

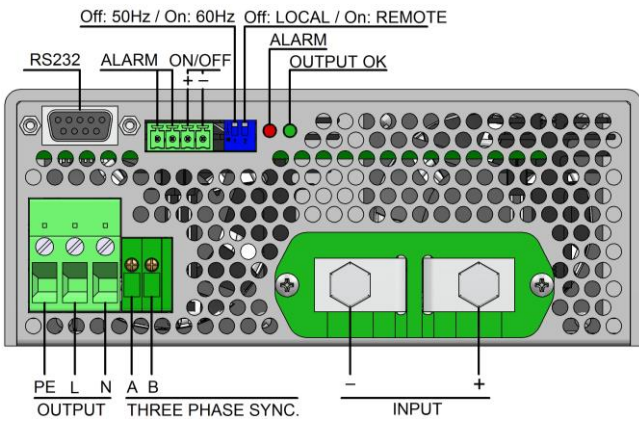

**GENERAL FEATURES:**

- Sine wave output voltage
- Selectable output frequency: 50/60Hz
- Adjustable output voltage
- High input-output isolation 3000Vrms
- Remote inhibit
- Three-phase synchronization
- Remote control via RS232
- Alarm by isolated relay contacts
- Remote off opto-coupled
- Optional railway version EN50155
- Fire and smoke: EN45545-2 approved

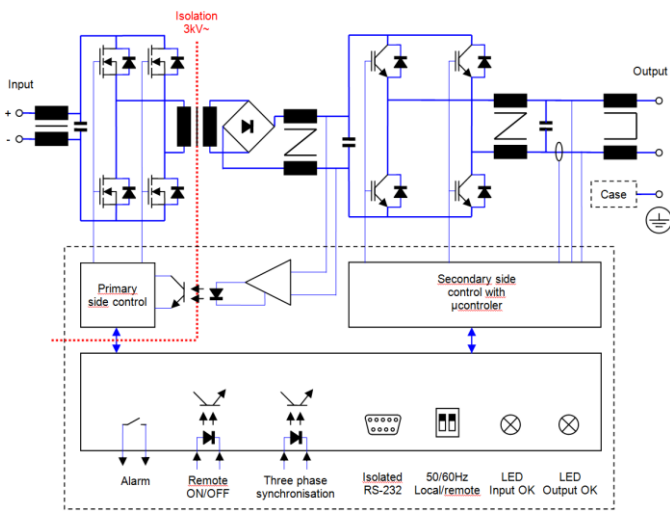
RS Stock No.	Model	Input	Input Voltage range	Output voltage	Output power	Output current	Output peak current		Efficiency	No load input current
							5s	10ms (lopk)		
1447709	ODS-1500-7113-T	24 Vdc	16.8 ... 30V	230 Vac	1500 W	6.5 A	10A	16A	88 %	<0.4 A
1447710	ODS-1500-7115-T	48 Vdc	33.6 ... 60V	230 Vac	1500 W	6.5 A	10A	16A	90 %	<0.2 A
1447711	ODS-1500-7117-T	110 Vdc	77 ... 138V	230 Vac	1500 W	6.5 A	10A	16A	91 %	<0.1 A

<b>INPUT</b>	
Input voltage range	-30, +25% Vin nom, (10 ... 15Vdc)*
Maximum input ripple	5% Vin nom (Vrms, 100Hz)
<b>OUTPUT</b>	
Output voltage	120 / 230Vac sinusoidal
Output frequency	50 / 60Hz ± 0.25Hz
Load regulation	< 4%
Line regulation	< 2 % Vin -25% ... +25%, < 10% Vin -30% ... +30%
Output wave distortion THD	< 2% (average of 16 samples)
Output HF ripple	< 2.5%
<b>ENVIRONMENTAL</b>	
Storage temperature	-25 ... 80°C
Operating temperature full load	-25 ... 55°C (EN50155 T1)
Operating temperature 50% load	-25 ... 70°C (EN50155 T3)
Relative humidity without condensation	5 ... 95%
Cooling	Controlled internal fan
MTBF (MIL-HDBK-217-E; G <sub>b</sub> , 25°C)	130.000 h
<b>EMC</b>	
Immunity according	EN61000-6-2 (EN50121-3-2)
Emissions according	EN61000-6-4 (EN50121-3-2)
<b>SAFETY</b>	
Dielectric strength: Input / output	3000 Vrms / 50Hz / 1min
Dielectric strength: Output / ground	1500 Vrms / 50Hz / 1min
Dielectric strength: Input / ground	500 Vrms / 50Hz / 1min
Safety according to	EN60950-1
Fire and smoke	EN45545-2 approved
<b>MECHANICAL</b>	
Weight	3800 g
<b>PROTECTIONS</b>	
Against overloads	Current and I <sup>2</sup> T limited (see overload protection)
Against overtemperature	Shutdown with auto-recovery
<b>CONTROL</b>	
Output OK LED	Green
Alarm LED	Red
Output failure alarm	Isolated contact relay open when alarm (<0.3A at 150Vcc)
Remote OFF	Off applying 4...24 Vdc, Impedance > 3k3Ω
Three-phase input synchronization	100 ... 250 Vac, Impedance > 36kΩ
Status and programming	RS232 port

## CONNECTIONS

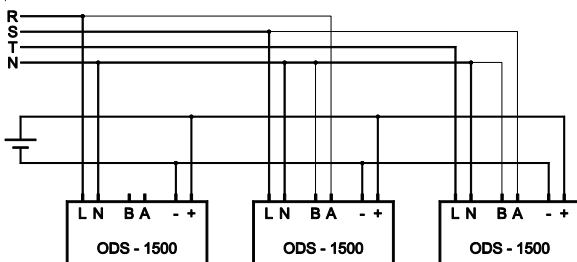


## BLOCK DIAGRAM



RS232 functions	
Monitoring	Input voltage
	Output voltage
	Output current
	Internal temperature
	Output frequency
	Output power
Settings	Input undervoltage lockout
	Input under voltage alarm
	On / Off
	Output frequency
	Maximum output current
	Output voltage

### Connections for a three phase system



## DIMENSIONS

## DESCRIPTION

The ODS-1500 consists of single phase sine-wave DC/AC inverters with galvanic isolation between input and output

The unit allows:

- Select 50 / 60Hz by means of DIP-switch.
- Select local / remote (RS-232) by means of DIP-switch
- Shutdown applying voltage on pins 3 and 4 of signal connector
- Connect three units in "Y" three phase way
- Local signalization of Output OK by means of green LED
- Local alarm. Red LED ON when:
  - Output voltage is not OK
  - Output current > OUTPUT CURRENT ALARM
  - Input voltage out of margins
  - Unit shutdowns by overcurrent or remote OFF
- Remote alarm. Open contacts when output voltage is not OK
- Set and monitor parameters via RS-232.

The ODS-1500 are equipped with a maximum average power protection as well as maximum output peak current protection. This protects the unit even when an output short-circuit occurs. It also features a disable function for input under-voltage, which allows protecting the batteries from harmful discharges.

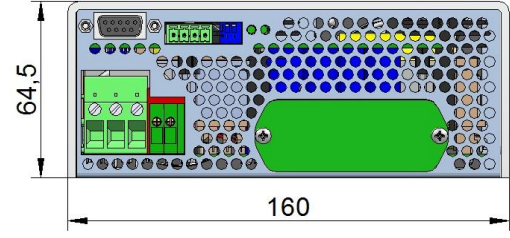
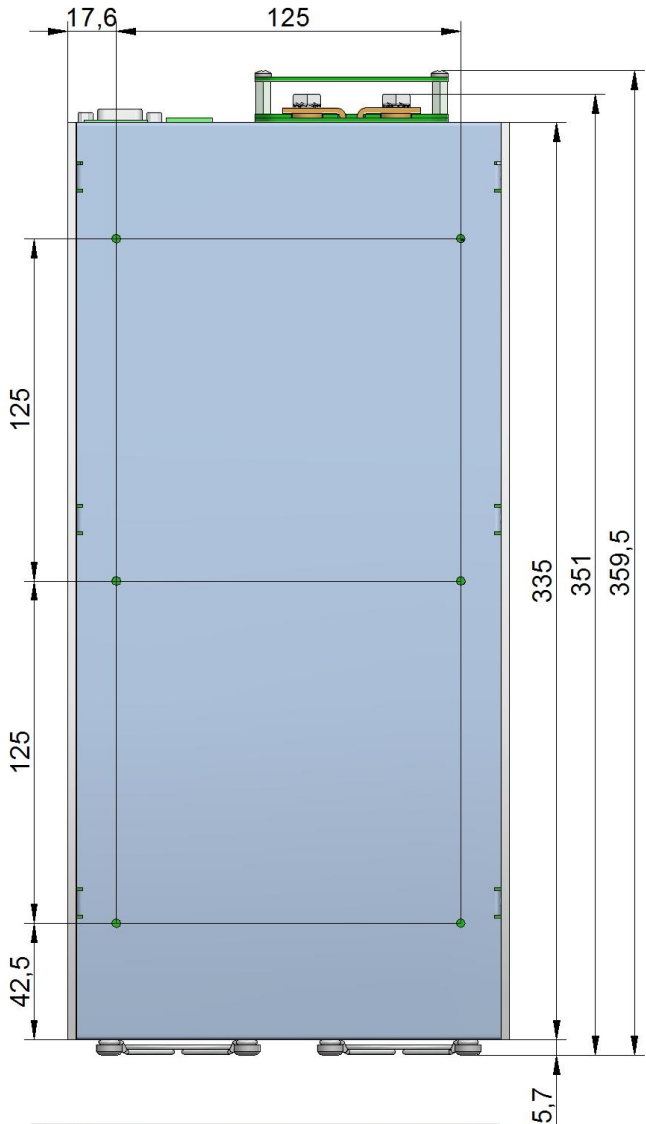
## START-UP

- The unit has 6 threaded holes for the fixation on a mounting surface.
- The unit has internal fans. For an appropriate cooling, the air input and output should be free of elements that cause and an air flow reduction (minimum recommended distance to other objects 50mm).
- Make connections as shown in the figure.
- The default output frequency is 50Hz. For 60Hz simply actuate the dip-switch as indicated in the figure.

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

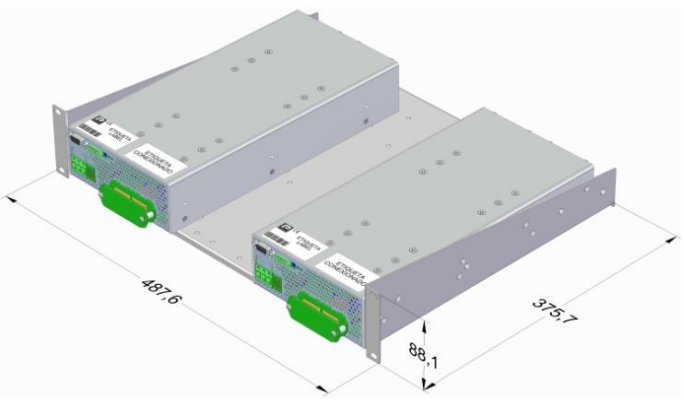
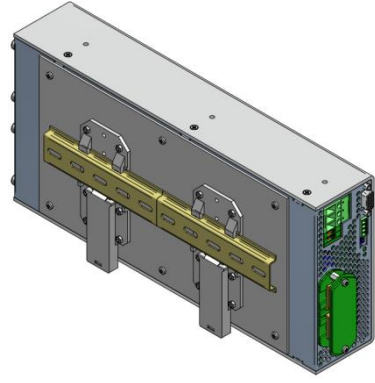
- Provide the equipment with some kind of protective enclosure that complies with the electrical safety directives in effect within the country where the equipment is installed.
- Include an input fuse with a rating immediately higher than the maximum input current.
- Use cables of adequate cross-section 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 12V	Input 24V	Input 36V	Input 48V	Input 72V	Input 110V	Output 120V	Output 230V
Max. current	140 A	100 A	75A	50 A	33 A	22 A	13 A	6.7 A
Cable cross-section	35 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	10 mm <sup>2</sup>	6 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.0 mm <sup>2</sup>

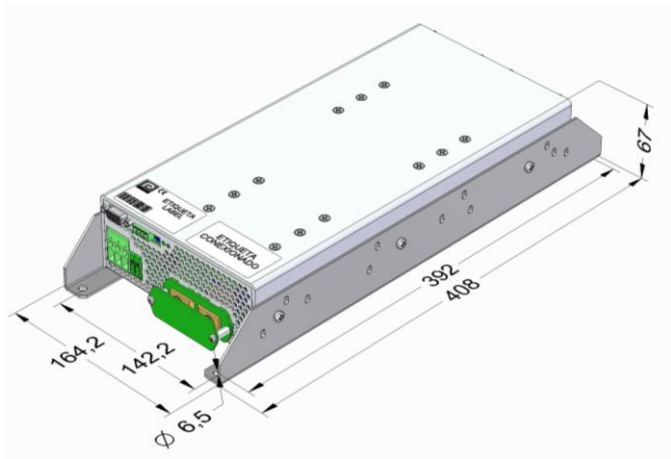


Maximum depth for the 6 screws M4: 3.5mm

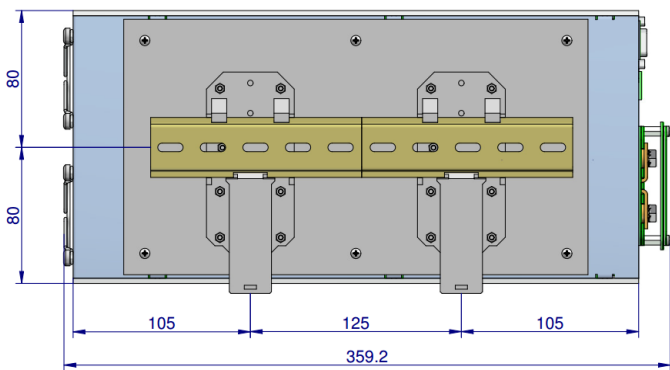
ACCESSORIES	CODE
Signals female connector	2601-409
Mounting brackets kit Contains baseplate	NP-9282
DIN rail assembly kit Screws included	NP-9339
2U 19" rackmount tray kit. It allows to install one or two units	NP-9353



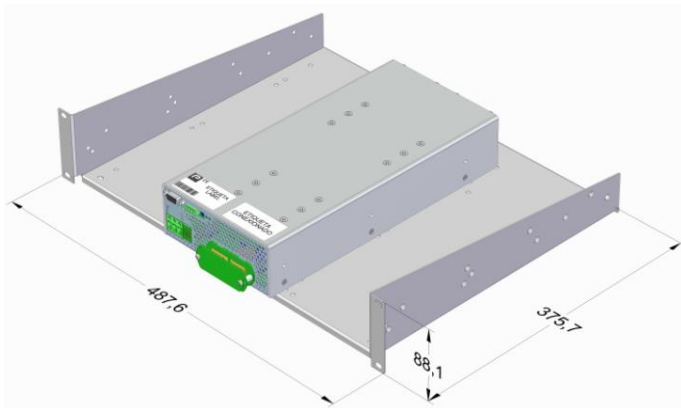
2601-409



**NP-9282**



**NP-9339**



**NP-9353**

Configuration: 19200 bauds – parity none – 8 bits – 1 bit stop  
 Protocole in ASCII code

Header		Function	Parameter	Returns	Explanation	
P	R	L	V	PTV■■■■.■	Input voltage in Volts	
			U	PTU■■■■.■	Output voltage in Volts RMS	
			I	PTI■■■■.■	Output current in Amps RMS	
			T	PTT■■■■.■	Internal temperature in °C	
			F	PTF■■■■.■	Output frequency in Hz	
			W	PTW■■■■	Output power in W	
			S	PTS■■■■.■	Inverter state <b>999.9</b> → Inverter enabled <b>000.0</b> → Inverter disabled <b>222.2</b> → Inverter blocked by overload <b>111.1</b> → Inverter blocked by overload or shortcircuit	
			M	PTM■■■■	Model number	
			R	PTR■■■■	Firmware version	
		Othercharacter	PTE	Command not supported		
		G	1	■■■■.■	OK	Set the minimum input working voltage in Volts
					ERR	Value NO VALID for this parameter
			2	■■■■.■	OK	Set the minimum alarm input voltage in Volts
					ERR	Value NO VALID for this parameter
			3	■■■■.■	OK	Changes the status bit (after start up enabled with SW3 =LOCAL and disabled with SW3 =REMOTE) <b>999.9</b> → Inverter enabled <b>000.0</b> → Inverter disabled
					ERR	Value NO VALID for this parameter
			4	■■■■.■	OK	Set the output voltage in Volts RMS $80\% V_{nom} \leq \text{■■■■.■} \leq 105\% V_{nom}$
					ERR	Value NO VALID for this parameter
			5	■■■■.■	OK	Set the maximum output current in Amps $20\% I_{nom} \leq \text{■■■■.■} \leq 100\% I_{nom}$
					ERR	Value NO VALID for this parameter
			6	■■■■.■	OK	Changes the output frequency (it's not stored for the next start-up) <b>050.0</b> → 50Hz <b>060.0</b> → 60Hz
					ERR	Value NO VALID for this parameter
			7	■■■■.■	OK	Set the OUTPUT CURRENT ALARM $0 \leq \text{■■■■.■} \leq 100\% I_{max\_warning}$
					ERR	Value NO VALID for this parameter
8	■■■■.■		OK	<b>111.1</b> → Reset the inverter		
			ERR	Value NO VALID for this parameter		

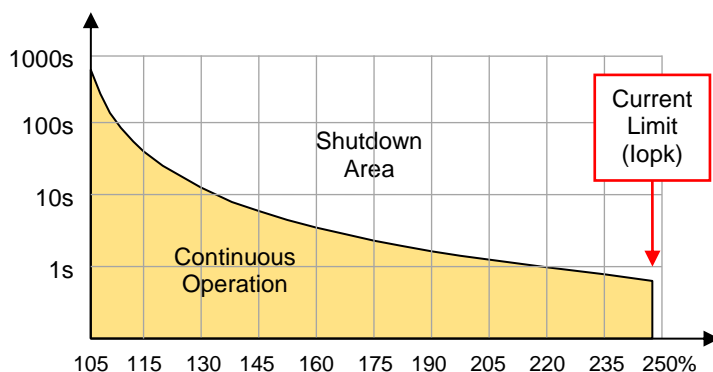
### WORKING PARAMETERS

	MODELS	
<b>Thermal protection</b>	<b>71XX</b>	
Internal warning temperature	88	°C
Internal shutdown temperature	92	°C

Internal restart temperature after over-temperature shutdown	75						°C
<b>Input voltage parameters</b>	<b>71X1</b>	<b>71X3</b>	<b>71X4</b>	<b>71X5</b>	<b>71X6</b>	<b>71X7</b>	
Max. input voltage shutdown instantaneous	16.8	33.7	50.6	67.3	100.9	154.1	Vdc
Max. input voltage shutdown timed 0.1s	15.1	30.1	45.2	60.1	90.1	138.6	Vdc
Maximum star-up voltage	14.9	29.9	44.9	59.8	89.7	137.4	Vdc
Minimum star-up voltage	10.6	17.9	26.9	35.9	53.9	82.4	Vdc
Min. input voltage shutdown timed 0.1s	10.0	16.7	25.1	33.5	50.3	76.9	Vdc
Min. input voltage shutdown instantaneous	9.6	14.4	21.6	28.7	43.1	65.9	Vdc
<b>Output voltage parameters</b>	<b>711X</b>			<b>712X</b>			
Output voltage of short circuit or deep overload	< 164			< 86			Vac
Time of short-circuit	1000						ms
Time of start-up after shutdown by short-circuit	2000						ms
Number of start-up attempts after a short circuit	3						
<b>Output current parameters</b>	<b>7111</b>	<b>7113/4/5/6/7</b>		<b>7121</b>	<b>7123/4/5/6/7</b>		
Maximum continuous output current	5.3	6.6		10.1	12.7		A
Warning current	5.2	6.5		10	12.5		A
Maximum overload I <sup>2</sup> t	See figure below						
Start-up time after shutdown by overload	1000	1500		1000	2000		ms
Number of attempts of consecutive overload	3						
<b>Start-up and working errors</b>	<b>71XX</b>						
Lock to continuous overload or internal failure	unlimited						
Minimum time between disconnection and another connection	2						min

### OVERLOAD PROTECTION

Protection against overloads and short-circuits	By <b>current</b> limiting at I <sub>opk</sub> By <b>I<sup>2</sup>t</b> . The unit shutdowns when the current-time is over the continuous operation curve
Overload protection recovery	Every 2 seconds after shutdown, the unit tries to restart up to 3 times. If the overload persists, the unit reminds shutdown until an <b>input reconnection</b> .





## EU DECLARATION OF CONFORMITY

The undersigned, representing the following:

Manufacturer: PREMIUM, S. A.,

Address: C/. Dolors Aleu 19-21, 2º 2ª 08908 L'Hospitalet de Llobregat, SPAIN

herewith declares that the product:

Type: DC/AC Inverter

Models: **ODS-750 -7111 -7113 -7115 -7116 -7117 -7121 -7123 -7125 -7126 -7127**

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

**2014/35/EU**

Low voltage

**2014/30/EU**

Electromagnetic compatibility

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

EN 60950: 2005

Safety (Information technology equipment)

EN 61000-6-3: 2007

Generic emission standard

EN 61000-6-2: 2005

Generic Immunity standard

EN 50155: 2007

Railway applications. Electronic equipment used on rolling stock material

EN 50121-3-2: 2015

Railway applications. EMC Rolling stock equipment

CE marking year: **2010**

For the fulfillment 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, 20-02-2017

Jordi Gazo

Managing Director

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

## ANEXO / ANNEX

Applicable values for the different sections of the norm EN50155: 2007																																																				
4.1.1	Working altitude	According EN50125-1:2003 Class A2 (up to 1000m)																																																		
4.1.2	Ambient temperature	Class T1 column 2: load at 100% Class T3 column 2: load at 50%																																																		
4.1.3	Shock and vibration	According EN61373:2010 Category 1 class B																																																		
4.1.4	Relative humidity	Up to 95%																																																		
5.1.1.1	Power supply voltage variations	From 0.70 to 1.25 $U_n$ continuous From 0.60 to 1.40 $U_n$ 0.1s From 1.25 to 1.40 $U_n$ 1s without damage																																																		
5.1.1.2	Power supply interruptions	Class S1 (without interruptions)																																																		
5.1.1.4	Input ripple factor	Up to 15% of $V_{in\ nom}$																																																		
5.1.3	Power supply switching	Class C1 (0.6 $U_n$ during 100ms without interruptions)																																																		
5.2	Power supply over-voltages	1.40 $U_n$ 1s (impedance 1 ohm)																																																		
5.5	EMC Electromagnetic Compatibility  <b>EN50121-3-2:2015</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Test</th> <th>Norm</th> <th>Port</th> <th>Frequency</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center;">Radiated emissions</td> <td rowspan="4" style="text-align: center;">IEC55016</td> <td rowspan="4" style="text-align: center;">Enclosure</td> <td>30MHz...230MHz</td> <td>40dB(<math>\mu</math>V/m) Qpk at 10m</td> </tr> <tr> <td>230MHz...1GHz</td> <td>47dB(<math>\mu</math>V/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" style="text-align: center;">Conducted emissions</td> <td rowspan="2" style="text-align: center;">IEC55016</td> <td rowspan="2" style="text-align: center;">Input</td> <td>150kHz...500kHz</td> <td>99dB(<math>\mu</math>V) Qpk</td> </tr> <tr> <td>500kHz...30MHz</td> <td>93dB(<math>\mu</math>V) Qpk</td> </tr> </tbody> </table>	Test	Norm	Port	Frequency	Limits	Radiated emissions	IEC55016	Enclosure	30MHz...230MHz	40dB( $\mu$ V/m) Qpk at 10m	230MHz...1GHz	47dB( $\mu$ V/m) Qpk at 10m	1...3GHz	Do not apply	3...6GHz	Internal freq. < 108MHz	Conducted emissions	IEC55016	Input	150kHz...500kHz	99dB( $\mu$ V) Qpk	500kHz...30MHz	93dB( $\mu$ V) Qpk																											
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7.2.6	Input reverse polarity protection	By external fuse																																																		
9.7	PCB protection	PCB conformal coated																																																		
12.2	Test list	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">1 Visual Inspection</td> <td style="width: 30%;">Routine</td> </tr> <tr> <td>2 Performance</td> <td>Routine</td> </tr> <tr> <td>3 Cooling</td> <td>Type</td> </tr> <tr> <td>4 Dry heat</td> <td>Type</td> </tr> <tr> <td>6 Supply overvoltages</td> <td>Type</td> </tr> <tr> <td>7 Surge, ESD and burst susceptibility</td> <td>Type</td> </tr> <tr> <td>8 RF Interferences</td> <td>Type</td> </tr> <tr> <td>9 Insulation</td> <td>Routine</td> </tr> <tr> <td>11 Shocks and vibrations</td> <td>Type</td> </tr> <tr> <td>13 Equipment stress screening:24h at 40°C and load 100%</td> <td>Routine</td> </tr> <tr> <td>14 Low temperature storage</td> <td>Type</td> </tr> </table>	1 Visual Inspection	Routine	2 Performance	Routine	3 Cooling	Type	4 Dry heat	Type	6 Supply overvoltages	Type	7 Surge, ESD and burst susceptibility	Type	8 RF Interferences	Type	9 Insulation	Routine	11 Shocks and vibrations	Type	13 Equipment stress screening:24h at 40°C and load 100%	Routine	14 Low temperature storage	Type																												
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