

**TRACO POWER**

**2020 | Medical Power Solutions**  
Product Portfolio



## Company Profile

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

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

## TRACO POWER Products for applied versus non applied medical requirements

**For non-applied parts** sections of medical equipment, power and safety requirements can be satisfied by any of Traco Power power supplies, non-medical for 1×MOOP applications and medical rated power supplies for all other MOPP levels. If this part of the system is attaching to a DC input from a non-medical rated power supply, then use of our DC/DC Converters should satisfy safety requirements for 1×MOPP / 2×MOPP applications.

**For applied parts** sections of medical equipment, the clearance and creepage distances, as well as a secondary isolation barrier are required to further isolate the patient from potentially high voltages (2×MOPP is means of patient protection). The isolation barrier may be satisfied using Traco Power medical rated 2×MOPP AC/DC power supplies or DC/DC converters.

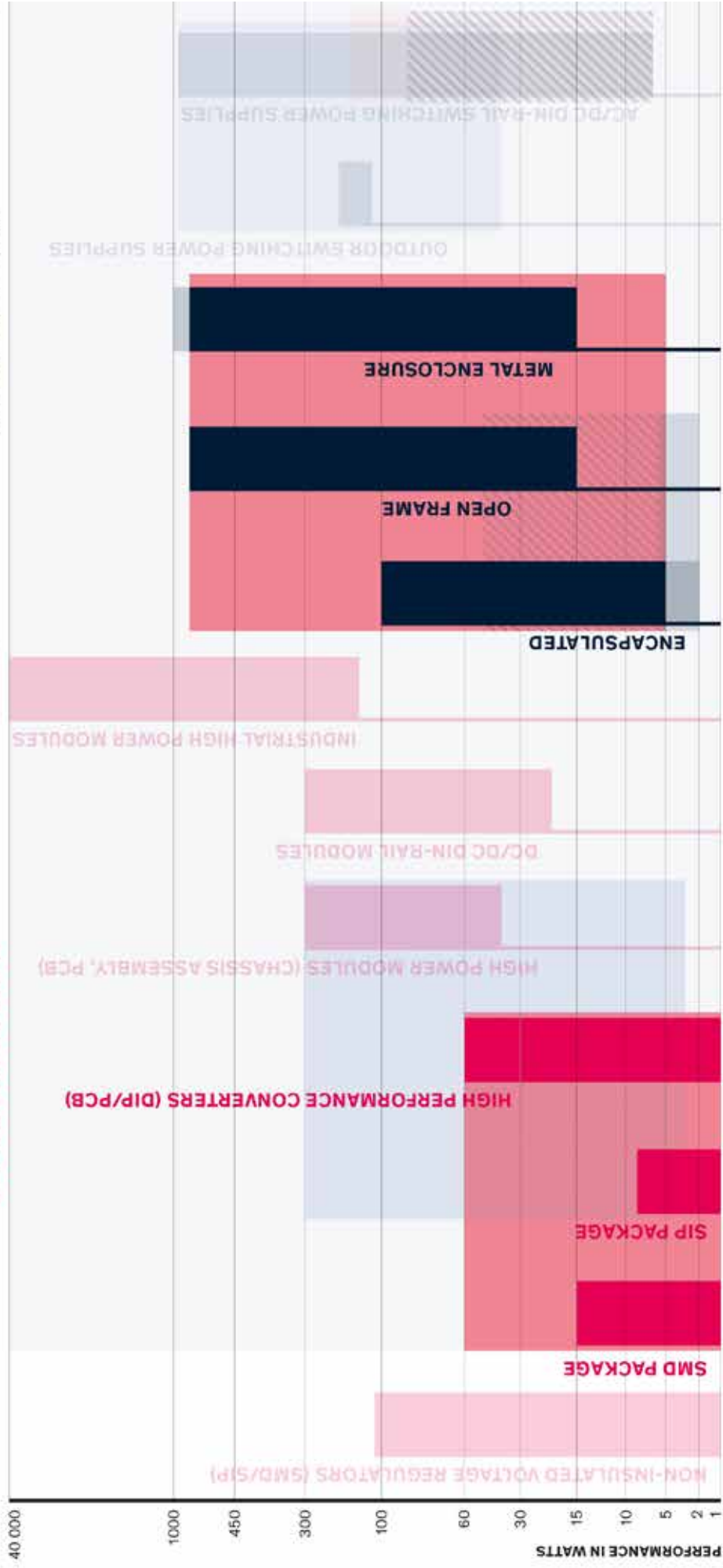
Even this reinforced insulation system does not unconditionally qualify a power supply unit and DC/DC converter for medical applications. Particular and collateral standards also require that a risk/quality management System be in place at the component level, especially for safety critical applications.

**TRACO POWER products** for applied parts applications with a 2×MOPP rating, have been carefully designed and manufactured to the highest standards to meet the increased quality, reliability and safety standards for medical equipment. These products have fully regulated output voltages and feature:

- Product certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- EMC emission and immunity according to IEC 60601-1-2 edition 4
- Acceptance criteria for electronic assemblies according to IPC-A-610 Level 3
- Design and production according to ISO 13485 quality management system
- 5-year product warranty

AC/DC & DIN RAIL

DC/DC CONVERTER



SPECIAL APPROVALS/TARGET MARKETS

- MEDICAL TECHNOLOGY
- INDUSTRY/ICT
- RAILWAY AND TRANSPORT
- HOUSEHOLD
- HARSH ENVIRONMENT ATEX
- BUILDING TECHNOLOGY

## Index

### DC/DC Converters

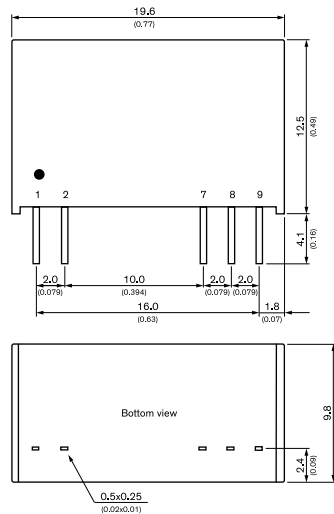
TRV 1M	SIP-9 package, $\pm 10\%$ input, encapsulated, semi-regulated, 5000 VAC I/O-isolation	<b>NEW under development</b>	1 Watt	5
TIM 2	DIP-16 package, 2 :1 input, encapsulated, 5000 VAC I/O-isolation	<b>NEW</b>	2 Watt	5
TIM 2SM	DIP-16 package, SMD, 2:1 input, encapsulated, 5000 VAC I/O-isolation	<b>NEW</b>	2 Watt	6
TIM 3.5	DIP-16 package, 2 :1 input, encapsulated, 5000 VAC I/O-isolation	<b>NEW</b>	3.5 Watt	6
TIM 3.5SM	DIP-16 package, SMD, 2:1 input, encapsulated, 5000 VAC I/O-isolation	<b>NEW</b>	3.5 Watt	7
THM 3	DIP-24 package, 2:1 input, encapsulated, 5000 VAC I/O-isolation		3 Watt	7
THM 3WI	DIP-24 package, 4:1 input, encapsulated, 5000 VAC I/O-isolation		3 Watt	8
THM 6	DIP-24 package, 2:1 input, encapsulated, 5000 VAC I/O-isolation		6 Watt	8
THM 6WI	DIP-24 package, 4:1 input, encapsulated, 5000 VAC I/O-isolation		6 Watt	9
THM 10	DIP-24 package, 2:1 input, encapsulated, 5000 VAC I/O-isolation		10 Watt	9
THM 10WI	DIP-24 package, 4:1 input, encapsulated, 5000 VAC I/O-isolation		10 Watt	10
THM 15	1.6" x 1.0" package, 2:1 input, encapsulated, 5000 VAC I/O-isolation		15 Watt	10
THM 15WI	1.6" x 1.0" package, 4:1 input, encapsulated, 5000 VAC I/O-isolation		15 Watt	11
THM 20	1.6" x 1.0" package, 2:1 input, encapsulated, 5000 VAC I/O-isolation		20 Watt	11
THM 20WI	1.6" x 1.0" package, 4:1 input, encapsulated, 5000 VAC I/O-isolation		20 Watt	12
THM 30	2.0" x 1.0" package, 2:1 input, encapsulated, 5000 VAC I/O-isolation		30 Watt	12
THM 30WI	2.0" x 1.0" package, 4:1 input, encapsulated, 5000 VAC I/O-isolation		30 Watt	13
THM 60WI	2.28" x 1.45" package, 4:1 input, encapsulated, 5000 VAC I/O-isolation	<b>NEW under development</b>	60 Watt	13

### AC/DC Power Supplies

TMF 05	1.6" x 1.0" package, PCB-mount, encapsulated, 4000 VAC I/O-isolation		5 Watt	14
TMF 10	2.0" x 1.0" package, PCB-mount, encapsulated, 4000 VAC I/O-isolation		10 Watt	14
TPP 15A-J	2.6" x 1.0" package, JST-connectors, open frame, 4000 VAC I/O-isolation		15 Watt	15
TPP 15A-D	1.5" x 1.0" package, PCB-mount, open frame, 4000 VAC I/O-isolation		15 Watt	15
TPP 15-J	2.82" x 1.14" package, JST-connectors, encapsulated, 4000 VAC I/O-isolation		15 Watt	16
TPP 15-D	1.65" x 1.14" package, PCB-mount, encapsulated, 4000 VAC I/O-isolation		15 Watt	16
TMF 20	2.16" x 1.78" package, PCB-mount, encapsulated, 4000 VAC I/O-isolation		20 Watt	17
TMW 24	2.09" x 2.0" package, flush box mounting, encapsulated (IP68), 4000 VAC I/O-isol.	<b>NEW under development</b>	24 Watt	17
TMF 30	2.52" x 1.80" package, PCB-mount, encapsulated, 4000 VAC I/O-isolation		30 Watt	18
TPP 30A-J	3.34" x 1.36" package, JST-connectors, open frame, 4000 VAC I/O-isolation		30 Watt	18
TPP 30A-D	2.74" x 1.1" package, PCB-mount, open frame, 4000 VAC I/O-isolation		30 Watt	19
TPP 30-J	3.95" x 1.5" package, JST-connectors, encapsulated, 4000 VAC I/O-isolation		30 Watt	19
TPP 30-D	2.89" x 1.50" package, PCB-mount, encapsulated, 4000 VAC I/O-isolation		30 Watt	20
TMW 36	2.09" x 2.0" package, flush box mounting, encapsulated (IP68), 4000 VAC I/O-isol.	<b>NEW under development</b>	36 Watt	20
TPP 40A	3" x 2" package, JST-connectors, open frame, 4000 VAC I/O-isolation		40 Watt	21
TPP 40	3.53" x 2.38" package, JST-connectors, encased, 4000 VAC I/O-isolation		40 Watt	21
TPP 65A	3" x 2" package, JST-connectors, open frame, 4000 VAC I/O-isolation		65 Watt	22
TPP 65	3.53" x 2.38" package, JST-connectors, encased, 4000 VAC I/O-isolation		65 Watt	22
TPP 100A-J	3" x 2" package, JST-connectors, open frame, 4000 VAC I/O-isolation		100 Watt	23
TPP 100	3.6" x 2.44" package, JST-connectors, encased, 4000 VAC I/O-isolation		100 Watt	23
TPP 150A-J	4 x 2" package, JST-connectors, open frame, 4000 VAC I/O-isolation		150 Watt	24
TPP 150	4.6" x 2.44" package, JST-connectors, encased, 4000 VAC I/O-isolation		150 Watt	24
TPP 180A	3" x 2" package, JST-connectors, open frame, 4000 VAC I/O-isolation	<b>NEW under development</b>	180 Watt	25
TPP 300A	4 x 2" package, JST-connectors, open frame, 4000 VAC I/O-isolation	<b>NEW under development</b>	300 Watt	25
TPP 450A	5 x 3" package, JST-connectors, open frame, 4000 VAC I/O-isolation		450 Watt	26
TPP 450	5.83 x 3" package, JST-connectors, encased, 4000 VAC I/O-isolation		450 Watt	26

TRV 1M **NEW - under development**

1 Watt



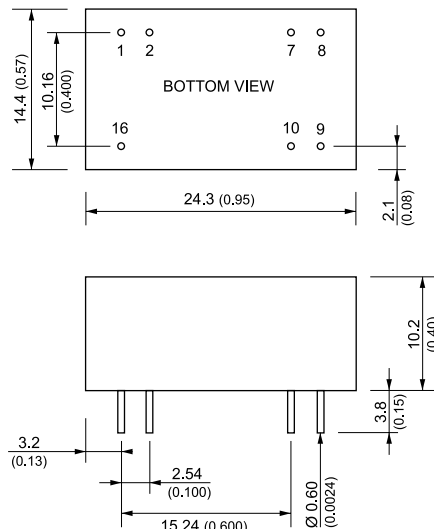
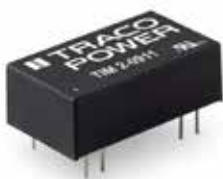
Model	Input	Vout	Iout	Efficiency
TRV 1-0510M	4.5-5.5 VDC	3.3 VDC	303 mA	80 %
TRV 1-0511M	4.5-5.5 VDC	5 VDC	200 mA	82 %
TRV 1-0512M	4.5-5.5 VDC	12 VDC	83 mA	85 %
TRV 1-0513M	4.5-5.5 VDC	15 VDC	67 mA	84 %
TRV 1-0521M	4.5-5.5 VDC	±5 VDC	±100 mA	85 %
TRV 1-0522M	4.5-5.5 VDC	±12 VDC	±42 mA	85 %
TRV 1-0523M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

- Semi regulation
- Medical safety approval ( 2x MOPP)
- 5000 VAC I/O-isolation (reinforced)
- ±10% Input 5 to 24 VDC
- 3.3 to 15 VDC
- 19.6 x 9.8 x 12.5 mm

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

TIM 2 **NEW!**

2 Watt

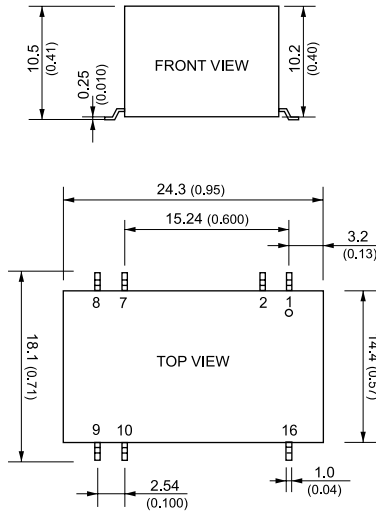


Model	Input Voltage Range	Output		Efficiency
		Vnom	I <sub>max</sub>	
TIM 2-0910	4.5 - 12 VDC (9 VDC nom.)	3.3 VDC	600 mA	75 %
TIM 2-0911		5 VDC	400 mA	78 %
TIM 2-0919		9 VDC	222 mA	78 %
TIM 2-0912		12 VDC	167 mA	82 %
TIM 2-0913		15 VDC	134 mA	82 %
TIM 2-0915		24 VDC	83 mA	82 %
TIM 2-0922		±12 VDC	83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

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

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

**TIM 2SM** **NEW!** **2 Watt**

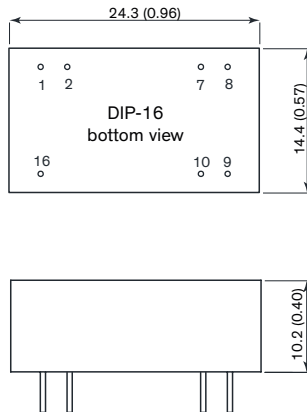


- Compact SMD-16-package
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP and operation to 5000 m altitude
- Low leakage current < 2 µA
- Extended operating temperature range -40°C to 95°C.
- EMC compliance to IEC 60601-1-2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

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

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

**TIM 3.5** **NEW!** **3.5 Watt**



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

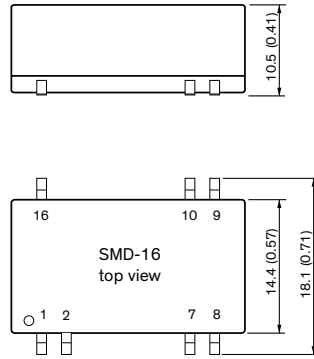
Pinout / Conecction		
Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	Remote	Remote
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin (Vcc)	+Vin (Vcc)

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

TIM 3.5SM

**NEW!**

3.5 Watt



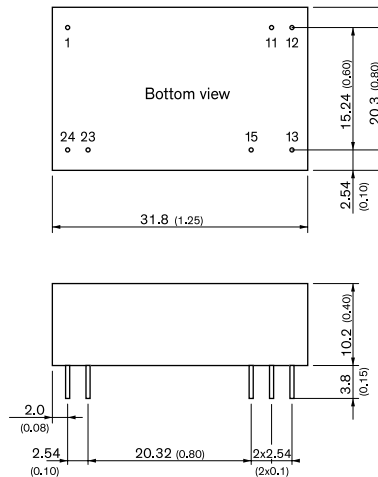
- Compact SMD-16-package
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP and operation to 5000 m altitude
- Low leakage current < 2  $\mu$ A for BF-applications
- Extended operating temperature range -40°C to 90°C.
- EMC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

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

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

THM 3

3 Watt

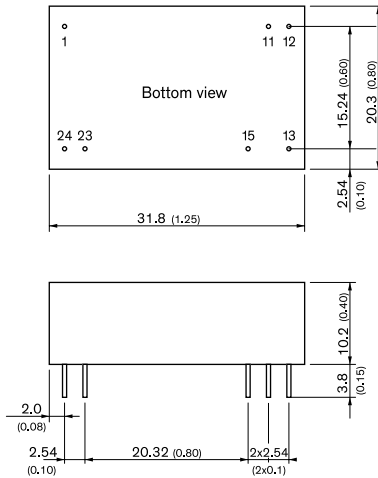


- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current < 2  $\mu$ A
- Operating temperature -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A

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

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

**THM 3WI** **3 Watt**



- Ultra wide 4:1 input voltage 3 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 µA
- Operating temp. -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

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

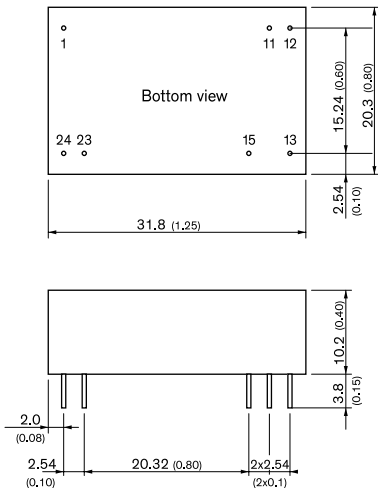
Model	Input Voltage Range	Output Vnom	I <sub>max</sub>	Efficiency
THM 3-0510WI	4.5 - 9 VDC (5 VDC nom.)	3.3 VDC	1000 mA	81 %
THM 3-0511WI		5 VDC	600 mA	85 %
THM 3-0512WI		12 VDC	250 mA	86 %
THM 3-0513WI		15 VDC	200 mA	88 %
THM 3-0515WI		24 VDC	125 mA	86 %
THM 3-0521WI		± 5 VDC	300 mA	83 %
THM 3-0522WI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

NC: No connection

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

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

**THM 6** **6 Watt**



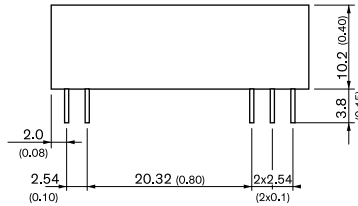
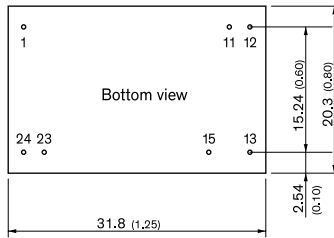
- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 µA
- Operating temperature -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A

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

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



**THM 6WI** **6 Watt**



- Ultra wide 4:1 input voltage 6 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 μA
- Operating temperature -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

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

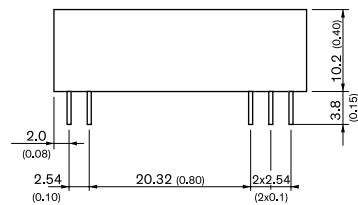
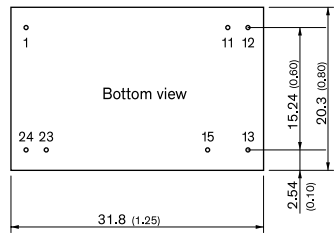
Model	Input Voltage Range	Output		Efficiency
		Vnom	I <sub>max</sub>	
THM 6-0510WI	4.5 - 9 VDC (5 VDC nom.)	3.3 VDC	1800 mA	82 %
THM 6-0511WI		5 VDC	1200 mA	86 %
THM 6-0512WI		12 VDC	500 mA	86 %
THM 6-0513WI		15 VDC	400 mA	88 %
THM 6-0515WI		24 VDC	250 mA	87 %
THM 6-0521WI		± 5 VDC	600 mA	84 %
THM 6-0522WI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

NC: No connection

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

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

**THM 10** **10 Watt**



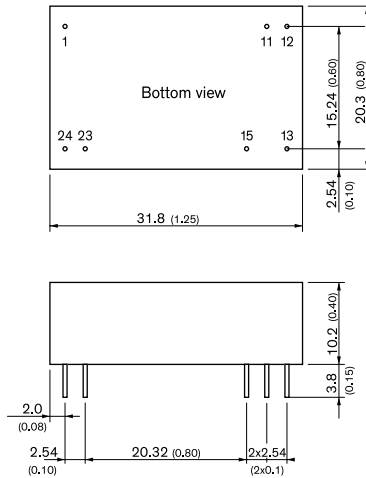
- Compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- IEC 60601-1 certification for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2 μA
- Operating temperature -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class

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

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

THM 10W1

10 Watt



- Ultra wide 4:1 input voltage 10 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2  $\mu$ A
- Operating temperature -40°C to 90°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

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

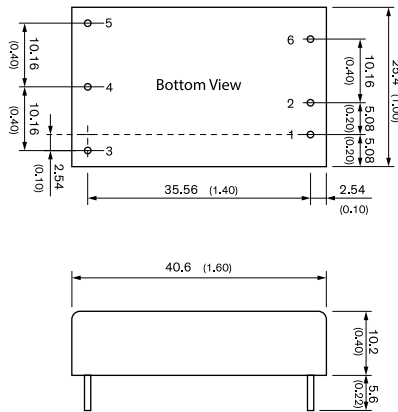
Model	Input Voltage Range	Output Vnom	I <sub>max</sub>	Efficiency
THM 10-0510W1	4.5 - 9 VDC (5 VDC nom.)	3.3 VDC	2500 mA	80 %
THM 10-0511W1		5 VDC	2000 mA	84 %
THM 10-0512W1		12 VDC	830 mA	87 %
THM 10-0513W1		15 VDC	670 mA	87 %
THM 10-0515W1		24 VDC	416 mA	86 %
THM 10-0521W1		$\pm$ 5 VDC	1000 mA	83 %
THM 10-0522W1	$\pm$ 12 VDC	416 mA	86 %	
THM 10-0523W1	$\pm$ 15 VDC	333 mA	87 %	
THM 10-2410W1	18 - 36 VDC (24 VDC nom.)	3.3 VDC	2500 mA	83 %
THM 10-2411W1		5 VDC	2000 mA	87 %
THM 10-2412W1		12 VDC	830 mA	89 %
THM 10-2413W1		15 VDC	670 mA	89 %
THM 10-2415W1		24 VDC	416 mA	89 %
THM 10-2421W1		$\pm$ 5 VDC	1000 mA	85 %
THM 10-2422W1	$\pm$ 12 VDC	416 mA	89 %	
THM 10-2423W1	$\pm$ 15 VDC	333 mA	88 %	
THM 10-4810W1	36 - 75 VDC (48 VDC nom.)	3.3 VDC	2500 mA	83 %
THM 10-4811W1		5 VDC	2000 mA	87 %
THM 10-4812W1		12 VDC	830 mA	89 %
THM 10-4813W1		15 VDC	670 mA	89 %
THM 10-4815W1		24 VDC	416 mA	89 %
THM 10-4821W1		$\pm$ 5 VDC	1000 mA	85 %
THM 10-4822W1	$\pm$ 12 VDC	416 mA	88 %	
THM 10-4823W1	$\pm$ 15 VDC	333 mA	88 %	

NC: No connection

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

THM 15

15 Watt



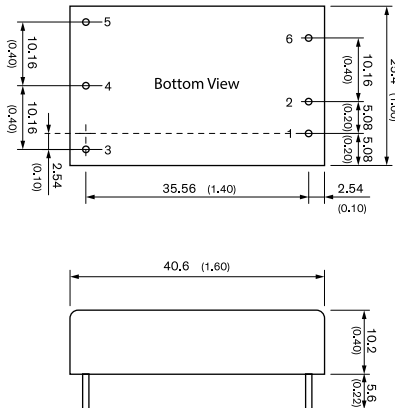
- Wide 2:1 input voltage 15 W DC/DC converter in a 1.6 x 1 " plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5  $\mu$ A
- Operating temperature -40°C to 85°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

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

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

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

**THM 15WI** **15 Watt**



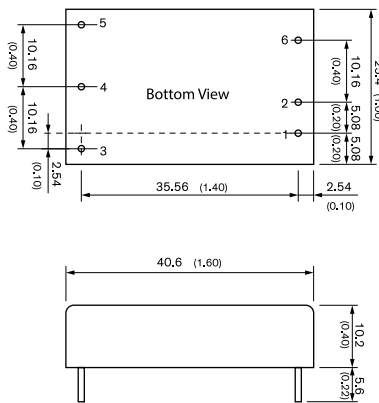
- Ultra wide 4:1 input voltage 15 W DC/DC converter in a 1.6 x 1 " plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 µA
- Operating temperature -40°C to 85°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

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

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

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

**THM 20** **20 Watt**



- Wide 2:1 input voltage 20 W DC/DC converter in a 1.6 x 1 " plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 µA
- Operating temperature -40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

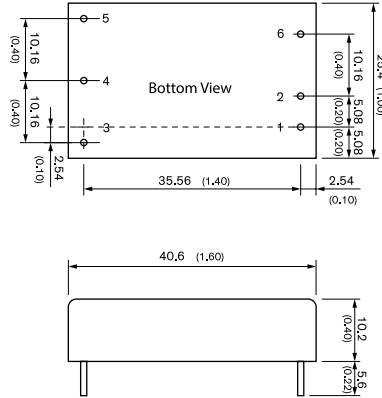
Pinout / Conection		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout
6	No pin*/Remote	No pin*/Remote

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

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

THM 20W1

20 Watt



- Ultra wide 4:1 input voltage 20 W DC/DC converter in a 1.6 x 1 " plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Operating temperature -40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

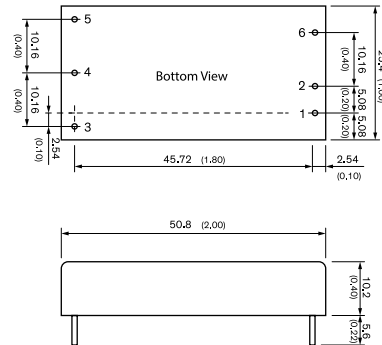
Pinout / Conecction		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout
6	No pin*/Remote	No pin*/Remote

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

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

THM 30

30 Watt



- Wide 2:1 input voltage 30 W DC/DC converter in a 2 x 1 " plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Operating temperature -40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

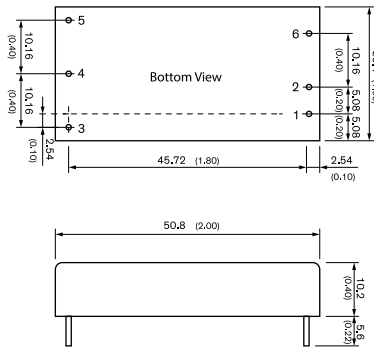
Pinout / Conecction		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout
6	No pin*/Remote	No pin*/Remote

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

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

THM 30WI

30 Watt



- Ultra wide 4:1 input voltage 30 W DC/DC converter in a 2 x 1 " plastic case
- I/O isolation 5000 VAC rated for 250 VAC working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Low leakage current <2.5 µA
- Operating temperature -40°C to 80°C
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude

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

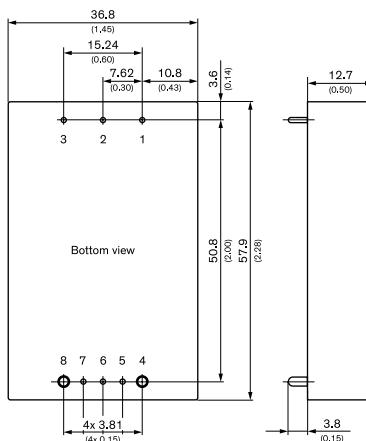
Model	Input Voltage Range	Output		Efficiency
		Vnom	I <sub>max</sub>	
THM 30-2411WI	9 - 36 VDC (24 VDC nom.)	5 VDC	6000 mA	89 %
THM 30-2412WI		12 VDC	2500 mA	89 %
THM 30-2413WI		15 VDC	2000 mA	91 %
THM 30-2415WI		24 VDC	1250 mA	90 %
THM 30-2421WI		± 5 VDC	3000 mA	86 %
THM 30-2422WI		± 12 VDC	1250 mA	90 %
THM 30-2423WI	± 15 VDC	1000 mA	90 %	
THM 30-4811WI	18 - 75 VDC (48 VDC nom.)	5 VDC	6000 mA	89 %
THM 30-4812WI		12 VDC	2500 mA	89 %
THM 30-4813WI		15 VDC	2000 mA	90 %
THM 30-4815WI		24 VDC	1250 mA	89 %
THM 30-4821WI		± 5 VDC	3000 mA	87 %
THM 30-4822WI		± 12 VDC	1250 mA	90 %
THM 30-4823WI	± 15 VDC	1000 mA	90 %	

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

THM 60WI

NEW - under development

60 Watt

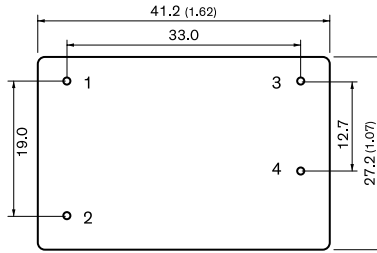


Pinout / Conecction		
Pin	Single	Dual
1	-Vin	-Vin
2	Ctrl	Ctrl
3	+Vin	+Vin
4	-Vout	-Vout
5	-Sense	-Sense
6	Trim	Common
7	+Sense	+Sense
8	+Vout	+Vout

- Medical safety approval
- 2 x MOPP
- 4:1 Input 9 to 75 VDC
- 5.0 to 24 VDC adjust.
- 2" x 1"

Model	Input	Vout	I <sub>out</sub>	Efficiency
THM 60-2412WI	9 - 36 VDC	12.0 VDC	5.0 A	90 %
THM 60-2413WI	9 - 36 VDC	15.0 VDC	4.0 A	90 %
THM 60-2415WI	9 - 36 VDC	24.0 VDC	2.5 A	91 %
THM 60-2422WI	9 - 36 VDC	± 12.0 VDC	± 2.5 A	91 %
THM 60-2423WI	9 - 36 VDC	± 15.0 VDC	± 2.0 A	91 %
THM 60-4811WI	18 - 75 VDC	5.0 VDC	12.0 A	89 %
THM 60-4812WI	18 - 75 VDC	12.0 VDC	5.0 A	90 %
THM 60-4813WI	18 - 75 VDC	15.0 VDC	4.0 A	90 %
THM 60-4815WI	18 - 75 VDC	24.0 VDC	2.5 A	91 %
THM 60-4822WI	18 - 75 VDC	± 12.0 VDC	± 2.5 A	91 %
THM 60-4823WI	18 - 75 VDC	± 15.0 VDC	± 2.0 A	92 %

**TMF 05** **5 Watt**

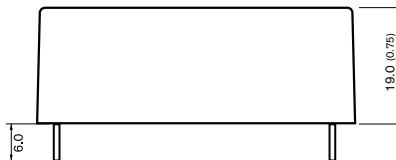
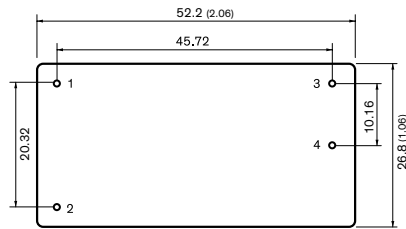


- Fully encapsulated power supplies in plastic casing for PCB mount
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to
- IPC-A-610 Level 3
-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

Pinout / Connection	
Pin	Single
1	AC (N)
2	AC (L)
3	-Vout
4	+Vout

Model	Output Voltage	Output Current (max.)	Efficiency (typ.)
TMF 05105	5.0 VDC	1000 mA	77 %
TMF 05112	12 VDC	417 mA	82 %
TMF 05115	15 VDC	333 mA	82 %
TMF 05124	24 VDC	208 mA	82 %

**TMF 10** **10 Watt**

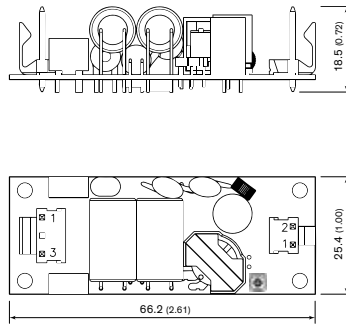


- Fully encapsulated power supplies in plastic casing for PCB mount
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to
- IPC-A-610 Level 3
-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

Pinout / Connection	
Pin	Single
1	AC (N)
2	AC (L)
3	+Vout
4	-Vout
5	No Pin

Model	Output Voltage	Output Current (max.)	Efficiency (typ.)
TMF 10105	5.0 VDC	2000 mA	79 %
TMF 10112	12 VDC	833 mA	84 %
TMF 10115	15 VDC	666 mA	84 %
TMF 10124	24 VDC	417 mA	84 %

**TPP 15A-J** **15 Watt**

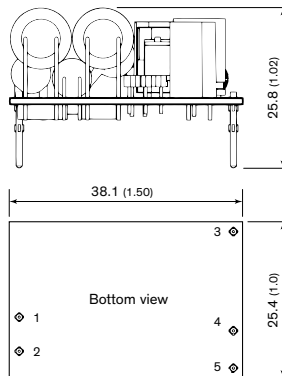


- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance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

Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	Line	1	-Vout
3	Neutral	2	+Vout

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

**TPP 15A-D** **15 Watt**



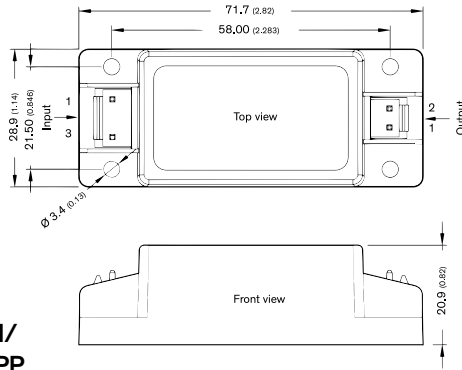
- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance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

PCB Pinout	
Pin	Function
1	Neutral
2	Line
3	Trim
4	-Vout
5	+Vout

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

TPP 15-J

15 Watt



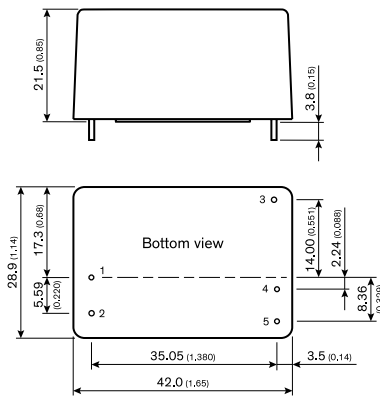
- High power density power supply (encapsulated)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance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

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

Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	Line	1	-Vout
3	Neutral	2	+Vout

TPP 15-D

15 Watt



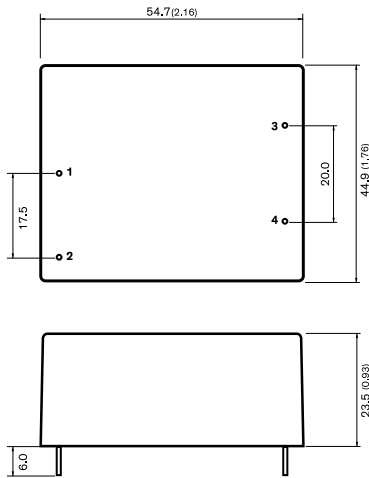
- High power density power supply (encapsulated)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance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

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

Pin Connections	
Pin	Function
1	Neutral
2	Line
3	Trim
4	-Vout
5	+Vout



**TMF 20** **20 Watt**

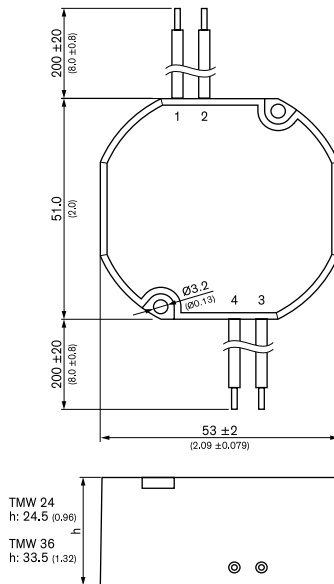


- Fully encapsulated power supplies in plastic casing for PCB mount
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to
- IPC-A-610 Level 3
-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

Pinout / Connection	
Pin	Single
1	AC (N)
2	AC (L)
3	-Vout
4	+Vout

Model	Output Voltage	Output Current (max.)	Efficiency (typ.)
TMF 20105	5.0 VDC	3600 mA	78 %
TMF 20112	12 VDC	1667 mA	84 %
TMF 20115	15 VDC	1333 mA	84 %
TMF 20124	24 VDC	833 mA	84 %

**TMW 24** NEW - under development **24 Watt**

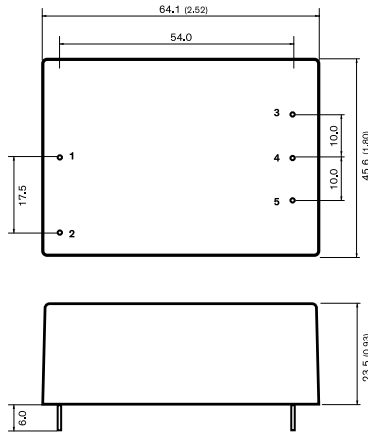


- Fully encapsulated power supplies in IP68 casing with flying leads
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- Effortless flush box mounting
- Fire safety for furniture
- Low leakage current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

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

Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TMW 24-105	5 VDC	4000 mA	85 %
TMW 24-112	12 VDC	2000 mA	85 %
TMW 24-124	24 VDC	1600 mA	90 %

**TMF 30** **30 Watt**

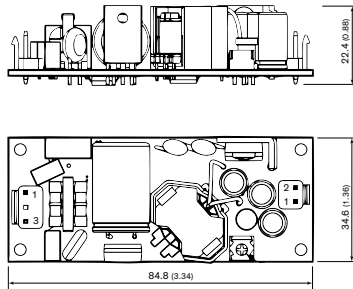


- Fully encapsulated power supplies in plastic casing for PCB mount
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to
- IPC-A-610 Level 3
-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

Pinout / Connection	
Pin	Single
1	AC (N)
2	AC (L)
3	-Vout
4	No Pin
5	+Vout

Model	Output Voltage	Output Current (max.)	Efficiency (typ.)
TMF 30105	5.0 VDC	5000 mA	82 %
TMF 30112	12 VDC	2500 mA	88 %
TMF 30115	15 VDC	2000 mA	86 %
TMF 30124	24 VDC	1250 mA	85 %

**TPP 30A-J** **30 Watt**



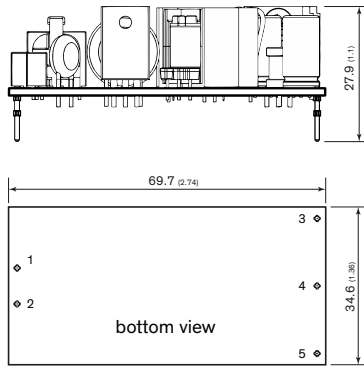
- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 risk management file
- Acceptance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

Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	Line	1	+Vout
3	Neutral	2	-Vout

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

TPP 30A-D

30 Watt



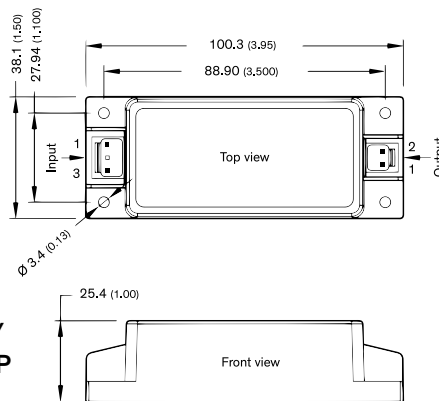
- High power density power supply (open frame)
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 risk management file
- Acceptance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

PCB Pinout	
Pin	Function
1	Neutral
2	Line
3	+Vout
4	-Vout
5	Trim

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

TPP 30-J

30 Watt



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

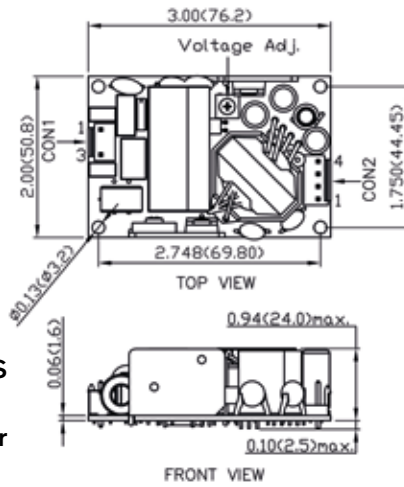
Pin Connectors			
Input		Output	
Pin	Function	Pin	Function
1	Line	1	+Vout
3	Neutral	2	-Vout

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



TPP 40A

40 Watt



- Open frame power supply with pin connector
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75  $\mu$ A rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

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

Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 40-105A-J	5 VDC (4.5 - 5.5 VDC)	8000 mA	90 %
TPP 40-112A-J	12 VDC (10.8 - 13.2 VDC)	3340 mA	92 %
TPP 40-124A-J	24 VDC (21.6 - 26.4 VDC)	1670 mA	92 %
TPP 40-148A-J	48 VDC (43.2 - 52.8 VDC)	840 mA	93 %

Note - Other output models are available on request.

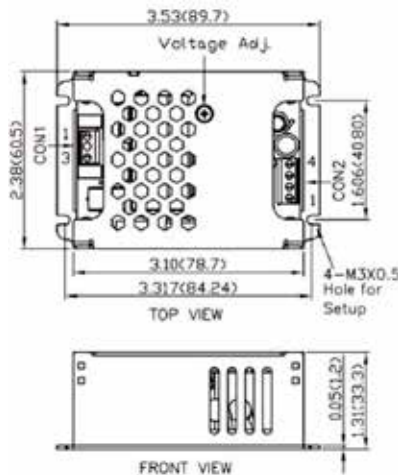
\*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: JST series mates with JST crimp terminal: BVH-21T-P1.1 and terminal housing: VHR-3N

CON2: JST series mates with JST crimp terminal: BVH-21T-P1.1 and terminal housing: VHR-4N

TPP 40

40 Watt



- Standby power module to comply with ErP directive
- No load input power < 150mW
- 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 and FCC, level B
- Short circuit, overload protection
- 3-year product warranty

Screw Terminal (Single Output Models)			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1, 2	-Vout
3	Neutral	3, 4	+Vout

Screw Terminal (Multi Output Models)			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1	Vout 3
3	Neutral	2, 3	COM
		4, 5	Vout 2
		6	Vout 1

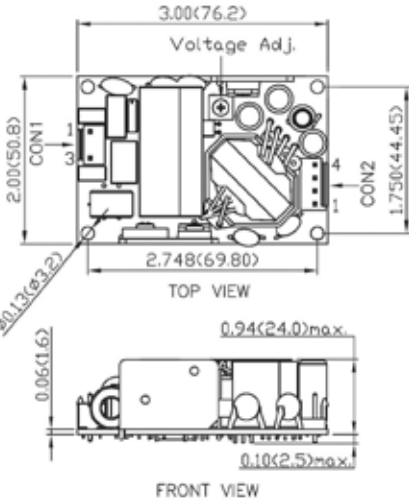
Model	Vout	Iout	Efficiency
TPP 40-105	5 VDC	8.00 A	90 %
TPP 40-112	12 VDC	3.34 A	92 %
TPP 40-115	15 VDC	2.67 A	92 %
TPP 40-124	24 VDC	1.67 A	92 %
TPP 40-221	+12/+5 VDC	3.34/6.00 A	89 %
TPP 40-231	+15/+5 VDC	2.67/6.00 A	89 %
TPP 40-251	+24/+5 VDC	1.67/6.00 A	86 %
TPP 40-321M2	+12/+5/-12 VDC	3.34/6.00/0.50 A	88 %
TPP 40-331M3	+15/+5/-15 VDC	2.67/6.00/0.50 A	88 %
TPP 40-3512	+24/+5/+12 VDC	1.67/6.00/0.50 A	96 %

Note  
 - Total Power must not exceed 40 W.  
 - Other output models are available on request.  
 - Multi output models have a common ground.

Note (Dimensions)  
 - Multi output models 102.4 (4.03) length, 34.5 (1.36) height

\* Terminal rated for 10 A max. (at higher current connection has to be split)

**TPP 65A** **65 Watt**



- Open frame power supply with pin connector
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

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

Model	Output Voltage nom. (adjustable)	Output 2	Efficiency
TPP 65-105A-J	5 VDC (4.5 - 5.5 VDC)	10000 mA	90 %
TPP 65-112A-J	12 VDC (10.8 - 13.2 VDC)	5420 mA	93 %
TPP 65-124A-J	24 VDC (21.6 - 26.4 VDC)	2710 mA	94 %
TPP 65-148A-J	48 VDC (43.2 - 52.8 VDC)	1360 mA	93 %

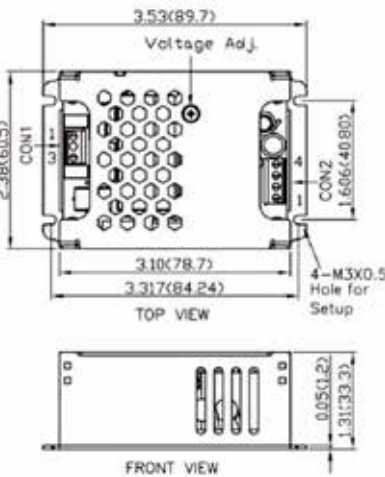
Note  
- Other output models are available on request.

\*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: JST series  
mates with JST crimp terminal: BVH-21T-P1.1  
and terminal housing: VHR-3N

CON2: JST series  
mates with JST crimp terminal: BVH-21T-P1.1  
and terminal housing: VHR-4N

**TPP 65** **65 Watt**



- Enclosed power supply with screw terminal connection
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75 µA rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- EMC compliance to IEC 60601-1-2 ed. 4
- Protection class I and II
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.15 W no load power consumption
- 5-year product warranty

Screw Terminal (Single Output Models)			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1, 2	-Vout
3	Neutral	3, 4	+Vout

Screw Terminal (Multi Output Models)			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1	Vout 3
3	Neutral	2, 3	COM
		4, 5	Vout 2
		6	Vout 1

Model	Vout	Iout	Efficiency
TPP 65-105	5 VDC	10.00 A	90 %
TPP 65-112	12 VDC	5.42 A	93 %
TPP 65-115	15 VDC	4.34 A	94 %
TPP 65-124	24 VDC	2.71 A	94 %
TPP 65-221	+12/+5 VDC	5.42/8.00 A	90 %
TPP 65-231	+15/+5 VDC	4.34/8.00 A	91 %
TPP 65-251	+24/+5 VDC	2.71/8.00 A	89 %
TPP 65-321M2	+12/+5/-12 VDC	5.42/8.00/0.60 A	89 %
TPP 65-331M3	+15/+5/-15 VDC	4.34/8.00/0.60 A	90 %
TPP 65-3512	+24/+5/+12 VDC	2.71/8.00/0.60 A	89 %

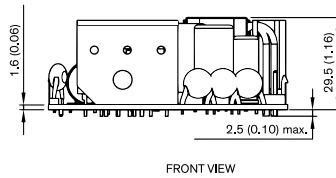
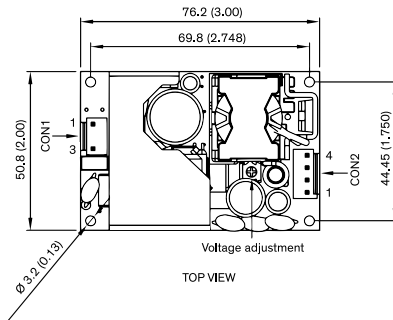
Note  
- Total Power must not exceed 65 W.  
- Other output models are available on request.  
- Multi output models have a common ground.

Note (Dimensions)  
- Multi output models 102.4 (4.03) length, 34.5 (1.36) height

\* Terminal rated for 10 A max. (at higher current connection has to be split)

TPP 100A-J

100 Watt



- Open frame 100 W power supply with JST connection in 2.0" x 3.0" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75  $\mu$ A rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

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

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 100-112-J	12 VDC (10.8 - 13.2 VDC)	8340 mA	91 %
TPP 100-115-J	15 VDC (13.5 - 16.5 VDC)	6670 mA	92 %
TPP 100-124-J	24 VDC (21.6 - 26.4 VDC)	4170 mA	92 %
TPP 100-128-J	28 VDC (25.2 - 30.8 VDC)	3580 mA	92 %
TPP 100-136-J	36 VDC (32.4 - 39.6 VDC)	2780 mA	91 %
TPP 100-148-J	48 VDC (43.2 - 52.8 VDC)	2090 mA	91 %

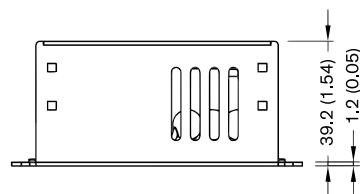
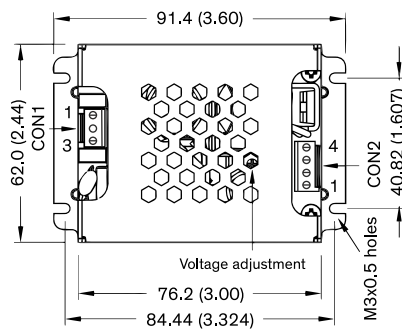
\*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: JST series mates with JST crimp terminal: BVH-21T-P1.1 and terminal housing: VHR-3N

CON2: JST series mates with JST crimp terminal: BVH-21T-P1.1 and terminal housing: VHR-4N

TPP 100

100 Watt

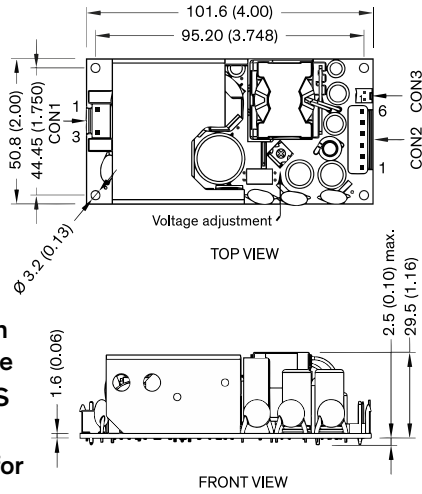


- Encased 100 W power supply with screw connection in 2.44" x 3.6" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <75  $\mu$ A rated for BF applications
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

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

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 100-112	12 VDC (10.8 - 13.2 VDC)	8340 mA	91 %
TPP 100-115	15 VDC (13.5 - 16.5 VDC)	6670 mA	92 %
TPP 100-124	24 VDC (21.6 - 26.4 VDC)	4170 mA	92 %
TPP 100-128	28 VDC (25.2 - 30.8 VDC)	3580 mA	92 %
TPP 100-136	36 VDC (32.4 - 39.6 VDC)	2780 mA	91 %
TPP 100-148	48 VDC (43.2 - 52.8 VDC)	2090 mA	91 %

**TPP 150A-J** **150 Watt**



- Open frame 150 W power supply with JST connection in 2.0" x 4.0" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <100 µA rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1-3	-Vout
3	Neutral	4-6	+Vout

Input (CON3)	
Pin	Function
1	-Fan
2	+Fan

Model	Output Voltage nom. (adjustable)	Output Current max. (Forced air cooling)	Efficiency typ.
TPP 150-112-J	12 VDC (10.8 - 13.2 VDC)	12'500 mA	91 %
TPP 150-115-J	15 VDC (13.5 - 16.5 VDC)	10'000 mA	92 %
TPP 150-124-J	24 VDC (21.6 - 26.4 VDC)	6'250 mA	92 %
TPP 150-128-J	28 VDC (25.2 - 30.8 VDC)	5'360 mA	92 %
TPP 150-136-J	36 VDC (32.4 - 39.6 VDC)	4'170 mA	92 %
TPP 150-148-J	48 VDC (43.2 - 52.8 VDC)	3'130 mA	92 %

Output Current max. (Natural convection):  
 8340 mA  
 7340 mA  
 4590 mA  
 3930 mA  
 3060 mA  
 2090 mA

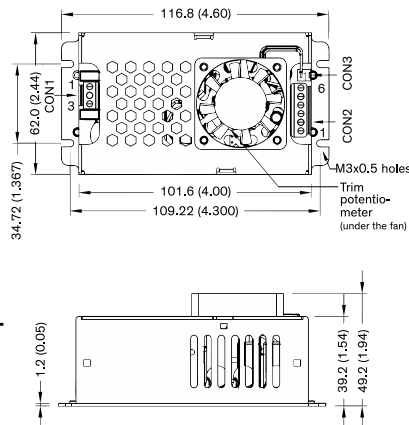
\*Terminal rated for 7 A max. (at higher current connection has to be split)

CON1: JST series  
 mates with JST crimp terminal: SVH-21T-P1.1  
 and terminal housing: VHR-3N

CON2: JST series  
 mates with JST crimp terminal: SVH-21T-P1.1  
 and terminal housing: VHR-6N

CON3: Molex series  
 mates with Molex crimp terminals: 2759  
 and Molex housing: 22-01-1022

**TPP 150** **150 Watt**



- Encased 150 W power supply with JST connection in 2.44" x 4.6" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- Low leakage current <100 µA rated for BF applications
- Risk management process according ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- Ready to meet ErP directive, <0.3 W no load power consumption
- 5-year product warranty

Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1-3	-Vout
3	Neutral	4-6	+Vout

Input (CON3)	
Pin	Function
1	-Fan
2	+Fan

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 150-112	12 VDC (10.8 - 13.2 VDC)	12500 mA	91 %
TPP 150-115	15 VDC (13.5 - 16.5 VDC)	10000 mA	92 %
TPP 150-124	24 VDC (21.6 - 26.4 VDC)	6250 mA	92 %
TPP 150-128	28 VDC (25.2 - 30.8 VDC)	5360 mA	92 %
TPP 150-136	36 VDC (32.4 - 39.6 VDC)	4170 mA	92 %
TPP 150-148	48 VDC (43.2 - 52.8 VDC)	3130 mA	92 %

\*Terminal rated for 7 A max. (at higher current connection has to be split)

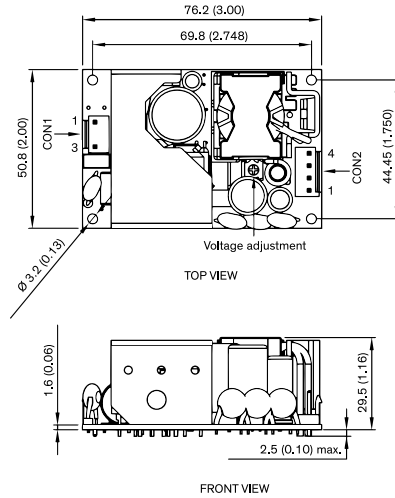
CON1: Screw Terminal

CON2: Screw Terminal

CON3: Molex series  
 mates with Molex crimp terminals: 2759  
 and Molex housing: 22-01-1022



**TPP 180A** **NEW - under development** **180 Watt**

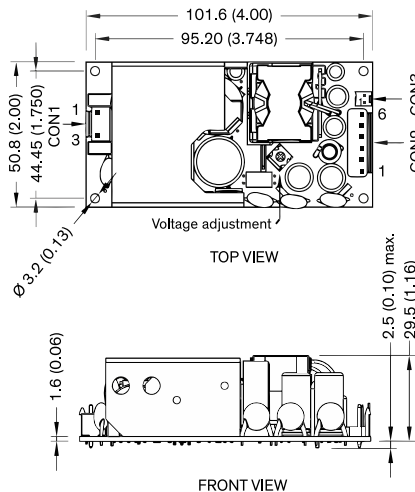


Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TBD	12 VDC	15 A	TBD
TBD	15 VDC	12 A	TBD
TBD	24 VDC	7.5 A	TBD
TBD	28 VDC	6.4 A	TBD
TBD	36 VDC	5 A	TBD
TBD	48 VDC	3.75 A	TBD

- Open frame 180 W power supply
- Universal input 85-264 VAC and 120-370 VDC
- Output voltages adjustable  $\pm 10\%$ : 12, 15, 24, 28, 36, 48 VDC
- Ultra compact design, high power density in 3" x 2" package
- Protection class II prepared
- Low leakage current <100  $\mu$ A
- Highest efficiency (ErP ready)
- Active power factor correction

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

**TPP 300A** **NEW - under development** **300 Watt**



Model	Output Voltage nom.	Output Current max.	Efficiency typ.
TBD	12 VDC	25 A	TBD
TBD	15 VDC	20 A	TBD
TBD	24 VDC	12.5 A	TBD
TBD	28 VDC	10.7 A	TBD
TBD	36 VDC	8.3 A	TBD
TBD	48 VDC	3.6.25 A	TBD

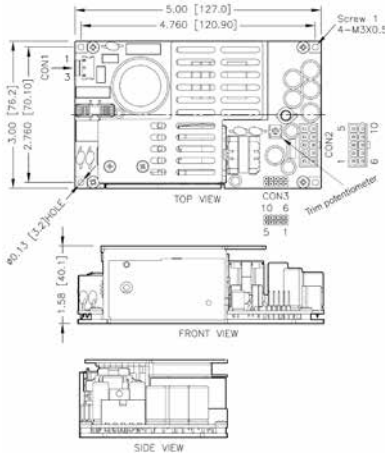
- Open frame 300 W power supply
- Universal input 85-264 VAC and 120-370 VDC
- Output voltages adjustable  $\pm 10\%$ : 12, 15, 24, 28, 36, 48 VDC
- Ultra compact design, high power density in 3" x 2" package
- Protection class II prepared
- Low leakage current <100  $\mu$ A
- Highest efficiency (ErP ready)
- Active power factor correction

Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin*	Function
1	Line	1-3	-Vout
3	Neutral	4-6	+Vout

Input (CON3)	
Pin	Function
1	-Fan
2	+Fan

**TPP 450A** **450 Watt**



- High power density 3" x 5" open frame medical power supply
- 450 Watt with forced air cooling, up to 320 Watt convection cooled with out derating up to 50°C
- Medical certification to IEC/EN/ES 60601-1 3rd edition for 2 x MOPP
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 class 3
- Standard features: 5 V standby output 12 V fan output, Remote On/Off, Power Good Signal, variable fan speed
- Operating up to 5000 m altitude
- 5-year product warranty

Input		Auxiliary	
CON1		CON3	
Pin	Function	Pin	Function
1	AC (L)	1	+Fan
3	AC (N)	2	+Sense
		3	+Remote
Output		4	PG
CON2		5	+Standby
Pin*	Function	6	-Fan
1-5	+Vout	7	-Sense
6-10	-Vout	8	-Remote
		9	No Pin
		10	-Standby

Model	Output Voltage nom. (adjustable)	Output Current max. (Forced air cooling)	Efficiency typ.
TPP 450-112A-M	12 VDC (11.0 - 13.0 VDC)	37'500 mA	91 %
TPP 450-115A-M	15 VDC (13.8 - 16.2 VDC)	30'000 mA	92 %
TPP 450-124A-M	24 VDC (22.1 - 25.9 VDC)	18'750 mA	93 %
TPP 450-128A-M	28 VDC (25.8 - 30.2 VDC)	16'100 mA	93 %
TPP 450-136A-M	36 VDC (33.1 - 38.9 VDC)	12'500 mA	93 %
TPP 450-148A-M	48 VDC (44.2 - 51.8 VDC)	9'400 mA	94 %
TPP 450-153A-M	53 VDC (48.8 - 57.2 VDC)	8'550 mA	94 %

Output Current max. (Natural convection):  
 20'800 mA  
 16'600 mA  
 13'300 mA  
 11'400 mA  
 8'900 mA  
 6'650 mA  
 6'050 mA

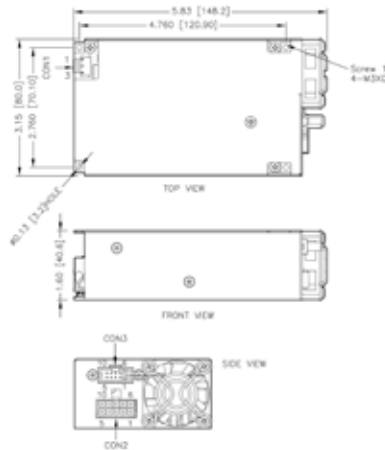
\*Terminal rated for 13 A max. (at higher current connection has to be split)

**CON1:**  
 Molex housing: 09-50-8031  
 Molex crimp terminals: 2478,6838,45570

**CON2:**  
 Molex housing: 39-01-2105  
 Molex crimp terminals: 5556,45750

**CON3:**  
 Molex housing: 90143-0010  
 Molex crimp terminals: 90119

**TPP 450** **450 Watt**



- High power density 3" x 5.8" encased medical power supply
- 450 Watt up to 65°C without derating, 320 Watt fanless operation without derating up to 50°C
- EMC compliance to IEC/EN 60601-1-2 4th edition
- Risk management process according to ISO 14971 incl. risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 class 3
- Isolation (4000 VAC) and leakage current (<100 µA) rated for BF applications
- Standard features: 5 V standby output 12 V fan output, Remote On/Off, Power Good Signal, variable fan speed
- Operating up to 5000 m altitude
- 5-year product warranty

Input		Auxiliary	
CON1		CON3	
Pin	Function	Pin	Function
1	AC (L)	1	+Fan
3	AC (N)	2	+Sense
		3	+Remote
Output		4	PG
CON2		5	+Standby
Pin*	Function	6	-Fan
1-5	-Vout	7	-Sense
6-10	+Vout	8	-Remote
		9	No Pin
		10	-Standby

Model	Output Voltage nom. (adjustable)	Output Current max.	Efficiency typ.
TPP 450-112-M	12 VDC (11.0 - 13.0 VDC)	37'500 mA	91 %
TPP 450-115-M	15 VDC (13.8 - 16.2 VDC)	30'000 mA	92 %
TPP 450-124-M	24 VDC (22.1 - 25.9 VDC)	18'750 mA	93 %
TPP 450-128-M	28 VDC (25.8 - 30.2 VDC)	16'100 mA	93 %
TPP 450-136-M	36 VDC (33.1 - 38.9 VDC)	12'500 mA	93 %
TPP 450-148-M	48 VDC (44.2 - 51.8 VDC)	9'400 mA	94 %
TPP 450-153-M	53 VDC (48.8 - 57.2 VDC)	8'550 mA	94 %

\*Terminal rated for 13 A max. (at higher current connection has to be split)

**CON1:**  
 Molex housing: 09-50-8031  
 Molex crimp terminals: 2478,6838,45570

**CON2:**  
 Molex housing: 39-01-2105  
 Molex crimp terminals: 5556,45750

**CON3:**  
 Molex housing: 90143-0010  
 Molex crimp terminals: 90119

## POWER BACKUP



TMF20

## POWER CONTROL



TPP65

## TOUCH-SCREEN/ OPERATION



THM6

## SIGNAL INTERFACE



TRS2

## PATIENT APPLICATION



TIM3.5

## Medical Approved Power Solutions

### DC/DC from 1–60 Watt

### AC/DC from 5–450 Watt

- IEC/EN/ES 60601-1 3rd Edition for 2× MOPP
- Risk Management ISO 14971
- IPC-A-610 Class 3 High Performance Acceptability
- EMC Emission to IEC 60601-1-2 ed. 4
- Quality Management ISO 13485
- 5-years warranty

For more information, datasheet and certifications please visit our website [www.tracopower.com](http://www.tracopower.com)

## AC/DC SWITCHING POWER SUPPLY



TPP450

TRACO POWER dedicated to design and production of high quality, state-of-the-art DC/DC & AC/DC power conversion products. Our mission is to provide optimal power supply solutions for specific applications with regard to performance, quality, cost and functionality.

TRACO POWER stocks an average of USD 25+ million in available finished goods inventory for immediate shipment through our distribution partners.

TRACO POWER offers extended product life-cycles, typically 10+ years, and our products are supported by a 5 year product warranty. We understand our customers require a high quality solution as well as a diverse product offering, availability from stock, extended life-cycles and a strong commitment to quality in the form of extended warranty to support their business.

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