POLYAMP

PU1000-series 800 to 1000 W

INPUT / OUTPUT

- Optimized input voltage ranges
- Input ranges from 18 to 750 Vd.c.
- Single outputs from 24 to 110 Vd.c.
- Reverse input voltage protection

OPERATION

- Operating temperature range -25 to +55 °C
- High efficiency > 88%
- Fully encapsulated, meets IP20 as standard.
- Convection cooled

FEATURES

- Current sharing
- Extra output with series diode
- External output voltage sense
- Inrush current limit
- Overvoltage protection OVP
- Alarm circuit with relay
- Inhibit input / Power down
- 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		
Nominal inputs	**Input range**	**Code**
24 Vd.c.	18-32 V	24
48 Vd.c.	38-60 V	48
72 Vd.c.	50-90 V	72
110, 127 Vd.c.	88-150 V	110
220, 250 Vd.c.	175-300 V	220
440, xxx Vd.c.	<750 V	xxx

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

OUTPUT		
Voltage	**Current**	**Power**
24 V	33.4-41.7 A	800-1000 W
28 V	28.6-35.7 A	800-1000 W
48 V	16.7-20.9 A	800-1000 W
60 V	13.4-16.7 A	800-1000 W
85 V	11.8 A	1000 W
110 V	7.28-9.09 A	800-1000 W

OUTPUT RATING & TYPE CODE

OUTPUT							
Voltage	**Current**	**Power**	**18 - 32 V**	**38 - 60 V**	**50 - 90 V**	**88 - 150 V**	**175 - 300 V**
24 V	33.4 A	800 W	PU1000 24/24				
24 V	41.7 A	1000 W		PU1000 48/24	PU1000 72/24	PU1000 110/24	PU1000 220/24
28 V	28.6 A	800 W	PU1000 24/28				
28 V	35.7 A	1000 W		PU1000 48/28	PU1000 72/28	PU1000 110/28	PU1000 220/28
48 V	16.7 A	800 W	PU1000 24/48				
48 V	20.9 A	1000 W		PU1000 48/48	PU1000 72/48	PU1000 110/48	PU1000 220/48
60 V	13.4 A	800 W	PU1000 24/60				
60 V	16.7 A	1000 W		PU1000 48/60	PU1000 72/60	PU1000 110/60	PU1000 220/60
85 V	11.8 A	1000 W		PU1000 48/85	PU1000 72/85	PU1000 110/85	PU1000 220/85
110 V	7.28 A	800 W	PU1000 24/110				
110 V	9.09 A	1000 W		PU1000 48/110	PU1000 72/110	PU1000 110/110	PU1000 220/110

How to read our product code:
Example PU1000 110/48
PU1000 = Family code
110 = input voltage code 110
48 = Output voltage 48 V

FEATURES

Current Sharing
Current sharing is used to balance the load between up to 10 units working in parallel. Even more units can be paralleled with special care. Contact Polyamp.

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

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.

Inrush current limit
Models with input code 110 and 220 have an active inrush current limit. I peak <6xInom.

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

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
The converter will shutdown if the inhibit input is short-circuit by a relay or electrical switch. The current through the short-circuit is 20mA. Note that there is no electrical isolation between the inhibit and the output.

Reverse input voltage protection
All PU1000 has input reverse protection. On input code 24 and 48 with a parallel diode, which is dimensioned to blow an external input fuse. Other inputs use a input series thyristor.

OPTIONAL FEATURES

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

EN IEC61000-4-5 level 4
Input filter to meet level 4 of 61000-4-5 (+/-2kV line to line, 4kV line to ground).

Train input
Input voltage range according to train standard EN50155 and IEC60571.

High input voltage up to nom. 600 Vd.c.
Inputs from submarines, powerplants and solar bus voltage.

Mounting bracket L-300-1
See figure 3.

Vertical mount 19”-rack
Up to 4 units can be mounted vertically with L480-2, see figure 2.

GENERAL DATA / INPUT DATA

LABEL	VALUE
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	<15 W
Reverse input voltage protection	
24, 48, 72 input code	Parallel diode
110, 220 input code	Thyristor
Dimensions (D x W x H)	337 x 420 x 86 mm
Weight	10 kg

1. Higher ripple affects the input, contact factory

OUTPUT DATA

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]	Typ. 30 mV p-p
Input ripple attenuation to output (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 - 110%
Current limit, rectangular	105%
Remote sense	Yes
Soft start	Yes
Start-up time	1 s
Hold-up time, contact factory	2 - 25 ms
Efficiency[3]	88 - 92 %
Operating temperature range at 100% load. (Convection cooling) with derating[4]	-25 to +55 °C -25 to +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 depends on model. The alarm relay can not be used at +70 °C

MECHANICAL DRAWING

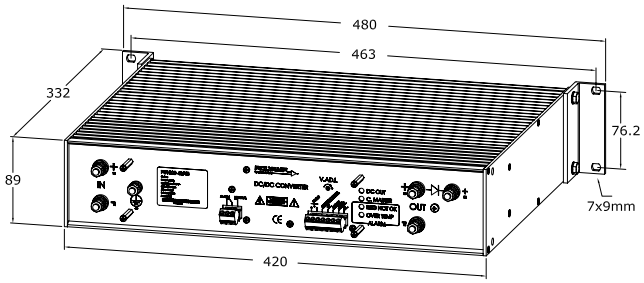
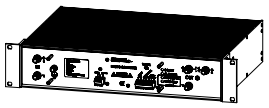
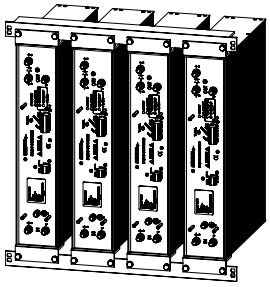


Figure 1. Dimensions

Weight: 10 kg



Single unit PU600/1000 mounted as one 19" unit using standard brackets L89-1



4 units PU600/1000 mounted verticaly, using standard L89-1 brackets and L480-2 (Optional).

Figure 2. 19"-rack mounting

PU600/1000 wall mounted. Using standard brackets L89-1

(Please note only vertical mounting is recomended)

PU600/1000 wall mounted. Using mounting brackets L300-1 (Optional)

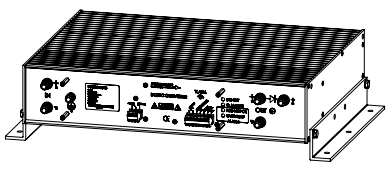


Figure 3. Wall and chassis mounting

CE MARK

PU1000 meets the requirements defined by CE mark as apparatus.

PU1000 meets requirements of EMC directive and low voltage directive (LVD) and RoHS II directive.

The PU1000 family is in respect to EMC, a stand alone unit 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
Safety class / Installation category		Class II / Class I
Input / Output	Input code: 24, 48, 72 Input code: 110, 220	2 kVd.c. 2.5 kVa.c. / 4 kVd.c.
Input / Alarm	Input code: 24, 48, 72 Input code: 110, 220	2 kVd.c. 2.5 kVa.c. / 4 kVd.c.
Input / Case	Input code: 24, 48, 72 Input code: 110, 220	2 kVd.c. 2.5 kVa.c. / 4 kVd.c.
Alarm / Case	Input code: 24, 48, 72 Input code: 110, 220	2 kVd.c. 2.5 kVa.c. / 4 kVd.c.
Output / Case on <75 Vd.c. output		2 kVd.c.
Output / Alarm		2 kVd.c.
Output / Case on >75 Vd.c. output		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 CISPR16 (0.15-30 MHz)	OK	OK	opt. EN 55022 level B
EN 55016 CISPR16 (30-1000 MHz)	OK		Enclosure test
Immunity standards	**EN IEC 61000-6-2**		**Industrial environments**
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, 72 EN IEC 61000-4-5, Input code 110[1], 220[1]	± 0.5 kV / ± 1 kV ± 1 kV / ± 2 kV	± 0.5 kV / ± 1 kV ± 0.5 kV / V1 kV	Line-line 2 Ω / Line-case 12 Ω 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.

POLYAMP

- A secure part of your system

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