

#### Features



- Small and compact PCB Construction
- Optional with Chassis and Cover
- Universal Input 85–264 VAC,
- Output Voltage adjustable
- Compliance to EN 61000-3-2 (PFC)
- EMI meets EN55022, Class B and FCC, Level B
- Short Circuit and Overvoltage Protection
- International Safety Standards
- Industrial Quality Standard
- 2 Year Product Warranty



The TOL Series switching power supplies are the best choice for many space critical applications. They feature ultra-compact dimensions and a low profile. As an accessory a chassis and cover kit for self-installation is available for all models. To make installation even more simple, prewired mating output/input connectors with flying leads are also offered as an accessory. Compliance with international safety standards (CE /UL) and EMC specifications qualify this product for worldwide use. A very high reliability is guaranteed by the use of industrial quality grade components and excellent thermal management..

#### Models

Order Code	Output Power	Output Voltage	Output Current max.
TOL 10-05 TOL 10-12 TOL 10-24	10 Watt	5 VDC 12 VDC 24 VDC	2 A 0.9 A 0.5 A
TOL 15-05 TOL 15-12 TOL 15-24	15 Watt	5 VDC 12 VDC 24 VDC	3 A 1.3 A 0.6 A
TOL 30-05 TOL 30-12 TOL 30-24	30 Watt	5 VDC 12 VDC 24 VDC	6 A 2.5 A 1.3 A
TOL 50-05 TOL 50-12 TOL 50-24F	50 Watt	5 VDC 12 VDC 24 VDC	10 A 4.3 A 2.2 A (peak 3.0 A)*
TOL 75-05 TOL 75-12 TOL 75-24F	75 Watt	5 VDC 12 VDC 24 VDC	15 A 6.3 A 3.2 A (peak 4.5 A)*
TOL 100-05 TOL 100-12 TOL 100-24F TOL 100-48	100 Watt	5 VDC 12 VDC 24 VDC 48 VDC	20 A 8.5 A 4.5 A (peak 6.3 A)* 2.1 A
TOL 150-05 TOL 150-12 TOL 150-24F TOL 150-48	150 Watt	5 VDC 12 VDC 24 VDC 48 VDC	30 A 13 A 6.5 A (peak 9.1 A)* 3.3 A
TOL 300-24 TOL 300-48	300 Watt	24 VDC 48 VDC	14 A 6.3 A

\* Peak current for max. 10sec

### Input Specifications

Input voltage range	85 – 264 VAC
Input frequency	47 – 63 Hz
Inrush current at 25°C (< 2ms)	15 A max. (Vin 120 VAC) 30 A max. (Vin 230 VAC)

### Output Specifications

Output voltage adjustment range	± 10 %
Regulation	– Input variation 0.5 % max. – Load variation (10 – 100%) 0.8 % max.
Ripple and noise (20Mhz Bandwidth)	5VDC output models: 100 mV pp max. 12/24VDC output models: 180 mV pp max. 48VDC output models: 300 mV pp max. (TOL 300: 600mV pp max)
Output current limitation (except for F versions)	105% – 140% of Inom.
Short circuit protection	– 10 to 30 Watt models: hiccup mode, indefinite (automatic recovery) – 50 to 300 Watt models: constant current (automatic recovery)
Overvoltage protection	115 – 135 % Vout nom.
Capacitive load	– TOL10 10'000 µF max. (24 Vout model: 2'000 µF) – TOL15 15'000 µF max. (24 Vout model: 6'000 µF) – other models 18'000 µF max.

### General Specifications

Temperature ranges	– Operating (ambient temp.) –10 °C...+60°C (TOL150: –10°C...+50°C) – Derating above 50°C 3 %/°C (TOL150: 1.5 %/°C above 35°C) – Storage (non operating) –20 °C...+ 75 °C
Temperature coefficient	0.02 % / °C
Efficiency	75 % typ.
Humidity (non condensing)	20 % – 90 % rel.
Switching frequency	100 kHz typ. (PWM)
Hold-up time	20 ms typ. at full load
Isolation voltage	– Input / output 3'000 VAC for 1min. – Input / FG (or case) 2'000 VAC for 1min. – Output / FG (or case) 500 VDC for 1min.
Isolation resistance	100 MOhm
Leakage current	0.6 mA RMS typ. / 230 VAC / 60 Hz
Electromagnetic compatibility (EMC) Emission	– Conducted input RI suppression EN 55022, class B; FCC Part 15, level B – Harmonic current emissions IEC / EN 61000-3-2, class A
Electromagnetic compatibility (EMC) Immunity	– Electrostatic discharge IEC / EN 61000-4-2 8kV / 15kV – Surge immunity IEC / EN 61000-4-5 2kV / 4kV

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

**General Specifications**

Safety standards	EN 60950, UL /cUL 1950 File E188913	
Reliability, calculated MTBF (MIL-HDBK-217E)	– TOL10 / TOL15: – TOL30: – TOL50 / TOL75: – TOL100 / TOL150: TOL300:	> 650'000 h @ 25 °C > 500'000 h @ 25 °C > 375'000 h @ 25 °C > 350'000 h @ 25 °C > 260'000 h @ 25 °C
Remote ON /OFF (available as option for models TOL30/50/75/100/150/300)	On: Off:	5 VDC (input resistance 1 KOhm) 0V or open circuit
Remote sensing (only TOL300 models)	– without sens line: – with sens line:	prewired connector included use Molex housing / pin 67260-0400 / 67260 to connect sens line at P54
Vibration	IEC 60068-2-6, 5-10 Hz with 10mm amplitude 2 gn, 60 sweeps of 10-55 Hz, each axis	
Shock resistance	IEC 60068-2-27, 20 gn each axis	

**Mating Connectors with prewired flying Leads (500mm Length)**

OrderCode	Description	Pin no.	Wire Color	Cross-Section	AWG
TOL-C31	Input cable for all models	1	black	0.75mm <sup>2</sup>	18
		3	white	0.75mm <sup>2</sup>	18
		5	green	0.75mm <sup>2</sup>	18
TOL-C41	TOL 10/15 output cable	1-2	black	0.4 mm <sup>2</sup>	22
		3-4	red	0.4 mm <sup>2</sup>	22
TOL-C42	TOL 30/50 output cable	1-2	black	0.75 mm <sup>2</sup>	18
		3-4	red	0.75 mm <sup>2</sup>	18
TOL-C61	TOL 75 output cable	1-3	black	0.4 mm <sup>2</sup>	22
		4-6	red	0.4 mm <sup>2</sup>	22
TOL-C62	TOL 150 output cable +	1-6	red	0.4 mm <sup>2</sup>	22
TOL-C71	TOL 150 output cable –	1-7	black	0.4 mm <sup>2</sup>	22
TOL-C81	TOL 100 output cable	1-4	black	0.4 mm <sup>2</sup>	22
		5-8	red	0.4 mm <sup>2</sup>	22

**Chassis / Cover Kit**

Order Code	For Models
TOL 10-MC	TOL 10-xx
TOL 15-MC	TOL 15-xx
TOL 30-MC	TOL 30-xx
TOL 50-MC	TOL 50-xx
TOL 75-MC	TOL 75-xx
TOL 100-MC	TOL 100-xx
TOL 150-MC	TOL 150-xx
TOL 300-MC	TOL 300-xx

**Mating Connectors**

For Connection	Molex Housing / Pin
P1 – all models	51144-0500 / 50539
P51 – TOL10/15	67261-0400 / 67260
P51 – TOL30/50	51144-0400 / 50539
P51 – TOL75/150	51144-0600 / 50539
P51 – TOL100	51144-0800 / 50539
P52 – TOL150	51144-0700 / 50539
P52/53 remote on/off	67261-0200 / 67260
P54 – TOL300 sens	67260-0400 / 67260

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

**One Power Supply - 3 Mounting Variations**

TOL Standard open Frame Version



TOL open Frame with L - Bracket for Chassis Mounting



TOL with L - Bracket and Cover ( Chassis / Cover Kit )



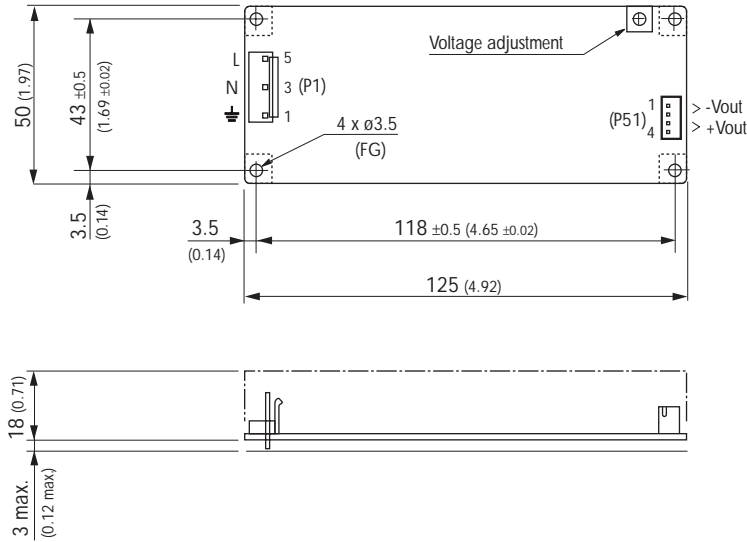
Mating Connectors with prewired flying Leads ( 500mm Length )





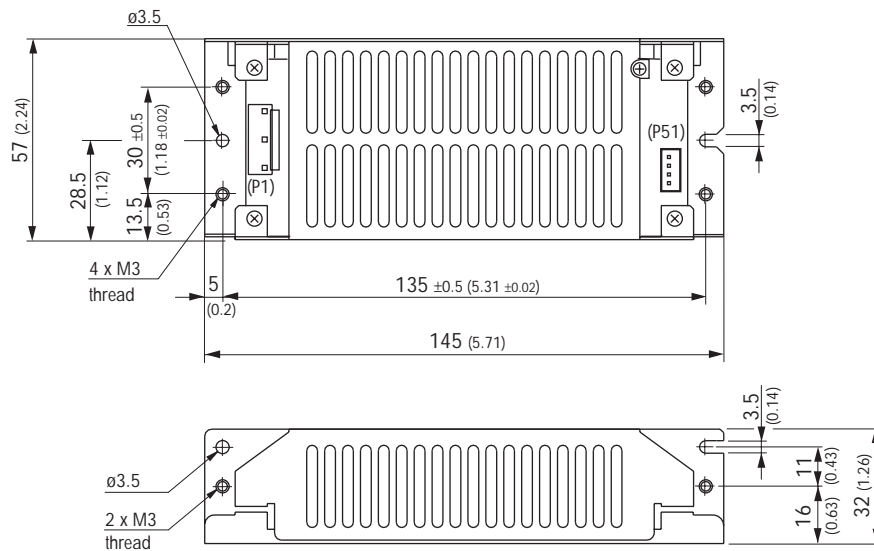
### Outline Dimensions mm (inches)

#### TOL 15 standard open frame version



**Weight**  
95 g (3.4 oz)

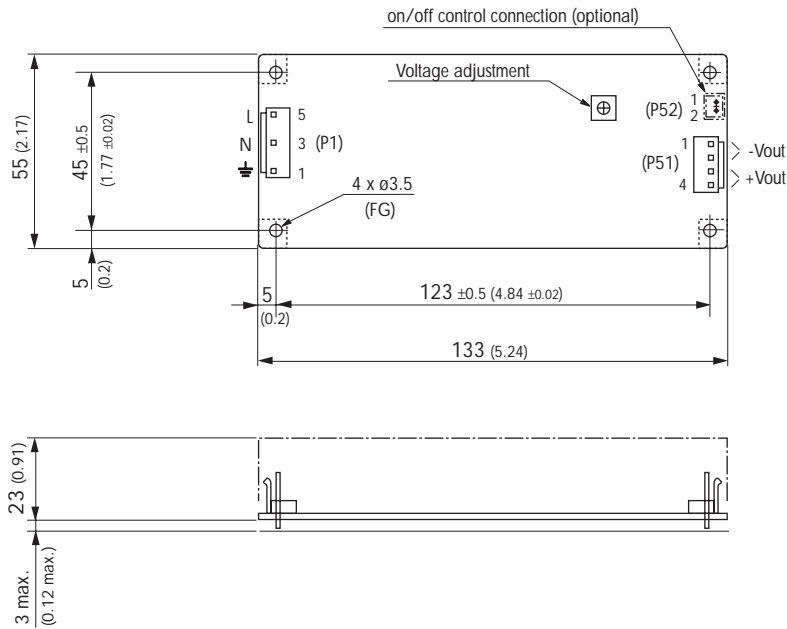
#### TOL 15 with chassis / cover option



**Weight**  
210 g (7.4 oz)

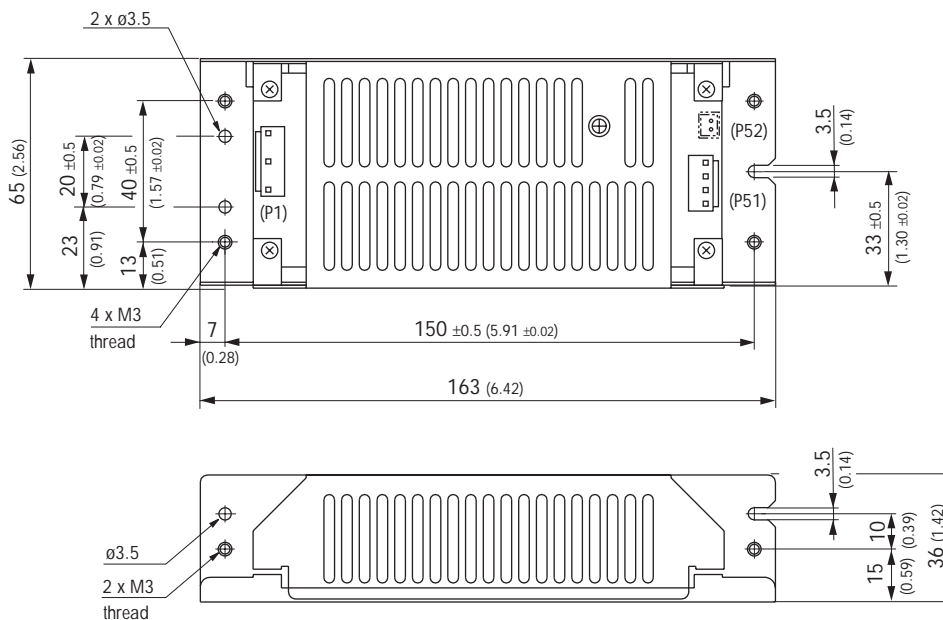
**Outline Dimensions mm (inches)**

**TOL 30 standard open frame version**



**Weight**  
200 g (7.1 oz)

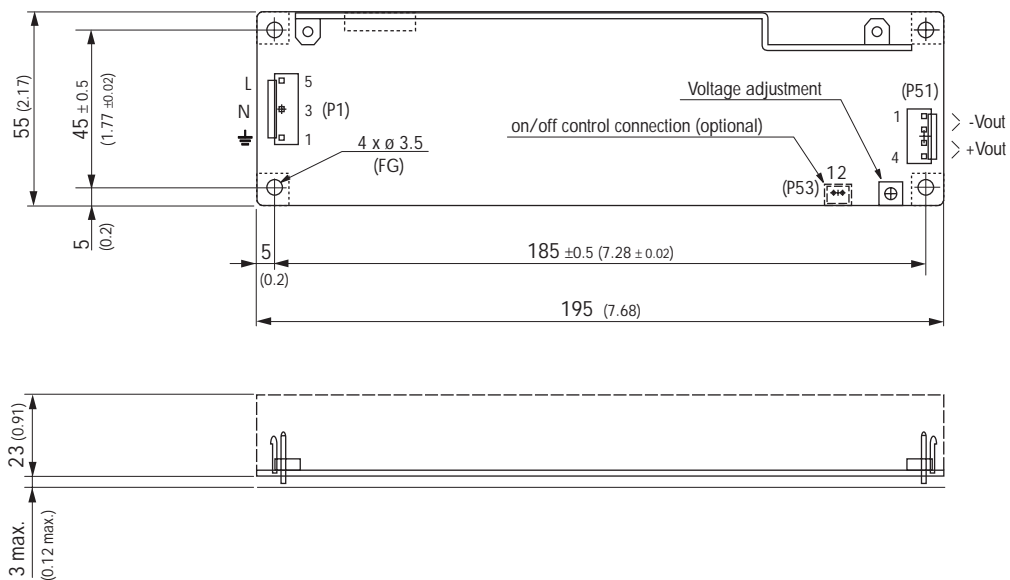
**TOL 30 with chassis / cover option**



**Weight**  
280 g (9.9 oz)

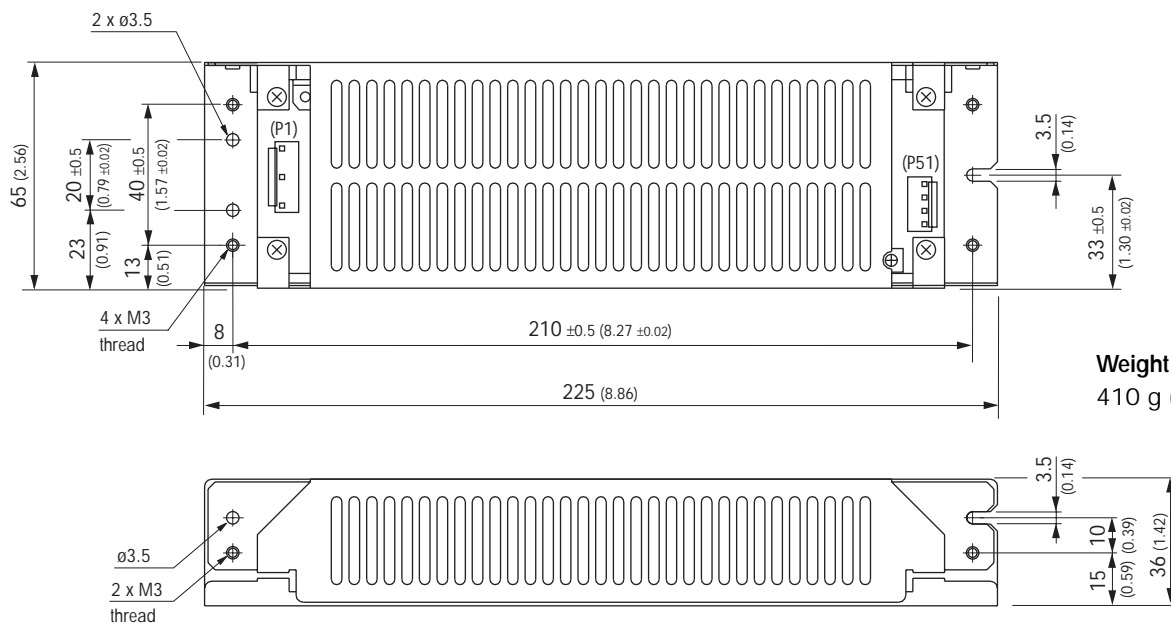
### Outline Dimensions mm (inches)

#### TOL 50 standard open frame version



**Weight**  
210 g (7.4 oz)

#### TOL 50 with chassis / cover option

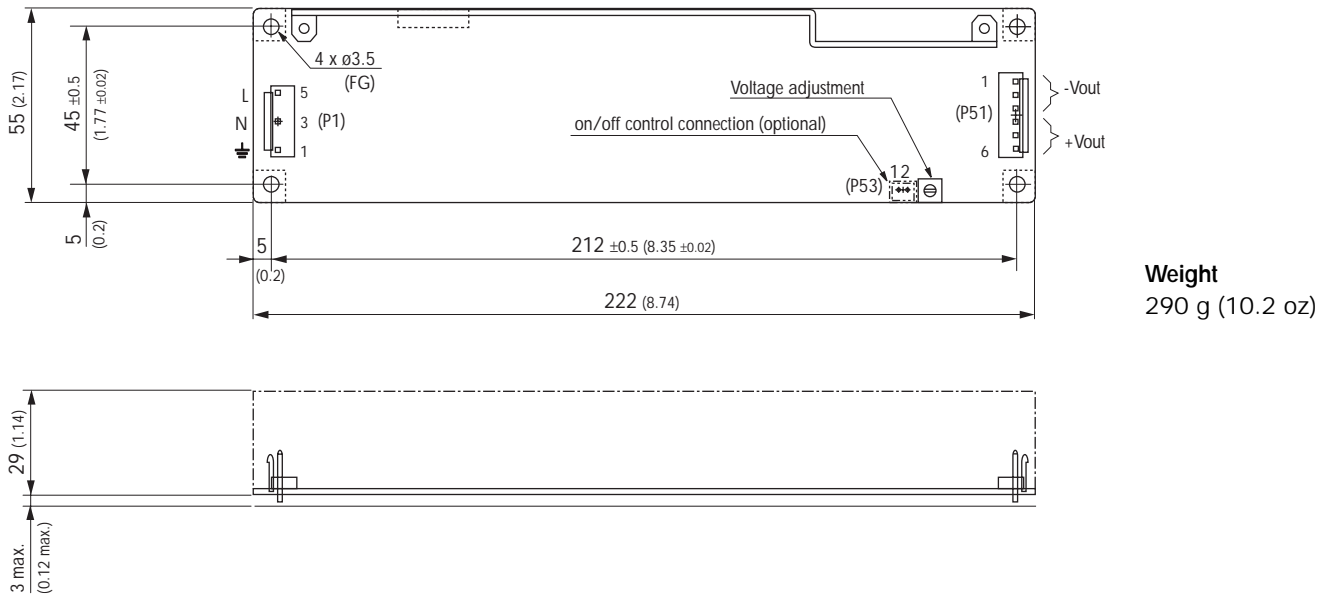


**Weight**  
410 g (14.5 oz)

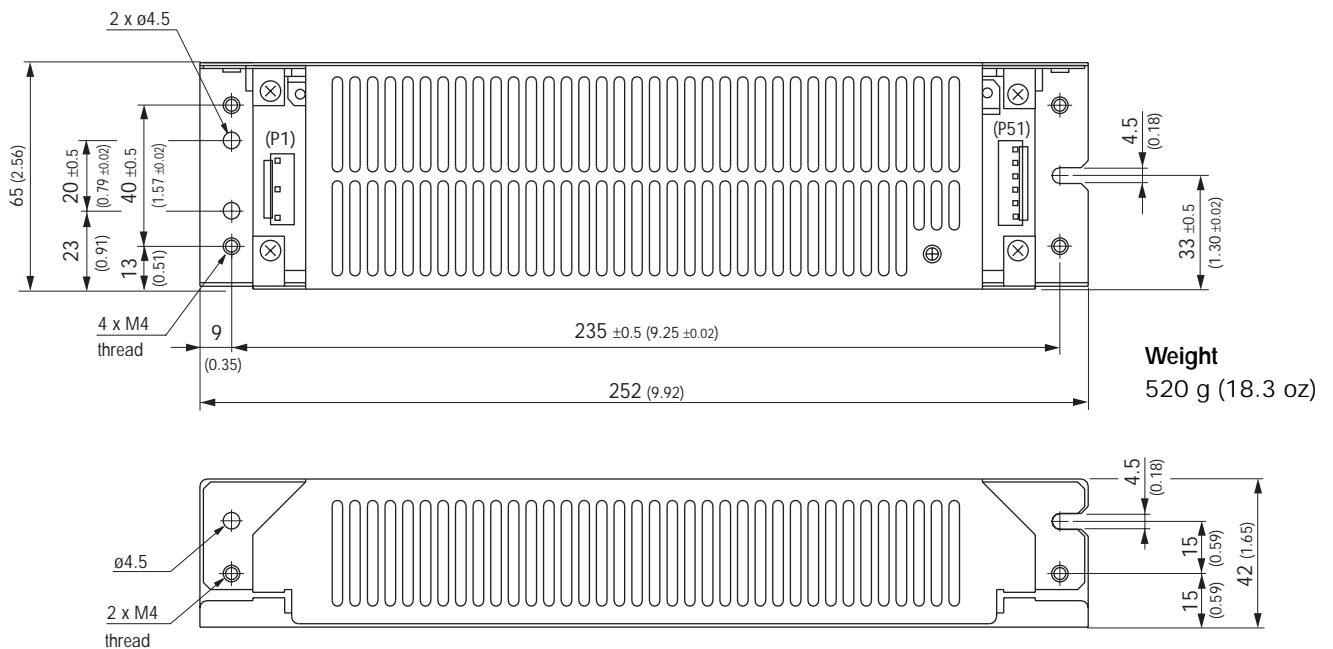


### Outline Dimensions mm (inches)

#### TOL 75 standard open frame version

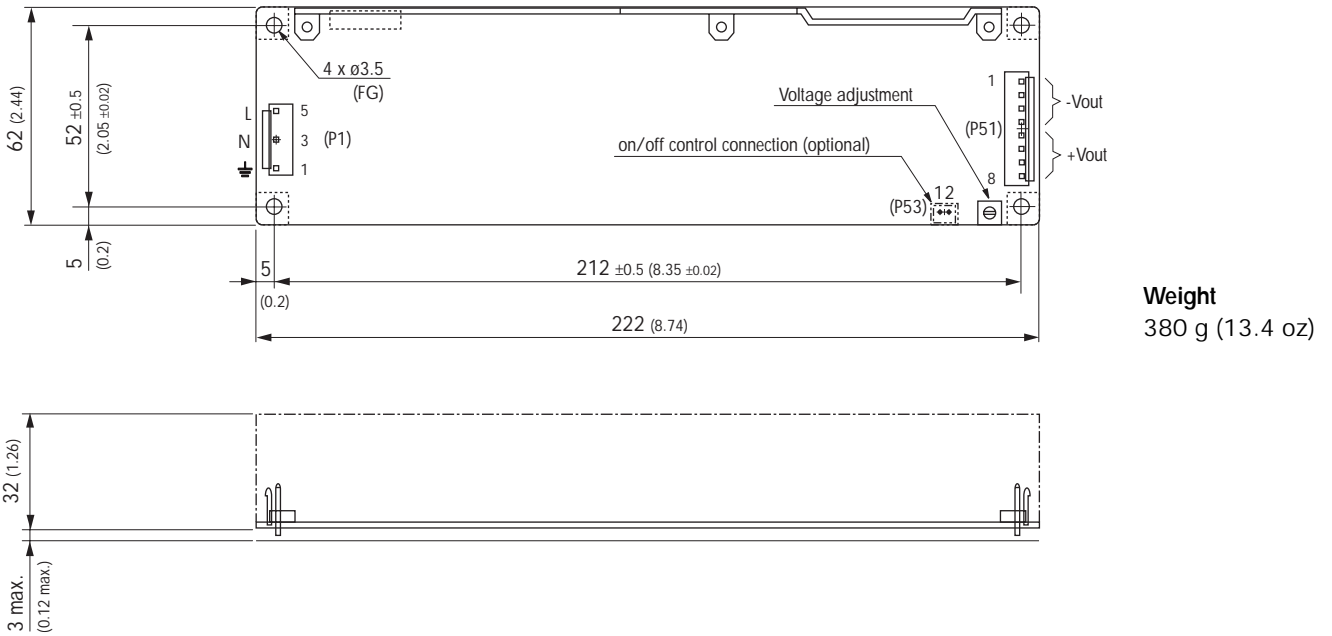


#### TOL 75 with chassis / cover option

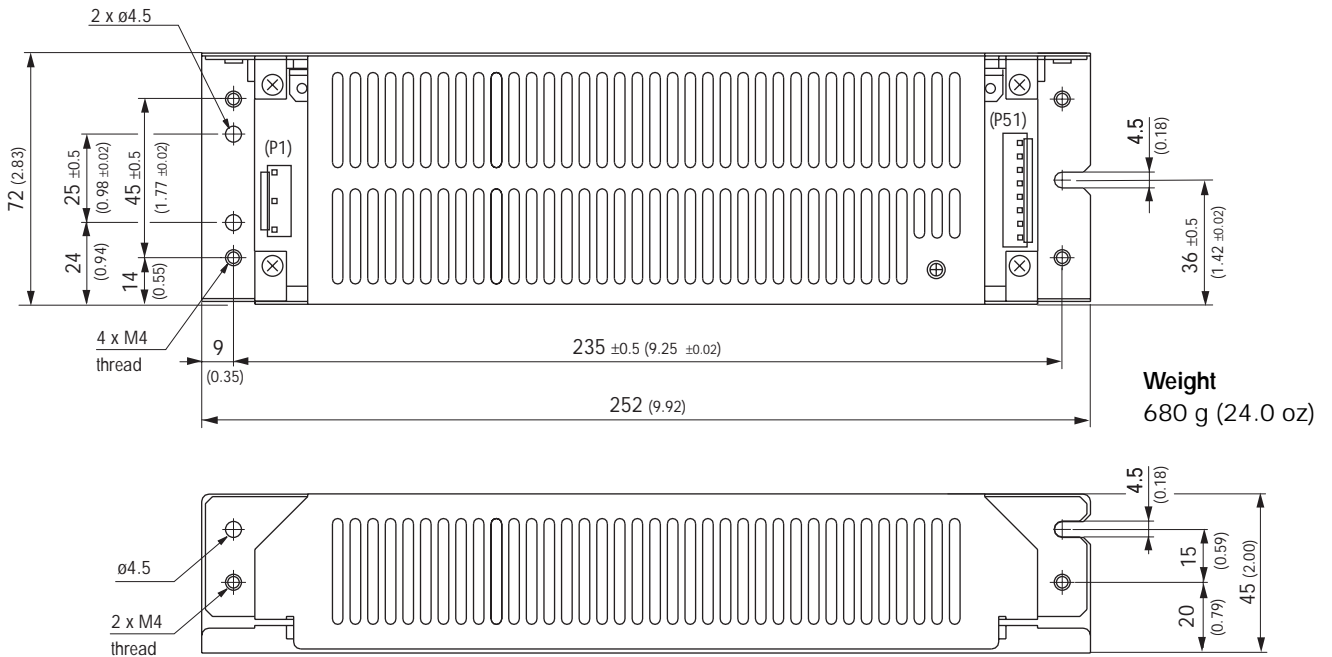


**Outline Dimensions mm (inches)**

**TOL 100 standard open frame version**

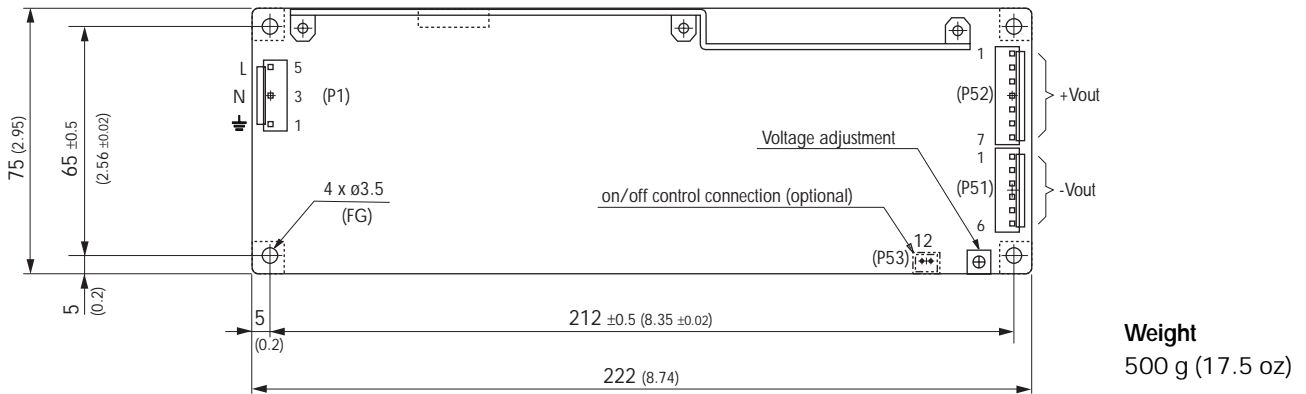


**TOL 100 with chassis / cover option**

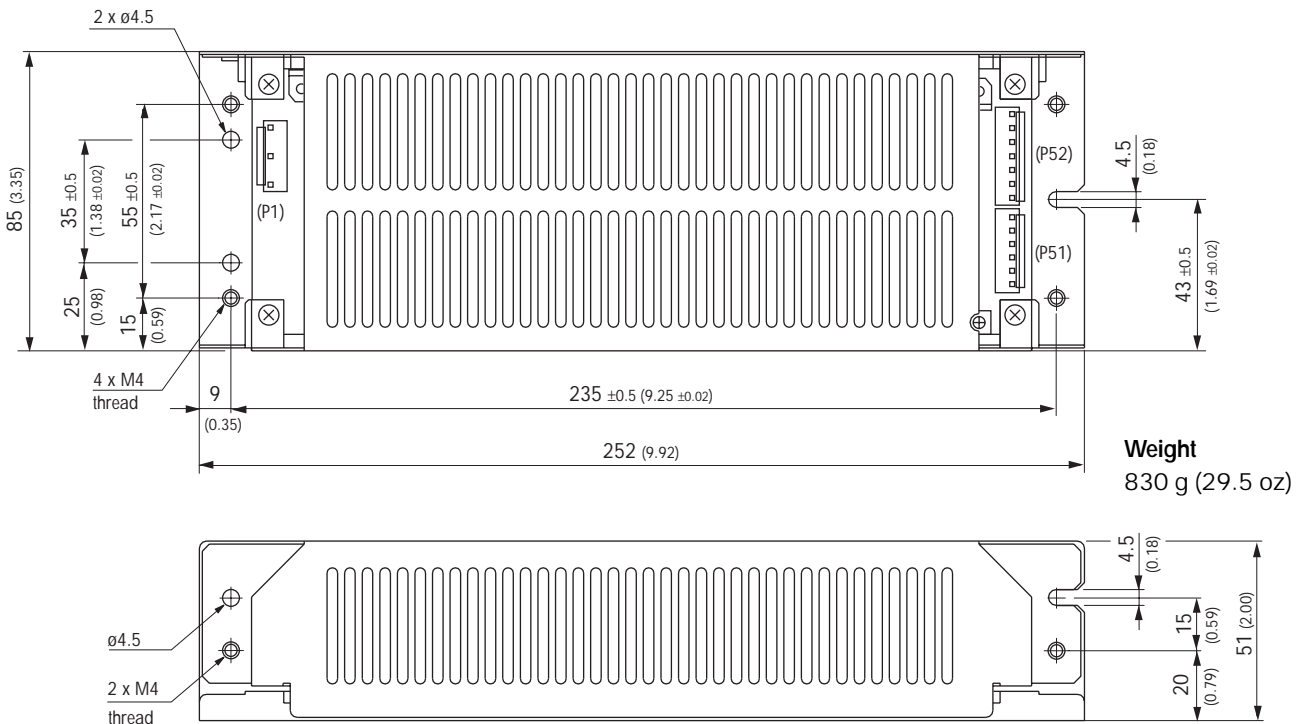


## Outline Dimensions mm (inches)

### TOL 150 standard open frame version

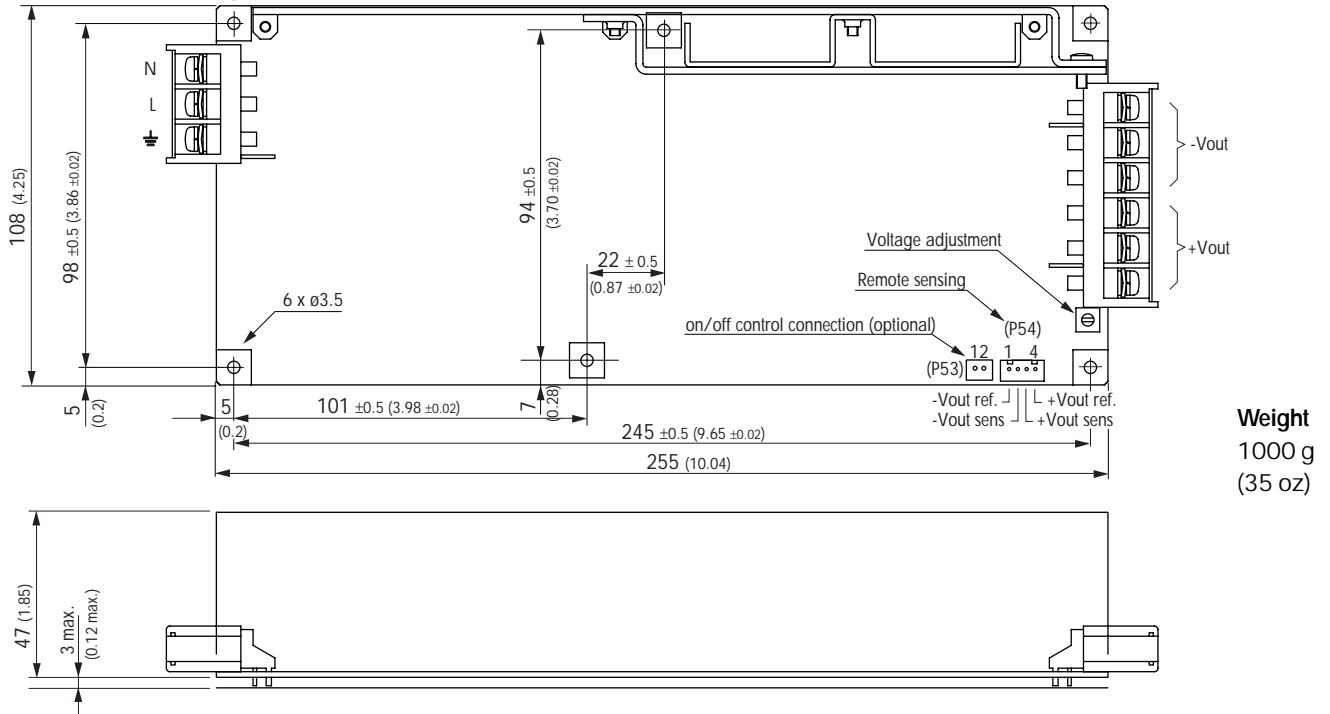


### TOL 150 with chassis / cover option

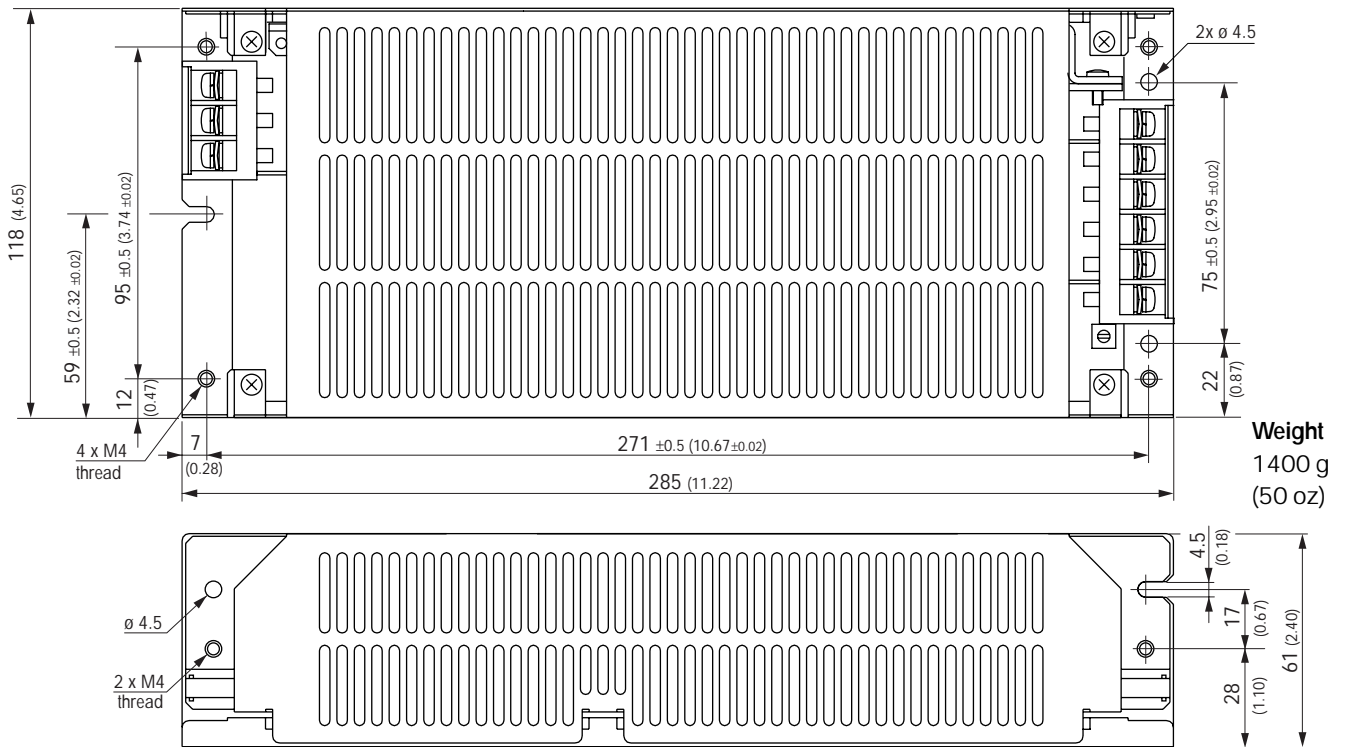


**Outline Dimensions mm (inches)**

**TOL 300 standard open frame version**



**TOL 300 with chassis / cover option**



Specifications can be changed without notice