

Technical Information

EP2402

Product name
EP2402



Description	EP2402
	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) certification. The series is also fully RoHS compliant. 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 between input to output
	Universal AC input voltage and full power from -10°C to +55°C operation
	Up to 90% efficiency
	Low earth leaking current < 0,5mA @ 264Vac
	Built-in DC OK relay contact option available
	Extreme 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	100-240VAC
Input Voltage Range	85-264VAC
Nominal Input Frequency	50-60Hz
Input Frequency Range	47-63Hz
DC Input Voltage Range	120-375VDC
Input Current	< 0.95A/115VAC < 0.55A/230VAC
Efficiency	> 89% at 115VAC > 90% at 230VAC
Max Power Dissipation	No load < 0.3W/115 VAC < 0.5W at 230VAC 100% load < 6W/115VAC & 230VAC
Max. Inrush current	< 30A/115VAC < 50A/230VAC
Leakage Current	< 0.5mA/264VAC



Output	
Nominal Output Voltage	24VDC
Factory Set Point Tolerance	± 2.0%
Output Voltage Adjustment Range	24-28VDC
Output Current	2.1A (50W max.)
Output Power	50W
Line Regulation	< 0.5% (at 85-264 VAC, 100% load)
Load Regulation	< 1% (at 85-264VAC, 0-100% load)
PARD (20MHz) ²	< 70m Vpp at > 0°C to 70°C < 100m Vpp at 0°C to -20°C
Rise Time	< 30ms at nominal input (100% load)
Start-up Time	<2000ms typ. at 115VAC (100% load) <1000ms typ. at 230VAC (100% load)
Hold-up Time	>20ms at 230VAC (100% load) >100ms at 230VAC (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.
Functional	DC Okay Relay Contact 30 V / 1 A, resistive load The Relay contact are normally "ON" (closed) when the output (Vout) is greater than 75% of its rated value and "OFF" (opened) when the output (Vout) is less than 75% typ.

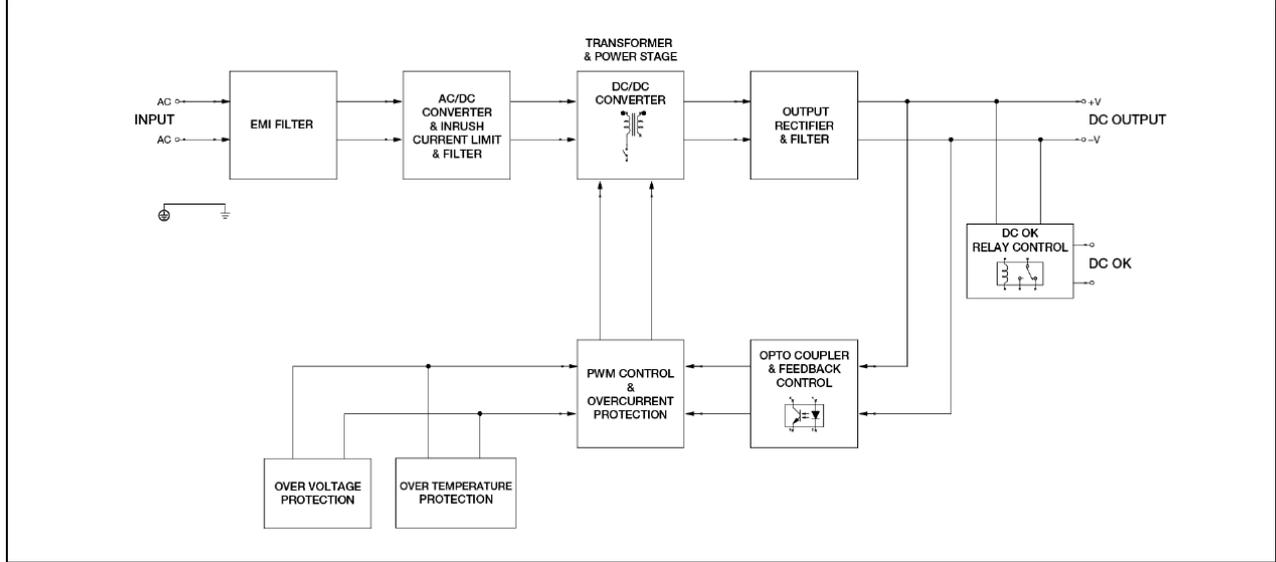
Protection	
Overvoltage	<34.8V, SELV output, Latch Mode
Overload/ Overcurrent	105 ~ 120% of rated load current, Foldback Mode (continuous current, voltage drops), Auto-recovery when the fault is removed
Over Temperature	< 75°C Surrounding Air Temperature at 100% load, Latch Mode
Short Circuit	Hiccup 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	0-2,000m
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

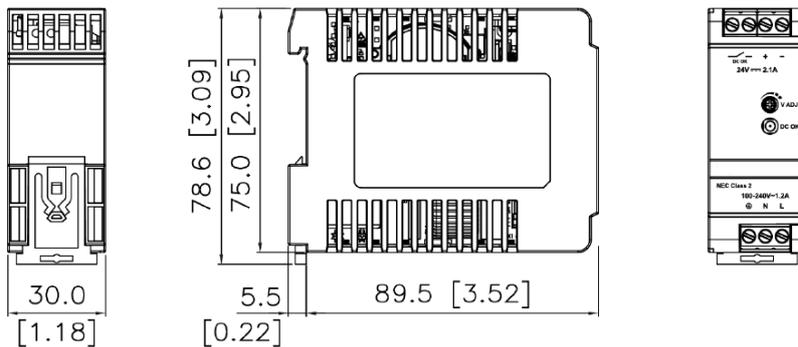
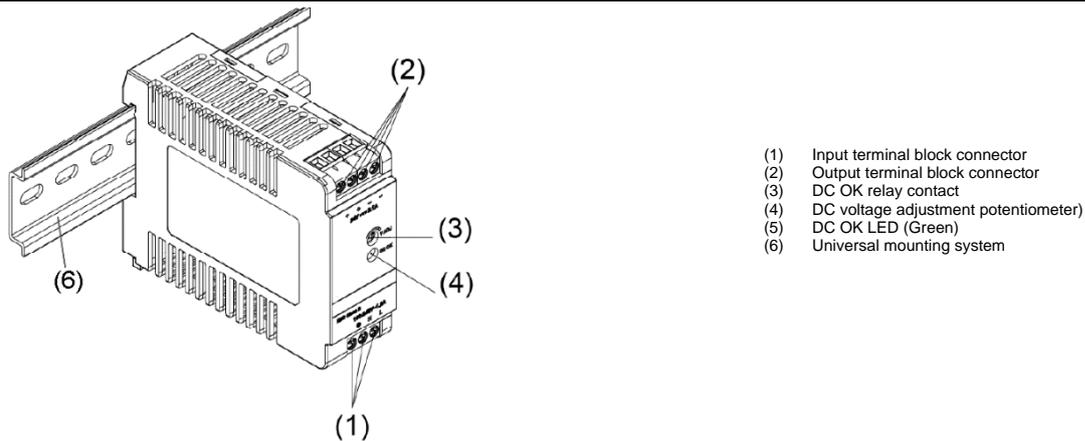


Safety/ EMC		
Safety Entry Low Voltage	SELV (EN 60950)	
Electrical Safety	TÜV Bauart: EN 62368-1 UL/cUL recognized: UL 60950-1, CSA C22.2 No. 60950-1 (File No. E191395), UL 62368-1, CSA C22.2 No. 62368-1 (File No. E191395) CB Scheme IEC 60950-1, IEC 62368-1, Limited Power Source (LPS)	
Industrial Control 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 2016 No. 1101. The Electrical Equipment (Safety) Regulations 2016 and 2016 No. 1091 The Electromagnetic Compatibility Regulations 2016	
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 100Vac, 2ms, Criteria A 0% of 100Vac, 500ms, Criteria B 40% of 100Vac, 200ms, Criteria B 70% of 100Vac, 10ms, Criteria A 70% of 100Vac, 500ms, Criteria B 0% of 240Vac, 20ms, Criteria A 0% of 240Vac, 500ms, Criteria B 40% of 240Vac, 200ms, Criteria A 70% of 240Vac, 500ms, 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



Dimensions L x W x D in mm	75 x 30 x 89.5
Weight in kg	0.18
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

