

# PU300

## DC-DC Converter



## PU300-series 216 to 300W

### Input / Output

- Wide input voltage ranges.
- Input ranges from 10 to 270 Vd.c.
- Single outputs from 12 to 60 Vd.c.
- Reverse input voltage protection.

### Operation

- High efficiency.
- Operating temperature range -25 to +55°C.
- Fully encapsulated, meets IP20 as standard.
- Convection cooled.

### Features

- Overvoltage protection OVP.
- Extra output with series diode.
- Over/Under voltage alarm relay.
- Remote sense.
- Inhibit input / Power down.
- Output voltage adjustable on frontpanel.

### EMC

- EN61000-6-3, Emission.
- EN61000-6-2, Immunity.
- EN/IEC61000-4-4, 4kV.
- EN/IEC61000-4-5 level 2&3.

### Input and output ratings

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

Input voltages meeting train standard  
EN50155/IEC60571, can be made on demand.

Output ratings		
Voltage	Current	Power
12V	18 - 25.0A	216 - 300W
13.8V	16 - 21.8A	220 - 300W
15V	16 - 20A	240 - 300W
24V	10 - 12.5A	240 - 300W
28V	8.6 - 10.7A	240 - 300W
36V	6.7 - 8.3A	240 - 300W
48V	5 - 6.2A	240 - 300W
60V	4 - 5.0A	240 - 300W

## Output ratings and type code

Output			Input			
Voltage	Current	Power	10 - 30V	20 - 60V	50 - 150V	90 - 270V
12V	18.0A	216W	PU300A12			
12V	25.0A	300W		PU300B12	PU300C12	PU300D12
13.8V	16.0A	220W	PU300A13.8			
13.8V	21.8A	300W		PU300B13.8	PU300C13.8	PU300D13.8
15V	16.0A	240W	PU300A15			
15V	20.0A	300W		PU300B15	PU300C15	PU300D15
24V	10.0A	240W	PU300A24			
24V	12.5A	300W		PU300B24	PU300C24	PU300D24
28V	8.58A	240W	PU300A28			
28V	10.8A	300W		PU300B28	PU300C28	PU300D28
36V	6.67A	240W	PU300A36			
36V	8.34A	300W		PU300B36	PU300C36	PU300D36
48V	5.00A	240W	PU300A48			
48V	6.25A	300W		PU300B48	PU300C48	PU300D48
60V	4.00A	240W	PU300A60			
60V	5.00A	300W		PU300B60	PU300C60	PU300D60

### How to read our product code:

Example **PU300A12**

**PU300** = Family code

**A** = input voltage code A

**12** = Output voltage 12V

## Features

- **Overvoltage protection OVP**  
The output voltage is limited to 15% over nominal output voltage by an extra regulation circuit.
- **External output voltage sense**  
External sense is used when the voltage regulation at the load is critical.  
The sense can compensate voltage drops up to 5% of the nominal voltage.
- **Remote sense**  
External sense is used when the voltage regulation at the load is critical.  
The sense can compensate voltage drops up to 5% of the nominal voltage.
- **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 function.  
The relay rating is 30V 0.5A (d.c. or a.c.)
- **Inhibit input / Power down**  
This input allows remote start and shutdown of the converter by a signal voltage of 5 to 12V. Max 35mA.

## Optional Features

- **Inrush current limit with NTC**  
Reduces the inrush current during start up.  
The input voltage range will be affected.  
Only available on C & D input code.
- **Conformally coating**  
For environment with high non condensing humidity max 98% RH.
- **Mounting brackets L216-1**  
See figure 3.
- **19" Rack mounting set**  
To mount two PU300 together to form a full 19" rack unit, see figure 2.
- **19" Rack mounting bracket**  
To mount one PU300 to form a full 19" rack unit, see figure 2.
- **Empty box**  
To produce a full 19"-rack unit. Includes 19"-rack mounting set, see top section of figure 2. (One converter replaced by empty box.)
- **Train input**  
Input voltage range according to train standard EN50155 and IEC60571.  
For train 36V use standard B-range and for 110V use standard C-range.

## General data / input data

Design topology	Push-Pull
Switching frequency	40 kHz
Emission / immunity	See page 4
Safety EN/IEC60950	Class I
Max. accepted input ripple <sup>1</sup> 50-400Hz	2% of nominal voltage
Input power at no load	
Uout <36 V	Max 10 W
Uout 36-50 V	Max 12 W
Uout 60 V	Max 17 W
<b>Reverse input voltage protection</b>	
A, B input code	Parallel diode
C, D input code	Series diode
Dimensions (D x W x H)	232x210x86mm
Weight	4.2 kg

- Higher ripple affects the input, contact factory

## Output data

Source regulation	0.1%
Load regulation (0-100% load)	0.2%
Transient recovery time for 10%-90% load step to within 3% of nominal output voltage.	<3ms
Output ripple (80kHz) <sup>2</sup>	Typ. 15mV p-p
Input ripple attenuation to output (50 to 400 Hz).	150:1
Emission / Immunity	See page 4
Temperature coefficient	0.02% /°C
<b>Min output adjustment range</b> adjustable with a 15 turn potentiometer	
	95% to 110%
Current limit, rectangular.	105%
Remote sense	Yes
Soft start	Yes
Start-up time	1s
Hold-up time, contact factory	2-25ms
Efficiency <sup>3</sup>	77-88%
Operating temperature range at 100% load. (Conduction cooling.) with derating <sup>4</sup>	-25 to +55°C -25 to +70°C

- Output ripple might increase to 0.5% RMS of Vout, when EN/IEC61000-4-3, 10V/m test is applied
- Lowest efficiency measured within the whole input voltage range at 100% load.
- Contact factory for derating as it depends on model. The alarm relay can not be used at +70°C.

## Mechanical drawing

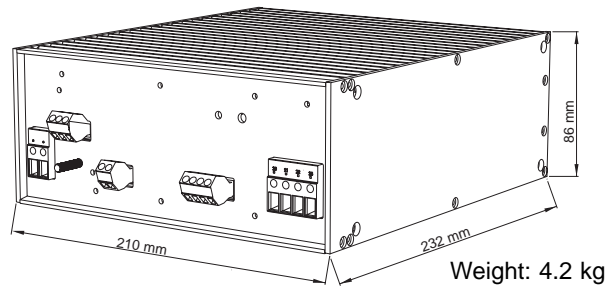


Figure 1. Dimensions

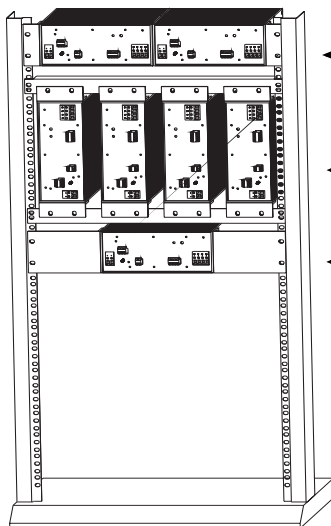


Figure 2. 19"-rack mounting

- ← 2 units PU300/500 mounted side by side forming one 19" unit using 19" rack mounting set.(Optional)
- ← 4 units PU300/500 mounted vertically using standard L86-1 brackets and L480-1 (Optional).
- ← Single unit PU300/500 mounted as one 19" unit using L86-3 brackets (Optional).

PU300/500 wall mounted.  
Using mounting brackets  
L216-1 (Optional)

PU300/500 wall mounted.  
Using standard brackets  
L86-1

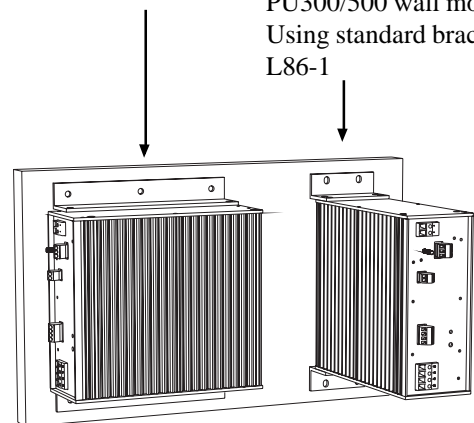


Figure 3. Wall and chassis mount

PU300 meets the requirements defined by CE mark as apparatus.

PU300 meets requirements of EMC directive and low voltage directive (LVD).

Thus a PU300 can be used as free standing unit or in installations as well as systems designed according to "The modular approach". PU300 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.

Isolation testable levels	Test voltage
Input / output: Input code: A, B	2kVd.c.
Input code: C, D	2.5kVa.c. / 4kVd.c.
Input / Signal* Input code: A, B	2kVd.c.
Input code: C, D	2.5kVa.c. / 4kVd.c.
Input / Case Input code: A, B	2kVd.c.
Input code: C, D	2.5kVa.c. / 4kVd.c.
Output / Case all outputs	2kVd.c.
Output / Case all outputs	2kVd.c.
Output / Signal*	2kVd.c.
Case / Signal* Input code: A, B	2kVd.c.
Input code: C, D	2.5kVa.c. / 4kVd.c.

\* Signal = Alarm + Inhibit

We use the product standard Low voltage power supplies, DC outputs EN/IEC61204-3 and the generic EMC standards:  
EN/IEC61000-6-2 (Immunity)  
EN/IEC61000-6-3 (Emission)

## EMC

EMC-standards	EMC-performance		Remarks
Emission standars	Input	Output	
EN55011/EN55022 (0.15-30MHz)	Level B	Level B	
EN55011/EN55022 (30-1000MHz)	Level B		Enclosure test
Immunity standards	IEC/EN61000-6-2		
EN/IEC61000-4-2	8 kV/15 kV		Contact / air, Enclosure test
EN/IEC61000-4-3	20 V/m AM-Modulated		Output ripple can increase to 0.5% of Vout Enclosure test
EN/IEC61000-4-3	20 V/m Pulse modulated		Enclosure test
EN/IEC61000-4-4	4 kV	4 kV	
EN/IEC61000-4-5, Input code A, B	0.5kV / 1 kV	0.5kV / 1 kV	Line-line 2Ω / Line-case 12Ω
EN/IEC61000-4-5, Input code C <sup>1</sup> , D <sup>1</sup>	1kV / 2 kV	0.5kV / 1 kV	
EN50155 Figure 4, 1.8kV 1.5/50μs	Yes		Line-line 100 Ω
EN/IEC61000-4-6	10 V <sub>RMS</sub>	10 V <sub>RMS</sub>	AM-Modulated
EN/IEC61000-4-8	Not sensitive		Enclosure test
EN/IEC61000-4-10	Not sensitive		Enclosure test

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

## Contact

For updates on this datasheet we refer to [www.polyamp.com](http://www.polyamp.com)  
Specifications subject to change without notice.

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