



## Wide Input Compact Housing Power Supply

With the PSW family, AC/DC compact DIN rail switching power supplies with single phase wide input range, Altech further expanded the power supply line. Built-in active PFC function, these high efficient power units meet the harmonic current limitation per EN61000-3-2. Equipped with 180 to 550Vac single phase wide input range, they can be used in general power system applications with single phase 230Vac input or can capture two phases from the 220~550Vac three-phase power system, which can greatly increase the flexibility of system deployment.

With up-to-date circuit design PSW series possess up to 93% of extremely high efficiency and can provide 100% power continuously at 50°C by only free air convection, or operate under 70°C ambient temperature by suitable power derating. The compact design in width helps save the precious space on the rail and also makes it up to 50% smaller in size compare to its predecessor models. Meanwhile, with wider input range the PSW series also has 3% higher efficiency than corresponding models, which response to the trend of green power with energy saving concept. Other standard functions include DC OK relay contact alarm signal output, front panel DC voltage adjustment , as well as protection for short-circuit, overload (constant current mode, shut down if over 3 seconds), over voltage, and over temperature. The PSW series comply with UL508, IEC60950-1 (CB), and CE certificates and also meet the EMC requirements of heavy industrial immunity level (EN61000-6-2). Suitable applications include industrial control system, semi-conductor fabrication equipment, factory automation, electro-mechanical applications, and marine related installation.

- Input voltage range: 180~550V AC; 254-780V DC
- AC inrush current (typical): Cold start: 50A at 400V AC
- DC adjustment range (typical): 12V: 12-15V, 24V: 24-29V, 48V: 48-58V,
- Overload protection (typical): 105%-130% rated output
- Over-voltage protection (typical): 16-18V for 12V model (PSW-120),  
31-37V for 24V model; 60-67V for 48V model
- Setup, rise, time (typical): 2000ms, 70ms at full load and 230V AC (PSW-120)  
2000ms, 150ms at full load and 230V AC (PSW240/480)
- Withstand voltage: I/P-O/P:3KV AC, I/P-FG:1.5KV AC, O/P-FG:0.5KV AC,
- Working temperature: -20 to +70°C (-4° to +158°F),  
refer to output derating curve (PSW-120)
- DC OK signal Relay contact
- Safety standards: UL508 (PSW-240 pending)
- EMC standards: Compliance to EN55011 (CISPR11), EN55022 class B,  
EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024,  
EN61000-6-2, EN61204-3, heavy Industry Level criteria A
- Military standard: MIL-HDBK-217K

# PSW Series



- Single and two phase wide input range 180~550VAC
- Universal AC Input / Full Range
- High efficiency up to 93% and low power dissipation
- Protections: Short circuit / Overload / Overvoltage / Over temperature
- Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty



35mm DIN Rail Mounting

Rugged metal housing

Narrow for maximized panel space

Multiple output connector for easy wiring

Adjustable DC Output Voltage

DC on LED signal

Easy to understand layout panel

CE Compliance

UL508 Compliance

Universal Input

# 120-480W Single Phase

## WIDE INPUT POWER SUPPLIES



### 120W Single Output DIN Rail Power Supply

| Cat. No.  | Output<br>V DC | A    | Tol.<br>% | Ripple &<br>Noise | Efficiency | NOTES |
|-----------|----------------|------|-----------|-------------------|------------|-------|
| PSW-12012 | 12V DC         | 10A  | ±1.5%     | 120 mVp-p         | 89.5%      |       |
| PSW-12024 | 24V DC         | 5A   | ±1%       | 120 mVp-p         | 91%        |       |
| PSW-12048 | 48V DC         | 2.5A | ±1%       | 150 mVp-p         | 92%        |       |



### 240W Single Output DIN Rail Power Supply

| Cat. No.  | Output<br>V DC | A   | Tol.<br>% | Ripple &<br>Noise | Efficiency | NOTES |
|-----------|----------------|-----|-----------|-------------------|------------|-------|
| PSW-24024 | 24V DC         | 10A | ±1%       | 120 mVp-p         | 90%        |       |
| PSW-24048 | 48V DC         | 5A  | ±1%       | 120 mVp-p         | 90%        |       |

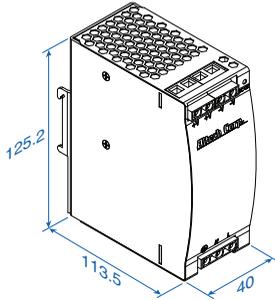


### 480W Single Output DIN Rail Power Supply

| Cat. No.  | Output<br>V DC | A   | Tol.<br>% | Ripple &<br>Noise | Efficiency | NOTES |
|-----------|----------------|-----|-----------|-------------------|------------|-------|
| PSW-48024 | 24V DC         | 20A | ±1%       | 100 mVp-p         | 94%        |       |
| PSW-48048 | 48V DC         | 10A | ±1%       | 120 mVp-p         | 94%        |       |

# SPECIFICATIONS

## PSW-120 Series



Terminal Pin. No Assign. (TB1)

| Pin No. | Assignment |
|---------|------------|
| 1       | FG ⊕       |
| 2       | AC/L2      |
| 3       | AC/L1      |

Terminal Pin. No Assign. (TB2)

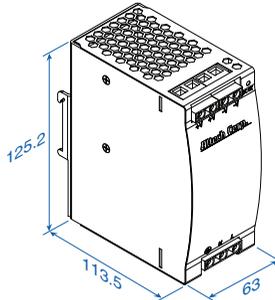
| Pin No. | Assignment    |
|---------|---------------|
| 1,2     | Relay Contact |
| 3       | DC OUTPUT -V  |
| 4       | DC OUTPUT +V  |

Universal Input: 180-550V AC, 254-780V DC full range,  
0.55A/400V AC, 1.2A/230V AC

Connection: Input - 3 poles, Output – 4 poles screw terminal  
Size (WxHxD): 40x125.2x113.5mm (1.57x4.93x4.47 inches)

Packaging: 1/box; 1.433lbs / 0.65Kg

## PSW-240 Series



Terminal Pin. No Assign. (TB1)

| Pin No. | Assignment |
|---------|------------|
| 1       | FG ⊕       |
| 2       | AC/L2      |
| 3       | AC/L1      |

Terminal Pin. No Assign. (TB2)

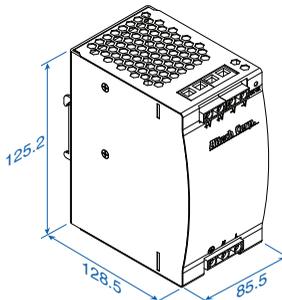
| Pin No. | Assignment    |
|---------|---------------|
| 1,2     | Relay Contact |
| 3,4     | DC OUTPUT -V  |
| 5,6     | DC OUTPUT +V  |

Universal Input: 180-550V AC, 254-780V DC full range,  
1A/400V AC, 2A/230V AC

Connection: Input - 3 poles, Output – 6 poles screw terminal  
Size (WxHxD): 63x125.2x113.5mm (2.48x4.93x4.47 inches)

Packaging: 1/box; 2.337lbs / 1.06Kg

## PSW-480 Series



Terminal Pin. No Assign. (TB1)

| Pin No. | Assignment |
|---------|------------|
| 1       | FG ⊕       |
| 2       | AC/L2      |
| 3       | AC/L1      |

Terminal Pin. No Assign. (TB2)

| Pin No. | Assignment    |
|---------|---------------|
| 1,2     | DC OUTPUT +V  |
| 3,4     | DC OUTPUT -V  |
| 5,6     | Relay Contact |

Universal Input: 180-550V AC, 254-780V DC full range,  
1.6A/400V AC, 4A/230V AC

Connection: Input - 3 poles, Output – 6 poles screw terminal  
Size (WxHxD): 85.5x125.2x128.5mm (3.37x4.93x5.06 inches)

Packaging: 1/box; 3.748lbs / 1.7Kg



# PSW-120 Series Specifications



## Features:

- Single and two phase wide input range 180 ~ 550VAC
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL508 (industrial control equipment) approved
- EN61000-6-2 (EN50082-2) industrial immunity level
- 100% full load burn-in test
- Built-in DC OK relay contact
- 3 year warranty

## OUTPUT

| Cat. No.   | PSW-12012                   | PSW-12024                                | PSW-12048 |
|--|-----------------------------|--|-----------|
| DC VOLTAGE   | 12V                         | 24V                                      | 48V       |
| RATED CURRENT  | 10A                         | 5A                                       | 2.5A      |
| CURRENT RANGE  | 0 ~ 10A                     | 0 ~ 5A                                   | 0 ~ 2.5A  |
| RATED POWER  | 120W                        | 120W                                     | 120W      |
| RIPPLE & NOISE (max)   | 120mVp-p                    | 120mVp-p                                 | 150mVp-p  |
| Ripple & noise are measured at 20MHz of bandwidth by using a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.       |                             |  |           |
| VOLTAGE ADJ. RANGE   | 12 ~ 15V                    | 24 ~ 29V                                 | 48 ~ 58V  |
| VOLTAGE TOLERANCE  | ±1.5%                       | ±1.0%                                    | ±1.0%     |
| Tolerance: includes set up tolerance, line regulation and load regulation.   |                             |  |           |
| LINE REGULATION  | ±0.5%                       | ±0.5%                                    | ±0.5%     |
| LOAD REGULATION  | ±0.5%                       | ±0.5%                                    | ±0.5%     |
| SETUP, RISE HOLD UP TIME   | 2000ms, 70ms, 50ms / 400VAC | 2000ms, 70ms, 10ms / 230VAC at full load |           |
| Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quick may lead to increase of the set up time. |                             |  |           |

## INPUT

|                       |                   |               |            |
|-----------------------|-------------------|---------------|------------|
| VOLTAGE RANGE         | 180 ~ 550VAC      | 254 ~ 780VDC  |            |
| FREQUENCY RANGE       | 47 ~ 63Hz         |               |            |
| EFFICIENCY (Typ.)     | 89.5% / 400V      | 91% / 400V    | 92% / 400V |
| AC CURRENT            | 0.55A / 400VAC    | 1.2A / 230VAC |            |
| INRUSH CURRENT (Typ.) | COLD START 50A    |               |            |
| LEAKAGE CURRENT       | ≤ 3.5 mA / 530VAC |               |            |

## PROTECTION

|   |  |          |          |
|---|--|----------|----------|
| OVERLOAD  | 105 ~ 130% rated output power  |          |          |
| Protection type: Constant current limiting, recovers automatically after fault condition is removed |  |          |          |
| OVERVOLTAGE   | 16 ~ 18V   | 31 ~ 37V | 60 ~ 67V |
| Protection type: Shut down overvoltage, re-power on to recover                                      |  |          |          |
| OVERTEMPERATURE   | 105°C ± 5°C (12V), 110°C ± 5°C (24V) (TSW1) detect on heat sink of power switch transistor;<br>100°C ± 5°C (48V) (TSW1) detect on heat sink of power diode |          |          |
| Protection type: Shut down overvoltage, re-power automatically after temperature goes down          |  |          |          |
| DC OK SIGNAL  | Relay contact rating (max.): 30V / 1A resistive  |          |          |

## ENVIRONMENT

|                         |   |  |  |
|-------------------------|---|--|--|
| WORKING TEMP.           | -25 ~ +70°C (Refer to output load derating curve)   |  |  |
| WORKING HUMIDITY        | 20 ~ 90% RH non-condensing  |  |  |
| STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH  |  |  |
| TEMP. COEFFICIENT       | ±0.03% / °C (0 ~ 50°C)  |  |  |
| VIBRATION               | 10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z axes Mounting clip: Compliance to IEC60068-2-6 |  |  |

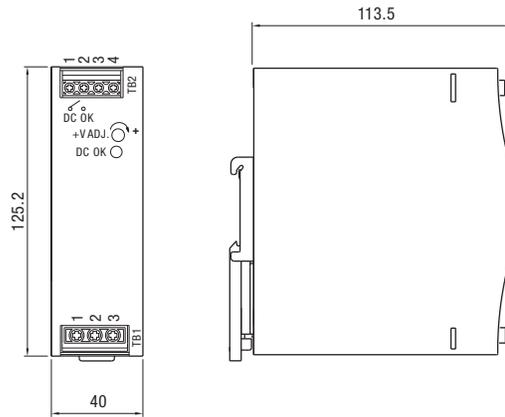
## SAFETY & EMC

|                            |  |  |  |
|----------------------------|--|--|--|
| SAFETY STANDARDS           | UL508 approved<br>IEC60950-1 compliant   |  |  |
| WITHSTAND VOLTAGE          | I/P-O/P: 3KVAC I/P-FG: 1.5KVAC O/P-FG: 0.5KVAC O/P-DC OK: 0.5KVAC  |  |  |
| ISOLATION RESISTANCE       | I/P-O/P, I/P-FG, O/P-FG: 100M Ohms/500VDC (25°C; 70% RH)   |  |  |
| EMI CONDUCTION & RADIATION | Compliance to EN55011 (CISPR11), EN55022 (CISPR22), EN61204-3 Class B  |  |  |
| EMS IMMUNITY               | Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204; EN61204-3; EN61000-6-2; (EN50082-2), heavy industry level; criteria A,<br>The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. |  |  |

## OTHERS

|   |                                    |  |  |
|---|------------------------------------|--|--|
| MTBF  | 268K hrs min. MIL-HDBK-217K (25°C) |  |  |
| DIMENSION   | 40x125.2x113.5mm (WxHxD)           |  |  |
| PACKING   | 0.65Kg; 20pcs / 14Kg / 1.16CUFT    |  |  |
| All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature. |                                    |  |  |

## Mechanical Specification



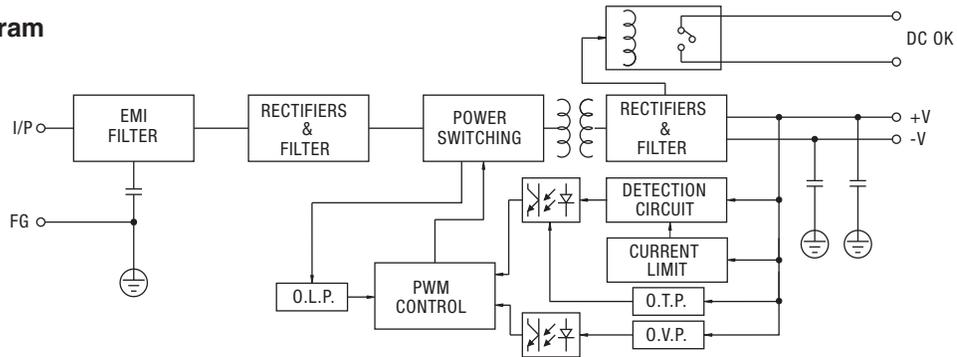
Terminal Pin No. Assignment (TB1)

| Pin No. | Assignment |
|---------|------------|
| 1       | FG         |
| 2       | AC/L2      |
| 3       | AC/L1      |

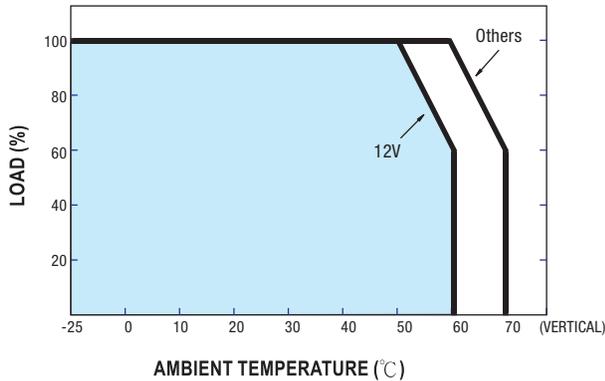
Terminal Pin No. Assignment (TB2)

| Pin No. | Assignment    |
|---------|---------------|
| 1,2     | Relay Contact |
| 3       | DC OUTPUT -V  |
| 4       | DC OUTPUT +V  |

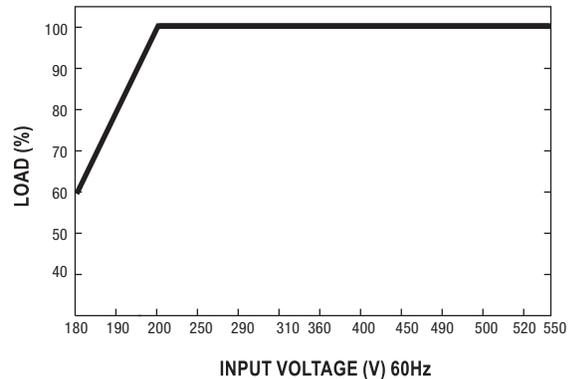
## Block Diagram



## Derating Curve



## Static Characteristics





# PSW-240 Series Specifications



## Features:

- Single and two phase wide input range 180~550VAC
- High efficiency 91% and low power dissipation
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- EN61000-6-2 (EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

## OUTPUT

### Cat. No.

### PSW-24024

### PSW-24048

DC VOLTAGE  
RATED CURRENT  
CURRENT RANGE  
RATED POWER  
RIPPLE & NOISE (max)

24V  
10A  
0 ~ 10A  
240W  
150mVp-p

48V  
5A  
0 ~ 5A  
240W  
150mVp-p

Ripple & noise are measured at 20MHz of bandwidth by using a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.

VOLTAGE ADJ. RANGE  
VOLTAGE TOLERANCE

24 ~ 28V  
±1.0%

48 ~ 55V  
±1.0%

Tolerance: includes set up tolerance, line regulation and load regulation.

LINE REGULATION  
LOAD REGULATION  
SETUP, RISE, HOLD UP TIME

±0.5%  
±1.0%

±0.5%  
±1.0%

800ms, 150ms, 18ms / 400VAC      1500ms, 150ms, 18ms / 230VAC at full load

## INPUT

VOLTAGE RANGE

180 ~ 550VAC      254 ~ 780VDC

Derating may be needed under low input voltage. Please check the derating curve for more details

FREQUENCY RANGE  
EFFICIENCY (Typ.)

47 ~ 63Hz  
91%

AC CURRENT  
INRUSH CURRENT (Typ.)  
LEAKAGE CURRENT

1A / 400VAC      2A / 230VAC  
COLD START 50A  
≤ 3.5 mA / 530VAC

## PROTECTION

OVERLOAD

105 ~ 130% rated output power

Protection type: Constant current limiting, unit will shut down after 3 sec.; auto recovery after 1 minute if the fault condition is removed

OVERVOLTAGE

29 ~ 33V      56 ~ 65V

Protection type: Shut down overvoltage, re-power on to recovery  
Under over-voltage condition, if input voltage ≤ 200VAC, the power supply will shut down and then may have auto-recovery after several seconds

OVERTEMPERATURE

90°C ± 5°C (TSW) detect on heat sink of power switch

Protection type: Shut down overvoltage, recovers automatically after temperature goes down

## ENVIRONMENT

DC OK RELAY CONTACT RATINGS (max.)

60VDC / 0.3A; 30VDC / 1A; 30VAC / 0.5A resistive load

WORKING TEMP.

-30 ~ +70°C (Refer to output load derating curve)

Installation clearances: 40mm on top, 20mm on the bottom, 5mm on the left and right side are recommended when loaded permanently with full power. In case the adjacent device is a heat source, 15mm clearance is recommended.

WORKING HUMIDITY  
STORAGE TEMP., HUMIDITY  
TEMP. COEFFICIENT

20 ~ 95% RH non-condensing  
-40 ~ +85°C; 10 ~ 95% RH  
±0.03% / °C (0 ~ 50°C)

VIBRATION  
MOUNTING

10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z axes  
Compliance to IEC60068-2-6

## SAFETY & EMC

SAFETY STANDARDS

UL508 approved  
IEC 60950-1 compliant  
Design refer to GL

WITHSTAND VOLTAGE  
ISOLATION RESISTANCE  
EMI CONDUCTION & RADIATION  
HARMONIC CURRENT  
EMS IMMUNITY

I/P-O/P: 3KVAC    I/P-FG: 1.5KVAC    O/P-FG :0.5KVAC    O/P-DC OK: 0.5KVAC  
I/P-O/P, I/P-FG, O/P-FG: ≥ 100M Ohms / 500VDC (25°C; 70% RH)  
EN55022 (CISPR22), Class B  
Compliance to EN61000-3-2,-3  
Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204; EN 55024; EN61000-6-2; (EN50082-2); EN61204-3; heavy industry level; criteria A approved;  
The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.

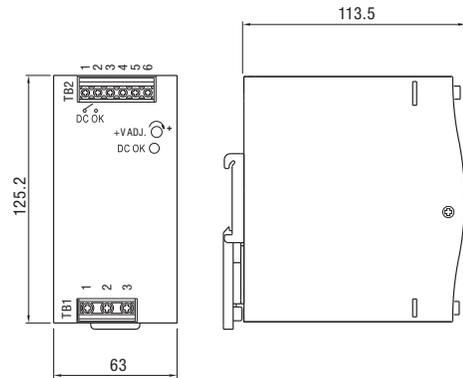
## OTHERS

MTBF  
DIMENSION  
PACKING

141.1K hrs min.    MIL-HDBK-217K (25°C)  
63x125.2x113.5mm (WxHxD)  
1.06Kg; 12pcs / 13.7Kg / 1.06CUFT

All parameters NOT specially mentioned are measured at 400VAC input, rated load and 25°C of ambient temperature.

## Mechanical Specification



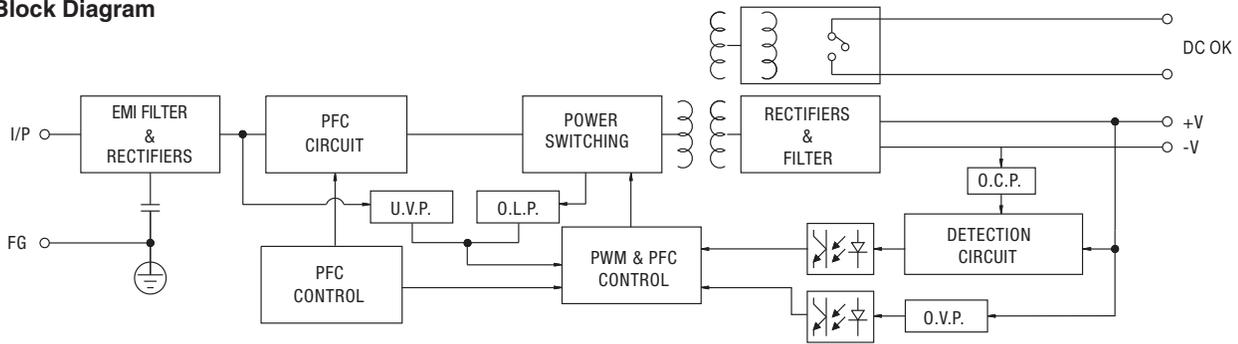
Terminal Pin No. Assignment (TB1)

| Pin No. | Assignment  |
|---------|-------------|
| 1       | FG $\oplus$ |
| 2       | AC/L2       |
| 3       | AC/L1       |

Terminal Pin No. Assignment (TB2)

| Pin No. | Assignment    |
|---------|---------------|
| 1,2     | Relay Contact |
| 3,4     | DC OUTPUT +V  |
| 5,6     | DC OUTPUT -V  |

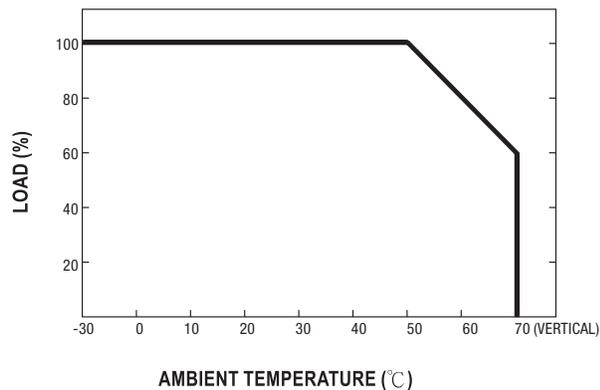
## Block Diagram



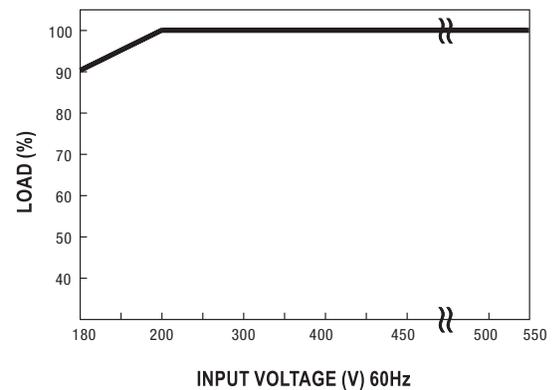
## DC OK Relay Contact

|                        |                          |
|------------------------|--------------------------|
| Contact Close          | PSU turns on / DC OK.    |
| Contact Open           | PSU turns off / DC Fail. |
| Contact Ratings (max.) | 30V/1A resistive load.   |

## Derating Curve

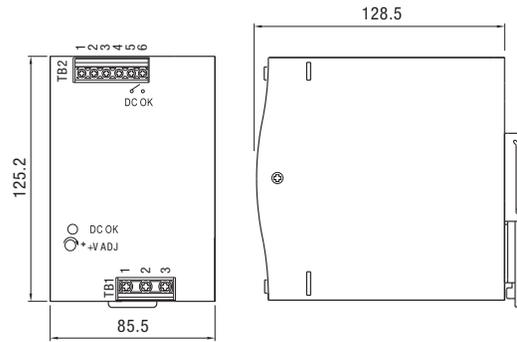


## Output Derating VS Input Voltage





## Mechanical Specification



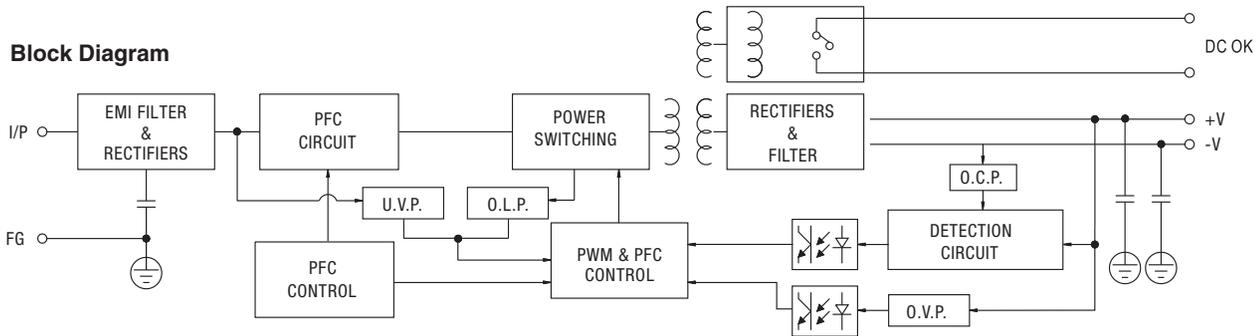
Terminal Pin No. Assignment (TB1)

| Pin No. | Assignment |
|---------|------------|
| 1       | FG ⊕       |
| 2       | AC/L2      |
| 3       | AC/L1      |

Terminal Pin No. Assignment (TB2)

| Pin No. | Assignment    |
|---------|---------------|
| 1,2     | DC OUTPUT +V  |
| 3,4     | DC OUTPUT -V  |
| 5,6     | Relay Contact |

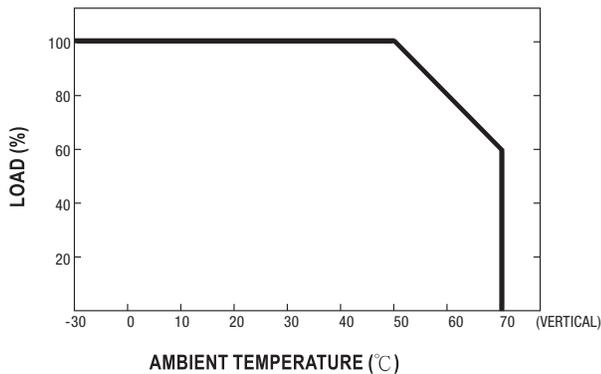
## Block Diagram



## DC OK Relay Contact

|                        |                          |
|------------------------|--------------------------|
| Contact Close          | PSU turns on / DC OK.    |
| Contact Open           | PSU turns off / DC Fail. |
| Contact Ratings (max.) | 30V/1A resistive load.   |

## Derating Curve



## Output Derating VS Input Voltage

