
		THD 10-4823N		±15 VDC	±333 mA

Dimensions		Pin		
		1	Single output	Dual output
		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)

() = Inches

# THD-10WIN Series ▶ 10 W



- ▶ Ultra wide 4:1 input range
- ▶ High efficiency up to 87%
- ▶ Operating temperature range -40°C to +85°C
- ▶ Internal EMI-filter meets EN 55022, class A
- ▶ No minimum load required
- ▶ I/O isolation 1500VDC
- ▶ Remote On/Off

**NEW**  
Product

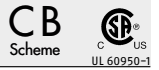


Specifications		Models			
Line regulation	1 % max.	Order code	Input voltage	Output voltage	Output current max.
Load regulation	1.2% typ.	THD 10-2410WIN		3.3 VDC	2700 mA
Ripple & noise	<100 mVpk-pk (20 MHz BW)	THD 10-2411WIN		5.1 VDC	2000 mA
Conducted EMI	EN 55022, class EN55022 class A (internal filter)	THD 10-2412WIN	9 – 36 VDC	12 VDC	833 mA
Short circuit protection	continuous, automatic recovery	THD 10-2413WIN		15 VDC	666 mA
Efficiency	86% typ.	THD 10-2415WIN		24 VDC	416 mA
Operating temperature range	-40 °C to +85 °C above 70°C derating 2.5 %/K	THD 10-2422WIN		±12 VDC	±416 mA
I/O isolation voltage	1500 VDC	THD 10-2423WIN		±15 VDC	±333 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, (report pending)	THD 10-4810WIN		3.3 VDC	2700 mA
Casing	metal	THD 10-4811WIN		5.1 VDC	2000 mA
Full datasheet	<a href="http://www.tracopower.com/products/thd10win.pdf">www.tracopower.com/products/thd10win.pdf</a>	THD 10-4812WIN	18 – 75 VDC	12 VDC	833 mA
		THD 10-4813WIN		15 VDC	666 mA
		THD 10-4815WIN		24 VDC	416 mA
		THD 10-4822WIN		±12 VDC	±416 mA
		THD 10-4823WIN		±15 VDC	±333 mA

Dimensions		Pin	
		Single output	Dual output
		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)

() = Inches

# THL-10 Series ▶ 10 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ Wide 2:1 input voltage range
- ▶ High efficiency up to 87%
- ▶ I/O-isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ No minimum load required

**NEW  
Product**



Specifications		Models			
Line regulation	1% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.	THL 10-1210		3.3 VDC	2500 mA
Ripple & noise	100 mVpk-pk typ. (20 MHz BW)	THL 10-1211		5.1 VDC	2000 mA
Conducted EMI	EN 55022, class EN55022 class A (internal filter)	THL 10-1212		12 VDC	830 mA
Short circuit protection	continuous, automatic recovery	THL 10-1213	9 – 18 VDC	15 VDC	670 mA
Efficiency	84% typ.	THL 10-1221		± 5 VDC	± 1000 mA
Operating temperature range	-40 °C to +80 °C above 60°C derating 2.5%/K - optional heatsink for extended temp.: see datasheet	THL 10-1222		± 12 VDC	± 416 mA
I/O isolation voltage	1500 VDC (60 sec.)	THL 10-1223		± 15 VDC	± 333 mA
Safety standards/ approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	THL 10-2410		3.3 VDC	2500 mA
Casing	metal, with insulated baseplate	THL 10-2411		5.1 VDC	2000 mA
Full datasheet	<a href="http://www.tracopower.com/products/thl10.pdf">www.tracopower.com/products/thl10.pdf</a>	THL 10-2412		12 VDC	830 mA
		THL 10-2413	18 – 36VDC	15 VDC	670 mA
		THL 10-2421		± 5 VDC	± 1000 mA
		THL 10-2422		± 12 VDC	± 416 mA
		THL 10-2423		± 15 VDC	± 333 mA
		THL 10-4810		3.3 VDC	2500 mA
		THL 10-4811		5.1 VDC	2000 mA
		THL 10-4812		12 VDC	830 mA
		THL 10-4813	36 – 75 VDC	15 VDC	670 mA
		THL 10-4821		± 5 VDC	± 1000 mA
		THL 10-4822		± 12 VDC	± 416 mA
		THL 10-4823		± 15 VDC	± 333 mA

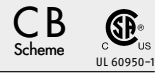
Optional heatsink: THL-HS1

Dimensions		Pin			
	<p>Bottom view</p>	<b>Single output</b>	<b>Dual output</b>		
		1	+ Vin (Vcc)	+ Vin (Vcc)	
		2	- Vin (GND)	- Vin (GND)	
		3	+ Vout	+ Vout	
		4	No pin	Common	
		5	- Vout	- Vout	

() = Inches



# THL-10WI Series ▶ 10 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ High efficiency up to 87%
- ▶ I/O-isolation 1500 VDC
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off

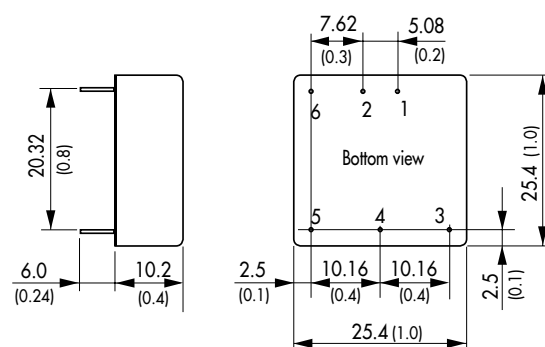


Specifications	
Line regulation	1% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 2.0% max.
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	-40 °C to +75 °C above 60°C derating 2.5%/K - optional heatsink for extended temp.: see datasheet
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards/ approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low current (10 mA) in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thl10wi.pdf">www.tracopower.com/products/thl10wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THL 10-2410WI		3.3 VDC	2200 mA
THL 10-2411WI		5.1 VDC	2000 mA
THL 10-2412WI		12 VDC	830 mA
THL 10-2413WI	9-36 VDC	15 VDC	660 mA
THL 10-2415WI		24 VDC	410 mA
THL 10-2421WI		± 5 VDC	± 1000 mA
THL 10-2422WI		± 12 VDC	± 410 mA
THL 10-2423WI		± 15 VDC	± 330 mA
THL 10-4810WI		3.3 VDC	2200 mA
THL 10-4811WI		5.1 VDC	2000 mA
THL 10-4812WI		12 VDC	830 mA
THL 10-4813WI	18-75 VDC	15 VDC	660 mA
THL 10-4815WI		24 VDC	410 mA
THL 10-4821WI		± 5 VDC	± 1000 mA
THL 10-4822WI		± 12 VDC	± 410 mA
THL 10-4823WI		± 15 VDC	± 330 mA

Optional heatsink: THL-HS1

## Dimensions



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
6	Remote On/Off	Remote On/Off

() = Inches

# THD-12 Series ▶ 12 W



- ▶ DIP-24 metal package
- ▶ Wide 2:1 input range
- ▶ I/O isolation 1500 VDC
- ▶ Operating temperature range -40°C to + 85°C
- ▶ Input under voltage lockout
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.	THD 12-1209		2.5 VDC	3500 mA
Ripple & noise	<85 mVpk-pk (20 MHz BW)	THD 12-1210		3.3 VDC	3500 mA
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)	THD 12-1211	9-18 VDC	5.1 VDC	2400 mA
Short circuit protection	continuous, automatic recovery	THD 12-1212		12 VDC	1000 mA
Efficiency	86% typ.	THD 12-1222		± 12 VDC	± 500 mA
Operating temperature range	-40 °C to +85°C above 65 °C derating 2.5%/K	THD 12-1223		± 15 VDC	± 400 mA
I/O isolation voltage	1500 VDC (60 sec.)	THD 12-2409		2.5 VDC	3500 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	THD 12-2410		3.3 VDC	3500 mA
Remote On/Off	shutdown input for low current (2.5 mA) in standby operation	THD 12-2411	18-36 VDC	5.1 VDC	2400 mA
Casing	metal, with insulated baseplate	THD 12-2412		12 VDC	1000 mA
Full datasheet	<a href="http://www.tracopower.com/products/thd12.pdf">www.tracopower.com/products/thd12.pdf</a>	THD 12-2422		± 12 VDC	± 500 mA
		THD 12-2423		± 15 VDC	± 400 mA
		THD 12-4809		2.5 VDC	3500 mA
		THD 12-4810		3.3 VDC	3500 mA
		THD 12-4811	36-75 VDC	5.1 VDC	2400 mA
		THD 12-4812		12 VDC	1000 mA
		THD 12-4822		± 12 VDC	± 500 mA
		THD 12-4823		± 15 VDC	± 400 mA

Dimensions		Pin																															
		<table border="1"> <thead> <tr> <th>Pin</th> <th>Single output</th> <th>Dual output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Remote On/Off</td> <td>Remote On/Off</td> </tr> <tr> <td>2</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>3</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>9</td> <td>No con.</td> <td>Common</td> </tr> <tr> <td>11</td> <td>No con.</td> <td>- Vout</td> </tr> <tr> <td>14</td> <td>+ Vout</td> <td>+ Vout</td> </tr> <tr> <td>16</td> <td>- Vout</td> <td>Common</td> </tr> <tr> <td>22</td> <td>+ Vin (Vcc)</td> <td>+ Vin (Vcc)</td> </tr> <tr> <td>23</td> <td>+ Vin (Vcc)</td> <td>+ Vin (Vcc)</td> </tr> </tbody> </table>		Pin	Single output	Dual output	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)
Pin	Single output	Dual output																															
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)																															
<p>( ) = Inches</p>																																	

# THD-12WI Series ▶ 12 W



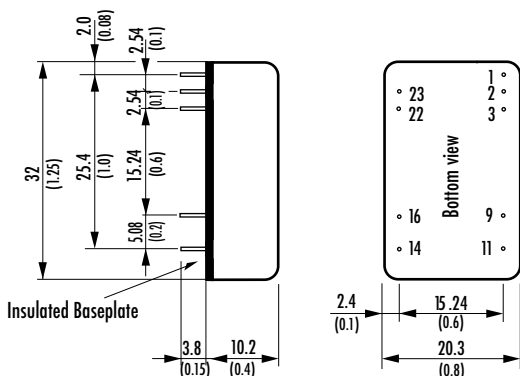
- ▶ DIP-24 metal package
- ▶ Ultra wide 4:1 Input Range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Remote On/Off



Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Ripple & noise	<85 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	-40 °C to +85°C above 65 °C derating 2.5%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low current (2.5 mA) in standby operation
Casing	metal, 5-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thd12wi.pdf">www.tracopower.com/products/thd12wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THD 12-2410WI		3.3 VDC	3500 mA
THD 12-2411WI		5.1 VDC	2400 mA
THD 12-2412WI		12 VDC	1000 mA
THD 12-2413WI	9 – 36 VDC	15 VDC	800 mA
THD 12-2421WI		± 5 VDC	± 1200 mA
THD 12-2422WI		± 12 VDC	± 500 mA
THD 12-2423WI		± 15 VDC	± 400 mA
THD 12-4810WI		3.3 VDC	3500 mA
THD 12-4811WI		5.1 VDC	2400 mA
THD 12-4812WI		12 VDC	1000 mA
THD 12-4813WI	18 – 75 VDC	15 VDC	800 mA
THD 12-4821WI		± 5 VDC	± 1200 mA
THD 12-4822WI		± 12 VDC	± 500 mA
THD 12-4823WI		± 15 VDC	± 400 mA

## Dimensions



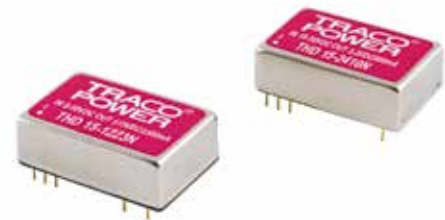
Pin	Single output	Dual output
1	Remote On/Off	Remote On/Off
2	- Vin (GND)	- Vin (GND)
3	- Vin (GND)	- Vin (GND)
9	No con.	Common
11	No con.	- Vout
14	+ Vout	+ Vout
16	- Vout	Common
22	+ Vin (Vcc)	+ Vin (Vcc)
23	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# THD-15N Series ▶ 15 W



- ▶ Highest power density in DIP 24 metal package
- ▶ Wide 2:1 input range
- ▶ Very high efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.	THD 15-1210N		3.3 VDC	4000 mA
Ripple & noise	<60 mVpk-pk (20 MHz BW)	THD 15-1211N		5.1 VDC	3000 mA
Conducted EMI	EN 55022, class EN55022 class A (internal filter)	THD 15-1212N		12 VDC	1250 mA
Short circuit protection	continuous, automatic recovery	THD 15-1213N	9 – 18 VDC	15 VDC	1000 mA
Efficiency	88% typ.	THD 15-1221N		± 5 VDC	± 1500 mA
Operating temperature range	-40 °C to +85°C above 70 °C derating 4.0%/K	THD 15-1222N		± 12 VDC	± 625 mA
I/O isolation voltage	1500 VDC (60 sec.)	THD 15-1223N		± 15 VDC	± 500 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	THD 15-2410N		3.3 VDC	4000 mA
Remote On/Off	shutdown input for low current (2.5 mA) in standby operation	THD 15-2411N		5.1 VDC	3000 mA
Casing	metal, 6-side shielded with insulated baseplate	THD 15-2412N		12 VDC	1250 mA
Full datasheet	<a href="http://www.tracopower.com/products/thd15n.pdf">www.tracopower.com/products/thd15n.pdf</a>	THD 15-2413N	18 – 36 VDC	15 VDC	1000 mA
		THD 15-2421N		± 5 VDC	± 1500 mA
		THD 15-2422N		± 12 VDC	± 625 mA
		THD 15-2423N		± 15 VDC	± 500 mA
		THD 15-4810N		3.3 VDC	4000 mA
		THD 15-4811N		5.1 VDC	3000 mA
		THD 15-4812N		12 VDC	1250 mA
		THD 15-4813N	36 – 75 VDC	15 VDC	1000 mA
		THD 15-4821N		± 5 VDC	± 1500 mA
		THD 15-4822N		± 12 VDC	± 625 mA
		THD 15-4823N		± 15 VDC	± 500 mA

Dimensions		Pin																															
		<table border="1"> <thead> <tr> <th>Pin</th> <th>Single output</th> <th>Dual output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Remote On/Off</td> <td>Remote On/Off</td> </tr> <tr> <td>2</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>3</td> <td>- Vin (GND)</td> <td>- Vin (GND)</td> </tr> <tr> <td>9</td> <td>No con.</td> <td>Common</td> </tr> <tr> <td>11</td> <td>No con.</td> <td>- Vout</td> </tr> <tr> <td>14</td> <td>+ Vout</td> <td>+ Vout</td> </tr> <tr> <td>16</td> <td>- Vout</td> <td>Common</td> </tr> <tr> <td>22</td> <td>+ Vin (Vcc)</td> <td>+ Vin (Vcc)</td> </tr> <tr> <td>23</td> <td>+ Vin (Vcc)</td> <td>+ Vin (Vcc)</td> </tr> </tbody> </table>		Pin	Single output	Dual output	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)
Pin	Single output	Dual output																															
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)																															

() = Inches

# THD-15WIN Series ▶ 15 W



- ▶ Highest power density in DIP 24 metal package
- ▶ Ultra wide 4:1 input range
- ▶ Very high efficiency up to 90 %
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off



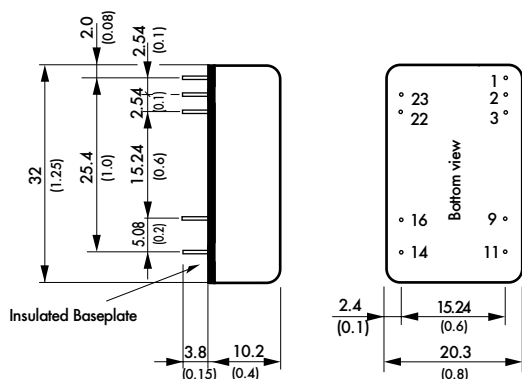
## Specifications

Line regulation	0.5% max.
Load regulation	– Single output models: 0.5% max. – Dual output models: 1.0% max.
Ripple & noise	<60 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	88% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $70\text{ }^{\circ}\text{C}$ derating 4.0%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low current (2.5 mA) in standby operation
Casing	metal, 6-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thd15win.pdf">www.tracopower.com/products/thd15win.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THD 15-2410WIN		3.3 VDC	4000 mA
THD 15-2411WIN		5.1 VDC	3000 mA
THD 15-2412WIN		12 VDC	1250 mA
THD 15-2413WIN	9–36 VDC	15 VDC	1000 mA
THD 15-2421WIN		$\pm 5\text{ VDC}$	$\pm 1500\text{ mA}$
THD 15-2422WIN		$\pm 12\text{ VDC}$	$\pm 625\text{ mA}$
THD 15-2423WIN		$\pm 15\text{ VDC}$	$\pm 500\text{ mA}$
THD 15-4810WIN		3.3 VDC	4000 mA
THD 15-4811WIN		5.1 VDC	3000 mA
THD 15-4812WIN		12 VDC	1250 mA
THD 15-4813WIN	18–75 VDC	15 VDC	1000 mA
THD 15-4821WIN		$\pm 5\text{ VDC}$	$\pm 1500\text{ mA}$
THD 15-4822WIN		$\pm 12\text{ VDC}$	$\pm 625\text{ mA}$
THD 15-4823WIN		$\pm 15\text{ VDC}$	$\pm 500\text{ mA}$

## Dimensions



Pin	Single output	Dual output
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)

# TEL-15 Series ▶ 15 W



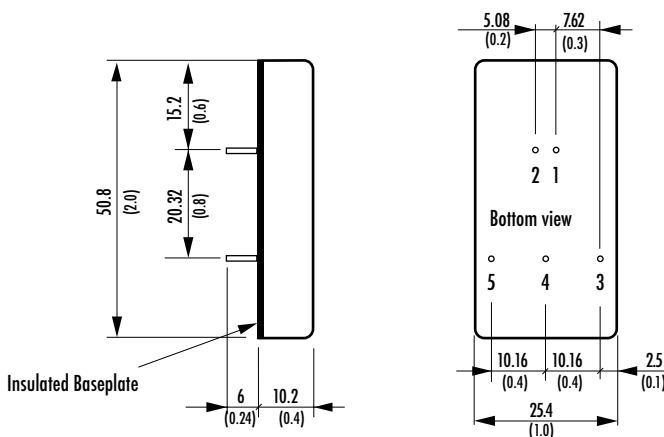
- ▶ Wide 2:1 input range
- ▶ I/O isolation 1500 VDC
- ▶ Cost optimized design



Specifications		Models			
Line regulation	1.0% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.5% max. - Dual output models: 2.0% max.	TEL 15-1210		3.3 VDC	3000 mA
Ripple & noise	<75 mVpk-pk (20 MHz BW)	TEL 15-1211		5.1 VDC	3000 mA
Input filter	Pi-filter	TEL 15-1212	9 – 18 VDC	12 VDC	1250 mA
Short circuit protection	continuous, automatic recovery	TEL 15-1213		15 VDC	1000 mA
Efficiency	86% typ.	TEL 15-1222		± 12 VDC	± 625 mA
Operating temperature range	-40 °C to +71 °C above 60 °C derating 2.5 %/K - optional heatsink for extended temp.: see datasheet	TEL 15-1223		± 15 VDC	± 500 mA
I/O isolation voltage	1500VDC (60 sec.)	TEL 15-2410		3.3 VDC	3000 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	TEL 15-2411		5.1 VDC	3000 mA
Casing	metal, 6-side shielded with insulated baseplate	TEL 15-2412	18 – 36 VDC	12 VDC	1250 mA
Full datasheet	<a href="http://www.tracopower.com/products/tel15.pdf">www.tracopower.com/products/tel15.pdf</a>	TEL 15-2413		15 VDC	1000 mA
		TEL 15-2422		± 12 VDC	± 625 mA
		TEL 15-2423		± 15 VDC	± 500 mA
		TEL 15-4810		3.3 VDC	3000 mA
		TEL 15-4811		5.1 VDC	3000 mA
		TEL 15-4812	36 – 75 VDC	12 VDC	1250 mA
		TEL 15-4813		15 VDC	1000 mA
		TEL 15-4822		± 12 VDC	± 625 mA
		TEL 15-4823		± 15 VDC	± 500 mA

Optional heatsink: [TEN-HS4](#)

## Dimensions



( ) = Inches

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-15 Series ▶ 15 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Remote On/Off
- ▶ Adjustable output voltage

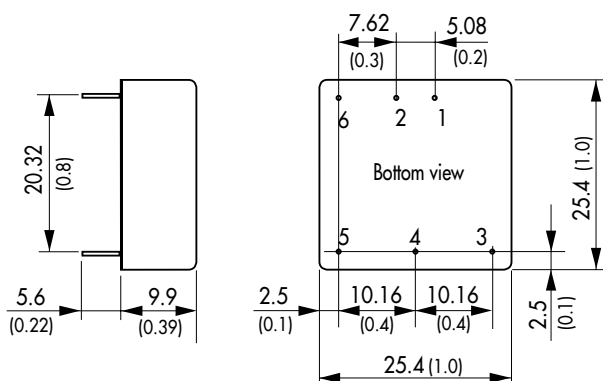


Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Output voltage adjustment	±10% by external resistor
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 2.8%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low current (2.5 mA) in standby operation
Casing	metal, 6-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thn15.pdf">www.tracopower.com/products/thn15.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THN 15-1210		3.3 VDC	4000 mA
THN 15-1211		5.0 VDC	3000 mA
THN 15-1212		12 VDC	1300 mA
THN 15-1213	9 – 18 VDC	15 VDC	1000 mA
THN 15-1221		± 5 VDC	± 1500 mA
THN 15-1222		± 12 VDC	± 625 mA
THN 15-1223		± 15 VDC	± 500 mA
THN 15-2410		3.3 VDC	4000 mA
THN 15-2411		5.0 VDC	3000 mA
THN 15-2412		12 VDC	1300 mA
THN 15-2413	18 – 36 VDC	15 VDC	1000 mA
THN 15-2421		± 5 VDC	± 1500 mA
THN 15-2422		± 12 VDC	± 625 mA
THN 15-2423		± 15 VDC	± 500 mA
THN 15-4810		3.3 VDC	4000 mA
THN 15-4811		5.0 VDC	3000 mA
THN 15-4812		12 VDC	1300 mA
THN 15-4813	36 – 75 VDC	15 VDC	1000 mA
THN 15-4821		± 5 VDC	± 1500 mA
THN 15-4822		± 12 VDC	± 625 mA
THN 15-4823		± 15 VDC	± 500 mA

Optional heatsink: **THN-HS1**

## Dimensions



Pin	Single output	Dual output
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

\* optional no pin on request

# THN-15WI Series ▶ 15 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input under voltage lockout
- ▶ Remote On/Off
- ▶ Adjustable output voltage



Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.2% max. - Dual output models: 1.0% max.	THN 15-2410WI		3.3 VDC	4000 mA
Output voltage adjustment	±10% by external resistor (single output models only)	THN 15-2411WI		5.0 VDC	3000 mA
Ripple & noise	<100 mVpk-pk (20 MHz BW)	THN 15-2412WI		12 VDC	1300 mA
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)	THN 15-2413WI	9 – 36 VDC	15 VDC	1000 mA
Short circuit protection	continuous, automatic recovery	THN 15-2421WI		± 5 VDC	± 1500 mA
Efficiency	86% typ.	THN 15-2422WI		± 12 VDC	± 625 mA
Operating temperature range	-40 °C to +85 °C above 65 °C derating 2.5%/K	THN 15-2423WI		± 15 VDC	± 500 mA
I/O isolation voltage	1500 VDC (60 sec.)	THN 15-4810WI		3.3 VDC	4000 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report	THN 15-4811WI		5.0 VDC	3000 mA
Remote On/Off	shutdown input for low current (2.5mA) in standby operation	THN 15-4812WI		12 VDC	1300 mA
Casing	metal, 6-side shielded with insulated baseplate	THN 15-4813WI	18 – 75 VDC	15 VDC	1000 mA
Full datasheet	<a href="http://www.tracopower.com/products/thn15wi.pdf">www.tracopower.com/products/thn15wi.pdf</a>	THN 15-4821WI		± 5 VDC	± 1500 mA
		THN 15-4822WI		± 12 VDC	± 625 mA
		THN 15-4823WI		± 15 VDC	± 500 mA
		Optional heatsink: THN-HS1			

Dimensions		Pin		
	<p>Bottom view</p>	<b>Single output</b>	<b>Dual output</b>	
		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	
		* optional no pin on request		

() = Inches



# THN-20 Series ▶ 20 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+75\text{ }^{\circ}\text{C}$
- ▶ I/O isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

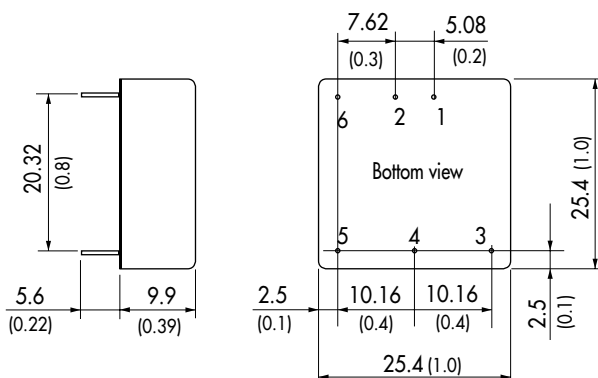
Line regulation	0.5% max.
Load regulation	- Single output models: 0.2% max. - Dual output models: 1.0% max.
Output voltage adjustment	$\pm 10\%$ by external resistor
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	89% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+75\text{ }^{\circ}\text{C}$ above $60\text{ }^{\circ}\text{C}$ derating 3.0%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	CUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low current (1.5 mA) in standby operation
Casing	metal, 6-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thn20.pdf">www.tracopower.com/products/thn20.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THN 20-1210		3.3 VDC	4500 mA
THN 20-1211		5.0 VDC	4000 mA
THN 20-1212	9 – 18 VDC	12 VDC	1670 mA
THN 20-1213		15 VDC	1330 mA
THN 20-1222		$\pm 12$ VDC	$\pm 833$ mA
THN 20-1223		$\pm 15$ VDC	$\pm 667$ mA
THN 20-2410		3.3 VDC	4500 mA
THN 20-2411		5.0 VDC	4000 mA
THN 20-2412	18 – 36 VDC	12 VDC	1670 mA
THN 20-2413		15 VDC	1330 mA
THN 20-2422		$\pm 12$ VDC	$\pm 833$ mA
THN 20-2423		$\pm 15$ VDC	$\pm 667$ mA
THN 20-4810		3.3 VDC	4500 mA
THN 20-4811		5.0 VDC	4000 mA
THN 20-4812	36 – 75 VDC	12 VDC	1670 mA
THN 20-4813		15 VDC	1330 mA
THN 20-4822		$\pm 12$ VDC	$\pm 833$ mA
THN 20-4823		$\pm 15$ VDC	$\pm 667$ mA

Optional heatsink: [THN-HS1](#)

## Dimensions



() = Inches

Pin	Single output	Dual output
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

\* optional no pin on request

# THN-20WI Series ▶ 20 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ 6-side shielded metal casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Low input current at no load
- ▶ Input filter to meet EN 55022, class A
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

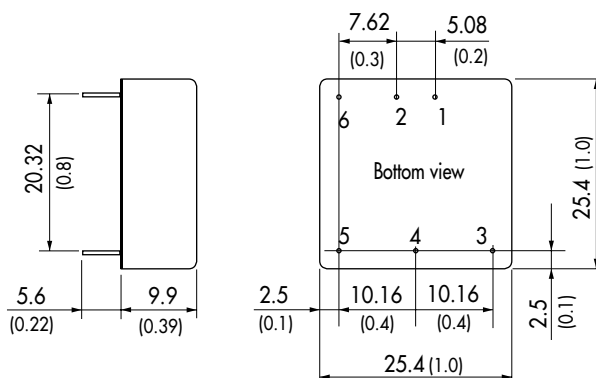
Line regulation	0.5% max.
Load regulation	- Single output models: 0.2% max. - Dual output models: 1.0% max.
Output voltage adjustment	±10% by external resistor
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	89% typ.
Operating temperature range	-40 °C to +75 °C above 60 °C derating 3.0%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low current (1.5 mA) in standby operation
Casing	metal, 6-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thn20wi.pdf">www.tracopower.com/products/thn20wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THN 20-2410WI	9-36 VDC	3.3 VDC	4500 mA
THN 20-2411WI		5.0 VDC	4000 mA
THN 20-2412WI		12 VDC	1670 mA
THN 20-2413WI		15 VDC	1330 mA
THN 20-2422WI		± 12 VDC	± 833 mA
THN 20-2423WI		± 15 VDC	± 667 mA
THN 20-4810WI	18-75 VDC	3.3 VDC	4500 mA
THN 20-4811WI		5.0 VDC	4000 mA
THN 20-4812WI		12 VDC	1670 mA
THN 20-4813WI		15 VDC	1330 mA
THN 20-4822WI		± 12 VDC	± 833 mA
THN 20-4823WI		± 15 VDC	± 667 mA

Optional heatsink: [THN-HS1](#)

## Dimensions



() = Inches

Pin	Single output	Dual output
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

\* optional no pin on request

# THL-20WI Series ▶ 20 W



- ▶ 1" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

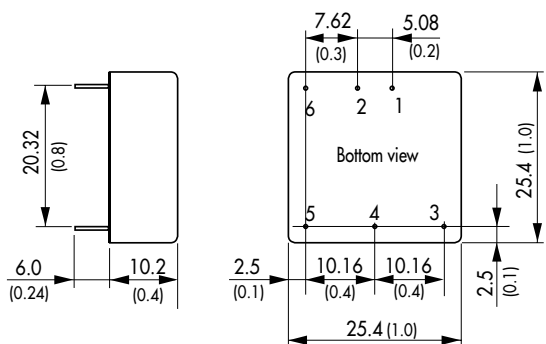
Line regulation	1% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 2.0% max.
Output voltage adjustment	±10% by external resistor (single output models)
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	88% typ.
Operating temperature range	-40 °C to +75 °C above 60°C derating 2.2%/K - optional heatsink for extended temp.: see datasheet
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low current in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thl20wi.pdf">www.tracopower.com/products/thl20wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THL 20-2410WI		3.3 VDC	4500 mA
THL 20-2411WI		5.1 VDC	4000 mA
THL 20-2412WI		12 VDC	1670 mA
THL 20-2413WI	9 – 36 VDC	15 VDC	1340 mA
THL 20-2415WI		24 VDC	835 mA
THL 20-2422WI		± 12 VDC	± 835 mA
THL 20-2423WI		± 15 VDC	± 670 mA
THL 20-4810WI		3.3 VDC	4500 mA
THL 20-4811WI		5.1 VDC	4000 mA
THL 20-4812WI		12 VDC	1670 mA
THL 20-4813WI	18 – 75 VDC	15 VDC	1340 mA
THL 20-4815WI		24 VDC	835 mA
THL 20-4822WI		± 12 VDC	± 835 mA
THL 20-4823WI		± 15 VDC	± 670 mA

Optional heatsink: [THL-HS1](#)

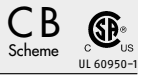
## Dimensions



Pin	Single output	Dual output
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

() = Inches

# TEN-20 Series ▶ 20 W



- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022 class A
- ▶ Remote On/Off

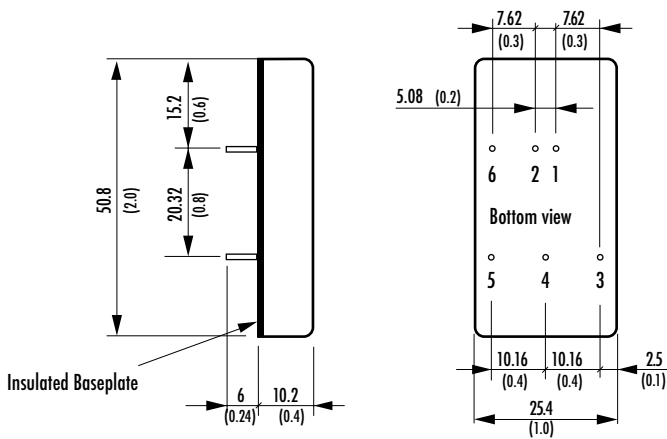


Specifications	
Line regulation	0.3% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Ripple & noise	<80 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	85% typ.
Operating temperature range	-40 °C to +85 °C above 60 °C derating 2.5%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (5 mA) in standby operation
Casing	metal, 6-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten20.pdf">www.tracopower.com/products/ten20.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEN 20-1210		3.3 VDC	4000 mA
TEN 20-1211		5 VDC	4000 mA
TEN 20-1212	9-18 VDC	12 VDC	1670 mA
TEN 20-1213		15 VDC	1340 mA
TEN 20-1222		± 12 VDC	± 835 mA
TEN 20-1223		± 15 VDC	± 670 mA
TEN 20-2410		3.3 VDC	4000 mA
TEN 20-2411		5 VDC	4000 mA
TEN 20-2412	18-36 VDC	12 VDC	1670 mA
TEN 20-2413		15 VDC	1340 mA
TEN 20-2422		± 12 VDC	± 835 mA
TEN 20-2423		± 15 VDC	± 670 mA
TEN 20-4810		3.3 VDC	4000 mA
TEN 20-4811		5 VDC	4000 mA
TEN 20-4812	36-75 VDC	12 VDC	1670 mA
TEN 20-4813		15 VDC	1340 mA
TEN 20-4822		± 12 VDC	± 835 mA
TEN 20-4823		± 15 VDC	± 670 mA

Optional heatsink: **TEN-HS4**

## Dimensions



() = Inches

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
6 *	Remote On/Off	Remote On/Off

\* optional no pin on request

# TEN-20WIN Series ▶ 20 W



- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

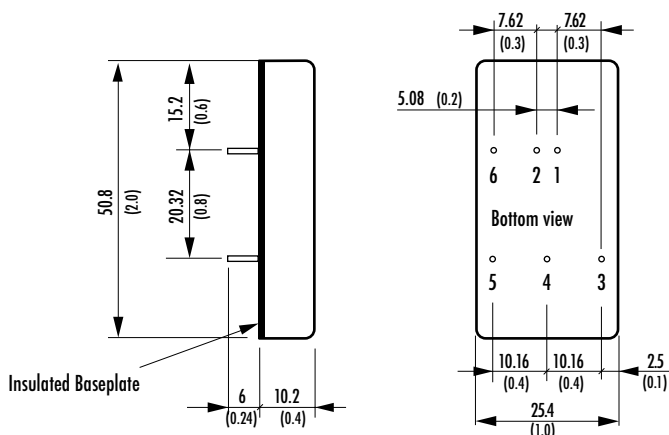


Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Output voltage adjustment	Single output models only: ±10% (by external resistor)
Ripple & noise	- Single output models: <75 mVpk-pk (20 MHz BW) - Dual output models: <100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)
Short circuit protection	continuous, automatic recovery
Efficiency	85% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 2.8%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	metal, 6-side shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten20win.pdf">www.tracopower.com/products/ten20win.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEN 20-2410WIN		3.3 VDC	5500 mA
TEN 20-2411WIN		5 VDC	4000 mA
TEN 20-2412WIN		12 VDC	1670 mA
TEN 20-2413WIN	9-36 VDC	15 VDC	1330 mA
TEN 20-2421WIN		± 5 VDC	± 2000 mA
TEN 20-2422WIN		± 12 VDC	± 835 mA
TEN 20-2423WIN		± 15 VDC	± 665 mA
TEN 20-4810WIN		3.3 VDC	5500 mA
TEN 20-4811WIN		5 VDC	4000 mA
TEN 20-4812WIN		12 VDC	1670 mA
TEN 20-4813WIN	18-75 VDC	15 VDC	1330 mA
TEN 20-4821WIN		± 5 VDC	± 2000 mA
TEN 20-4822WIN		± 12 VDC	± 835 mA
TEN 20-4823WIN		± 15 VDC	± 665 mA

Optional heatsink: TEN-HS1

## Dimensions



Pin	Single output	Dual output
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

\* optional no pin on request

() = Inches

# TEN-20WIR Series ▶ 20 W



- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ High efficiency across load range
- ▶ Low input current at no load
- ▶ Input undervoltage-lockout
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ I/O isolation 1500 VDC
- ▶ Input filter to meet EN 55022 class A
- ▶ Remote On/Off



Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.	TEN 20-2410WIR		3.3 VDC	4500 mA
Ripple & Noise	<75 mVpk-pk (20 MHz BW)	TEN 20-2411WIR		5 VDC	4000 mA
EMC	- Conducted noise: EN 55022, class EN55022 class A (without external capacitor) - Immunity: EN 50155	TEN 20-2412WIR		12 VDC	1670 mA
Short circuit protection	continuous, automatic recovery	TEN 20-2413WIR	9 – 36 VDC	15 VDC	1330 mA
Efficiency	88% typ.	TEN 20-2422WIR		± 12 VDC	± 833 mA
Operating temperature range	-40 °C to +85 °C above 70 °C derating 4.0%/K	TEN 20-2423WIR		± 15 VDC	± 667 mA
I/O isolation voltage	1500 VDC (60 sec.)	TEN 20-4810WIR		3.3 VDC	4500 mA
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1, EN 50155	TEN 20-4811WIR		5 VDC	4000 mA
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F	TEN 20-4812WIR		12 VDC	1670 mA
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TEN 20-4813WIR	18 – 75 VDC	15 VDC	1330 mA
Casing	metal, 6-side shielded with insulated baseplate	TEN 20-4822WIR		± 12 VDC	± 833 mA
Full datasheet	<a href="http://www.tracopower.com/products/ten20wir.pdf">www.tracopower.com/products/ten20wir.pdf</a>	TEN 20-4823WIR		± 15 VDC	± 667 mA
		TEN 20-7210WIR		3.3 VDC	4500 mA
		TEN 20-7211WIR		5 VDC	4000 mA
		TEN 20-7212WIR		12 VDC	1670 mA
		TEN 20-7213WIR	43 – 160 VDC	15 VDC	1330 mA
		TEN 20-7222WIR		± 12 VDC	± 833 mA
		TEN 20-7223WIR		± 15 VDC	± 667 mA

Optional heatsink: TEN-HS1

Dimensions		
<b>Pin</b>	<b>Single output</b>	<b>Dual output</b>
1	+ Vin (Vcc)	+ Vin (Vcc)
2	- Vin (GND)	- Vin (GND)
3	+ Vout	+ Vout
4	No pin	Common
5	- Vout	- Vout
6	Remote On/Off	Remote On/Off

( ) = Inches

# TMDC-20 Series ▶ 20 W



- ▶ Fully encapsulated low profile plastic casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40°C to +85°C
- ▶ Highest efficiency up to 91%
- ▶ I/O isolation 2500 VDC
- ▶ Remote On/Off
- ▶ Power-good LED indicator
- ▶ Reverse input protection
- ▶ Optional DIN-rail mount adapter

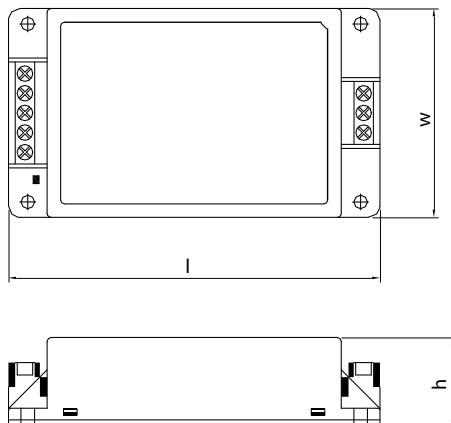
**NEW**  
Product



Specifications	
Line regulation	0.5% max.
Load regulation	0.5% max.
Ripple & noise	5.1 VDC modes: <100 mVpk-pk (20 MHz BW) 12 & 24 VDC modes: <150 mVpk-pk (20 MHz BW) 48 VDC modes: <200 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	90% typ.
Operating temperature range	-40 °C to +80 °C above 65°C derating 3.3%/K
I/O isolation voltage	2500 VDC (60 sec.) reinforced insulation
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)
Remote On/Off	shutdown input for low current in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/tmdc20.pdf">www.tracopower.com/products/tmdc20.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TMDC 20-2411	9 – 36 VDC	5.1 VDC	4000 mA
TMDC 20-2412		12 VDC	1670 mA
TMDC 20-2415		24 VDC	835 mA
TMDC 20-2418	18 – 75 VDC	48 VDC	420 mA
TMDC 20-4811		5.1 VDC	4000 mA
TMDC 20-4812		12 VDC	1670 mA
TMDC 20-4815		24 VDC	835 mA
TMDC 20-4818		48 VDC	420 mA

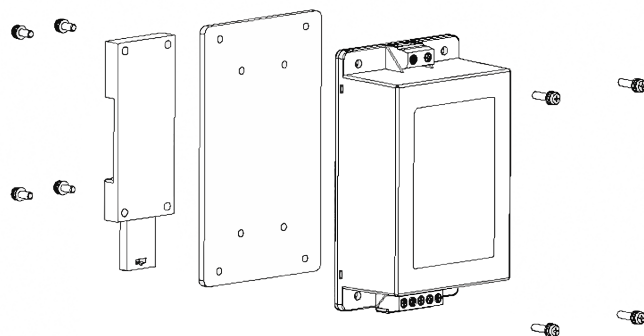
Dimensions			
Type	Length l	Width w	Height h
TMDC 20-xxxx	96 (3.78)	54.0 (2.13)	23.3 (0.88)



( ) = Inches

## DIN-rail mount adapter

TMP-MK1



# THL-25 Series ▶ 25 W



- ▶ High power density 25 W converter
- ▶ 1" x 1" x 0.4" metal package
- ▶ Wide 2:1 input voltage range
- ▶ Highest efficiency up to 90 %
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

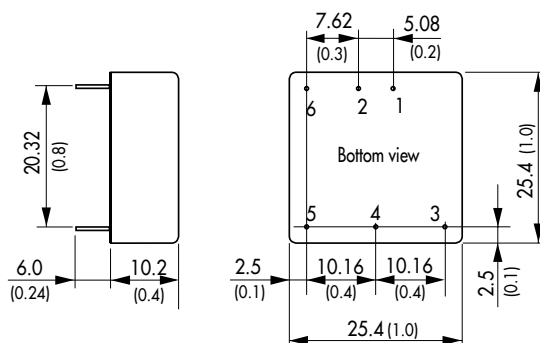


Specifications	
Line regulation	1% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 2.0% max.
Output voltage adjustment	±10% by external resistor (single output models)
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	89% typ.
Operating temperature range	-40 °C to +80 °C above 50°C derating 1.7%/K - optional heatsink for extended temp.: see datasheet
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)
Remote On/Off	shutdown input for low current in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thl25.pdf">www.tracopower.com/products/thl25.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THL 25-1210		3.3 VDC	6000 mA
THL 25-1211		5.0 VDC	5000 mA
THL 25-1212	9 – 18 VDC	12 VDC	2085 mA
THL 25-1213		15 VDC	1670 mA
THL 25-1222		± 12 VDC	± 1042 mA
THL 25-1223		± 15 VDC	± 835 mA
THL 25-2410		3.3 VDC	6000 mA
THL 25-2411		5.0 VDC	5000 mA
THL 25-2412	18 – 36 VDC	12 VDC	2085 mA
THL 25-2413		15 VDC	1670 mA
THL 25-2422		± 12 VDC	± 1042 mA
THL 25-2423		± 15 VDC	± 835 mA
THL 25-4810		3.3 VDC	6000 mA
THL 25-4811		5.0 VDC	5000 mA
THL 25-4812	36 – 75 VDC	12 VDC	2085 mA
THL 25-4813		15 VDC	1670 mA
THL 25-4822		± 12 VDC	± 1042 mA
THL 25-4823		± 15 VDC	± 835 mA

Optional heatsink: THL-HS1

## Dimensions



() = Inches

Pin	Single output	Dual output
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



# THL-25WI Series ▶ 25 W



- ▶ High power density 25 W converter
- ▶ 1" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Highest efficiency up to 90 %
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage
- ▶ Industry standard pinout

**NEW**  
Product



Specifications	
Line regulation	0.2% max.
Load regulation	– Single output models: 0.2% max. – Dual output models: 1.0% max.
Output voltage adjustment	±10 % by external resistor (single output models)
Ripple & noise	<150 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	89% typ.
Operating temperature range	–40 °C to +80 °C above 50°C derating 1.7%/K (depending on model) – optional heatsink for extended temp.: see datasheet
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)
Remote On/Off	shutdown input for low current in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thl25wi.pdf">www.tracopower.com/products/thl25wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THL 25-2410WI		3.3 VDC	6000 mA
THL 25-2411WI		5.0 VDC	5000 mA
THL 25-2412WI	9 – 36 VDC	12 VDC	2090 mA
THL 25-2413WI		15 VDC	1670 mA
THL 25-2422WI		± 12 VDC	± 1040 mA
THL 25-2423WI		± 15 VDC	± 840 mA
THL 25-4810WI		3.3 VDC	6000 mA
THL 25-4811WI		5.0 VDC	5000 mA
THL 25-4812WI	18 – 75 VDC	12 VDC	2090 mA
THL 25-4813WI		15 VDC	1670 mA
THL 25-4822WI		± 12 VDC	± 1040 mA
THL 25-4823WI		± 15 VDC	± 840 mA

Optional heatsink: **THL-HS1**

Dimensions	
<p>The drawing shows a square component with a height of 0.4 inches (10.2 mm). The top view shows a square footprint of 1.0 inches (25.4 mm) by 1.0 inches (25.4 mm). Pin 1 is 0.2 inches (5.08 mm) from the right edge, and Pin 2 is 0.3 inches (7.62 mm) from the top edge. The distance between Pin 1 and Pin 2 is 0.2 inches (5.08 mm). The distance between Pin 2 and Pin 3 is 0.4 inches (10.16 mm). The distance between Pin 3 and Pin 4 is 0.4 inches (10.16 mm). The distance between Pin 4 and Pin 5 is 0.4 inches (10.16 mm). The distance between Pin 5 and Pin 6 is 0.4 inches (10.16 mm). The distance between Pin 6 and Pin 1 is 0.3 inches (7.62 mm). The distance between Pin 1 and Pin 5 is 0.1 inches (2.5 mm). The distance between Pin 2 and Pin 6 is 0.1 inches (2.5 mm).</p>	
<p>( ) = Inches</p>	

Pin	Single output	Dual output
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

# TEN-30 Series ▶ 30 W

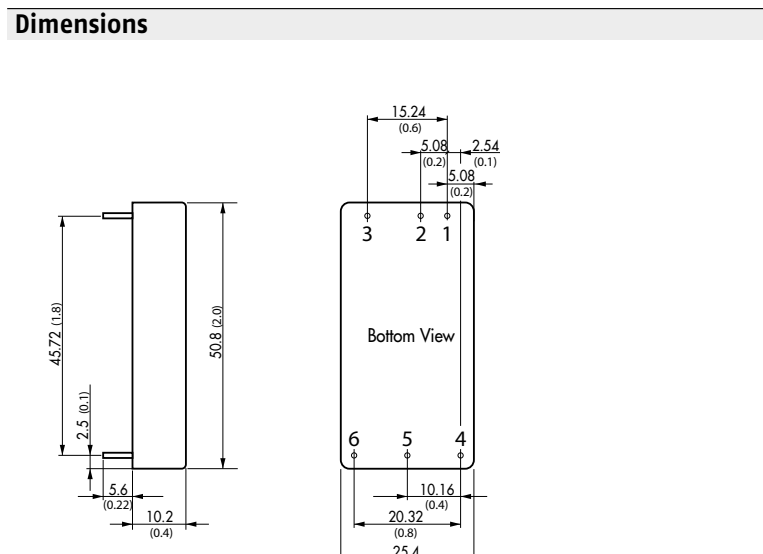


- ▶ 2" x 1" x 0.4" shielded metal package
- ▶ Wide 2:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over-temperature protection
- ▶ I/O-isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



Specifications	
Line regulation	0.2% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Output voltage adjustment	±10% by external resistor (single output models only)
Ripple & noise	- Single output models: <100 mVpk-pk (20 MHz BW) - Dual output models: <150 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)
Short circuit protection	continuous, automatic recovery
Efficiency	89% typ.
Operating temperature range	-40 °C to +85 °C above 65 °C derating 2.6%/K
Thermal protection	shutdown at 115 °C
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Casing	6-side shielded metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten30.pdf">www.tracopower.com/products/ten30.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEN 30-1207		1.5 VDC	8500 mA
TEN 30-1209		2.5 VDC	8000 mA
TEN 30-1210		3.3 VDC	8000 mA
TEN 30-1211		5.1 VDC	6000 mA
TEN 30-1212	9 – 18 VDC	12 VDC	2500 mA
TEN 30-1213		15 VDC	2000 mA
TEN 30-1221		±5 VDC	±3000 mA
TEN 30-1222		±12 VDC	±1250 mA
TEN 30-1223		±15 VDC	±1000 mA
TEN 30-2407		1.5 VDC	8500 mA
TEN 30-2409		2.5 VDC	8000 mA
TEN 30-2410		3.3 VDC	8000 mA
TEN 30-2411		5.1 VDC	6000 mA
TEN 30-2412	18 – 36 VDC	12 VDC	2500 mA
TEN 30-2413		15 VDC	2000 mA
TEN 30-2421		±5 VDC	±3000 mA
TEN 30-2422		±12 VDC	±1250 mA
TEN 30-2423		±15 VDC	±1000 mA
TEN 30-4807		1.5 VDC	8500 mA
TEN 30-4809		2.5 VDC	8000 mA
TEN 30-4810		3.3 VDC	8000 mA
TEN 30-4811		5.1 VDC	6000 mA
TEN 30-4812	36 – 75 VDC	12 VDC	2500 mA
TEN 30-4813		15 VDC	2000 mA
TEN 30-4821		±5 VDC	±3000 mA
TEN 30-4822		±12 VDC	±1250 mA
TEN 30-4823		±15 VDC	±1000 mA



() = Inches

Optional heatsink: **TEN-HS1**

Pin	Single output	Dual output
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

# TEN-30WIN Series ▶ 30 W



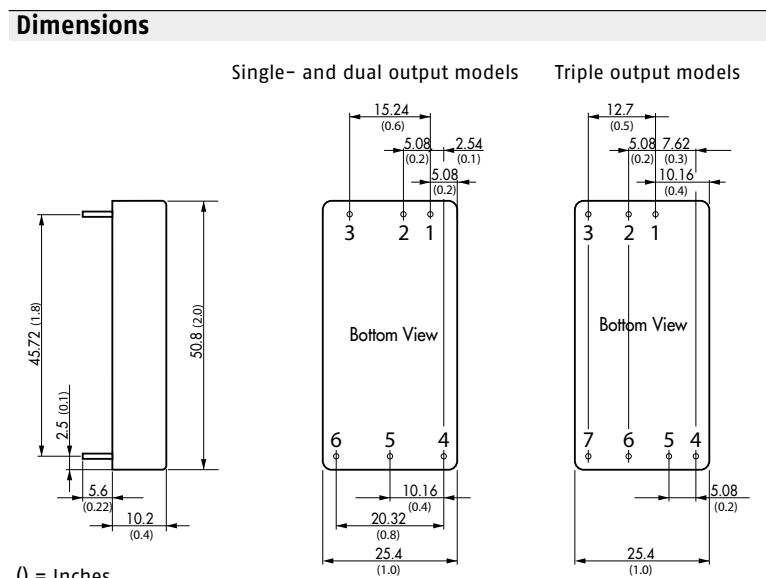
- ▶ 2" x 1" x 0.4" shielded metal package
- ▶ Ultra wide 4:1 input voltage range
- ▶ Single- dual- and triple output models
- ▶ Very high efficiency up to 91%
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over temperature protection
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



Specifications	
Line regulation	- Single and dual output models: 0.2% max. - Triple output models: 1.0% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max. - Triple output models: Vout 1: 1% max, Vout 2: 5.0% max.
Output voltage adjustment	±10% by external resistor (single output models only)
Ripple & noise	- Single output models: <100 mVpk-pk (20 MHz BW) - Dual output models: <150 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)
Short circuit protection	continuous, automatic recovery
Efficiency	87% typ.
Operating temperature range	-40 °C to +85 °C above 60 °C derating 2.4%/K
Thermal protection	shutdown at 115 °C
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	6-side shielded metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten30win.pdf">www.tracopower.com/products/ten30win.pdf</a>

Models			
Order code	Input voltage	Output 1 Vout / Iout max.	Output 2 Vout / Iout max.
TEN 30-2407WIN		1.5 VDC / 8.5 A	
TEN 30-2409WIN		2.5 VDC / 8.0 A	
TEN 30-2410WIN		3.3 VDC / 7.5 A	
TEN 30-2411WIN		5.1 VDC / 6.0 A	
TEN 30-2412WIN		12 VDC / 2.5 A	
TEN 30-2413WIN		15 VDC / 2.0 A	
TEN 30-2421WIN	9-36 VDC	+5 VDC / 3.0 A	-5 VDC / 3.0 A
TEN 30-2422WIN		+12 VDC / 1.25 A	-12 VDC / 1.25 A
TEN 30-2423WIN		+15 VDC / 1.0 A	-15 VDC / 1.0 A
TEN 30-2433WIN		3.3 VDC / 5.0 A	±12 VDC / ±0.42 A
TEN 30-2434WIN		3.3 VDC / 5.0 A	±15 VDC / ±0.33 A
TEN 30-2431WIN		5 VDC / 4.0 A	±12 VDC / ±0.42 A
TEN 30-2432WIN		5 VDC / 4.0 A	±15 VDC / ±0.33 A
TEN 30-4807WIN		1.5 VDC / 8.5 A	
TEN 30-4809WIN		2.5 VDC / 8.0 A	
TEN 30-4810WIN		3.3 VDC / 7.5 A	
TEN 30-4811WIN		5.1 VDC / 6.0 A	
TEN 30-4812WIN		12 VDC / 2.5 A	
TEN 30-4813WIN		15 VDC / 2.0 A	
TEN 30-4821WIN	18-75 VDC	+5 VDC / 3.0 A	-5 VDC / 3.0 A
TEN 30-4822WIN		+12 VDC / 1.25 A	-12 VDC / 1.25 A
TEN 30-4823WIN		+15 VDC / 1.0 A	-15 VDC / 1.0 A
TEN 30-4833WIN		3.3 VDC / 5.0 A	±12 VDC / ±0.42 A
TEN 30-4834WIN		3.3 VDC / 5.0 A	±15 VDC / ±0.33 A
TEN 30-4831WIN		5 VDC / 4.0 A	±12 VDC / ±0.42 A
TEN 30-4832WIN		5 VDC / 4.0 A	±15 VDC / ±0.33 A

Optional heatsink: TEN-HS1



Pin	Single output	Dual output	Triple output
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	Output 1	Output 2
5	- Vout	Common	Output 3
6	Trim	Output 2	Common
7	No pin	No pin	Output 1

# THN-30 Series ▶ 30 W



- ▶ Highest power density 30 W converter
- ▶ 1" x 1" x 0.4" 6-side shielded metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Low input current at no load
- ▶ High efficiency accross load range
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ Over-temperature protection
- ▶ I/O-isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Remote On/Off and output trim



## Specifications

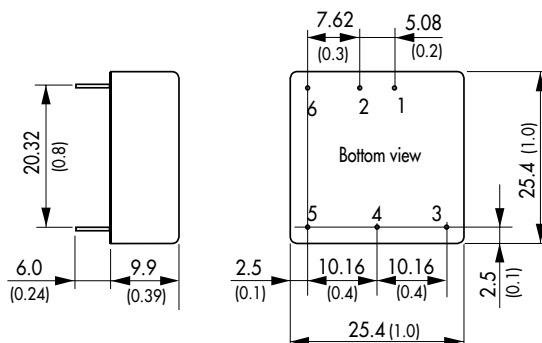
Line regulation	- Single output models: 0.2% max. - Dual output models: 0.5% max.
Load regulation	- Single output models: 0.2% max. - Dual output models: 1.0% max.
Output voltage adjustment	12 & 15 VDC models: +20 / -10% other single output models: ±10% by external resistor
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor and inductor)
Short circuit protection	continuous, automatic recovery
Efficiency	90% typ.
Operating temperature range	-40 °C to +80 °C above 55 °C derating 2.2%/K
Thermal protection	shutdown at 115 °C
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)
Remote On/Off	shutdown input for low input current (2mA) in standby operation
Casing	6-side shielded metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thn30.pdf">www.tracopower.com/products/thn30.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THN 30-1210		3.3 VDC	7000 mA
THN 30-1211		5.0 VDC	6000 mA
THN 30-1212		12 VDC	2500 mA
THN 30-1213	9 – 18 VDC	15 VDC	2000 mA
THN 30-1215		24 VDC	1250 mA
THN 30-1222		±12 VDC	±1250 mA
THN 30-1223		±15 VDC	±1000 mA
THN 30-2410		3.3 VDC	7000 mA
THN 30-2411		5.0 VDC	6000 mA
THN 30-2412		12 VDC	2500 mA
THN 30-2413	18 – 36 VDC	15 VDC	2000 mA
THN 30-2415		24 VDC	1250 mA
THN 30-2422		±12 VDC	±1250 mA
THN 30-2423		±15 VDC	±1000 mA
THN 30-4810		3.3 VDC	7000 mA
THN 30-4811		5.0 VDC	6000 mA
THN 30-4812		12 VDC	2500 mA
THN 30-4813	36 – 75 VDC	15 VDC	2000 mA
THN 30-4815		24 VDC	1250 mA
THN 30-4822		±12 VDC	±1250 mA
THN 30-4823		±15 VDC	±1000 mA

Optional heatsink: THN-HS1

## Dimensions



() = Inches

Pin	Single output	Dual output
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

# THN-30WI Series ▶ 30 W



- ▶ Highest power density 30 W converter
- ▶ 1" x 1" x 0.4" 6-side shielded metalcase
- ▶ Ultra wide 4:1 input voltage range
- ▶ Very high efficiency up to 91%
- ▶ Low input current at no load
- ▶ High efficiency accross load range
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ Over-temperature protection
- ▶ I/O-isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Remote On/Off and output trim



## Specifications

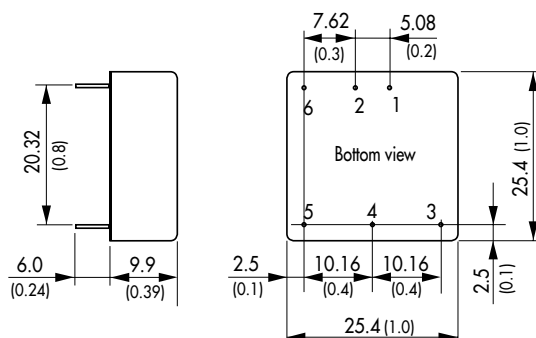
Line regulation	- Single output models: 0.2% max. - Dual output models: 0.5% max.
Load regulation	- Single output models: 0.2% max. - Dual output models: 1.0% max.
Output voltage adjustment	12 & 15 VDC models: +20 / -10% other single output models: ±10% by external resistor
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor and inductor)
Short circuit protection	continuous, automatic recovery
Efficiency	90% typ.
Operating temperature range	-40 °C to +80 °C above 55 °C derating 2.4%/K
Thermal protection	shutdown at 115 °C
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)
Remote On/Off	shutdown input for low input current (2 mA) in standby operation
Casing	6-side shielded metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/thn30wi.pdf">www.tracopower.com/products/thn30wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THN 30-2410WI		3.3 VDC	7000 mA
THN 30-2411WI		5.0 VDC	6000 mA
THN 30-2412WI		12 VDC	2500 mA
THN 30-2413WI	9 – 36 VDC	15 VDC	2000 mA
THN 30-2415WI		24 VDC	1250 mA
THN 30-2422WI		±12 VDC	±1250 mA
THN 30-2423WI		±15 VDC	±1000 mA
THN 30-4810WI		3.3 VDC	7000 mA
THN 30-4811WI		5.0 VDC	6000 mA
THN 30-4812WI		12 VDC	2500 mA
THN 30-4813WI	18 – 75 VDC	15 VDC	2000 mA
THN 30-4815WI		24 VDC	1250 mA
THN 30-4822WI		±12 VDC	±1250 mA
THN 30-4823WI		±15 VDC	±1000 mA

Optional heatsink: **THN-HS1**

## Dimensions



() = Inches

Pin	Single output	Dual output
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

# TEN-40 Series ▶ 40 W



- ▶ Models with 2 isolated outputs (3.3 V / 5 V)
- ▶ Triple output models
- ▶ Wide 2:1 input range
- ▶ High efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



Specifications		Models			
Line regulation	1.0% max.	Order code	Input voltage	Output 1 Vout / Imax.	Output 2 Vout / Imax
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max. - Triple output models: Vout 1: 1% max, Vout 2: 5.0% max.	TEN 40-1210		3.3 VDC / 8.0 A	
Output voltage adjustment	±10 % by external resistor (only for single and symmetric dual output models)	TEN 40-1211		5 VDC / 8.0 A	
Ripple & noise (20 MHz BW)	- 3.3 / 5 VDC output models: <50 mVpk-pk - Symmetric dual output models: <150 mVpk-pk - Asymmetric dual output models: <100 mVpk-pk - all other output models <75 mVpk-pk	TEN 40-1212		12 VDC / 3.3 A	
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)	TEN 40-1220		*3.3 VDC / 8.0 A	*5 VDC / 8.0 A
Short circuit protection	continuous, automatic recovery	TEN 40-1222	9 – 18 VDC	+12 VDC / 1.8 A	-12 VDC / 1.8 A
Efficiency	86% typ.	TEN 40-1223		+ 15 VDC / 1.4 A	-15 VDC / 1.4 A
Operating temperature range	-40 °C to +75 °C for derating see datasheet	TEN 40-1233		3.3 VDC / 6.0 A	± 12 VDC / ± 0.4 A
Thermal protection	shutdown at 115 °C	TEN 40-1234		3.3 VDC / 6.0 A	± 15 VDC / ± 0.3 A
I/O isolation voltage	1500 VDC (60 sec.)	TEN 40-1231		5 VDC / 6.0 A	± 12 VDC / ± 0.4 A
Safety standards / approvals	cUL / UL 60950-1, IEC/EN 60950-1 CB-report	TEN 40-1232		5 VDC / 6.0 A	± 15 VDC / ± 0.3 A
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation	TEN 40-2410		3.3 VDC / 8.0 A	
Casing	6-side shielded metal, with insulated baseplate	TEN 40-2411		5 VDC / 8.0 A	
Full datasheet	<a href="http://www.tracopower.com/products/ten40.pdf">www.tracopower.com/products/ten40.pdf</a>	TEN 40-2412		12 VDC / 3.3 A	
		TEN 40-2420		*3.3 VDC / 8.0 A	*5 VDC / 8.0 A
		TEN 40-2422	18 – 36 VDC	+12 VDC / 1.8 A	-12 VDC / 1.8 A
		TEN 40-2423		+ 15 VDC / 1.4 A	-15 VDC / 1.4 A
		TEN 40-2433		3.3 VDC / 6.0 A	± 12 VDC / ± 0.4 A
		TEN 40-2434		3.3 VDC / 6.0 A	± 15 VDC / ± 0.3 A
		TEN 40-2431		5 VDC / 6.0 A	± 12 VDC / ± 0.4 A
		TEN 40-2432		5 VDC / 6.0 A	± 15 VDC / ± 0.3 A
		TEN 40-4810		3.3 VDC / 8.0 A	
		TEN 40-4811		5 VDC / 8.0 A	
		TEN 40-4812		12 VDC / 3.3 A	
		TEN 40-4820		*3.3 VDC / 8.0 A	*5 VDC / 8.0 A
		TEN 40-4822	36 – 75 VDC	+12 VDC / 1.8 A	-12 VDC / 1.8 A
		TEN 40-4823		+ 15 VDC / 1.4 A	-15 VDC / 1.4 A
		TEN 40-4833		3.3 VDC / 6.0 A	± 12 VDC / ± 0.4 A
		TEN 40-4834		3.3 VDC / 6.0 A	± 15 VDC / ± 0.3 A
		TEN 40-4831		5 VDC / 6.0 A	± 12 VDC / ± 0.4 A
		TEN 40-4832		5 VDC / 6.0 A	± 15 VDC / ± 0.3 A

\*dynamic current allocation, max. 8 A total output current  
Optional heatsink: TEN-HS3

Dimensions		Pin				
		Pin	Single output	Dual output symmetric	Dual output asymmetric	Triple output
		1	+ Vin (Vcc)	+ Vin (Vcc)	+ Vin (Vcc)	+ Vin (Vcc)
		2	- Vin (GND)	- Vin (GND)	- Vin (GND)	- Vin (GND)
		3	Remote On/Off			
		4	No con.	No pin	+Vout 1	+Vout 2
		5	-Sense	Vout 1	-Vout 1	Common 2
		6	+Sense	Common 1/2	No con.	-Vout 2
		7	+Vout	Common 1/2	No con.	+Vout 1
		8	-Vout	Vout 2	+Vout 2	-Vout 1
		9	Trim	Trim	-Vout 2	No con.

( ) = Inches



## TEN-40WI Series ▶ 40 W



- ▶ Ultra wide 4:1 input range
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Over temperature protection
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



## Specifications

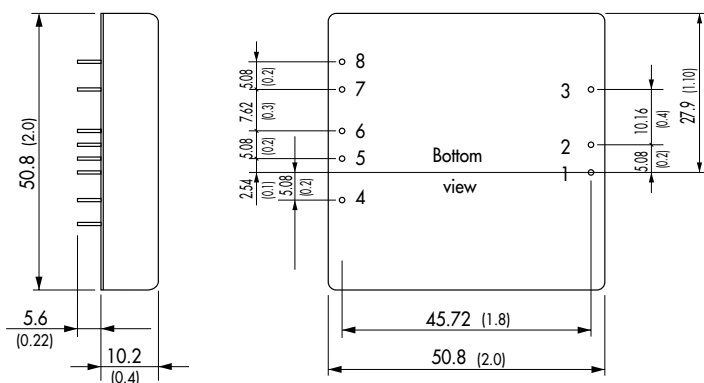
Line regulation	0.2% max.
Load regulation	– Single output models: 0.5% max. – Dual/Triple output models: 1.0% max.
Output voltage adjustment	$\pm 10\%$ by external resistor
Ripple & noise (20 MHz BW)	– 3.3 / 5 VDC output models: $< 50\text{ mVpk-pk}$ – other single output models: $< 75\text{ mVpk-pk}$ – dual output models: $< 150\text{ mVpk-pk}$
Conducted EMI	EN 55022, class EN55022 class A (with external capacitor)
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $55\text{ }^{\circ}\text{C}$ derating 2.0%/K
Thermal protection	shutdown at $110\text{ }^{\circ}\text{C}$
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Casing	6-side shielded metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten40wi.pdf">www.tracopower.com/products/ten40wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 40-2410WI		3.3 VDC	10000 mA
TEN 40-2411WI		5 VDC	8000 mA
TEN 40-2412WI	9–36 VDC	12 VDC	3330 mA
TEN 40-2413WI		15 VDC	2660 mA
TEN 40-2422WI		$\pm 12\text{ VDC}$	$\pm 1667\text{ mA}$
TEN 40-2423WI		$\pm 15\text{ VDC}$	$\pm 1333\text{ mA}$
TEN 40-4810WI		3.3 VDC	10000 mA
TEN 40-4811WI		5 VDC	8000 mA
TEN 40-4812WI	18–75 VDC	12 VDC	3333 mA
TEN 40-4813WI		15 VDC	2666 mA
TEN 40-4822WI		$\pm 12\text{ VDC}$	$\pm 1667\text{ mA}$
TEN 40-4823WI		$\pm 15\text{ VDC}$	$\pm 1333\text{ mA}$

Optional heatsink: TEN-HS3

## Dimensions



() = Inches

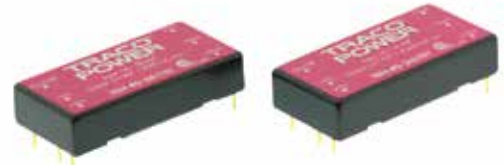
Pin	Single output	Dual output
1	+ Vin (Vcc)	+ Vin (Vcc)
2	– Vin (GND)	– Vin (GND)
3	Remote On/Off	Remote On/Off
4	– Sense	+ Vout
5	+ Sense	Common
6	+ Vout	Common
7	– Vout	– Vout
8	Trim	Trim

# TEN-40N Series ▶ 40 W



- ▶ High power density 40 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ High efficiency up to 92 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW Models**



## Specifications

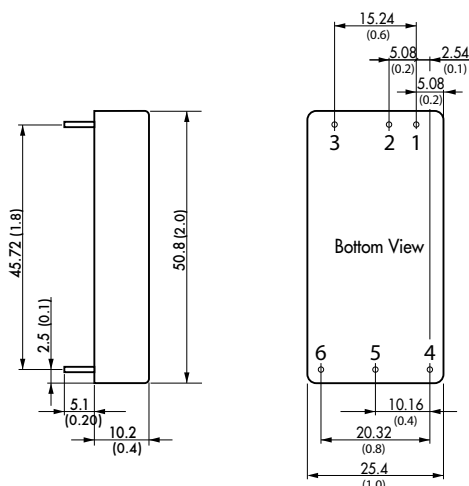
Line regulation	0.5% max.
Load regulation	- Single output models: 1.0% max. - Dual output models: 2.0% max.
Output voltage adjustment	±10% by external resistor (single output models)
Ripple & noise	100 mVpk-pk typ. (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A (external capacitors)
Short circuit protection	continuous, automatic recovery
Efficiency	90% typ.
Operating temperature range	-40 °C to +75 °C above 45 °C derating 1.6%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten40n.pdf">www.tracopower.com/products/ten40n.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 40-1210N		3.3 VDC	8000 mA
TEN 40-1211N		5.0 VDC	8000 mA
TEN 40-1212N		12 VDC	3333 mA
TEN 40-1213N	9 – 18 VDC	15 VDC	2666 mA
TEN 40-1215N		24 VDC	1670 mA
TEN 40-1222N		±12 VDC	±1666 mA
TEN 40-1223N		±15 VDC	±1333 mA
TEN 40-2410N		3.3 VDC	8000 mA
TEN 40-2411N		5.0 VDC	8000 mA
TEN 40-2412N		12 VDC	3333 mA
TEN 40-2413N	18 – 36 VDC	15 VDC	2666 mA
TEN 40-2415N		24 VDC	1670 mA
TEN 40-2422N		±12 VDC	±1666 mA
TEN 40-2423N		±15 VDC	±1333 mA
TEN 40-4810N		3.3 VDC	8000 mA
TEN 40-4811N		5.0 VDC	8000 mA
TEN 40-4812N		12 VDC	3333 mA
TEN 40-4813N	36 – 75 VDC	15 VDC	2666 mA
TEN 40-4815N		24 VDC	1670 mA
TEN 40-4822N		±12 VDC	±1666 mA
TEN 40-4823N		±15 VDC	±1333 mA

Optional heatsink: TEN-HS4

## Dimensions



() = Inches

Pin	Single output	Dual output
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



# TEN-40WIN Series ▶ 40 W



- ▶ High power density 40 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range
- ▶ High efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

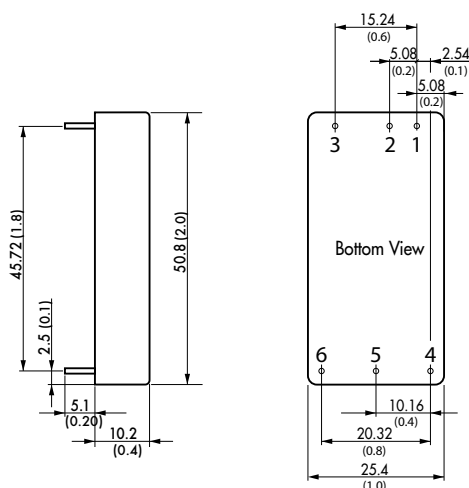


Specifications	
Line regulation	0.5% max.
Load regulation	- Single output models: 0.5% max. - Dual/Triple output models: 1.0% max.
Output voltage adjustment	±10% by external resistor
Ripple & noise (20MHz BW)	- 3.3 / 5 VDC output models: <100 mVpk-pk - other output models: <150 mVpk-pk
Conducted EMI	EN 55022, class EN55022 class A (with external capacitors)
Short circuit protection	continuous, automatic recovery
Efficiency	89% typ.
Operating temperature range	-40 °C to +75 °C above 45 °C derating 1.6%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	metal, shielded with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten40win.pdf">www.tracopower.com/products/ten40win.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEN 40-2410WIN	9 – 36 VDC	3.3 VDC	8000 mA
TEN 40-2411WIN		5.0 VDC	8000 mA
TEN 40-2412WIN		12 VDC	3330 mA
TEN 40-2413WIN		15 VDC	2670 mA
TEN 40-2415WIN		24 VDC	1670 mA
TEN 40-2422WIN		±12 VDC	±1670 mA
TEN 40-2423WIN		±15 VDC	±1330 mA
TEN 40-4810WIN	18 – 75 VDC	3.3 VDC	8000 mA
TEN 40-4811WIN		5.0 VDC	8000 mA
TEN 40-4812WIN		12 VDC	3330 mA
TEN 40-4813WIN		15 VDC	2670 mA
TEN 40-4815WIN		24 VDC	1670 mA
TEN 40-4822WIN		±12 VDC	±1670 mA
TEN 40-4823WIN		±15 VDC	±1330 mA

Optional heatsink: [TEN-HS4](#)

## Dimensions



( ) = Inches

Pin	Single output	Dual output
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

# TEN-40WIR Series ▶ 40 W



- ▶ High power density 40 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ High efficiency across load range
- ▶ Low input current at no load
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Over temperature protection
- ▶ I/O isolation 1500 VDC
- ▶ Input undervoltage-lockout
- ▶ Remote On/Off and output trim



## Specifications

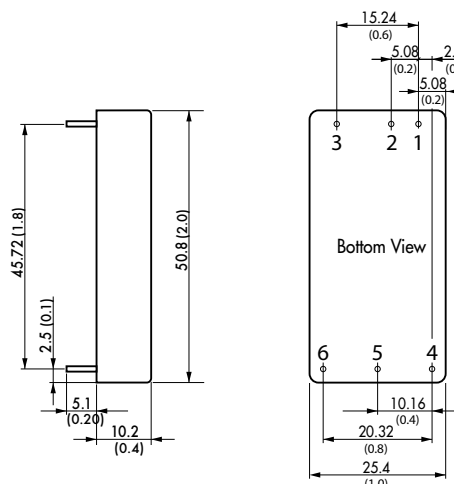
Line regulation	0.5% max.
Load regulation	- Single output models: 0.5% max. - Dual output models: 1.0% max.
Output voltage adjustment	±10% by external resistor (single output models)
Ripple & noise	100 mVpk-pk typ. (20 MHz BW)
EMC	- Conducted noise: EN 55022, class EN55022 class A (with external capacitor) - Immunity: EN 50155
Short circuit protection	continuous, automatic recovery
Efficiency	90% typ.
Operating temperature range	-40 °C to +85 °C above 60 °C derating 2.6%/K
Thermal protection	shutdown at 115 °C
I/O isolation voltage	1500 VDC (60 sec.)
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, CB-report
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Casing	6-side shielded metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten40wir.pdf">www.tracopower.com/products/ten40wir.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 40-2410WIR		3.3 VDC	10'000 mA
TEN 40-2411WIR		5 VDC	8000 mA
TEN 40-2412WIR		12 VDC	3333 mA
TEN 40-2413WIR	9 – 36 VDC	15 VDC	2666 mA
TEN 40-2415WIR		24 VDC	1666 mA
TEN 40-2422WIR		± 12 VDC	± 1666 mA
TEN 40-2423WIR		± 15 VDC	± 1333 mA
TEN 40-4810WIR		3.3 VDC	10'000 mA
TEN 40-4811WIR		5 VDC	8000 mA
TEN 40-4812WIR		12 VDC	3333 mA
TEN 40-4813WIR	18 – 75 VDC	15 VDC	2666 mA
TEN 40-4815WIR		24 VDC	1666 mA
TEN 40-4822WIR		± 12 VDC	± 1666 mA
TEN 40-4823WIR		± 15 VDC	± 1333 mA
TEN 40-7210WIR		3.3 VDC	10'000 mA
TEN 40-7211WIR		5 VDC	8000 mA
TEN 40-7212WIR		12 VDC	3333 mA
TEN 40-7213WIR	43 – 160 VDC	15 VDC	2666 mA
TEN 40-7215WIR		24 VDC	1666 mA
TEN 40-7222WIR		± 12 VDC	± 1666 mA
TEN 40-7223WIR		± 15 VDC	± 1333 mA

Optional heatsink: TEN-HS1

## Dimensions



( ) = Inches

Pin	Single output	Dual output
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

# TMDC-40 Series ▶ 40 W



- ▶ Fully encapsulated low profile plastic casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ▶ Highest efficiency up to 91%
- ▶ I/O isolation 2500 VDC
- ▶ Remote On/Off
- ▶ Power-good LED indicator
- ▶ Reverse input protection
- ▶ Optional DIN-rail mount adapter

**NEW**  
Product



## Specifications

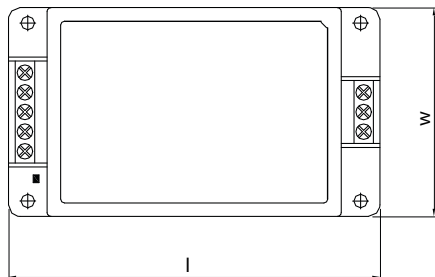
Line regulation	0.5% max.
Load regulation	1.0% max.
Ripple & noise	5.1 VDC modes: <100 mVpk-pk (20 MHz BW) 12 & 24 VDC modes: <150 mVpk-pk (20 MHz BW) 48 VDC modes: <200 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, class EN55022 class A
Short circuit protection	continuous, automatic recovery
Efficiency	90% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ above $70^{\circ}\text{C}$ derating 3.3%/K
I/O isolation voltage	2500 VDC (60 sec.) reinforced insulation
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)
Remote On/Off	shutdown input for low current in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/tmdc40.pdf">www.tracopower.com/products/tmdc40.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMDC 40-2411	9 – 36 VDC	5.1 VDC	8000 mA
TMDC 40-2412		12 VDC	3330 mA
TMDC 40-2415		24 VDC	1670 mA
TMDC 40-2418	18 – 75 VDC	48 VDC	835 mA
TMDC 40-4811		5.1 VDC	8000 mA
TMDC 40-4812		12 VDC	3330 mA
TMDC 40-4815		24 VDC	1670 mA
TMDC 40-4818		48 VDC	835 mA

## Dimensions

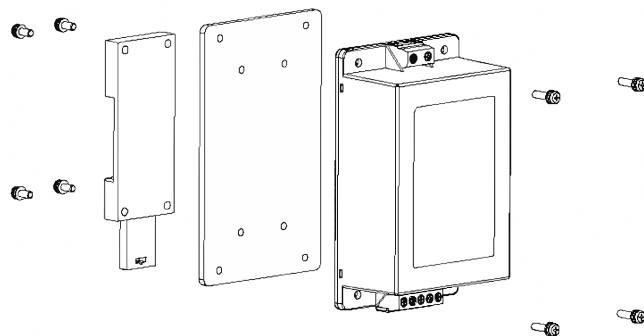
Type	Length l	Width w	Height h
TMDC 40-xxxx	112 (4.41)	63.8 (2.51)	25.6 (1.01)



() = Inches

## DIN-rail mount adapter

TMP-MK2



# TEN-50 Series ▶ 50 W



- ▶ High power density 50 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ High efficiency up to 92 %
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ EN 55022, class A
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW Models**



## Specifications

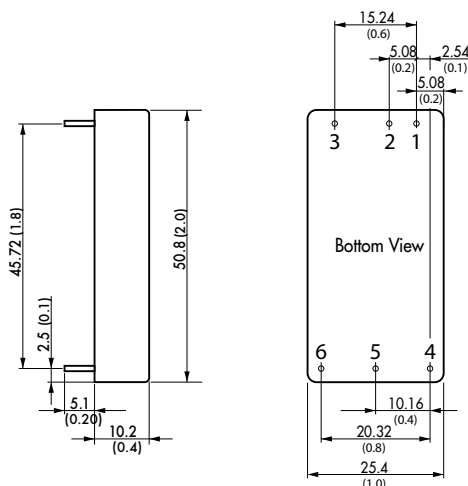
Line regulation	0.5% max.
Load regulation	0.5% max.
Output voltage adjustment	±10% by external resistor
Conducted EMI	EN 55022, class A (with external capacitor)
Ripple & noise	100 mVpk-pk typ. (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	92% typ.
Operating temperature range	-40 °C to +75 °C above 55 °C derating 2.0%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten50.pdf">www.tracopower.com/products/ten50.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 50-1210		3.3 VDC	10000 mA
TEN 50-1211		5 VDC	10000 mA
TEN 50-1212	9 – 18 VDC	12 VDC	4167 mA
TEN 50-1213		15 VDC	3333 mA
TEN 50-1215		24 VDC	2080 mA
TEN 50-2410		3.3 VDC	10000 mA
TEN 50-2411		5 VDC	10000 mA
TEN 50-2412	18 – 36 VDC	12 VDC	4167 mA
TEN 50-2413		15 VDC	3333 mA
TEN 50-2415		24 VDC	2080 mA
TEN 50-4810		3.3 VDC	10000 mA
TEN 50-4811		5 VDC	10000 mA
TEN 50-4812	36 – 75 VDC	12 VDC	4167 mA
TEN 50-4813		15 VDC	3333 mA
TEN 50-4815		24 VDC	2080 mA

Optional heatsink: **TEN-HS4**

## Dimensions



( ) = Inches

## Pin

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

# TEN-50WI Series ▶ 50 W



- ▶ High power density 50 W converter
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range
- ▶ High efficiency up to 92 %
- ▶ Operating temperature range -40 °C to +80 °C
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage



**NEW**  
Product

## Specifications

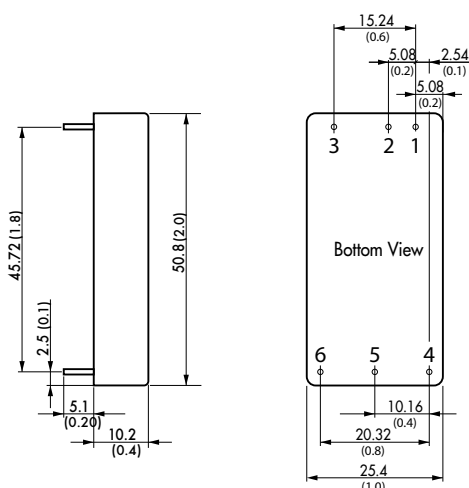
Line regulation	0.5 % max.
Load regulation	0.5 % max.
Output voltage adjustment	±10 % by external resistor 24 VDC models: +20 / -10 %
Ripple & noise	3.3 & 5 VDC models: <100 mVpk-pk typ. (20 MHz BW) other models: <150 mVpk-pk typ. (20 MHz BW)
Short circuit protection	continuous, automatic recovery
Efficiency	91% typ.
Operating temperature range	-40 °C to +80 °C above 55 °C derating 2.0 %/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	metal, with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten50wi.pdf">www.tracopower.com/products/ten50wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 50-2410WI		3.3 VDC	10000 mA
TEN 50-2411WI		5 VDC	10000 mA
TEN 50-2412WI	9-36 VDC	12 VDC	4170 mA
TEN 50-2413WI		15 VDC	3330 mA
TEN 50-2415WI		24 VDC	2080 mA
TEN 50-4810WI		3.3 VDC	10000 mA
TEN 50-4811WI		5 VDC	10000 mA
TEN 50-4812WI	18-75 VDC	12 VDC	4170 mA
TEN 50-4813WI		15 VDC	3330 mA
TEN 50-4815WI		24 VDC	2080 mA

Optional heatsink: TEN-HS4

## Dimensions



() = Inches

## Pin

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

# TEN-60N Series ▶ 60 W



- ▶ Highest power density 60 W converter
- ▶ 6-sided shielded metal casing
- ▶ 2" x 1" x 0.4" metal package
- ▶ Wide 2:1 input range
- ▶ Highest efficiency up to 92 %
- ▶ High efficiency across load range
- ▶ Operating temperature range -40 °C to +70 °C
- ▶ Low no-load current
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

**NEW**  
Product



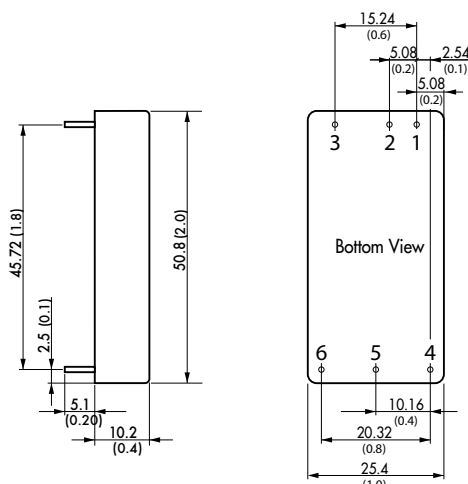
## Specifications

Line regulation	0.2% max.
Load regulation	1.0% max.
Output voltage adjustment	±10 % by external resistor 15 & 24 VDC models: +20/-10 %
Input current at no load	10mA typ.
Ripple & noise (20 MHz BW)	- 24 VDC output models: <200 mVpk-pk - other output models: <125 mVpk-pk
Conducted EMI	EN 55022, class EN55022 class A (with external components)
Short circuit protection	continuous, automatic recovery
Efficiency	91% typ.
Operating temperature range	-40 °C to 70 °C above 40 °C derating 1.7%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	6-side shielded metal case with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten60n.pdf">www.tracopower.com/products/ten60n.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEN 60-1211N		5.0 VDC	12000 mA
TEN 60-1212N		12 VDC	5000 mA
TEN 60-1213N	9 – 18 VDC	15 VDC	4000 mA
TEN 60-1215N		24 VDC	2500 mA
TEN 60-1222N		±12 VDC	±2500 mA
TEN 60-1223N		±15 VDC	±2000 mA
TEN 60-2411N		5.0 VDC	12000 mA
TEN 60-2412N		12 VDC	5000 mA
TEN 60-2413N	18 – 36 VDC	15 VDC	4000 mA
TEN 60-2415N		24 VDC	2500 mA
TEN 60-2422N		±12 VDC	±2500 mA
TEN 60-2423N		±15 VDC	±2000 mA
TEN 60-4811N		5.0 VDC	12000 mA
TEN 60-4812N		12 VDC	5000 mA
TEN 60-4813N	36 – 75 VDC	15 VDC	4000 mA
TEN 60-4815N		24 VDC	2500 mA
TEN 60-4822N		±12 VDC	±2500 mA
TEN 60-4823N		±15 VDC	±2000 mA

## Dimensions



() = Inches

Pin	Single output	Dual output
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

# TEN-60WIN Series ▶ 60 W



- ▶ Highest power density 60 W converter
- ▶ 6-sided shielded metal casing
- ▶ 2" x 1" x 0.4" metal package
- ▶ Ultra wide 4:1 input range
- ▶ Highest efficiency up to 92 %
- ▶ High efficiency across load range
- ▶ Operating temperature range -40 °C to +70 °C
- ▶ Low no-load current
- ▶ I/O isolation 1500 VDC
- ▶ Remote On/Off
- ▶ Adjustable output voltage

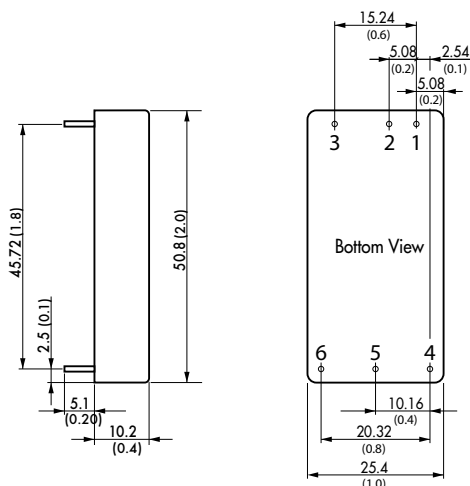
**NEW**  
Product



Specifications	
Line regulation	0.2% max.
Load regulation	1.0% max.
Output voltage adjustment	±10% by external resistor 15 & 24 VDC models: +20/-10 %
Ripple & noise (20 MHz BW)	- 24 VDC output models: <200 mVpk-pk - other output models: <125 mVpk-pk
Conducted EMI	EN 55022, class EN55022 class A (with external components)
Short circuit protection	continuous, automatic recovery
Efficiency	91% typ.
Operating temperature range	-40 °C to +70 °C above 42 °C derating 1.7%/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety standards / approvals	cUL /UL 60950-1, IEC/EN 60950-1, CB-report
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Casing	6-side shielded metal case with insulated baseplate
Full datasheet	<a href="http://www.tracopower.com/products/ten60win.pdf">www.tracopower.com/products/ten60win.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEN 60-2411WIN		5.0 VDC	12000 mA
TEN 60-2412WIN		12 VDC	5000 mA
TEN 60-2413WIN	9 – 36 VDC	15 VDC	4000 mA
TEN 60-2415WIN		24 VDC	2500 mA
TEN 60-2422WIN		±12 VDC	±2500 mA
TEN 60-2423WIN		±15 VDC	±2000 mA
TEN 60-4811WIN		5.0 VDC	12000 mA
TEN 60-4812WIN		12 VDC	5000 mA
TEN 60-4813WIN	18 – 75 VDC	15 VDC	4000 mA
TEN 60-4815WIN		24 VDC	2500 mA
TEN 60-4822WIN		±12 VDC	±2500 mA
TEN 60-4823WIN		±15 VDC	±2000 mA

## Dimensions



() = Inches

Pin	Single output	Dual output
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



# TMDC-60 Series ▶ 60 W



- ▶ Fully encapsulated low profile plastic casing
- ▶ Ultra wide 4:1 input voltage range
- ▶ Operating temperature range -40°C to +80°C
- ▶ Highest efficiency up to 91%
- ▶ I/O isolation 2500 VDC
- ▶ Remote On/Off
- ▶ Power-good LED indicator
- ▶ Reverse input protection
- ▶ Optional DIN-rail mount adapter

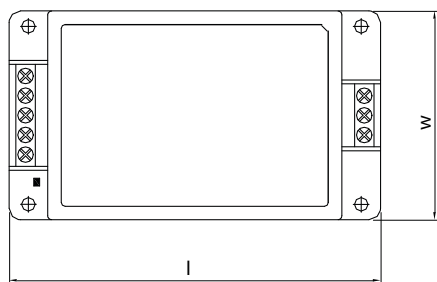
**NEW**  
Product



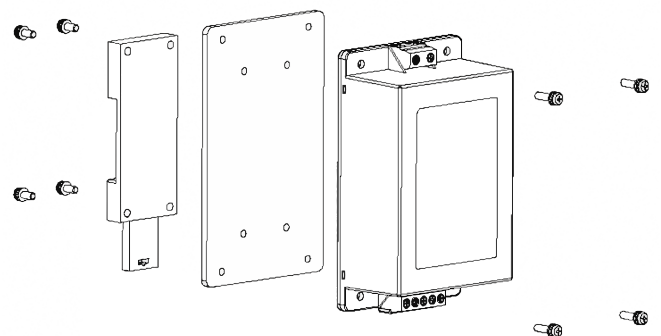
Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	1.0% max.	TMDC 60-2411	9 – 36 VDC	5.1 VDC	12000 mA
Ripple & noise	5.1 VDC modesl: <100 mVpk-pk (20 MHz BW) 12 & 24 VDC modesl: <150 mVpk-pk (20 MHz BW) 48 VDC modesl: <200 mVpk-pk (20 MHz BW)	TMDC 60-2412		12 VDC	5000 mA
Conducted EMI	EN 55022, class EN55022 class A	TMDC 60-2415		24 VDC	2500 mA
Short circuit protection	continuous, automatic recovery	TMDC 60-2418		48 VDC	1250 mA
Efficiency	90% typ.	TMDC 60-4811	18 – 75 VDC	5.1 VDC	12000 mA
Operating temperature range	-40 °C to +80 °C above 70 °C derating 3.3%/K	TMDC 60-4812		12 VDC	5000 mA
I/O isolation voltage	2500 VDC (60 sec.) reinforced insulation	TMDC 60-4815		24 VDC	2500 mA
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1 (reports pending)	TMDC 60-4818		48 VDC	1250 mA
Remote On/Off	shutdown input for low current in standby operation				
Casing	metal, with insulated baseplate				
Full datasheet	<a href="http://www.tracopower.com/products/tmdc60.pdf">www.tracopower.com/products/tmdc60.pdf</a>				

## Dimensions DIN-rail mount adapter TMP-MK2

Type	Length l	Width w	Height h
TMDC 60-xxxx	112 (4.41)	67.8 (2.67)	38.0 (1.50)



( ) = Inches





# TEP-75WI Series ▶ 75 W



- ▶ Rugged compact metal casing
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Very high efficiency up to 90 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Certified for railway applications EN 50155
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Optional chassis mount adapter with screw terminal and adapter for DIN-rail mount



(Models pictured with chassis mount adapter and heat-sink)

Specifications	
Line regulation	0.2% max.
Load regulation	0.3% max.
Output voltage	+10% / -20% adjustable by external resistor
Ripple & noise	<1% of Vout (20 MHz BW)
EMC	- Conducted noise: EN 55022, class EN55022 class A (with CMF option). On request: Common mode chokes for filter proposals to meet EN55022 class A/B - Immunity: EN 50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	88% typ.
Operating temperature range	-40 °C to +85°C with heat-sink for derating see datasheet
Thermal protection	shutdown at 115 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN50155
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Full datasheet	<a href="http://www.tracopower.com/products/tep75wi.pdf">www.tracopower.com/products/tep75wi.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEP 75-2411WI		5.0 VDC	15.0 A
TEP 75-2412WI		12 VDC	6.3 A
TEP 75-2413WI	9 – 36 VDC	15 VDC	5.0 A
TEP 75-2415WI		24 VDC	3.2 A
TEP 75-2416WI		28 VDC	2.7 A
TEP 75-2418WI		48 VDC	1.6 A
TEP 75-4811WI		5.0 VDC	15.0 A
TEP 75-4812WI		12 VDC	6.3 A
TEP 75-4813WI	18 – 75 VDC	15 VDC	5.0 A
TEP 75-4815WI		24 VDC	3.2 A
TEP 75-4816WI		28 VDC	2.7 A
TEP 75-4818WI		48 VDC	1.6 A
TEP 75-7211WI		5.0 VDC	15.0 A
TEP 75-7212WI		12 VDC	6.3 A
TEP 75-7213WI	43 – 160 VDC	15 VDC	5.0 A
TEP 75-7215WI		24 VDC	3.2 A
TEP 75-7216WI		28 VDC	2.7 A
TEP 75-7218WI		48 VDC	1.6 A

### Options

Heat-sink: **TEP-HS1** (separate part, assembling on demand)

Chassis mount adapter with EMI-filter: add suffix **-CMF\***

DIN-rail mounting clip for chassis mount versions: **TEP-MK1**

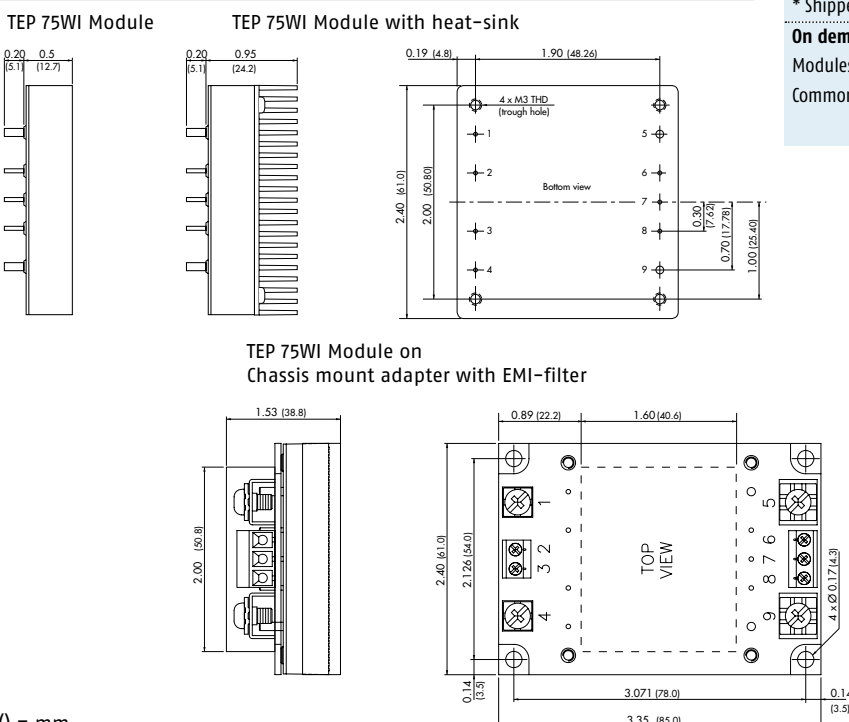
\* Shipped assembled with converter module

### On demand:

Modules with output voltages of 3.3 VDC

Common mode chokes for filter proposals to meet EN55022 class A/B

## Dimensions



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

# TEP-100 Series ▶ 100 W



- ▶ Rugged compact metal casing
- ▶ Wide 2:1 input voltage range
- ▶ Excellent efficiency up to 93 %
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Optional chassis mount adapter with screw terminal and adapter for DIN-rail mount

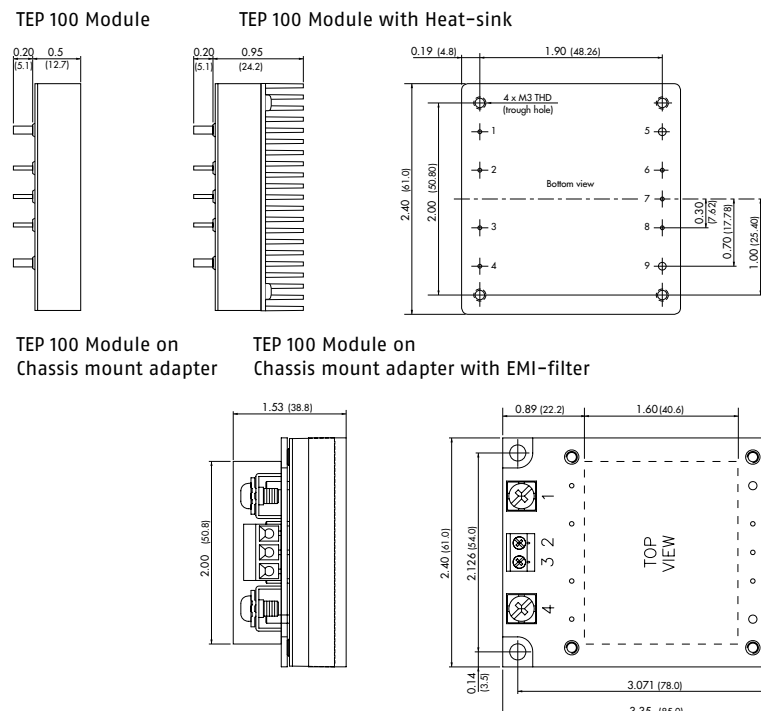


(Models pictured with chassis mount adapter and heat-sink)

Specifications	
Line regulation	0.2% max.
Load regulation	0.3% max.
Output voltage adjustmt	+10 % / -20% adjustable by external resistor
Ripple & noise (20 MHz BW)	- 5 VDC output models: <75 mVpk-pk - other output models: <1 % of Vout
Conducted EMI	EN 55022, class EN55022 class A (with CMF option) On request: Common mode chokes for filter proposals to meet EN55022 class A/B
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	92 % typ.
Operating temperature range	-40 °C to +85 °C (with heat-sink) for derating see datasheet
Thermal protection	shutdown at 115 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Casing	shielded metal case with aluminium baseplate
Full datasheet	<a href="http://www.tracopower.com/products/tep100.pdf">www.tracopower.com/products/tep100.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEP 100-1210		3.3 VDC	25.0 A
TEP 100-1211		5.0 VDC	20.0 A
TEP 100-1212		12 VDC	8.4 A
TEP 100-1213	9 – 18 VDC	15 VDC	6.7 A
TEP 100-1215		24 VDC	4.2 A
TEP 100-1216		28 VDC	3.6 A
TEP 100-1218		48 VDC	2.1 A
TEP 100-2410		3.3 VDC	25.0 A
TEP 100-2411		5.0 VDC	20.0 A
TEP 100-2412		12 VDC	8.4 A
TEP 100-2413	18 – 36 VDC	15 VDC	6.7 A
TEP 100-2415		24 VDC	4.2 A
TEP 100-2416		28 VDC	3.6 A
TEP 100-2418		48 VDC	2.1 A
TEP 100-4810		3.0 VDC	25.0 A
TEP 100-4811		5.0 VDC	20.0 A
TEP 100-4812		12 VDC	8.4 A
TEP 100-4813	36 – 75 VDC	15 VDC	6.7 A
TEP 100-4815		24 VDC	4.2 A
TEP 100-4816		28 VDC	3.6 A
TEP 100-4818		48 VDC	2.1 A

## Dimensions



**Options**

Heat-sink: **TEP-HS1** (separate part, assembling on demand)

Chassis mount adapter with EMI-filter: add suffix **-CMF\***

DIN-rail mounting clip for chassis mount versions: **TEP-MK1**

\* Shipped assembled with converter module

**On demand:**

Common mode chokes for filter proposals to meet EN55022 class A/B

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

( ) = mm

# TEP-100WIR Series ▶ 100 W



- ▶ High power density
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Very high efficiency up to 92%
- ▶ Certified for railway applications EN 50155
- ▶ Over temperature protection
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Shielded metal case with aluminium baseplate

**NEW**  
Product



(Model pictured with mounted heat-sink)

Specifications	
Line regulation	0.1% max.
Load regulation	0.1% max.
Output voltage	+10% / -20% adjustable by external resistor
Ripple & noise (20 MHz BW)	<1% of Vout
EMC	- Conducted noise: Common mode chokes for filter proposals to meet EN55022 class A/B on demand - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	90% typ.
Operating temperature range	-40 °C to +75°C with heat-sink for derating see datasheet
Thermal protection	shutdown at 120 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, (reports pending)
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/tep100wir.pdf">www.tracopower.com/products/tep100wir.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEP 100-2412WIR		12 VDC	8.4 A
TEP 100-2415WIR	8.5 – 36 VDC	24 VDC	4.2 A
TEP 100-2416WIR		28 VDC	3.6 A
TEP 100-2418WIR		48 VDC	2.1 A
TEP 100-4812WIR		12 VDC	8.4 A
TEP 100-4815WIR	16.5 – 75 VDC	24 VDC	4.2 A
TEP 100-4816WIR		28 VDC	3.6 A
TEP 100-4818WIR		48 VDC	2.1 A
TEP 100-7212WIR		12 VDC	8.4 A
TEP 100-7215WIR	43 – 160 VDC	24 VDC	4.2 A
TEP 100-7216WIR		28 VDC	3.6 A
TEP 100-7218WIR		48 VDC	2.1 A

**Options**

Heat-sink: **TEP-HS1** (separate part, assembling on demand)

Chassis mount adapter with EMI-filter: add suffix **-CMF\***

DIN-rail mounting clip for chassis mount versions: **TEP-MK1**

\* Shipped assembled with converter module

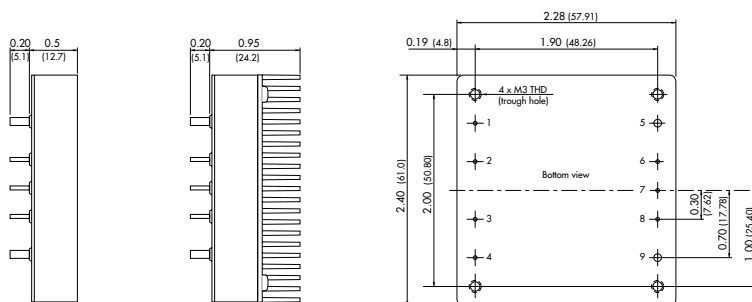
**On demand:**

Modules with output voltages of 3.3 VDC

Common mode chokes for filter proposals to meet EN55022 class A/B

## Dimensions

TEP 100WIR Modul      TEP 100WIR Module with heat-sink



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

( ) = mm

# TEQ-100WIR Series ▶ 100 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+85^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ UL 508 approval
- ▶ Excellent efficiency up to 90%
- ▶ Low no-load input current
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 2250 VDC
- ▶ Input undervoltage-lockout circuit

**NEW**  
Product



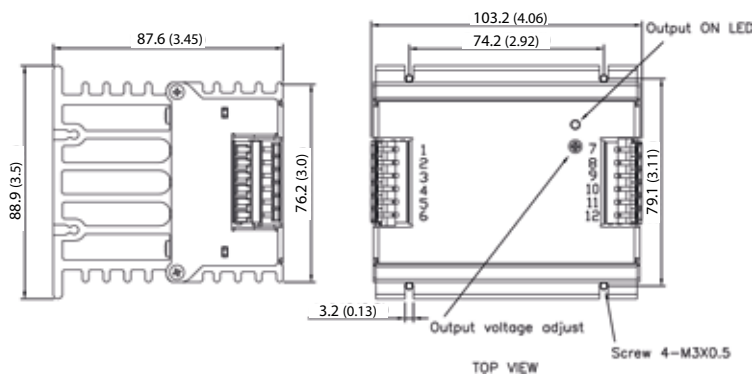
## Specifications

Line regulation	0.1% max.
Load regulation	0.1% max.
Output voltage	+10% / -20% adjustable by external resistor
Ripple & noise (20 MHz BW)	<1% of Vout
EMC	- Conducted noise: EN5022 class A - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	90% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ without derating up to $+105^{\circ}\text{C}$ with derating
Thermal protection	shutdown at $120^{\circ}\text{C}$
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/teq100wir.pdf">www.tracopower.com/products/teq100wir.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEQ 100-2412WIR	8.5 - 36 VDC	12 VDC	8.4 A
TEQ 100-2415WIR		24 VDC	4.2 A
TEQ 100-2416WIR	16.5 - 75 VDC	28 VDC	3.6 A
TEQ 100-2418WIR		48 VDC	2.1 A
TEQ 100-4812WIR	43 - 160 VDC	12 VDC	8.4 A
TEQ 100-4815WIR		24 VDC	4.2 A
TEQ 100-4816WIR	48 VDC	28 VDC	3.6 A
TEQ 100-4818WIR		48 VDC	2.1 A
TEQ 100-7212WIR	48 VDC	12 VDC	8.4 A
TEQ 100-7215WIR		24 VDC	4.2 A
TEQ 100-7216WIR	48 VDC	28 VDC	3.6 A
TEQ 100-7218WIR		48 VDC	2.1 A

## Dimensions



Pin	
1	- Vin (GND)
2	- Vin (GND)
3	No con.
4	Remote On/Off
5	+ Vin
6	+ Vin
7	- Vout
8	- Vout
9	- Sense
10	+ Sense
11	+ Vout
12	+ Vout

() = Inches

# TEP-150WI Series ▶ 150 W



CB  
Scheme



- ▶ Highest power density
- ▶ Wide 4:1 input voltage range
- ▶ Over temperature protection
- ▶ Constant current characteristic at 100 % load for battery load applications
- ▶ Certified for railway applications EN 50155
- ▶ Input under voltage lockout
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC (basic insulation)
- ▶ Easy chassis and wall mounting

**NEW**  
Models



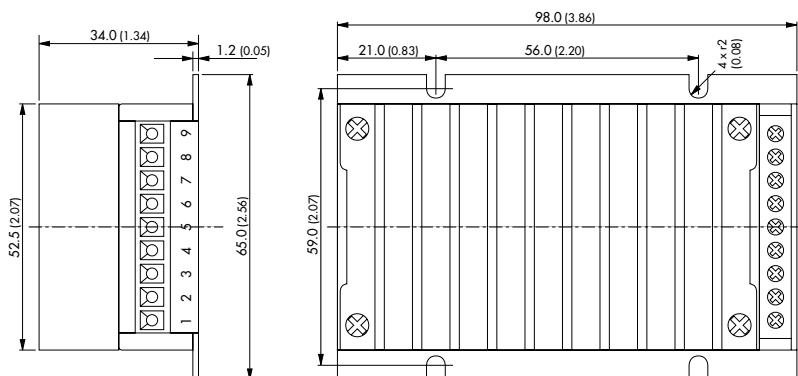
Specifications	
Line regulation	0.2% max.
Load regulation	0.4 % max.
Output voltage adjustment	+20 % by external resistor
Ripple & noise (20 MHz BW)	<1 % of Vout
EMC	EN 55022, class EN55022 class A EN 55022, class B with filter module (suffix -F) EN 50155
Short circuit protection	continuous, automatic recovery
Over-temperature protection	switch off at over-temperature, automatic restart.
Reverse input protection	parallel diode
Efficiency	86 % typ.
Operating temperature range	-40 °C to +75 °C for derating see datasheet
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, CB test report
Remote On/Off	shutdown input for low input current (3 mA) in standby operation (passive input = On) On demand: reverse function (passive input = off)
Casing	shielded metal case, IP55
Full datasheet	<a href="http://www.tracopower.com/products/tep150wi.pdf">www.tracopower.com/products/tep150wi.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEP 150-2412WI		12 VDC	12.5 A
TEP 150-2413WI		15 VDC	10.0 A
TEP 150-2415WI	9 – 36 VDC	24 VDC	6.3 A
TEP 150-2416WI		28 VDC	5.4 A
TEP 150-2418WI		48 VDC	3.2 A
TEP 150-4812WI		12 VDC	12.5 A
TEP 150-4813WI		15 VDC	10.0 A
TEP 150-4815WI	18 – 75 VDC	24 VDC	6.3 A
TEP 150-4816WI		28 VDC	5.4 A
TEP 150-4818WI		48 VDC	3.2 A
TEP 150-7212WI		12 VDC	12.5 A
TEP 150-7213WI		15 VDC	10.0 A
TEP 150-7215WI	43 – 160 VDC	24 VDC	6.3 A
TEP 150-7216WI		28 VDC	5.4 A
TEP 150-7218WI		48 VDC	3.2 A

Modules with input filter to meet EN 55022 class B. Add suffix **-F**



## Dimensions



( ) = Inches

Con.	
1	+ Vin (Vcc)
2	+ Vin (Vcc)
3	- Vin (GND)
4	- Vin (GND)
5	Remote On/Off
6	+ Vout
7	- Vout
8	Trim
9	Trim

# TEP-160 Series ▶ 150 to 196 W



- ▶ High power density
- ▶ Wide 2:1 input voltage range
- ▶ Excellent efficiency up to 93 %
- ▶ Over temperature protection
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC (basic insulation)
- ▶ Adjustable output voltage
- ▶ Shielded metal case with aluminium baseplate



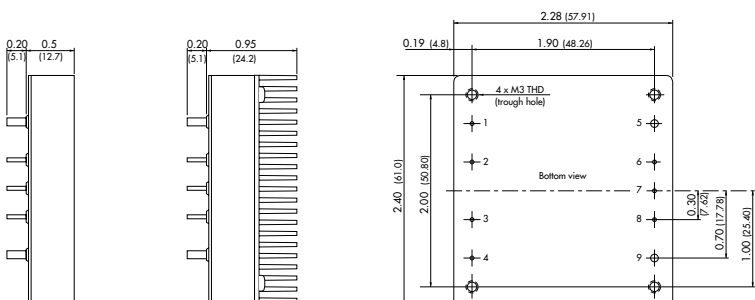
(Model pictured with mounted heat-sink)

Specifications		Models			
Line regulation	0.2% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	0.3% max.	TEP 160-2412		12 VDC	13 A
Output voltage	+10 % / -20 % adjustable by external resistor	TEP 160-2413		15 VDC	10 A
Ripple & noise (20 MHz BW)	- 5 VDC output models: <75 mVpk-pk - other output models: <1 % of Vout	TEP 160-2415	16.5 – 36 VDC	24 VDC	6.5 A
Short circuit protection	continuous, automatic recovery	TEP 160-2416		28 VDC	5.5 A
Reverse input protection	parallel diode	TEP 160-2418		48 VDC	3.3 A
Efficiency	90% typ.	TEP 160-4812		12 VDC	16 A
Operating temperature range	-40 °C to +75°C, for derating see datasheet	TEP 160-4813		15 VDC	13 A
Thermal protection	shutdown at 115 °C	TEP 160-4815	33 – 75 VDC	24 VDC	8 A
I/O isolation voltage	2250 VDC (60 sec.), basic insulation	TEP 160-4816		28 VDC	7 A
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1	TEP 160-4818		48 VDC	4 A
Remote On/Off	shutdown input for low input current (3 mA) in standby operation	TEP 160-48153		53 VDC	3.7 A
Full datasheet	<a href="http://www.tracopower.com/products/tep160.pdf">www.tracopower.com/products/tep160.pdf</a>	<b>Options:</b> Heat-sink: <b>TEP-HS1</b> (separate part, factory assembling on demand) <b>On demand:</b> Modules with input voltage range of 8.5 – 22 VDC Modules with output voltages of 3.3 or 5.0 VDC Common mode chokes for filter proposals to meet EN55022 class A/B			

## Dimensions

TEP 160 Module

TEP 160 Module with heat-sink



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

() = mm



# TEP-160WIR Series ▶ 144 to 182 W



- ▶ High power density
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Very high efficiency up to 91%
- ▶ Certified for railway applications EN 50155
- ▶ Over temperature protection
- ▶ Input under voltage lockout
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC (basic insulation)
- ▶ Adjustable output voltage
- ▶ Shielded metal case with aluminium baseplate



(Model pictured with mounted heat-sink)

Specifications	
Line regulation	0.2% max.
Load regulation	0.25% max.
Output voltage	+10% / -20% adjustable by external resistor
Ripple & noise (20 MHz BW)	<1% of Vout
EMC	- Conducted noise: Common mode chokes for filter proposals to meet EN55022 class A/B on demand - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	88% typ.
Operating temperature range	-40 °C to +75°C with heat-sink for derating see datasheet
Thermal protection	shutdown at 120 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/tep160wir.pdf">www.tracopower.com/products/tep160wir.pdf</a>

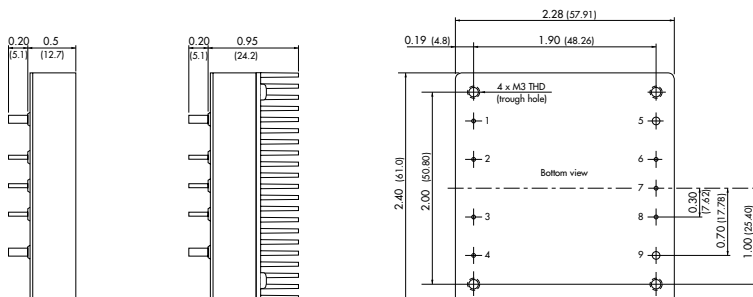
Models			
Order code	Input voltage	Output voltage	Output current max.
TEP 160-2412WIR		12 VDC	12 A
TEP 160-2413WIR		15 VDC	9.5 A
TEP 160-2415WIR	8.5 – 36 VDC	24 VDC	6.0 A
TEP 160-2416WIR		28 VDC	5.0 A
TEP 160-2418WIR		48 VDC	3.0 A
TEP 160-4812WIR		12 VDC	13 A
TEP 160-4813WIR		15 VDC	10 A
TEP 160-4815WIR	16.5 – 75 VDC	24 VDC	6.5 A
TEP 160-4816WIR		28 VDC	5.5 A
TEP 160-4818WIR		48 VDC	3.2 A
TEP 160-7212WIR		12 VDC	15 A
TEP 160-7213WIR		15 VDC	12 A
TEP 160-7215WIR	43 – 160 VDC	24 VDC	7.5 A
TEP 160-7216WIR		28 VDC	6.5 A
TEP 160-7218WIR		48 VDC	3.8 A

**Options:**  
Heat-sink: **TEP-HS1** (separate part, factory assembling on demand)

**On demand:**  
Modules with output voltages of 3.3 or 5.0 VDC  
Adapter for Chassis mount and DIN-rail mount (with screw terminal)  
Chassis mount models with input filter to meet EN 55022 class A  
Common mode chokes for filter proposals to meet EN55022 class A/B

## Dimensions

TEP 160WIR Module      TEP 160WIR Module with heat-sink



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

# TEQ-160WIR Series ▶ 156 to 182 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+75^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ UL 508 approval
- ▶ Excellent efficiency up to 90%
- ▶ Low no-load input current
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 2250 VDC
- ▶ Inout undervoltage-lockout circuit

**NEW**  
Product



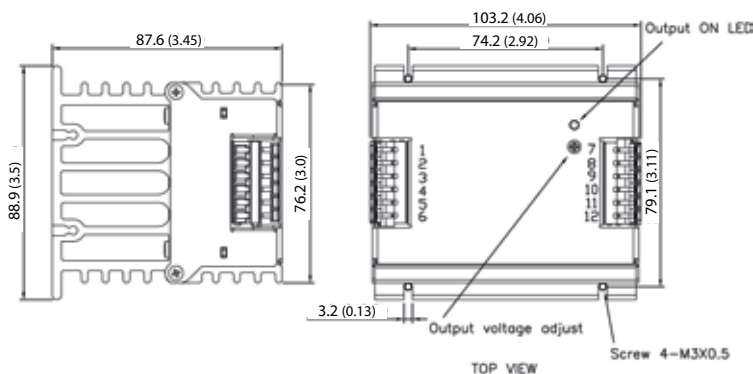
## Specifications

Line regulation	0.1% max.
Load regulation	0.1% max.
Output voltage	+10% / -20% adjustable by external resistor
Ripple & noise (20 MHz BW)	<1% of Vout
EMC	- Conducted noise: EN5022 class A - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	89% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+75^{\circ}\text{C}$ without derating up to $+105^{\circ}\text{C}$ with derating
Thermal protection	shutdown at $120^{\circ}\text{C}$
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/teq160wir.pdf">www.tracopower.com/products/teq160wir.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEQ 160-4812WIR		12 VDC	13 A
TEQ 160-4815WIR	18 - 75 VDC	24 VDC	6.5 A
TEQ 160-4816WIR		28 VDC	5.5 A
TEQ 160-4818WIR		48 VDC	3.2 A
TEQ 160-7212WIR		12 VDC	15 A
TEQ 160-7215WIR	43 - 160 VDC	24 VDC	7.5 A
TEQ 160-7216WIR		28 VDC	6.5 A
TEQ 160-7218WIR		48 VDC	3.8 A

## Dimensions



### Pin

Pin	Description
1	- Vin (GND)
2	- Vin (GND)
3	No con.
4	Remote On/Off
5	+ Vin
6	+ Vin
7	- Vout
8	- Vout
9	- Sense
10	+ Sense
11	+ Vout
12	+ Vout

() = Inches



# TEP-200WIR Series ▶ 180 to 240 W



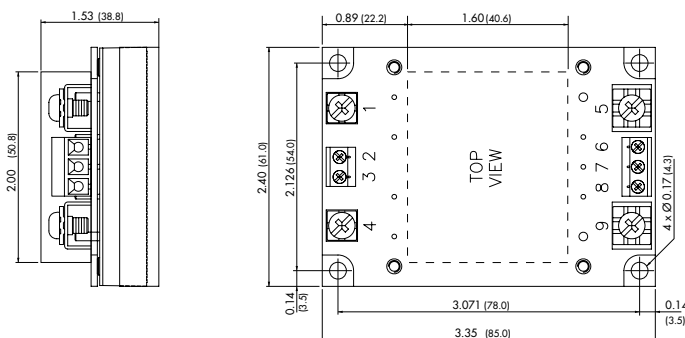
- ▶ Chassis mount converter with screw terminal
- ▶ Ultra wide 4:1 input voltage range
- ▶ EMI filter to meet EN 55022 class A
- ▶ Very high efficiency up to 91%
- ▶ Certified for railway applications EN 50155
- ▶ Input under voltage lockout
- ▶ Over temperature protection
- ▶ Reverse input protection
- ▶ I/O isolation 2250 VDC
- ▶ Adjustable output voltage
- ▶ Low no-load input current



Specifications	
Line regulation	0.2% max.
Load regulation	0.3% max.
Output voltage	+10% / -20 % adjustable by external resistor
Ripple & noise	<1% of Vout (20 MHz BW)
EMC	- Conducted noise: EN55022 class A - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	90% typ.
Operating temperature range	-40 °C to +75°C with heat-sink for derating see datasheet
Thermal protection	shutdown at 120 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/tep200wir.pdf">www.tracopower.com/products/tep200wir.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEP 200-2412WIRCMF		12 VDC	15 A
TEP 200-2413WIRCMF		15 VDC	12 A
TEP 200-2415WIRCMF	8.5 – 36 VDC	24 VDC	7.5 A
TEP 200-2416WIRCMF		28 VDC	6.5 A
TEP 200-2418WIRCMF		48 VDC	3.7 A
TEP 200-4812WIRCMF		12 VDC	18 A
TEP 200-4813WIRCMF		15 VDC	14 A
TEP 200-4815WIRCMF	16.5 – 75 VDC	24 VDC	9.0 A
TEP 200-4816WIRCMF		28 VDC	7.5 A
TEP 200-4818WIRCMF		48 VDC	4.5 A
TEP 200-7212WIRCMF		12 VDC	20 A
TEP 200-7213WIRCMF		15 VDC	16 A
TEP 200-7215WIRCMF	43 – 160 VDC	24 VDC	10 A
TEP 200-7216WIRCMF		28 VDC	8.5 A
TEP 200-7218WIRCMF		48 VDC	5 A
<b>On demand</b>			
Models with 3.3 VDC or 5.0 VDC output			
Models with 53 VDC output (input voltage range 33 – 75 VDC)			
Negative (passive = Off) Remote On/Off function (standard is passive = On)			

## Dimensions



( ) = mm

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

# TEQ-200WIR Series ▶ 216 to 240 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+70^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range up to 160 VDC
- ▶ Certified for railway applications EN 50155
- ▶ UL 508 approval
- ▶ Excellent efficiency up to 90%
- ▶ Low no-load input current
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 2250 VDC
- ▶ Inout undervoltage-lockout circuit

**NEW**  
Product



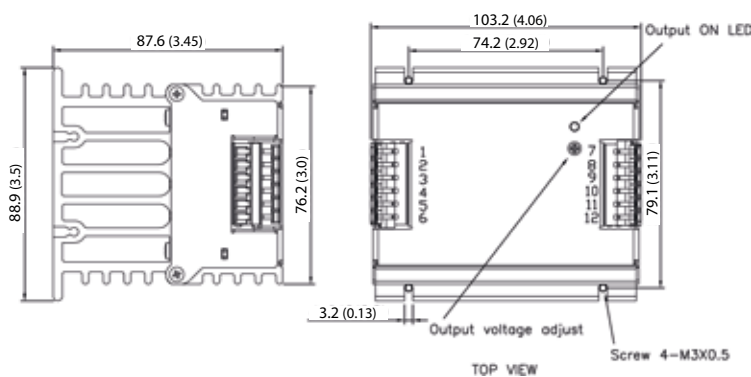
## Specifications

Line regulation	0.1% max.
Load regulation	0.1% max.
Output voltage	+10% / -20% adjustable by external resistor
Ripple & noise (20 MHz BW)	<1% of Vout
EMC	- Conducted noise: EN55022 class A - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	89% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ without derating above $70^{\circ}\text{C}$ derating 3%/K
Thermal protection	shutdown at $120^{\circ}\text{C}$
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/teq200wir.pdf">www.tracopower.com/products/teq200wir.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TEQ 200-4812WIR		12 VDC	18 A
TEQ 200-4815WIR	18 - 75 VDC	24 VDC	9.0 A
TEQ 200-4816WIR		28 VDC	7.5 A
TEQ 200-4818WIR		48 VDC	4.5 A
TEQ 200-7212WIR		12 VDC	20 A
TEQ 200-7215WIR	43 - 160 VDC	24 VDC	10 A
TEQ 200-7216WIR		28 VDC	8.5 A
TEQ 200-7218WIR		48 VDC	5.0 A

## Dimensions



Pin	Description
1	- Vin (GND)
2	- Vin (GND)
3	No con.
4	Remote On/Off
5	+ Vin
6	+ Vin
7	- Vout
8	- Vout
9	- Sense
10	+ Sense
11	+ Vout
12	+ Vout

( ) = Inches

# TEQ-300WIR Series ▶ 300 W



- ▶ High power block with excellent thermal convection
- ▶ Operating temperature  $-40^{\circ}\text{C}$  up to  $+55^{\circ}\text{C}$  without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage range
- ▶ Certified for railway applications EN 50155
- ▶ Excellent efficiency up to 90%
- ▶ Input filter to meet EN 55022, class A
- ▶ I/O isolation 3000 VDC
- ▶ Undervoltage lockout circuit
- ▶ Soft start
- ▶ Constant current characteristic at 100 % load

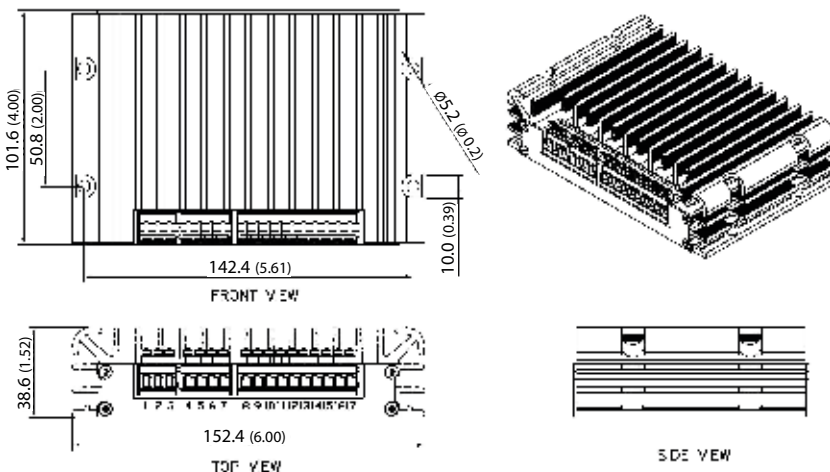
**NEW**  
Product



Specifications	
Line regulation	0.1% max.
Load regulation	0.1% max.
Output voltage	+10 % / -20 % adjustable by external resistor
Ripple & noise (20 MHz BW)	<1 % of Vout
EMC	- Conducted noise: EN55022 class A - Immunity: EN50155
Short circuit protection	continuous, automatic recovery
Reverse input protection	parallel diode
Efficiency	89% typ.
Operating temperature range	$-40^{\circ}\text{C}$ to $+55^{\circ}\text{C}$ without derating up to $+75^{\circ}\text{C}$ with derating
Thermal protection	shutdown at $120^{\circ}\text{C}$
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 50155, UL508 (reports pending)
Thermal shock and shock & vibration	EN 61373 / MIL-STD-810F
Remote On/Off	shutdown input for low input current (3 mA) in standby operation
Full datasheet	<a href="http://www.tracopower.com/products/teq300wir.pdf">www.tracopower.com/products/teq300wir.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TEQ 300-4812WIR	18 - 75 VDC	12 VDC	25 A
TEQ 300-4815WIR		24 VDC	12.5 A
TEQ 300-4816WIR	43 - 160 VDC	28 VDC	11 A
TEQ 300-4818WIR		48 VDC	6.5 A
TEQ 300-7212WIR		12 VDC	27 A
TEQ 300-7215WIR		24 VDC	13.5 A
TEQ 300-7216WIR	48 VDC	28 VDC	12 A
TEQ 300-7218WIR		48 VDC	7 A

## Dimensions



Pin	
1, 2, 3	+ Vin
4, 5, 6	-Vin
7	Remote On/Off
8, 9, 10	+Vout
11, 12, 13	- Vout
14	+ Sense
15	Trim
16	- Sense
17	Current share*

\* Option

( ) = Inches

# TMV-EN Series ▶ 1 W



- ▶ SIP package
- ▶ Reinforced insulation rated for 300 VAC working voltage
- ▶ IEC/UL 60950-1 safety approvals
- ▶ I/O isolation voltage 3000 VACrms
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$
- ▶ Over voltage category OCV III



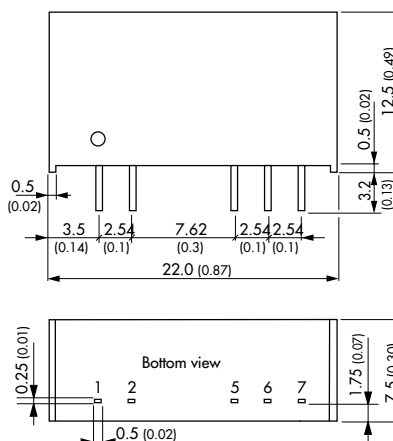
## Specifications

Line regulation	non regulated
Load regulation	$\pm 10\%$ max.
Ripple & noise	$<120\text{ mVpk-pk}$ (20 MHz BW)
Short circuit protection	limited 1 sec.
Efficiency	67% typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ above $70\text{ }^{\circ}\text{C}$ derating 3.3 %/K
I/O isolation voltage	3000 VACrms (60 sec.), reinforced insulation, rated for 300 VAC working voltage
I/O isolation test voltage	4500Vpk (1 sec.)
I/O isolation capacitance	15 pF typ.
I/O isolation resistance	$>10\text{ G}\Omega$
Safety standards / approvals	UL 60950-1, IEC/EN 60950-1, CB-report
Casing	plastic (UL 94 V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmv-en.pdf">www.tracopower.com/products/tmv-en.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
TMV 0505EN		5 VDC	200 mA
TMV 0512EN		12 VDC	80 mA
TMV 0515EN	5VDC $\pm 10\%$	15 VDC	65 mA
TMV 0505DEN		$\pm 5\text{ VDC}$	$\pm 100\text{ mA}$
TMV 0512DEN		$\pm 12\text{ VDC}$	$\pm 40\text{ mA}$
TMV 0515DEN		$\pm 15\text{ VDC}$	$\pm 30\text{ mA}$
TMV 1205EN		5 VDC	200 mA
TMV 1212EN		12 VDC	80 mA
TMV 1215EN	12VDC $\pm 10\%$	15 VDC	65 mA
TMV 1205DEN		$\pm 5\text{ VDC}$	$\pm 100\text{ mA}$
TMV 1212DEN		$\pm 12\text{ VDC}$	$\pm 40\text{ mA}$
TMV 1215DEN		$\pm 15\text{ VDC}$	$\pm 30\text{ mA}$

## Dimensions



( ) = Inches

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

# TES-2M Series ▶ 2 W



- ▶ Ultracompact SMD package
- ▶ I/O isolation 4000 VACrms
- ▶ Reinforced insulation rated for working voltage up to 300 VAC
- ▶ Industrial and medical safety approval
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ Low leakage current <2µA
- ▶ Optional tape & reel package

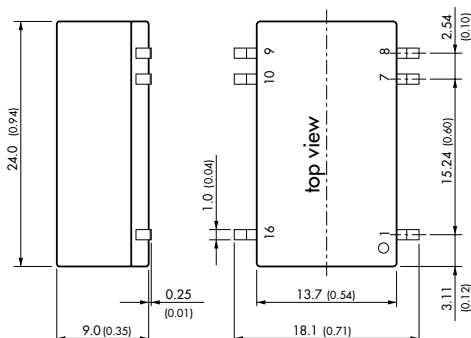


Specifications	
Line regulation	non regulated
Load regulation	10 % max.
Ripple & noise	<150 mVpk-pk (20 MHz BW)
Input filter	Pi-filter
Short circuit protection	limited 0.5 sec.
Efficiency	70 % typ.
Operating temperature range	-25 °C to +71 °C above 60 °C derating 2.5 %/K
I/O isolation voltage	4000 VACrms (reinforced), rated for 300 VAC working voltage
I/O isolation test voltage	6000Vpk (1 sec.)
I/O isolation capacitance	20 pF typ.
I/O isolation resistance	>10,000 MΩhm
Leakage current	2µA max. (at 240VAC / 60Hz)
Safety standards / approvals	UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report
Casing	plastic, insert mold (UL 94-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tes2m.pdf">www.tracopower.com/products/tes2m.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
TES 2-0511M		5 VDC	400 mA
TES 2-0512M		12 VDC	165 mA
TES 2-0513M	5 VDC ± 10 %	15 VDC	133 mA
TES 2-0522M		± 12 VDC	± 83 mA
TES 2-0523M		± 15 VDC	± 66 mA
TES 2-1211M		5 VDC	400 mA
TES 2-1212M		12 VDC	165 mA
TES 2-1213M	12 VDC ± 10 %	15 VDC	133 mA
TES 2-1222M		± 12 VDC	± 83 mA
TES 2-1223M		± 15 VDC	± 66 mA
TES 2-2411M		5 VDC	400 mA
TES 2-2412M		12 VDC	165 mA
TES 2-2413M	24 VDC ± 10 %	15 VDC	133 mA
TES 2-2422M		± 12 VDC	± 83 mA
TES 2-2423M		± 15 VDC	± 66 mA

Product with same electrical specifications available in DIP package.  
See THI-2M series page 113

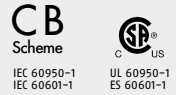
## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
7	No con.	No con.
8	No con.	Common
9	+ Vout	+ Vout
10	- Vout	- Vout
16	+ Vin (Vcc)	+ Vin (Vcc)

( ) = Inches

# THI-2M Series ▶ 2 W



- ▶ Ultra compact DIP 16 package
- ▶ I/O isolation 4000 VACrms
- ▶ Reinforced insulation rated for working voltage up to 300 VAC
- ▶ Industrial and medical safety approval
- ▶ Operating temperature range  $-40\text{ }^{\circ}\text{C}$  to  $+71\text{ }^{\circ}\text{C}$
- ▶ Low leakage current  $<2\mu\text{A}$



## Specifications

Line regulation	non regulated
Load regulation	10 % max.
Ripple & noise	$<150\text{ mVpk-pk}$ (20 MHz BW)
Input filter	Pi-filter
Short circuit protection	limited 0.5 sec.
Efficiency	70 % typ.
Operating temperature range	$-40\text{ }^{\circ}\text{C}$ to $+71\text{ }^{\circ}\text{C}$ above $60\text{ }^{\circ}\text{C}$ derating 2.5 %/K
I/O isolation voltage	4000 VACrms (60 sec.), reinforced insulation, rated for 300 VAC working voltage
I/O isolation test voltage	6000Vpk (1 sec.)
I/O isolation capacitance	20 pF typ.
I/O isolation resistance	$>10,000\text{ M}\Omega\text{hm}$
Leakage current	$2\mu\text{A}$ max. (at 240VAC / 60Hz)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/thi2m.pdf">www.tracopower.com/products/thi2m.pdf</a>

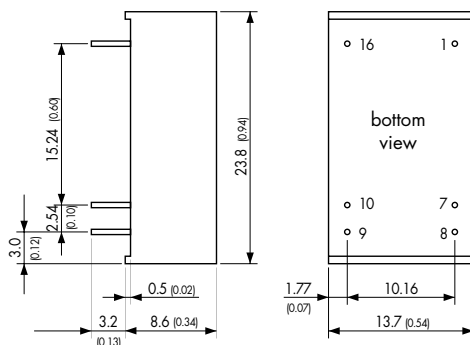
## Models

Order code	Input voltage	Output voltage	Output current max.
THI 2-0511M		5 VDC	400 mA
THI 2-0512M		12 VDC	165 mA
THI 2-0513M	5 VDC $\pm 10\%$	15 VDC	133 mA
THI 2-0522M		$\pm 12\text{ VDC}$	$\pm 83\text{ mA}$
THI 2-0523M		$\pm 15\text{ VDC}$	$\pm 66\text{ mA}$
THI 2-1211M		5 VDC	400 mA
THI 2-1212M		12 VDC	165 mA
THI 2-1213M	12 VDC $\pm 10\%$	15 VDC	133 mA
THI 2-1222M		$\pm 12\text{ VDC}$	$\pm 83\text{ mA}$
THI 2-1223M		$\pm 15\text{ VDC}$	$\pm 66\text{ mA}$
THI 2-2411M		5 VDC	400 mA
THI 2-2412M		12 VDC	165 mA
THI 2-2413M	24 VDC $\pm 10\%$	15 VDC	133 mA
THI 2-2422M		$\pm 12\text{ VDC}$	$\pm 83\text{ mA}$
THI 2-2423M		$\pm 15\text{ VDC}$	$\pm 66\text{ mA}$

Product with same electrical specifications available in SMD package.

See TES-2M series page 112

## Dimensions



Pin	Single output	Dual output
1	- Vin (GND)	- Vin (GND)
7	No con.	No con.
8	No con.	Common
9	+ Vout	+ Vout
10	- Vout	- Vout
16	+ Vin (Vcc)	+ Vin (Vcc)

() = Inches

# THI-3 Series ▶ 3 W

CB  
Scheme

IEC 60950-1  
IEC 60601-1

UL  
ES 60601-1

- ▶ Supplementary and reinforced insulation
- ▶ I/O isolation 4000 VACrms rated for 300 VACrms working voltage
- ▶ 2 x 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
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ Low leakage current <2µA

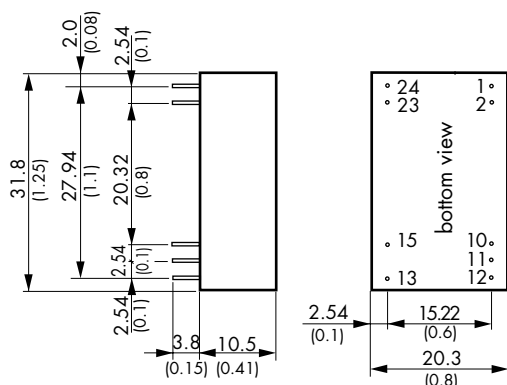
**NEW**  
Product



Specifications	
Line regulation	0.5%
Load regulation	1% max.
Ripple & noise	<50 mVpk-pk (20 MHz BW)
Input filter	Pi-filter
Short circuit protection	limited 0.5 sec.
Efficiency	60 % typ.
Operating temperature range	-40 °C to +75 °C above 60 °C derating 2.8 %/K
I/O isolation voltage	4000 VACrms (reinforced), rated for 300 VAC working voltage
I/O isolation test voltage	6000Vpk (1 sec.)
I/O isolation capacitance	20 pF typ.
I/O isolation resistance	>10,000 MOhm
Leakage current	2µA max. (at 240VAC / 60Hz)
Safety standards / approvals	IEC/EN 60950-1, IEC/EN 60601-1 3rd Edition, ANSI/AAMI ES60601-1 and CAN/CSA-C22.2 No. 60601-1, CB report
Casing	plastic (UL 94-0 rated plastic)
Full datasheet	<a href="http://www.tracopower.com/products/thi3.pdf">www.tracopower.com/products/thi3.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THI 3-0511		5 VDC	600 mA
THI 3-0512		12 VDC	250 mA
THI 3-0513	5 VDC ± 10 %	15 VDC	200 mA
THI 3-0522		± 12 VDC	±125 mA
THI 3-0523		± 15 VDC	±100 mA
THI 3-1211		5 VDC	600 mA
THI 3-1212		12 VDC	250 mA
THI 3-1213	12 VDC ± 10 %	15 VDC	200 mA
THI 3-1222		± 12 VDC	±125 mA
THI 3-1223		± 15 VDC	±100 mA
THI 3-2411		5 VDC	600 mA
THI 3-2412		12 VDC	250 mA
THI 3-2413	24 VDC ± 10 %	15 VDC	200 mA
THI 3-2422		± 12 VDC	±125 mA
THI 3-2423		± 15 VDC	±100 mA

## Dimensions



() = Inches

Pin	Single output	Dual output
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)



# THB-3 Series ▶ 3 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation voltage 4800 VACrms
- ▶ Reinforced insulation rated for working voltage 1000VAC
- ▶ Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd edition, 2 x M00P
- ▶ Industrial safety to IEC/EN/UL 60950-1
- ▶ Low coupling capacitance (13pF)
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current <2µA



Specifications		Models			
Line regulation	±0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 1% max. - Dual output models: 2% max.	THB 3-0511		5 VDC	600 mA
Ripple & noise	<150 mVpk-pk (20 MHz BW)	THB 3-0512		12 VDC	250 mA
Conducted EMI	EN 55022, class A (internal filter)	THB 3-0515	4.5 – 9 VDC	24 VDC	125 mA
Short circuit protection	continuous, automatic recovery	THB 3-0522		± 12 VDC	± 125 mA
Efficiency	83% typ.	THB 3-0523		± 15 VDC	± 100 mA
Operating temperature range	-40 °C to +75 °C above 60 °C derating 3.3%/K	THB 3-1211		5 VDC	600 mA
I/O isolation voltage	4800 VACrms (60 sec.) reinforced insulation, rated for 1000VAC working voltage	THB 3-1212		12 VDC	250 mA
I/O isolation test voltage	6000 Vpk (1sec)	THB 3-1215	9 – 18 VDC	24 VDC	125 mA
I/O isolation capacitance	13 pF max.	THB 3-1222		± 12 VDC	± 125 mA
Leakage current	2µA max. (at 240VAC / 60Hz)	THB 3-1223		± 15 VDC	± 100 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report	THB 3-2411		5 VDC	600 mA
Casing	plastic (UL 94V-0 rated)	THB 3-2412		12 VDC	250 mA
Full datasheet	<a href="http://www.tracopower.com/products/thb3.pdf">www.tracopower.com/products/thb3.pdf</a>	THB 3-2415	18 – 36 VDC	24 VDC	125 mA
		THB 3-2422		± 12 VDC	± 125 mA
		THB 3-2423		± 15 VDC	± 100 mA
		THB 3-4811		5 VDC	600 mA
		THB 3-4812		12 VDC	250 mA
		THB 3-4815	36 – 75 VDC	24 VDC	125 mA
		THB 3-4822		± 12 VDC	± 125 mA
		THB 3-4823		± 15 VDC	± 100 mA

Dimensions		Pin			
		<b>Single output</b>	<b>Dual output</b>		
		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)	

() = Inches



# THP-3 Series ▶ 3 W



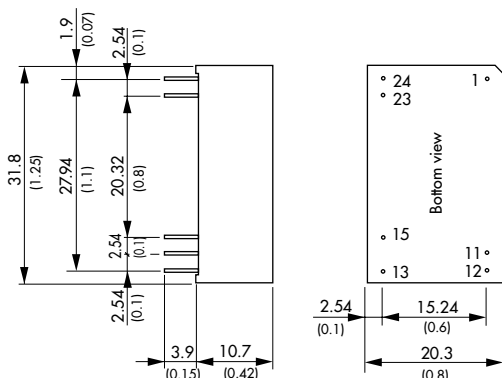
- ▶ Ultra wide 4:1 input voltage range up to 160VDC
- ▶ I/O isolation voltage 4000VACrms
- ▶ Reinforced insulation rated for working voltage 300VAC
- ▶ Industrial and medical safety approvals
- ▶ Operating temperature range -40 °C to +85 °C
- ▶ Low coupling capacitance (13pF)
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current <2µA



Specifications	
Line regulation	0.5% max.
Load regulation	- Single output models: 1% max. - Dual output models: 2% max.
Ripple & noise (20 MHz BW)	<100 mVpk-pk for 5 VDC models <150 mVpk-pk for other models
Conducted EMI	EN 55022, class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	83% typ.
Operating temperature range	-40 °C to +85 °C above 70 °C derating 3.3%/K
I/O isolation voltage	4000 VACrms (60 sec.) reinforced insulation, rated for 300VAC working voltage
I/O isolation test voltage	6000Vpk (1sec)
I/O isolation capacitance	13 pF max.
Leakage current	2µA max. (at 240VAC / 60Hz)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/thp3.pdf">www.tracopower.com/products/thp3.pdf</a>

Models			
Order code	Input voltage	Output voltage	Output current max.
THP 3-2411	9 - 40 VDC	5 VDC	600 mA
THP 3-2412		12 VDC	250 mA
THP 3-2422		± 12 VDC	± 125 mA
THP 3-2423		± 15 VDC	± 100mA
THP 3-4811	18 - 80 VDC	5 VDC	600 mA
THP 3-4812		12 VDC	250 mA
THP 3-4822		± 12 VDC	± 125 mA
THP 3-4823		± 15 VDC	± 100mA
THP 3-7211	36 - 160 VDC	5 VDC	600 mA
THP 3-7212		12 VDC	250 mA
THP 3-7222		± 12 VDC	± 125 mA
THP 3-7223		± 15 VDC	± 100mA

## Dimensions



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)

() = Inches

# THM-3WI Series ▶ 3 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Extended operating temperature range -40 °C to +94 °C at full load !
- ▶ Low leakage current < 2µA
- ▶ Input filter to meet EN 55022, class A

**NEW Product**

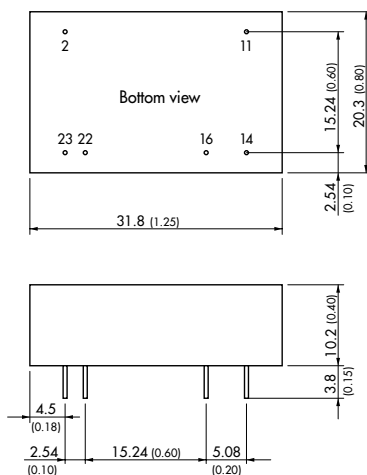


Specifications	
Line regulation	0.5% max.
Load regulation	- Single output models: 0.2% max. - Dual output models: 1% max.
Ripple & noise	3.3 & 5 VDC models: 30 mVpk-pk typ. (20MHz BW) 12 & 15 VDC models: 40 mVpk-pk typ. (20MHz BW) 24 VDC models: 50 mVpk-pk typ. (20MHz BW)
Conducted EMI	EN 55022, class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	83% typ.
Operating temperature range	-40 °C to +94 °C without derating
I/O isolation voltage	5000 VACrms (60 sec.) reinforced insulation, rated for 250VAC working voltage
I/O isolation test voltage	6000Vpk (1sec)
I/O isolation capacitance	17pF max.
Safety standards / approvals	ANSI/AAMI ES 60601-1:2005(R)2012, IEC/EN 60601-1 3rd edition, CB-report
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/thm3wi.pdf">www.tracopower.com/products/thm3wi.pdf</a>

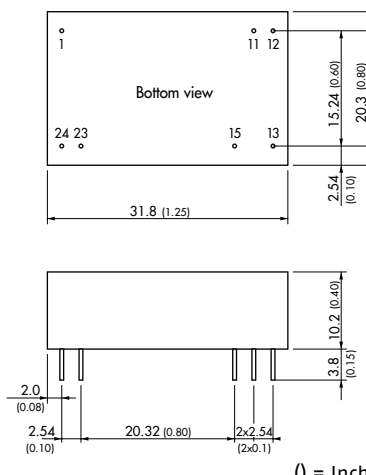
Models			
Order code	Input voltage	Output voltage	Output current max.
THM 3-0510WI		3.3 VDC	1000 mA
THM 3-0511WI		5 VDC	600 mA
THM 3-0512WI		12 VDC	250 mA
THM 3-0513WI	4.5 - 9 VDC	15 VDC	200 mA
THM 3-0515WI		24 VDC	125 mA
THM 3-0521WI		± 5 VDC	± 300 mA
THM 3-0522WI		± 12 VDC	± 125 mA
THM 3-0523WI		± 15 VDC	± 100 mA
THM 3-2410WI		3.3 VDC	1000 mA
THM 3-2411WI		5 VDC	600 mA
THM 3-2412WI		12 VDC	250 mA
THM 3-2413WI	9 - 36 VDC	15 VDC	200 mA
THM 3-2415WI		24 VDC	125 mA
THM 3-2421WI		± 5 VDC	± 300 mA
THM 3-2422WI		± 12 VDC	± 125 mA
THM 3-2423WI		± 15 VDC	± 100 mA
THM 3-4810WI		3.3 VDC	1000 mA
THM 3-4811WI		5 VDC	600 mA
THM 3-4812WI		12 VDC	250 mA
THM 3-4813WI	18 - 75 VDC	15 VDC	200 mA
THM 3-4815WI		24 VDC	125 mA
THM 3-4821WI		± 5 VDC	± 300 mA
THM 3-4822WI		± 12 VDC	± 125 mA
THM 3-4823WI		± 15 VDC	± 100 mA

## Dimensions

Standard pinning



Optional pinning: suffix -A1



Pin	Single output	Dual output
2	- Vin (GND)	- Vin (GND)
11	No con.	- Vout
14	+ Vout	+ Vout
16	- Vout	Common
22	+ Vin (Vcc)	+ Vin (Vcc)
23	+ Vin (Vcc)	+ Vin (Vcc)

( ) = Inches

# THB-6 Series ▶ 6 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation voltage 4800 VACrms
- ▶ Reinforced insulation rated for working voltage 1000 VAC
- ▶ Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd edition, 2 x M00P
- ▶ Operating temperature range -40 °C to +71 °C
- ▶ Industrial safety to IEC/EN/UL 60950-1
- ▶ Low coupling capacitance (13pF)
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current <2μA



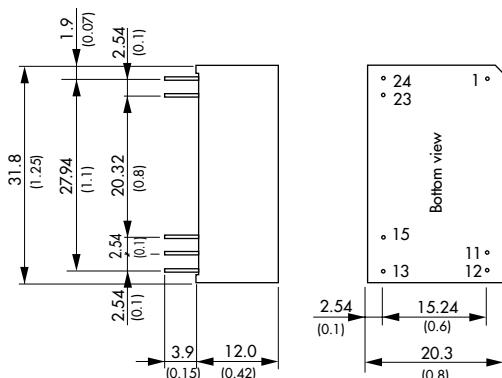
## Specifications

Line regulation	1.0 % max.
Load regulation	- Single output models: 1% max. - Dual output models: 2% max.
Ripple & noise (20 MHz BW)	<100 mVpk-pk for 5 VDC models <150 mVpk-pk for other models
Conducted EMI	EN 55022, class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	80% typ.
Operating temperature range	-40 °C to +71 °C above 60 °C derating 3%/K
I/O isolation voltage	4000 VACrms (60 sec.) reinforced insulation, rated for 300 VAC working voltage
I/O isolation test voltage	6000 Vpk (1sec)
I/O isolation capacitance	13 pF max.
Leakage current	2μA max. (at 240VAC / 60Hz)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, ES 60601-1, IEC/EN 60601-1, CB-report
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/thb6.pdf">www.tracopower.com/products/thb6.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THB 6-1211	9 - 18 VDC	5 VDC	1000 mA
THB 6-1212		12 VDC	500 mA
THB 6-1222		± 12 VDC	± 250 mA
THB 6-1223		± 15 VDC	± 200mA
THB 6-2411	18 - 36 VDC	5 VDC	1000 mA
THB 6-2412		12 VDC	500 mA
THB 6-2422		± 12 VDC	± 250 mA
THB 6-2423		± 15 VDC	± 200mA
THB 6-4811	36 - 75 VDC	5 VDC	1000 mA
THB 6-4812		12 VDC	500 mA
THB 6-4822		± 12 VDC	± 250 mA
THB 6-4823		± 15 VDC	± 200mA

## Dimensions



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)

() = Inches

# THM-6WI Series ▶ 6 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Extended operating temperature range -40 °C to +88 °C at full load !
- ▶ Low leakage current < 2µA
- ▶ Input filter to meet EN 55022, class A

**NEW Product**

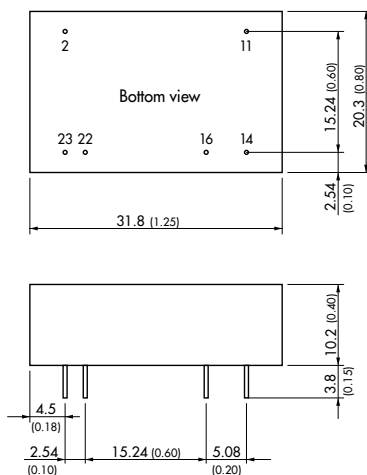


Specifications	
Line regulation	0.5% max.
Load regulation	- Single output models: 0.2% max. - Dual output models: 1% max.
Ripple & noise	3.3 & 5 VDC models: 30 mVpk-pk typ. (20MHz BW) 12 & 15 VDC models: 40 mVpk-pk typ. (20MHz BW) 24 VDC models: 50 mVpk-pk typ. (20MHz BW)
Conducted EMI	EN 55022, class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	86% typ.
Operating temperature range	-40 °C to +88 °C without derating
I/O isolation voltage	5000 VACrms (60 sec.) reinforced insulation, rated for 250VAC working voltage
I/O isolation test voltage	6000Vpk (1sec)
I/O isolation capacitance	17 pF max.
Leakage current	2µA max. (at 240VAC / 60Hz)
Safety standards / approvals	ANSI/AAMI ES 60601-1:2005/(R)2012, IEC/EN 60601-1 3rd edition, CB-report
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/thm6wi.pdf">www.tracopower.com/products/thm6wi.pdf</a>

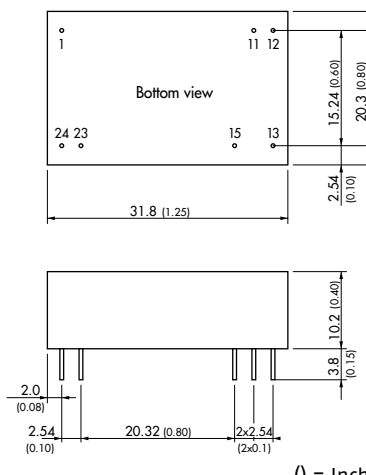
Models			
Order code	Input voltage	Output voltage	Output current max.
THM 6-0510WI		3.3 VDC	1800 mA
THM 6-0511WI		5 VDC	1200 mA
THM 6-0512WI		12 VDC	500 mA
THM 6-0513WI	4.5 - 9 VDC	15 VDC	400 mA
THM 6-0515WI		24 VDC	250 mA
THM 6-0521WI		± 5 VDC	± 600 mA
THM 6-0522WI		± 12 VDC	± 250 mA
THM 6-0523WI		± 15 VDC	± 200 mA
THM 6-2410WI		3.3 VDC	1800 mA
THM 6-2411WI		5 VDC	1200 mA
THM 6-2412WI		12 VDC	500 mA
THM 6-2413WI	9 - 36 VDC	15 VDC	400 mA
THM 6-2415WI		24 VDC	250 mA
THM 6-2421WI		± 5 VDC	± 600 mA
THM 6-2422WI		± 12 VDC	± 250 mA
THM 6-2423WI		± 15 VDC	± 200 mA
THM 6-4810WI		3.3 VDC	1800 mA
THM 6-4811WI		5 VDC	1200 mA
THM 6-4812WI		12 VDC	500 mA
THM 6-4813WI	18 - 75 VDC	15 VDC	400 mA
THM 6-4815WI		24 VDC	250 mA
THM 6-4821WI		± 5 VDC	± 600 mA
THM 6-4822WI		± 12 VDC	± 250 mA
THM 6-4823WI		± 15 VDC	± 200 mA

## Dimensions

### Standard pinning



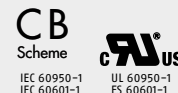
### Optional pinning: suffix -A1



Pin	Single output	Dual output
2	- Vin (GND)	- Vin (GND)
11	No con.	- Vout
14	+ Vout	+ Vout
16	- Vout	Common
22	+ Vin (Vcc)	+ Vin (Vcc)
23	+ Vin (Vcc)	+ Vin (Vcc)

( ) = Inches

# THB-10 Series ▶ 10 W



- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation voltage 4000 VACrms
- ▶ Reinforced insulation rated for working voltage 300 VAC
- ▶ Industrial and medical safety approvals
- ▶ Operating temperature range -40 °C to +75 °C
- ▶ Input filter to meet EN 55022, class A
- ▶ Low leakage current



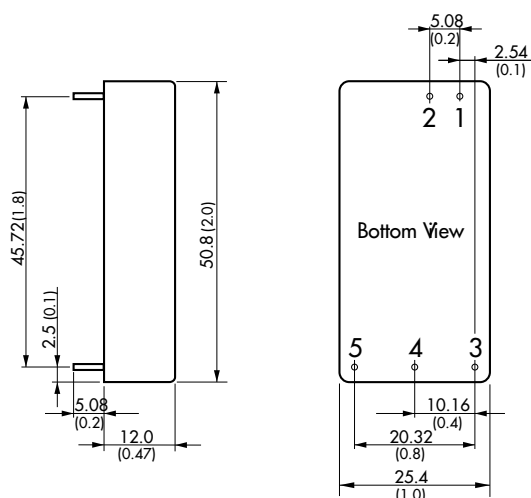
## Specifications

Line regulation	0.5% max.
Load regulation	1% max.
Ripple & noise (20 MHz BW)	<100 mVpk-pk for 5 VDC models <150 mVpk-pk for other models
Conducted EMI	EN 55022, class A (internal filter)
Short circuit protection	continuous, automatic recovery
Efficiency	80% typ.
Operating temperature range	-40 °C to +75 °C above 55 °C derating 2.5%/K
I/O isolation voltage	4000 VACrms (60 sec.) reinforced, rated for 300 VAC working voltage
I/O isolation test voltage	6000 Vpk (1sec)
I/O isolation capacitance	60 pF typ.
Leakage current	10µA max. (at 240VAC / 60Hz)
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, UL 60601-1, IEC/EN 60601-1, (reports pending)
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/thb10.pdf">www.tracopower.com/products/thb10.pdf</a>

## Models

Order code	Input voltage	Output voltage	Output current max.
THB 10-1211	9 – 18 VDC	5.1 VDC	1600 mA
THB 10-1212		12 VDC	835 mA
THB 10-1222	18 – 36 VDC	± 12 VDC	± 417 mA
THB 10-1223		± 15 VDC	± 333 mA
THB 10-2411	36 – 75 VDC	5.1 VDC	1600 mA
THB 10-2412		12 VDC	835 mA
THB 10-2422	75 – 150 VDC	± 12 VDC	± 417 mA
THB 10-2423		± 15 VDC	± 333 mA
THB 10-4811	150 – 300 VDC	5.1 VDC	1600 mA
THB 10-4812		12 VDC	835 mA
THB 10-4822	300 – 600 VDC	± 12 VDC	± 417 mA
THB 10-4823		± 15 VDC	± 333 mA

## Dimensions



( ) = Inches

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

# THM-10WI Series ▶ 10 W



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Extended operating temperature range -40 °C to +77 °C at full load !
- ▶ Low leakage current < 2µA
- ▶ Input filter to meet EN 55022, class A



**NEW Product**

Specifications		Models			
Line regulation	0.5% max.	<b>Order code</b>	<b>Input voltage</b>	<b>Output voltage</b>	<b>Output current max.</b>
Load regulation	- Single output models: 0.2% max. - Dual output models: 1% max.	THM 10-0510WI		3.3 VDC	2500 mA
Ripple & noise	3.3 & 5 VDC models: 30 mVpk-pk typ. (20MHz BW) 12 & 15 VDC models: 40 mVpk-pk typ. (20MHz BW) 24 VDC models: 50 mVpk-pk typ. (20MHz BW)	THM 10-0511WI		5 VDC	2000 mA
Conducted EMI	EN 55022, class A (internal filter)	THM 10-0512WI		12 VDC	830 mA
Short circuit protection	continuous, automatic recovery	THM 10-0513WI	4.5 - 9 VDC	15 VDC	670 mA
Efficiency	87% typ.	THM 10-0515WI		24 VDC	416 mA
Operating temperature range	-40 °C to +77 °C without derating above 77°C derating 3.6%/K	THM 10-0521WI		± 5 VDC	±1000 mA
I/O isolation voltage	5000 VACrms (60 sec.) reinforced insulation, rated for 250VAC working voltage	THM 10-0522WI		±12 VDC	± 416 mA
I/O isolation test voltage	6000Vpk (1sec)	THM 10-0523WI		±15 VDC	± 333 mA
I/O isolation capacitance	17 pF max.	THM 10-2410WI		3.3 VDC	2500 mA
Leakage current	2µA max. (at 240VAC / 60Hz)	THM 10-2411WI		5 VDC	2000 mA
Safety standards / approvals	ANSI/AAMI ES 60601-1:2005/(R)2012, IEC/EN 60601-1 3rd edition, CB-report	THM 10-2412WI		12 VDC	830 mA
Casing	plastic (UL 94V-0 rated)	THM 10-2413WI	9 - 36 VDC	15 VDC	670 mA
Full datasheet	<a href="http://www.tracopower.com/products/thm10wi.pdf">www.tracopower.com/products/thm10wi.pdf</a>	THM 10-2415WI		24 VDC	416 mA
		THM 10-2421WI		± 5 VDC	±1000 mA
		THM 10-2422WI		±12 VDC	± 416 mA
		THM 10-2423WI		±15 VDC	± 333 mA
		THM 10-4810WI		3.3 VDC	2500 mA
		THM 10-4811WI		5 VDC	2000 mA
		THM 10-4812WI		12 VDC	830 mA
		THM 10-4813WI	18 - 75 VDC	15 VDC	670 mA
		THM 10-4815WI		24 VDC	416 mA
		THM 10-4821WI		± 5 VDC	±1000 mA
		THM 10-4822WI		±12 VDC	± 416 mA
		THM 10-4823WI		±15 VDC	± 333 mA

Dimensions		Pin		
Standard pinning	Optional pinning: suffix -A1	Pin	Single output	Dual output
		2	- Vin (GND)	- Vin (GND)
		11	No con.	- Vout
		14	+ Vout	+ Vout
		16	- Vout	Common
		22	+ Vin (Vcc)	+ Vin (Vcc)
		23	+ Vin (Vcc)	+ Vin (Vcc)

( ) = Inches

# THV / PHV Series ▶ 2/5 W

- ▶ Ultra compact high voltage converter up to 2000 VDC
- ▶ Full SMD-design with ceramic capacitors for high reliability
- ▶ Very low electromagnetic interference
- ▶ Excellent output stability
- ▶ Low temperature drift
- ▶ Remote voltage programming
- ▶ Short circuit protection
- ▶ Positive or negative output models
- ▶ PCB-mount or flying lead version
- ▶ Shielded metal casing



Specifications	
Line regulation	0.03% for THV 0.01% for PHV
Load regulation	THV models: 0.08% PHV models: 0.1%
Output voltage adjustment	0...100% (by external resistor or reference voltage)
Ripple & noise	THV: < 30 mVpk-pk (20 MHz BW) PHV: <100 mVpk-pk (20 MHz BW)
Short circuit protection	continuous
Efficiency	65% typ.
Operating temperature range	THV models: -10 °C to +60 °C, above 50 °C derating 4%/K PHV models: -10 °C to +50 °C, above 40 °C derating 4%/K
Temperature coefficient	0.01%/K
Stability	0.05%/8 h drift
Remote On/Off	for THV 500-2,000 VDC and PHV models
Casing	metal
Full datasheet	<a href="http://www.tracopower.com/products/thv.pdf">www.tracopower.com/products/thv.pdf</a> <a href="http://www.tracopower.com/products/phv.pdf">www.tracopower.com/products/phv.pdf</a>

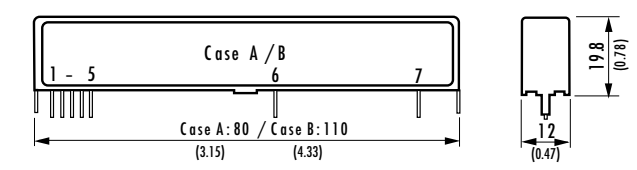
THV Models 2 Watt				
Order code *	Input voltage range	Output voltage	Output current max.	Case
THV 12-180P		0 - 180 VDC	15 mA	A
THV 12-300P	10.8 - 13.2 VDC	0 - 300 VDC	10 mA	A
THV 12-350P		0 - 350 VDC	7 mA	A
THV 12-500P		0 - 500 VDC	6 mA	B
THV 12-1000P		0 - 1000 VDC	2 mA	B
THV 12-1500P	10.8 - 16.5 VDC	0 - 1500 VDC	1.3 mA	B
THV 12-2000P		0 - 2000 VDC	1 mA	B

\* replace suffix P by suffix N for negative output

PHV Models 5 Watt				
Order code *	Input voltage range	Output voltage	Output current max.	Case
PHV 12-350 S 10P		0 - 350 VDC	10 mA	C
PHV 12-0.5 K 1000P	10.8 - 16.5 VDC	0 - 500 VDC	10 mA	C
PHV 12-1.0 K 5000P		0 - 1000 VDC	5 mA	C
PHV 12-2.0 K 2500P		0 - 2000 VDC	2.5 mA	C

\* replace suffix P by suffix N for negative output

## Dimensions



Models with flying lead connection available on request

Pin	Case A	Case B	Case C
1	+ Vin (Vcc)	+ Vin (VCC)	+ Vin (Vcc)
2	- Vin (GND)	- Vin (GND)	- Vin (GND)
3	Vadj.	Vadj.	Vadj.
4	Vref.	Vref.	Vref.
5	No pin	Remote On/Off	Remote On/Off
6	- Vout	- Vout	- Vout
7	+ Vout	+ Vout	+ Vout

() = Inches



# TCL-DC Series ▶ 24 to 60 W



- ▶ Slim plastic case
- ▶ For industrial-, office- and residential environments
- ▶ Available with detachable screw terminals or spring clamps
- ▶ Standard models with 5, 12 and 24VDC output
- ▶ Models with: 9.5–18 VDC and 18–75 VDC output
- ▶ Worldwide safety approval package
- ▶ Adjustable output voltage
- ▶ Power Good signal
- ▶ Parallel and redundant operation



Specifications		Models			
Output regulation	1.25 % max.	<b>Order code</b>	<b>Output power max.</b>	<b>Output voltage (adjustable output)</b>	<b>Output current max.</b>
Ripple & noise	<50 mVpk-pk (20 MHz BW)	TCL 012-124DC	9.5 – 18 VDC	24 VDC	1.0 A
EMI emission	EN 55011, class B, EN 55022, class B, EN61000-6-3	TCL 024-105DC		5 VDC	5.0 A
EMC immunity	EN 61000-6-2 (industrial environment)	TCL 024-112DC	18 – 75 VDC	12 VDC	2.0 A
Output current limitation	at 130 % of Iout max.	TCL 024-124DC		24 VDC	1.0 A
Over voltage protection	at 140 % of Vout nom.	TCL 060-112DC	18 – 75 VDC	12 VDC	5.0 A
Efficiency	90 % typ.	TCL 060-124DC		24 VDC	2.5 A
DC-OK Signal	open collector / max. 30 mA	without suffix: detachable screw terminal block with suffix C: spring clamps			
Operating temperature	-25 °C to +70 °C above 50 °C derating 1.5%/K	Redundancy Module			
Safety standards / approvals	cUL/UL 60950-1, UL 508C listed, IEC/EN 60950-1, CB-Report EN 50178, EN 60204	<b>Order code</b>	<b>2 Inputs</b>	<b>Output voltage</b>	<b>Output current max.</b>
Connection	detachable screw terminals or spring clamp terminals	TCL-REM240	5 – 60 VDC 144 W max./input	Vin – 0.9 VDC	8.0 A
Casing	plastic (UL 94V-0 rated)				
Mounting	snap-on mounting on 35 mm DIN-rail or chassis mounting with mounting bracket (included)				
Options	output current characteristics set for battery charging applications				
Full datasheet	<a href="http://www.tracopower.com/products/tcl-dc.pdf">www.tracopower.com/products/tcl-dc.pdf</a>				

Dimensions		Type			
		<b>Width w</b>	<b>Height h</b>	<b>Depth d</b>	
		TCL 012	27 (1.06)	75 (2.95)	100 (3.94)
		TCL 024 & REM	27 (1.06)	75 (2.95)	100 (3.94)
		TCL 060	45 (1.77)	75 (2.95)	100 (3.94)

() = Inches



# TZL Series ▶ 60 to 300 W

- ▶ Compact metal casing with screw terminal block
- ▶ Wide 2:1 input voltage range
- ▶ I/O isolation 1500VDC
- ▶ Input reverse polarity protection
- ▶ Soft start, low inrush current
- ▶ Overload and short circuit protection
- ▶ Adjustable output voltage
- ▶ Cost optimized design



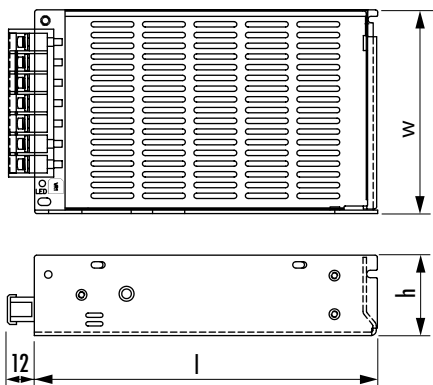
## Specifications

Line regulation	1.0% max.
Load regulation	1.0% max.
Output voltage adjustment	±10% (by internal potentiometer)
Ripple & noise	12VDC output models: <100 mVpk-pk (20 MHz BW) 24VDC output models: <150 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022 class EN55022 class B
EMC immunity	EN 61000-6-1 (light industry)
Short circuit protection	foldback, automatic recovery
Efficiency	80% typ.
Operating temperature range	-10 °C to +60 °C above 50 °C derating 2.5%/K
I/O isolation voltage	1500VDC (60 sec.)
Safety standards	IEC/EN 60950-1 (no report)
Casing	aluminium / steel
Full datasheet	<a href="http://www.tracopower.com/products/tzl.pdf">www.tracopower.com/products/tzl.pdf</a>

## Models

Order code	Input voltage range	Output voltage	Output current max.
TZL 060-2412	18-36 VDC	12 VDC	5.0 A
TZL 060-2424		24 VDC	2.5 A
TZL 060-4812	36-72 VDC	12 VDC	5.0 A
TZL 060-4824		24 VDC	2.5 A
TZL 100-2412	19-36 VDC	12 VDC	8.5 A
TZL 100-2424		24 VDC	4.2 A
TZL 100-4812	36-72 VDC	12 VDC	8.5 A
TZL 100-4824		24 VDC	4.2 A
TZL 150-2412	19-32 VDC	12 VDC	12.5 A
TZL 150-2424		24 VDC	6.3 A
TZL 150-4812	36-72 VDC	12 VDC	12.5 A
TZL 150-4824		24 VDC	6.3 A
TZL 300-4812	36-72 VDC	12 VDC	26.7 A
TZL 300-4824		24 VDC	13.4 A

## Dimensions



Type	Length l	Width w	Height h
TZL 060	159 (6.26)	95 (3.74)	38 (1.50)
TZL 100	198 (7.80)	95 (3.74)	38 (1.50)
TZL 150	198 (7.80)	99 (3.90)	50 (1.97)
TZL 300	212 (8.35)	115 (4.53)	50 (1.97)

() = Inch

# TSC Series ▶ 150 to 5000 W

- ▶ Modular system for individual power solution
- ▶ Robust mechanical design for industrial applications
- ▶ Input voltages from 10 to 800 VDC
- ▶ Input under voltage lockout
- ▶ Standard models with output voltages up to 400 VDC
- ▶ Also AC input 115/230 VAC or 400/480 VAC 3P available
- ▶ EMI complies with EN 55022, class A
- ▶ Available with many options

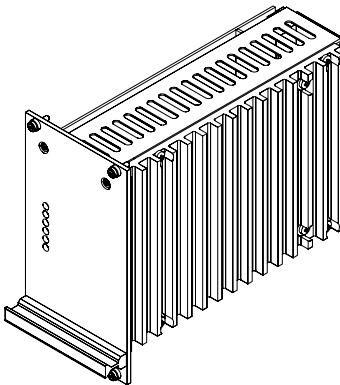


## Specifications

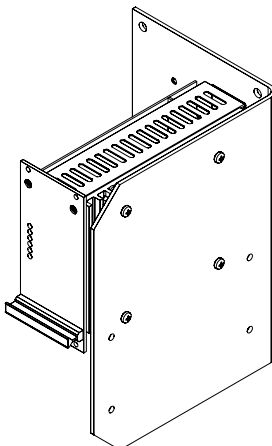
Line regulation	0.1% max.
Load regulation	0.2% max.
Ripple & noise	<1% Vout + 30 mVpk-pk (20 MHz BW)
Conducted EMI	EN 55022, Class A
Short circuit protection	continuous, automatic recovery
Overvoltage protection	105 % of Vout (factory adjustable)
Efficiency	85% typ.
Operating temperature range	-20 °C to +75 °C
I/O isolation voltage	2100VDC (Vin < 60 VDC) 3500VDC (Vin > 60 VDC & VAC input models)
Safety standards	IEC/EN 60950-1 (no report)
Full datasheet	<a href="http://www.tracopower.com/products/tsc.pdf">www.tracopower.com/products/tsc.pdf</a>

## 4 Package styles available

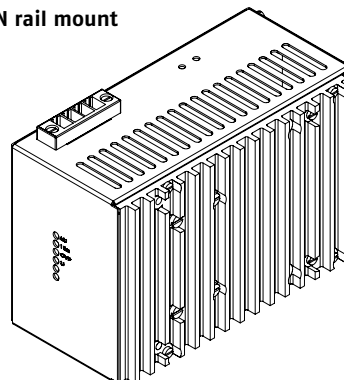
Rack mount



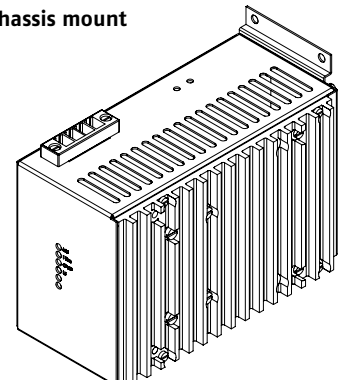
Wall mount



DIN rail mount



Chassis mount



For higher power modules DIN rail mount and chassis mount might not be suitable because of static reasons (weight)

## Models

Input voltage range	Output power	Output voltage range
10 – 16 VDC	Models with 150W – 5000W available	4.5 – 5.5 VDC
18 – 36 VDC		8 – 10 VDC
36 – 75 VDC		11 – 13 VDC
80 – 160 VDC		14 – 16 VDC
160 – 320 VDC		23 – 26 VDC
320 – 640 VDC		26 – 30 VDC
450 – 800 VDC		45 – 55 VDC
		58 – 68 VDC
		100 – 130 VDC
		200 – 250 VDC
		380 – 400 VDC

Other input and output voltages on demand

### Options (examples):

- ▶ Inrush current limiting
- ▶ Input voltage: 115/230 VAC, single phase or 200/400/480 VAC, three phase
- ▶ Input polarity protection
- ▶ Output decoupling diode for redundant / parallel operation
- ▶ Active current sharing for parallel operation
- ▶ Remote On/Off (inhibit)
- ▶ Output programmable via analogue signal
- ▶ Monitoring of input and output voltage
- ▶ RS232 or IEEE488 interface
- ▶ Increased mechanical strength
- ▶ Tropical protection

for model selection visit TRACOPOWER website

# TSC 19" Series ▶ 5 to 22 kW

- ▶ Modular system for individual power solution
- ▶ Robust mechanical design for industrial applications
- ▶ Input voltages from 20 to 800VDC
- ▶ Standard models with output voltages up to 800VDC
- ▶ Also AC input 115/230 VAC or 400/480 VAC 3P available
- ▶ EMI complies with EN 55022, Class A
- ▶ Available with many options



Specifications	
Line regulation	0.1% max.
Load regulation	0.2% max.
Ripple & noise	0.5% Vrms
Conducted EMI	EN 55022-A
Noise Immunity	EN 50082
Short circuit protection	continuous, automatic recovery
Overvoltage protection	105% of Vout
Efficiency	90% typ.
Operating temperature range	-10 °C to +50 °C
I/O isolation voltage	2100VDC (Vin < 60VDC) 3500VDC (Vin > 60VDC & VAC input models)
Safety standards	IEC/EN 60950-1
Full datasheet	<a href="http://www.tracopower.com/products/tsc.pdf">www.tracopower.com/products/tsc.pdf</a>

Models			
Input voltage range	Output power	Output voltage range	
<b>40 – 64 VDC</b> <b>50 – 80 VDC</b> <b>80 – 160 VDC</b> <b>160 – 320 VDC</b> <b>320 – 640 VDC</b> <b>450 – 800 VDC</b>	Models with 5 kW – 22 kW available	4.5 – 5.5	VDC
		8 – 10	VDC
		11 – 13	VDC
		14 – 16	VDC
		23 – 26	VDC
		26 – 30	VDC
		45 – 55	VDC
		58 – 68	VDC
		100 – 130	VDC
		200 – 250	VDC
Other input and output voltages on demand		380 – 400	VDC
		570 – 600	VDC
		760 – 800	VDC
Options (examples):			
▶ Input voltage: 115/230 VAC, single phase or 200/400/480 VAC, three phase			
▶ Input polarity protection			
▶ Output decoupling diode for redundant / parallel operation			
▶ Active current sharing for parallel operation			
▶ Remote On/Off (inhibit)			
▶ Output programmable via analogue signal			
▶ Monitoring of input and output voltage			
▶ RS232 or IEEE488 interface			
▶ Wall mounting			
▶ Increased mechanical strength			
▶ Automatic/manual setting of output characteristic			
▶ Temperature compensated battery charging voltage			
▶ Digital Volt- and Ampere meter			
▶ Tropical protection			

for model selection visit TRACOPOWER website

Dimensions			
Power [kW]	Width [mm]	Depth [mm]	Height [mm]
5/7.5/10	19"	600	178 (4U)
6/8/12	19"	360/460*	267/400 (6/9U)
22	19"	600	356 (8U)

\* depending on output current

# TSD Series ▶ 200 VA to 30 kVA

- ▶ True sine wave output (40–400 Hz)
- ▶ 19" subracks or plug-in modules for 19" subrack
- ▶ Single phase or 3-phase output
- ▶ DC input 10 – 800 VDC
- ▶ AC input (for frequency conversion)
- ▶ Isolation between input and output
- ▶ Compact and robust design for industrial environment
- ▶ Low standby power consumption



Specifications	Models																																							
Line regulation	0.1% to 2% depending on model																																							
Load regulation	1% typ.																																							
Harmonic distortion	3% typ.																																							
EMC suppression	EN 55022, Class A																																							
EMC immunity	according to EN 61000-6-2																																							
Output current limitation at 105% of I <sub>out</sub> max. (steady state)																																								
Short circuit current	electronically limited to 3x I <sub>out</sub> max.																																							
Surge power	2 x P <sub>nom.</sub> for 1 sec.																																							
Efficiency	75–94%																																							
No-load input power	20 Watt typ.																																							
Operating temperature	–20 °C to +75 °C above 55 °C derating 2.5%/K																																							
I/O isolation voltage	3000VDC																																							
Safety standards	IEC/EN60950-1																																							
Full datasheet	<a href="http://www.tracopower.com/products/tsd.pdf">www.tracopower.com/products/tsd.pdf</a>																																							
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #f2f2f2;">Input voltage range</th> <th style="background-color: #f2f2f2;">Output power</th> <th style="background-color: #f2f2f2;">Output voltage</th> </tr> </thead> <tbody> <tr> <td>10 – 16 VDC 20 – 32 VDC 40 – 64 VDC 50 – 80 VDC 80 – 160 VDC 160 – 320 VDC 340 – 400 VDC 340 – 640 VDC 450 – 800 VDC</td> <td style="text-align: center;"><b>Inverte</b> models with 200 VA – 30 kVA</td> <td>Single-phase 115/230 VAC Three-phase 200/400/480 VAC</td> </tr> <tr> <td colspan="3" style="text-align: center;">Other input and output voltages on demand</td> </tr> <tr> <td>Single-phase 115/230 VAC Three-phase 200/400/480 VAC</td> <td style="text-align: center;"><b>Frequency converter</b> models with 600 VA – 36 kVA</td> <td>Single-phase 115/230 VAC Three-phase 200/400/480 VAC</td> </tr> </tbody> </table> <p><b>Options (examples):</b></p> <ul style="list-style-type: none"> <li>▶ Inrush current limiting</li> <li>▶ Input polarity protection</li> <li>▶ Remote On/Off (inhibit)</li> <li>▶ Output programmable via analog signal</li> <li>▶ Monitoring of input and output voltage</li> <li>▶ RS232 or IEEE488 interface</li> <li>▶ Wall mounting</li> <li>▶ Increased mechanical strength</li> <li>▶ Tropical protection</li> <li>▶ Static Switch for uninterruptible power supply</li> </ul>	Input voltage range	Output power	Output voltage	10 – 16 VDC 20 – 32 VDC 40 – 64 VDC 50 – 80 VDC 80 – 160 VDC 160 – 320 VDC 340 – 400 VDC 340 – 640 VDC 450 – 800 VDC	<b>Inverte</b> models with 200 VA – 30 kVA	Single-phase 115/230 VAC Three-phase 200/400/480 VAC	Other input and output voltages on demand			Single-phase 115/230 VAC Three-phase 200/400/480 VAC	<b>Frequency converter</b> models with 600 VA – 36 kVA	Single-phase 115/230 VAC Three-phase 200/400/480 VAC																											
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# TOP-60 Series ▶ 60 W



- ▶ 4.0" x 2.0" footprint
- ▶ Supplies 60 W with convection cooling
- ▶ Single-, dual- and triple output models
- ▶ Compliance with EN 61000-3-2

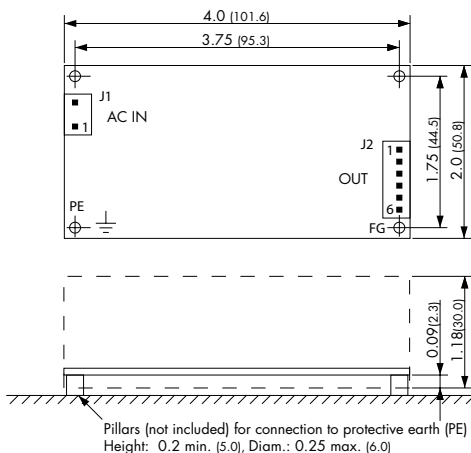


Specifications	
Input voltage range	90–264 VAC, 47–63 Hz
Line regulation	1.0% max.
Load regulation	2.0% max. for single output models 3.0% max. for multi output models
Ripple & noise (20 MHz BW)	<100 mVpk-pk for 3.3 and 5 VDC models <120 mVpk-pk for other models
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN 61000-6-1
Output current limitation	>110% of Iout max.
Efficiency	85% typ.
Oversvoltage protection	>110% of Vout nom.
Operating temperature	-10 °C to +70 °C (convection cooling) derating 2.0%/K above 50 °C,
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report
Degree of protection	class I
Full datasheet	<a href="http://www.tracopower.com/products/top60.pdf">www.tracopower.com/products/top60.pdf</a>

Models			
Order code	Output power max.	Output 1	Output 2/3
TOP 60105	55 W	5.0 VDC / 11.0 A	
TOP 60112	60 W	12 VDC / 5.0 A	
TOP 60115	64 W	15 VDC / 4.3 A	
TOP 60124	64 W	24 VDC / 2.7 A	
TOP 60148	64 W	48 VDC / 1.35 A	
TOP 60252	55 W	+5.0 VDC / 6.0 A <sup>1)</sup>	+12 VDC / 3.0 A
TOP 60254	55 W	+5.0 VDC / 6.0 A <sup>1)</sup>	+24 VDC / 1.5 A
TOP 60522	55 W	+5.0 VDC / 6.0 A <sup>1)</sup>	+12 VDC / 3.0 A -12 VDC / 0.5 A
TOP 60533	55 W	+5.0 VDC / 6.0 A <sup>1)</sup>	+15 VDC / 2.4 A -15 VDC / 0.5 A
TOP 60316	38 W	+3.3 VDC / 6.0 A <sup>1)</sup>	+5.2 VDC / 3.0 A +12 VDC / 0.5 A
TOP 60317	38 W	+5.0 VDC / 6.0 A <sup>1)</sup>	+3.3 VDC / 1.5 A +12 VDC / 0.5 A
TOP 60318	55 W	+5.0 VDC / 6.0 A <sup>1)</sup>	+24 VDC / 1.5 A -12 VDC / 0.5 A

1) 8.0 A peak current for max. 10 sec. or with forced air cooling  
Total power of multi output models not to exceed nominal power

## Dimensions



Pillars (not included) for connection to protective earth (PE)  
Height: 0.2 min. (5.0), Diam.: 0.25 max. (6.0)  
To comply with EN 55022 class B:  
Field ground (FG) and protective earth (PE)  
are to be connected to chassis

( ) = mm

# TOP-100 Series ▶ 100 W



- ▶ Low profile 2.0" x 4.0" footprint
- ▶ Full load operation up to +50°C with convection cooling
- ▶ High efficiency of 90% typ.
- ▶ Operating temperature range -25 °C to +70 °C
- ▶ Compliance with EN 61000-3-2
- ▶ Safety class I and class II
- ▶ Optional case version



## Specifications

Input voltage range	90-132 VAC / 187-264 VAC (autorange) 47-63 Hz
Line regulation	0.5% max.
Load regulation	1.0% max.
Output voltage adjustment	approx. +5 % of Vout nom. by internal potentiometer
Ripple & noise (20 MHz BW)	<100 mVpk-pk <200 mVpk-pk for 48 V models
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN61000-6-1
Output current limitation	>125% Inom. foldback, automatic recovery
Efficiency	90% typ.
Operating temperature	-25 °C to +70 °C (convection cooling) derating 2.0%/K above 50 °C, for 3.3 & 5.0 VDC models: 2.0%/K above 40 °C
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Degree of protection	class I, class II prepared with second fuse
Full datasheet	<a href="http://www.tracopower.com/products/top100.pdf">www.tracopower.com/products/top100.pdf</a>

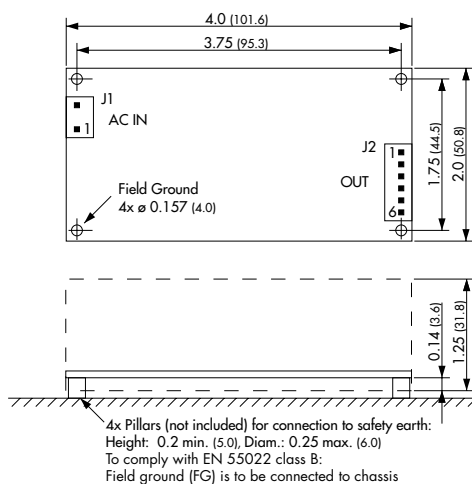
## Models open frame

Order code	Output power max.	Output voltage	Output current max.
TOP 100-105		5 VDC	20 A
TOP 100-112		12 VDC	8.3 A
TOP 100-115	100 W	15 VDC	6.7 A
TOP 100-124		24 VDC	4.2 A
TOP 100-148		48 VDC	2.1 A

## Models chassis cover

Order code	Output power max.	Output voltage	Output current max.
TOP 100-105C		5 VDC	20 A
TOP 100-112C		12 VDC	8.3 A
TOP 100-115C	100 W	15 VDC	6.7 A
TOP 100-124C		24 VDC	4.2 A
TOP 100-148C		48 VDC	2.1 A

## Dimensions



() = mm

# TPI-100 Series ▶ 100 W



- ▶ Highest power density open frame 100 W power supply in 2" x 3" package
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared
- ▶ Operating up to 5000 m altitude
- ▶ Optional case version

**NEW**  
Product



## Specifications

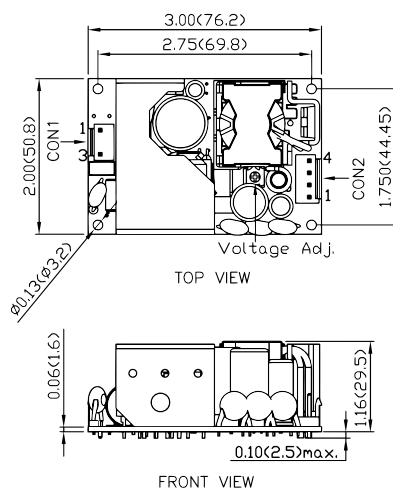
Input voltage range	universal input 85-264VAC
Line regulation	0.2% max.
Load regulation	0.5% max.
Output voltage adjustment	approx. +5 % of Vout nom. by internal potentiometer
Ripple & noise (20 MHz BW)	120 – 340 mVpk-pk depending on model with external capacitor
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN61000-6-2
Output current limitation	>125% Inom. foldback, automatic recovery
Efficiency	91% typ.
Operating temperature	-40 °C to +80 °C (convection cooling) derating 2.0%/K above 50 °C
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Degree of protection	class II prepared
Full datasheet	<a href="http://www.tracopower.com/products/tpi100.pdf">www.tracopower.com/products/tpi100.pdf</a>

## Models

Order code	Output power max.	Output voltage	Output current max.
TPI 100-112A-J		12 VDC	8.34 A
TPI 100-115A-J		15 VDC	6.67 A
TPI 100-124A-J	100 W	24 VDC	4.17 A
TPI 100-136A-J		36 VDC	2.78 A
TPI 100-148A-J		48 VDC	2.09 A

on demand: case version

## Dimensions



( ) = mm



# TPI-150 Series ▶ 150 W



- ▶ Highest power density open frame  
150 W power supply in 2" x 4" package
- ▶ EN 55022 without ground plane
- ▶ Ready to meet ErP directive,  
< 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92%  
across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared
- ▶ Operating up to 5000 m altitude

**NEW  
Product**

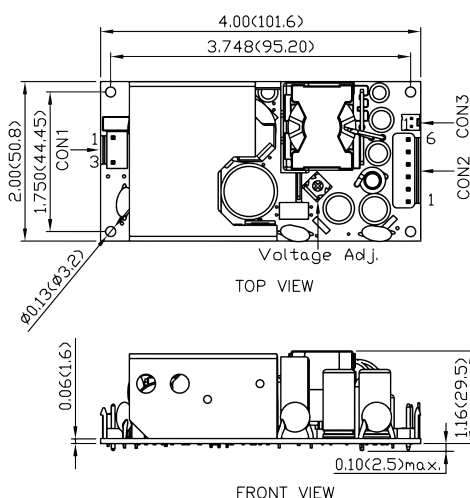


Input voltage range	universal input 85-264VAC
Line regulation	0.2% max.
Load regulation	0.5% max.
Output voltage adjustment	approx. +5 % of Vout nom. by internal potentiometer
Ripple & noise (20 MHz BW)	120 – 250 mVpk-pk depending on model with external capacitor
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN61000-6-2
Output current limitation	>125% Inom. foldback, automatic recovery
Efficiency	91% typ.
Operating temperature	-40 °C to +80 °C (convection cooling) derating 2.0%/K above 50 °C
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Degree of protection	class II prepared
Full datasheet	<a href="http://www.tracopower.com/products/tpi150.pdf">www.tracopower.com/products/tpi150.pdf</a>

Order code	Output power max.*	Output voltage	Output current max.
TPI 150-112A-J		12 VDC	12.5 A
TPI 150-115A-J		15 VDC	10.0 A
TPI 150-124A-J	150 W	24 VDC	6.25 A
TPI 150-136A-J		36 VDC	4.17 A
TPI 150-148A-J		48 VDC	3.13 A

\* for 100-150 W operation forced air cooling with 10 CFM is required

## Dimensions



() = mm



# TOP-200 Series ▶ 200 W



- ▶ High power density in 3.0" x 5.0" footprint
- ▶ Supplies 200 W (without fan!)
- ▶ Highest efficiency of 90% typ.
- ▶ Operating temperature range -25 °C to +70 °C
- ▶ Universal input 85–264 VAC
- ▶ Compliance with EN 61000-3-2
- ▶ Protection class I and class II
- ▶ Optional case version



## Specifications

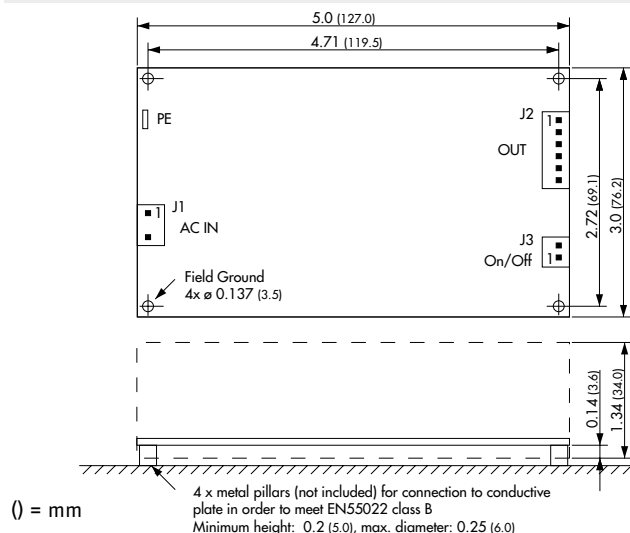
Input voltage range	85–264 VAC, 47–63 Hz
Line regulation	0.5% max.
Load regulation	1.0% max.
Ripple & noise (20 MHz BW)	<120 mVpk-pk for other models <150 mVpk-pk for 48 VDC models
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN 61000-6-1
Output current limitation	>110% of Iout max.
Efficiency	90% typ.
Overvoltage protection	>130% of Vout nom.
Operating temperature	-25 °C to +70 °C (convection cooling) derating 2.0%/K above 40°C for 12 & 15 VDC models derating 2.0%/K above 50°C for 24 & 48 VDC models
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Degree of protection	class I, class II prepared
Full datasheet	<a href="http://www.tracopower.com/products/top200.pdf">www.tracopower.com/products/top200.pdf</a>

## Models

Order code	Output power max.	Output voltage	Output current max.
TOP 200-112(C)	200 W	12 VDC	16 A
TOP 200-115(C)		15 VDC	13 A
TOP 200-124(C)		24 VDC	8.3 A
TOP 200-148(C)		48 VDC	4.2 A

\* with suffix C: case version

## Dimensions



# TMSB-2 Series ▶ 2 W



- ▶ Standby power module to comply with ErP directive; no load input power < 30mW
- ▶ EN 60335 household appliance
- ▶ Constant power characteristics at 2W (no current limitation)
- ▶ Suitable to drive relays, solenoids, capacitive loads and LED's
- ▶ Constant voltage auxiliary outputs 3.3 and 5 VDC
- ▶ Operating temperature range -30°C to +70°C
- ▶ EMI meets EN 55022, class B

**NEW Product**



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz
Line regulation	Output 1: 1.0 % Output 2: 0.3%
Load regulation	Output 1: 1.0 % Output 2: 0.5%
Ripple & noise (20 MHz BW)	Output 1: 1 % of Vout [Vp-p] typ. Output 2: 0.1 % of Vout [Vp-p] typ.
EMI emission	EN 55022 class B
EMC immunity	EN 61000-6-1
Efficiency	72 % typ.
Operating temperature	-30 °C to +70 °C (convection cooling) derating 2.0%/K above 60 °C
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 60335, CB-report
Full datasheet	<a href="http://www.tracopower.com/products/tmsb2.pdf">www.tracopower.com/products/tmsb2.pdf</a>

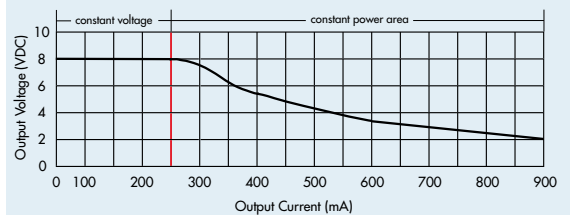
## Models

Order code	Output power max.	Output 1	Output 2
TMSB 2-108		8 VDC / 250 mA	---
TMSB 2-114		14 VDC / 143 mA	---
TMSB 2-124		24 VDC / 83 mA	---
TMSB 2-283	2 W	8 VDC / 250 mA <sup>1)</sup>	3.3 VDC / 160 mA <sup>1)</sup>
TMSB 2-285		8 VDC / 250 mA <sup>1)</sup>	5.0 VDC / 250 mA <sup>1)</sup>
TMSB 2-2143		14 VDC / 143 mA <sup>2)</sup>	3.3 VDC / 70 mA <sup>2)</sup>
TMSB 2-2145		14 VDC / 143 mA <sup>2)</sup>	5.0 VDC / 83 mA <sup>2)</sup>

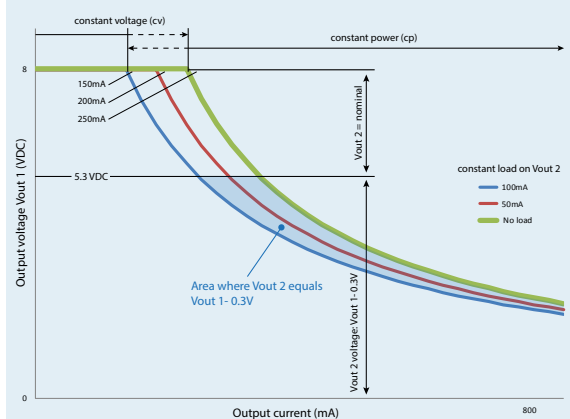
<sup>1)</sup> Total output current must not exceed 250 mA

<sup>2)</sup> Total output current must not exceed 143 mA

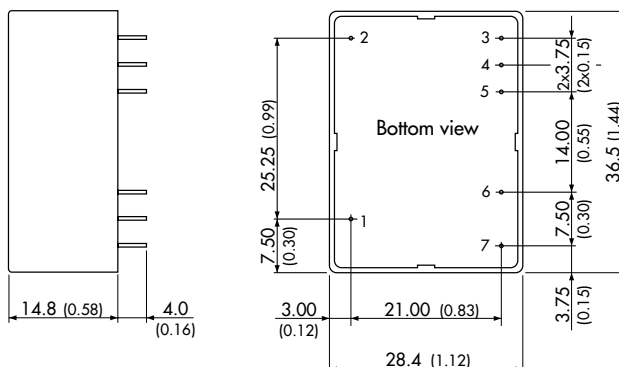
### Output characteristics (single output)



### Output characteristics (dual output)



## Dimensions



() = Inches

Pin	Single output	Dual output
1	No con.	No con.
2	No con.	No con.
3	+ Vout	+ Vout 1
4	- Vout	Common
5	No pin	+ Vout 2
6	AC(N)	AC(N)
7	AC(L)	AC(L)

# TMPS-03 Series ▶ 3 W



UL 60950-1

- ▶ Compact 1" x 1" package
- ▶ EN 60335 household appliance
- ▶ Standby power module to comply with ErP directive; no load input power < 300mW
- ▶ Operating temperature range -25°C to +70°C
- ▶ EMI meets EN 55022, class B
- ▶ Short circuit and overload protection
- ▶ Peak current +30%
- ▶ Protection class II prepared

**NEW**  
Product



## Specifications

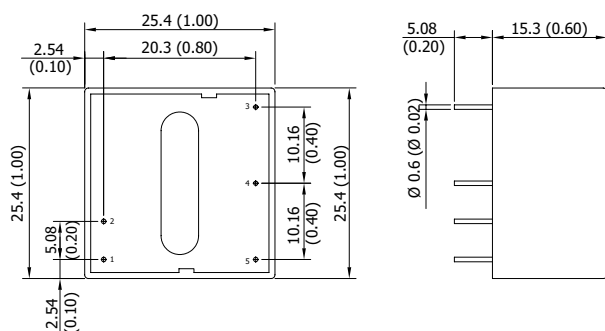
Input voltage range	85–264 VAC, 47–63 Hz
Line regulation	1.0% max.
Load regulation	1.0% max.
Ripple & noise (20 MHz BW)	1% of Vout nom.
EMI emission	EN 55022 class B
EMC immunity	EN 61000-6-1
Efficiency	75% typ.
Operating temperature	-25 °C to +70 °C (convection cooling) derating 5.0%/K above 60°C
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 60335
Full datasheet	<a href="http://www.tracopower.com/products/tmps03.pdf">www.tracopower.com/products/tmps03.pdf</a>

## Models

Order code	Out. power max.	Out. voltage	Nom. current	Output current max.*
TMPS 03-103		3.3 VDC	900 mA	1170 mA
TMPS 03-105		5.0 VDC	600 mA	780 mA
TMPS 03-109	3 W	9.0 VDC	333 mA	430 mA
TMPS 03-112		12 VDC	250 mA	320 mA
TMPS 03-115		15 VDC	200 mA	260 mA
TMPS 03-124		24 VDC	125 mA	160 mA

\* < 30s with maximum duty cycle of 10%  
average output power must not exceed 3W

## Dimensions



() = Inches

## Pin

1	AC(N)
2	AC(L)
3	No con.
4	- Vout
5	+ Vout

# TMPS-05 Series ▶ 5 W



- ▶ Compact 1" x 1" package
- ▶ EN 60335 household appliance
- ▶ Standby power module to comply with ErP directive; no load input power < 300mW
- ▶ Operating temperature range -25°C to +70°C
- ▶ EMI meets EN 55022, class B
- ▶ Short circuit and overload protection
- ▶ Peak current +30%
- ▶ Protection class II prepared



**NEW**  
Product

## Specifications

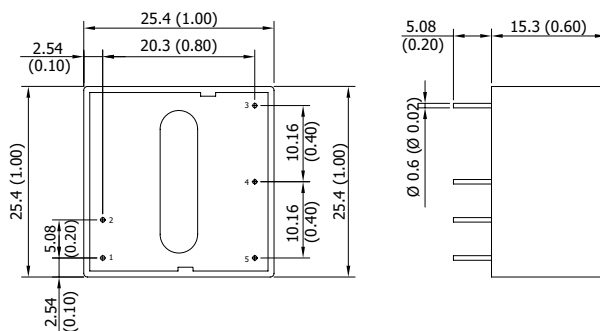
Input voltage range	85–264 VAC, 47–63 Hz
Line regulation	1.0% max.
Load regulation	1.0% max.
Ripple & noise (20 MHz BW)	1% of Vout nom.
EMI emission	EN 55022 class B
EMC immunity	EN 61000-6-1
Efficiency	81% typ.
Operating temperature	-25 °C to +70 °C (convection cooling) derating 2.5%/K above 50° C
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, EN 60335
Full datasheet	<a href="http://www.tracopower.com/products/tmps05.pdf">www.tracopower.com/products/tmps05.pdf</a>

## Models

Order code	Out. power max.	Out. voltage	Nom. current	Output current max.*
TMPS 05-103		3.3 VDC	1515 mA	1970 mA
TMPS 05-105		5.0 VDC	1000 mA	1300 mA
TMPS 05-109		9.0 VDC	555 mA	721 mA
TMPS 05-112	5 W	12 VDC	416 mA	540 mA
TMPS 05-115		15 VDC	333 mA	433 mA
TMPS 05-124		24 VDC	208 mA	270 mA
TMPS 05-148		48 VDC	104 mA	135 mA

\* < 30s with maximum duty cycle of 10%  
average output power must not exceed 5W

## Dimensions



() = Inches

## Pin

1	AC(N)
2	AC(L)
3	No con.
4	- Vout
5	+ Vout

# TMS Series ▶ 6 to 25 W



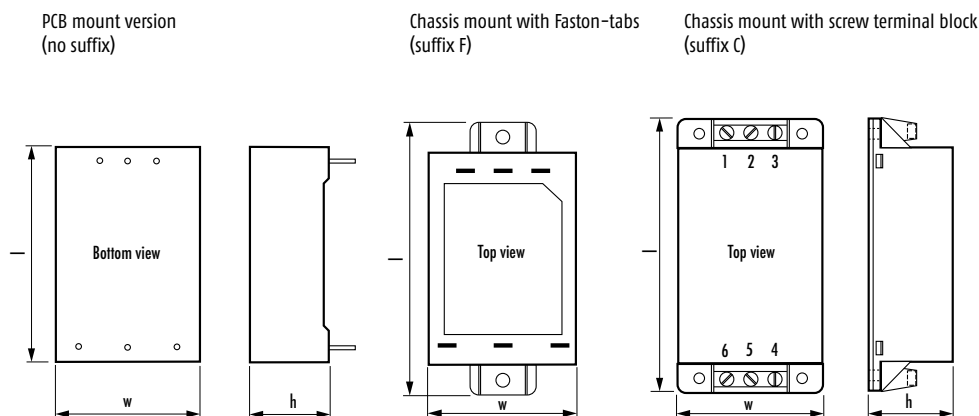
- ▶ Miniature encapsulated power supplies
- ▶ 3 package styles available:
  - for PCB mount with solder pins
  - for chassis mount with FASTON-tabs
  - for chassis mount with screw terminal block
- ▶ Universal input 85–264 VAC
- ▶ EMI meets 55022, class B
- ▶ Short circuit protection



Specifications		Models			
Input voltage range	85–264 VAC, 47–63 Hz 110–375 VDC	Order code*	Output power	Output 1	Output 2
Line regulation	0.4% max.	TMS 06105		5 VDC / 1200 mA	
Load regulation	1.0% max. for single output models 2.0% max. for dual output models	TMS 06112		12 VDC / 500 mA	
Ripple & noise	<100 mVpk-pk (20 MHz BW)	TMS 06115	6 W	15 VDC / 400 mA	
EMI suppression	EN 55011 class B, EN 55022 class EN55022 class B	TMS 06124		24 VDC / 250 mA	
EMC immunity	EN61000-6-1	TMS 06212		+12 VDC / 250 mA	-12 VDC / 250 mA
Output current limitation	>130% Iout max., foldback, automatic recovery	TMS 06215		+15 VDC / 200 mA	-15 VDC / 200 mA
Efficiency	78% typ.	TMS 10105		5 VDC / 2000 mA	
Operating temperature	-25 °C to +60 °C above 50 °C derating 5%/K 5 Vout models: above 40 °C derating 2.5%/K	TMS 10112		12 VDC / 900 mA	
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1 CB-report	TMS 10115	10 W	15 VDC / 700 mA	
Degree of protection	safety class I	TMS 10124		24 VDC / 450 mA	
Casing	plastic (UL 94V-0 rated)	TMS 10212		+12 VDC / 450 mA	-12 VDC / 450 mA
Full datasheet	<a href="http://www.tracopower.com/products/tms.pdf">www.tracopower.com/products/tms.pdf</a>	TMS 10215		+15 VDC / 350 mA	-15 VDC / 350 mA
		TMS 15105		5 VDC / 3000 mA	
		TMS 15112		12 VDC / 1300 mA	
		TMS 15115	15 W	15 VDC / 1000 mA	
		TMS 15124		24 VDC / 650 mA	
		TMS 15212		+12 VDC / 650 mA	-12 VDC / 650 mA
		TMS 15215		+15 VDC / 500 mA	-15 VDC / 500 mA
		TMS 25105		5 VDC / 4600 mA	
		TMS 25112		12 VDC / 2000 mA	
		TMS 25115	25 W	15 VDC / 1600 mA	
		TMS 25124		24 VDC / 1000 mA	
		TMS 25212		+12 VDC / 1000 mA	-12 VDC / 1000 mA
		TMS 25215		+15 VDC / 800 mA	-15 VDC / 800 mA

\* For PCB mount version - no suffix  
 For chassis mount with Faston-Tabs add suffix F (not for 6 W models)  
 For chassis mount with screw terminal block add suffix C (not for 6 & 10 W models)

## Dimensions



Type	Length l	Width w	Height h
TMS 06	50 (1.97)	40 (1.57)	20 (0.79)
TMS 10	55 (2.17)	45 (1.77)	24 (0.94)
TMS 15	64 (2.52)	45 (1.77)	24 (0.94)
TMS 25	76 (2.99)	51 (2.01)	28 (1.10)
TMS 10F	75 (2.95)	45 (1.77)	24 (0.94)
TMS 15F	84 (3.31)	45 (1.77)	24 (0.94)
TMS 25F	96 (3.78)	51 (2.01)	29 (1.14)
TMS 15C	84 (3.31)	45 (1.77)	26.5 (1.04)
TMS 25C	96 (3.78)	51 (2.01)	29.5 (1.16)

() = Inch

# TMP & TPM Series ▶ 4 to 10 W



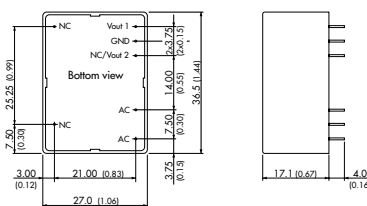
- ▶ Fully encapsulated low profile plastic casing
- ▶ Single and dual output models
- ▶ Meets ErP directive (green mode), <0.3 W no load power consumption, high efficiency across full load range
- ▶ Universal input 85–264 VAC, 47–440 Hz
- ▶ Protection against short circuit, overload and over-temperature
- ▶ EMI meets 55022, class B



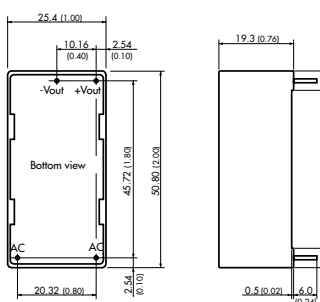
Specifications		Models			
Input voltage range	85–264 VAC, 47–440 Hz 120–370 VDC	Order code	Output power	Output 1	Output 2
Line regulation	1.0 % max. 3.0 % typ. output 2	TMPM 04103		3.3 VDC / 1200 mA	
Load regulation	1.0 % typ. output 1 2.5 % typ. output 2	TMPM 04105		5.0 VDC / 800 mA	
Ripple & noise (20 MHz BW)	<1.8 % of Vout nom. for 3.3 & 5 VDC outputs <1.0 % of Vout nom. for other outputs	TMPM 04109		9.0 VDC / 444 mA	
EMI suppression	EN 55022 class EN55022 class B	TMPM 04112		12 VDC / 333 mA	
EMC immunity	EN61000–6–2	TMPM 04115	4 W	15 VDC / 267 mA	
Output current limitation	>105% Inom. foldback, automatic recovery	TMPM 04124		24 VDC / 167 mA	
Efficiency	78 % typ.	TMPM 04212		+12 VDC / 166 mA	-12 VDC / 166 mA
Operating temperature	-25 °C to +60 °C above 40 °C derating 2.5%/K	TMPM 04215		+15 VDC / 133 mA	-15 VDC / 133 mA
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report,	TMPM 04253		+5.0 VDC / 600 mA	+3.3 VDC / 150 mA
Degree of protection	safety class II prepared	TMPM 04225		+12 VDC / 250 mA	+5.0 VDC / 120 mA
Casing	plastic (UL 94V-0 rated)	TMP 07103	4.6 W	3.3 VDC / 1400 mA	
Full datasheet	<a href="http://www.tracopower.com/products/tmp.pdf">www.tracopower.com/products/tmp.pdf</a>	TMP 07105		5.0 VDC / 1400 mA	
		TMP 07112	7 W	12 VDC / 585 mA	
		TMP 07115		15 VDC / 465 mA	
		TMP 07124		24 VDC / 290 mA	
		TMPM 10103	8.6 W	3.3 VDC / 2500 mA	
		TMPM 10105		5.0 VDC / 2000 mA	
		TMPM 10112	10 W	12 VDC / 830 mA	
		TMPM 10115		15 VDC / 665 mA	
		TMPM 10124		24 VDC / 415 mA	
		TMP 10103	6.6 W	3.3 VDC / 2000 mA	
		TMP 10105		5.0 VDC / 2000 mA	
		TMP 10112		12 VDC / 830 mA	
		TMP 10115	10 W	15 VDC / 665 mA	
		TMP 10124		24 VDC / 415 mA	
		TMP 10212		+12 VDC / 380 mA	-12 VDC / 380 mA
		TMP 10215		+15 VDC / 300 mA	-15 VDC / 300 mA

## Dimensions

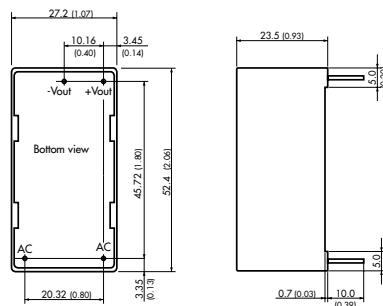
TMPM 04 Models:



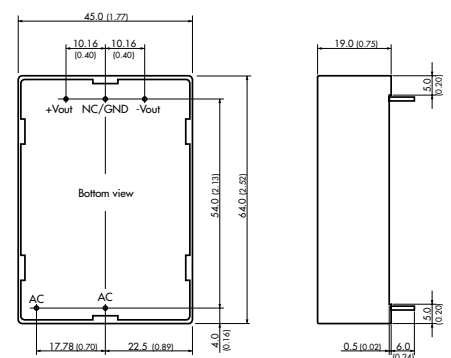
TMP 07 Models:



TPM 10 Models:



TMP 10 Models:



( ) = Inches

# TMP Series ▶ 15 to 60 W

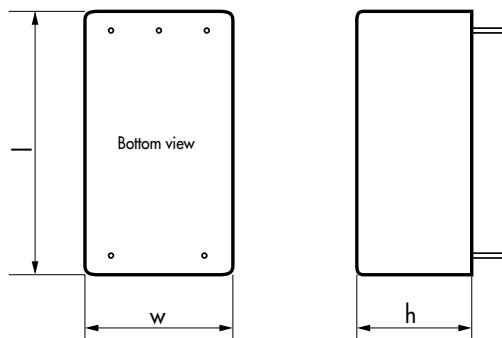


- ▶ Fully encapsulated low profile plastic casing
- ▶ PCB mount
- ▶ Single-, dual- and triple output models
- ▶ Universal input 85–264 VAC, 47–440 Hz
- ▶ Protection class II prepared
- ▶ EMI meets 55022, class B
- ▶ Protection against short circuit, overload and over-temperature



Specifications	
Input voltage range	85–264 VAC, 47–440 Hz (47–63 Hz for 60 W models) 120–370 VDC
Line regulation	1.0 % max.
Load regulation	1.0 % typ. output 1 3.0 % typ. output 2 & 3
Ripple & noise (20MHz BW)	<2% of Vout nom. for 5 VDC outputs <1.3% of Vout nom. for other outputs
EMI suppression	EN 55011 class B, EN 55022 class B
EMC immunity	EN61000-6-1
Output current limitation	>105% Inom. foldback, automatic recovery
Efficiency	80 % typ.
Operating temperature	–25 °C to +65 °C above 50 °C derating 3.3%/K
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, CB-report
Degree of protection	safety class II prepared
Casing	plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmp.pdf">www.tracopower.com/products/tmp.pdf</a>

Dimensions				
	Type	Length l	Width w	Height h
PCB mount	TMP 15xxx	74.0 (2.91)	54.0 (2.13)	19.3 (0.76)
	TMP 30xxx	89.0 (3.50)	63.5 (2.50)	21.5 (0.85)
	TMP 60xxx	89.0 (3.50)	67.5 (2.66)	34.0 (1.34)



() = Inches

Models			
Order code*	Output power	Output 1	Output 2/3
TMP 15105		5.0 VDC / 3000 mA	
TMP 15112		12 VDC / 1250 mA	
TMP 15115		15 VDC / 1000 mA	
TMP 15124		24 VDC / 625 mA	
TMP 15148	15 W	48 VDC / 310 mA	
TMP 15212		+12 VDC / 650 mA	-12 VDC / 650 mA
TMP 15215		+15 VDC / 500 mA	-15 VDC / 500 mA
TMP 15252		+5.0 VDC / 1500 mA	+12 VDC / 625 mA
TMP 15512		+5.0 VDC / 2000 mA	+12 VDC / 200 mA -12 VDC / 200 mA
TMP 15515		+5.0 VDC / 2000 mA	+15 VDC / 150 mA -15 VDC / 150 mA
TMP 30105		5.0 VDC / 6000 mA	
TMP 30112		12 VDC / 2500 mA	
TMP 30115		15 VDC / 2000 mA	
TMP 30124		24 VDC / 1250 mA	
TMP 30148		48 VDC / 625 mA	
TMP 30212		+12 VDC / 1300 mA	-12 VDC / 1300 mA
TMP 30215		+15 VDC / 1000 mA	-15 VDC / 1000 mA
TMP 30252		+5.0 VDC / 3000 mA	+12 VDC / 1250 mA
TMP 30512	30 W	+5.0 VDC / 3000 mA	+12 VDC / 600 mA -12 VDC / 600 mA
TMP 30515		+5.0 VDC / 3000 mA	+15 VDC / 500 mA -15 VDC / 500 mA
TMP 30522		+5.0 VDC / 1500 mA	+12 VDC / 1000 mA -12 VDC / 250 mA
TMP 30316		+3.3 VDC / 4000 mA	+5.0 VDC / 1500 mA +12 VDC / 250 mA
TMP 30317		+5.0 VDC / 4500 mA	+3.3 VDC / 1000 mA +12 VDC / 250 mA
TMP 60105		5.1 VDC / 10'000 mA	
TMP 60112		12 VDC / 5000 mA	
TMP 60115	60 W	15 VDC / 4000 mA	
TMP 60124		24 VDC / 2500 mA	
TMP 60136		36 VDC / 1670 mA	
TMP 60148		48 VDC / 1250 mA	



# TMP-C Series ▶ 15 to 60 W

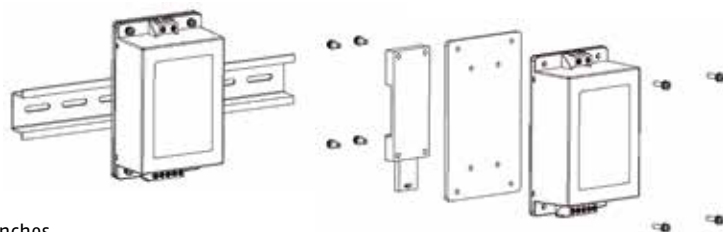
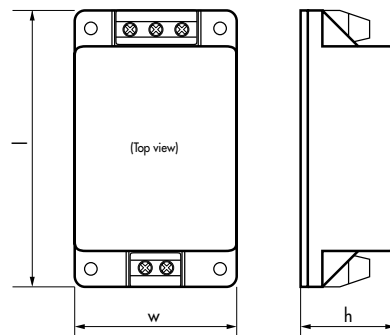


- ▶ Fully encapsulated low profile plastic case
- ▶ For DIN-rail mount or chassis mount
- ▶ Screw terminal block
- ▶ Single-, dual- and triple output models
- ▶ Universal input 85–264 VAC, 47–440 Hz
- ▶ UL 508 listed
- ▶ Protection class II
- ▶ Protection against short circuit, overload and over-temperature
- ▶ Power-good LED indicator



Specifications	
Input voltage range	85–264 VAC, 47–440 Hz (47–63 Hz for 60 W models) 120–370 VDC
Line regulation	1.0 % max.
Load regulation	1.0% typ. Output 1 3.0% typ. Output 2 & 3
Ripple & noise (20 MHz BW)	<2% of Vout nom. for 5 VDC outputs <1.3% of Vout nom. for other outputs
EMI suppression	EN 55011 class B, EN 55022 class EN55022 class B
EMC immunity	EN61000–6–1
Output current limitation	>105% Inom. foldback, automatic recovery
Efficiency	80% typ.
Operating temperature	–25 °C to +65 °C above 50 °C derating 3.3%/K
Safety standards / approvals	cUL/UL 60950–1, IEC/EN 60950–1, UL 508 (single output and symmetric dual output models only), CB-report
Degree of protection	class II
Casing	plastic (UL 94V–0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmp.pdf">www.tracopower.com/products/tmp.pdf</a>

Dimensions			
Type	Length l	Width w	Height h
TMP 15xxxC	96 (3.78)	54.0 (2.13)	23.3 (0.88)
TMP 30xxxC	112 (4.41)	63.8 (2.51)	25.6 (1.01)
TMP 60xxxC	112 (4.41)	67.8 (2.67)	38.0 (1.50)



( ) = Inches

Models			
Order code	Output power	Output 1	Output 2/3
TMP 15105C		5.0 VDC / 3000 mA	
TMP 15112C		12 VDC / 1250 mA	
TMP 15115C		15 VDC / 1000 mA	
TMP 15124C		24 VDC / 625 mA	
TMP 15148C	15 W	48 VDC / 310 mA	
TMP 15212C		+12 VDC / 650 mA	–12 VDC / 650 mA
TMP 15215C		+15 VDC / 500 mA	–15 VDC / 500 mA
TMP 15252C		+5.0 VDC / 1500 mA	+12 VDC / 625 mA
TMP 15512C		+5.0 VDC / 2000 mA	+12 VDC / 200 mA –12 VDC / 200 mA
TMP 15515C		+5.0 VDC / 2000 mA	+15 VDC / 150 mA –15 VDC / 150 mA
TMP 30105C		5.0 VDC / 6000 mA	
TMP 30112C		12 VDC / 2500 mA	
TMP 30115C		15 VDC / 2000 mA	
TMP 30124C		24 VDC / 1250 mA	
TMP 30148C		48 VDC / 625 mA	
TMP 30212C		+12 VDC / 1300 mA	–12 VDC / 1300 mA
TMP 30215C		+15 VDC / 1000 mA	–15 VDC / 1000 mA
TMP 30252C		+5.0 VDC / 3000 mA	+12 VDC / 1250 mA
TMP 30512C	30 W	+5.0 VDC / 3000 mA	+12 VDC / 600 mA –12 VDC / 600 mA
TMP 30515C		+5.0 VDC / 3000 mA	+15 VDC / 500 mA –15 VDC / 500 mA
TMP 30522C		+5.0 VDC / 1500 mA	+12 VDC / 1000 mA –12 VDC / 250 mA
TMP 30316C		+3.3 VDC / 4000 mA	+5.0 VDC / 1500 mA +12 VDC / 250 mA
TMP 30317C		+5.0 VDC / 4500 mA	+3.3 VDC / 1000 mA +12 VDC / 250 mA
TMP 60105C		5.1 VDC / 10'000 mA	
TMP 60112C		12 VDC / 5000 mA	
TMP 60115C	60 W	15 VDC / 4000 mA	
TMP 60124C		24 VDC / 2500 mA	
TMP 60136C		36 VDC / 1670 mA	
TMP 60148C		48 VDC / 1250 mA	

DIN-rail mount adapter	
TMP-MK1	for 15 W version
TMP-MK2	for 30 W and 60 W versions



# TMLM Series ▶ 4 to 20 W



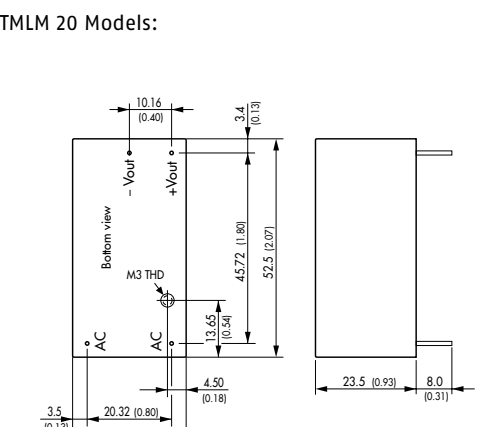
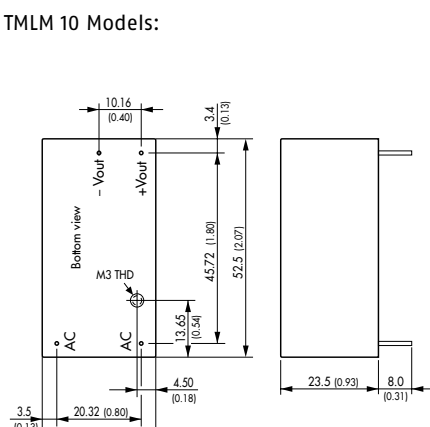
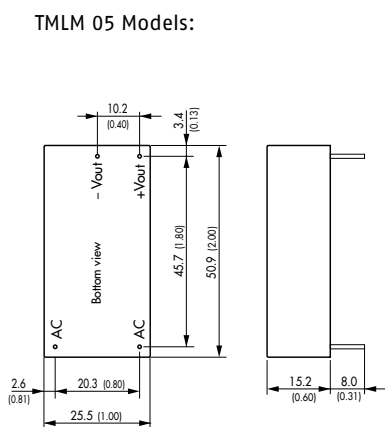
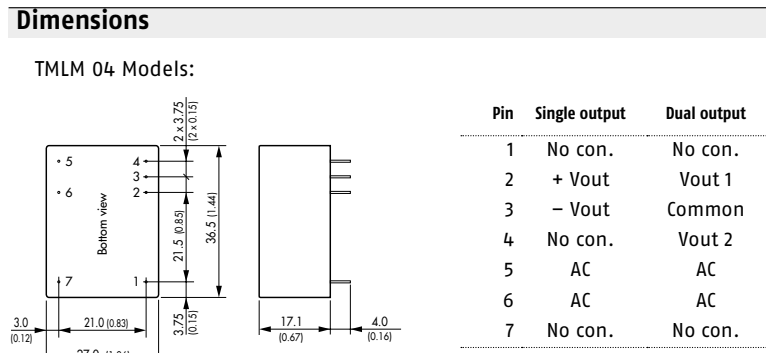
- ▶ Ultra compact 20 W in 2" x 1" package
- ▶ Fully encapsulated modules for PCB mount
- ▶ Universal input 90–264 VAC, 47–440 Hz
- ▶ TMLM04 with extended input range 85–305 VAC
- ▶ EMI meets EN 55022, class B
- ▶ Low ripple and noise
- ▶ Short circuit and overload protection
- ▶ Protection class II prepared



Specifications	
Input voltage range	90–264 VAC, 47–440 Hz 120–370 VDC
Line regulation	0.3% max.
Load regulation	0.5% typ.
Ripple & noise (20 MHz BW)	<1.0% of Vout <1.5% of Vout for 3.3 & 5 VDC models
EMI suppression	EN 55011 class B, EN 55022 class EN55022 class B
EMC immunity	EN61000–6–1
Output current limitation	foldback, automatic recovery
Efficiency	78% typ.
Operating temperature	–25 °C to +60 °C TMLM 04 models: above 50 °C derating 3.75%/K other models: above 40 °C derating 2.5%/K
Safety standards / approvals	cUL/UL 60950–1, EN 60950–1
Degree of protection	class II prepared
Casing	plastic (UL 94V–0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tmlm.pdf">www.tracopower.com/products/tmlm.pdf</a>

Models				
Order code	Output power	Output 1		Output 2
TMLM 04103*	4 W	3.3 VDC /	1200 mA	
TMLM 04105*	4 W	5.0 VDC /	800 mA	
TMLM 04109*	4 W	9.0 VDC /	444 mA	
TMLM 04112*	4 W	12 VDC /	333 mA	
TMLM 04115*	4 W	15 VDC /	267 mA	
TMLM 04124*	4 W	24 VDC /	167 mA	
TMLM 04253*	3.5 W	+5.0 VDC /	+3.3 VDC /	150 mA
TMLM 04225*	3.6 W	+12 VDC /	+5.0 VDC /	120 mA
TMLM 05103	4.1 W	3.3 VDC /	1250 mA	
TMLM 05105	5 W	5.0 VDC /	1000 mA	
TMLM 05112	5 W	12 VDC /	420 mA	
TMLM 05115	5 W	15 VDC /	330 mA	
TMLM 05124	5.5 W	24 VDC /	230 mA	
TMLM 10103	8.2 W	3.3 VDC /	2500 mA	
TMLM 10105	10 W	5.0 VDC /	2000 mA	
TMLM 10112	10 W	12 VDC /	830 mA	
TMLM 10115	10 W	15 VDC /	665 mA	
TMLM 10124	10 W	24 VDC /	420 mA	
TMLM 20103	12 W	3.3 VDC /	3600 mA	
TMLM 20105	18 W	5.0 VDC /	3600 mA	
TMLM 20112	20 W	12 VDC /	1670 mA	
TMLM 20115	20 W	15 VDC /	1330 mA	
TMLM 20124	20 W	24 VDC /	830 mA	

\* Add suffix -EI for extended input range version (85–305 VAC)



( ) = Inches

# TML Series ▶ 20 to 40 W



- ▶ 2 Package styles available:
  - for PCB mount with solder pins
  - for chassis mount with screw terminal block
- ▶ Single-, dual- and triple output models
- ▶ Universal input 90–264 VAC, 47–440 Hz
- ▶ Protection class I (TML 20) and class II (TML 40)
- ▶ EMI meets EN 55022, class B
- ▶ Short circuit and overload protection



## Specifications

Input voltage range	90–264 VAC, 47–440 Hz 100–370 VDC
Line regulation	1.0% max. for output 1 5.0% max. for output 2/3
Load regulation	1.0% max. for single output models 2.0% max. for output 1, 7.0% max. for output 2/3
Ripple & noise (20 MHz BW)	<1.0% of Vout <1.5% of Vout for 3.3 & 5 VDC models
EMI suppression	EN 55011 class B, EN 55022 class EN55022 class B
EMC immunity	EN61000–6–1
Output current limitation	foldback, automatic recovery
Efficiency	80% typ.
Operating temperature	–25 °C to +60 °C above 50 °C derating 4%/K
Safety standards / approvals	cUL/UL 60950–1, IEC/EN 60950–1 CB-report
Degree of protection	safety class I (TML 40 W models safety class II)
Casing	plastic (UL 94V–0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tml.pdf">www.tracopower.com/products/tml.pdf</a>

## Models

Order code*	Output power	Output 1	Output 2/3
TML 20103		3.3 VDC 4500 mA	
TML 20105		5 VDC 4000 mA	
TML 20112		12 VDC 1670 mA	
TML 20115		15 VDC 1340 mA	
TML 20124	20 W	24 VDC 840 mA	
TML 20205		+5 VDC 2000 mA	–5 VDC 2000 mA
TML 20212		+12 VDC 830 mA	–12 VDC 830 mA
TML 20215		+15 VDC 670 mA	–15 VDC 670 mA
TML 20512		5 VDC 2800 mA	±12 VDC ±250 mA
TML 20515		5 VDC 2800 mA	±15 VDC ±200 mA
TML 40103		3.3 VDC 8000 mA	
TML 40105		5 VDC 8000 mA	
TML 40112		12 VDC 3330 mA	
TML 40115		15 VDC 2670 mA	
TML 40124		24 VDC 1670 mA	
TML 40205	40 W	+5 VDC 4000 mA	–5 VDC 4000 mA
TML 40212		+12 VDC 1670 mA	–12 VDC 1670 mA
TML 40215		+15 VDC 1330 mA	–15 VDC 1330 mA
TML 40252		5 VDC 5000 mA	12 VDC 1250 mA
TML 40254		5 VDC 5000 mA	24 VDC 625 mA
TML 40512		5 VDC 5000 mA	±12 VDC ±600 mA
TML 40515		5 VDC 5000 mA	±15 VDC ±500 mA

\* For chassis mount version add suffix C

## DIN-rail mount adapter

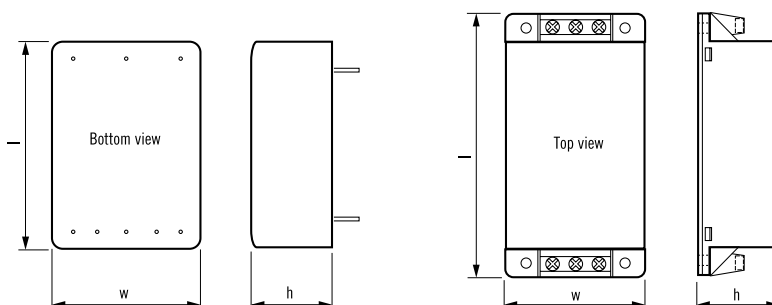
TMP-MK1	for 20 W chassis mount version
TMP-MK2	for 40 W chassis mount version

	Type	Length l	Width w	Height h
PCB mount	TML 20xxx	70.0 (2.76)	48.0 (1.89)	22.0 (0.87)
	TML 40xxx	89.0 (3.50)	63.5 (2.50)	25.0 (0.98)
Chassis mount	TML 20xxxC	96.0 (3.78)	54.6 (2.15)	27.5 (1.08)
	TML 40xxxC	112.9 (4.44)	64.7 (2.55)	31.5 (1.24)

() = Inch

PCB Mount Version

Chassis Mount with Screw Terminals



# TMT Series ▶ 10 to 50 W



- ▶ Industrial (UL508) and medical safety approvals
- ▶ 2 packages styles available:
  - PCB mount with solder pins
  - Chassis mount with screw terminal block
- ▶ Adapter for DIN-rail mount
- ▶ Single-, dual- and triple output models
- ▶ Universal input 85 – 264 VAC
- ▶ Short circuit and overload protection



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz 85–370 VDC (derating below 110 VDC input)
Line regulation	0.4% max.
Load regulation	1.0% max. for single output models 3.0% max. for multi output models
Ripple & noise	<150 mVpk-pk (20 MHz BW)
EMI suppression	EN 55011 class B, EN 55022 class EN55022 class B
EMC immunity	EN 60601-1-2
Output current limitation	>105% Inom. foldback, automatic recovery
Efficiency	83% typ.
Operating temperature	-25 °C to +50 °C above 40 °C derating 5%/K
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1, UL 60601-1, IEC/EN 60601-1, CB-report, UL 508 listed (chassis mount modules)
Degree of protection	class II prepared
Casing	plastic (UL 94V-0 rated)
Option	DIN-rail mount adapter
Full datasheet	<a href="http://www.tracopower.com/products/tmt.pdf">www.tracopower.com/products/tmt.pdf</a>

## Models

Order code	Output power	Output 1	Output 2/3
TMT 10105		5 VDC / 2000 mA	
TMT 10112	10 W	12 VDC / 840 mA	
TMT 10115		15 VDC / 670 mA	
TMT 10124		24 VDC / 420 mA	
*TMT 15105		5 VDC / 3000 mA	
*TMT 15112		12 VDC / 1250 mA	
*TMT 15115	15 W	15 VDC / 1000 mA	
*TMT 15124		24 VDC / 625 mA	
*TMT 15212		+12 VDC / 625 mA	-12 VDC / 625 mA
*TMT 15215		+15 VDC / 500 mA	-15 VDC / 500 mA
*TMT 30105		5 VDC / 6000 mA	
*TMT 30112		12 VDC / 2500 mA	
*TMT 30115		15 VDC / 2000 mA	
*TMT 30124		24 VDC / 1250 mA	
*TMT 30212		+12 VDC / 1250 mA	-12 VDC / 1250 mA
*TMT 30215		+15 VDC / 1000 mA	-15 VDC / 1000 mA
*TMT 30252	30 W	5 VDC / 3000 mA	12 VDC / 1200 mA
*TMT 30522		5 VDC / 3000 mA	12 VDC / 1000 mA 12 VDC / 250 mA
*TMT 30515		5 VDC / 3000 mA	15 VDC / 500 mA 15 VDC / 500 mA
TMT 30503		3.3 VDC / 6000 mA	5 VDC / 1500 mA 12 VDC / 250 mA
TMT 30505		5 VDC / 5000 mA	3.3 VDC / 1000 mA 12 VDC / 250 mA
*TMT 50105		5 VDC / 9000 mA	
*TMT 50112		12 VDC / 4200 mA	
*TMT 50115	50 W	15 VDC / 3400 mA	
*TMT 50124		24 VDC / 2300 mA	
*TMT 50148		48 VDC / 1150 mA	

\* For chassis mount version add suffix c

## DIN-rail mount adapter

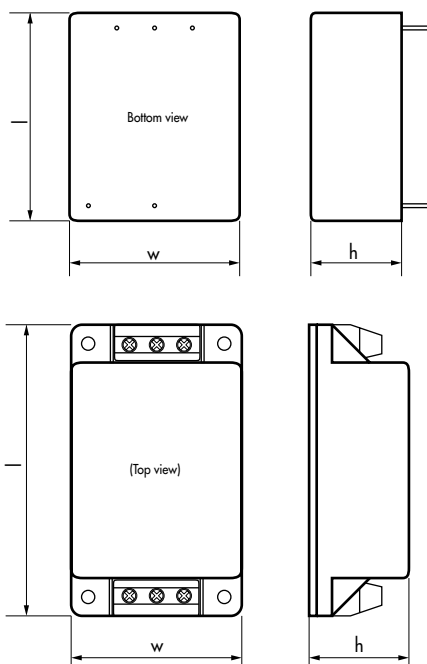
TMT-MK1	for 15 W
TMT-MK2	for 30 W single and symmetric dual
TMT-MK3	for 30 W asymmetric dual and tripple
TMT-MK5	for 50 W

## Dimensions

Type	PCB mount			Chassis mount		
	Length l	Width w	Height h	Length l	Width w	Height h
TMT 10xxx	51 (2.00)	33 (1.30)	21.6 (0.79)			
TMT 15xxx	55 (2.16)	45 (1.77)	24 (0.95)	77 (3.03)	45 (1.77)	26.4 (1.04)
TMT 301xx	76 (2.99)	51 (2.00)	28 (1.10)	96 (3.78)	51 (2.01)	29.5 (1.16)
TMT 3021x	76 (2.99)	51 (2.00)	28 (1.10)	96 (3.78)	51 (2.01)	29.5 (1.16)
TMT 30252	86 (3.39)	58 (2.28)	28 (1.10)	106 (4.17)	58 (2.28)	29.5 (1.16)
TMT 305xx	86 (3.39)	58 (2.28)	28 (1.10)	106 (4.17)	58 (2.28)	29.5 (1.16)
TMT 50xxx	89 (3.50)	64 (2.52)	28 (1.10)	110 (4.33)	64 (2.52)	31.5 (1.24)

() = Inch

## Dimensions



# TMM Series ▶ 24 to 60 W

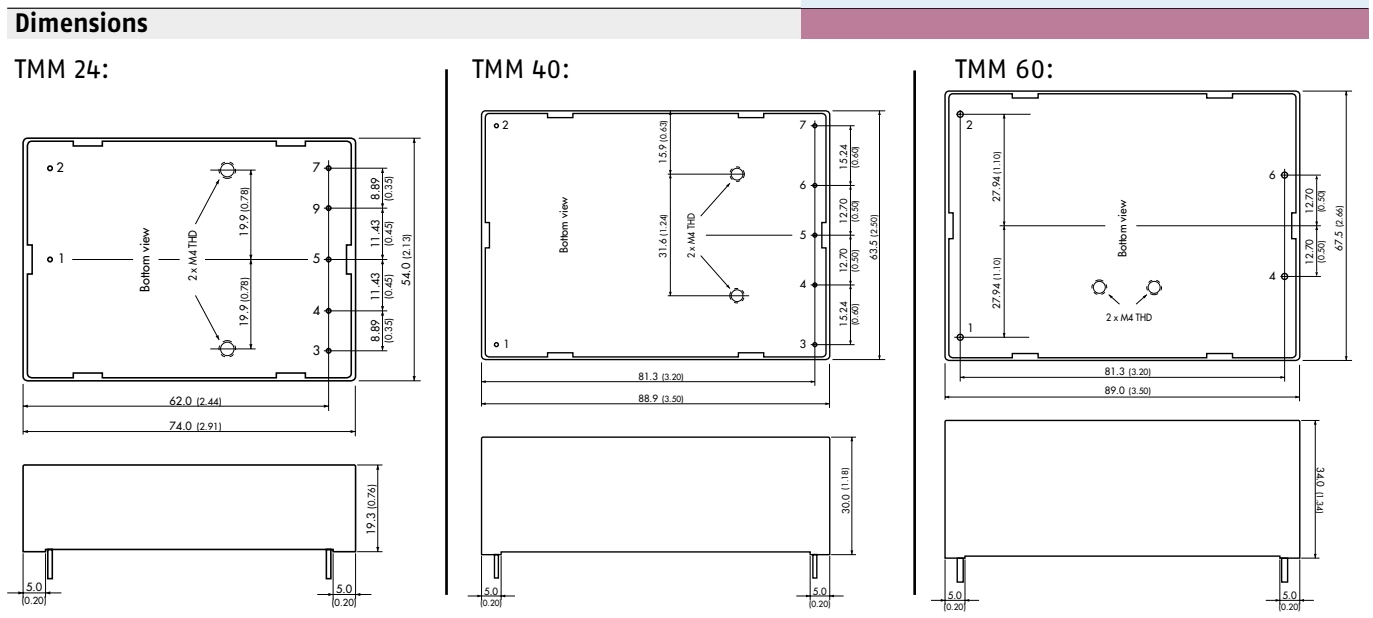


- ▶ Fully encapsulated low profile plastic (PCB mount)
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ IT and industrial safety according to IEC/EN/UL 60950-1 and UL 508
- ▶ Ready to meet ErP directive <0.3W no load power consumption
- ▶ Operating temperature -40°C up to +60°C without derating
- ▶ Protection class II prepared
- ▶ Power-good LED indicator

**NEW Product**



Specifications		Models			
Input voltage range	85–264 VAC, 47–63 Hz 85–370 VDC (derating below 110 VDC input)	Order code*	Output power	Output 1	Output 2
Line regulation	0.5% typ.	TMM 24105	15 W	5.0 VDC 3000 mA	
Load regulation	Singel output: – 24 & 60 W models: 0.5% typ. – 40 W models: 1.0% typ.  Dual output: – 24 W models: 2.5% typ. – 40 W models: 2.0% typ.	TMM 24112		12 VDC 2000 mA	
Ripple & noise	5.0 VDC models: 2% max. 5.1 VDC model: 3% max. other models: 1.5% max.	TMM 24115	24 W	15 VDC 1600 mA	
EMI suppression	EN 55011 class B, EN 55022 class B	TMM 24124		24 VDC 1000 mA	
EMC immunity	EN 60601-1-2, EN 61000-6-2	TMM 24212		+12 VDC 1000 mA	-12 VDC 1000 mA
Output current limitation	>105% Inom. foldback, automatic recovery	TMM 24215		+15 VDC 800 mA	-15 VDC 800 mA
Leakage current	80µA max.	TMM 40105		5.0 VDC 8000 mA	
Efficiency	83% typ.	TMM 40112		12 VDC 3300 mA	
Operating temperature	-40 °C to +80 °C above 60°C derating 3%/K	TMM 40115	40 W	15 VDC 2660 mA	
Safety standards / approvals	UL 60950-1, IEC/EN 60950-1, UL508 IEC/EN 60601-1 3rd edition, 2 x MOPP ANSI/AAMI ES60601-1:2005(R)2012	TMM 40124		24 VDC 1660 mA	
Degree of protection	class II prepared	TMM 40212		+12 VDC 1660 mA	-12 VDC 1660 mA
Casing	plastic (UL 94V-0 rated)	TMM 40215		+15 VDC 1330 mA	-15 VDC 1330 mA
Full datasheet	<a href="http://www.tracopower.com/products/tmm24.pdf">www.tracopower.com/products/tmm24.pdf</a> <a href="http://www.tracopower.com/products/tmm40.pdf">www.tracopower.com/products/tmm40.pdf</a> <a href="http://www.tracopower.com/products/tmm60.pdf">www.tracopower.com/products/tmm60.pdf</a>	TMM 60105		5.1 VDC 10000 mA	
		TMM 60112		12 VDC 5000 mA	
		TMM 60115	60 W	15 VDC 4000 mA	
		TMM 60124		24 VDC 2500 mA	
		TMM 60148		48 VDC 1250 mA	



# TMM-C Series ▶ 24 to 60 W



- ▶ Fully encapsulated low profile plastic (chassis mount)
- ▶ -40°C start-up temperature
- ▶ IT and industrial safety according to IEC/EN/UL 60950-1 and UL 508
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive <0.3W no load power consumption
- ▶ Protection class II prepared
- ▶ Power-good LED indicator

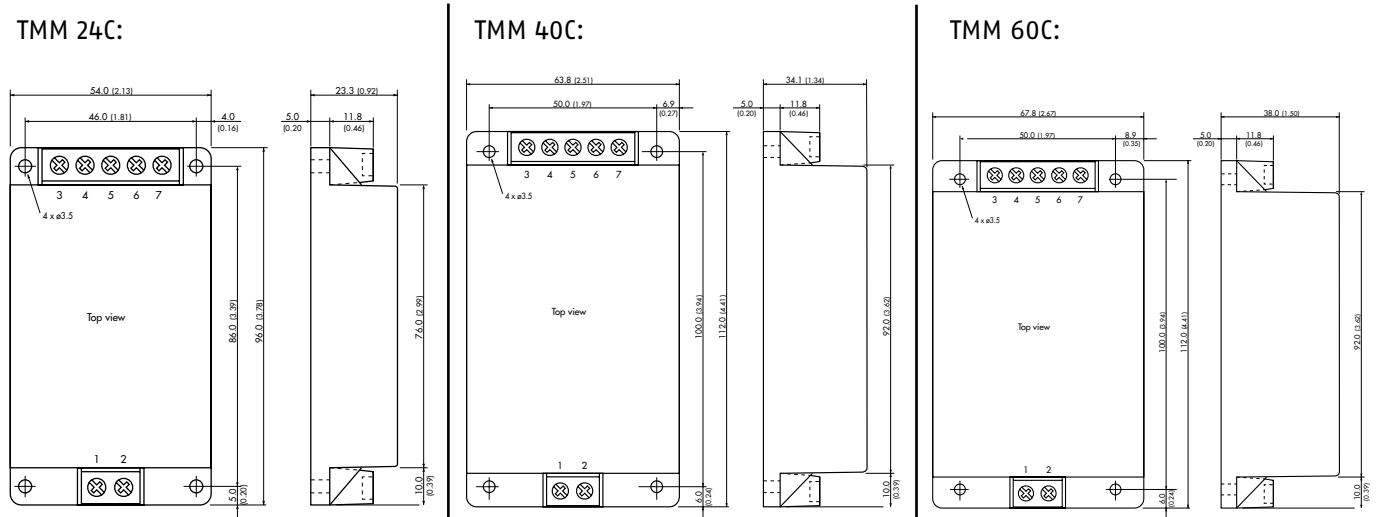
**NEW**  
Product



Specifications	
Input voltage range	85–264 VAC, 47–63 Hz 85–370 VDC (derating below 110 VDC input)
Line regulation	60W models: 0.2% typ. other models: 0.5% typ.
Load regulation	Singel output: – 24 & 60 W models: 0.5% typ. – 40 W models: 1.0% typ. Dual output: – 24 W models: 2.5% typ. – 40 W models: 2.0% typ.
Ripple & noise	5.0 VDC models: 2% max. 5.1 VDC model: 3% max. other models: 1.5% max.
EMI suppression	EN 55011 class B, EN 55022 class B
EMC immunity	EN 60601-1-2, EN 61000-6-2
Output current limitation	>105% Inom. foldback, automatic recovery
Leakage current	80µA max.
Efficiency	83% typ.
Operating temperature	-40 °C to +80 °C above 60°C derating 3%/K
Safety standards / approvals	UL 60950-1, IEC/EN 60950-1, UL 508 IEC/EN 60601-1 3rd edition, 2 x MOPP ANSI/AAMI ES60601-1:2005(R)2012
Degree of protection	class II prepared
Casing	plastic (UL 94V-0 rated)
Option	DIN-Rail clip
Full datasheet	<a href="http://www.tracopower.com/products/tmm24.pdf">www.tracopower.com/products/tmm24.pdf</a> <a href="http://www.tracopower.com/products/tmm40.pdf">www.tracopower.com/products/tmm40.pdf</a> <a href="http://www.tracopower.com/products/tmm60.pdf">www.tracopower.com/products/tmm60.pdf</a>

Models					
Order code*	Output power	Output 1		Output 2	
TMM 24105C	15 W	5.0 VDC	3000 mA		
TMM 24112C		12 VDC	2000 mA		
TMM 24115C	24 W	15 VDC	1600 mA		
TMM 24124C		24 VDC	1000 mA		
TMM 24212C		+12 VDC	1000 mA	-12 VDC	1000 mA
TMM 24215C		+15 VDC	800 mA	-15 VDC	800 mA
TMM 40105C		5.0 VDC	8000 mA		
TMM 40112C		12 VDC	3300 mA		
TMM 40115C	40 W	15 VDC	2660 mA		
TMM 40124C		24 VDC	1660 mA		
TMM 40212C		+12 VDC	1660 mA	-12 VDC	1660 mA
TMM 40215C		+15 VDC	1330 mA	-15 VDC	1330 mA
TMM 60105C		5.1 VDC	10000 mA		
TMM 60112C		12 VDC	5000 mA		
TMM 60115C	60 W	15 VDC	4000 mA		
TMM 60124C		24 VDC	2500 mA		
TMM 60148C		48 VDC	1250 mA		

## Dimensions



# TML-100C Series ▶ 100 W



- ▶ Very compact power modules with a low profile and screw terminal connection
- ▶ Active PFC, power factor >0.95 (230VAC), >0.99 (115 VAC)
- ▶ High efficiency up to 93%
- ▶ Remote On/Off input
- ▶ Power-good LED indicator

**NEW**  
Product

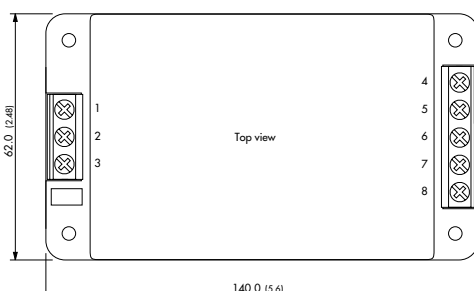
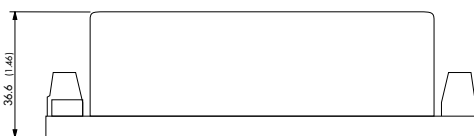


## Specifications

Input voltage range	85–264 VAC, 47–63 Hz 85–370 VDC (derating below 110 VDC input)
Line regulation	1.0% max
Load regulation	1.0% max.
Ripple & noise	12 VDC model: 120 mV max. 15 VDC model: 150 mV max. 24 VDC model: 200 mV max. 48 VDC model: 240 mV max.
EMC immunity	EN 61000–6–2
Output current limitation	>105% Inom. foldback, automatic recovery
Efficiency	91% typ.
Operating temperature	–25 °C to +70 °C above 50°C derating of 2.0%/K
Safety standards / approvals	IEC 60950–1 2nd ed +Am1 UL 60950–1 2nd ed +Am1 EN 60950–1:2006/A11:2009/A1:2010/A12:2011
Degree of protection	class I and class II prepared
Casing	plastic (UL 94V–0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tml100c.pdf">www.tracopower.com/products/tml100c.pdf</a>

## Models

Order code*	Output power	Output 1	Output 2
TML 100–112C	85 W	12 VDC	7000 mA
TML 100–115C		15 VDC	5660 mA
TML 100–124C	100 W	24 VDC	4200 mA
TML 100–148C		48 VDC	2100 mA



() = Inches



# TIW Series ▶ 4 to 24 W



- ▶ Easy installation into standard flush boxes
- ▶ Dust and waterproof to IP 67
- ▶ Meets ERP directive (green mode), <0.3 W no load power consumption, high efficiency across full load range
- ▶ Regulated output voltage
- ▶ Safety approval to EN 60950-1 and EN 60335-1
- ▶ Protection class II
- ▶ Short circuit and overload protection

**NEW Models**

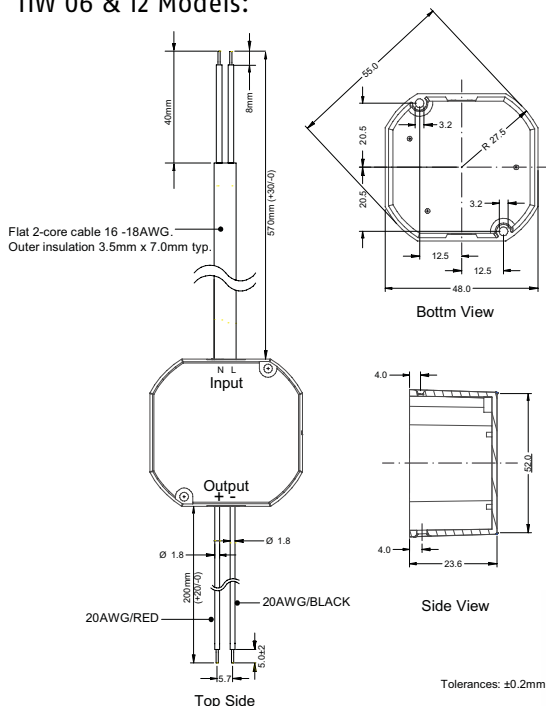


Specifications	
Input voltage range	93–264 VAC, 47–63 Hz
Line regulation	1.0 % max.
Load regulation	2.0 %
Ripple & noise (20 MHz BW)	<300 mVp-p for 3.3 – 6.0 VDC models <500 mVp-p for other models
EMI suppression	EN 55022 class B
EMC immunity	EN 61000-6-2
Output current limitation	>2.5 A for 3.3 – 6.0 VDC models >3.5 A for other models
Efficiency	81% typ.
Operating temperature	-25 °C to +50 °C
Safety standards / approvals	IEC/EN 60950-1, EN 50178, EN 60335-1, CB-report (UL approvals pending)
Degree of protection	class II as per IEC/EN 61140
Casing	IP 67, plastic (UL 94V-0 rated)
Full datasheet	<a href="http://www.tracopower.com/products/tiw.pdf">www.tracopower.com/products/tiw.pdf</a>

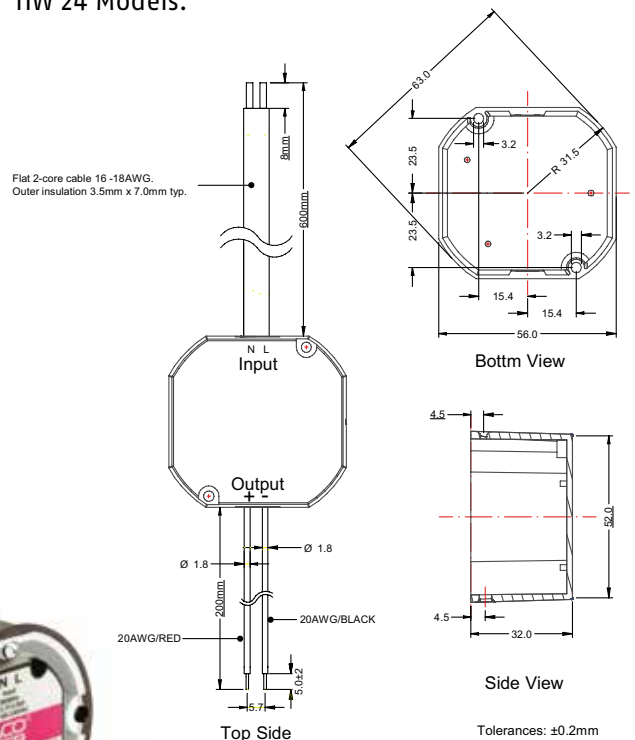
Models			
Order code	Output power	Output voltage	Output current max.
TIW 06-103	4 W	3.3 VDC	1200 mA
TIW 06-105	5 W	5.0 VDC	1000 mA
TIW 06-106	6 W	6.0 VDC	1000 mA
TIW 12-112	12 W	12 VDC	1000 mA
TIW 12-115	12 W	15 VDC	800 mA
TIW 12-124	12 W	24 VDC	500 mA
TIW 24-112	24 W	12 VDC	2000 mA
TIW 24-124	24 W	24 VDC	1000 mA

## Dimensions

### TIW 06 & 12 Models:



### TIW 24 Models:



( ) = Inches

(Mounted in standard flush)

# TPP 40 Series ▶ 40 W

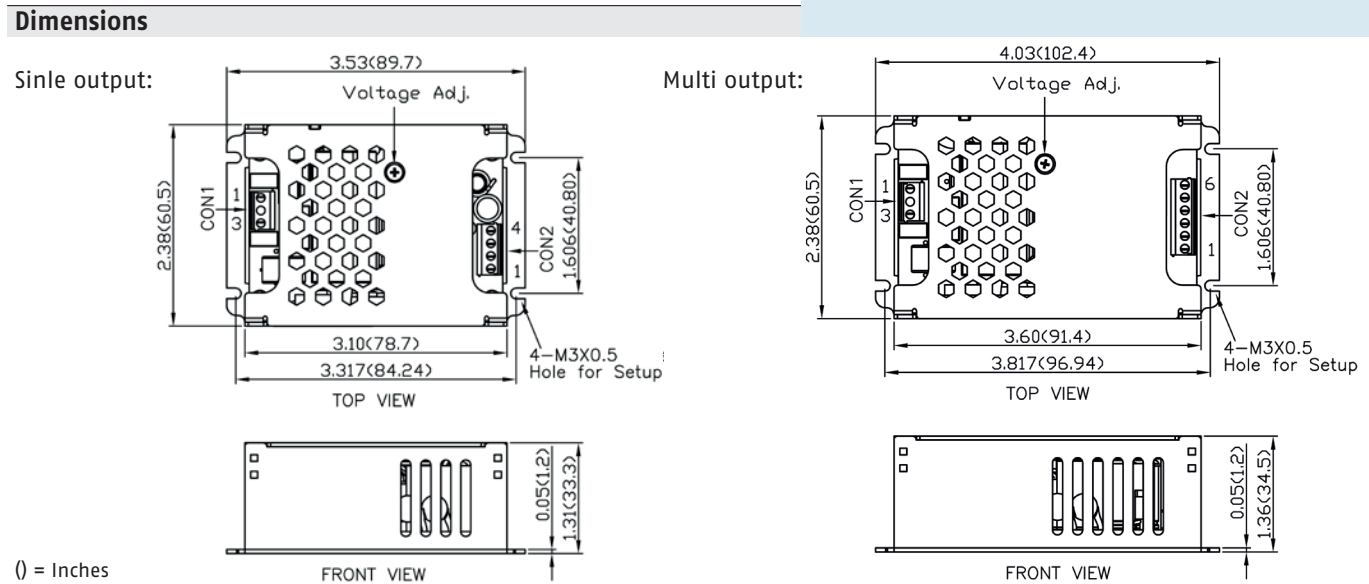


- ▶ High power density encased 40 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Protection class II prepared

**NEW Product**



Specifications		Models			
Input voltage range	85-264VAC (47-63Hz) / 120-370VDC	Order code	Output power max.	Output voltage	Output current max.
Line regulation	0.2% max.	TPP 40-105		5 VDC	8.0 A
Load regulation	0.7% max.	TPP 40-112		12 VDC	3.34 A
Output voltage adjustment	approx. +10 % of Vout nom. by internal potentiometer	TPP 40-115		15 VDC	2.67 A
Ripple & noise (20 MHz BW)	75 – 100 mVpk-pk typ. depending on model with external capacitor	TPP 40-124		24 VDC	1.67 A
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2	TPP 40-221	40 W	+12 / +5 VDC	3.34 / 6.0 A
EMC immunity	EN61000-6-1, EN 60601-1-2	TPP 40-231		+15 / +5 VDC	2.67 / 6.0 A
Output current limitation	>150% Inom. continuous, automatic recovery	TPP 40-251		+24 / +5 VDC	1.67 / 6.0 A
Efficiency	91% typ.	TPP 40-321M2		+12 / +5 / -12 VDC	3.34 / 6.0 / 0.5 A
Operating temperature	-40 °C to +73 °C (convection cooling) with derating up to +80°C	TPP 40-331M3		+15 / +5 / -15 VDC	2.67 / 6.0 / 0.5 A
Leakage current	75µA max. at 264 VAC	TPP 40-3512		+24 / +5 / +12 VDC	1.67 / 6.0 / 0.5 A
Altitude	Operating up to 5000m altitude				
Safety standards / approvals	IEC/EN 60601-1 3rd edition, CB-report ANSI/AAMI ES60601-1:2005(R)2012				
Degree of protection	class II prepared				
Casing	Encased with screw terminal				
Full datasheet	<a href="http://www.tracopower.com/products/tpp40.pdf">www.tracopower.com/products/tpp40.pdf</a>				





# TPP 65 Series ▶ 65 W



- ▶ High power density encased 65 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Protection class II prepared

**NEW**  
Product



## Specifications

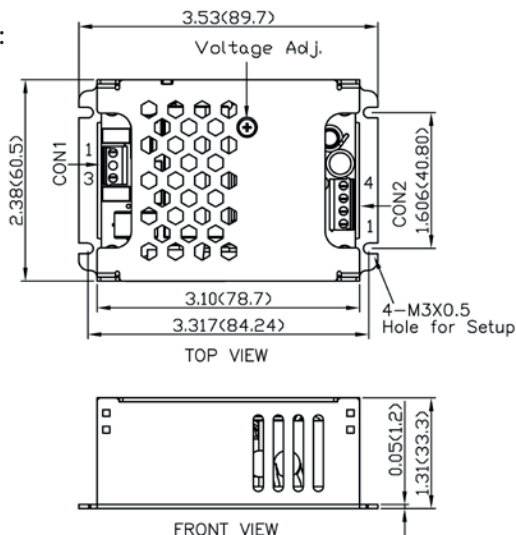
Input voltage range	85–264VAC (47–63Hz) / 120–370VDC
Line regulation	0.2% max.
Load regulation	0.7% max.
Output voltage adjustment	approx. +10 % of Vout nom. by internal potentiometer
Ripple & noise (20 MHz BW)	75 – 100 mVpk-pk typ. depending on model with external capacitor
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN61000-6-1, EN60601-1-2
Output current limitation	>150% Inom. continuous, automatic recovery
Efficiency	90% typ.
Operating temperature	–40 °C to +60 °C (convection cooling) with derating up to +80°C
Leakage current	75µA max. at 264 VAC
Altitude	Operating up to 5000m altitude
Safety standards / approvals	IEC/EN 60950-1, CB-report IEC/EN 60601-1 3rd edition, ANSI/AAMI ES60601-1:2005(R)2012
Degree of protection	class II prepared
Casing	Encased with screw terminal
Full datasheet	<a href="http://www.tracopower.com/products/tpp65.pdf">www.tracopower.com/products/tpp65.pdf</a>

## Models

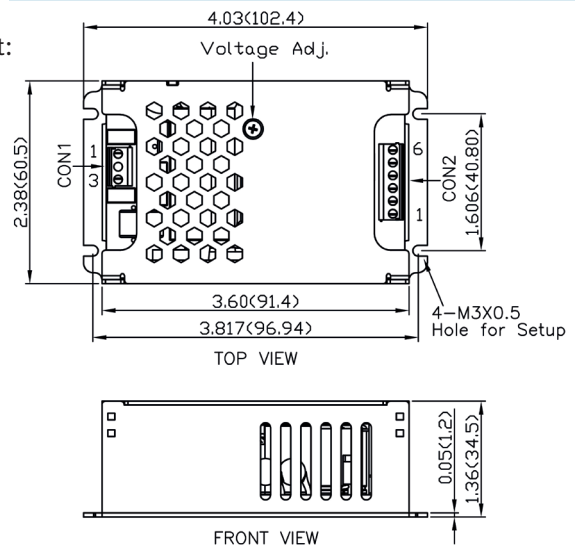
Order code	Output power max.	Output voltage	Output current max.
TPP 65-105		5 VDC	10.0 A
TPP 65-112		12 VDC	5.42 A
TPP 65-115		15 VDC	4.34 A
TPP 65-124		24 VDC	2.71 A
TPP 65-221	65 W	+12 / +5 VDC	5.42 / 8.0 A
TPP 65-231		+15 / +5 VDC	4.34 / 8.0 A
TPP 65-251		+24 / +5 VDC	2.71 / 8.0 A
TPP 65-321M2		+12 / +5 / -12 VDC	5.42 / 8.0 / 0.6 A
TPP 65-331M3		+15 / +5 / -15 VDC	4.34 / 8.0 / 0.6 A
TPP 65-3512		+24 / +5 / +12 VDC	2.71 / 8.0 / 0.6 A

## Dimensions

Single output:



Multi output:



( ) = Inches

# TPP 100 Series ▶ 100 W



- ▶ Highest power density encased 100 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared

**NEW Product**



## Specifications

Input voltage range	85-264VAC (47-63Hz) / 120-370VDC
Line regulation	0.2% max.
Load regulation	0.5% max.
Output voltage adjustment	approx. +10 % of Vout nom. by internal potentiometer
Ripple & noise (20 MHz BW)	120 – 340 mVpk-pk depending on model with external capacitor
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN61000-6-1, EN 60601-1-2
Output current limitation	>150% Inom. continuous, automatic recovery
Efficiency	91% typ.
Operating temperature	-25 °C to +80 °C (convection cooling) derating 2.33%/K above 50 °C
Altitude	Operating up to 5000m altitude
Safety standards / approvals	UL 60950-1, IEC/EN 60950-1, IEC/EN 60601-1 3rd edition, ANSI/AAMI ES60601-1:2005(R)2012
Degree of protection	class II prepared
Casing	Encased with screw terminal
Full datasheet	<a href="http://www.tracopower.com/products/tpp100.pdf">www.tracopower.com/products/tpp100.pdf</a>

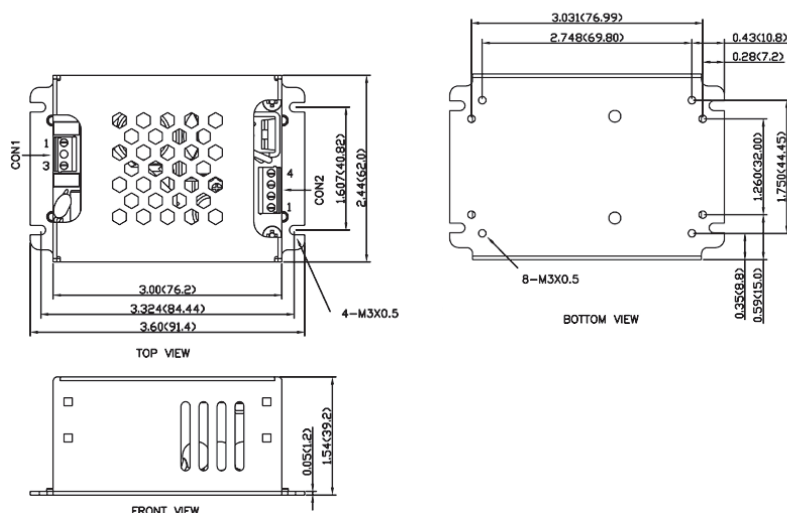
## Models

Order code	Output power max.	Output voltage	Output current max.
TPP 100-112		12 VDC	8.34 A
TPP 100-115		15 VDC	6.67 A
TPP 100-124	100 W	24 VDC	4.17 A
TPP 100-136		36 VDC	2.78 A
TPP 100-148		48 VDC	2.09 A

### Options on demand:

- open frame
- pin connector
- DIN-rail clip

## Dimensions



() = Inches

# TPP 150 Series ▶ 150 W



- ▶ Highest power density encased 150 W power supply
- ▶ 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- ▶ Ready to meet ErP directive, < 0.3 W no load power consumption
- ▶ Highest efficiency 91 to 92% across 10% – 100% load range
- ▶ Active power factor correction (>95)
- ▶ Protection class II prepared

**NEW Product**



## Specifications

Input voltage range	85–264VAC (47–63Hz) / 120–370VDC
Line regulation	0.2% max.
Load regulation	0.5% max.
Output voltage adjustment	approx. +10 % of Vout nom. by internal potentiometer
Ripple & noise (20 MHz BW)	120 – 480 mVpk-pk depending on model with external capacitor
EMI emission	EN 55011/22 class B, harmonic current EN 61000-3-2
EMC immunity	EN61000-6-1, EN 60601-1-2
Output current limitation	>150% Inom. continuous, automatic recovery
Efficiency	91% typ.
Operating temperature	-25 °C to +80 °C derating 2.33%/K above 50 °C
Altitude	Operating up to 5000m altitude
Safety standards / approvals	UL 60950-1, IEC/EN 60950-1, IEC/EN 60601-1 3rd edition, ANSI/AAMI ES60601-1:2005(R)2012
Degree of protection	class II prepared
Casing	Encased with screw terminal
Full datasheet	<a href="http://www.tracopower.com/products/tpp150.pdf">www.tracopower.com/products/tpp150.pdf</a>

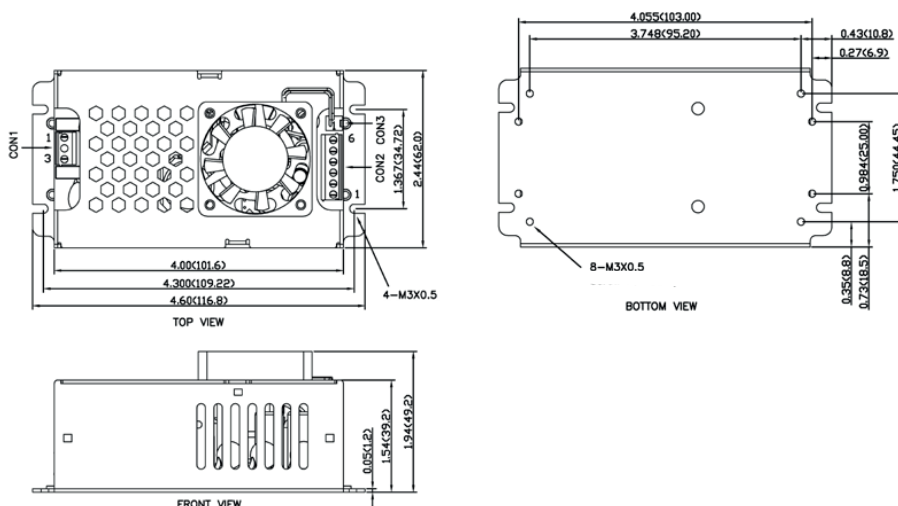
## Models

Order code	Output power max.	Output voltage	Output current max.
TPP 150-112		12 VDC	12.5 A
TPP 150-115		15 VDC	10.0 A
TPP 150-124	150 W	24 VDC	6.25 A
TPP 150-136		36 VDC	4.17 A
TPP 150-148		48 VDC	3.13 A

### Options on demand:

- open frame
- pin connector
- DIN-rail clip

## Dimensions



() = Inches

# TXM Series ▶ 15 to 320 W



- ▶ Very compact enclosed power supplies
- ▶ Cost optimized design
- ▶ Low no load power consumption <0.5 W up to 75 W units
- ▶ Screw terminal block
- ▶ No internal fan up to 150 W models
- ▶ Universal input 88–264 VAC
- ▶ Adjustable output voltage
- ▶ Short circuit and overvoltage protection
- ▶ PCB solder side conformal coated



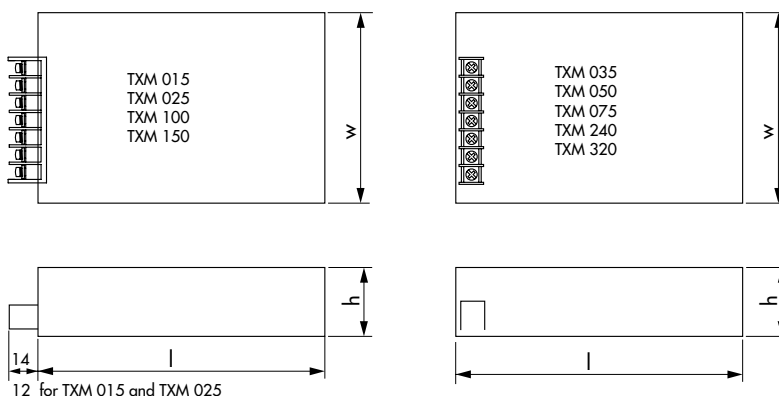
## Specifications

Input voltage range	88–264 VAC, 47–63 Hz
Line regulation	0.5%
Load regulation	2.0%
Output voltage adjustment:	±10% of Vout nom. with potentiometer
Ripple & noise	<1% of Vout nom.
EMI suppression	EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2
EMC immunity	EN 61000-6-1
Output current limitation	>105% of Iout max.
Overvoltage protection	>110% of Vout nom.
Efficiency	85% typ.
Operating temperature	-20 °C to +70 °C above 45 °C derating 2.5%/K
Safety standards / approvals	cUL/UL 60950-1, IEC/EN 60950-1
Connection	screw terminal block
Casing	Metal enclosure, 240 & 320 Watt models with internal fan
Full datasheet	<a href="http://www.tracopower.com/products/txm.pdf">www.tracopower.com/products/txm.pdf</a>

## 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	179 (7.05)	99 (3.90)	50 (1.97)
TXM 240	199 (7.83)	99 (3.90)	50 (1.97)
TXM 320	199 (7.83)	99 (3.90)	50 (1.97)

() = Inch



## Models

Order code	Output power max.	Output voltage	Output current max.
TXM 015-103	13 W	3.3 VDC	4.0 A
TXM 015-105		5.0 VDC	3.0 A
TXM 015-112	15 W	12 VDC	1.3 A
TXM 015-115		15 VDC	1.0 A
TXM 015-124		24 VDC	0.7 A
TXM 025-103	20 W	3.3 VDC	5.0 A
TXM 025-105		5.0 VDC	5.0 A
TXM 025-112	25 W	12 VDC	2.1 A
TXM 025-115		15 VDC	1.6 A
TXM 025-124		24 VDC	1.1 A
TXM 035-105	30 W	5.0 VDC	6.0 A
TXM 035-112		12 VDC	3.0 A
TXM 035-115	35 W	15 VDC	2.4 A
TXM 035-124		24 VDC	1.5 A
TXM 035-148		48 VDC	0.75 A
TXM 050-105	40 W	5.0 VDC	8.0 A
TXM 050-112		12 VDC	4.2 A
TXM 050-115	50 W	15 VDC	3.4 A
TXM 050-124		24 VDC	2.2 A
TXM 050-148		48 VDC	1.1 A
TXM 075-105	60 W	5.0 VDC	12.0 A
TXM 075-112		12 VDC	6.0 A
TXM 075-115	75 W	15 VDC	5.0 A
TXM 075-124		24 VDC	3.2 A
TXM 075-148		48 VDC	1.6 A
TXM 100-105		5.0 VDC	20.0 A
TXM 100-112		12 VDC	8.5 A
TXM 100-115	100 W	15 VDC	6.7 A
TXM 100-124		24 VDC	4.2 A
TXM 100-148		48 VDC	2.15 A
TXM 150-112		12 VDC	12.5 A
TXM 150-124	150 W	24 VDC	6.3 A
TXM 150-148		48 VDC	3.2 A
TXM 240-112		12 VDC	16.7 A
TXM 240-124	240 W	24 VDC	8.4 A
TXM 240-148		48 VDC	4.2 A
TXM 320-112		12 VDC	25.0 A
TXM 320-124	320 W	24 VDC	13.0 A
TXM 320-136		36 VDC	8.8 A
TXM 320-148		48 VDC	6.7 A

# TXL Series ▶ 15 to 1000 W

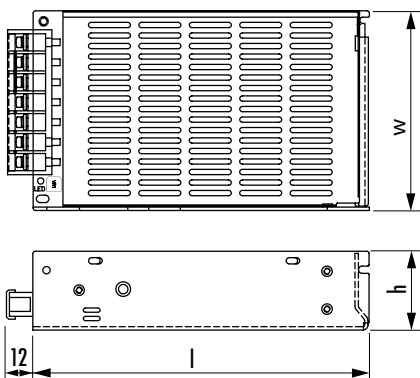


- ▶ Metal casing with screw terminal block
- ▶ Single-, dual- and triple output models
- ▶ Multi output models with isolated outputs
- ▶ Universal input 85–264 VAC
- ▶ Adjustable output voltage
- ▶ Short circuit and overvoltage protection



Specifications	
Input voltage range	85–264 VAC, 50/60 Hz 120–370 VDC
Line regulation	1.0 %
Load regulation	2.0 %
Output voltage adjustment:	±10 % of Vout nom. with potentiometer
Ripple & noise	<1% of Vout nom.
EMI suppression	EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2
EMC immunity	EN 61000-6-1
Output current limitation	at 105–150 % of Iout max. (foldback, automatic recovery)
Overvoltage protection	at 115–140 % of Vout nom.
Efficiency	80 % typ.
Operating temperature	–10 °C to +70 °C above 45 °C derating 2%/K
Safety standards / approvals	cUL/UL 60950-1, EN 60950-1, CB-report
Connection	screw terminal block
Casing	aluminium / steel, 230 –1000 W models with internal fan
Full datasheet	<a href="http://www.tracopower.com/products/txl.pdf">www.tracopower.com/products/txl.pdf</a>

Dimensions			
Case Type	Length l	Width w	Height h
B	62 (2.48)	51 (2.01)	28 (1.10)
C	79 (3.11)	51 (2.01)	29 (1.14)
D	99 (3.90)	82 (3.23)	35 (1.38)
E	160 (6.30)	95 (3.74)	38 (1.50)
J	198 (7.80)	95 (3.74)	38 (1.50)
L	198 (7.80)	99 (3.90)	50 (1.97)
N	198 (7.80)	99 (3.90)	45 (1.77)
O	212 (8.35)	115 (4.53)	50 (1.97)
P	275 (10.83)	125 (4.92)	63 (2.48)
Q	295 (11.61)	127 (5.00)	40 (1.57)



( ) = Inch

Models				
Order code	Output power max.	Output voltage nom.	Output current max.	Case
TXL 015-3.3S	10 W	3.3 VDC	3.0 A	B
TXL 015-05S		5 VDC	3.0 A	B
TXL 015-12S		12 VDC	1.3 A	B
TXL 015-15S	15 W	15 VDC	1.0 A	B
TXL 015-24S		24 VDC	0.63 A	B
TXL 015-48S		48 VDC	0.32 A	B
TXL 025-3.3S	20 W	3.3 VDC	6.0 A	C
TXL 025-05S		5 VDC	5.0 A	C
TXL 025-12S		12 VDC	2.1 A	C
TXL 025-15S	25 W	15 VDC	1.7 A	C
TXL 025-24S		24 VDC	1.1 A	C
TXL 025-48S		48 VDC	0.57 A	C
TXL 035-3.3S	30 W	3.3 VDC	9.0 A	D
TXL 035-05S		5 VDC	7.0 A	D
TXL 035-12S		12 VDC	3.0 A	D
TXL 035-15S	35 W	15 VDC	2.4 A	D
TXL 035-24S		24 VDC	1.5 A	D
TXL 035-48S		48 VDC	0.8 A	D
TXL 050-05S	50 W	5 VDC	10.0 A	D
TXL 060-3.3S	50 W	3.3 VDC	15.0 A	E
TXL 060-05S		5 VDC	12.0 A	E
TXL 060-12S	60 W	12 VDC	5.0 A	D
TXL 060-15S		15 VDC	4.0 A	D
TXL 060-24S		24 VDC	2.5 A	D
TXL 070-12S		12 VDC	6.0 A	E
TXL 070-15S	70 W	15 VDC	4.8 A	E
TXL 070-24S		24 VDC	3.0 A	E
TXL 070-48S		48 VDC	1.5 A	E
TXL 100-05S		5 VDC	20.0 A	J
TXL 100-12S		12 VDC	8.5 A	J
TXL 100-15S	100 W	15 VDC	6.8 A	J
TXL 100-24S		24 VDC	4.5 A	J
TXL 100-48S		48 VDC	2.1 A	J
TXL 150-05S		5 VDC	30.0 A	L
TXL 150-12S	150 W	12 VDC	12.5 A	L
TXL 150-24S		24 VDC	6.3 A	L
TXL 150-48S		48 VDC	3.2 A	L
TXL 230-12S		12 VDC	19.2 A	N
TXL 230-24S	230 W	24 VDC	9.6 A	N
TXL 230-48S		48 VDC	4.8 A	N
TXL 350-24S	350 W	24 VDC	14.7 A	O
TXL 350-48S		48 VDC	7.5 A	O
TXL 750-24S	750 W	24 VDC	31.3 A	P
TXL 750-48S		48 VDC	15.8 A	P
TXL 1000-24S	1000 W	24 VDC	40 A	Q
TXL 1000-48S		48 VDC	21 A	Q

Multi Output Models					
Order code	Output power	Output 1* max.	Output 2*	Output 3*	Case
TXL 035-0512D	35 W	+5 VDC / 4.0 A	+12 VDC / 2.5 A		D
TXL 035-0524D		+5 VDC / 4.0 A	+24 VDC / 1.3 A		D
TXL 035-1212D		+12 VDC / 1.5 A	-12 VDC / 1.5 A		D
TXL 035-1515D		+15 VDC / 1.3 A	-15 VDC / 1.3 A		D
TXL 060-0512DI	60 W	5 VDC / 8.0 A	12 VDC / 4.0 A		E
TXL 060-0524DI		5 VDC / 8.0 A	24 VDC / 2.2 A		E
TXL 060-0521TI		5 VDC / 8.0 A	12 VDC / 3.5 A	5 VDC / 1.0 A	E
TXL 060-0522TI		5 VDC / 7.0 A	12 VDC / 3.5 A	12 VDC / 1.0 A	E
TXL 060-0533TI		5 VDC / 7.0 A	15 VDC / 3.0 A	15 VDC / 1.0 A	E
TXL 060-0534TI		5 VDC / 6.0 A	12 VDC / 1.5 A	24 VDC / 1.2 A	E
TXL 100-0512DI	100 W	5 VDC / 12 A	12 VDC / 6.0 A		J
TXL 100-0524DI		5 VDC / 10 A	24 VDC / 4.0 A		J
TXL 100-0521TI		5 VDC / 12 A	12 VDC / 5.0 A	5 VDC / 1.5 A	J
TXL 100-0522TI		5 VDC / 12 A	12 VDC / 5.0 A	12 VDC / 1.5 A	J
TXL 100-0533TI		5 VDC / 12 A	15 VDC / 3.0 A	15 VDC / 1.5 A	J
TXL 100-0534TI		5 VDC / 12 A	12 VDC / 3.0 A	24 VDC / 2.0 A	J

60 & 100 Watt models with fully isolated outputs  
\*Total power not to exceed specified output power



# TXH Series ▶ 120 to 480 W



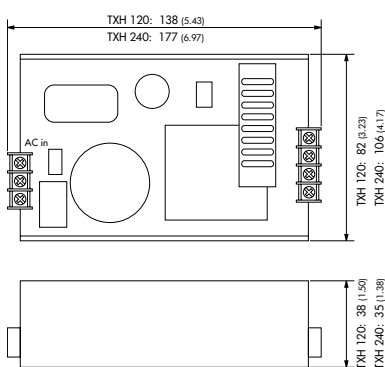
- ▶ Compact U-bracket and enclosed power supplies
- ▶ Screw terminal block
- ▶ Very high efficiency up to 93%
- ▶ No internal fan for 120 W & 240 W models
- ▶ Universal input 90–264 VAC
- ▶ Short circuit and overvoltage protection



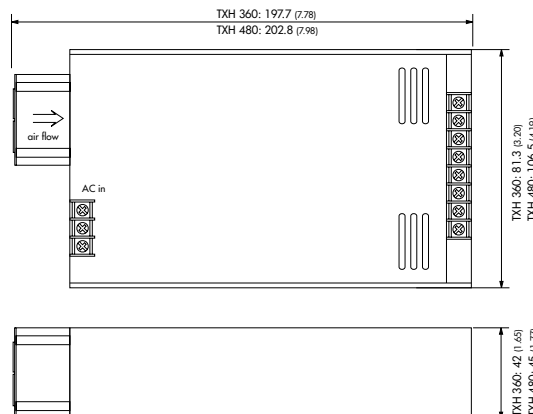
Specifications		Models			
Input voltage range	90–264 VAC, 50/60 Hz 120–370 VDC	<b>Order code</b>	<b>Output power max.</b>	<b>Output voltage</b>	<b>Output current max.</b>
Line regulation	1.0%	TXH 120-112	120 W	12 VDC	10 A
Load regulation	1.0%	TXH 120-124		24 VDC	5 A
Output voltage adjustment:	±10% of Vout nom. with potentiometer TXH 360 and TXH 480 models only	TXH 120-148		48 VDC	2.5 A
Ripple & noise	<1% of Vout nom.	TXH 240-112	240 W	12 VDC	20 A
EMI suppression	EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2	TXH 240-124		24 VDC	10 A
EMC immunity	EN 61000-6-1	TXH 240-148		48 VDC	5 A
Output current limitation	>110% of Iout max.	TXH 360-112	360 W	12 VDC	30 A
Overvoltage protection	>110% of Vout nom.	TXH 360-124		24 VDC	15 A
Efficiency	90% typ.	TXH 360-148		48 VDC	7.5 A
Operating temperature	-10 °C to +70 °C above 50 °C derating 2.5%/K	TXH 480-112*	480 W	12 VDC	40 A
Safety standards / approvals	cUL/UL 60950-1, EN 60950-1, CB-report	TXH 480-124*		24 VDC	20 A
Connection	screw terminal block TXH 480: connector for control functions (remote On/Off, sense line, standby / auxillary output)	TXH 480-148*		48 VDC	10 A
Casing	120 & 240 W models: U-bracket (optional cover) 360 & 480 W models: Metal enclosure	* Standby / auxillary output 5 V / 600 mA			
Full datasheet	<a href="http://www.tracopower.com/products/txh.pdf">www.tracopower.com/products/txh.pdf</a>	<b>Cover</b>			
		TXH 120-COV	Cover for TXH 120 models		
		TXH 240-COV	Cover for TXH 240 models		

## Dimensions

120 W & 240 W models:



360 & 480 W models:



() = Inches

# TXH-600 Series ▶ 600 W



- ▶ Universal input: 90–264 VAC or 120–370 VDC
- ▶ Active power factor correction (>0.95)
- ▶ Very high efficiency up to 93%
- ▶ Current share function for up to 3 units in parallel
- ▶ Adjustable output voltage
- ▶ Protection against over-voltage, overtemperature, overload and short circuit
- ▶ Rear side IEC-C13 line socket, including mains switch and fuse

**NEW**  
Product



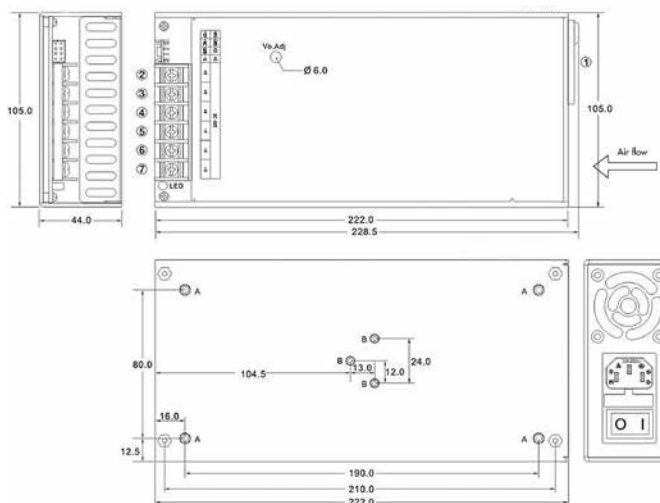
## Specifications

Input voltage range	90–264 VAC, 50/60 Hz 120–370 VDC
Line regulation	1.0% max.
Load regulation	1.0% max.
Output voltage adjustment:	±5% of Vout nom. with potentiometer
Ripple & noise	<1% of Vout nom. [mVpk-pk]
EMI suppression	EN 55011, class B, EN 55022, class B and FCC, part 15, level B, EN 61000-3-2
EMC immunity	EN 61000-6-1
Output current limitation	auto recovery
Overvoltage protection	>120% of Vout nom.
Efficiency	92% typ.
Operating temperature	–25 °C to +65 °C above 50 °C derating 4%/K
Safety standards / approvals	cUL/UL 60950-1, EN 60950-1, CB-report
Connection	screw terminal block
Casing	Metal enclosure
Full datasheet	<a href="http://www.tracopower.com/products/txh600.pdf">www.tracopower.com/products/txh600.pdf</a>

## Models

Order code	Output power max.	Output voltage	Output current max.
TXH 600-112	600 W	12 VDC	45 A
TXH 600-124		24 VDC	25 A
TXH 600-148		48 VDC	12.5 A
TXH 600-154		54 VDC	11.1 A

## Dimensions



( ) = Inches

# TEX Series ▶ 120 W



- ▶ Sealed, rugged die-cast aluminium casing
- ▶ Dust- and water resistant to IP67 & NEMA 4X
- ▶ Wide operating temperature range -40 °C to +85 °C
- ▶ Easy connection via waterproof plugs
- ▶ Universal input voltage 85–264 VAC, 85–375 VDC
- ▶ Adjustable output voltage
- ▶ Short circuit and overload protection
- ▶ Certificate for test and measurements EN 61010 3rd edition
- ▶ UL 508 listed
- ▶ Class I, zone 2 approval incl. ATEX certification for hazardous locations (Class I, Div. 2)



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz 85–375 VDC
Output regulation	2.5% max.
Output voltage adjustment	12 V model: 12 – 15 VDC, 24 V model: 24 – 28 VDC, with internal potentiometer
Ripple & noise	<50 mVpk-pk (20 MHz BW)
EMI suppression	EN 55022 class B, harmonic current EN 61000-3-2, class A
EMC immunity	EN61000-6-2, SEMI F47
Output current limitation	>125% Inom.
Efficiency	90% typ.
Operating temperature	-40 °C to +85 °C (convection cooling) above 60 °C derating 2.0%/K
Safety standards / approvals	UL 508, UL 1604, EN 61010 3rd edition, IEC/EN 60950-1 (CB-Report), EN 50178, EN 60204, EN 61558-2-8, IEC/EN 60079-15 (class I, div.2), UL 60079-15, ANSI/ISA 12.12.01 (class I, div. 2), EN 50021, ATEX 94/9/EC
Degree of protection	safety class I, (IEC 536)
Case protection	IP 67 (IEC 60529), NEMA 4X rated, UL 50
Shock & vibration	meets IEC 60068-2-6, IEC 60068-2-27
Humidity	up to 100% rel. H with condensation
Full datasheet	<a href="http://www.tracopower.com/products/text120.pdf">www.tracopower.com/products/text120.pdf</a>

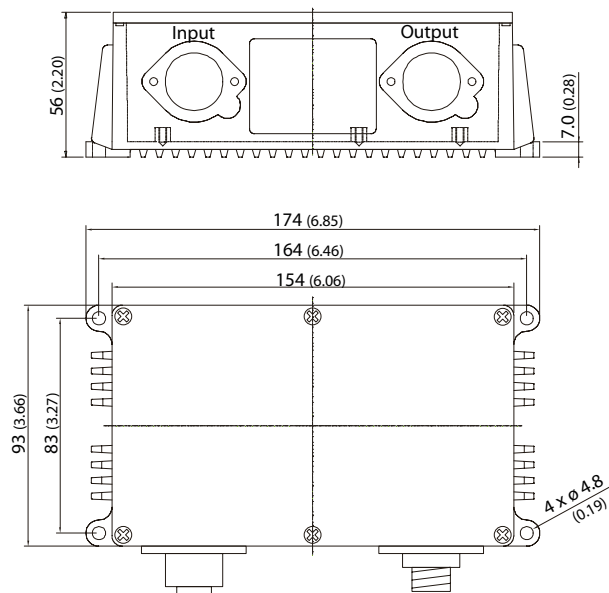
## Models

Order code	Output power	Output voltage	Output current max.
TEX 120-112	96 W	12 VDC	8 A
TEX 120-124	120 W	24 VDC	5 A

## Accessories

TEX-P11	AC input connector
TEX-P21	DC output connector
TEX-C11	Input cable assembly 2m (for UL508 compliance)
TEX-C21	Output cable assembly 2m

## Dimensions



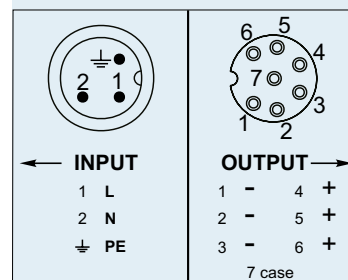
( ) = Inches

## Mating Connectors (not included in shipment)

AC Input: Binder 3-pin female circular plug 693 series: 99-4222-14-04

DC Output: Binder 7-pin male circular plug 693 series: 99-4225-160-07

units are supplied with sealing connector caps





# TBL Series ▶ 15 to 150 W



- ▶ Low profile plastic case
- ▶ For building- and industrial automation applications
- ▶ Model with battery controller for UPS system
- ▶ Fits into flat control panels
- ▶ Meets NEC class II (limited power source)
- ▶ Safety class II
- ▶ Universal input voltage 85–264 VAC
- ▶ Adjustable output voltage
- ▶ Short circuit and overload protection
- ▶ UL 508 listed



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz TBL 150 models: 85–132 / 187–264 VAC (autorange)
Output regulation	1.0% max.
Output voltage adjustment range	5 V models: 5.0 – 5.2 VDC 12 V models: 12.0 – 16.0 VDC 24 V models: 24.0 – 28.0 VDC
Ripple & noise	<100 mVpk-pk (20MHz BW)
EMI emission	EN 55011/22, class B, EN61000-6-3
EMC immunity	EN 61000-6-2
Output current limitation	>105% of I <sub>out</sub> max.
Over voltage protection	at 140% of V <sub>out</sub> nom.
Efficiency	80% typ.
Operating temperature	-25 °C to +70 °C above 60 °C derating 2.5%/K
Safety standards / approvals	UL 1310, IEC/EN 60950-1, CB-Report, cUL/UL 508 listed, EN 50178, EN 60204, EN 61558-2-8
Connection	screw terminals
Casing	plastic (UL 94V-0 rated)
Mounting	snap-on mounting on 35 mm DIN-rail or wall mount with included brackets
Full datasheet	<a href="http://www.tracopower.com/products/tbl.pdf">www.tracopower.com/products/tbl.pdf</a>

## Models

Order code	Output power max.	Output voltage	Output current max.
TBL 015-105*		5.0 VDC	2.4 A
TBL 015-112*	15 W	12 VDC	1.25 A
TBL 015-124*		24 VDC	0.63 A
TBL 030-112*	30 W	12 VDC	2.5 A
TBL 030-124*		24 VDC	1.25 A
TBL 060-112*	60 W	12 VDC	4.5 A
TBL 060-124*		24 VDC	2.5 A
TBL 090-112	90 W	12 VDC	6.0 A
TBL 090-124*		24 VDC	3.75 A
TBL 150-112	120 W	12 VDC	10 A
TBL 150-124	150 W	24 VDC	6.25 A

\* Models meet NEC class II (limited power source) acc. UL 1310

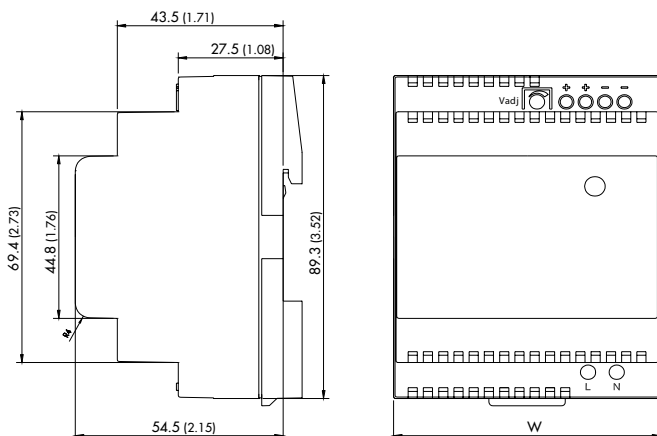
## Model with Battery Controller (For UPS-System)

Order code	Battery voltage	Max. Battery load current	Output voltage adj.	Power max.
TBL 060-124BC	24 VDC	2 A	26–29.5 VDC	60 W



For details see datasheet: [www.tracopower.com/products/tbl-bc.pdf](http://www.tracopower.com/products/tbl-bc.pdf)

## Dimensions



() = Inches

## Type

## Width (w)

TBL 015	26.3 (1.03)
TBL 030	52.5 (2.07)
TBL 060	70 (2.78)
TBL 090	105 (4.13)
TBL 150	175 (6.89)
TBL 060-124BC	175 (6.89)

# TCL / TCL-DC Series ▶ 24 to 240 W



- ▶ For industrial-, office- and residential environments
- ▶ Available with detachable screw terminals or spring clamps
- ▶ Standard models with 5, 12, 24 and 48 VDC output
- ▶ Models with DC input: 9.5–18 VDC and 18–75 VDC
- ▶ Universal input 85–264 VAC
- ▶ Worldwide safety approval package
- ▶ Adjustable output voltage
- ▶ Power Good signal
- ▶ Parallel and redundant operation



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz, 85–375 VDC TCL 240 models: 85–132 / 187–264 VAC (autorange) DC Input models: 18–75 VDC TCL 012–124 DC: 9.5–18 VDC
Output regulation	1.25% max.
Ripple & noise	<50 mVpk-pk (20 MHz BW)
EMI emission	EN 55011, class B, EN 55022, class B, EN61000–6–3
EMC immunity	EN 61000–6–2 (industrial environment), SEMI F47
Output current limitation	at 130% of Iout max.
Over voltage protection	at 140% of Vout nom.
Efficiency	90% typ.
DC-OK Signal	open collector / max. 30 mA
Operating temperature	–10 °C to +70 °C , –25 °C to +70 °C for DC input models above 50 °C derating 1.7%/K
Safety standards / approvals	cUL/UL 60950–1, UL 508C listed, IEC/EN 60950–1, CB-Report EN 50178, EN 60204, EN 61558–2–8
Connection	detachable screw terminals or spring clamp terminals
Casing	plastic (UL 94V–0 rated)
Mounting	snap-on mounting on 35 mm DIN-rail or chassis mounting with mounting bracket (included)
Options	output current characteristics set for battery charging applications
Full datasheet	AC/DC: <a href="http://www.tracopower.com/products/tcl.pdf">www.tracopower.com/products/tcl.pdf</a> DC/DC: <a href="http://www.tracopower.com/products/tcl-dc.pdf">www.tracopower.com/products/tcl-dc.pdf</a>

## Models

Order code	Output power max.	Output voltage (adjustable output)	Output current max.
TCL 024-105	24 Watt	5.1 VDC	4.0 A
TCL 024-112		12 VDC	2.0 A
TCL 024-124 (C)		24 VDC	1.0 A
TCL 060-112 (C)	60 Watt	12 VDC	4.0 A
TCL 060-124 (C)		24 VDC	2.5 A
TCL 060-148 (C)		48 VDC	1.25 A
TCL 120-112 (C)	120 Watt	12 VDC	8.0 A
TCL 120-124 (C)		24 VDC	5.0 A
TCL 240-124	240 Watt	24 VDC	10.0 A

without suffix: detachable screw terminal block  
with suffix C: spring clamps

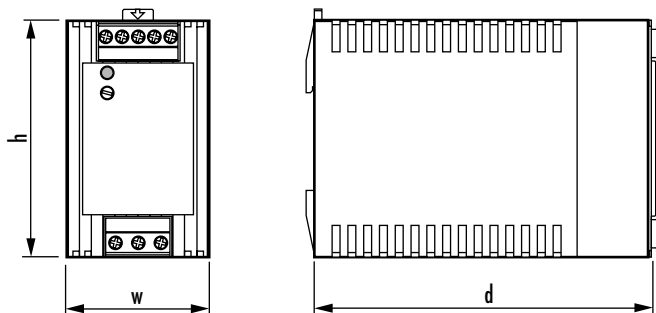
## Redundancy Module

Order code	2 Inputs	Output voltage	Output current max.
TCL-REM240	5 – 60 VDC 144 W max./input	Vin – 0.9 VDC	8.0 A

## Models with DC Input

Order code	Input voltage range	Output voltage (adjustable output)	Output current max.
TCL 012-124DC	9.5–18 VDC	24 VDC	1.0 A
TCL 024-105DC	18–75 VDC	5 VDC	5.0 A
TCL 024-112DC		12 VDC	2.0 A
TCL 024-124DC		24 VDC	1.0 A
TCL 060-112DC	18–75 VDC	12 VDC	5.0 A
TCL 060-124DC		24 VDC	2.5 A

## Dimensions



Type	Width w	Height h	Depth d
TCL 012	27 (1.06)	75 (2.95)	100 (3.94)
TCL 024 & REM	27 (1.06)	75 (2.95)	100 (3.94)
TCL 060	45 (1.77)	75 (2.95)	100 (3.94)
TCL 120	85 (3.35)	75 (2.95)	100 (3.94)
TCL 240	85 (3.35)	110 (4.33)	125 (4.92)

# TPC Series ▶ 30 to 120 W



- ▶ Slim plastic casing
- ▶ For industrial-, office- and residential environments
- ▶ Meets ErP directive (green mode), <0.3 W no load power consumption, high efficiency across full load range
- ▶ Universal input 85–264 VAC
- ▶ Worldwide safety approval package
- ▶ Adjustable output voltage +20% of nominal
- ▶ Power Good signal
- ▶ Remote On/Off
- ▶ Parallel and redundant operation



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz universal input 90–375 VDC
Line regulation	0.5% max.
Load regulation	0.5% max.
Ripple & noise	<80 mVpk-pk (20 MHz BW)
EMI emission	EN61000-6-3 (residential environment)
EMC immunity	EN 61000-6-2 (industrial environment), SEMI F47
Output current limitation	100 – 200% of Iout max. (constant current)
Overvoltage protection	at 160% of Vout nom.
Efficiency	87% average at power consumption 25–100%. – standby power loss: TPC 030: <0.3W, other models <0.5W
Operating temperature	–25°C to +70°C above 50°C derating 2.5% / K
Safety standard	IEC/EN 60950-1, EN 50178, EN 60204, UL 508, UL 60950-1
Connection	screw terminals
Casing	plastic
Mounting	snap-on mounting on 35 mm DIN-rail or chassis mounting with mounting bracket (included)
Remote On/Off	shutdown input for standby operation – power loss: TPC 030: <0.3 W, other models <0.5 W
Full datasheet	<a href="http://www.tracopower.com/products/tpc.pdf">www.tracopower.com/products/tpc.pdf</a>

## Models

Order code	Output power max.	Output voltage nominal	Output voltage adjustable range	Output current max.
TPC 030-105	20 W	5 VDC	5.0–6.0 VDC	4.0 A
TPC 030-112	30 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	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	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

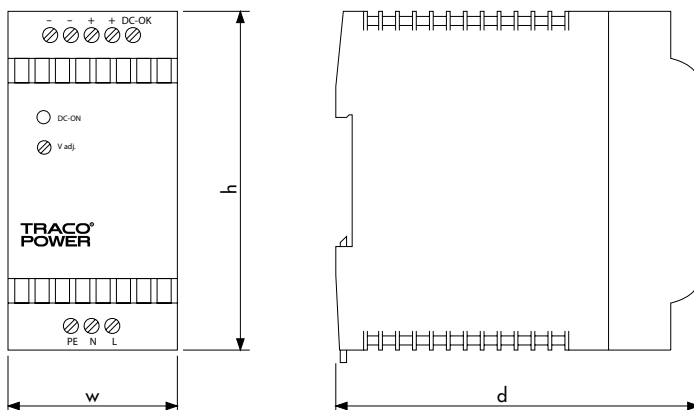
## Redundancy Module

Order code	2 Inputs	Output voltage	Output current max.
TPC-REM240-24	24 VDC 5 A max / input	24 – 27 VDC adjustable	10.0 A



- Active current sharing
- DC-OK signal output

## Dimensions



Type	Width w	Height h	Depth d
TPC 030	26.5 (1.04)	90 (3.54)	96.5 (3.80)
TPC 055	45 (1.77)	90 (3.54)	96.5 (3.80)
TPC-REM240-24	45 (1.77)	90 (3.54)	96.5 (3.80)
TPC 080	63 (2.48)	90 (3.54)	96.5 (3.80)
TPC 120	72 (2.83)	90 (3.54)	110 (4.33)

() = Inches

# TSPC Series ▶ 50 to 480 W



- ▶ Cost optimized design in rugged, compact metal casing for harsh industrial environments
- ▶ Operating temperature range -25 °C to +70 °C
- ▶ Boost power up to 120%
- ▶ Industrial safety approval package
- ▶ ATEX certification for hazardous locations
- ▶ Power Good signal
- ▶ Overload and over temperature protection
- ▶ Vibration and shock proof



**NEW Models**

## Specifications

Input voltage range	85-132 VAC / 187-264 VAC by selection switch, 47-63 Hz
Line regulation	1.0% max.
Load regulation	1.0% max
Ripple & Noise	<200 mVpk-pk
EMI emission	EN 61204-3, EN 61000-6-3
EMC immunity	EN 61204-3, EN 61000-6-2 (industrial environment), SEMI F47
Output current limitation	at 120% of Iout max.
Over-temperature protection	switch off at over-temperature, automatic restart.
Over voltage protection	45 V
Efficiency	90% typ.
Operating temperature	-25 °C to +70 °C above 60 °C derating 2.5%/K
Safety standards / approvals	IEC/EN 60950-1, UL 60950-1, CSA 22.2 No 60950-1-07 UL 508, CSA-C22.2 No.107, EN 60204-1, EN 50178 EN 61558-2-4, EN 60079-15- IIG EX nA IIC T4
Degree of protection	safety class I (IEC 536).
Case protection	IP20 (IEC 529)
Vibration/Shock	IEC 60068-2-6 / IEC 60068-2-27
Connection	screw terminals
Casing	aluminium (chassis) / stainless steel (cover)
Mounting	- snap-on mounting on 35 mm DIN-Rail - wall mounting brackets (option)
Full datasheet	<a href="http://www.tracopower.com/products/tspc.pdf">www.tracopower.com/products/tspc.pdf</a>

## Models

Order code	Output power max.	Output voltage nom.	Output current max.
TSPC 050-112	50 W	12 VDC	4.0 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

## Decoupling Module

Order code	Input voltage	Input current	Voltage drop across the diodes
TSPC-DCM600	5 - 28 VDC max.	25 A max.	0.75 V typ. / 1.2 V max.



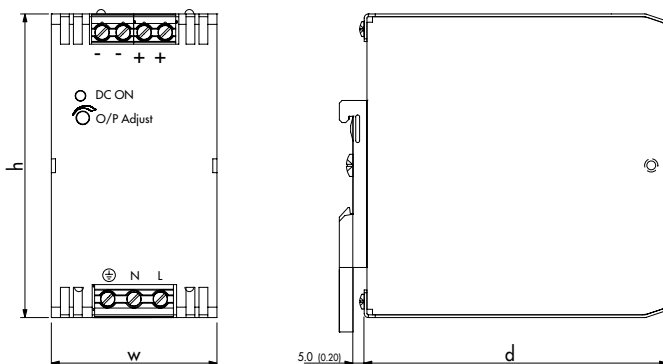
The module contains two diodes for redundant operation of two power supplies of any series. There is no active current sharing and no signal output.

[www.tracopower.com/products/tspc-dcm.pdf](http://www.tracopower.com/products/tspc-dcm.pdf)

## Wall mount brackets

TSP-WMK03	for 80 - 240 W and -DCM models
TSP-WMK02	for 480 W model

Type	Width w	Height h	Depth d
TSPC 050	35.5 (1.45)	110 (4.33)	87 (3.56)
TSPC 080	40 (1.57)	110 (4.33)	110 (4.33)
TSPC 120	46 (1.81)	110 (4.33)	110 (4.33)
TSPC 240	60 (2.36)	110 (4.33)	110 (4.33)
TSPC 480	150 (5.90)	110 (4.33)	115 (4.53)
TSPC-DCM600	54 (2.13)	110 (4.33)	110 (4.33)



## TSP Series ▶ 72 to 600 W



- ▶ Rugged, ultra compact metal casing for harsh industrial environments
- ▶ Operating temperature range  $-25\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$
- ▶ Industrial safety approval package
- ▶ ATEX certification for hazardous locations (Opt.)
- ▶ Add-on function modules for system application
- ▶ Power Good signal, remote On/Off
- ▶ Overload and over temperature protection
- ▶ Vibration and shock proof
- ▶ Detachable screw terminal block



## Specifications

Input voltage range	85–264 VAC, 47–63 Hz, autorange
Line regulation	0.5% max.
Load regulation	0.5% max
Ripple & Noise	<150 mVpk-pk
EMI emission	EN 61204-3, EN 61000-6-3
EMC immunity	EN 61204-3, EN 61000-6-2 (indust. environment), SEMI F47
Output current limitation	at max. output current (constant current, automatic restart)
Over-temperature protection	switch off at over-temperature, automatic restart.
Output characteristic	selectable for parallel operation or battery charging application
Over voltage protection	20 V for 12 VDC models, 35 V for 24 VDC models, 60V for 48 VDC models
Efficiency	87% typ.
Operating temperature	$-25\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$ above $40\text{ }^{\circ}\text{C}$ derating see datasheet
Safety standards / approvals	IEC/EN 60950-1, UL 60950-1, CSA-C22.2 No. 60950-1-03 UL 508, CSA-C22.2 No. 107, EN 60204, EN 50178, EN 61558-2-4, with option -EX: UL 60079-15 (Class I, Division 2, Groups A,B,C,D AEx n C II C T4 U), EN 60079-15 IIIG EEX nAC IIC T4
Degree of protection	safety class I (IEC 536).
Case protection	IP20 (IEC 529)
Vibration/Shock	IEC 60068-2-6 / IEC 60068-2-27
Connection	detachable screw terminals
Casing	aluminium (chassis) / stainless steel (cover)
Mounting	– snap-on mounting on 35 mm DIN-Rail – wall mounting brackets (option)
Full datasheet	<a href="http://www.tracopower.com/products/tsp.pdf">www.tracopower.com/products/tsp.pdf</a>

## Models

<sup>1)</sup> Order code	Output power max.	<sup>2)</sup> Output voltage nom.	<sup>3)</sup> Output current max.
TSP 070-112	72 W	12 VDC	6.0 A
TSP 090-124		24 VDC	3.75 A
TSP 090-124N <sup>4)</sup>	90 W	24 VDC	3.75 A
TSP 090-148		48 VDC	2.0 A
TSP 140-112		12 VDC	12.0 A
TSP 180-124	180 W	24 VDC	7.5 A
TSP 180-148		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

<sup>1)</sup> Suffix EX: For ATEX certified models (Example TSP 180-124 EX)

<sup>2)</sup> Output voltage adjustable 12-14 VDC, 24-28 VDC, 48-56 VDC

<sup>3)</sup> Max. current at nominal output voltage and max. 40°C ambient temperature

<sup>4)</sup> Model meets EN 60950-1 sect. 2.5 and NEC Class2 (limited power source)

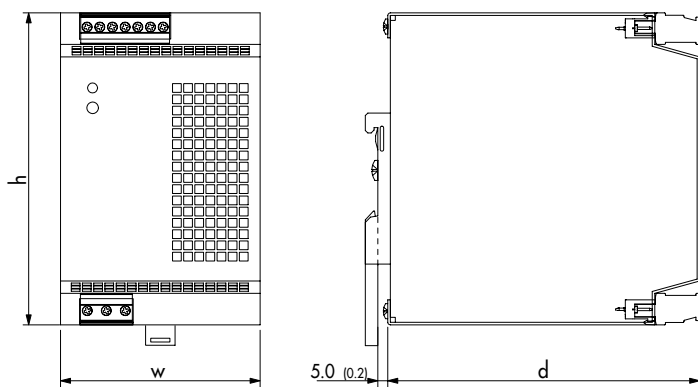
## Add-on function modules

See page 163

## Wall mount brackets

TSP-WMK03	for 72 - 180 W models
TSP-WMK02	for 360 - 600 W models

## Dimensions



() = Inches

Type	Width w	Height h	Depth d
TSP 070 / 090	35 (1.38)	110 (4.33)	110 (4.33)
TSP 140 / 180	54 (2.13)	110 (4.33)	110 (4.33)
TSP 360	80 (3.15)	125 (4.92)	125 (4.92)
TSP 600	165 (6.50)	125 (4.92)	125 (4.92)



# TSP-3P Series ▶ 240 – 960 W



- ▶ Low cost-weight-size alternative to 3-phase transformers
- ▶ 3AC 320–440 V or 3AC 400–550 VAC input ranges
- ▶ Rugged, ultra compact metal casing for harsh industrial environments
- ▶ Industrial safety approval package
- ▶ ATEX certification for hazardous locations
- ▶ Operating temperature range –25 °C to +70 °C
- ▶ 200% peak current for up to 5 seconds (electronic controlled)
- ▶ Power Good signal
- ▶ Overload and over temperature protection



## Specifications

Input voltage ranges:	3xAC 320–440 V or 3xAC 400–550 V
Line regulation	1.0% max
Load regulation	3.0% max.
Ripple & noise	<100 mVpk-pk
EMI emission	EN 61000–6–3
EMC immunity	EN 61000–6–2 (industrial environment)
Output current limitation	at 220% of nominal current (constant current, automatic restart)
Over-temperature protection	switch off at over-temperature, automatic restart
Over voltage protection	at 35 VDC
Efficiency	92% typ.
Operating temperature	–25°C to +70°C above 60°C derating 2.5%/K
Safety standards / approvals	cUL/UL 60950–1 recognized, IEC/EN 60950–1, UL 508, (CB-Report), EN 50178, EN 60204, EN 61558–2–4, FM 3611, EN 60079–15, ANSI/ISA 12.12.01 (Class I, Div. 2), ATEX 94/9/EC
Degree of protection	safety class I (IEC 536)
Case protection	IP20 (IEC 529)
Vibration/Shock	IEC 60068–2–6 / IEC 60068–2–27
Connection	detachable screw terminals
Casing	aluminium (chassis) / stainless steel (cover)
Mounting	– snap-on mounting on 35 mm DIN-Rail – wall mounting brackets (option)
Full datasheet	<a href="http://www.tracopower.com/products/tsp3p.pdf">www.tracopower.com/products/tsp3p.pdf</a>

## Models

### 240 W Models

Order code	Input voltage nom.	Output voltage nom.	Output current nom.*
TSP 240-124-3PAC400	3 AC 400 V	24 VDC	10 A
TSP 240-124-3PAC500	3 AC 500 V	24 VDC	10 A

### 480 W Models

Order code	Input voltage nom.	Output voltage nom.	Output current nom.*
TSP 480-124-3PAC400	3 AC 400 V	24 VDC	20 A
TSP 480-124-3PAC500	3 AC 500 V	24 VDC	20 A

### 960 W Models

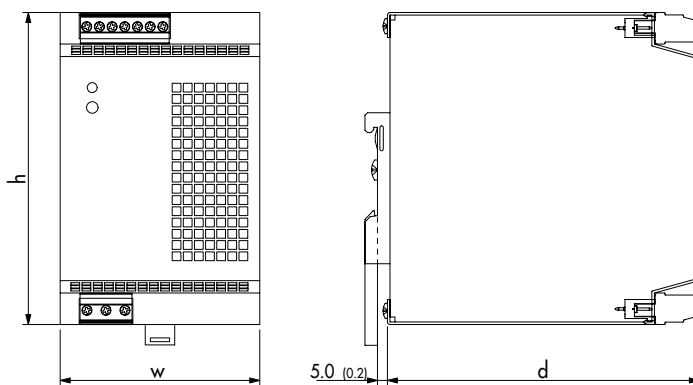
Order code	Input voltage nom.	Output voltage nom.	Output current nom.*
TSP 960-124-3PAC400	3 AC 400 V	24 VDC	40 A
TSP 960-124-3PAC500	3 AC 500 V	24 VDC	40 A

\*200% peak current for up to 5 sec.

## Wall mount brackets

TSP-WMK03	for 240 W models
TSP-WMK02	for 480 – 960 W models

## Dimensions



Type	Width w	Height h	Depth d
TSP 240	54 (2.13)	110 (4.33)	110 (4.33)
TSP 480	80 (3.15)	125 (4.92)	125 (4.92)
TSP 960	165 (6.50)	125 (4.92)	125 (4.92)

() = Inches

## TSP-WR Series ▶ 180 to 600 W



- ▶ For worldwide operation, with ultra wide input voltage ranges from 100 to 500 VAC, for single phase and two phase operation
- ▶ Rugged, ultra compact metal casing for harsh industrial environments
- ▶ Operating temperature range  $-25\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$
- ▶ Industrial safety approval package
- ▶ Add-on function modules for system application
- ▶ Overload and over temperature protection
- ▶ Power Good signal, remote On/Off
- ▶ Vibration and shock proof
- ▶ Detachable screw terminal block



## Specifications

Applicable 3-phase networks	<ul style="list-style-type: none"> <li>- TN, TT: 500 VAC Star configuration (EN60950+UL508) 500 VAC Delta (UL508 only)</li> <li>- IT: 400 VAC Delta (IEC-62103) 230 VAC Delta (IEC-60950) 500 VAC (UL508 only)</li> </ul>
Input voltage ranges	85-132VAC / 187-264VAC / 323-550VAC
Line regulation	0.5% max
Load regulation	0.5% max.
Ripple & noise	<150 mVpk-pk
EMI emission	EN 61204-3, EN 61000-6-3
EMC immunity	EN 61204-3, EN 61000-6-2 (industrial environment), SEMI F47
Output current limitation	at max. output current (constant current, automatic restart)
Over-temperature protection	switch off at over-temperature, automatic restart
Output characteristic	selectable for parallel operation or battery charging application
Efficiency	88% typ.
Operating temperature	$-25\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$ above $40\text{ }^{\circ}\text{C}$ derating see datasheet
Safety standards / approvals	cUL/UL 60950-1 recognized, UL 508, IEC/EN 60950-1, (CB-Report), EN 50178, EN 60204, EN 61558-2-16, FM 3611, IEC/EN 60079-15 (Class I, Div. 2)
Degree of protection	safety class I (IEC 536)
Case protection	IP20 (IEC 529)
Vibration/Shock	IEC 60068-2-6 / IEC 60068-2-27
Connection	detachable screw terminals
Casing	aluminium (chassis) / stainless steel (cover)
Mounting	- snap-on mounting on 35 mm DIN-Rail - wall mounting brackets (option)
Full datasheet	<a href="http://www.tracopower.com/products/tsp-wr.pdf">www.tracopower.com/products/tsp-wr.pdf</a>

## Models

<sup>1)</sup> Order code	Output power max.	<sup>2)</sup> Output voltage nom.	<sup>2)</sup> Output current max.
TSP 180-124WR	180 Watt	24 VDC	7.5 A
TSP 360-124WR	360 Watt	24 VDC	15.0 A
TSP 600-124WR	600 Watt	24 VDC	25.0 A

<sup>1)</sup> Output voltage adjustable 24-28 VDC<sup>2)</sup> Max. current at nominal output voltage and max.  $40\text{ }^{\circ}\text{C}$  ambient temperature

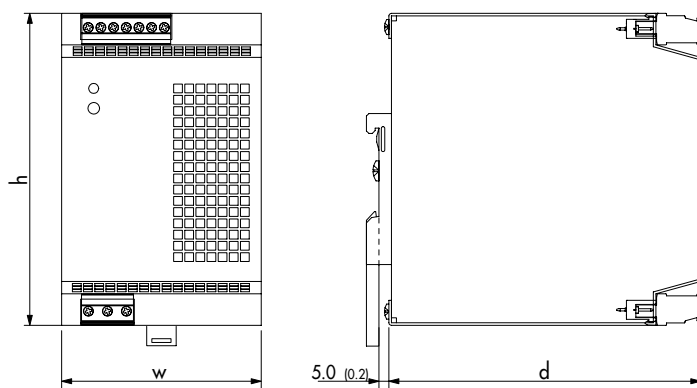
## Add-on function modules

See page 163

## Wall mount brackets

TSP-WMK03	for 180 W models
TSP-WMK02	for 360 - 600 W models

## Dimensions



( ) = Inches

Type	Width w	Height h	Depth d
TSP 180	54 (2.13)	110 (4.33)	110 (4.33)
TSP 360	80 (3.15)	125 (4.92)	125 (4.92)
TSP 600	190 (7.48)	125 (4.92)	125 (4.92)



# TSP / TSP-WR Series ▶ Function Modules

- ▶ **TSP-REM:** Module for true current sharing operation
- ▶ Alarm outputs, redundancy OK signal
- ▶ Hot swappable inputs
  
- ▶ **TSP-BCM:** Battery protection for over voltage, deep discharge, short circuit and reverse connection
- ▶ Alarm outputs for input, output and battery condition
  
- ▶ **TSP-BAT:** Battery pack for TSP-BCM battery controller modules

**NEW Models**



## Description

### Redundancy Modules

With this module and two power supplies of the TSP series a highly reliable, true redundant power system can be configured without any additional components. This module provides:



- Operation with true current sharing
- Alarm outputs and redundancy OK signal
- Hot swappable inputs can be loaded up to 15A each (resp. 25A with model TSP REM600)

Full datasheet: [www.tracopower.com/products/tsp-rem.pdf](http://www.tracopower.com/products/tsp-rem.pdf)

### TSP-BCM

This module provides a professional battery controller to charge and monitor an external lead-acid battery. Together with a power supply of the TSP series and a battery pack a perfect DC-UPS system can be configured. This module provides:



- Battery protection for over voltage, deep discharge, short circuit and reverse connection
- Remote On/Off for battery and power supply
- Alarm outputs for input, output and battery condition
- Controlled end of charge voltage by temperature sensor

### Battery Packs

Sealed, maintenance free Lead-Acid batteries incl. wall mounting kit. Available with 1.2, 3.4, 7.2 and 12 Ah capacity.



Full datasheet: [www.tracopower.com/products/tsp-bcm.pdf](http://www.tracopower.com/products/tsp-bcm.pdf)

### TSP-BFM

This module will maintain the output voltage of a 24VDC power supply during typical mains faults, short time blackouts or voltage dips of up to ten full 50 Hz cycles. During this buffer period no deterioration of the 24VDC output voltage will occur. This module provides:



- Capacitor bank for energy storage, no battery needed!
- Maintenance free, long lifetime, high performance also at low temperature.
- Guaranteed Hold-up-time 200 ms/25A to 4 s/1.2A max.
- Output 24 to 28VDC, 600W max.
- Active ready and inhibit signals

Full datasheet: [www.tracopower.com/products/tsp-bfm.pdf](http://www.tracopower.com/products/tsp-bfm.pdf)

## Redundancy Module

Order code	Input	Max. power per input	Output voltage	Output power max.
TSP-REM360	2 x 24 VDC 2 x Control	360 W	24 VDC	360 W
TSP-REM600		600 W	(24 – 27 VDC)	600 W

## Battery Controller Modules

Order code	Input	Max. power	Output voltage nom.	Output power max.
TSP-BCM12	12 VDC and	180 W	12 VDC	180 W
TSP-BCM24	24 VDC and 24 V Battery	360 W	24 VDC	360 W
TSP-BCM24A		600 W	24 VDC	600 W
TSP-BCM48	48 VDC and 48 V Battery	360 W	48 VDC	360 W
TSP-BCM48A		600 W	48 VDC	600 W

## Battery Pack

Order code	Nominal voltage	Charge current max.	Nominal capacity (at 25°C, 77°F)
TSP-BAT12-072	12 VDC	1.08 A	7.2 Ah
TSP-BAT24-012		0.30 A	1.2 Ah
TSP-BAT24-034		0.51 A	3.4 Ah
TSP-BAT24-072	24 VDC	1.08 A	7.2 Ah
TSP-BAT24-120		1.80 A	12.0 Ah
TSP-BAT24-072KIT	Installation rack without batteries		
TSP-BAT24-120KIT	Installation rack without batteries		

## Buffer Module

Order code	Input voltage	Buffer time	Output voltage	Output power
TSP-BFM24	24 VDC nom.	200 ms typ. @ 25 A 4.0s max. @ 1.2A	24 VDC	600 W 25 A max.

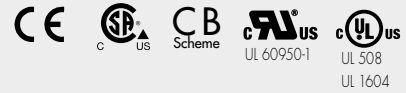
## Dimensions Function Modules

Type	Width	Height	Depth
TSP-REM360	35 (1.38)	110 (4.33)	110 (4.33)
TSP-REM600	54 (2.13)	110 (4.33)	110 (4.33)
TSP-BCM212	35 (1.38)	110 (4.33)	110 (4.33)
TSP-BCM24	35 (1.38)	110 (4.33)	110 (4.33)
TSP-BCM24A	54 (2.13)	110 (4.33)	110 (4.33)
TSP-BCM48	35 (1.38)	110 (4.33)	110 (4.33)
TSP-BCM48A	54 (2.13)	110 (4.33)	110 (4.33)
TSP-BFM24	54 (2.13)	110 (4.33)	110 (4.33)

## Dimensions Battery Packs

Type	Width	Height h	Depth
TSP-BAT24-034	137 (5.39)	140 (5.51)	76 (2.99)
TSP-BAT24-072	133 (5.24)	157 (6.18)	110 (4.33)
TSP-BAT24-120	199 (7.83)	157 (6.18)	110 (4.33)

# TIS Series ▶ 50 to 600 W



- ▶ Low profile metal casing
- ▶ Standard models with 12, 24, 48 and 72VDC
- ▶ For system applications expandable with built-in function modules (see datasheet)
- ▶ Adjustable output voltage
- ▶ Overload protection
- ▶ Worldwide safety approvals



## Specifications

Input voltage range	– 93–132 VAC / 187–264 VAC (user selectable) 50/60 Hz – TIS 50 models: 93–264 VAC (universal input) 50/60 Hz – TIS 500–124–230: 187–264 VAC 50/60 Hz – TIS 500–124–115: 93–132 VAC 50/60 Hz / 113 – 187 VDC
Line regulation	0.2% max.
Load regulation	1.0% max.
Ripple & noise	<50 mVpk-pk (20 MHz BW)
EMI suppression	EN 55011, class B, EN 55022, class B and FCC, level B
EMC immunity	EN 61000-6-2
Output current limitation	at 110% of I <sub>out</sub> max. (constant current)
Overvoltage protection	at 140% of V <sub>out</sub> nom.
Efficiency	90% typ.
Operating temperature	–25°C to +70°C above 50°C derating 2%/K
Safety standard / approvals	cUL/UL 60950-1, UL 508C listed, UL 1604 listed (except for models with options), IEC/EN 60950-1, CB-report
Connection	detachable screw terminals (plugs included) (TIS 600 models: screw terminal blocks)
Casing	stainless steel, aluminium
Mounting	snap-on mounting on 35 mm DIN-Rail or chassis mounting
Note	Output current characteristics suitable for battery charging applications
Full datasheet	<a href="http://www.tracopower.com/products/tis.pdf">www.tracopower.com/products/tis.pdf</a>

## Models

Order code	Output power max.	Output voltage (adjustable range)	Output current max.
TIS 50-112	50 Watt	12 VDC (12–14 VDC)	3.5 A
TIS 50-124		24 VDC (24–28 VDC)	2 A
TIS 75-112		12 VDC (12–14 VDC)	6 A
TIS 75-124	75 Watt	24 VDC (24–28 VDC)	3 A
TIS 75-148		48 VDC (48–52 VDC)	1.5 A
TIS 150-124	150 Watt	24 VDC (24–28 VDC)	6 A
TIS 150-148		48 VDC (48–52 VDC)	3 A
TIS 300-124		24 VDC (24–28 VDC)	12 A
TIS 300-148	300 Watt	48 VDC (48–52 VDC)	6 A
TIS 300-172		72 VDC (60–76 VDC)	4.2 A
TIS 500-124-230	500 Watt	24 VDC (24–28 VDC)	20 A
TIS 500-124-115		24 VDC (24–28 VDC)	20 A
TIS 600-124		24 VDC (24–28 VDC)	24 A
TIS 600-148	600 Watt	48 VDC (48–52 VDC)	12 A
TIS 600-172		72 VDC (60–76 VDC)	8.5 A

## Models with internal redundancy module

TIS 150-124 RED	150 W	24 VDC	6 A
TIS 150-148 RED	150 W	48 VDC	3 A
TIS 300-124 RED	300 W	24 VDC	12 A
TIS 300-148 RED	300 W	48 VDC	6 A
TIS 600-124 RED	600 W	24 VDC	24 A
TIS 600-148 RED	600 W	48 VDC	12 A

## Models with internal battery controller module

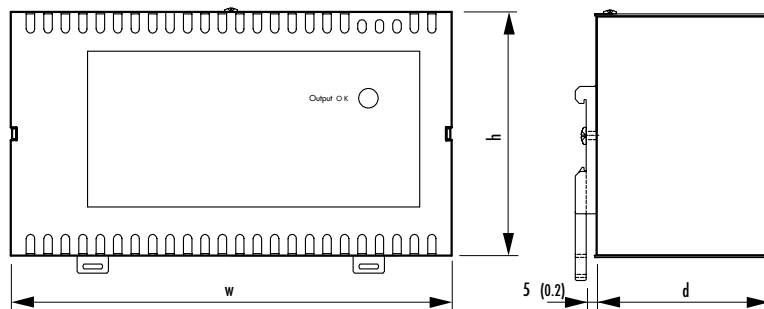
TIS 300-124 UDS	300 W	24 VDC	12 A
TIS 600-124 UDS	600 W	24 VDC	24 A

## Battery Pack

TIS 24-32 AP		24 VDC	3.2 Ah
TIS 24-70 AP		24 VDC	7 Ah

\* order code for power supply with built in function module and terminal plugs

## Dimensions



Type	Width w	Height h	Depth d
TIS 50	75 (2.95)	100 (3.94)	56.7 (2.23)
TIS 75	90 (3.54)	114.6 (4.51)	56.7 (2.23)
TIS 150	157 (6.18)	114.6 (4.51)	56.7 (2.23)
TIS 300	207 (8.15)	114.6 (4.51)	83.0 (3.27)
TIS 500	220 (8.66)	130 (8.66)	83.0 (3.27)
TIS 600	243 (9.57)	177.2 (6.98)	83.0 (3.27)

() = Inches

# TFP Series ▶ 250 to 750 W



- ▶ Robust and compact low profile
- ▶ Low heat dissipation and a high efficiency of 92% typical
- ▶ Worldwide Safety approval package.
- ▶ ATEX certification
- ▶ Wide AC and DC input voltage range  
85 – 264 VAC and 90 – 280 VDC
- ▶ Industrial operating temperature range:  
–40 °C to +70 °C
- ▶ Active isolation diode
- ▶ Mains current with power factor >98%
- ▶ Extended functional features (opt.)

**NEW  
Product**



## Specifications

Input voltage range	85–264 VAC (50/60 Hz) / 90–280 VDC
Line regulation	0.5% max.
Load regulation	1.0% max.
Ripple & noise	<100 mVpk-pk (20 MHz BW)
EMI suppression	EN 55011, class B, EN 55022, class B and FCC, class B
EMC immunity	EN 61000-6-2
Output current limitation	at 110 % of Iout max. (constant current)
Overvoltage protection	at 140 % of Vout nom.
Efficiency	92% typ.
Operating temperature	–40 °C to +70 °C above 60°C derating 3%/K
Safety standard / approvals	IEC/EN 60950-1, UL 60950-1, CSA 22.2 No. 60950-1-03 UL 508, CSA-C22.2 No.107, EN 60204-1, EN 61552-2-4 IEC/EN 60079-15
Connection	detachable screw terminals (plugs included)
Casing	stainless steel, aluminium
Mounting	snap-on mounting on 35 mm DIN-Rail or chassis mounting
Note	Output current characteristics suitable for battery charging applications
Full datasheet	<a href="http://www.tracopower.com/products/TFP.pdf">www.tracopower.com/products/TFP.pdf</a>

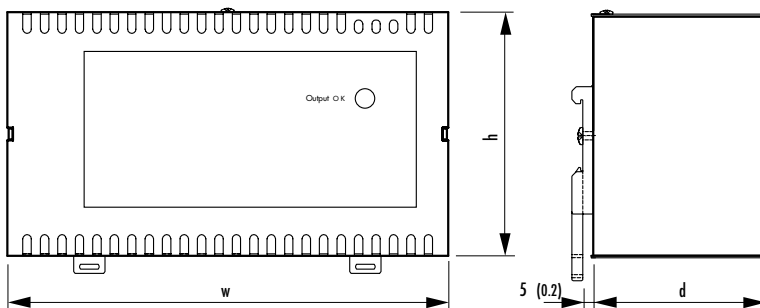
## Models

Order code	Output power max.	Output voltage (adjustable range)	Output current max.
TFP 250-124	250 W	24 VDC (24–28,8 VDC)	10 A
TFP 500-124	500 W	24 VDC (24–28,8 VDC)	20 A
TFP 750-124	750 W	24 VDC (24–28,8 VDC)	30 A

### Options:

- CS: Active current share module
- CAN: CAN-bus interface and current share function
- NET: Lan interface current share function
- BC: Battery charger module

## Dimensions



Type	Width w	Height h	Depth d
TFP 250	176 (6.93)	111 (4.37)	62 (2.44)
TFP 500	200 (7.87)	125 (4.92)	62 (2.44)
TFP 750	250 (9.84)	125 (4.92)	62 (2.44)

# TSP-BCMU360 / TSPC-240UPS Series ▶ UPS Systems

- ▶ **TSP-BCMU360:** Universal battery controller module for uninterruptible 24 VDC and 48 VDC bus voltage
- ▶ Redundant inputs for two independent sources
- ▶ **TSPC-240UPS:** Compact universal 24 VDC power supply with integrated battery controller module
- ▶ 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

**NEW**  
Product



## Description

### TSP-BCMU360



The TSP-BCMU360 module extends any 24VDC or 48VDC power supply to a DC-USP (uninterruptible DC Power supply). This module is a standalone unit and is designed to function with the Traco TSP series; however it can be used in conjunction with any fully stabilized 24V or 48V DC power supply output. The module also offers the unique feature of redundant inputs as well as the battery backup. Redundancy is achieved by two internal decoupling diodes which allow operation with two independent voltage sources in order to increase the reliability of the output even further.

Full datasheet:

[www.tracopower.com/products/tsp-bcmu360.pdf](http://www.tracopower.com/products/tsp-bcmu360.pdf)

### TSPC-240UPS



This power supply provides an integrated professional battery management system to charge and monitor an external lead-acid battery. The result is a complete DCUPS system in a compact housing with no additional parts needed. The external connected 12 V battery will be charged and held in charged mode by the power supply. In the event of a mains power failure the battery will supply the output power until the battery is discharged. As a consequence, the output voltage of the system is equivalent to the battery voltage. To avoid overcharging the battery, an external temperature sensor adjusts the battery voltage automatically to the required end of charge voltage. This can extend the battery life. The battery is protected against deep discharge.

Input voltage range	85-132 / 187-264 VAC (autorange)
Output regulation	1% max.
Ripple & noise	<100 mVpk-pk (20 MHz BW)
Output current limitation	>120% of Iout nom.
Over voltage protection	at 30 VDC
Efficiency	90% typ.
Operating temperature	-25 °C to +70 °C above 60 °C derating 2.5%/K
Safety standards / approvals	IEC/EN 60950-1, CUL/UL 508 listed
Full datasheet	<a href="http://www.tracopower.com/products/tspc-240ups.pdf">www.tracopower.com/products/tspc-240ups.pdf</a>

## Models

Order code	Input	Max. power	Output voltage nom.	Output power max.
TSP-BCMU360	24 or 48 VDC or Battery	600 W	24 or 48 VDC	600 W

## Models

Order code	Input	Max. power	Output voltage nom.	Output current max.
TSPC 240-124 UPS	85-132 VAC 187-264 VAC	240 W	24 VDC	12 A

\* A 12 VDC lead acid back up battery is required  
(to purchase on local market no Traco Power stocking item)

## Dimensions Function Modules

Type	Width	Height	Depth
TSPC 240-124 UPS	pending	pending	pending
TSP-BCMU360	54 (2.13)	110 (4.33)	110 (4.33)

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