

- **UL Hazloc Class I, division 2 approval and ATEX certification**
- **SEMI F47 compliant for voltage sag immunity**
- **Rugged metal case with optional side-mounting**
- **Back power immunity**
- **150% peak current for 4 s**
- **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**



The TIB 240-EX family of next generation of 240 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 (EN 60079-0, EN 60079-7, EN 60079-15) 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 240-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, UL 508 and CB Report with EMC compliance to IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

Models					
Order Code	Output Power max.	Output Voltage nom. (adjustable)	Output Current max.	Output Current peak	Efficiency typ.
TIB 240-124EX	240 W	24 VDC (23.5 - 28.0 VDC)	10'000 mA	15'000 mA	95 %
TIB 240-148EX		48 VDC (47.0 - 56.0 VDC)	5'000 mA	7'500 mA	95 %

### Input Specifications

Input Voltage		85 - 264 VAC (Full Range)
Input Frequency		45 - 65 Hz
Power Consumption	- at no Load	2'300 mW typ.
Input Inrush Current	- at 230 VAC	30 A max.
	- at 115 VAC	15 A max.
Power Factor	- at 230 VAC	0.92 min. (Active Power Factor Correction)
	- at 115 VAC	0.98 min. (Active Power Factor Correction)

### Output Specifications

Output Voltage Adjustment		24 VDC model: 23.5 - 28.0 VDC
		48 VDC model: 47.0 - 56.0 VDC By trim potentiometer Output power must not exceed rated power!
Regulation	- Input Variation (Vmin - Vmax)	0.1% max.
	- Load Variation (10 - 90%)	0.5% max.
Output Current peak		Peak Power: 105 - 150% of Iout max. Peak Operation Time: 4 s max. (switch off) Off Time: 10 s typ. In peak power mode, the unit continuously switches off the output voltage after 4 s and restarts after approx. 10 s.
Ripple and Noise (20 MHz Bandwidth)		24 VDC model: 100 mVp-p max.
		48 VDC model: 200 mVp-p max.
Capacitive Load		Infinite
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Hold-up Time	- at 230 VAC	20 ms min.
	- at 115 VAC	20 ms min.
Start-up Time	- at 230 VAC	2'000 ms max.
	- at 115 VAC	2'000 ms max.
Short Circuit Protection		Continuous, Automatic recovery
Overload Protection		Constant Current Mode Switch off after 4 s delay, automatic restart
Output Current Limitation		155% min. of Iout max.
Overvoltage Protection		117 - 146% of Vout nom. (depending on model) 32 - 35 VDC (24 VDC model) 56 - 60 VDC (48 VDC model) (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 tries to restart after 10 s.)
Transient Response	- Peak Variation	600 mV max. (10% to 90% Load Step)
	- Response Time	2000 µs typ. (10% to 90% Load Step)

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

## Safety Specifications

Safety Standards	- IT / Multimedia Equipment	IEC 60950-1 EN 60950-1 UL 60950-1 CSA-C22.2, No 60950-1
	- Industrial Control Equipment	UL 508
	- ATEX	EN 60079-0 EN 60079-7 EN 60079-15
	- HazLoc	EX II3G Ex nA nC IIC T4 GC UL 121201
	- Certification Documents	Class I; Div 2; Groups A,B,C,D; T4 <a href="http://www.tracopower.com/overview/tib240-ex">www.tracopower.com/overview/tib240-ex</a>
Protection Class		Class I Prepared: Connection to PE
Pollution Degree		PD 2
Over Voltage Category		OVC II

## EMC Specifications

EMC Emissions		EN 61000-6-3 (Generic Residential) EN 61204-3 (Low Voltage Power Supplies) EN 50121-3-2 (EMC for Rolling Stock) EN 50121-4 (Railway Application Signalling)
	- Conducted Emissions	EN 55011 class B (internal filter) EN 55032 class B (internal filter)
	- Radiated Emissions	EN 55011 class B (internal filter) EN 55032 class B (internal filter)
	- Harmonic Current Emissions	EN 61000-3-2, class A
EMC Immunity		EN 50121-3-2 (EMC for Rolling Stock) EN 50121-4 (Railway Application Signalling) EN 61000-6-2 (Generic Industrial) EN 61204-3 (Low Voltage Power Supplies)
	- Electrostatic Discharge	Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, $\pm 2$ kV, perf. criteria B
	- RF Electromagnetic Field	L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria B
	- EFT (Burst)	L to PE: EN 61000-4-5, $\pm 2$ kV, perf. criteria B
	- Surge	EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 30 A/m, perf. criteria A
	- Conducted RF Disturbances	230 VAC / 50 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria C 60%, 10 periods, perf. criteria C >95%, 1 period, perf. criteria B >95%, 5 periods, perf. criteria C
	- PF Magnetic Field	115 VAC / 60 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria C 60%, 10 periods, perf. criteria C >95%, 1 period, perf. criteria B >95%, 5 periods, perf. criteria C
	- Voltage Dips & Interruptions	20%, 250 periods, perf. criteria C
	- Voltage Sag Immunity	SEMI F47, criteria A

## General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +70°C

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Power Derating	- High Temperature - Low Input Voltage	2 %/K above 60°C (at standard operation) 3 %/K above 60°C (at peak power mode) 3 %/V below 90 VAC (at standard operation) 1.5 %/V below 100 VAC (at peak power mode)
Over Temperature Protection Switch off		(Automatical switch off at over temperature)
Cooling System		Natural convection (20 LFM)
Altitude During Operation		2'000 m max.
Switching Frequency		75 - 100 kHz (PWM)
Insulation System		Reinforced Insulation
Isolation Test Voltage	- Input to Output, 60 s - Input to Case or PE, 60 s - Output to Case or PE, 60 s	4'250 VDC 1'500 VDC 750 VDC
Creepage	- Input to Output - Input to Case or PE - Output to Case or PE	8 mm min. 4 mm min. 1.5 mm min.
Clearance	- Input to Output - Input to Case or PE - Output to Case or PE	8 mm min. 4 mm min. 1.5 mm min.
Leakage Current	- Earth Leakage Current - Touch Current	3500 µA max. 310 µA max.
Reliability	- Calculated MTBF	1'300'000 h (IEC 61709)
Environment	- Vibration  - Mechanical Shock	EN 61373 IEC 60068-2-6 3 axis, sine sweep, 10 - 55 Hz, 2 g, 11 oct/min EN 61373 IEC 60068-2-27 3 axis, 25 g half sine, 11 ms shock
Housing Material		Aluminium (Chassis) Stainless Steel (Cover)
Connection Type		Screw Terminal
Mounting	- DIN Rail	For DIN-rails as per EN 50022-35x15/7.5
Weight		643 g
Thermal Impedance		0.95 K/W
Power Back Immunity		24 VDC model: 35 V max. 48 VDC model: 60 V max.  (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.)
Power OK Signal	- Trigger Threshold  - Power OK - Power Off - Pin Specifications	24 VDC model: OK: 22.5 VDC, Off: 21.5 VDC 48 VDC model: OK: 45 VDC, Off: 43 VDC Relay contact closed Relay contact open 30 VDC / 1 A max.
Status Indicator		Also indicated by green LEDs: front and side
Environmental Compliance	- Reach - RoHS	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a>

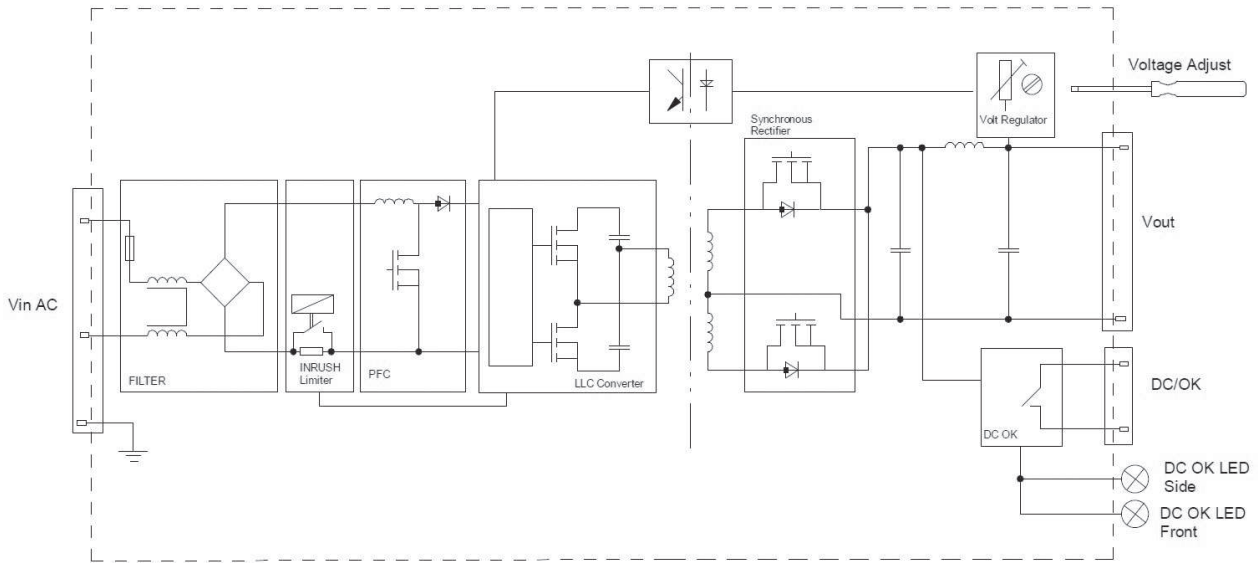
## Supporting Documents

Overview Link (for additional Documents)

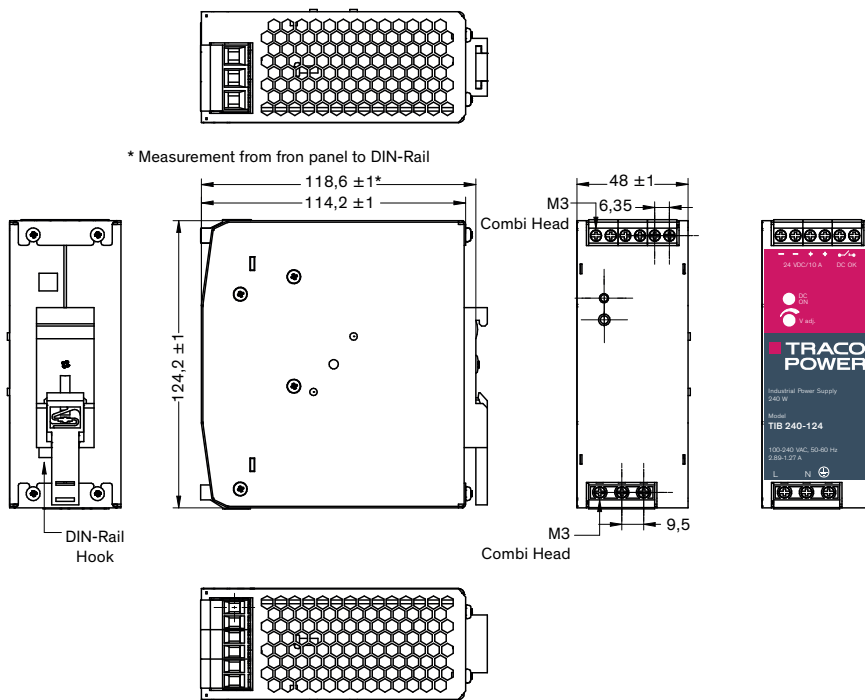
[www.tracopower.com/overview/tib240-ex](http://www.tracopower.com/overview/tib240-ex)

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### Blockdiagram



### Outline Dimensions



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### Alternative side mounting

