PM240

DC-DC Converter

PM240-series 216 to 240 W

Input / Output

- Optimized input voltage ranges.
- Input ranges from 18 to 300 Vd.c.
- Single outputs from 24 to 110 Vd.c.
- Reverse input voltage protection.
- 2.5 kVa.c. isolation input/output, input/case, output/case.

Features

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

Operation

- High efficiency >88 %.
- Operating temperature range -25 to +55 °C and +70 °C with derating.
- Fully encapsulated, meets IP20 as standard.
- Convection cooled.
- Output voltage adjustable on frontpanel

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.

Input and output ratings

Nominal inputs	Input range	Code
24 Vd.c.	18 - 32 V	24
48 Vd.c.	38 - 60 V	48
110, 127 Vd.c.	88 - 150 V	110
220, 250 Vd.c.	175 - 300 V	220

Input voltages meeting train standard EN 50155/IEC 60571, can be made on demand.

Output Voltage	Current	Power
24 V	9 - 10 A	216 - 240 W
36 V	6.7 A	240 W
48 V	4.5 - 5 A	216 - 240 W
60 V	3.6 - 4 A	216 - 240 W
110 V	1.97 - 2.2 A	216 - 240 W

Output ratings and type code

	Ouput			Input		
Voltage	Current	Power	18 - 32 V	38 - 60 V	88 - 150 V	175 - 300 V
24 V	9.0 A	216 W	PM240 24/24			
24 V	10.0 A	240 W		PM240 48/24	PM240 110/24	PM240 220/24
36 V	6.7 A	240 W		PM240 48/36		
48 V	4.5 A	216 W	PM240 24/48			
48 V	5.0 A	240 W		PM240 48/48	PM240 110/48	PM240 220/48
60 V	3.6 A	216 W	PM240 24/60			
60 V	4.0 A	240 W		PM240 48/60	PM240 110/60	PM240 220/60
110 V	1.97 A	216 W	PM240 24/110			
110 V	2.2 A	240 W		PM240 48/110	PM240 110/110	PM240 220/110

How to read our product code:
Example **PM240 110/24**
PM240 = Family code
110 = input voltage code 110
24 = Output voltage 24 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 archive 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 output.
The user can select NO or NC relay funktion. 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 voltage range will be affected. Only available on 110 & 220 input code.
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 PM240 together to form a full 19” rack unit, see figure 2.
19” Rack mounting bracket PL88-3
To mount one PM240 to form a full 19” rack unit, see figure 2.
EN/IEC 61000-4-5 level 4
External varistor + surge arrestor 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 PM240 on a 35 mm DIN-rail. Used with PL88-1 & L214 see figure 3.
Train input
Input voltage range according to train standard EN 50155 and IEC 60571.

General data / input data

Design topology	Push-Pull
Switching frequency	30 kHz
Emission / Immunity	See page 4
Safety EN/IEC 60950	Class I
Max. accepted input ripple[1] 50-400 Hz	2 % of nominal voltage
Input power at no load Uout <55 V	Max. 9 W
Input power at no load Uout >55 V	Max. 20 W
Inrush current limit	No
Reverse input voltage protection	
24, 48 input code	Parallel diode
110, 220 input code	Series diode
Dimensions (D x W x H)	160 x 214 x 88 mm
Weight	2.5 kg

1. Higher ripple affects the input, contact factory

Output data

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 out (50 to 400 Hz)	150:1
Emission / Immunity	See page 4
Temperature coefficient	0.02 %/°C
Min output adjustment range adjustable with a 15 turn potentiometer	95 % to 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]	88 - 91 %
Operating temperature range at 100 % load. (Convection cooling) with derating[4]	-25 to +55 °C +70 °C
Storage temperature range	-40 to +85 °C

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

Mechanical drawing

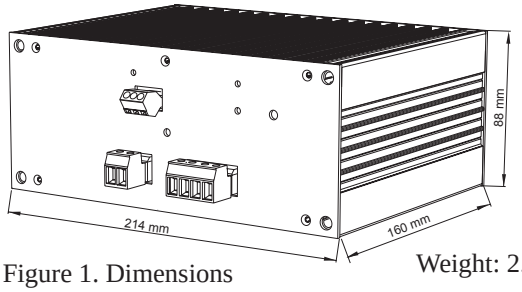
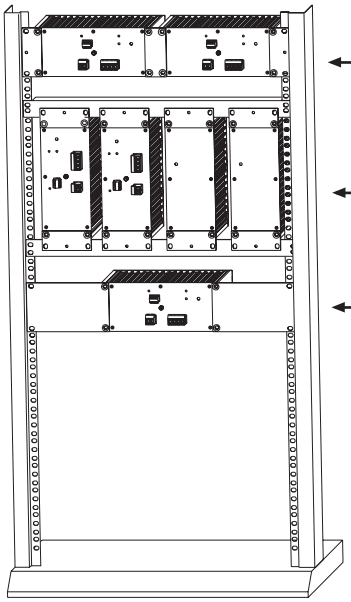


Figure 1. Dimensions

Weight: 2.5 kg



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 verticaly using standard PL88-1 brackets and L480-2 (Optional).

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

Figure 2. 19”-rack mounting

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

PM150/240 wall mounted. Using standard brackets PL88-1

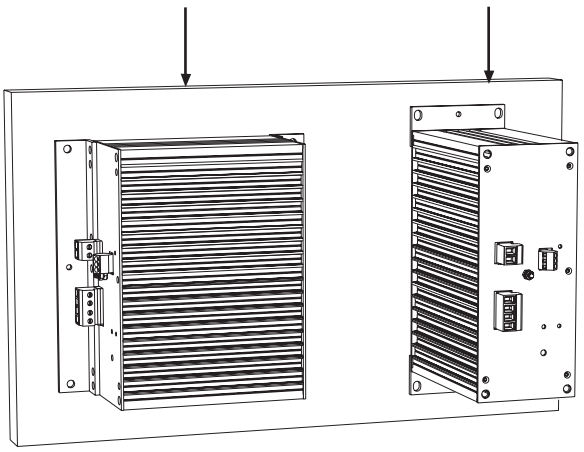


Figure 3.Wall and chassis mounting

Safety and EMC

PM240 meets the requirements defined by CE mark as apparatus.
PM240 meets requirements of EMC directive and low voltage directive (LVD).
Thus a PM240 can be used as free standing unit or in installations as well as systems designed according to ”The modular approach”. PM240 can be used in installation without further EMC tests, if our installation instructions are followed.
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.
Case / Alarm	2.5 kVa.c. / 4 kVd.c.

We use the product standard Low voltage power supplies, DC outputs EN/IEC 61204-3 and the generic EMC standards:
EN/IEC 61000-6-2 (Immunity)
EN/IEC 61000-6-3 (Emission)

EMC

EMC-standards	EMC-performance		
Emission standards	**Input**	**Output**	**Remarks**
EN 55011/EN 55022 (0.15-30 MHz)	Level B	Level B	
	Level B		Enclosure test
Immunity standards	**EN/IEC 61000-6-2**		
EN/IEC 61000-4-2	8 kV / 15 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 24, 48 EN/IEC 61000-4-5, Input code 110, 220	0.5 kV / 1 kV 1 kV / 2 kV[1]	0.5 kV / 1 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.

Contact

For updates on this datasheet we refer to www.polyamp.com
Specifications subject to change without notice.

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