ACI-3000

Inrush current limiting accessory

GENERAL FEATURES:

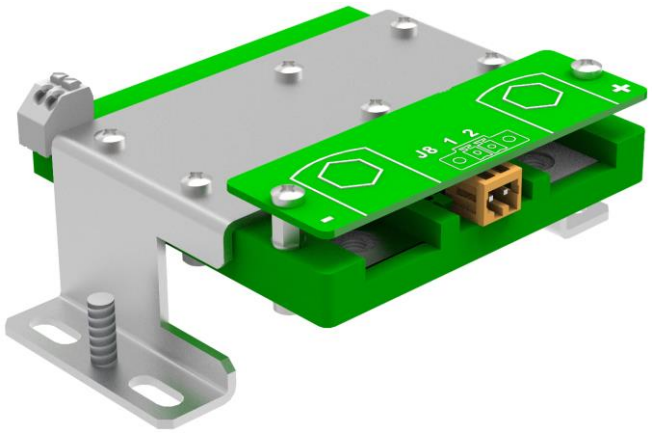
Suitable for the series:

- ODS-1500
- ODS-3000
- ODX-3000

Active polarity reversal protection

According to EN-50155

According to EN-45545



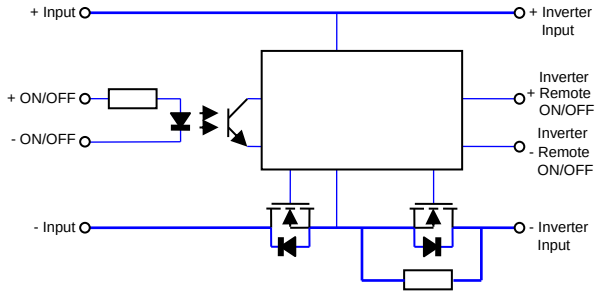
Model	Nominal Input Voltage	Input voltage range	Inrush current	Typical serial resistance	Remote ON/OFF input Impedance
ACI-3000-9333	24 Vdc	16.8 … 30 V	< 10 A	0.4 mΩ	9.5 kΩ
ACI-3000-9334	36 Vdc	25.2 … 45 V	< 9 A	0.24 mΩ	15 kΩ
ACI-3000-9335	48 Vdc	33.6 … 60 V	< 9 A	1 mΩ	20 kΩ
ACI-3000-9336	72 Vdc	50.4 … 90 V	TBD	TBD	TBD
ACI-3000-9337	110 Vdc	77 … 138 V	< 7 A	10 mΩ	66 kΩ

Specifications are subject to change without notice. These products are not intended for use as critical components in life support or nuclear systems.

INPUT	
Input voltage range	-30, +25 % Vin nom, transients according to EN50155
Maximum input ripple	5% Vin nom (Vrms, 100 Hz)
ENVIRONMENTAL	
Storage temperature	-40 … 80 °C
Operating temperature:	
Full load	-40 … 55 °C (EN50155 OT2)
62.5 % load	-40 … 70 °C (EN50155 OT4)
25 % load	-40 … 85 °C (EN50155 OT6)
Relative humidity	5 … 95 %
Maximum altitude	2500m at full load
Cooling	Natural convection
Shock and vibration	According to EN61373:2010 + Corr 1:2011 Category 1 class B body mounted
MTBF (MIL-HDBK-217-E; G_b, 25 °C)	1M h
EMC	
Immunity according	EN61000-6-2, EN50121-3-2
Emissions according	EN61000-6-4, EN50121-3-2
SAFETY	
Dielectric strength: Input-Inverter-Inhibit / Earth (frame) (1)	2500 Vrms / 50 Hz / 1 min
Dielectric strength: Input-Inverter-Inhibit / ON/OFF (1)	1500 Vrms / 50 Hz / 1 min
Dielectric strength: Earth (frame) / ON/OFF (1)	2500 Vrms / 50 Hz / 1 min
Safety according to	EN60950-1, EN62368-1
Fire and smoke according to	EN45545-2
MECHANICAL	
Weight	< 260 g
Shock and Vibrations according to	EN61373:2010 + Corr 1:2011 Category 1 Class B
PROTECTIONS	
Against input reverse polarity	Active
CONTROL	
Remote ON/OFF input	Optocoupled Maximum rating = Input voltage range Impedance: see Model table ON: Applying a voltage within input voltage range OFF: Open circuit or < 3V

Note 1 See blocks diagram in next page

ACI-3000 Block diagram



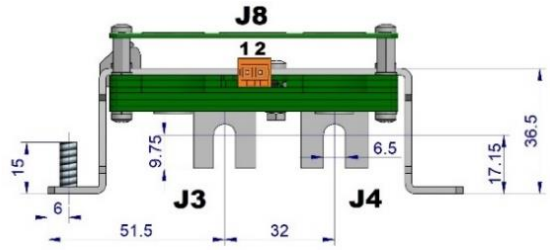
DESCRIPTION

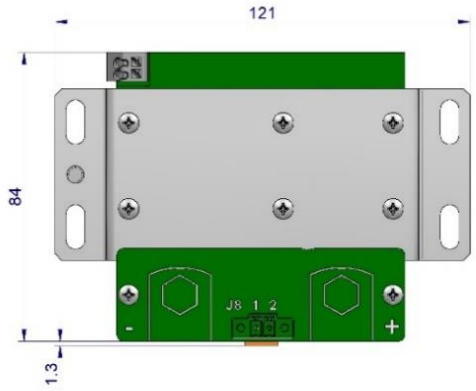
The ACI-3000 is an accessory for the following Premium series: ODS-1500, ODS-3000 and ODX-3000.

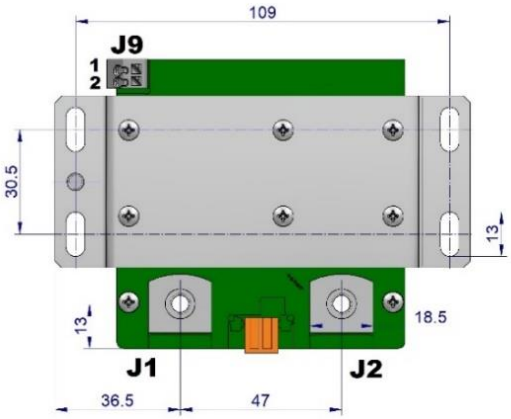
This device provides the following features:

1. It reduces the inrush current to the values indicated in the table.
2. It provides active protection against reverse polarity, so that the DC/AC inverter does not receive voltage or overcurrent when the voltage is reversed at the input of the ACI-3000 accessory.
3. The inverter remote ON/OFF input is in the ACI-3000.

INSTALLATION







1. WARNING: Use only inverters with option remote OFF reversed. This option can be ordered including "I" letter at the end of the part number:
   ODS-1500-71__-_I
   ODS-3000-71__-_I
   ODX-3000-74__-_I
   Otherwise, the inverter will remain OFF
2. Remove the protective cover of the input inverter terminals.
3. For an easier assembly, we recommend replacing the input terminals screws of the inverter with the included Allen type ones, leaving them lose.
4. Insert terminals J3 and J4 on the input terminals of the inverter. See figure-1.
5. Mount the ACI-3000 brackets to the mounting surface with the screws lose.
6. Tighten the Allen screws from J3 and J4 terminals.
7. Tighten the bracket screws.
8. Place the inhibit cable included. See figure-2.

J1	- Input	Terminals M6 (Rec. torque 6 Nm)
J2	+ Input	
J3	- Inverter	Terminals M6 (Rec. torque 6 Nm)
J4	+ Inverter	
J9 - 1	To +Inhibit inverter	Cables 0.25 … 1.5 mm^2
J9 - 2	To - Inhibit inverter	
J8 - 1	- Remote ON/OFF	Cables 0.25 … 1.5 mm^2 Wago 734-262 Includes female: 734-202/037-000
J8 - 2	+ Remote ON/OFF	
	Earth bolt	M5 (Rec. torque 3.8 Nm)

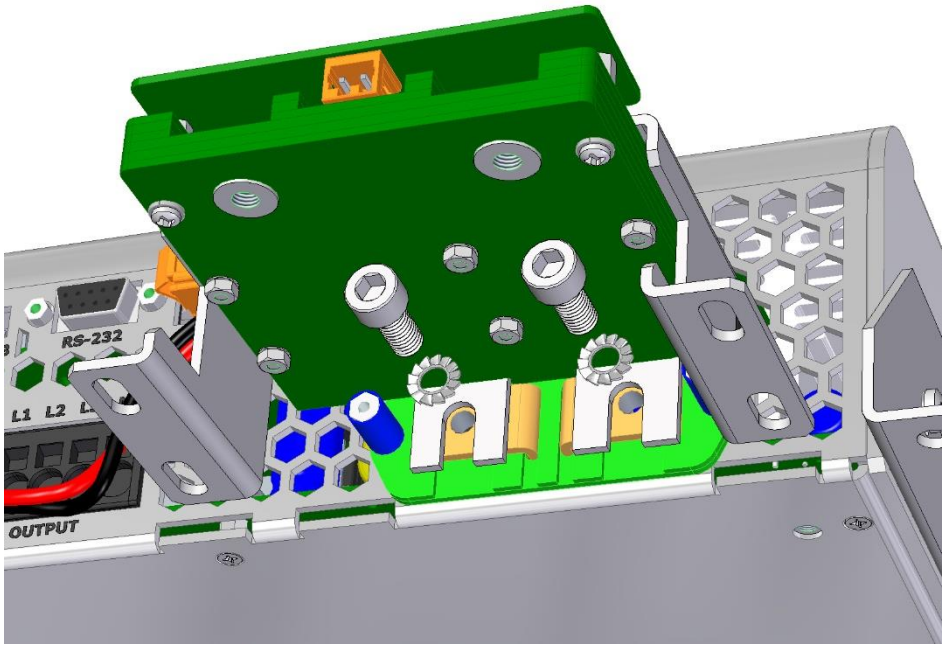


Figure-1

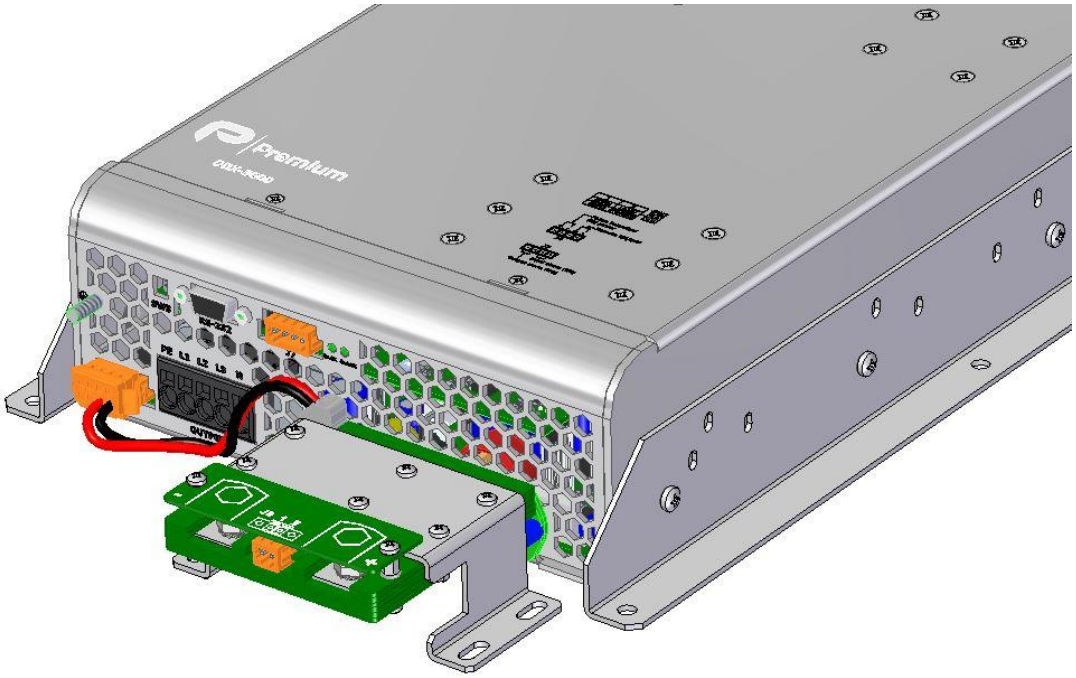
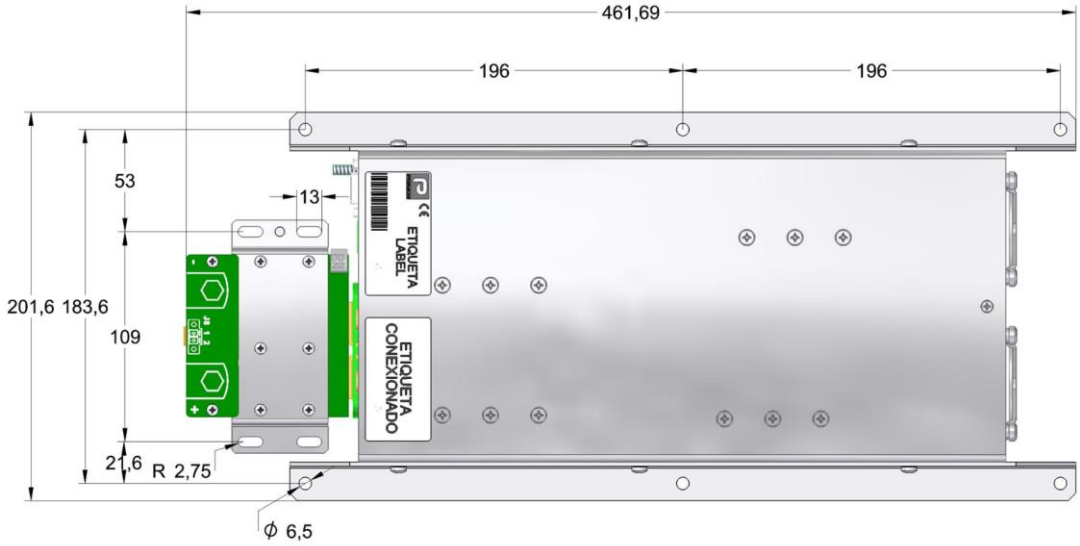


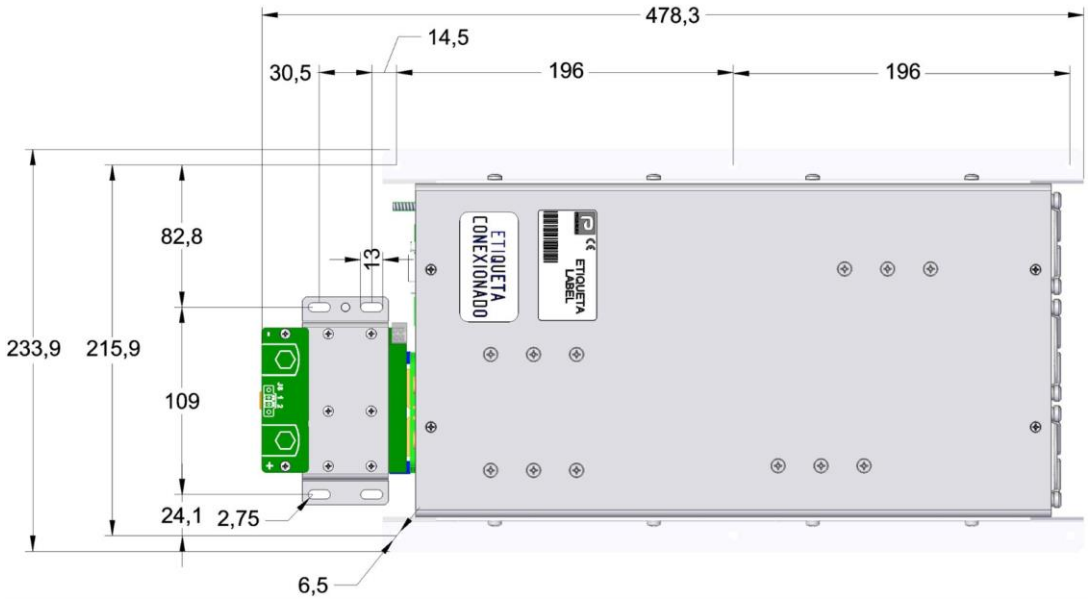
Figure-2

Example for ODX-3000 series

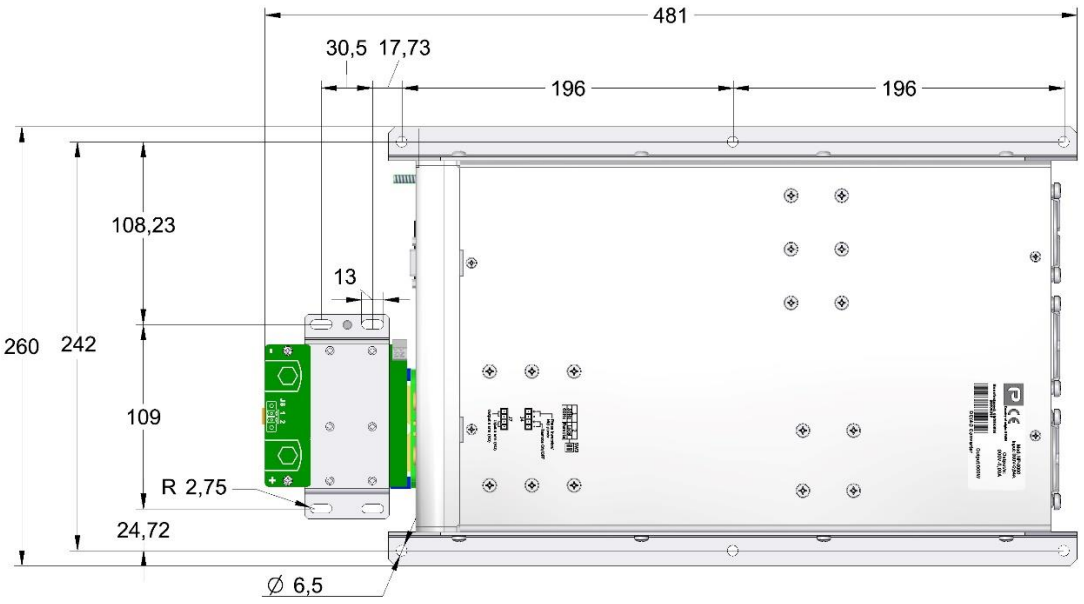
ACI-3000 + ODS-1500



ACI-3000 + ODS-3000



ACI-3000 + ODX-3000



EU, UKCA DECLARATION OF CONFORMITY

The undersigned, representing the following:

Manufacturer: PREMIUM, S. A.,
Address: C/ Dolors Aleu 19-21, 08908 L'Hospitalet de Llobregat, SPAIN

herewith declares that the product:

Type: DC/DC converter
Models: **ACI-3000-9333 … 9337**

is in conformity with the provisions of the following EU directive(s):

2014/35/EU SI 2016 No 1101	Low voltage / The electrical equipment (safety) regulations
2014/30/EU SI 2016 No 1091	EMC / Electromagnetic compatibility regulations
2011/65/EU Annex II and its amendment 2015/863/EU SI 2012 No. 3032	RoHS / Restriction of the use of certain hazardous substances in electrical and electronic equipment

and that standards and/or technical specifications referenced below have been applied:

EN 60950-1: 2005	Safety. Information technology equipment
EN 62368-1: 2014	Safety. Audio/video information and communication technology equipment
IEC 61000-6-4: 2018	Generic emission standard
IEC 61000-6-2: 2019	Generic immunity standard
EN 50155: 2017*	Railway applications. Electronic equipment used on rolling stock material
EN 50121-3-2: 2016*	Railway applications. EMC Rolling stock equipment

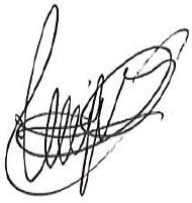
* Optional, See annexe

CE marking year: **2016**; UKCA marking year: **2021**

Notes:

For the fulfilment of this declaration the product must be used only for the aim that has been conceived, considering the limitations established in the instructions manual or datasheet.

L'Hospitalet de Llobregat, 31-05-2021



Miguel Angel Fernandez
Chief Research & Development Officer

PREMIUM S.A. is an ISO9001and ISO14001 certified company by **Bureau Veritas**

ANNEXE

<table>
<tr><th colspan="4">Applicable values for the different sections of the norm EN50155: 2017</th></tr>
<tr><td>4.3.1</td><td>Working altitude</td><td colspan="2">Up to 2500 m</td></tr>
<tr><td>4.3.2</td><td>Ambient temperature</td><td colspan="2">Class OT2 (-40 to 55 °C): load < 100 %
Class OT4 (-40 to 70 °C): load <62.5 %
Class OT6 (-40 to 85 °C): load <25 %</td></tr>
<tr><td>4.3.3</td><td>Switch-on extended operating temp.</td><td colspan="2">ST1</td></tr>
<tr><td>4.3.4</td><td>Rapid temperature variations</td><td colspan="2">H1</td></tr>
<tr><td>4.3.5</td><td>Shocks and vibrations</td><td colspan="2">According EN61373:2010 + Corr 1:2011 Category 1 class B</td></tr>
<tr><td>4.3.6</td><td>EMC Electromagnetic Compatibility

EN50121-3-2:2016</td><td colspan="2">
<table>
<tr><th>Test</th><th>Norm</th><th>Port</th><th>Frequency</th><th>Limits</th></tr>
<tr><td rowspan="4">Radiated emissions</td><td rowspan="4">IEC55016</td><td rowspan="4">Case</td><td>30 MHz…230 MHz</td><td>40 dB(µV/m) Qpk at 10 m</td></tr>
<tr><td>230 MHz…1 GHz</td><td>47 dB(µV/m) Qpk at 10 m</td></tr>
<tr><td>1…3 GHz</td><td rowspan="2">Do not apply
Internal freq. < 108 MHz</td></tr>
<tr><td>3…6 GHz</td></tr>
<tr><td>Conducted emissions</td><td>IEC55016</td><td>Input</td><td>150 kHz…500 kHz</td><td>99 dB(µV) Qpk</td></tr>
<tr><td></td><td></td><td></td><td>500 kHz…30 MHz</td><td>93 dB(µV) Qpk</td></tr>
</table>
<table>
<tr><th>Test</th><th>Norm</th><th>Port</th><th>Severity</th><th>Conditions</th><th>P</th></tr>
<tr><td rowspan="2">Electrostatic discharge</td><td rowspan="2">IEC61000-4-2</td><td rowspan="2">Case</td><td>±8 kV</td><td>Air (isolated parts)</td><td rowspan="2">B</td></tr>
<tr><td>±8 kV</td><td>Contact (conductive parts)</td></tr>
<tr><td rowspan="4">Radiated high-frequency</td><td rowspan="4">IEC61000-4-3</td><td rowspan="4">X/Y/Z Axis</td><td>20 V/m</td><td>0.08…1.0 GHz M. 80% 1 kHz</td><td rowspan="4">A</td></tr>
<tr><td>10 V/m</td><td>1.4…2.1 GHz M. 80% 1 kHz</td></tr>
<tr><td>5 V/m</td><td>2.1…2.5 GHz M. 80% 1 kHz</td></tr>
<tr><td>3 V/m</td><td>5.1…6 Ghz M. 80% 1 kHz</td></tr>
<tr><td rowspan="4">Fast transients</td><td rowspan="4">IEC61000-4-4</td><td>Input</td><td>±2 kV</td><td rowspan="4">Tr/Th: 5/50 ns</td><td rowspan="4">A</td></tr>
<tr><td>Output</td><td>±2 kV</td></tr>
<tr><td>Signal</td><td>±2 kV</td></tr>
<tr><td>PE</td><td>±1 kV</td></tr>
<tr><td rowspan="2">Surge</td><td rowspan="2">IEC61000-4-5</td><td>Input L to L</td><td>±1 kV</td><td rowspan="2">Tr/Th: 1.2/50 µs</td><td rowspan="2">B</td></tr>
<tr><td>Input L to PE</td><td>±2 kV</td></tr>
<tr><td rowspan="4">Conducted RF</td><td rowspan="4">IEC61000-4-6</td><td>Input</td><td>10 V</td><td rowspan="4">0.15...80 MHz M. 80% 1 kHz</td><td rowspan="4">A</td></tr>
<tr><td>Output</td><td>10 V</td></tr>
<tr><td>Signal</td><td>10 V</td></tr>
<tr><td>PE</td><td>10 V</td></tr>
<tr><td>Magnetic field</td><td>IEC61000-4-8</td><td>X/Y/Z Axis</td><td>300 A/m</td><td>0 Hz, 16.7 Hz, 50/60 Hz</td><td>A</td></tr>
</table>
P= Performance criteria, L= Line, PE= Protective Earth
</td></tr>
<tr><td>4.3.7</td><td>Relative humidity</td><td colspan="2">Up to 95%</td></tr>
<tr><td>5.1.1.2</td><td>DC power supply range</td><td colspan="2">From 0.70 to 1.25 Un continuous</td></tr>
<tr><td>5.1.1.3</td><td>Temporary DC power supply fluctuation</td><td colspan="2">From 0.60 to 1.40 Un 0.1 s
From 1.25 to 1.40 Un 1 s without damage</td></tr>
<tr><td>5.1.1.4</td><td>Interruptions of voltage supply</td><td colspan="2">Class S1 (without interruptions)</td></tr>
<tr><td>5.1.1.6</td><td>Input ripple factor</td><td colspan="2">10 % peak to peak with a DC Ripple Factor of 5 %</td></tr>
<tr><td>5.1.3</td><td>Supply change-over</td><td colspan="2">0.6 Un duration 100 ms (without interruptions). Performance criterion A</td></tr>
<tr><td>7.2.7</td><td>Input reverse polarity protection</td><td colspan="2">Yes, active protection</td></tr>
<tr><td>10.7</td><td>Protective coating for PCB assemblies</td><td colspan="2">Class PC2</td></tr>
<tr><td>13.3</td><td>Tests list</td><td>1 Visual Inspection
2 Performance test
3 Power supply test
4 Insulation test
5 Low temperature storage test
6 Low temperature start-up test
7 Dry heat test
8 Cyclic damp heat test
9 Salt mist test
10 Enclosure protection test (IP code)
11 EMC test
12 Shocks and vibrations test
13 Equipment stress screening test
14 Rapid Temperature variation test</td><td>Routine
Routine
Routine
Routine
Type
Type
Type
Type
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Type
Type
Routine: 24 h at 40 °C and load 100 %
-</td></tr>
</table>