



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

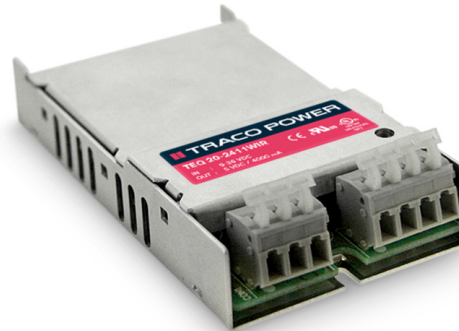
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- High power block with excellent thermal convection
- Operating temperature -40°C to +93°
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 88%
- Input filter meet EN 55032, class B
- I/O isolation 2'250 VDC
- Under voltage lock-out circuit
- Protection against overvoltage, over-temperature and short circuit
- Output LED indicator



The TEQ-20WIR Series is a family of isolated high performance dc-dc converter modules with ultra-wide 4:1 input voltage ranges which come in a rugged metal case. These converters are suitable for a wide range of applications, but the product is designed particularly also for industrial applications where often no PCB mounting is possible but the module has to be mounted on a chassis. A very high efficiency and the heatsink construction allows an operating temperature up to +83°C with natural convection cooling without power derating and up to +93°C with power derating. Further features include under voltage lockout, over temperature protection and short circuit protection.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TEQ 20-2411WIR	9 - 36 VDC (nominal 24 VDC)	5 VDC	4000 mA	87 %
TEQ 20-2412WIR		12 VDC	1670 mA	88 %
TEQ 20-2413WIR		15 VDC	1330 mA	87 %
TEQ 20-2415WIR		24 VDC	833 mA	87 %
TEQ 20-4811WIR	18 - 75 VDC (nominal 48 VDC)	5 VDC	4000 mA	87 %
TEQ 20-4812WIR		12 VDC	1670 mA	88 %
TEQ 20-4813WIR		15 VDC	1330 mA	88 %
TEQ 20-4815WIR		24 VDC	833 mA	87 %
TEQ 20-7211WIR	43 - 160 VDC (nominal 110 VDC)	5 VDC	4000 mA	86 %
TEQ 20-7212WIR		12 VDC	1670 mA	87 %
TEQ 20-7213WIR		15 VDC	1330 mA	87 %
TEQ 20-7215WIR		24 VDC	833 mA	87 %

Input Specifications

Input current no load	24 Vin models: 8 mA typ. 48 Vin models: 6 mA typ. 110 Vin models: 5 mA typ.
Surge voltage (1 s max.)	24 Vin models: 50 VDC max 48 Vin models: 100 VDC max. 110 Vin models: 170 VDC max.
Start-up voltage	24 Vin models: 9 VDC (or lower) 48 Vin models: 18 VDC (or lower) 110 Vin models: 43 VDC (or lower)
Under voltage shut down	24 Vin models: 8 VDC typ. 48 Vin models: 16 VDC typ 110 Vin models: 40 VDC typ.
Inrush current	15 A typ.
Input fuse	24 Vin models: 4 A (slow blow) 48 Vin models: 2 A (slow blow) 110 Vin models: 1 A (slow blow)
EMC emissions	– Conducted and radiated input suppression EN 55032 class B (internal filter)
EMC immunity	– Electrostatic discharge ESD EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A – Radiated immunity EN 61000-4-3, 20 V/m, perf. criteria A – Fast transient EN 61000-4-4, ± 2 kV, perf. criteria A – Surge EN 61000-4-5, ± 1 kV perf. criteria A – Conducted immunity EN 61000-4-6, 10 Vrms, perf. criteria A – Magnetic field immunity EN 61000-4-8, 100 A/m, perf. criteria A

Output Specifications

Voltage set accuracy	± 1 %
Regulation	– Input variation (Vin min. to Vin max.) – Load variation (0 to 100 %) 5 Vout models: 0.5 % max. 1.5 % max. other models: 1.0% max.
Temperature coefficient	± 0.02 %/K typ.
Start up time (constant resistive load)	100 ms typ.
Hold up time	10 ms min. (acc. EN50155 class S2)
Minimum load	not required
Ripple and noise (20 MHz Bandwidth)	5 Vout models: 75 mVp-p max. 12 & 15 Vout models: 100 mVp-p max. 24 Vout models: 150 mVp-p max.
Transient response (25% load step change)	250 μ s typ.
Over-voltage protection	5 Vout models: at 6.2 VDC typ. 12 Vout models: at 15 VDC typ. 15 Vout models: at 20 VDC typ. 24 Vout models: at 30 VDC typ.
Output indicator	green LED
Current limitation	at 150 % of rated lout max., hiccup mode
Short circuit protection	continuous, automatic recovery
Capacitive load	5 Vout models: 5'000 μ F 12 Vout models: 850 μ F 15 Vout models: 700 μ F 24 Vout models: 250 μ F

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

General Specifications

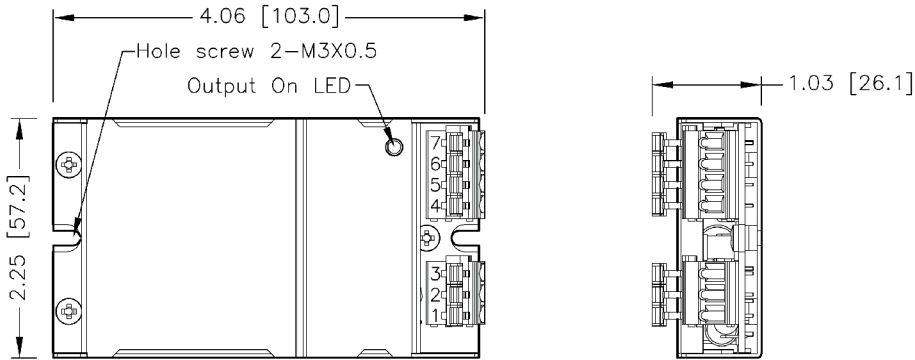
Temperature ranges	<ul style="list-style-type: none"> – Operating (natural convection: 20 LFM, 0.1 m/s) – Storage temperature 	–40°C to +83°C (without derating) –40°C to +93°C (with derating) –40°C to +105°C
Derating	<ul style="list-style-type: none"> – Natural convection – Natural convection, with 2U base plate 	5.8 %/K above 83°C (depending on model) 7.7 %/K above 87°C (depending on model)
Mechanical shock		acc. EN61373, MIL-STD-810F
Thermal shock		acc. MIL-STD-810F
Vibration		acc. EN61373, MIL-STD-810F
Humidity (non condensing)		5 - 95 % rel H max.
Isolation voltage (60 s)	<ul style="list-style-type: none"> – Input to Output – Input/Output to Case 	2'250 VDC 1'600 VDC
Isolation capacitance (Input to Output)		6'000 pF typ.
Isolation resistance (Input to Output)		>1 GOhm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		1'600'000 h
Switching frequency		330 kHz ±33 kHz (PWM)
Safety standards & approvals	<ul style="list-style-type: none"> – CB test certificate – UL online certification E188913, QOQO2 – Railway immunity – Certification documents 	IEC/EN 60950-1 UL 60950-1 EN50155 www.tracopower.com/overview/teq20wir
Environmental compliance	<ul style="list-style-type: none"> – Reach – RoHS – Flamability identified acc. EN 45545-2 	www.tracopower.com/info/reach-declaration.pdf RoHS directive 2011/65/EU www.tracopower.com/info/en45545-declaration.pdf

Physical Specifications

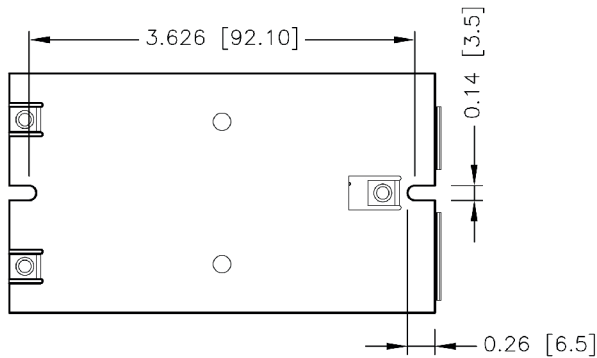
Casing material	aluminium
Package weight	122 g (4.30 oz)

* The 2U iron base-plate dimension is 19" x 3.5" x 0.063" (48.26 × 8.89 × 0.16 mm)

Outline Dimensions



TOP VIEW



BOTTOM VIEW

Terminal connection

Terminal	
1	+Vin
2	-Vin (GND)
3	NC
4	NC
5	-Vout
6	+Vout
7	NC

Dimensions in [mm], () = Inch

Tolerances: x.x ±0.02 [±0.5]

x.xx ±0.01 [±0.25]

Screw max. torque: 5.0 kgf - cm (0.49 Nm)

Spring terminals: 12 - 18 AWG