SPD, SPM, SPP, SPU

Технические характеристики

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Хабаровск (4212)92-98-04
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Switching Power Supply
Type SPD 5W
DIN rail mounting

- **Universal AC input full range**
- **Installation on DIN rail 7.5 or 15mm**
- **Short circuit protection**
- **Overload protection**
- **High efficiency**
- **LED indicator for DC power ON**
- **LED indication for DC low**
- **Internal input filter**
- **CE, TUV approved and cULus Listed**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 12 05 1 B

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input Type**
- **Optional features**

Input type: 1= single phase

Approvals

Optional Features

Description	Code
Spring connectors	B

Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	EFF. (avg.)
Single Output Models							
SPD05	90~264 VAC	5 WATTS	+ 5 VDC	1000 mA	67%	83%	69%
SPD12	90~264 VAC	5 WATTS	+12 VDC	420 mA	70%	86%	72%
SPD15	90~264 VAC	5 WATTS	+15 VDC	340 mA	70%	87%	72%
SPD24	90~264 VAC	5 WATTS	+24 VDC	210 mA	70%	87%	72%

Output Data

Line regulation	± 1%
Load regulation	± 2%
Minimum load	0
Turn on time (full resistive load)	1000ms max
Transient recovery time	2ms
Ripple and noise	50mVpp
Output voltage accuracy	± 1%
Temperature coefficient	± 0.03%/°C
Hold up time **Vi= 115VAC**	30ms
Vi= 230VAC	130ms
Voltage fall time (I_0nom)	150ms max

Rated continuous loading	
5V Model	1.0A @ 5VDC/0.85A @ 5.75VDC
12V Model	0.42A @ 12VDC/0.36A @ 13.8VDC
15V Model	0.34A @ 15VDC/0.28A @ 17.25VDC
24V Model	0.21A @ 24VDC/0.17A@28.8VDC
Reverse voltage	
5V Model	VDC 7.5
12V Model	VDC 18
15V Model	VDC 22
24V Model	VDC 35
Capacitor load	7000µF
Voltage rise time at full resistive load	150ms max

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Input Data

Rated input voltage	100 - 240VAC
Voltage range	
AC	90 - 265VAC
DC	120 - 370VDC
Rated input current	
(Vi : 115VAC, Io nom) Typ.	115mA
Max.	200mA
Inrush current	
Vi= 115VAC	10A
Vi= 230VAC	18A

Power dissipation	
(Vi : 230VAC, Io nom) 5V Model	2.2W
12V Model	1.9W
15V Model	2.1W
24V Model	1.8W
Frequency range	47- 63Hz
Leakage current	
Input-Output	0.25mA 3.5mA

Controls and Protections

Overload	110 – 135%
Input fuse	T2A/250VAC internal[1)]
Output short circuit	Hiccup mode

Over voltage protection	125 - 145%
Internal surge voltage protection (IEC 61000-4-5)	Varistor

[1)] Fuse not replaceable by user

General Data (@ nominal line, full a, 25°C)

Ambient temperature	-20°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 95%RH
Storage	-25°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Insulation voltage	
Input-Output	3.000VAC/4242VDC min
Input-FG	1.500VAC/2121VDC min
Insulation resistance I/O	100MΩ min (@ 500VDC)

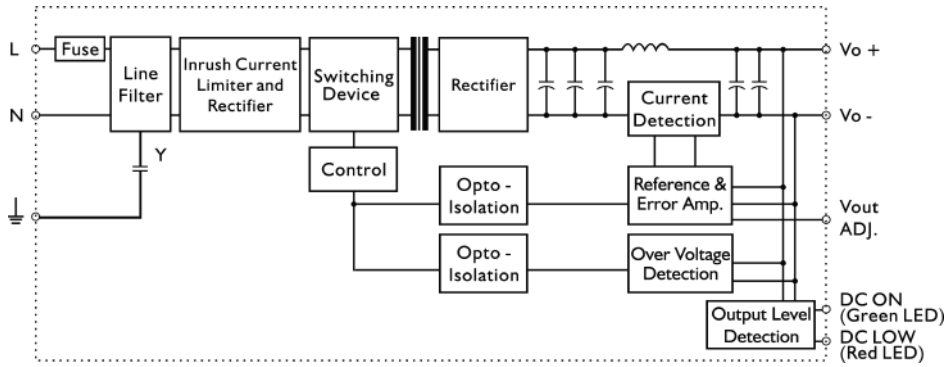
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	802000 Hours
12V Model	805000 Hours
15V Model	808000 Hours
24V Model	812000 Hours
Case material	Plastic: PC, UL94-V0
Pollution degree	2
Altitude	4850m
Dimensions LxWxD mm(inch)	90(3.60)x22.5(0.89)x114(4.49)
Weight	120g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, UL1310 Class 2 Power (only 5V, 12V w/o Class 2) Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme
CCC	GB4943, GB9254, GB17625.1

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

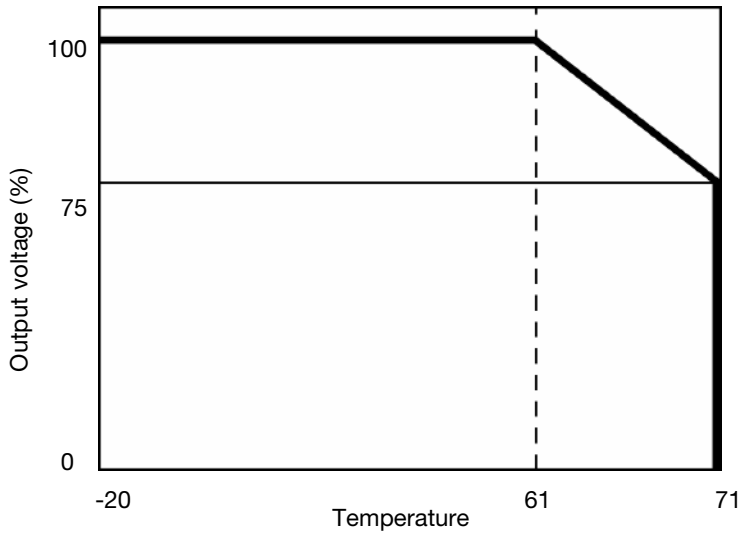
Block Diagrams



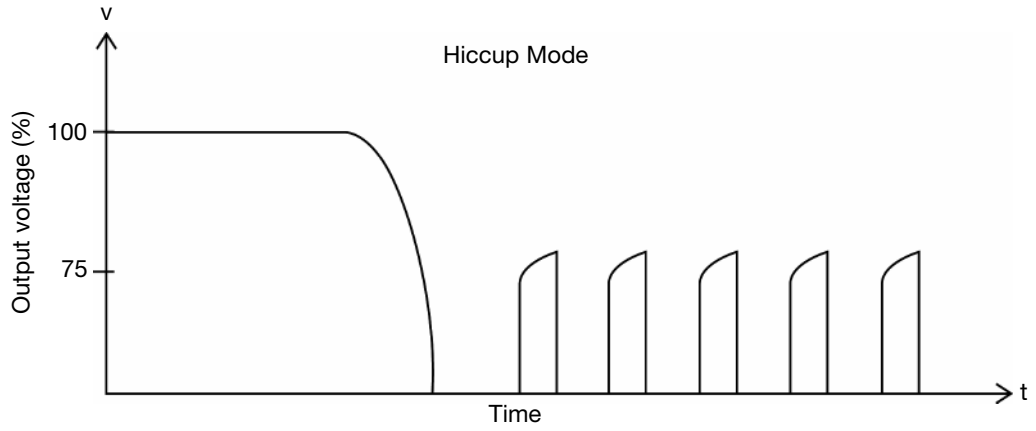
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	V+	Positive output terminal
2	V-	Negative output terminal
3	⏚	Ground this terminal to minimize high-frequency emission
4	N	Input terminals (neutral conductor, no polarity at DC input)
5	L	Input terminals (phase conductor, no polarity at DC input)
	ON	Operation indicator LED
	LO	DC LOW indicator LED
	Vout ADJ.	Trimmer-potentiometer for Vout adjustment

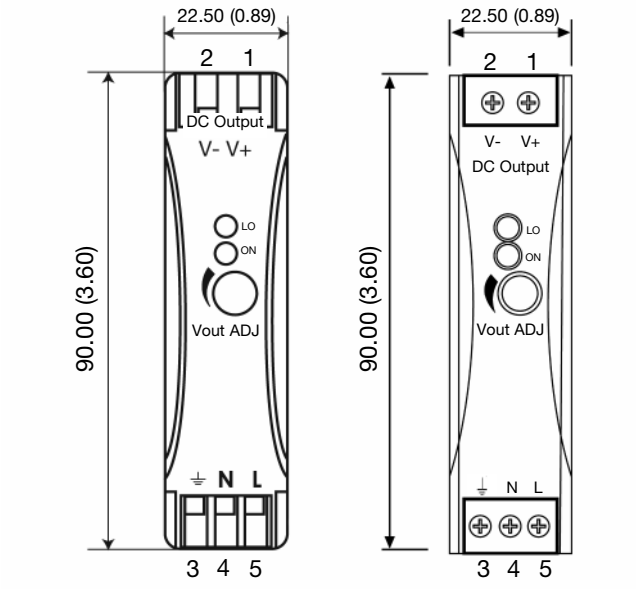
Derating Diagram

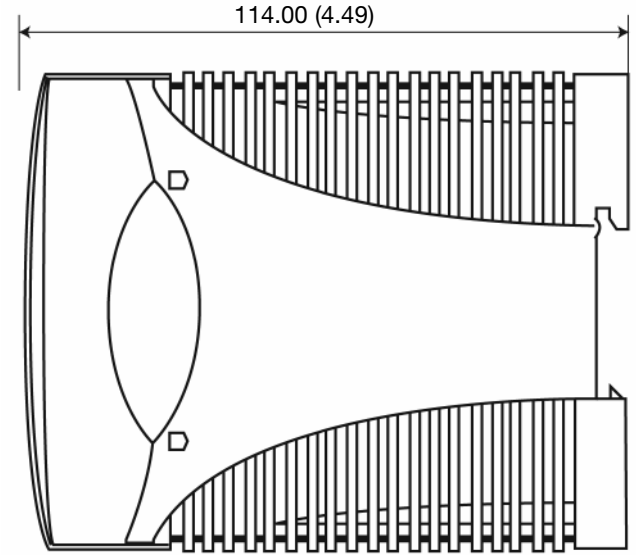


Typ. Current Limited Curve

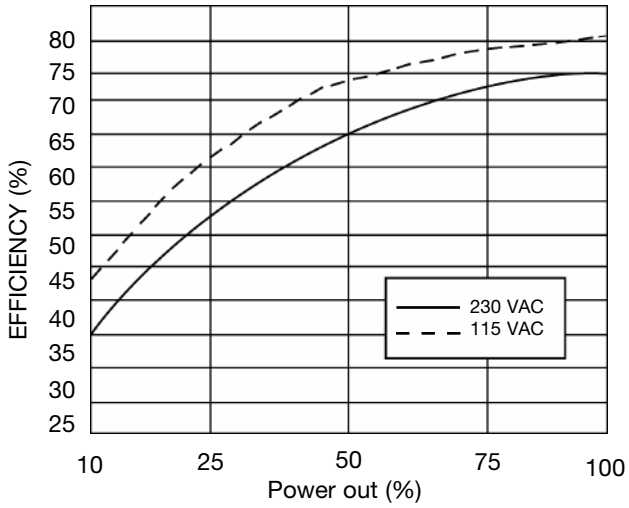


Mechanical Drawings mm (inches)





Typ. Efficiency Curve



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Connector size range	
Spring terminal	AWG24-14 (0.2~2mm²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C
Screw terminal	AWG26-12 (0.2~2.5mm²) flexible/solid cable, connector can withstand torque at max 0,56Nm (5 lbs-in). 4~5 mm stripping at cable and recommends use copper conductors only, 60/75°C
Max. torque for terminal	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)
General tolerances mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)

Switching Power Supply
Type SPD 10W
DIN rail mounting

- **Universal AC input full range**
- **Installation on DIN rail 7.5 or 15mm**
- **Short circuit protection**
- **Overload protection**
- **High efficiency**
- **LED indicator for DC power ON**
- **LED indication for DC low**
- **Power Ok output**
- **Internal input filter**
- **CE, TUV approved and cULus Listed**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 10 1 B

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input Type**
- **Optional features**

Input type: 1= single phase

Approvals

Class I, Div 2 UL 1310 UL 60950-1

Optional Features

Description	Code
Spring connectors	B

Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD05	90~264 VAC	10 WATTS	+ 5 VDC	2000 mA	71%	73%
SPD12	90~264 VAC	10 WATTS	+12 VDC	840 mA	73%	75%
SPD15	90~264 VAC	10 WATTS	+15 VDC	670 mA	74%	76%
SPD24	90~264 VAC	10 WATTS	+24 VDC	420 mA	74%	76%

Output Data

Line regulation		± 1%
Load regulation		± 2%
Minimum load		0
Turn on time (full resistive load)		1000ms
Vi nom, Io nom with 3500µF		1500ms
Transient recovery time		2ms
Ripple and noise		50mVpp
Output voltage accuracy		+ 1%
Temperature coefficient		± 0.03%/°C
Hold up time	**Vi= 115VAC**	25ms
	Vi= 230VAC	100ms
Voltage fall time (I_0nom)		150ms max

Rated continuous loading	
5V Model	2A @ 5VDC/1.7A @ 5.75VDC
12V Model	0.84A@12VDC/0.72A@13.8VDC
15V Model	0.67A @ 15VDC/0.58A @ 17.25VDC
24V Model	0.42A @ 24VDC/0.34A @ 28.8VDC
Reverse voltage	
5V Model	7.5VDC
12V Model	18VDC
15V Model	22VDC
24V Model	35VDC
Capacitor load	3500µF
Voltage rise time at (full resistive load)	500ms
Vi nom, Io nom with 3500µF	150ms

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Input Data

Rated input voltage		100 - 240VAC
Voltage range		
	AC	90 - 264VAC
	DC	120 - 375VDC
Rated input current		
(Vi : 115VAC, Io nom)	**Typ.**	200mA
	Max.	300mA
Inrush current		
	Vi= 115VAC	10A
	Vi= 230VAC	18A

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	4.0W
	12V Model	3.4W
	15V Model	3.3W
	24V Model	2.8W
Frequency range		47- 63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA

Controls and Protections

Overload	110 – 145%
Input fuse	T2A/250VAC internal[1)]
Output short circuit	Hiccup mode

Over voltage protection	125-145%
Internal surge voltage protection (IEC 61000-4-5)	Varistor

[1)] Fuse not replaceable by user

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-20°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 95%RH
Storage	-25°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Insulation voltage	
Input-Output	3.000VAC/4242VDC min
Input-FG	1.500VAC/2121VDC min
Insulation resistance I/O	100MΩ min (@ 500VDC)

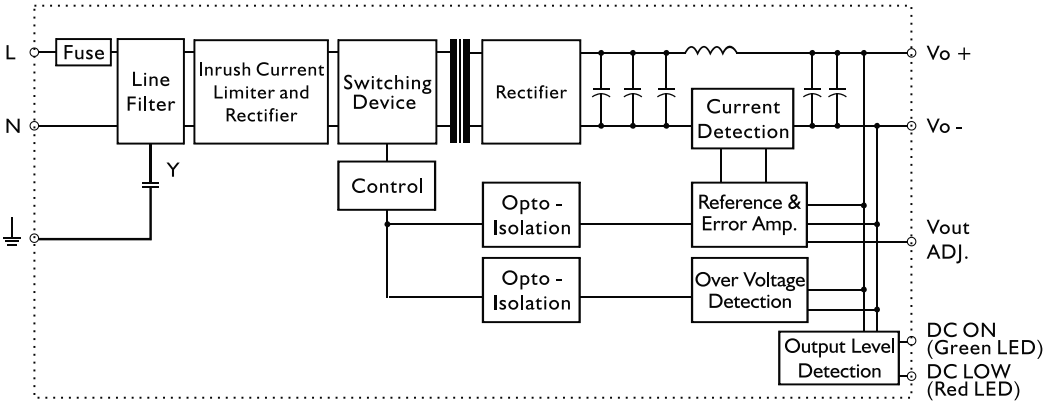
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	801000 Hours
12V Model	803000 Hours
15V Model	805000 Hours
24V Model	808000 Hours
Case material	Plastic: PC, UL94-V0
Pollution degree	2
Altitude	2000m
Dimensions LxWxD mm(inch)	90(3.60)x22.5(0,89)x114(4.49)
Weight	120g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, UL1310 Class 2 Power Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme
CCC	GB4943, GB9254, GB17625.1

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

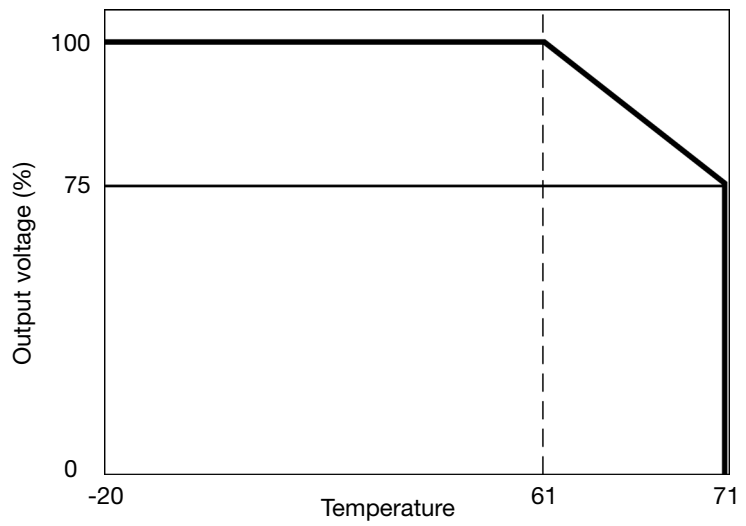
Block Diagrams



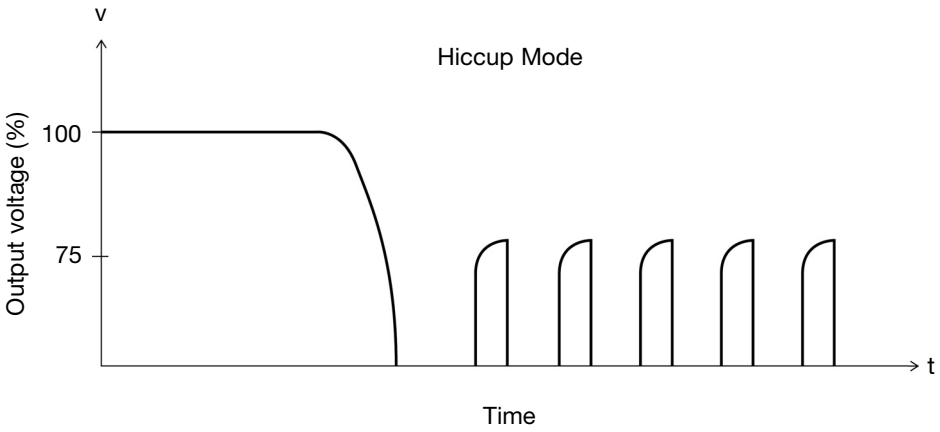
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**V+**	Positive output terminal
2	**V-**	Negative output terminal
3	⏚	Ground terminal to minimise High frequency emissions
4	**N**	Input terminals (neutral conductor, no polarity at DC input)
5	**L**	Input terminals (phase conductor, no polarity at DC input)
	ON	Operation indicator LED
	LO	DC LOW indicator LED
	Vout ADJ.	Trimmer-potentiometer for Vout adjustment

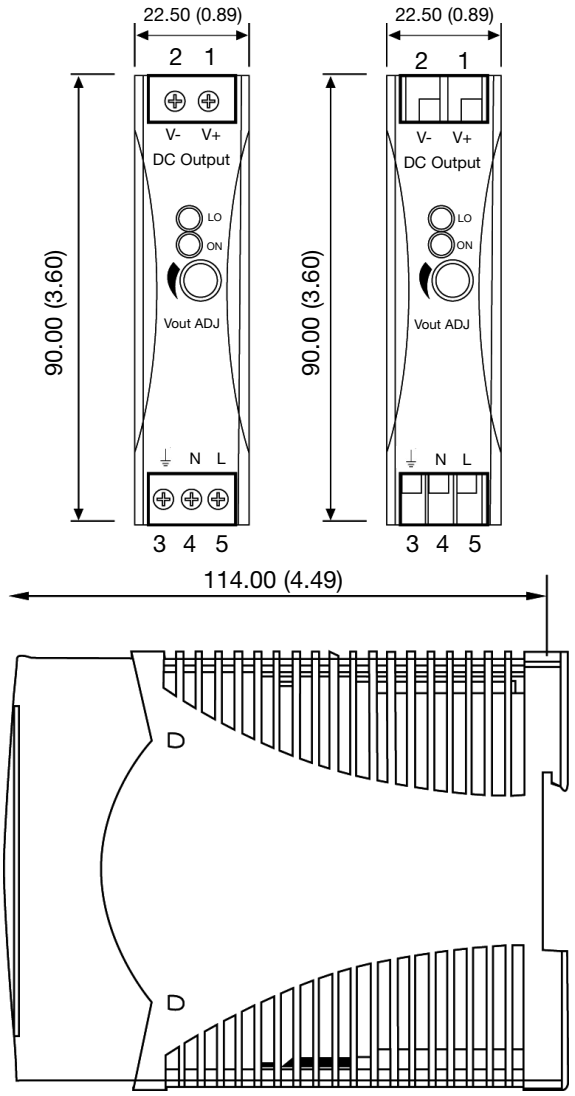
Derating Diagram



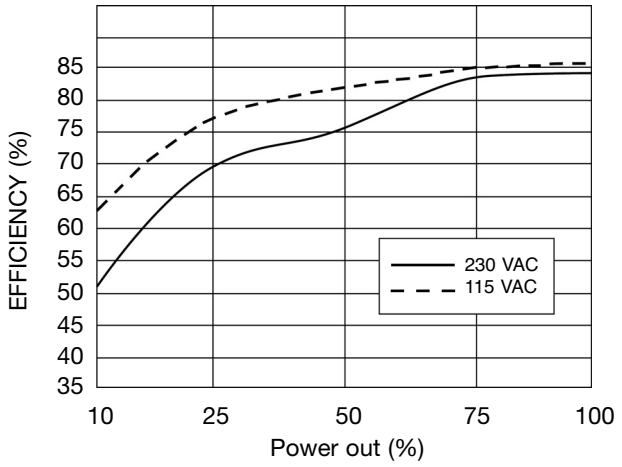
Typ. Current Limited Curve



Mechanical Drawings mm (inches)



Typ. Efficiency Curve



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Connector size range	
Spring terminal	AWG24-14 (0.2~2mm²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C
Screw terminal	AWG26-12 (0.2~2.5mm²) flexible/solid cable, connector can withstand torque at max 0,56Nm (5 lbs-in). 4~5 mm stripping at cable and recommends use copper conductors only, 60/75°C
Max. torque for terminal	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)
General tolerances mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)

Switching Power Supply
Type SPD 18W
DIN rail mounting

- **Universal AC input full range**
- **Installation on DIN rail 7.5 or 15mm**
- **Short circuit protection**
- **Overload protection**
- **High efficiency**
- **LED indicator for DC power ON**
- **LED indication for DC low**
- **Internal input filter**
- **CE, TUV approved and cULus Listed**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 18 1 B

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input Type**
- **Optional features**

Input type: 1= single phase

Approvals

Class I, Div 2 — UL 1310 — UL 60950-1

Optional Features

Description	Code
Spring connectors	B

Output performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD05	90~264 VAC	15 WATTS	+ 5 VDC	3000 mA	73%	75%
SPD12	90~264 VAC	18 WATTS	+12 VDC	1500 mA	75%	77%
SPD15	90~264 VAC	18 WATTS	+15 VDC	1200 mA	75%	77%
SPD24	90~264 VAC	18 WATTS	+24 VDC	750 mA	75%	77%

Output data

Line regulation		± 1%
Load regulation		± 2%
Minimum load		0
Turn on time (full resistive load)		1000ms
Vi nom, Io nom with 7000µF **CAP**		1500ms
Transient recovery time		2ms
Ripple and noise		50mVpp
Output voltage accuracy		± 1%
Temperature coefficient		± 0.03%/°C
Hold up time	**Vi= 115VAC**	20ms
	Vi= 230VAC	75ms
Voltage fall time (I_0nom)		150ms max

Rated continuous loading	
5V Model	3A @ 5VDC/2.6A @ 5.75VDC
12V Model	1.5A @ 12VDC/1.3A @ 13.8VDC
15V Model	1.2A @ 15VDC/1.0A @ 17.25VDC
24V Model	0.75A @ 24VDC/0.6A @28.8VDC
Reverse voltage	
5V Model	VDC 7.5
12V Model	VDC 18
15V Model	VDC 22
24V Model	VDC 35
Capacitor load	7000µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom with 7000µF **CAP**	500ms

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Input data

Rated input voltage	100 - 240VAC
Voltage range	
AC	90 - 264VAC
DC	120 - 375VDC
Rated input current Vi: 115VAC, Io nom	335-500mA
Inrush current	
Vi= 115VAC	10A
Vi= 230VAC	18A

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	5.0W
	12V Model	4.65W
	15V Model	4.25W
	24V Model	4.45W
Frequency range		47- 63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA

Controls and Protections

Overload	110 – 140%
Input Fuse	T2A/250VAC internal[1)]
Overvoltage Protection	125 – 145%

[1)] Fuse not replaceable by user

Output Short Circuit	Hiccup mode
Internal surge voltage protection (IEC 61000-4-5)	Varistor

General data (@ nominal line, full load, 25°C)

Ambient temperature	-20°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 95%RH
Storage	-25°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Insulation voltage	
Input-Output	3.000VAC/4242VDC min
Input-FG	1.500VAC/2121VDC min
Insulation resistance I/O	100MΩ min (@ 500VDC)

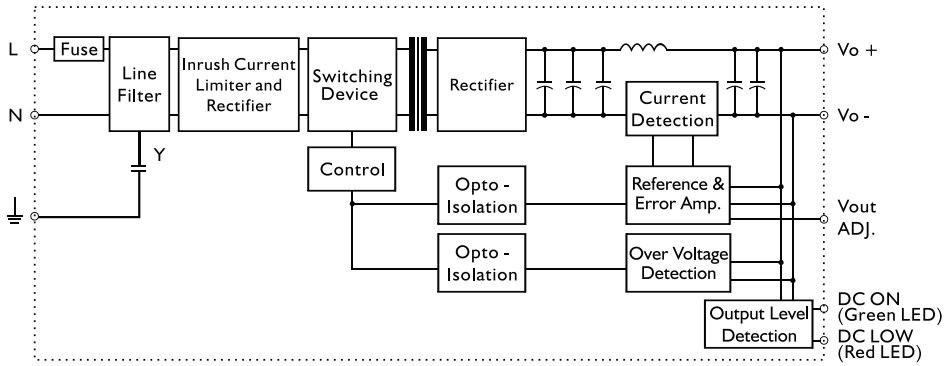
MTBF (Bellcore issue 6 @ 40°C, GB)		
	5V Model	795000 Hours
	12V Model	797000 Hours
	15V Model	796000 Hours
	24V Model	800000 Hours
Case material		Plastic: PC, UL94-V0
Pollution degree		2
Altitude		2000m
Dimensions LxWxD mm(inch)		90(3.60)x22.5(0.89)x114(4.49)
Weight		150g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, UL1310 Class 2 Power (only 5V, 12V w/o Class 2) Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme
CCC	GB4943, GB9254, GB17625.1

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

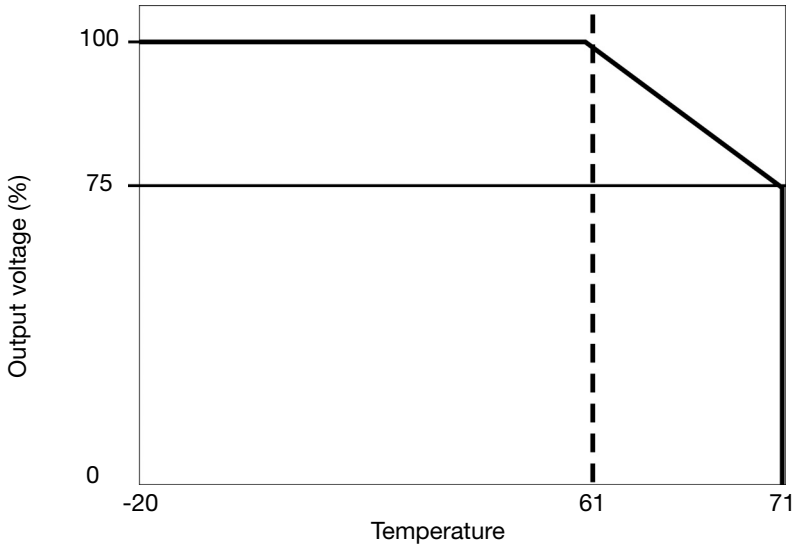
Block diagrams



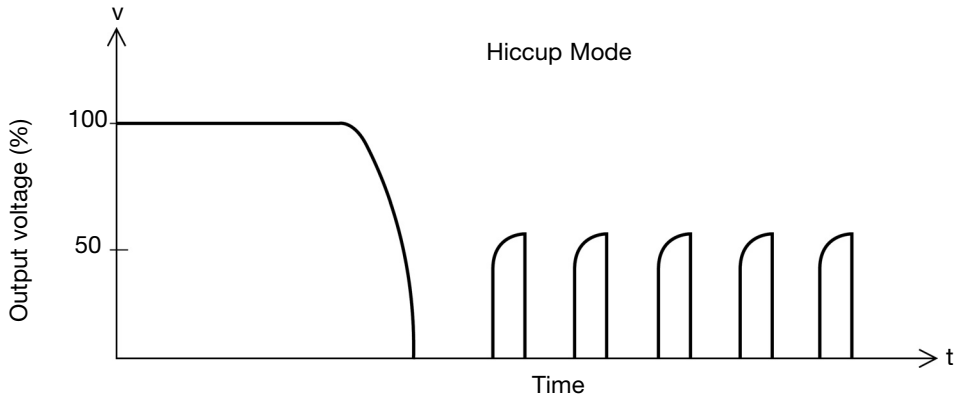
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**V+**	Positive output terminal
2	**V-**	Negative output terminal
3	⏚	Ground this terminal to minimize high-frequency emission
4	**N**	Input terminals (neutral conductor, no polarity at DC input)
5	**L**	Input terminals (phase conductor, no polarity at DC input)
	ON	Operation indicator LED
	LO	DC LOW indicator LED
	Vout ADJ.	Trimmer-potentiometer for Vout adjustment

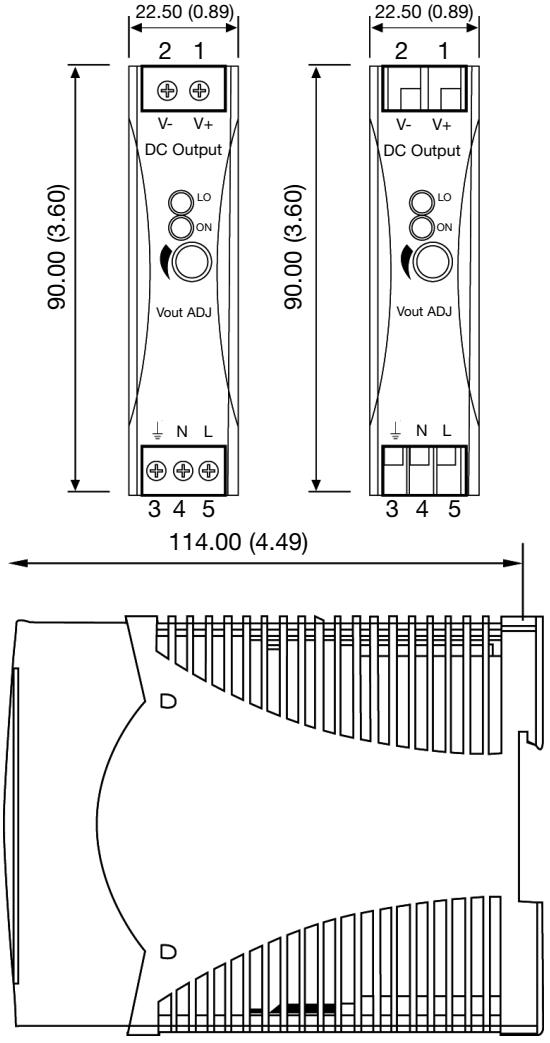
Derating Diagram



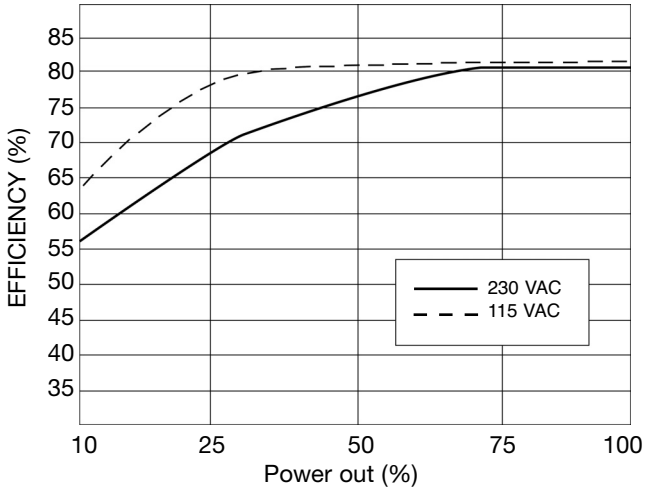
Typ. Current Limited Curve



Mechanical Drawings mm (inches)



Typ. Efficiency Curve



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Connector size range	
Spring terminal	AWG24-14 (0.2~2mm²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C
Screw terminal	AWG26-12 (0.2~2.5mm²) flexible/solid cable, connector can withstand torque at max 0,56Nm (5 lbs-in). 4~5 mm stripping at cable and recommends use copper conductors only, 60/75°C
Max. torque for terminal	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)
General tolerances mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)

Switching Power Supply
Type SPD 30W
DIN rail mounting

CARLO GAVAZZI

- **Universal AC input full range**
- **Installation on DIN rail 7.5 or 15mm**
- **Short circuit protection**
- **Overload protection**
- **Class 2 output**
- **High efficiency**
- **LED indicator for DC power ON**
- **Power Ok output**
- **CE, TUV approved and cULus Listed**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 12 30 1 B

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input Type**
- **Optional features**

Input type: 1= single phase

Approvals

Class I, Div 2 UL 1310 UL 60950-1

Optional Features

Description	Code
Spring connectors	B

Output performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD05	85~264 VAC	30 WATTS	+ 5 VDC	6000 mA	77%	79%
SPD12	85~264 VAC	30 WATTS	+12 VDC	2500 mA	82%	84%
SPD24	85~264 VAC	30 WATTS	+24 VDC	1250 mA	83%	86%
SPD48	85~264 VAC	30 WATTS	+48 VDC	625 mA	83%	86%

Output Data

Line regulation	± 0.5%
Load regulation	± 0.5%
Minimum load	0
Turn on time (full resistive load) **Vi nom, Io nom** **Vi nom, Io nom** with 3500µF **CAP**	 1000ms 2000ms
Transient recovery time	2ms
Ripple and noise	50mVpp
Output voltage accuracy	± 1%
Temperature coefficient	± 0.03%/°C
Hold up time Vi= 115VAC **Vi= 230VAC**	20ms 30ms
Voltage fall time (I_0nom)	150ms max

Rated continuous loading	
5V Model	6A @ 5VDC/5.4A @ 5.5VDC
12V Model	2.5A @ 12VDC/2.1A @ 14VDC
24V Model	1.25A @ 24VDC/1.05A @ 28VDC
48V Model	0.625A @ 48VDC/0.54A @ 55VDC
Reverse voltage	
5V Model	7.5VDC
12V Model	18VDC
24V Model	35VDC
48V Model	63VDC
Capacitor load	3500µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom with 3500µF **CAP**	500ms

CARLO GAVAZZI

Input Data

Rated input voltage		100 - 240VAC
Voltage range		
	AC	85 - 264VAC
	DC	90 - 375VDC
Rated input current		
(Vi : 115VAC, Io nom)	**Typ.**	560mA
	Max.	800mA
Inrush current		
	Vi= 115VAC	20A
	Vi= 230VAC	40A

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	8.5W
	12V Model	5.6W
	24V Model	5.5W
	48V Model	4.9W
Frequency range		47- 63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA

Controls and Protections

Overload		110 – 140%
Input fuse		T2A/250VAC internal[1)]
Output short circuit		Fold forward
Power ready output		
(only SPD 24)	**On threshold**	≥19.2-19.4VDC
	Off threshold	≤19.1-19.3VDC

[1)] Fuse not replaceable by user

		VDC	
Over voltage protection		**Min.**	**Max.**
	5V Model	6	6.8
	12V Model	15	16.5
	24V Model	30	33
	48V Model	60	66
Internal surge voltage protection (IEC 61000-4-5)		Varistor	

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-40°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 90%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2

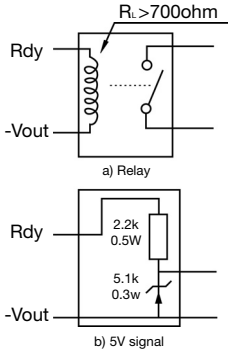
MTBF (Bellcore issue 6 @ 40°C, GB)		
	5V Model	551000 Hours
	12V Model	582000 Hours
	24V Model	588000 Hours
	48V Model	609000 Hours
Case material		Plastic: PC, UL94-V0
Dimensions LxWxD mm(inch)		90(3.6) x 40.5(1.59) x 114(4.49)
Weight		270g

Norms and Standards

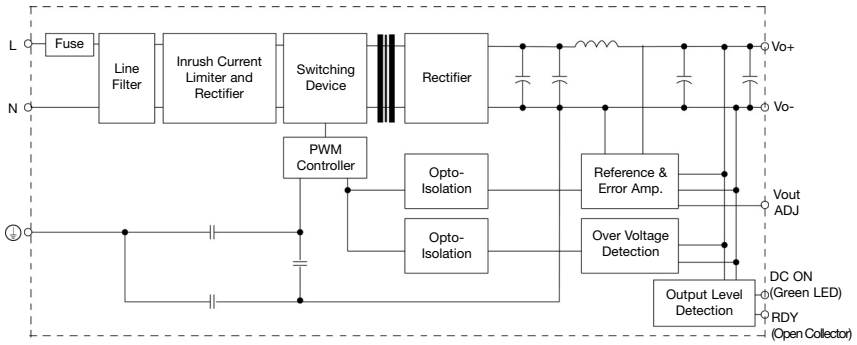
Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, UL1310 Class 2 Power (only 5V, w/o Class 2) Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)
CCC	GB4943, GB9254, GB17625.1

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

Rdy connection



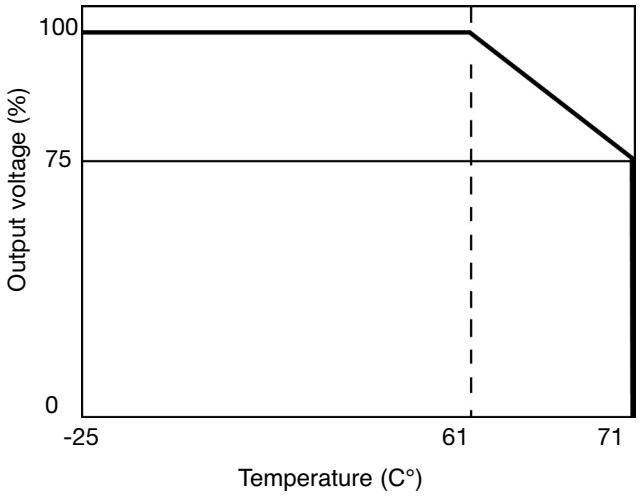
Block Diagrams



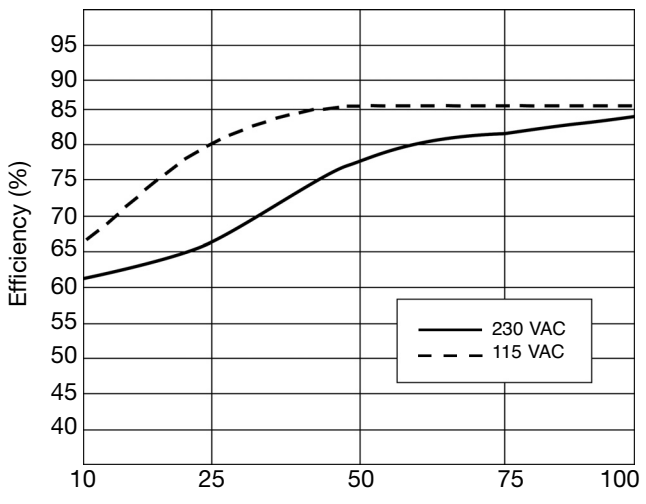
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**RDY**	DC OK output for relay (not connect except 24V model)
2	**+**	Positive output terminal
3	**+**	Positive output terminal
4	**-**	Negative output terminal
5	**-**	Negative output terminal
	⏚	Ground this terminal to minimize high-frequency emissions
	N	Input terminals (neutral conductor, no polarity at DC input)
	L	Input terminals (phase conductor, no polarity at DC input)
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED

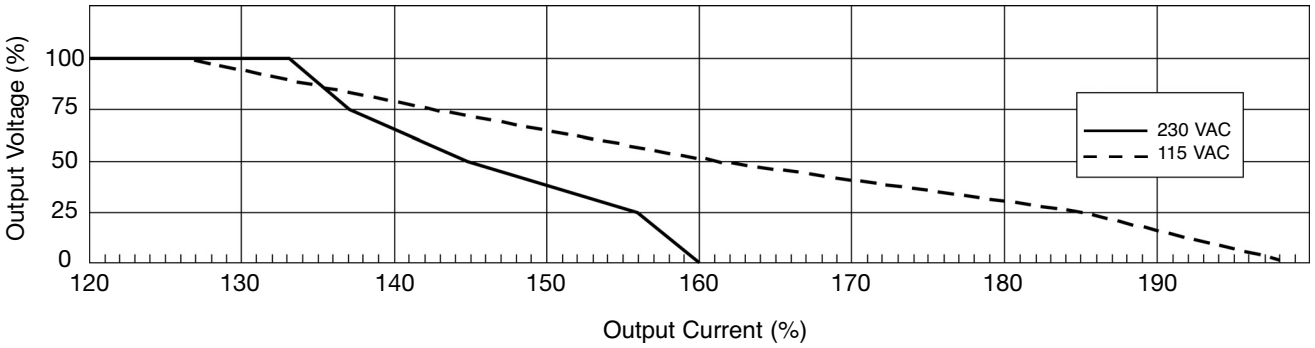
Derating Diagram



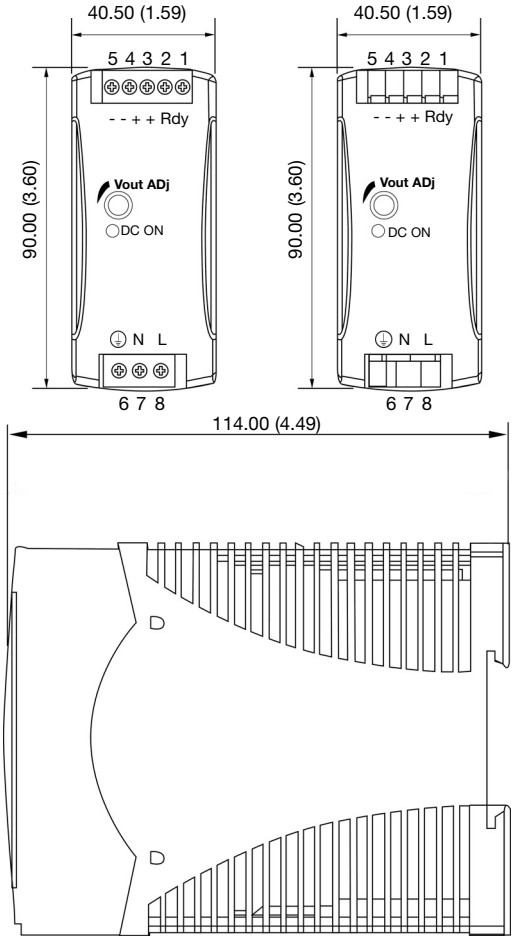
Typ. Efficiency Curve



Typ. Current Limited Curve



Mechanical Drawings mm (inches)



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Connector size range	
Spring terminal	AWG24-14 (0.2~2mm²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C
Screw terminal	AWG26-12 (0.2~2.5mm²) flexible/solid cable, connector can withstand torque at max 0,56Nm (5 lbs-in). 4~5 mm stripping at cable and recommends use copper conductors only, 60/75°C
Max. torque for terminal	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)
General tolerances mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)

Switching Power Supply
Type SPD 60W
DIN rail mounting

- **Universal AC input full range**
- **Installation on DIN rail 7.5 or 15mm**
- **Short circuit protection**
- **Overload protection**
- **Class 2 output**
- **High efficiency**
- **LED indicator for DC power ON**
- **Power Ok output**
- **CE, TUV approved and cULus Listed**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 60 1 B

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input Type**
- **Optional features**

Input type: 1= single phase

Approvals

Optional Features

Description	Code
Spring connectors	B

Output Performances

Model	Rated output Voltage (VDC)	Output Power (W)	Output Current (A)	Voltage Trim Range		DC ON green LED at start up DC LOW red LED after start up		Typical Efficiency
				Min. VDC	Max. VDC	Min. VDC	Max. VDC	
SPD05	5	50	10.0	5	5.5	3.5	4.5	79%
SPD12	12	60	5.0	12	14	9.0	10.8	86%
SPD24	24	60	2.5	24	28	18	21.6	89%
SPD48	48	60	1.25	48	55	37	43	89%

Output Data

Line regulation	± 0.5%
Load regulation	± 0.5%
Minimum load (A)	0
Turn on time (full resistive load)	1000ms max
Transient recovery time	2ms
Ripple and noise BW = 20MHz	50mVpp
Output voltage accuracy	± 1% max.
Temperature coefficient	± 0.03%/°C
Hold up time Vi= 115VAC	20ms
Vi= 230VAC	30ms
Voltage fall time (I_{0}nom)	150ms max

Rated continuous loading	
5V Model	10A @ 5VDC/9.0A @ 5.5VDC
12V Model	5A @ 12VDC/4.25A @ 14VDC
24V Model	2.5A @ 24VDC/2.1A @ 28VDC
48V Model	1.25A @ 48VDC/1.08A @ 55VDC
Reverse voltage	
5V Model	7.5VDC
12V Model	18VDC
24V Model	35VDC
48V Model	63VDC
Capacitor load	7000µF
Voltage rise time at full resistive load	150ms max

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Input Data

Rated input voltage	100 - 240VAC
Voltage range	
AC	85 - 264VAC
DC	90 - 375VDC
Rated input current	
(Vi : 115VAC)	1060mA
(Vi : 230VAC)	590mA
Input current (Vi : 85VAC)	1500mA
Inrush current	
Vi= 115VAC	20A
Vi= 230VAC	40A

Power dissipation	
(Vi : 230VAC, Io nom)	
5V Model	12.5W
12V Model	9.0W
24V Model	8.8W
48V Model	7.8W
Frequency range	47- 63Hz
Leakage current	
Input-Output	0.25mA
Input-FG	3.5mA

Controls and Protections

Overload	110 – 150%
Input fuse	T2A/250VAC internal[1)]
Output short circuit	Fold forward
Power ready output (Rdy)	
(only SPD 24) **On threshold**	Vout > 19,2V ± 2%
Off threshold	Vout < 19,1V ± 2%

[1)] Fuse not replaceable by user

	VDC	
Over voltage protection	**Min.**	**Max.**
5V Model	6.0	6.8
12V Model	15	16.5
24V Model	30	33
48V Model	60	66
Internal surge voltage protection (IEC 61000-4-5)	Varistor	

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-40°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 95%RH
Storage temperature	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Insulation voltage	
Input-Output	3.000VAC/4242VDC min
Input-FG	1.500VAC/2121VDC min
Insulation resistance I/O	100MΩ min (@ 500VDC)

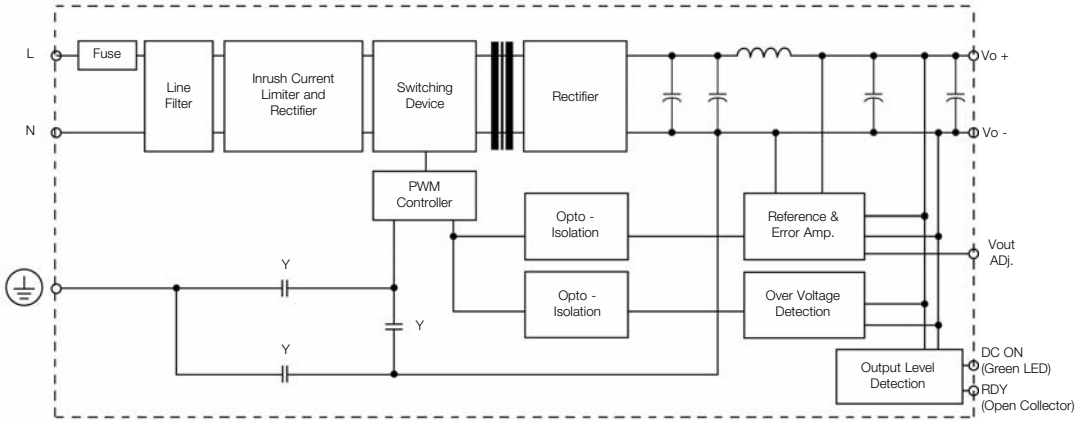
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	498000 Hours
12V Model	504000 Hours
24V Model	520000 Hours
48V Model	531000 Hours
Case material	Plastic: PC, UL94-V0
Pollution degree	2
Altitude	2000m
Dimensions LxWxD mm (inch)	90(3.60)x40.5(1.59)x114(4.49)
Weight	340g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, UL1310 Class 2 Power (only 5V, 12V w/o Class 2) Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-16 (meet EN 60204)
CCC	GB4943, GB9254, GB17625.1

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

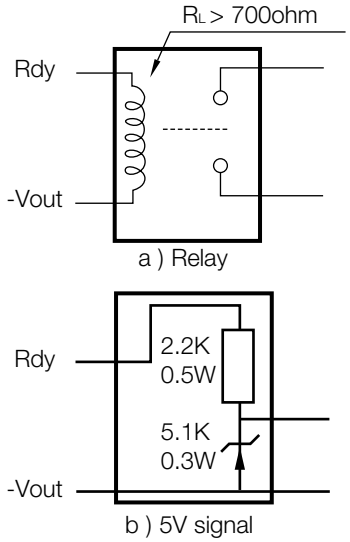
Block Diagrams



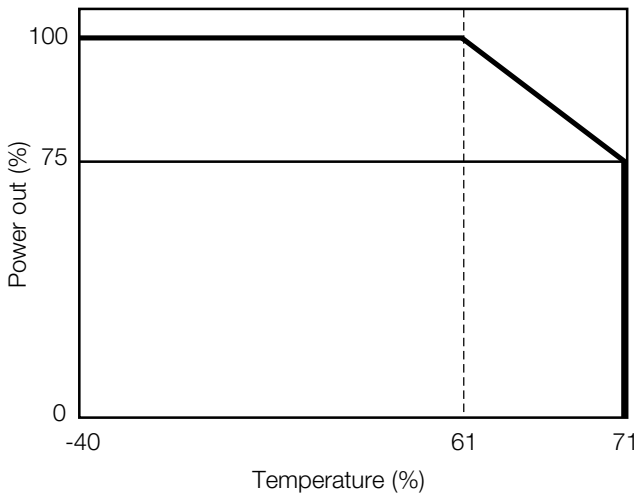
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**RDY**	DC OK, output for relay (only on SPD 24)
2	**+**	Positive output terminal
3	**+**	Positive output terminal
4	**-**	Negative output terminal
5	**-**	Negative output terminal
6	**GND**	Ground terminal to minimise High frequency emissions
7	**L**	Phase input (no polarity with DC input)
8	**N**	Neutral input (no polarity with DC input)
Pot1	**Vout ADJ.**	Trimmer for fine output voltage adjustment
L1	**DC ON**	DC output ready LED

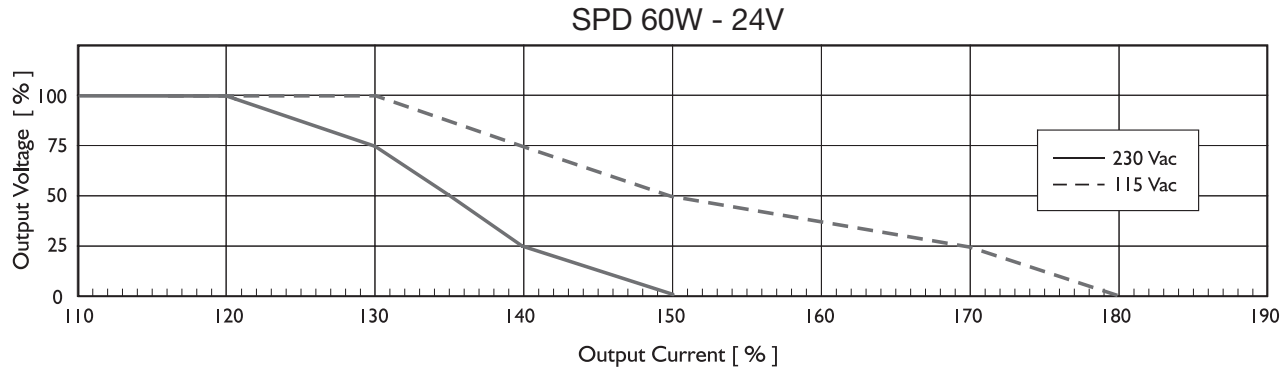
Output Rdy Wiring Diagram



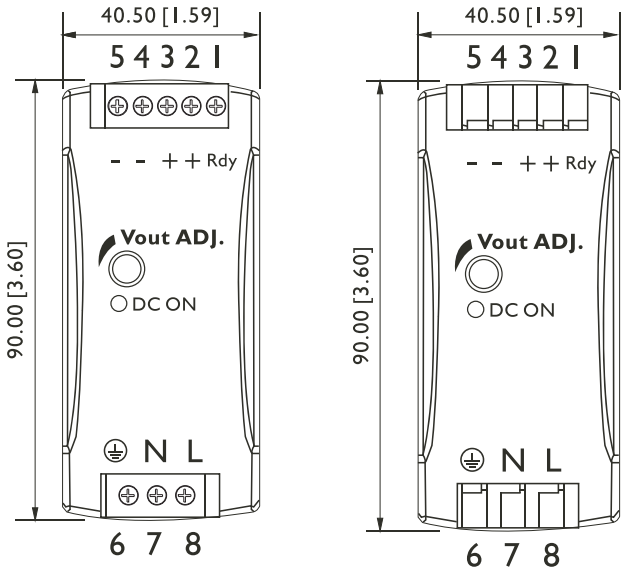
Derating Diagram

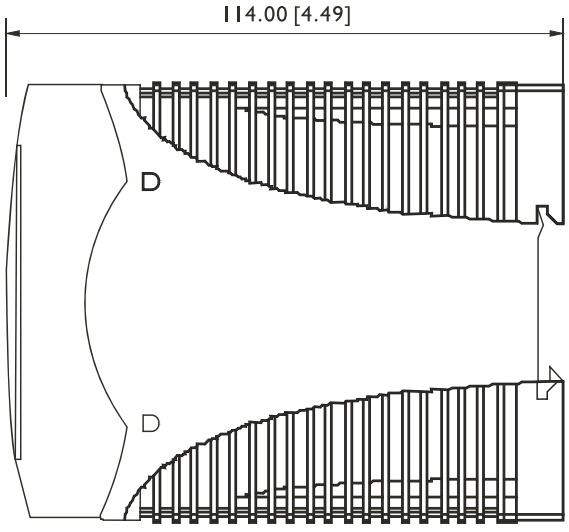


Typ. Current Limited Curve

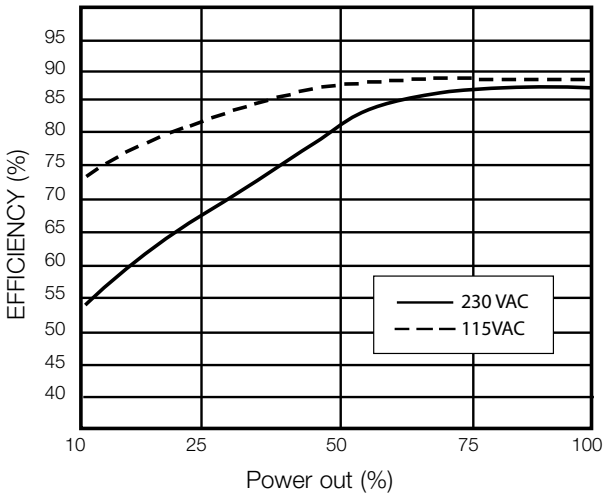


Mechanical Drawings mm (inches)





Typ. Efficiency Curve



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Connector size range	
Spring terminal	AWG24-14 (0.2~2mm²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C
Screw terminal	AWG26-12 (0.2~2.5mm²) flexible/solid cable, connector can withstand torque at max 0,56Nm (5 lbs-in). 4~5 mm stripping at cable and recommends use copper conductors only, 60/75°C
Max. torque for terminal	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)
General tolerances mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)

Switching Power Supply
Type SPD 100W
DIN rail mounting

- **Installation on DIN Rail 7.5 or 15mm**
- **Short circuit protection**
- **PFC standard**
- **Power ready output on 24VDC**
- **LED indicator for DC power ON**
- **LED indicator for DC low**
- **Standard parallel function**
- **Very compact dimensions**
- **UL, cUL listed and TUV/CE approved**
- **Class I Div 2 Groups A, B, C, D approved**

Product Description

This SPD is the most compact 100W power supply on the market. Relay output for “power ready” parallel function and PFC are included. Performances are unique with high efficiencies and the possibility of being used up to 70°C with a little derating.

Ordering Key

SP D 24 100 1

Model
Mounting (D = Din rail)
Output voltage
Output power
Input Type

Input type: 1= single phase

Approvals

Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD12100	90~264 VAC	100.8 WATTS	+12 VDC	8,4 A	82%	84%
SPD24100	90~264 VAC	100.8 WATTS	+24 VDC	4,2 A	84%	86%
SPD48100	90~264 VAC	100.8 WATTS	+48 VDC	2,1 A	86%	88%

Output Data

Line regulation	± 1%
Load regulation	
Non parallel model	±1%
Parallel model	±5%
Minimum load	0A
Turn on time (full resistive load)	
Vi nom, Io nom 12V/24V models with 7000 µF CAP	1000ms
Vi nom, Io nom 48V models with 3500 µF CAP	2000ms
Transient recovery time	2ms
Ripple and noise	50mVpp
Output voltage accuracy	±1%
Temperature coefficient	±0.03%/°C
Hold up time	
Vi= 115VAC	15ms
Vi=230VAC	30ms

Voltage fall time (I_0**nom Vi nom**)	150ms max
Rated continuous loading	
12V Model	8.4A @ 12VDC/6.9A @ 14.5VDC
24V Model	4.2A @ 24VDC/3.5A @ 28.5VDC
48V Model	2.1A @ 48VDC/1.8A @ 56VDC
Reverse voltage	
12V Model	VDC 18
24V Model	VDC 35
48V Model	VDC 63
Capacitor load	7000µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom 12V/24V models with 7000µF CAP	500ms
48V model with 3500µF CAP	500ms

Switching Power Supply
Type SPD 100W
DIN rail mounting

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Input Data

Rated input voltage		100 - 240VAC
Voltage range		
	AC	90 - 264VAC
	DC	120 - 375VDC
Rated input current		
(Vi:90VAC, Io nom)	**Typ.**	2.4A
Inrush current		
	Vi= 115VAC	30A
	Vi= 230VAC	60A

Power dissipation		
(Vi : 230VAC, Io nom)	**12V Model**	18.5W
	24V Model	15W
	48V Model	14W
Frequency range		47-63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA

Controls and Protections

Overload		
	12V Model	14.5V to 17.4V
	24V Model	30.0V to 33.0V
	48V Model	60.0V to 66.0V
Input fuse		T3.15A/250VAC internal1[1)]
Output short circuit		Fold forward
Power ready output threshold at start up		≥17.6-19.4VDC
Electrical isolation		500VDC
Contact rating at60VDC		0.3A

Over voltage protection		**VDC**	
		Min.	**Max.**
	12V Model	14.5	16.5
	24V Model	30	33
	48V Model	60	66
Internal surge voltage protection (IEC 61000-4-5)		Varistor	

1) Fuse not replaceable by user

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-35°C to +71°C
Derating (>61°C to +71°C)	2.5%/C
Ambient humidity	22 - 95% RH
Storage temperature	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2
Switching frequency Vi nom, Io nom	45-60 kHz
Isolation voltage	
Input/output	3,000/4,242 VAC/VDC
Input/FG	1,500/2,121 VAC/VDC
Output/FG	500/710 VAC/VDC

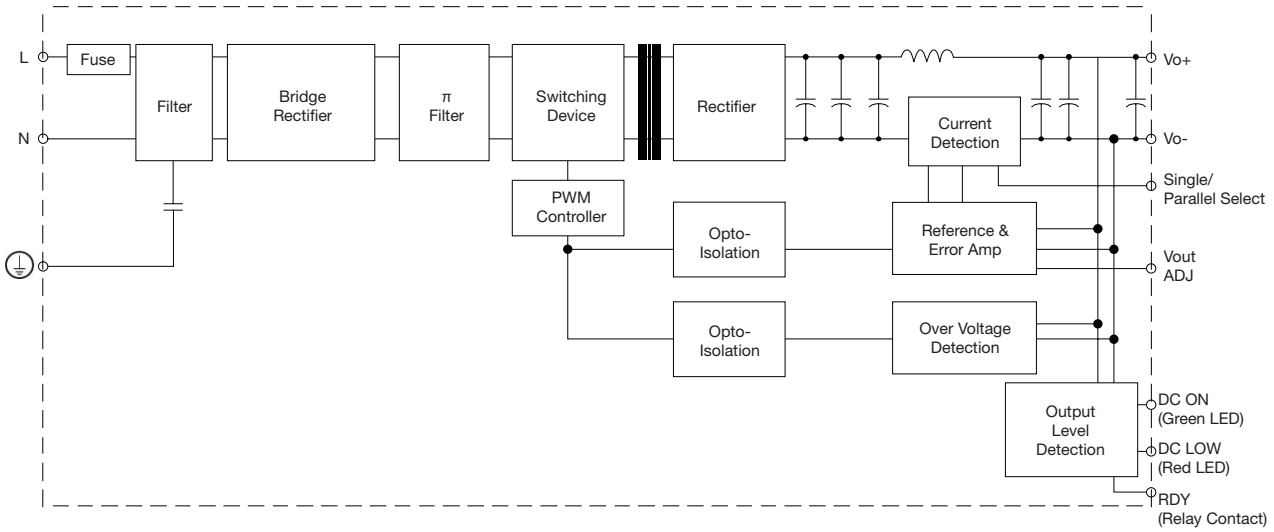
Isolation resistance	
input/output, @500VDC	100MΩ
Altitude during operation	5000m
Installation position	Vertical
MTB (Bellcore issue 6 @ 40°C, GB)	
	5V Model 498000 Hours
	12V Model 504000 Hours
	24V Model 520000 Hours
	48V Model 531000 Hours
Case material	Plastic: PC, UL94-V0
Dimensions LxWxD mm(inch)	90(3.6) x 54(2.13) x 114(4.49)
Weight	430 g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G,11ms, 3 Axis, 6 faces, 3 times for each face)
UL/cUL	UL508 listed, UL60950-1
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)
ISA	12.12.01 Class I Div 2 Groups A, B, C, D

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

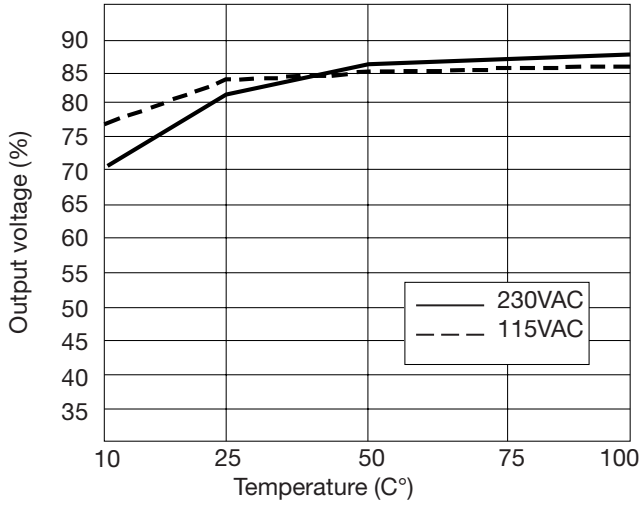
Block Diagram



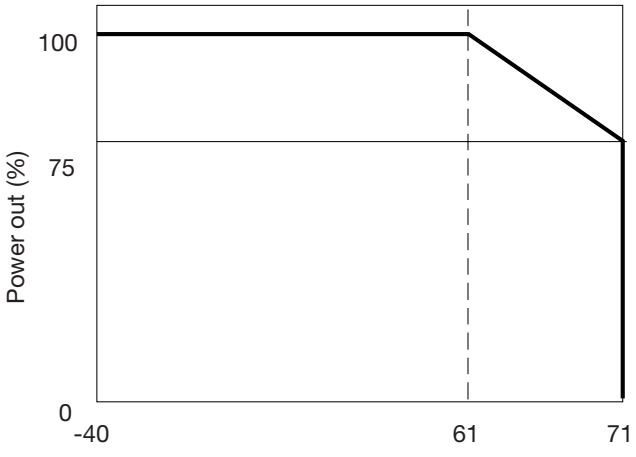
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	RDY	A normal open relay contact for DC ON level control
2		Never connect
3, 4	V+	Positive output terminal
5, 6	V-	Negative output terminal
7	⏚	Grounf this terminal to minimize high-frequency emissions
8	N	Input terminals (neutral conductor, no polarity at DC input)
9	L	Input terminals (phase conductor, no polarity at DC input)
	DC ON	Operation indicator LED
	DC LO	DC LOW voltage indicator LED
	Vout ADJ	Trimmer-potentiometer for Vout adjustment

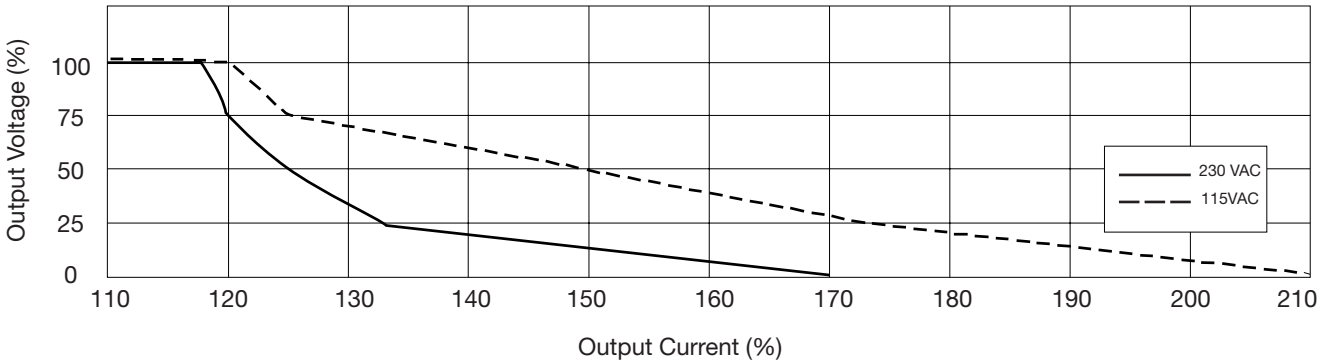
Typ. Efficiency Curve



Derating Diagram



Typ. Current Limited Curve

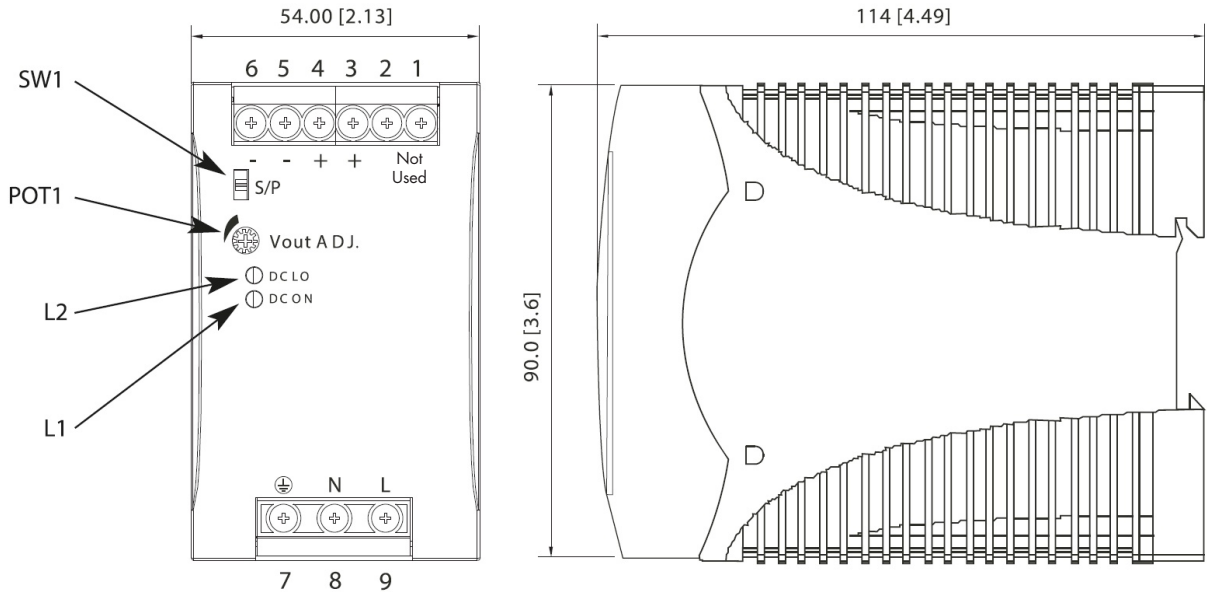


Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Connector size range	
Spring terminal	AWG24-14 (0.2~2mm²) flexible/solid cable, 10mm stripping at cable and recommends use copper conductors only, 60/75°C
Screw terminal	AWG26-12 (0.2~2.5mm²) flexible/solid cable, con nector can withstand torque at max 0,56Nm (5 lbs-in). 4~5 mm stripping at cable and recom mends use copper conductors monly, 60/75°C

Max. torque for terminal	
Input terminal	0.56Nm (5.0lb-in)
Output terminal	0.56Nm (5.0lb-in)
General tollerance mm(in.)	
0.00 (0.00) ÷ 30.00 (1.18)	±0.30 (0.01)
30.00 (1.18) ÷ 120.00 (4.72)	±0.50 (0.02)

Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 100W Bi-Phase DIN rail mounting

- Installation on DIN Rail 7.5 or 15mm
- Short circuit protection
- Input single phase 340 to 575VAC
- Passive PFC
- Power ready output on 24VDC
- LED indicator for DC power ON
- LED indicator for DC low
- Standard parallel function
- Very compact dimensions
- UL, cUL listed and TUV/CE approved

Product Description

This particular SPD is the most compact 100W power supply on the market. Relay output for "power ready" parallel function and PFC are included. Performances are unique with high efficiencies and the possibility of being used up to 70°C with a little derating. Furthermore it can be powered with 2 phases of a 3 phase grid system due to its high voltage input.

Ordering Key

SP D 24 100 2

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input type**

Input type: 2= single phase high voltage (bi-phase)

Approvals

Output Performances

Model	Rated output Voltage (VDC)	Output Power (W)	Output Current (A)	Voltage Trim Range 0.8 $I_{o\ nom}$		DC ON LED (VDC) Threshold at startup		DC LO LED (VDC) Threshold after startup		Typical Efficiency
				Min. VDC	Max. VDC	Min.	Max.	Min.	Max.	
SPD12100	12	100.8	8.4	11.4	14.5	10	11.2	10	11.2	86%
SPD24100	24	100.8	4.2	22.5	28.5	17.6	19.4	17.6	19.4	87%
SPD48100	48	100.8	2.1	47.0	56.0	37.0	43.0	37.0	43.0	89%

Output Data

Output voltage accuracy	-0 +1% max (factory adjusted)
Line regulation	± 1%
Load regulation	
Non parallel model	± 1%
Parallel model	± 5%
Temp. coefficient	± 0.03% / °C
Ripple and noise $V_{i\ nom}$, $I_{o\ nom}$, BW=20MHz	50mV
Rated continuous Loading	8.4A @ 12VDC / 6.9A @14.5VDC 4.2A @ 24VDC / 3.5A @ 28.5VDC 2.1A @ 48VDC / 1.8A @ 56VDC
Fall Time	150ms
Transient recovery time	
$V_{i\ nom}$, I_o= 0.5 x I_{nom}	2ms
Turn On Time	
$V_{i\ nom}$, $I_{o\ nom}$	1.0s
$V_{i\ nom}$, $I_{o\ nom}$ with Capacitor load	1.5s
Rise Time	
$V_{i\ nom}$, $I_{o\ nom}$	150ms
$V_{i\ nom}$, $I_{o\ nom}$ with Capacitor load	500ms
Capacitor Load	
12V, 24V versions	7000µF
48V version	3500µF
Reverse Voltage Immunity	
12V	18V
24V	35V
48V	63V
Hold up Time $V_{i\ nom}$ $I_{o\ max}$	20ms
Minimum load $V_{i\ nom}$	0%
Parallel Operation 0.1 $I_{o\ min}$~0.9 $I_{o\ max}$	2 units max.

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Input Data

Rated input voltage	400/500VAC
Voltage range	
AC in	340 - 575VAC
DC in	480 - 820VDC
Rated input current	0.48A / 0.75A
Power dissipation	
12V	15.0W
24V	13.0W
48V	10.5W

Frequency range	47 - 63Hz
Internal Voltage Surge Protection (acc. to IEC61000-4-5)	Varistor
Leakage Current	
Input / Output	0.25mA
Input / FG	3.5mA
Inrush current	10A
P.F.C.	0.55

Controls and Protections

Input Fuse	2A/600VAC internal[1)]
Output Short Circuit	current limit
Rated Overload Protection	115 - 135%
Over voltage protection (auto recovery)	
12V model	14.5V to 17.4V
24V model	30.0V to 33.0V
48V model	60.0V to 66.0V

Input Voltage Surge Protection	Varistor
Power ready (only SPD241002)	
Threshold at start up (contact closed)	Min. 17.6VDC - Max.19.4VDC
Contact rating at 60VDC	0.3A
Insulation	500VDC

[1)] Fuse not replaceable by user

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-25°C to 71°C
Derating (>61°C to +71°C)	2.5% / °C
Ambient humidity	20 to 95%RH
Storage	-25°C to +85°C
Pollution degree	2
Protection degree	IP20
Cooling	Free air convection
Switching frequency	45kHz

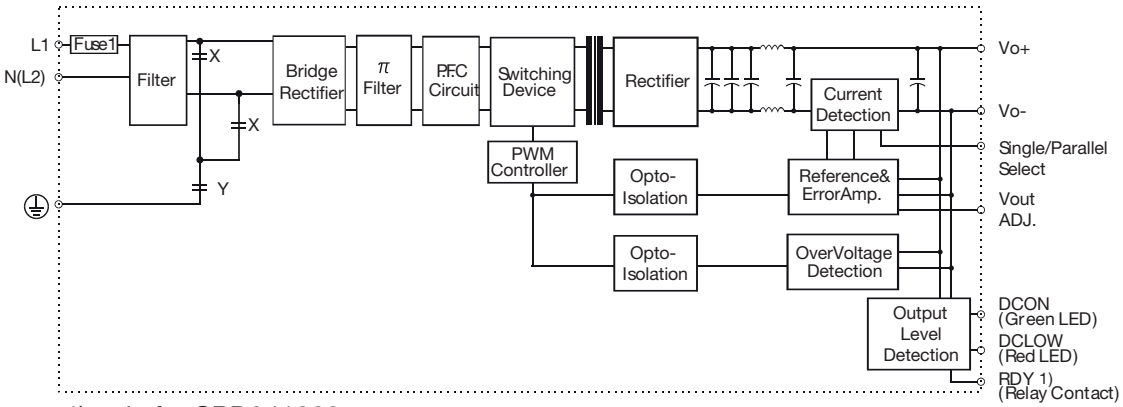
MTBF (Bellcore Issue 6@40°C), GB	
12V model	622.000h
24V model	661.000h
48V model	672.000h
Altitude during operation	3.000m
Case material	Plastic
Dimensions L x W x D	90 x 54 x 114mm
Weight	500g

Approvals and EMC

Insulation voltage	
Input / Output	3.000VAC / 4242VDC
Input / FG	1500VAC / 2121VDC
Insulation resistance	100MΩ min
Shock resistance	acc. to IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)
Vibration resistance	acc. to IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
UL / cUL	UL 508 Listed UL 60950-1
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (acc.to EN 60204)

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4 EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11 ENV 50204 Level 2, EN 61204-3

Block Diagrams



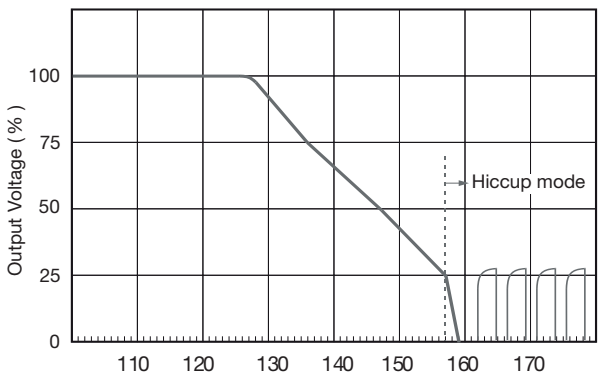
1) only for SPD241002

Pin Assignment and Front Controls

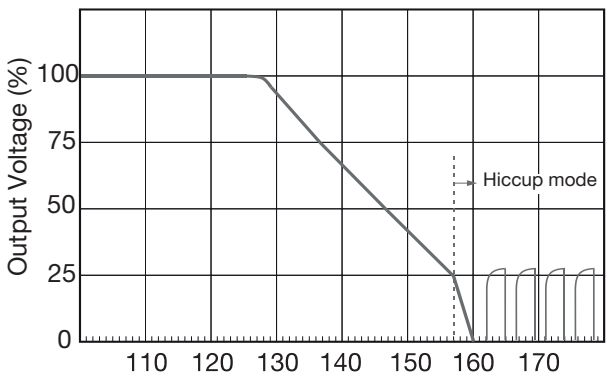
Pin No.	Designation	Description
1	**RDY**	NO relay contact for DC OK (only SPD241002)
2	**RDY**	NO relay contact for DC OK (only SPD241002)
3	**V+**	Positive output terminal
4	**V+**	Positive output terminal
5	**V-**	Negative output terminal
6	**V-**	Negative output terminal
7	**GND**	Ground terminal to minimise High frequency emissions
8	**N or L2**	Neutral or phase 2 (no polarity with DC input)
9	**L1**	Phase 1 (no polarity with DC input)
L1	**DC ON**	DC output ready LED
L2	**DC LO**	DC low indicator LED
POT1	**Vout ADJ.**	Trimmer for fine output voltage adjustment
SW1	**S/P**	Single / Parallel select switch

Typ. Current Limited Curve

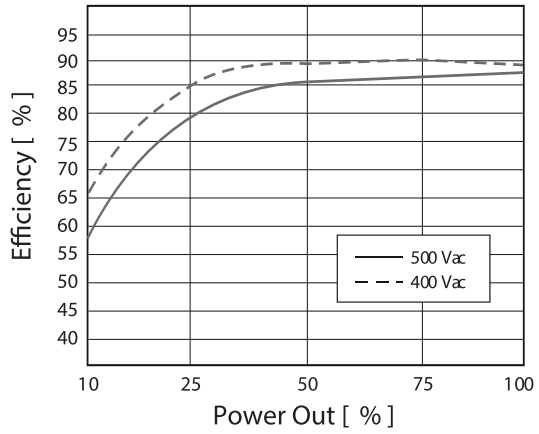
SPD241002 / 400VAC



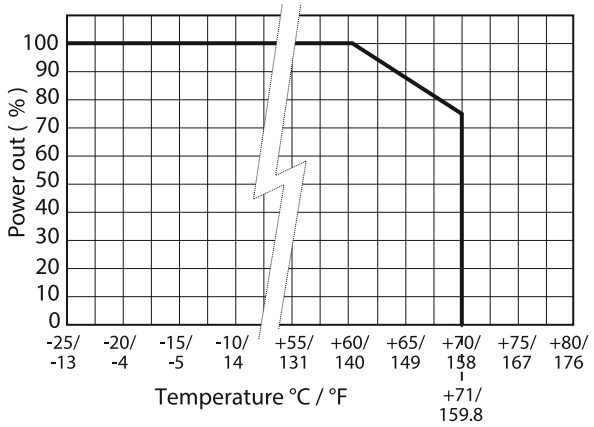
SPD241002 / 500VAC



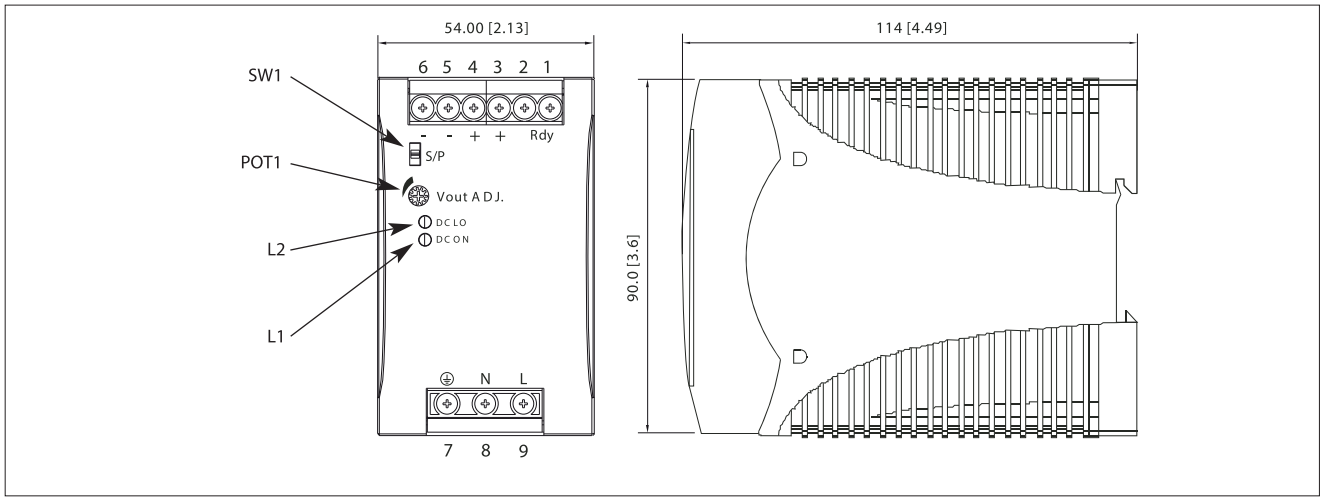
Typ. Efficiency Curve



Derating Diagram



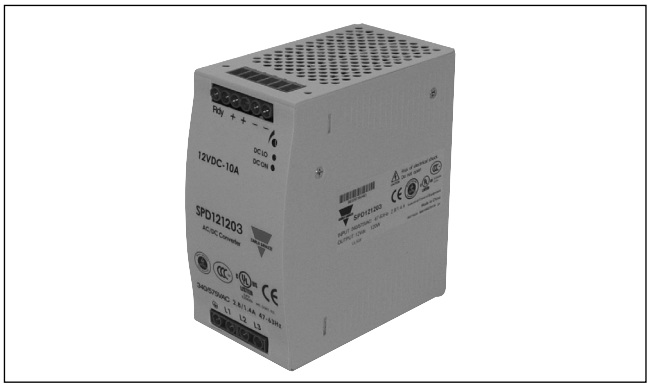
Mechanical Drawings mm (inches)



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw terminals cable 8mm stripping recommend	10-24AWG flexible or solid
Max. torque for screws terminals Input terminals Output terminals	 1.008Nm (9.0lb-in) 0.616Nm (5.5lb-in)
Plug-in connectors cable 7mm stripping recommend	10-24AWG flexible or solid
Max. torque for plug-in terminals Input terminals Output terminals	 0.784Nm (7.0lb-in) 0.784Nm (7.0lb-in)
Recommended circuit breaker	3A / 5A / 6A B, D characteristics

Switching Power Supply
Type SPD 120W 3 phases
DIN rail mounting



- **Universal AC 3 phases input full range**
- **Can also be used as single phase 480VAC**
- **Installation on DIN rail 7.5 or 15mm**
- **PFC as standard**
- **High efficiency up to 88%**
- **Power ready output**
- **Compact dimensions**
- **UL, cUL listed and TUV/CE**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Approvals

Ordering Key

SP D 24 120 3

Model
Mounting (D= Din rail)
Output voltage
Output power
Input Type

Input type: 3 = three phase
(or single phase 400/500VAC[3])

Output performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD12	3ø 340~575 VAC	120 WATTS	+ 12 VDC	10 A	85%	87%
SPD24	3ø 340~575 VAC	120 WATTS	+ 24 VDC	5 A	87%	89%

Output data

Line regulation	± 1%
Load regulation	± 1%
Minimum load	0
Turn on time (full resistive load) **Vi nom, Io nom**	150ms
Vi nom, Io nom **12v model** with 7000µF **CAP**	500ms
Vi nom, Io nom **24v model** with 3500µF **CAP**	500ms
Transient recovery time	2ms
Ripple and noise	100mVpp
Output voltage accuracy	± 1%
Temperature coefficient	± 0.03%/°C
Hold up time	20ms

Voltage fall time (I_0nom)	150ms max
Rated continuous loading	
12V Model	10A @ 12VDC/8.2A @ 14.5VDC
24V Model	5A @ 24VDC/4.2A @ 28.5VDC
Reverse voltage	
12V Model	18VDC
24V Model	35VDC
Capacitor load	
Vi nom Io nom 12V model	7000µF
Vi nom Io nom 24V model	3500µF
Voltage rise time	
Vi nom Io nom **Vi nom, Io nom**	150ms
12v model with 7000µF **CAP** **Vi nom, Io nom**	500ms
24v model with 3500µF **CAP**	500ms

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Input data

Rated input voltage	400 - 500VAC
Voltage range	
AC	340 - 575VAC
DC	480 - 820VDC
Rated input current	
(Vi : 400VAC, Io nom) **Typ.**	0.36A
Max.	0.5A
Inrush current	
Vi nom, Io nom	10A

Power dissipation	
12V Model	20W
24V Model	16W
Frequency range	47- 63Hz
Leakage current	
Input-Output	0.25mA
Input-FG	3.5mA

Controls and Protections

Overload	115-135%
Input fuse	T2A/600VAC internal[1)]
Output short circuit	Hiccup mode
Power ready output	
(only 24V model) **On threshold**	≥17.6 -19.4VDC
Elettrical isolation	500VDC
Contact rating at 60vdc	0.3A

[1)] Fuse not replaceable by user

	VDC	
Over voltage protection	**Min.**	**Max.**
12V Model	14.5	17.4
24V Model	30	33
Internal surge voltage protection (IEC 61000-4-5)	Varistor	

General data (@ nominal line, full load, 25°C)

Ambient temperature	-35°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 90%RH
Storage	-25°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2

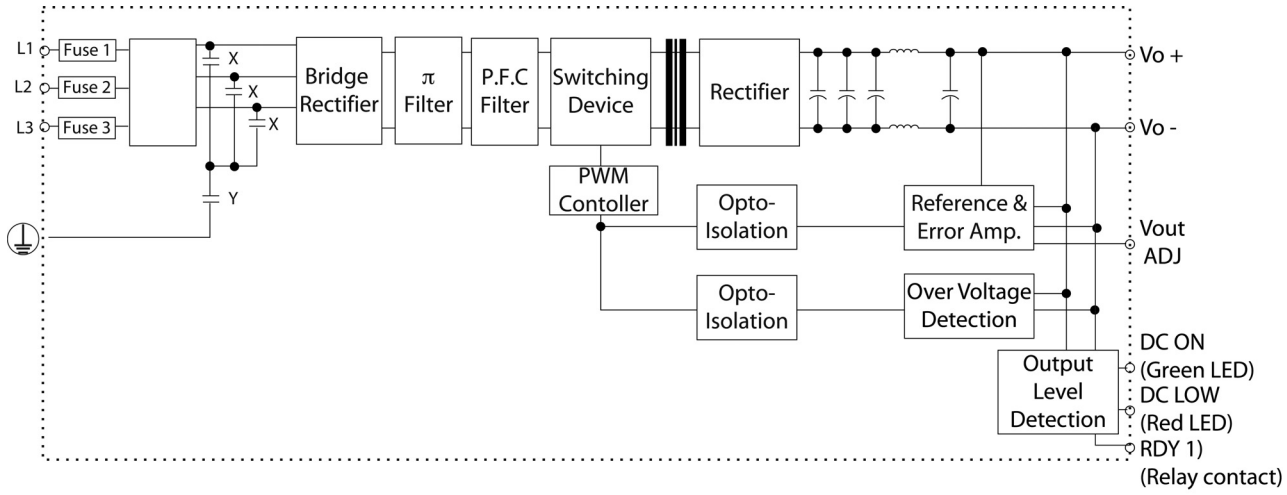
MTBF (Bellcore issue 6 @ 40°C, GB)	
12V Model	527000 Hours
24V Model	559000 Hours
Case material	Metal
Dimensions LxWxD mm(inch)	124(4.88) x 74.3(2.92) x 118.8(4.68)
Weight	800g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)

CCC	GB4943, GB9254, GB17625.1
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

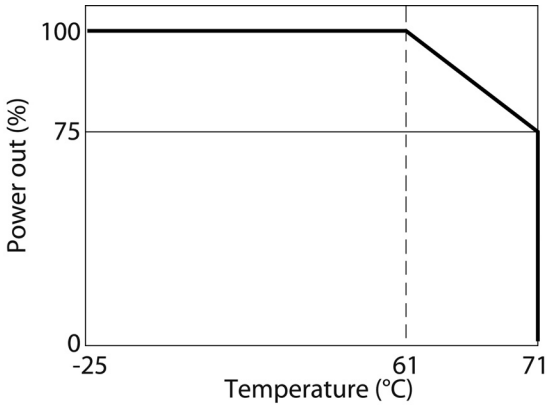
Block diagrams



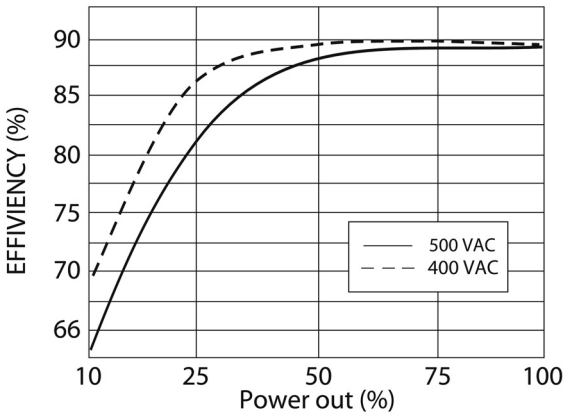
Pin Assignement and Front Controls

Pin No.	Designation	Description
1, 2	V-	Negative output terminal
3, 4	V+	Positive output terminal
5	RDY	A normal open relay contact for DC ON level control
6	RDY	(Never connect except 24V model)
7	⏚	Ground this terminal to minimize high-frequency emissions
8	L1	Input terminals
9	L2	Input terminals
10	L3	Input terminals
	DC ON	Operation indicator LED
	DC LO	DC LOW voltage indicator LED
	Vout ADj	Trimmer-potentiometer for Vout adjustment

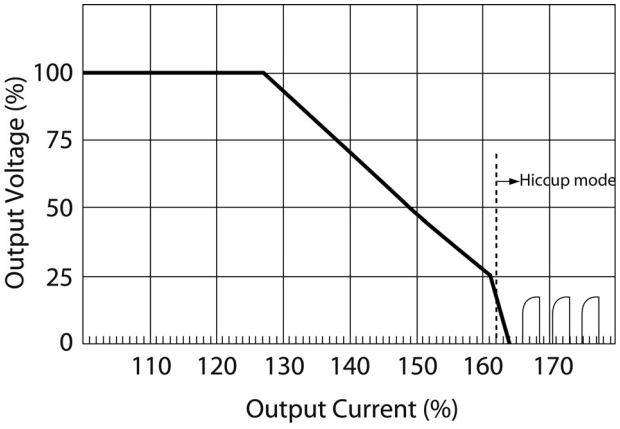
Derating Diagram

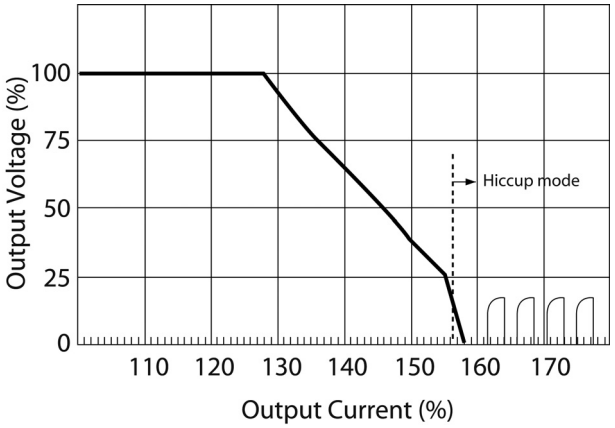


Typ. Efficiency Curve

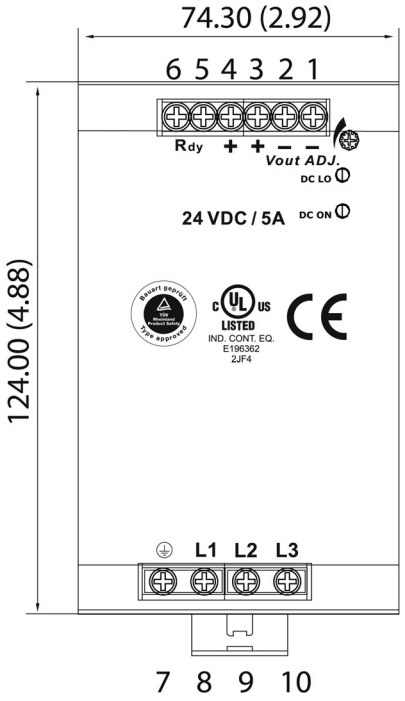


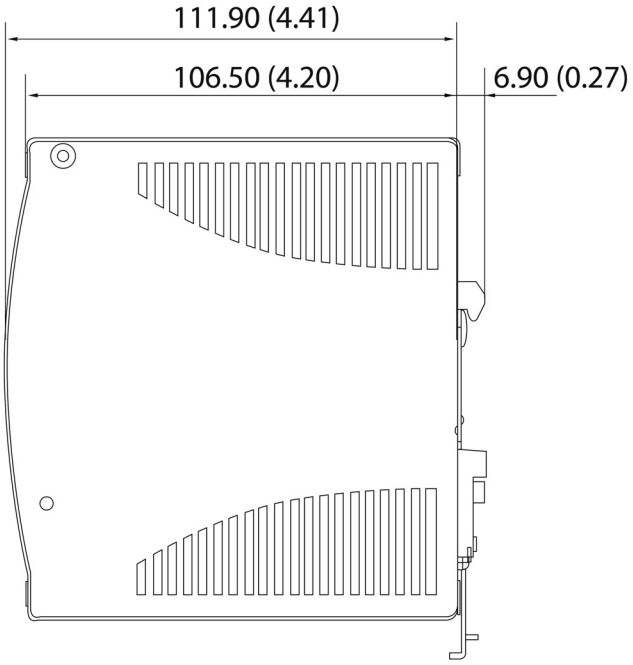
Typ. Current Limited Curve





Mechanical Drawings mm/inches





Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw connections	10-24AWG flexible or solid cable 8mm stripping recommend
Max. torque for screws terminals	
Input terminals	1.008Nm (9.0lb-in)
Output terminals	0.616Nm (5.5lb-in)

Switching Power Supply Type SPD 120W New DIN rail mounting

- Installation on DIN Rail 7.5 or 15mm
- Short circuit protection
- PFC standard
- High efficiency
- Power ready output
- LED indicator for DC power ON
- LED indicator for DC low
- Parallel versions standard
- Compact dimensions
- UL, cUL listed and TUV/CE approved

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must. Then version features PFC and parallel function as standard.

Ordering Key

SP D 24 120 1 B N

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input type**
- **Optional features**
- **New Type**

Input type: 1= single phase

Approvals

Optional Features

Description	Code
Standard screw terminal	Nil
Plug-in connectors	B

Output performances

Model	Rated output Voltage (VDC)	Output Power (W)	Output Current (A)	Voltage Trim Range		DC ON LED (VDC)Thereshold at startup		DC LO LED (VDC) Thereshold after startup		Typical Efficiency
				Min. VDC	Max. VDC	Min.	Max.	Min.	Max.	
SPD12120	12	120	10	11.4	14.5	10	11.2	10	11.2	84%
SPD24120	24	120	5	22.5	28.5	17.6	19.4	17.6	19.4	86%
SPD48120	48	120	2.5	45.0	55.0	37.0	43.0	37.0	43.0	87%

Output data

Output voltage accuracy	- 0 +1% max (factory adjusted)
Line regulation	± 0.5%
Load regulation Non parallel model Parallel model	 ± 1% ± 5%
Temp. coefficient	± 0.3% / °C
Transient recovery time	300µs
Ripple and noise	50mVpp
Hold up Time Vi = 115VAC **Hold up time Vi = 230VAC**	25ms 30ms
Minimum load	0%
Parallel Operation	3 units max.

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Input data

Rated input voltage	115/230 autoselect	**Frequency range**	47- 63 Hz
Voltage range		**Inrush current**	
AC in, 115	90 - 132VAC	Vi= 115VAC	24A
AC in, 230	186 - 264VAC	Vi= 230VAC	48A
DC in	210 - 370VDC	**P.F.C.**	0.7
Rated input current	2.8 / 1.4A		

Controls and Protections

Input Fuse	T3.15/250VAC internal[1)]	**Power ready** (only SPD 24)	
Overvoltage Protection	125 – 145%	Threshold at start up	17.6 - 19.4
Output Short Circuit	Current limited	(contact closed)	
Rated Overload Protection	110 - 145%	Contact rating at 60VDC	0.3A
		Insulation	500VDC

[1)] Fuse not replaceable by user

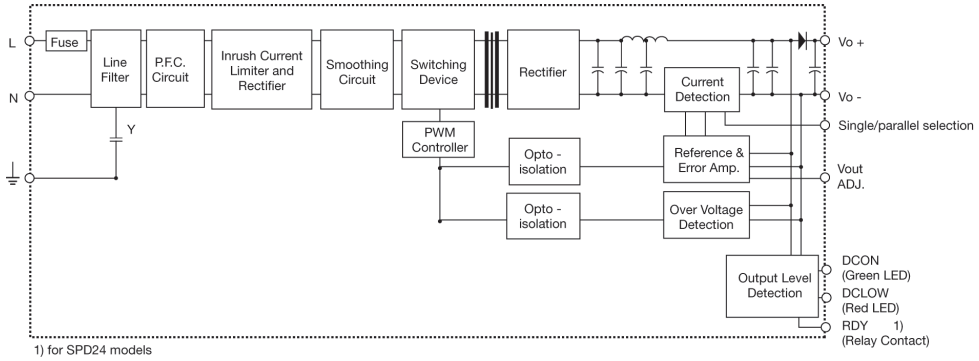
General data (@ nominal line, full load, 25°C)

Ambient temperature	-35°C to 71°C	**Switching frequency**	80kHz
Derating (>60°C to +71°C)	2.5% / °C	**MTBF (MIL-HDBK-217F)**	480.000h
Ambient humidity	20 to 95%RH	**Case material**	Metal (powder painted aluminium)
Storage	-35°C to +85°C	**Dimensions L x W x D**	125 x 63.5 x 126
Protection degree	IP20	**Weight**	920g
Cooling	Free air convection		

Approvals and EMC

Insulation voltage I / O	3.000VAC min	**CE**	EN50081-1 EN55022 class B EN61000-3-2 EN61000-3-3 EN61000-6-2 EN61000-6-3 EN55024
Insulation resistance	100MΩ min		
UL / cUL	UL508 listed, UL60950-1 Recognized		
TUV	EN60950-1		

Block diagrams



1) for SPD24 models

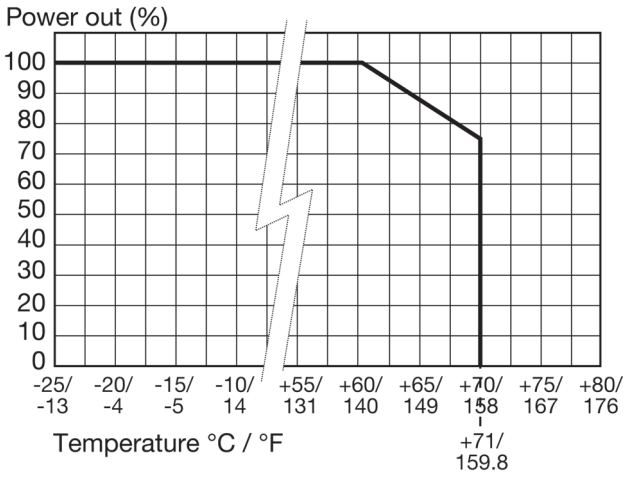
Pin assignement and front controls

Pin No.	Designation	Description
1	**RDY**	DC OK, relay normally open contact
2	**RDY**	DC OK, relay normally open contact
3	**+**	Positive output terminal
4	**+**	Positive output terminal
5	**-**	Negative output terminal
6	**-**	Ground terminal to minimise High frequency emissions
7	**GND**	Negative output terminal
8	**L**	Phase input (no polarity with DC input)
9	**N**	Neutral input (no polarity with DC input)
	DC ON	DC output ready LED
	DC LO	DC low indicator LED
	Vout ADJ.	Trimmer for fine output voltage adjustment
	S/P	Single/parallel selection switch

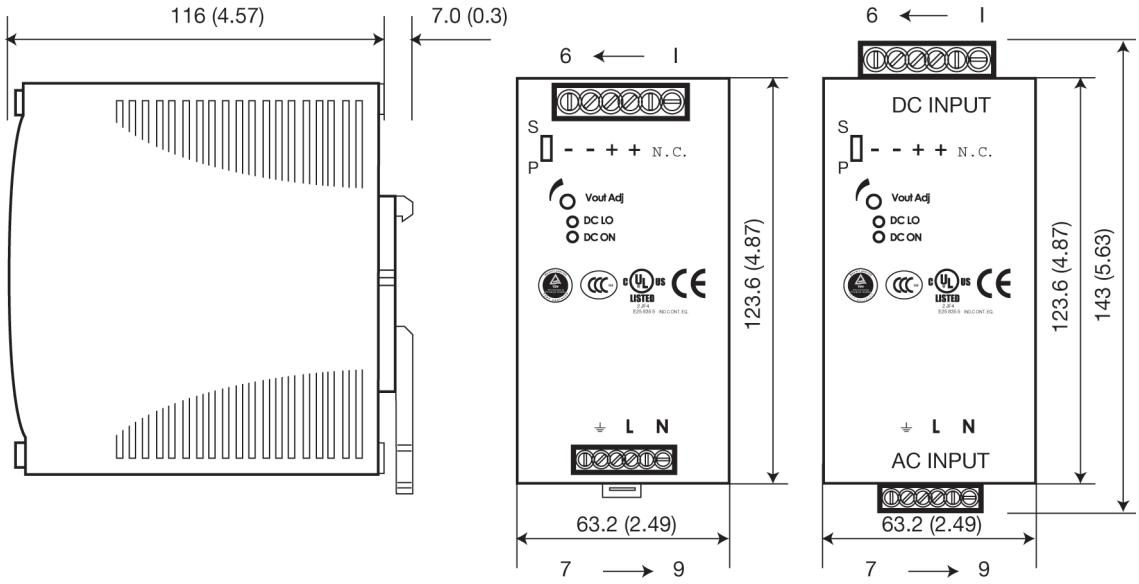
Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw terminals	10-24AWG flexible or solid cable 8mm stripping recommend
Max. torque for screws terminals Input terminals Output terminals	 1.008Nm (9.0lb-in) 0.616Nm (5.5lb-in)
Plug-in connectors	10-24AWG flexible or solid cable 7mm stripping recommend
Max. torque for plug-in terminals Input terminals Output terminals	 0.784Nm (7.0lb-in) 0.784Nm (7.0lb-in)

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 240W Compact DIN rail mounting

- Universal AC input full range
- Installation on DIN rail 7.5 or 15mm
- Short circuit protection
- Active PFC as standard
- High efficiency up to 93%
- Power ready output
- LED indicator for DC power ON
- LED indicator for DC low
- Parallel connection feature
- Compact dimensions
- UL, cUL listed and TUV/CE approved
- 150% peak load capability

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 240 1C X

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input type**
- **Optional features**

Input type: 1C = single phase Compact version

Approvals

Optional features

Description	Code
Screw terminal	Nil
Plug-in connectors	B

Output Performance

MODEL NO.	INPUT VOLTAGE	OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD 12 240 1C X	88~264 VAC	192 WATTS	+12 VDC	16A	89%	91%
SPD 24 240 1C X	88~264 VAC	240 WATTS	+ 24 VDC	10A	91%	93%

Output Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

Line regulation	± 1%
Load regulation	±1%
Minimum load	0%
Turn on time **Vi nom, Io nom**	1000ms (full resistive load) 1500ms with **7000**µF CAP
Transient recovery time	2ms
Ripple and noise	100mVpp
Output voltage accuracy	0% ~ +1%
Hold up time **Vi= 115VAC** **Vi= 230VAC**	25ms 30ms
Voltage fall time (I_0nom, Vi nom)	150ms
Voltage rise time **Vi nom, Io nom**	150ms (full resistive load) 500ms with **7000**µF CAP
Voltage trim range **12V Model** **24V Model**	 11.4-14.5 VDC 22.5-28.5 VDC
Rated continuous loading **12V Model** **24V Model**	 16A@12VDC/13A@14.5VDC 10A@24VDC/8.4A@28.5VDC

Reverse voltage		
12V Model	18VDC	
24V Model	35VDC	
Capacitor load	7000µF	
Temperature coefficient	±0.03°C	
DC ON indicator threshold at start up (Green LED)	**VDC**	
	Min.	**Max.**
Vi nom, Io nom 12V Model	10	11.2
24V Model	17.6	19.4
DC LOW indicator threshold at start up (Red LED)	**VDC**	
	Min.	**Max.**
Vi nom, Io nom 12V Model	10	11.2
24V Model	17.6	19.4
Parallel operation	0.1 Io min~0.9 Io max For parallel operation, turn the Switch S/P Single/Parallel to the position "P" in advance. Max 3 units and power out 90%	

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Input Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

Rated input voltage Inom	100 - 240VAC
Voltage range	
AC IN	88 - 264VAC
DC IN	120 - 375VDC
Rated input current	
Vi: 88VAC Io nom	3.2A Max.
Vi: 115VAC Io nom	2.3A Typ.
Vi: 230VAC Io nom	1.15A Typ.
Inrush current	
Vi= 115VAC	24A
Vi= 230VAC	48A

Power dissipation		
(Vi : 230VAC, Io nom)	**12V Model**	19W
	24V Model	18W
Frequency range		47- 63Hz
Leakage current		
	Input-Output	<0.25mA
	Input-FG	<3.5mA
P.F.C. (Active)		0.97@Vi:230VAC, Io nom

Controls and Protections (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

Overload Vi nom (see typ current limited curve)	120% - 150%
Input fuse	T5A/250VAC internal[1)]
Output short circuit	Shut-down protection, after 7s auto-restart
Over voltage protection (Auto recovery)	VDC
	Min. / **Max.**
12V Model	15 / 16.5
24V Model	30 / 33
Internal surge voltage protection IEC 61000-4-5	Varistor

[1)] Fuse not replaceable by user

Power RDY (for 24V model only)	Threshold voltage of contact closed (at start up) 17.6 - 19.4VDC
Electrical isolation	500VDC
Over temperature Detect on heat sink, shut down O/P voltage, recovers automatically after temperature goes down	100 - 110°C
Rated over load protection Vi nom (see typ current limited curve)	120 - 150%

General Data (All specifications are at nominal values, full load, 25°C unless otherwise noticed)

Ambient temperature	-40°C to + 71°C
Derating (+61°C to + 71°C)	2.5%/°C (see curve)
Relative humidity	20 ~ 95%RH
Storage temperature	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Insulation voltage	
Input-Output	3000VAC/4242VD min
Input-Fg	1500VAC/2121VD min
Insulation resistance I/O	100MΩ min (@ 500VDC)
Switching Frequency	90 Khz Typ

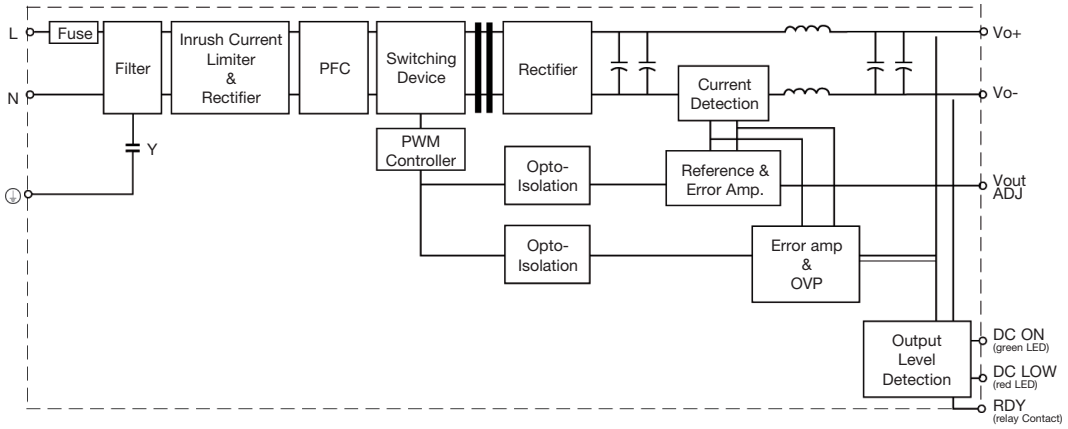
Pollution degree	2
MTBF (Bellcore issue 6 @ 40°C, GB)	
12V Model	374000 Hours
24V Model	384000 Hours
Case material	Metal
Altitude	4850m
Dimensions LxWxD mm(inch)	
Screw terminal type	124.5(4.9)x64(2.52)x123.6(4.87)
Detachable connector type	143.5(5.65)x64(2.52)x123.6(4.87)
Weight	860g
Packing	960g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: Random wave, 10-500 Hz, 2G each long Z, Y, Z axes 10 min/cycle, 60min.)
Shock resistance	meet IEC 60068-2-27 (4G, 22ms, 3 Axis, 6 faces, 3 times for each face)
UL/cUL	UL 508 Listed UL 60950-1 Recognized
TUV	EN 60950-1 EN 21558-1 EN 6155-8-2-16

CE	EN 61000-6-3, EN 55037 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 level 4, EN 61000-4-3 level 3 EN 61000-4-4 level 4 EN 61000-4-5 L-N level 3 EN 61000-4-6 level 3 EN 61000-4-8 level 4 EN 61000-4-11, ENV 50204 Level 2

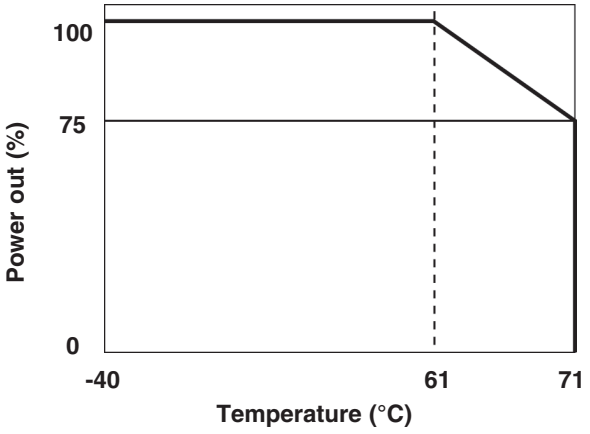
Block Diagram



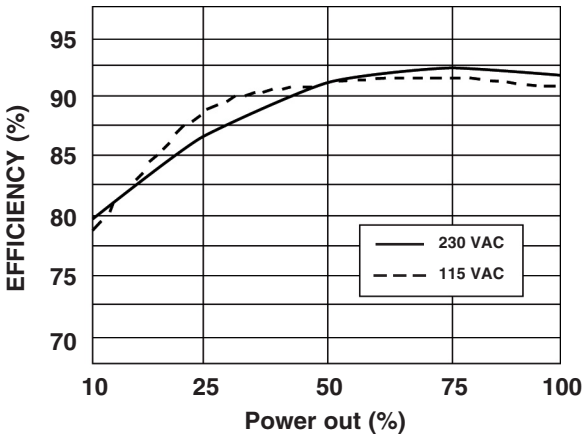
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	RDY	A normal open relay contact for DC ON level control Never connect except 24V model
2		
3. 4	V+	Positive output terminal
5. 6	V-	Negative output terminal
7	⏚	Ground this terminal to minimize high-frequency emissions
8	N	Input terminals (neutral conductor, no polarity at DC input)
9	L	**Input terminal (phase conductor, no polarity at DC input)**
LED	**DC ON**	**Operation indicator LED**
LED	**DC LO**	**DC LOW voltage indicator LED**
Trimmer	**Vout ADJ.**	**Trimmer-potentiometer for Vout adjustment**
Switch	**S/P**	**Single / Parallel select switch**

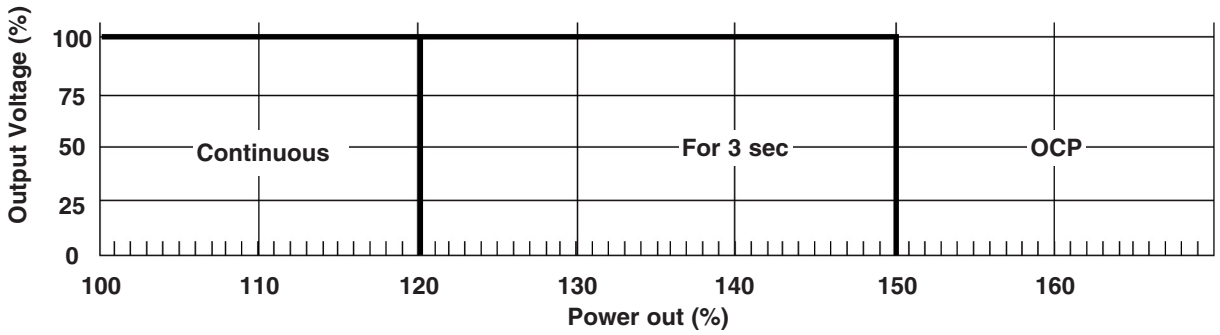
Derating Curve



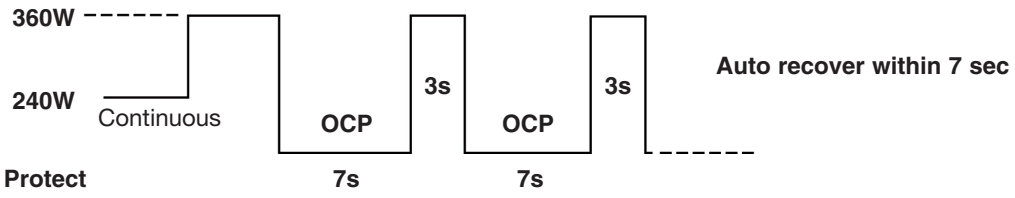
Typ. Efficiency curve



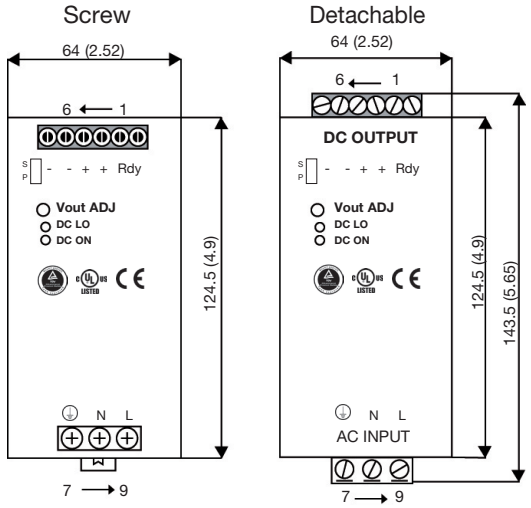
Typ. Current Limited Curve

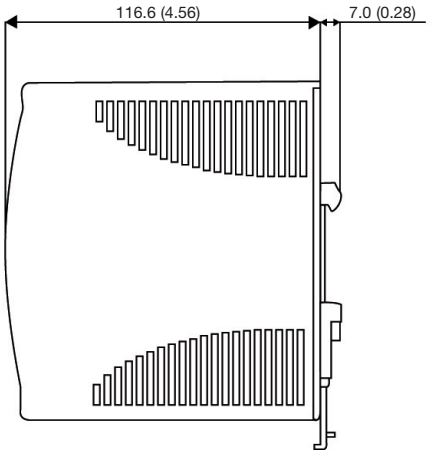


Peak Loading



Mechanical Drawings mm (inches)

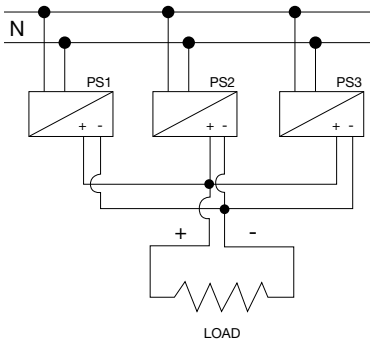




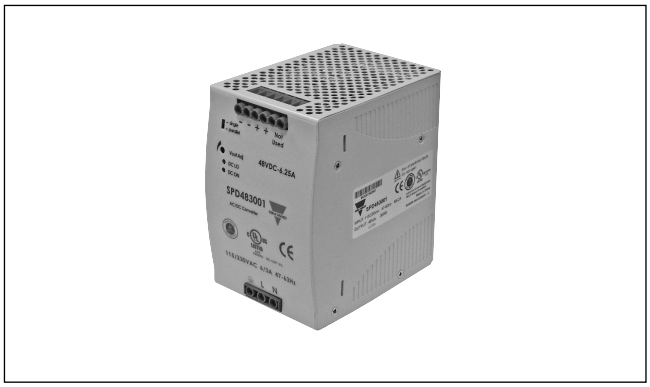
Installation

Ventilation and cooling	Normal convection. All sides 25mm free space for cooling is recommended
Connector size range **Screw terminals:**	
- Input Terminals	AWG24-10 (0.2~4mm²) flexible / solid cable, max. torque at 1.16Nm (9 pound-inches).
- Output Terminals	max. torque at 0.616Nm (5.5 pound-inches). 8mm stripping at cable end recommends.
Detachable connectors:	AWG24-12 (0.2~2.5 mm²) flexible / solid cable,
- Input Terminals	max. torque at 0.51 Nm (4.5 pound-inches).
- Output Terminals	max. torque at 0.79 Nm (7 pound-inches). 4~5mm stripping at cable end recommends. Use copper conductors only, 60/75°C.

Parallel Connection



Switching Power Supply
Type SPD 300W
DIN rail mounting



- **Installation on DIN Rail 7.5 or 15mm**
- **Short circuit protection**
- **Passive PFC**
- **Power ready relay output on 24VDC**
- **LED indicator for DC power ON**
- **LED indicator for DC low**
- **Parallel function by switch**
- **Very compact dimensions**
- **UL, cUL listed and TUV/CE approved**
- **Ex Class I division 2 certification**
- **Selv design**

Product Description

This SPD is the most compact 300W power supply on the market. Relay output for "power ready" parallel function and PFC are included. Performances are unique with high efficiencies and the possibility of being used up to 70°C with a little derating. Thanks to the Class I Div 2 design is suitable for installation in potentially explosive environments.

Ordering Key

SP D 24 300 1 B

- **Model**
- **Mounting (D= Din rail)**
- **Output voltage**
- **Output power**
- **Input type**
- **Connection**

Input type: 1= single phase
Connection: Nil= screw terminals
B= Detachable connectors

Approvals

Output performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD24300	115~230 VAC	300 WATTS	+ 24 VDC	12.5 A	87%	89%
SPD48300	115~230 VAC	300 WATTS	+ 48 VDC	6.25 A	88%	90%

Output data

Line regulation	± 0.5%
Load regulation	± 1%
Minimum load	
Single mode	± 1%
Parallel mode	± 5%
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with 7000µF **CAP**	1500ms
Transient recovery time	2ms
Ripple and noise	100mVpp
Output voltage accuracy	± 1%
Temperature coefficient	± 0.03%/°C

Hold up time Vi115/230 VAC	25/30 ms
Voltage fall time (I_0nom)	150ms max
Rated continuous loading	
24V Model	12.5A @ 24VDC/10.5A @ 28.5VDC
48V Model	6.25A @ 48VDC/5.35A @ 56VDC
Reverse voltage	
24V Model	35VDC
48V Model	63VDC
Capacitor load	
Vi nom Io nom	7000µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom **12v model** with 7000µF **CAP**	500ms

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Input data

Rated input voltage	115 - 230VAC
Voltage range	
AC in 115V selected	90 - 132VAC
AC in 230V selected	180 - 264VAC
DC in	210 - 375VDC
Rated input current	
(Vi : 90/180VAC, Io nom) **Typ.**	6.0A
Max.	3.0A
Inrush current	
Vi= 115/230VAC	35 - 65A

Power dissipation	
24V Model	42W
48V Model	40W
Frequency range	47- 63Hz
Leakage current	
Input-Output	0.25mA
Input-FG	3.5mA

Controls and Protections

Overload	120-145%
Input fuse	T8A/250VAC internal[1)]
Output short circuit	Fold forward
Power ready output	
(only 24V model) **On threshold**	≥17.6 -19.4VDC
Elettrical isolation	500VDC
Contact rating at 60vdc	0.3A

[1)] Fuse not replaceable by user

Over voltage protection	125 - 140%
Internal surge voltage protection (IEC 61000-4-5)	Varistor

General data (@ nominal line, full load, 25°C)

Ambient temperature	-30°C to 71°C
Derating (>56°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 90%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2

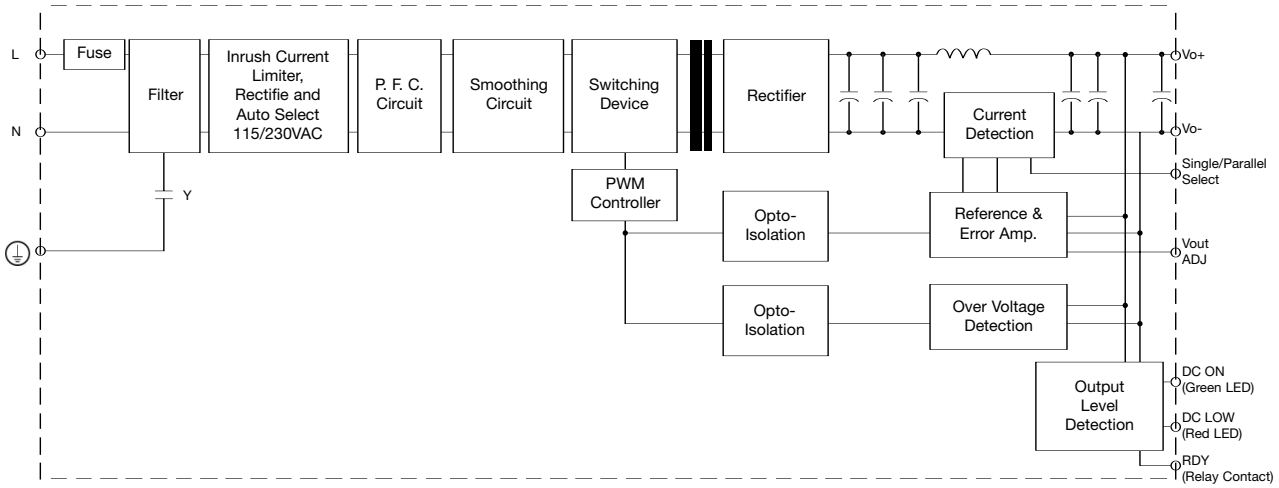
MTBF (Bellcore issue 6 @ 40°C, GB)	
24V Model	415000 Hours
48V Model	431000 Hours
Case material	Metal
Dimensions LxWxD mm(inch)	124(4.88) x 83.5(3.29) x 123.6(4.87)
Weight	1400g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2 Class D, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

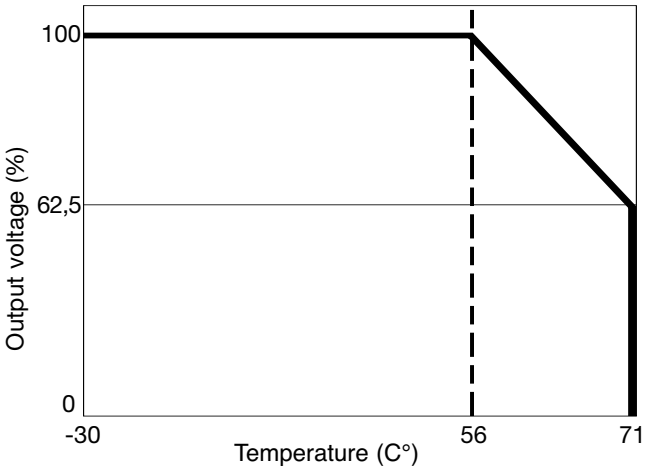
Block Diagrams



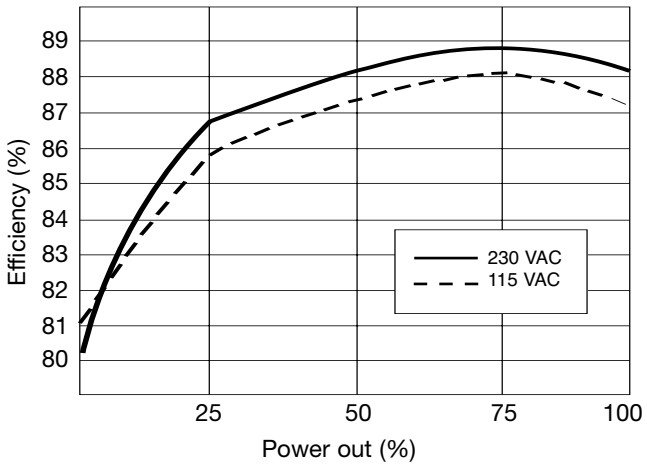
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**RDY**	A normal open relay contact for DC ON level control
2		(Never connect except 24V model)
3, 4	**V+**	Positive output terminal
5, 6	**V-**	Negative output terminal
7	⏚	Ground this terminal to minimize high-frequency emissions
8	**L**	Input terminals (phase conductor, no polarity at DC input)
9	**N**	Input terminals (neutral conductor, no polarity at DC input)
	DC ON	Operation indicator LED
	DC LO	DC LOW voltage indicator LED
	Vout ADj	Trimmer-potentiometer for Vout adjustment
	S/P	Single / Parallel select switch

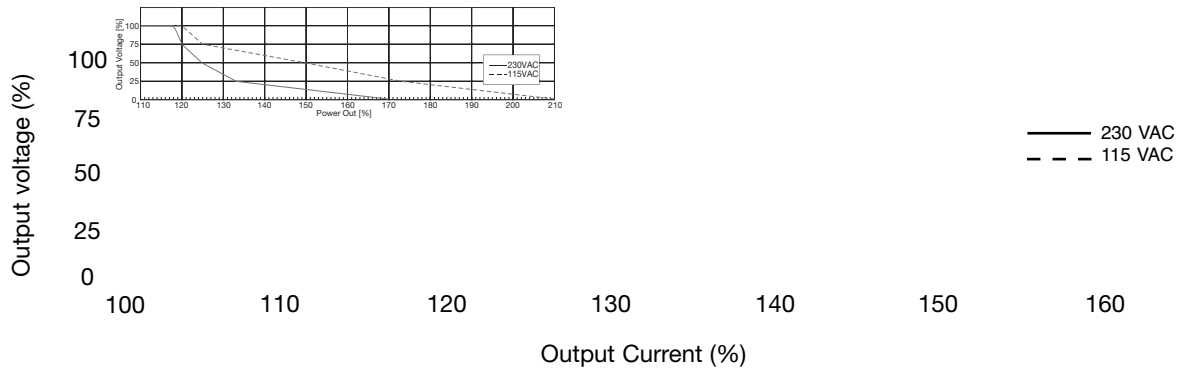
Derating Diagram



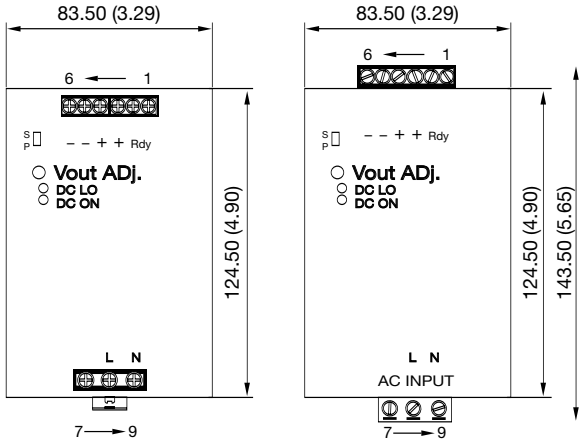
Typ. Efficiency Curve

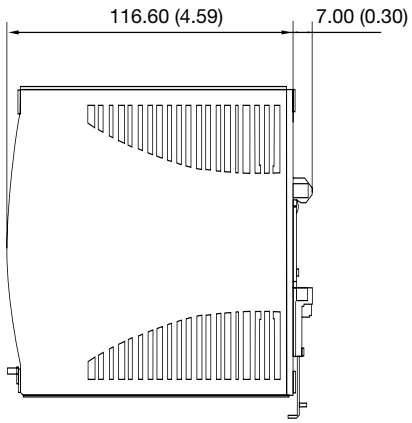


Typ. Current Limited Curve



Mechanical Drawings mm (inches)





Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw terminals	10-24AWG flexible or solid cable 8mm stripping recommend
Max. torque for screws terminals	
Input terminals	1.008Nm (9.0lb-in)
Output terminals	0.616Nm (5.5lb-in)
Max. torque for detachable connections	
Input terminals	1.008Nm (9.0lb-in)
Output terminals	0.616Nm (5.5lb-in)
Plug-in connectors	10-24AWG flexible or solid cable 7mm stripping recommend
Max. torque for plug-in terminals	
Input terminals	0.784Nm (7.0lb-in)
Output terminals	0.784Nm (7.0lb-in)
Recommended circuit breaker	15A / 16A B, D characteristics

Switching Power Supply
Type PSS 480W
DIN rail mounting

- **Universal AC single phase input full range**
- **Can also be used as bi-phase 400VAC**
- **Installation on DIN rail 7.5 or 15mm**
- **PFC as standard**
- **High efficiency up to 90%**
- **Power ready output**
- **Parallel connection feature**
- **Compact dimensions**
- **CE, TÜV, CCC approved and cULus listed**
- **Class I Div 2 Groups A, B, C, D approved**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 480 1 B

- **Model**
- **Mounting (D = Din rail)**
- **Output voltage**
- **Output power**
- **Input type**
- **Optional features**

Input type: 1= single phase

Approvals

Optional Features

Description	Code
Plug-in connectors	**B**

Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD24	90~264 VAC	480 WATTS	+ 24 VDC	20 A	86%	89%
SPD48	90~264 VAC	480 WATTS	+ 48 VDC	10 A	87%	90%

[1] When S/P switch is set to parallel, it is not possible to trim output voltage.

Output Data

Line regulation	± 0.5%
Load regulation	
Non parallel model	±1%
Parallel model	±5%
Minimum load	0A
Turn on time (full resistive load)	
Vl nom, Io nom	1000ms
Vl nom, Io nom with 7000 µF CAP	1500ms
Transient recovery time	2ms
Ripple and noise	100mVpp
Output voltage accuracy	±1%
Temperature coefficient	±0.03%/°C

Hold up time	
Vi= 115VAC	25ms
Vi=230VAC	30ms
Voltage fall time (I_o**nom Vi nom**)	150ms max
Rated continuous loading	
24V Model	20A @ 24VDC/16.8A @ 28.5VDC
48V Model	2.1A @ 48VDC/8.5A @ 56VDC
Reverse voltage	
24V Model	VDC 35
48V Model	VDC 63
Capacitor load	7000µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom with 7000µF CAP	500ms

Switching Power Supply
Type SPD 480W
DIN rail mounting

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Input Data

Rated input voltage		115 - 230VAC
Voltage range		
	AC	90 - 264VAC
	DC	120 - 375VDC
Rated input current		
(Vi:90VAC, Io nom)	**Typ.**	4.9/2.5A
	Max.	7/3.5A
Inrush current		
	Vi= 115VAC	25A
	Vi= 230VAC	50A

Power dissipation		
(Vi : 400VAC, Io nom)	**24V Model**	63W
	48V Model	56W
Frequency range		47-63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA
P.F.C Vi=115/230VAC, Ionom		0.99/0.97

Controls and Protections

Overload	110 - 140%
Input fuse	T10A/250VAC internal
Output short circuit	Fold forward
Power ready output threshold at start up	≥17.6-19.4VDC
Electrical isolation	500VDC
Contact rating at 60VDC	0.3A

Over voltage protection	125/140%
Internal surge voltage protection (IEC 61000-4-5)	Varistor

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-40°C to +71°C
Derating (>61°C to +71°C)	2.5%/C
Ambient humidity	20 ~ 95%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2
MTB (Bellcore issue 6 @ 40°C, GB)	
24V Model	403000 Hours
48V Model	416000 Hours

Case material	Metal
Dimensions LxWxD mm (inch)	
Screw terminal type	124.5 x 175.5 x 123.6 mm (4.9 x 6.91 x 4.87 inches)
Detachable connector type	143.5 x 175.5 x 123.6 mm (5.65 x 6.91 x 4.87 inches)
Weight	430 g

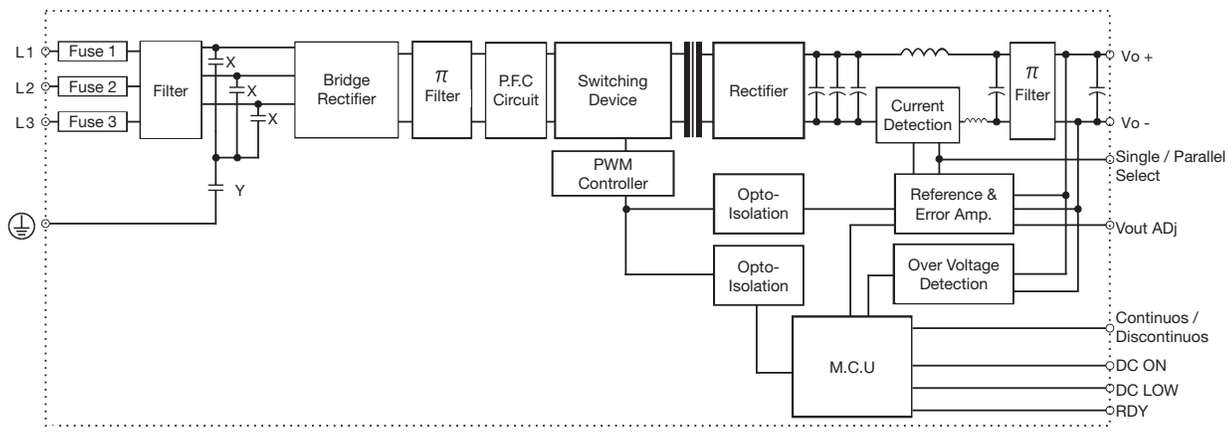
Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G,11ms, 3 Axis, 6 faces, 3 times for each face)
UL/cUL	UL508 listed, UL60950-1 Recognized
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)
ISA	12.12.01 Class I Div 2 Groups A, B, C, D

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

Switching Power Supply
Type SPD 480W
DIN rail mounting

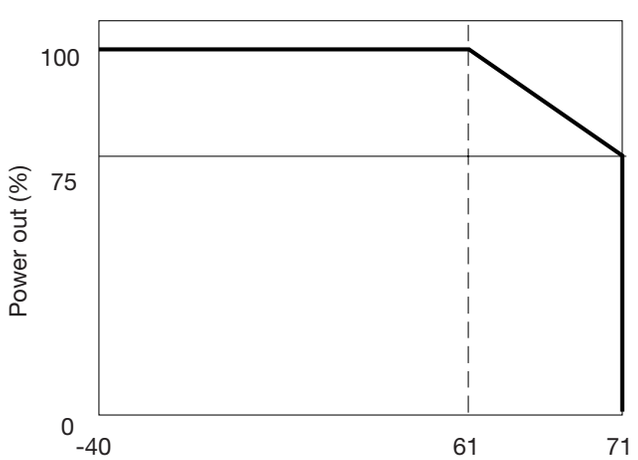
Block Diagram



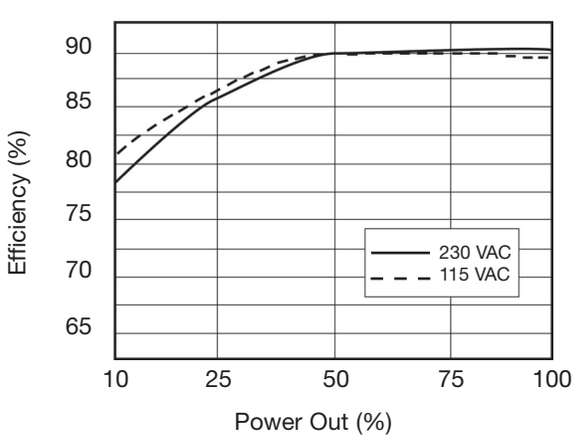
Pin Assignement and Front Controls

Pin No.	Designation	Description
1, 2	**V-**	Negative output teminal
3, 4	**V+**	Positive output terminal
5	**RDY**	A normal open relay contact for DC ON level control
6		(Never connect except 24V model)
7	**L**	Input terminals (phase conductor, no polarity at DC input)
8	**N**	Input terminal (neutral conductor, no polarity at DC input)
9	⏚	Ground this terminal to minimize high-frequency emissions
	DC ON	Operation indicator LED
	DC LOW	DC LOW voltage indicator LED
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	S/P	Single / Paralle select switch

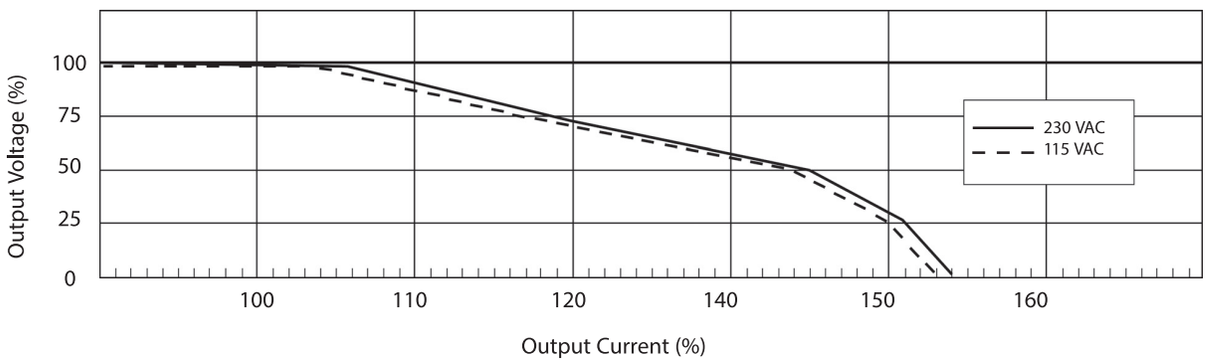
Derating Diagram



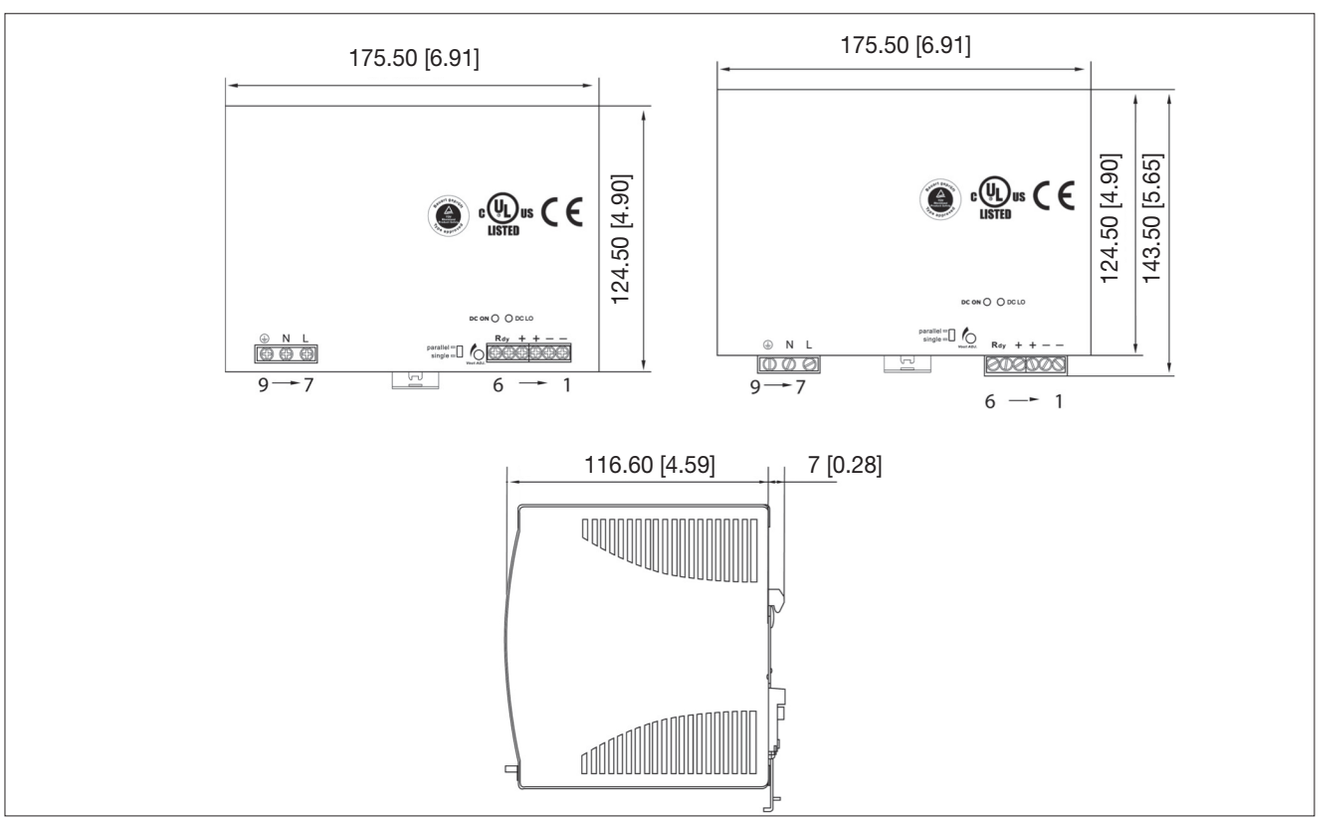
Typ. Efficiency Curve



Typ. Current Limited Curve



Mechanical Drawings mm (inches)



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended.
Connector	Size range AWG 24-10 (0.2~4mm²) flexible/solid cable.
Input Connector	can withstand torque at maximum 9 pound-inches
Output Connector	can withstand torque at maximum 5.5 poundinches. 8 mm strip ping at cable end recom mends, use copper conductors only, 60/75°C.
Max. torque for screws terminals	
Input terminals	0.784Nm (7.0lb-in)
Output terminals	0.784Nm (7.0lb-in)

Switching Power Supply
Type SPD 480W 3 phases
DIN rail mounting

- **Universal AC 3 phases input full range**
- **Can also be used as single phase 480VAC**
- **Installation on DIN rail 7.5 or 15mm**
- **PFC as standard**
- **High efficiency up to 91%**
- **Power ready output**
- **Parallel connection feature**
- **Compact dimensions**
- **UL, cUL listed and TUV/CE**

Product Description

The Switching power supplies SPD series are specially designed to be used in all automation application where the installation is on a DIN rail and compact dimensions and performance are a must.

Ordering Key

SP D 24 480 3

- **Model**
- **Mounting (D= Din rail)**
- **Output voltage**
- **Output power**
- **Input Type**

Input type: 3 = three phase
(or single phase 400/500VAC[3])

Approvals

Output performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD24	3ø 340~575 VAC	480 WATTS	+ 24 VDC	20 A	88%	90%
SPD48	3ø 340~575 VAC	480 WATTS	+ 48 VDC	10 A	89%	91%

Output data

Line regulation	± 1%
Load regulation	
Single mode	± 1%
Parallel mode	± 5%
Minimum load	0
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with 7000µF **CAP**	1500ms
Transient recovery time	2ms
Ripple and noise	100mVpp
Output voltage accuracy	± 1%
Temperature coefficient	± 0.03%/°C
Hold up timeVi	20ms

Voltage fall time (I_0nom)	150ms max
Rated continuous loading	
24V Model	20A @ 24VDC/16.8A @ 28.5VDC
48V Model	10A @ 48VDC/8.5A @ 56VDC
Reverse voltage	
24V Model	35VDC
48V Model	63VDC
Capacitor load	
Vi nom Io nom 24V model	7000µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom with 7000µF **CAP**	500ms

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Input data

Rated input voltage	400 - 500VAC
Voltage range	
AC	340 - 575VAC
DC	480 - 820VDC
Rated input current	
(Vi : 400VAC, Io nom) **Typ.**	1.1A
Max.	1.4A
Inrush current	
Vi= 115VAC	20A

Power dissipation	
24V Model	58W
48V Model	55W
Frequency range	47- 63Hz
Leakage current	
Input-Output	0.25mA
Input-FG	3.5mA

Controls and Protections

Overload	110-135%
Input fuse	T3.15A/500VAC internal phase
Output short circuit	
Continuos	Fold forward
Discontinuos	Delay 3S shut-down. After 30S auto restart
Power ready output	
(only 24V model) **On threshold**	≥17.6 -19.4VDC

[1] Fuse not replaceable by user

Elettrical isolation	500VDC	
Contact rating at 60vdc	0.3A	
Over voltage protection	**VDC**	
	Min.	**Max.**
24V Model	30	33
48V Model	60	68
Internal surge voltage protection (IEC 61000-4-5)	Varistor	

General data (@ nominal line, full load, 25°C)

Ambient temperature	-30°C to 71°C
Derating (>61°C to +71°C)	2.5%/°C
Ambient humidity	20 ~ 90%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2

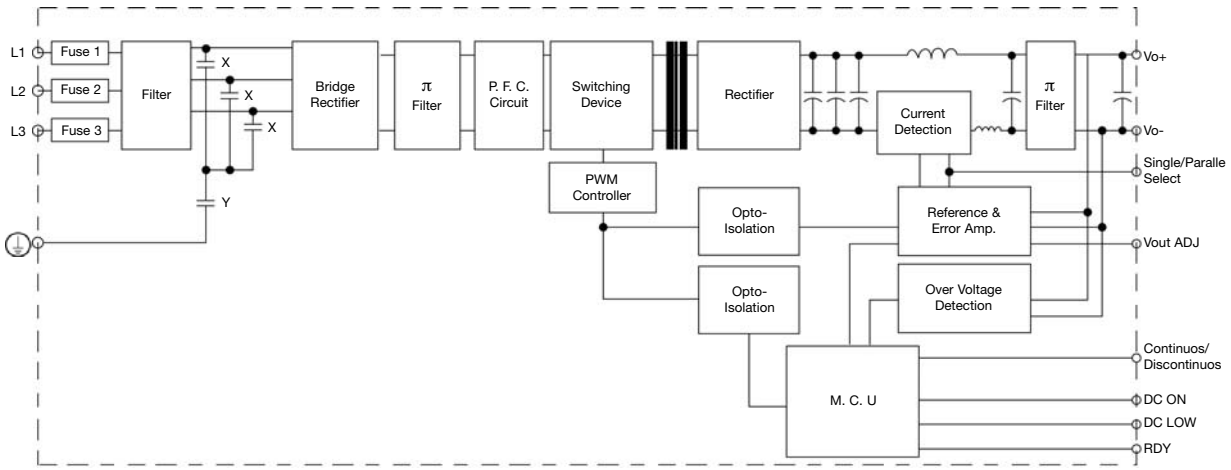
MTBF (Bellcore issue 6 @ 40°C, GB)	
24V Model	411000 Hours
48V Model	423000 Hours
Case material	Metal
Dimensions LxWxD mm(inch)	124(4.88) x 150(5.91) x 118.8(4.68)
Weight	1720g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL508 listed, UL60950-1, Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)

CCC	GB4943, GB9254, GB17625.1
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

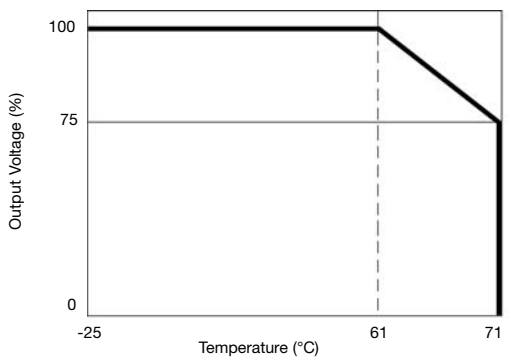
Block diagrams



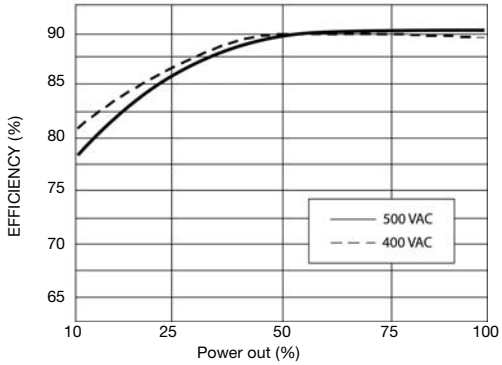
Pin Assignement and Front Controls

Pin No.	Designation	Description
1, 2	**V-**	Negative output teminal
3, 4	**V+**	Positive output terminal
5	**L3**	Input terminals
6	**L2**	Input terminals
7	**L1**	Input terminals
8	⏚	Input terminal (neutral conductor, no polarity at DC input)
9	**RDY**	A normal open relay contact for DC ON level control
10	**RDY**	(Never connect except 24V model)
	DC ON	Operation indicator LED
	DC LO	DC LOW voltage indicator LED
	Vout ADJ	Trimmer potentiometer for Vout adjustment
	S/P	Single / Parallel select switch
	C/D	Continuos / Discontinuos

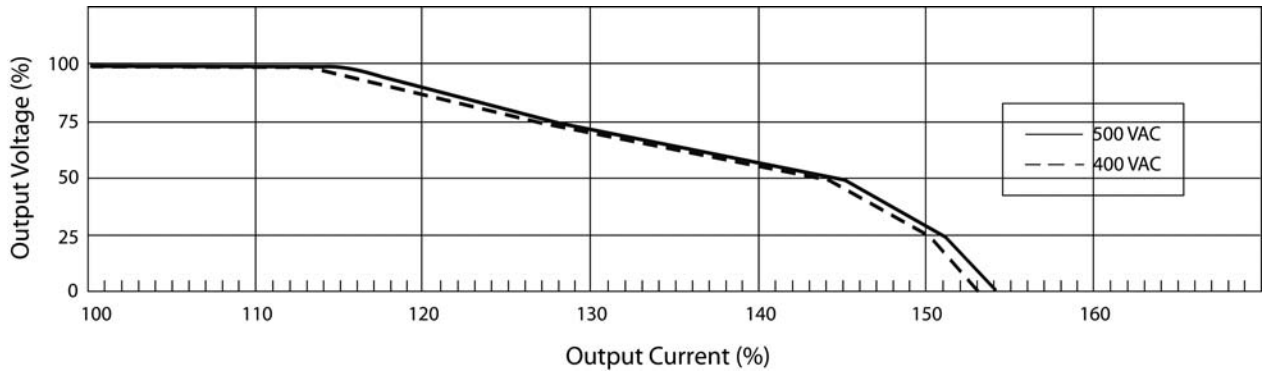
Derating Diagram



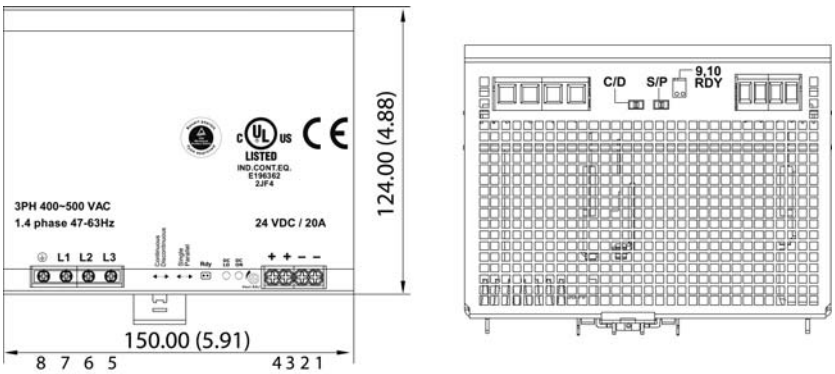
Typ. Efficiency Curve

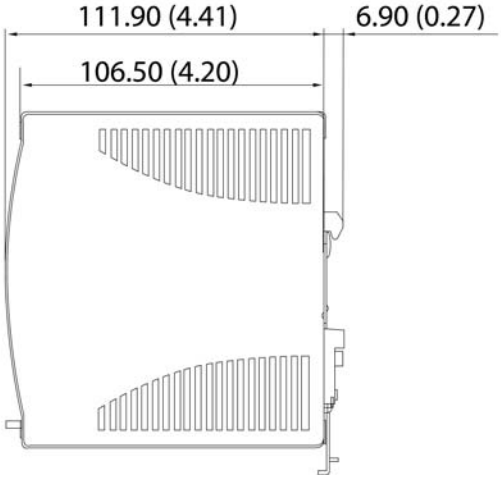


Typ. Current Limited Curve



Mechanical Drawings mm/inches





Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw connections	10-24AWG flexible or solid cable 8mm stripping recommend
Max. torque for screws terminals	
Input terminals	1.008Nm (9.0lb-in)
Output terminals	0.616Nm (5.5lb-in)

Switching Power Supply
Type SPD 960W 3 phases
DIN rail mounting

- **Universal AC 3 phases input full range**
- **Can also be used as single phase 960VAC**
- **Installation on DIN rail 7.5 or 15mm**
- **PFC as standard**
- **High efficiency up to 93%**
- **Power ready output**
- **Parallel connection feature (except "L" version)**
- **Compact dimensions**
- **UL, cUL listed and TUV/CE**

Product Description

The Switching power supplies SPD XX9603 series are suitable for those applications where high DC power is required. Besides the PFC as standard, it also features the parallel connection with active current sharing on the high end versions.

Ordering Key

SP D 24 960 3 L

Model
Mounting (D = Din rail)
Output voltage
Output power
Input Type
Option

Input type: 3= three phase (or single phase 400/500VAC[3])
Option: Nil= standard version
L= without active current sharing feature

Approvals

Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
SPD24	3ø 340~575 VAC	960 WATTS	+ 24 VDC	40 A	90%	92%
SPD24...L	3ø 340~575 VAC	960 WATTS	+ 24 VDC	40 A	90%	92%
SPD48	3ø 340~575 VAC	960 WATTS	+ 48 VDC	20 A	91%	93%

Output Data

Line regulation	± 0.5%
Load regulation	
Non parallel model	±1%
Parallel model	±5%
Minimum load	0A
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with 7000 µF CAP	1500ms
Transient recovery time	2ms
Ripple and noise	80mVpp
Output voltage accuracy	±1%
Temperature coefficient	±0.03%/°C

Hold up time Vi nom, Io nom	15ms
Voltage fall time ($I_o$nom Vi nom)	150ms max
Rated continuous loading	
24V Model	40A @ 24VDC/33.8A @ 28.5VDC
48V Model	20A @ 48VDC/17A @ 56VDC
Reverse voltage	
24V Model	VDC 35
48V Model	VDC 63
Capacitor load	7000µF
Voltage rise time	
Vi nom Io nom	150ms
Vi nom, Io nom with 7000µF CAP	500ms

Input Data

Rated input voltage	400 - 500VAC
Voltage range	
AC	340 - 575VAC
DC	480 - 820VDC
Rated input current	
(Vi:340VAC, Io nom) **Typ.**	2.4A
Inrush current	
Vi nom, Io nom 24V/48V models	30 - 35A
Cold start 24L model	50 - 60A

Power dissipation	
(Vi : 400VAC, Io nom) **24V Model**	98W
48V Model	55W
Frequency range	47-63Hz
Leakage current	
Input-Output	0.25mA
Input-FG	3.5mA

Controls and Protections

Overload	120 - 140%
Input fuse	T5A/500VAC internal/phase
Output short circuit	Hiccup mode
Power ready output	
(only 24V model) **On threshold**	≥17.6-19.4VDC
Electrical isolation	500VDC
Contact rating at 60VDC	0.3A

Over voltage protection	125/140%	
Over voltage protection	**VDC**	
	Min.	**Max.**
24V Model	30	33
48V Model	60	68
Internal surge voltage protection (IEC 61000-4-5)	Varistor	

General Data (@ nominal line, full load, 25°C)

Ambient temperature	-40°C to +71°C
Derating (>61°C to +71°C)	3.5%/C
Ambient humidity	20 ~ 90%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Pollution degree	2

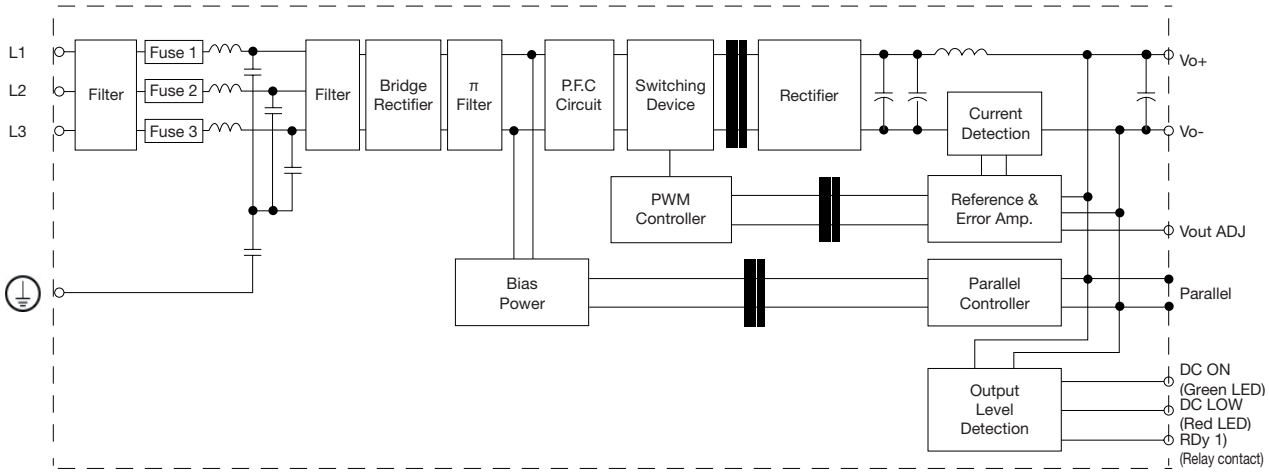
MTB (Bellcore issue 6 @ 40°C, GB)	
24V Model	352000 Hours
24L Model	381000 Hours
48V Model	390000 Hours
Case material	Metal
Dimensions LxWxD mm (inch)	126.2(4.97)x275.(10.86)x118.8 (4.68)
Weight	3400 g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G,11ms, 3 Axis, 6 faces, 3 times for each face)
UL/cUL	UL508 listed, UL60950-1, Recognized, ISA 12.12.01 (Class 1, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (meet EN 60204)

CCC	GB4943, GB9254, GB17625.1
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L/N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3

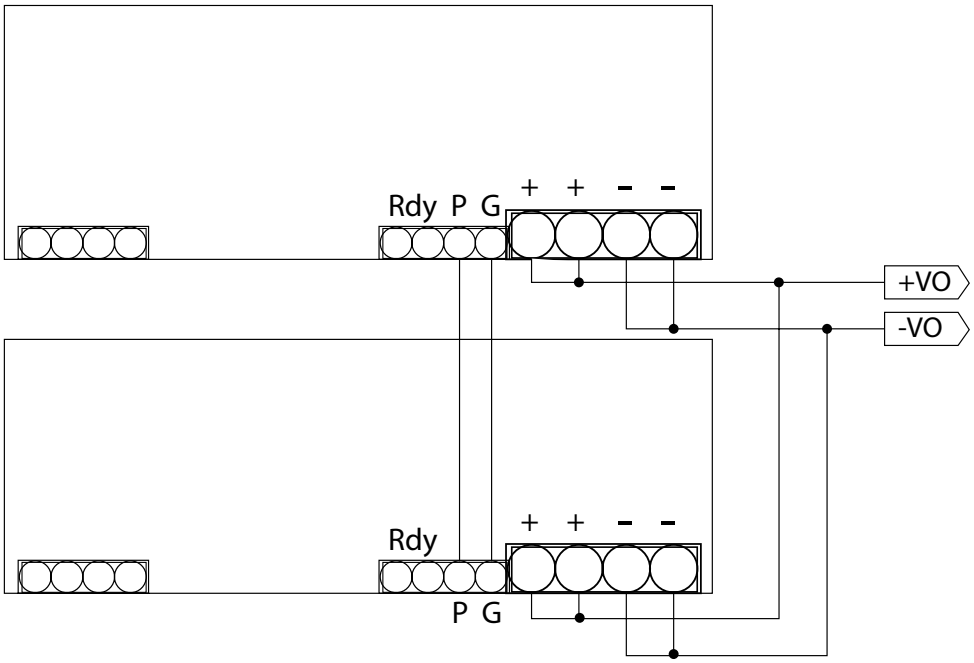
Block Diagrams



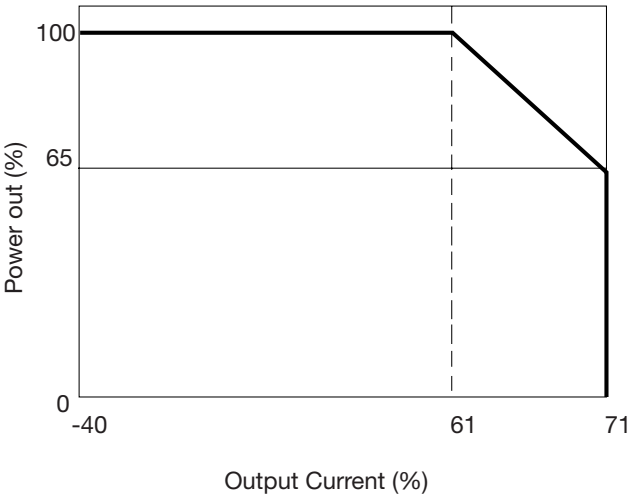
Pin Assignement and Front Controls

Pin No.	Designation	Description
1, 2	V-	Negative output teminal
3, 4	V+	Positive output terminal
5	G	Parallel GND PIN for current share
6	P	Parallel PIN for current share
7	RDY	A normal open relay contact for DC ON level control
8		(Never connect except 24V model)
9	L3	Input terminals
10	L2	Input terminals
11	L1	Input terminals
12	⏚	Ground this terminal to minimize high-frequency emission
	DC ON	Operation indicator LED
	DC LOW	DC LOW voltage indicator LED
	Vout ADJ	Trimmer-potentiometer for Vout adjustment

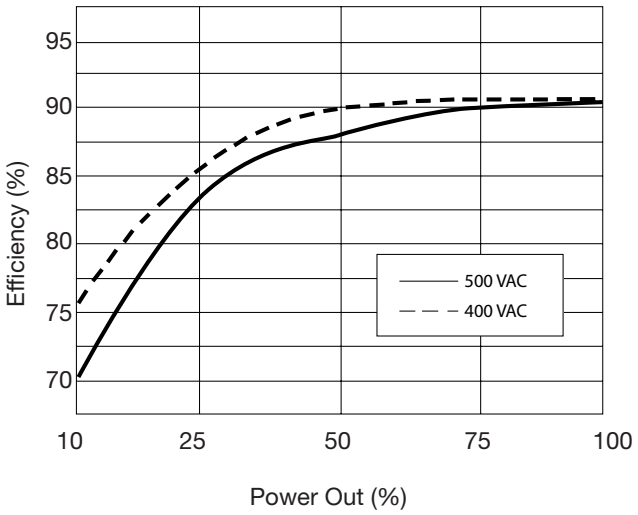
Parallel Connection



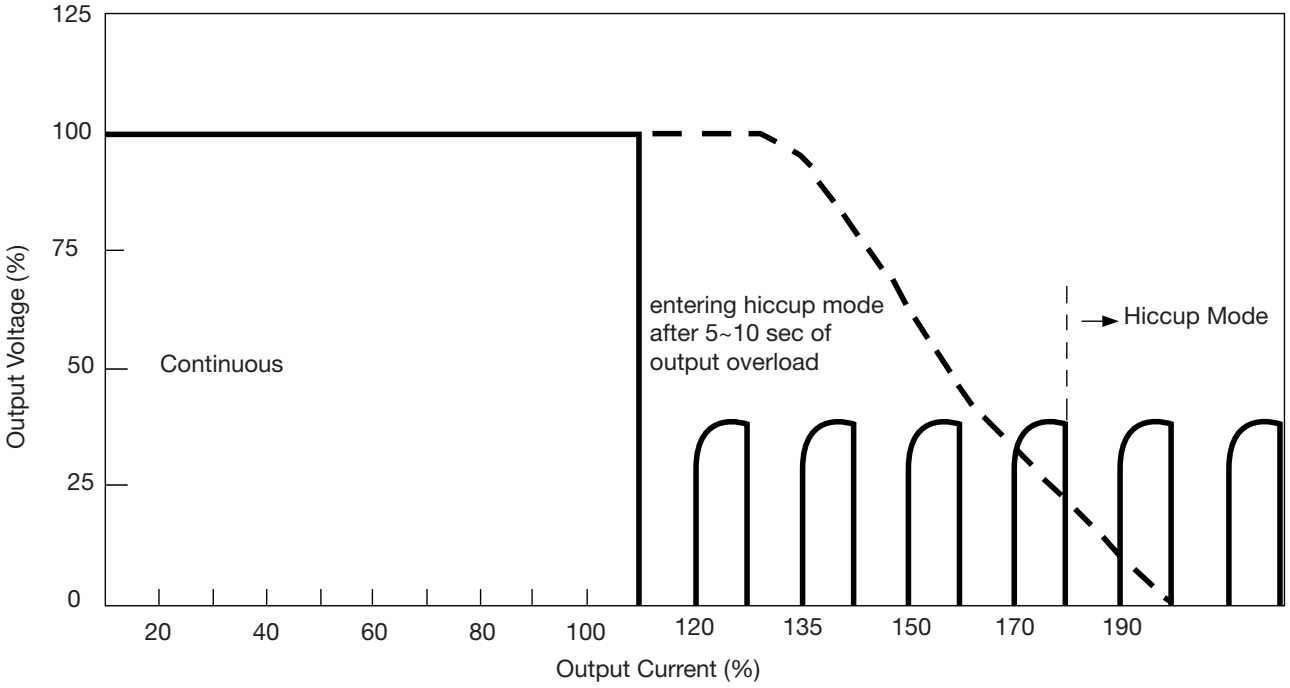
Derating Diagram



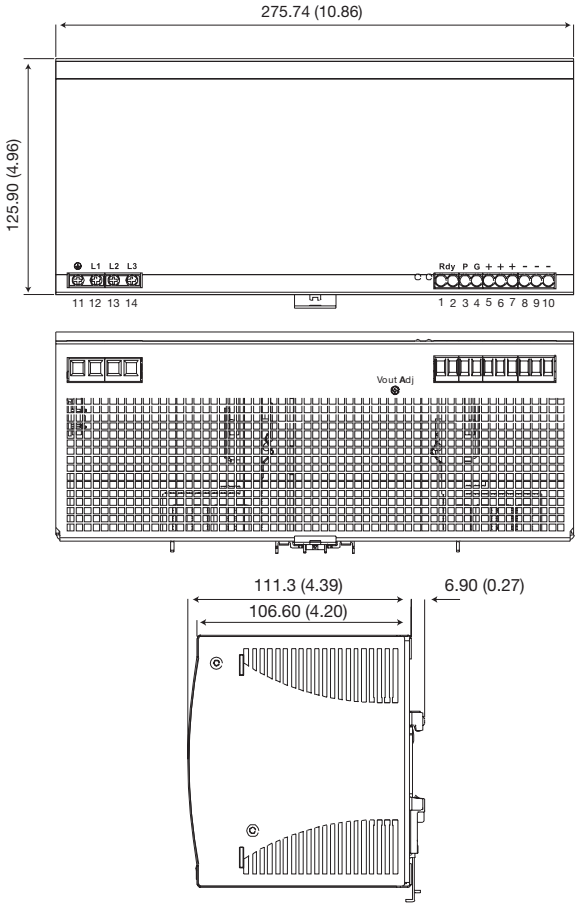
Typ. Efficiency Curve



Typ. Current Limited Curve



Mechanical Drawings mm/inches



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended.
Conductors sections	
From PIN1 to PIN4	AWG20-6 (0.5 - 10mm²) flexible or solid cable 8mm stripping recommend
From PIN5 to PIN8	AWG24-10 (0.2 - 4mm²) flexible or solid cable 8mm stripping recommend
From PIN9 to PIN12	AWG24-10 (0.2 - 4mm²) flexible or solid cable 8mm stripping recommend
Max. torque for screws terminals	
From PIN1 to PIN4	1.008Nm (9.0lb-in)
From PIN5 to PIN8	1.763Nm (15.6lb-in)
From PIN9 to PIN12	0.616Nm (5.5lb-in)

Switching Power Supply Redundant Module
Type SPD24RM20
DIN rail mounting

- **Installation on DIN Rail 7.5 or 15mm**
- **2 “Power Rdy” relay outputs**
- **Up to 480W output**
- **Unlimited number of connectable redundant power supplies***
- **Very compact dimensions**
- **UL, cUL listed**
- **TUV approved**
- **Ce and RoHS compliant**

*The power supplies can be externally connected with SPD24RM20 to increase the output power. However it is suggested to use 90% load only, for example 10A*2*0.9= 18A. The power supplies of different models or spec. can not be connected for parallel operation.

Product Description

This SPD additional module allows the connection of 1 power supply +1 or more additional redundant power supplies. In this case, the continuity of the 24VDC output is always guaranteed, even in case of failure of one power supply. 2 relay outputs provide voltage free outputs in order to send the alarm to a control unit when a failure occurs.

Ordering Key

SP D 24 RM 20

Model
Mounting (D = Din rail)
Output voltage
Redundant module
Maximum current

Approvals

Output Data

Output voltage drop	0.5V
Output maximum Current	20A
Output Peak Current >5ms	30A
Max Reverse Voltage	30V

Input Data

Rated input Voltage	21...28VDC
Number of inputs	2
Maximum input current	20A

Controls and Protections

Power RDY relay Output	
OK	input 20...30V ±5%
Fail	input 20...30V ±5%
Contact rating	1.0A

General Data

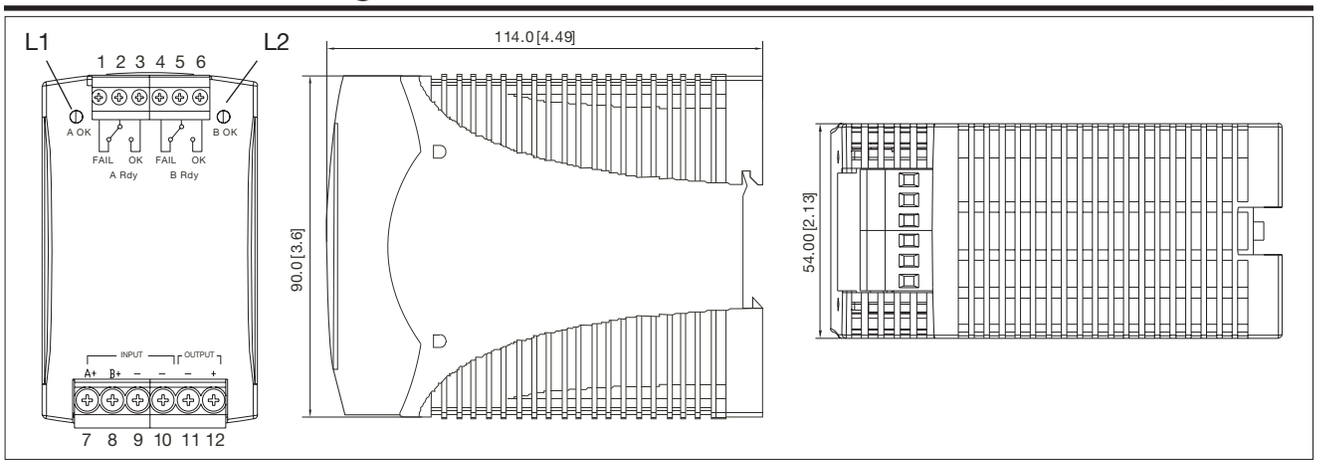
Insulation Voltage	
Input / Relay contact	100VDC
Insulation Resistance	
Input / Relay contact @100VDC	100MΩ
Operating temperature	-25°C...+71°C
Storage temperature	-25°C...+85°C
Relative Humidity	20...95%RH
MTBF (Bellcore issue 6 @ 40°C, GB)	659,000h
Cooling	Free air convection
Case material	Plastic
Dimensions L x W x D	90 x 54 x 114mm
Weight	210g

Approvals and EMC

Shock resistance	acc. to IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)
Vibration resistance	acc. to IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
UL / cUL	UL 508 Listed UL 60950-1 Recognized
TUV	EN 60950-1, CB scheme
CE	EN 55022 Class B, EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6, EN 61000-4-8, EN 61204-3

Switching Power Supply Redundant Module
Type SPD24RM20
DIN rail mounting

Mechanical Drawings mm (inches)

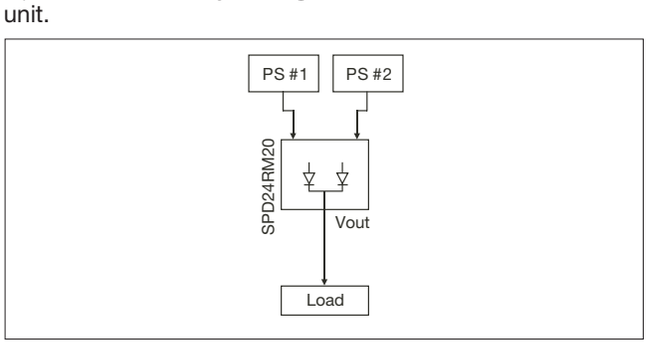


Pin Assignment and Front Controls

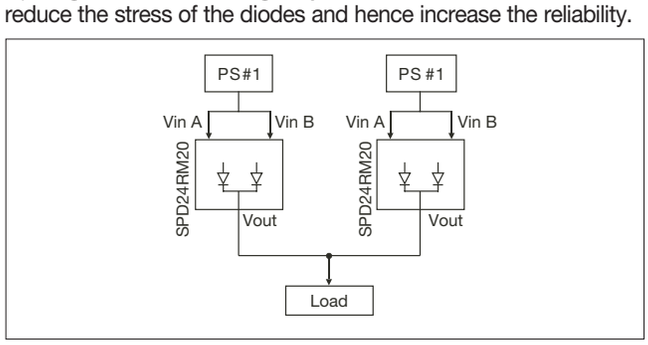
Pin No.	Designation	Description
1	**A Rdy Fail**	Relay normally closed contact (power supply A Fail)
2	**A Rdy COM**	Relay common contact
3	**A Rdy OK**	Relay normally open contact (power supply A OK)
4	**B Rdy Fail**	Relay normally closed contact (power supply B Fail)
5	**B Rdy COM**	Relay common contact
6	**B Rdy OK**	Relay normally open contact (power supply B OK)
7	**Input A+**	Positive Input power supply A
8	**Input B+**	Positive Input power supply B
9	**Input -**	Negative Input power supply A
10	**Input -**	Negative Input power supply B
11	**Output -**	Positive Output terminal
12	**Output +**	Negative Output terminal
L1	**A OK**	“A” power supply operation OK LED
L2	**B OK**	“B” power supply operation OK LED

Typical Application Notes

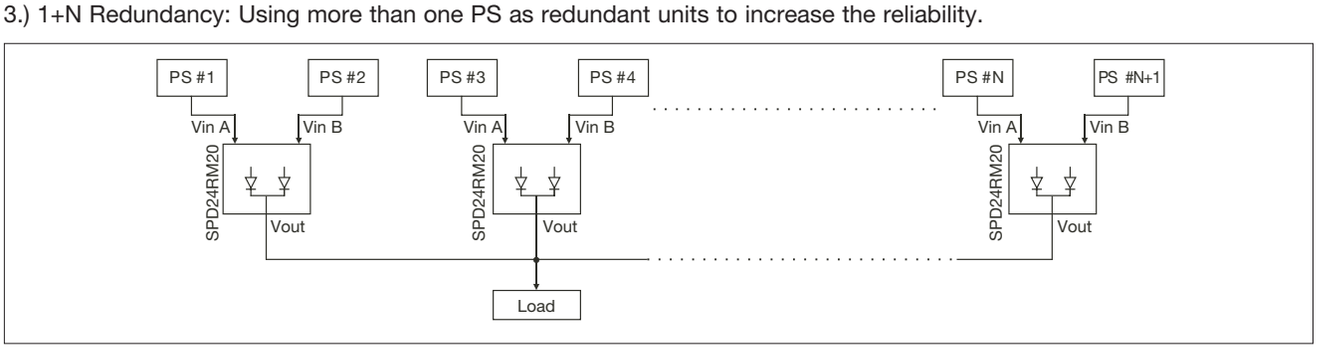
1.) 1+1 Redundancy: Using 1 more PS as the redundant unit.



2.) Single Use: Connecting only one PS to one SPD24RM20 to reduce the stress of the diodes and hence increase the reliability.

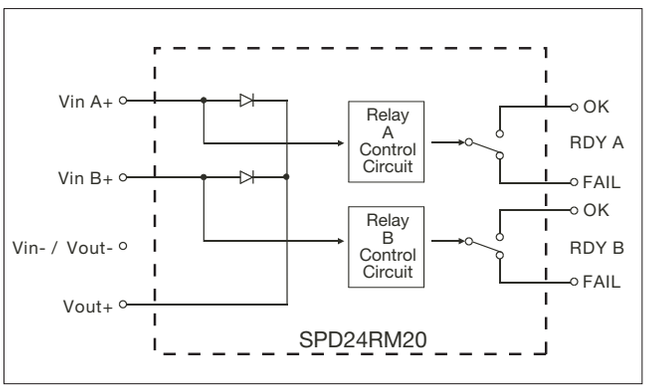


3.) 1+N Redundancy: Using more than one PS as redundant units to increase the reliability.



Switching Power Supply Redundant Module
Type SPD24RM20
DIN rail mounting

Circuit Diagram



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw terminals cable 8mm stripping recommend	10-24AWG flexible or solid
Max. torque for screws terminals Input terminals Output terminals	 1.008Nm (9.0lb-in) 0.616Nm (5.5lb-in)
Plug-in connectors cable 7mm stripping recommend	10-24AWG flexible or solid
Max. torque for plug-in terminals Input terminals Output terminals	 0.784Nm (7.0lb-in) 0.784Nm (7.0lb-in)

SPDC

Single Phase Compact Power Supply

Description

The SPDC power supplies is a range where high performance meets high quality in a compact frame. These power supplies are offered in 120W, 240W, 480W, and they have a universal input voltage range 85VAC to 264VAC and 130VDC to 350VDC.
The SPDC achieve a high energy efficiency of up to 94%, and can be connected in parallel to achieve twice the current. Reliability is guaranteed through the multiple integrated protections, and it also comes with built-in active PFC.
SPDC coupled compact dimensions with advance features to provide a power supply for all automation applications requiring reliability, quality and performance.

Benefits

- **Reliable power in very compact dimensions.** This SPDC has an ultra-slim DIN rail body, with up to 480W in only 70mm width of space
- **Built-in active PFC.** The power factor correction (PFC) circuit adjusts the power factor to 0.99@110Vac and 0.95@230Vac.
- **Parallel function.** The SPDC can easily be connected in parrallel to provide for increased power or used in redundancy operations.
- **150% Power Boost.** The SPDC can provide 150% of the rated output power for up to 3 seconds, providing the extra power needed during critical startups.
- **Universal AC, DC input range.** SPDC Series can be powered with AC Voltage (85VAC to 264VAC) or with DC Voltage (130VDC to 350VDC).
- **Reliable critical protection.** Safety and reliability is guaranteed by the various output protections: Over Voltage (OVP), Over Load (OLP), Short Circuit (SCP) and Over Temperature (OTP).
- **High efficiency and wide operating ambient temperature.** The SPDC has a very high efficiency of up to 93.8%. The operating temperature range is, from -25°C to +60°C (without derating), and up to 70°C with -25% derating.
- **Ease of installation.** The SPDC can be installed in 5 different orientations, enabling the unit to fit easily into installation with limited space.

Applications

The SPDC is extremely suitable for applications which requires high efficiency, high safety standards and high PF corrections. It also provides the DC OK signaling with LED and relay output.

Main functions

- High Efficiency up to 93.8%
- In-built active PFC, PF>0.95
- Output options of 12VDC, 24VDC or 48VDC
- Universal input voltage range: 85VAC to 264VAC; 130VDC to 350VDC
- Bi-colour LED for Status, and DC-OK relay contact
- Parallel function

SPDC

References

Order code

SPDC □ □ 1

Enter the code entering the corresponding option instead of □

Code	Option	Description	Notes
S	-	Switching	Device typology
P	-	Power	
D	-	DIN rail	Mounting
C	-	Compact	Size
□	12	12VDC	Rated output voltage
	24	24VDC	
	48	48VDC	
□	120	120W	Rated output power
	240	240W	
	480	480W	
1	-	Single phase input	Input type

Selection guide

Output Voltage	120W	240W	480W
12VDC	SPDC121201	-	-
24VDC	SPDC241201	SPDC242401	SPDC244801
48VDC	-	-	SPDC484801

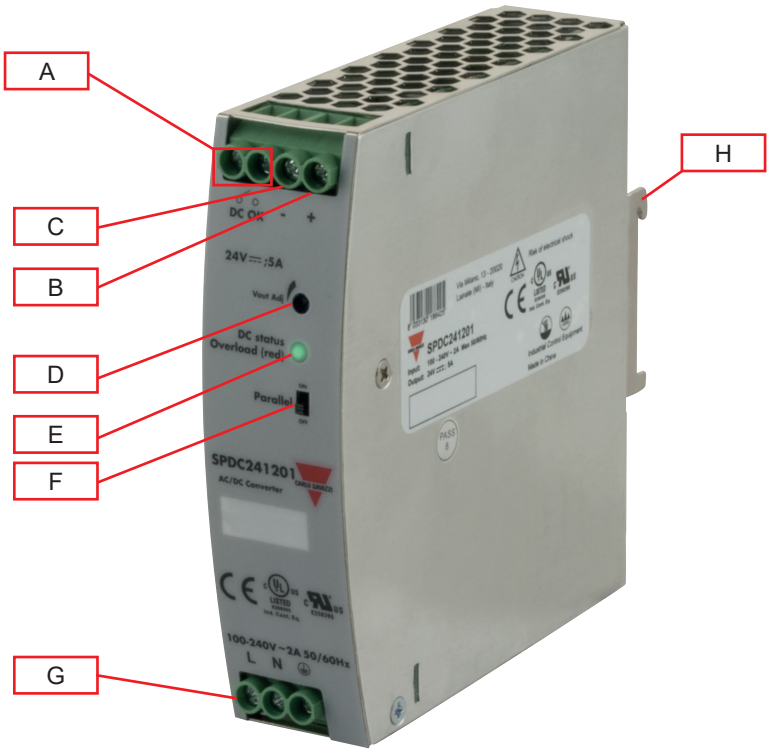
Further reading

Information	Where to find it	QR
SPDC DatasheetSheet		
SPDC Installation Sheet		
SPDC CAD drawings		

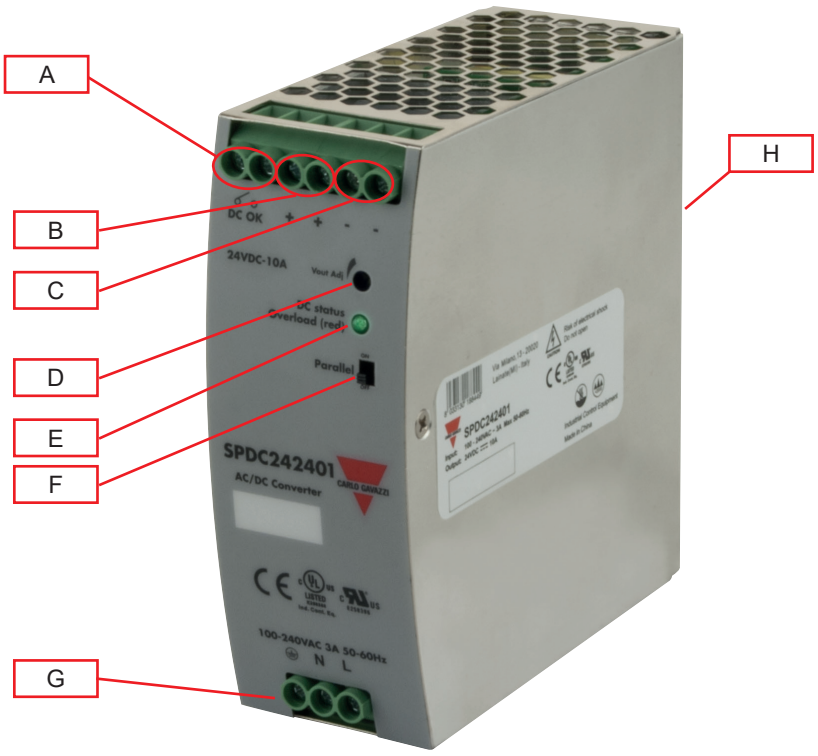
SPDC

Structure

SPDC 120W

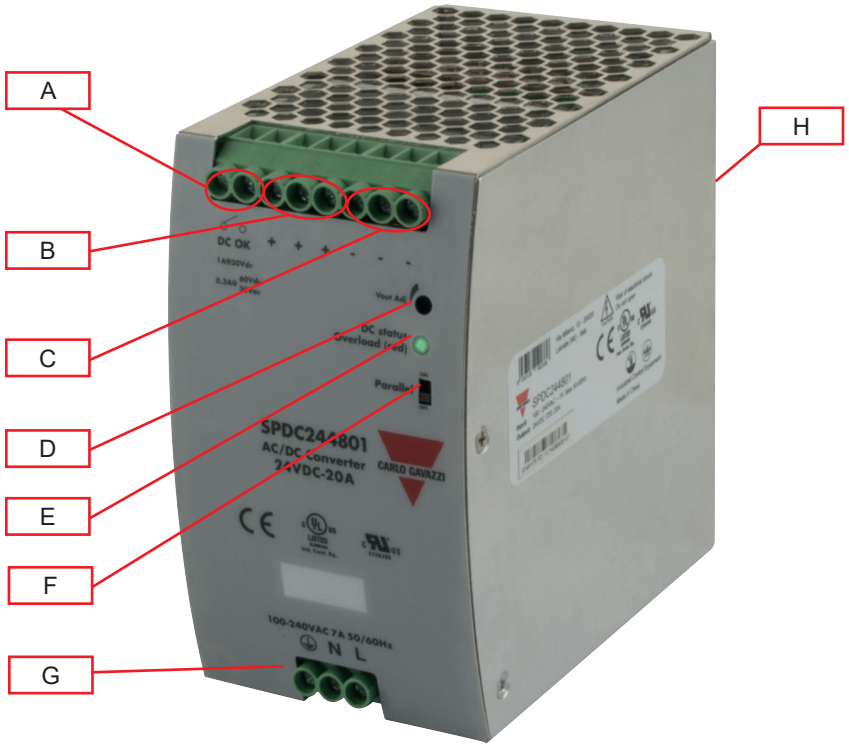


SPDC 240W



SPDC

SPDC 480W



Element	Component	Function
A	DC OK Relay contacts	Output status. Max 30V/1A or 60V/0.3A or 30Vac/0.3A Resistive load
B	+ V terminals	Positive DC Output terminals
C	- V terminals	Negative DC Output terminals
D	VADJ Trimmer	Output voltage adjustment
E	DC OK LED	Green when output voltage ≥90% of rated output voltage Red when output voltage ≤80% of rated output voltage, or, Overload
F	Single/Parallel Switch	Enabling or disabling of output parallel connection function
G	Power supply terminals	L, N supply terminals + GND
H	DIN rail mounting clip	Clip present on back side

SPDC

Features

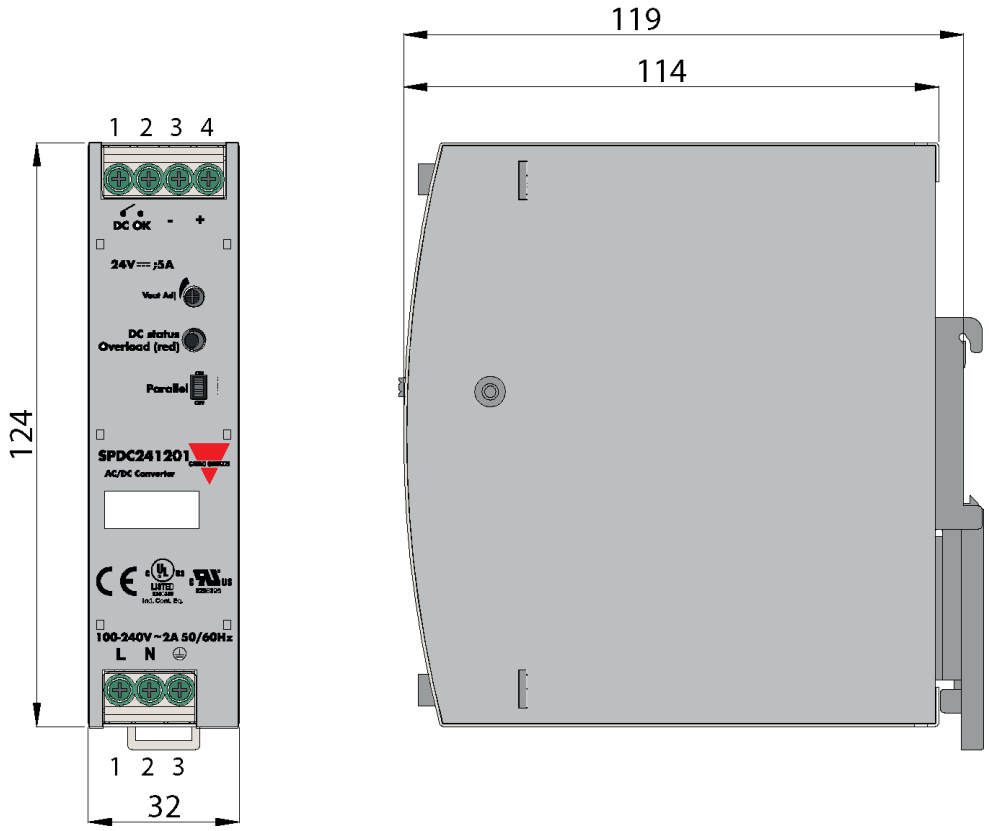
General data

	SPDC 120W	SPDC 240W	SPDC 480W
Leakage current	<0.25mA (Input-Output)		
Earth leakage current	<3.5mA (Input-GND)		
Efficiency	89.5% (12VDC) 91% (24VDC)	94% (24VDC)	93.8% (24VDC) 93.8% (48VDC)
Power loss @ nominal load	15W	23W	35W
Power Factor (Full Load) **110VAC** **230VAC**	 0.99 0.95		
Ingress Protection	IP20		
MTBF (MIL-HDBK-217F)	>300,000Hrs		
Case material	Metal, Stainless Steel		
Weight	550g (1.21lb)	780g (1.72lb)	1150g (2.535 lb)

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

Dimensions

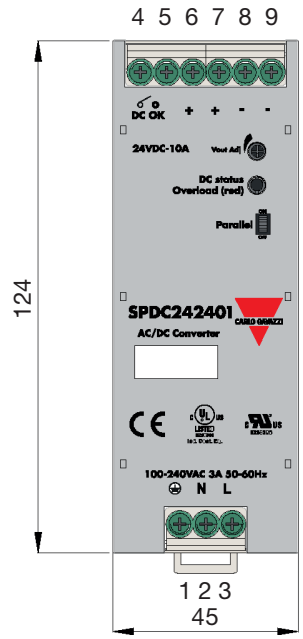
SPDC 120W
Unit : mm

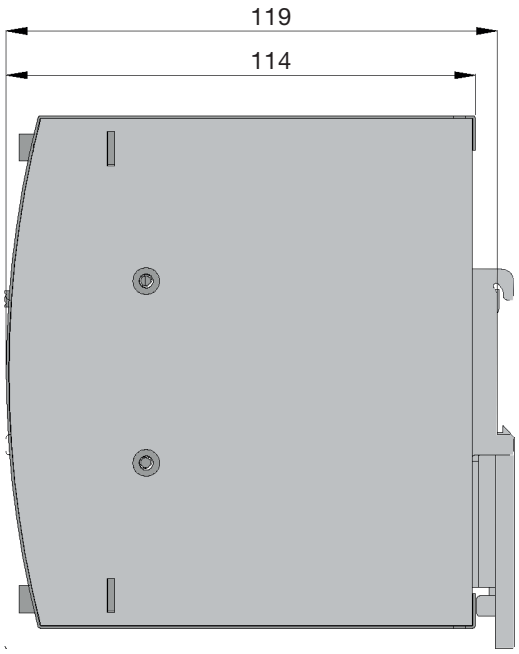


SPDC

SPDC 240W

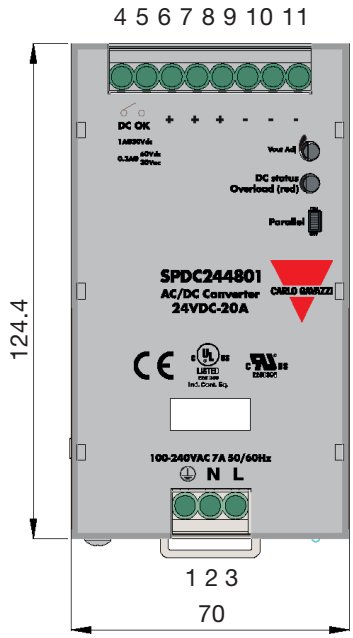
Unit: mm

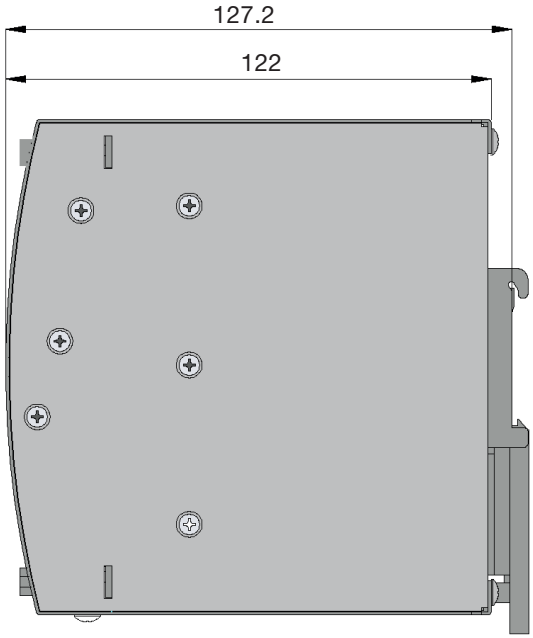




SPDC 480W

Unit: mm





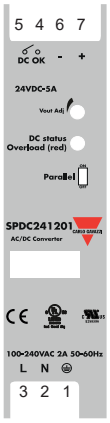
SPDC

Connection diagram

Terminal markings

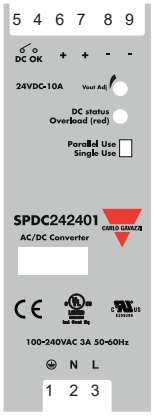
SPDC120W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4	DC OK	DC ON relay contact (Common)
5	DC OK	DC ON relay contact (Normally open contact)
7	V+	Positive output terminal
6	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status
	Parallel	Switch for single or parallel operation



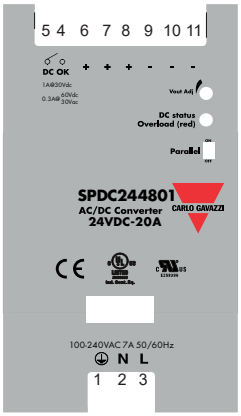
SPDC240W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4	DC OK	DC ON relay contact (Common)
5	DC OK	DC ON relay contact (Normally open contact)
6, 7	V+	Positive output terminal
8, 9	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status
	Parallel	Switch for single or parallel operation



SPDC480W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4	DC OK	DC ON relay contact (Common)
5	DC OK	DC ON relay contact (Normally open contact)
6, 7, 8	V+	Positive output terminal
9, 10, 11	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status
	Parallel	Switch for single or parallel operation



SPDC

Environmental

	SPDC 120W	SPDC 240W	SPDC 480W
Operating temperature	-25°C to 70°C -13°F to 158°F		
Storage temperature	-40°C to 85°C -40°F to 185°F		
Humidity	20% to 90% RH No condensing	5% to 90% RH No condensing	
Temperature derating from 60°C to 70°C (140°F to 158°F)	Refer to derating diagram		
Temperature coefficient	+/- 0.03%/°C		

Compatibility and conformity

	SPDC 120W	SPDC 240W	SPDC 480W
Safety standards	EN60950-1		
EMC emission	EN55022, EN55024, FCC PART 15 Class B		
Harmonic current	EN61000-3-2, Class A		
EMC immunity	EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11, Heavy Industrial Level		
UL Certification **cULus** **cURus**	UL508 Listed UL60950-1 (2nd Edition)		
Vibration resistance	IEC 60068-2-6		

Insulation

	SPDC 120W	SPDC 240W	SPDC 480W
Insulation/Withstand Voltage (Input / GND)	2.5kVAC /10mA		
Insulation/Withstand Voltage (Input / Output)	3kVAC /10mA		
Insulation/Withstand Voltage (Output / GND)	0.5kVAC /20mA		
Output / DC OK	0.5KVAC/1mA		
Insulation resistance	≥10MΩ		
Overvoltage Category	II		
Pollution Degree	2		

SPDC

Inputs

	SPDC 120W	SPDC 240W	SPDC 480W
Rated input Voltage	100VAC to 240VAC		
Input Voltage range	85VAC to 264VAC 127VDC to 375 VDC		90VAC to 264VAC 130VDC to 350VDC
AC Current (max) **100VAC** **230VAC**	 <1.5A <0.65A	 <3A <1.5A	 <7A <3.5A
Frequency Range	47Hz to 63Hz		
Inrush current **100VAC** **230VAC**	 <30A <60A	 <20A <40A	 <20A <40A
Inrush current (DC)	60A	44A	5.3A
Internal input fuse	T5A/250V	T5A/250V	T10A/250V
Standby-Consumption	<2.5W	<3W	<4W

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

Outputs

	SPDC 120W	SPDC 240W	SPDC 480W
Output Power	120W	240W	480W
Voltage accuracy	±1%	±3%	±3%
Line Regulation	±0.5%		
Load Regulation	±1.0%		
Voltage regulation span	12VDC to 14VDC (12VDC) 24VDC to 28VDC (24VDC)	24VDC to 28VDC (24VDC)	24VDC to 28VDC (24VDC) 48VDC to 56VDC (48VDC)
Rated ouput current	10A (12VDC) 5A (24VDC)	10A (24VDC)	20A (24VDC) 10A (48VDC)
Ripple and Noise			
0 to 70°C (32 to 158°F)	≤100mV (12VDC) ≤120mV (24VDC)	≤240mV (24VDC)	≤240mV (24VDC) ≤480mV (48VDC)
-25 to 0°C (-13 to 32°F)	≤200mV (12VDC) ≤240mV (24VDC)	≤480mV (24VDC)	≤480mV (24VDC) ≤480mV (48VDC)
Hold up Time	≤20ms		
Set-up Time	≤250ms	≤3s	
Rise Time	≤23ms	≤26ms	≤30ms
Turn-on overshoot	≤5.0%		
Overshoot and Undershoot	≤5.0%		
Series Operation	Yes		
Parallel Operation	Max 2 identical units		
Power Boost	150% of rated output current		

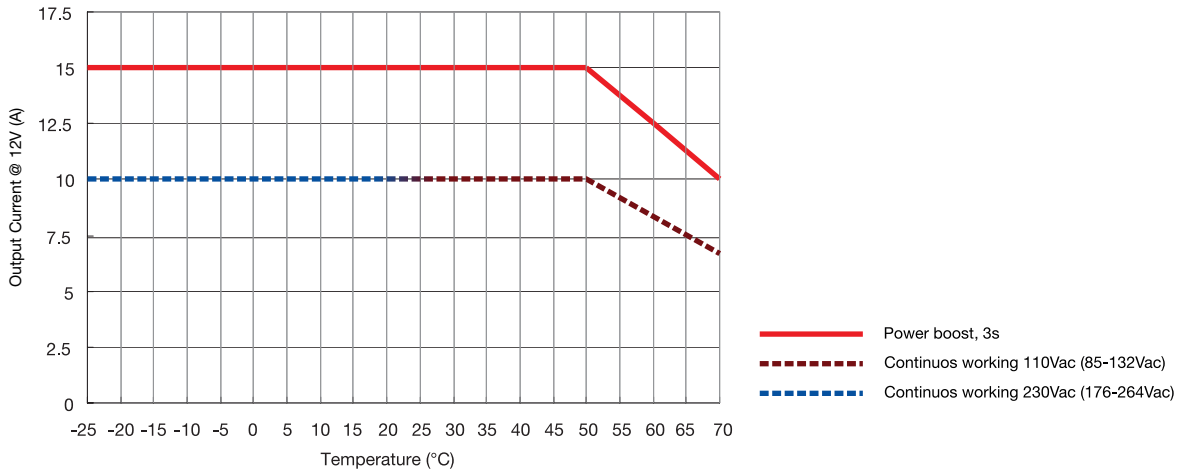
(All specifications are at nominal values, full load, 25°C unless otherwise stated)

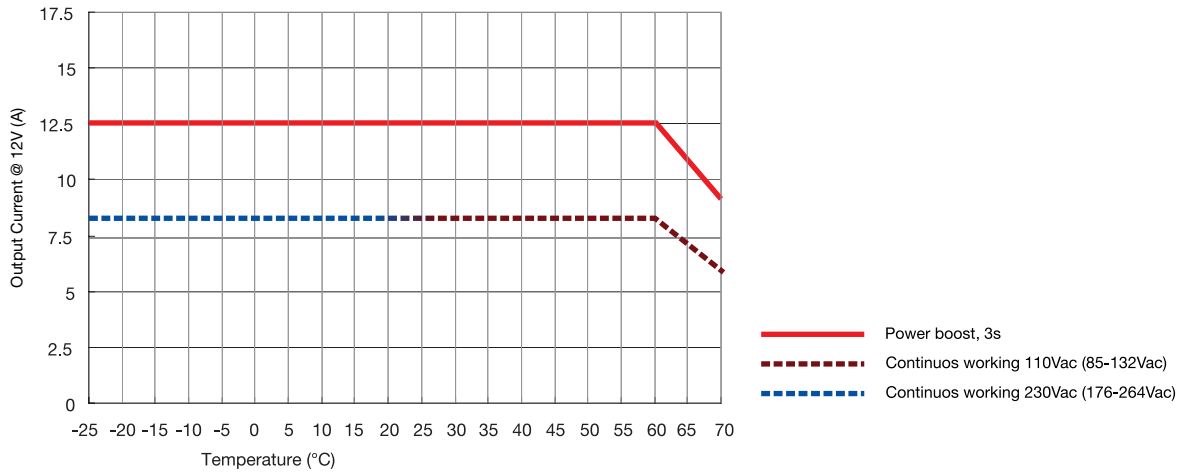
SPDC

Performance

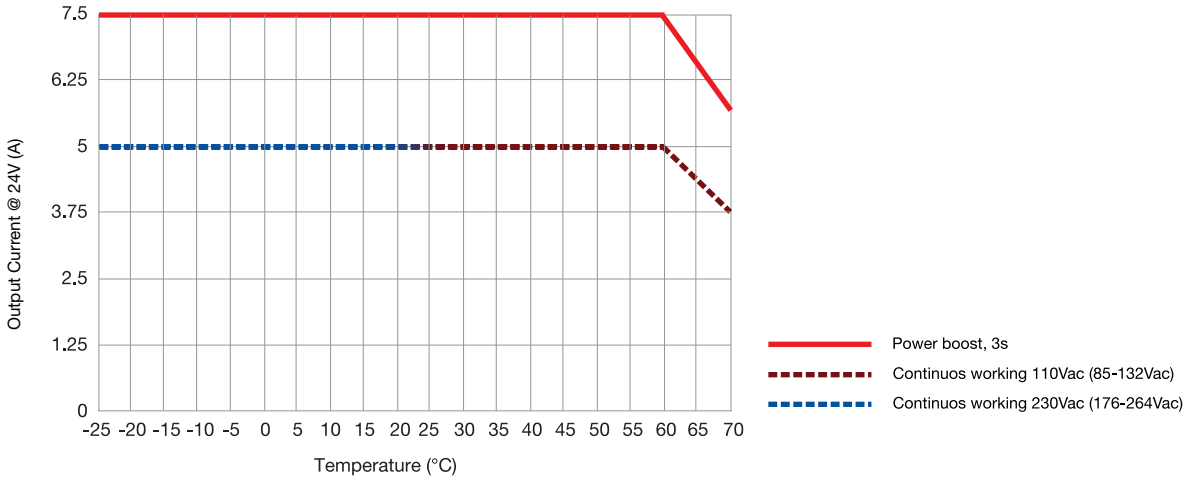
Current derating

SPDC 120W 12VDC



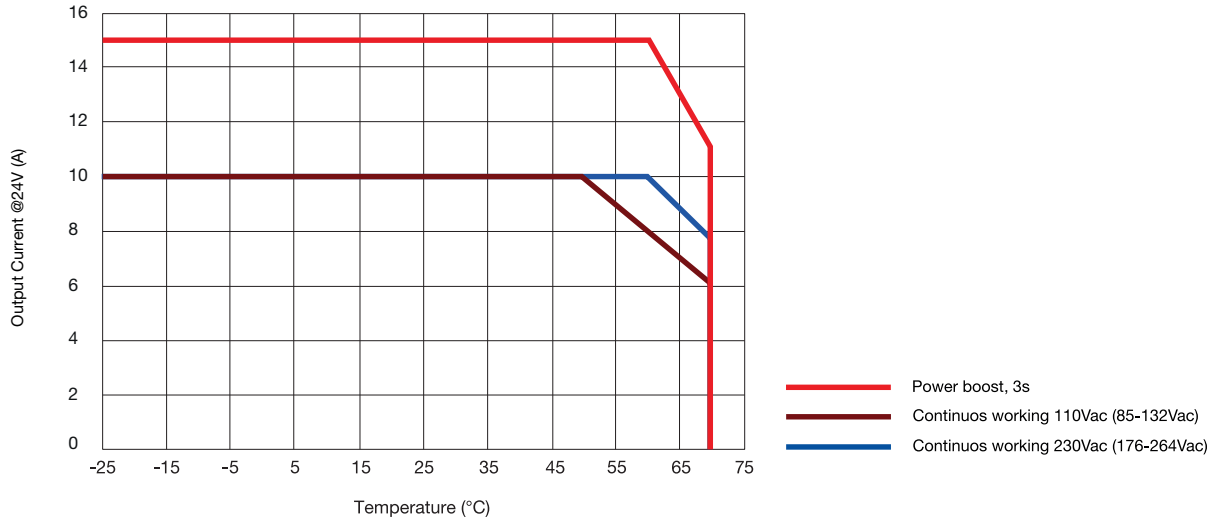


SPDC 120W 24VDC

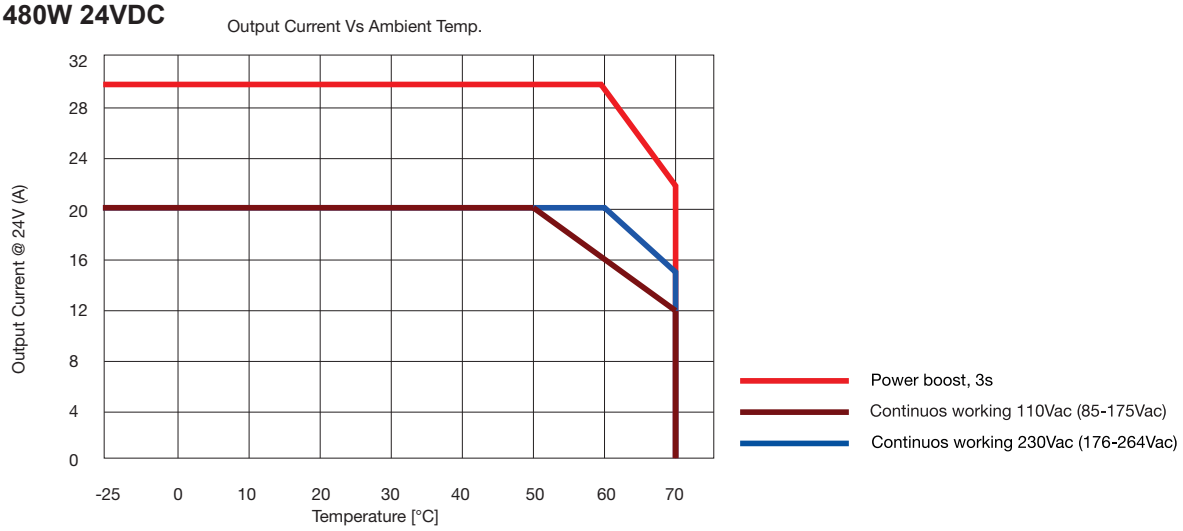


SPDC

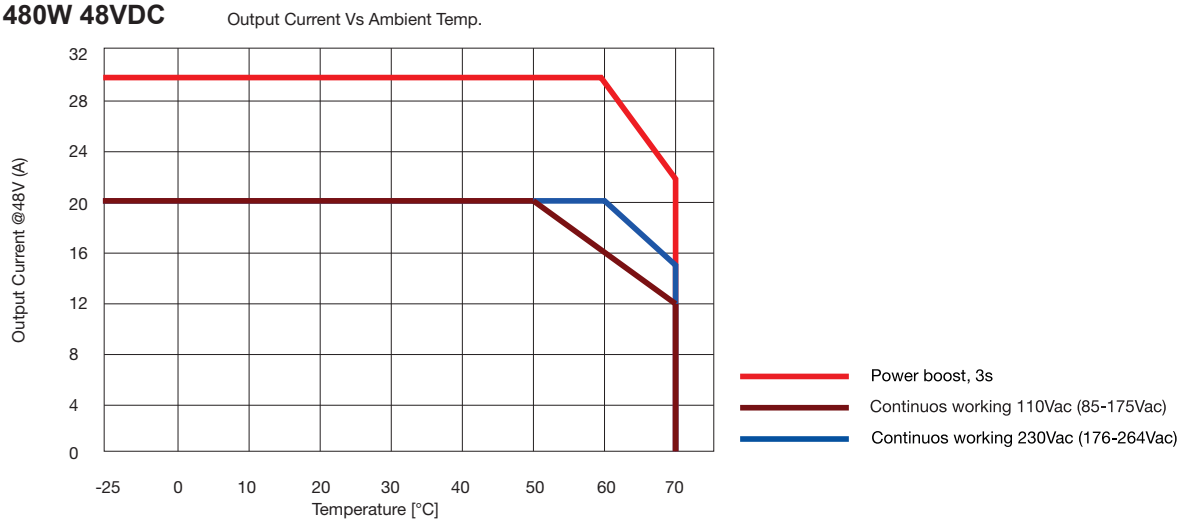
SPDC 240W 24VDC



SPDC 480W 24VDC



SPDC 480W 48VDC



SPDC

Installation

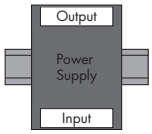
	SPDC 120W	SPDC 240W	SPDC 480W
Ventilation and Cooling	Normal air convection; 25mm of free space on each side is recommended		

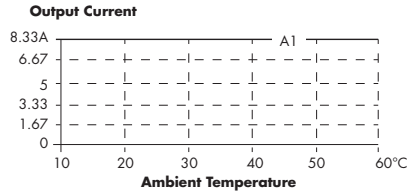
Mounting method instruction

A1 is recommended output current, A2 is the allowed max output current (PSU lifetime is around half of A1)

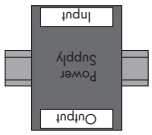
120W 12VDC

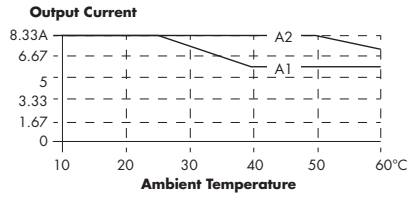
Mounting A



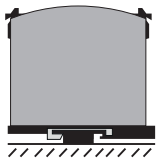


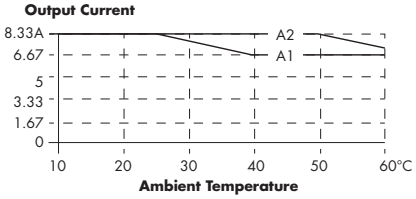
Mounting B



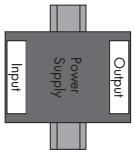


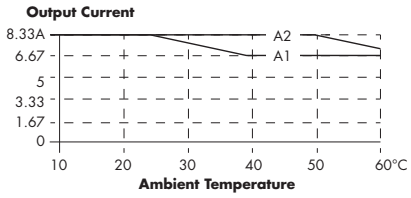
Mounting C



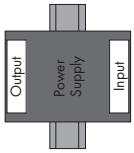


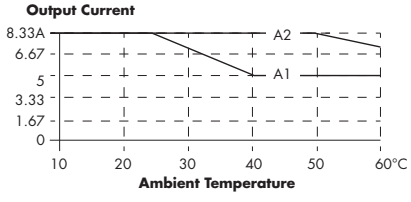
Mounting D





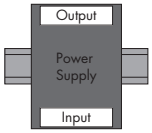
Mounting E

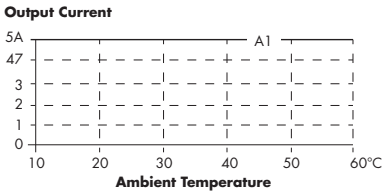




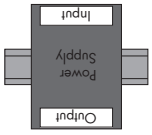
120W 24VDC

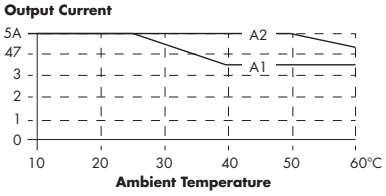
Mounting A



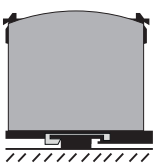


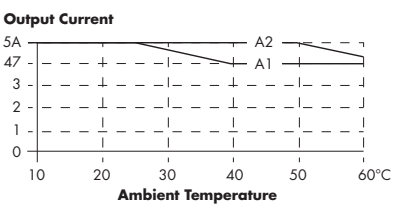
Mounting B



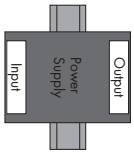


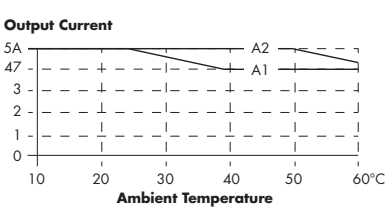
Mounting C



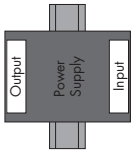


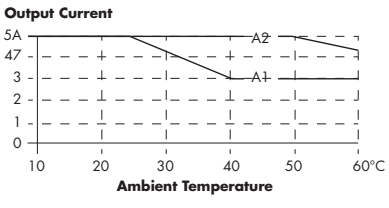
Mounting D





Mounting E





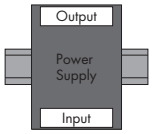
Installation

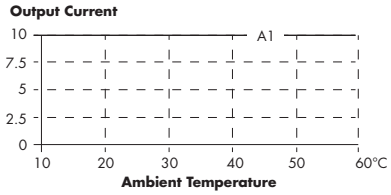
Mounting method instruction

A1 is recommended output current, A2 is the allowed max output current (PSU lifetime is around half of A1). Below curves are tested under 230Vac (179~264Vac), when 110Vac input (85~175Vac), all derating points drops 10°C

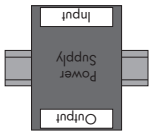
240W 24VDC

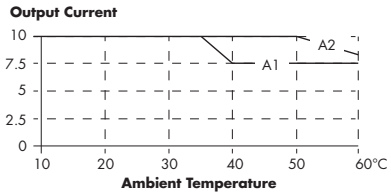
Mounting A



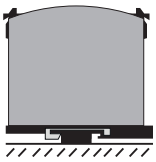


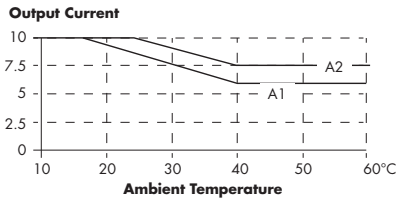
Mounting B



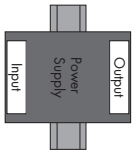


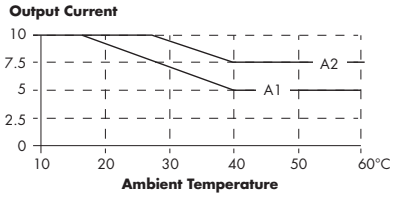
Mounting C



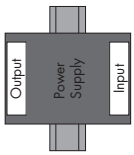


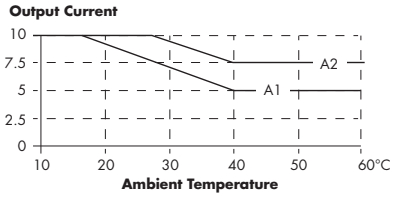
Mounting D





Mounting E





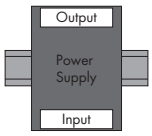
Installation

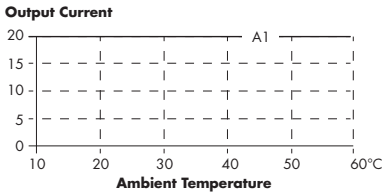
Mounting method instruction

A1 is recommended output current, A2 is the allowed max output current (PSU lifetime is around half of A1). Below curves are tested under 230Vac (179~264Vac), when 110Vac input (85~175Vac), all derating points drops 10°C

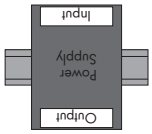
480W 24VDC

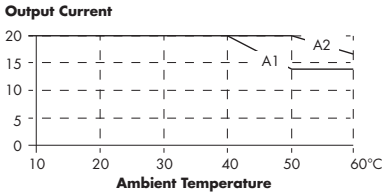
Mounting A



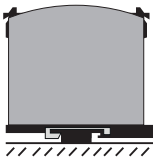


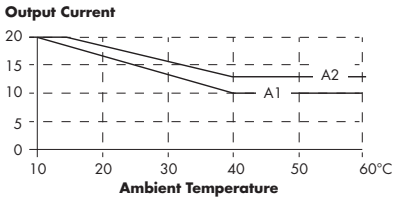
Mounting B



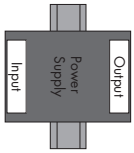


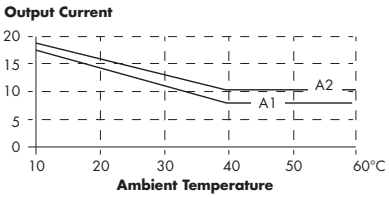
Mounting C



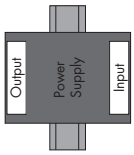


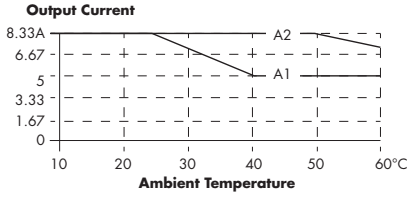
Mounting D





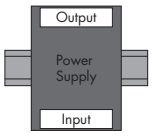
Mounting E

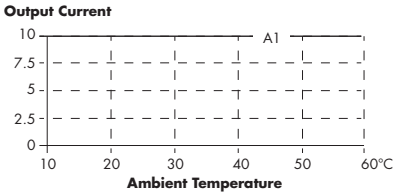




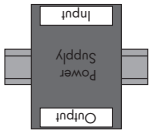
480W 48VDC

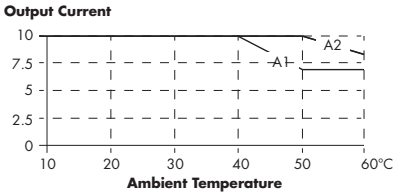
Mounting A



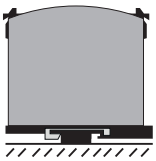


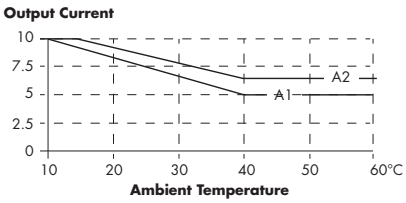
Mounting B



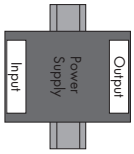


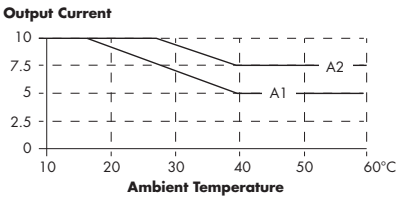
Mounting C



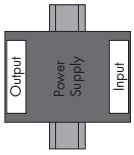


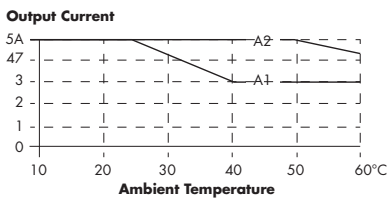
Mounting D





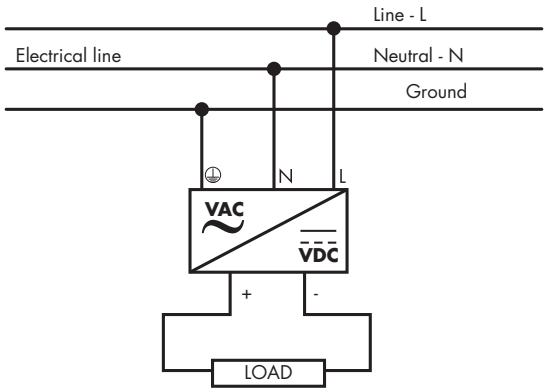
Mounting E





SPDC

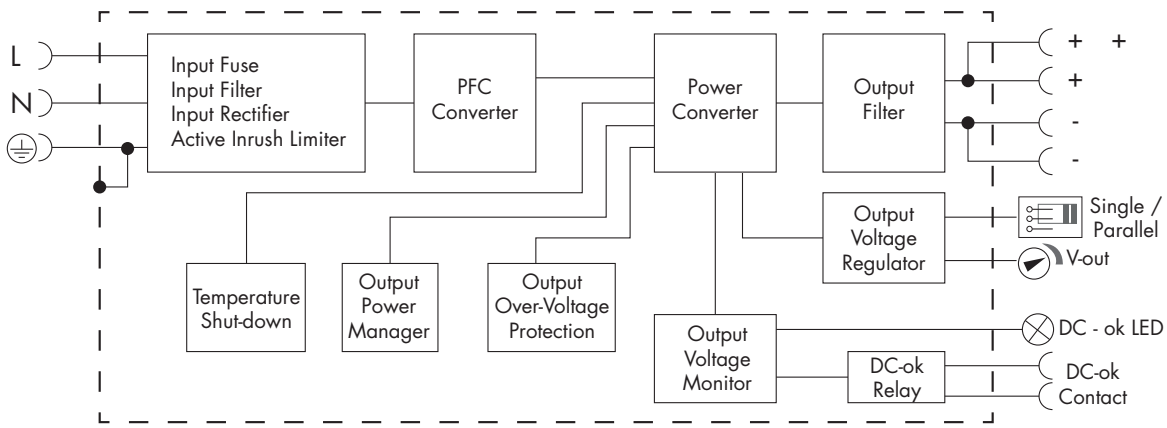
Wiring diagram



Connection specification

	SPDC 120W	SPDC 240W	SPDC 480W
Terminal type	Input: 6.35mm 3PIN screw terminals		
Screw driver blade	3.5mm slotted or cross screwdriver		
Tightening torque (Recommended)	1Nm		
Flexible conductor Cross section Max	4mm²		
Flexible conductor Cross section Min	0.5mm²		
Conductor Cross section AWG Max	AWG20 (GND wire >18AWG)		
Conductor Cross section AWG Min	AWG10 (GND wire >18AWG)		
Rigid conductor Cross-section Min	6mm²		
Rigid conductor Cross-section Max	0.5mm²		
Max Wire Diameter	2.8mm²		

Block diagram



Troubleshooting

Signaling and controls

	SPDC 120W	SPDC 240W	SPDC 480W
DC OK LED	Bicolour LED: Green-OK, Red-Fault		
DC OK output type	Normally Open contact		
Voltage free contact	Yes		
DC contact rating	Max 30V/1A or 60V/0.3A (DC1)		
AC contact rating	Max 30V/0.3A Resistive load (AC1)		
OK threshold	≥ 90% of rated output voltage		
Not OK threshold	≤ 80% of rated output voltage		

Operating description

Control and protection

	SPDC 120W	SPDC 240W	SPDC 480W
Overvoltage protection	15-18VDC (12VDC) 29-33VDC (24VDC)	29-33VDC (24VDC)	28.8-33VDC (24VDC) 58-63VDC (48VDC)
Overload protection **100% ~ 150% of rated current** **>150% of rated current**	Constant current limiting for some time (150% of rated current, last 3s) Hiccup mode, auto recovery: PS stop working for 7s, after 7s, if the load <=rated current, PS will work normally, auto recovery		
Current Limiting	Constant Current limiting		
Short Circuit protection	Long term mode. Auto recovery		
Over temperature protection	105±5°C (221°±41°F), detect on temperature controller; shut down O/P, auto recovery after temperature goes down		
Reverse voltage protection	No		

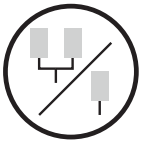
SPDC

Glossary

CE: "Conformité Européene" or "European Conformity" ; Indicates the manufacturer declaration of conformity that the product meets the relevant health, safety and environmental protection requirements of the applicable EC directives.

cULus: This certification mark is based on the UL508 ; Standard for Industrial Control Equipment. The UL508 covers industrial control devices and devices accessory for starting, stopping, regulating, controlling, or protecting electric motors. In addition, UL508 also covers devices rated 1500 volts or less. Industrial control equipment covered by these requirements is intended for use in an ambient temperature of 0 – 40°C (32 – 104°F)

cRUus: This certification mark is based on the UL60950-1 ; Information Technology Equipment - Safety - Part 1. The UL60950-1 is applicable to mains-powered or battery-powered information technology equipment, including electrical business equipment and associated equipment, with a RATED VOLTAGE not exceeding 600 V.



Parallel Operation: Enable the use of 2 identical Power Supply units to be connected in Parallel to double the output current.

Power Boost: Increase the power output between 110% to 150% for a short period of time to sustain the intial load operations.

Compact dimension: The footprint is greatly reduced with this range, saving up to 50% space when compared to others.

SPDM

Single Phase Power Supply

Benefits

- **Power in compact dimensions.** The SPDM provides up to +30% space saving when compared to SPD
- **Reliable and cost saving.** The SPDM provides high reliability power at an attractive price level
- **Low power loss, high efficiency.** The compact design results in low energy losses and high efficiency
- **Intuitive indication.** A clear LED indicates the status of the power supply
- **Universal AC, DC input range.** SPDM series can be powered with AC Voltage (85VAC to 264VAC) or with DC Voltage (130VDC to 350VDC).
- **Reliable critical protection.** The operation safety is guaranteed by the various output protections: Over Voltage (OVP), Over Load (OLP), Short Circuit (zz) and Over Temperature (OTP).
- **High efficiency and wide operating ambient temperature.** These power supplies have an efficiency up to 88%.
- **Ease of installation.** The SPDM can be installed in 5 different orientations, enabling the unit to fit easily into installations with limited space.

Description

The SPDM is designed to be used in all automation applications, where it can be easily installed on the Din rail and save installation time by up to 50% with the option of the spring terminal. The SPDM is a premium quality product at an attractive price level. Reliability is guaranteed through the multiple integrated protections.

Applications

This product is extremely suitable for all applications which require single-phase power supply with universal voltage input and high efficiency.

Main functions

- Compact dimension of up to 45mm width
- High efficiency up to 88%
- Universal input voltage range: 85VAC to 264VAC; 130VDC to 350VDC
- 30W, 50W, 75W, 120W, 240W
- Screw or spring terminals

SPDM

References

Order code

SPDM ☐ ☐ 1 ☐

Enter the code entering the corresponding option instead of ☐

Code	Option	Description	Notes
S	-	Switching	Device typology
P	-	Power	
D	-	DIN rail	Mounting
M	-	Medium	Size
☐	12	12VDC	Rated output voltage
	24	24VDC	
	48	48VDC	
☐	30	30W	Rated output power
	50	50W	
	75	75W	
	120	120W	
	240	240W	
1	-	Single phase input	Input type
	B	Spring terminal	Terminal type

Selection guide

Output Voltage	30W	50W	75W	120W	240W
12VDC	SPDM12301/B	SPDM12501/B	SPDM12751/B	SPDM121201	-
24VDC	SPDM24301/B	SPDM24501/B	SPDM24751/B	SPDM241201	SPDM242401
48VDC	-	-	-	SPDM481201	SPDM482401

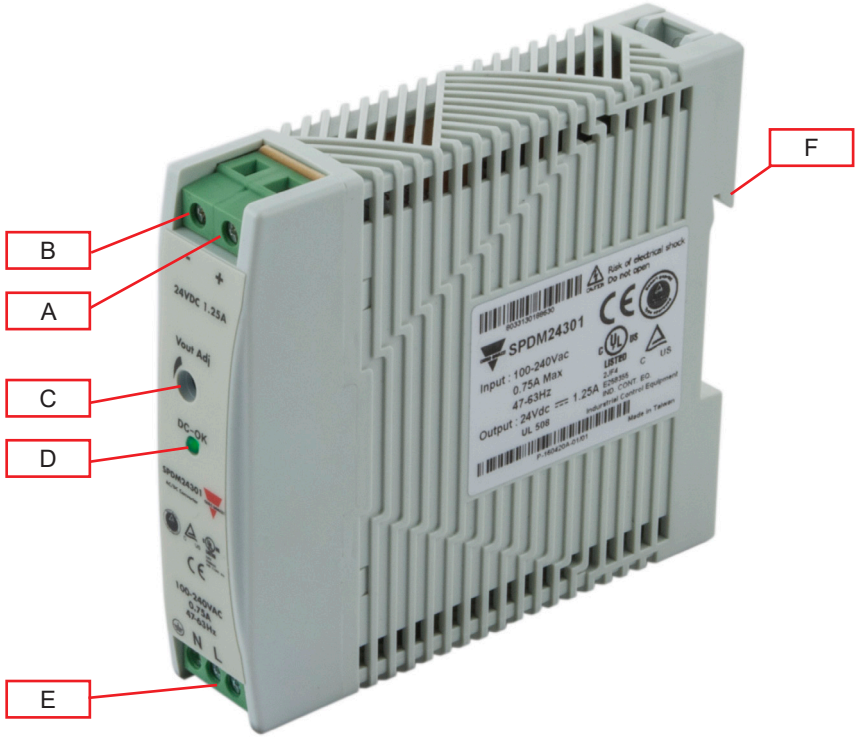
Further reading

Information	Where to find it	QR
SPDM Data sheet		
SPDM Installation sheet		
SPDM CAD drawings		

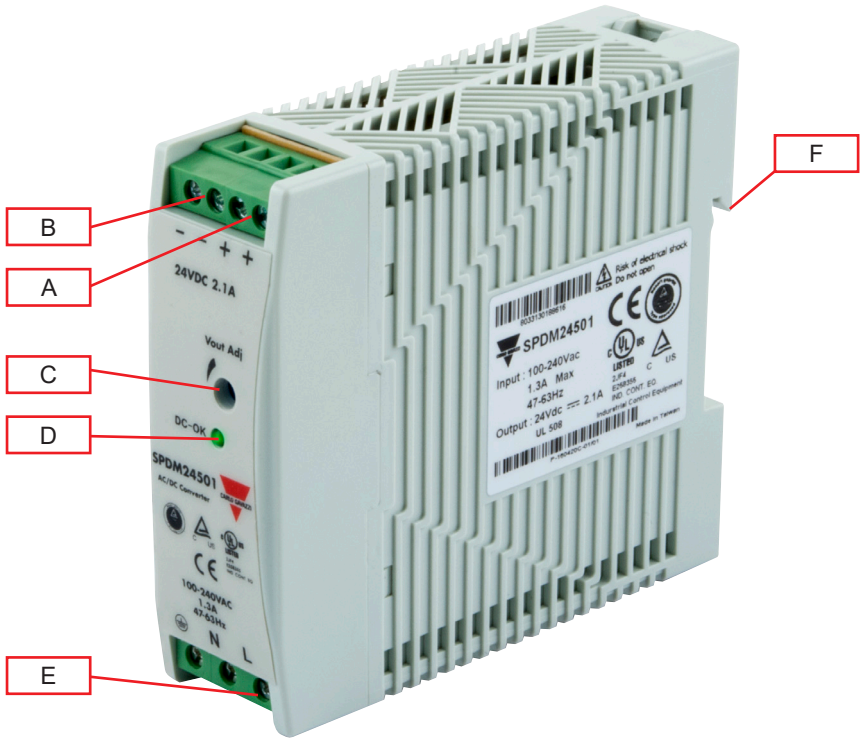
SPDM

Structure

SPDM 30W

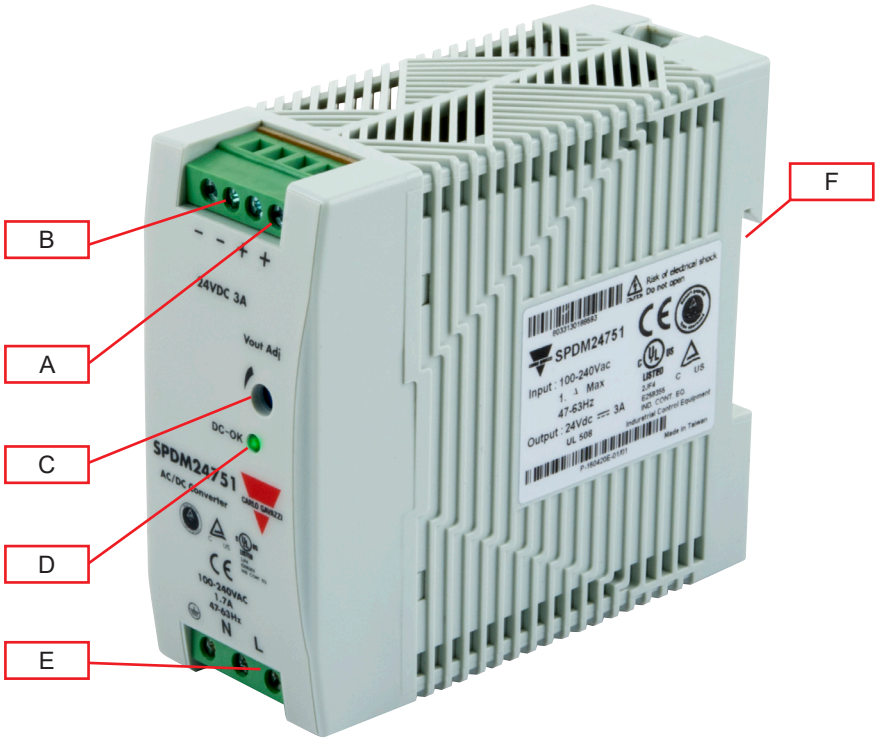


SPDM 50W



SPDM

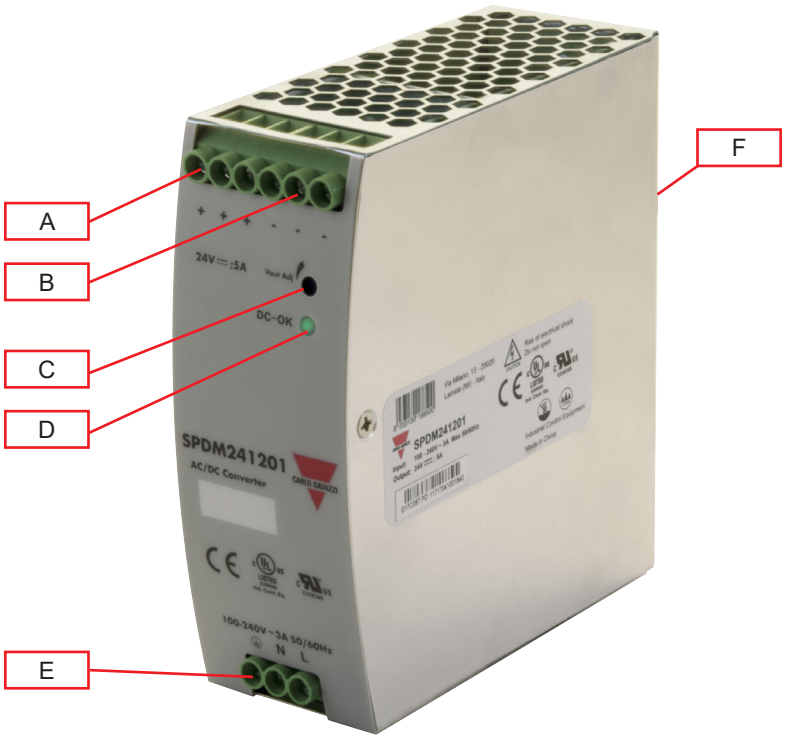
SPDM 75W



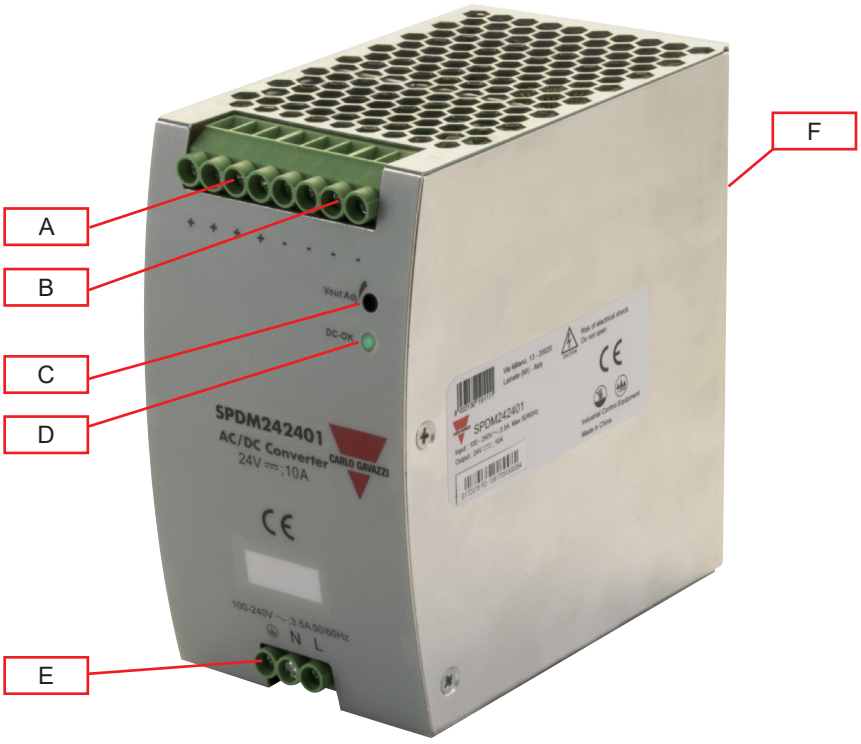
SPDM 30W / SPDM 50W / SPDM 75W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage ≥90% of rated output voltage red when output voltage ≤80% of rated output voltage, or, overload
E	Power supply terminals	L, N supply terminals + GND
F	DIN rail mounting clip	Clip present on back side

SPDM

SPDM 120W



SPDM 240W



SPDM

SPDM 120W / SPDM 240W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	DC OK LED	Green when output voltage ≥90% of rated output voltage red when output voltage ≤80% of rated output voltage, or, overload
E	Power supply terminals	L, N supply terminals + GND
F	DIN rail mounting clip	Clip present on back side

Features

General data

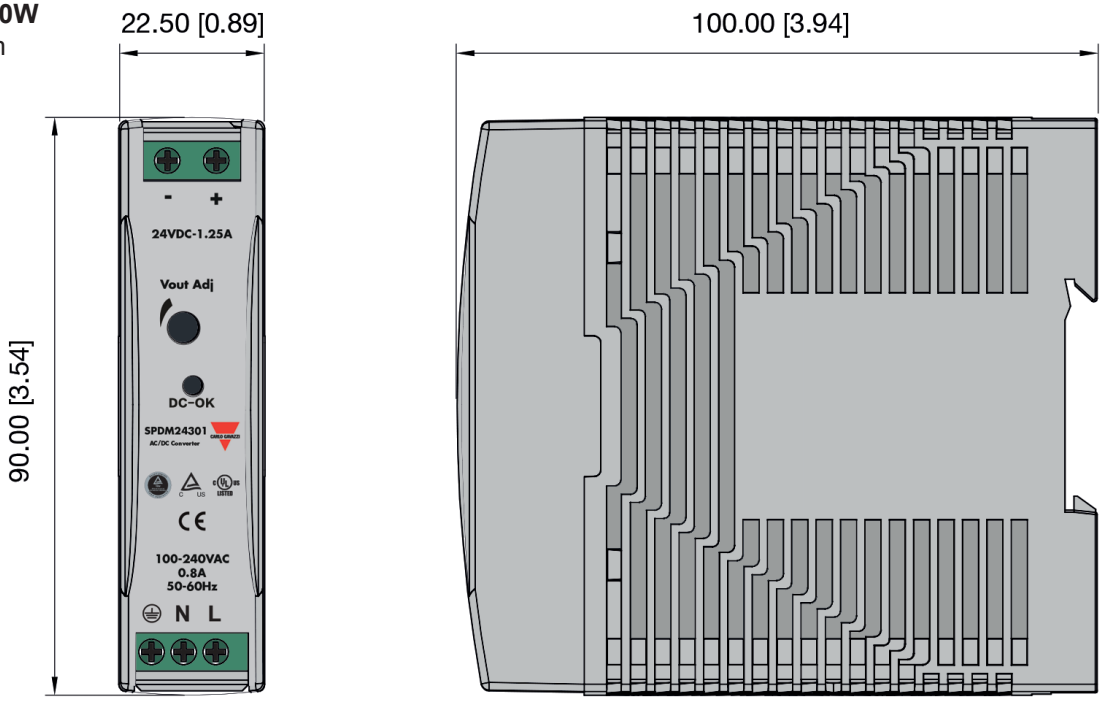
	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Leakage current	<0.25mA (Input-Output)				
Earth leakage current	<3.5mA (Input-GND)				
Efficiency	86%	87%	87%	85% (12VDC) 88% (24VDC) 89% (48VDC)	87% (24VDC) 88% (48VDC)
Power loss @ nominal load	4.9W (12VDC) 5.7W (24VDC)	8.0W (12VDC) 8.8W (24VDC)	10.5W (12VDC) 10.5W (24VDC)	16W @ 120W	35W @ 240W
Power factor (Full Load) **110VAC** **230VAC**	-	-	-	-	 0.98 0.94
Ingress protection	IP20				
MTBF	721,000Hrs (12V) 764,000Hrs (24V) Bellcore Issue 6 @40°C, GB	556,000Hrs (12V) 580,000Hrs (24V) Bellcore Issue 6 @40°C, GB	556,000Hrs (12V) 580,000Hrs (24V) Bellcore Issue 6 @40°C, GB	>500,000Hrs (MIL-HDBK-217F)	>300,000Hrs (MIL-HDBK-217F)
Case material	Plastic			Metal	
Weight	140g	200g	250g	590g	940g
Switching frequency	65kHz		40 to 100kHz	80KHz	75z
Mounting	DIN rail mounting				
Packing	0.15Kg; 60 pcs / 10Kg / 2.16cuft	0.22Kg; 48 pcs / 12Kg / 2.16cuft	0.27Kg; 40 pcs / 12Kg / 2.16cuft	24pcs/CTN, 15.0Kg, 0.04cbm	10pcs/CTN, 11.5Kg, 0.04cbm

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

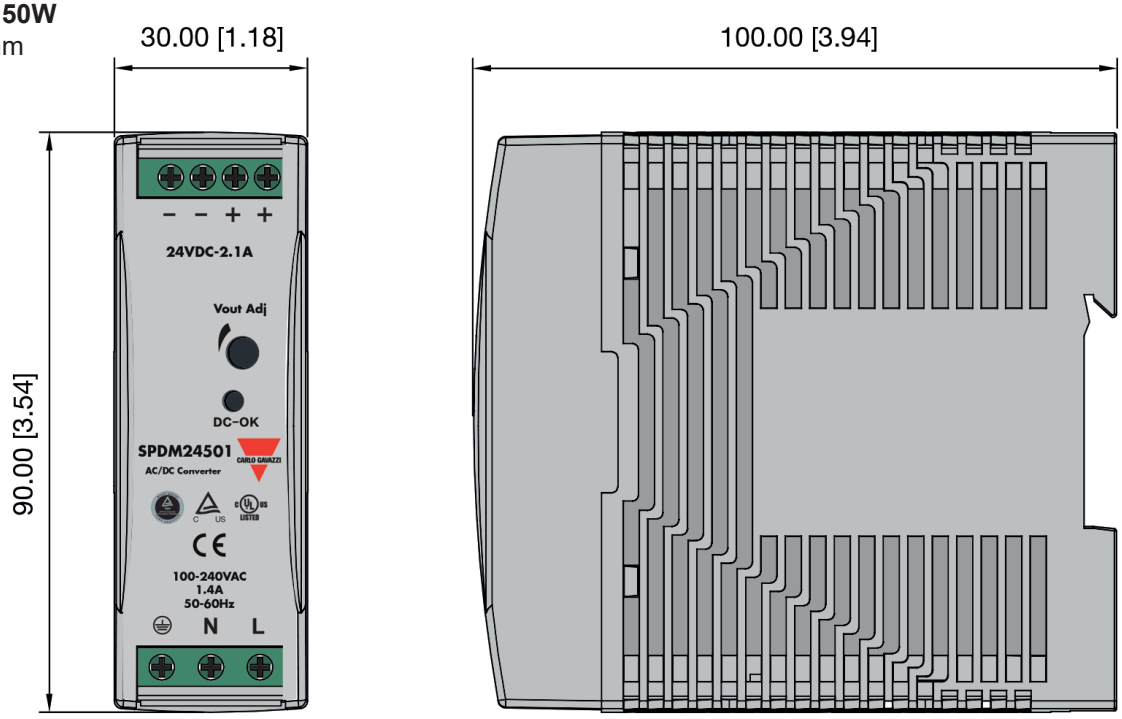
SPDM

Dimensions

SPDM 30W
Unit: mm



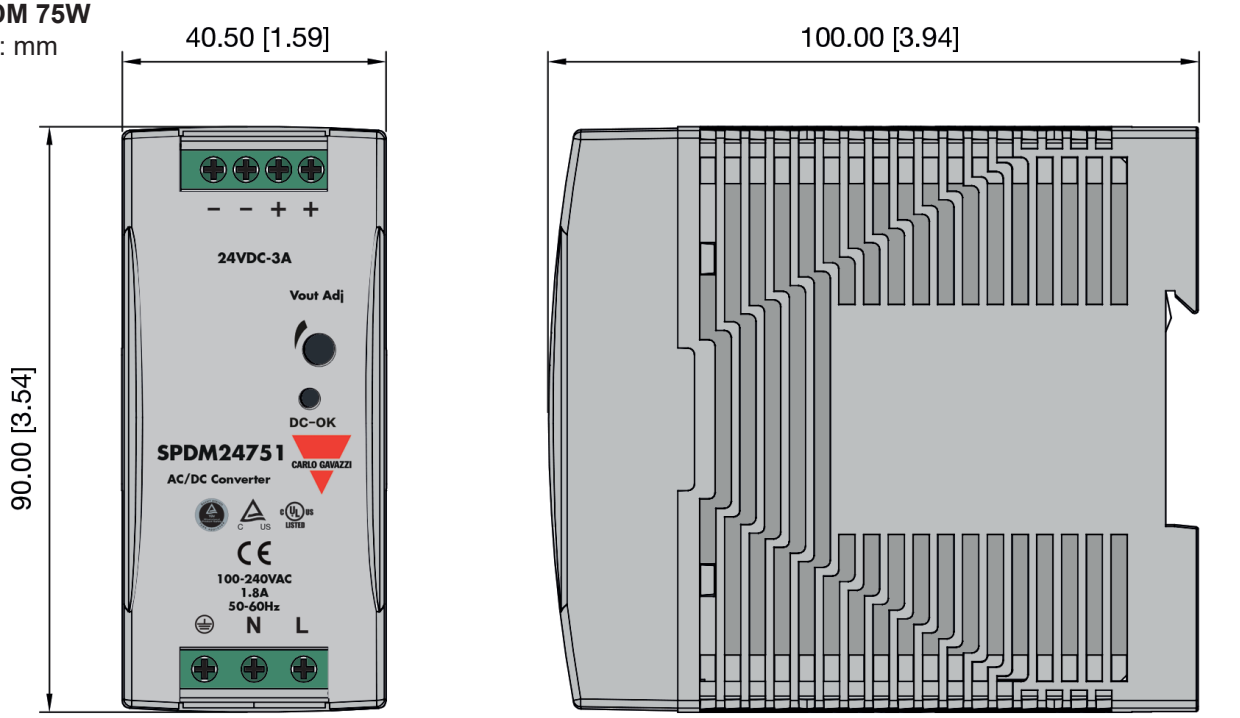
SPDM 50W
Unit: mm



SPDM

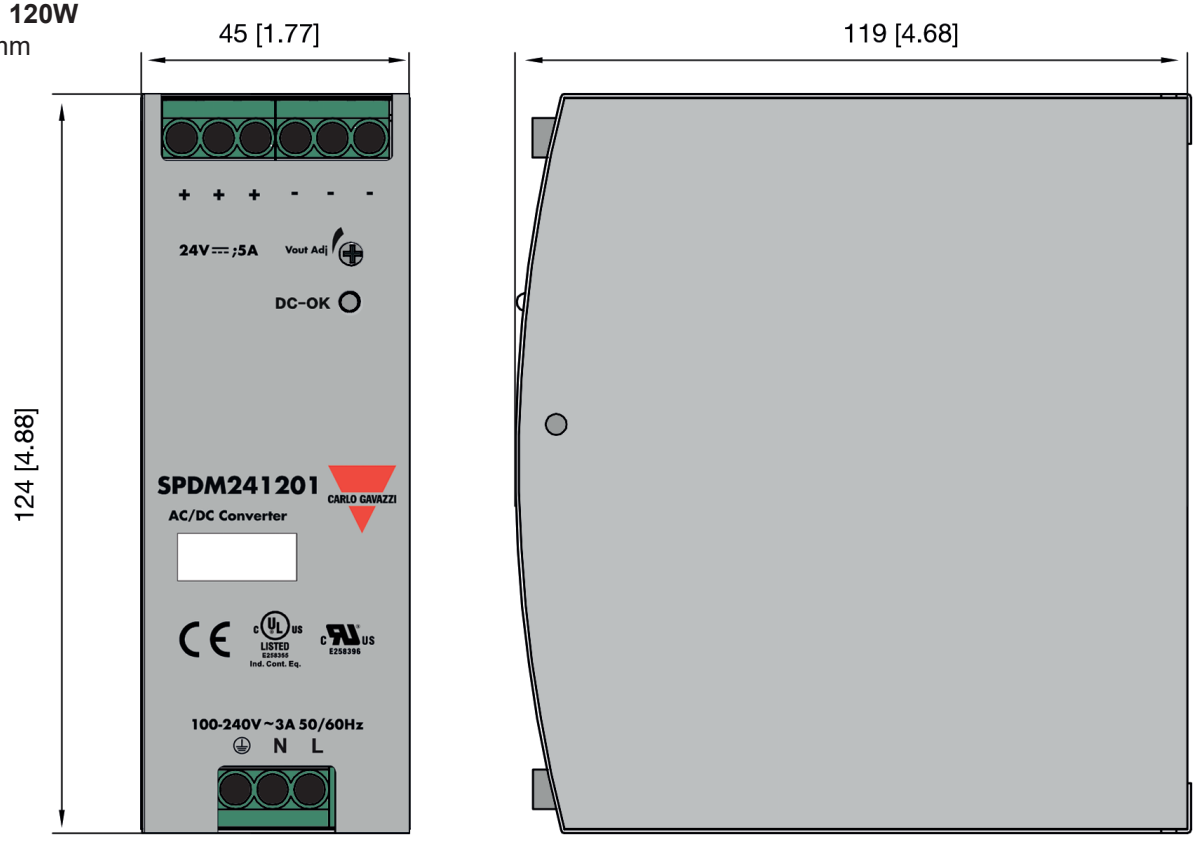
SPDM 75W

Unit: mm



SPDM 120W

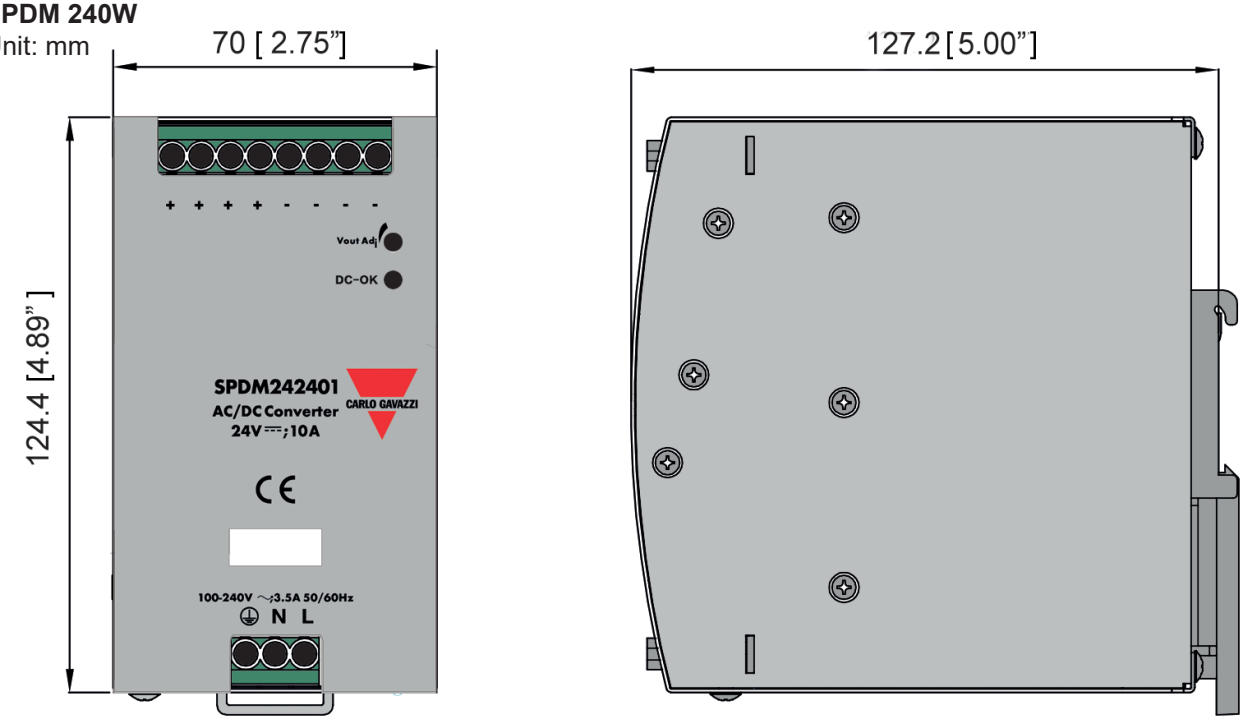
Unit: mm



SPDM

SPDM 240W

Unit: mm



SPDM

Connection diagram

Terminal markings

SPDM 30W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4	V+	Positive output terminal
5	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status

SPDM 50W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4, 5	V+	Positive output terminal
6, 7	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status

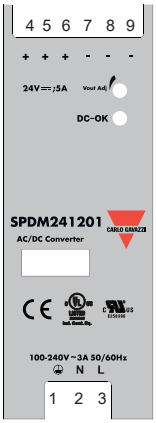
SPDM 75W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4, 5	V+	Positive output terminal
6, 7	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status

SPDM

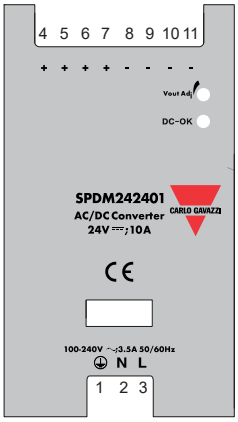
SPDM 120W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4, 5, 6	V+	Positive output terminal
7, 8, 9	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status



SPDM 240W

Terminal	Designation	Description
1	Ground	Ground this terminal to minimize high frequency emissions
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	L	Input terminals (phase conductor, no polarity with DC input)
4, 5, 6, 7	V+	Positive output terminal
8, 9, 10, 11	V-	Negative output terminal
	Vout ADJ.	Potentiometer for output voltage adjustment
	DC status	LED indication of power supply output status



SPDM

Environmental

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Temperature operating range	-25°C to 71°C -13°F to 159.8°F			-20°C to 70°C -4°F to 158°F	
Temperature storage	-40°C to 85°C -40°F to 185°F				
Humidity	20% to 95% RH No condensing			20% to 90% RH No condensing	
Temperature derating	Refer to derating diagrams				
Temperature regulation	+/- 0.03%/°C				

Compatibility and conformity

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Safety standards	EN60950-1				
EMC emission	EN61000-6-3:2007+A1:2011+AC:2012 EN61204-3:2000			EN55022, EN55024, FCC PART 15 Class B	EN55022, EN55024, Class B
Harmonic current	EN 61000-3-2			EN61000-3-2, Class A	
EMC immunity	EN 61000-6-2: 2005+AC: 2005 EN 61204-3: 2000 EN55024:2010+A1: 2015			EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11, Heavy industrial level	
CE	EN61000-6-3, EN55032 Class B, EN61000-3-2, EN61000-3-3 EN61000-6-2, EN55024, EN61000-4-2 Level 4, EN61000-4-3 Level 3 EN61000-4-4 Level 4, EN61000-4-5 L-N Level 3, L / N-FG Level 4 EN61000-4-6 Level 3, EN61000-4-8 Level 4, EN691000-4-11 ENV 50204 Level 2, EN61204-3			EN55022, EN55024, FCC PART 15 CLASS B	EN55022, EN55024, FCC PART 15 CLASS B
UL certification **cULus** **cURus** **UL1310**	UL508 Listed UL60950-1 (2nd Edition) Class 2		UL508 Listed UL60950-1 (2nd Edition) Class 2 only for 24VDC models (SPDM24751 and SPDM24751B)	UL508 Listed UL60950-1 (2nd Edition)	-
Vibration resistance	IEC 60068-2-6			IEC 60068-2-6	IEC 60068-2-6
Shock resistance	IEC 60068-2-27			IEC 60068-2-27	IEC 60068-2-27

SPDM

Insulation

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Insulation/Withstand Voltage (I/PE)	3000VAC / 4242VDC			3kVAC , ≤10mA	
Insulation/Withstand Voltage (I/O)	1500VAC / 2121VDC			1.5kVAC , ≤10mA	
Insulation/Withstand Voltage (O/PE)	500VAC / 710VDC			0.5kVAC , ≤10mA	
Insulation resistance	100MΩ Input-Output @ 500VDC			10MΩ	
Overvoltage category	Level OVC II			II	
Pollution degree	2				

Input data

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Rated input voltage	100VAC to 240VAC				
Input voltage range	85VAC to 264VAC 120VDC to 375VDC			90VAC to 264VAC 127VDC to 370VDC	
AC current (max) **115VAC** **230VAC**	335mA 210mA	1000mA 500mA	1450mA 750mA	<2.7A <1.35A	<3A (24VDC), <3.5A (48VDC) <2.5A (24VDC), <2.5A (48VDC)
Frequency range	47Hz to 63Hz				
Inrush current **115VAC** **230VAC**	<20A <40A	<30A <60A	<30A <60A	<20A <35A	<30A <60A
Inrush current (DC)	50A @ 375Vdc	70A @ 375Vdc	/		
Internal input fuse	T2A/250VAC	T2A/250VAC	T3.15A/250VAC	4A/250Vac	T6.3A/250V
Standby power consumption	0.3W		0.5W	<5W	

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

SPDM

Output data

		SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Output power		30W	50W	75W	120W	240W
Voltage accuracy		±1%				
Line regulation		±1%			±0.5%	
Load regulation		±1%				
Voltage regulation span		11.4VDC to 15.6VDC (12VDC) 22.5VDC to 28.5VDC (24VDC)			12VDC to 14VDC (12VDC) 24VDC to 28VDC (24VDC) 48VDC to 56VDC (48VDC)	24VDC to 28VDC (24VDC) 48VDC to 56VDC (48VDC)
Rated output current		2A (12VDC) 1.25A (24VDC)	4A (12VDC) 2.1A (24VDC)	5.5A (12VDC) 3A (24VDC)	10A (12V) 5A (24V) 2.5A (48DC)	10A (24V) 5A (48DC)
Rated continuous loading	**12**	1.6 A (15 VDC)	3.2 A (15 VDC)	4.4 A (15 VDC)	9 A (14 VDC)	
	24	1 A (28.5 VDC)	1.7 A (28.5 VDC)	2.4 A (28.5 VDC)	4.5 A (28 VDC)	9 A (28 VDC)
	48				2.25 A(56 VDC)	4.5 A (56 VDC)
Ripple and noise		100mV			0 to 70°C (32 to 158°F) ≤120mV (12-24VDC) ≤240mV (48VDC) -20 to 0°C (-13 to 32°F) ≤240mV (12-24VDC) ≤480mV (48VDC)	0-70°C (32 to 158°F) ≤120mV (24VDC) ≤240mV (48VDC) (-20) -0°C (-13 to 32°F) ≤240mV (24VDC) ≤480mV (48VDC)
Hold up time **115VAC** **230VAC**		20ms 50ms		15ms 50ms	≥10ms ≥20ms	≥10ms ≥20ms
Set-up time **115VAC** **230VAC**		≤1s ≤1s		≤2s ≤2s	≤3ms ≤1.2s	≤2s
Rise time		150ms			<60mS	<100mS
Turn-on overshoot		< +5%, Io nom, 25°C			<5.0%	
Overshoot and undershoot		< +5%, Io nom, 25°C / < -5%, Io nom, 25°C			≤5.0%	
Series operation		Yes				
Parallel operation		No				
Power oost		No				

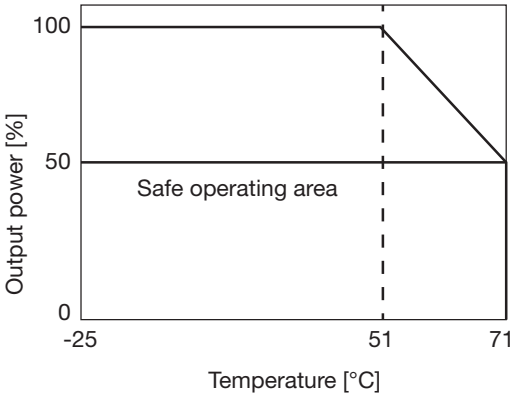
(All specifications are at nominal values, full load, 25°C unless otherwise stated)

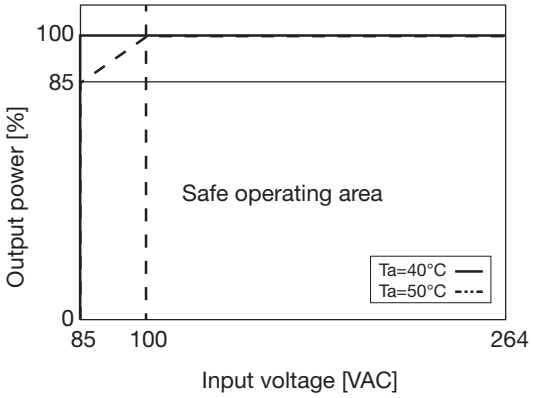
SPDM

Performance

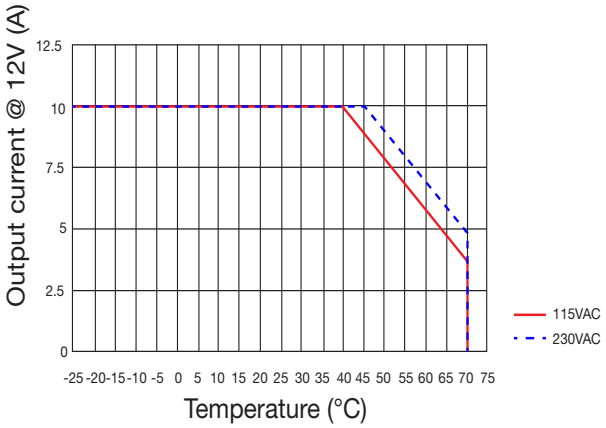
Current derating

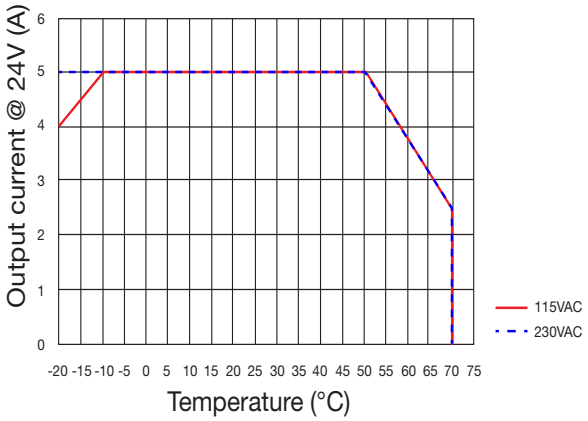
SPDM 30W - 50W - 75W 12VDC / 24VDC

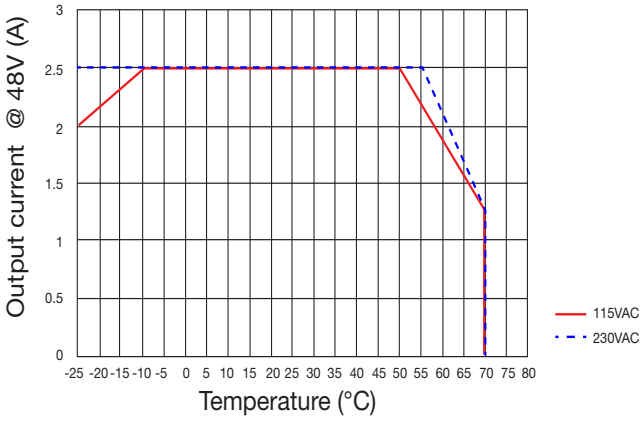




SPDM 120W 12VDC / 24VDC / 48VDC

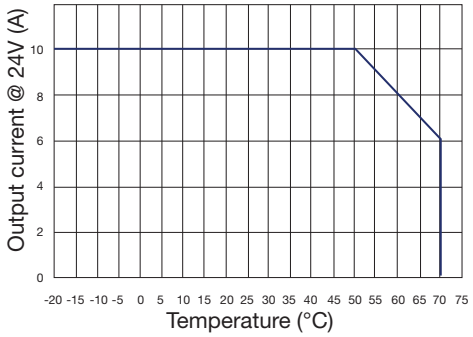


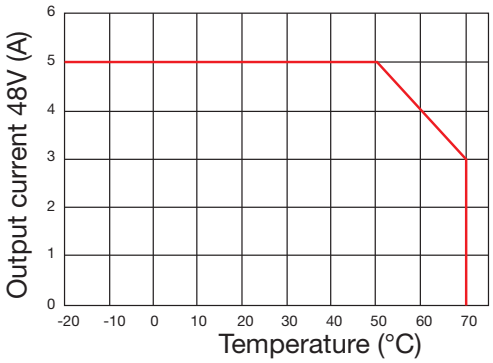




SPDM

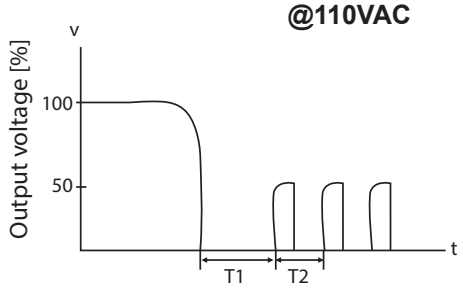
SPDM 240W 24VDC / 48VDC





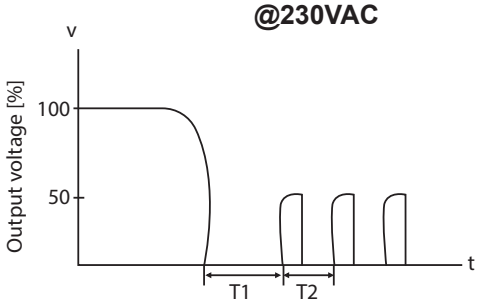
Typical current limited curve

SPDM 30W / 50W / 75W 12VDC / 24VDC @110VAC



Typ T1 : 1000ms, Typ T2 : 300ms

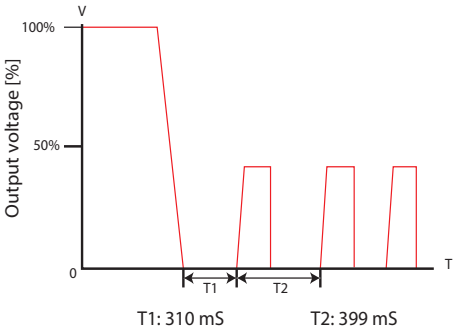
SPDM 30W / 50W / 75W 12VDC / 24VDC @230VAC



Typ T1 : 4500ms, Typ T2 : 320ms

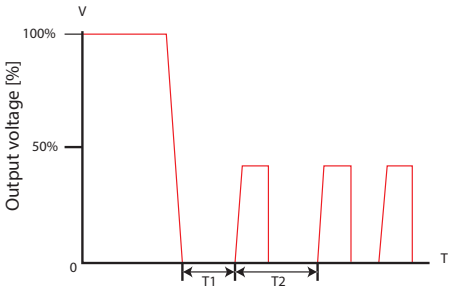
SPDM

SPDM 120W 12VDC / 24VDC / 48VDC @ 110 VAC



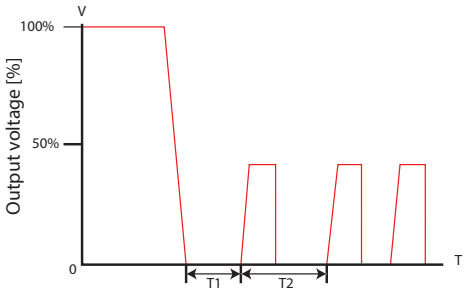
T1: 310 mS T2: 399 mS

SPDM 120W 12VDC / 24VDC / 48VDC @ 230 VAC



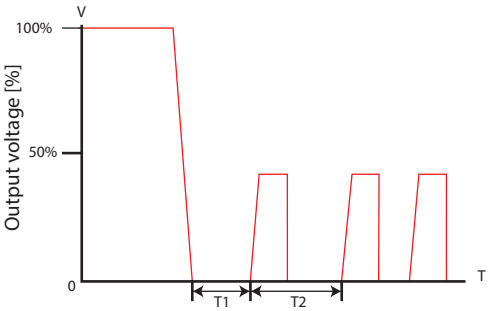
T1: 150 mS T2: 265 mS

SPDM 240W 24VDC / 48VDC @ 110VAC



T1: 338 mS T2: 402 mS

SPDM 240W 24VDC / 48VDC @ 230VAC

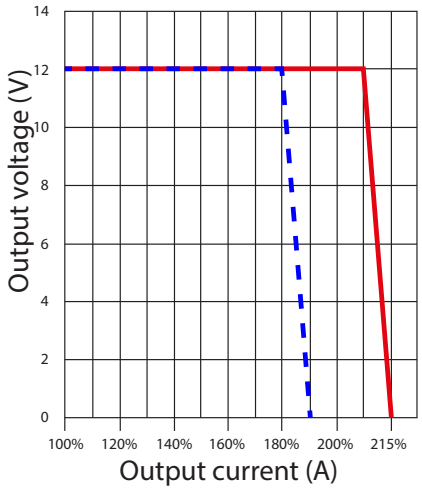


T1: 162 mS T2: 258 mS

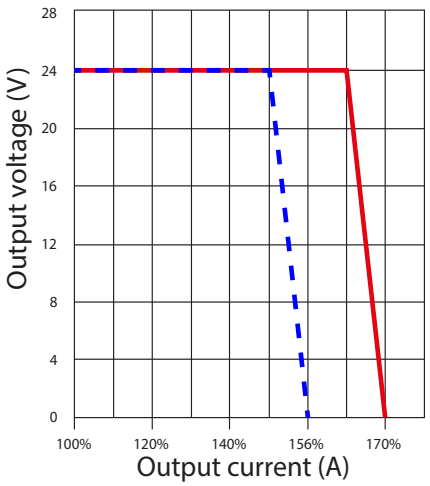
SPDM

Output characteristics

SPDM 30W 12VDC



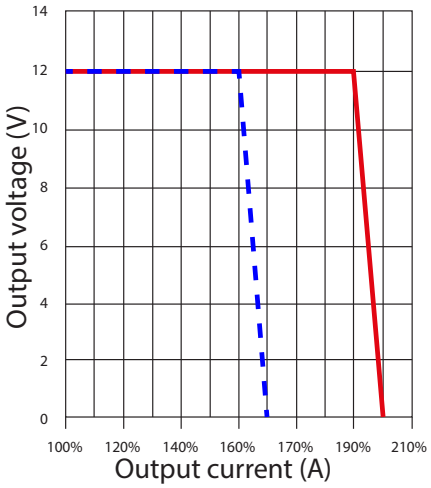
SPDM 30W 24VDC



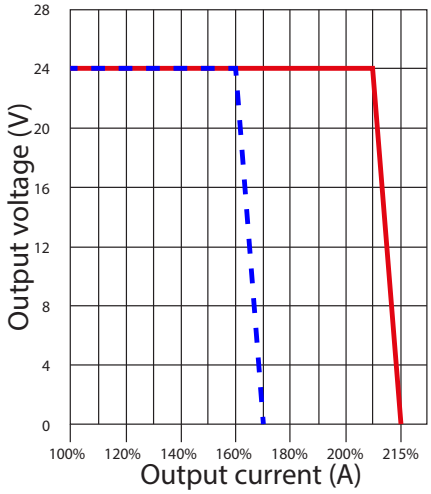
@ 110VAC

@ 230VAC

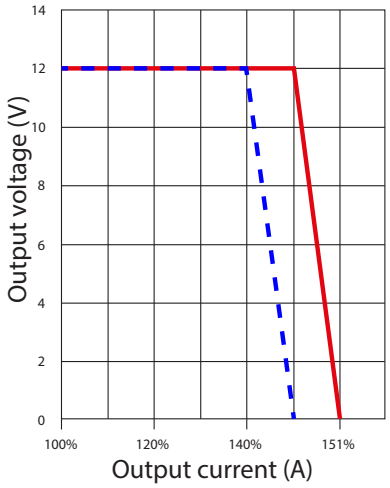
SPDM 50W 12VDC



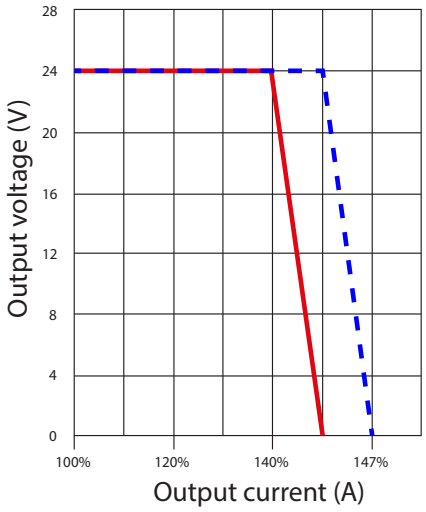
SPDM 50W 24VDC



SPDM 75W 12VDC

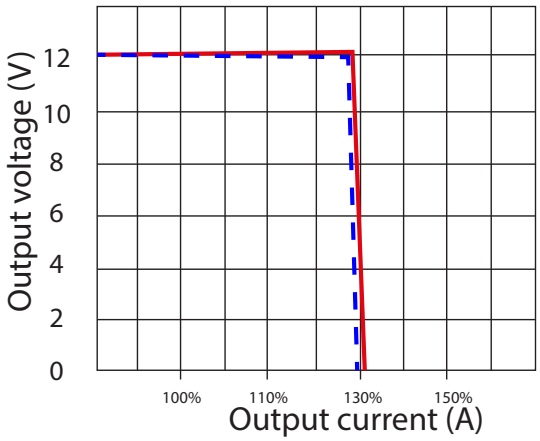


SPDM 75W 24VDC

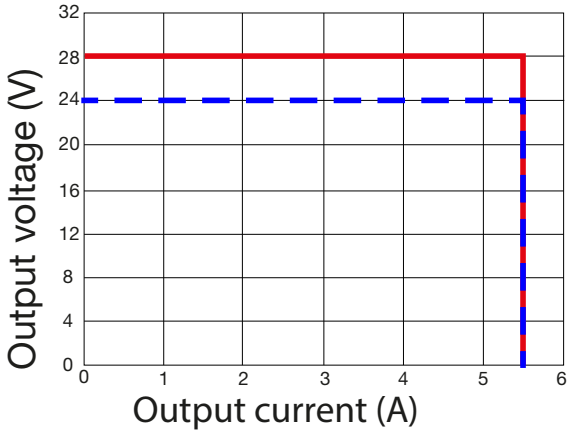


SPDM

SPDM 120W 12VDC



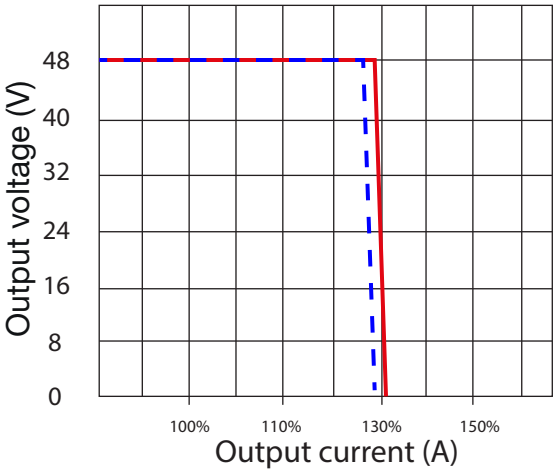
SPDM 120W 24VDC



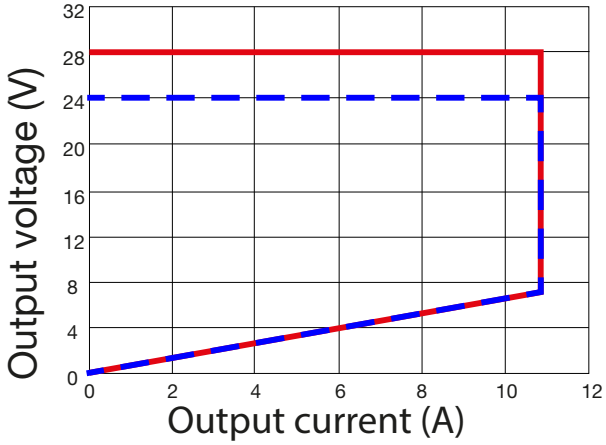
@ 110VAC

@ 230VAC

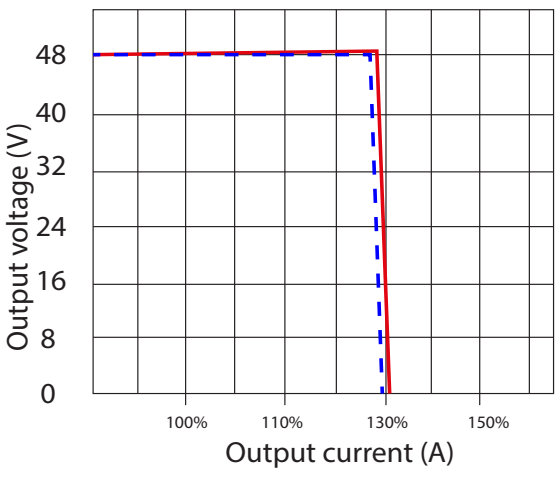
SPDM 120W 48VDC



SPDM 240W 24VDC

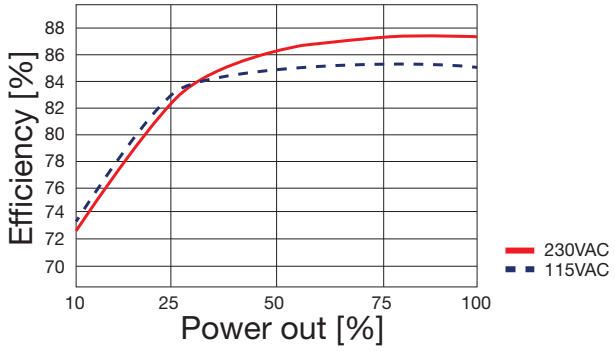


SPDM 240W 48VDC

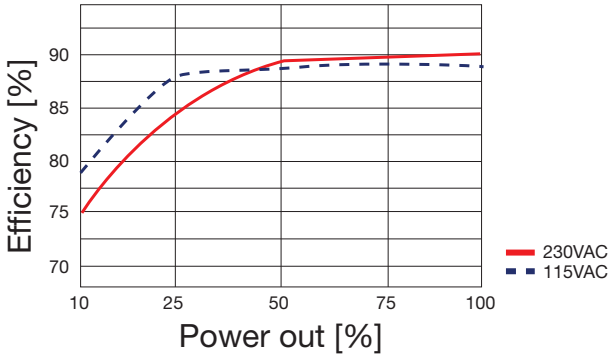


Typical efficiency curve

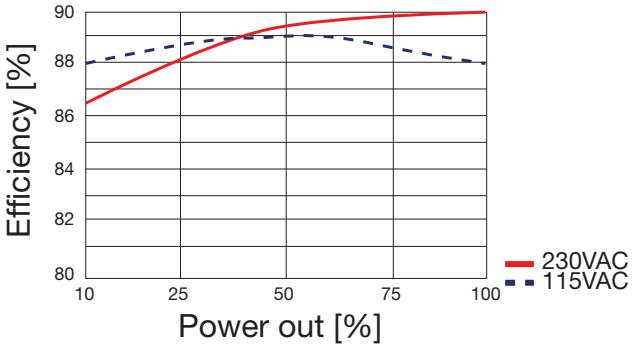
SPDM 30W 12VDC / 24VDC



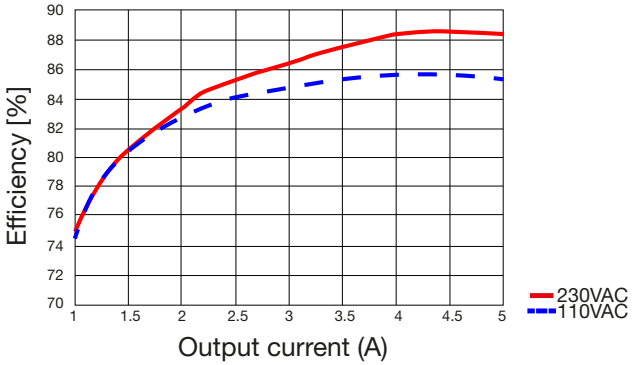
SPDM 50W 12VDC / 24VDC



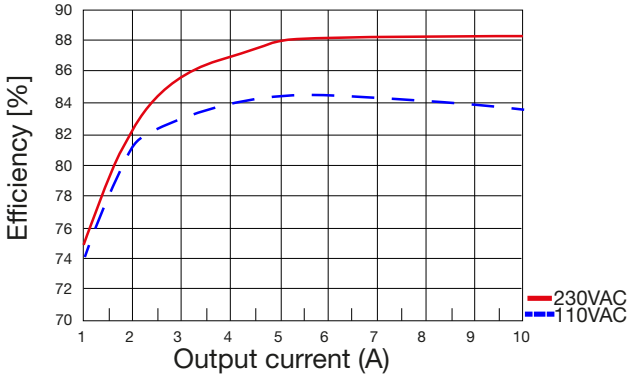
SPDM 75W 12VDC / 24VDC



SPDM 120W 12VDC / 24VDC / 48VDC



SPDM 240W 24VDC / 48VDC



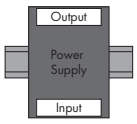
SPDM

Installation

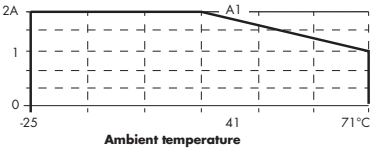
	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Ventilation and cooling	Normal air convection; 25mm of free space on each side is recommended				

SPDM 30W / 12VDC

Mounting A

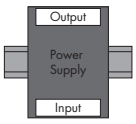


Output current

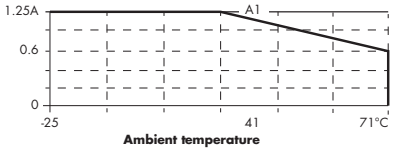


SPDM 30W / 24VDC

Mounting A

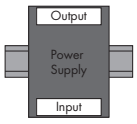


Output current

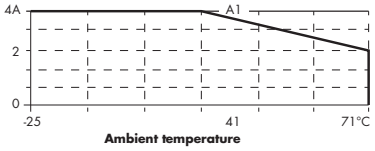


SPDM 50W / 12VDC

Mounting A

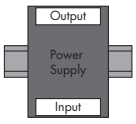


Output current

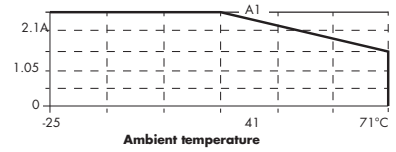


SPDM 50W / 24VDC

Mounting A

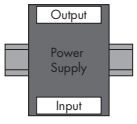


Output current

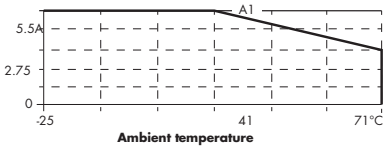


SPDM 75W / 12VDC

Mounting A

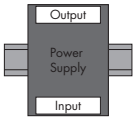


Output current

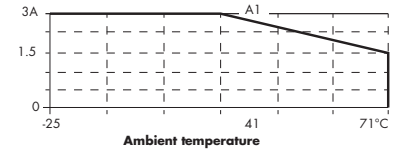


SPDM 75W / 24VDC

Mounting A

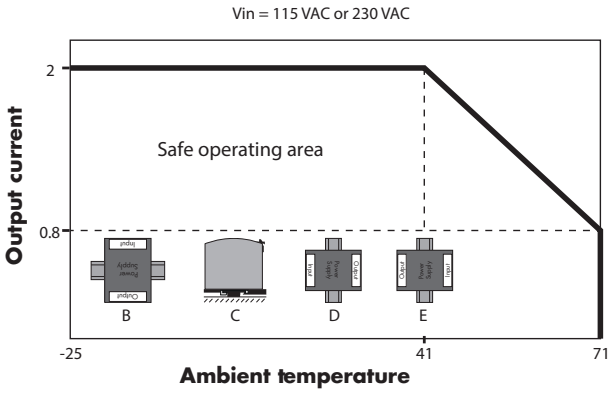


Output current

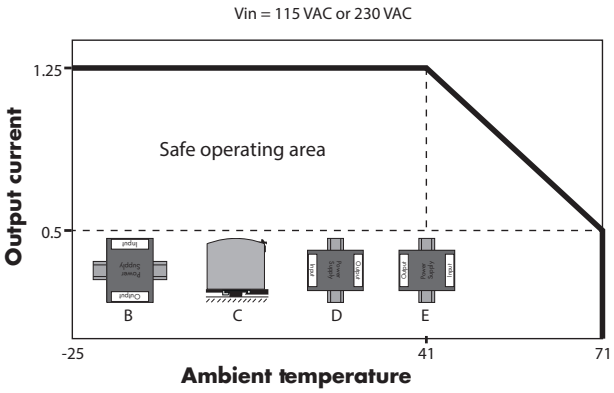


SPDM

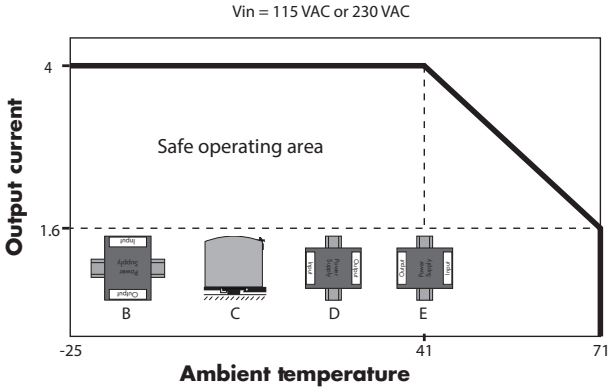
SPDM 30W / 12VDC



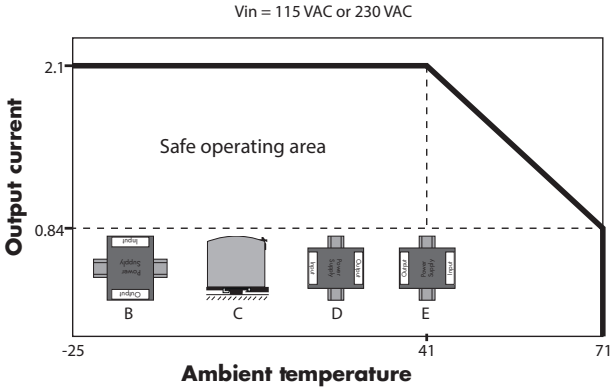
SPDM 30W / 24VDC



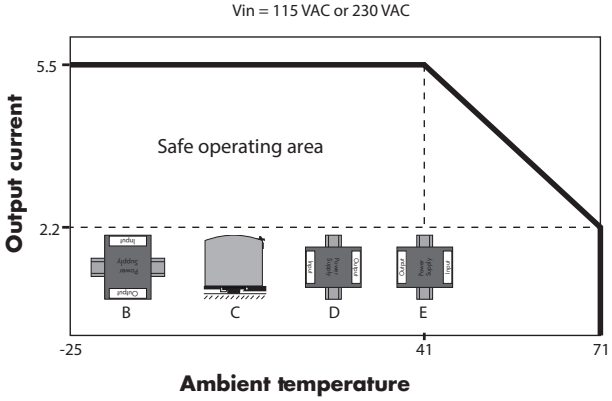
SPDM 50W / 12VDC



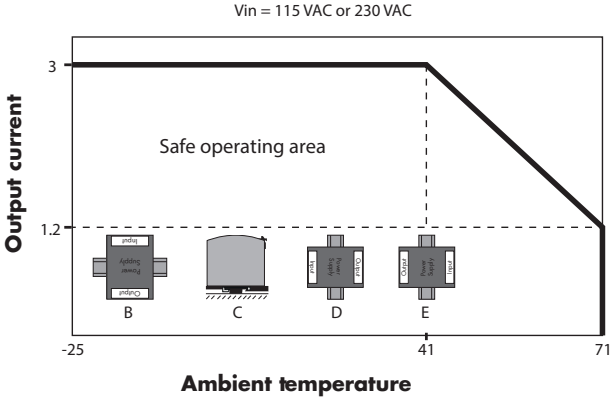
SPDM 50W / 24VDC



SPDM 75W / 12VDC



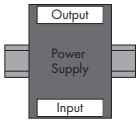
SPDM 75W / 24VDC



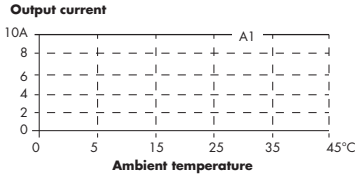
SPDM

SPDM 120W / 12VDC

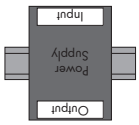
Mounting A



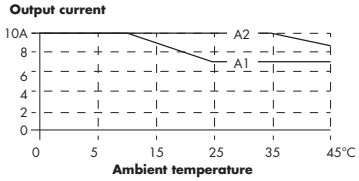
Output current



Mounting B

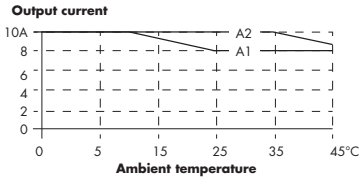


Output current

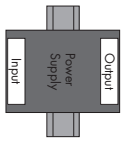


Mounting C

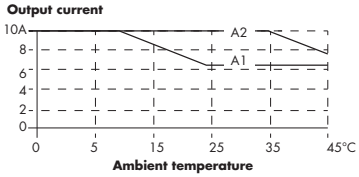
Output current



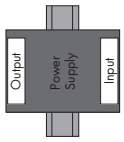
Mounting D



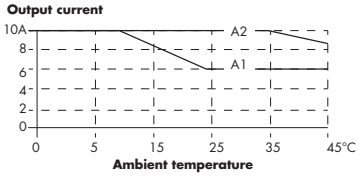
Output current



Mounting E

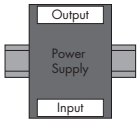


Output current

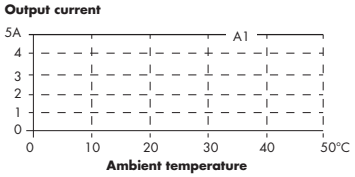


SPDM 120W / 24VDC

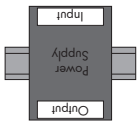
Mounting A



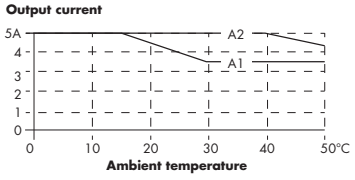
Output current



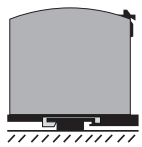
Mounting B



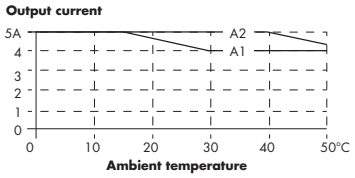
Output current



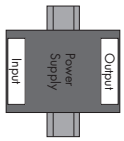
Mounting C



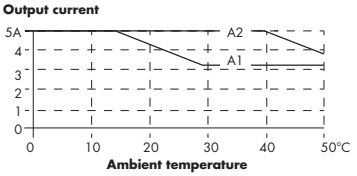
Output current



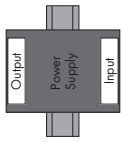
Mounting D



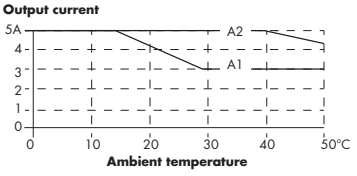
Output current



Mounting E



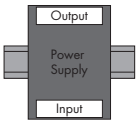
Output current



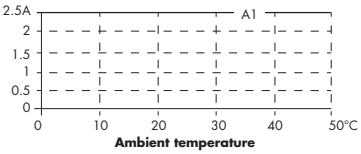
SPDM

SPDM 120W / 48VDC

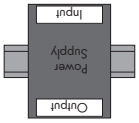
Mounting A



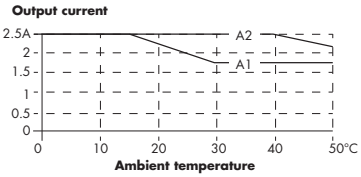
Output current



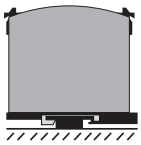
Mounting B



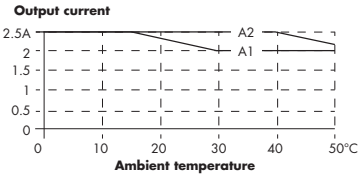
Output current



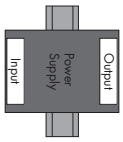
Mounting C



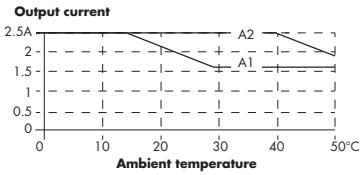
Output current



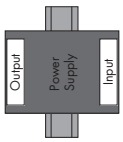
Mounting D



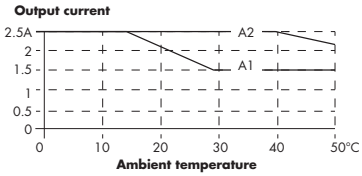
Output current



Mounting E



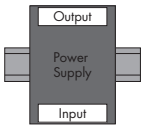
Output current



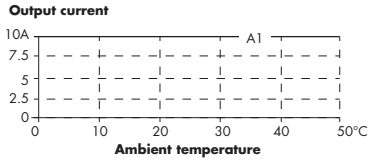
SPDM

SPDM 240W / 24VDC

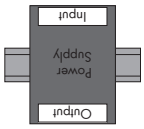
Mounting A



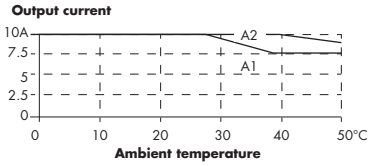
Output current



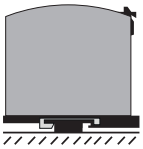
Mounting B



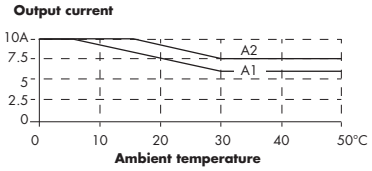
Output current



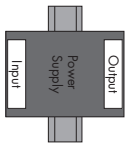
Mounting C



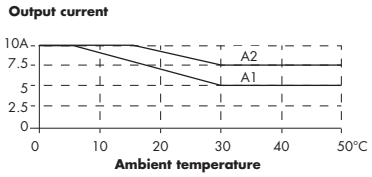
Output current



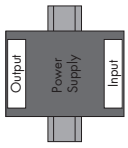
Mounting D



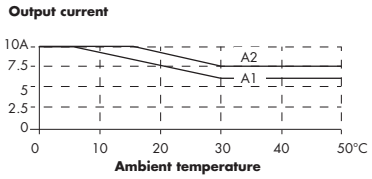
Output current



Mounting E

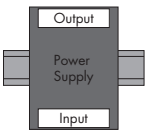


Output current

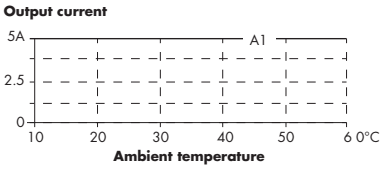


SPDM 240W / 48VDC

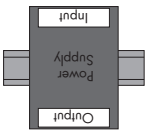
Mounting A



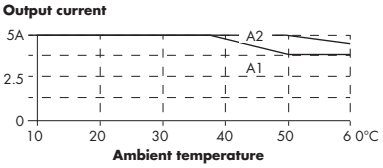
Output current



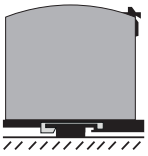
Mounting B



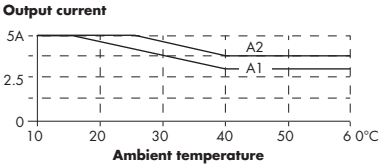
Output current



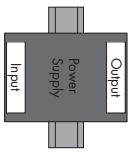
Mounting C



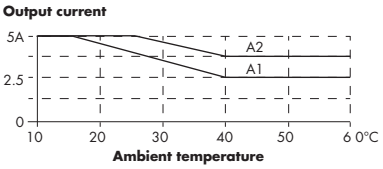
Output current



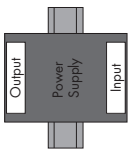
Mounting D



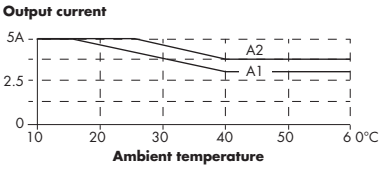
Output current



Mounting E

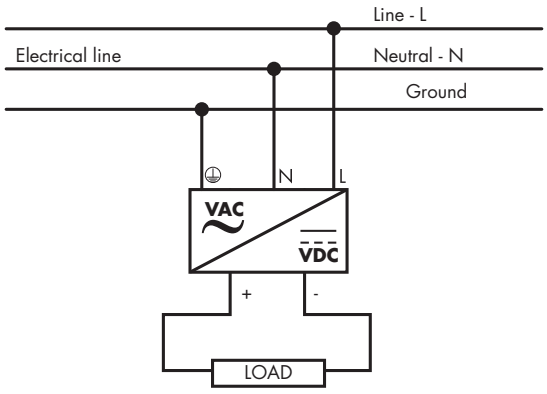


Output current



SPDM

Wiring diagram



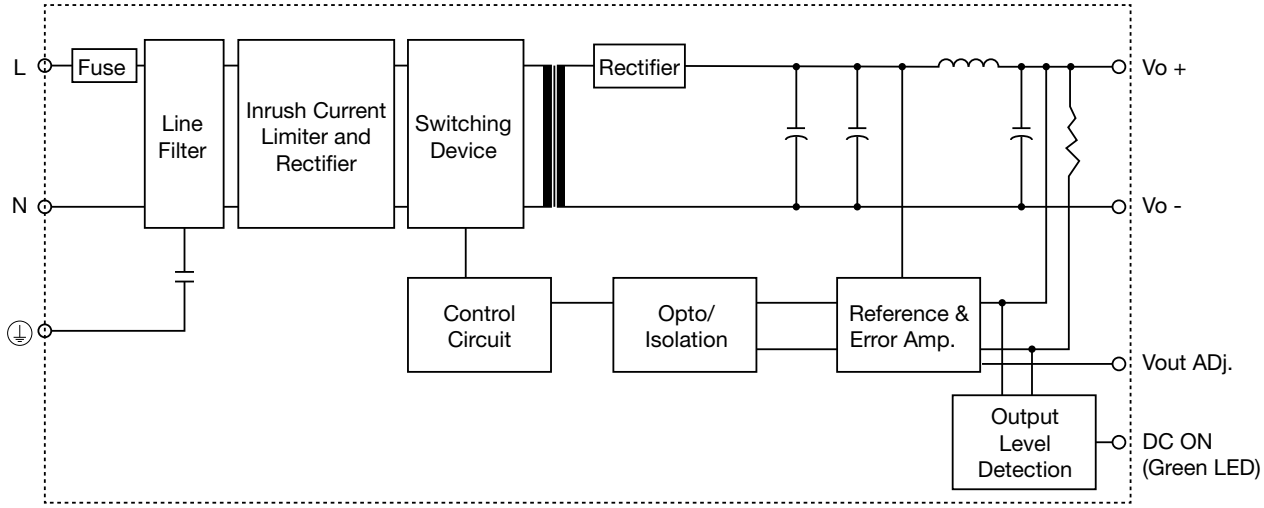
Connection specification

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Terminal type	Screw or spring terminal type			Input 6.35mm, 3pin screw terminals	
Screw driver blade	Philips 1 (PH 1)			3.5mm slotted or cross screwdriver	
Tightening torque (recommended)	5Nm			5Nm	
Flexible conductor cross section max	2.5mm² (screw) 2.0mm² (spring)			4mm²	
Flexible conductor cross section min	0.2mm²			0.5mm²	
Conductor cross section AWG max	AWG26 (screw) AWG 24 (spring)			AWG20 (PG wire >18AWG)	
Conductor cross section AWG min	AWG12 (screw) AWG 14 (spring)			AWG10 (PG wire >18AWG)	
Rigid conductor cross-section min	2.5mm² (screw) 2.0mm² (spring)			6mm²	
Rigid conductor cross-section max	0.2mm²			0.5mm²	
Max wire diameter	Spring terminal: AWG24-14 (0.2~ 2mm²) Screw terminal: AWG26-12 (0.2~2.5mm²)			2.8mm²	

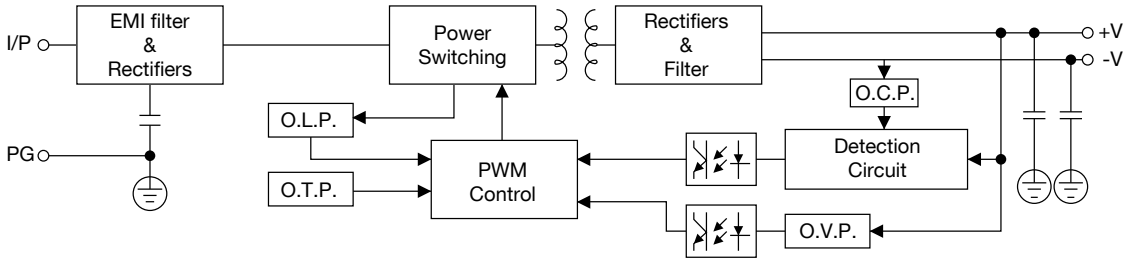
SPDM

Block diagram

SPDM 30W / 50W / 75W



SPDM 120W / 240W



Troubleshooting

Signaling and controls

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
DC OK LED	Green				
DC OK output type	No				
OK threshold	9.6VDC to 10.8VDC (12VDC) 19.2 VDC to 21.6VDC (24VDC)			/	/

Operating description

Control and protection

	SPDM 30W	SPDM 50W	SPDM 75W	SPDM 120W	SPDM 240W
Overvoltage protection	16-18VDC (12VDC) 28.8-32.4VDC (24VDC)			15-18VDC (12VDC) 29-33VDC (24VDC) 58-63VDC (48VDC)	28-35VDC (24VDC) 58-63VDC (48VDC)
Overload protection	140%			10.5-13A (12VDC) 5.25-6.5A (24VDC) 2.75-3.25A (48VDC)	10.3-11.5A (24VDC) 5.55-6.5A (48VDC)
Current limiting	/			/	/
Short circuit protection	Hiccup mode			Long-term mode, auto recovery	
Over temperature protection	-			100±5°C, detect on heat sink of power transistor; shut down O/P, re-power on	
Internal voltage surge protection	Varistor			NTC	
Reverse voltage protection	No				

SPDM

Glossary

CE: "Conformité Européene" or "European Conformity" ; Indicates the manufacturer declaration of conformity that the product meets the relevant health, safety and environmental protection requirements of the applicable EC directives.

cULus: This certification mark is based on the UL508 - Standard for Industrial Control Equipment. The UL508 standard covers industrial control and auxiliary devices for starting, stopping, regulating, controlling, or protecting electric motors. In addition, UL508 also covers devices rated 1500 volts or less. Industrial control equipment covered by these requirements is intended for use in an ambient temperature of 0°C – 40°C (32 – 104°F).

UL1310: The UL1310 Class 2 units utilize an isolating transformer and may incorporate components to provide an alternating- or direct-current output. Each output provides Class 2 power levels in accordance with the National Electrical Code, ANSI/NFPA 70. Maximum output voltage does not exceed 42.4 V peak for alternating current, 60 V for continuous direct current. These products are intended primarily to provide power to low voltage, electrically operated devices.

cRUus: This certification mark is based on the UL60950-1 ; Information Technology Equipment - Safety - Part 1. The UL60950-1 is applicable to mains-powered or battery-powered information technology equipment, including electrical business equipment and associated equipment, with a RATED VOLTAGE not exceeding 600 V.

Economical: The SPDM is the most economical power supply, offering features and spacing while lowering the cost.

Spring Terminals: The SPDM 30W, 50W and 75W provide the option of spring terminals, saving installation time by up to 50%.

Reduced dimension: The footprint is reduced with the SPDM, saving up to 30% space when compared to others.

Modular Switching Power Supply
Type SPM 1
DIN rail mounting

- **Single DIN module**
- **Universal input 90/264VAC – 120/370VDC**
- **High efficiency up to 80%**
- **Short circuit protection**
- **Overload protection**
- **Internal input filter**
- **LOW voltage LED indicator**
- **UL Class 2 Output**

Product Description

SPM Modular switching power supplies are specifically designed in order to satisfy both the Automation and the Building automation application requirements. The single DIN module PS is capable of up to 10W of output power. Its high efficiency prevents excess of heat in the installation place.

Ordering Key

SPM 1 - 24 1

Series
Number of DIN modules
Output Voltage
Phases (only single phase)

Approvals

Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM1-051	90~264	7.5	5	1.50	74%
SPM1-121	90~264	10	12	0.83	78%
SPM1-151	90~264	10	15	0.67	78%
SPM1-241	90~264	10	24	0.42	80%

Output Data

Line regulation		±1% max.
Load regulation		±1%
Output Voltage accuracy		±1%
Ripple and Noise		50mV
Temperature Coefficient		±0.03%/°C (±0.0112%/°F)
Hold up time	**Vi = 115VAC**	5V and 12V: 10ms 15V and 24V: 60ms
	Vi = 230VAC	30ms
Minimum load		0%

DC ON indicator	**Min.**	**Max.**
5V	3.5VDC	4.5VDC
12V	9VDC	10.8VDC
15V	11VDC	13.5VDC
24V	19.2VDC	21.6VDC

DC LOW indicator	**Min.**	**Max.**
5V	3.5VDC	4.5VDC
12V	9VDC	10.8VDC
15V	11VDC	13.5VDC
24V	19.2VDC	21.6VDC

Voltage rise time	
Vi nom, Io nom	150ms
Vi nom, Io nom with **3500**µF CAP	500ms
Voltage fall time (I_0**nom, Vi nom)**	150ms
Capacitor Load	3500µF
Transient recovery time (50% load step changed)	2ms
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with **3500**µF	1500ms

CARLO GAVAZZI

Input Data

Voltage range	
AC in	90 - 264 VAC
DC in	120 - 375 VDC
Line frequency	47 - 63Hz
Inrush current	
Vi= 115VAC	Typ: 10A Max: 15A
Vi= 230VAC	Typ: 20A Max: 30A
Rated input current	
Vi: 115/230 VAC, Io nom	200mA / 135 mA
Vi: 90 VAC Io nom	300mA

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	2.3W
	12V Model	2.3W
	15V Model	2.3W
	24V Model	2.3W
Leakage current Input-Output		<0.25mA
Rated input voltage		100/240VAC

Controls and Protections

Input Fuse	T1A/250VAC internal*
Output Short Circuit	Fold forward
Rated Overload Protection	110-165%

[1] Fuse not replaceable by user

Over voltage protection	**VDC**	
	Min.	**Max.**
5V Model	5.75	6.5
12V Model	15	16.5
15V Model	18	20
24V Model	30	33

General Data (@ nominal line, full load, 25°C)

Insulation voltage	3.000/VAC
Insulation resistance	100MΩ
Ambient temperature	-40°C to +71°C
Derating (>61°C to +71°C)	2.5%/°C (1.4%°F)
Ambient humidity	20-95%RH
Storage temperature	-40°C to +85°C
Dimensions L x W x D mm	91 x 18 x 56.5
L x W x D inches	3.582 x 0.709 x 2.22
Cooling	Free air convection

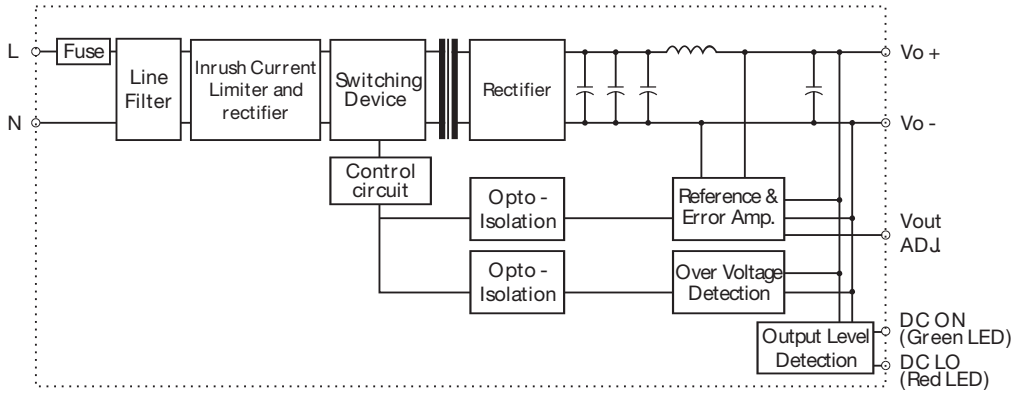
Case material	Plastic (PC-UL94-V0)
Weight	65g
Protection degree	IP20
Altitude IEC 60068-2-13	4850m
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	970000 Hours
12V Model	884000 Hours
15V Model	948000 Hours
24V Model	868000 Hours

Norms and Standards

Vibration resistance		meet IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance		meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each Face)
UL / cUL	file: E258355 file: E258395 file: E258396	UL508 listed, UL1310 Class 2 power supply, UL60950-1 Recognized ISA 12.12.01 (Class1, Division2, GroupsA, B, C and D)
TUV		EN60950-1 CB scheme

CE	EN61000-6-3, EN55022 class B, EN61000-3-2, EN61000-3-3, EN61000-6-2, EN55024, EN61000-4-2 Level 3, EN61000-4-3 Level3, EN61000-4-4 Level 4, EN61000-4-5, L-N Level 3 EN61000-4-6 Level 3, EN61000-4-8 Level 4, EN61000-4-11, ENV 50204 Level2, EN 61204-3

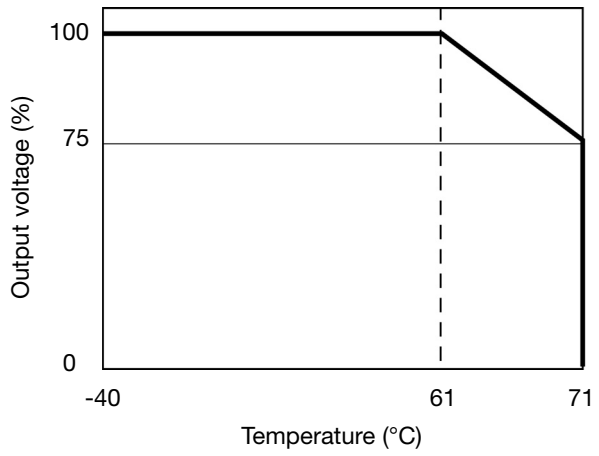
Block Diagrams



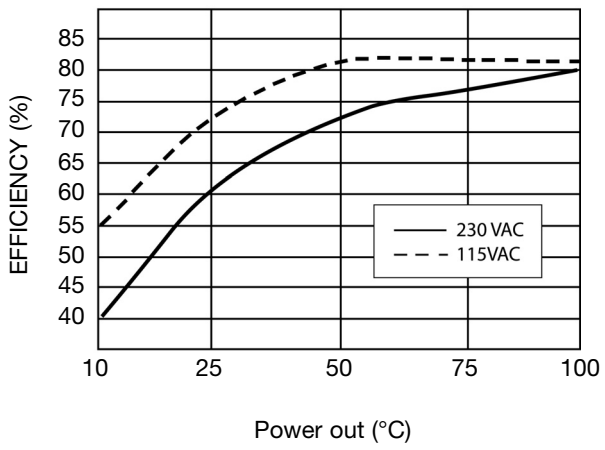
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**-**	Negative output terminal
2	**+**	Positive output terminal
3	**L**	Input terminals (phase conductor, no polarity at DC input)
4	**N**	Input terminals (neutral conductor, no polarity at DC input)
	DC ON	Operation indicator LED
	DC LO	DC Low indicator LED

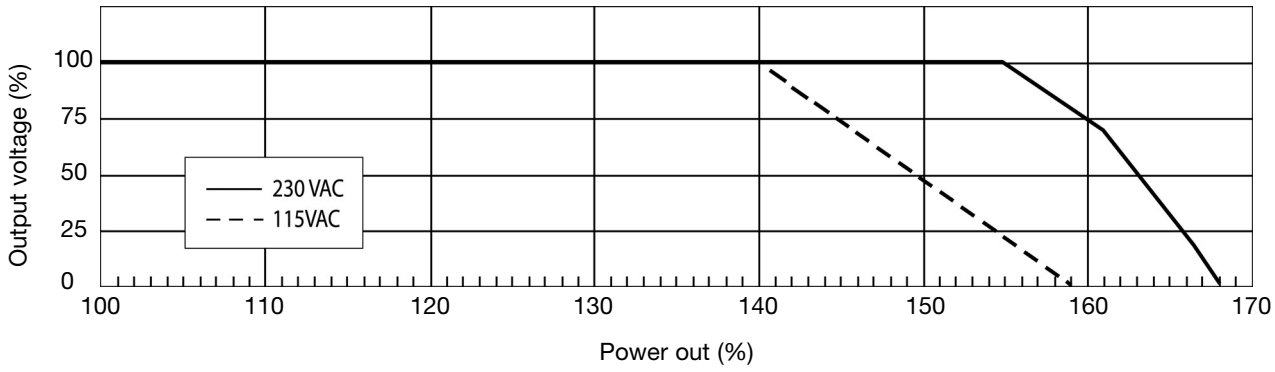
Derating Diagram



Typ. Efficiency Curve

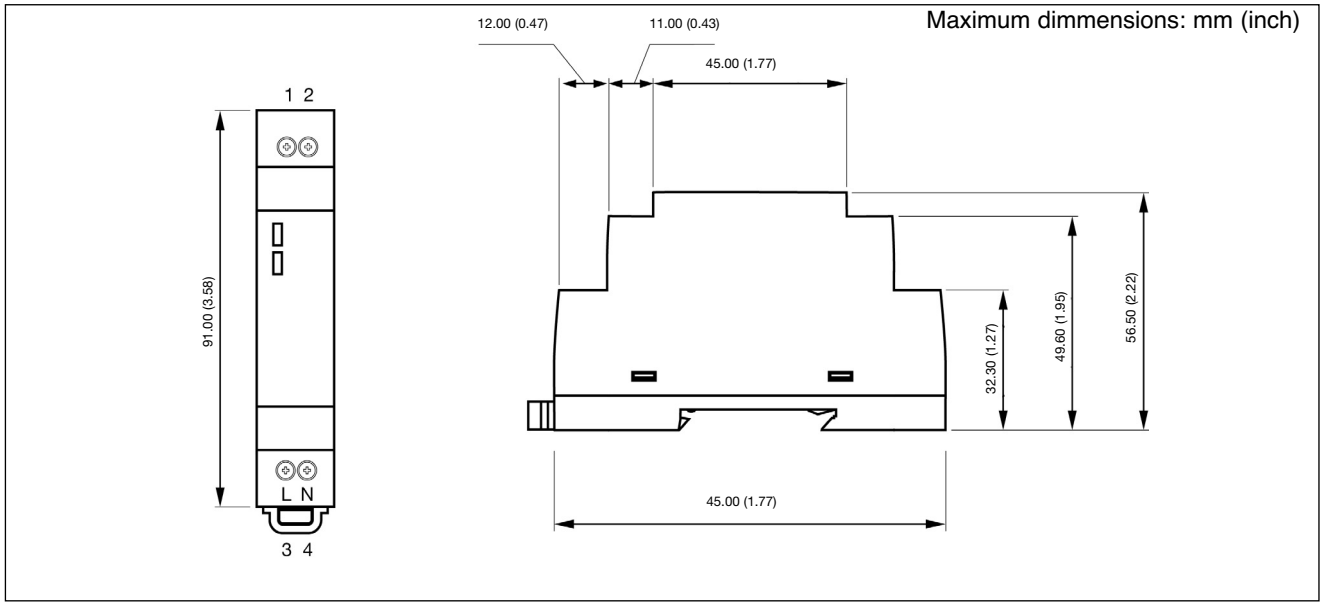


Typ. Current Limited Curve



Mechanical Drawings (mm)

Maximum dimmensions: mm (inch)



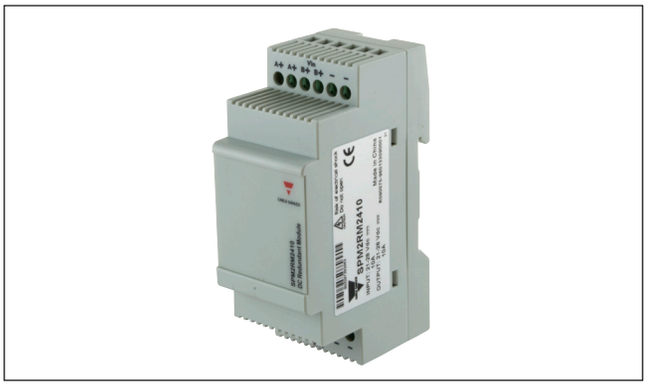
Construction

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safety and firmly on the rail; no tools required even to remove.

Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw terminals	26-12AWG flexible or solid cable (user copper conductors only)
Max. torque for terminals	
Input terminals	0.56Nm (5.0lb-in)
Output terminals	0.56Nm (5.0lb-in)

Switching Power Supply Redundant Module
Type SPM2RM2410
DIN rail mounting



- **Installation on DIN Rail 7.5 or 15mm**
- **Low profile installation**
- **Up to 240W output**
- **Unlimited number of connectable redundant power supplies***
- **Very compact dimensions**
- **UL, cUL listed**
- **TUV approved**
- **Ce and RoHS compliant**

*The power supplies can be externally connected with SPD24RM20 to increase the output power. However it is suggested to use 90% load only, for example 10A*2*0.9= 18A. The power supplies of different models or spec. can not be connected for parallel operation.

Product Description

This SPD additional module allows the connection of 1 power supply +1 or more additional redundant power supplies. In this case, the continuity of the 24VDC output is always guaranteed, even in case of failure of one power supply.

Ordering Key

SP M 2 RM 24 10

- **Model**
- **Enclosure (M = Modular DIN type)**
- **Number of DIN modules**
- **Redundant module**
- **Output voltage**
- **Maximum output current (A)**

Approvals

Output Data

Output voltage drop	0.5V
Output maximum Current	10A
Max Reverse Voltage	30V

Input Data

Rated input Voltage	21...28VDC
Number of inputs	2
Maximum input current	10A

General Data

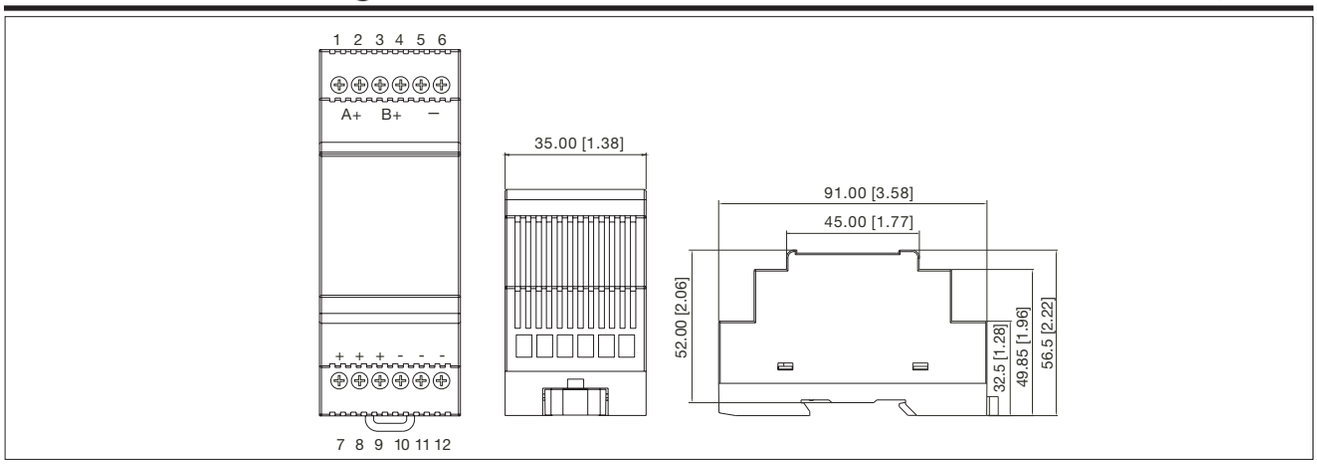
Operating temperature	-25°C...+71°C
Storage temperature	-25°C...+85°C
Relative Humidity	20...95%RH
MTBF (Bellcore issue 6 @ 40°C, GB)	9.697.000h
Case material	Plastic
Cooling	Free air convection
Dimensions L x W x D	91 x 35 x 56.55mm
Weight	75g

Approvals and EMC

Shock resistance	acc. to IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)
Vibration resistance	acc. to IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
CE	EN 55022 Class B, EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6, EN 61000-4-8, EN 61204-3

Switching Power Supply Redundant Module
Type SPM2RM2410
DIN rail mounting

Mechanical Drawings mm (inches)

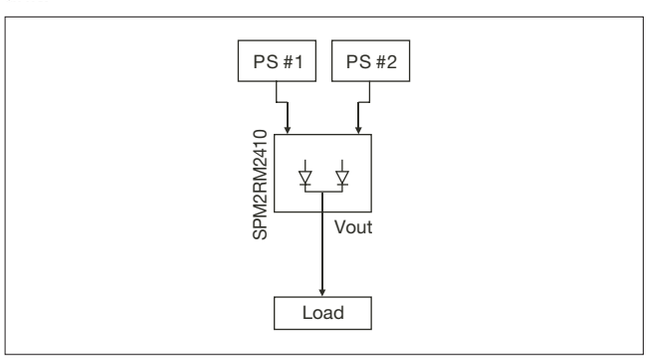


Pin Assignement and Front Controls

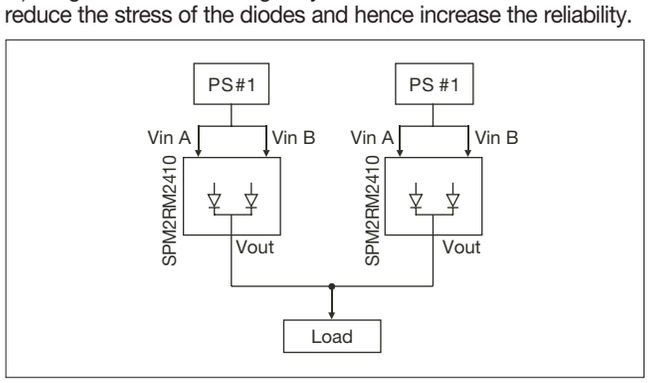
Pin No.	Designation	Description
1	**Input A+**	Positive Input power supply A
2	**Input A+**	Positive Input power supply A
3	**Input B+**	Positive Input power supply B
4	**Input B+**	Positive Input power supply B
5	**Input -**	Negative Input power supply
6	**Input -**	Negative Input power supply
7	**Output +**	Positive Output terminal
8	**Output +**	Positive Output terminal
9	**Output +**	Positive Output terminal
10	**Output -**	Negative Output terminal
11	**Output -**	Negative Output terminal
12	**Output -**	Negative Output terminal

Typical Application Notes

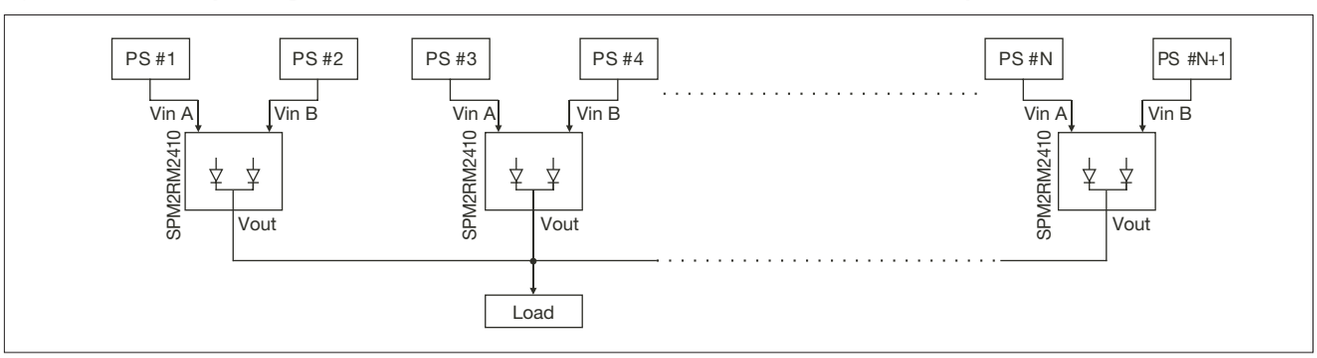
1.) 1+1 Redundancy: Using 1 more PS as the redundant unit.



2.) Single Use: Connecting only one PS to one SPD24RM20 to reduce the stress of the diodes and hence increase the reliability.

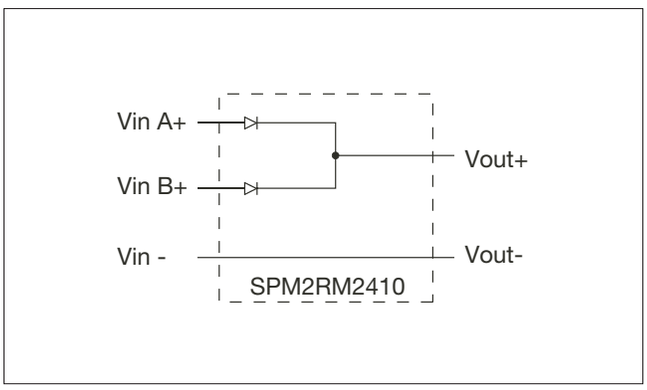


3.) 1+N Redundancy: Using more than one PS as redundant units to increase the reliability.



Switching Power Supply Redundant Module
Type SPD24RM20
DIN rail mounting

Circuit Diagram



Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommended
Screw terminals cable 8mm stripping recommend	10-24AWG flexible or solid
Max. torque for screws terminals Input terminals Output terminals	 1.008Nm (9.0lb-in) 0.616Nm (5.5lb-in)
Plug-in connectors cable 7mm stripping recommend	10-24AWG flexible or solid
Max. torque for plug-in terminals Input terminals Output terminals	 0.784Nm (7.0lb-in) 0.784Nm (7.0lb-in)

Modular Switching Power Supply
Type SPM 3
DIN Rail Mounting

- **Single DIN module**
- **Universal input 90/264VAC – 120/370VDC**
- **High efficiency up to 83%**
- **Short circuit protection**
- **Overload protection**
- **Internal input filter**
- **LOW voltage LED indicator**
- **UL Class 2 Output**

Product Description

SPM Modular switching power supplies are specifically designed in order to satisfy both the Automation and the Building automation application requirements. The three DIN modules PS is capable of up to 30W of output power. Its high efficiency prevents excess of heat in the installation place.

Ordering Key

SPM 3 - 24 1

Series
Number of DIN modules
Output Voltage
Phases (only single phase)

Approvals

Class 2

Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM3-051	90~264	15	5	3.0	74%
SPM3-121	90~264	25	12	2.1	82%
SPM3-151	90~264	30	15	2.0	83%
SPM3-241	90~264	30	24	1.3	83%

Output Data

Line regulation	1% max.	
Load regulation	1%	
Output Voltage accuracy	±1%	
Ripple and Noise	50mV	
Temperature Coefficient	±0.02%/°C (±0.0112%/°F)	
Hold up time		
Vi = 115VAC	25ms	
Vi = 230VAC	100ms	
Minimum load	0%	
Voltage trim range	**Min.**	**Max.**
5V Model	5VDC	5.5VDC
12V Model	12VDC	14VDC
15V Model	13.5VDC	16.5VDC
24V Model	24VDC	28VDC

Transient recovery time (50% load step changed)	1ms	
DC ON indicator	**Min.**	**Max.**
5V Model	3VDC	-
12V Model	9VDC	-
15V Model	11VDC	-
24V Model	20VDC	-
DC LOW indicator	**Min.**	**Max.**
5V Model	3.2VDC	3.7VDC
12V Model	8.8VDC	9.3VDC
15V Model	12VDC	12.5VDC
24V Model	21.5VDC	22VDC
Short circuit alarm	Beep sound	

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Input Data

Rated input voltage	100/240VAC
Voltage range	
AC in	90 - 264 VAC
DC in	120 - 370 VDC
Line frequency	47 - 63Hz
Inrush current	
Vi= 115VAC	Typ: 20A Max: 25A
Vi= 230VAC	Typ: 40A Max: 50A

[1] Fuse not replaceable by user

Controls and Protections

Input Fuse	T2A/250VAC internal[1]
Output Short Circuit	Fold forward
Rated Overload Protection	110-150%

General Data (@ nominal line, full load, 25°C)

Insulation voltage	3.000VAC
Insulation resistance	100MΩ
Ambient temperature	-25°C to 71°C (-13°F to 159.8°F)
Derating (>61°C to +71°C)	2.5%/°C (1.4%/°F)
Ambient humidity	90%RH
Storage temperature	-25°C to 85°C (-13°F to 185°F)
Dimensions	
L x W x D mm	91 x 52 x 55.5
L x W x D inches	3.582 x 2.047 x 2.185

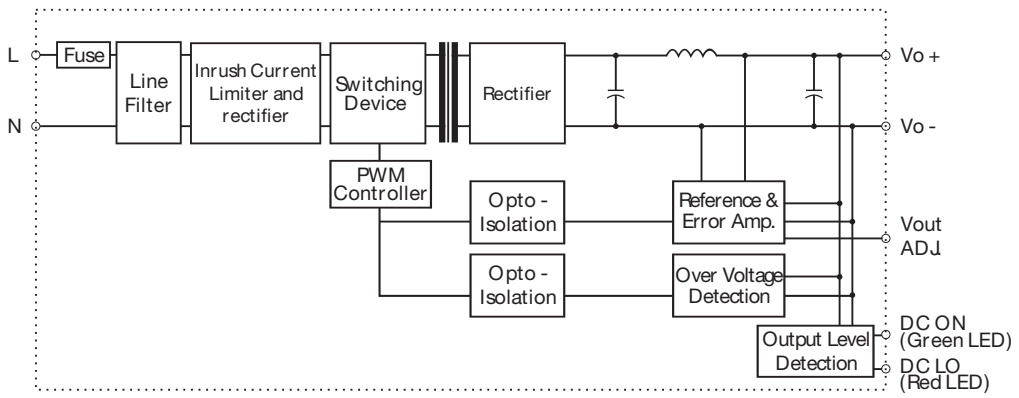
Cooling	Free air convection
Case material	Plastic (PC-UL94-V0)
MTBF	
SPM3-051	737000 Hours
SPM3-121	735000 Hours
SPM3-151	779000 Hours
SPM3-241	778000 Hours
Weight	185g
Protection degree	IP20

Approvals

UL / cUL	
file: E258355	UL508 listed,
file: E258395	UL1310 Class 2 power supply, file: E258396 UL60950-1 Recognized
TUV	EN60950-1

CE	EN61000-6-3, EN55022 class B, EN61000-3-2, EN61000-3-3, EN61000-6-2, EN55024, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11

Block Diagrams



Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**+**	Positive output terminal
2	**+**	Positive output terminal
3	**-**	Negative output terminal
4	**-**	Negative output terminal
5	**L**	Input terminal (phase conductor, no polarity @ DC input)
6	**N**	Input terminal (neutral conductor, no polarity @ DC input)
P1	**Vout Adj.**	Trimmer-potentiometer for Vout adjustment
LED1	**DC ON**	Operation indicator LED
LED2	**DC LO**	DC LOW indicator LED

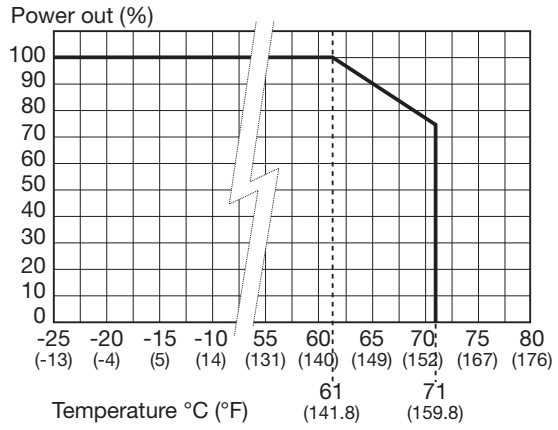
Installation

Ventilation and cooling	Normal convection. All sides 25mm free space for cooling is recommended
Screw terminals	24-12 AWG flexible or solid cable (user copper conductors only)
Max. torque for terminals **Input terminals** **Output terminals**	 0.56Nm (5.0lb-in) 0.56Nm (5.0lb-in)

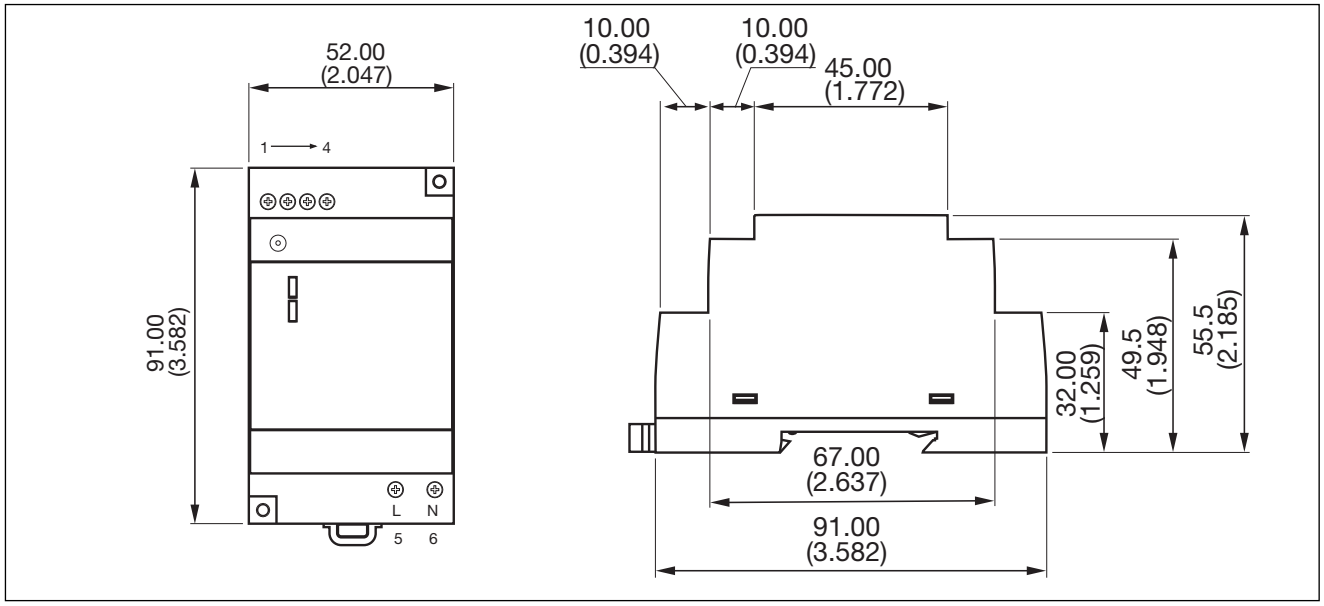
Construction

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safety and firmly on the rail; no tools required even to remove.

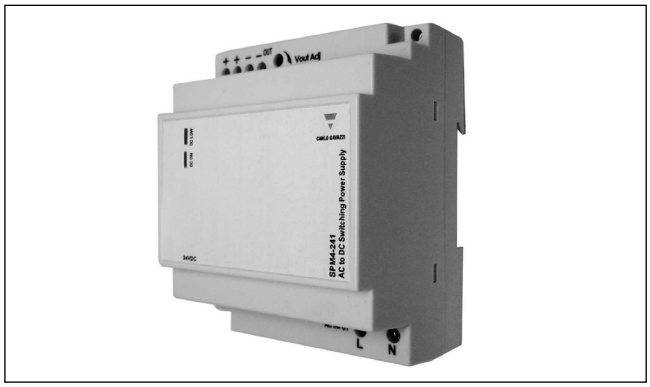
Derating Diagram



Mechanical Drawings (mm)



Modular Switching Power Supply
Type SPM 4
DIN rail mounting



- **Single DIN module**
- **Universal input 90/264VAC – 120/370VDC**
- **High efficiency up to 86%**
- **Short circuit protection**
- **Overload protection**
- **Internal input filter**
- **LOW voltage LED indicator**
- **UL Class 2 Output**

Product Description

SPM Modular switching power supplies are specifically designed in order to satisfy both the Automation and the Building automation application requirements. The four DIN modules PS is capable of up to 60W of output power. Its high efficiency prevents excess of heat in the installation place.

Ordering Key

SPM 4 - 24 1

Series
Number of DIN modules
Output Voltage
Phases (only single phase)

Approvals

LISTED Class 2*

* only 12, 15, 24VDC

Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM4-051	90~264	35	5	7.0	80%
SPM4-121	90~264	54	12	4.5	84%
SPM4-151	90~264	60	15	4.0	85%
SPM4-241	90~264	60	24	2.5	86%

Output Data

Line regulation		±1% max.	
Load regulation		±1%	
Output Voltage accuracy		±1%	
Ripple and Noise		50mV	
Temperature Coefficient		±0.03%/°C (±0.0112%/°F)	
Hold up time	**Vi = 115VAC**	5V and 16V: 10ms 15V and 24V: 12ms	
	Vi = 230VAC	60ms	
DC ON indicator		**Min.**	**Max.**
	5V model	3.5VDC	4.5VDC
	12V model	9VDC	10.8VDC
	15V model	11VDC	13.5VDC
	24V model	19.2VDC	21.6VDC
DC LOW indicator		**Min.**	**Max.**
	5V model	3.5VDC	4.5VDC
	12V model	9VDC	10.8VDC
	15V model	11VDC	13.5VDC
	24V model	19.2VDC	21.6VDC

Voltage rise time	
Vi nom, Io nom	150ms
Vi nom, Io nom with **3500**µF CAP	500ms
Voltage fall time (I_0**nom, Vi nom**)	150ms
Capacitor Load	3500µF
Transient recovery time (50% load step changed)	2ms
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with **3500**µF	1500ms
Rated continuos loading	
5V model	7A @ 5VDC / 6.3A @ 5.5VDC
12V model	4.5A @ 12VDC / 3.8A @ 14VDC
15V model	4A @ 15VDC / 3.6A @ 16.5VDC
24V model	2.5A @ 24VDC / 2.1A @ 28VDC
Minimum load	0%

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Input Data

Voltage range AC in DC in	 90 - 264 VAC 120 - 375 VDC
Line frequency	47 - 63Hz
Inrush current Vi= 115VAC Vi= 230VAC	 Typ: 25A Max: 30A Typ: 50A Max: 60A
Rated input current **Vi: 115/230 VAC**, **Io nom** **5V Model**	 0.7 / 0.43A
Io nom 12; 15V, 24V Models	1.1 / 0.6A

[1] Fuse not replaceable by user

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	8.8W
	12V Model	10.2W
	15V Model	10W
	24V Model	9.9W
Leakage current **Input-Output**		 <0.25mA
Rated input voltage		100/240VAC

General Data (@ nominal line, full load, 25°C)

Insulation voltage	3.000VAC
Insulation resistance	100MΩ
Ambient temperature	-40°C to 71°C
Derating (>56°C to +71°C)	2.5% /°C
Ambient humidity	20~95%RH
Storage temperature	-25°C to +85°C
Dimensions L x W x D mm	91 x 71 x 56.5
L x W x D inches	3.58 x 2.8 x 2.22

Case material	Plastic (PC-UL94-V0)
Weight	250g
Protection degree	IP20
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	595000 Hours
12V Model	582000 Hours
15V Model	582000 Hours
24V Model	608000 Hours
Cooling	Free air convection

Controls and Protections

Input Fuse	T2A/250VAC internal[1]
Output Short Circuit	Fold forward
Rated Overload Protection	110-150%

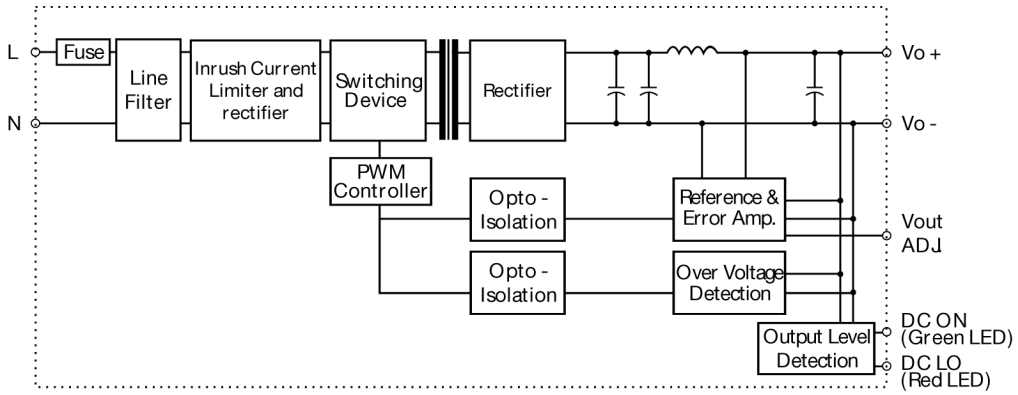
	VDC	
Over voltage protection	**Min.**	**Max.**
5V Model	5.75	6.5
12V Model	15	16.5
15V Model	18	20
24V Model	30	33

Approvals

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail: 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11 ms, 3 Axis, 6 Faces, 3 times for each Face)
UL / cUL	UL508 listed, UL1310 Class 2 power supply (only 5V w/o Class 2) Recognized, ISA 12.12.01 (Class1. Division2, Groups A, B, C and D) UL60950-1 Recognized
TUV	EN60950-1, CB scheme

CE	EN61000-6-3, EN55022 class B, EN61000-3-2, EN61000-3-3, EN61000-6-2, EN55024, EN61000-4-2 Level 4, EN61000-4-3 Level 3, EN61000-4-4 Level 4, EN61000-4-5 L-N Level 3, EN61000-4-6 Level 3, EN61000-4-8 Level 4, EN61000-4-1, ENV 50204 Level 2, EN 61204-3

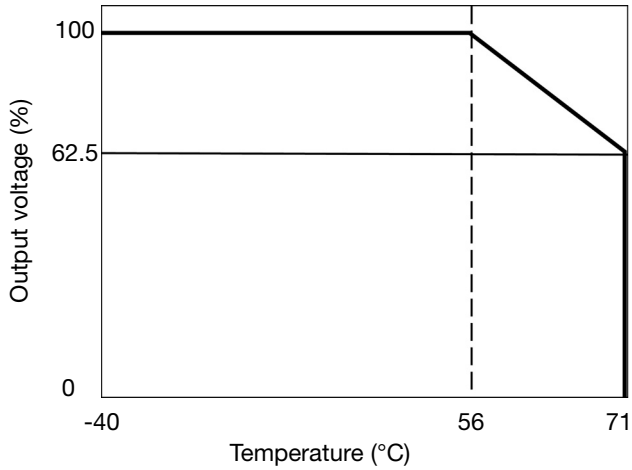
Block Diagrams



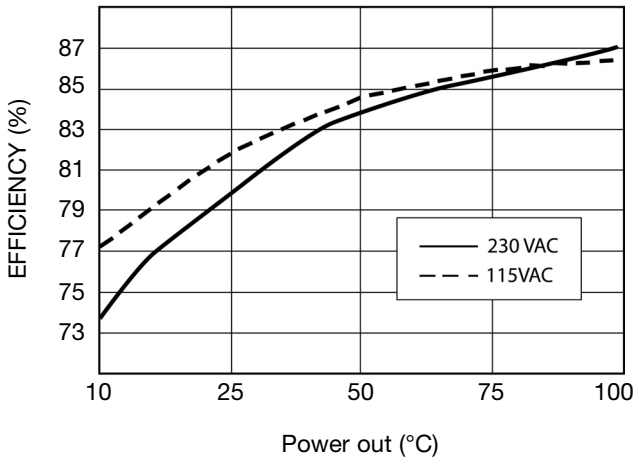
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**-**	Negative output terminal
2	**-**	Negative output terminal
3	**+**	Positive output terminal
4	**+**	Positive output terminal
5	**L**	Input terminals (phase conductor, no polarity at DC input)
6	**N**	Input terminals (neutral conductor, no polarity at DC input)
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED
	DC LO	DC Low indicator LED

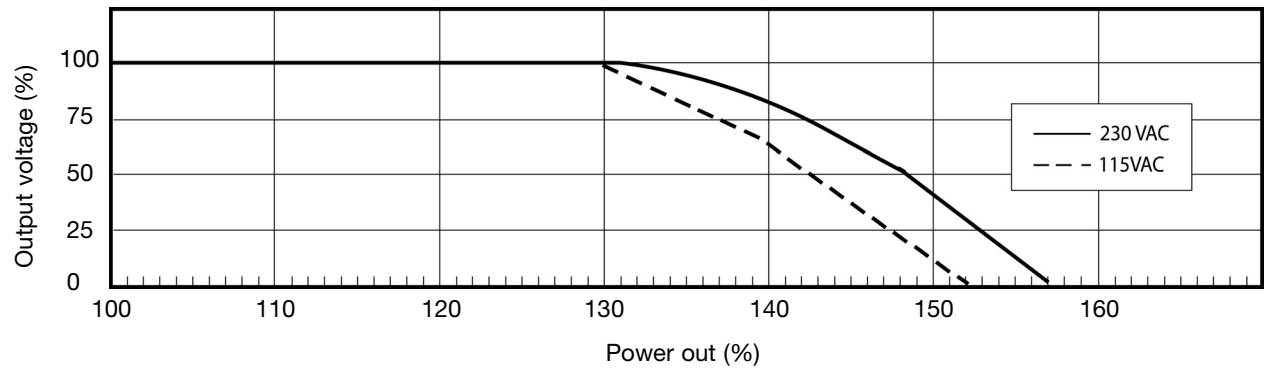
Derating Diagram



Typ. Efficiency Curve

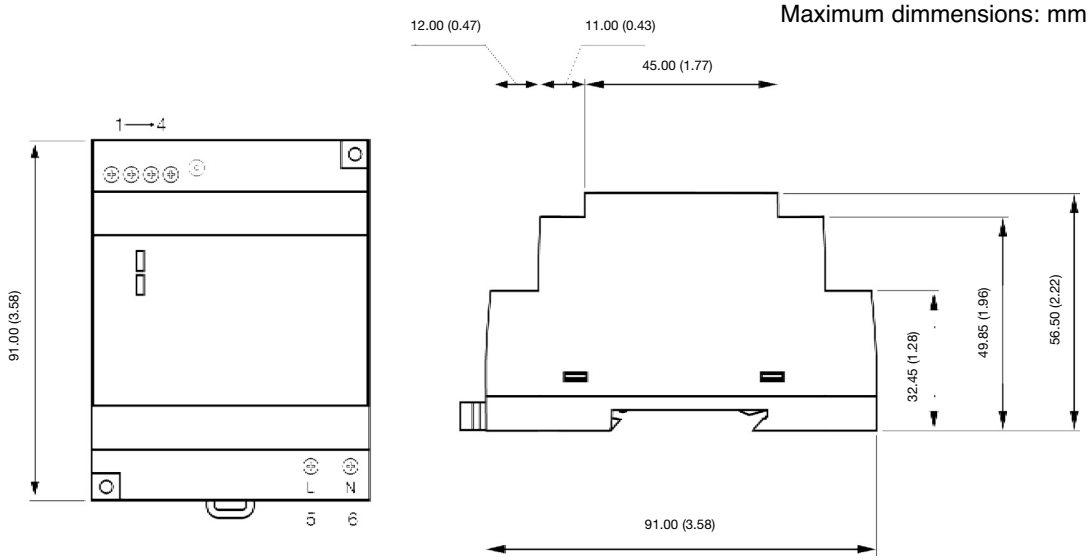


Typ. Current Limited Curve



Mechanical Drawings

Maximum dimmensions: mm (inch)



Construction

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safety and firmly on the rail; no tools required even to remove.

Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling recommended
Screw terminals	24-12AWG flexible or solid cable (user copper conduct ors only)
Max. torque for terminals	
Input terminals	0.67Nm (6.0lb-in)
Output terminals	0.67Nm (6.0lb-in)

Modular Switching Power Supply
Type SPM 5
DIN Rail Mounting

- **Single DIN module**
- **Universal input 90/264VAC – 120/370VDC**
- **High efficiency up to 89%**
- **Short circuit protection**
- **Overload protection**
- **Internal input filter**
- **LOW voltage LED indicator**
- **UL Class 2 Output (only 91W version)**

Product Description

SPM Modular switching power supplies are specifically designed in order to satisfy both the Automation and the Building automation application requirements. The five DIN modules PS is capable of up to 10W of output power. Its high efficiency prevents excess of heat in the installation place.

Ordering Key

SPM 5 - 24 1

Series
Number of DIN modules
Output Voltage
Phases (only single phase)

Approvals

LISTED
Class 2*

* only SPM5-241S

Output Performances

Model	Input Voltage VAC	Output Power (W)	Output Voltage VDC	Current (A)	Typical Efficiency
SPM5-051	90~264	60	5	12.0	80%
SPM5-121	90~264	72	12	6.0	86%
SPM5-151	90~264	75	15	5.0	86%
SPM5-241	90~264	100.8	24	4.2	89%
SPM5-241S	90~264	91.2	24	3.8	89%

Output Data

Line regulation	±1% max.	
Load regulation	±1%	
Output Voltage accuracy	±1%	
Ripple and Noise	50mV	
Temperature Coefficient	±0.03%/°C	
Hold up time		
Vi = 115VAC	5V & 12V: 16ms 15V & 24V: 10ms	
Vi = 230VAC	60ms	
Minimum load	0%	
Voltage trim range	**Min.**	**Max.**
5V Model	5VDC	5.5VDC
12V Model	12VDC	14VDC
15V Model	13.5VDC	16.5VDC
24V & 24V S	24VDC	28VDC
Transient recovery time (50% load step changed)	2ms	
Voltage fall time (I_0nom, Vi nom)	150ms	
Capacitor load	3500µF	

DC ON indicator	**Min.**	**Max.**
5V Model	3.5VDC	4.5VDC
12V Model	9VDC	10.8VDC
15V Model	11VDC	13.5VDC
24V & 24V S	19.2VDC	21.6VDC
DC LOW indicator	**Min.**	**Max.**
5V Model	3.5VDC	4.5VDC
12V Model	9VDC	10.8VDC
15V Model	11VDC	13.5VDC
24V & 24V S	19.2VDC	21.6VDC
Turn on time (full resistive load)		
Vi nom, Io nom	1000ms	
Vi nom, Io nom with **3500**µF	1500ms	
Voltage rise time		
Vi nom, Io nom	150ms	
Vi nom, Io nom with **3500**µF CAP	500ms	
Rated continuos loading		
5V Model	12A @ 5VDC / 10.5A @ 5.5VDC	
12V Model	6A @ 12VDC / 5.1A @ 14VDC	
15V Model	4.2A @ 24VDC / 3.6A @ 28VDC	
24V Model	3.8A @ 24VDC / 3.7A @ 24.2VDC	

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Input Data

Rated input voltage	100/240VAC
Voltage range	
AC in	90 - 264 VAC
DC in	120 - 375 VDC
Line frequency	47 - 63Hz
Inrush current	
Vi= 115VAC	Typ: 25A Max: 30A
Vi= 230VAC	Typ: 40A Max: 60A
Leakage current input-output	0.25 mA

Input current	
Vi: 115/230VAC, 5V Model	1.15 / 0.62A
Io nom 12V, 15V Models	1.35 / 0.72A
24V Model	1.8 / 0.9A
Power dissipation	
Vi: 230VAC, Io nom	
5V Model	15.6W
12V Model	12.9W
15V Model	12.5W
24V Model	12.2W

[1] Fuse not replaceable by user

General Data (@ nominal line, full load, 25°C)

Insulation voltage	3.000VAC
Insulation resistance	100MΩ
Ambient temperature	-40°C to 71°C
Derating (>61°C to +71°C)[2]	2.5%/°C
Ambient humidity	20~95%RH
Storage temperature	-40°C to +85°C
Dimensions	
L x W x D mm	91 x 90 x 57
L x W x D inches	3.58 x 3.54 x 2.24
Cooling	Free air convection

Case material	Plastic (PC-UL94-V0)
Weight	380g
Protection degree	IP20
MTBF (Bellcore issue 6 @ 40°C, GB)	
5V Model	566000 Hours
12V Model	556000 Hours
15V Model	564000 Hours
24V Model	525000 Hours
24LS Model	527000 Hours

[2] SPM5-051 derating starts from 56°C (132.8°F)

Controls and Protections

Input Fuse	T3.15A/250VAC internal[1]
Output Short Circuit	Fold forward
Rated Overload Protection	
5V, 12V, 15V & 24V	110-150%
24V S	102-108%

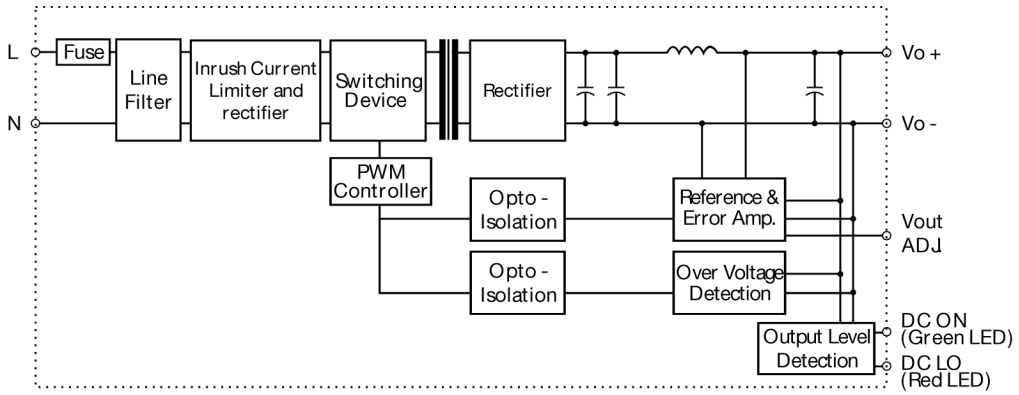
	VDC	
Over voltage protection	**Min.**	**Max.**
5V Model	5.75	6.5
12V Model	15	16.5
15V Model	18	20
24V Model	30	33
24LS Model	24.5	25.5

Approvals

Vibration resistance	meet IEC 60068-2-6 (Mounting by rail:10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11 ms, 3 Axis, 6 Faces, 3 times for each Face)
UL / cUL	UL508 listed, UL 60950-1, UL1310 Class 2 Power (24LS model only) Recognized, ISA 12.12.01 (Class1. Division2, Groups A, B, C and D)
TUV	EN60950-1, CB scheme

CE	EN61000-6-3, EN55022 class B, EN61000-3-2, EN61000-3-3, EN61000-6-2, EN55024, EN61000-4-2 Level 4, EN61000-4-3 Level 3, EN61000-4-4 Level 4, EN61000-4-5 L-N Level 3, EN61000-4-6 Level 3, EN61000-4-8 Level 4, EN61000-4-11, ENV 50204 Level 2, EN 61204-3

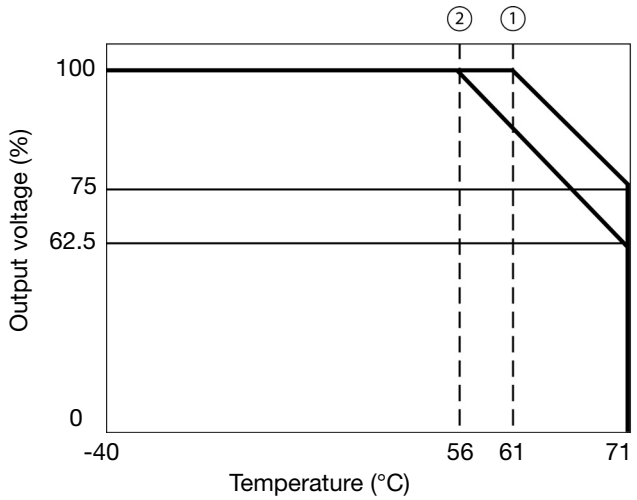
Block diagrams



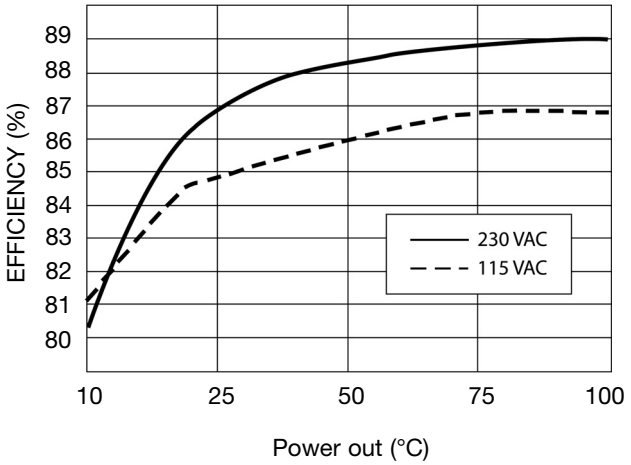
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**-**	Negative output terminal
2	**-**	Negative output terminal
3	**+**	Positive output terminal
4	**+**	Positive output terminal
5	**L**	Input terminals (phase conductor, no polarity at DC input)
6	**N**	Input terminals (neutral conductor, no polarity at DC input)
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED
	DC LO	DC Low indicator LED

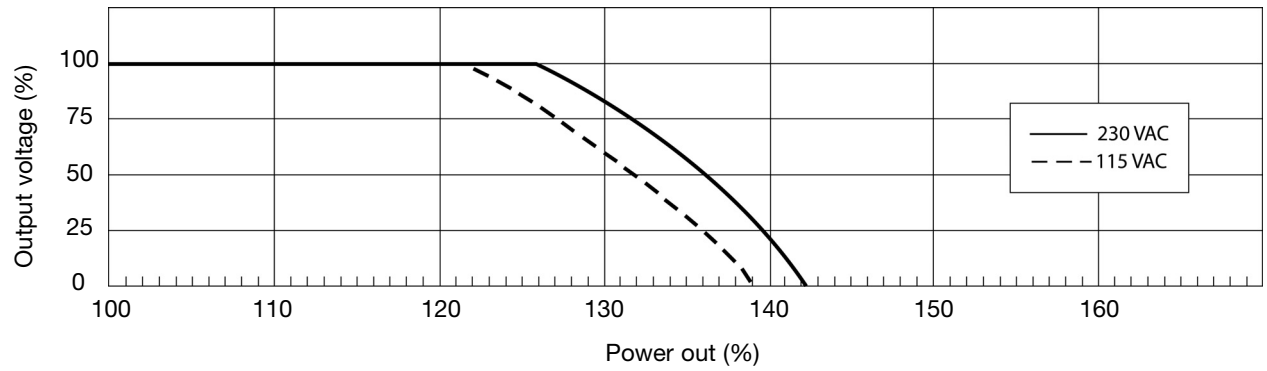
Derating Diagram



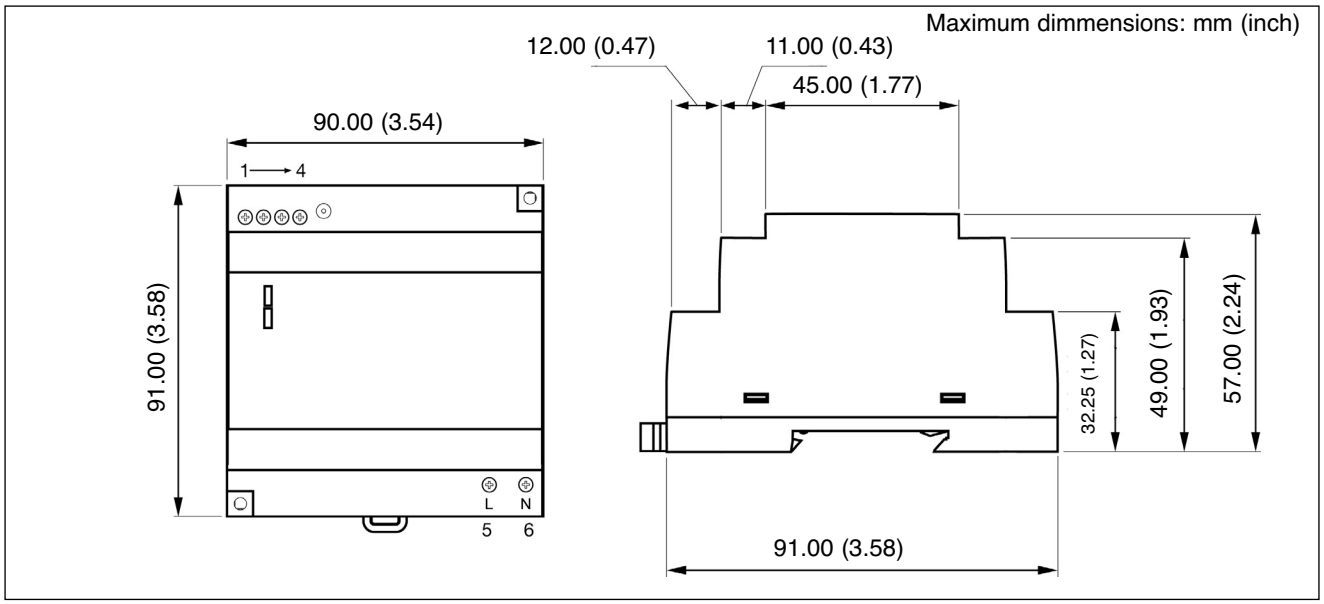
Typ. Efficiency Curve



Typ. Current Limited Curve



Mechanical Drawings



Construction

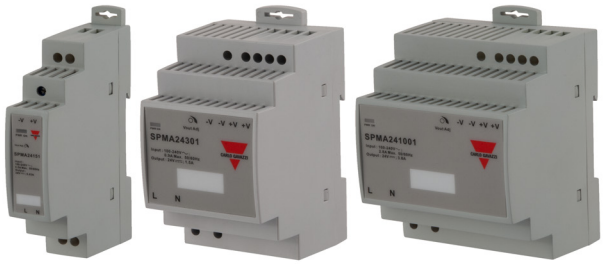
Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safety and firmly on the rail; no tools required even to remove.

Installation

Ventilation and cooling	Normal convection All sides 25mm free space for cooling is recommen ded
Screw terminals	24-12 AWG flexible or solid cable (user copper conductors only)
Max. torque for terminals	
Input terminals	0.67Nm (6.0lb-in)
Output terminals	0.67Nm (6.0lb-in)

SPMA

Single Phase Power Supply



Benefits

- **Universal AC input range.** SPMA series can be powered with AC voltage (85 VAC to 264 VAC) or with DC voltage (120 VDC to 350 VDC).
- **CE and UL approvals.** These power supplies meet CE, UL508, UL 62368, UL 1310 Class 2 (Output), UL 121201 Class 1 Div 2 (hazardous location installations).
- **Isolation class II.** This series has the Isolation Class II and a Primary - Secondary withstand voltage of 4kVAC.
- **Reliable power in very compact dimensions.** SPMA has an ultra-slim body, from 15W in 17.5mm (1 DIN), up to 100W in only 70mm (4 DIN) of space.
- **High efficiency, long life and high reliability.** The SPMA has a very high efficiency of up to 89%.
- **Reliable critical output protections.** Safe operation is guaranteed by the various output protections: Over Current (OVC), Over Voltage (OVP), Short Circuit (SCP).
- **Wide operating ambient temperature.** The operating temperature range is from -30 °C to +70 °C (-22 °F to 158 °F), and a storage temperature range from -40 °C to +85 °C (-40 °F to 185 °F).
- **Conformal coating (option).** SPMA series are available with the protective coating in order to protect its electronic circuits from harsh environments as humidity and contaminants.

Description

SPMA Modular switching power supplies are specifically designed to satisfy both the industrial automation and the building automation application requirements. The four DIN modules power supplies are capable of up to 100W of output power. Its high efficiency prevents excess of heat in the installation place. These power supplies meet CE, UL508 listed, UL 62368, UL1310 Class 2 (Output), UL 121201 Class1 Div 2, and the 4kVAC isolation voltage that is mandatory for automotive battery charger applications.

Applications

The SPMA is extremely suitable for automotive battery chargers, high efficiency and applications requiring wide operating ambient temperature. Suitable for use in class 1, division 2, groups a, b, c and d hazardous locations, or nonhazardous locations only. This equipment is an open-type device and must be installed in an enclosure such that the equipment is only accessible with the use of a tool.
Warning: Explosion hazard - do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.

Main functions

- Universal input voltage range: 85 VAC to 264 VAC; 120 VDC to 350 VDC
- Output options of 5 VDC, 12 VDC, 15 VDC or 24 VDC
- From 1 DIN to 4 DIN modules, from 12 W to 100.8 W
- Bi-colour LED for status indication
- Voltage output adjustment
- High efficiency up to 89%
- 4kVAC isolation voltage

SPMA

References

Order code

SPMA ☐ ☐ 1 ☐

Enter the code entering the corresponding option instead of ☐

Code	Option	Description	Notes
S	-	Switching	Device typology
P	-	Power supply	
M	-	Modular	Series
A	-	Advanced	
☐	5	5VDC	Rated output voltage
	12	12VDC	
	15	15VDC	
	24	24VDC	
☐	15	15W	Rated output power
	30	30W	
	60	60W	
	100	100W	
1	-	Single phase input	Input type
☐	-	Class 2	
	S	Non Class 2	Applies to SPMA241001 models only
☐	-		
	SCC	Conformal coating version	PCB coating

Selection guide

Output Voltage	SPMA...151	SPMA...301	SPMA...601	SPMA...1001	
5 VDC	SPMA05151	SPMA05301	-	-	
12 VDC	SPMA12151	SPMA12301	SPMA12601	SPMA121001	
15 VDC	SPMA15151	SPMA15301	SPMA15601	SPMA151001	
24 VDC	SPMA24151	SPMA24301	SPMA24601	SPMA241001	SPMA241001S

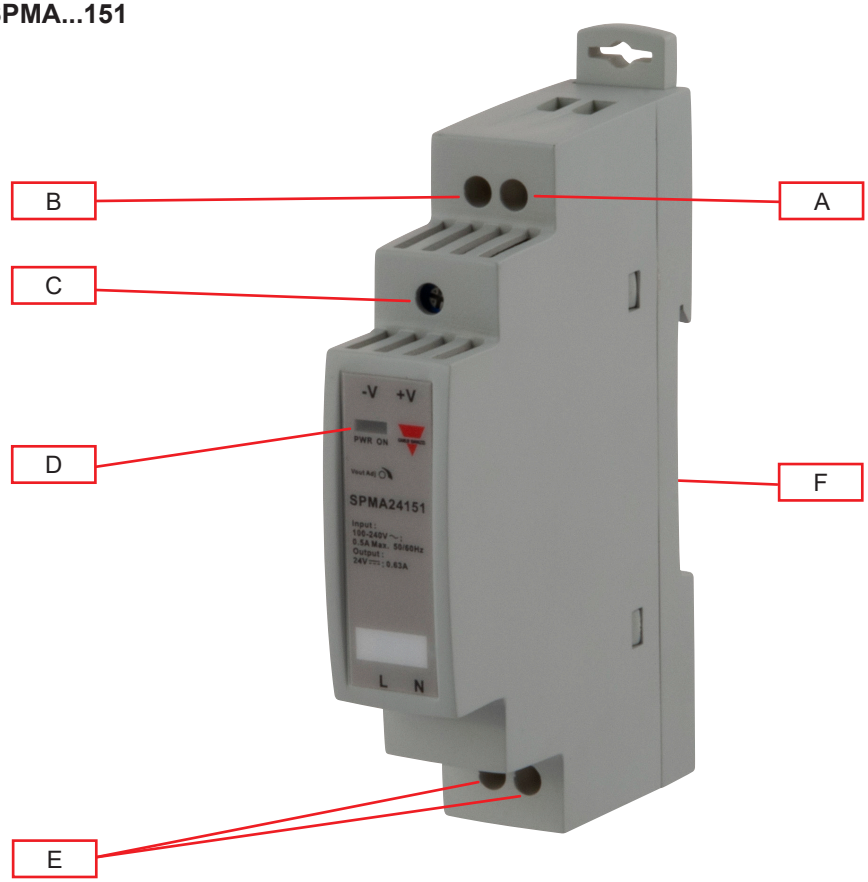
Further reading

Information	Where to find it	QR
SPMA Installation sheet	http://cga.pub/?52e71a	

SPMA

Structure

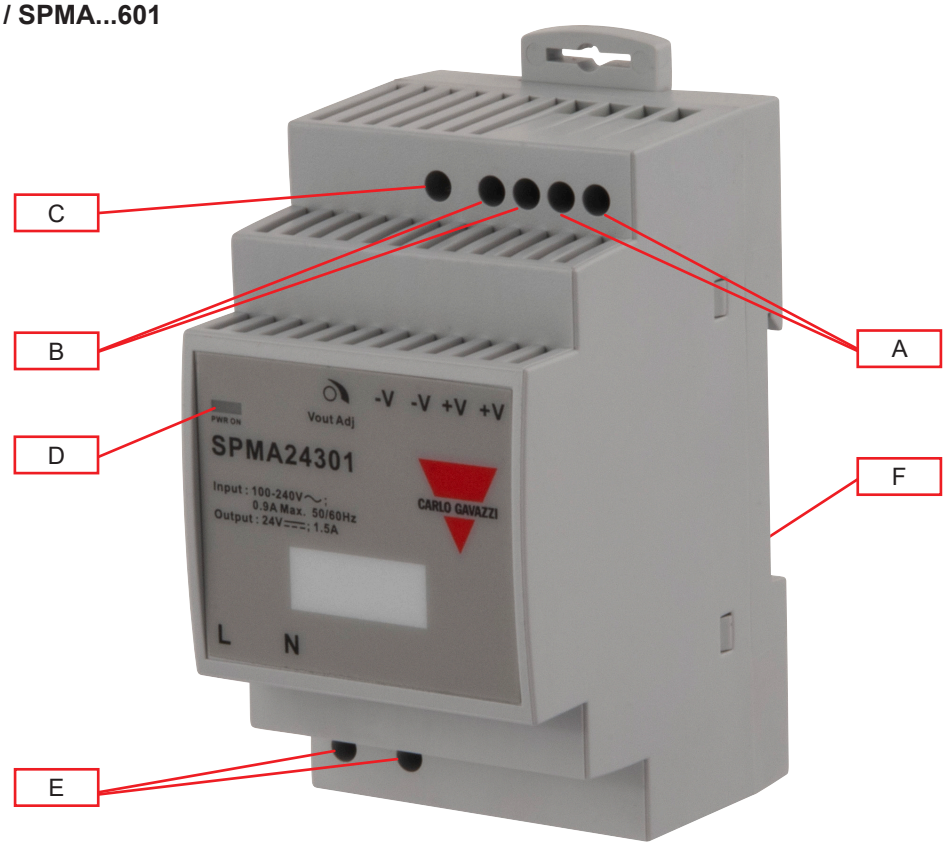
SPMA...151



Element	Component	Function
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	DC OK LED	Green: output voltage ≥ 90% of rated output voltage Red: output voltage ≤ 80% of rated output voltage or overload
E	Power supply terminals	L, N supply terminals + GND
F	DIN rail mounting clip	Clip present on back side

SPMA

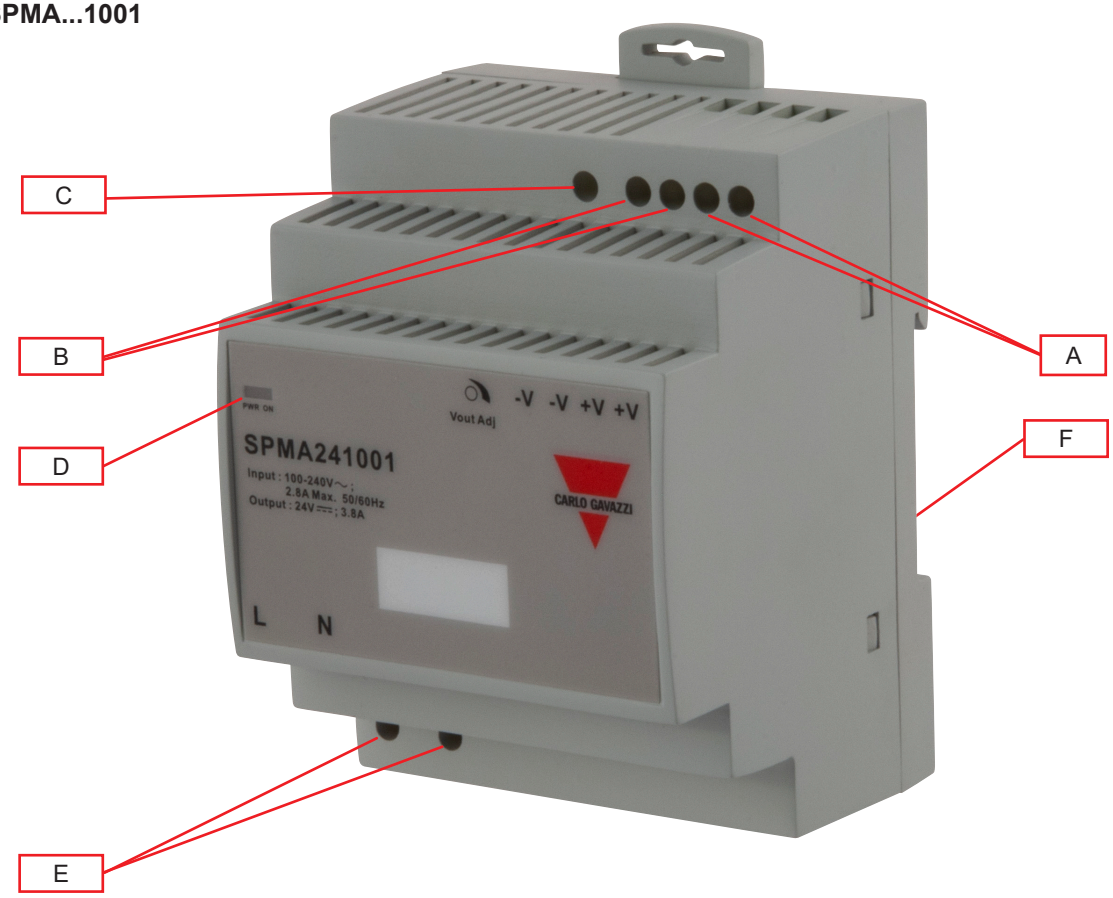
SPMA...301 / SPMA...601



Element	Component	Function
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	DC OK LED	Green: output voltage ≥ 90% of rated output voltage Red: output voltage ≤ 80% of rated output voltage or overload
E	Power supply terminals	L, N supply terminals + GND
F	DIN rail mounting clip	Clip present on back side

SPMA

SPMA...1001



Element	Component	Function
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	DC OK LED	Green: output voltage ≥ 90% of rated output voltage Red: output voltage ≤ 80% of rated output voltage or overload
E	Power supply terminals	L, N supply terminals + GND
F	DIN rail mounting clip	Clip present on back side

SPMA

Features

General data

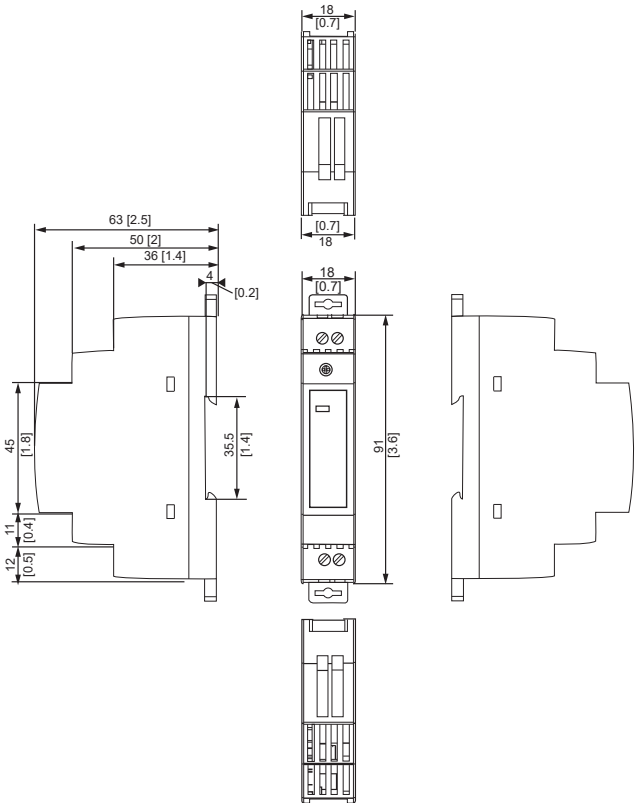
		SPMA...151	SPMA...301	SPMA...601	SPMA...1001
Leakage current (Input @240VAC, 63Hz)		< 0.25 mA (input - output)			
Efficiency	**5 V**	77.5 %	81 %	-	-
	12 V	83 %	86 %	86.5 %	87 %
	15 V	84 %	86.5 %	87 %	88 %
	24 V	85 %	88 %	89 %	89 %
Power loss @ nominal load		< 0.5 W			
Ingress protection		IP 20			
MTBF		>300,000 Hrs			
Case material		Plastic			
Weight		71 g	201 g		267 g
Mounting		DIN rail			

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

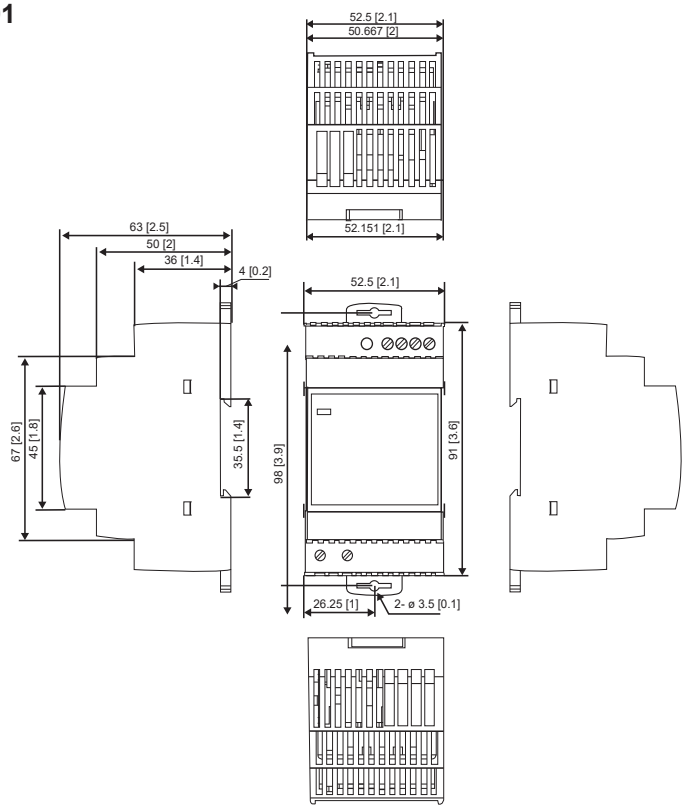
SPMA

Dimensions

SPMA...151
Unit: mm [inches]

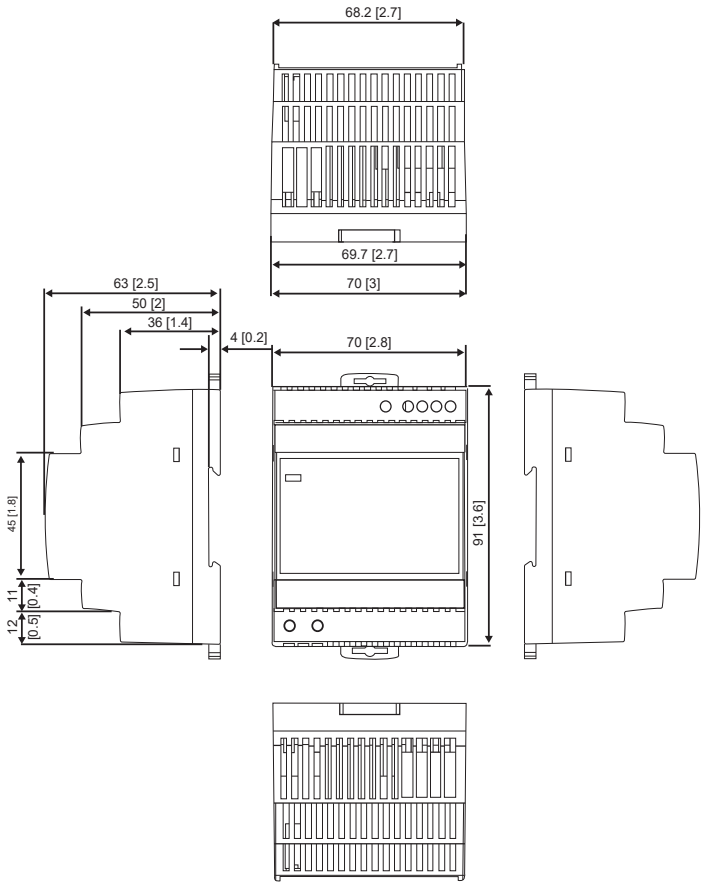


SPMA...301 / SPMA...601
Unit: mm [inches]



SPMA

SPMA...1001
Unit: mm [inches]

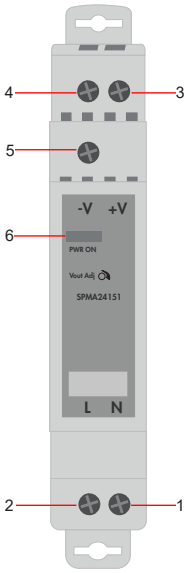


Connection diagram

Terminal markings

SPMA...151

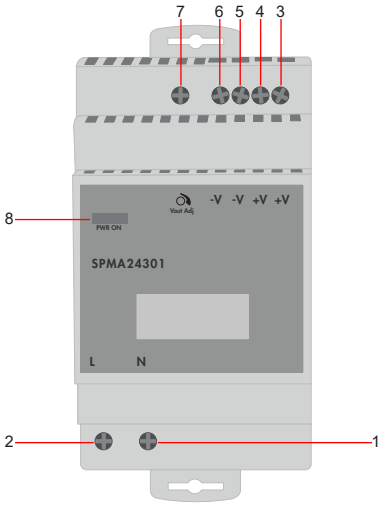
Terminal	Designation	Description
1	N	Input terminals (neutral conductor, no polarity with DC input)
2	L	Input terminals (phase conductor, no polarity with DC input)
3	V+	Positive output terminal
4	V-	Negative output terminal
5	Vout ADJ.	Potentiometer for output voltage adjustment
6	DC status	LED indication of power supply output status



SPMA

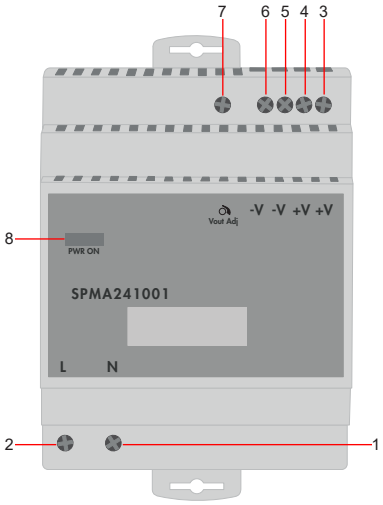
SPMA...301 / SPMA...601

Terminal	Designation	Description
1	N	Input terminals (neutral conductor, no polarity with DC input)
2	L	Input terminals (phase conductor, no polarity with DC input)
3, 4	V+	Positive output terminal
5, 6	V-	Negative output terminal
7	Vout ADJ.	Potentiometer for output voltage adjustment
8	DC status	LED indication of power supply output status



SPMA...1001

Terminal	Designation	Description
1	N	Input terminals (neutral conductor, no polarity with DC input)
2	L	Input terminals (phase conductor, no polarity with DC input)
3, 4	V+	Positive output terminal
5, 6	V-	Negative output terminal
7	Vout ADJ.	Potentiometer for output voltage adjustment
8	DC status	LED indication of power supply output status



Environmental

	SPMA...151	SPMA...301	SPMA...601	SPMA...1001
Temperature operating range	-30 °C to 70 °C (-22 °F to 158 °F)			
Temperature storage	-40 °C to 85 °C (-40 °F to 185 °F)			
Humidity	10 % to 95 % RH non-condensing			
Temperature derating	Refer to derating diagram			
Temperature regulation	±0.03 % / °C			

Compatibility and conformity

Safety standards	UL/EN62368-1, UL508
EMC emission	EN55032
Harmonic current	EN61000-3-2, Class A (SPMA...1001S)
EMC immunity	EN55035
CE	EMC 2014/30/EU LVD 2014/35/EU RoHS 2011/65EU + 2015/863
UL certification	UL508 Listed UL62368 UL1310 Class 2 (output)* UL 121201 (Class 1 Div 2)
Vibration resistance	10 ~ 500 Hz, 2G 10 min. / cycle, period for 60 min. each along X, Y, Z axes; Compliance to IEC60068-2-6
Shock resistance	15 G, 11 ms, 3 times along X, Y, Z axes; Compliance to IEC60068-2-27

* Except for SPMA05301, SPMA121001, SPMA151001, SPMA241001S, SPMA05301SCC, SPMA121001SCC, SPMA151001SCC, SPMA241001SSCC models

SPMA

Insulation

Insulation/Withstand Voltage (I / O)	Primary - Secondary 4.0kVAC / 10 mA
Insulation resistance	100 MΩ
Overvoltage category	II
Pollution degree	2

Input data

	SPMA...151	**SPMA...301**	**SPMA...601**	**SPMA...101**
Rated input voltage	100 ~ 240 VAC			115 ~ 240 VAC
Input voltage range	85 VAC to 264 VAC 120 VDC to 350 VDC			
AC current (max) **115 VAC** **230 VAC**	< 0.45 A < 0.25 A	< 0.90 A < 0.5 A	< 1.8 A < 0.9 A	< 2.8 A < 1.4 A
Frequency range	50 Hz to 60 Hz			
Inrush current **115 VAC** **230 VAC**	< 25 A < 50 A	< 30 A -	- < 60 A	
Internal input fuse (250 VAC)	2 A	3.15 A		5 A
Standby power consumption	< 0.5 W (Subject to load conditions)			

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

SPMA

Output data

		SPMA...151	SPMA...301	SPMA...601	SPMA...1001
Output power	5 V	12 W	30 W	-	-
	12 V	15 W	25.2 W	54 W	85.2 W
	15 V		30 W	60 W	91.8 W
	24 V	15.12 W	36 W	60 W	91.92 W / 100.8 W (100W S)
Voltage accuracy	5 V	± 2.0 %		-	-
	12 V	± 1.0 %			± 2.0 %
	15 V				± 1.0 %
	24 V				
Line regulation		±0.5 %			
Load regulation		±1.0 %			
Voltage regulation span (VDC)	5 V	5.0 V ~ 5.5 V		-	-
	12 V	10.8 V ~ 13.8 V			12 ~ 13 V
	15 V	13.5 V ~ 18 V			15 ~ 17 V
	24 V	21.6 V ~ 28 V			24 ~ 25.5 V / 21.6 ~ 29 V (100W S)
Rated output current	5 V	2.4 A	6 A	-	-
	12 V	1.25 A	2.1 A	4.5 A	7.1 A
	15 V	1 A	2 A	4 A	6.1 A
	24 V	0.63 A	1.5 A	2.5 A	3.8 A / 4.2 A (100W S)
Rated continuous loading	5 V	0 ~ 2.4 A	0 ~ 6.0 A	-	-
	12 V	0 ~ 1.25 A	0 ~ 2.1 A	0 ~ 4.5 A	0 ~7.1 A
	15 V	0 ~ 1 A	0 ~ 2 A	0 ~ 2.5 A	0 ~ 6.13 A
	24 V	0 ~ 0.63 A	0 ~ 1.5 A	0 ~ 2.5 A	0 ~ 3.83 A / 0 ~ 4.2 A (100W S)
Ripple and noise (at 25°C)	5 V	≤ 80 mV	≤ 100 mV		-
	12 V	≤ 120 mV			
	15 V				
	24 V	≤ 150 mV			
Hold up time 115 VAC 230 VAC		≤ 10 ms ≤ 20 ms			
Set-up time 115 VAC 230 VAC		≤ 2000 ms ≤ 1000 ms			
Rise time		≤ 100 ms			
Turn-on overshoot		< 5 %			
Overshoot and undershoot		< 5 %			
Series operation		Yes			
Parallel operation		No			
Power boost		No			

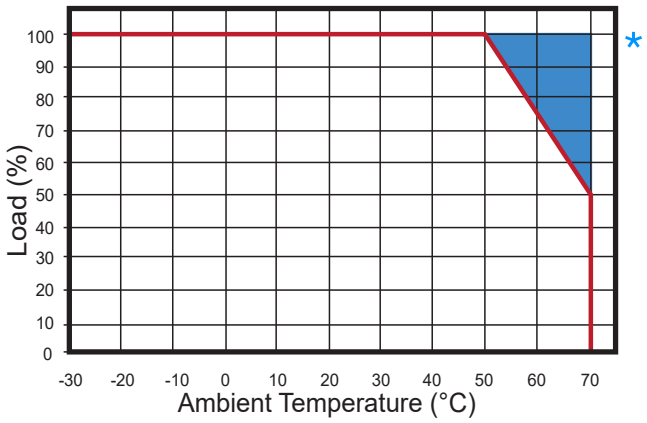
(All specifications are at nominal values, full load, 25°C unless otherwise stated)

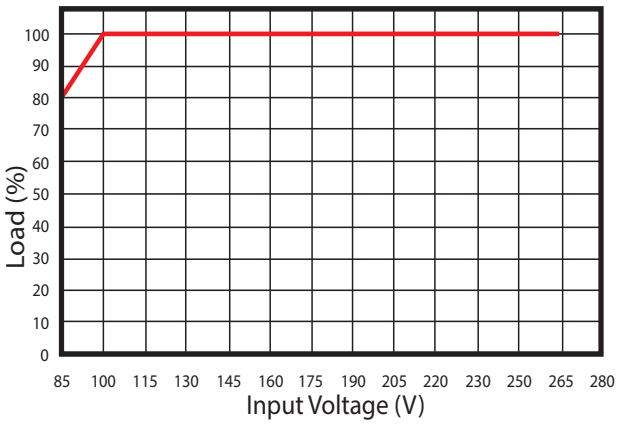
SPMA

Performance

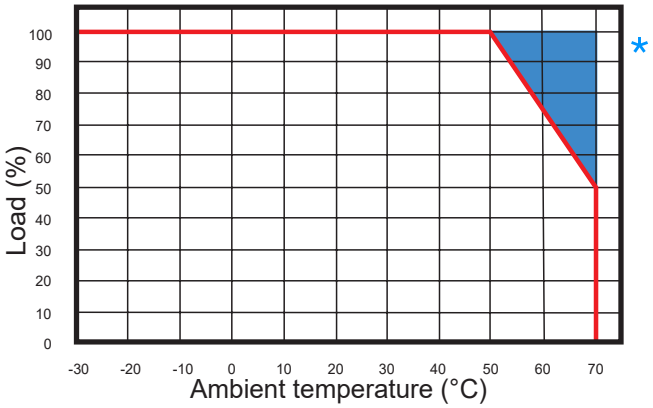
Current derating

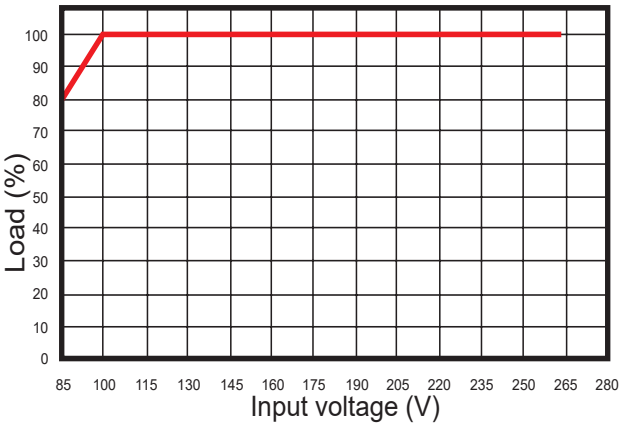
SPMA...151



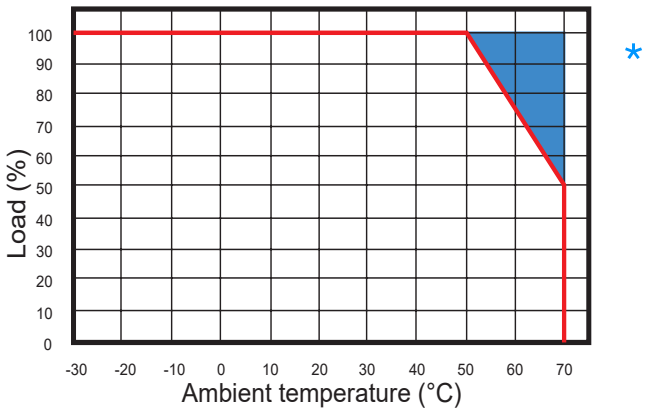


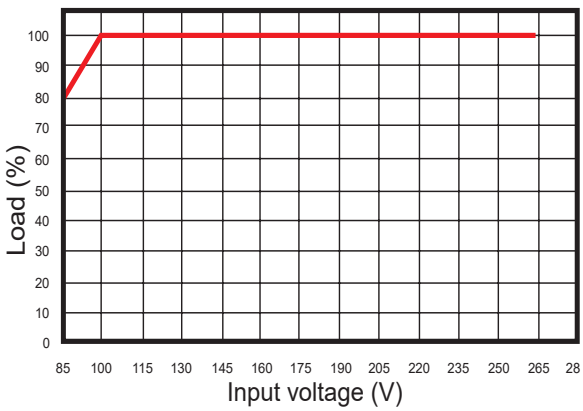
SPMA...301





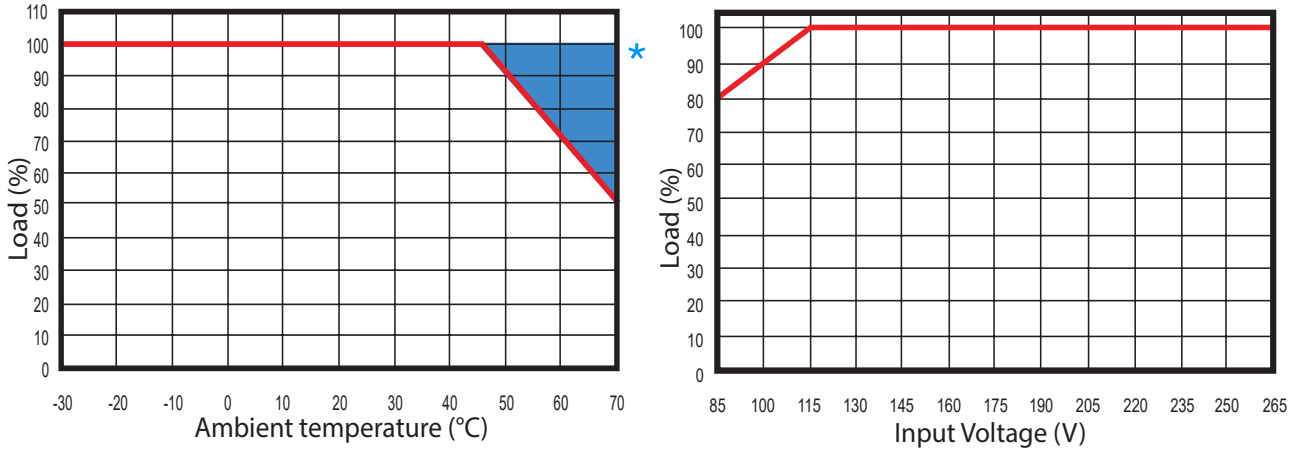
SPMA...601





Current derating

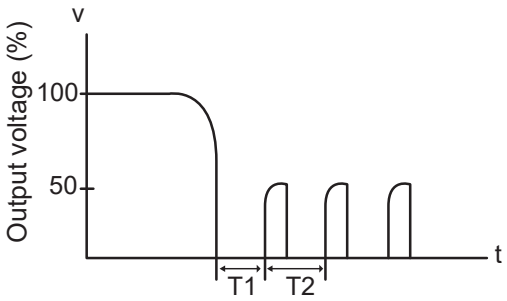
SPMA...1001



* Power supply components may degrade, or be damaged, when the power supply is continuously used within the shaded region, refer to the graph.

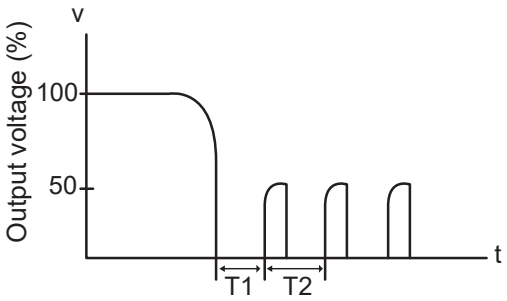
Typical current limited curves

SPMA...151 @ 110 VAC



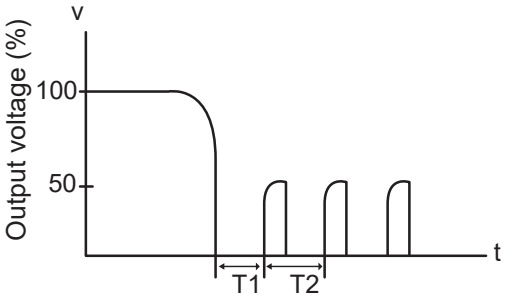
Typ T1: 480 ms, Typ T2: 520 ms

SPMA...151 @ 230 VAC



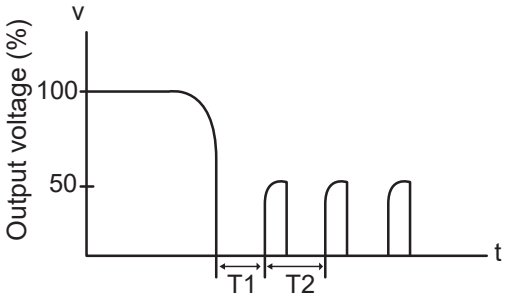
Typ T1: 480 ms, Typ T2: 520 ms

SPMA...301 / SPMA...601 / SPMA...1001 @ 110 VAC



Typ T1: 1100 ms, Typ T2: 1200 ms

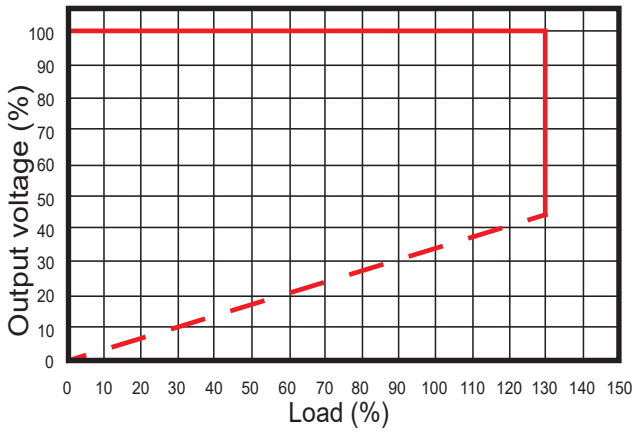
SPMA...301 / SPMA...601 / SPMA...1001 @ 230 VAC



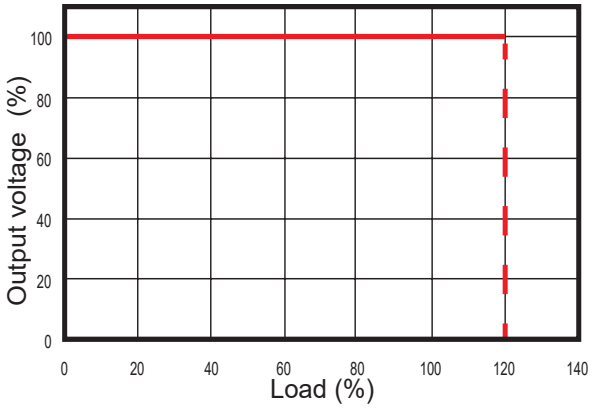
Typ T1: 1100 ms, Typ T2: 1200 ms

Output characteristics

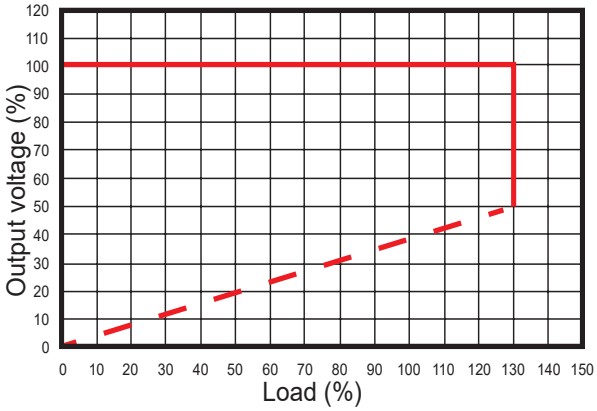
SPMA...151



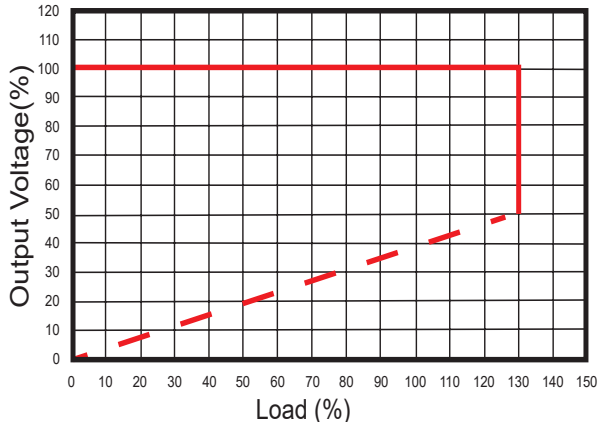
SPMA...301 @ 5 VDC



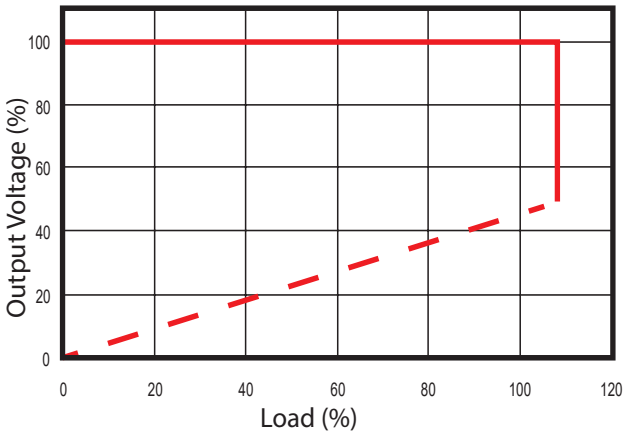
SPMA...301 @ 12 VDC, 15 VDC, 24 VDC



SPMA...601

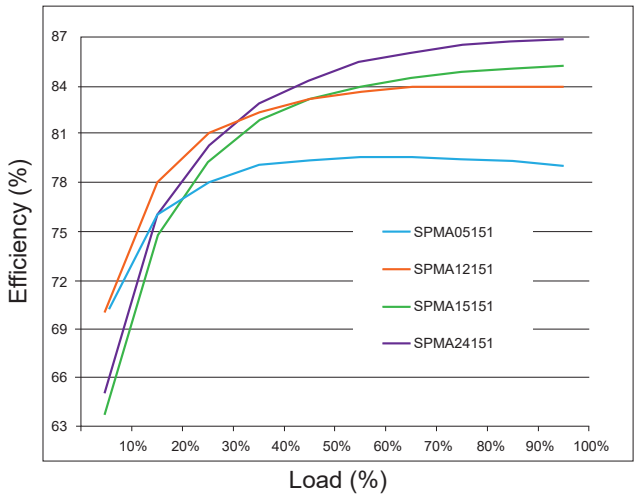


SPMA...1001

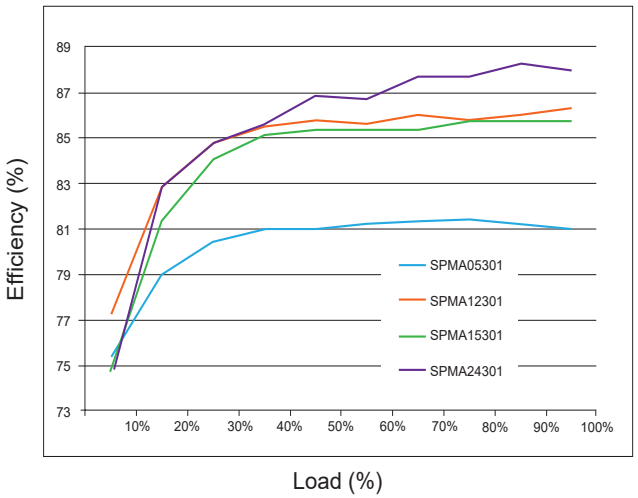


Typical efficiency curves

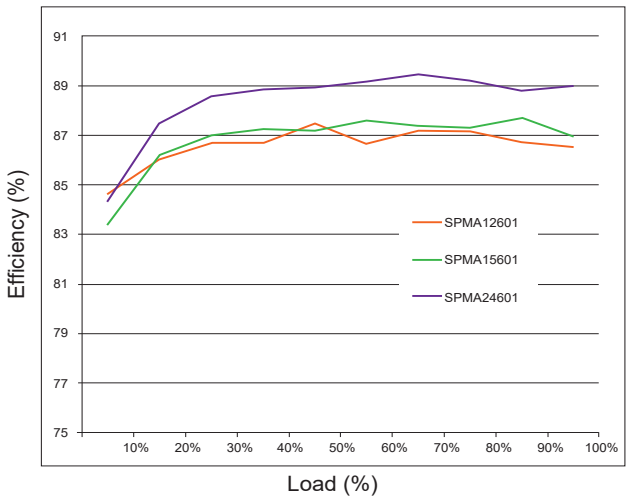
SPMA...151



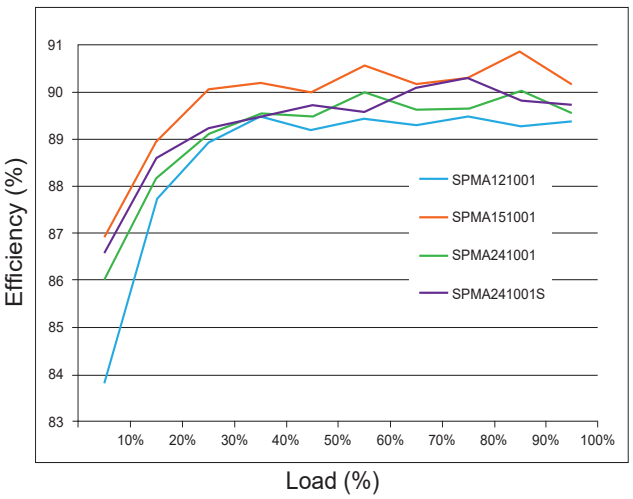
SPMA...301



SPMA...601



SPMA...1001

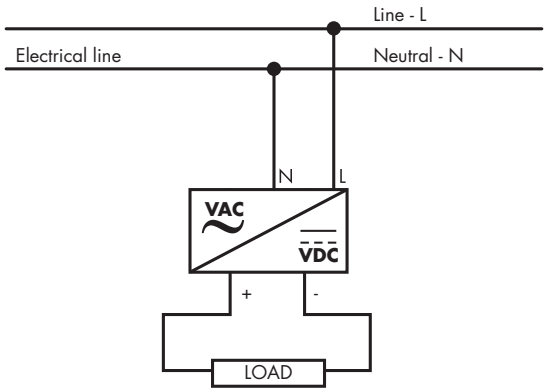


Installation

Ventilation and cooling	Cooling by free air convection

SPMA

Wiring diagram



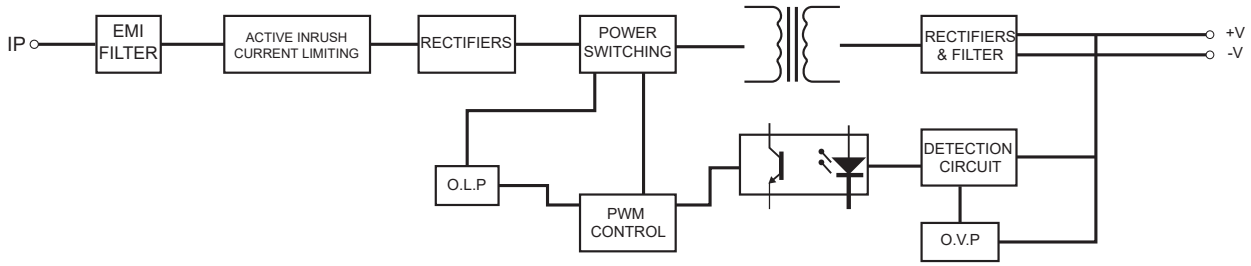
Connection specification

		SPMA...151	SPMA...301	SPMA...601	SPMA...1001
Terminal type	**Input**	screw terminals	screw terminals		
	Output		screw terminals		
Screw driver blade		3.5 mm slotted or Philips			
Tightening torque (recommended)		0.4 Nm			
Flexible conductor cross section max - min		0.5 - 2.5 mm^2			
Conductor cross section AWG min - max		22 - 12 AWG			
Rigid conductor cross-section min - max		0.5 - 2.5 mm^2			
Max wire diameter		2.05 mm			

SPMA

Block diagram

SPMA...151, SPMA...301, SPMA...601, SPMA...1001



Troubleshooting

Signaling and controls

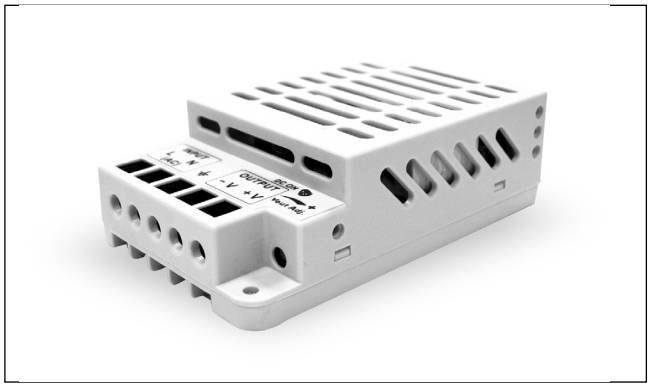
DC OK LED		Yes
DC OK output type		LED (green)
DC OK threshold (green colour)	**5 V**	Output voltage ≥ 90% of rated output voltage
	12 V	
	15 V	
	24 V	
Alarm threshold (red colour)		Output voltage ≤ 80% of rated output voltage, or overload

Operating description

Control and protection

		SPMA...151	**SPMA...301**	**SPMA...601**	**SPMA...1001**	
Overvoltage protection	**5 V**	5.8 ~ 7.5 V		-	-	
	12 V	14.2 ~ 16.5 V	15 ~ 18 V	14.5 ~ 17.5 V	14.2 ~ 16.2 V	
	15 V	18 ~ 20 V	18.8 ~ 22.5 V	18.8 ~ 22.5 V	18.8 ~ 22.5 V	
	24 V	29 ~ 33 V	30 ~ 36 V		30 ~ 36 V	30 ~ 36 V (100W S)
Overvoltage protection type		Shut off o/p voltage, re-power on				
Overload protection and protection type		110% ~ 150% of rated output current, constant current, auto recovery	110% ~ 150% of rated output current, constant current, auto recovery (12 V / 15 V / 24 V) 110% ~ 150% of rated output current, hiccup mode, auto recovery (5 V)	110% ~ 160% of rated output current, constant current, auto recovery (12 V / 15 V / 24 V) 110% ~ 160% of rated output current, hiccup mode, autor recovery (5 V)	110% ~ 150% (100W S) 102% ~ 110% of rated output current, constant current, auto recovery	
Short circuit protection		Long-term mode, auto recovery				

Switching Power Supply
Type SPP1 20W
Enclosed type



- **Universal AC input full range**
- **Short circuit protection**
- **Internal input filter**
- **High efficiency**
- **High everage efficiency (meet ErP)**
- **Low stand-by power consumption**
- **CE, TUV, and cURus approved**

Product Description

Enclosed Switching Power Supply meet your needs for AC DC and DC DC power requirements. SPP provide the most flexible OEM system power solutions from 5V to 24V at 20V for industrial control and automation applications.
Most carry fullcertifications and offer wide range universal input, screw terminal connections.
Especially designed where compact dimensions and performance are a must.

Ordering Key

SP P1 24 20 1 X

- **Model**
- **Mounting (P1 = Panel)**
- **Output voltage**
- **Output power**
- **Input Type**
- **Optional features**

Input type: 1= single phase

Approvals

UL60950-1

Output Performances

MODEL NO.	INPUT VOLTAGE	OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	EFF. (avg.)
Single Output Models							
SPP1 05201	88~264 VAC	20 WATTS	+ 5 VDC	4000 mA	81%	83%	80%
SPP1 12201	88~264 VAC	20.4 WATTS	+ 12 VDC	1700 mA	84%	86%	83%
SPP1 15201	88~264 VAC	21 WATTS	+15 VDC	1400 mA	85%	87%	84%
SPP1 24201	88~264 VAC	21.6 WATTS	+24 VDC	900 mA	85%	87%	84%

Output Data

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

Line regulation	± 0.5%
Load regulation	±1%
Minimum load	0%
Turn on time (full resistive load)	
Vi nom, Io nom	1000ms
Vi nom, Io nom with **3500**µF	1500ms
Transient recovery time	2ms
Ripple and noise	100mVpp
Output voltage accuracy	+ 1%
Temperature coefficient	± 0.03%/°C
Hold up time **Vi= 115VAC**	15ms
Vi= 230VAC	80ms
Voltage fall time (I_O**nom, Vi nom**)	150ms
Voltage rise time	
Vi nom, Io nom (full resistive load)	150ms
Vi nom, Io nom with **3500**µF CAP	500ms

Voltage trim range	
5V Model	4.5-5.5 VDC
12V Model	10.8-13.2 VDC
15V Model	13.5-16.5 VDC
24V Model	21.6-27.6 VDC
Rated continuous loading	
5V Model	4A @ 5VDC/3.6A @ 5.5VDC
12V Model	1.7A @ 12VDC/1.5A @ 13.2 VDC
15V Model	1.4A @ 15VDC/1.25A@ 16.5VDC
24V Model	0.9A @ 24VDC/0.75A @ 27.6VDC
Reverse voltage	
5V Model	7.5VDC
12V Model	18VDC
15V Model	22VDC
24V Model	35VDC
Capacitor load	3500µF

Switching Power Supply
Type SPD 20W
DIN rail mounting

CARLO GAVAZZI

Input Data

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

Rated input voltage Inom	100 - 240VAC
Voltage range	
AC IN	88 - 264VAC
DC IN	120 - 375VDC
Rated input current	
Vi: 115/230 VAC Io nom	390mA / 250 mA
Vi: 88 VAC Io nom	250mA
Inrush current	
Vi= 115VAC	20A
Vi= 230VAC	40A

Power dissipation		
(Vi : 230VAC, Io nom)	**5V Model**	4.5W
	12V Model	4W
	15V Model	4W
	24V Model	4W
Frequency range		47- 63Hz
Leakage current		
	Input-Output	0.25mA
	Input-FG	3.5mA

Controls and Protections

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

Overload	120 – 160%
Input fuse	T2A/250VAC internal[1)]
Output short circuit	Hiccup mode

[1)] Fuse not replaceable by user

		VDC	
Over voltage protection		**Min.**	**Max.**
	5V Model	5.75	6.75
	12V Model	13.8	16.2
	15V Model	17.25	20.25
	24V Model	28.8	32.4

General Data

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

Ambient temperature	-40°C to +71°C
Derating (>60°C to +71°C)	2.5%/°C (see curve)
Relative humidity	20 ~ 95%RH
Storage	-40°C to +85°C
Protection degree	IP20
Cooling	Free air convection
Insulation voltage	
Input-Output	3.000VAC/4242VDC min
Input-FG	1.500VAC/2121VDC min
Insulation resistance I/O	100MΩ min (@ 500VDC)
Switching Frequency	65 Khz

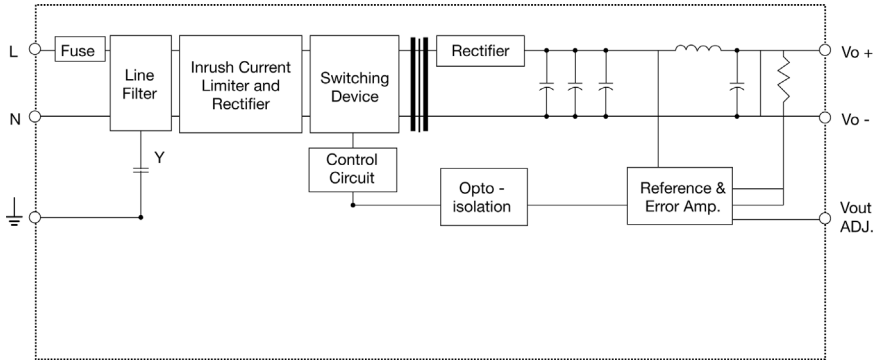
MTBF (Bellcore issue 6 @ 40°C, GB)		
	5V Model	729000 Hours
	12V Model	740000 Hours
	15V Model	746000 Hours
	24V Model	772000 Hours
Case material		Plastic: PC, UL94-V0
Altitude IEC 60068-2-13		4850m
Stand-by power comsumption		0.3W
Dimensions LxWxD mm(inch)		92(3.62)x54(2.13)x30(1.18)
Weight		140g

Norms and Standards

Vibration resistance	meet IEC 60068-2-6 (10-500Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 faces, 3 times for each face)
UL / cUL	UL60950-1, Recognized
TUV	EN 60950 -1 CB scheme

CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, ENV 50204, EN 61204-3

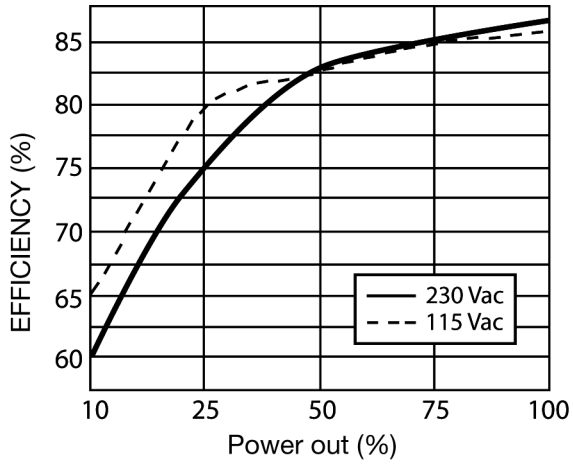
Block Diagrams



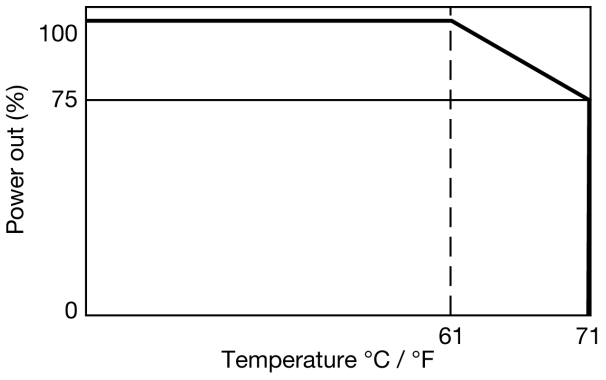
Pin Assignement and Front Controls

Pin No.	Designation	Description
1	**L**	Input terminals (phase conductor, no polarity at DC input)
2	**N**	Input terminals (neutral conductor, no polarity at DC input)
3	⏚	Ground this terminal to minimize high-frequecy emissions
4	**-**	Negative output terminal
5	**+**	Positive output terminal
	Vout ADJ	Trimmer-potentiometer for Vout adjustment
	DC ON	Operation indicator LED

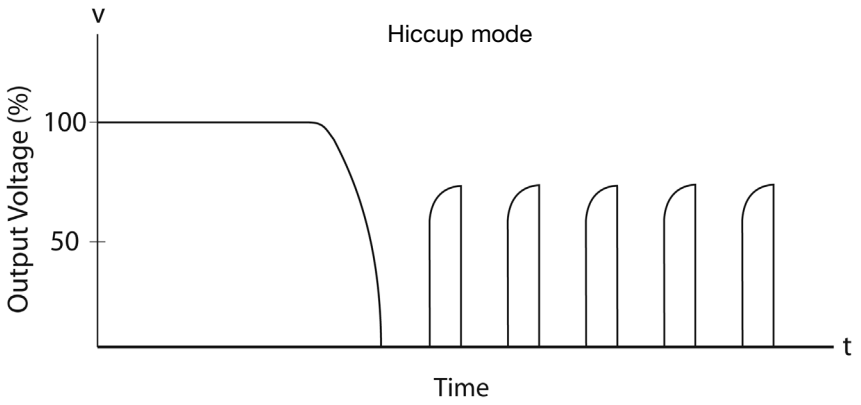
Typ. Efficency Curve



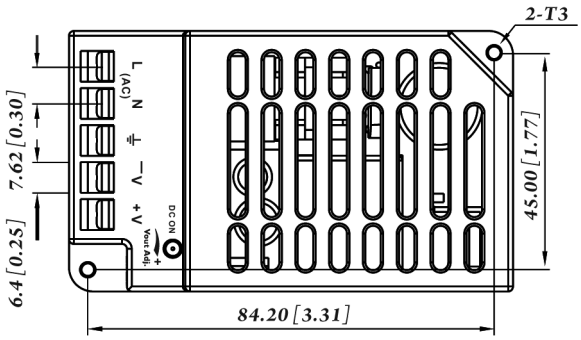
Derating Diagram

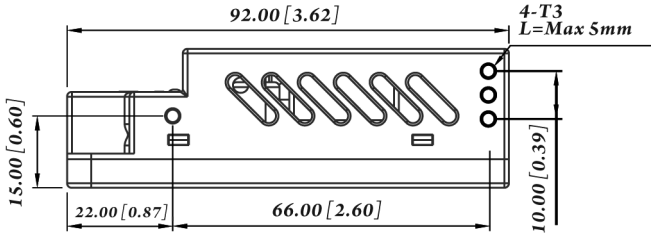


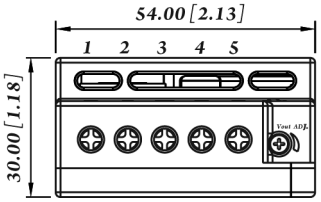
Typ. Current Limited Curve



Mechanical Drawings mm (inches)







Installation

Ventilation and cooling	Ventilation/Cooling Normal convection
Connector size range **Spring terminal**	AWG22-12 (0.2~2.5mm²) flexible/solid cable, 10mm stripping at cable connector can withstand torque at maximum 0.90 Nm (8 pound-inches)
General tolerances mm(in.) **0.00 (0.00) ÷ 30.00 (1.18)** **30.00 (1.18) ÷ 120.00 (4.72)**	 ±0.30 (0.01) ±0.50 (0.02)

SPPC

Single Phase Power Supply

Benefits

- **Universal AC, DC input range.** SPPC Series can be powered with AC Voltage (85-90 VAC to 264 VAC) or with DC Voltage (120-127 VDC to 370 VDC).
- **Reliable power in very compact dimensions**. High compactness, miniature size, long life and high power density, efficiency and reliability.
- **Reliable critical Protection.** The operation safety is guaranteed by the various output protections: Over Voltage (OVP), Over Load (OLP), Short Circuit (SCP), Over Power (OVP) and Over Temperature (OTP) depending on the model.
- **Built-in active PFC function**. PF >0.95 (for 150W to 800W models).
- **Built-in features**. Built-in Fan Speed Control, remote sense function, DC OK signal depending on the model.
- **Wide operating ambient temp.** The operating temperature range is from -20 / -30°C to +65 / 70°C depending on the model, and a Storage temperature range from -40°C / +85°C.

Description

Enclosed Switching Power Supply for AC DC and DC DC power requirement. The new SPPC family provides flexible OEM power solutions for industrial control and automation applications. This Series is available with range from 25W to 800W, and from 5V to 24V. All the range carries full certification offering a wide range of universal input and screw terminal connections.

Applications

This product is suitable for all applications which require single-phase power supply with universal AC or DC voltage input range, high efficiency, and high compactness for panel mounting solution.

Main functions

- Compact dimensions of up to 28.8 mm height
- High efficiency up to 90%
- Universal AC, DC input voltage range
- 25W, 35W, 50W, 75W, 150W, 200W, 240W, 320W, 480W, 600W, 800W
- Screw terminals

SPPC

References

Order code

SPPC □ □ 1 □

Enter the code entering the corresponding option instead of □

Code	Option	Description	Notes
S	-	Switching	Device typology
P	-	Power supply	
PC	-	Panel mounted	Mounting
□	5	5 VDC	Rated output voltage
	12	12 VDC	
	15	15 VDC	
	24	24 VDC	
	36	36 VDC	
	48	48 VDC	
□	25	25W	Rated output power
	35	35W	
	50	50W	
	75	75W	
	150	150W	
	200	200W	
	240	240W	
	320	320W	
	480	480W	
	600	600W	
	800	800W	
1	-	Single phase input	Input type
□	-	Basic model	Optional features
	F	Power factor correction	
□	-	Standard model	
	C	Compact size	

Selection guide

	Output power				
Output voltage	**25W**	**35W**	**50W**	**75W**	**150W**
5 VDC	SPPC5251	SPPC5351	SPPC5501	SPPC5751	-
12VDC	SPPC12251	SPPC12351	SPPC12501	SPPC12751	SPPC121501FC
15 VDC	SPPC15251	-	SPPC15501	-	-
24 VDC	SPPC2451	SPPC24351	SPPC24501	SPPC24751	SPPC241501FC
36 VDC	-	-	-	-	-
48 VDC	-	-	SPPC48501	SPPC48751	-

SPPC

	Output power					
Output voltage	**200W**	**240W**	**320W**	**480W**	**600W**	**800W**
5 VDC	SPPC52001FC	-	-	-	-	-
12VDC	SPPC122001FC	SPPC122401FC	SPPC123201FC	SPPC124801FC	SPPC126001FC	-
15 VDC	-	-	-	-	-	-
24 VDC	SPPC242001FC	SPPC242401FC	SPPC243201FC	SPPC244801FC	SPPC246001FC	SPPC248001FC
36 VDC	-	-	-	SPPC364801FC	SPPC366001FC	-
48 VDC	SPPC482001FC	-	SPPC483201FC	SPPC484801FC	SPPC486001FC	SPPC488001FC

CARLO GAVAZZI compatible components

Purpose	Component name/code	Notes
Bracket for side mounting	SPPX-DINCLIPA	
Bracket for bottom mounting	SPPX-DINCLIPB	
Small square bracket	SPPX-BKTLA	
Medium square bracket	SPPX-BKTLB	
Large square bracket	SPPX-BKTLD	

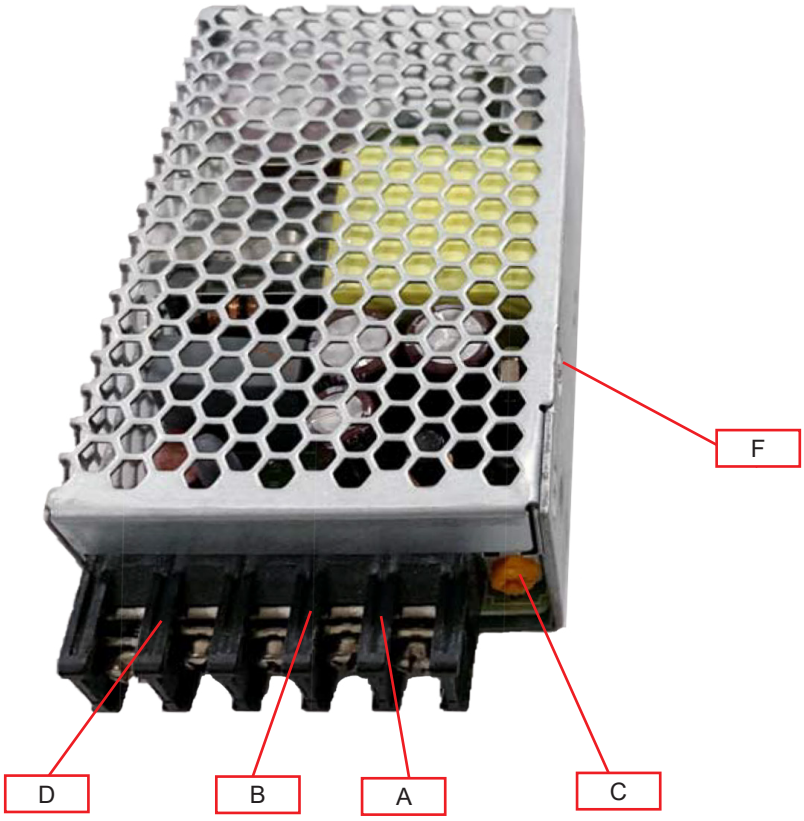
Further reading

Information	Where to find it	QR
SPPC Data sheet		
SPPC Installation sheet		
SPPC CAD drawings		

SPPC

Structure

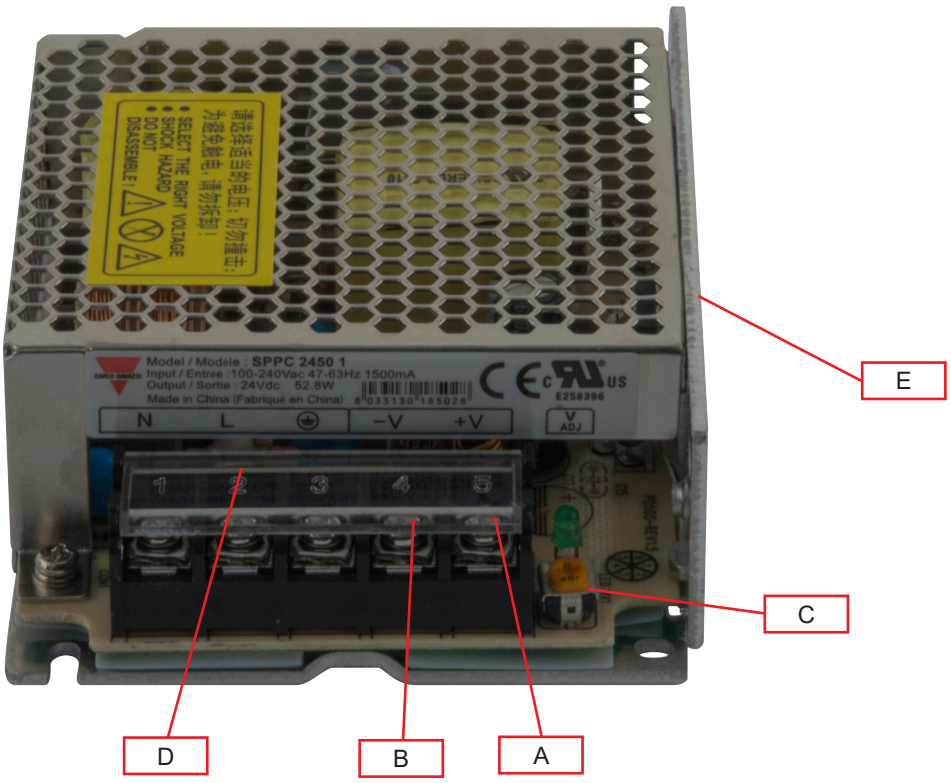
SPPC 25W



SPPC 25W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	Power supply terminals	L, N supply terminals + GND
F	Wall Mounting Predisposition	Predispositions present on two sides

SPPC

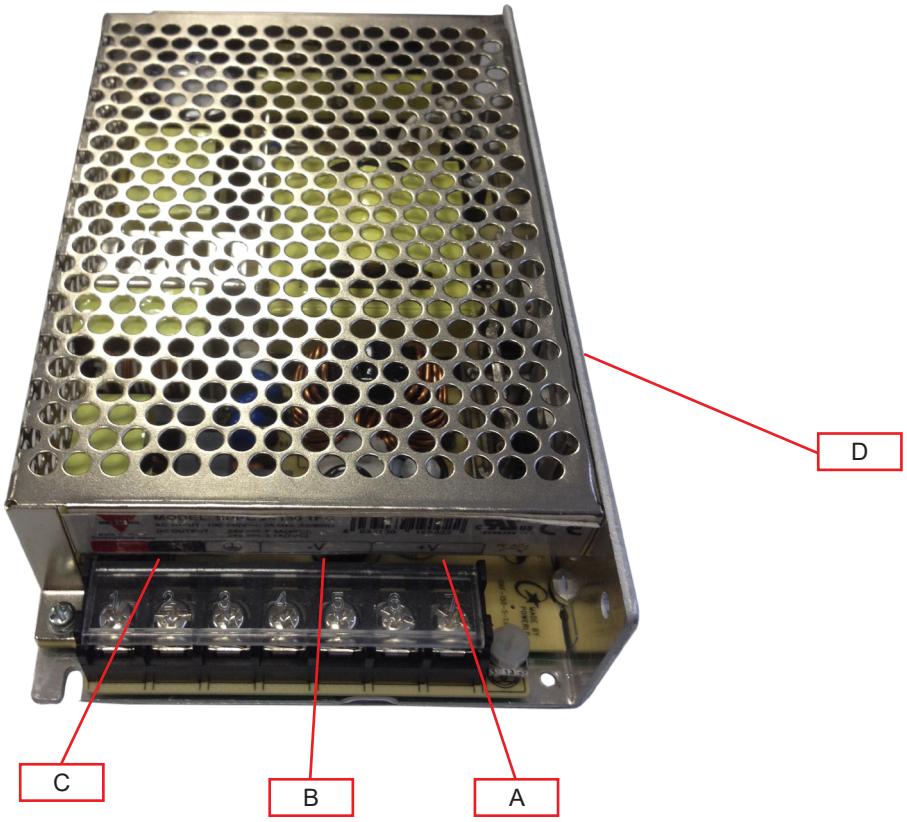
SPPC 35W / 50W / 75W



SPPC 35W / 50W / 75W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	Power supply terminals	L, N supply terminals + GND
E	Wall Mounting Predisposition	Predispositions present on two sides

SPPC

SPPC 150W



SPPC 150W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	Power supply terminals	L, N supply terminals + GND
D	Wall Mounting Predisposition	Predispositions present on two sides

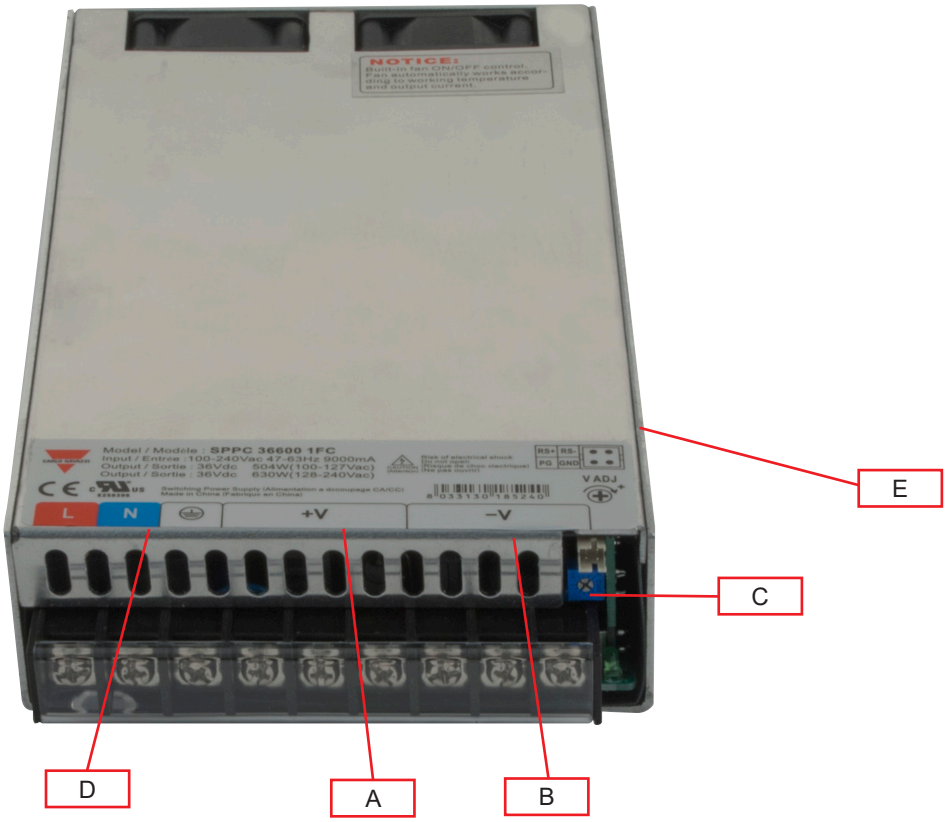
SPPC

SPPC 200W, 240W, 320W

SPPC 200W / 240W / 320W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	Power supply terminals	L, N supply terminals + GND
E	Wall Mounting Predisposition	Predispositions present on two sides

SPPC

SPPC 480W / 600W / 800W



SPPC 480W / 600W / 800W		
Element	**Component**	**Function**
A	+ V terminals	Positive DC output terminals
B	- V terminals	Negative DC output terminals
C	VADJ Trimmer	Output voltage adjustment
D	Power supply terminals	L, N supply terminals + GND
E	Wall Mounting Predisposition	Predispositions present on two sides

SPPC

Features

General data

SPPC		25W	35W	50W	75W	150W
Leakage current (input - output)		< 0.25mA				
Earth leakage current (input - PG)		≤ 3.5mA				
Efficiency @115 VAC	output voltage					
	5 VDC	76 %	79 %			
	12 VDC	80 %	83 %	84 %		82.5 %
	15 VDC	-	-	85 %		-
	24 VDC	84 %	86 %		87 %	85 %
	48 VDC	-	-	88 %		-
Efficiency @230 VAC	5 VDC	78 %	80 %			-
	12 VDC	82 %	84 %	85 %		86 %
	15 VDC	-	-	86 %		-
	24 VDC	85 %	87 %	87 %	88 %	88 %
	36 VDC	-	-	-	-	-
	48 VDC	-	-	89 %		-
Power factor (full load) 110 VAC 230 VAC		-	-	-	-	> 0.98 >0.95
Ingress protection		IP 20				
MTBF (MIL-HDBK-217F)		> 200.000 hours				
Case material		Metal				
Weights		0.15 Kg (0.33 Lb)	0.19 Kg (0.42 Lb)	0.25 Kg (0.55 Lb)	0.366 Kg (0.8 Lb)	0.61 Kg (1.34 Lb)
Switching frequency		65 kHz		-	-	-
Mounting		Panel				
Packing		48 PCS / CTN	60 PCS / CTN	40 PCS / CTN	30 PCS / CTN	20 PCS / CTN
		G. W: 10.05 kgs (22.1 lb)	G.W: 14.22 kgs (31.3 lb)	G.W: 12.29 kgs (27.1 lb)	G.W: 13.29 kgs (29.2 lb)	G.W: 14.26 kgs (31.4 lb)
		0.03 CBM	0.06 CBM	0.043 CBM	0.044 CBM	0.04 CBM

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

SPPC

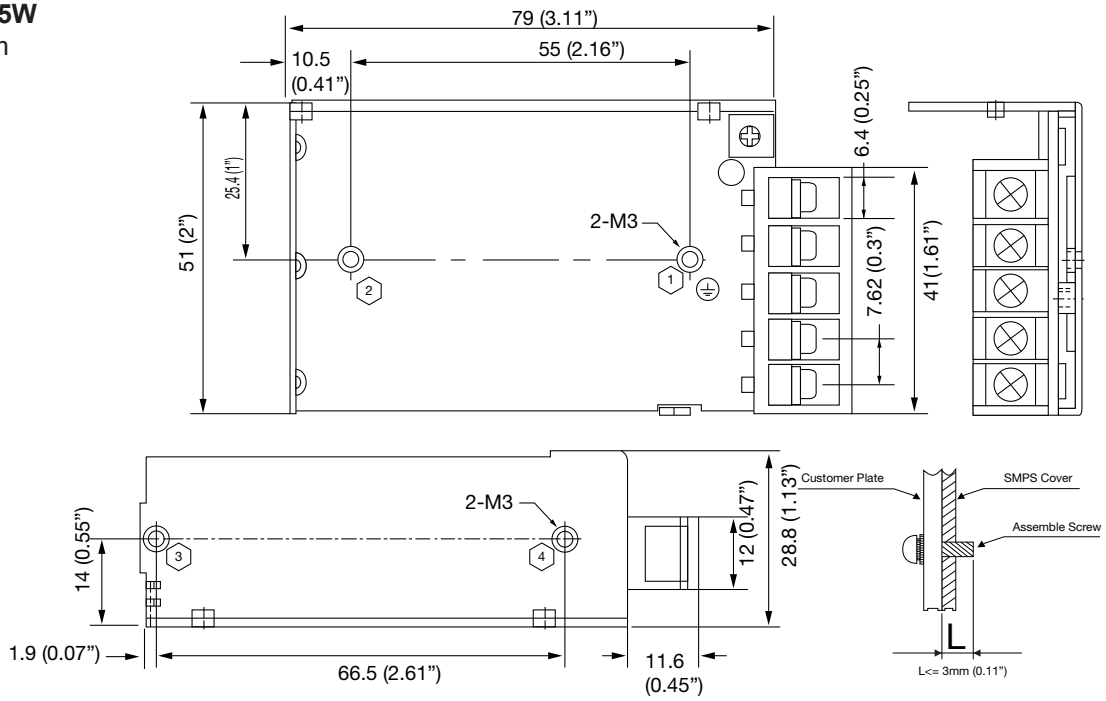
SPPC		200W	240W	320W	480W	600W	800W
Leakage current (input - output)		≤ 0.25 mA					
Earth leakage current (input - PG)		≤ 3.5 mA					
Efficiency @115VAC	Output voltage						
	5 VDC	79 %					
	12 VDC	84 %	84 %	84.5 %	88 %	88 %	-
	15 VDC	-	-	-	-	-	-
	24 VDC	86 %	86 %	87 %	89 %	89 %	≥ 88 %
	36 VDC	86 %	-	-	90 %	90 %	-
	48 VDC	87.5 %	-	87.5 %	90 %	90 %	-
Efficiency @230VAC	5 VDC	79 %	-	-	-	-	-
	12 VDC	84 %		84.5 %	88 %		-
	15 VDC	-	-	-	-	-	-
	24 VDC	86 %		87 %	89 %		≥ 88 %
	36 VDC	-	-	-	90 %		-
	48 VDC	87.5 %	-	87.5 %-	90 %		≥ 89 %
Power factor (full load) 110 VAC 230 VAC		> 0.98 > 0.95			> 0.98 > 0.96		
Ingress protection		IP 20					
MTBF (MIL-HDBK-217F)		> 200.000 hours					
Case material		Metal					
Weights		780g	810g		1.13Kgs		1.22Kgs
Switching frequency		83KHz			100KHz		
Mounting		Panel					
Packing		12 PCS / CTN			8 PCS / CTN		
		G.W: 11.4 kgs (25.1 lb)		G.W: 11.6 kgs (25.5 lb)	G.W: 8.7 kgs (19.1 lb)		G.W: 10.97 kgs (24.1 lb)
		0.04 CBM					

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

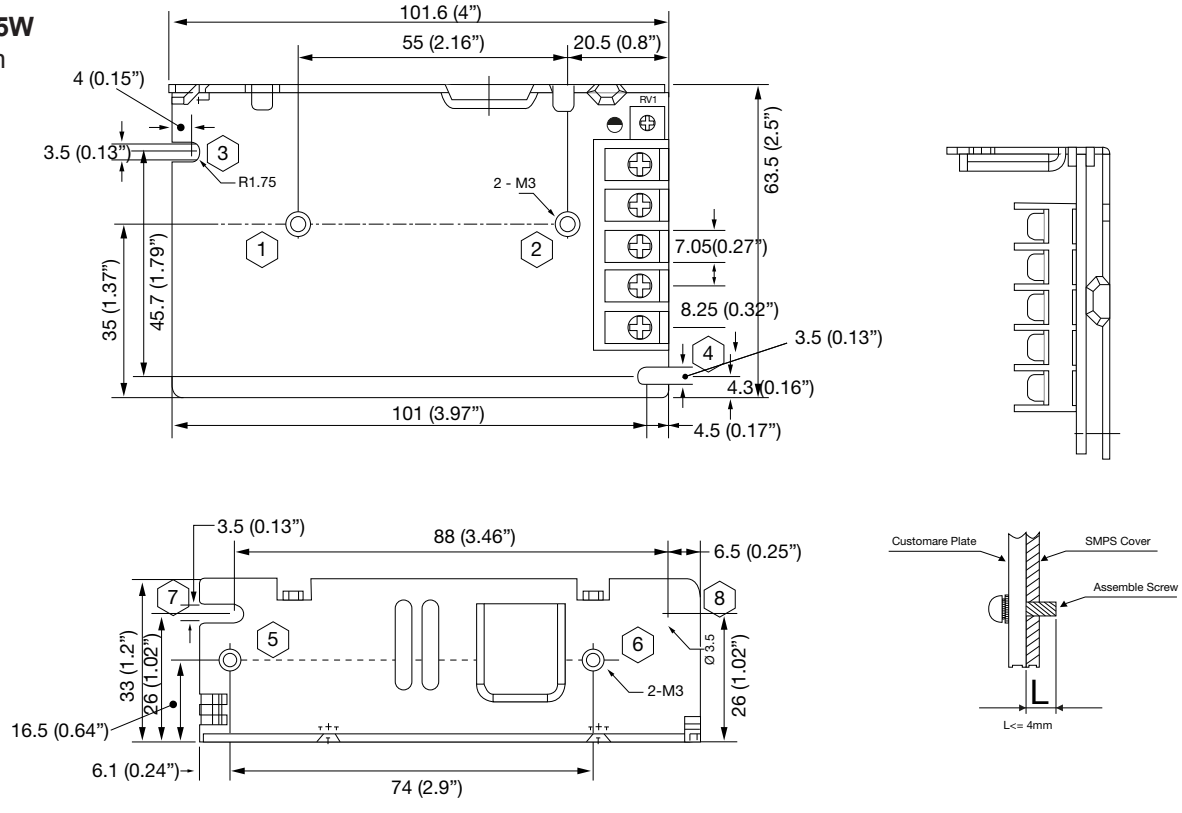
SPPC

Dimensions

SPPC 25W
Unit: mm



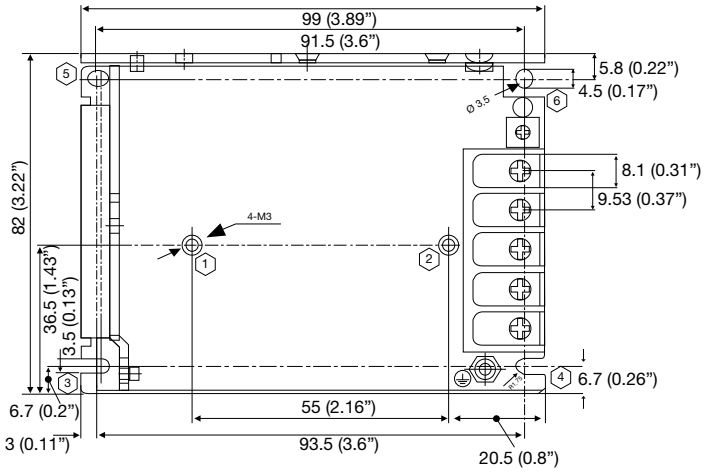
SPPC 35W
Unit: mm

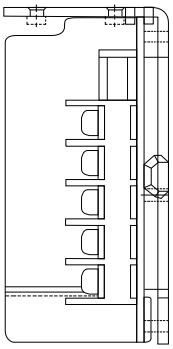


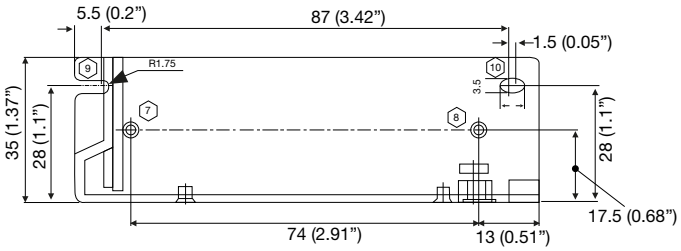
SPPC

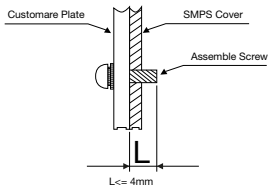
SPPC 50W

Unit: mm



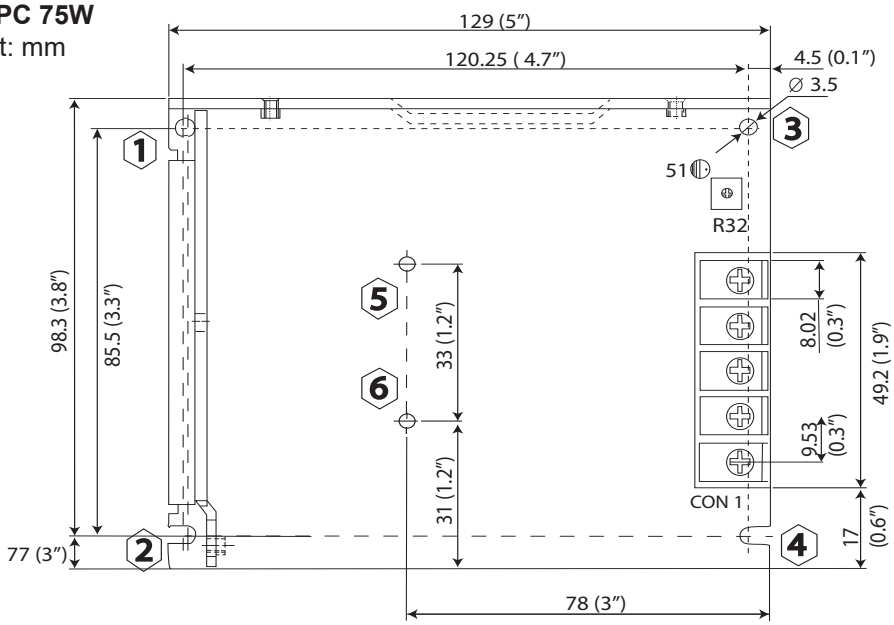


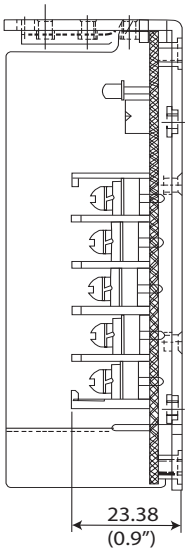


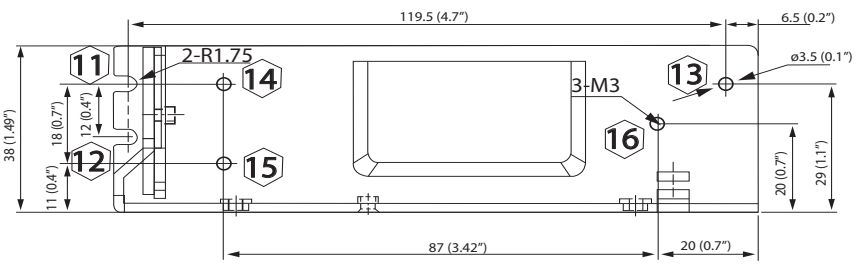


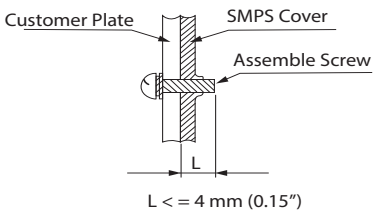
SPPC 75W

Unit: mm



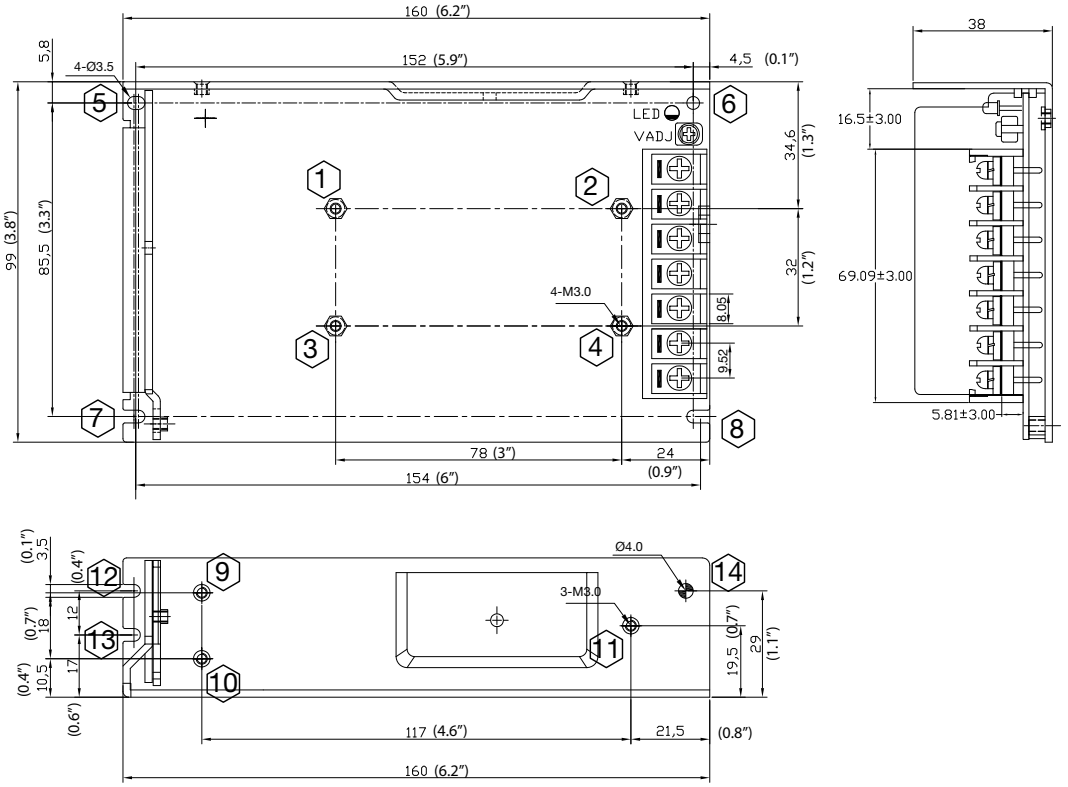






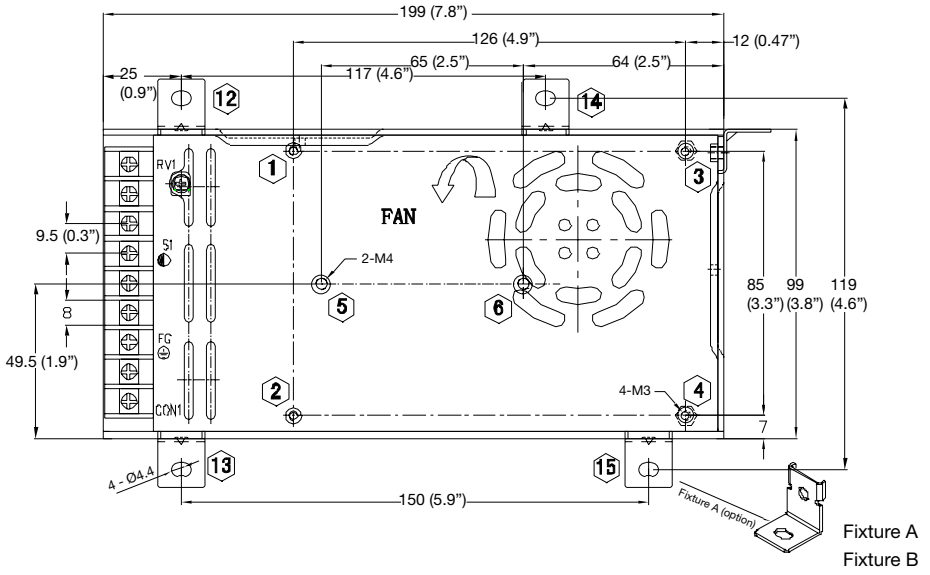
SPPC

SPPC 150W
Unit: mm

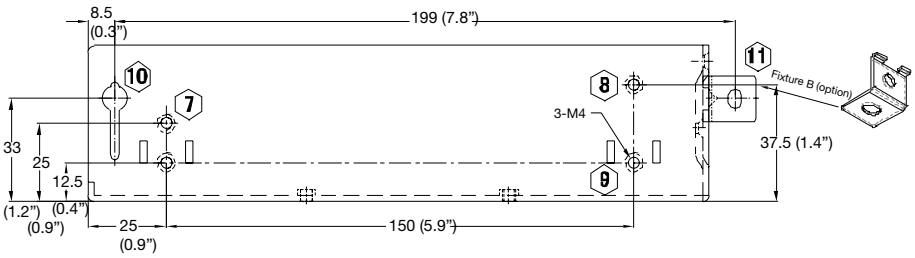


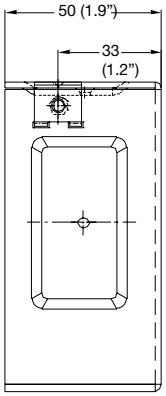
SPPC

SPPC 200W / 240W / 320W
Unit: mm



Fixture A
Fixture B

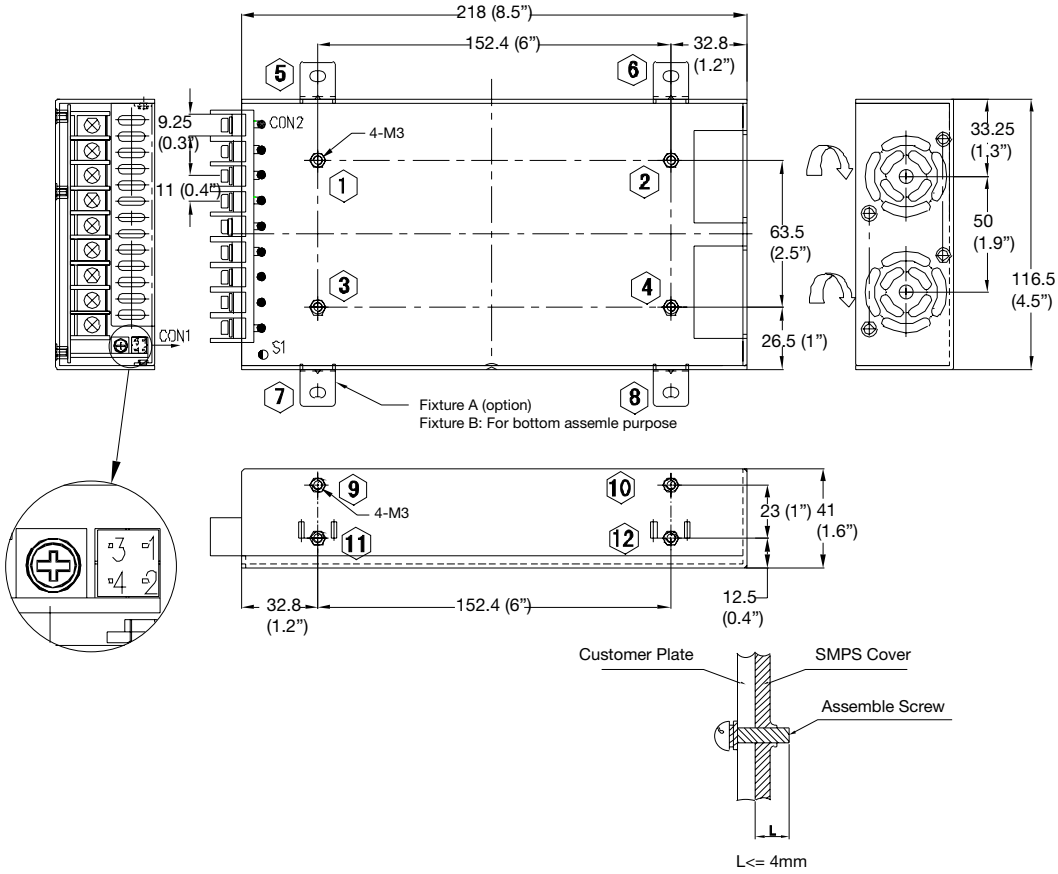




SPPC

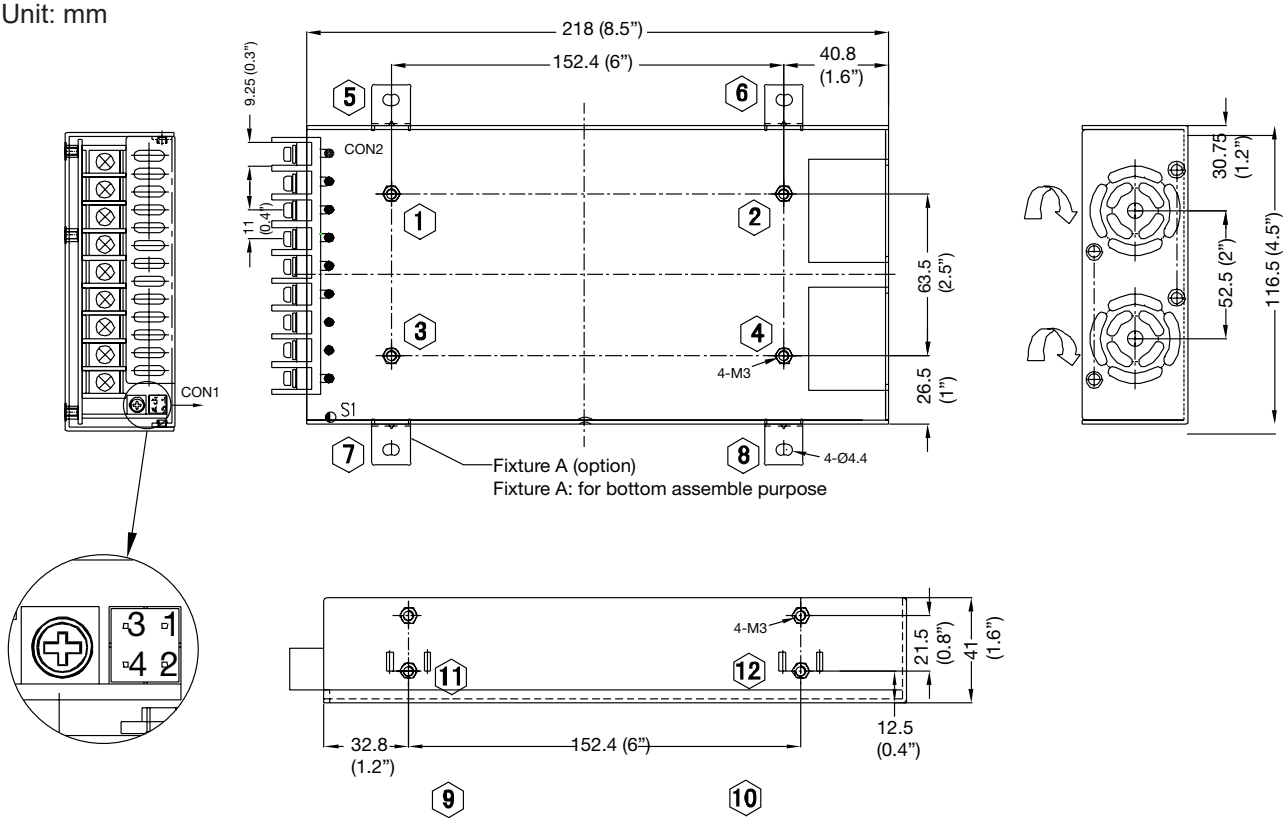
SPPC 480W

Unit: mm



SPPC 600W / 800W

Unit: mm



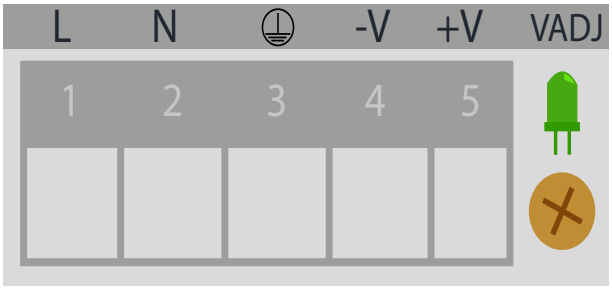
SPPC

Connection diagram

Terminal markings

SPPC 25W

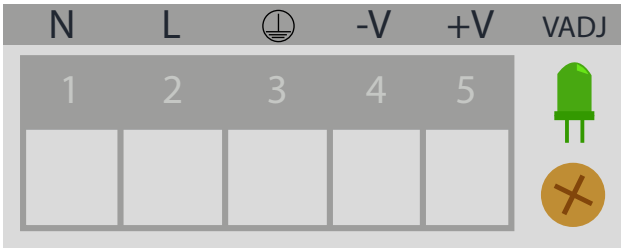
Terminal	Designation	Description
1	L	Input terminals (phase conductor, no polarity with DC input)
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	Ground	Ground this terminal to minimize high frequency emissions
4	V-	Negative output terminal
5	V+	Positive output terminal
	Vout ADJ	Potentiometer for output voltage adjustment



SPPC 35W

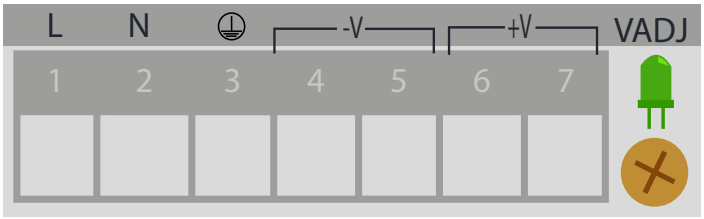
Terminal	Designation	Description
1	L	Input terminals (phase conductor, no polarity with DC input)
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	Ground	Ground this terminal to minimize high frequency emissions
4	V-	Negative output terminal
5	V+	Positive output terminal
	Vout ADJ	Potentiometer for output voltage adjustment
	DC Status	LED indication of power supply output status

SPPC



SPPC 50W / 75W

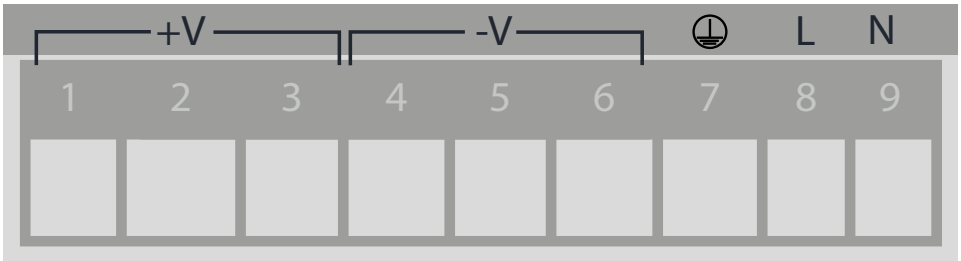
Terminal	Designation	Description
1	N	Input terminals (neutral conductor, no polarity with DC input)
2	L	Input terminals (phase conductor, no polarity with DC input)
3	Ground	Ground this terminal to minimize high frequency emissions
4	V-	Negative output terminal
5	V+	Positive output terminal
	Vout ADJ	Potentiometer for output voltage adjustment
	DC Status	LED indication of power supply output status



SPPC 150W

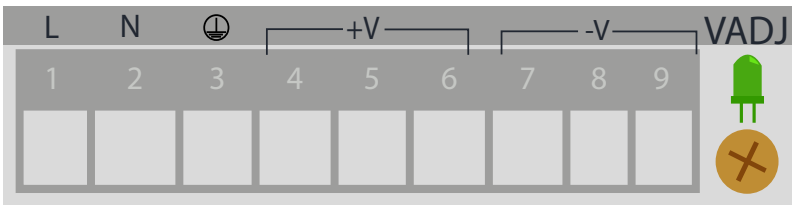
Terminal	Designation	Description
1	L	Input terminals (phase conductor, no polarity with DC input)
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	Ground	Ground this terminal to minimize high frequency emissions
4, 5	V-	Negative output terminal
6, 7	V+	Positive output terminal
	Vout ADJ	Potentiometer for output voltage adjustment
	DC Status	LED indication of power supply output status

SPPC



SPPC 200W / 240W / 320W

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



SPPC 400W / 600W / 800W

Terminal	Designation	Description
1	L	Input terminals (phase conductor, no polarity with DC input)
2	N	Input terminals (neutral conductor, no polarity with DC input)
3	Ground	Ground this terminal to minimize high frequency emissions
4, 5, 6	V+	Positive output terminal
7, 8, 9	V-	Negative output terminal
	DC Status	LED indication of power supply output status
	Vout ADJ	Potentiometer for output voltage adjustment

SPPC

Environmental

SPPC	25W	35W	50W	75W	150W
Operating temperature range	-20 °C to 70 °C (-4 °F to 158 °F)	-25 °C to 70 °C (-13 °F to 158 °F)			-20 °C to 70 °C (-4 °F to 185 °F)
Storage temperature	- 40 °C to 85 °C (- 40 °F to 185 °F)				- 30 °C to 85 °C (- 22 °F to 185 °F)
Humidity	20 % ~ 90 % RH no condensing				
Temperature derating	50 °C (122 °F)				40 °C (104 °F)
Temperature regulation	± 0.03 % / °C (± 32.054 % / °F)				

SPPC	200W	240W	320W	480W	600W	800W
Operating temperature range	-20 °C to 65 °C (-4 °F to 149 °F)			- 30 °C to 70 °C (- 22 °F to 158 °F)		
Temperature storage	-40 °C to +85 °C (-40 °F to 185 °F)					
Humidity	20 % ~ 90 % RH no condensing					
Temperature derating	50 °C (122 °F)					
Temperature regulation	± 0.03 % / °C (± 32.054 % / °F)					

Compatibility and conformity

SPPC	25W	35W	50W	75W	150W
Safety standards	UL60950-1 2nd Ed, IEC 60950-1:2005 (2nd Ed); EN60950-1:2006				UL60950-1 2nd Ed; IEC 60950-1:2005 (2nd Ed); EN60950-1:2006
EMC Emission: EMI conductor & radiation EMS immunity	Compliance to EN55022, EN55024 Compliance to EN61000-4-2,3,4,5,6,8,11				
Harmonic current	Compliance to EN61000-3-2, 3				
EMC immunity	Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11; EN55024, EN61000-6-2 Heavy industry level				-
CE	CE Approved				CE approved
UL Certification	UL approved				

SPPC

SPPC	25W	35W	50W	75W	150W
Vibration resistance	10 ~ 150Hz, 2G 10 min. / 1 cycle, period for 60 min. each along X, Y, Z axes	10~500 Hz, 5G 10 min / 1 cycle, 60 min, each along X, Y, Z axes.			
Shock resistance	20 G, 11 ms, 3 times along X, Y, Z axes				

SPPC	200W	240W	320W	480W	600W	800W
Safety standards	UL60950-1 2nd Ed; IEC 60950-1:2005 (2nd Ed); EN60950-1:2006					
EMC Emission: **EMI conduction & radiation** **EMS immunity**	Compliance to EN55022, EN55024 Compliance to EN61000-4-2,3,4,5,6,8,11					
Harmonic current	Compliance to EN61000-3-2, Class D					
EMC immunity	-	-	-	-	-	-
CE	CE					
UL Certification	UL approved					
Vibration resistance	10 ~ 500 Hz, 2G 10 min. / 1 cycle, period for 60 min. each along X, Y, Z axes			10 ~ 150 Hz, 2G 10 min. / 1 cycle, period for 60 min. each along X, Y, Z axes		10 ~ 500 Hz, 2G 10 min. / 1 cycle, period for 60 min. each along X, Y, Z axes
Shock resistance	20 G / 11 ms pulse, 3 times at each X, Y, Z axes					

Insulation

SPPC	25W	35W	50W	75W	150W
Insulation / withstand voltage (I/PE)	Primary - PG: 1.5k VAC / ≤ 10 mA				
Insulation / withstand voltage (I/O)	Primary - Secondary: 3.0k Vac / 10 mA				

SPPC

SPPC	25W	35W	50W	75W	150W
Insulation / withstand voltage (O/PE)	Secondary - PG: 0.5k VDC / 10 mA				
Insulation resistance	100 ohms			10M ohms	
Overvoltage category	II				
Pollution degree	2				

SPPC	200W	240W	320W	480W	600W	800W
Insulation / withstand voltage (I/PE)	Primary - PG: 1.5K VAC/10 mA					
Insulation / withstand voltage (I/O)	Primary - Secondary: 3.0K VAC/10 mA					
Insulation / withstand voltage (O/PE)	Secondary - PG: 0.5k VDC ; ≤ 10 mA	≤ 10 mA Secondary - PG: 0.5k Vac ; ≤10 mA				
Insulation resistance	10M ohms			100M ohms		10M ohms
Overvoltage category	II					
Pollution degree	2					

Input data

SPPC	25W	35W	50W	75W	150W
Rated input voltage	100 VAC / 240 VAC				
Input voltage range	88 VAC / 264 VAC				
AC current (max) 115VAC 230VAC	< 0.7 A -	< 1 A -	< 1.3 A -	< 2.5 A -	
Frequency range	47 Hz ~ 63 Hz				

SPPC

SPPC	25W	35W	50W	75W	150W
Inrush current **115 VAC** **230 VAC**	20 A (120VAC) 40 A	- < 50 A	- 45 A	- <60 A	< 30 A < 45 A
Internal input fuse	2A / 250 VAC	3.15 / 250 VAC		5 A / 250 VAC	5 A / 250 VAC

SPPC	200W	240W	320W	480W	600W	800W
Rated input voltage	100 VAC / 240 VAC					
Input voltage range	90 VAC ~ 264 VAC, 120 VDC ~ 370 VDC			90 VAC ~ 264 VAC,		
AC current (max) **115 VAC** **230 VAC**	< 3.5 A -	< 4.5 A -	< 4.5 A -	< 7 A -		≤ 12 A -
Frequency range	47 Hz ~ 63 Hz					
Inrush current **115 VAC** **230 VAC**	< 30 A < 50 A			- < 20 A		≤ 20 A (220 VAC)
Internal input fuse	5 A / 250 VAC	6.3 A / 250 VAC		10 A / 250 VAC		15 A / VAC

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

Output data

SPPC	25W	35W	50W	75W	150W
Output power	25W	35W	50W	75W	150W
Voltage accuracy	± 2%	± 3%		± 1%	± 2%
Line regulation	± 1%	± 0.5%			
Load regulation	± 2%	± 1%			
Voltage regulation span	-10 % ~ 10 %				

SPPC

SPPC		25W	35W	50W	75W	150W
Rated output current at different output voltages	5	5 A	6 A	8 A	12 A	-
	12	2.1 A	3 A	4.2 A	6 A	
	15	1.7 A	2.4 A	3.4 A	5 A	
	24	1.1 A	1.5 A	2.2 A	3.2 A	
	36	-	-	-	-	-
	48	-	0.76 A	1.12 A	1.6 A	3.2 A
Ripple and noise at different output voltages *Note	5	< 80 mV	< 50 mV (0°C ~ 70°C) < 80 mV (-25 °C ~ 0°C)	< 80 mV (0°C ~ 70 °C) < 80 mV (-25 °C ~ 70°C)	<50mV (0°C ~ 70 °C) <80mV (-25 °C ~ 70°C)	-
	12	< 120 mV	< 80 mV (0°C ~ 70 °C) < 180 mV (-25 °C ~ 0°C)	< 120 mV (0°C ~ 70 °C) < 200 mV (-25 °C ~ 70°C)	< 80 mV (0°C ~ 70 °C) <200mV (-25 °C ~ 70°C)	≤ 100 mV (0°C ~ 70°C) ≤ 200 mV (-20°C ~ 0°C)
	15	< 150 mV		< 120 mV (0°C ~ 70 °C) < 200 mV (-25 °C ~ 0°C)		
	24	<240 mV	< 120 mV (0°C ~ 70 °C) < 200 mV (-25 °C ~ 0°C)	< 200 mV (0°C ~ 70 °C) < 300 mV (-25 °C ~ 70°C)		
	36	-	-	-	-	
	48	-	< 180 mV (0°C ~ 70°C) < 240 mV(-25 °C ~ 0°C)	< 200 mV (0°C ~ 70 °C) < 500 mV (-25 °C ~ 70°C)	<120mV (0°C ~ 70 °C) <240mV (-25 °C ~ 70°C)	≤ 100 mV (0°C ~ 70°C) ≤ 200 mV (-20°C ~ 0°C)
Hold up time 115 VAC 230 VAC		> 10 ms (120VAC) > 20 ms	> 10 ms (120 VAC) > 20 ms	- > 50 ms	> 10 ms (120 VAC) > 20 ms	- > 10 ms
Set up time 115 VAC 230 VAC		< 2.0 s < 1.0 s	- < 1 s	< 2.0 s < 1.5 s	< 2.0 s < 1.5 s	≤ 3 s ≤ 2 s
Turn-on overshoot		<+5%				
Overshoot and undershoot		<5%				
Series operation		Support				
Parallel operation		No				
Power boost		No				

*NOTE: Measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF and 10uF parallel capacitor

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

SPPC

SPPC		200W	240W	320W	480W	600W	800W
Output power		200W	240W	320W	480W	600W	800W
Voltage accuracy		±1%					±2%
Line regulation		±0.5%					
Load regulation		±1%					±2%
Voltage regulation span		-10 % ~ 10 %					
Rated ouput current at different output oltages	5	40 A	48 A	55 A	-	-	-
	12	16.7 A	20 A	25 A	34 A	42 A	-
	24	8.4 A	10 A	13 A	22 A	26.5 A	33 A
	36	-	-	-	14 A	17.5 A	-
	48	4.2 A	5 A	6.7 A	11 A	13.6 A	16.5 A
Ripple and noise at different output voltages *Note	5	-	-	<150mV (0~65°C) <200mV (-20~0°C)	-	-	-
	12	< 150mV (0~65°C) < 200 mV (-20~0°C)	< 200mV (0~65°C) < 250 mV (-20~0°C)	< 200mV (0~65°C) < 250 mV (-20~0°C)	< 120 mV (0°C ~ 70°C) < 180 mV (-30 °C)	< 120 mV (0°C ~ 70°C) < 180 mV (-30 °C)	-
	24	< 150mV (0~65°C) < 200 mV (-20~0°C)	< 150mV (0~65°C) < 200 mV (-20~0°C)	<150mV (0~65°C <200mV (-20~0°C)	< 150 mV (0°C ~ 70°C) < 150 mV (-30 °C)	< 150 mV (0°C ~ 70°C) < 150 mV (-30 °C)	≤ 200 mV
	36	< 200 (0~65°C) < 200 mV (-20~0°C)	-	<200mV (0~65°C) < 200 mV (-20~0°C)			-
	48	< 150mV (0~65°C) < 200 mV (-20~0°C)	-	< 150mV (0~65°C) < 200 mV (-20~0°C)	< 200 mV (0°C ~ 70°C) < 200 mV (-30 °C)	< 200 mV (0°C ~ 70°C) < 200 mV (-30 °C)	≤ 240 mV
Hold up time 115 VAC 230 VAC		- > 12 ms			- > 16 ms		> 8 ms (220 VAC) - -
Set-up Time 115VAC 230VAC		< 4S (120 VAC) - ≤ 2s			< 3 s < 1.5 s		≤ 3 s (220 VAC) - -
Turn-on overshoot		<+5%					
Overshoot and Undershoot		<5%					
Series Operation		Support					
Parallel Operation		No					
Power Boost		No					

*NOTE: Measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF and 10uF parallel capacitor

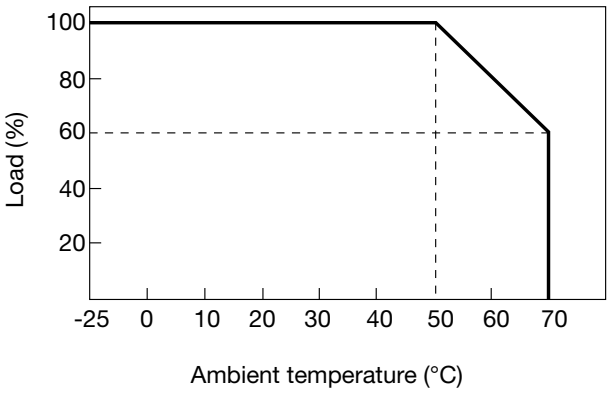
(All specifications are at nominal values, full load, 25°C unless otherwise stated)

SPPC

Performance

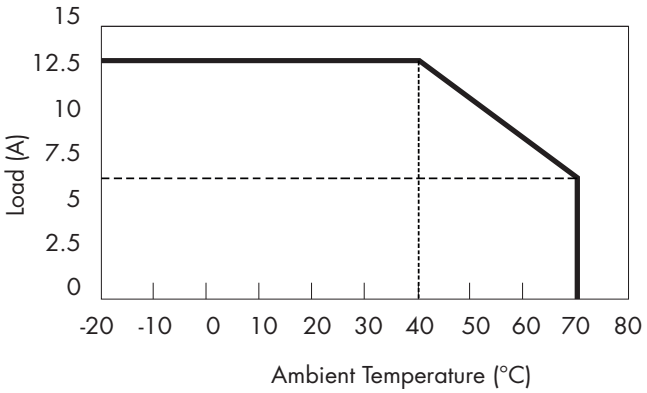
Current derating

SPPC 25W / 35W / 50W / 75W / 600W / 800W

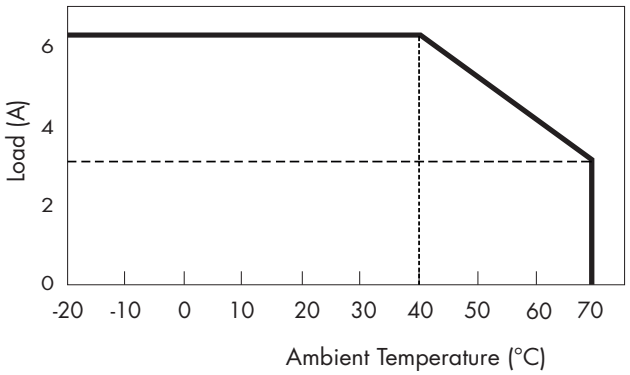


SPPC 150W

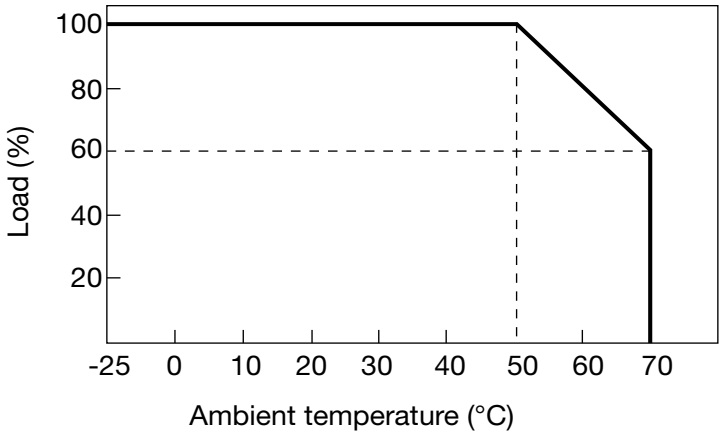
SPPC121501FC



SPPC241501FC

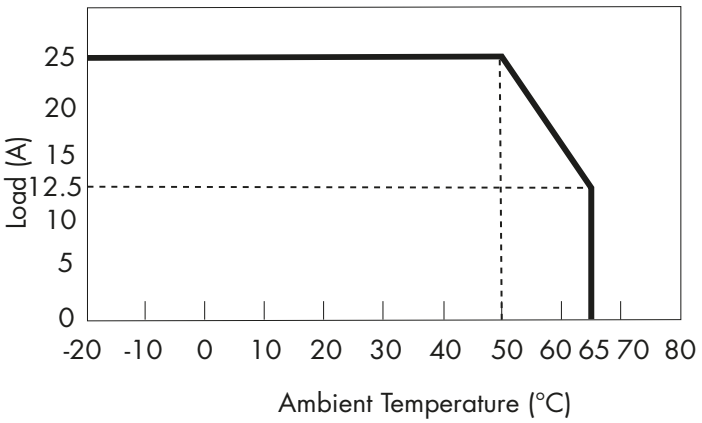


SPPC 200W / 240W / 480W



SPPC 320W

SPPC123201FC



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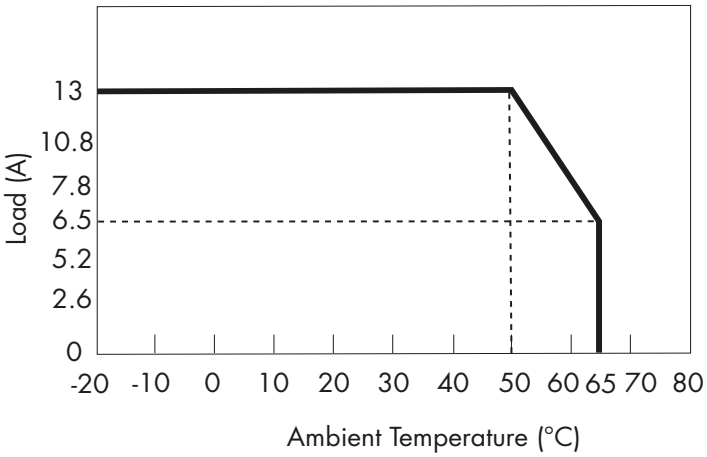
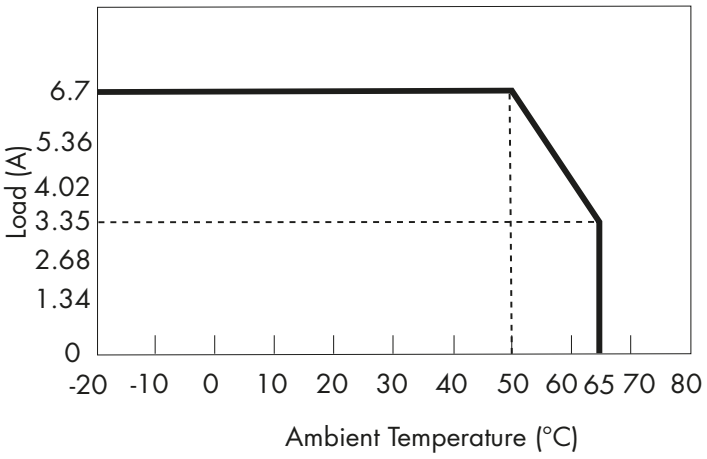
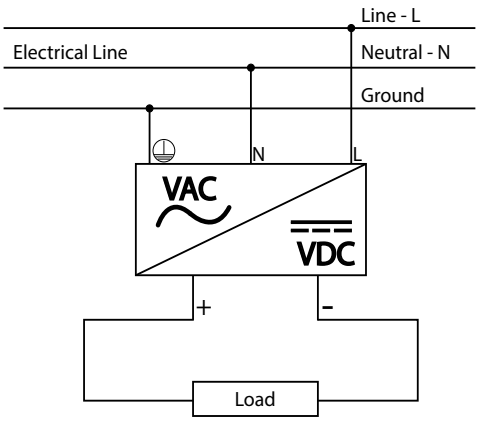


SPPC483201FC



SPPC

Wiring diagram



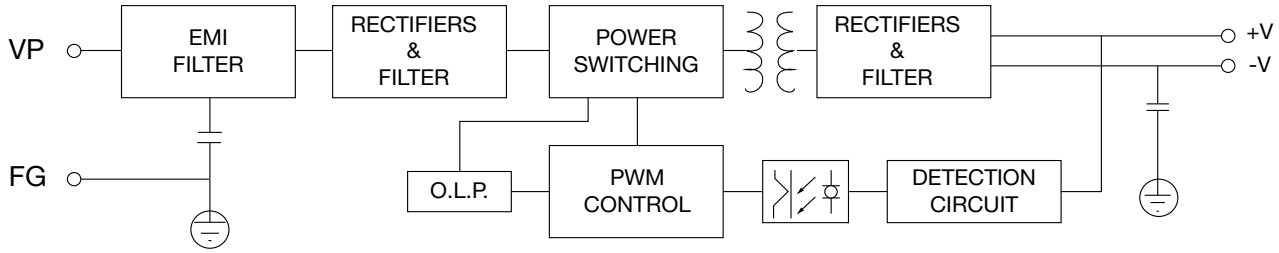
Connection specification

SPPC	25W	35W	50W	75W	150W	
	200W	240W	320W	480W	600W	800W
Terminal type	Input: 6.35 mm 3 PIN screw terminals					
Screw driver blade	3.5 mm slotted or cross screwdriver					
Tightening torque (recommended)	1 Nm					
Flexible conductor cross section max	4 mm^2					
Flexible conductor cross section min	0.5 mm^2					
Conductor cross section AWG max	AWG 20 (GND wire >18 AWG)					
Conductor cross section AWG min	AWG 10 (GND wire >18 AWG)					
Rigid conductor cross section min	6 mm^2					
Rigid conductor cross section max	0.5 mm^2					
Max wire diameter	2.8 mm^2					

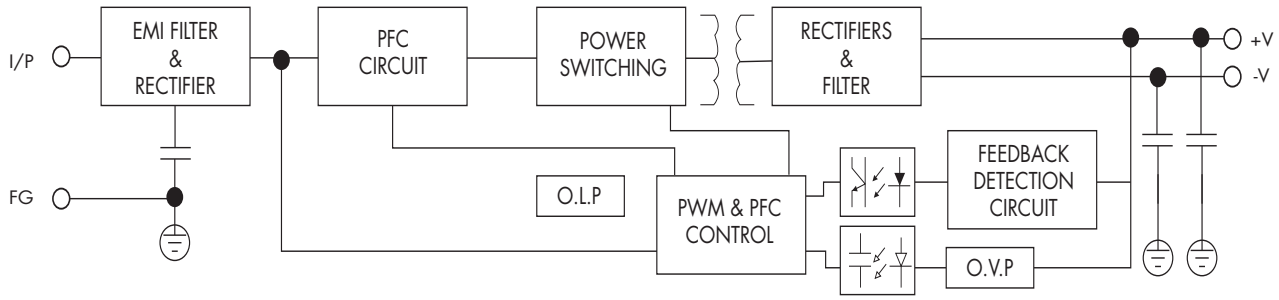
SPPC

Block diagram

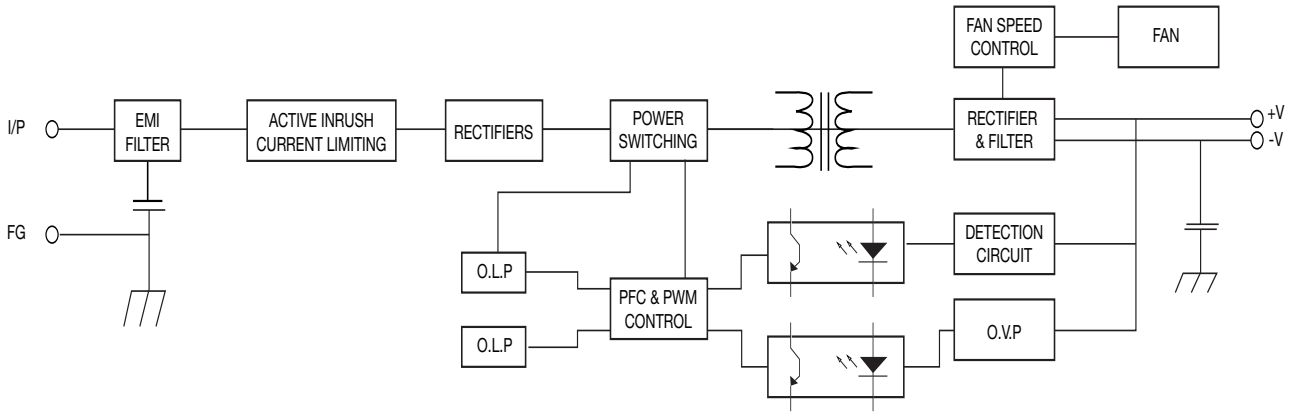
SPPC 25W / 35W / 50W / 75W



SPPC 150W

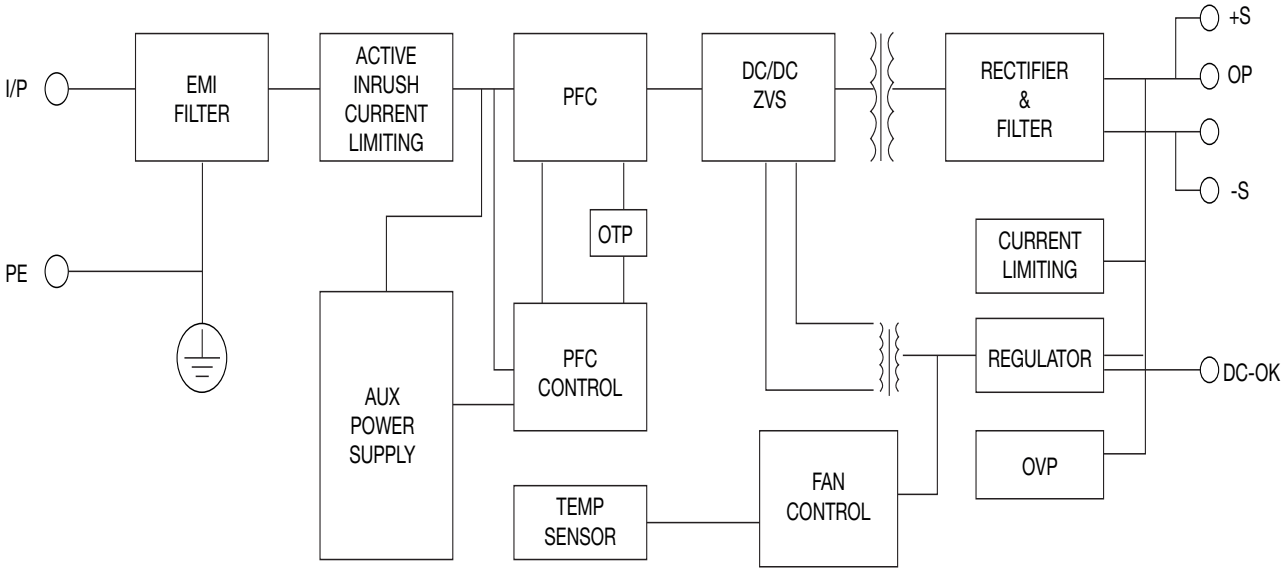


SPPC 200W / 240W / 320W



SPPC

SPPC 480W / 600W / 800W



SPPC

Troubleshooting

Signalling and controls

SPPC	25W	35W	50W	75W	150W	
	200W	240W	320W	480W	600W	800W
DC OK LED	Green when output voltage ≥ 90% of rated output voltage red when output voltage ≤ 80% or rated output voltage or overload					

Operating description

Control and protection

SPPC	25W	35W	50W	75W	150W
Overvoltage protection	105 % ~ 150 % of rated output current, constant power, auto recovery	105 % ~ 150 % of rated output voltage, Constant voltage	5.75 ~ 7.5V (5VDC) 13.8 ~ 18V (12VDC) 17.25 ~ 22.5V (15VDC) 27.6 ~ 36V (24VDC) 55.2 ~ 72V (48VDC)	5.5 ~ 7.5V (5VDC) 13.2 ~ 18V (12VDC) 16.5 ~ 22.5V (15VDC) 26.4 ~ 36V (24VDC) 52.8 ~ 72V (48VDC)	14 ~ 18 V (12 VDC) 17.8 ~ 22.5 V (15 VDC) 27 ~ 36 V (24 VDC) 52.5 ~ 72 V (48 VDC)
			Protection type: constant voltage	Protection type: constant voltage, auto recovery	Protection type: Hiccup mode, auto recovery
Overload protection	105 % ~ 150 % of rated output current, constant power, auto recovery		8.4 ~ 12 A (5VDC) 4.41 ~ 6.3 A (12VDC) 3.57 ~ 5.1A (15VDC) 2.31 ~ 3.3A (24VDC) 1.155 ~ 1.65A (48VDC)	12.6 ~ 18A (5VDC) 6.3 ~ 9A (12VDC) 5.25 ~ 7.5A (15VDC) 3.36 ~ 4.8A (24VDC) 1.7 ~ 2.43A (48VDC)	13.125 ~ 18.75 A (12 VDC) 10.5 ~ 17 A (15 VDC) 6.93 ~ 9.45 A (24 VDC) 3.36 ~ 4.8 A (48 VDC)
			Protection type: 5V is hiccup mode, rest are constant power, auto recovery	Protection type: 5V is hiccup mode, rest are constant power, auto recovery	Protection type: Hiccup mode, auto recovery
Current limiting	No support				
Short circuit protection	Long - term mode, auto recovery				
Over temperature protection	-	-	-	-	105 °C ±5 °C (detect on Mosfet temperature); shut down, auto recovery after the temperature goes down to 50 °C

SPPC

SPPC	200W	240W	320W	480W	600W	800W
Overvoltage protection	-	-	-	110 % ~ 150 % of rated voltage, constant voltage		110 % ~ 150 % of rated output voltage, constant voltage, auto recovery
Overload protection	18 ~ 30 A (12 VDC) 10 ~ 15 A (24 VDC) 5.88 ~ 8.8 A (36 VDC) 5 ~ 7.56 A (48 VDC)	120 % ~ 170 % of rated output current, Hicchup mode, auto recovery	105 % ~ 150 % of rated ouput current, hiccup mode, auto recovery	110 % ~ 135 % of rated output current, constant current		
	Protection type: Hiccup mode, auto recovery					
Current limiting	No support					
Short circuit protection	Long - term mode, auto recovery			Long - term mode, constant current, auto recovery		
Over temperature protection	-	-	-	105°C + 5°C (detect on Mosfet temperature); shut down, auto recovery after the temperature goes down to 75°C		105°C + 5°C (detect on Mosfet temperature); shut down, auto recovery after the temperature goes down to 70°C

Compatible components

Accessories / power supplies

Power supply	Side mounting	Bottom mounting
SPPC up to 75 W	SPPX - BKTLA + SPPX - DINCLIPA	SPPX - DINCLIPB
SPPC 150 W	SPPX - BKTLB + SPPX - DINCLIPA	NOT AVAILABLE
SPPC 200 W	SPPX - BKTLB + SPPX - DINCLIPA [NOT SUGGESTED*]	SPPX - DINCLIPB [NOT SUGGESTED*]
SPPC 240 W	SPPX - BKTLB + SPPX - DINCLIPA [NOT SUGGESTED*]	SPPX - DINCLIPB [NOT SUGGESTED*]
SPPC 320 W	SPPX - BKTLD + SPPX - DINCLIP [NOT SUGGESTED*]	NOT AVAILABLE
SPPC 480 W and above	NOT AVAILABLE	NOT AVAILABLE
SPPC 150 W 1FC	NOT AVAILABLE	NOT AVAILABLE
SPPA 150 W	SPPX - BKTLB + SPPX - DINCLIPA	NOT AVAILABLE

NOT SUGGESTED*:
The mounting is available only with 2 fixing screws

SPPC

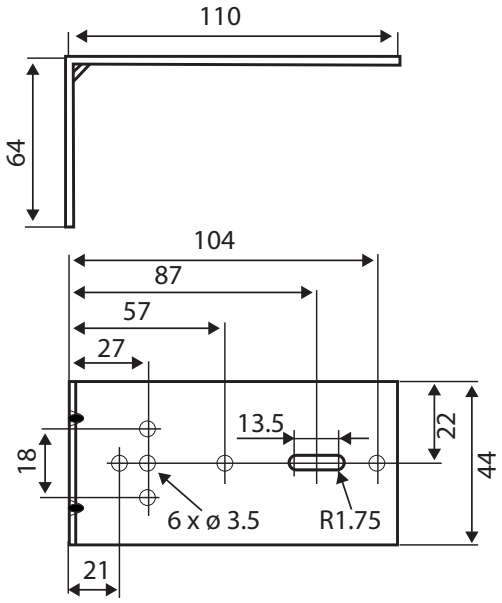
Structure

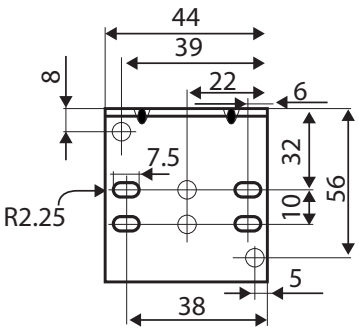
Items		
Order number	**Description**	**Image**
SPPX - BKTLA	small square	
SPPX - BKTLB	Medium square	
SPPX - BKTLD	Large square	

Items		
Order number	**Description**	**Image**
SPPX - DINCLIPA	Bracket for side mounting	
SPPX - DINCLIPB	Bracket for bottom mounting	

Dimensions

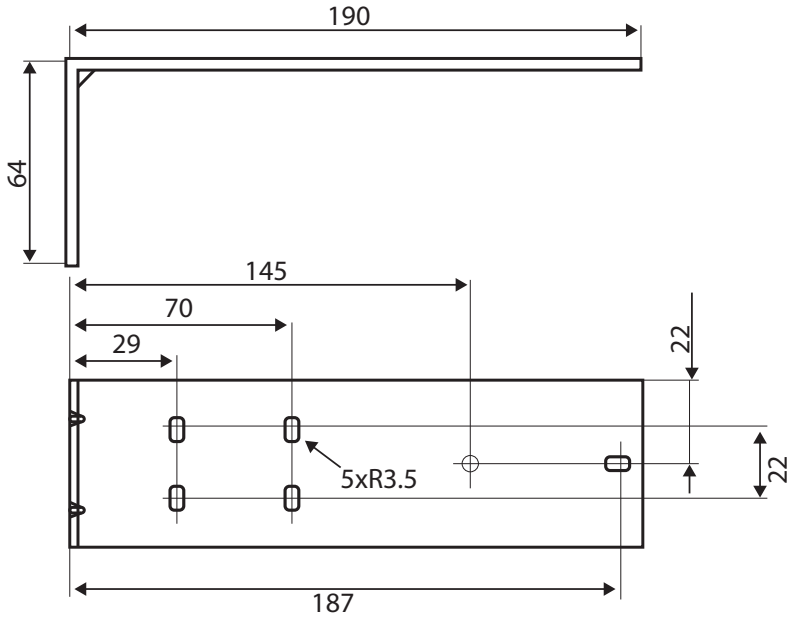
SPPX - BKTLA bracket

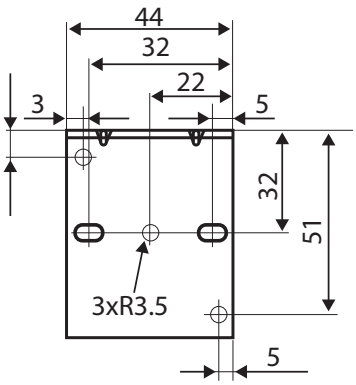




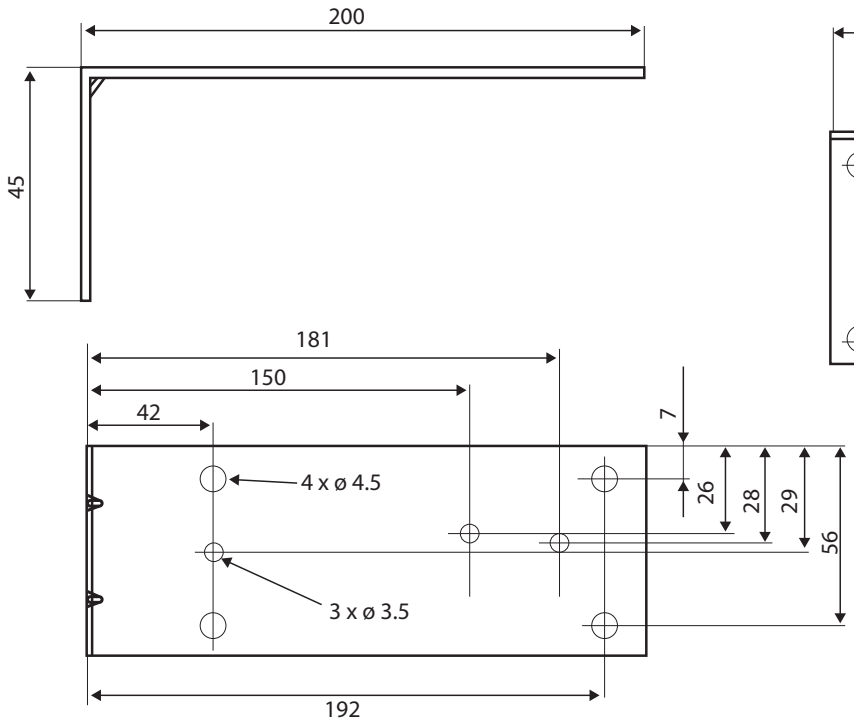
SPPC

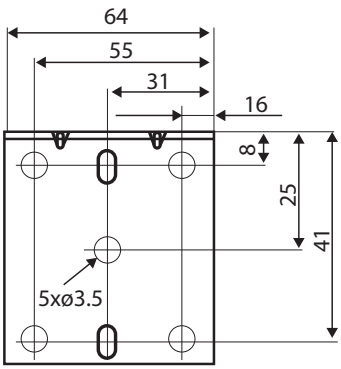
SPPX - BKTLB bracket





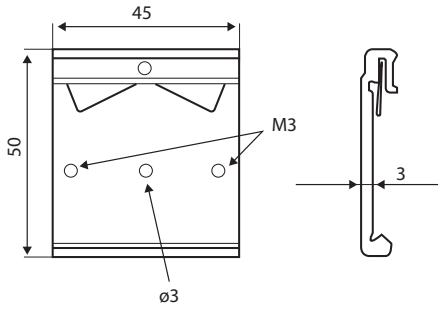
SPPX - BKTLD bracket



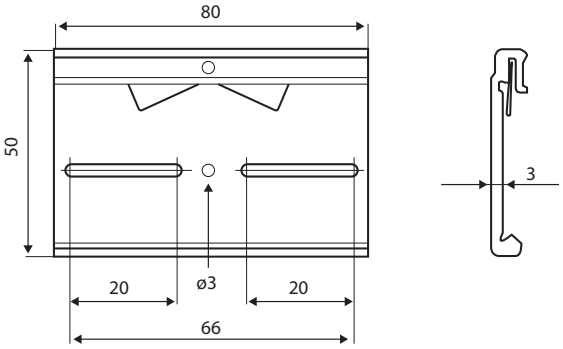


SPPC

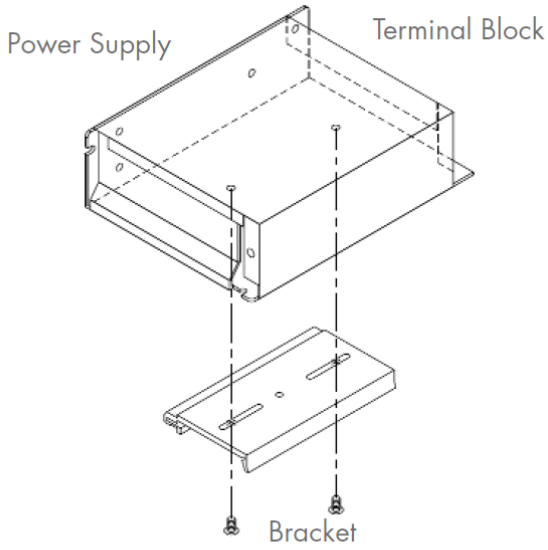
SPPX - DINCLIP A



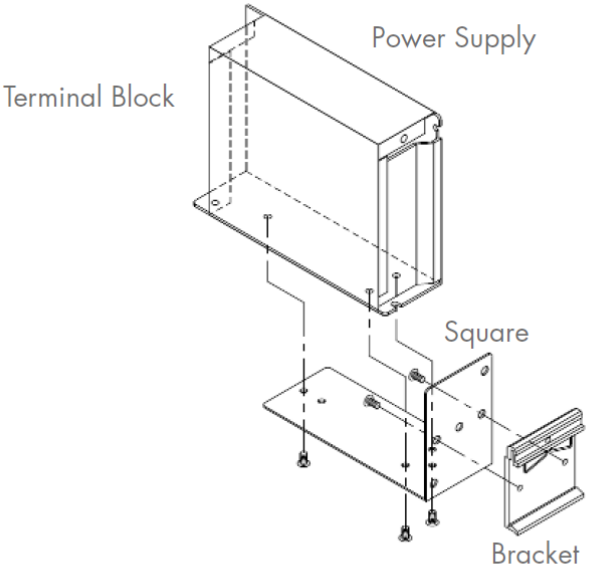
SPPX - DINCLIP B



Mounting Drawings



Bottom Mounting



Side Mounting

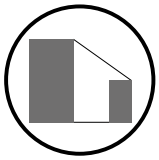
SPPC

Glossary

CE: "Conformité Européene" or "European Conformity"; Indicates the manufacturer declaration of conformity that the product meets the relevant health, safety and environmental protection requirements of the applicable EC directives.

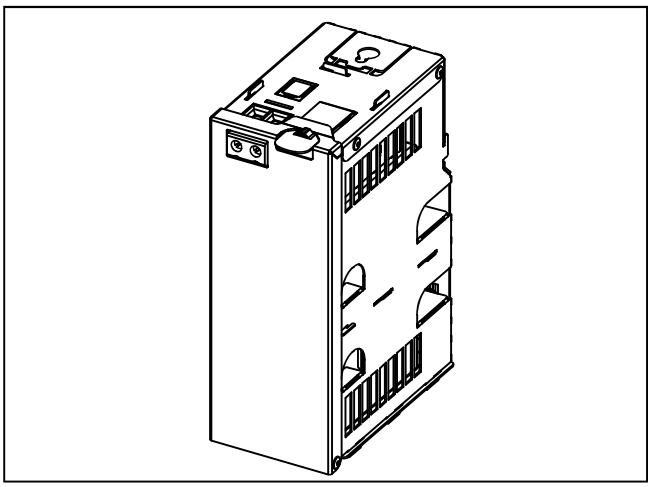
cRUus: This certification mark is based on the UL60950-1; Information Technology Equipment - Safety - Part 1. The UL60950-1 is applicable to mains-powered or battery-powered information technology equipment, including electrical business equipment and associated equipment, with a rated voltage not exceeding 600 V.

Economical: The SPDM is the most economical power supply, offering features and space spacing while lowering the cost.



Reduced dimension: The footprint is reduced with the SPDM, saving up to 30% space when compared to others.

SPUBAT
DIN Rail Battery Rack



- **DIN Rail Rack for batteries**
- **Available with VRLA battery**
- **Supports for wall mounting**
- **Easy battery access**
- **IP20**
- **Built in terminals**

Ordering Key

SPUBAT 24 1A2

DIN Rail Rack
Battery Voltage (if present)[1]
Battery capacity rack size

[1] When battery voltage is not present the rack is without battery

Accessory: Protection Fuse Flat Type Mini 25 A

Product Description

SPUBAT is a series of metal racks that facilitate the battery mounting next to the UPS, either on the DIN rail or wall mounted. SPUBAT can be delivered with the battery already installed, or as an empty rack for other battery types selected by the installer. Standard battery type is AGM Valve Regulated Lead Acid (VRLA). It requires no maintenance and can be mounted in any position. This type of batteries are ideal for applications where it is required high starting current. They also have extreme resistance to charge / discharge cycles. Body is very robust, stainless steel made. It is equipped with connection terminals for fast connection and disconnection in case of need.

Technical Data

Nominal voltage	24V
Battery capacity	
1A2	1.2Ah
3A2	3.2Ah
7A2	7.2Ah
12A	12Ah

Battery type	AGM VRLA
Protection fuse	Flat type mini 25A
Recovery fuse	Flat type mini 25A

Charging

End of charge voltage (trickle)	
@20°C	27.5VDC
@30°C	26.8VDC
@40°C	26.1VDC
Max Charging current	
1A2	0.36A
3A2	0.9A
7A2	2.16A
12A	3.6A

Discharging

Max discharging current	25A
Self discharge at 20°C	15%/month

Norms and Certification

-	-

General Data

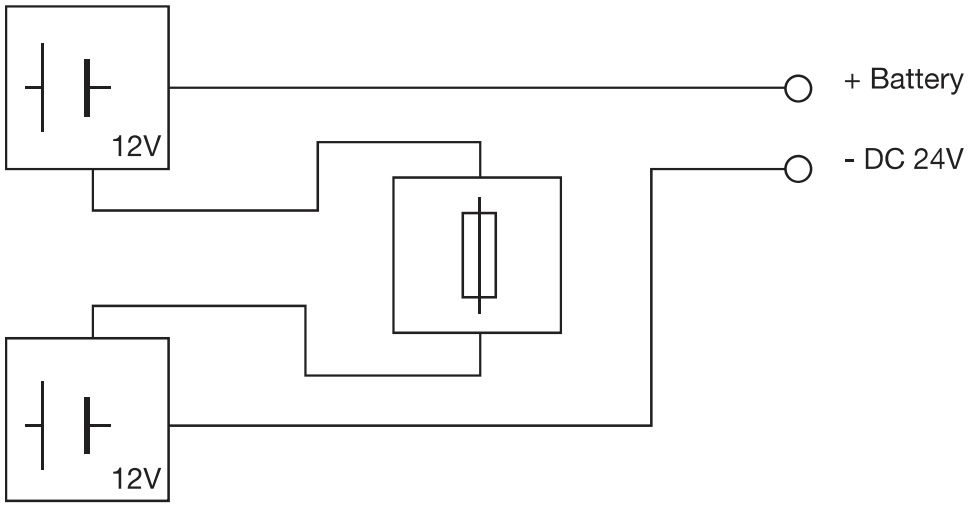
Protection degree EN/IEC 60529	IP20
Protection class	III
Screw terminals connection	
Threaded wire	0.5-16 mm² / AWG 20 to AWG 6
Dimension (WxHxD)	See table p. 3

Weight	See table p. 3
DIN Rail Mounting	Yes
Wall mounting	Yes
Ambient temperature op:	0 ... 40°C
Temperature storage	0 ... 40°C
Humidity at 25°C, no condensation	95%

Buffering Time (min.)

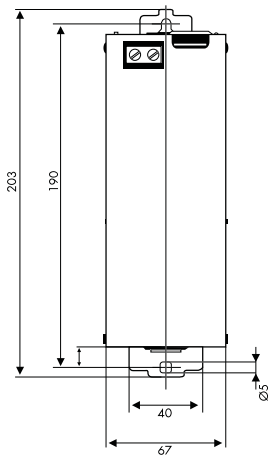
Battery type	1A2	3A2	7A2	12 Ah
Load 1.5 A	20	60	200	400
Load 3 A	8	30	120	240
Load 5 A	3	15	55	100
Load 7.5 A	2	10	30	60
Load 10 A	No	7	20	45
Load 12 A	No	3	12	30
Load 15 A	No	No	9	20
Load 20 A	No	No	7	13

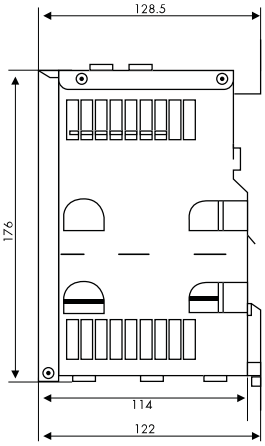
Internal Electrical Diagram



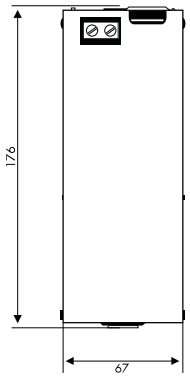
Dimensions SPUBAT 241A2

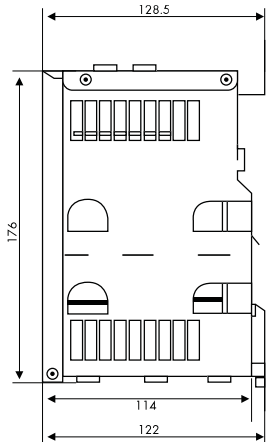
Wall Mount





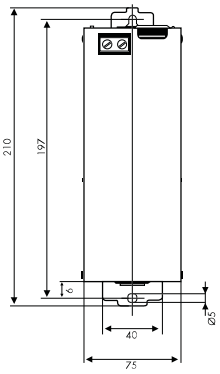
DIN Rail Mount

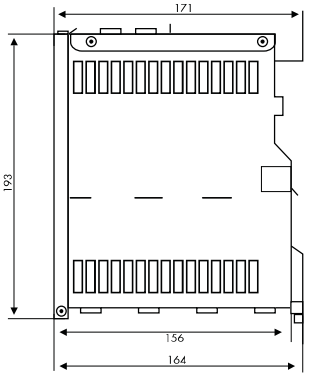




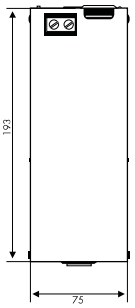
Dimensions SPUBAT 243A2

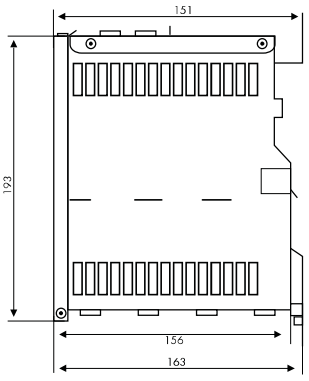
Wall Mount





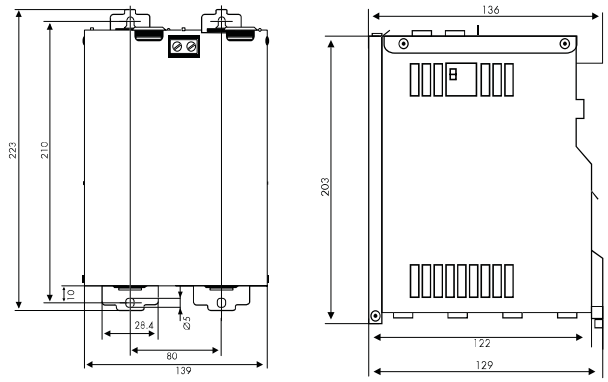
DIN Rail Mount



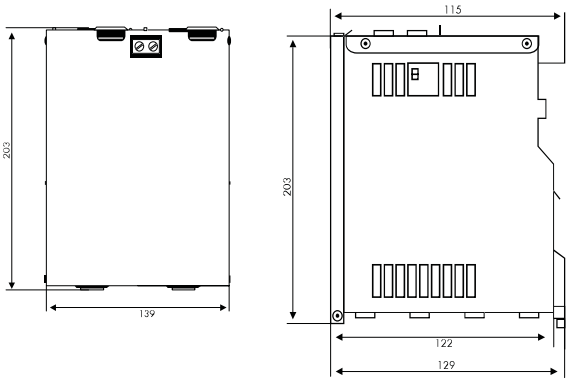


Dimensions SPUBAT 247A2

Wall Mount

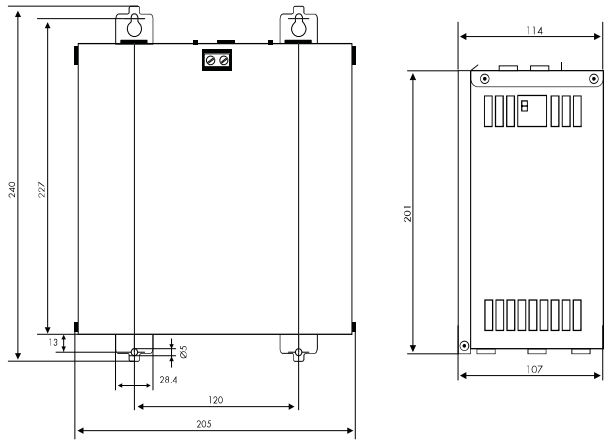


DIN Rail Mount



Dimensions SPUBAT 2412A

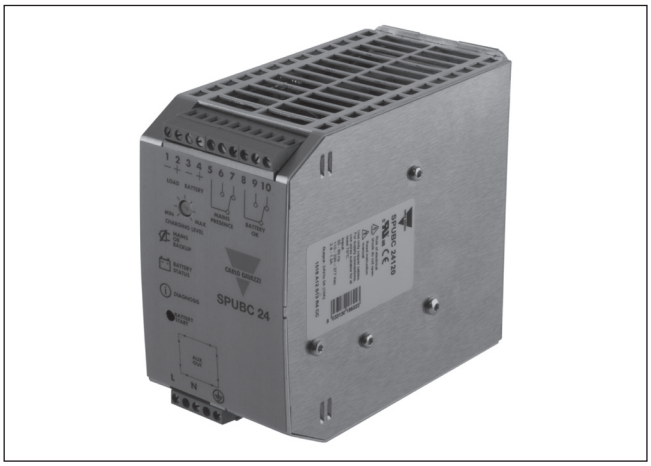
Wall Mount



Dimension & Weight Table

Model	Dimensions W x H x D	Weight
SPUBAT241A2	67 x 203 x 128.5mm	1.5 Kg
SPUBAT243A2	75 x 210 x 171mm	3 Kg
SPUBAT247A2	139 x 223 x 136mm	5.5 Kg
SPUBAT2412A	205 x 240 x 114mm	9 Kg

Smart Power Supply and UPS
Type SPUBC 24V 5A



- **Single phase input 115Vac / 230Vac / 277Vac**
- **Smart power management**
- **Rated output 5A with permanent 10A overboost**
- **Max battery charging current 5A**
- **Suitable for Lead Acid open or sealed, Lead gel**
- **Automatic Battery diagnostic and battery care**
- **Boost, Trikle/float and recovery charging cycles.**
- **Battery reversed polarity, element short circuit or disconnection**
- **2 relay outputs for remote status and operation indication**
- **cURus recognized and CE approved**

Product Description

The new Carlo Gavazzi SPUBC puts you in the driving seat of your power management requirements, allocating power, in the most efficient way, between the load and the battery.The maximum available current for battery charging is set by means of a front trimmer. It can go from 20% to 100%, which means that it possible to charge with up to 5A. The priority though is always the load. If the load requires 80% of current, the current available for the battery is only the remaining 20% regardless of the setting.
On the SPUBC24120 the rated output current is 5A, although, after the battery is charged, the power supply can provide 10A. SPUBC implements a comprehensive process called “Battery Care” that applies algorithms to obtain rapid and automatic charging, battery charge optimization over time, flat battery recovery and real time diagnostic during installation and operation. The Real Time auto-diagnostic system, monitors battery faults such as battery sulphatation, elements in short circuit, accidental reverse polarity connection and battery disconnection or bad connection. All these can be easily detected and removed during installation and operation by the “diagnostic LED” Blinking Code. Continuous battery efficiency monitoring, reduces battery damage risk and allows safe operation in permanent connection.
This device is suitable for a selection of most common battery types.
By means of built in jumpers it is possible to set preset curves.
They are programmed for two charging levels, boost and float/trikle, but can be changed to single charging level by the user.
In addition to the SPUBC, Carlo Gavazzi, also provides a selection of Racks for DIN rail mounting of the battery, with battery included upon request from 1.2Ah up to 12Ah capable of providing, depending upon load, from a few minutes to several hours of charge reserve.

Approvals

CE cULus

Ordering Key

SPUBC 24 120

Power supply UPS battery charger
Battery and Output Voltage Vdc
Output power W

Output Data

Output voltage	24Vdc
Nominal current	5A
Rated output current	5A
Efficiency (@50% of rated current)	≥90%
Turn on delay	1S (Max)
Max Capacitive load startup	Unlimited

Power dissipation @ Max. Load	17W
Short circuit protection	Yes
Over load protection	Yes
Overvoltage output protection	Yes (typ. 35Vdc)
Thermal protection	Yes

CARLO GAVAZZI

Input Data

Nominal input voltage	115 ~ 230 ~ 277Vac	**Frequency**	47 ÷ 63Hz
Voltage range	90 ÷ 305Vac	**Input current (115 - 230Vac)**	2.8 ~ 1.3A
Inrush current (Vn - In nom. Load) I^2t	≤ 11A ≤ 5ms	**Internal fuse** (not replaceable)	4A
		External fuse MCB curve B	10A

General Data

Insulation voltage		**Dimensions W x H x D**	65 x 115 x 135mm
IN / OUT	3000Vac	**Weight**	0.6Kg approx.
IN / GND	1605Vac	**Operating temperature**	-25°C ~ 70°C
OUT / GND	500Vac	**Derating T^a >50°C**	-2.5% (In)/°C
Protection Degree EN/IEC 60529	IP20	**Storage temperature**	-40°C ~ +85°C
Pollution degree	2	**Ambient Humidity**	RH 95% not condensing
Connection wires size	2.5mm (24-14AWG)	**Cooling**	Natural air flow, convection
Protection class (with PE connected)	I (IEC61140)		

Battery Charger (@ 25°C Ambient, Inom)

Boost charge	28.8Vdc	**Charging current Adjustment**	20 ~ 100% Inom
Max. Boost charge duration	15h	**Reverse battery protection**	Yes
Min. duration boost charge	1min.	**Sulfated battery check**	Yes
Trickle charge	27.5Vdc	**Detection of battery element in short circuit**	Yes
MTBF IEC 61709	> 300.000h	**Quiescent current**	≤ 5mA
Recovery charge	2 ~ 16Vdc	**Charging Profile**	3 stage
Max. Charging current	5A ± 5%	**Remote input control**	Boost / Trickle

Power Supply Output (@ 25°C Ambient, Inom)

Output voltage	22 ~ 28.8Vdc	**Max current output load**	15A x 4s Max
Output Current	1.1 x I_{nA} ±5%	**Total discharge protection**	19 ~ 20Vdc batt
Continuos current (without battery)	5A	**Flat battery alarm**	20 ~ 21Vdc batt
Continuos current (with battery)	10A		

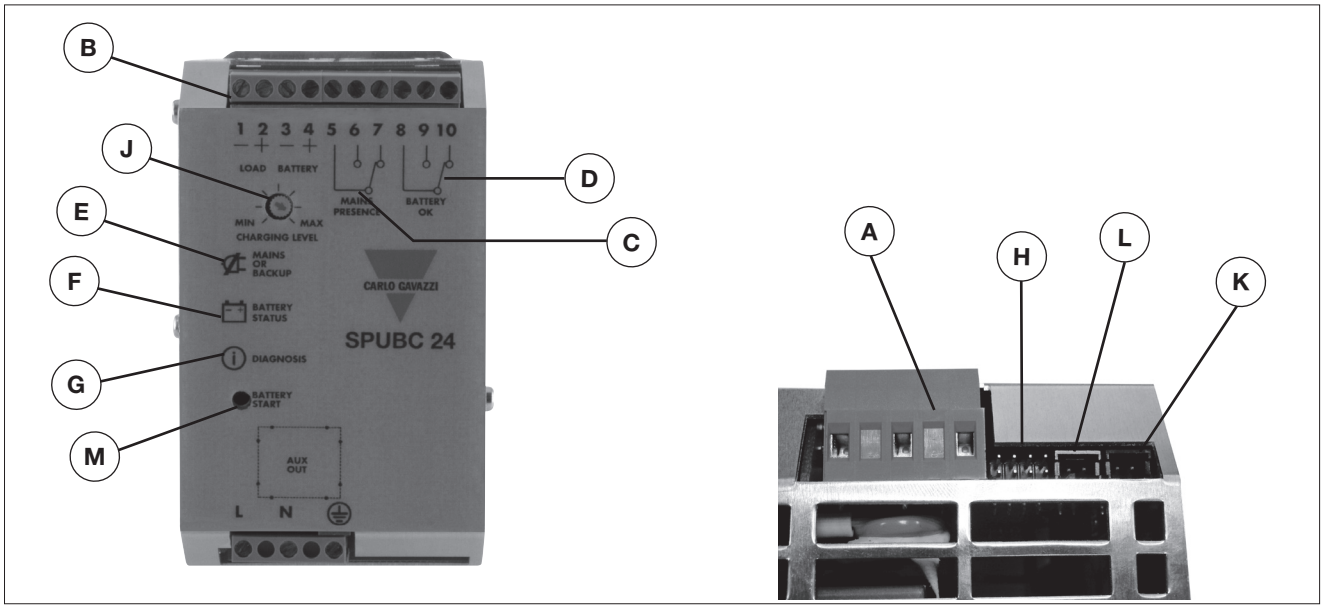
Signal Outputs

Mains or backup power	Yes	**Relay outputs**	
Low battery	Yes	Type	2 x SPDT
Battery fault	Yes	Max. AC Load AC1	1A @ 60Vac
		Max. DC Load DC1	1A @ 30Vdc
		Min. Load	1mA @ 5Vdc

Signal Port RJ45 (RJ 45 Auxiliary Output behind the label; remove the window label to find the connector)

Battery temp. Compensation	Yes. It is possible connect a temperature sensor, for ambient temperature charging compensation.	**Can Bus**	No
Remote monitoring display	Yes. It is possible connect an external display to remote N° 3 led of the internal device.		

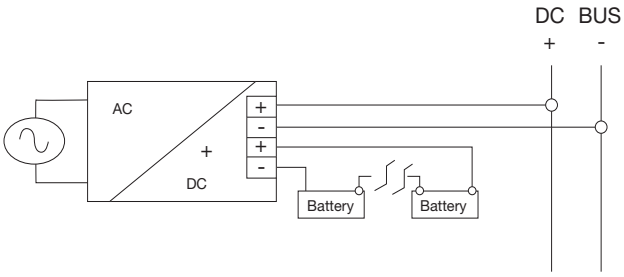
Signals and Terminals



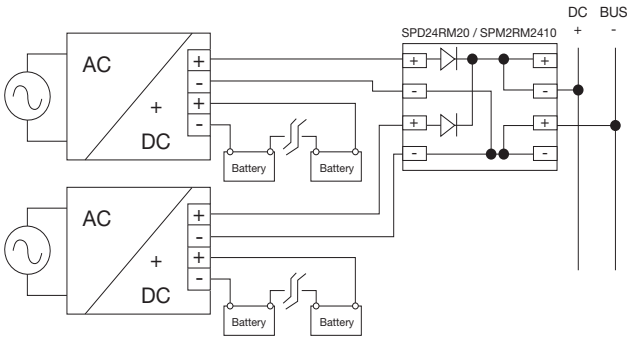
A: Mains Terminals (input)
B: Battery and load terminals
C: Backup mode output
D: Battery status output
E: Backup mode LED
F: Battery status LED
G: Diagnosis LED
H: Battery configuration jumpers
J: Charging level adjustment (from 20 to 100%)
K: Fast charge enabling jumper
L: Remote battery start
M: Local battery start

Output Power Connections

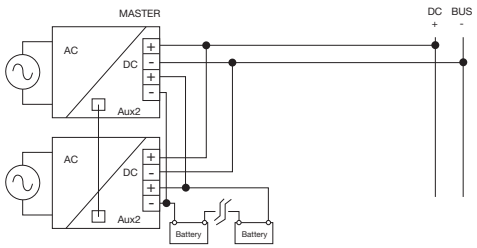
Normal connection



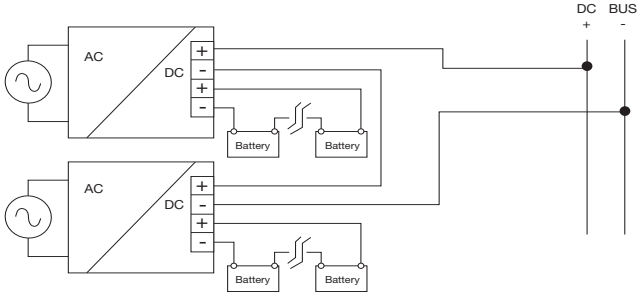
Parallel connection "Redundancy"



Parallel connection "Double Power"



Series connection



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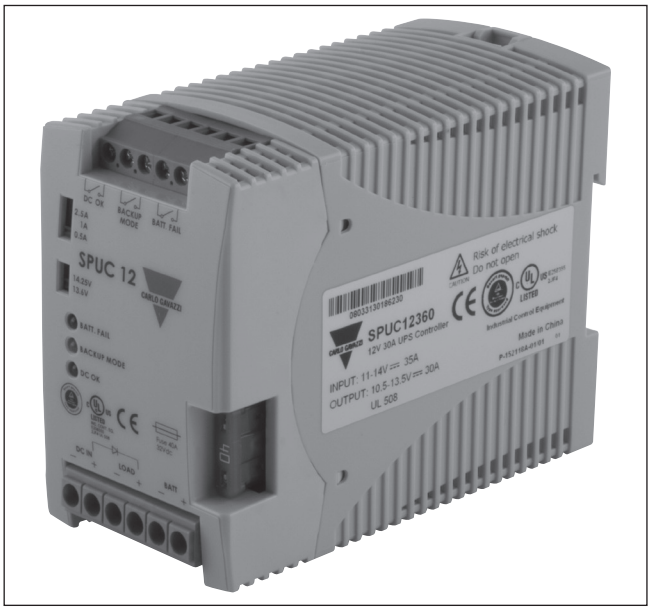
Buffering Time / Battery Capacity

Load \ Battery capacity	1.2Ah SPUBATxx1A2	3.2Ah SPUBATxx3A2	7.2Ah SPUBATxx7A2	12Ah SPUBATxx12	100Ah
1.5A	20’	60’	200’	400’	-
3A	8’	30’	120’	240’	-
5A	3’	15’	55’	100’	-
7.5A	2’	10’	30’	60’	-
10A	no	7’	20’	45’	20h

Accessories

Ordering Code	Description	Type	Voltage	Battery Capacity	Max. Charging current	Weight	Width mm	Height mm	Depth mm
SPUBAT241A2	DIN Rail Rack with 1.2Ah Battery	Lead Acid VRLA	24V	1.2Ah	0.3A	1.5Kg	62	185	120
SPUBAT243A2	DIN Rail Rack with 3.2Ah Battery	Lead Acid VRLA	24V	3.2Ah	0.8A	3Kg	82	200	160
SPUBAT247A2	DIN Rail Rack with 7.2Ah Battery	Lead Acid VRLA	24V	7.2Ah	1.7A	5.5Kg	145	210	130
SPUBAT1A2	Empty DIN Rail Rack for 1.2Ah Battery	-	12V or 24V	Designed for 1.2Ah	-	?	62	175	120
SPUBAT3A2	Empty DIN Rail Rack for 3.2Ah Battery	-	12V or 24V	Designed for 3.2Ah	-	?	82	200	160
SPUBAT7A2	Empty DIN Rail Rack for 7.2Ah Battery	-	12V or 24V	Designed for 7.2Ah	-	?	145	210	130
SPUBAT12	Empty DIN Rail Rack for 12Ah Battery	-	12V or 24V	Designed for 12Ah	-	?	210	210	210

UPS Controller
Type SPUC 30A 12 / 24V
DIN Rail Mounting



- **DIN Rail mounting UPS controller**
- **To be used in combination up to 30A power Supply**
- **Built-in battery test function**
- **Battery polarity protection**
- **Relay contact signal output LED indicator for DC Bus ok, battery fail and battery discharge**
- **Suggested batteries from 4 to 12Ah**
- **3 years warranty**

Ordering Key

SPUC 24 720

Model
Output voltage
Output power

Approvals

Product Description

The SPUC, being a UPS controller, it can be used to either convert and existing conventional supply system into an uninterruptible power supply system or else to realize a UPS system by using a separate power supply.
It is suitable for both 12V and 24V systems and it can handle up to 30A load current whilst the suggested battery sizes are from 4 to 12Ah.
The input of the SPUC has to be connected to a a 12Vdc or 24Vdc source, depending upon the model.
The output is connected to the load which needs to be supplied uninterruptedly.
The battery, suggested type is lead acid, is connected to the battery terminals.
DIN rail mounting racks are also available, with or without batteries, for easy installation of the battery aside the SPUC. The nominal charging voltage is 13.6V (or 27.2V).
The charge is carried out in the first stage by constant current until the nominal voltage is reached then by constant voltage.
When the battery is fully charged it stays into “float” cycle. Sulphatation process is prevented by charging with positive/negative pulse current.
If the 24Vdc input is cut off because of mains failure or blackout the SPUC will immediately switch the supply to the load by using the battery stored energy.
There are three relays for remote operation monitoring: “DC OK” provides indication of correct DC output, “Battery fail” indicates a possible failure of the battery and “Backup Mode” provides remore indication that the device is providing power to the load from the battery not from input.

Output Performance

AVAILABLE MODELS	INPUT VOLTAGE	MAX. OUTPUT POWER	OUTPUT VOLTAGE	MAX. OUTPUT CURRENT
Single Output Models				
SPUC12360	11 ~ 14VDC	360 WATTS	10.5 ~ 13.5VDC	30A
SPUC24720	22.5 ~ 28VDC	720 WATTS	22 ~ 27.5VDC	30A

Input Data

DC input	
Nominal input voltage	
12V Model	12V
24V Model	24V
Input voltage range	
12V Model	Min. 11 ~ 14V Max.
24V Model	Min. 22.5 ~ 28V Max.
Current consumption	
No load	0.2A
Charging	3.5A
Maximum	35A

Battery	
Voltage range	
12V Model	Min. 9.6V ~ 14.25V Max.
24V Model	Min. 19.2V ~ 28.5V Max.
Switching threshold	
12V Model Vin < 11V	Dynamic Vout - 1V / 100ms
24V Model Vin < 22.5V	Dynamic Vout - 1V / 100ms

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Output Data All specifications are at nominal values, full load, 25°C unless otherwise noted

DC output	
Nominal Output voltage	
12V Model	12V
24V Model	24V
Output voltage range	
12V Model	Min. 10.5V ~ 13.5V Max.
24V Model	Min. 22V ~ 27.5V Max.
Current range	30A Max.
Battery output	
12V Model	Min. 9.1V ~ 13.75V Max.
24V Model	Min. 18.7V ~ 28.0V Max.
Current range	2.5A
Output voltage drop	
Vi out	0.55V
Battery - Vout	0.45V
Ripple and noise (Vi nom, Io nom)	100mV
Battery max withstand reverse voltage	
12V Model	14.25V
24V Model	28.5V

Battery output fuse	40A 32V Automotive fuse on the front side. Replaceable.
Suggested external battery	3.2Ah, 7.2Ah or 12Ah Lead Acid batteries. (SPUBAT series, see related Data Sheet)
Charge Voltage selection	
12V Model	
Float charge voltage	13.6V
Fast/bulk charge Voltage	14.25V
24V Model	
Float charge voltage	27.2V
Fast/Bulk charge voltage	28.5V
Charge Current selection	
12V/24V Models	
2AH ~ 5AH	0.5A
5AH ~ 10AH	1A
>10AH	2.5A
Suggested Discharge current	
From 0.1 to 3 times battery capacity	30A Max

Control and Protections

Battery discharge low voltage protection	
12V Model	≤ 9.6V
24V Model	≤ 19.2V
Battery charging low voltage protection	
12V Model	≤ 8V
24V Model	≤ 16V
DC OK relay output (active when)	
12V Version	11 to 14Vdc
24V Version	22.5 to 28Vdc

Battery Fail Output	
Relay status	Output relay switches when battery test is negative
Backup Mode	output is active when the SPUC operates as UPS as there is no input. Power i provided from battery
Note	Carlo Gavazzi provides a set of batteries, SPUBAT series. See related Data Sheet.

General Data

Dimensions LxWxD mm (inch)	90x54x114 mm (3.60x2.13x4.49) inches
Case material	Plastic
Weight	370g

Packing	Cartons of 32 x 0.45kg each pieces. Total weight 15.5kg (34.17lbs; 1.85cuft)

Signal Outputs

Batt fail	Yes
Back up mode	Yes
DC OK	Yes

Relay outputs	
Type	3 x SPDT
Max. AC Load	2A @ 115Vac / 1A @ 240Vac
Max. DC Load	2A @ 30Vdc

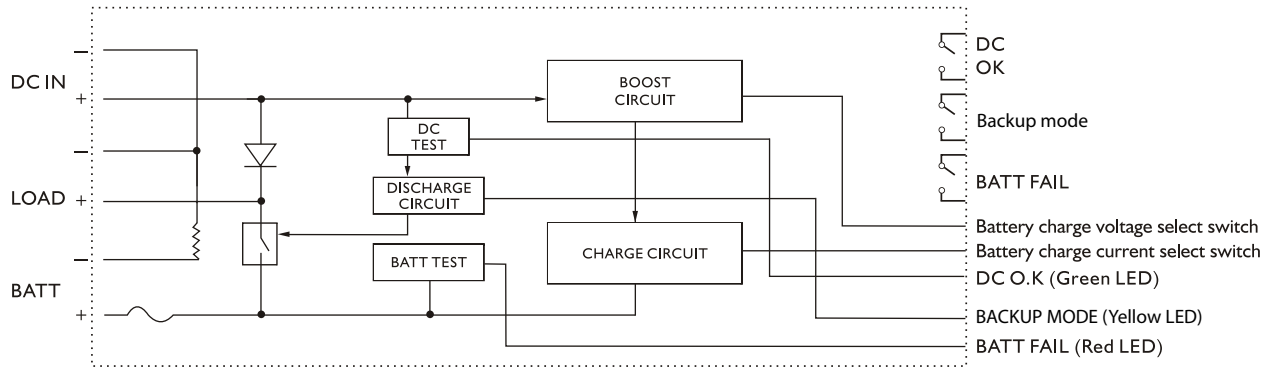
UPS Controller
Type SPUC 30A 12 / 24V
DIN Rail Mounting

Norms and Standard

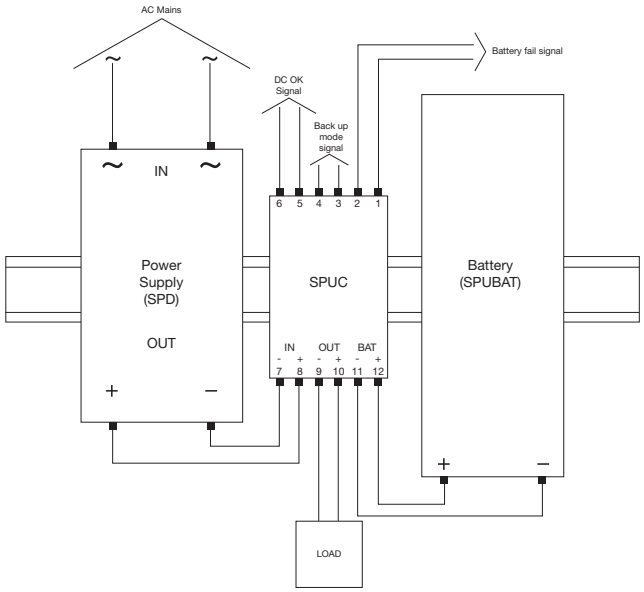
UL / CUL	UL508 Listed, UL60950-1 Recognized
TUV	EN60950-1
CE	EN61000-6-3, EN55022 class B, EN61000-6-2, EN55024, EN61204-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-6, EN61000-4-8

Vibration resistance	IEC60068-2-6 (Mounting on rail: 10-500Hz 2G, along X, Y, Z each Axis, 60 min for each Axis).
Shock resistance	IEC60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face).

Block Diagram



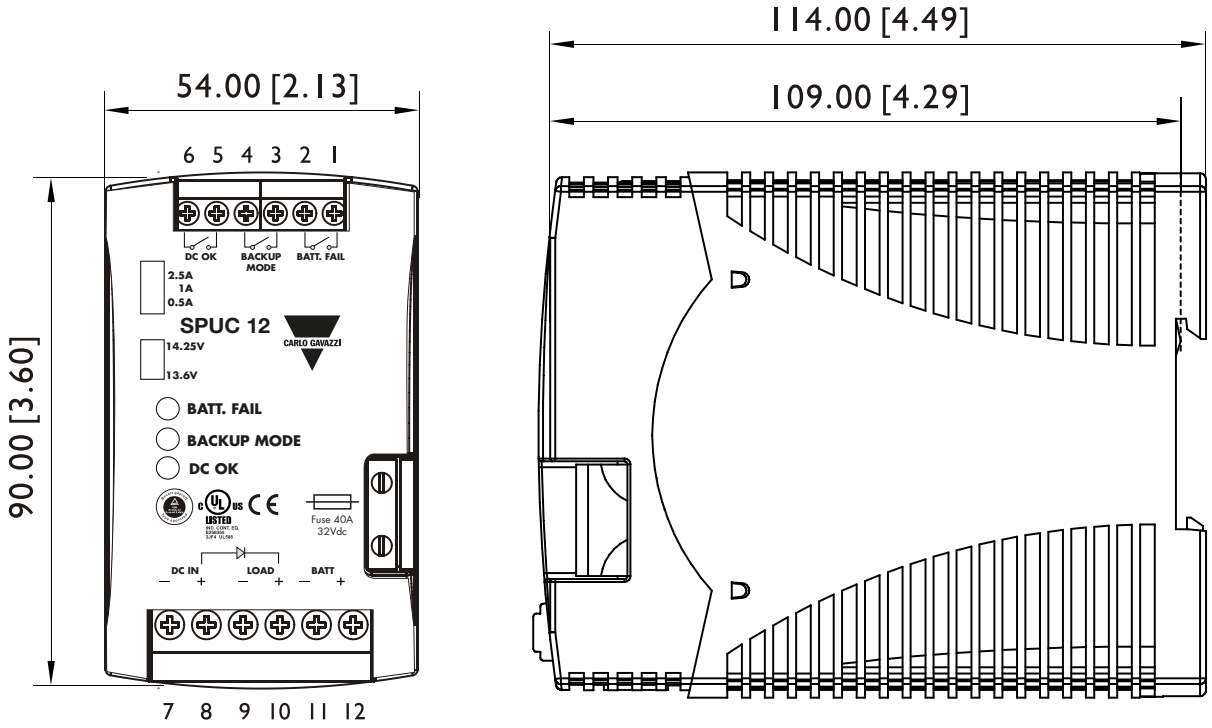
Application



Pin Assignement and Front Controls

Pin No.	Designation	Description
1, 2	Batt Fail	Relay output
3, 4	Backup mode	Relay output
5, 6	DC Ok	Relay output
7	DC IN (-)	Negative pole input
8	DC IN (+)	Positive pole input
9	LOAD (-)	Negative pole input
10	LOAD (+)	Positive pole input
11	Batt (-)	Negative battery pole
12	Batt (+)	positive battery pole
	0.5A / 1A / 2.5A	Battery charging current selection switch
	27.2V / 28.5V (24V Model)	Battery charging voltage selection switch
	13.6V / 14.25V (12V Model)	Battery charging voltage selection switch
	Batt Fail (Red LED)	Battery fail LED Indicator
	Batt Discharge (Yellow LED)	Backup mode LED Indicator
	DC OK (Green LED)	DC OK LED Indicator

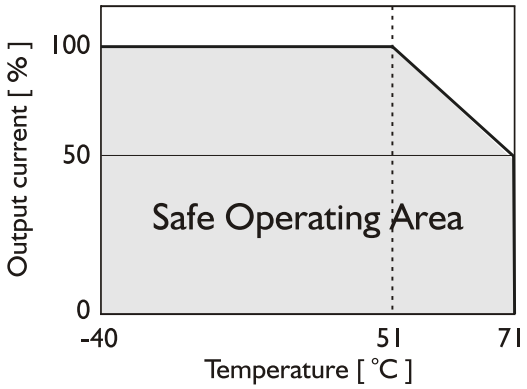
Mechanical Drawing



LED Indicator State

State	LED	Batt Fail (Red)	Backup mode (Yellow)	DC OK (Green)
Battery status @DC IN OK	Battery open circuit	ON	OFF	ON
	Fuse open circuit			
	Battery reverse polarity			
	Battery over discharge protection			
DC IN OK battery charging		OFF	OFF	ON
12V Model: DC IN < 11V, Battery discharge, Batt > 10V		OFF	ON	OFF
24V Model: DC IN <22.5V, battery discharge, Batt > 20.5V				
12V Model: DC IN < 11V, Battery discharge, Batt <10V		ON	ON	OFF
24V Model: DC IN < 22.5V, Battery discharge, Batt <20.5V				
12V Model: DC IN < 11V, Batt ≤9.6V		OFF	OFF	OFF
24V Model: DC IN < 22.5V, Batt ≤19.2V				

Derating Curve



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