

Switching Power Supply Type SPD 5W DIN rail mounting

CARLO GAVAZZI



- 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 and compact dimensions and performance are a must. designed to be used in all automation application where the installation is on a DIN rail

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 | Rated output Voltage (VDC) | Output Power | Output Current (A) | Voltage Trim Range | | DC ON LED (VDC) Threshold at startup Min. | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|-------|----------------------------|--------------|--------------------|--------------------|----------|---|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | | Min. | Max. | |
| SPD05 | 5 | 5 | 1.0 | 4.5 | 5.75 | 4.5 | 3.75 | 4.5 | 69% |
| SPD12 | 12 | 5 | 0.42 | 10.8 | 13.8 | 10.8 | 9.0 | 10.8 | 72% |
| SPD15 | 15 | 5 | 0.34 | 13.5 | 17.25 | 13.5 | 11.25 | 13.5 | 72% |
| SPD24 | 24 | 5 | 0.21 | 21.6 | 28.8 | 21.6 | 18.0 | 21.6 | 72% |

Output data

| | | | |
|-------------------------|--------|--------------------------|------------|
| Line regulation | ± 1% | Output Voltage accuracy | ± 1% |
| Load regulation | ± 2% | Temperature coefficient | ± 0.02%/°C |
| Minimum load | 0% | Hold up Time Vi = 115VAC | 30ms |
| Transient recovery time | 300µs | Hold up time Vi = 230VAC | 130ms |
| Ripple and noise | 50mVpp | | |

Input data

| | | | |
|---------------------|--------------|-----------------|-----------|
| Rated input voltage | 100 - 240 | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current | |
| AC | 90 - 265VAC | Vi = 115VAC | 10A |
| DC | 120 - 370VDC | Vi = 230VAC | 18A |

Controls and Protections

| | | | |
|----------------------|-------------|------------------------|-----------------------------------|
| Overload | 110 – 135% | Input Fuse | T2A/250VAC internal ¹⁾ |
| Output Short Circuit | Hiccup mode | Overvoltage Protection | 125 – 145% |

¹⁾ Fuse not replaceable by user

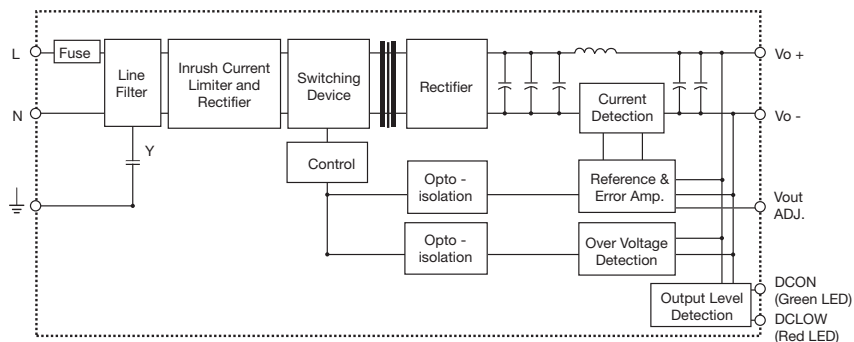
General data (@ nominal line, full load, 25°C)

| | | | |
|---------------------------|---------------------|----------------------|----------------------|
| Ambient temperature | -25°C to 71°C | MTBF (MIL-HDBK-217F) | 830.000h |
| Cooling | Free air convection | Ambient humidity | 20 - 95%RH |
| Switching frequency | 100kHz | Case material | Plastic: PC, UL94-V0 |
| Derating (>60°C to +71°C) | 2.5%/°C | Storage | -25°C to +85°C |
| Protection degree | IP20 | Dimensions L x W x D | 90 x 22.5 x 115 |
| | | Weight | 115g |

Approvals and EMC

| | | | |
|--------------------------|--|----|---|
| Insulation voltage I / O | 3.000VAC | CE | EN50081-1 / EN55022 Class B EN50082-1 / EN55024 EN61000-3-2 EN61000-3-3 |
| Insulation resistance | 100MΩ | | |
| UL / cUL | UL508, UL60950-1 listed, UL1310 Class 2 Recognized | | |
| TUV | EN60950 | | |

Block diagrams



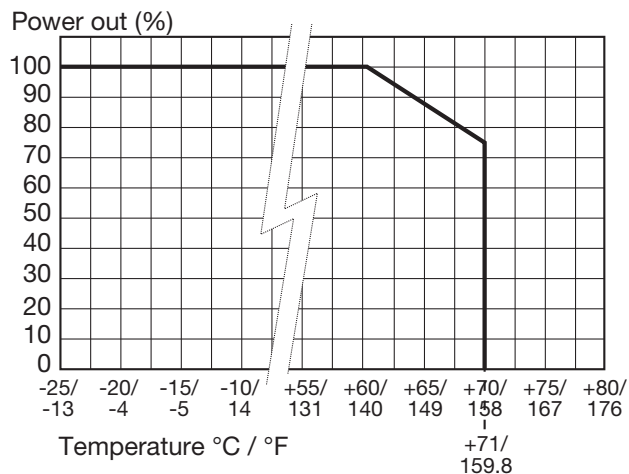
Pin assignment and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | V+ | Positive output terminal |
| 2 | V- | Negative output terminal |
| 3 | GND | Ground terminal to minimise High frequency emissions |
| 4 | N | Neutral input (no polarity with DC input) |
| 5 | L | Phase input (no polarity with DC input) |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |
| | ON | DC output ready LED |
| | LO | DC low indicator LED |

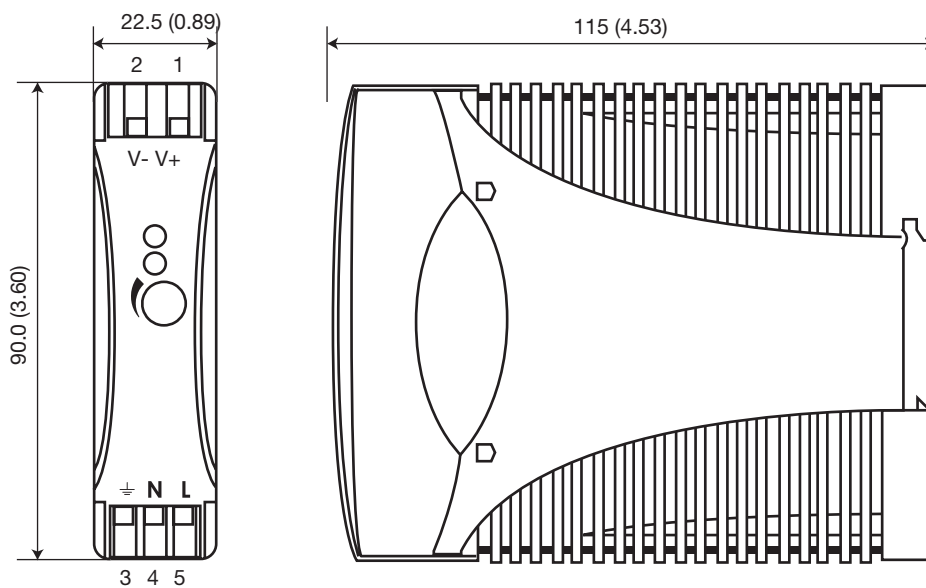
Installation

| | |
|----------------------------------|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Connector size range | Solid: 0.2 – 2mm ² (AWG24-14) (use copper conductors only) |
| Max. torque for terminals | |
| Input terminals | 0.56Nm (5.0lb-in) |
| Output terminals | 0.56Nm (5.0lb-in) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 10W DIN rail mounting

CARLO GAVAZZI



- 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 10 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 LED (VDC) Thershold at startup Min. | DC LO LED (VDC) Thershold after startup | | Typical Efficiency |
|-------|----------------------------|------------------|--------------------|--------------------|----------|---|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | | Min. | Max. | |
| SPD05 | 5 | 10 | 2.0 | 4.5 | 5.75 | 4.5 | 3.75 | 4.5 | 73% |
| SPD12 | 12 | 10 | 0.84 | 10.8 | 13.8 | 10.8 | 9.0 | 10.8 | 75% |
| SPD15 | 15 | 10 | 0.67 | 13.5 | 17.25 | 13.5 | 11.25 | 13.5 | 76% |
| SPD24 | 24 | 10 | 0.42 | 21.6 | 28.8 | 21.6 | 18.0 | 21.6 | 76% |

Output data

| | | | |
|-------------------------|--------|--------------------------|------------|
| Line regulation | ± 1% | Output Voltage accuracy | ± 1% |
| Load regulation | ± 2% | Temperature coefficient | ± 0.02%/°C |
| Minimum load | 0% | Hold up Time Vi = 115VAC | 25ms |
| Transient recovery time | 300µs | Hold up time Vi = 230VAC | 100ms |
| Ripple and noise | 50mVpp | | |

Input data

| | | | |
|---------------------|--------------|-----------------|----------|
| Rated input voltage | 100 - 240 | Frequency range | 47- 63Hz |
| Voltage range | | Inrush current | |
| AC | 90 - 265VAC | Vi = 115VAC | 10A |
| DC | 120 - 370VDC | Vi = 230VAC | 18A |

Controls and Protections

| | | | |
|-------------------|-----------------------------------|-------------------------------|-------------|
| Overload | 110 – 135% | Overvoltage Protection | 125 – 145% |
| Input Fuse | T2A/250VAC internal ¹⁾ | Output Short Circuit | Hiccup mode |

¹⁾ Fuse not replaceable by user

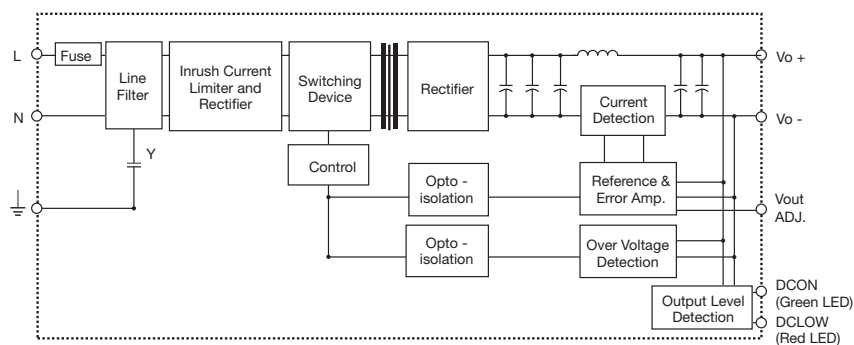
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|---------------------|-----------------------------|----------------------|
| Ambient temperature | -25°C to 71°C | Switching frequency | 100kHz |
| Derating (>60°C to +71°C) | 3%/°C | MTBF (MIL-HDBK-217F) | 787.000h |
| Ambient humidity | 20 - 95%RH | Case material | Plastic: PC, UL94-V0 |
| Storage | -25°C to +85°C | Dimensions L x W x D | 90 x 22.5 x 115 |
| Protection degree | IP20 | Weight | 120g |
| Cooling | Free air convection | | |

Approvals and EMC

| | | | |
|---------------------------------|---|-----------|---|
| Insulation voltage I / O | 3.000VAC | CE | EN50081-1 / EN55022 Class B EN50082-1 / EN55024 EN61000-3-2 EN61000-3-3 |
| Insulation resistance | 100MΩ | | |
| UL / cUL | UL508, UL60950-1, UL1310 Class 2 Recognized | | |
| TUV | EN60950-1 | | |

Block diagrams



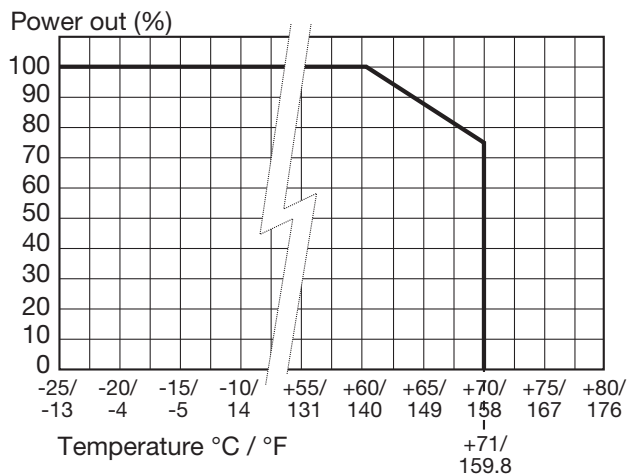
Pin assignment and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | V+ | Positive output terminal |
| 2 | V- | Negative output terminal |
| 3 | GND | Ground terminal to minimise High frequency emissions |
| 4 | N | Neutral input (no polarity with DC input) |
| 5 | L | Phase input (no polarity with DC input) |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |
| | ON | DC output ready LED |
| | LO | DC low indicator LED |

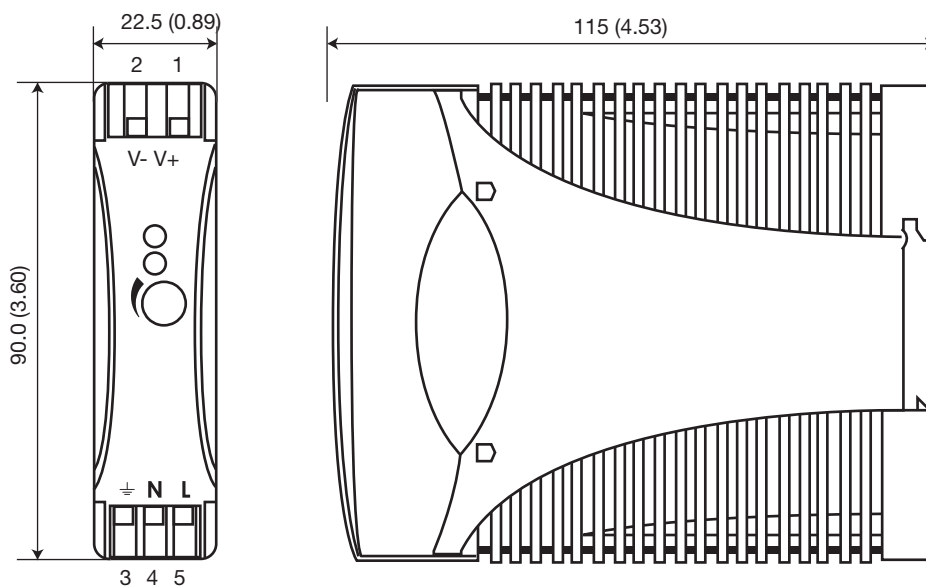
Installation

| | |
|---------------------------------|--|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Connector size range | Solid: 0.2 – 2mm ² (AWG24-14) (use copper conductors only) |
| Max. torque for terminal | |
| Input terminals | 0.56Nm (5.0lb-in) |
| Output terminals | 0.56Nm (5.0lb-in) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 18W DIN rail mounting

CARLO GAVAZZI



- 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



Optional Features

| Description | code |
|-------------------|------|
| Spring connectors | B |

Output performances

| Model | Output Voltage (VDC) | Output Current (A) | Output Power (W) | Voltage Trim Range | | DC on LED (VDC) | DC low LED (VDC) | | Typical Efficiency |
|-------|----------------------|--------------------|------------------|--------------------|------------|-----------------|------------------|------|--------------------|
| | | | | Min. (VDC) | Max. (VDC) | | Min. | Max | |
| SPD05 | 5 | 3 | 15 | 4.5 | 5.75 | 4.5 | 3.75 | 4.5 | 75% |
| SPD12 | 12 | 1.5 | 18 | 10.8 | 13.8 | 10.8 | 9 | 10.8 | 77% |
| SPD15 | 15 | 1.2 | 18 | 13.5 | 17.25 | 13.5 | 11.25 | 13.5 | 77% |
| SPD24 | 24 | 0.75 | 18 | 21.3 | 28.8 | 21.6 | 18 | 21.6 | 77% |

Output data

| | | | |
|-------------------------|--------|--------------------------|------------|
| Line regulation | ± 1% | Output Voltage accuracy | ± 1% |
| Load regulation | ± 2% | Temperature coefficient | ± 0.02%/°C |
| Minimum load | 0 | Hold up Time Vi = 115Vac | 20ms |
| Transient recovery time | 300µs | Hold up time Vi = 230Vac | 75ms |
| Ripple and noise | 50mVpp | | |

Input data

| | | | |
|---------------------|---------------|-----------------|-----------|
| Rated input voltage | 100 - 240 | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current | |
| AC | 90 - 265 Vac | Vi= 115Vac | 10A |
| DC | 120 - 370 Vdc | Vi= 230Vac | 18A |

Controls and Protections

| | | | |
|------------|----------------------|------------------------|-------------|
| Overload | 110 – 135% | Overvoltage Protection | 125 – 145% |
| Input Fuse | T2A/250Vac internal* | Output Short Circuit | Hiccup mode |

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

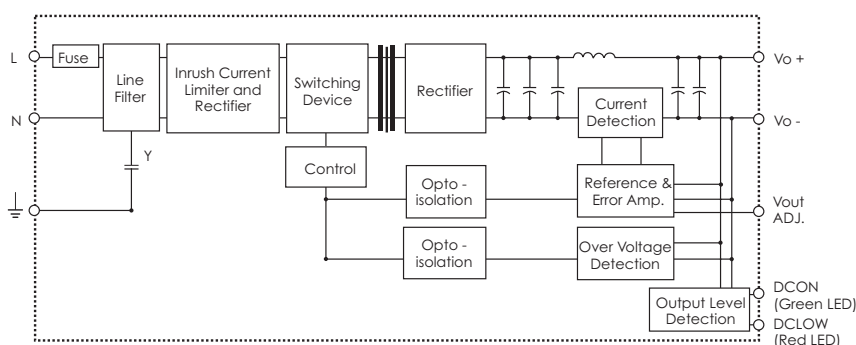
| | | | |
|---------------------------|---------------------|----------------------|----------------------|
| Ambient temperature | -10°C to 71°C | Switching frequency | 100kHz |
| Derating (>60°C to +71°C) | 3%/°C | MTBF (MIL-HDBK-217F) | 800.000h |
| Ambient humidity | 20 - 90%RH | Case material | Plastic: PC, UL94-V0 |
| Storage | -25°C to +85°C | Dimensions L x W x D | 90 x 22.5 x 115 |
| Protection degree | IP20 | Weight | 150g |
| Cooling | Free air convection | | |

Norms and Standards

| | | | |
|--------------------------|---|----|---|
| Insulation voltage I / O | 3.000Vac min. | CE | EN50081-1 / EN55022 Class B EN50082-1 / EN55024 EN61000-3-2 EN61000-3-3 |
| Insulation resistance | 100Mohm min. | | |
| UL / cUL | UL508, UL60950-1, UL1310 Class 2 Recognised | | |
| TUV | EN60950-1 | | |

* fuse not replaceable by user

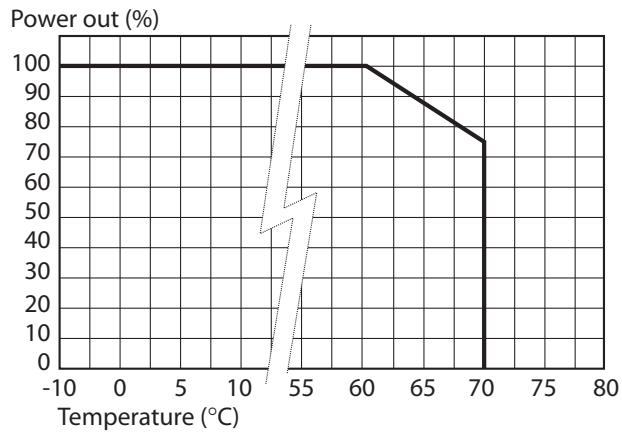
Block diagrams



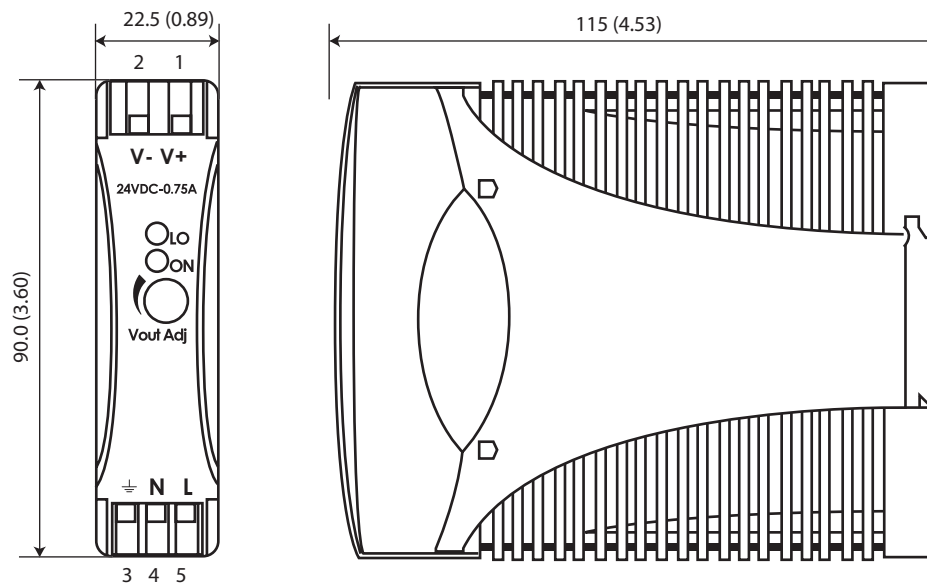
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | V+ | Positive output terminal |
| 2 | V- | Negative output terminal |
| 3 | GND | Ground terminal to minimise High frequency emissions |
| 4 | N | Neutral input (no polarity with DC input) |
| 5 | L | Phase input (no polarity with DC input) |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |
| | ON | DC output ready LED |
| | LO | DC low indicator LED |

Derating Diagram



Mechanical Drawings



Installation

Ventilation and cooling

Normal convection
 All sides 25mm free space
 for cooling is recommended

Connector size range

Solid: 0.2 – 2mm²
 (AWG24-14)
 (use copper conductors only)

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
- 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



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 LED (VDC) Threshold at startup Min. | Typical Efficiency |
|-------|----------------------------|------------------|--------------------|--------------------|----------|---|--------------------|
| | | | | Min. VDC | Max. VDC | | |
| SPD05 | 5 | 30 | 6.0 | 5 | 5.5 | 4 | 79% |
| SPD12 | 12 | 30 | 2.5 | 12 | 14 | 9.6 | 84% |
| SPD24 | 24 | 30 | 1.25 | 24 | 28 | 19.2 | 86% |
| SPD48 | 48 | 30 | 0.625 | 48 | 55 | 37 | 86% |

Output data

| | | | |
|------------------------------------|------------|--|------------|
| Line regulation | ± 0.5% max | Output Voltage accuracy | ± 2% |
| Load regulation | ± 0.5% max | Temperature coefficient | ± 0.02%/°C |
| Minimum load | 0 | Hold up Time Vi = 115VAC | 20ms min |
| Turn on time (full resistive load) | 1.0s max | Hold up time Vi = 230VAC | 30ms min |
| Transient recovery time | 300µs | Voltage fall time (I _o nom) | 150ms max |
| Ripple and noise (bw=20Mhz) | 50mVpp | Voltage rise time at full resistive load | 150ms max |

Input data

| | | | |
|---------------------|--------------|----------------------------|-----------|
| Rated input voltage | 100 - 240 | Frequency range | 47- 63 Hz |
| Voltage range AC | 85 - 264VAC | Inrush current Vi = 115VAC | 20A |
| Voltage range DC | 90 - 375 VDC | Inrush current Vi = 230VAC | 40A |

Controls and Protections

| | | | | | |
|---|-----------------------------------|--------------------------------|---------------------------------|-------------|-------------|
| Overload | 110 – 140% | Over voltage protection | VDC | | |
| Input Fuse | T2A/250VAC internal ¹⁾ | | SPD5 SPD12 SPD24 SPD48 | Min. | Max. |
| Output Short Circuit | Fold forward | | | 6 | 6.8 |
| Power ready output (only SPD 24) | | | | 15 | 16.5 |
| On threshold | ≥ 20V ± 1V | | | 30 | 33 |
| Off threshold | ≤19.2V ± 1V | 60 | 66 | | |

¹⁾ Fuse not replaceable by user

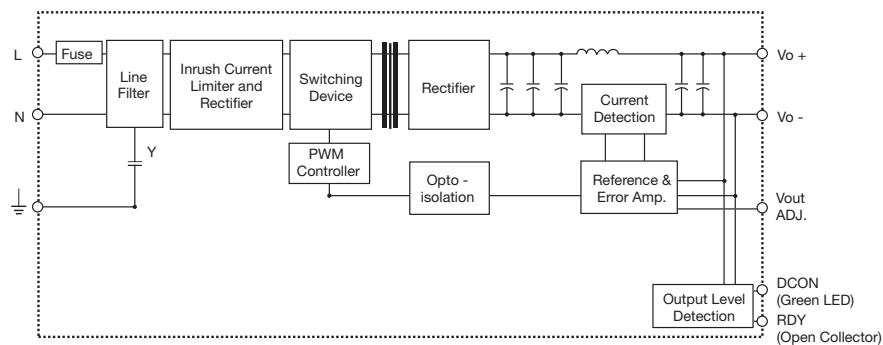
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|----------------|-----------------------------|----------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>60°C to +71°C) | 2.5%/°C | Switching frequency | 50kHz |
| Ambient humidity | 20 ~ 90%RH | MTBF | 565.000h |
| Storage | -25°C to +85°C | Case material | Plastic: PC, UL94-V0 |
| Protection degree | IP20 | Dimensions L x W x D | 90 x 40.5 x 115 |
| | | Weight | 290g |

Norms and Standards

| | | | |
|---------------------------------|--|-----------|---------------------------|
| Insulation voltage I / O | 3.000VAC | CE | EN61000-6-3 - EN55022 |
| Insulation resistance | 100MΩ | | Class B |
| UL / cUL | UL508 listed, UL60950-1, UL1310 Class 2 (5V without class 2) Recognized | | EN61000-3-2 - EN61000-3-3 |
| | | | EN61000-6-2 - EN550241 |
| | | | EN61000-4-2 - EN61000-4-3 |
| TUV | EN60950-1 | | EN61000-4-4 - EN61000-4-5 |
| | | | EN61000-4-6 - EN61000-4-8 |
| | | | EN61000-4-11 |

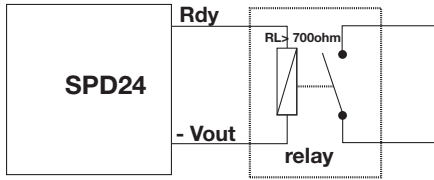
Block diagrams



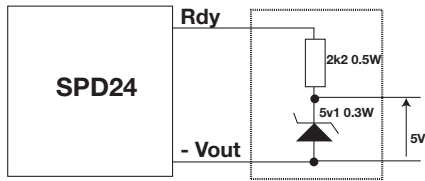
Pin assignment and front controls

| Pin No. | Designation | Description |
|---------|------------------|--|
| 1 | RDY | DC OK output for relay (only on SPD24) |
| 3 | + | Positive output terminal |
| 4 | + | Positive output terminal |
| 5 | - | Negative output terminal |
| 6 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 8 | L | Phase input (no polarity with DC input) |
| 9 | N | Neutral input (no polarity with DC input) |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |
| | DC ON | DC output ready LED |

Output Rdy Wiring diagram

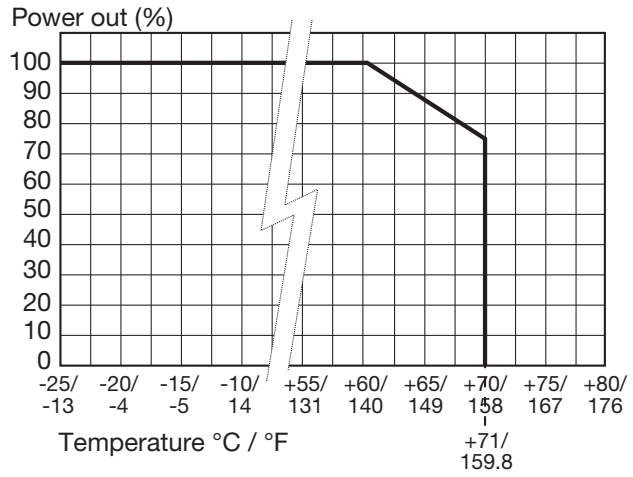


Relay connection diagram



5V signal

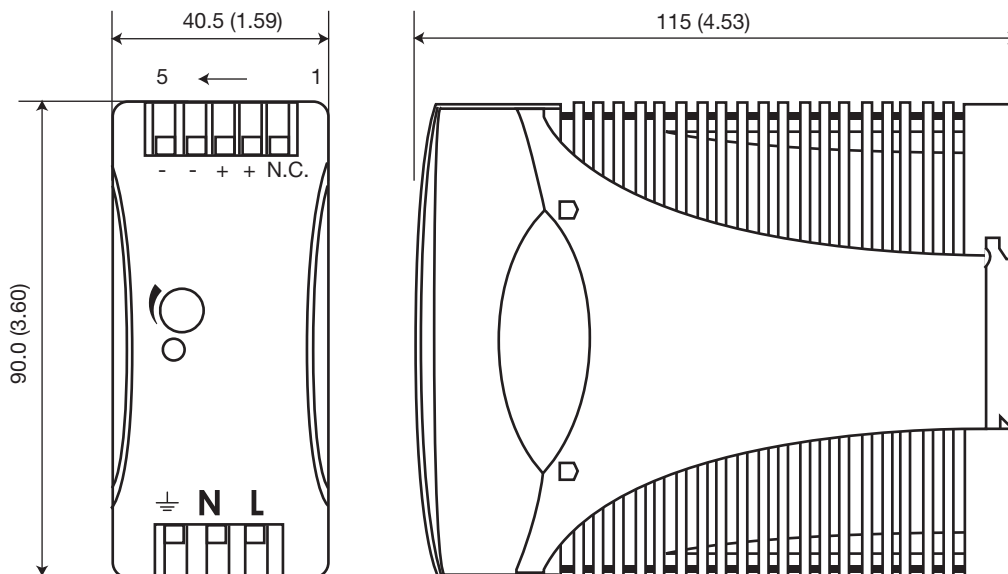
Derating Diagram



Installation

| | |
|---------------------------------|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Connector size range | Solid: 0.2 – 2mm ² (AWG24-14) (use copper conductors only) |
| Max. torque for terminal | |
| Input terminals | 0.56Nm (5.0lb-in) |
| Output terminals | 0.56Nm (5.0lb-in) |

Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 60W 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
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Product Description

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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 LED (VDC) Threshold at startup Min. | Typical Efficiency |
|-------|----------------------------|------------------|--------------------|--------------------|----------|---|--------------------|
| | | | | Min. VDC | Max. VDC | | |
| SPD05 | 5 | 50 | 10.0 | 5 | 5.5 | 4 | 79% |
| SPD12 | 12 | 60 | 5.0 | 12 | 14 | 9.6 | 86% |
| SPD24 | 24 | 60 | 2.5 | 24 | 28 | 19.2 | 89% |
| SPD48 | 48 | 60 | 1.25 | 48 | 55 | 37 | 89% |

Output data

| | | | |
|------------------------------------|----------|--|------------|
| Line regulation | ± 0.5% | Output Voltage accuracy | ± 2% |
| Load regulation | ± 0.5% | Temperature coefficient | ± 0.02%/°C |
| Minimum load | 0 | Hold up Time Vi = 115VAC | 20ms |
| Turn on time (full resistive load) | 1.0s max | Hold up time Vi = 230VAC | 30ms |
| Transient recovery time | 300µs | Voltage fall time (I _o nom) | 150ms max |
| Ripple and noise | 50mVpp | Voltage rise time at full resistive load | 150ms max |

Input data

| | | | |
|---------------------|--------------|----------------------------|-----------|
| Rated input voltage | 100 - 240 | Frequency range | 47- 63 Hz |
| Voltage range AC | 85 - 264 VAC | Inrush current Vi = 115VAC | 30A |
| DC | 90 - 375 VDC | Vi = 230VAC | 60A |

Controls and Protections

| | | | | | |
|---|-----------------------------------|--------------------------------|-------------|-------------|------|
| Overload | 110 – 150% | Over voltage protection | VDC | | |
| Input Fuse | T2A/250VAC internal ¹⁾ | | Min. | Max. | |
| Output Short Circuit | Fold forward | | SPD5 | 6 | 6.8 |
| Power ready output (only SPD 24) | | | SPD12 | 15 | 16.5 |
| On threshold | ≥ 20V ± 1V | SPD24 | 30 | 33 | |
| Off threshold | ≤ 19.2V ± 1V | SPD48 | 60 | 66 | |

¹⁾ Fuse not replaceable by user

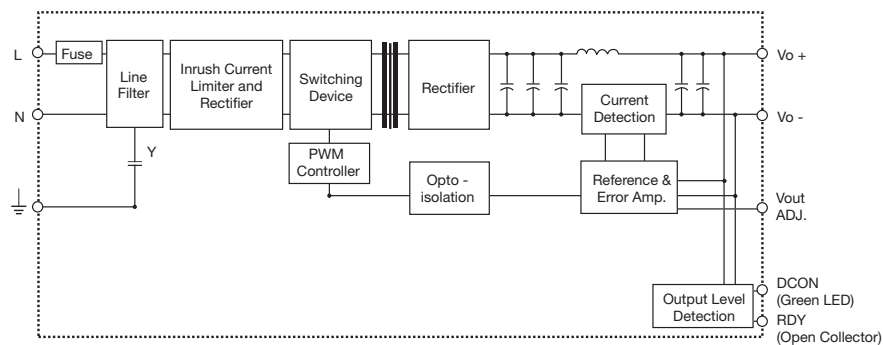
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|----------------|-----------------------------|----------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>60°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | 500.000h |
| Ambient humidity | 20 ~ 90%RH | Case material | Plastic: PC, UL94-V0 |
| Storage | -25°C to +85°C | Dimensions L x W x D | 90 x 40.5 x 115 |
| Protection degree | IP20 | Weight | 360g |

Norms and Standards

| | | | |
|---------------------------------|---|-----------|---------------------------|
| Insulation voltage I / O | 3.000VAC min | CE | EN61000-6-3 - EN55022 |
| Insulation resistance | 100MΩ min | | Class B |
| UL / cUL | UL508 listed, UL1950, UL1310 Class 2 (5V without class 2) Recognized | | EN61000-3-2 - EN61000-3-3 |
| TUV | EN60950 | | EN61000-6-2 - EN550241 |
| | | | EN61000-4-2 - EN61000-4-3 |
| | | | EN61000-4-4 - EN61000-4-5 |
| | | | EN61000-4-6 - EN61000-4-8 |
| | | | EN61000-4-11 |

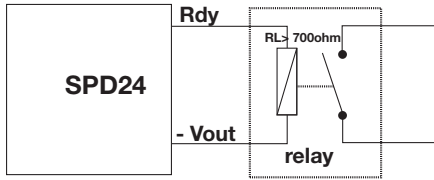
Block diagrams



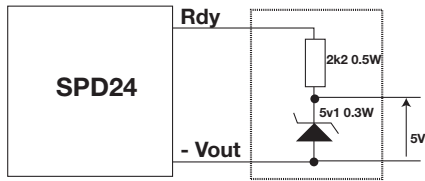
Pin assignment and front controls

| Pin No. | Designation | Description |
|---------|------------------|--|
| 1 | RDY | DC OK, output for relay (only on SPD 24) |
| 3 | + | Positive output terminal |
| 4 | + | Positive output terminal |
| 5 | - | Negative output terminal |
| 6 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 8 | L | Phase input (no polarity with DC input) |
| 9 | N | Neutral input (no polarity with DC input) |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |
| | DC ON | DC output ready LED |

Output Rdy Wiring diagram

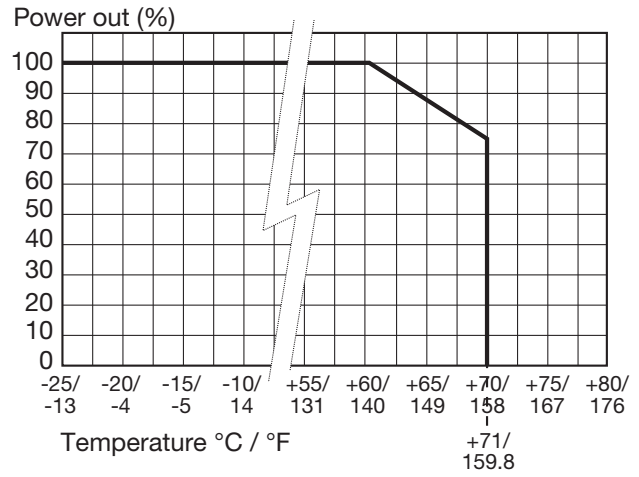


Relay connection diagram



5V signal

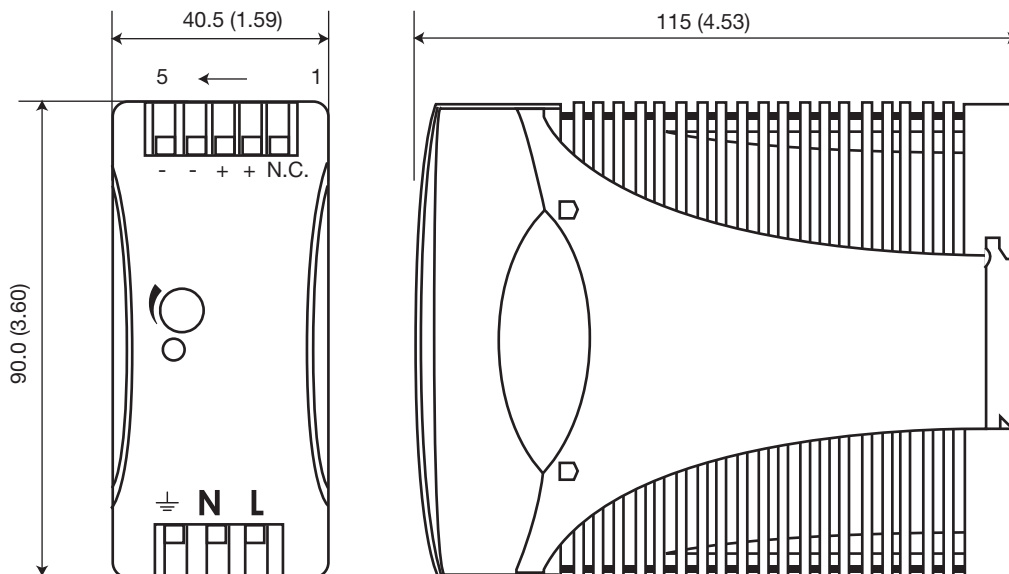
Derating Diagram



Installation

| | |
|---------------------------------|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Connector size range | Solid: 0.2 – 2mm ² (AWG24-14) (use copper conductors only) |
| Max. torque for terminal | |
| Input terminals | 0.56Nm (5.0lb-in) |
| Output terminals | 0.56Nm (5.0lb-in) |

Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 90W DIN rail mounting

CARLO GAVAZZI



- 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
- Model specific to meet UL 1310 class 2
- UL, cUL listed and TUV/CE approved

Product Description

The Switching power supplies and compact dimensions and performance are a must. This version is specifically developed to meet UL1310 class 2.

Ordering Key

SP D 24 90 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 |
|-------------------------|------|
| 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) Threshold at startup | | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|---------|----------------------------|------------------|--------------------|--------------------|----------|--------------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD2490 | 24 | 92 | 3.8 | 22.5 | 24.5 | 17.6 | 19.4 | 17.0 | 19.4 | 85% |

Output data

| | | | |
|-------------------------|-------------------------------|--------------------------|--------|
| Output voltage accuracy | -0 +1% max (factory adjusted) | Transient recovery time | 300µs |
| Line regulation | ± 0.5% | Ripple and noise | 50mVpp |
| Load regulation | | Hold up Time Vi = 115VAC | 25ms |
| Non parallel model | ± 1% | Hold up time Vi = 230VAC | 30ms |
| Parallel model | ± 5% | Minimum load | 0% |
| Temp. coefficient | ± 0.3% / °C | Parallel Operation | No |

Input data

| | | | |
|---------------------|--------------------|---------------------|------------|
| Rated input voltage | 115/230 autoselect | Rated input current | 2.0 / 0.8A |
| Voltage range | | Frequency range | 47- 63 Hz |
| AC in, 115 | 90 - 132VAC | Inrush current | |
| AC in, 230 | 186 - 264VAC | Vi = 115VAC | 24A |
| DC in | 210 - 370VDC | Vi = 230VAC | 48A |
| | | P.F.C. | 0.7 |

Controls and Protections

| | | | |
|----------------------------------|-------------------------------------|--|-----------------------------------|
| Input Fuse | T3.15/250VAC internal ¹⁾ | Power ready | 17.6 - 19.4 0.3A 500VDC |
| Overvoltage Protection | 102 - 106% | Threshold at start up (contact closed) | |
| Output Short Circuit | Current limited | Contact rating at 60VDC | |
| Rated Overload Protection | 102 - 108% | Insulation | |

¹⁾ Fuse not replaceable by user

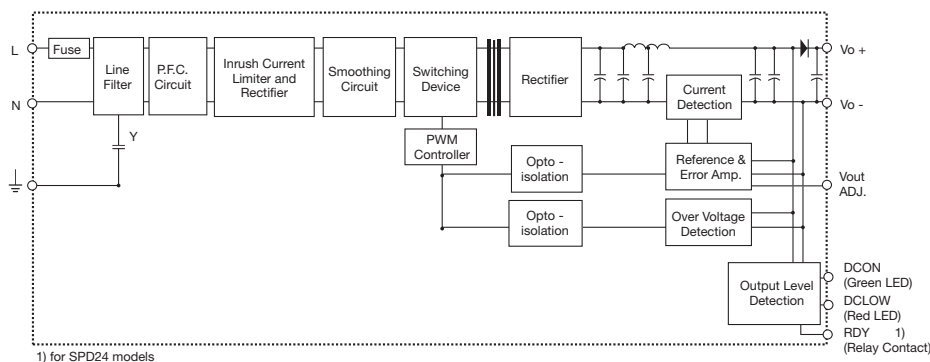
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|---------------------|-----------------------------|-------------------------------------|
| Ambient temperature | -25°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 | -25°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 UL1310 class 2 | | |
| TUV | EN60950-1 | | |

Block diagrams



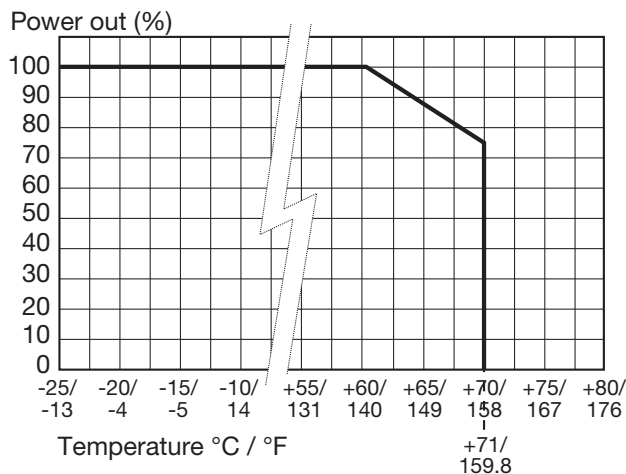
Pin assignment and front controls

| 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 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 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 |

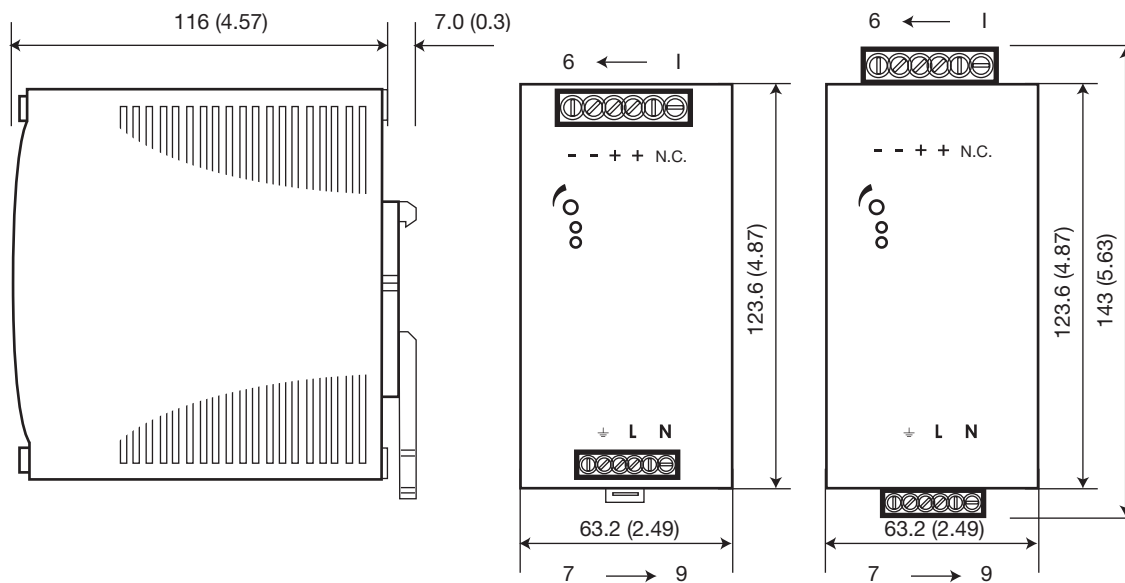
Installation

| | |
|--|---|
| 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) |
| 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) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 90W DIN rail mounting

CARLO GAVAZZI



- Installation on DIN Rail 7.5 or 15mm
- Short circuit protection
- PFC standard
- Power ready output
- LED indicator for DC power ON
- LED indicator for DC low
- Very compact dimensions
- UL, cUL listed and TUV/CE approved
- UL 1310 Class 2
- Class I Div 2 certification (in progress)

Product Description

This SPD is the most compact 90W power supply on the market. Relay output for "power ready" function is 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 90 1 L

Model _____
 Mounting (D = Din rail) _____
 Output voltage _____
 Output power _____
 Input type _____
 Plastic enclosure _____

Input type: 1= single phase

Approvals



Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range | | DC ON LED (VDC) Threshold at startup | | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|---------|----------------------------|------------------|--------------------|--------------------|----------|--------------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD2490 | 24 | 91.2 | 3.8 | 22.5 | 24.5 | 17.6 | 19.4 | 17.6 | 19.4 | 85% |

Output Data

| | | | |
|--|-------------------------------|---|--------|
| Output voltage accuracy | -0 +1% max (factory adjusted) | Turn On Time | |
| Line regulation | ± 1% | $V_{i\ nom}, I_{o\ nom}$ | 1.0s |
| Load regulation | | $V_{i\ nom}, I_{o\ nom}$ with Capacitor load | 1.5s |
| Non parallel model | ± 1% | Rise Time | |
| Parallel model | ± 5% | $V_{i\ nom}, I_{o\ nom}$ | 150ms |
| Temp. coefficient | ± 0.03% / °C | $V_{i\ nom}, I_{o\ nom}$ with Capacitor load | 500ms |
| Ripple and noise | 50mV | Capacitor Load | 7000µF |
| $V_{i\ nom}, I_{o\ nom}, BW=20MHz$ | | Reverse Voltage Immunity | 35V |
| Rated continuous Loading | 3.8A @ 24VDC / 3.7A @ 24.5VDC | Hold up Time $V_i = 115VAC$ $I_{o\ nom}$ | 15ms |
| Fall Time | 150ms | Hold up Time $V_i = 230VAC$ $I_{o\ nom}$ | 30ms |
| Transient recovery time | | Minimum load $V_{i\ nom}$ | 0% |
| $V_{i\ nom}, I_{o} = 0.5 \times I_{nom}$ | 2ms | Parallel Operation | No |

Input data

| | | | |
|--|--------------|------------------------|--------|
| Rated input voltage | 110/240 | Leakage Current | |
| Voltage range | | Input / Output | 0.25mA |
| AC in | 90 - 264VAC | Input / FG | 3.5mA |
| DC in | 120 - 375VDC | Inrush current | |
| Rated input current | 1.65A / 1.4A | Vi= 115VAC | 30A |
| Power dissipation | 15W | Vi= 230VAC | 60A |
| Frequency range | 47- 63 Hz | P.F.C. | 0.7 |
| Internal Voltage Surge Protection | Varistor | | |

(acc. to IEC61000-4-5)

Controls and Protections

| | | | |
|--|-------------------------------------|-------------------------|----------------------------|
| Input Fuse | T3.15/250VAC internal ¹⁾ | Power ready | |
| Output Short Circuit | fold forward | Threshold at start up | Min. 17.6VDC - Max.19.4VDC |
| Rated Overload Protection | 102 - 108% | (contact closed) | |
| Over voltage protection (auto recovery) | 24.5V to 25.5V | Contact rating at 60VDC | 0.3A |
| Input Voltage Surge Protection | Varistor | Insulation | 500VDC |

¹⁾ Fuse not replaceable by user

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

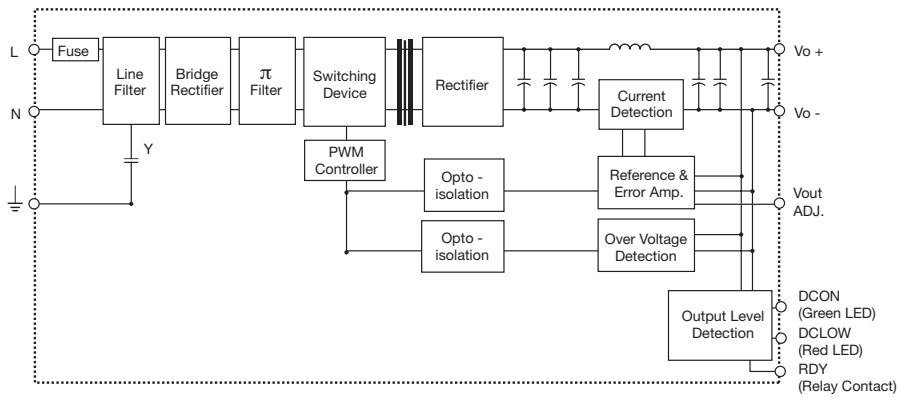
| | | | |
|-------------------------------------|---------------------|---|-----------------|
| Ambient temperature | -25°C to 71°C | Switching frequency | |
| Derating (>61°C to +71°C) | 2.5% / °C | Min. | 45kHz |
| Ambient humidity | 20 to 95%RH | Max. | 60kHz |
| Storage | -25°C to +85°C | MTBF (Bellcore Issue 6@40°C), GB | 493000h |
| Pollution degree | 2 | Altitude during operation | 3.000m |
| Protection degree | IP20 | Case material | Plastic |
| Cooling | Free air convection | Dimensions L x W x D | 90 x 54 x 114mm |
| | | Weight | 430g |

Approvals and EMC

| | | | |
|------------------------------|--|-----------|---|
| Insulation voltage | Input / Output 3.000VAC / 4242VDC Input / FG 1500VAC / 2121VDC | 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 |
| 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, UL 1310 Class 2 Power Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D in progress) | | |
| TUV | EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (acc.to EN 60204) | | |



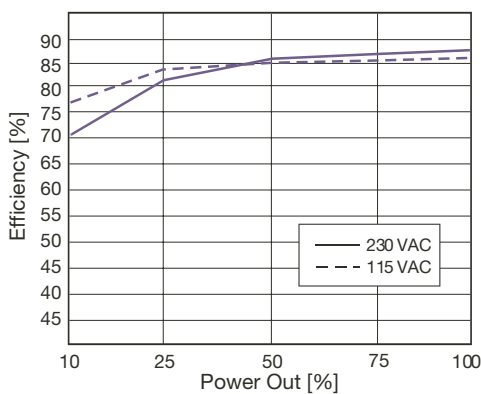
Block diagrams



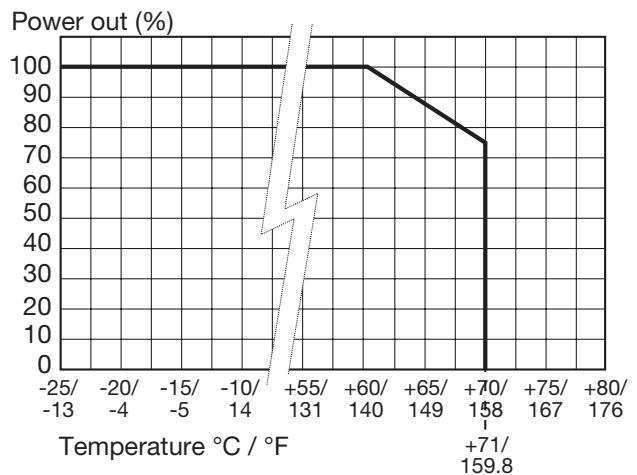
Pin Assignment and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | RDY | N.O. relay contact for DC OK (only SPD241001) |
| 2 | RDY | N.O. relay contact for DC OK (only SPD241001) |
| 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 | Neutral input (no polarity with DC input) |
| 9 | L | Phase input (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 |

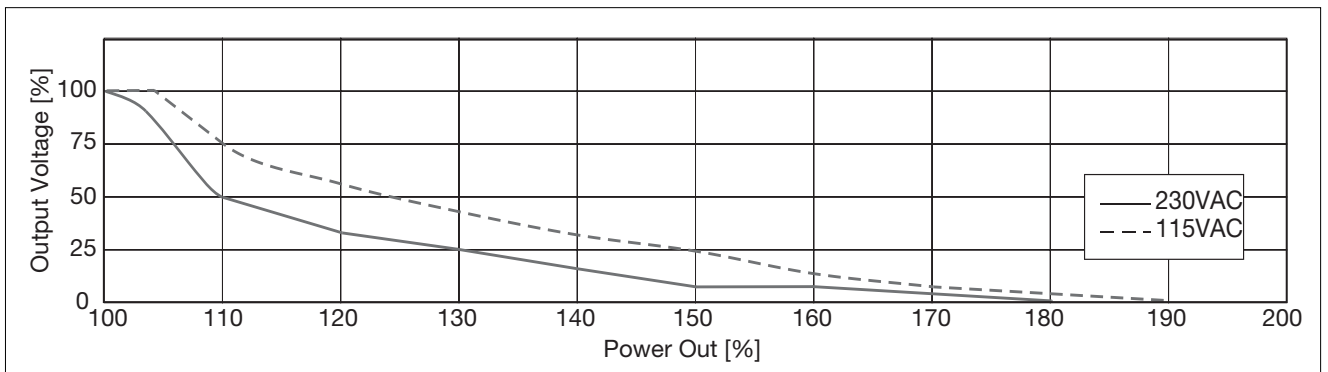
Typ. Efficiency Curve



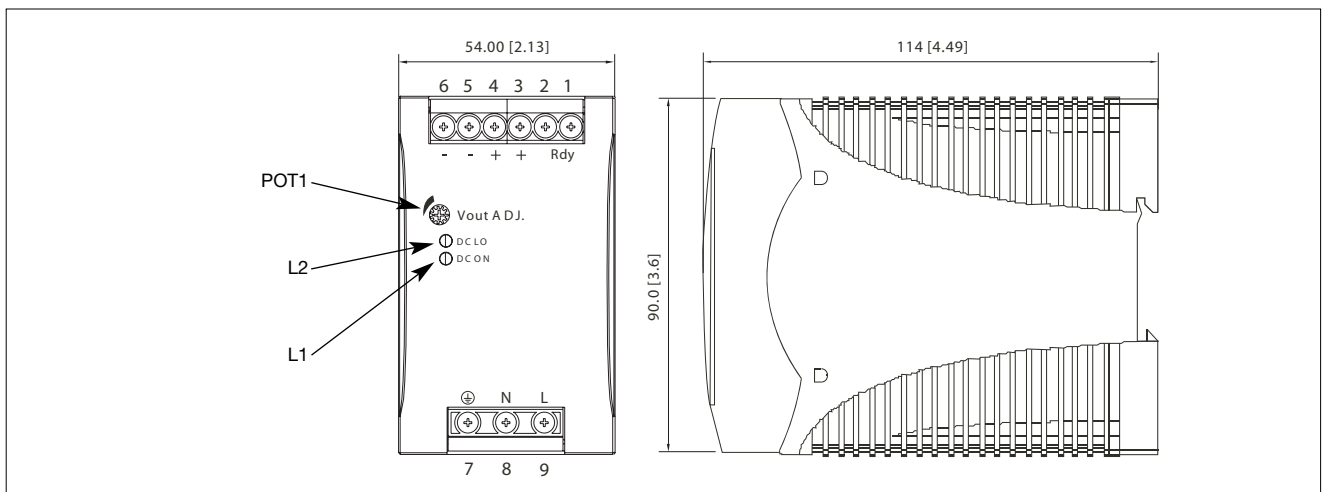
Derating Diagram



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) |
| 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) |
| Reccomended circuit breaker | 5A / 6A / 10A B, D characteristics |

Switching Power Supply Type SPD 100W DIN rail mounting

CARLO GAVAZZI



- 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 div2 certification (in progress)

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 | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range | | 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 | 84% |
| SPD24100 | 24 | 100.8 | 4.2 | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 86% |
| SPD48100 | 48 | 100.8 | 2.1 | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 88% |

Output Data

| | | | |
|--|--|---|--------------|
| Output voltage accuracy | -0 +1% max (factory adjusted) | Rise Time | |
| Line regulation | ± 1% | $V_{i\ nom}, I_{o\ nom}$ | 150ms |
| Load regulation | | $V_{i\ nom}, I_{o\ nom}$ with Capacitor load | 500ms |
| Non parallel model | ± 1% | Capacitor Load | |
| Parallel model | ± 5% | 12V, 24V versions | 7000µF |
| Temp. coefficient | ± 0.03% / °C | 48V version | 3500µF |
| Ripple and noise | 50mV | Reverse Voltage Immunity | |
| $V_{i\ nom}, I_{o\ nom}, BW=20MHz$ | | 12V | 18V |
| Rated continuous Loading | 8.4A @ 12VDC / 6.9A @14.5VDC 4.2A @ 24VDC / 3.5A @ 28.5VDC 2.1A @ 48VDC / 1.8A @ 56VDC | 24V | 35V |
| Fall Time | 150ms | 48V | 63V |
| Transient recovery time | | Hold up Time $V_i = 115VAC$ $I_{o\ nom}$ | 15ms |
| $V_{i\ nom}, I_{o\ nom}$ | 2ms | Hold up Time $V_i = 230VAC$ $I_{o\ nom}$ | 30ms |
| Turn On Time | | Minimum load $V_{i\ nom}$ | 0% |
| $V_{i\ nom}, I_{o\ nom}$ | 1.0s | Parallel Operation | 3 units max. |
| $V_{i\ nom}, I_{o\ nom}$ with Capacitor load | 1.5s | 0.1 $I_{o\ min}$ ~ 0.9 $I_{o\ max}$ | |

Input Data

| | | | |
|---|-----------------------------|--|-----------------|
| Rated input voltage | 110/240 | Internal Voltage Surge Protection (acc. to IEC61000-4-5) | Varistor |
| Voltage range AC in DC in | 90 - 264VAC 120 - 375VDC | Leakage Current Input / Output Input / FG | 0.25mA 3.5mA |
| Rated input current | 1.65A / 1.4A | Inrush current Vi= 115VAC Vi= 230VAC | 30A 60A |
| Power dissipation 12V 24V 48V | 18.5W 15W 14W | P.F.C. | 0.7 |
| Frequency range | 47 - 63Hz | | |

Controls and Protections

| | | | |
|---|--|---|--|
| Input Fuse | T3.15/250VAC internal ¹⁾ | Input Voltage Surge Protection | Varistor |
| Output Short Circuit | fold forward | Power ready (only SPD241001) Threshold at start up (contact closed) Contact rating at 60VDC Insulation | Min. 17.6VDC - Max.19.4VDC 0.3A 500VDC |
| Rated Overload Protection | 110 - 140% | | |
| Over voltage protection (auto recovery) 12V model 24V model 48V model | 14.5V to 17.4V 30.0V to 33.0V 60.0V to 66.0V | | |

¹⁾ Fuse not replaceable by user

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

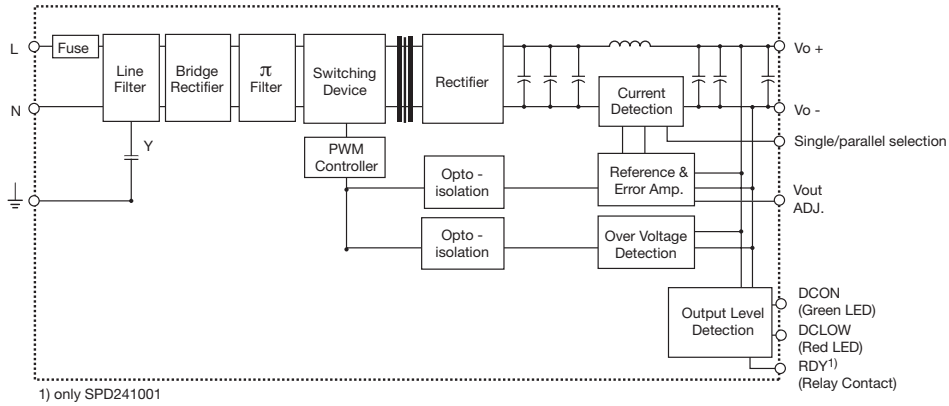
| | | | |
|--|---------------------|--|----------------------------------|
| Ambient temperature | -25°C to 71°C | MTBF (Bellcore Issue 6@40°C), GB 12V model 24V model 48V model | 448.000h 456.000h 490.000h |
| Derating (>61°C to +71°C) | 2.5% / °C | Altitude during operation | 3.000m |
| Ambient humidity | 20 to 95%RH | Case material | Plastic |
| Storage | -25°C to +85°C | Dimensions L x W x D | 90 x 54 x 114mm |
| Pollution degree | 2 | Weight | 430g |
| Protection degree | IP20 | | |
| Cooling | Free air convection | | |
| Switching frequency Min. Max. | 45kHz 60kHz | | |

Approvals and EMC

| | | | |
|---|---|-----------|---|
| Insulation voltage Input / Output Input / FG | 3.000VAC / 4242VDC 1500VAC / 2121VDC | 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 |
| 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, Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D in progress) | | |
| TUV | EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (acc.to EN 60204) | | |



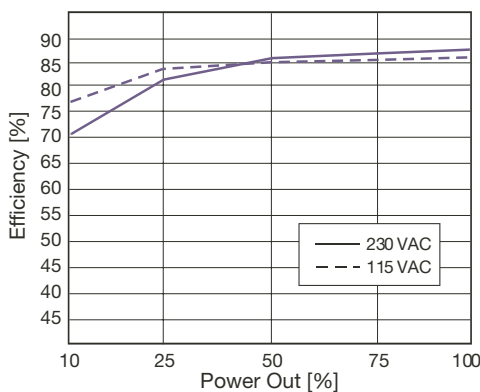
Block Diagrams



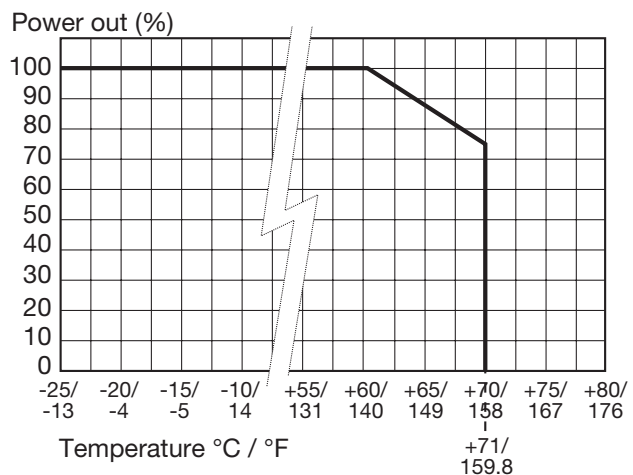
Pin Assignment and Front Controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | RDY | NO relay contact for DC OK (only SPD241001) |
| 2 | RDY | NO relay contact for DC OK (only SPD241001) |
| 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 | Neutral input (no polarity with DC input) |
| 9 | L | Phase input (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 |

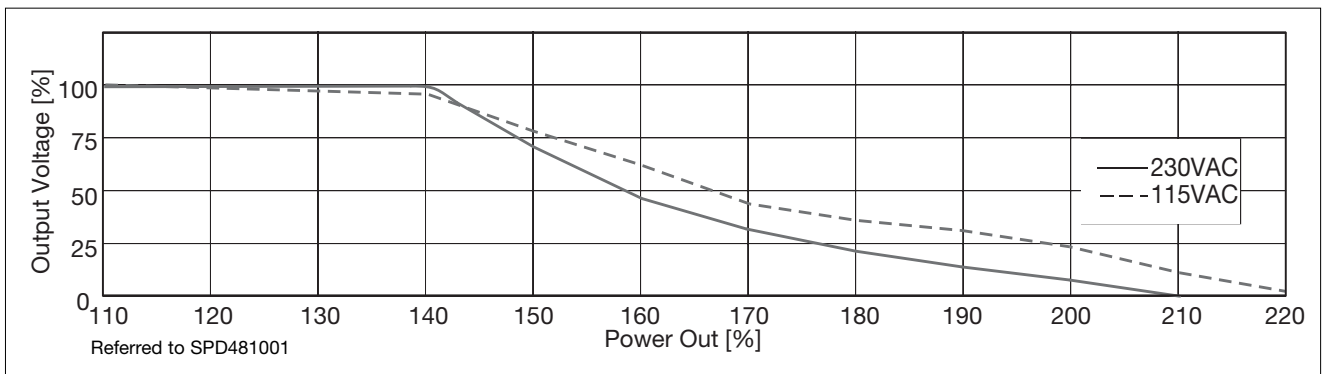
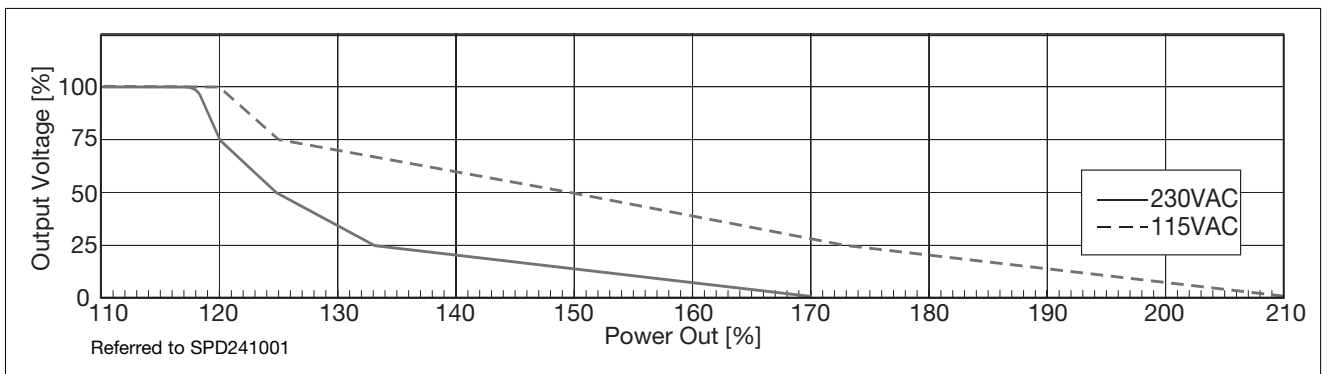
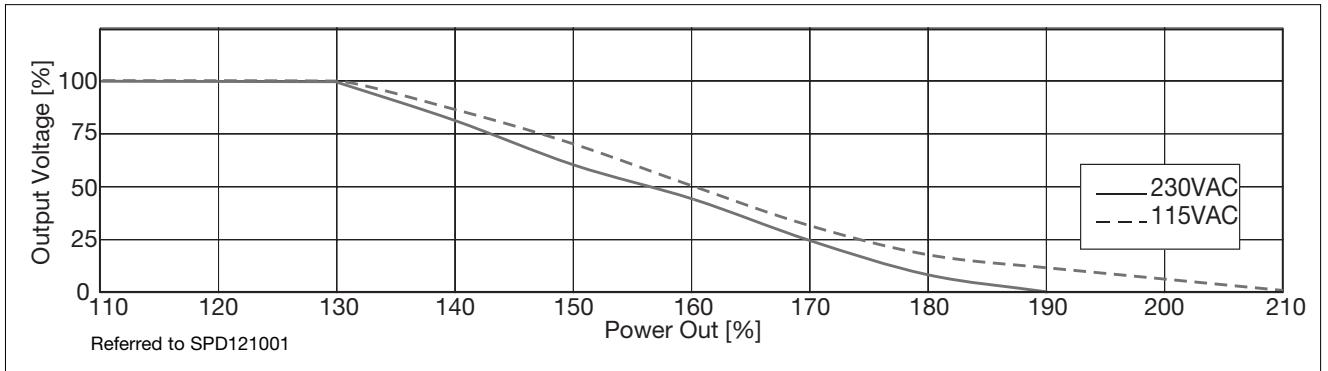
Typ. Efficiency Curve



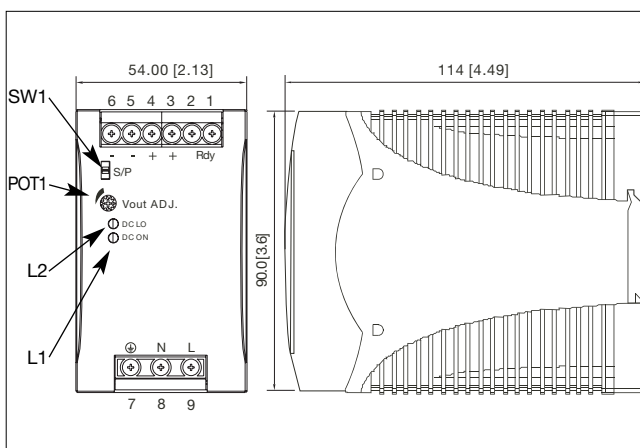
Derating Diagram



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) |
| 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 | 5A / 6A / 10A B, D characteristics |

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

CARLO GAVAZZI



- 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
- Class I div2 certification (in progress)

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

Input Data

| | | | |
|---|------------------------------|--|-----------------|
| Rated input voltage | 400/500VAC | Frequency range | 47 - 63Hz |
| Voltage range AC in DC in | 340 - 575VAC 480 - 820VDC | Internal Voltage Surge Protection (acc. to IEC61000-4-5) | Varistor |
| Rated input current | 0.48A / 0.75A | Leakage Current Input / Output Input / FG | 0.25mA 3.5mA |
| Power dissipation 12V 24V 48V | 15.0W 13.0W 10.5W | Inrush current | 10A |
| | | P.F.C. | 0.55 |

Controls and Protections

| | | | |
|---|--|---|--|
| Input Fuse | 2A/600VAC internal ¹⁾ | Input Voltage Surge Protection | Varistor |
| Output Short Circuit | current limit | Power ready (only SPD241002) Threshold at start up (contact closed) Contact rating at 60VDC Insulation | Min. 17.6VDC - Max.19.4VDC 0.3A 500VDC |
| Rated Overload Protection | 115 - 135% | | |
| Over voltage protection (auto recovery) 12V model 24V model 48V model | 14.5V to 17.4V 30.0V to 33.0V 60.0V to 66.0V | | |

¹⁾ Fuse not replaceable by user

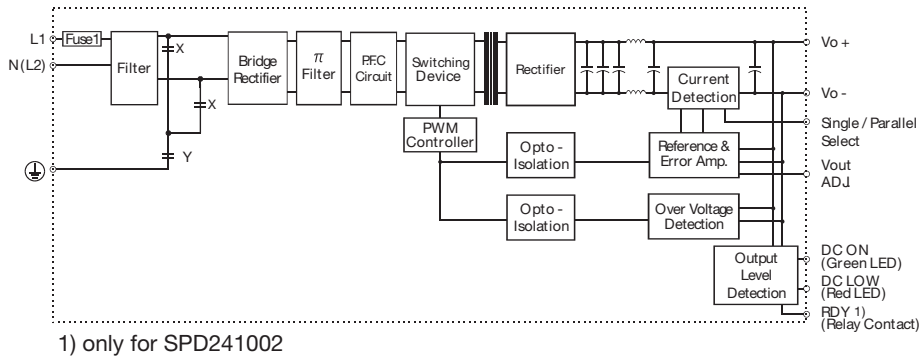
General Data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|---------------------|--|----------------------------------|
| Ambient temperature | -25°C to 71°C | MTBF (Bellcore Issue 6@40°C), GB 12V model 24V model 48V model | 622.000h 661.000h 672.000h |
| Derating (>61°C to +71°C) | 2.5% / °C | Altitude during operation | 3.000m |
| Ambient humidity | 20 to 95%RH | Case material | Plastic |
| Storage | -25°C to +85°C | Dimensions L x W x D | 90 x 54 x 114mm |
| Pollution degree | 2 | Weight | 500g |
| Protection degree | IP20 | | |
| Cooling | Free air convection | | |
| Switching frequency | 45kHz | | |

Approvals and EMC

| | | | |
|---|---|-----------|---|
| Insulation voltage Input / Output Input / FG | 3.000VAC / 4242VDC 1500VAC / 2121VDC | 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 |
| 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, Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D in progress) | | |
| TUV | EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (acc.to EN 60204) | | |

Block Diagrams



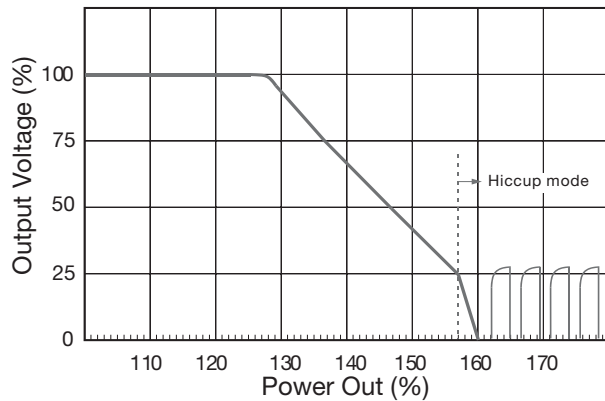
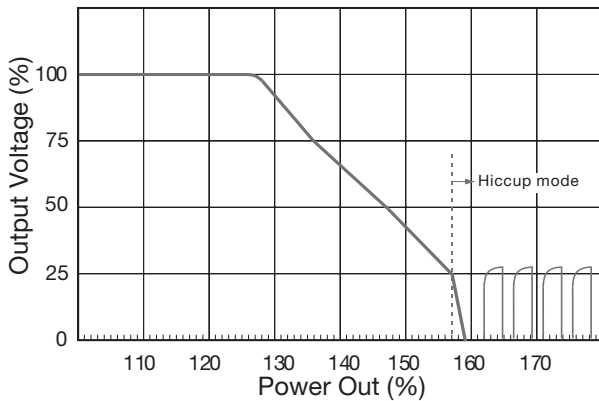
Pin Assignment and Front Controls

| 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 |

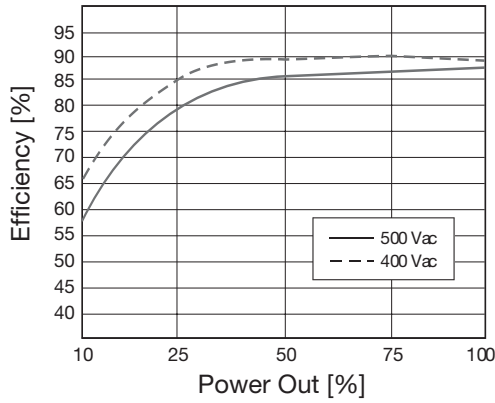
Typ. Current Limited Curve

SPD241002 / 400VAC

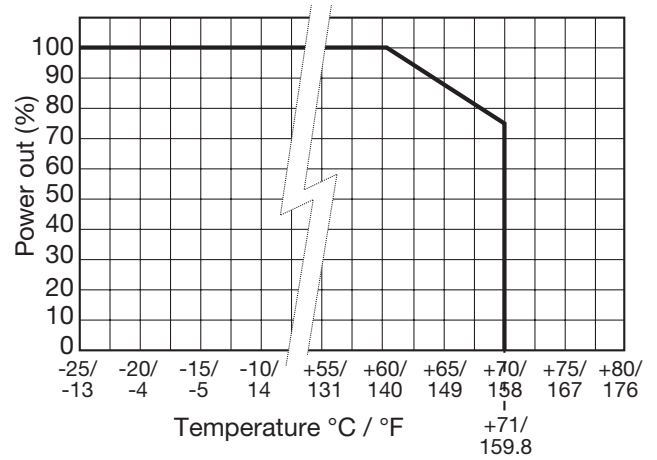
SPD241002 / 500VAC



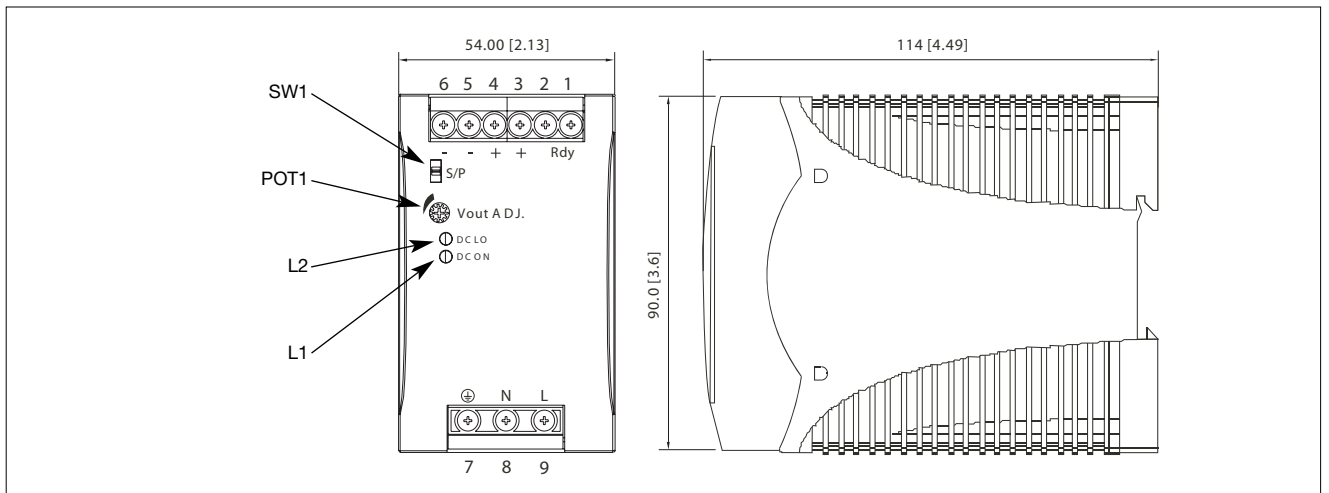
Typ. Efficiency Curve



Derating Diagram



Mechanical Drawings mm (inches)



Installation

| | |
|--|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Screw terminals | 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) |
| 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 | 3A / 5A / 6A B, D characteristics |

Switching Power Supply Type SPD 120W DIN rail mounting

CARLO GAVAZZI



- Installation on DIN Rail 7.5 or 15mm
- Short circuit protection
- PFC available
- High efficiency
- Power ready output
- LED indicator for DC power ON
- LED indicator for DC low
- Parallel versions available
- 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.

Ordering Key

SP D 24 120 1 BFP

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 | Bxx |
| With P.F.C. | xFx |
| With Parallel function | xxP |

Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range ¹⁾ (VDC) | | DC ON LED (VDC) Threshold at startup | | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|-------|----------------------------|------------------|--------------------|--|------|--------------------------------------|------|---|------|--------------------|
| | | | | Min. | Max. | Min. | Max. | Min. | Max. | |
| SPD12 | 12 | 120 | 10 | 11.4 | 14.5 | 10 | 11 | 10 | 11.2 | 84% |
| SPD24 | 24 | 120 | 5 | 22.5 | 30 | 21 | 22 | 20.5 | 22.5 | 86% |
| SPD48 | 48 | 120 | 2.5 | 45 | 55 | 42 | 44 | 41 | 45 | 87% |

¹⁾ N.A. on parallel model. Output voltage is fixed in house, cannot be trimmed by user.

Output data

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

Input data

| | | | |
|---|--|---|------------|
| Rated input voltage | 115/230 selectable | Frequency range | 47- 63Hz |
| Voltage range AC in, 115 selected AC in, 230 selected DC in, only 230 selected | 93 - 132VAC 186 - 264VAC 210 - 370 VDC | Inrush current Vi= 115VAC Vi= 230VAC | 24A 48A |
| | | P.F.C. (optional) | 0.7 |

Controls and Protections

| | | | |
|----------------------------------|-----------------------------------|---|----------------|
| Input Fuse | T4A/250VAC internal ²⁾ | Power ready (only SPD 24) Threshold at start up (contact closed) | 21.1 - 23.1 |
| Overvoltage Protection | 125 - 145% | Threshold after start up (contact open) | 20.6 - 19.0 |
| Output Short Circuit | Current limited | Contact rating at 60VDC insulation | 0.3A 500VDC |
| Rated Overload Protection | 105-125% | | |

²⁾ Fuse not replaceable by user

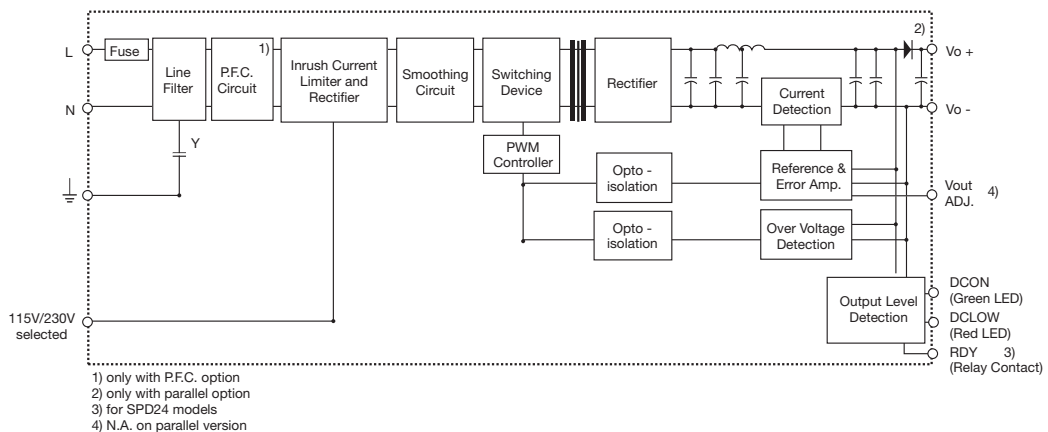
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|---------------------|-----------------------------|----------------------------------|
| Ambient temperature | -25°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 | -25°C to +85°C | Dimensions L x W x D | 125 x 63.5 x 126 |
| Protection degree | IP20 | Without P.F.C. | 640g |
| Cooling | Free air convection | With P.F.C. | 860g |

Approvals and EMC

| | | | |
|---------------------------------|--|-----------|--|
| Insulation voltage I / O | 3.000VAC min | CE | EN50081-1 EN55022 class B EN61000-3-2 EN61000-3-3 EN50082-1 EN55024 |
| Insulation resistance | 100MΩ min | | |
| UL / cUL | UL508 listed, UL60950-1, Recognized | | |
| TUV | EN60950 | | |

Block diagrams



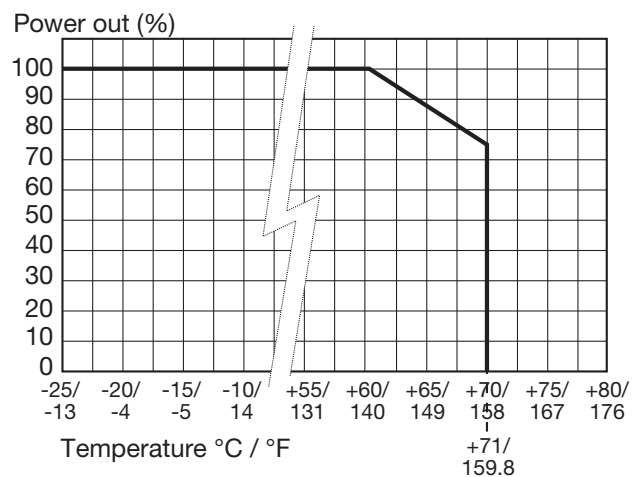
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|--------------------------|--|
| 1 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 2 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 3 | + | Positive output terminal |
| 4 | + | Positive output terminal |
| 5 | - | Negative output terminal |
| 6 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 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 |
| | 115/230 | Input voltage selection switch |

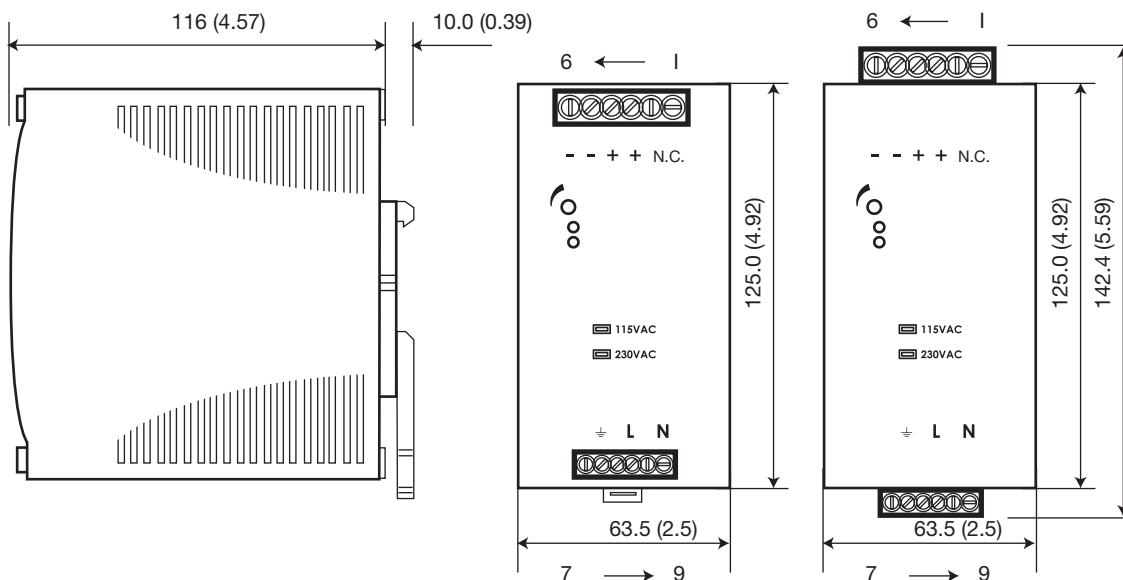
Installation

| | |
|--|---|
| 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 | 1.008Nm (9.0lb-in) |
| Output terminals | 0.616Nm (5.5lb-in) |
| Plug-in terminals | 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) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 120W New DIN rail mounting

CARLO GAVAZZI



- 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) Threshold at startup | | DC LO LED (VDC) Threshold 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) | Transient recovery time | 300µs |
| Line regulation | ± 0.5% | Ripple and noise | 50mVpp |
| Load regulation | | Hold up Time Vi = 115VAC | 25ms |
| Non parallel model | ± 1% | Hold up time Vi = 230VAC | 30ms |
| Parallel model | ± 5% | Minimum load | 0% |
| Temp. coefficient | ± 0.3% / °C | Parallel Operation | 3 units max. |

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) Threshold at start up (contact closed) | 17.6 - 19.4 |
| Ovoltage Protection | 125 - 145% | Contact rating at 60VDC Insulation | 0.3A 500VDC |
| Output Short Circuit | Current limited | | |
| Rated Overload Protection | 110 - 145% | | |

¹⁾ Fuse not replaceable by user

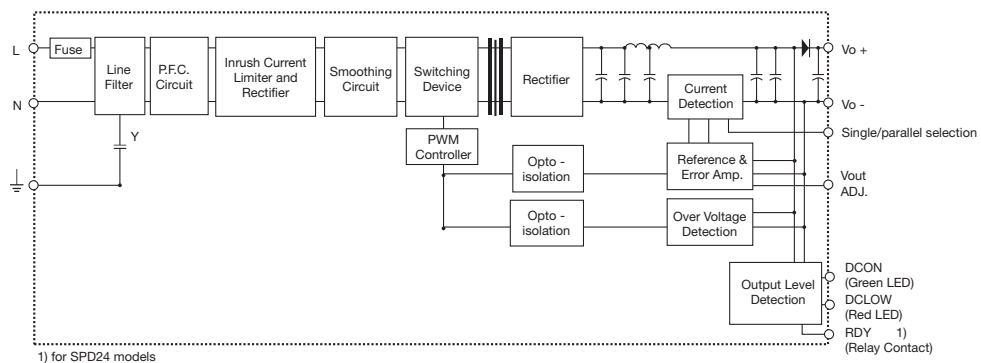
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|---------------------|-----------------------------|-------------------------------------|
| Ambient temperature | -25°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 | -25°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



Pin assignment and front controls

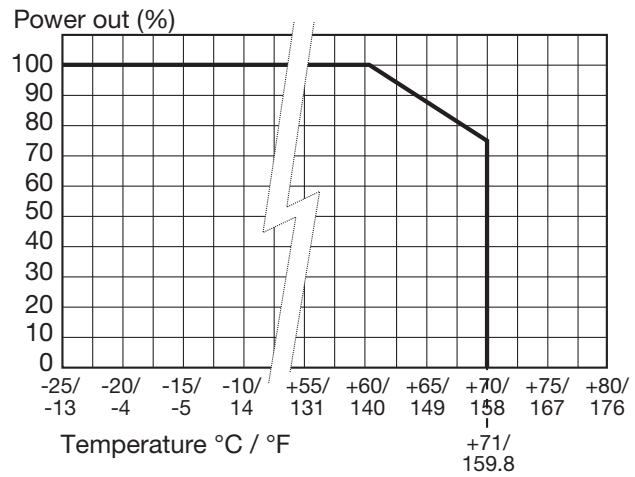
| Pin No. | Designation | Description |
|---------|-------------------|--|
| 1 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 2 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 3 | + | Positive output terminal |
| 4 | + | Positive output terminal |
| 5 | - | Negative output terminal |
| 6 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 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 |



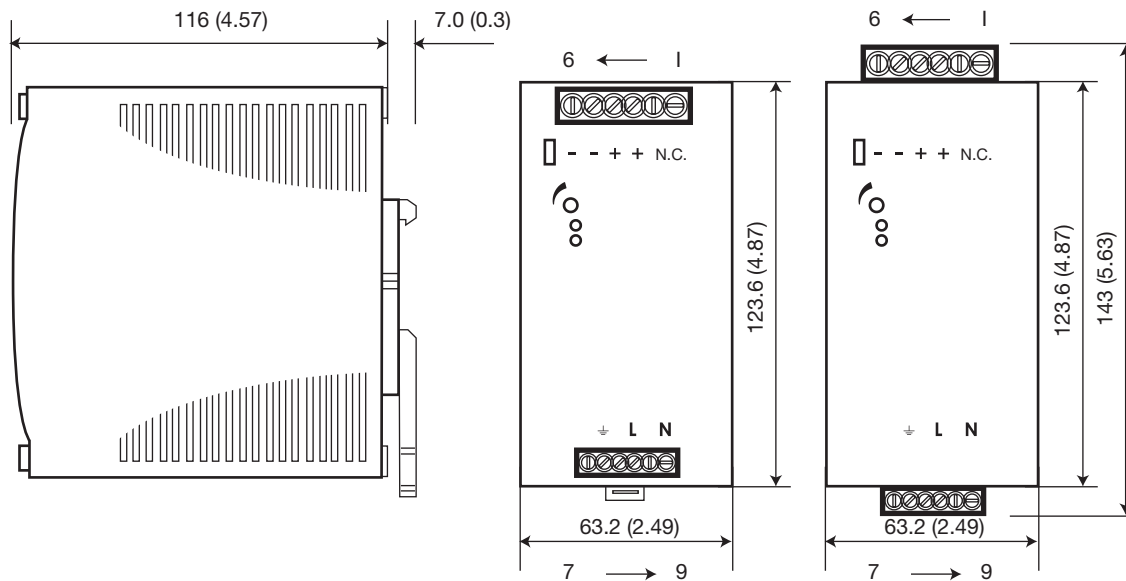
Installation

| | |
|--|---|
| 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 | 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) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 240W DIN rail mounting

CARLO GAVAZZI



- Universal AC input full range
- Installation on DIN rail 7.5 or 15mm
- Short circuit protection
- PFC as standard
- High efficiency
- 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

Product Description

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

Ordering Key

SP D 24 240 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 | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range ¹⁾ | | DC ON LED (VDC) Threshold at startup | | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|-------|----------------------------|------------------|--------------------|----------------------------------|----------|--------------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD24 | | | 10 | 22.5 | 28.5 | 17.6 | 18.4 | 17.6 | 18.4 | 89% |
| SPD48 | | | 5 | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 90% |

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

Output data

| | | | |
|-------------------------|------------------------|--|--------------|
| Line regulation | ± 0.5% | Hold up Time Vi = 115VAC | 25ms |
| Load regulation | | Hold up time Vi = 230VAC | 30ms |
| Non parallel mode | ± 1% | Minimum load | 0% |
| Parallel mode | ± 5% | Parallel Operation | 3 units max. |
| Output Voltage accuracy | +1% (factory adjusted) | (only with S/P switch on "P" position) | |

Input data

| | | | |
|-------------------------------|----------------------|---------------------------|-----------|
| Rated input voltage | 115/230 (autoselect) | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current | |
| AC in, 115 selected | 93 - 132VAC | Vi= 115VAC | 30A |
| AC in, 230 selected | 186 - 264VAC | Vi= 230VAC | 60A |
| DC in | 210 - 370VDC | P.F.C. Vi= 230VAC, Ionom. | 0.7 |
| Rated input current (115/230) | 5.4 / 2.2A | | |

Controls and Protections

| | | | |
|----------------------------------|-------------------------------------|---|----------------------------------|
| Input Fuse | T6.3A/250VAC internal ²⁾ | Power ready output (only SPD 24) | 17.6 - 19.4VDC 0.3A 500VDC |
| Overvoltage Protection | 120 - 145% | Threshold voltages | |
| Output Short Circuit | Current limit | Contact rating at 60VDC | |
| Rated Overload Protection | 105 - 145% | Insulation | |

²⁾ Fuse not replaceable by user.

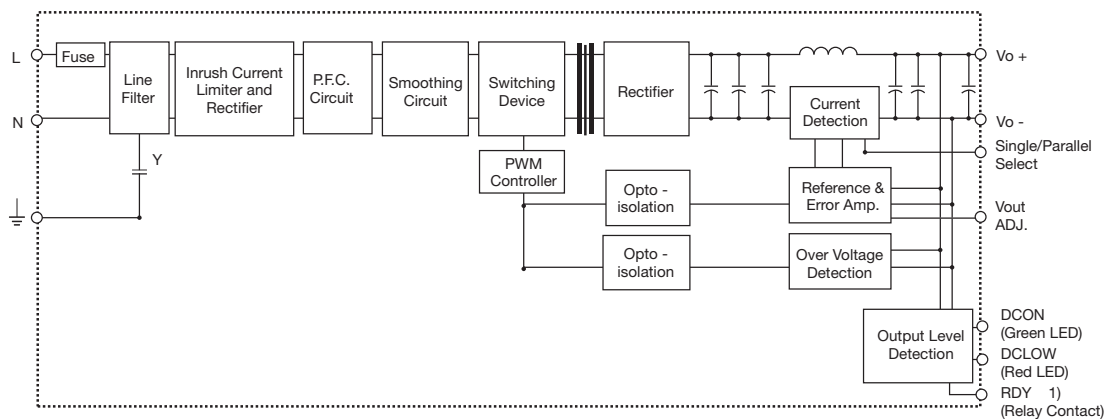
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|----------------|-----------------------------|-------------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>60°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | 514.000h |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage | -25°C to +85°C | Weight | 1000g |
| Dimensions L x W x D | | Protection degree | IP20 |
| Screw terminal type | 125 x 83 x 126 | | |
| Plug in connectors | 142 x 83 x 126 | | |

Approvals and EMC

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

Block diagrams





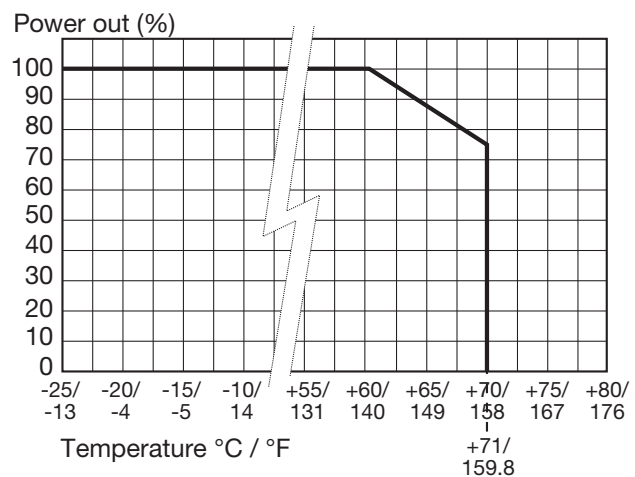
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------------|--|
| 1 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 2 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 3 | + | Positive output terminal |
| 4 | + | Positive output terminal |
| 5 | - | Negative output terminal |
| 6 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 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 |

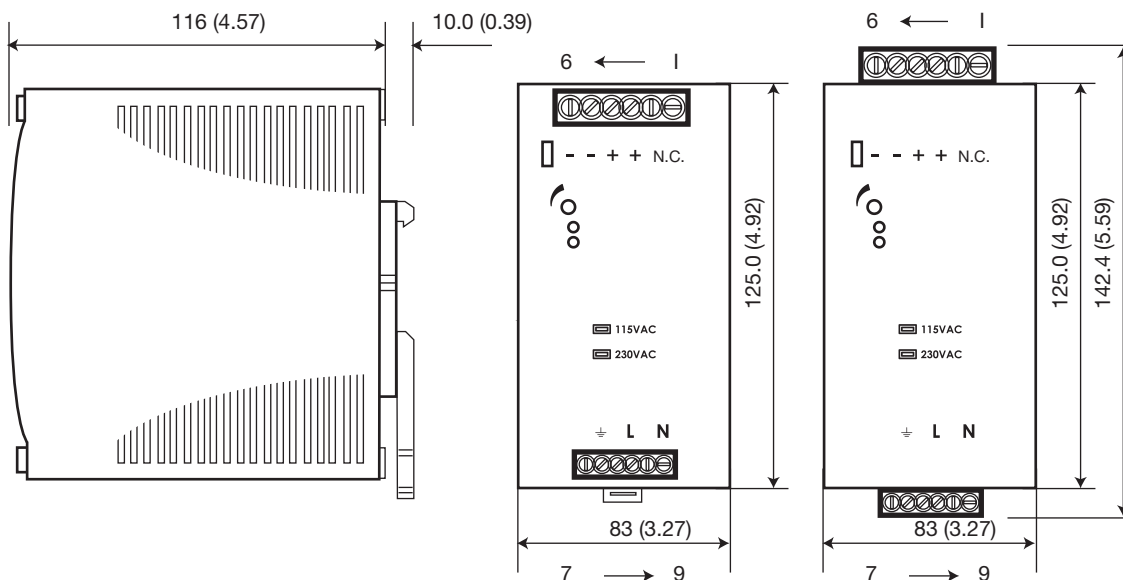
Installation

| | |
|--|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Screw 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) |
| 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) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Type SPD 300W DIN rail mounting

CARLO GAVAZZI



- 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
- 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 | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range | | DC ON LED (VDC) Threshold at startup | | DC LO LED (VDC) Threshold after startup | | Typical Efficiency |
|----------|----------------------------|------------------|--------------------|--------------------|----------|--------------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD24300 | 24 | 300 | 12.5 | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 89% |
| SPD48300 | 48 | 300 | 6.25 | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 90% |

Output Data

| | | |
|---|--|--|
| Output voltage accuracy | -0 +1% max (factory adjusted) | Turn On Time Vi nom, Io nom 1.0s Vi nom, Io nom with Capacitor load 1.5s |
| Line regulation | ± 0.5% | |
| Load regulation Non parallel model ± 1% Parallel model ± 5% | | Rise Time Vi nom, Io nom 150ms Vi nom, Io nom with Capacitor load 500ms |
| Ripple and noise Vi nom, Io nom, BW=20MHz | 100mV | |
| Rated continuous Loading | 12.5A @ 24VDC / 10.5A @ 28.5VDC 6.25A @ 48VDC / 5.35A @ 56VDC | Capacitor Load 7000µF |
| Fall Time | 150ms | Reverse Voltage Immunity 24V 35V 48V 63V |
| Transient recovery time Vi nom, Io = 0.5 x Inom | 2ms | Hold up Time Vi = 115VAC Io nom 25ms |
| | | Hold up Time Vi = 230VAC Io nom 30ms |
| | | Minimum load Vi nom 0% |
| | | Parallel Operation 3 units max. 0.1 Io min ~ 0.9 Io max |

Input Data

| | | | |
|-------------------------------------|---|--|-----------|
| Rated AC input voltage | 115 / 230VAC | Frequency range | 47 - 63Hz |
| Voltage range | | Internal Voltage Surge Protection | Varistor |
| AC (autoselect) | 115V 230V | (acc. to IEC61000-4-5) | |
| DC in | 90 - 132VAC 180 - 264VAC 210 - 375VDC | Leakage Current | |
| Rated input current 115/230V | | Input / Output | 0.25mA |
| Typ. | 4.8 / 1.9A | Input / FG | 3.5mA |
| Max. | 6.0 / 3.0A | Inrush current | |
| Power dissipation | | Vi= 115VAC | 35A |
| 24V | 42W | Vi= 230VAC | 65A |
| 48V | 40W | P.F.C. (passive) | 0.75 |

Controls and Protections

| | | | |
|---------------------------------------|----------------------------------|-------------------------------------|----------------------------|
| Input Fuse | T8/250VAC internal ¹⁾ | Power ready (only SPD243001) | |
| Output Short Circuit | fold forward | Threshold at start up | Min. 17.6VDC - Max.19.4VDC |
| Rated Overload Protection | 120 - 145% | (contact closed) | |
| Over voltage protection | 125 - 140% | Contact rating at 60VDC | 0.3A |
| Input Voltage Surge Protection | Varistor | Insulation | 500VDC |

¹⁾ Fuse not replaceable by user

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

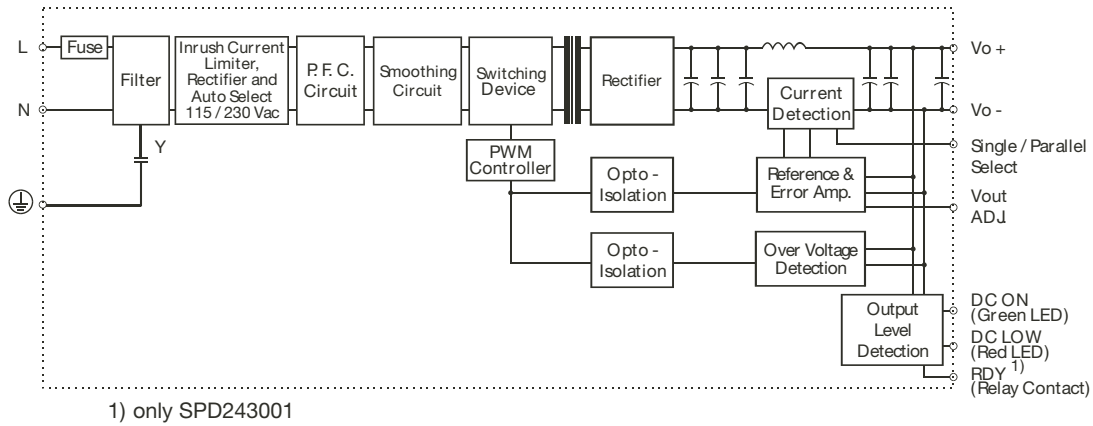
| | | | |
|--------------------------------------|---------------------|---|------------------------|
| Ambient temperature | -25°C to 71°C | MTBF (Bellcore Issue 6@40°C), GB | |
| Derating (>+56°C to +71°C) | 2.5% / °C | 24V model | 415.000h |
| Ambient humidity | 20 to 95%RH | 48V model | 431.000h |
| Storage | -25°C to +85°C | Altitude during operation | 2.000m |
| Pollution degree | 2 | Case material | Metal |
| Protection degree | IP20 | Dimensions L x W x D | |
| Cooling | Free air convection | Screw terminals | 124.5 x 83.5 x 123.6mm |
| Switching frequency | 40kHz | Detachable connections | 143.5 x 83.5 x 123.6mm |
| | | Weight | 400g |

Approvals and EMC

| | | | |
|------------------------------|---|-----------|--|
| Insulation voltage | | CE | |
| Input / Output | 3.000VAC / 4242VDC | | EN 61000-6-3, |
| Input / FG | 1500VAC / 2121VDC | | EN 55022 Class B, |
| Insulation resistance | 100MΩ min | | EN 61000-3-2 Class D, |
| Shock resistance | acc. to IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face) | | EN 61000-3-3 |
| 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) | | EN 61000-6-2, EN 55024, |
| UL / cUL | UL 508 Listed UL 60950-1, Recognized ISA 12.12.01 (Class I, Division 2, Groups A, B, C and D) | | 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 |
| TUV | EN 60950-1, CB scheme EN 61558-1, EN 61558-2-17 (acc.to EN 60204) | | |



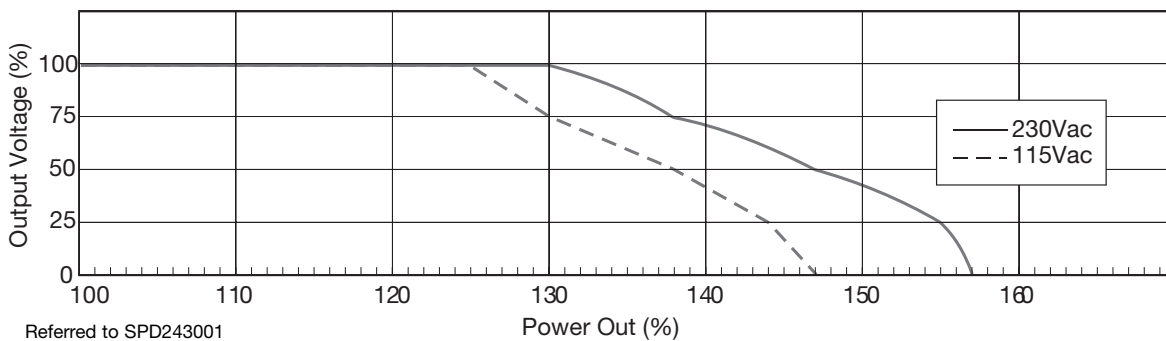
Block Diagrams



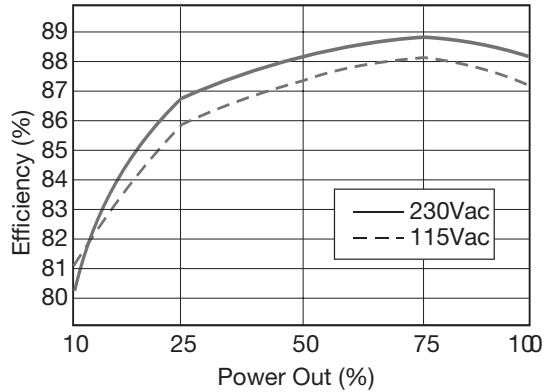
Pin Assignment and Front Controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | RDY | NO relay contact for DC OK (only SPD243001) |
| 2 | RDY | NO relay contact for DC OK (only SPD243001) |
| 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 | Neutral input (no polarity with DC input) |
| 9 | L | Phase input (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 |

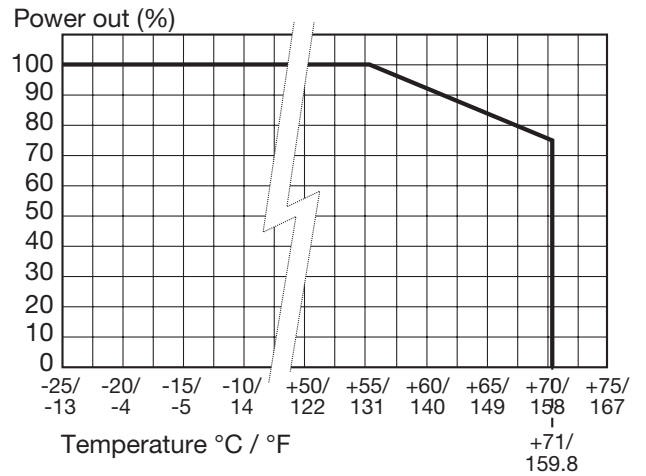
Typ. Current Limited Curve



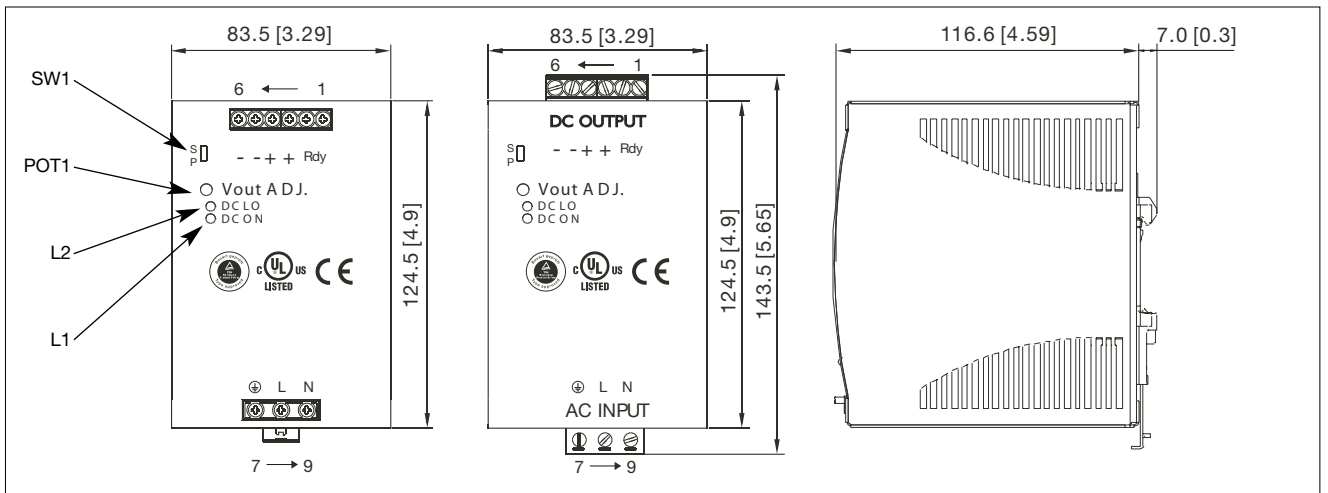
Typ. Efficiency Curve



Derating Diagram



Mechanical Drawings mm (inches)



Installation

| | |
|---|---|
| Ventilation and cooling | Normal convection All sides 25mm free space for cooling is recommended |
| Screw terminals | 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 SPD 480W DIN rail mounting

CARLO GAVAZZI



- Universal AC single phase input full range
- 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

Product Description

The Switching power supplies and compact dimensions and SPD series are specially designed to be used in all automation application where the installation is on a DIN rail 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 | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range ¹⁾ | | DC OK Threshold at startup (VDC) | | DC LO LED Threshold after startup(VDC) | | Typical Efficiency |
|-------|----------------------------|------------------|--------------------|----------------------------------|----------|----------------------------------|------|--|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD24 | | | 20 | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 89% |
| SPD48 | | | 10 | 47.0 | 56.0 | 37.0 | 40.0 | 37.0 | 40.0 | 90% |

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

Output data

| | | | |
|-------------------------|------------------------|--|--------------|
| Line regulation | ± 0.5% | Temperature Coefficient | +0.02% / °C |
| Load regulation | ± 0.5% ± 5% | Hold up time Vi = 230VAC | 30ms |
| Non parallel mode | | Minimum load | 0% |
| Parallel mode | | Parallel Operation (only with S/P switch on "P" position) | 3 units max. |
| Output Voltage accuracy | +1% (factory adjusted) | | |
| Ripple and Noise | 100mV | | |

Input data

| | | | |
|-------------------------------|-----------------------------|---------------------------|------------|
| Rated input voltage | 115 / 264VAC | Frequency range | 47- 63 Hz |
| Voltage range | 90 - 264VAC 120 - 370VDC | Inrush current | 25A 50A |
| AC in | | | |
| DC in | | P.F.C. Vi= 230VAC, Ionom. | 0.99 |
| Rated input current (115/230) | 7 / 3.5A | | |

Controls and Protections

| | | | |
|---|------------------------------------|--|----------------------------------|
| Input Fuse | T10A/250VAC internal ²⁾ | Rated Overload Protection | 120 - 140% |
| Overvoltage Protection SPD24 SPD48 | 30 - 33VDC 57 - 63VDC | Power ready output (only SPD 24) Threshold voltages Contact rating at 60VDC insulation | 17.6 - 19.4VDC 0.3A 500VDC |
| Output Short Circuit | Current limit | | |

²⁾ Not replaceable by user.

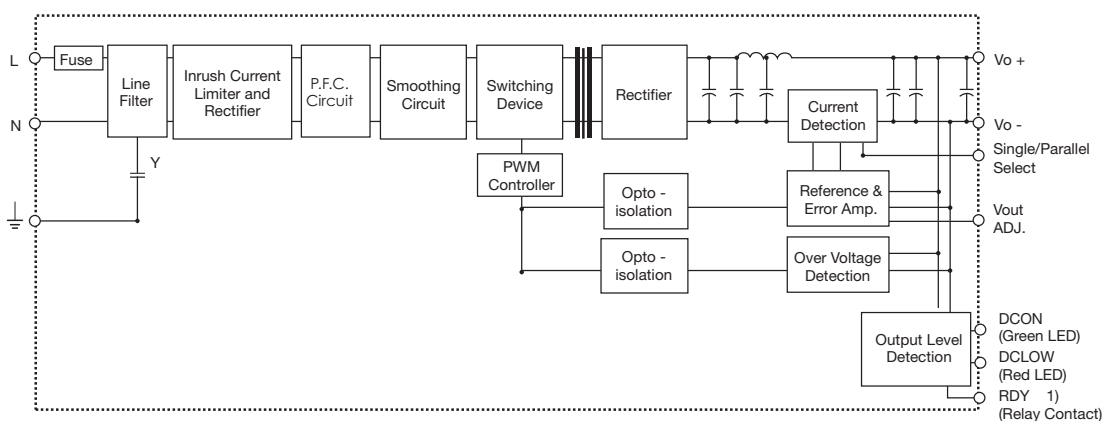
General data (@ nominal line, full load, 25°C)

| | | | |
|-------------------------------------|-----------------|-----------------------------|-------------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>56°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | n.a. |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage | -25°C to +85°C | Weight | 1920g |
| Dimensions L x W x D | | Protection degree | IP20 |
| Screw terminal type | 125 x 175 x 123 | | |
| Plug in connectors | 142 x 175 x 123 | | |

Approvals and EMC

| | | | |
|---|-------------------------------------|-----------|--------------------------------|
| Insulation voltage I/O | 3.000VAC | CE | EN61000-6-3 EN55022 class B |
| Insulation resistance I/O @ 500VDC | 100MΩ | | EN61000-3-2 EN61000-3-3 |
| UL / cUL | UL508 listed, UL60950-1, Recognized | | EN61000-6-2 EN55024 |
| TUV | EN60950-1 | | |

Block diagrams



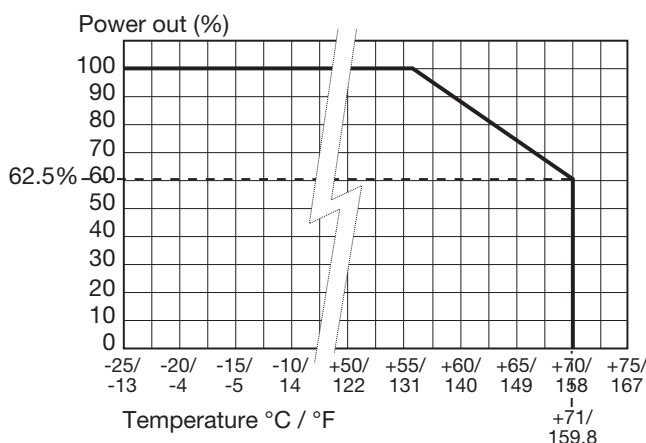
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------------|--|
| 1 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 2 | RDY (only SPD 24) | DC OK, relay normally open contact |
| 3 | + | Positive output terminal |
| 4 | + | Positive output terminal |
| 5 | - | Negative output terminal |
| 6 | - | Negative output terminal |
| 7 | GND | Ground terminal to minimise High frequency emissions |
| 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 |

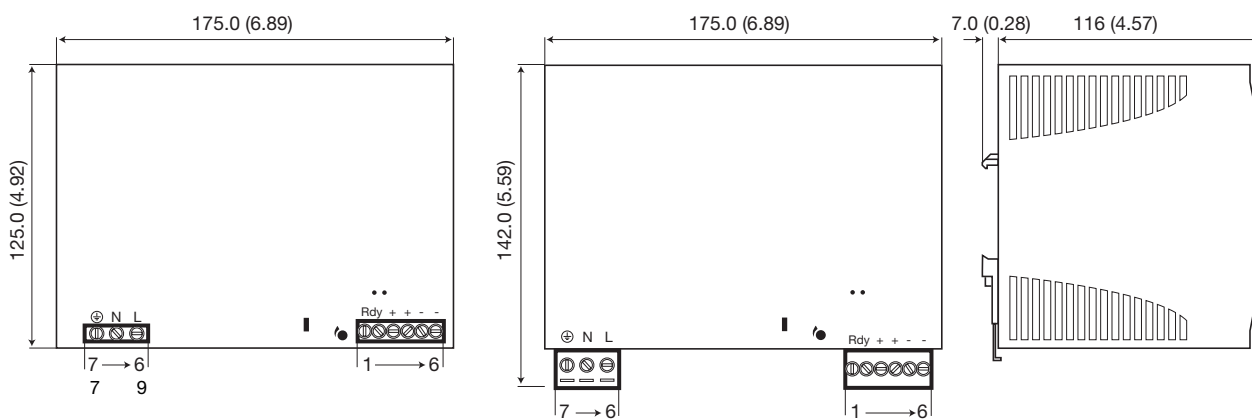
Installation

| | |
|---|---|
| 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 | 1.008Nm (9.0lb-in) |
| Output terminals | 0.616Nm (5.5lb-in) |
| Plug-in terminals | 10-24AWG flexible or solid cable 7mm stripping recommend |
| Max. torque for screws terminals | |
| Input terminals | 0.784Nm (7.0lb-in) |
| Output terminals | 0.784Nm (7.0lb-in) |

Derating Diagram



Mechanical Drawings mm (inches)



Switching Power Supply Redundant Module

Type SPD24RM20

DIN rail mounting

CARLO GAVAZZI



- 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

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 |

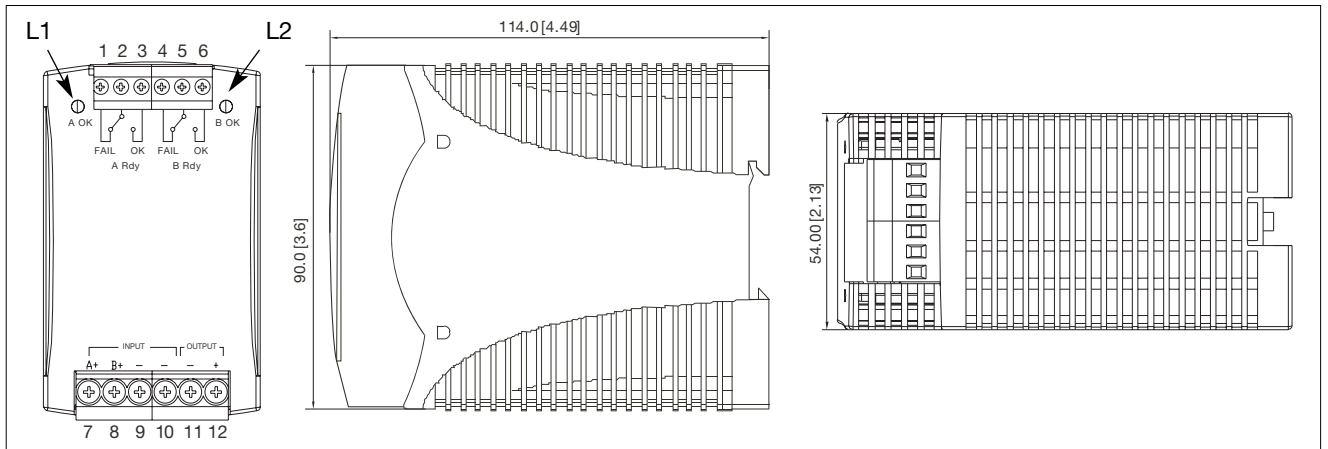
Approvals and EMC

| | |
|----------------------|---|
| 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 |

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 |

Mechanical Drawings mm (inches)

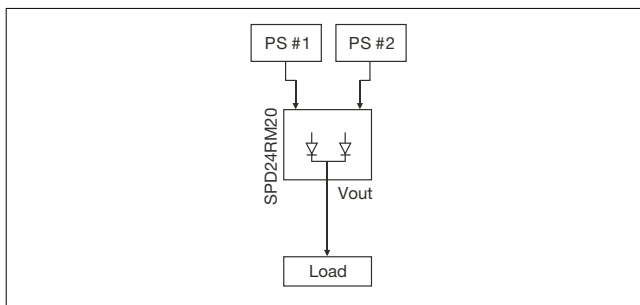


Pin Assignment and Front Controls

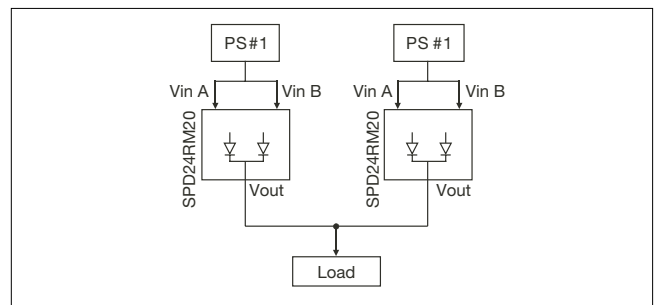
| Pin No. | Designation | Description |
|---------|-------------|---|
| 1 | A Rdy Fail | Relay normally closed contact (power supply A Fail) |
| 2 | A Rdy COM | Relay common contact |
| 3 | A Rdy OK | Relay normally open contact (power supply A OK) |
| 4 | B Rdy Fail | Relay normally closed contact (power 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

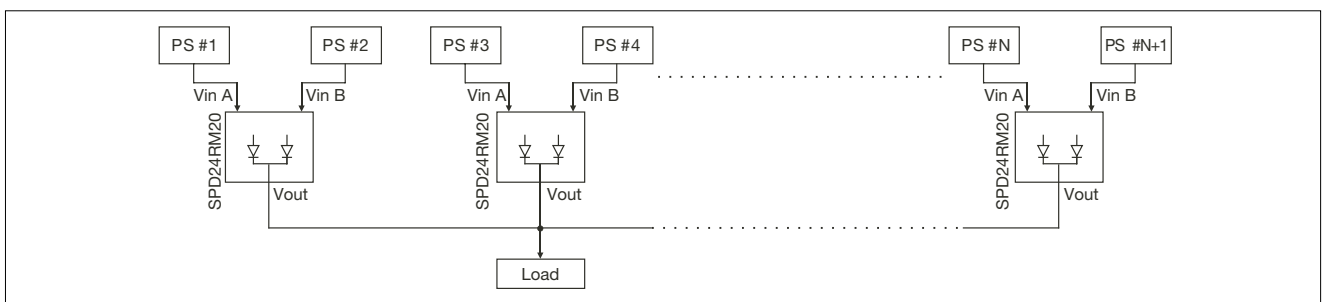
1.) 1+1 Redundancy: Using 1 more PS as the redundant unit.



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

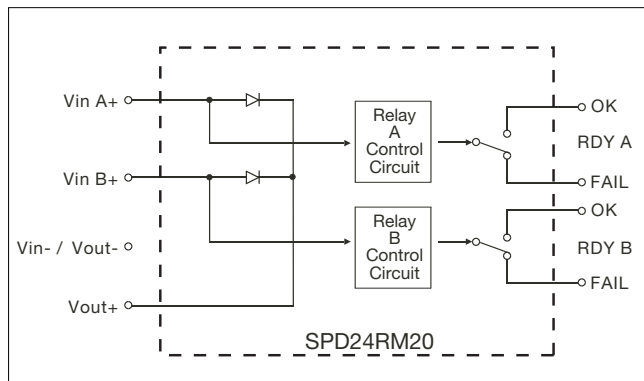


3.) 1+N Redundancy: Using more than one PS as redundant units to increase the reliability.





Circuit Diagram



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) |
| 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) |

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

CARLO GAVAZZI



- 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.

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 400/500VAC³⁾)

Approvals



Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) ¹⁾ | Voltage Trim Range | | DC OK Threshold at startup (VDC) | | DC low LED Threshold after startup(VDC) | | Typical Efficiency |
|-------|----------------------------|------------------|----------------------------------|--------------------|----------|----------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD12 | 12 | 120 | 10 (7.5) | 11.4 | 14.5 | 10.0 | 11.2 | 10.0 | 11.2 | 87% |
| SPD24 | 24 | 120 | 5 (3.75) | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 88% |

¹⁾ When powered with three phases input; with biphasic input value is in the brackets.

Output data

| | | | |
|-------------------------|----------------------------------|--------------------------|-------------|
| Line regulation | ± 1% | Temperature Coefficient | +0.02% / °C |
| Load regulation | ± 1% | Hold up time Vi = 230VAC | 20ms |
| Output Voltage accuracy | from 0 to +1% (factory adjusted) | Minimum load | 0% |
| Ripple and Noise | 100mV | Parallel Operation | NO |

Input data

| | | | |
|-------------------------------|----------------------------|----------------------------|-----------|
| Rated input voltage | 400/500VAC | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current | 10A |
| AC in | 340 - 575VAC ³⁾ | P.F.C. Vi= 500VAC, Io nom. | 0.6 |
| DC in | 480 - 820VDC | | |
| Rated input current (380/500) | 0.5A / 0.35A | | |

³⁾ Biphasic or triphasic input (biphase can be: L1 L2, L2 L3 or L1 L3).
 Note: when used as biphasic, the maximum output power is 75% of rated power.

Controls and Protections

| | | | |
|---|--|---|--|
| Input Fuse | 1.0A/600VAC internal/phase ⁴⁾ | Power ready output (only SPD 24) | |
| Overvoltage Protection SPD12 SPD24 | 14.5 – 17.4VDC 30 – 33VDC | Threshold voltages Contact rating at 60VDC insulation | 17.6 - 19.4VDC 0.3A 500VDC |
| Output Short Circuit Continuous | Current limit | Overtemperature | 100 - 110°C (shutdown with auto-restart when temperature is back to normal) |
| Rated Overload Protection | 115 - 135% | | |

⁴⁾ Not replaceable by user.

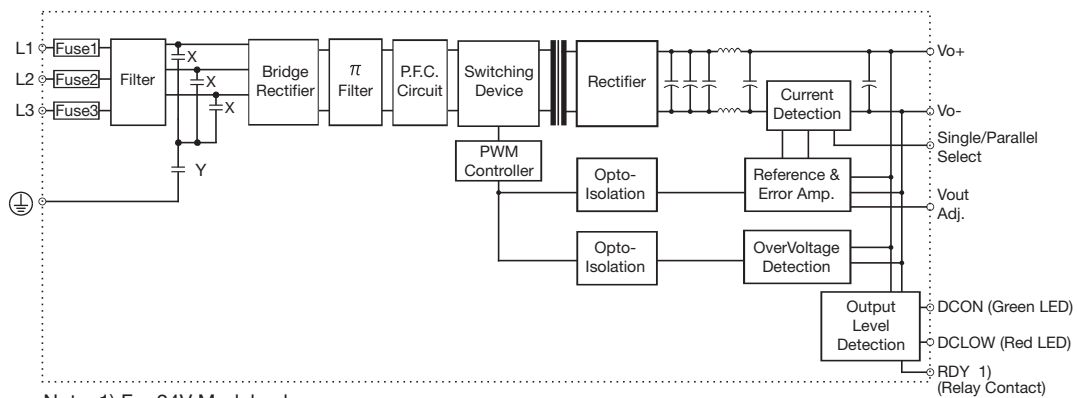
General data (@ nominal line, full load, 25°C)

| | | | |
|--|--|-----------------------------|----------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>61°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | n.a. |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage temperature | -25°C to +85°C | Weight | 800g / 28.22oz |
| Dimensions L x W x D Screw terminal type | 123.6 x 74.3 x 112 mm 4.87 x 2.93 x 4.41 inches | Protection degree | IP20 |

Approvals and EMC

| | | | |
|--|--|-----------|--|
| Insulation voltage I/O | 3.000VAC | CE | EN61000-6-3 EN55022 class B EN61000-3-2 EN61000-3-3 EN61000-6-2 EN55024 |
| Insulation resistance I/O @ 500VDC | 100MΩ | | |
| UL / cUL | UL508 listed, UL60950-1, Recognized | | |
| TUV | EN60950-1 | | |

Block diagrams



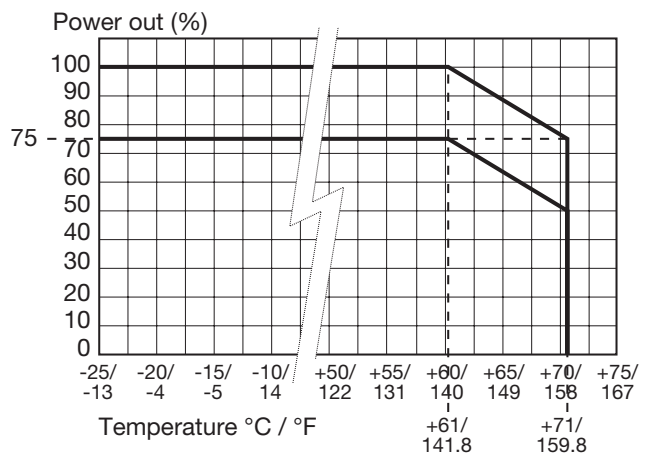
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | V+ | Positive output terminal |
| 2 | V+ | Positive output terminal |
| 3 | V- | Negative output terminal |
| 4 | V- | Negative output terminal |
| 5 | GND | Ground terminal to minimise High frequency emissions |
| 6 | L1 | Input terminals |
| 7 | L2 | Input terminals |
| 8 | L3 | Input terminals |
| 9 | RDY | A normal open relay contact for DC ON level control |
| 10 | RDY | A normal open relay contact for DC ON level control |
| | DC ON | DC output ready LED |
| | DC LO | DC low indicator LED |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |

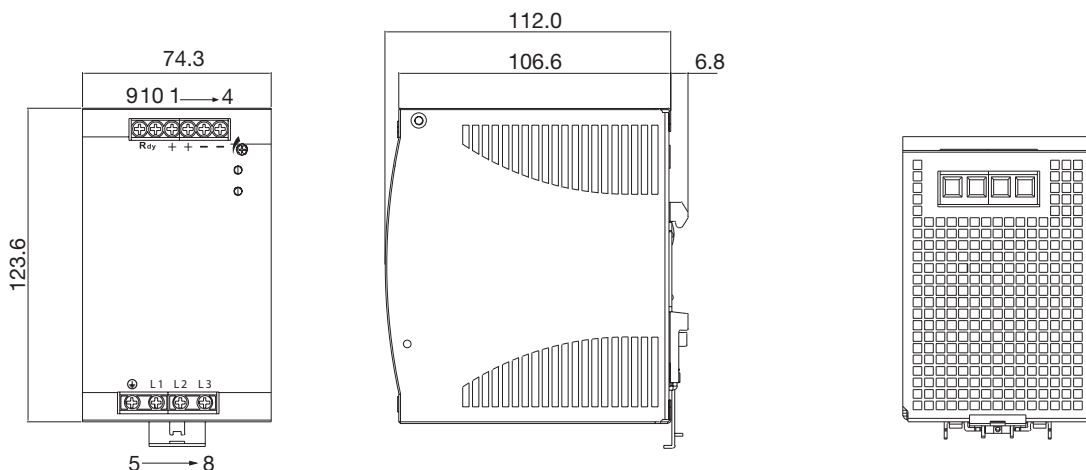
Installation

| | |
|---|---|
| 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) |

Derating Diagram



Mechanical Drawings mm/inches



Switching Power Supply Type SPD 240W 3 phases DIN rail mounting

CARLO GAVAZZI



- Universal AC 3 phases input full range
- Installation on DIN rail 7.5 or 15mm
- PFC as standard
- High efficiency up to 90%
- 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 24 240 3

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

Input type: 3 = three phase
 (or single phase 400/500VAC³⁾)

Approvals



Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) ¹⁾ | Voltage Trim Range ²⁾ | | DC OK Threshold at startup (VDC) | | DC low LED Threshold after startup(VDC) | | Typical Efficiency |
|-------|----------------------------|------------------|----------------------------------|----------------------------------|----------|----------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD24 | 24 | 240 | 10 (7.5) | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 89% |
| SPD48 | 48 | 240 | 5 (3.75) | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 90% |

¹⁾ When powered with three phases input; with biphas input value is in the brackets.

²⁾ When S/P switch is set to parallel, it is not possible to trim output voltage.

Output data

| | | | |
|-------------------------|----------------------------------|--|--------------|
| Line regulation | ± 1% | Temperature Coefficient | +0.02% / °C |
| Load regulation | | Hold up time Vi = 230VAC | 20ms |
| Parallel mode | ± 5% | Minimum load | 0% |
| Non parallel mode | ± 1% | Parallel Operation (only with S/P switch on "P" position) | 2 units max. |
| Output Voltage accuracy | from 0 to +1% (factory adjusted) | | |
| Ripple and Noise | 100mV | | |

Input data

| | | | |
|-------------------------------|----------------------------|------------------------------|-----------|
| Rated input voltage | 400/500VAC | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current | 10A |
| AC in | 340 - 575VAC ³⁾ | P.F.C. (Vi= 500VAC, Io nom.) | 0.6 |
| DC in | 480 - 820VDC | | |
| Rated input current (380/500) | 0.85A / 0.7A | | |

³⁾ Biphas or triphase input (biphas can be: L1 L2, L2 L3 or L1 L3.
 Note: when used as biphas, the maximum output power is 75% of rated power.

Controls and Protections

| | | | |
|---|--|---|--|
| Input Fuse | 2.0A/600VAC internal/phase ⁴⁾ | Power ready output (only SPD 24) | |
| Overvoltage Protection SPD24 SPD48 | 30 – 33VDC 60 – 68VDC | Threshold voltages Contact rating at 60VDC insulation | 17.6 - 19.4VDC 0.3A 500VDC |
| Output Short Circuit Continuous | Current limit | Overtemperature | 100 - 110°C (shutdown with auto-restart when temperature is back to normal) |
| Rated Overload Protection | 115 - 135% | | |

⁴⁾ Not replaceable by user.

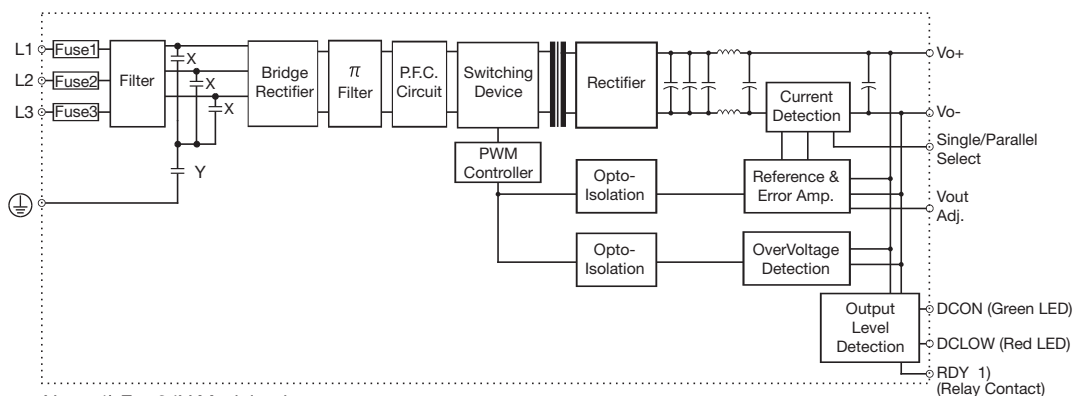
General data (@ nominal line, full load, 25°C)

| | | | |
|--|--|-----------------------------|----------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>61°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | n.a. |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage temperature | -25°C to +85°C | Weight | 1.1Kg / 38,80oz |
| Dimensions L x W x D Screw terminal type | 123.6 x 89.0 x 110.7 mm 4.87 x 3.50 x 4.36 inches | Protection degree | IP20 |

Approvals and EMC

| | | | |
|---|-------------------------------------|-----------|--|
| Insulation voltage I/O | 3.000VAC | CE | EN61000-6-3 EN55022 class B EN61000-3-2 EN61000-3-3 EN61000-6-2 EN55024 |
| Insulation resistance I/O @ 500VDC | 100MΩ | | |
| UL / cUL | UL508 listed, UL60950-1, Recognized | | |
| TUV | EN60950-1 | | |

Block diagrams



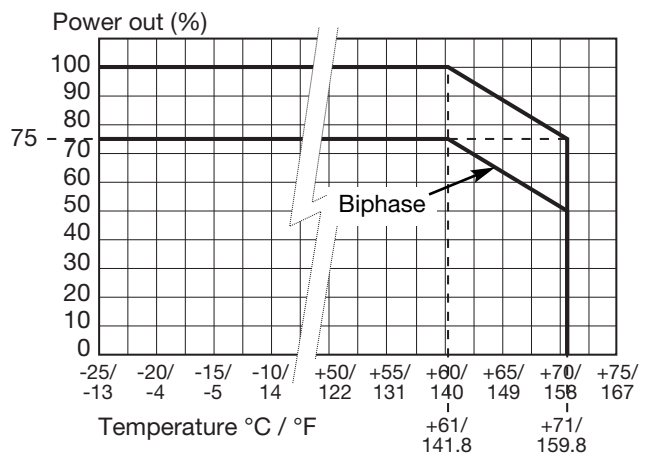
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | V+ | Positive output terminal |
| 2 | V+ | Positive output terminal |
| 3 | V- | Negative output terminal |
| 4 | V- | Negative output terminal |
| 5 | GND | Ground terminal to minimise High frequency emissions |
| 6 | L1 | Input terminals |
| 7 | L2 | Input terminals |
| 8 | L3 | Input terminals |
| 9 | RDY | A normal open relay contact for DC ON level control |
| 10 | RDY | A normal open relay contact for DC ON level control |
| | DC ON | DC output ready LED |
| | DC LO | DC low indicator LED |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |
| | S/P | Single / Parallel select switch |

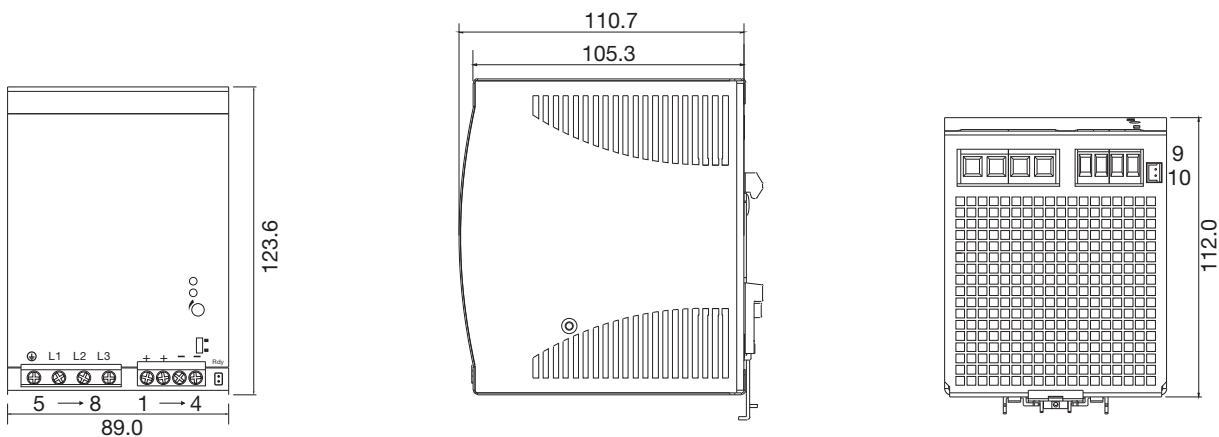
Installation

| | |
|---|---|
| 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) |

Derating Diagram



Mechanical Drawings mm/inches



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

CARLO GAVAZZI



- 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 400/500VAC³⁾)

Approvals



Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) ¹⁾ | Voltage Trim Range ¹⁾ | | DC OK Threshold at startup (VDC) | | DC low LED Threshold after startup(VDC) | | Typical Efficiency |
|-------|----------------------------|------------------|----------------------------------|----------------------------------|----------|----------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD24 | | | 20 (15) | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 90% |
| SPD48 | | | 10 (7.5) | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 91% |

¹⁾ When powered with three phases input; with biphas input value is in the brackets.

²⁾ When S/P switch is set to parallel, it is not possible to trim output voltage.

Output data

| | | | |
|-------------------------|----------------------------------|--|--------------|
| Line regulation | ± 1% | Temperature Coefficient | +0.02% / °C |
| Load regulation | | Hold up time Vi = 230Vac | 20ms |
| Non parallel mode | ± 1% | Minimum load | 0% |
| Parallel mode | ± 5% | Parallel Operation (only with S/P switch on "P" position) | 2 units max. |
| Output Voltage accuracy | from 0 to +1% (factory adjusted) | | |
| Ripple and Noise | 100mV | | |

Input data

| | | | |
|-------------------------------|----------------------------|----------------------------|-----------|
| Rated input voltage | 400/500VAC | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current | 15A |
| AC in | 340 - 575VAC ³⁾ | P.F.C. Vi= 500VAC, Io nom. | 0.7 |
| DC in | 480 - 820VDC | | |
| Rated input current (380/500) | 1.4A / 1.0A | | |

³⁾ Biphas or triphase input (biphas can be: L1 L2, L2 L3 or L1 L3.
 Note: when used as biphas, the maximum output power is 75% of rated power.

Controls and Protections

| | | | |
|--|--|---|--|
| Input Fuse | 3.15A/250VAC internal/phase ⁴⁾ | Power ready output (only SPD 24) | |
| Overvoltage Protection SPD24 SPD48 | 30 – 33VDC 60 – 68VDC | Threshold voltages Contact rating at 60Vdc insulation | 17.6 - 19.4VDC 0.3A 500VDC |
| Output Short Circuit Continuous Discontinuous | Current limit Delay 3s shut-down, after 30s Auto-restart | Overtemperature | 100 - 110°C (shutdown with auto-restart when temperature is back to normal) |
| Rated Overload Protection | 115 - 135% | | |

⁴⁾ Not replaceable by user.

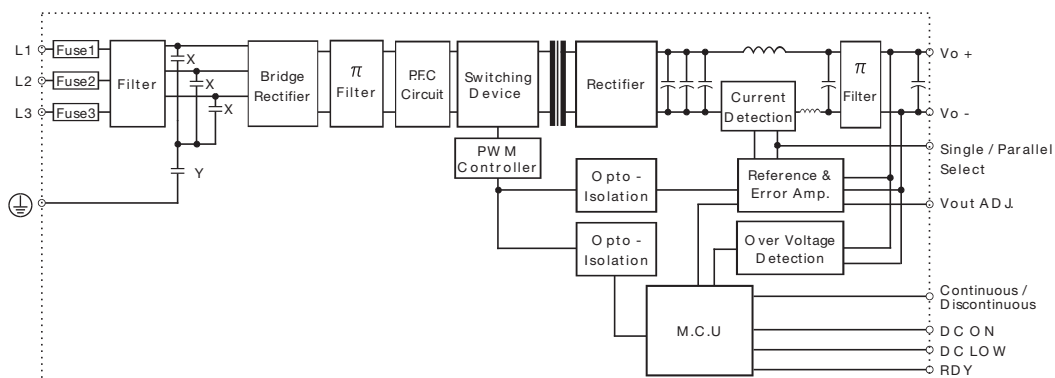
General data (@ nominal line, full load, 25°C)

| | | | |
|--|---|-----------------------------|----------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>61°C to +71°C) | 2.5%/°C | MTBF (MIL-HDBK-217F) | n.a. |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage | -25°C to +95°C | Weight | 1750g / 61.73oz |
| Dimensions L x W x D Screw terminal type | 124 x 150 x 118 mm 1.88 x 5.91 x 4.65 inches | Protection degree | IP20 |

Approvals and EMC

| | | | |
|---|-------------------------------------|-----------|--|
| Insulation voltage I/O | 3.000VAC | CE | EN61000-6-3 EN55022 class B EN61000-3-2 EN61000-3-3 EN61000-6-2 EN55024 |
| Insulation resistance I/O @ 500VDC | 100MΩ | | |
| UL / cUL | UL508 listed, UL60950-1, Recognized | | |
| TUV | EN60950-1 | | |

Block diagrams



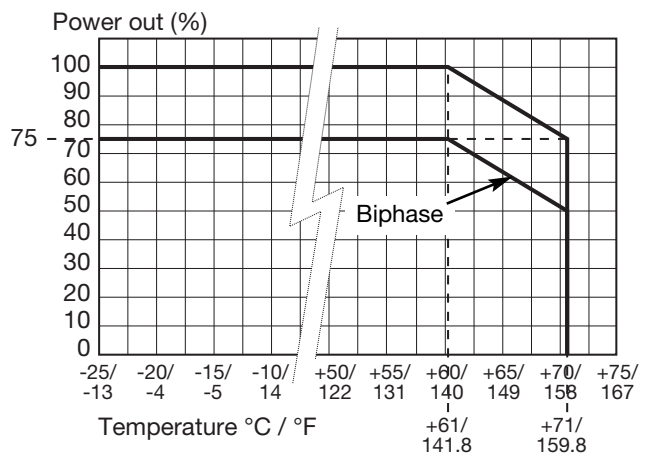
Pin assignement and front controls

| Pin No. | Designation | Description |
|---------|-------------|--|
| 1 | + | Positive output terminal |
| 2 | + | Positive output terminal |
| 3 | - | Negative output terminal |
| 4 | - | Negative output terminal |
| 5 | GND | Ground terminal to minimise High frequency emissions |
| 6 | L1 | Input terminals |
| 7 | L2 | Input terminals |
| 8 | L3 | Input terminals |
| 9 | RDY | A normal open relay contact for DC ON level control |
| 10 | RDY | A normal open relay contact for DC ON level control |
| | 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 |
| | C/D | Continuous / Discontinuous |

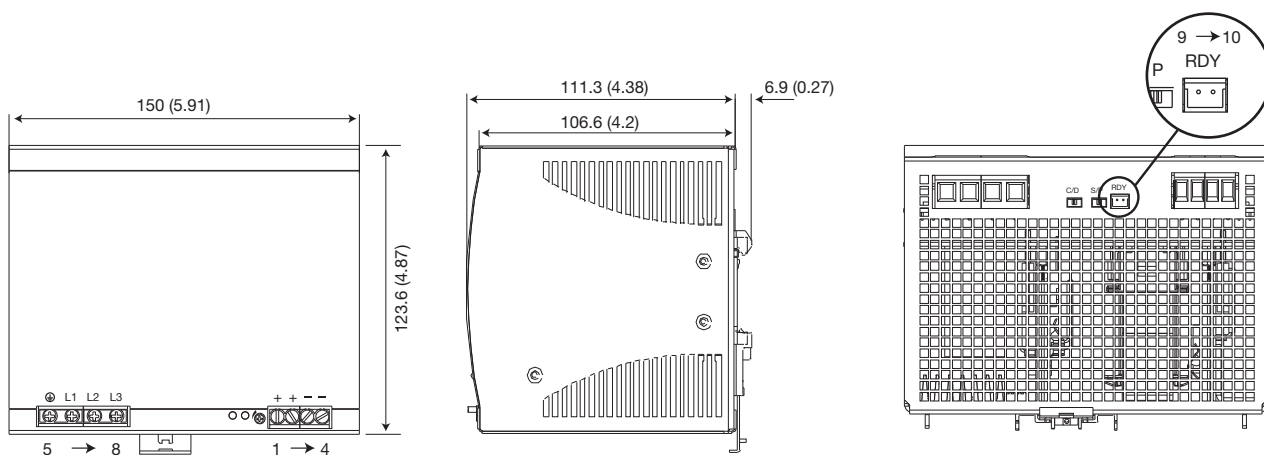
Installation

| | |
|---|---|
| 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) |

Derating Diagram



Mechanical Drawings mm/inches



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

CARLO GAVAZZI



- 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
- 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.

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 400/500VAC³⁾)
 Option: Nil = standard version
 L = without active current sharing feature

Approvals



Output performances

| Model | Rated output Voltage (VDC) | Output Power (W) | Output Current (A) | Voltage Trim Range ¹⁾ | | DC on LED Threshold at startup (VDC) | | DC low LED Threshold after startup(VDC) | | Typical Efficiency |
|-------------------------|----------------------------|------------------|--------------------|----------------------------------|----------|--------------------------------------|------|---|------|--------------------|
| | | | | Min. VDC | Max. VDC | Min. | Max. | Min. | Max. | |
| SPD24 | 24 | 960 | 40 | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 92% |
| SPD24...L ²⁾ | 24 | 960 | 40 | 22.5 | 28.5 | 17.6 | 19.4 | 17.6 | 19.4 | 92% |
| SPD48 | 48 | 960 | 20 | 47.0 | 56.0 | 37.0 | 43.0 | 37.0 | 43.0 | 93% |

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

²⁾ This model is without active current sharing feature.

Output data

| | | | |
|-------------------------|----------------------------------|--|----------------------------|
| Line regulation | ± 1% | Temperature Coefficient | +0.02% / °C |
| Load regulation | ± 1% | Hold up time Vi = 400VAC | 14ms min. 15ms typ. |
| Non parallel mode | ± 1% | Vi = 500VAC | 28ms min. 30ms typ. |
| Parallel mode | ± 5% | Minimum load | 0% |
| Output Voltage accuracy | from 0 to +1% (factory adjusted) | Parallel Operation | 2 units max. ³⁾ |
| Ripple and Noise | 80mV | (only with S/P switch on "P" position) | |

³⁾ Except SPD24...L model.

Input data

| | | | |
|-------------------------------|----------------------------|--------------------------------|-----------|
| Rated input voltage | 380/480VAC | Frequency range | 47- 63 Hz |
| Voltage range | | Inrush current 24 and 48 model | 30A |
| AC in | 340 - 575VAC ⁴⁾ | 24L model | 50A |
| DC in | 480 - 820VDC | P.F.C. Vi= 500VAC, Io nom. | 0.7 |
| Rated input current (380/500) | 2.4A / 1.6A | | |

⁴⁾ Biphasic or triphasic input (biphase can be: L1 L2, L2 L3 or L1 L3.
 Note: when used as biphasic, the maximum output power is 75% of rated power.

Controls and Protections

| | | | |
|---|----------------------------|--|--|
| Input Fuse | 6.3A/250VAC internal/phase | Power ready output⁹ | 17.6 - 19.4VDC 0.3A 500VDC |
| Overvoltage Protection SPD24 SPD48 | 30 - 33VDC 60 - 68VDC | Threshold voltages Contact rating at 60Vdc Insulation | |
| Output Short Circuit (Continuous) | Current limited | Overtemperature (temperature detected on heatsink) | 100 - 110°C (shutdown with auto-restart when temperature is back to normal) |
| Rated Overload Protection | 110 - 130% | | |

⁹ SPD24L Model no this function

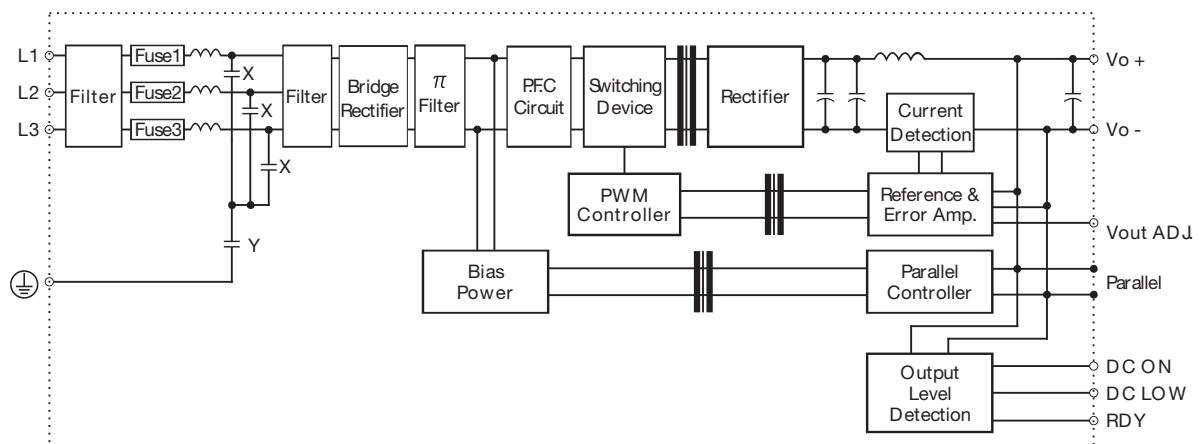
General data (@ nominal line, full load, 25°C)

| | | | |
|--|--|-----------------------------|----------------------------------|
| Ambient temperature | -25°C to 71°C | Cooling | Free air convection |
| Derating (>61°C to +71°C) | 3.5%/°C | MTBF (MIL-HDBK-217F) | n.a. |
| Ambient humidity | 20 - 95%RH | Case material | Metal (powder painted aluminium) |
| Storage | -25°C to +85°C | Weight | 3200g / 112.88oz |
| Dimensions L x W x D Screw terminal type | 125.9 x 275.8 x 118.2 mm 4.96 x 10.86 x 4.65 inches | Protection degree | IP20 |

Approvals and EMC

| | | | |
|-----------------|--|-----------|--|
| UL / cUL | UL508 listed, UL60950-1, Recognized | CE | EN61000-6-3 EN55022 class B EN61000-3-2 EN61000-3-3 EN61000-6-2 EN55024 |
| TUV | EN60950-1 | | |

Block diagrams

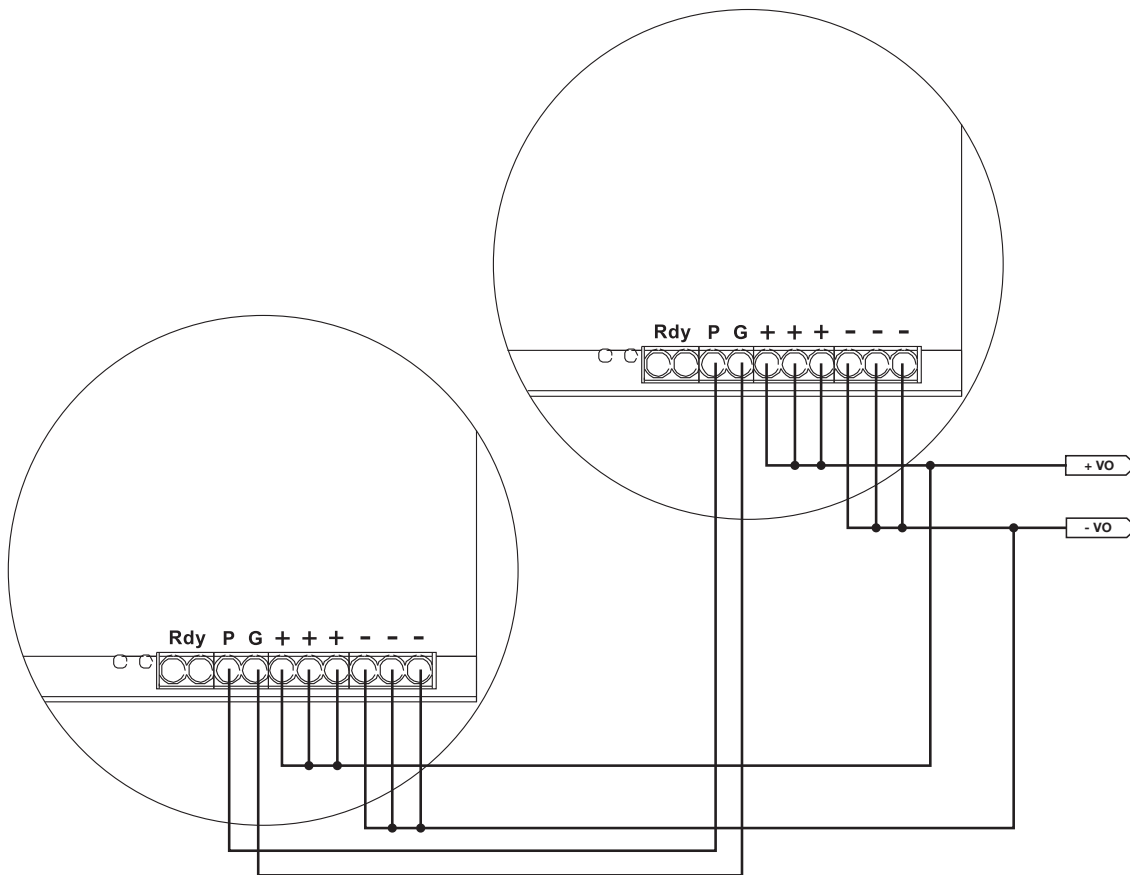


Pin assignement and front controls

| Pin No. | Designation | Description |
|-----------------|-------------|--|
| 1 ⁶⁾ | RDY | A normal open relay contact for DC ON level control |
| 2 ⁶⁾ | RDY | (Never connect except 24V model) |
| 3 ⁶⁾ | P | Parallel PIN for current share |
| 4 ⁶⁾ | G | Parallel GEN PIN for current share |
| 5 | V+ | Positive output terminal |
| 6 | V+ | Positive output terminal |
| 7 | V+ | Positive output terminal |
| 8 | V- | Negative output terminal |
| 9 | V- | Negative output terminal |
| 10 | V- | Negative output terminal |
| 11 | GND | Ground terminal to minimise High frequency emissions |
| 12 | L1 | Input terminals |
| 13 | L2 | Input terminals |
| 14 | L3 | Input terminals |
| | DC ON | DC output ready LED |
| | DC LO | DC low indicator LED |
| | Vout ADJ. | Trimmer for fine output voltage adjustment |

⁶⁾ SPD24...L Model without PIN1, PIN2, PIN3, PIN4

Parallel Connection

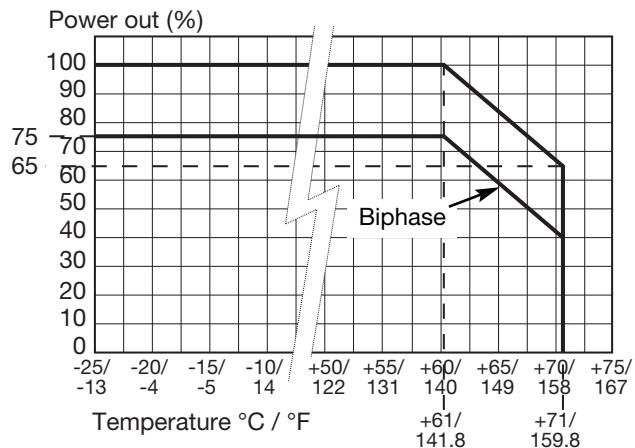


Note: when the power supplies are connected in parallel, P and G terminals shall be wired as in the diagram in order to activate the "active current sharing". Else current sharing does not work.

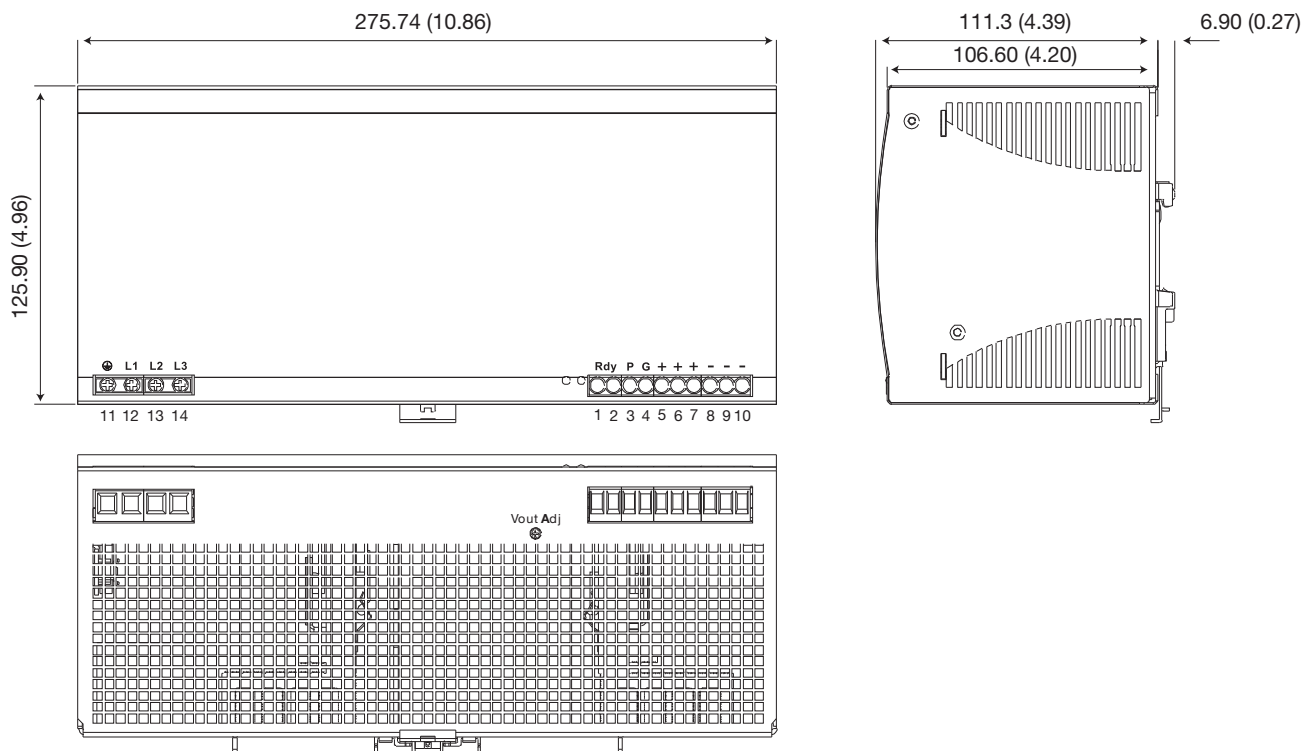
Installation

| | |
|---|---|
| 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) |

Derating Diagram



Mechanical Drawings mm/inches



Modular Switching Power Supply

Type SPM 1

DIN rail mounting

CARLO GAVAZZI



- 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 | Output Power | Output Voltage | Current | Typical Efficiency |
|----------|---------------|--------------|----------------|---------|--------------------|
| SPM1-051 | 90~264Vac | 7.5W | 5Vdc | 1.50A | 74% |
| SPM1-121 | 90~264Vac | 10W | 12Vdc | 0.83A | 78% |
| SPM1-151 | 90~264Vac | 10W | 15Vdc | 0.67A | 78% |
| SPM1-241 | 90~264Vac | 10W | 24Vdc | 0.42A | 80% |

Output data

| | | | | |
|-------------------------|-------------------------|------------------|---------|---------|
| Line regulation | 1% max. | DC ON indicator | Min. | Max. |
| Load regulation | 1% | 5V | 3Vdc | - |
| Output Voltage accuracy | ±1% | 12V | 9Vdc | - |
| Ripple and Noise | 50mV | 15V | 11Vdc | - |
| Temperature Coefficient | ±0.02%/°C (±0.0112%/°F) | 24V | 20Vdc | - |
| Hold up time | Vi = 115Vac | DC LOW indicator | Min. | Max. |
| | 5V and 12V: 10ms | 5V | 3.2Vdc | 3.7Vdc |
| | 15V and 24V: 60ms | 12V | 8.8Vdc | 9.3Vdc |
| | Vi = 230Vac | 15V | 12Vdc | 12.5Vdc |
| Minimum load | 0% | 24V | 21.5Vdc | 22Vdc |
| Transient recovery time | | | | |
| (50% load step changed) | 1ms | | | |



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: 10A Max: 15A |
| Vi= 230Vac | Typ: 20A Max: 30A |

* Not replaceable by user

Controls and Protections

| | |
|----------------------------------|----------------------|
| Input Fuse | T1A/250Vac internal* |
| Output Short Circuit | Fold forward |
| Rated Overload Protection | 110-160% |

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

| | | | |
|-------------------------------------|-----------------------------------|--------------------------|----------------------|
| Insulation voltage | 3.000Vac | Cooling | Free air convection |
| Insulation resistance | 100MΩ | Case material | Plastic (PC-UL94-V0) |
| Ambient temperature | -25°C to +71°C (-13°F to 159.8°F) | Weight | 60g |
| Derating (>61°C to +71°C) | 2.5%/°C (1.4%/°F) | Protection degree | IP20 |
| 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 18 x 55.5 | | |
| Dimensions L x W x D inches | 3.582 x 0.709 x 2.185 | | |

Approvals

UL / cUL file: E258355
 file: E258395
 file: E258396

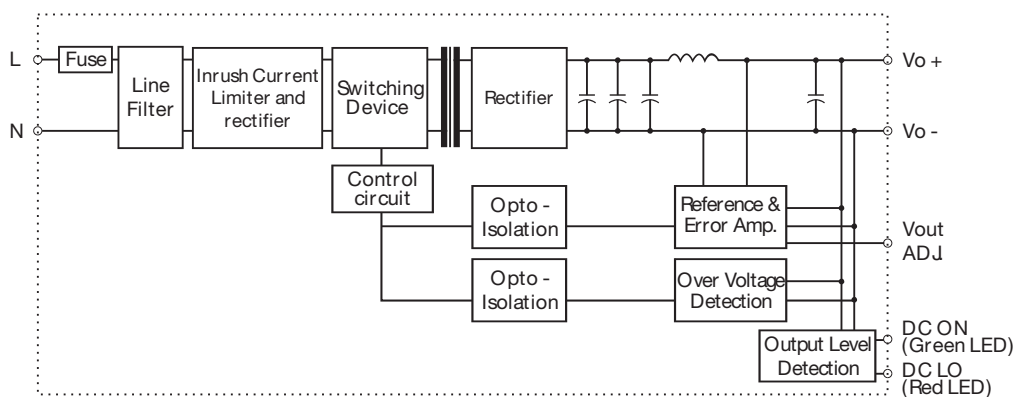
UL508 listed,
 UL1310 Class 2 power supply,
 UL60950-1 Recognized

CE

TUV EN60950-1

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 | - | Negative output terminal |
| 3 | L | Input terminal (phase conductor, no polarity @ DC input) |
| 4 | N | Input terminal (neutral conductor, no polarity @ DC input) |
| LED1 | DC ON | Operation indicator LED |
| LED2 | DC LOW | DC LOW indicator LED |

Installation

VENTILATION / COOLING:

- Normal air convection
- 25mm of free space along all sides to allow good cooling

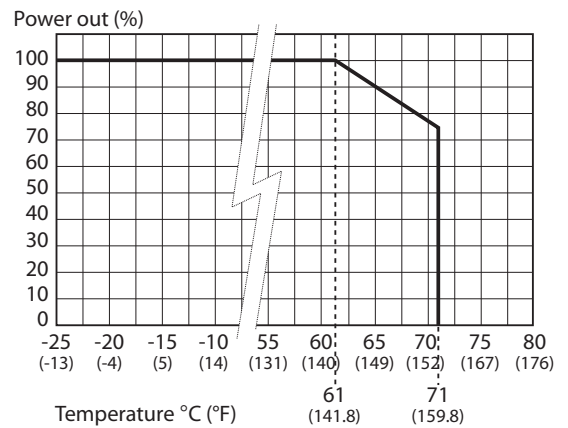
CONNECTOR SIZE RANGE:

- Solid: 0.2-2.0,mm² (AWG24-14)
 (user copper conductors only)

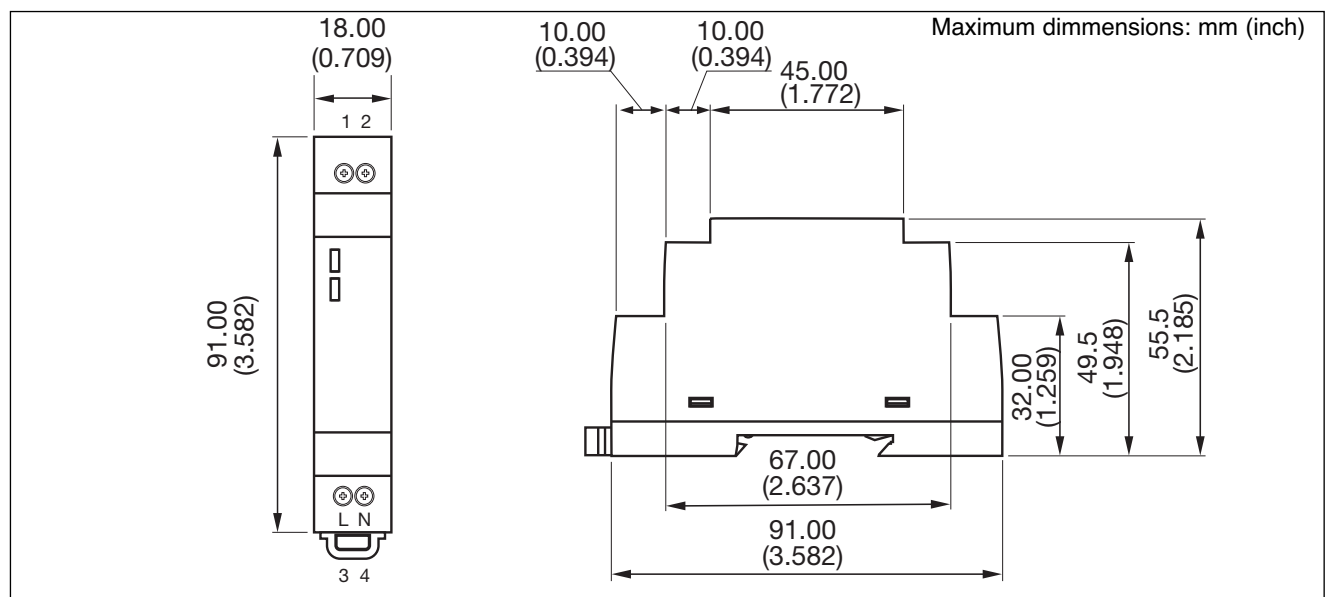
Construction

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 3 DIN rail mounting

CARLO GAVAZZI



- 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 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



Output performances

| Model | Input Voltage | Output Power | Output Voltage | Current | Typical Efficiency |
|----------|---------------|--------------|----------------|---------|--------------------|
| SPM3-051 | 90~264Vac | 15W | 5Vdc | 3.0A | 74% |
| SPM3-121 | 90~264Vac | 25W | 12Vdc | 2.1A | 82% |
| SPM3-151 | 90~264Vac | 30W | 15Vdc | 2.0A | 83% |
| SPM3-241 | 90~264Vac | 30W | 24Vdc | 1.3A | 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 | $V_i = 115Vac$ | 25ms |
| | $V_i = 230Vac$ | 100ms |
| Minimum load | 0% | |
| Voltage trim range | Min. | Max. |
| | 5V | 5.5Vdc |
| | 12V | 14Vdc |
| | 15V | 16.5Vdc |
| | 24V | 28Vdc |

| | | |
|--|---------|---------|
| Transient recovery time (50% load step changed) | 1ms | |
| DC ON indicator | Min. | Max. |
| | 5V | 3Vdc |
| | 12V | 9Vdc |
| | 15V | 11Vdc |
| DC LOW indicator | Min. | Max. |
| | 5V | 3.2Vdc |
| | 12V | 8.8Vdc |
| | 15V | 12.5Vdc |
| 24V | 21.5Vdc | |



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 |

* Not replaceable by user

Controls and Protections

| | |
|----------------------------------|----------------------|
| Input Fuse | T2A/250Vac internal* |
| Output Short Circuit | Fold forward |
| Rated Overload Protection | 110-150% |

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

| | | | |
|-------------------------------------|----------------------------------|--------------------------|----------------------|
| Insulation voltage | 3.000Vac | Cooling | Free air convection |
| Insulation resistance | 100MΩ | Case material | Plastic (PC-UL94-V0) |
| Ambient temperature | -25°C to 71°C (-13°F to 159.8°F) | Weight | 185g |
| Derating (>61°C to +71°C) | 2.5%/°C (1.4%/°F) | Protection degree | IP20 |
| 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 | | |
| Dimensions L x W x D inches | 3.582 x 2.047 x 2.185 | | |

Approvals

UL / cUL file: E258355
 file: E258395
 file: E258396

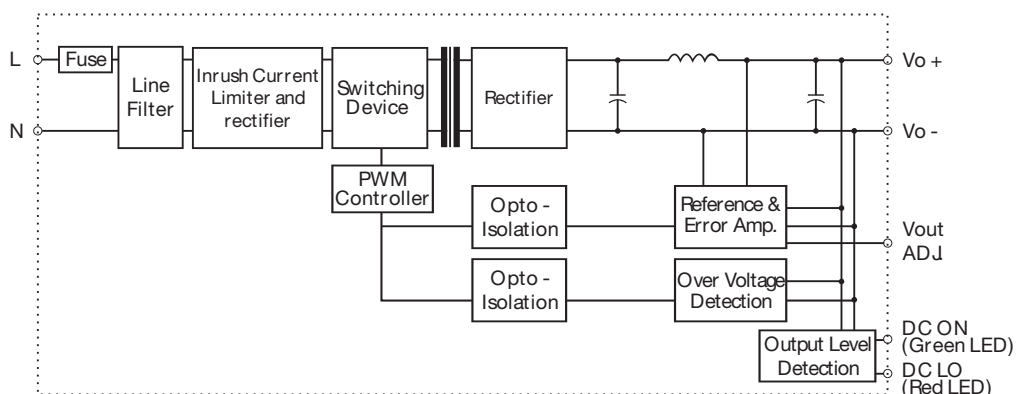
UL508 listed,
 UL1310 Class 2 power supply,
 UL60950-1 Recognized

CE

TUV EN60950-1

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 LOW | DC LOW indicator LED |

Installation

VENTILATION / COOLING:

- Normal air convection
- 25mm of free space along all sides to allow good cooling

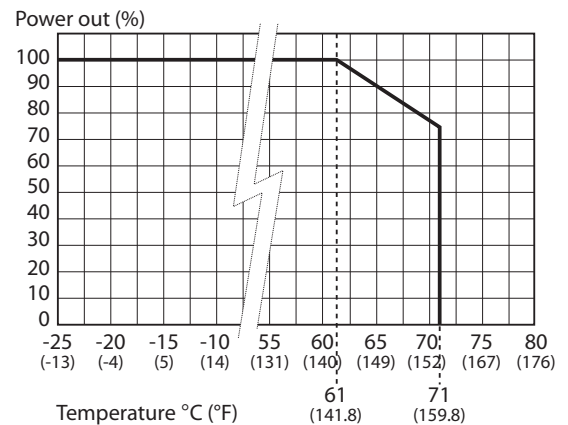
CONNECTOR SIZE RANGE:

- Solid: 0.2-2.0,mm² (AWG24-14)
(user copper conductors only)

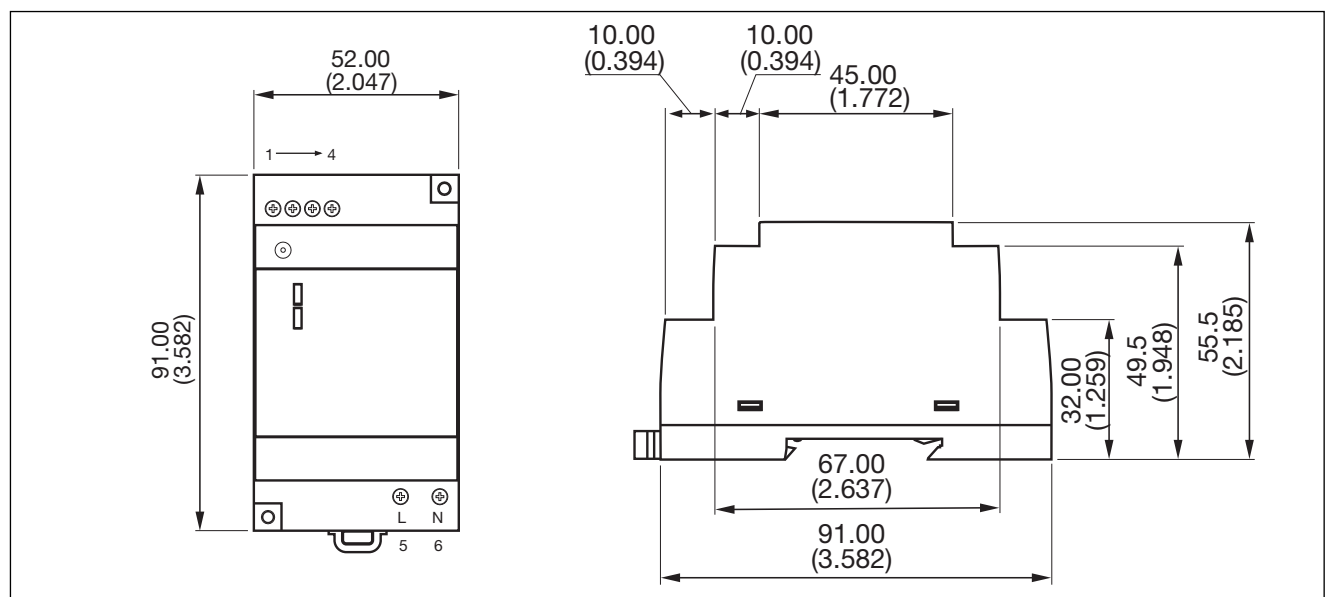
Construction

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

CARLO GAVAZZI



- 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 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



* only 12, 15, 24VDC

Output performances

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

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 | 5V and 12V: 16ms 15V and 24V: 12ms |
| | Vi = 230Vac | 60ms |
| Minimum load | 0% | |
| Voltage trim range | Min. | Max. |
| | 5V | 5Vdc 5.5Vdc |
| | 12V | 12Vdc 14Vdc |
| | 15V | 13.5Vdc 16.5Vdc |
| | 24V | 24Vdc 28Vdc |

| | | |
|--|---------------|---------------|
| Transient recovery time (50% load step changed) | 1ms | |
| DC ON indicator | Min. | Max. |
| | 5V | 3Vdc - |
| | 12V | 9Vdc - |
| | 15V | 11Vdc - |
| DC LOW indicator | Min. | Max. |
| | 5V | 3.2Vdc 3.7Vdc |
| | 12V | 8.8Vdc 9.3Vdc |
| | 15V | 12Vdc 12.5Vdc |
| 24V | 21.5Vdc 22Vdc | |



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: 25A Max: 30A |
| Vi= 230Vac | Typ: 50A Max: 60A |

* Not replaceable by user

Controls and Protections

| | |
|----------------------------------|----------------------|
| Input Fuse | T2A/250Vac internal* |
| Output Short Circuit | Fold forward |
| Rated Overload Protection | 110-150% |

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

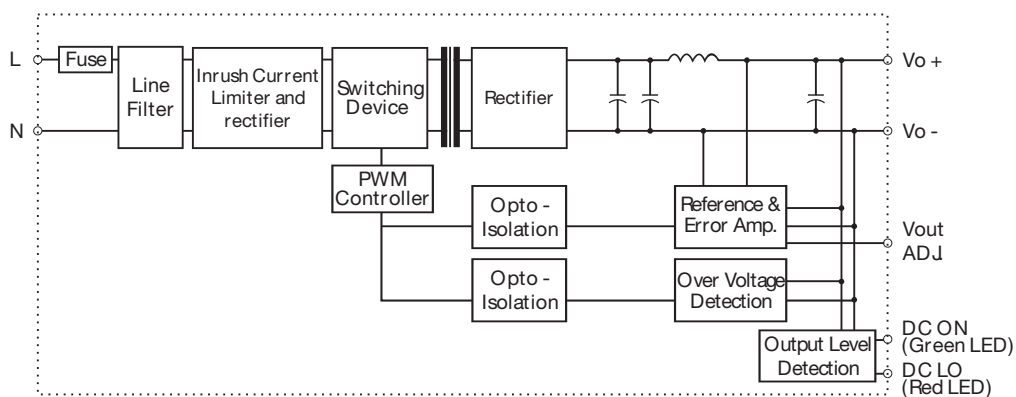
| | | | |
|-------------------------------------|----------------------------------|--------------------------|----------------------|
| Insulation voltage | 3.000Vac | Cooling | Free air convection |
| Insulation resistance | 100MΩ | Case material | Plastic (PC-UL94-V0) |
| Ambient temperature | -25°C to 71°C (-13°F to 159.8°F) | Weight | 250g |
| Derating (>61°C to +71°C) | 2.5%/°C (1.4%/°F) | Protection degree | IP20 |
| 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 70.5 x 55.5 | | |
| Dimensions L x W x D inches | 3.582 x 2.756 x 2.185 | | |

Approvals

| | | |
|-----------------|---|---|
| UL / cUL | file: E258355 file: E258395 file: E258396 | UL508 listed, UL1310 Class 2 power supply, (only 12V, 15V, 24V models), 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 LOW | DC LOW indicator LED |

Installation

VENTILATION / COOLING:

- Normal air convection
- 25mm of free space along all sides to allow good cooling

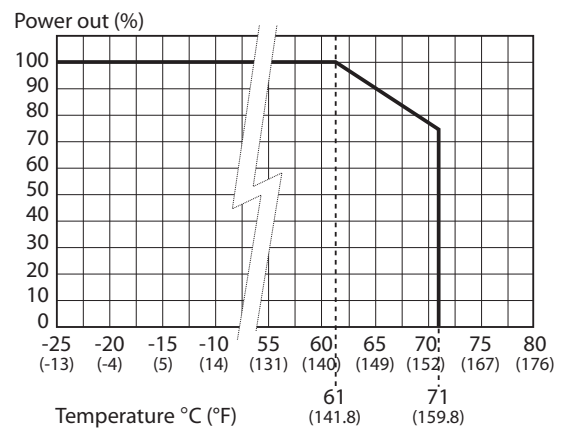
CONNECTOR SIZE RANGE:

- Solid: 0.2-2.0,mm² (AWG24-14)
(user copper conductors only)

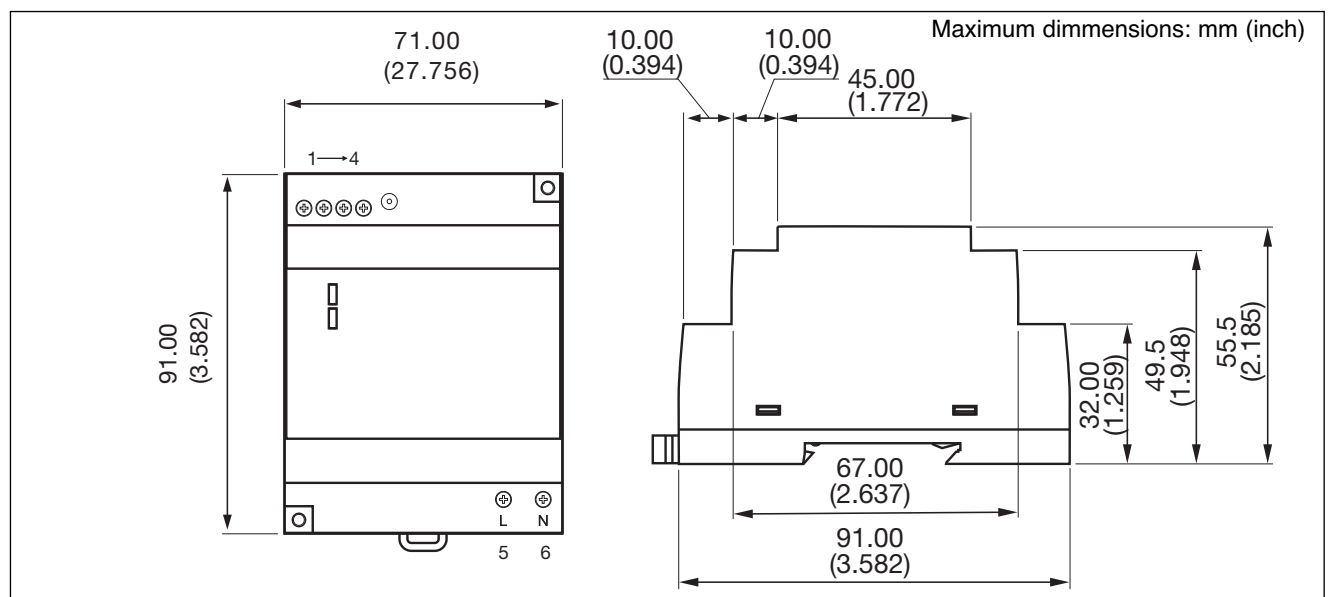
Construction

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



Modular Switching Power Supply Type SPM 5 DIN rail mounting

CARLO GAVAZZI



- 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



* only SPM5-241S

Output performances

| Model | Input Voltage | Output Power | Output Voltage | Current | Typical Efficiency |
|-----------|---------------|--------------|----------------|---------|--------------------|
| SPM5-051 | 90~264Vac | 60W | 5Vdc | 12.0A | 80% |
| SPM5-121 | 90~264Vac | 72W | 12Vdc | 6.0A | 86% |
| SPM5-151 | 90~264Vac | 75W | 15Vdc | 5.0A | 86% |
| SPM5-241 | 90~264Vac | 100W | 24Vdc | 4.2A | 89% |
| SPM5-241S | 90~264Vac | 91W | 24Vdc | 3.8A | 89% |

Output data

| | | | | | |
|-------------------------|------------------------|-----------------------------------|--|--------|---------|
| Line regulation | 1% max. | | Transient recovery time (50% load step changed) | 1ms | |
| Load regulation | 1% | | DC ON indicator | Min. | Max. |
| Output Voltage accuracy | ±1% | | 5V | 3Vdc | - |
| Ripple and Noise | 50mV | | 12V | 9Vdc | - |
| Temperature Coefficient | ±0.02%/°C (±0.0112/°F) | | 15V | 13Vdc | - |
| Hold up time | Vi = 115Vac | 5V & 12V: 16ms 15V & 24V: 10ms | 24V & 24V S | 18Vdc | - |
| | Vi = 230Vac | 60ms | DC LOW indicator | Min. | Max. |
| Minimum load | 0% | | 5V | 3.2Vdc | 3.7Vdc |
| Voltage trim range | Min. | Max. | 12V | 8.8Vdc | 9.3Vdc |
| 5V | 5Vdc | 5.5Vdc | 15V | 12Vdc | 12.5Vdc |
| 12V | 12Vdc | 14Vdc | 24V & 24V S | 18Vdc | 19Vdc |
| 15V | 13.5Vdc | 16.5Vdc | | | |
| 24V & 24V S | 24Vdc | 28Vdc | | | |



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: 25A Max: 30A |
| Vi= 230Vac | Typ: 40A Max: 60A |

* Not replaceable by user

Controls and Protections

| | |
|---|----------------------|
| Input Fuse | T2A/250Vac internal* |
| Output Short Circuit | Fold forward |
| Rated Overload Protection 5V, 12V, 15V & 24V 24V S | 110-150% 102-108% |

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

| | | | |
|--------------------------------------|----------------------------------|--------------------------|----------------------|
| Insulation voltage | 3.000Vac | Cooling | Free air convection |
| Insulation resistance | 100MΩ | Case material | Plastic (PC-UL94-V0) |
| Ambient temperature | -25°C to 71°C (-13°F to 159.8°F) | Weight | 320g |
| Derating (>61°C to +71°C)* | 2.5%/°C (1.4%/°F) | Protection degree | IP20 |
| Ambient humidity | 90%RH | | |
| Storage temperature | -25°C to +85°C (-13°F to 195°F) | | |
| Dimensions L x W x D mm | 91 x 90.0 x 55.5 | | |
| L x W x D inches | 3.582 x 3.543 x 2.185 | | |

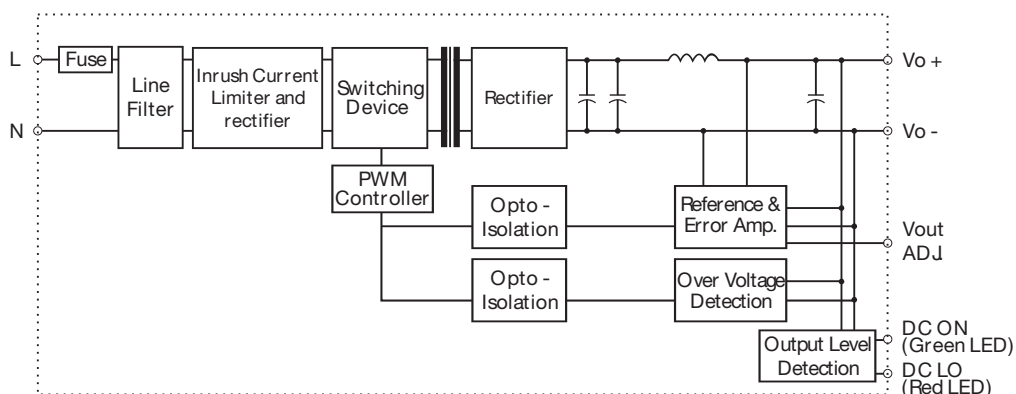
SPM5-051 derating starts from 56°C (132.8°F)

Approvals

| | | |
|-----------------|---|--|
| UL / cUL | file: E258355 file: E258395 file: E258396 | UL508 listed, UL1310 Class 2 power supply, (only 24V S model), 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 LOW | DC LOW indicator LED |

Installation

VENTILATION / COOLING:

- Normal air convection
- 25mm of free space along all sides to allow good cooling

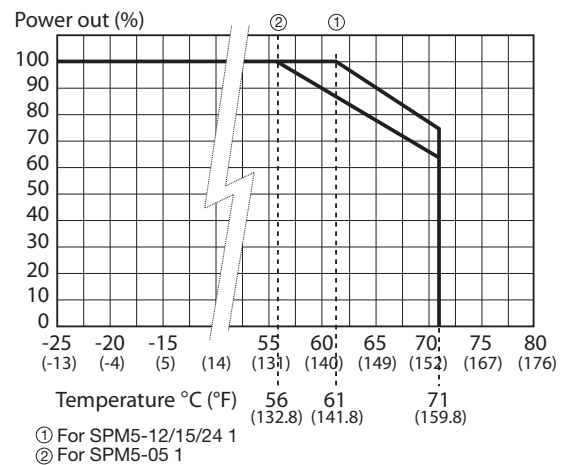
CONNECTOR SIZE RANGE:

- Solid: 0.2-2.0,mm² (AWG24-14)
 (user copper conductors only)

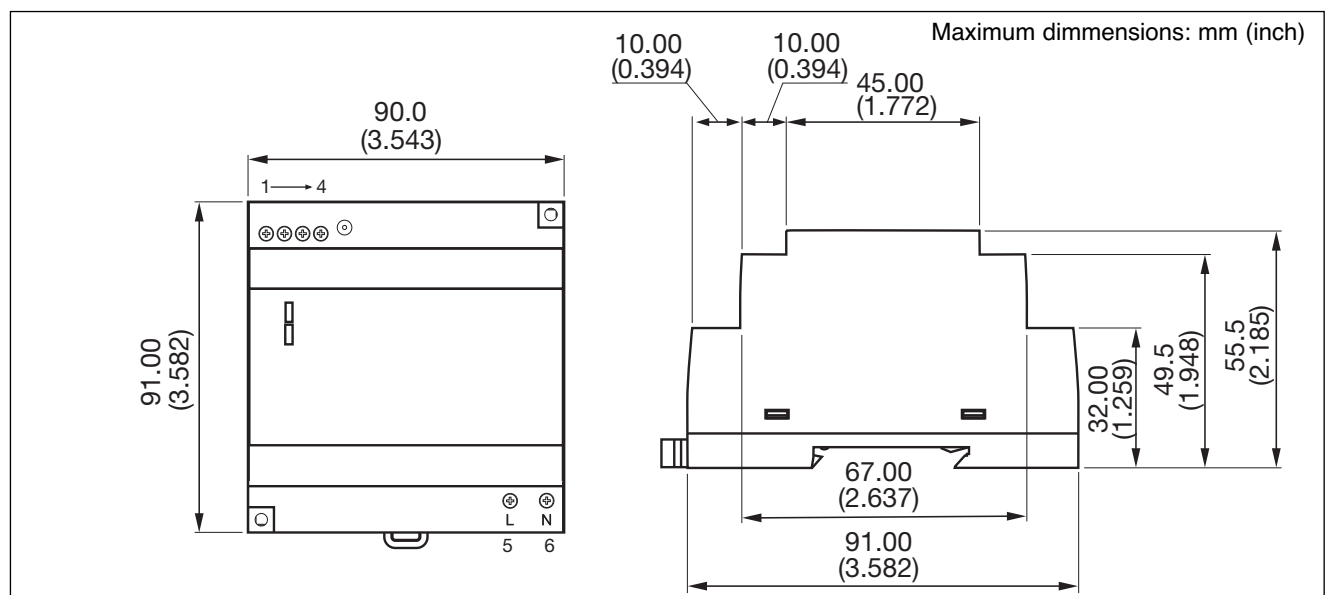
Construction

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



Switching Power Supply Redundant Module Type SPM2RM2410 DIN rail mounting

CARLO GAVAZZI



- 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

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 |

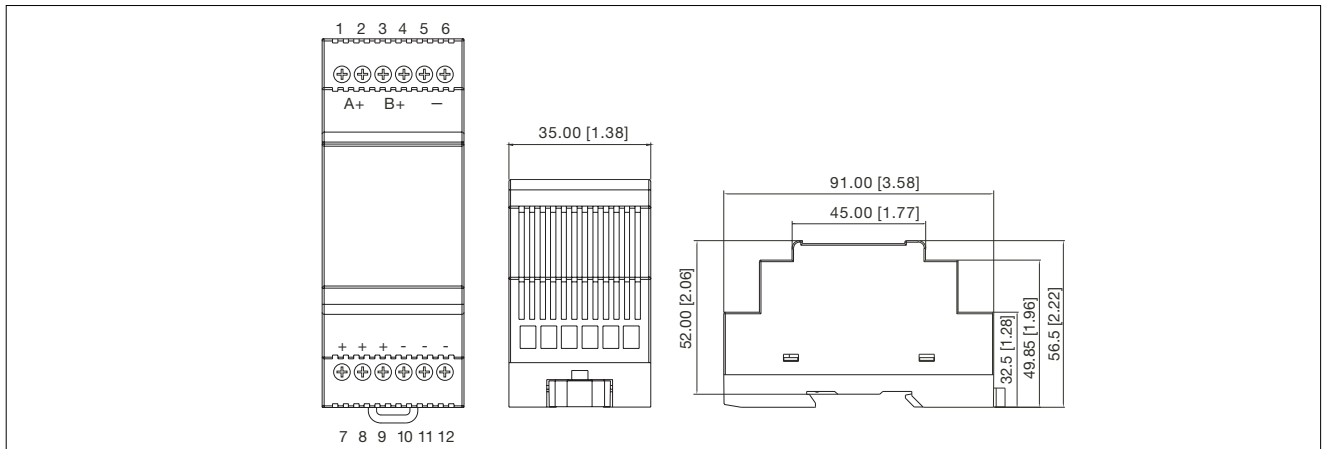
General Data

| | |
|------------------------------------|---------------------|
| 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 |

Mechanical Drawings mm (inches)

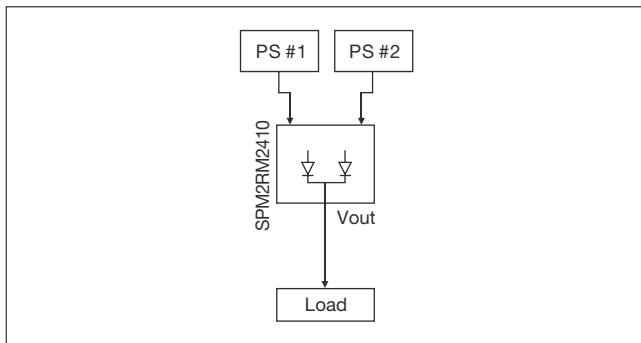


Pin Assignment and Front Controls

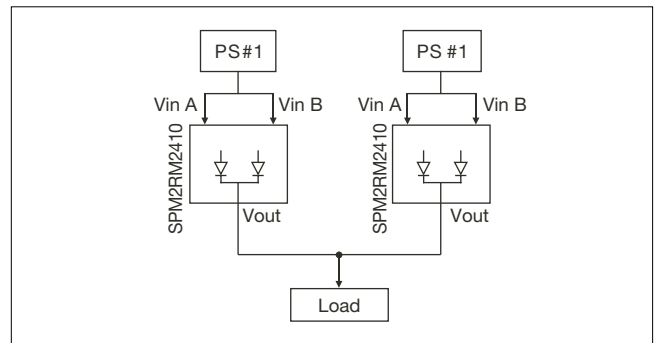
| Pin No. | Designation | Description |
|---------|-------------|-------------------------------|
| 1 | Input A+ | Positive Input power supply A |
| 2 | Input A+ | Positive Input power supply A |
| 3 | Input B+ | Positive Input power supply B |
| 4 | Input B+ | Positive Input power supply B |
| 5 | Input - | 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

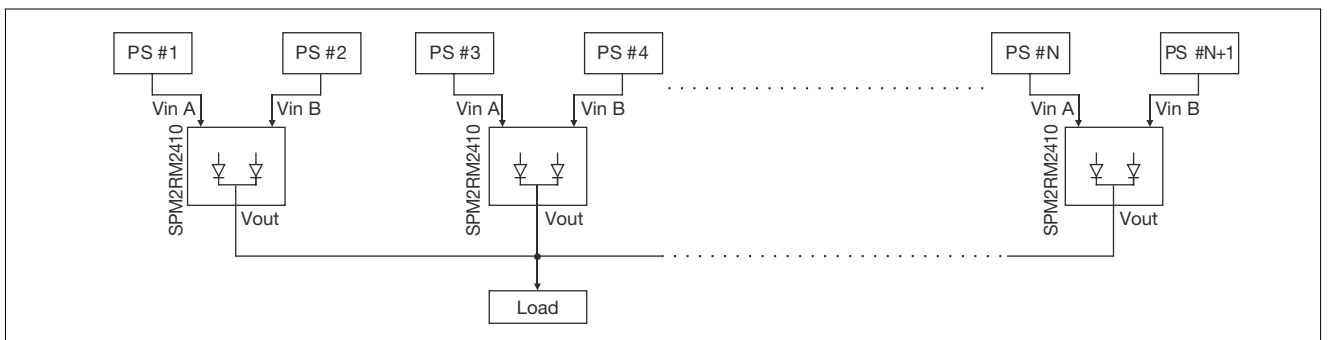
1.) 1+1 Redundancy: Using 1 more PS as the redundant unit.



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

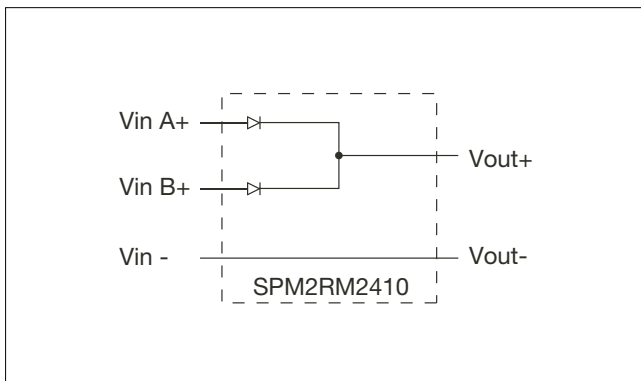


3.) 1+N Redundancy: Using more than one PS as redundant units to increase the reliability.





Circuit Diagram



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) |
| 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) |