TRACO POWER

Industrial Power Supplies

TIB 480EX Series, 480 Watt

- **UL Hazloc Class I, division 2 approval and ATEX certification**
- **SEMI F47 compliant for voltage sag immunity**
- **Rugged metal case with optional side-mounting**
- **Very high efficiency up to 95%**
- **Back power immunity**
- **150% peak current for 4 sec.**
- **Operating Temp –40°C to +70°C (full load up to 60°C)**
- **Adjustable output voltage**
- **High Reliability: MTBF 1 mill hrs per IEC 61709**
- **Short circuit and overload protection**
- **5-year product warranty**

CE CB Scheme SI Type Approved Bauart Geprüft c UL us UL508 c TÜV us UL60950-1 Ex ATEX II3G

Other output power of same series:
www.tracopower.com/overview/tib-ex

The TIB 480-EX family of next generation of 480 Watt din rail power supplies feature high efficiency operation of up to 95% enabling a slim design with alternative side-mounting for flat panels (DC OK Indicator on both front and side panel). These products certified to UL Hazloc Class 1 / Div 2, and ATEX (EN60079-0, EN60079-7. EN600079-15) for operation in hazardous locations. These convection cooled power supplies have a -40°C to +60°C full load operating temperature range. 150% peak power for up to 4 seconds which is ideal for stepper motors, solenoids or actuators. The TIB 080-EX series has an important Back Power Immunity feature that helps protect against shut-down or malfunction with loads such as inductors and decelerating motors that can feed voltage back to the power supply. Outputs are radio-interference-suppressed to impede radiation at long output lines which reduces the common mode current to within limits of telecommunication ports. The series operate with a high power factor of up to 99% which also minimizes inrush current.
Additional qualifications include IEC/EN/UL 60950-1, UL508 and CB Report with EMC compliance to IEC/EN61000-6-2 and IEC/EN61000-6-3.

Models

Order Code	Output Power (max.)	Output Voltage nom. (adjustable)	Output Current (max.)	Efficiency (typ.)
TIB 480-124EX	480 W	24 VDC (23.5–28.0)	20 A	95.0 %
TIB 480-148EX	480 W	48 VDC (47.0–56.0)	10 A	95.0 %

Input Specifications

Input voltage	– nominal ranges – effective ranges		100 – 240 VAC 85 – 264 VAC (below 90 VAC a derating of 3%/V is required)
Input voltage frequency			45 – 65 Hz
Standby power cunsumption			4.8/3.8 W (115/230 VAC)
Power Factor Correction (PFC)			0.99/0.97 (115/230 VAC)
Harmonic limits	– acc. EN 61000-3-2		class A, D
Inrush current			15/30 A max. (115/230 VAC)

Output Specifications

Output voltage adjustment [1]		24 Vout models: 48 Vout models:	23.5 – 28.0 V 47.0 – 56.0 V
Regulation	– Input variation – Load variation (10–90 %)		0.1 % max. 0.5 % max.
Temperature coefficient			0.02 %/K
Hold-up time			20 ms min.
Start-up time			2 s max.
Ripple and Noise (20MHz bandwidth)		24 Vout models: 48 Vout models:	100 mVp-p max. 200 mVp-p max.
Output overvoltage protection (OVP) [2]		24 Vout models: 48 Vout models:	32 – 35 V 56 – 60 V
Power back immunity [3]			< OVP level
Operation	– Nominal operation – Peak power operation – Constant current (cc)		100 % of Iout nom. 105 – 150 % of Iout nom. > 155 % of Iout nom.
Duty cycle [4] (for peak and cc mode)	– Threshold – CC or peak opeartion timer – normal operation / off period		> 105 % 4 s max. (switch off) 10 s typ. (automatic restart after switch off or peak and cc operation timer reset)
Short circuit			Switch off after 4s delay, automatic restart
DC OK signal	– Threshold for Vout – DC ON – DC OFF	24 Vout models: 48 Vout models:	on: > 22.5 V typ., off: < 21.5 V typ. on: > 45 V typ., off: < 43 V typ. relay contact closed, 1 A max., < 100 mOhm (also indicated by green LEDs: front and side) relay contact open, 30 V max.

[1] Output voltage can be adjusted as indicated. However, output power has to be maintained at nominal value. This means the output nominal current has to be reduced in accordance with the increase of output voltage.

[2] In case of an internal error a second voltage regulation loop keeps the output voltage at a save level, the power supply turns off and restarts after typ. 10 seconds.

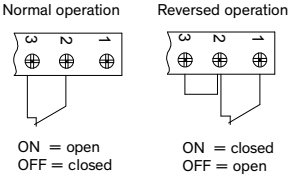
[3] When external voltage is supplied above set output voltage and below OVP threshold, the power supply will function normally without switch off or destruction, even if external voltage is applied continuously.

[4] In case of overload or short circuit, the unit switches the output voltage off after 4 seconds and tries to restart every typ. 10 seconds.

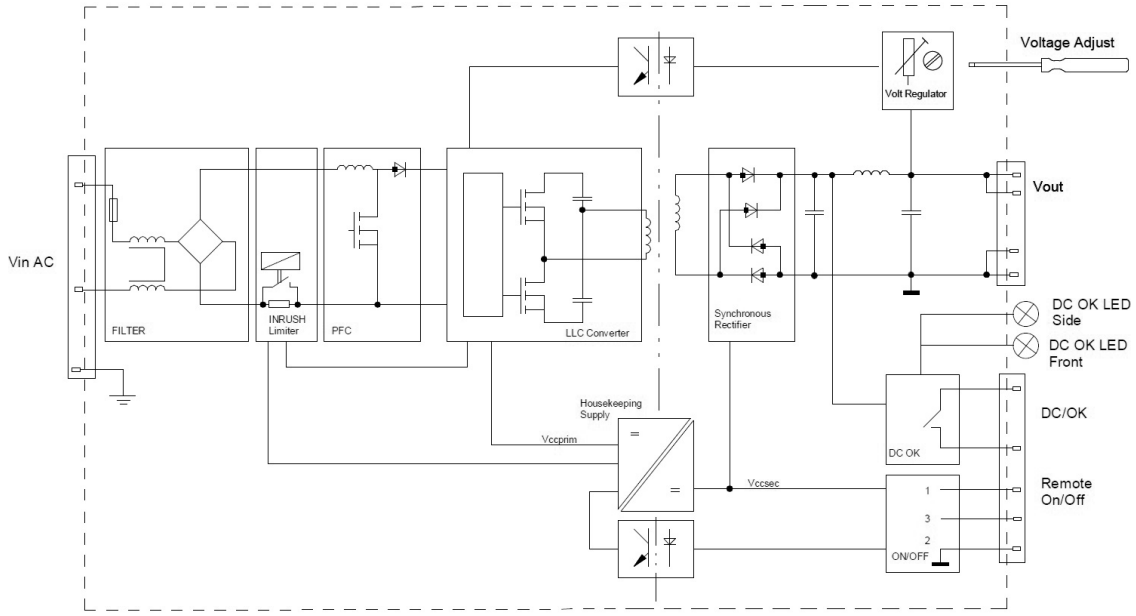
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

General Specifications

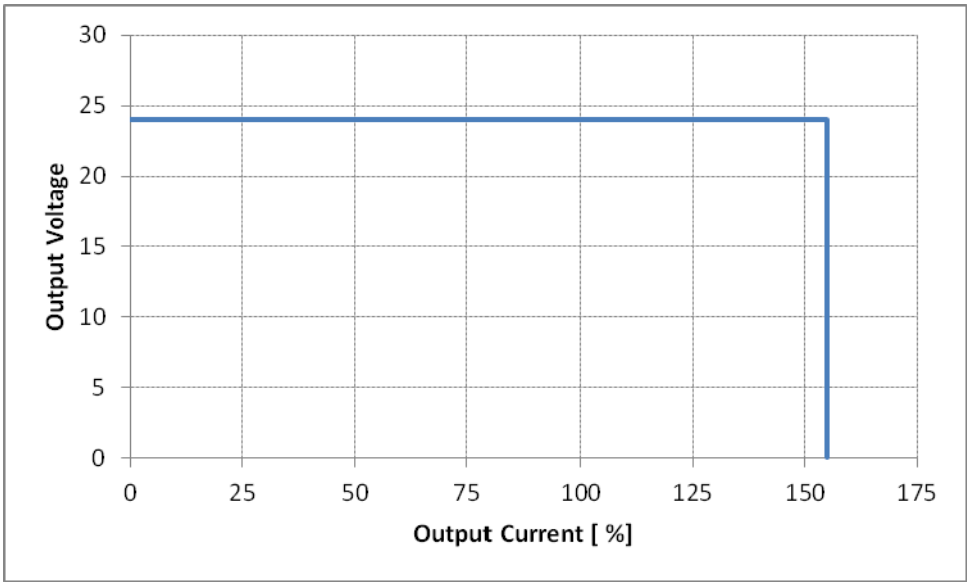
Operating temperature range			–40°C to +70°C max.
Derating		24 Vout models: 48 Vout models:	2 %/K above +60°C 1.4 %/K above +55°C
Cooling			convection cooling, no internal fan
Overtemperature protection			switch off at overtemperature
Humidity (non condensing)			5–95 % rel. H max.
Altitude during operation			2000 m max.
Isolation Voltage	– Input/Ouput – Input/Chassis – Ouput/Chassis		4250 VDC 1500 VDC 750 VDC
Creapage Clearance	– Input/Ouput – Input/Chassis – Output/Chassis		8 mm 4 mm 1.5 mm
MTBF (acc. to IEC 61709 at 25°C)			> 1'000'000 h
Safety standards	– Information technology equipment – Safety low voltage switchgear and controlgear – ATEX for hazardous location – UL HazLoc – Certification documents		IEC/EN 60950-1, UL 60950-1 CSA 22.2 No 60950-1-03 UL 508 EN 60079-15, EN 60079-15, EN 60079-15 (EX II3G Ex ec nC IIC GC) Class I, Division 2 www.tracopower.com/overview/tib
Electromagnetic compatibility (EMC), Emissions			EN 61000-6-3, EN 61204-3
	– Conducted emission input		EN 55032, EN 55011 class B
	– Radiated RI emission		EN 55032, EN 55011 class B
Electromagnetic compatibility (EMC), Immunity			EN 61000-6-2, EN 61204-3
	– Railway applications signalling apparatus		EN 50121-4
	– Railway applications rolling stock apparatus		EN 50121-3-2
	– Electrostatic discharge (ESD)	IEC/EN 61000-4-2	4 kV/8 kV criteria A
	– Radiated RF field immunity	IEC/EN 61000-4-3	10 V/m criteria A
	– Electrical fast transient / burst immunity	IEC/EN 61000-4-4	2 kV criteria B
	– Surge immunity	IEC/EN 61000-4-5	1 kV/2 kV criteria B
	– Immunity to conducted RF disturbances	IEC/EN 61000-4-6	10 V criteria A
	– Power frequency field immunity	IEC/EN 61000-4-8	30 A/m criteria A
	– Mains voltage dips and interruptions	IEC/EN 61000-4-11	criteria B/C
	– Voltage sag immunity	SEMI F47 (230 VAC)	criteria A
Environment	– Railway applications shock and vibration		according EN 61373
	– Vibration acc. IEC 60068-2-6-3		3 axis, 2 g sine sweep, 10–55 Hz, 11 okt/min
	– Shock acc. IEC 60068-2-27		3 axis, 25 g half sine, 11 ms
Enclosure material	– Chassis / Cover		aluminium / stainless steel
Mounting	– DIN-rail mounting		for DIN-rails as per EN 50022-35×15/7.5
Environmental compliance	– Reach		www.tracopower.com/products/reach-declaration.pdf
	– RoHS		RoHS directive 2011/65/EU
Connection			screw terminals
Remote On/Off			The unit can be controlled by external relay contact or open collector signal.
	– contact rating		open: 15 V; leakage current max 100 µA close: 0.3 V; max drop at 15 mA
	– signal assignement		Normal operation / Reversed operation



Function Specification



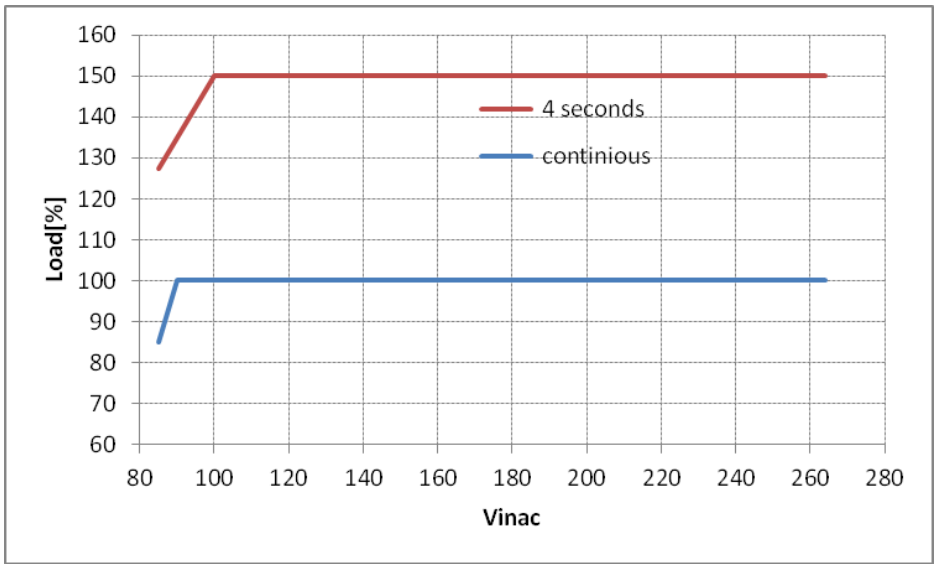
Output Characteristic



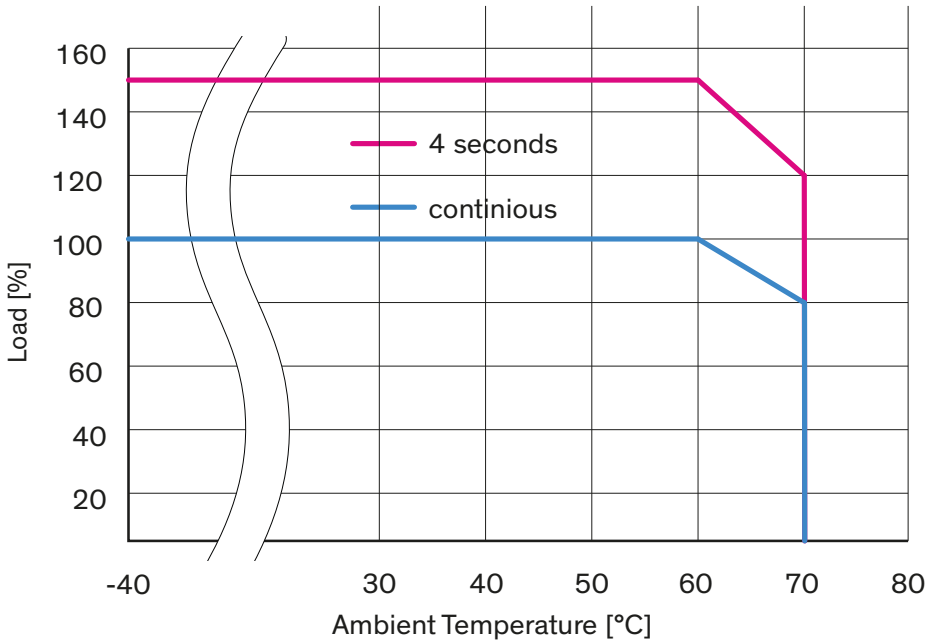
Characteristic: Output voltage vs output current for overload conditions until switch off after 4 s at nominal input voltages

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

Output Characteristic (continued)



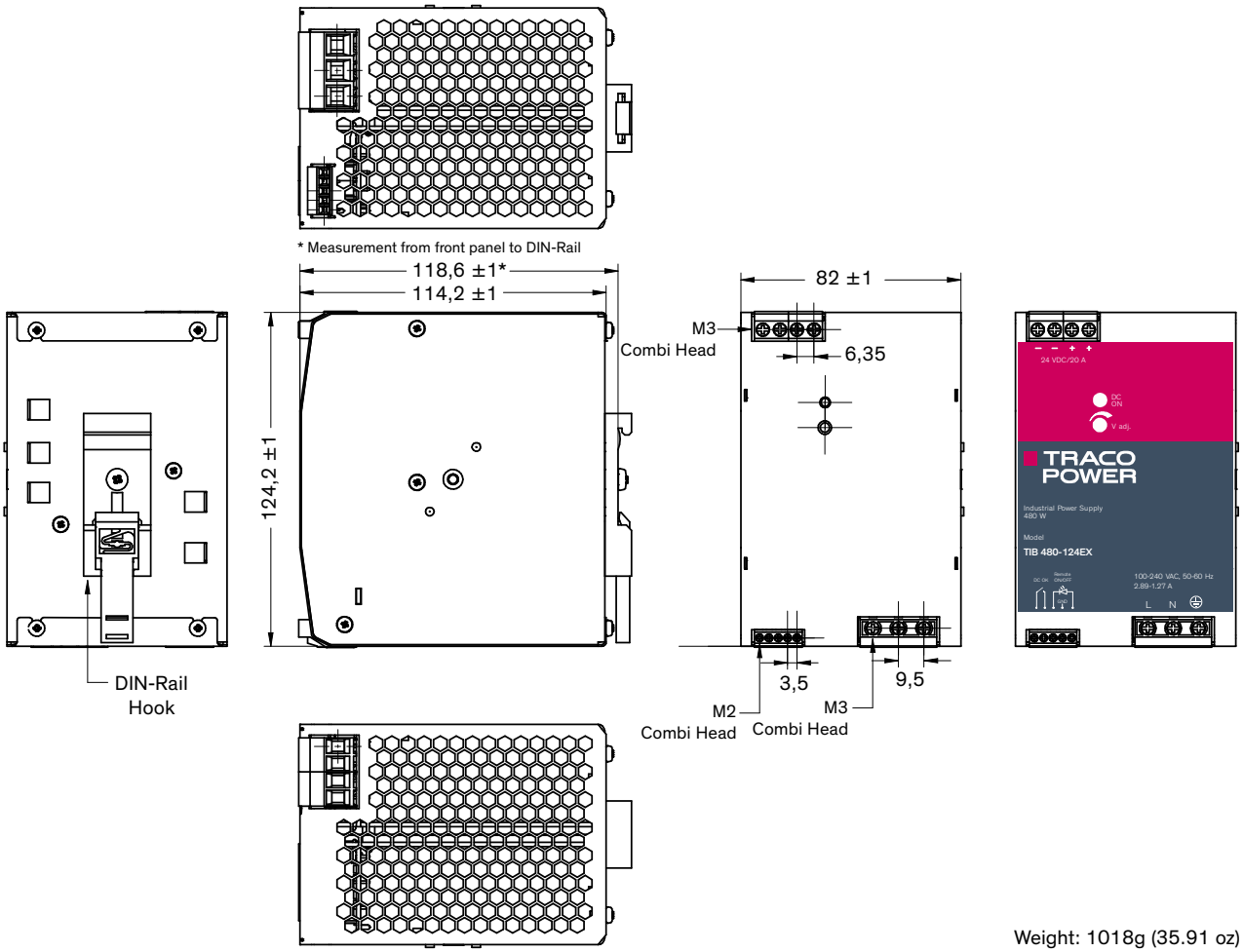
Derating: max load vs input voltage



Derating: Load vs ambient temperature

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

Outline Dimensions



Weight: 1018g (35.91 oz)

Alternative side mounting: