



Technical Information

EP2404

Product name
EP2404



Description	EP2404
	The ultra-compact and affordable EP series is designed for industrial applications that require reliable power in a small space. The EP units operate with a universal AC input range and provide full power up to 55°C. All models in the series are certified to IEC/EN/UL 60950-1 & IEC/EN/UL 62368-1 for Information Technology Equipment (ITE) and UL 508 Industrial Control Equipment (ICE) certified. The series is also fully compliant with the RoHS Directive. NEC Class 2 and Limited Power Source (LPS) approvals are also available for this product.

Characteristics	
	Ultra compact size and galvanic isolation up to 3.0kVac
	Universal AC input voltage and full power from -10°C to +55°C operation
	Up to 89% efficiency and built-in active PFC
	Low earth leaking current < 0,5mA @ 264Vac
	Built-in DC OK relay contact
	Extrem low temperature cold start -40°C
	NEC Class 2 / Limited Power Source (LPS) certified
	Certified according to IEC/EN/UL 62368-1

Input	
Nominal Input Voltage	100 - 240 VAC
Input Voltage Range	85 - 264 VAC
Nominal Input Frequency	50 - 60 Hz
Input Frequency Range	47 - 63 Hz
DC Input Voltage Range	120-375VDC
Input Current	<1.2A /115 VAC < 0.6A / 230 VAC
Efficiency	>89 % at 115 VAC & 230 VAC
Max Power Dissipation	No load < 0.4W/115 VAC and 230 VAC 100% load <11W/115 VAC & 230 VAC
Max. Inrush current	<25A / 115VAC, < 40 A /230VAC >0.97 / 115VAC, > 0.9/230VAC
Leakage Current	< 0.5 mA/264 VAC



Output	
Nominal Output Voltage	24 VDC
Factory Set Point Tolerance	± 2.0 %
Output Voltage Adjustment Range	24 - 28 VDC
Output Current	4.0 A (96W max.)
Output Power	96 W
Line Regulation	< 0.5% (at 85-264 VAC, 100% load)
Load Regulation	< 1 % (at 85-264VAC, 0-100% load)
PARD (20MHz) ²	< 50m Vpp at > 0°C to 70°C < 100m Vpp at 0°C to -20°C
Rise Time	< 100 ms at nominal input (100% load)
Start-up Time	<2500ms. at 115Vac (100% load) <1500ms. at 230Vac (100% load)
Hold-up Time	>50ms at 115Vac & 230 Vac (100% load)
Dynamic Response (Overshoot & Undershoot O/P Voltage)	± 5% @ 85-264Vac Input, 0-100% load (Slew Rate: 0.1A/µs, 50% duty cycle @ 5Hz to 1KHz)
Start-up with Capacitive Loads	3,000 µF max.

Protection	
Overvoltage	<34.8 V, SELV output, Latch Mode
Overload/ Overcurrent	105 ~ 140% of rated load current, Fold Forward Mode (current rises, voltage drops), Auto-recovery when the fault is removed
Over Temperature	< 75°C Surrounding Air Temperature at 100% load, Latch Mode
Short Circuit	Hiccup Mode, Non-Latching (Auto-recovery when the fault is removed)
Internal Fuse at L Pin	T3.15A
Degree of Protection	IP20
Protection Against Shock	Class I with PE (Primary Earth) connection

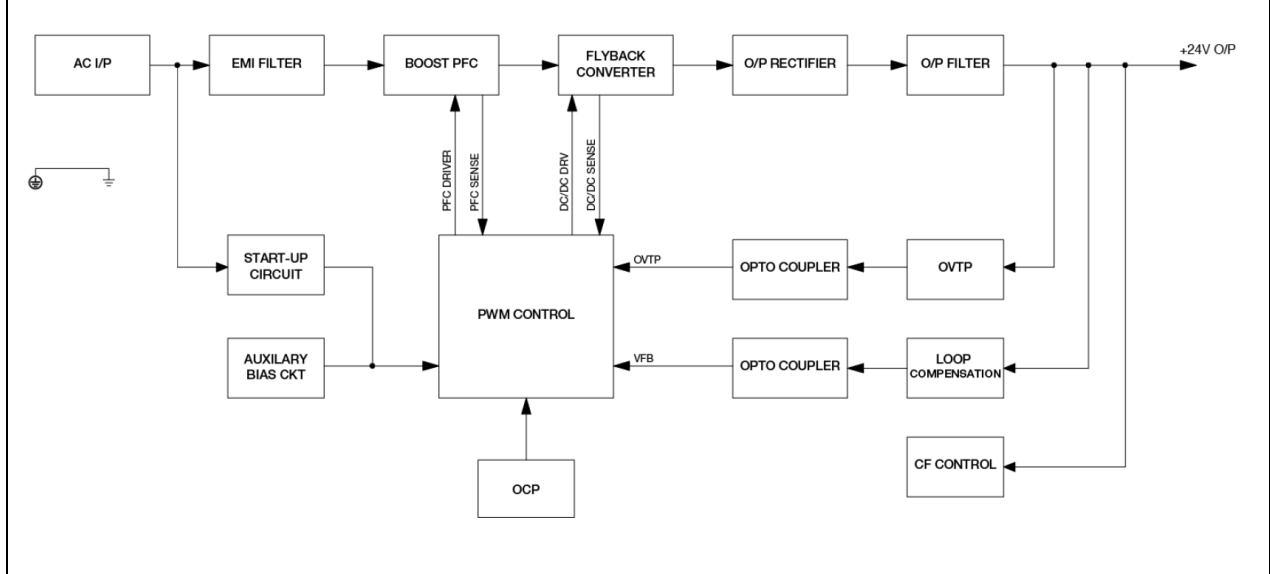
Environment	
Surrounding Air Temperature	-20°C to +70°C (Cold start at -40°C at 40% load)
Storage Temperature	-40 to +85°C
Power De-rating (temperature)	-10°C to -20°C de.rate power by 2%/°C > 55°C de-rate power by 3.33% / °C
Operating Humidity	5 to 95% RH (Non-Condensing)
Operating Altitude	0 – 2,000 m
Vibration	Non-operating: IEC 60068-2-6, Random: 5 - 500Hz; 2.09Grms; 20 min per axis for all X, Y, Z directions Operating: IEC 60068-2-6, Sine Wave: 10 - 500Hz, 2G peak; displacement of 0.35mm; 1 octave per min; 60 min per axis for all X,Y,Z directions
Shock Test	Non-operating: IEC 60068-2-27, Half Sine Wave: 50G for duration of 11ms; 3 times per direction, 9 times in total Operating: IEC 60068-2-27, Half Sine Wave: 10G for duration of 11ms; 1 time in X axis
Over Voltage Category	II
Pollution Degree	2



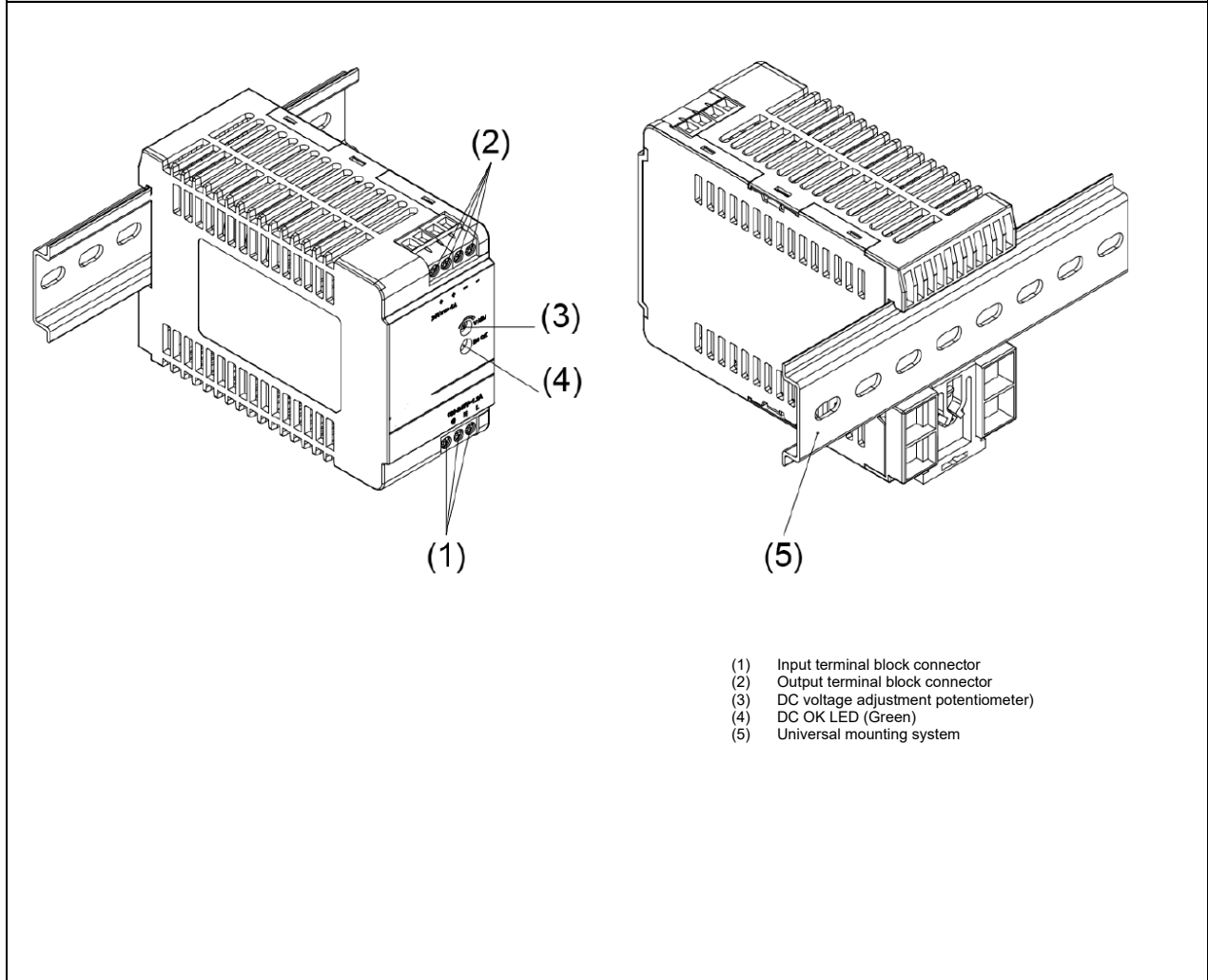
Safety/ EMC		
Safety Entry Low Voltage	SELV (EN 60950)	
Electrical Safety	TÜV Bauart: EN 62368-1 UL/cUL recognized: UL 60950-1, CSA C22.2 No. 60950-1 (File No. E191395), UL 62368-1, CSA C22.2 No. 62368-1 (File No. E191395) CB Scheme IEC 60950-1, IEC 62368-1	
Industrial Control Equipment	UL/cUL listed UL 508 and CSA C22.2 No. 107.1-01 (File No. E315335)	
Class 2 Power Supply	UL/cUL recognized UL 60950-1, CSA C22.2 No. 60950-1 (File No. E191395) UL 62368-1, CSA C22.2 No. 62368-1 (File No. E191395)	
CE	In conformance with EMC Directive 2014/30/EU and Low Voltage Directive 2014/35/EU	
UKCA	In conformance with Electrical Equipment (Safety) Regulations 2016 No. 1011 and The Electromagnetic Compatibility Regulations 2016 No. 1091	
Galvanic Isolation	Input-Output: 3 KVAC Input-Ground: 3 KVAC Output-Ground: 0,5 KVAC	
Emissions (CE & RE)	Generic Standards: EN/BS EN 61000-6-3, EN/BS EN 61000-6-4, CISPR 32, EN/BS EN 55032, EN/BS EN 55011, FCC Title 47: Class B	
Component Power Supply for General Use	EN 61204-3	
Immunity	Generic Standards: EN/BS EN 55024, EN/BS EN 61000-6-1, EN/BS EN 61000-6-2	
Electrostatic Discharge	IEC 61000-4-2	Level 3 Criteria A Air Discharge: 8kV Contact Discharge: 6kV
Radiated Field	IEC 61000-4-3	Level 3 Criteria A 80 MHz – 1 GHz, 10 V/M with 1 kHz tone / 80% modulation 1.4 GHz – 2 GHz, 3 V/M with 1 kHz tone / 80% modulation 2 GHz - 2.7 GHz, 1 V/M with 1 kHz tone / 80% modulation
Electrical Fast Transient / Burst	61000-4-4	Level 3 Criteria A 2kV
Surge	IEC 61000-4-5	Level 3 Criteria A Common Mode: 2kV Differential Mode: 1kV
Conducted	IEC 61000-4-6	Level 3 Criteria A 150kHz-80MHz 10Vrms
Power Frequency Magnetic Fields	IEC 61000-4-8	Criteria A 30A/Meter
Voltage Dips and Interruptions	IEC 61000-4-11	0% of 100 Vac, 20 ms, Criteria A 0% of 100 Vac, 5000 ms, Criteria B 40% of 100 Vac, 200 ms, Criteria B 70% of 100 Vac, 10 ms, Criteria A 70% of 100 Vac, 500 ms, Criteria B 0% of 240 Vac, 20 ms, Criteria A 0% of 240 Vac, 5000 ms, Criteria B 40% of 240 Vac, 200 ms, Criteria A 70% of 240 Vac, 500 ms, Criteria A
Low Energy Pulse Emission	IEC 61000-4-12	Level 3 Criteria A Common Mode: 2kV Differential Mode: 1kV
Harmonic Current Emission	IEC/EN/BS EN 61000-3-2, Class A	
Voltage Fluctuation and Flicker	IEC/EN 61000-3-3	



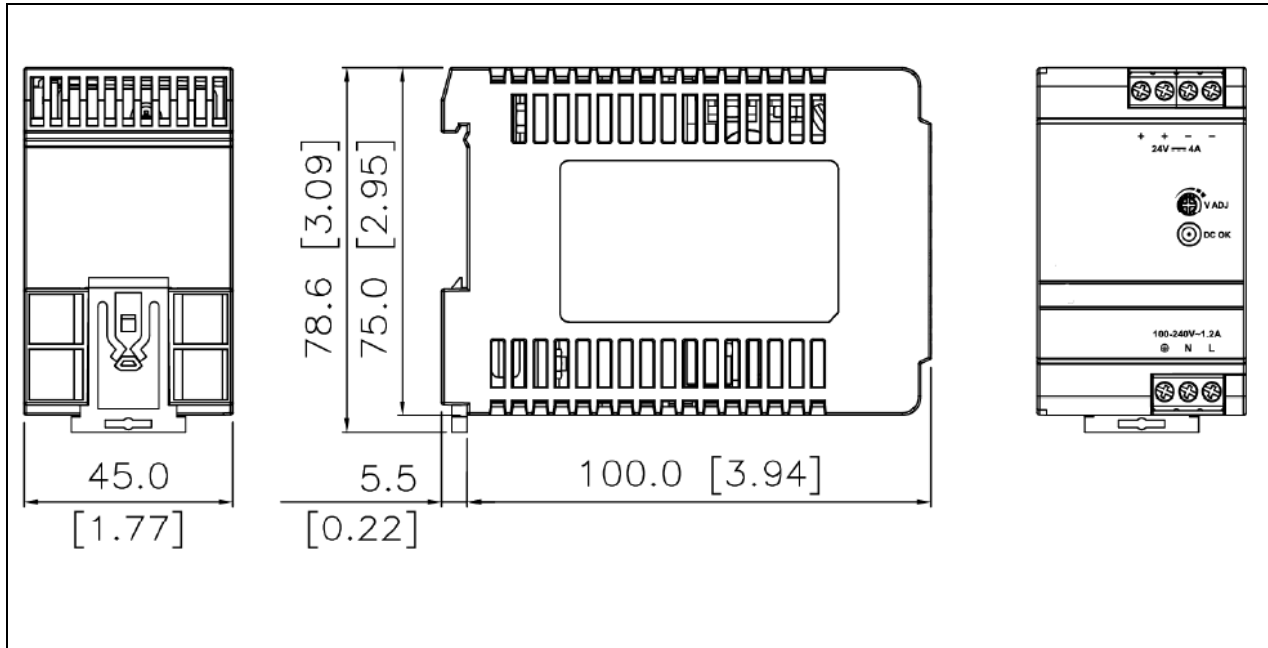
Block Diagram:



Mechanical Data



- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (Green)
- (5) Universal mounting system



Dimensions L x W x D in mm	75 x 45 x 100
Weight in kg	0.325
Case Cover/ Chassis	Plastic
Indicator	Green LED (DC-OK)
Cooling	Convection
Terminal	Input: 3 Pins (rated 300V/16A) Output: 4 Pins (rated 300V/16A)
Wire	Input/Output: AWG 22-12 / AWG 20-12
Mounting rail	Standard TS35 DIN rail in accordance with EN 60715
Noise (1 Meter from power supply)	SPL < 25dBA

