

SPDL



Single Phase Compact Power Supply



Description

The SPDL series of DIN-rail mount power supplies encompasses high performance within an extremely compact footprint. Power ratings are available in 15, 30, 60, 75, 120, 240 and 480 W, with 12, 24 or 48 VDC output. The SPDL achieves high operating efficiency of up to 95% @ 230 VAC. Features such as DC ok output relay (for SPDL 240 and 480 W model) and built-in protection functions ensure a high degree of reliability during operation.

All specifications are at nominal values, full load, 25°C unless otherwise stated.

Benefits

- **Compact dimensions.** SPDL can save up to 50% panel-width space thanks to its ultra-slim design. All models are just 32 mm wide, except 45mm for 480 W.
- **High efficiency.** The built-in PFC (in SPDL 240 and 480 W models) results in high operating efficiency up to 95%.
- **Flexible installation.** Universal AC/DC input range with AC voltage (90 VAC to 264 VAC) or with DC voltage (120 VDC to 370 VDC).
- **Integrated protection.** Output short circuit, over-current, over-voltage, over-temperature protection.
- **Wide operating temperature.** SPDL models can work in extreme temperatures up to -40°C to 80°C (-40°F to 176°F).
- **High altitude.** SPDL series assures the operating altitude up to 5000m.
- **High degree of reliability.** Built-in active PFC (only in SPDL 240 and 480 W models) and DC OK Relay Contact (only in SPDLxx2401R and SPDLxx4801R models) assure high degree of reliability during the operations.

Applications

Installations with limited panel space, industrial equipment, machinery.

Main functions

- Output short circuit, over-current, over-voltage and over-temperature protection
- DC OK relay indication (only in SPDL 240 and 480 W models)
- Built-in active PFC (only in SPDL 240 and 480 W models)

References

Order code

 **SPDL** ☐ ☐ 1 ☐

Enter the code entering the corresponding option instead of ☐.

Code	Option	Description	Notes
S	-	Switching	Device typology
P	-	Power	
D	-	DIN rail	
L	-	Light	Mounting
☐	12	12 VDC	
	24	24 VDC	
	48	48 VDC	Rated output voltage
☐	15	15 W	
	30	30 W	
	60	60 W	Rated output power
	75	75 W	
	120	120 W	
	240	240 W	
	480	480 W	Input type
1	-	Single phase input	
☐	-	-	
	R	Relay output	

Selection guide

Output Voltage	Output power						
	15 W	30 W	60 W	75 W	120 W	240 W	480 W
12 VDC	SPDL12151	SPDL12301	SPDL12601	SPDL12751	-	-	-
24 VDC	SPDL24151	SPDL24301	SPDL24601	SPDL24751	SPDL241201	SPDL242401R	SPDL244801 SPDL244801R
48 VDC	-	-	-	-	-	-	SPDL484801 SPDL484801R

Further reading

Information	Where to find it	QR code
SPDL datasheet	https://www.gavazziautomation.com/fileadmin/images/PIM/DATASHEET/ENG/SPDL_DS_EN.pdf	
SPDL installation sheet	https://www.gavazziautomation.com/fileadmin/images/PIM/MANUALS/ENG/SPDL_IM.pdf	

Structure

SPDL 15 W



Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)

SPDL 30 W



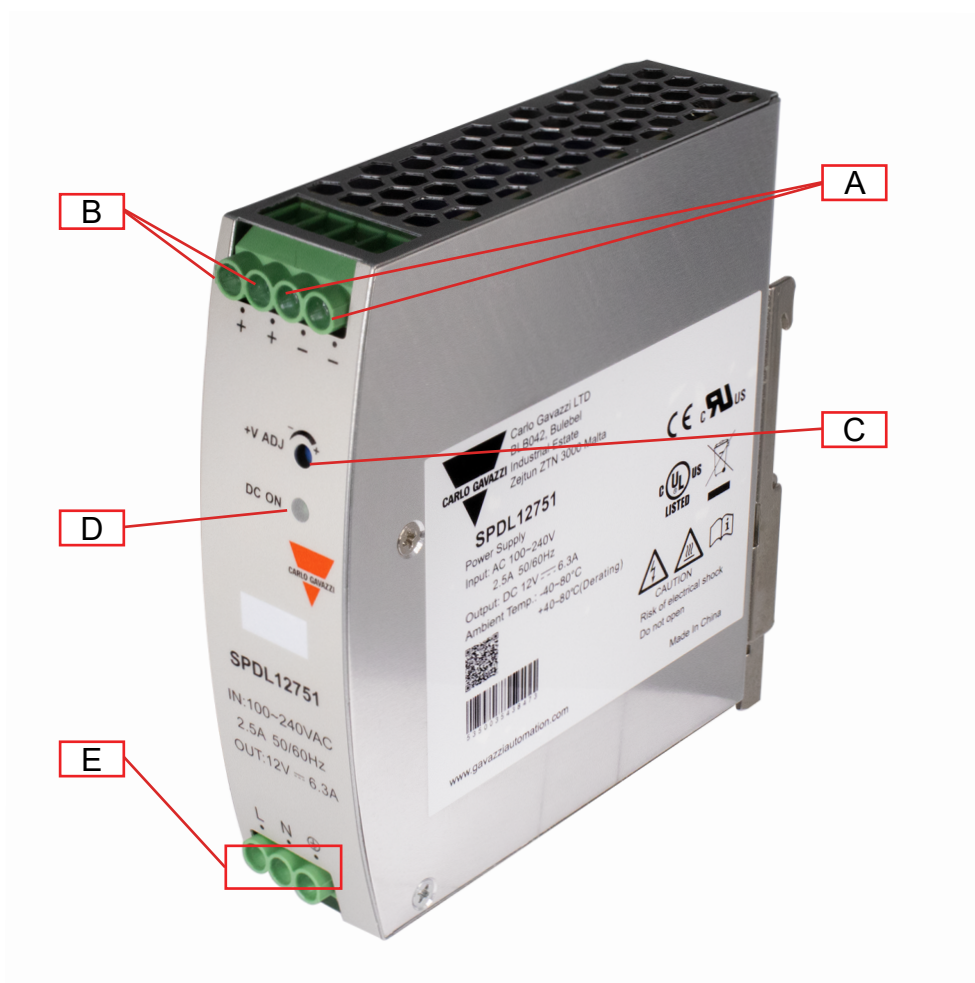
Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)

SPDL 60 W



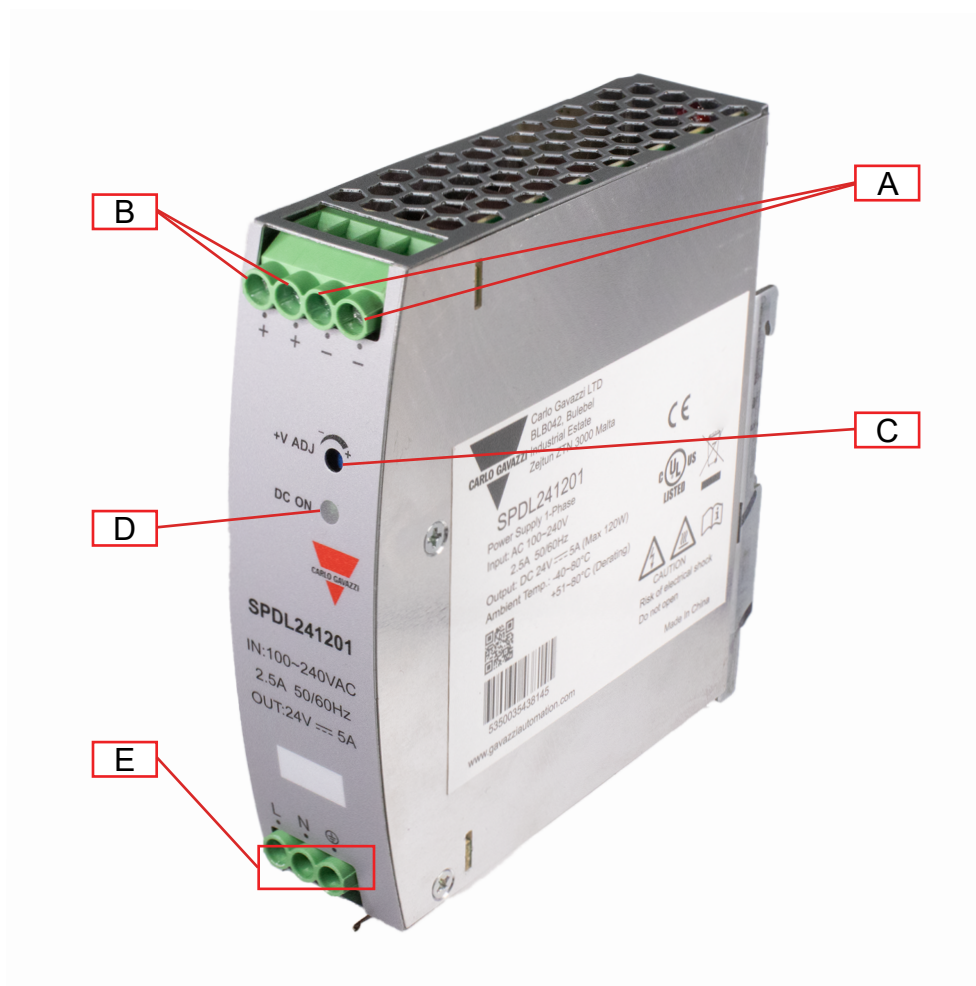
Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)

SPDL 75 W



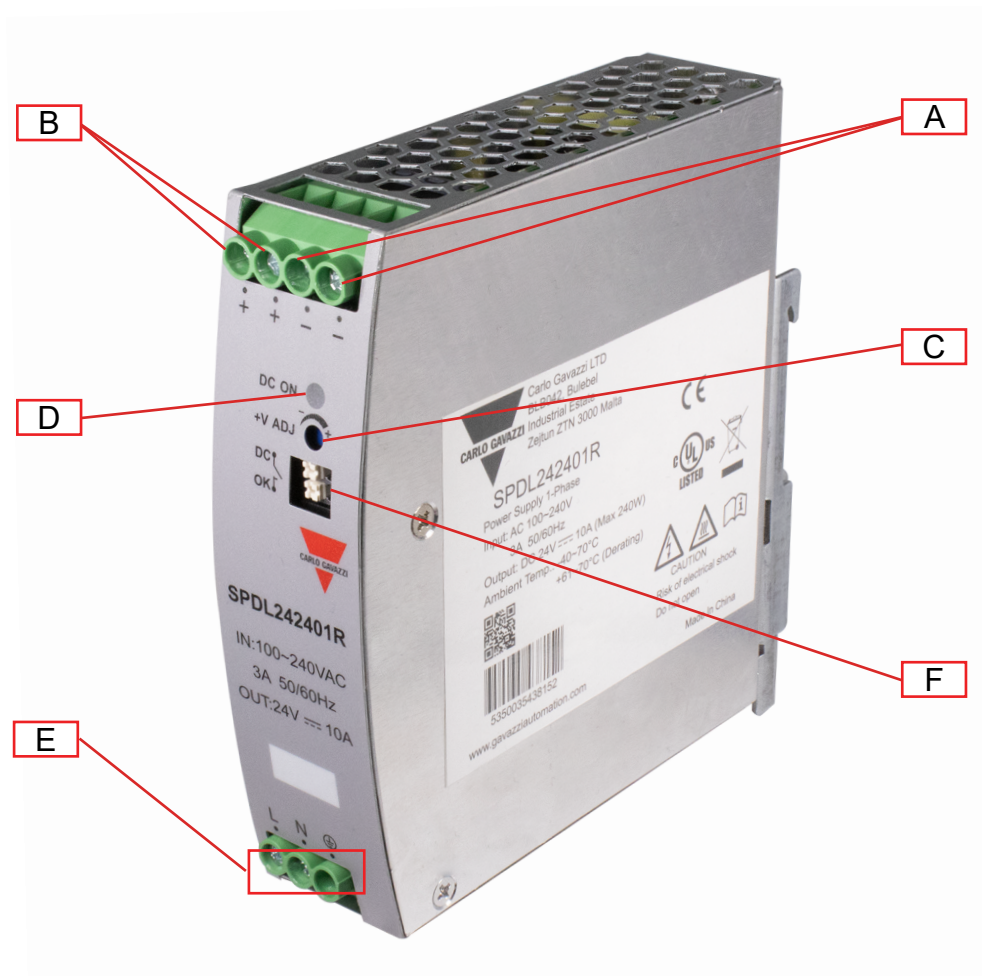
Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)

SPDL 120 W



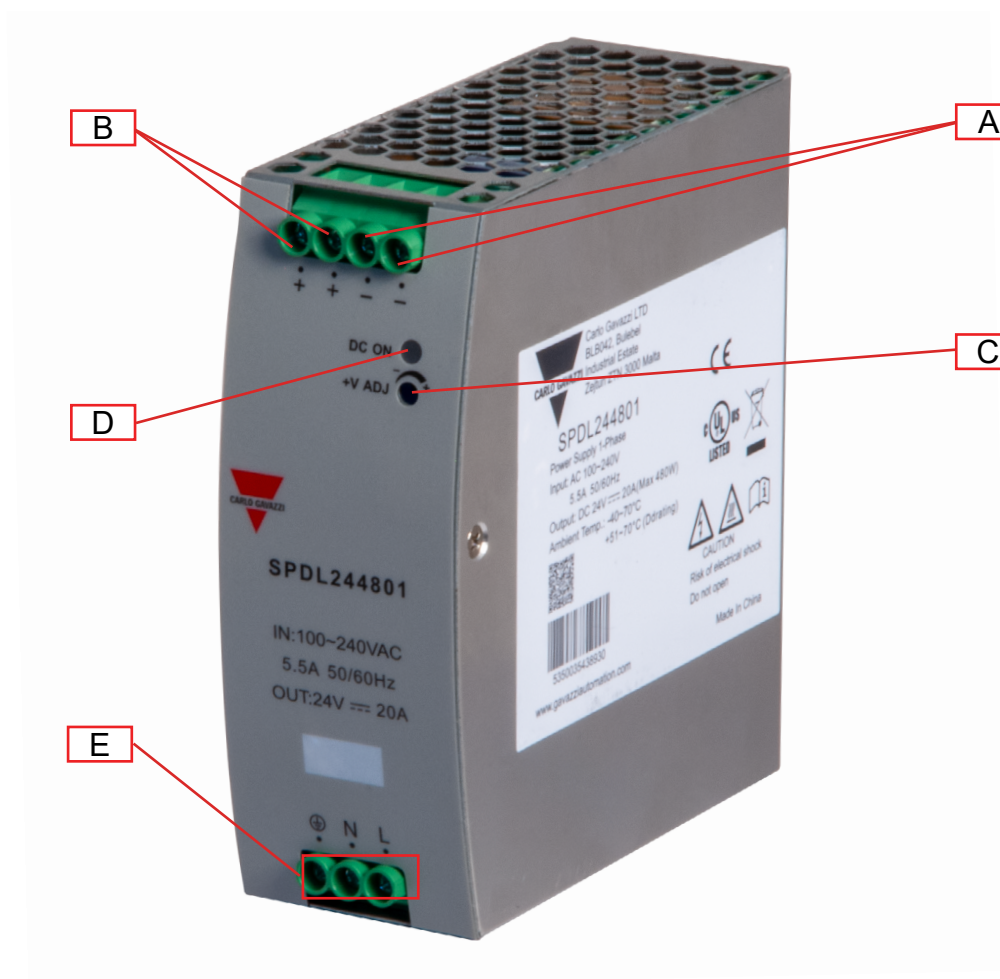
Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)

SPDL 240 W



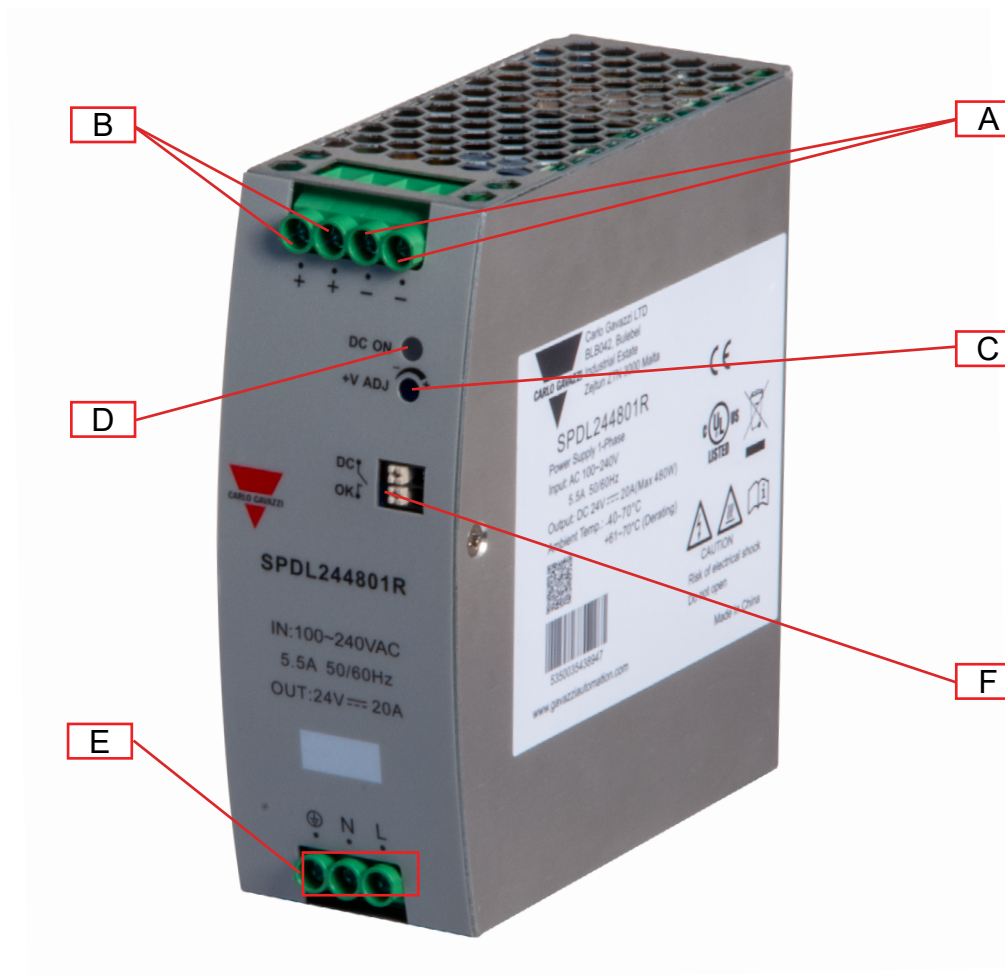
Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)
F	DC OK relay	Relay rating: 30 VDC / 1 A max. or 60 VDC / 0.3 A max. or 30 VAC / 0.3 A max. (resistive load) Relay contacts closed when output voltage $\geq$ 90% of rated output voltage.

SPDL 480 W



Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)

SPDL 480 R



Element	Component	Function
A	- V terminals	Negative DC Output terminals
B	+ V terminals	Positive DC Output terminals
C	VADJ trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage is active
E	Input terminals	L, N supply terminals and Protective Earth (PE)
F	DC OK relay	Relay rating: 30 VDC / 1 A max. or 60 VDC / 0.3 A max. or 30 VAC / 0.3 A max. (resistive load) Relay contacts closed when output voltage $\geq$ 90% of rated output voltage.

Features

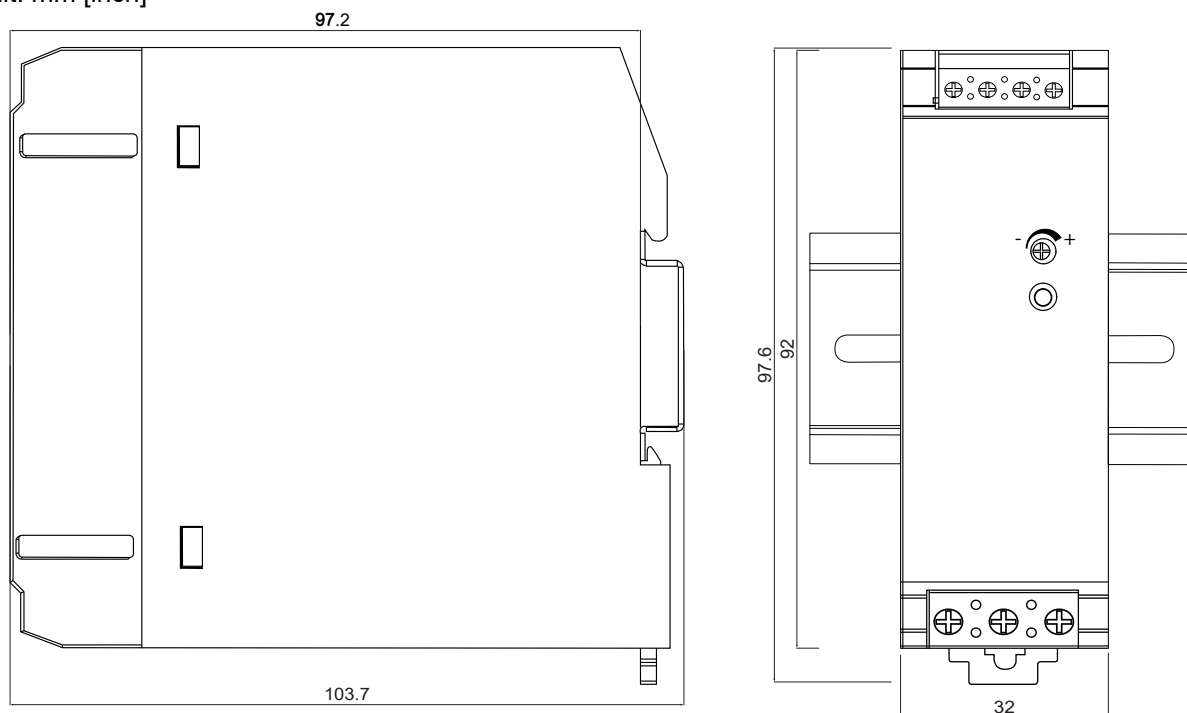
General data

		15 W	30 W	60 W	75 W	120 W	240 W	480 W	480 W R
Leakage current		I/O: < 0.25 mA I/PE: < 3.5 mA (264 VAC / 63 Hz)			< 1.0 mA (240 VAC, 63 Hz)	< 1.0 mA (240 VAC, 63 Hz)	I/O: < 0.25 mA I/PE: < 3.5 mA (264 VAC / 63 Hz)	I/O: < 0.25 mA I/PE: < 3.5 mA (264 VAC / 63 Hz)	
Efficiency @ 230 VAC									
12 VDC		83 %	82 %	86 %	85.5 %	-	-	-	-
24 VDC		84.5 %	85 %	88 %	88 %	88.5 %	95 %	94 %	95 %
48 VDC		-	-	-	-	-	-	94 %	95 %
Power loss @ nominal load	115 VAC	-	-	-	-	-	>0.98	>0.99	
	230 VAC	-	-	-	-	-	>0.95	>0.95	
Ingress protection		IP20							
MTBF (MIL-HDBK-217F)		590,000 h			200,000 h	>200,000 h	≥300,000 h		
Case material		Plastic			Metal				
Weight		159 g	170 g	220 g	380 g		540 g	752g	757g
Mounting		DIN rail							

Dimensions

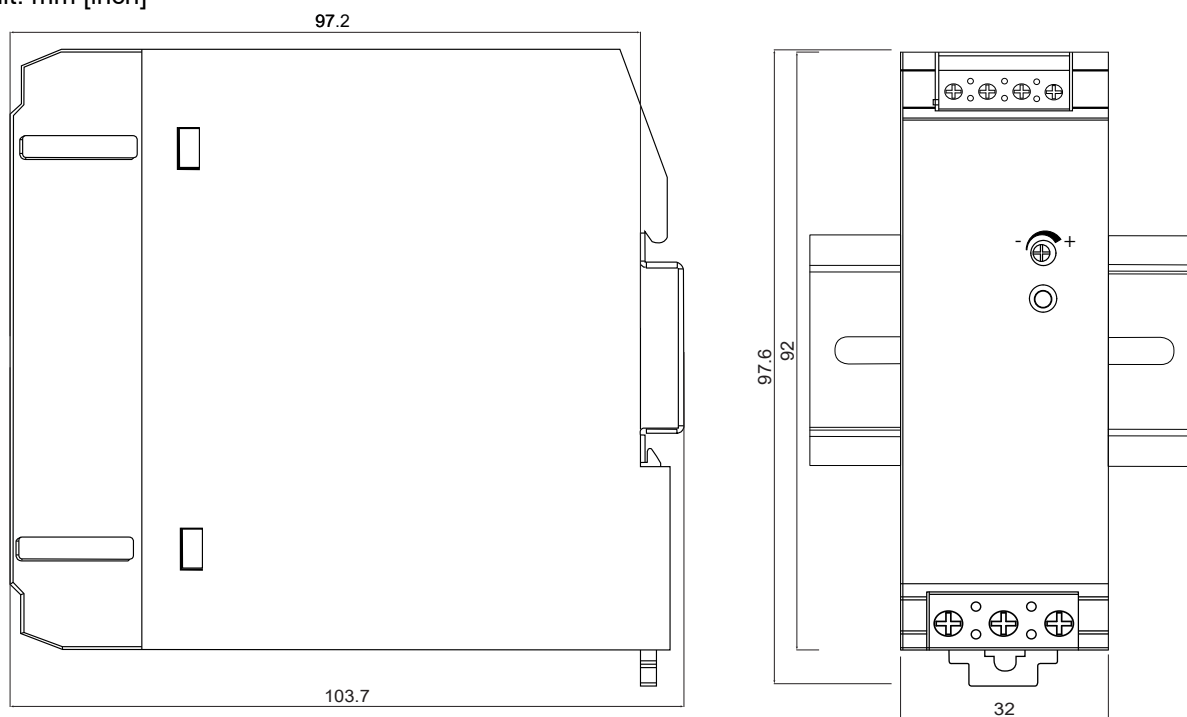
SPDL 15 W

Unit: mm [inch]



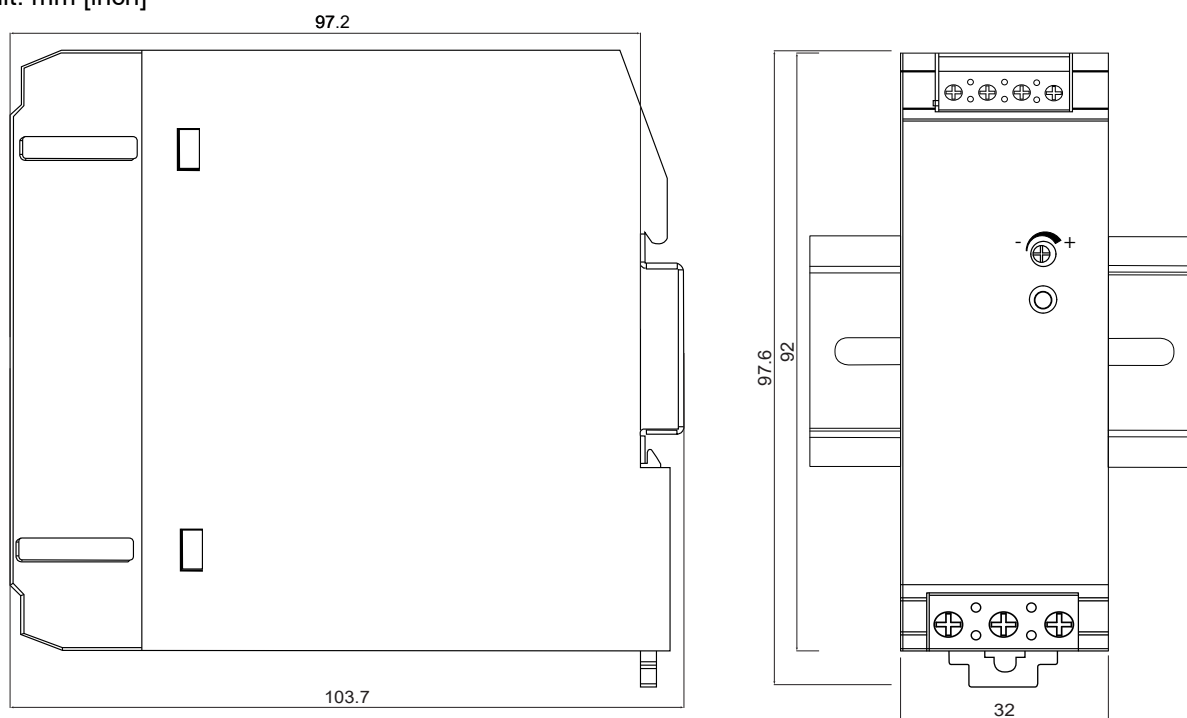
SPDL 30 W

Unit: mm [inch]



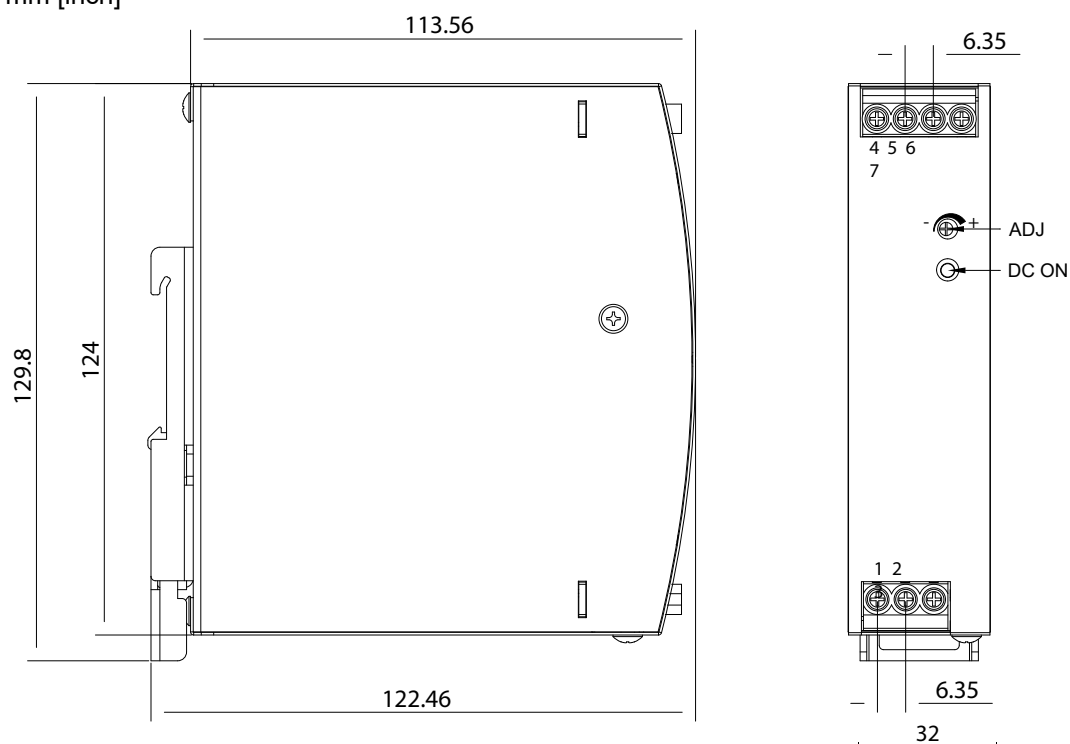
SPDL 60 W

Unit: mm [inch]



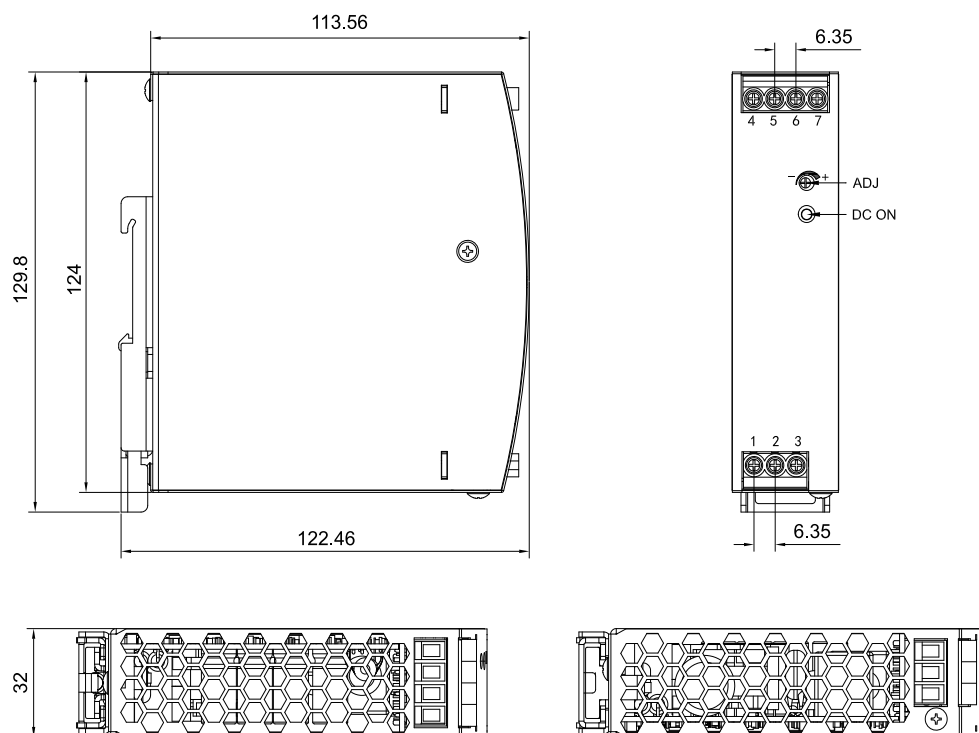
SPDL 75 W

Unit: mm [inch]



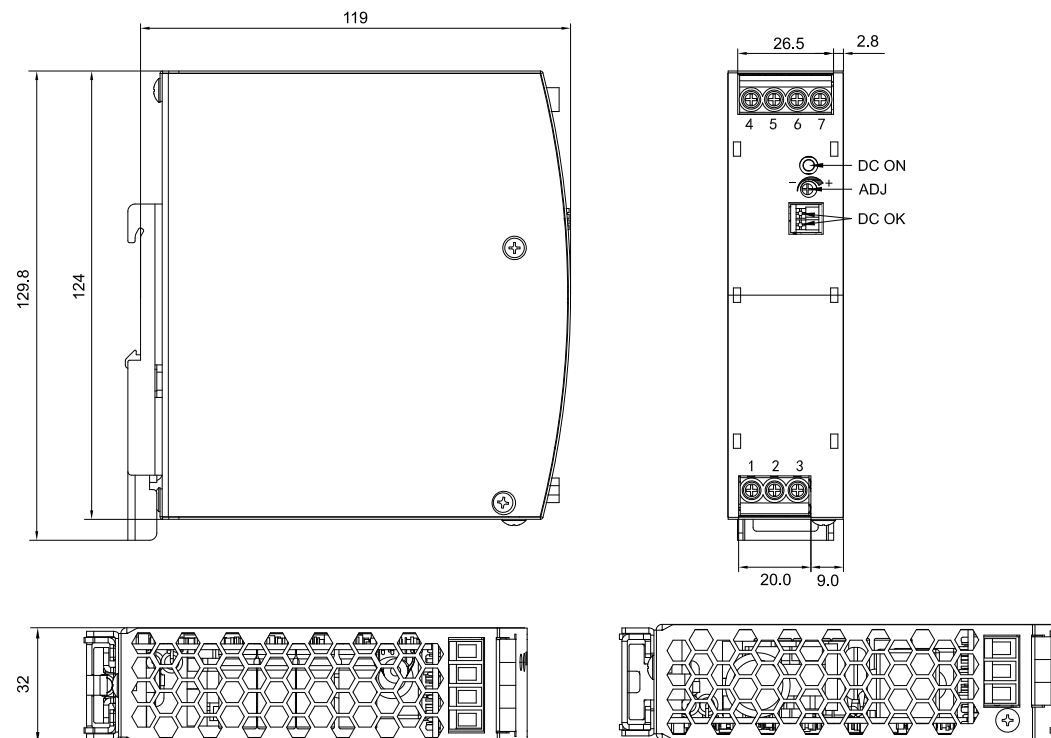
SPDL 120 W

Unit: mm [inch]



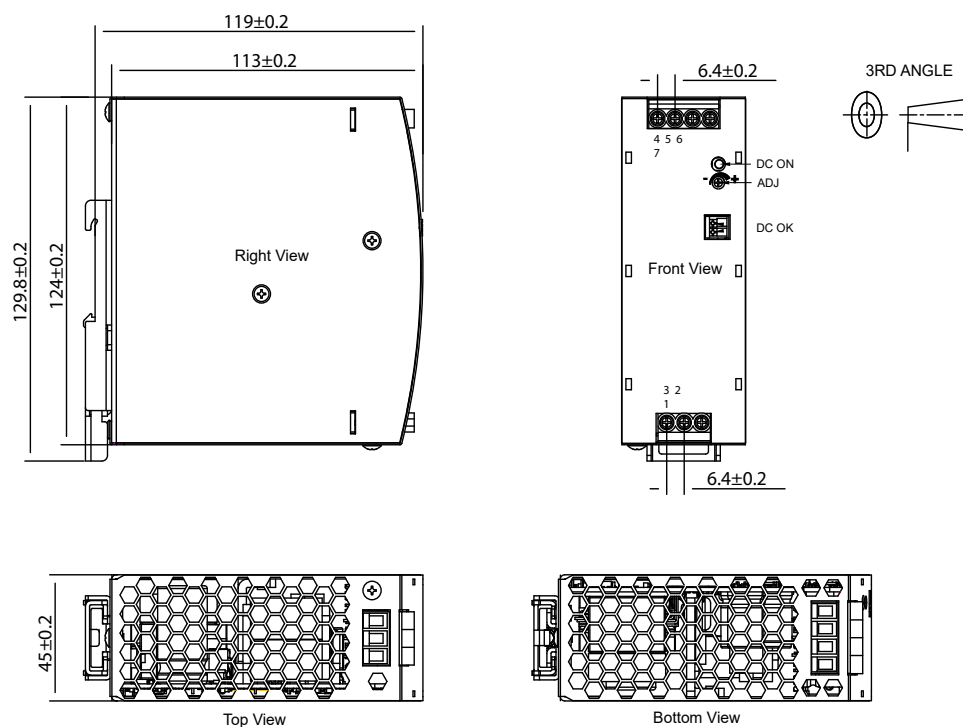
SPDL 240 W R

Unit: mm [inch]



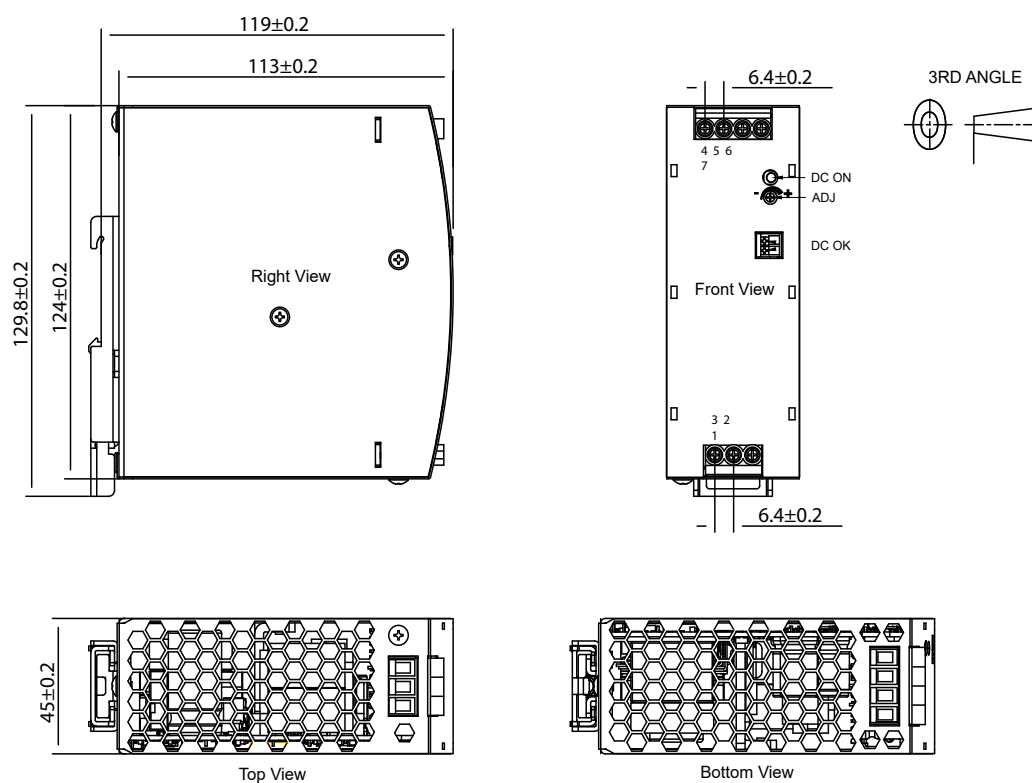
SPDL 480 W

Unit: mm [inch]



SPDL 480 W R

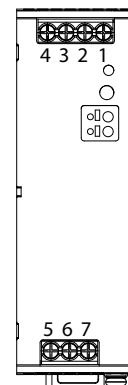
Unit: mm [inch]



Connection diagram

Terminal markings

Terminal	Designation	Description
1	-V _o	Negative output terminal
2	-V _o	Negative output terminal
3	+V _o	Positive output terminal
4	+V _o	Positive output terminal
5	AC(L)	Input terminals (phase conductor, no polarity with DC input)
6	AC(N)	Input terminals (neutral conductor, no polarity with DC input)
7	PE	Ground this terminal to minimize high frequency emissions



Environmental

	15 W	30 W	60 W	75 W	120 W	240 W	480 W
Operating temperature	-25°C to 70°C (-13°F to 158°F)			-40°C to 80°C (-40°F to 176°F)		-40°C to 70°C -40°F to 158°F	
Storage temperature	-40°C to 85°C (-40°F to 185°F)						
Operating humidity	20 - 90 % RH non-condensing						
Storage humidity	5 - 95 % RH non-condensing						10 - 95 % RH
Operating altitude	5000 m						
Temperature derating	Refer to derating diagram						
Temperature regulation	± 0.03 % / °C TBH						
Ventilation and cooling	Cooling by free air convection						

Compatibility and conformity

	15 W	30 W	60 W	75 W	120 W	240 W	480 W
Safety standards	UL62368-1			EN62368-1, UL61010			
Approvals							
Conducted (CS) IEC/EN 61000-4-6	3 Vrms (PC A)						10 Vrms (PC A)
Voltage dips and interruptions IEC/EN61000-4-11	0% (PC B) 70% (PC B)						
EMC emission EN55022 EN55024 CE: CISPR32/EN55032 RE: CISPR32/EN55032	CLASS B CLASS B						
Harmonic current	IEC/EN61000-3-2 CLASS A						
EMC immunity	EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11						

MCB protection

	15 W	30 W	60 W	75 W	120 W	240 W	480 W	480 W R
Internal fuse of the product	2A slow-blow fuse: SS-5-2A-AP	3.15A slow-blow fuse: SS-5-3.15A-AP		4A slow-blow fuse: SMT T4A 250V		5A slow-blow fuse: SMT1500AP	10A slow-blow fuse: 2010 T10A250V	
Inrush current	50A at 230 VAC		65A at 230 VAC	55A at 230 VAC		30A at 230 VAC		
MCB type and rated value	type D MCB with a rated value of 6A.		type D MCB with a rated value of 10A		type D MCB with a rated value of 16A.	type D MCB with a rated value of 20A		

Insulation

	15 W	30 W	60 W	75 W	120 W	240 W	480 W
Insulation / withstand voltage (input / GND)	1.5 kVAC / < 10 mA			2.0 kVAC / < 10 mA			
Insulation / withstand voltage (input / output)	3.0 kVAC / < 10 mA						
Insulation / withstand voltage (output / GND)	0.5 kVAC / < 10 mA						
Output / DC OK*	30 VDC / 1 A max. or 60 VDC / 0.3 A max. or 30 VAC / 0.3 A max. (resistive load)						
Insulation resistance	> 10 MΩ			>100MΩ			
Overvoltage category	II						
Pollution degree	2						

*Applies only to SPDL 240W

Inputs

	15 W	30 W	60 W	75 W	120 W	240 W	480 W	480 W R
Rated input voltage	100 VDC to 240 VAC							
Input voltage range	90 VAC - 264 VAC (264 VAC max.)					85 VAC - 264 VAC (264 VAC max.)	90 VAC - 264 VAC (264 VAC max.)	85 VAC 264 VAC (264 VAC max.)
	127 VDC - 370 VDC (370 VDC max.)			120 VDC - 370 VDC (370 VDC max.)			127 VDC - 375 VDC (375 VDC max.)	120 VDC - 375 VDC (375 VDC max.)
AC current (max.) 115 VAC 230 VAC	< 0.5 A	< 0.8 A	< 1.6 A	< 1.45 A < 0.9 A	< 2.25 A < 1.3 A	< 3.0 A < 1.5 A	< 5.5 A < 2.5 A	
Frequency range	47 Hz to 63 Hz							
Inrush current 115 VAC 230 VAC	Cold start - 50 A		Cold start - 65 A (12 V) 50 A (24 V)	Cold start 28 A 55 A		Cold start 15 A 30		

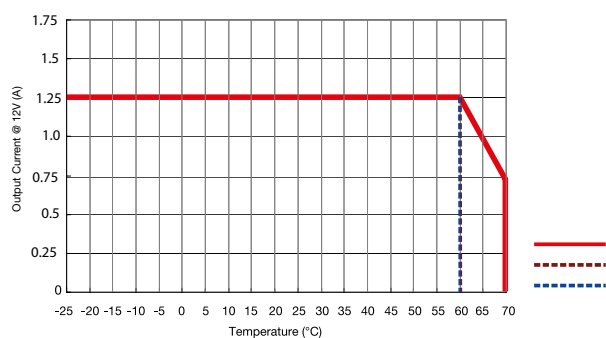
 Outputs

	15 W	30 W	60 W	75 W	120 W	240 W	480 W
Output power	15 W	30 W	60 W	75 W	120 W	240 W	480 W
Peak power	-					360 W (3 S)	720 W (3 S)
Voltage accuracy	±1.0 %						
Line regulation	±0.5 %			±0.3 %		±0.5 %	
Load regulation	±1.0 %			±0.5 %		±1.0 %	
Voltage regulation span 12 VDC 24 VDC 48 VDC	12 V to 14 V 24 V to 28 V -		12 V to 14 V 24 V to 28 V -		24 V to 28 V		- 24 V to 28 V 48 V to 55 V
Rated output current 12 VDC 24 VDC 48 VDC	1.25A 0.65 A -	2.5 A 1.25 A -	5 A 2.5 A -	6.3 A 3.2 A -	5 A	10 A	- 24VDC : 20A 48VDC : 10A
Ripple and noise 12 VDC 24 VDC 48 VDC	≤ 120 mV ≤ 120 mV -	≤ 100 mV ≤ 70 mV -	≤ 60 mV ≤ 50 mV -	≤ 100 mV ≤ 100 mV -	≤ 120 mV	≤ 100 mV	- ≤80 mV ≤100 mV
Hold up time 115 Vac 230 Vac	- ≥ 20 ms			≥ 10 ms ≥ 25 ms	≥ 10 ms ≥ 25 ms	≥ 20 ms	≥16 ms
Set-up time 115 Vac 230 Vac	- ≤ 1.5 s			2.5 s 1.2 s	≤ 2.5 s ≤ 1.2 s	≤ 3.0 s ≤ 1.5 s	
Turn-on overshoot	< 5.0 %						
Power boost of rated output current	-					150 % for 3 s	
Mounting space	No requirement for the installation distance						

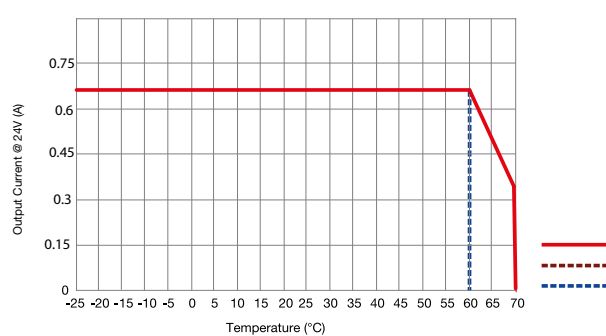
Performance

Current derating

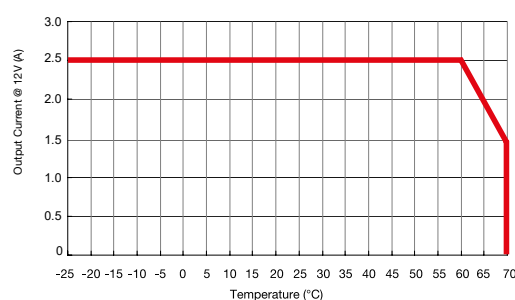
SPDL12151



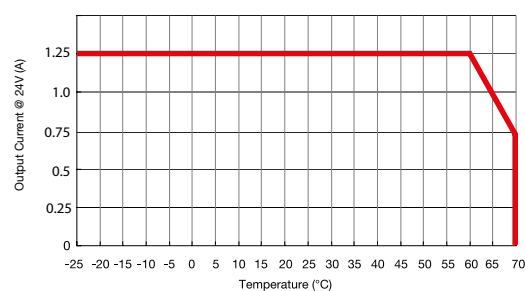
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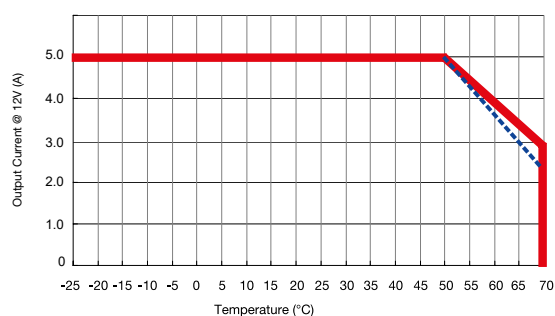
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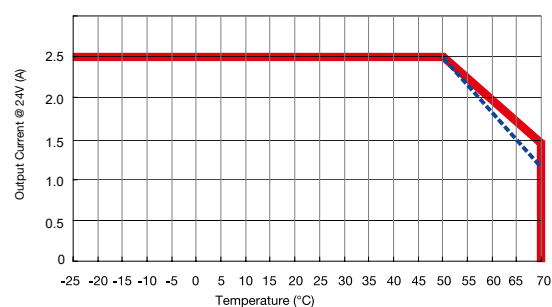
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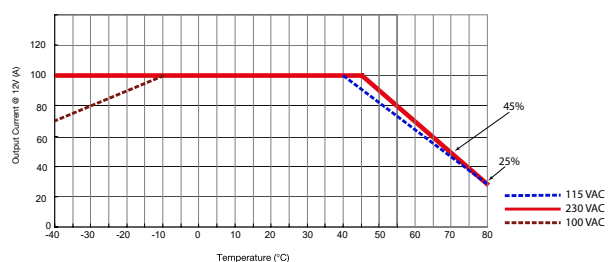
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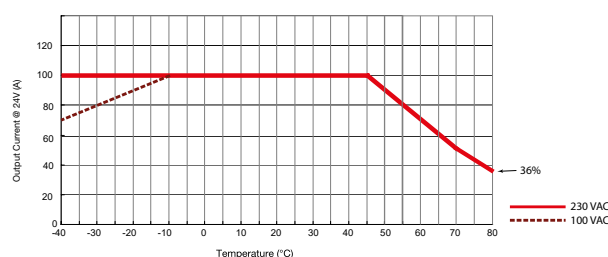
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SPDL12751



SPDL24751



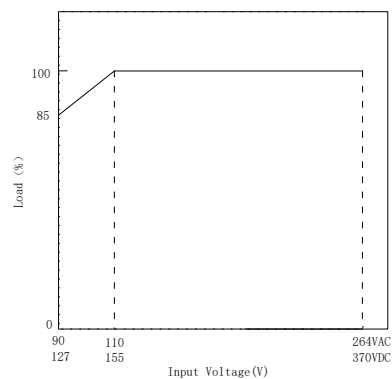
The graph shows the power output percentage as a function of temperature for three different input voltage configurations. The y-axis represents 'Power out [%]' from 0 to 100, and the x-axis represents 'Temperature [°C]' from -40 to 80. All three curves start at 100% power output at -40°C and remain constant until approximately 45°C. Beyond 45°C, the power output decreases linearly. The 12V (230VAC) curve (red) drops most sharply, reaching 25% at 80°C. The 12/24/48V (110VAC) curve (blue) reaches 36% at 80°C. The 24/48V (230VAC) curve (black) reaches 50% at 80°C.

Temperature [°C]	24/48 V (230 VAC) Power out [%]	12/24/48 V (110 VAC) Power out [%]	12 V (230 VAC) Power out [%]
-40	100	100	100
-10	100	100	100
45	100	100	100
50	90	80	70
60	75	60	50
70	60	40	30
80	50	36	25

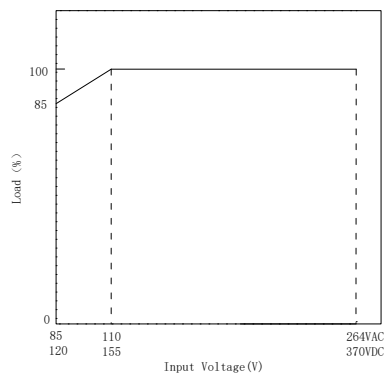
The graph shows the power output percentage as a function of temperature for three different input voltage configurations. The y-axis represents 'Power out [%]' from 0 to 100, and the x-axis represents 'Temperature [°C]' from -40 to 70. All three curves show a constant 100% power output until approximately 40°C, after which they derate linearly. The 12V (115VAC) curve derates most steeply, reaching 50% power at 60°C. The 24V (115VAC) curve reaches 50% power at 65°C. The 24V (230VAC) curve derates most gradually, reaching 50% power at 70°C.

Temperature [°C]	24/48 V (230 VAC) Power out [%]	24/48 V (115 VAC) Power out [%]	12 V (115 VAC) Power out [%]
-40	100	100	100
40	100	100	100
50	95	90	80
60	80	70	50
65	70	50	-
70	50	-	-

Ambient temperature (°C)	230VAC Load (%)	115VAC Load (%)
-40	100	100
40	100	100
50	90	90
70	60	50



Ambient temperature (°C)	230VAC Load (%)	115VAC Load (%)
-40 to 45	100	100
45	100	100
60	80	85
70	60	60



Installation

Ventilation and Cooling

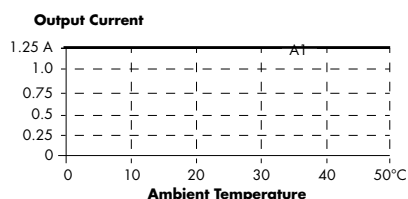
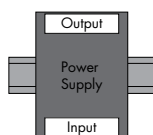
Normal air convection; 25 mm of free space on each side is recommended

Mounting method instruction

A1 is the recommended output current. The output current is a constant of the max value across the full temperature range.

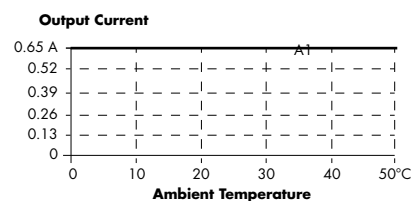
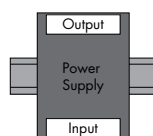
SPDL12151

Mounting A



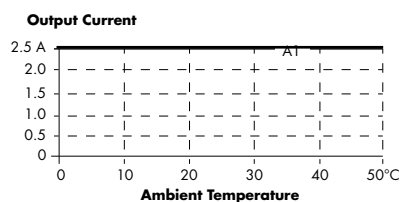
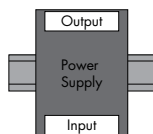
SPDL24151

Mounting A



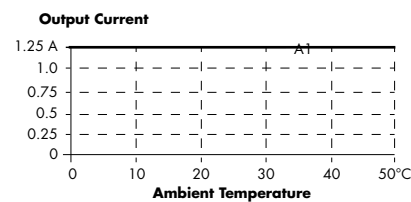
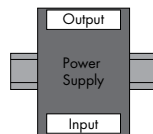
SPDL12301

Mounting A



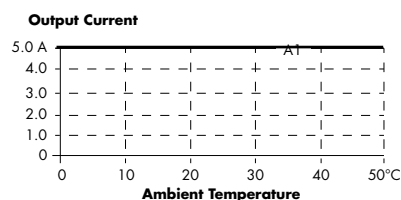
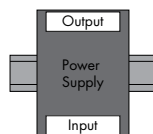
SPDL24301

Mounting A



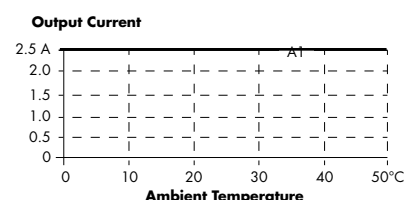
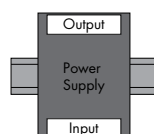
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Mounting A



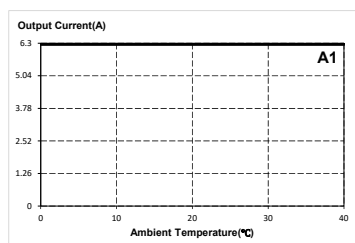
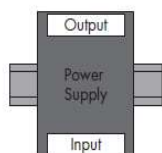
SPDL24601

Mounting A



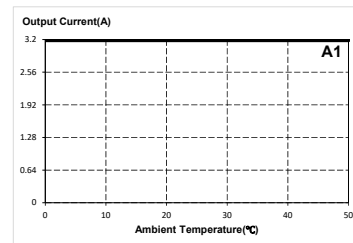
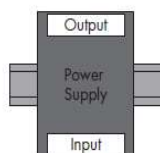
SPDL12751

Mounting A



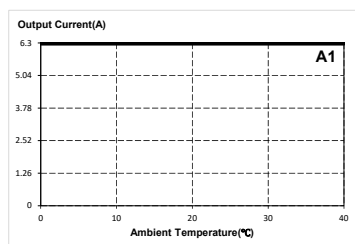
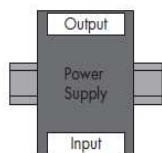
SPDL24751

Mounting A



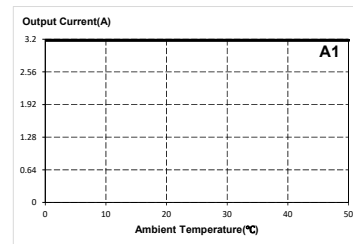
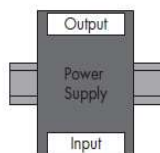
SPDL241201

Mounting A



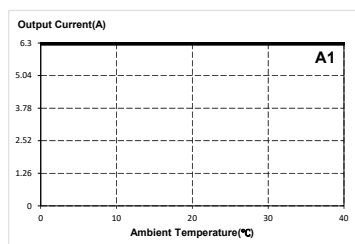
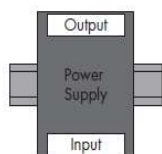
SPDL242401R

Mounting A



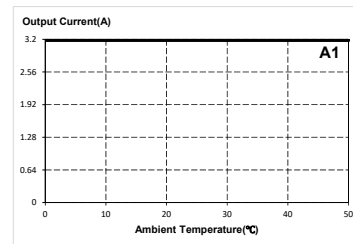
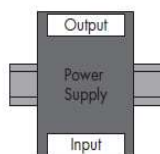
SPDL244801

Mounting A



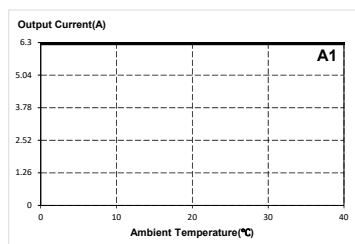
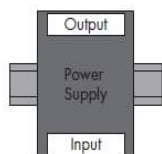
SPDL484801

Mounting A



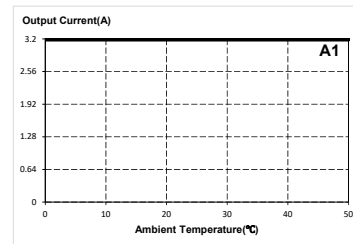
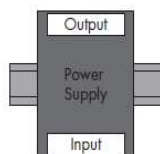
SPDL244801R

Mounting A

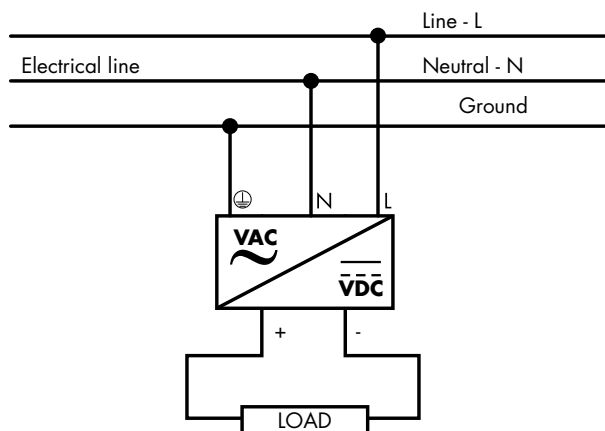


SPDL484801R

Mounting A



Wiring diagram

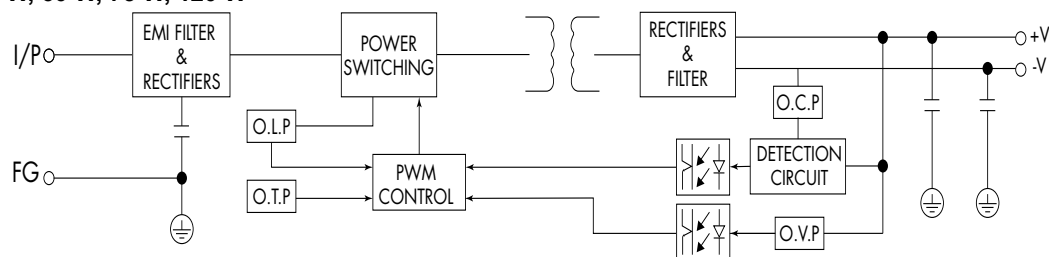


Connection specification

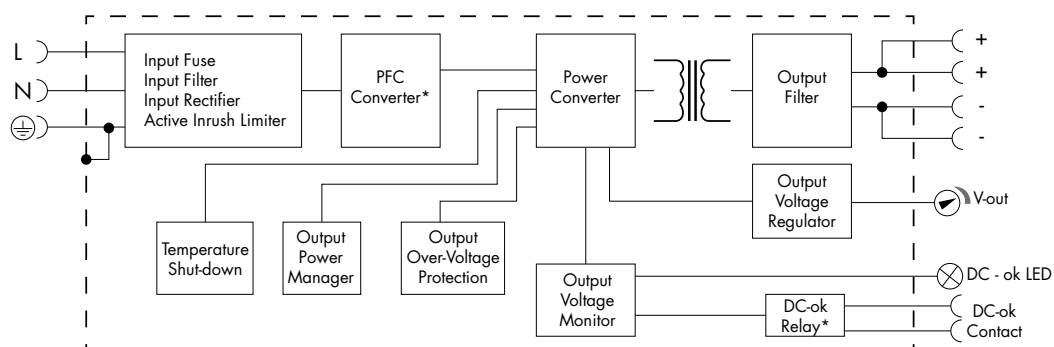
	SPDL 15W	SPDL 30W	SPDL 60W	SPDL 75W	SPDL 120W	SPDL 240W	SPDL 480W
Terminal type	Screw terminals blocks			Screw terminals with Phillips screw head			
Screw driver blade	3.5 mm Straight screwdriver			3.5 mm slotted or Phillips			
Tightening torque ADJ	0.5 Nm			5 Nm			
Conductor cross section (input terminals)	0.32 - 4 mm² (22 - 12 AWG)			0.5 - 6 mm² (20 - 10 AWG)		0.5 - 6 mm² (20 - 10 AWG)	0.75 - 6 mm² (18 - 10 AWG)
Conductor cross section (PE connection)						0.75 - 6 mm² (18 - 10 AWG)	1.5 - 6 mm² (16 - 10 AWG)
Conductor cross section (output terminals)							
DC OK relay output	-			-		0.2 - 1.5 mm² (24 - 16 AWG)	

Block diagram

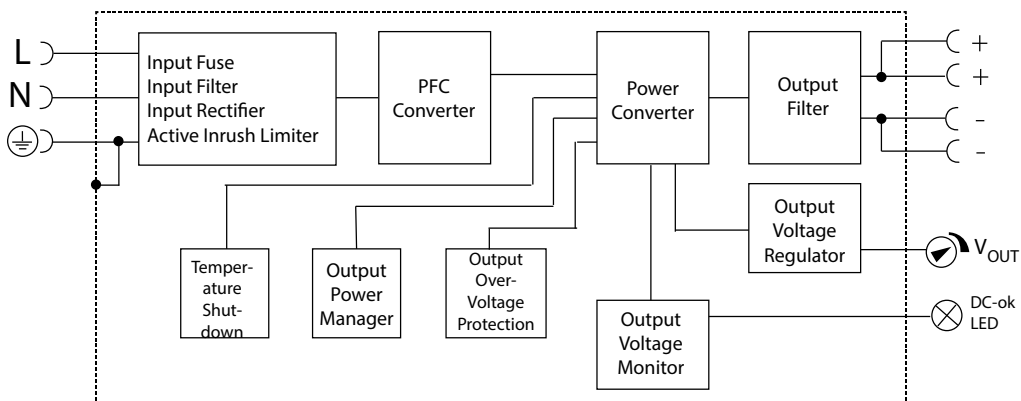
15 W, 30 W, 60 W, 75 W, 120 W



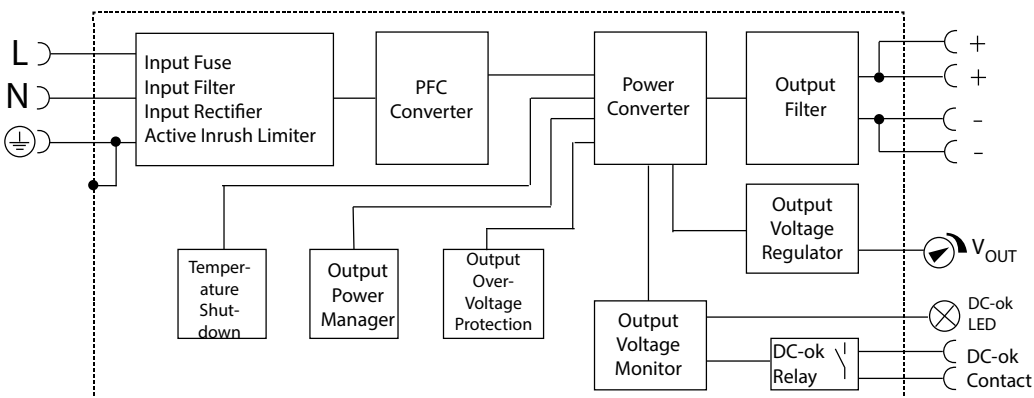
240 W



480 W



480 W R



Operating description

Control and protection

	15 W	30 W	60 W	75 W	120 W	240 W	480 W
Overvoltage 12 VDC 24 VDC 48 VDC	15 VDC - 16.8 VDC 28.8 VDC - 31.2 VDC		15.4 VDC - 18 VDC 28.8 VDC - 31.2 VDC	14.5 VDC - 17 VDC 29 VDC - 33 VDC	- 29 VDC - 33 VDC		29 VDC - 33 VDC 56 VDC - 63 VDC
	Constant voltage, auto recovery			Shut down Re-power ON	Shut down o/p voltage, re-power on to recover	Shut down o/p voltage, auto recovery	Shut down Re- power ON
Overload 12 VDC 24 VDC	1.5 - 2.0 A 0.7 - 1.0 A	3.0 - 4.0 A 1.5 - 2.5 A	6.0 - 7.5 A 3.0 - 4.0 A	105 - 150% of rated output power	105 - 150% Io, self-recovery	110% - 200% Io, hiccup, self-recovery	110 - 150% Io,
	Hiccup mode, auto recovery						
Short circuit	Long-term mode, auto recovery						
Overtem- perature	No protection			Shut down o/p voltage, re-power on to recover		Self-recovery	



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