# imall

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# Contact us

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# **DC/DC Converter**

TZL Series, 60 to 300 Watt

### **Features**

- Compact metal case with screw terminal block
- Wide 2:1 input range
- I/O isolation 1500VDC
- Input reverse polarity protection
- No minimum load required
- Soft start, low inrush current
- Overload and short circuit protection
- EMC compliance with EN 61000-6-1 and EN 50082-1
- Adjustable output voltage
- 3-year product warranty



This range of boxed DC/DC converter are designed for all applications, where high reliability and long lifetime are important. They provide excellent electric specifications and full compliance to the European EMC and low voltage directive. International safety approvals qualify these converter for worldwide use. With their low profile case and screw terminal block they are easy to install in any equipment.

Models				
Order code	Output power	Input voltage	Output voltage nom.	Output current max.
TZL 060-2412	60 Watt	18 - 36 VDC	12 VDC	5.0 A
TZL 060-2424			24 VDC	2.5 A
TZL 060-4812		36 - 72 VDC	12 VDC	5.0 A
TZL 060-4824			24 VDC	2.5 A
TZL 100-2412	100 Watt	19 - 36 VDC	12 VDC	8.5 A
TZL 100-2424			24 VDC	4.2 A
TZL 100-4812		36 - 72 VDC	12 VDC	8.5 A
TZL 100-4824			24 VDC	4.2 A
TZL 150-2412	150 Watt	19 - 32 VDC	12 VDC	12.5 A
TZL 150-2424			24 VDC	6.3 A
TZL 150-4812		36 - 72 VDC	12 VDC	12.5 A
TZL 150-4824			24 VDC	6.3 A
TZL 300-4812	300 Watt	36 - 72 VDC	12 VDC	26.7 A
TZL 300-4824			24 VDC	13.4 A

# TRACO<sup>®</sup> POWER

# Enclosed Power Supplies TZL Series 60–300 Watt

Input current (at full load)         10 Vm         30 Vm           TZL 060 models TZL 100 models TZL 150 models         40 A typ.         40 A typ.           Recommended circuit breaker (zb and circuit breaker         12 L 060 models TZL 150 models         -         30 A typ.           Recommended circuit breaker (zb and circuit breaker         TZL 060 models TZL 150 models         5A         -           Output Specifications         10 %         5A         -         -           Output voltage adjustment range         410 %         -         -         -           Regulation - load variation (10-100%)         1 % max.         -         -         -           Minimum Load         not required         -         -         -         -         -           Ripple and noise (20 MHz bandwidth)         12 VDC output 24 VDC output voltage protection         105 % - 150 % of lout max.         -         -           Over voltage protection         TZL 000 regit         105 % - 120 % of Vout nom.         -         -         -         -           Short circuit protection         TZL 000 regit         105 % - 140 % d/outmatic recovery         -         -         -         -         -         -         -         -         -         -         -         -         -         - <th>Input Specifications</th> <th></th> <th></th> <th></th> <th></th>	Input Specifications				
(characteristic C) or slow blow fuse     TZL 100 models TZL 100 models 15 A TZL 100 models 20 A     10 A TZL 100 models 15 A       Output Specifications     #10 %       Regulation     - Input variation - Input variation (10–100%)     1 % max.       Minimum Load     not required       Ripple and noise (20 MHz bandwidth)     12 VDC output 24 VDC output     100mVpkpk       Output current limitation     105 % – 150 % of loat max.       Overload protection mode     Fold back, automatic recovery       Overload protection (only output 1)     15 % – 160 % of Vour non.       Short circuit protection     Fold back, automatic recovery       Capacitive load, max.     TZL 100: 12 VDC / 24 VDC output models TZL 150: 12 VDC / 24 VDC output models     1/2000 µF / 2000 µF       Short circuit protection     TZL 100: 12 VDC / 24 VDC output models     1/2000 µF / 2000 µF       TZL 100: 12 VDC / 24 VDC output models     1/2000 µF / 2000 µF     2/700 µF / 1000 µF       TZL 100: 12 VDC / 24 VDC output models     1/200 µF / 1000 µF     2/700 µF       TZL 300: 12 VDC / 24 VDC output models     1/200 µF / 1000 µF     2/700 µF       TZL 100: 12 VDC / 24 VDC output models     1/200 µF / 1000 µF     2/700 µF       TZL 100: 12 VDC / 24 VDC output models     1/200 µF / 1000 µF     2/700 µF       TZL 100: 12 VDC / 24 VDC output models     1/200 µF / 1000 µF     2/700 µF       TZL 100: 12 VDC / 24 VDC output mode	Input current (at full load)		TZL 100 models TZL 150 models	4.6 A typ. 8.0 A typ. 12 A typ.	2.4 A typ. 4.0 A typ. 6.3 A typ.
Output voltage adjustment range       ±10 %         Regulation       - Input variation       1 % max, 1 % max, 1 % max,         Minimum Load       not required         Ripple and noise (20 MHz bandwidth)       12 VDC output 24 VDC output       <100mVpk-pk <150mVpk.pk			TZL 100 models TZL 150 models	10 A 15 A	
Regulation       - Input variation - Load variation [10-100%]       1 % max. 1 % max.         Minimum Load       not required         Ripple and noise [20 MHz bandwidth]       12 VDC output 24 VDC output 25 % - 150 % of lout max.         Overload protection mode       Fold back, outomatic recovery         Over valtage protection       fold back, outomatic recovery         Capacitive load, max.       TZL 000: 12 VDC / 24 VDC output models TZL 100: 12 VDC / 24 VDC output models TZL 100: 12 VDC / 24 VDC output models TZL 100: 12 VDC / 24 VDC output models TZL 300: 12 VDC / 24 VDC output models S0 kHz typ. [pulse width modulation]         Holdrup time       20 ms min.         Isolation voltage [60:sec.]       - Input/Output - Input/Case       1'500 VAC TS00 VAC	· · ·				
− Load variation (10–100%)       1 % max.         Minimum Load       not required         Ripple and noise [20 MHz bandwidth]       12 VDC output       <100mVpk.pk		0			
Ripple and noise (20 MHz bandwidth)       12 VDC output 24 VDC output       <100mVpk-pk <150mVpk.pk	Regulation				
24 VDC output       <150 mVpk/pk	Minimum Load			not required	
Overload protection mode       Fold back, automatic recovery         Over voltage protection (only output 1)       115 % - 140 % of Vout nom.         Short circuit protection       foldback, automatic recovery         Capacitive load, max.       TZL 060: 12 VDC / 24 VDC output models TZL 100: 12 VDC / 24 VDC output models TZL 300: 12 VDC / 24 VDC output models       11'000 µF / 2'000 µF         Brown Strength Strengt Stren	<b>Ripple and noise</b> (20 MHz	bandwidth)			
Over voltage protection (only output 1)       115 % - 140 % of Vout nom.         Short circuit protection       foldback, automatic recovery         Capacitive load, max.       TZL 060: 12 VDC / 24 VDC output models TZL 150: 12 VDC / 24 VDC output models TZL 300: 12 VDC / 24 VDC output models       11'000 µF / 2'000 µF         TZL 300: 12 VDC / 24 VDC output models       14'200 µF / 1'000 µF         Temperature ranges       - Operating - Load derating above 50°C - Storage (non operating)       -10°C to +60°C 2.5 %/K - Storage (non operating)         Temperature coefficient       0.03 %/°C         Efficiency       ~80 % (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output - Input/Case       1'500 VAC 1'500 VAC         Reliability /calculated MTBF (MILHDBK:217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel chassis:         Casing material       cover: chassis:       nickel plated steel chassis:	Output current limitation			105 % – 150 % of Ic	ut max.
Short circuit protection       foldback, automatic recovery         Capacitive load, max.       TZL 060: 12 VDC / 24 VDC output models TZL 100: 12 VDC / 24 VDC output models TZL 150: 12 VDC / 24 VDC output models TZL 300: 12 VDC / 24 VDC output models       14'200 µF / 1'000 µF         General Specifications       8'600 µF / 470 µF       2'700 µF / 1'000 µF         Temperature ranges       - Operating - Load deroting above 50°C 2.5 %/K       -10°C to +60°C - 10°C to +75°C         Temperature coefficient       0.03 %/°C         Efficiency       ~80 % (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output - Input/Case       1'500 VAC - 0utput/Case         - Output/Case       500 VAC       500 VAC         - Output/Case       500 VAC       500 VAC         Casing material       Cover: natural aluminium       inckel plated steel chassis: natural aluminium	Overload protection mode		Fold back, automatic recovery		
Capacitive load, max.       TZL 060: 12 VDC / 24 VDC output models TZL 100: 12 VDC / 24 VDC output models TZL 150: 12 VDC / 24 VDC output models TZL 300: 12 VDC / 24 VDC output models       11'000 µF / 2'000 µF 8'600 µF / 470 µF 8'600 µF / 470 µF         General Specifications         Temperature ranges       - Operating - Load derating above 50°C - Storage (non operating)       -10°C to +60°C 2.5 %/K         Temperature coefficient       0.03 %/°C         Efficiency       -80 % (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output - Input/Case       1'500 VAC 500 VAC         - Output/Case       1'500 VAC         - Output/Case       500 VAC         - Output/Case       1'500 VAC         - Output/Case       500 VAC         - Output/Case       1'500 VAC         - Output/Case       500 VAC         - Output/Case       1000-6-1         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium <td>Over voltage protection (or</td> <td>nly output 1)</td> <td></td> <td>115 % – 140 % of Va</td> <td>out nom.</td>	Over voltage protection (or	nly output 1)		115 % – 140 % of Va	out nom.
TZL 100: 12 VDC / 24 VDC output models TZL 150: 12 VDC / 24 VDC output models TZL 300: 12 VDC / 24VDC output models       14'200 µF / 1'000 µF         General Specifications         Temperature ranges       - Operating - load derating above 50°C - storage [non operating]       -10°C to +60°C 2.5 %/K         Temperature coefficient         Efficiency         A0 (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MILHDBK:217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC), radiated emission       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium	Short circuit protection			foldback, automatic	recovery
Temperature ranges       - Operating - Load derating above 50°C - Storage (non operating)       -10°C to +60°C 2.5 %/K -10°C to +75°C         Temperature coefficient       0.03 %/°C         Efficiency       ~80 % (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output - Input/Case       1'500 VAC 1'500 VAC         Reliability /calculated MTBF (MIL+HDBK:217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	Capacitive load, max.	TZL 100: 12 VDC / 2 TZL 150: 12 VDC / 2	24 VDC output models 24 VDC output models	14′200 μF / 1′000 8′600 μF / 470 μF	JF
- Load derating above 50°C       2.5 %/K         - Storage (non operating)       -10°C to +75°C         Temperature coefficient       0.03 %/°C         Efficiency       ~80 % (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MILHDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	<b>General Specification</b>	ns			
Efficiency       ~80 % (depending on model and load)         Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output         - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MILHDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	Temperature ranges	– Load derating above 50°C		2.5 %/K	
Humidity (non condensing)       85 % rel max. (non condensing)         Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output         - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MILHDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	Temperature coefficient			0.03 %/°C	
Switching frequency       50 kHz typ. (pulse width modulation)         Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output         - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MIL-HDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: cover: cover: cover: chassis:         Environmental compliance       - Reach	Efficiency			~80 % (depending a	on model and load)
Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output       1'500 VAC         - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MIL-HDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:         Environmental compliance       - Reach	Humidity (non condensing)			85 % rel max. (non a	condensing)
Hold-up time       20 ms min.         Isolation voltage (60sec.)       - Input/Output       1'500 VAC         - Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MIL-HDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:         Environmental compliance       - Reach	Switching frequency			50 kHz typ. (pulse v	vidth modulation)
- Input/Case       1'500 VAC         - Output/Case       500 VAC         Reliability /calculated MTBF (MIL-HDBK-217F, at+25°C, ground benign)       >250'000 h         Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	Hold-up time			20 ms min.	
Electromagnetic compatibility (EMC)       EN 61000-6-1         Electromagnetic compatibility (EMC), radiated emission       EN 55022, class B         Casing material       cover: nickel plated steel chassis: natural aluminium         Environmental compliance - Reach       www.tracopower.com/overview/tzl	Isolation voltage (60sec.)	– Input/Case		1′500 VAC	
Electromagnetic compatibility       (EMC), radiated emission       EN 55022, class B         Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	Reliability /calculated MTBF	(MIL-HDBK-217F, at+25°C, groun	d benign)	>250′000 h	
Casing material       cover: chassis:       nickel plated steel natural aluminium         Environmental compliance       - Reach       www.tracopower.com/overview/tzl	Electromagnetic compatibility	(EMC)		EN 61000-6-1	
chassis:       natural aluminium         Environmental compliance       - Reach         www.tracopower.com/overview/tzl	Electromagnetic compatibility	(EMC), radiated emission		EN 55022, class B	
	Casing material				
	Environmental compliance				

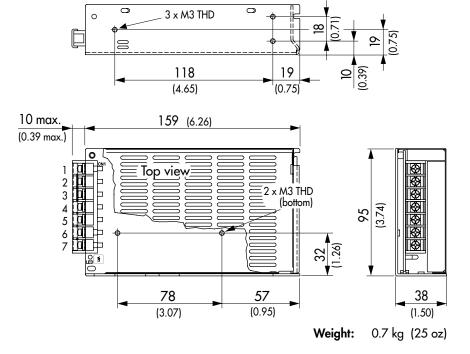
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

# TRACO<sup>®</sup> POWER

# **Case Dimensions**

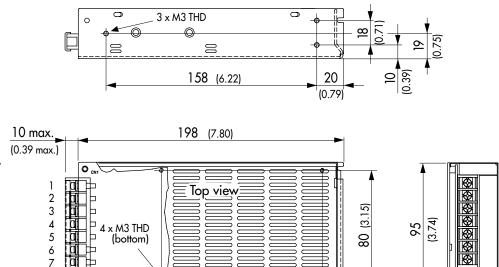
### TZL 060 Series

Connection		
1	1 +Vin	
2	–Vin	
3	NC	
4	-Vout	
5	-Vout	
6	+Vout	
7	+Vout	



#### **TZL 100 Series**

Connection		
1	+Vin	
2	–Vin	
3	NC	
4	-Vout	
5	-Vout	
6	+Vout	
7	+Vout	



120 (4.72)

**Caution!** Max mounting screw penetration: 3.0 mm (0.12)

Weight: 0.8 kg (28 oz)

9 (0.35)

16.5

(0.45)

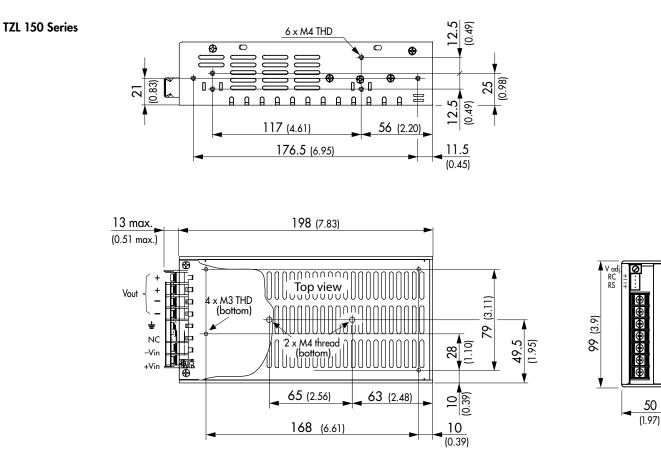
Dimensions in [mm], () = Inch Tolerances  $\pm 0.8$  (0.03) Monting hole pich tolerances  $\pm 0.5$  (0.02)

38

(1.50)



## **Case Dimensions**

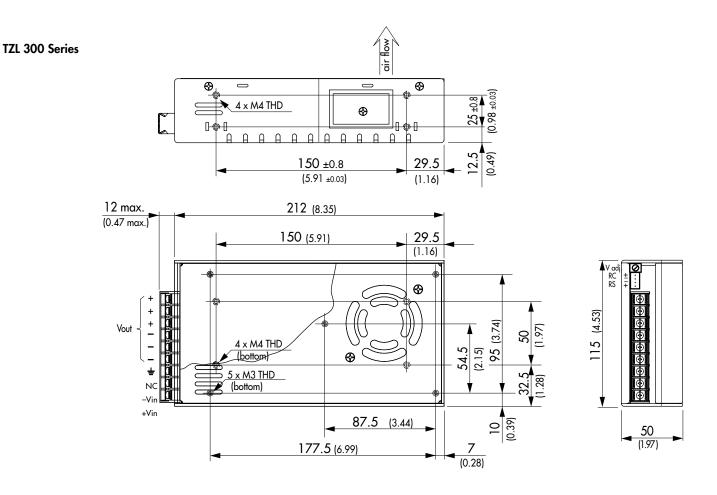


### Caution! Max mounting screw penetration: 3.0 mm (0.12)

Dimensions in [mm], () = Inch Tolerances  $\pm 0.8$  (0.03) Monting hole pich tolerances  $\pm 0.5$  (0.02) Weight: 0.89 kg ( 31 oz)



## **Outline Dimensions**



Weight: 1.05 kg (37 oz)

**Caution!** Max mounting screw penetration: 3.0 mm (0.12)

Dimensions in [mm], () = Inch Tolerances  $\pm 0.8$  (0.03) Monting hole pich tolerances  $\pm 0.5$  (0.02)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at www.tracopower.com