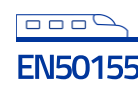


# ODS-750

## 450...750W DC/AC SINE WAVE INVERTER

### GENERAL FEATURES:

- Sine wave output voltage
- Selectable output frequency: 50/60Hz
- High input-output isolation 3000Vrms
- Remote inhibit
- Input and output alarm
- Railway version EN50155, RIA12 (optional)
- Fire and smoke: EN45545-2 approved



	12Vdc 9.5 ... 15V <sup>(1)</sup>	24Vdc 16.8 ... 30V	36Vdc 25.2 ... 45V	48Vdc 33.6 ... 60V	72Vdc 50.4 ... 90V	110Vdc 77 ... 138V
120Vac	<b>ODS-750-7281</b> 450W	<b>ODS-750-7283</b> 750W	<b>ODS-750-7284</b> 750W	<b>ODS-750-7285</b> 750W	<b>ODS-750-7286</b> 750W	<b>ODS-750-7287</b> 750W
230Vac	<b>ODS-750-7271</b> 450W	<b>ODS-750-7273</b> 750W	<b>ODS-750-7274</b> 750W	<b>ODS-750-7275</b> 750W	<b>ODS-750-7276</b> 750W	<b>ODS-750-7277</b> 750W



<b>INPUT</b>	
Input voltage range	See table
Maximum input ripple	5% Vin nom (Vrms, 100Hz)
<b>OUTPUT</b>	
Output voltage	120 / 230Vac sinusoidal
Load regulation	4%
Line regulation	0.4% @ $\Delta V_{in}$ -20...+25% 10% @ $\Delta V_{in}$ -30...+25% 1% @ $\Delta V_{in}$ -10...+25% for 12Vin models 10% @ $\Delta V_{in}$ -20...+25% for 12Vin models
Output frequency	50 / 60Hz $\pm$ 0.25Hz
Output wave distortion THD	< 2% (16 samples average)
Output voltage HF ripple	< 20Vpp
<b>ENVIRONMENTAL</b>	
Storage temperature	-40 ... 85°C
Operating temperature full load	-25 ... 55°C (-40 ... 55°C) <sup>(1)</sup>
Operating temperature 50% load	-25 ... 70°C (-40 ... 70°C) <sup>(1)</sup>
Cooling	Variable speed internal fan
MTBF (MIL-HDBK-217-E; G <sub>b</sub> , 25°C)	160.000 h
<b>EMC</b>	
Immunity according to	EN61000-6-2 / EN50121-3-2
Emissions according to	EN61000-6-3 / EN50121-3-2
<b>SAFETY</b>	
Safety according to	EN60950
Dielectric strength: Input /output	3000 Vrms / 50Hz / 1min
Dielectric strength: Output / Earth	1500 Vrms / 50Hz / 1min
Dielectric strength: Input / Earth	1500 Vrms / 50Hz / 1min
Fire and smoke	EN45545 approved
<b>MECHANICAL</b>	
Weight	1950 g
Dimensions	130 x 270 x 50mm
<b>PROTECTIONS</b>	
Against input over-currents	Internal fuse for 36, 48, 72, and 110V input models
Against output overloads < 10A	Linear
Against output overloads > 10A	Triggered
Against over-temperature	Shutdown with automatic recovery
<b>CONTROL</b>	
Remote inhibit input	OFF: applying 4...24 Vdc, Impedance >3k $\Omega$
Input and output alarm (OPTIONAL)	Isolated contact relay open when alarm (< 0.1A at 150Vcc)

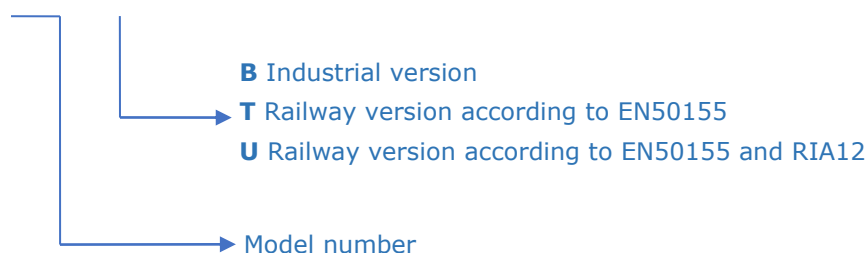
Note <sup>(1)</sup>: The unit can start up and work at an ambient temperature of -40°C with the following restriction: Do not actuate over the connectors below -25°C.



## ORDERING CODES

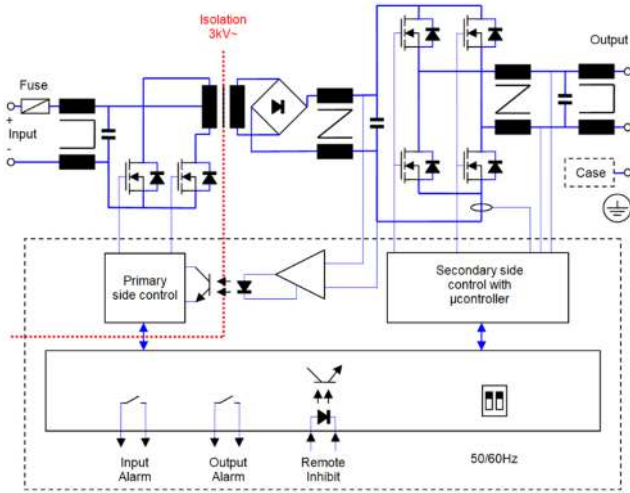
Model	Input Voltage DC [V]	Input voltage range [V]	Output voltage AC [V]	Output current [A]	Active output power [W]	Appar. output power [VA]	Output peak curr. 10ms [A]	Efficiency [%]	No load input current [A]
<b>ODS-750-7271</b>	12	9.50 - 15	230	2.0	450	750	10	85	0.80
<b>ODS-750-7273</b>	24	16.8 - 30	230	3.26	750	750	10	86	0.46
<b>ODS-750-7274</b>	36	25.0 - 45	230	3.26	750	750	10	87	0.36
<b>ODS-750-7275</b>	48	33.6 - 60	230	3.26	750	750	10	88	0.27
<b>ODS-750-7276</b>	72	50.4 - 90	230	3.26	750	750	10	88	0.17
<b>ODS-750-7277</b>	110	77 - 138	230	3.26	750	750	10	89	0.12
<b>ODS-750-7281</b>	12	9.50 - 15	120	3.75	450	750	16	84	0.80
<b>ODS-750-7283</b>	24	16,8 - 30	120	6.26	750	750	16	86	0.46
<b>ODS-750-7284</b>	36	25.0 - 45	120	6.26	750	750	16	87	0.36
<b>ODS-750-7285</b>	48	33.6 - 60	120	6.26	750	750	16	87	0.27
<b>ODS-750-7286</b>	72	50.4 - 90	120	6.26	750	750	16	87	0.17
<b>ODS-750-7287</b>	110	77 - 138	120	6.26	750	750	16	88	0.12

ODS-750-72\_\_-\_\_

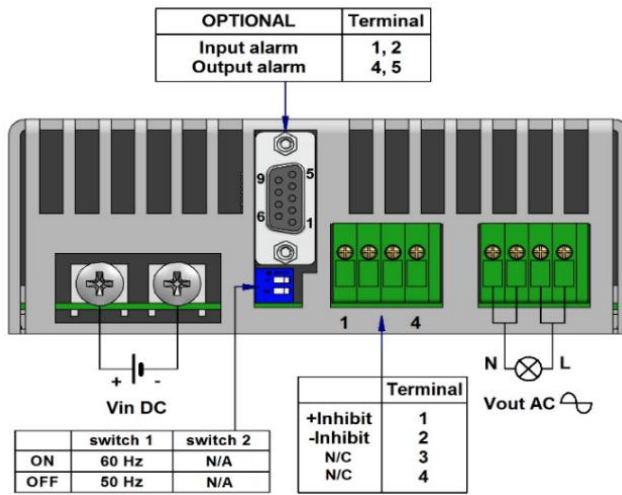


Accessories must be ordered in a separated order line

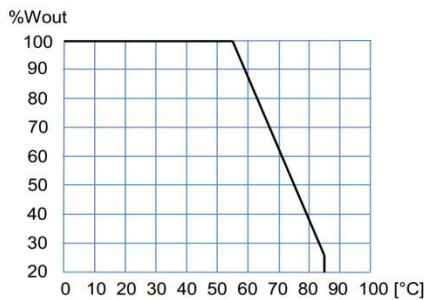
## BLOCKS DIAGRAM



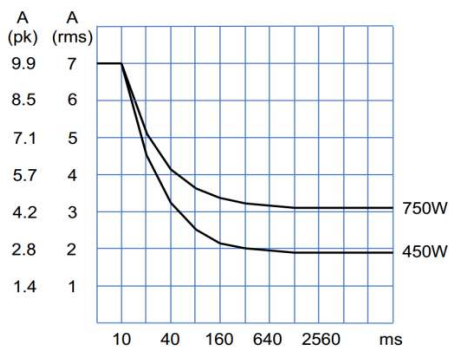
## CONNECTIONS



## POWER DERATING vs AMBIENT TEMPERATURE



## OPERATION CURVE LIMIT



## DESCRIPTION

The ODS-750 consists of sine-wave 120Vac or 230Vac output voltage DC-AC converters. The frequency can be set to 50Hz or 60 Hz, and input and output are galvanically isolated.

The ODS-750 inverters consist of two cascaded converters, one DC-DC generating an intermediate output voltage from the input voltage. That intermediate voltage is inverted to supply the output voltage and frequency by means of a second DC/AC converter.

The input is protected against reverse polarity by means of fuse and against under-voltage by unit shutdown.

The output has protection of maximum average power and maximum peak current. The unit shutdowns when the operation curve limit is exceeded for more than one second. Every 2 seconds after shutdown, the unit tries to restart up to 3 times. If the overload persists, the unit remains shutdown until an input reconnection.

## INSTALLATION

- The device includes 10 M3 threaded holes that allows different mounting positions. For other mounting solutions see the accessories.
- Make connections as shown in the table.
- The default output frequency is 50Hz. For 60Hz simply actuate the dip-switch as indicated in the figure.
- The inverter includes active overload protection but does not provide protection against prolonged reactive overload conditions. Therefore, the maximum power output (VA) should not be exceeded.
- The EMC output filter is connected to the case, which causes a leakage current lower than 1mA. In order to prevent any touch current, connect the case to earth by means of any mounting hole.

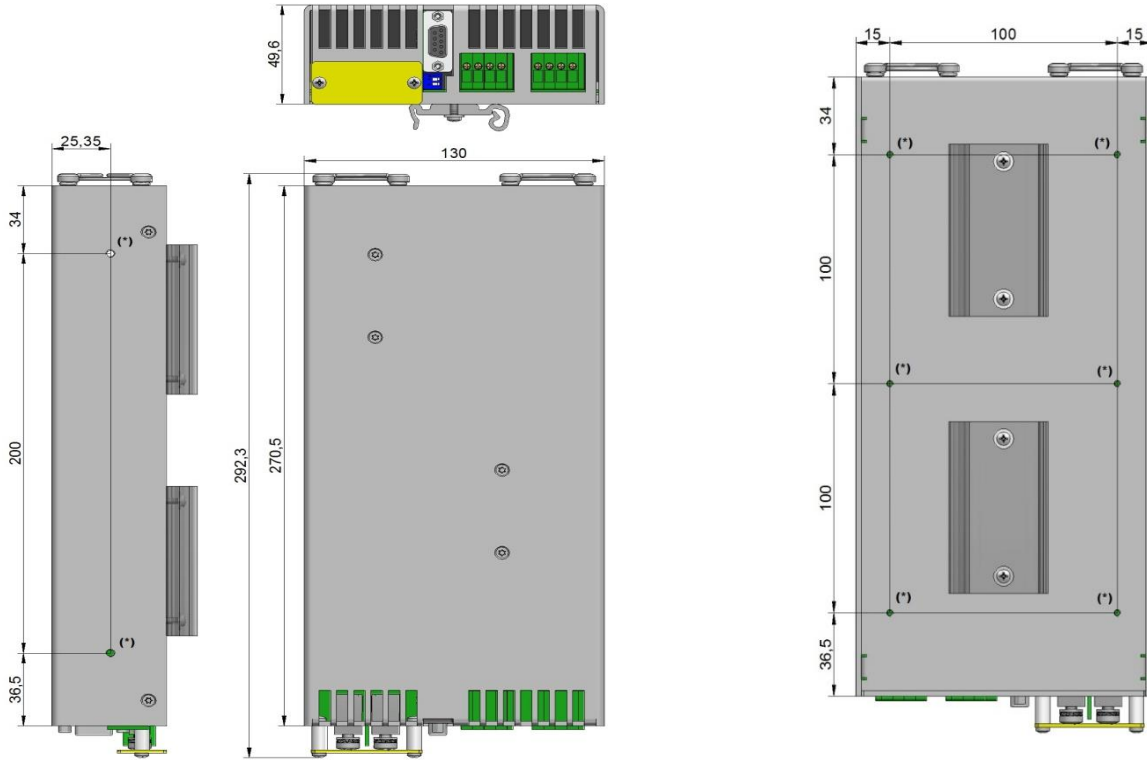
**For safety reasons, the following requirements must be met:**

- Provide the equipment with some kind of protective enclosure that complies with the electrical safety directives in effect within the country where the equipment is installed.
- Add an external fuse of 60A and 50A for the models of input voltage 12V and 24V respectively.
- Use cables of adequate cross-section to connect inputs and outputs. The following table lists the maximum currents and the minimum cross-sections for the cables used for each power connection.

	Input 12Vcc	Input 24Vcc	Input 36Vcc	Input 48Vcc	Input 72Vcc	Input 110Vcc	Output 120Vca	Output 230Vca
Max. current	60 A	50 A	33A	25 A	17A	12 A	6.7 A	3.5 A
Cable section	<b>10</b> mm <sup>2</sup>	<b>10</b> mm <sup>2</sup>	<b>6</b> mm <sup>2</sup>	<b>2.5</b> mm <sup>2</sup>	<b>2.5</b> mm <sup>2</sup>	<b>1.5</b> mm <sup>2</sup>	<b>1</b> mm <sup>2</sup>	<b>0.75</b> mm <sup>2</sup>



## DIMENSIONS



(\* ) M3 threaded hole. Maximum screw depth: 3mm

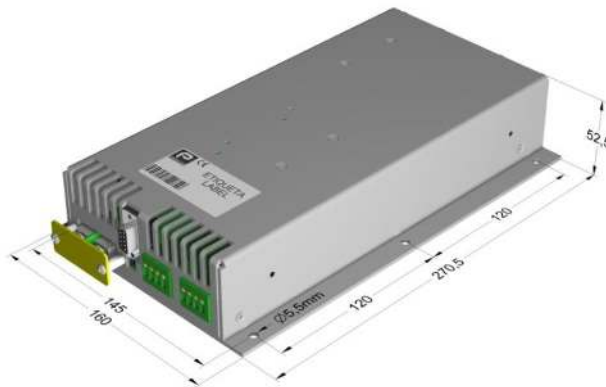
## ACCESSORIES

ACCESSORIES	NOTES	CODE
DIN RAIL CLIP	Screws included. Order 2 units per inverter	<b>NP-9135</b>
Mounting base	Screws included	<b>NP-9265</b>
Mechanical Interface for subrackof 6U 11Te	Screws included	<b>NP-9366</b>

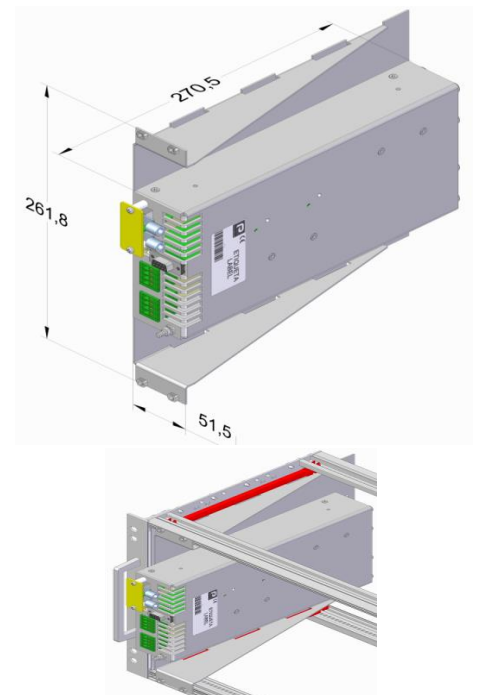
**NP-9135**



**NP-9265**



**NP- 9366**





## CE EU 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/AC Inverter  
Models: **ODS-750-7071...7087**

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

2014/35/EU	Low voltage
2014/30/EU	Electromagnetic compatibility
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

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

EN 60950: 2005	Safety (Information technology equipment)
EN 62368-1: 2014	Safety. Audio/video, information and communication technology equipment
EN 61000-6-3: 2007	Generic emission standard
EN 61000-6-2: 2005	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
EN 50121-4: 2016*	Railway applications. EMC of the signalling and telecommunications apparatus
RIA-12*	Protection of electronic equipment from transients & surges in DC Control Systems

\* Optional, see annexe

CE marking year: **2006**

### 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, 28-08-2019

Jordi Gazo  
Chief Executive Officer

**PREMIUM S.A.** is an ISO9001 and ISO14001  
certified company by **Bureau Veritas**

## ANNEXE

Applicable values for the different sections of the norm EN50155: 2017																																																																								
4.3.1	Working altitude	Up to 1800m																																																																						
4.3.2	Ambient temperature	Class OT1 (-25 to 55°C): load < 100% Class OT2 (-40 to 55°C): load < 100% (Without connectors handling) Class OT3 (-25 to 70°C): load <50% Class OT4 (-40 to 70°C): load <50% (Without Connectors handling)																																																																						
4.3.3	Switch-on extended operating temp.	ST1																																																																						
4.3.4	Rapid temperature variations	H1																																																																						
4.3.5	Shocks and vibrations	According EN61373:2010 Category 1 class B																																																																						
4.3.6	EMC Electromagnetic Compatibility EN50121-3-2:2016	<table border="1"> <thead> <tr> <th>Test</th> <th>Norm</th> <th>Port</th> <th>Frequency</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Radiated emissions</td> <td rowspan="4">IEC55016</td> <td rowspan="4">Case</td> <td>30MHz...230MHz</td> <td>40dB(μV/m) Qpk at 10m</td> </tr> <tr> <td>230MHz...1GHz</td> <td>47dB(μV/m) Qpk at 10m</td> </tr> <tr> <td>1...3GHz</td> <td>Do not apply</td> </tr> <tr> <td>3...6GHz</td> <td>Internal freq. &lt; 108MHz</td> </tr> <tr> <td rowspan="2">Conducted emissions</td> <td rowspan="2">IEC55016</td> <td rowspan="2">Input</td> <td>150kHz...500kHz</td> <td>99dB(μV) Qpk</td> </tr> <tr> <td>500kHz...30MHz</td> <td>93dB(μV) Qpk</td> </tr> </tbody> </table>	Test	Norm	Port	Frequency	Limits	Radiated emissions	IEC55016	Case	30MHz...230MHz	40dB(μV/m) Qpk at 10m	230MHz...1GHz	47dB(μV/m) Qpk at 10m	1...3GHz	Do not apply	3...6GHz	Internal freq. < 108MHz	Conducted emissions	IEC55016	Input	150kHz...500kHz	99dB(μV) Qpk	500kHz...30MHz	93dB(μV) Qpk																																															
		Test	Norm	Port	Frequency	Limits																																																																		
		Radiated emissions	IEC55016	Case	30MHz...230MHz	40dB(μV/m) Qpk at 10m																																																																		
					230MHz...1GHz	47dB(μV/m) Qpk at 10m																																																																		
					1...3GHz	Do not apply																																																																		
					3...6GHz	Internal freq. < 108MHz																																																																		
		Conducted emissions	IEC55016	Input	150kHz...500kHz	99dB(μV) Qpk																																																																		
					500kHz...30MHz	93dB(μV) Qpk																																																																		
		<table border="1"> <thead> <tr> <th>Test</th> <th>Norm</th> <th>Port</th> <th>Severity</th> <th>Conditions</th> <th>P</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Electrostatic discharge</td> <td rowspan="2">IEC61000-4-2</td> <td rowspan="2">Case</td> <td>±8kV</td> <td>Air (isolated parts)</td> <td rowspan="2">B</td> </tr> <tr> <td>±8kV</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>20V/m</td> <td>0.08...1.0GHz M. 80% 1kHz</td> <td rowspan="4">A</td> </tr> <tr> <td>10V/m</td> <td>1.4...2.1GHz M. 80% 1kHz</td> </tr> <tr> <td>5V/m</td> <td>2.1...2.5GHz M. 80% 1kHz</td> </tr> <tr> <td>3V/m</td> <td>5.1...6GHz M. 80% 1kHz</td> </tr> <tr> <td rowspan="4">Fast transients</td> <td rowspan="4">IEC61000-4-4</td> <td>Input</td> <td>±2kV</td> <td rowspan="4">Tr/Th: 5/50 ns</td> <td rowspan="4">A</td> </tr> <tr> <td>Output</td> <td>±2kV</td> </tr> <tr> <td>Signal</td> <td>±2kV</td> </tr> <tr> <td>PE</td> <td>±1kV</td> </tr> <tr> <td rowspan="2">Surge</td> <td rowspan="2">IEC61000-4-5</td> <td>Input L to L</td> <td>±1kV</td> <td rowspan="2">Tr/Th: 1.2/50μs</td> <td rowspan="2">B</td> </tr> <tr> <td>Input L to PE</td> <td>±2kV</td> </tr> <tr> <td rowspan="4">Conducted RF</td> <td rowspan="4">IEC61000-4-6</td> <td>Input</td> <td>10V</td> <td rowspan="4">0.15...80MHz M. 80% 1kHz</td> <td rowspan="4">A</td> </tr> <tr> <td>Output</td> <td>10V</td> </tr> <tr> <td>Signal</td> <td>10V</td> </tr> <tr> <td>PE</td> <td>10V</td> </tr> <tr> <td>Magnetic field</td> <td>IEC61000-4-8</td> <td>X/Y/Z Axis</td> <td>300A/m</td> <td>0Hz, 16.7Hz, 50/60Hz</td> <td>A</td> </tr> <tr> <td>Pulse magnetic field</td> <td>IEC61000-4-9</td> <td>X/Y/Z Axis</td> <td>300A/m</td> <td>Tr/Th: 6.4/16μs</td> <td>B</td> </tr> </tbody> </table>	Test	Norm	Port	Severity	Conditions	P	Electrostatic discharge	IEC61000-4-2	Case	±8kV	Air (isolated parts)	B	±8kV	Contact (conductive parts)	Radiated high-frequency	IEC61000-4-3	X/Y/Z Axis	20V/m	0.08...1.0GHz M. 80% 1kHz	A	10V/m	1.4...2.1GHz M. 80% 1kHz	5V/m	2.1...2.5GHz M. 80% 1kHz	3V/m	5.1...6GHz M. 80% 1kHz	Fast transients	IEC61000-4-4	Input	±2kV	Tr/Th: 5/50 ns	A	Output	±2kV	Signal	±2kV	PE	±1kV	Surge	IEC61000-4-5	Input L to L	±1kV	Tr/Th: 1.2/50μs	B	Input L to PE	±2kV	Conducted RF	IEC61000-4-6	Input	10V	0.15...80MHz M. 80% 1kHz	A	Output	10V	Signal	10V	PE	10V	Magnetic field	IEC61000-4-8	X/Y/Z Axis	300A/m	0Hz, 16.7Hz, 50/60Hz	A	Pulse magnetic field	IEC61000-4-9	X/Y/Z Axis	300A/m	Tr/Th: 6.4/16μs	B
		Test	Norm	Port	Severity	Conditions	P																																																																	
		Electrostatic discharge	IEC61000-4-2	Case	±8kV	Air (isolated parts)	B																																																																	
					±8kV	Contact (conductive parts)																																																																		
		Radiated high-frequency	IEC61000-4-3	X/Y/Z Axis	20V/m	0.08...1.0GHz M. 80% 1kHz	A																																																																	
					10V/m	1.4...2.1GHz M. 80% 1kHz																																																																		
					5V/m	2.1...2.5GHz M. 80% 1kHz																																																																		
3V/m	5.1...6GHz M. 80% 1kHz																																																																							
Fast transients	IEC61000-4-4	Input	±2kV	Tr/Th: 5/50 ns	A																																																																			
		Output	±2kV																																																																					
		Signal	±2kV																																																																					
		PE	±1kV																																																																					
Surge	IEC61000-4-5	Input L to L	±1kV	Tr/Th: 1.2/50μs	B																																																																			
		Input L to PE	±2kV																																																																					
Conducted RF	IEC61000-4-6	Input	10V	0.15...80MHz M. 80% 1kHz	A																																																																			
		Output	10V																																																																					
		Signal	10V																																																																					
		PE	10V																																																																					
Magnetic field	IEC61000-4-8	X/Y/Z Axis	300A/m	0Hz, 16.7Hz, 50/60Hz	A																																																																			
Pulse magnetic field	IEC61000-4-9	X/Y/Z Axis	300A/m	Tr/Th: 6.4/16μs	B																																																																			
		<b>P</b> = Performance criteria, L= Line, PE= Protective Earth																																																																						
4.3.7	Relative humidity	Up to 95%																																																																						
5.1.1.2	DC power supply range	From 0.70 to 1.25 Un continuous																																																																						
5.1.1.3	Temporary DC power supply fluctuation	From 0.60 to 1.40 Un 0.1s From 1.25 to 1.40 Un 1s without damage																																																																						
5.1.1.4	Interruptions of voltage supply	Class S1 (without interruptions)																																																																						
5.1.1.6	Input ripple factor	10% peak to peak with a DC Ripple Factor of 5 %																																																																						
5.1.3	Supply change-over	0,6 Un duration 100 ms (without interruptions). Performance criterion A																																																																						
7.2.7	Input reverse polarity protection	By serial diode in the input																																																																						
10.7	Protective coating for PCB assemblies	Class PC2																																																																						
13.3	Tests list	<table border="0"> <tr><td>1 Visual Inspection</td><td>Routine</td></tr> <tr><td>2 Performance test</td><td>Routine</td></tr> <tr><td>3 Power supply test</td><td>Routine</td></tr> <tr><td>4 Insulation test</td><td>Routine</td></tr> <tr><td>5 Low temperature storage test</td><td>-</td></tr> <tr><td>6 Low temperature start-up test</td><td>Type</td></tr> <tr><td>7 Dry heat test</td><td>Type</td></tr> <tr><td>8 Cyclic damp heat test</td><td>Type</td></tr> <tr><td>9 Salt mist test</td><td>-</td></tr> <tr><td>10 Enclosure protection test (IP code)</td><td>-</td></tr> <tr><td>11 EMC test</td><td>Type</td></tr> <tr><td>12 Shocks and vibrations test</td><td>Type</td></tr> <tr><td>13 Equipment stress screening test</td><td>Routine: 24h at 40°C and load 100%</td></tr> <tr><td>14 Rapid Temperature variation test</td><td>Type</td></tr> </table>	1 Visual Inspection	Routine	2 Performance test	Routine	3 Power supply test	Routine	4 Insulation test	Routine	5 Low temperature storage test	-	6 Low temperature start-up test	Type	7 Dry heat test	Type	8 Cyclic damp heat test	Type	9 Salt mist test	-	10 Enclosure protection test (IP code)	-	11 EMC test	Type	12 Shocks and vibrations test	Type	13 Equipment stress screening test	Routine: 24h at 40°C and load 100%	14 Rapid Temperature variation test	Type																																										
1 Visual Inspection	Routine																																																																							
2 Performance test	Routine																																																																							
3 Power supply test	Routine																																																																							
4 Insulation test	Routine																																																																							
5 Low temperature storage test	-																																																																							
6 Low temperature start-up test	Type																																																																							
7 Dry heat test	Type																																																																							
8 Cyclic damp heat test	Type																																																																							
9 Salt mist test	-																																																																							
10 Enclosure protection test (IP code)	-																																																																							
11 EMC test	Type																																																																							
12 Shocks and vibrations test	Type																																																																							
13 Equipment stress screening test	Routine: 24h at 40°C and load 100%																																																																							
14 Rapid Temperature variation test	Type																																																																							



**Applicable values for the different sections of the norm RIA12**

	<b>Type of disturbance</b>	<b>Voltage level</b>	<b>Duration</b>	<b>Source impedance</b>
5.2	Supply related surge	3.5 x Vin nom	20 ms	0.2 Ω
		1.5 x Vin nom	1 s	0.2 Ω
5.3	Direct transient	800 V	100 μs	5 Ω
		1500 V	50 μs	5 Ω
		3000 V	5 μs	100 Ω
		4000 V	1 μs	100 Ω
		7000 V	0.1 μs	100 Ω
5.4	Indirect coupled transient	1500 V	50 μs	100 Ω
		3000 V	5 μs	100 Ω
		4000 V	1 μs	100 Ω
		7000 V	0.1 μs	100 Ω