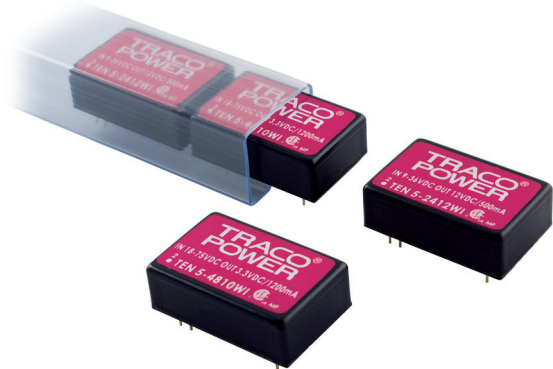


#### Features

- ◆ Ultra wide 4:1 input range
- ◆ DIP-24 Package with standard pinout
- ◆ Full SMD design
- ◆ Extended operating temperature range  
-40°C to +85°C max.
- ◆ High efficiency
- ◆ Excellent load and line regulation
- ◆ Indefinite short circuit protection
- ◆ I/O isolation 1500VDC
- ◆ Built-in Filter to meet EN 55022, Class A  
and FCC, level A
- ◆ Lead-free design, fully RoHS compliant
- ◆ 3-year product warranty



The TEN 5WI series is a family of high performance dc-dc converter modules with 5 W output power, featuring ultra wide input voltage ranges of 9 - 36 VDC or 18 - 75 VDC. They come in a shielded DIP-24 metal package with industry-standard footprint.

A high efficiency allows -40°C to +70°C operation ambient temperatures at full load. Typical applications for these converters are battery operated equipment and distributed power architectures in communication, instrumentation and industrial electronics, everywhere where a wide input voltage range is required.

#### Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TEN 5-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	1200 mA	75 %
TEN 5-2411WI		5 VDC	1000 mA	78 %
TEN 5-2412WI		12 VDC	500 mA	83 %
TEN 5-2413WI		15 VDC	400 mA	82 %
TEN 5-2421WI		±5 VDC	±500 mA	78 %
TEN 5-2422WI		±12 VDC	±250 mA	83 %
TEN 5-2423WI		±15 VDC	±200 mA	82 %
TEN 5-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	1200 mA	75 %
TEN 5-4811WI		5 VDC	1000 mA	78 %
TEN 5-4812WI		12 VDC	500 mA	83 %
TEN 5-4813WI		15 VDC	400 mA	82 %
TEN 5-4821WI		±5 VDC	±500 mA	78 %
TEN 5-4822WI		±12 VDC	±250 mA	83 %
TEN 5-4823WI		±15 VDC	±200 mA	82 %

### Input Specifications

Input current no load	24 Vin models	20 mA typ.
	48 Vin models	10 mA typ.
Start-up voltage / under voltage shut down	24 Vin models	9 VDC / 8.5 VDC typ.
	48 Vin models	18 VDC / 16 VDC typ.
Surge voltage (1 sec. max.)	24 Vin models	50 V max.
	48 Vin models	100 V max.
Conducted noise (input)	EN 55022 level A, FCC part 15, level A	

### Output Specifications

Voltage set accuracy	±2.0 % max.	
Regulation	– Input variation Vin min. to Vin max.	±0.5 % max.
	– Load variation 10 – 100 %	
	single output models	1.0 % max.
	dual output models	1.0 % max. balanced load
	25 – 100 %	5.0 % max. unbalanced load
Ripple and noise (20 MHz Bandwidth)	80 mVpk-pk max	
Temperature coefficient	±0.02 %/K	
Current limitation	>110 % of Iout max., constant current	
Short circuit protection	indefinite (automatic recovery)	
Capacitive load	3.3 / 5 VDC models	470 µF max.
	12 / 15 VDC models	100 µF max.
	dual output models	100 µF max.

### General Specifications

Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+100°C max.
	– Storage	–40°C to +125°C
Derating	3.5 %/K above +70°C	
Humidity (non condensing)	95 % rel H max.	
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)	>800'000 h	
Isolation voltage (60 sec.)	– Input/Output	1'500 VDC
Isolation capacitance	– Input/Output	1000 pF typ
Isolation resistance	– Input/Output (500 VDC)	>1'000 M Ohm
Switching frequency	450 kHz typ. (Pulse frequency modulation PFM)	
Safety standards	cUL/UL 60950-1 , IEC/EN 60950-1	
Environmental compliance	– Reach	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> directive 2011/65/EU
	– RoHS	

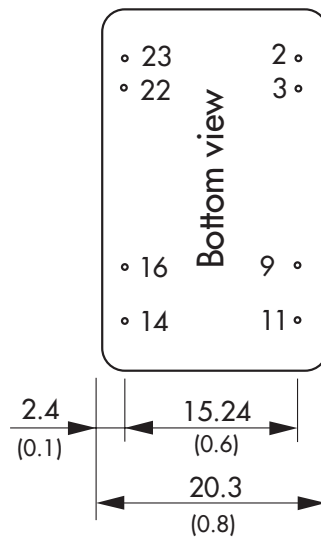
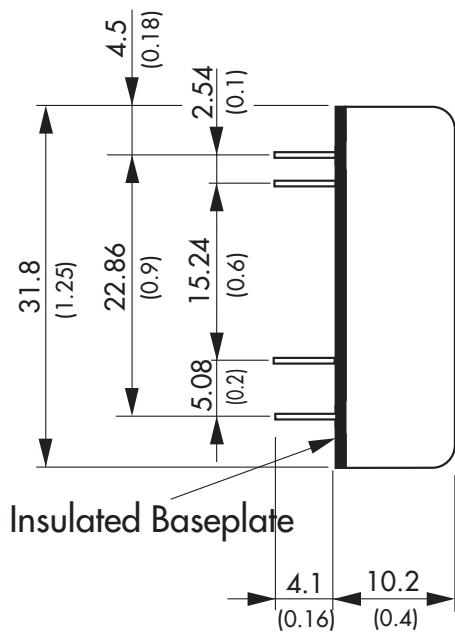
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Physical Specifications**

Casing material	black anodized aluminium
Baseplate material	non conductive FR4
Potting material	epoxy (UL 94V-0 rated)
Weight	17 g (0.49 oz)
Soldering temperature	max. 260°C / 10 sec.

**Supporting documents:** [www.tracopower.com/overview/ten5wi](http://www.tracopower.com/overview/ten5wi)

**Outline Dimensions**



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

Dimensions in [mm], ( ) = Inch  
 Pin diameter  $\varnothing 0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
 Tolerances  $\pm 0.5$  ( $\pm 0.02$ )  
 Pin pitch tolerances  $\pm 0.35$  ( $\pm 0.014$ )

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)

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