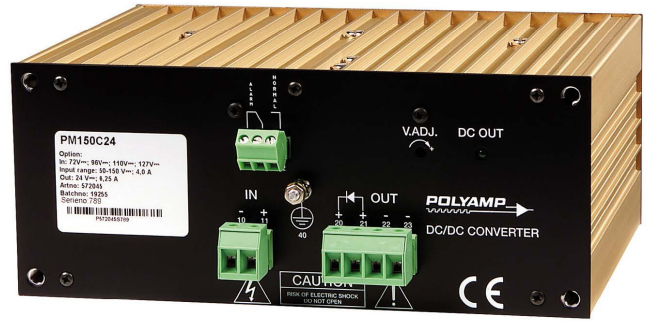


PM150-SERIES 120 TO 150 W



INPUT / OUTPUT

- Wide input voltage ranges
- Input ranges from 10 to 270 Vd.c.
- Single outputs from 12 to 48 Vd.c.
- Reverse input voltage protection
- 2.5 kVa.c. isolation input/output, input/case, output/case
- 5 years warranty.

FEATURES

- Overvoltage protection OVP
- Extra output with series diode
- Over/Under voltage alarm relay

EMC

- EN IEC 61000-6-3, Emission.
- EN IEC 61000-6-2, Immunity.
- EN IEC 61000-4-4, 4 kV.
- EN IEC 61000-4-5 level 2 & 3.

OPERATION

- Operating temperature range -25 to +55 °C and + 70 ° with derating.
- High efficiency.
- Fully encapsulated, meets IP20 as standard.
- Convection cooled.
- Output voltage adjustable on frontpanel.

| INPUT | | |
|------------------------|-------------|------|
| Nominal inputs | Input range | Code |
| 12, 24 Vd.C. | 10-30 V | A |
| 24, 28, 36, 48 Vd.C. | 20-60 V | B |
| 72, 96, 110, 127 Vd.C. | 50-150 V | C |
| 110, 127, 220 Vd.C. | 90-270 V | D |

| OUTPUT | | |
|---------|-------------|-----------|
| Voltage | Current | Power |
| 12 V | 10-12 A | 120-150 W |
| 13.8 V | 8.7-10.9 A | 120-150 W |
| 15 V | 8-10 A | 120-150 W |
| 24 V | 5-6.25 A | 120-150 W |
| 28 V | 5.36 A | 150 W |
| 36 V | 4.17 A | 150 W |
| 48 V | 2.5-3.13 AA | 120-150 W |

OUTPUT & RATING CODE

| OUTPUT | | | INPUT | | | |
|---------|---------|-------|------------|------------|------------|------------|
| Voltage | Current | Power | 10 - 30 V | 20 - 60 V | 50 - 150 V | 90 - 270 V |
| 12 V | 10.0 A | 120 W | PM150A12 | | | |
| 12 V | 12.5 A | 150 W | | PM150B12 | PM150C12 | PM150D12 |
| 13.8 V | 8.70 A | 120 W | PM150A13.8 | | | |
| 13.8 V | 10.9 A | 150 W | | PM150B13.8 | PM150C13.8 | PM150D13.8 |
| 15 V | 8.00 A | 120 W | PM150A15 | | | |
| 15 V | 10.0 A | 150 W | | PM150B15 | PM150C15 | PM150D15 |
| 24 V | 5.00 A | 120 W | PM150A24 | | | |
| 24 V | 6.25 A | 150 W | | PM150B24 | PM150C24 | PM150D24 |
| 28 V | 5.36 A | 150 W | | PM150B28 | PM150C28 | PM150D28 |
| 36 V | 4.17 A | 150 W | | PM150B36 | | |
| 48 V | 2.50 A | 120 W | PM150A48 | | | |
| 48 V | 3.13 A | 150 W | | PM150B48 | PM150C48 | PM150D48 |

How to read our product code: Example PM150B12
 PM150 = Family code
 B = input voltage code B
 12 = Output voltage 12 V

FEATURES

Overvoltage protection OVP

The output voltage is limited to 15 % over nominal output voltage by an extra regulation circuit.

Extra output with series diode

Use the series diode output when the output is connected in parallel with other power supplies to achieve redundancy.

Over / Under voltage alarm

The built in relay changes to alarm state if the converter output voltage is not within 90 to 115 % of nominal out-put. The user can select NO or NC relay function. The relay rating is 30 V 0.5 A (d.c. or a.c.)

OPTIONAL FEATURES

Inrush current limit with NTC

Reduces the inrush current during start up. The input volt-age range will be affected. Only available on C & D inputs.

Conformally coating

For environment with high non condensing humidity max 98 % RH.

+70 °C operating temperature

Contact factory for derating as it depends on model.
 The alarm can not be used at +70 °C.

Mounting brackets L214-1

Se figure 3.

19" Rack mounting set PL88-2

To mount two PM150 together to form a full 19" rack unit, see figure 2.

19" Rack mounting bracket PL88-3

To mount one PM150 to form a full 19" rack unit, see figure 2.

EN IEC 61000-4-5 level 4

External varistor + surge arrester mounted from pole to ground. With this filter the input meets level 4 of EN IEC 61000-4-5 (+/-2 kV line to line, 4 kV line to ground)

DIN-rail clips

Clips to mount PM150 on a 35 mm DIN-rail.
 (Used with PL88-1 & L-214 see figure 3)

Train input

Input voltage range according to train standard EN 50155 and IEC 60571.

GENERAL DATA / INPUT DATA

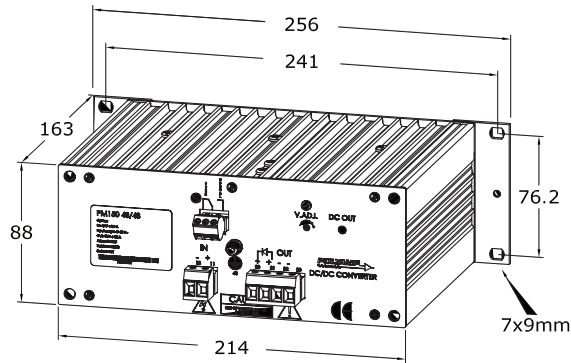
| Label | Value |
|--|----------------------------|
| Design topology | Push-Pull |
| Switching frequency | 30 kHz |
| Emission / Immunity | 8.70 A |
| Safety EN IEC 60950 | 10.9 A |
| Max. accepted input ripple ¹ 50-400 Hz | 8.00 A |
| Inrush current limit | 10.0 A |
| Reverse input voltage protection | |
| A, B input code | 6.25 A |
| C, D input code | 5.36 A |
| Dimensions (D x W x H) | 4.17 A |
| Weight | 2.50 A |
| Power connectors | 0,25 - 4 mm ² |
| Signal connector | 0,25 - 2,5 mm ² |

- Higher ripple affects the input, contact factory
- The output ripple might increase to 0.5% RMS of Vout, when EN IEC 61000-4-3, 10 V/m test is applied.
- Lowest efficiency measured within the whole input voltage range at 100% load.
- Contact factory for derating as depends on model. The alarm relay can not be used at +70 °C

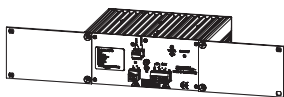
| Label | Value |
|---|-------------------------|
| Source regulation | 0.1% |
| Load regulation (0 to 100% load) | 0.3% |
| Transient recovery time for 10 to 90 % load step to within 3 % of nominal output voltage. | <3 ms |
| Output ripple (60 kHz) ² | 30 mV p-p |
| Input ripple attenuation to output (50 to 400 Hz) | 0.02%/°C |
| Temperature coefficient | 0.02%/°C |
| Min output adjustment range adjustable with a 15 turn potentiometer | 95 - 110% |
| Current limit, rectangular | 105% |
| Remote sense | No |
| Soft start | Yes |
| Start-up time | 1 s |
| Hold-up time, contact factory | 2 - 25 ms |
| Efficiency ³ | 80 - 88 % |
| Operating temperature range at 100% load. (Convection cooling) with derating ⁴ | -25 to +55 °C +70 °C |
| Storage temperature range | -40 to +85 °C |

MECHANICAL DRAWING

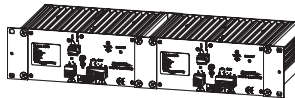
Figure 1. Dimensions



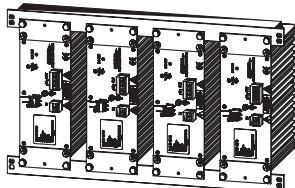
Weight: 2.5 kg



Single unit PM150/240 mounted as one 19" unit using PL88-3 brackets (Optional).



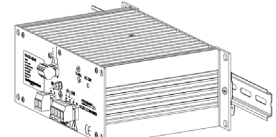
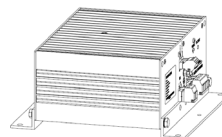
2 units PM150/240 mounted side by side forming one 19" unit, using standard bracket PL88-1 and PL88-2 (Optional).



4 units PM150/240 mounted vertically, using standard PL88-1 brackets and L480-2 (Optional).

PM150/240 wall mounted. Using mounting brackets (Optional) L214-1)

PM150/240 DIN or wall mounted. Using standard brackets PL88-1 +TS35 clips for DIN montage



CE MARK

PM150 meets the requirements defined by CE mark as apparatus.

PM150 meets requirements of EMC directive and low voltage directive (LVD) and RoHS II directive.

The PM150 family is in respect to EMC, a stand alone unit that can also be installed in any other environment by a professional installer.

Please note that product standards can demand different levels or other basic standard tests. We test according to levels below. For higher levels or other tests, contact factory

SAFETY STANDARD EN/IEC 60950

| Isolation testable levels | Test voltage |
|---------------------------|-----------------------|
| Input / Output | 2.5 kVa.c. / 4 kVd.c. |
| Input / Case | 2.5 kVa.c. / 4 kVd.c. |
| Output / Case all outputs | 2.5 kVa.c. / 4 kVd.c. |
| Input / Alarm | 2.5 kVa.c. / 4 kVd.c. |
| Output / Alarm | 2.5 kVa.c. / 4 kVd.c. |
| Case / Alarm | 2.5 kVa.c. / 4 kVd.c. |

EMC

| EMC standards | EMC Performance | | Remarks |
|-----------------------------------|-------------------------|---------------------|---|
| Emission standards | EN IEC 61000-6-3 | | Commercial and light-industrial environments |
| | Input | Output | |
| EN 55016 CISPR 16 (0.15-30 MHz) | OK | OK | opt.EN 55022 level B |
| EN 55016 CISPR 16 (30-1000 MHz) | OK | | Enclosure test |
| Immunity standards | EN IEC 61000-6-2 | | Industrial environments |
| EN IEC 61000-4-2 | 8 kV / 8 kV | | Contact / air, Enclosure test |
| EN IEC 61000-4-3 | 10 V/m AM-Modulated | | Output ripple can increase to 0.5% of Vout Enclosure test |
| EN IEC 61000-4-4 | ± 4 kV | ± 4 kV | |
| EN IEC 61000-4-5, Input code A, B | ± 0.5 kV / ± 1 kV | ± 0.5 kV / ± 1 kV | Line-line 2 Ω / Line-case 12 Ω |
| EN IEC 61000-4-5, Input code C, D | ± 1 kV / ± 2 kV | ± 0.5 kV / ± 1 kV | Line-line 2 Ω / Line-case 12 Ω |
| EN 50121-3-2, IEC 62236-3-2 | ± 1 kV / ± 2 kV | ± 1 kV / ± 2 kV | Line-line 42 Ω / Line-case 42 Ω |
| EN IEC 61000-4-6 | 10 V _{RMS} | 10 V _{RMS} | AM-Modulated |
| EN IEC 61000-4-8 | Not sensitive | | Enclosure test |
| EN IEC 61000-4-10 | Not sensitive | | Enclosure test |

1. Higher level 2 kV / 4 kV with external filters, contact factory.

We use the EMC product standard "Low voltage power supplies DC output" EN 61204-3 as base for measurement principles. The Immunity EMC levels are elevated in order to comply to EN 50121-3-2 (IEC 62236-3-2) Railway application: Rolling stock – Apparatus, and EN 50121-4 (IEC 62236-4)

Railway application: Signaling and telecommunication apparatus. Also to meet relevant parts of IEC 61000-6-5 Generic Standards – Immunity for power stations and substation environments.