

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



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, EN60079-15) 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 consumption		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		15/30A max. (115/230 VAC)

Output Specifications

Output voltage adjustment ¹⁾		24 Vout models: 23.5 – 28.0 V 48 Vout models: 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: 100 mVp-p max. 48 Vout models: 200 mVp-p max.
Output overvoltage protection (OVP) ²⁾		24 Vout models: 32 – 35 V 48 Vout models: 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 operation 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: on: > 22.5 V typ., off: < 21.5 V typ. 48 Vout models: 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 safe level, the power supply turns off and restarts after typ. 10 seconds.

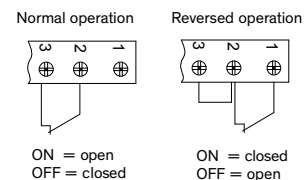
³⁾ When external voltage is supplied above set output voltage and below OVP threshold, the power supply will function normally without switch off or destruction, even if external voltage is applied continuously.

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.

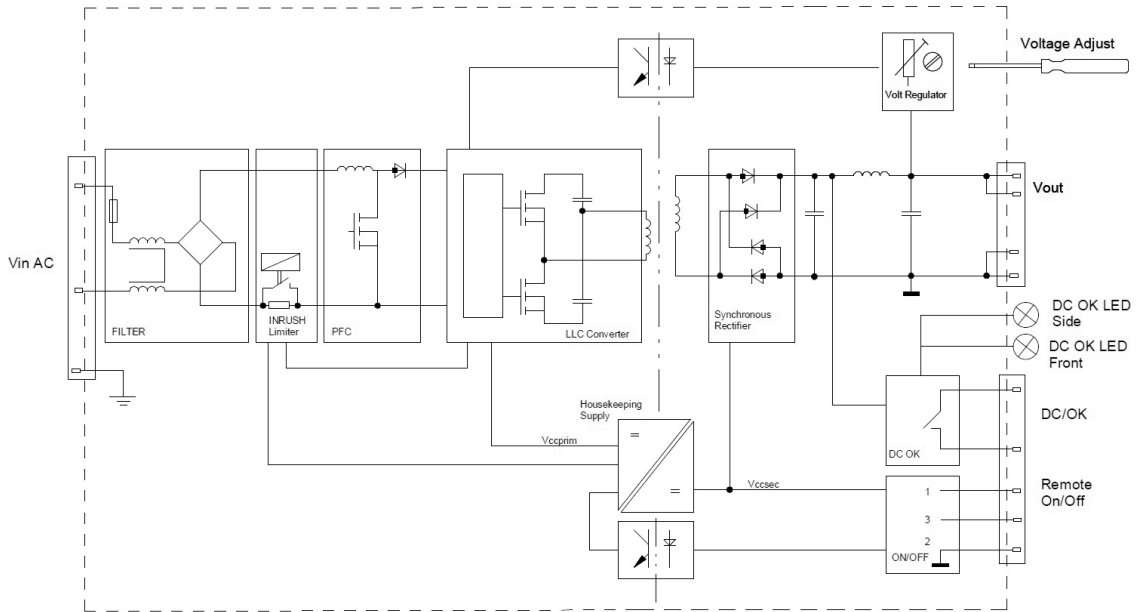
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

General Specifications

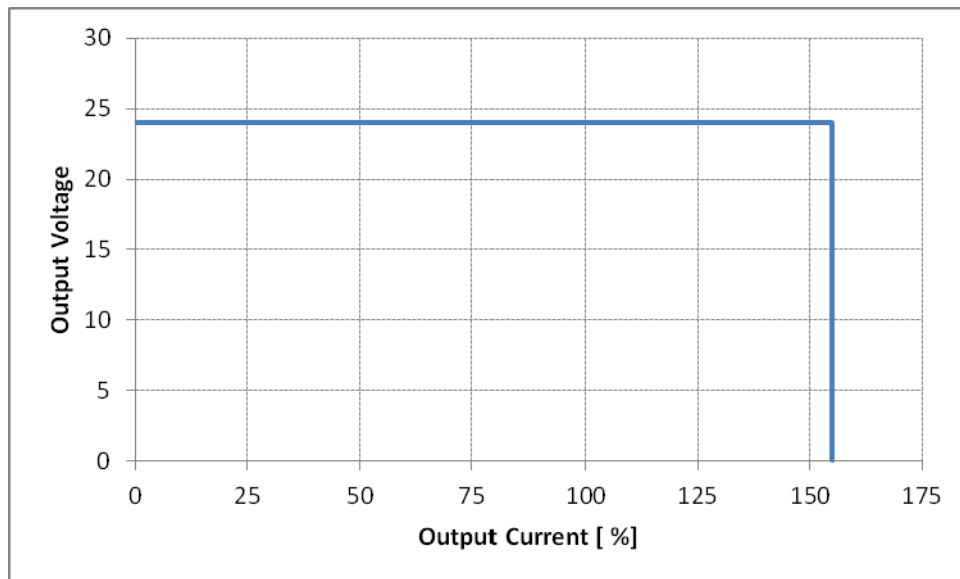
Operating temperature range		-40°C to +70°C max.
Derating	24 Vout models: 48 Vout models:	2 %/K above +60°C 1.4 %/K above +55°C
Cooling		convection cooling, no internal fan
Overtemperature protection		switch off at overtemperature
Humidity (non condensing)		5–95 % rel. H max.
Altitude during operation		2000 m max.
Isolation Voltage	– Input/Ouput – Input/Chassis – Ouput/Chassis	4250 VDC 1500 VDC 750 VDC
Creepage 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	– Conducted emission input – Radiated RI emission	EN 61000-6-3, EN 61204-3 EN 55032, EN 55011 class B EN 55032, EN 55011 class B
Electromagnetic compatibility (EMC), Immunity	– Railway applications signalling apparatus – Railway applications rolling stock apparatus – Electrostatic discharge (ESD) – Radiated RF field immunity – Electrical fast transient / burst immunity – Surge immunity – Immunity to conducted RF disturbances – Power frequency field immunity – Mains voltage dips and interruptions – Voltage sag immunity	EN 61000-6-2, EN 61204-3 EN 50121-4 EN 50121-3-2 IEC/EN 61000-4-2 4 kV/8 kV criteria A IEC/EN 61000-4-3 10 V/m criteria A IEC/EN 61000-4-4 2 kV criteria B IEC/EN 61000-4-5 1 kV/2 kV criteria B IEC/EN 61000-4-6 10 V criteria A IEC/EN 61000-4-8 30 A/m criteria A IEC/EN 61000-4-11 criteria B/C SEMI F47 (230 VAC) criteria A
Environment	– Railway applications shock and vibration – Vibration acc. IEC 60068-2-6-3 – Shock acc. IEC 60068-2-27	according EN 61373 3 axis, 2 g sine sweep, 10–55 Hz, 11 okt/min 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 – RoHS	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU
Connection		screw terminals
Remote On/Off	– contact rating – signal assignment	The unit can be controlled by external relay contact or open collector signal. open: 15V; leakage current max 100µA close: 0.3V; max drop at 15 mA



Function Specification



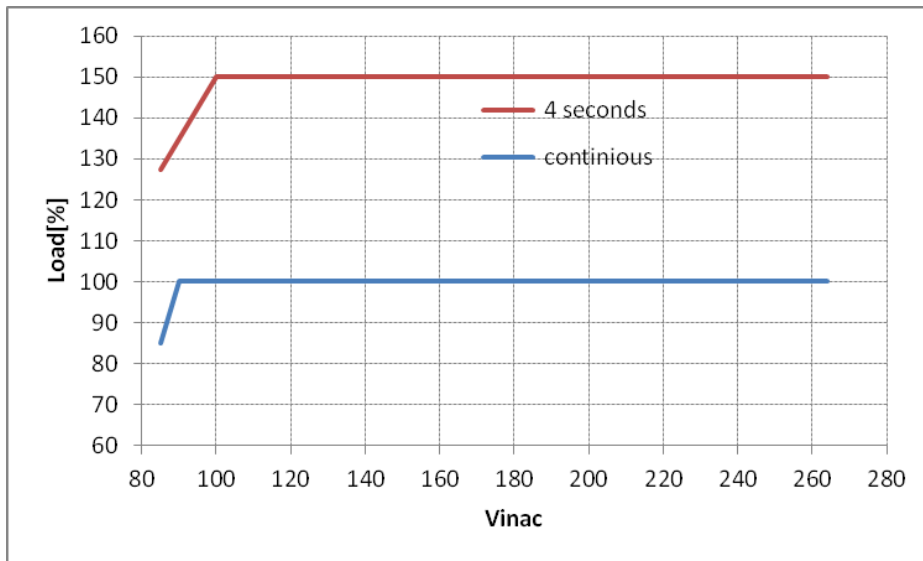
Output Characteristic



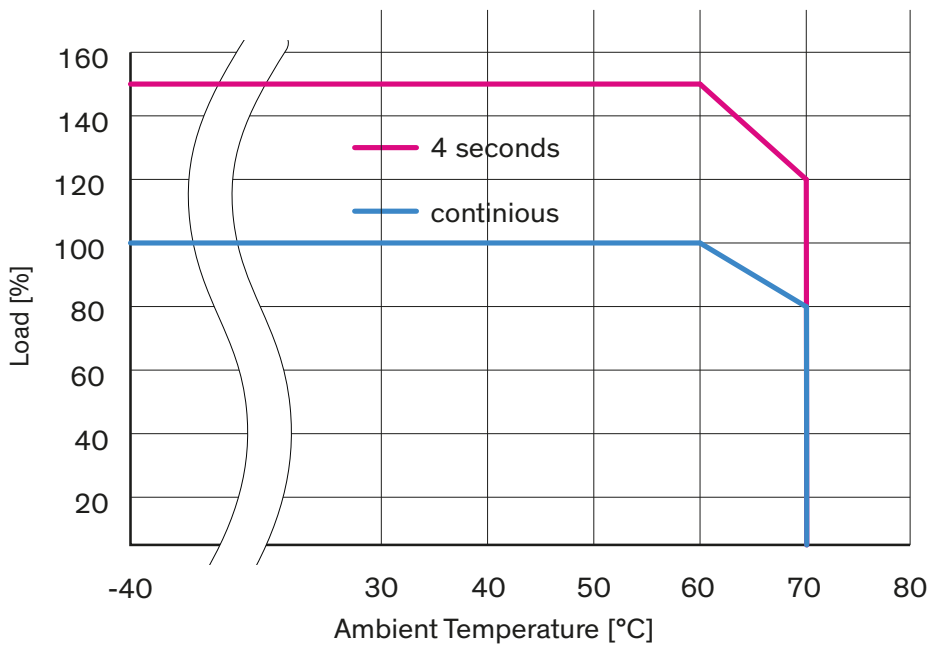
Characteristic: Output voltage vs output current for overload conditions until switch off after 4s at nominal input voltages

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

Output Characteristic (continued)



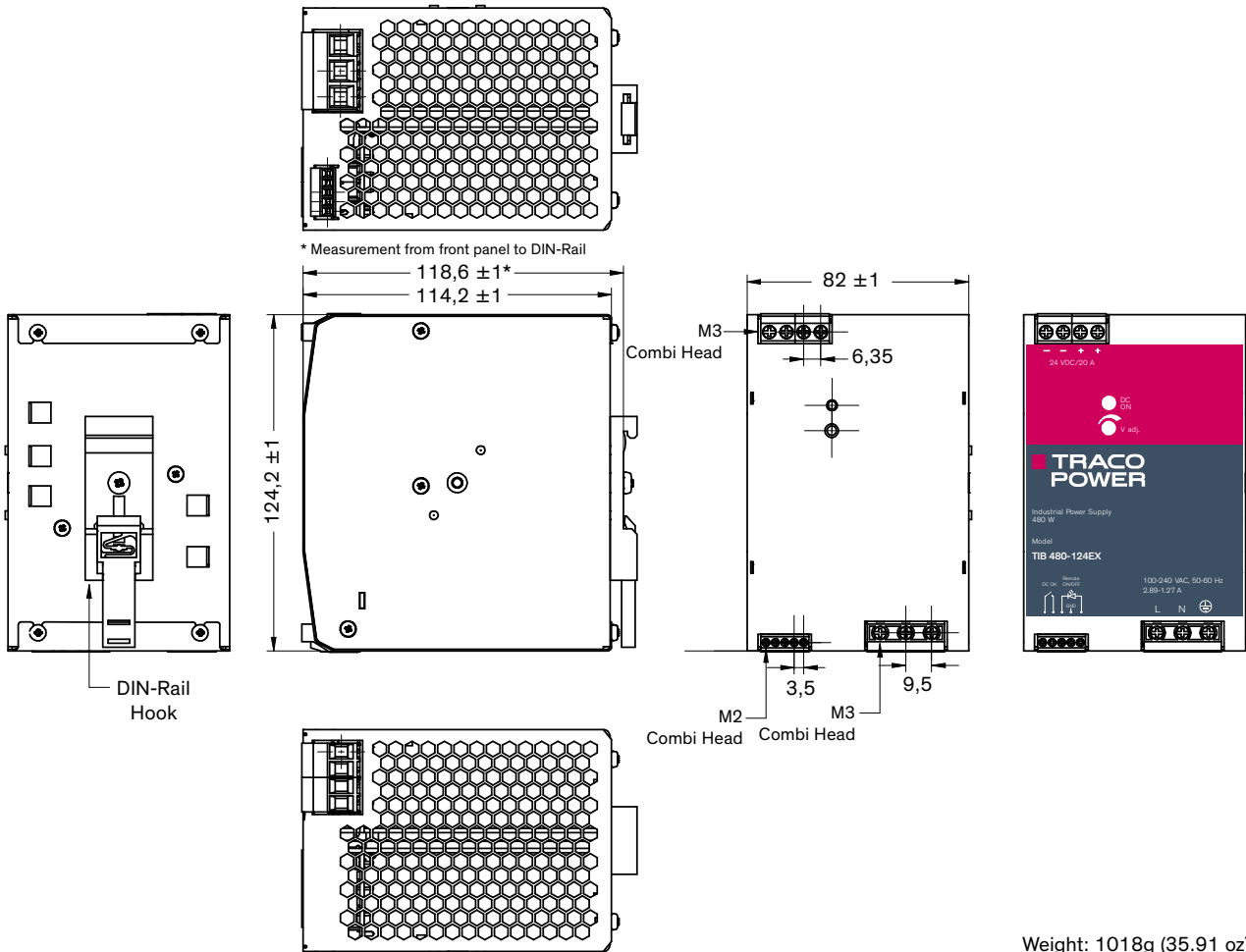
Derating: max load vs input voltage



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



Alternative side mounting:

