

TRACO[®] POWER

Selection Guide 2012
Supplement

DC-DC CONVERTERS AC-DC POWER SUPPLIES



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Product release scheduled for first quarter of 2013

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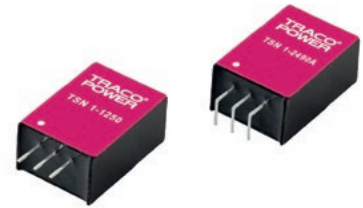
AC/DC Power Supplies			Page
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TSN-1 Series ▶ 1A

Step down

DC/DC Converter

- ▶ Non-isolated DC/DC converter for negative output
- ▶ Small size and low profile
- ▶ Pin compatible with LM79xx regulators
- ▶ No heatsink required
- ▶ High efficiency up to 94 %
- ▶ Protection against overload, short circuit and over-temperature
- ▶ Fixed switching frequency



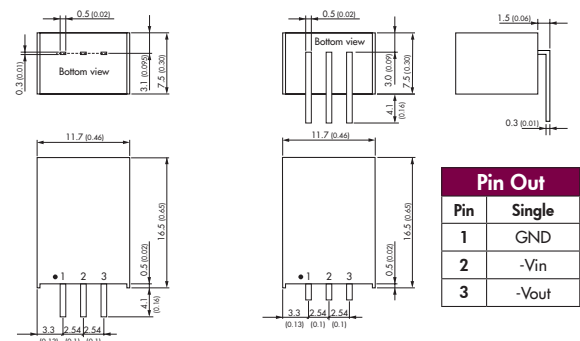
Specifications

Line regulation	1.0% max.
Load regulation	0.6% max.
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
Standby input current	3 mA
Full datasheet	www.tracopower.com/products/tsn1.pdf

Models

Order code *	Input voltage	Output voltage	Output current max.
TSN 1-2450	-7.5 - -32 VDC	-5.0 VDC	-1000 mA
TSN 1-2452	-7.5 - -32 VDC	-5.2 VDC	-1000 mA
TSN 1-2460	-8.5 - -32 VDC	-6.0 VDC	-1000 mA
TSN 1-2480	-11 - -32 VDC	-8.0 VDC	-1000 mA
TSN 1-2490	-12 - -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-pins, add suffix -A



Pin Out	
Pin	Single
1	GND
2	-Vin
3	-Vout

TMR-1SM Series ▶ 1W

SMD

DC/DC Converter

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

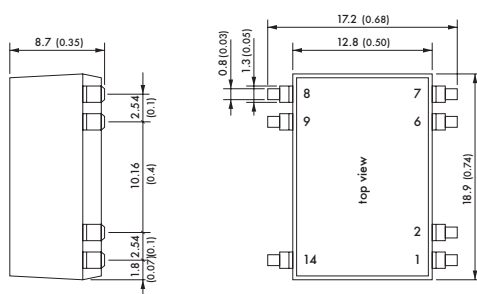


Specifications

Line regulation	0.2% max.
Load regulation	1% max.
Short circuit protection	continuous, automatic recovery
Efficiency	80% typ.
Operating temperature range	-40 °C to +85 °C above 75 °C derating 6.7%/K
I/O isolation voltage	1500 VDC (60 sec.)
Remote On/Off	shutdown input for low input current (2.5 mA) in standby operation
Full datasheet	www.tracopower.com/products/tmr1sm.pdf

Models

Order code	Input voltage	Output voltage	Output current max.
TMR 1-0511SM		5 VDC	200 mA
TMR 1-0512SM		12 VDC	83 mA
TMR 1-0513SM	4.5-9.0 VDC	15 VDC	67 mA
TMR 1-0522SM		± 12 VDC	± 42 mA
TMR 1-0523SM		± 15 VDC	± 33 mA
TMR 1-1211SM		5 VDC	200 mA
TMR 1-1212SM		12 VDC	83 mA
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



Pin-Out		
Pin	Single	Dual
1	-Vin	-Vin
2	On/Off	On/Off
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin	+Vin

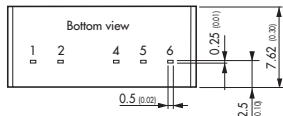
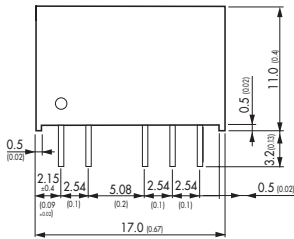
TMR-1 Series ▶ 1W

DC/DC Converter

- ▶ Compact SIP package
- ▶ Wide 2:1 input voltage range
- ▶ Fully regulated outputs
- ▶ No minimum load required
- ▶ I/O isolation voltage 1500 VDC
- ▶ Short circuit protection



Specifications	
Line regulation	0.2% max.
Load regulation	1% max.
Short circuit protection	continuous automatic recovery
Efficiency	78% typ.
Operating temperature	-40°C to +85°C without derating
I/O isolation voltage	1500 VDC (60 sec.)
Full datasheet	www.tracopower.com/products/tmr1.pdf



Pin-Out		
Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
4	+Vout	+Vout
5	No Pin	Common
6	-Vout	-Vout

Models			
Order code	Input voltage	Output voltage	Output current max.
TMR 1-0511		5 VDC	200 mA
TMR 1-0512		12 VDC	83 mA
TMR 1-0513	4.5-9.0 VDC	15 VDC	67 mA
TMR 1-0515		24 VDC	42 mA
TMR 1-0522		± 12 VDC	± 42 mA
TMR 1-0523		± 15 VDC	± 33 mA
TMR 1-1211		5 VDC	200 mA
TMR 1-1212		12 VDC	83 mA
TMR 1-1213	9-18 VDC	15 VDC	67 mA
TMR 1-1215		24 VDC	42 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 1-2415		24 VDC	42 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 1-4815		24 VDC	42 mA
TMR 1-4822		± 12 VDC	± 42 mA
TMR 1-4823		± 15 VDC	± 33 mA

TMV-HI Series ▶ 1W

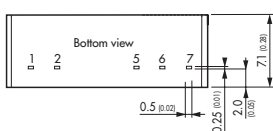
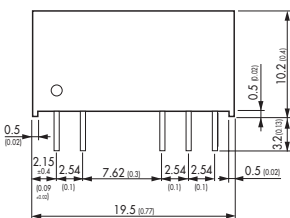
High Isolation

DC/DC Converter

- ▶ Ultra compact SIP package
- ▶ Very high 5200 VDC I/O-isolation
- ▶ Dedicated for IGBT applications
- ▶ Operating temperature range -40°C to +85°C



Specifications	
Line regulation	1.2%
Load regulation	15% max.
Efficiency	76% typ.
Operating temperature	-40°C to +85°C without derating
I/O isolation voltage	5200 VDC (60 sec.)
I/O isolation capacitance	7 pF typ.
I/O isolation resistance	>10 Gohm
Full datasheet	www.tracopower.com/products/tmv-hi.pdf



Pin-Out		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	Common
7	+Vout	+Vout

Models			
Order code	Input voltage	Output voltage	Output current max.
TMV 0505SHI		5 VDC	200 mA
TMV 0512SHI		12 VDC	84 mA
TMV 0515SHI	5 VDC ± 10%	15 VDC	66 mA
TMV 0505DHI		± 5 VDC	± 100 mA
TMV 0512DHI		± 12 VDC	± 42 mA
TMV 0515DHI		± 15 VDC	± 33 mA
TMV 1205SHI		5 VDC	200 mA
TMV 1212SHI		12 VDC	84 mA
TMV 1215SHI	12 VDC ± 10%	15 VDC	66 mA
TMV 1205DHI		± 5 VDC	± 100 mA
TMV 1212DHI		± 12 VDC	± 42 mA
TMV 1215DHI		± 15 VDC	± 33 mA
TMV 1505SHI		5 VDC	200 mA
TMV 1512SHI		12 VDC	84 mA
TMV 1515SHI	15 VDC ± 10%	15 VDC	66 mA
TMV 1505DHI		± 5 VDC	± 100 mA
TMV 1512DHI		± 12 VDC	± 42 mA
TMV 1515DHI		± 15 VDC	± 33 mA
TMV 2405SHI		5 VDC	200 mA
TMV 2412SHI		12 VDC	84 mA
TMV 2415SHI	24 VDC ± 10%	15 VDC	66 mA
TMV 2405DHI		± 5 VDC	± 100 mA
TMV 2412DHI		± 12 VDC	± 42 mA
TMV 2415DHI		± 15 VDC	± 33 mA

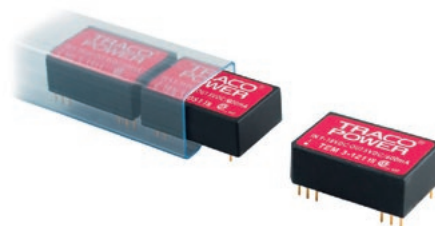
TEM-3N Series ▶ 3W

DC/DC Converter



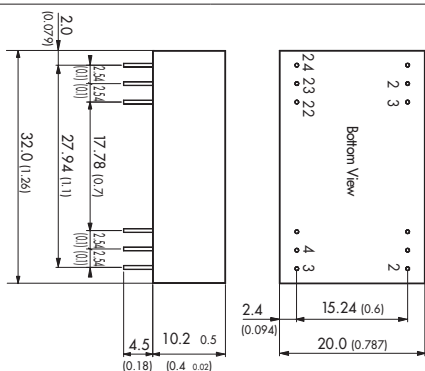
- ▶ Cost optimized design in DIP-24 package
- ▶ Output ripple & noise 30 mVpp
- ▶ Short circuit protection
- ▶ Input filter to meet EN 55022, class A
- ▶ No minimum load required

Specifications	
Line regulation	0.2% max.
Load regulation	0.2% max.
Input filter	EN55022, class A (internal filter)
Short circuit protection	continuous
Efficiency	78% typ.
Operating temp. range	-40 °C to +85 °C above 75 °C derating 5 %/K
I/O isolation voltage	1500 VDC (60 sec.)
Safety approvals	cUL/UL 60950-1, IEC/EN 60950-1 (pending)
Full datasheet	www.tracopower.com/products/item3n.pdf



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



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

THI-3 Series ▶ 3W

Reinforced Insulation

DC/DC Converter



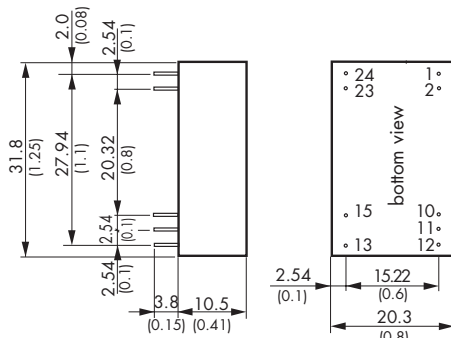
- ▶ I/O isolation voltage 3000 VACrms reinforced insulation
- ▶ Rated for working voltage up to 300 VAC
- ▶ Industrial and medical safety approvals
- ▶ Input filter to meet EN 55022, class A

Specifications	
Line regulation	0.5% max.
Load regulation	0.5% max.
Input filter	EN55022, class A (internal filter)
Efficiency	61% typ.
Operating temp. range	-40 °C to +75 °C above 60 °C derating 2.9%/K
I/O isolation voltage	3000 VAC (60sec.)
I/O isolation capacitance	20pF typ.
I/O isolation resistance	>10 GOhm
Safety standards / approvals (pending)	IEC/EN 60601-1 3rd edition, 2 x M00P, UL/cUL 60601-1 IEC/EN 60950-1, UL/cUL 60950-1, CB-report
I/O isolation capacitance	20 pF typ.
Casing	plastic (UL 94V-0 rated)
Full datasheet	www.tracopower.com/products/thi3.pdf



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



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

THM-3WI Series ▶ 3W

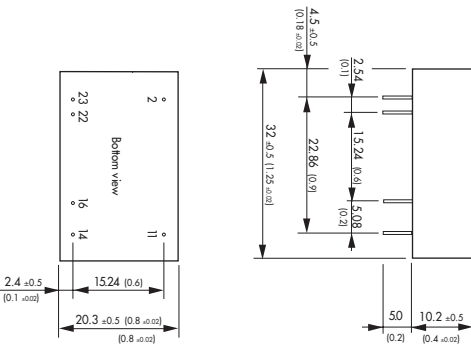
Reinforced Insulation

DC/DC Converter

- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation voltage 5000 VACrms reinforced insulation
- ▶ Rated for working voltage 250 VAC
- ▶ Medical safety to IEC/EN60601-1 3rd edition, 2 x MOPP
- ▶ Very high efficiency up to 87 %
- ▶ Input filter meet EN 55022, class A



Specifications	
Line regulation	0.5 % max.
Load regulation	single output models: 0.2 % max. dual output models: 1 % max.
Conducted EMI	EN 55022, class A (internal filter)
Efficiency	85 % typ.
Operating temperature	-40 °C to +85 °C (with derating, tba)
Safety standards/ approvals (pending)	IEC/EN60601-1 3rd edition, 2 x MOPP, UL 60601-1
I/O isolation voltage	5000VAC (60 sec.), reinforced insulation rated for 250VAC working voltage, clearance/creepage 8mm
I/O isolation capacitance	17pF max.
Full datasheet	www.tracopower.com/products/thm3wi.pdf



Pin-Out		
Pin	Single	Dual
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)

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

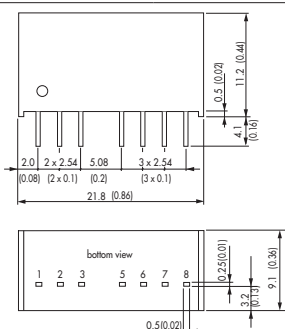
TMR-6WI Series ▶ 6W

DC/DC Converter

- ▶ Highest power density in SIP package
- ▶ Smallest footprint 6W converter
- ▶ Operating temperature -40 to +71 °C without derating
- ▶ Ultra wide 4:1 input range
- ▶ Fully regulated outputs
- ▶ I/O isolation 1500 VDC
- ▶ No minimum load required



Specifications	
Line regulation	0.2 % max.
Load regulation	0.5 % max. ; 1 % max. for dual output models
Efficiency	83 % typ.
Operating temperature	-40 °C to +71 °C (without derating)
I/O isolation voltage	1500VDC (60 sec.)
Remote On/Off	shutdown input for low input current (2.5mA) in standby operation
Full datasheet	www.tracopower.com/products/tmr6wi.pdf



Pin-Out		
Pin	Single	Dual
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

Models			
Order code	Input voltage	Output voltage	Output current max.
TMR 6-2410WI		3.3 VDC	1500 mA
TMR 6-2411WI		5 VDC	1200 mA
TMR 6-2419WI		9 VDC	666 mA
TMR 6-2412WI	9-36 VDC	12 VDC	500 mA
TMR 6-2413WI		15 VDC	400 mA
TMR 6-2415WI		24 VDC	250 mA
TMR 6-2421WI		± 5 VDC	± 600 mA
TMR 6-2422WI		± 12 VDC	± 250 mA
TMR 6-2423WI		± 15 VDC	± 200 mA
TMR 6-4810WI		3.3 VDC	1500 mA
TMR 6-4811WI		5 VDC	1200 mA
TMR 6-4819WI		9 VDC	666 mA
TMR 6-4812WI	18-75 VDC	12 VDC	500 mA
TMR 6-4813WI		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

THM-WI Series ▶ 6 & 10W Reinforced Insulation DC/DC Converter



- ▶ Ultra wide 4:1 input voltage range
- ▶ I/O isolation voltage 5000 VAC reinforced insulation
- ▶ Rated for working voltage 250 VAC
- ▶ Compact DIP-24 package
- ▶ Medical safety to IEC/EN60601-1 3rd edition, 2 x MOPP
- ▶ Very high efficiency up to 89%
- ▶ Input filter to meet EN 55022, class A

Specifications

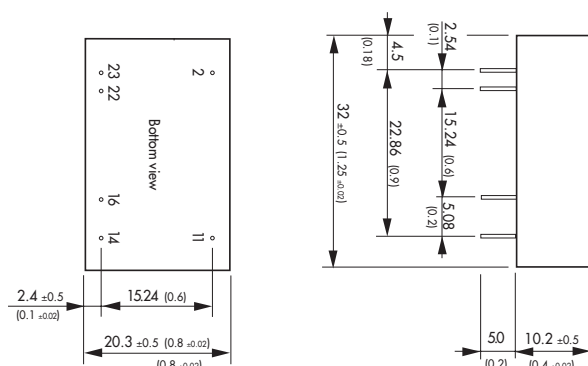
Line regulation	0.5% max.
Load regulation	single output models: 0.2% max. dual output models: 1% max.
Conducted EMI	EN 55022, class A (internal filter)
Efficiency	88% typ.
Operating temperature	-40 °C to +85 °C (with derating, tba)
Safety standards / approvals (pending)	IEC/EN 60601-1 3rd edition, 2 x MOPP, UL 60601-1
I/O isolation voltage	5000 VAC (60 sec.), reinforced insulation rated for 250 VAC working voltage, clearance/creepage 8 mm
I/O isolation capacitance	17 pF max.
Casing	plastic (UL 94V-0 rated)
Full datasheet	www.tracopower.com/products/thm6wi.pdf www.tracopower.com/products/thm10wi.pdf

6 Watt models

THM 6WI series			
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

10 Watt models

THM 10WI series			
Order code	Input voltage	Output voltage	Output current max.
THM 10-0510WI		3.3 VDC	2500 mA
THM 10-0511WI		5 VDC	2000 mA
THM 10-0512WI		12 VDC	830 mA
THM 10-0513WI	4.5-9 VDC	15 VDC	670 mA
THM 10-0515WI		24 VDC	416 mA
THM 10-0521WI		± 5 VDC	± 1000 mA
THM 10-0522WI		± 12 VDC	± 416 mA
THM 10-0523WI		± 15 VDC	± 333 mA
THM 10-2410WI		3.3 VDC	2500 mA
THM 10-2411WI		5 VDC	2000 mA
THM 10-2412WI		12 VDC	830 mA
THM 10-2413WI	9-36 VDC	15 VDC	670 mA
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	333 mA
THM 10-4821WI		± 5 VDC	± 1000 mA
THM 10-4822WI		± 12 VDC	± 416 mA
THM 10-4823WI		± 15 VDC	± 333 mA



Pin-Out		
Pin	Single	Dual
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)

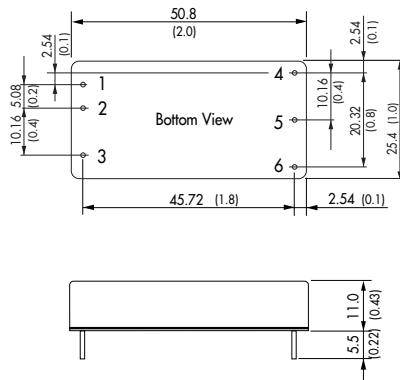
TEN-50WI Series ▶ 50W

DC/DC Converter

- ▶ Ultra compact 50W converter
- ▶ Ultra wide 4:1 input range
- ▶ Excellent efficiency up to 91 %
- ▶ Protection against over-temperature
- ▶ Adjustable output voltage, remote On/Off



Specifications	
Line regulation	0.5 % max.
Load regulation	0.5 % max.
Output voltage adjustment	± 10 % by external resistor
Efficiency	90 % typ.
Operating temperature	-40 °C to +80 °C (with derating), optional heatsink
I/O isolation voltage	1500 VDC (60 sec.)
Safety approvals	UL/cUL 60950-1, IEC/EN 60950-1 (pending)
Casing	metal, with insulated baseplate
Full datasheet	www.tracopower.com/products/ten50wi.pdf



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

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	18-36 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	36-75 VDC	12 VDC	4170 mA
TEN 50-4813WI		15 VDC	3330 mA
TEN 50-4815WI		24 VDC	2080 mA

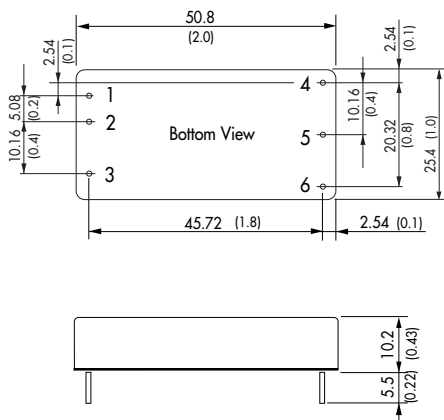
TEN-60N Series ▶ 60W

DC/DC Converter

- ▶ Highest power density 60W converter
- ▶ Wide 2:1 input voltage
- ▶ Highest efficiency up to 92 %
- ▶ Adjustable output voltage, remote On/Off
- ▶ Input filter to meet EN55022, class A



Specifications	
Line regulation	0.2 % max.
Load regulation	single output models: 0.5 % , dual output models 1 %
Output voltage adjustment	± 10 % by external resistor
Efficiency	91 % typ.
Operating temperature	-40 °C to +85 °C (with derating) , optional heatsink
I/O isolation voltage	1500 VDC (60 sec.)
Safety approvals	UL/cUL 60950-1, IEC/EN 60950-1 (pending)
Casing	metal,6-side shielded with insulated baseplate
Full datasheet	www.tracopower.com/products/ten60n.pdf



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

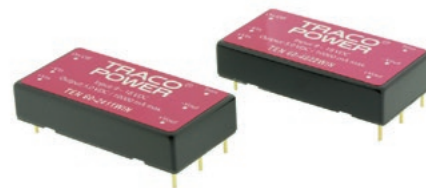
Models

Order code	Input voltage	Output voltage	Output current max.
TEN 60-1210N		3.3 VDC	12000 mA
TEN 60-1211N		5 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 60-2410N		3.3 VDC	12000 mA
TEN 60-2411N		5 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 60-4810N		3.3 VDC	12000 mA
TEN 60-4811N		5 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

TEN-60WIN Series ▶ 60W

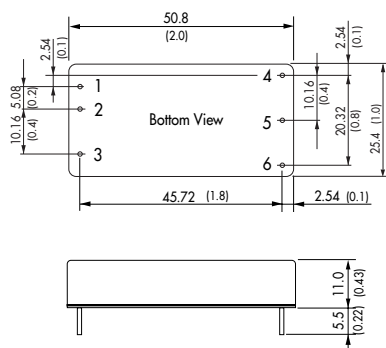
DC/DC Converter

- ▶ Highest power density 60W converter
- ▶ Ultra wide 4:1 input voltage
- ▶ Highest efficiency up to 92 %
- ▶ Low input current at no load
- ▶ Input filter to meet EN55022, class A



Specifications

Line regulation	0.2% max.
Load regulation	single output models: 0.5%, dual output models 1%
Output voltage adjustment	± 10% by external resistor (single output models)
Efficiency	91% typ.
Operating temperature	-40 °C to +85 °C (with derating, tba) optional heatsink
I/O isolation voltage	1500 VDC (60 sec.)
Safety approvals	UL/cUL 60950-1, IEC/EN 60950-1 (pending)
Casing	shielded metal with insulated baseplate
Full datasheet	www.tracopower.com/products/ten60win.pdf



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

Models

Order code	Input voltage	Output voltage	Output current max.
TEN 60-2410WIN		3.3 VDC	12000 mA
TEN 60-2411WIN		5 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 60-4810WIN		3.3 VDC	12000 mA
TEN 60-4811WIN		5 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

TEQ-100WIR Series ▶ 100W

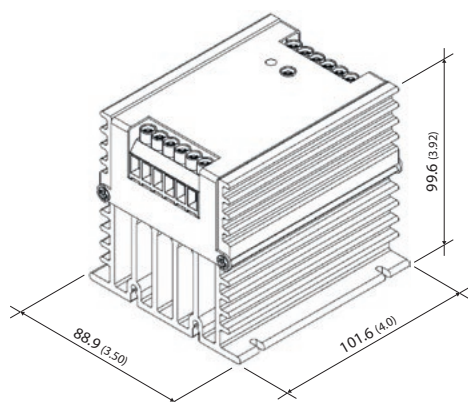
DC/DC Converter

- ▶ High power block with excellent thermal convection
- ▶ Operating temperature -40 °C up to +85 °C without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage
- ▶ EN 50155 approval for railway applications
- ▶ Excellent efficiency up to 93%
- ▶ Input filter to meet EN 55022, class A



Specifications

Line regulation	0.2% max.
Load regulation	0.3% max.
Output voltage	+10% / -20% adjustable by internal potentiometer
Conducted EMI	EN55022, class A (internal filter)
Efficiency	92% typ.
Operating temperature	-40 °C to +85 °C without derating
Thermal protection	shutdown at 115 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety approvals	UL/cUL 60950-1, IEC/EN 60950-1, EN 50155 (Railway) - pending
Full datasheet	www.tracopower.com/products/teq100wir.pdf



Optional DIN-rail mount adapter

Models

Order code	Input voltage	Output voltage	Output current max.
TEQ 100-2412WIR		12 VDC	8.4 A
TEQ 100-2415WIR	9-36 VDC	24 VDC	4.2 A
TEQ 100-2416WIR		28 VDC	3.6 A
TEQ 100-2418WIR		48 VDC	2.1 A
TEQ 100-4812WIR		12 VDC	8.4 A
TEQ 100-4815WIR	18-75 VDC	24 VDC	4.2 A
TEQ 100-4816WIR		28 VDC	3.6 A
TEQ 100-4818WIR		48 VDC	2.1 A
TEQ 100-7212WIR		12 VDC	8.4 A
TEQ 100-7215WIR	43-160 VDC	24 VDC	4.2 A
TEQ 100-7216WIR		28 VDC	3.6 A
TEQ 100-7218WIR		48 VDC	2.1 A

TEQ-160WIR Series ▶ 144 to 182W

DC/DC Converter



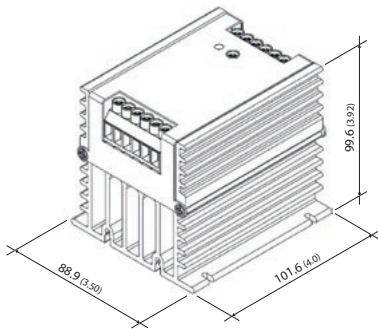
- ▶ High power block with excellent thermal convection
- ▶ Operating temperature -40 °C up to +70 °C without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage
- ▶ EN 50155 approval for railway applications
- ▶ Excellent efficiency up to 93 %
- ▶ Input filter to meet EN 55022, class A



Specifications	
Line regulation	0.2 % max.
Load regulation	0.3 % max.
Output voltage	+10 % / -20 % adjustable by internal potentiometer
Conducted EMI	EN55022, class A (internal filter)
Efficiency	92 % typ.
Operating temperature	-40 °C to +70 °C without derating
Thermal protection	shutdown at 115 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety approvals	UL/cUL 60950-1, IEC/EN 60950-1, EN 50155 (Railway) - pending
Full datasheet	www.tracopower.com/products/teq160wir.pdf

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



Optional DIN-rail mount adapter

TEQ-200WIR Series ▶ 180 to 240W

DC/DC Converter



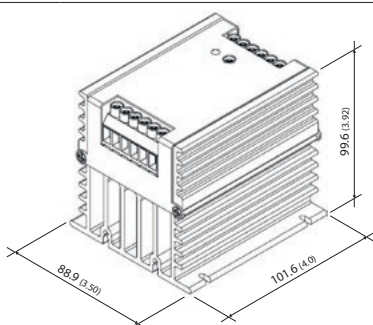
- ▶ High power block with excellent thermal convection
- ▶ Operating temperature -40 °C up to +55 °C without derating!
- ▶ Increased shock & vibration resistance
- ▶ Ultra wide 4:1 input voltage
- ▶ EN 50155 approval for railway applications
- ▶ Excellent efficiency up to 93 %
- ▶ Input filter to meet EN 55022, class A



Specifications	
Line regulation	0.2 % max.
Load regulation	0.3 % max.
Output voltage	+10 % / -20 % adjustable by internal potentiometer
Conducted EMI	EN55022, class A (internal filter)
Efficiency	92 % typ.
Operating temperature	-40 °C to +55 °C without derating
Thermal protection	shutdown at 115 °C
I/O isolation voltage	2250 VDC (60 sec.), basic insulation
Safety approvals	UL/cUL 60950-1, IEC/EN 60950-1, EN 50155 (Railway) - pending
Full datasheet	www.tracopower.com/products/teq200wir.pdf

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



Optional DIN-rail mount adapter

TMSB-2 Series ▶ 2W

Power Module

AC/DC

- ▶ Standby power module to comply with ErP directive
- ▶ No load input power < 30mW
- ▶ Suitable to drive relays, solenoids, capacitive loads and LED's
- ▶ Constant power characteristics at 2W (no current limitation)
- ▶ Constant voltage auxiliary outputs 3.3 and 5 VDC

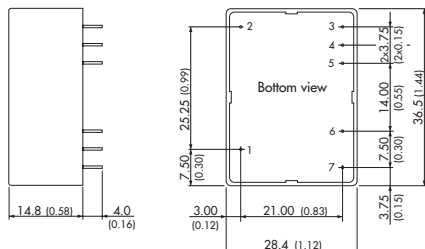


ErP ready

Specifications	
Input voltage range	85–264 VAC, 47–440 Hz
Line regulation	1.0%
Load regulation	1.0%
Efficiency	70% typ.
EMI suppression	EN55022, class B, EN 55014-1
Operating temperature	-30 °C to +70 °C
Safety approvals	IEC/EN 60950-1, UL 60950-1, EN 60335-1 - pending
Degree of protection	safety class II
Full datasheet	www.tracopower.com/products/tmsb2.pdf

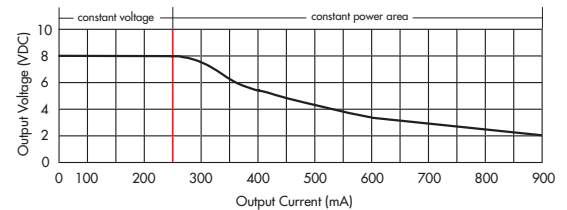
Models			
Order code	Output power max.	Output voltage	Output current max.
TMSB 2-108		8 VDC	250 mA
TMSB 2-114		14 VDC	143 mA
TMSB 2-124		24 VDC	83 mA
TMSB 2-283 ¹⁾	2 W	8 VDC	250 mA
TMSB 2-285 ²⁾		8 VDC	250 mA
TMSB 2-2143 ¹⁾		14 VDC	143 mA
TMSB 2-2145 ²⁾		14 VDC	143 mA

¹⁾ Auxiliary output 3.3 VDC
²⁾ Auxiliary output 5 VDC



Pin-Out		
Pin	Single	Dual
1	NC	NC
2	NC	NC
3	+Vout	+Vout1
4	-Vout	Common
5	No Pin	+Vout2
6	AC(N)	AC(N)
7	AC(L)	AC(L)

Output characteristics: (e.g. TMSB 2-108)



TMM-24 Series ▶ 24W

Medical AC/DC Power Modules

AC/DC

- ▶ Medical safety to IEC/EN60601-1 3rd edition, 2 x MOPP
- ▶ Extended operating temp.range -40 °C to +60 °C at full load
- ▶ Fully encapsulated low profile plastic case
- ▶ Ready to meet ErP directive, <0.3W no load power consumption
- ▶ PCB-mount version or chassis-mount version with DC-OK LED-indicator

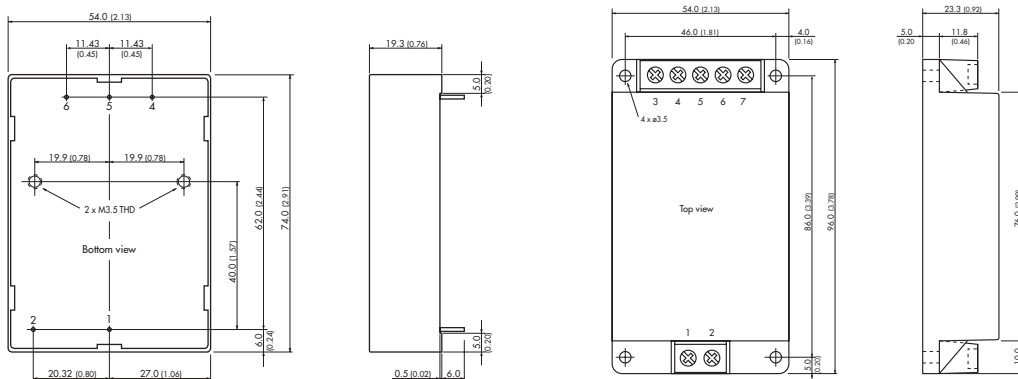


ErP ready

Specifications	
Input voltage range	85–264 VAC, 47–440 Hz
Line regulation	0.5%
Load regulation	single output models: 0.5%, dual output models: 2.5%
Efficiency	82% typ.
EMI suppression	EN55022, class B
Operating temperature	-40 °C to +80 °C, derating above 60 °C
Safety approvals	IEC/EN 60601-1 3rd edition, 2 x MOPP, UL 60601-1 (pending) IEC/EN 609501-1, UL60950-1, UL 508 for chassis mount ver.
Degree of protection	safety class II prepared
Casing	fully encapsulated plastic, PCB or chassis mount
Full datasheet	www.tracopower.com/products/tmm24.pdf

Models			
Order code*	Output power max.	Output voltage	Output current max.
TMM 24105		5 VDC	3000 mA
TMM 24112		12 VDC	2000 mA
TMM 24115	24W	15 VDC	1600 mA
TMM 24124		24 VDC	1000 mA
TMM 24212		± 12 VDC	± 1000 mA
TMM 24215		± 15 VDC	± 800 mA

* for chassis mount version add suffix C



Pin-Out		
Pin	Single	Dual
1	AC (N)	AC (N)
2	AC (L)	AC (L)
3	No Pin / NC	No Pin / NC
4	-Vout	-Vout
5	No Pin / NC	Common
6	+Vout	+Vout
7	No Pin / NC	No Pin / NC

TMM-40 Series ▶ 40W

Medical AC/DC Power Modules

AC/DC

- ▶ Medical safety to IEC/EN60601-1 3rd edition, 2 x MOPP
- ▶ Extended operating temp.range -40 °C to +60 °C at full load
- ▶ Fully encapsulated low profile plastic case
- ▶ Ready to meet ErP directive, <0.3W no load power consumption
- ▶ PCB-mount version or chassis-mount version with DC-OK LED



ErP ready



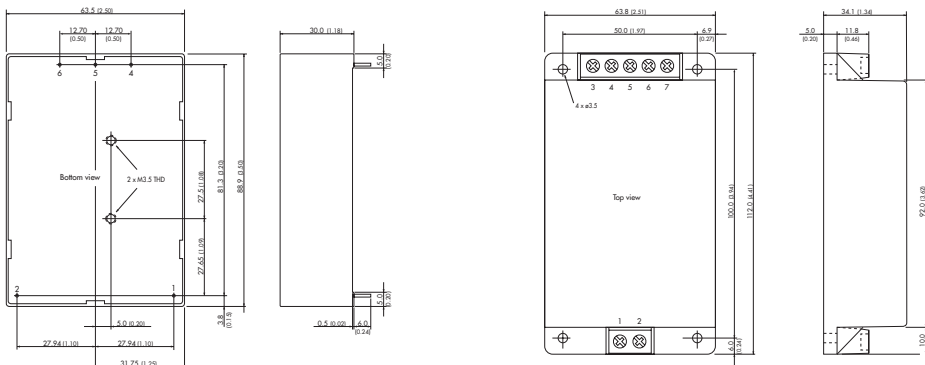
Specifications

Input voltage range	85–264 VAC, 47–440 Hz
Line regulation	0.5%
Load regulation	–Single output models: 1%, dual output models: 2%
Efficiency	84% typ.
EMI suppression	EN55022, class B
Operating temperature	–40 °C to +80 °C, derating above 60 °C
Safety approvals	IEC/EN 60601-1 3rd edition, 2 x MOPP, UL 60601-1 (pending)
Degree of protection	Safety class II prepared
Casing	Fully encapsulated plastic, PCB or chassis mount
Full datasheet	www.tracopower.com/products/tmm40.pdf

Models

Order code*	Output power max.	Output voltage	Output current max.
TMM 40105		5 VDC	8000 mA
TMM 40112		12 VDC	3330 mA
TMM 40115	40 W	15 VDC	2660 mA
TMM 40124		24 VDC	1660 mA
TMM 40212		± 12 VDC	± 1660 mA
TMM 40215		± 15 VDC	± 1330 mA

* for chassis mount version add suffix C



Pin-Out		
Pin	Single	Dual
1	AC (N)	AC (N)
2	AC (L)	AC (L)
3	No Pin / NC	No Pin / NC
4	-Vout	-Vout
5	No Pin / NC	Common
6	+Vout	+Vout
7	No Pin / NC	No Pin / NC

TMM-60 Series ▶ 60W

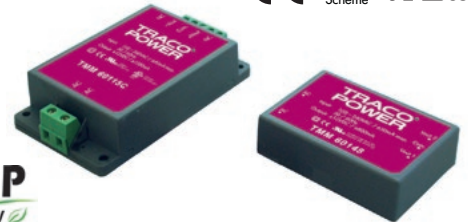
Medical AC/DC Power Modules

AC/DC

- ▶ Medical safety to IEC/EN60601-1 3rd edition, 2 x MOPP
- ▶ Extended operating temp.range -40 °C to +60 °C at full load
- ▶ Fully encapsulated low profile plastic case
- ▶ Ready to meet ErP directive, <0.3W no load power consumption
- ▶ PCB-mount version or chassis-mount version with DC-OK LED



ErP ready



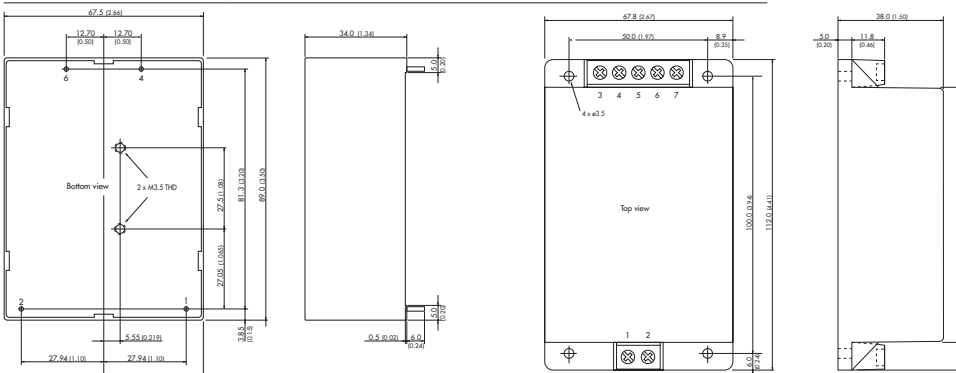
Specifications

Input voltage range	85–264 VAC, 47–440 Hz
Line regulation	0.2%
Load regulation	0.5%
Efficiency	87% typ.
EMI suppression	EN55022, class B
Operating temperature	–40 °C to +80 °C, derating above 60 °C
Safety approvals	IEC/EN 60601-1 3rd edition, 2 x MOPP, UL 60601-1 (pending)
Degree of protection	safety class II prepared
Casing	fully encapsulated plastic, PCB or chassis mount
Full datasheet	www.tracopower.com/products/tmm60.pdf

Models

Order code*	Output power max.	Output voltage	Output current max.
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

* for chassis mount version add suffix C



Pin-Out	
Pin	Single
1	AC (N)
2	AC (L)
3	No Pin / NC
4	-Vout
5	No Pin / NC
6	+Vout
7	No Pin / NC

TML-100C Series ▶ 100W

Power Module

AC/DC

- ▶ Fully encapsulated compact low profile plastic casing
- ▶ Active power factor correction
- ▶ High efficiency up 93 %
- ▶ Safety class II prepared
- ▶ DC-OK LED indicator
- ▶ EMI meets IEC/EN 61000-6-3
- ▶ Remote On/Off control input
- ▶ Adjustable output voltage

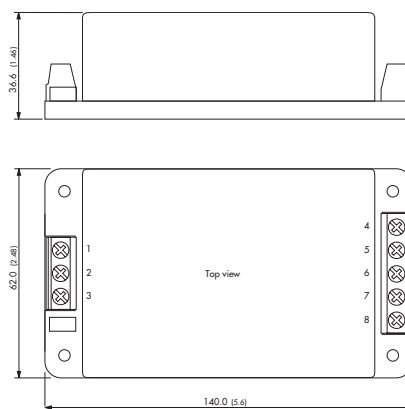


Specifications

Input voltage range	90–264 VAC, 47–63 Hz
Line regulation	1.0% max.
Load regulation	1.0%
EMI suppression	IEC/EN 61000-6-3
Efficiency	90% typ.
Operating temperature	-25 °C to +70 °C above 50°C derating 2%/K
Safety standards / approvals (pending)	IEC/EN 60950-1, UL/cUL 60950-1, UL 508
Degree of protection	safety class II prepared
Casing	plastic (UL 94V-0 rated)
Full datasheet	www.tracopower.com/products/tml.pdf

Models

Order code	Output power max.	Output voltage	Output current max.
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



TIW Series ▶ 24W

Flush Box Mount

AC/DC

- ▶ Easy installation into standard flush boxes
- ▶ Dust and waterproof to IP 67
- ▶ Ready to meet ERP directive, <0.3 W no load power consumption, high efficiency across full load range
- ▶ Regulated output voltage
- ▶ Safety approvals to IEC/EN/UL 60950-1 and EN 60335-1
- ▶ Protection class II
- ▶ Short circuit and overload protection

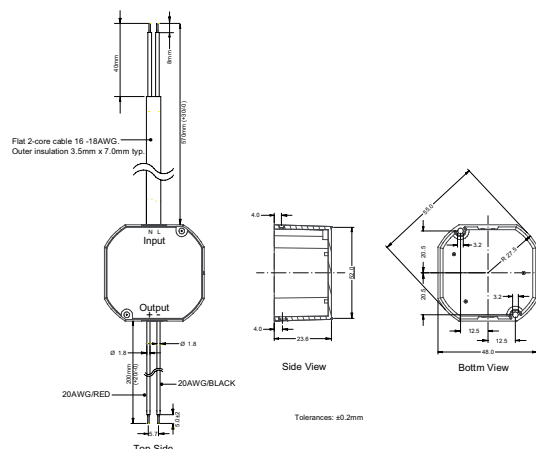


Specifications

Input voltage range	90–264 VAC, 47–63 Hz, 90–370 VDC
Line regulation	1.0% max.
Load regulation	2.0%
EMI suppression	IEC/EN 61000-6-3
EMC immunity	IEC/EN 61000-6-2
Efficiency	80% typ.
Operating temperature	-25 °C to +50 °C
Safety standards / approvals (pending)	IEC/EN/UL 60950-1, EN 50178, EN 60335-1, CB-report
Degree of protection	class II as per IEC/EN 61140
Casing	IP 67, plastic (UL 94V-0 rated)
Full datasheet	www.tracopower.com/products/tiw.pdf

Models

Order code	Output power	Output voltage	Output current max.
TIW 24-112	24 W	12 VDC	2000 mA
TIW 24-124	24 W	24 VDC	1000 mA



- ▶ Highest power density open frame power supply
100 W in 2" x 3" and 150 W in 2" x 4"
- ▶ Medical safety approval according
IEC 60601-1 3rd edition 2 x MOPP
- ▶ Ready to meet ErP directive: Highest efficiency 89% to 92%
across 10%–100% load range,
<0.3 W no load power consumption
- ▶ Safety class II prepared



Specifications	
Input voltage range	90–264 VAC, 47–63 Hz
Line regulation	0.3% max.
Load regulation	0.5%
Ripple & noise (20MHz)	< 1% of Vout
EMI suppression	EN 55022 class B
EMC immunity	EN 61000-6-2
Efficiency	92% typ.
Operating temperature	–20 °C to +70 °C
Safety standards / approvals	IEC 60601-1 3rd edition 2 x MOPP, UL 60601-1 IEC/EN 60950-1, UL 60950-1
Degree of protection	Safety class II prepared
Casing	Open frame with pin connector
Full datasheet	www.tracopower.com/products/tpp.pdf

Models			
Order code	Output power max.	Output voltage	Output current max.
TPP 100-105		5 VDC	20.0 A
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 100-128		28 VDC	3.58 A
TPP 100-148		48 VDC	2.09 A
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

TSP/TSPC DIN-Rail Battery Controller Modules

All modules provide a professional battery control function to charge and monitor external lead-acid batteries. These are to build professional DC-UPS systems using TSP and TSP-WR series power supplies.

- ▶ Battery protection against 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 external battery temperature sensor



TSPC 240UPS

24 VDC / 240 W power supply with integrated battery controller

TSP-BCMU360

Universal battery controller module, 24 / 48 VDC step up from 12 V batteries

TSP-BCM

Battery controller modules for TSP power supplies, for 12, 24 and 48 VDC output voltage systems

Models			
Order code	Input	Output	Battery / max. charging current
TSPC 240UPS	115 / 230 VAC (selection switch)	24 VDC / 10 A (12A boost)	12 V / 1 A
TSP-BCMU360	Any 24 VDC or 48 VDC	Input voltage, 240 W (360 W boost)	12 V / 1.2 A
TSP-BCM12	TSP 070-112 or TSP 140-112	12 VDC	12 V / 1.4 A
TSP-BCM24	TSP 090-124 or TSP 180-124 (-WR) or TSP 360-124(-WR)	24 VDC	24 V / 3.0 A
TSP-BCM24A	TSP 600-124(-WR)	24 VDC	24 V / 6.4 A
TSP-BCM48	TSP 090-148 or TSP 180-148 or TSP 360-148	48 VDC	48 V / 1.4 A
TSP-BCM24A	TSP 600-148	48 VDC	48 V / 3.0 A



- ▶ Robust low profile metal casing
- ▶ Extended operating temperature range -40 to +70 °C
- ▶ Boost power 150 % / 5s, Peak power 300 % / 20ms
- ▶ Extended monitoring and control modules
- ▶ Optional CAN and LAN interface with current share function
- ▶ Optional battery charger module and DC-UPS module
- ▶ Excellent efficiency up to 93 %
- ▶ Atex, IECEx and HazLoc approvals



Specifications	
Input voltage range	85–264 VAC, 45–440 Hz, 90–350 VDC
Line regulation	0.5 % max.
Load regulation	1.0 %
Ripple & noise (20 MHz)	<100 mVp-p
EMI suppression	IEC/EN 61000-6-3, EN 61204-3
EMC immunity	IEC/EN 61000-6-2, EN 61204-3
Efficiency	92 % typ.
Operating temperature	-40 °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. 60950-1-03 UL 508, CSA-C22.2 No.107, EN 60204-1, EN 61552-2-4 IEC/EN 60079-15
Degree of protection	class I as per IEC/EN 61140
Shock	25g acc. IEC 60068-2-27
Vibration	2g acc. IEC 60068-2-6
Casing	aluminium / stainless steel
Full datasheet	www.tracopower.com/products/ftp.pdf

Models			
Order code	Output power nom.	Output voltage	Output current nom.
TFP 250-124	250 W	24 VDC	10 A
TFP 250-148		48 VDC	5 A
TFP 500-124	500 W	24 VDC	20 A
TFP 500-148		48 VDC	10 A
TFP 750-124	750 W	24 VDC	30 A
TFP 750-148		48 VDC	15 A
Options:			
-CS Active current share module			
-CAN CAN-bus interface and current share function			
-NET LAN interface and current share function			
-BC Battery charger module			
-UPS DC-UPS system module			

For complete product range see online Selection Guide 2012

www.tracopower.com/products/sg.html



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