



CARACTERÍSTICAS GENERALES:

- Tensión de salida sinusoidal
- Frecuencia de salida seleccionable: 50/60Hz
- Tensión de salida ajustable
- Alarma de fallo de salida
- Inhibición remota
- Alto aislamiento entrada/salida 3000Vrms
- Versión ferroviaria EN50155 opcional
- Fuego y humo: Aprobado EN45545-2

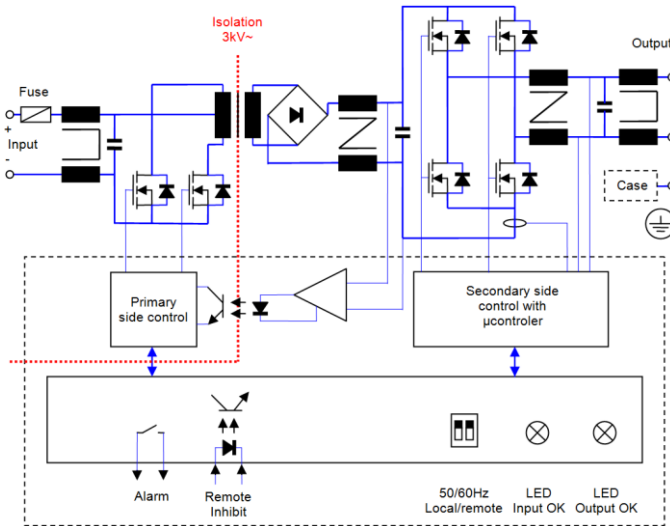
GENERAL FEATURES:

- Sine wave output voltage
- Selectable output frequency: 50/60Hz
- Adjustable output voltage
- Output failure alarm
- Remote inhibit
- High input-output isolation 3000Vrms
- Optional railway version EN50155
- Fire and smoke: EN45545-2 approved

| Model | Input V | Input V range | Output V | Active Power | Apparent power | Output peak current (10ms) | Efficiency | No load input current |
|-------|---------|---------------|----------|--------------|----------------|----------------------------|------------|-----------------------|
| 7031 | 12 Vdc | 9.5 ... 15V* | 230 Vac | 180W | 260VA | 4Apk | 86 % | < 0.50 A |
| 7033 | 24 Vdc | 16.8 ... 30V | 230 Vac | 200W | 260VA | 4Apk | 87 % | < 0.26 A |
| 7034 | 36 Vdc | 25.2 ... 45V | 230 Vac | 220W | 260VA | 4Apk | 88 % | < 0.21 A |
| 7035 | 48 Vdc | 33.6 ... 60V | 230 Vac | 220W | 260VA | 4Apk | 89 % | < 0.15 A |
| 7036 | 72 Vdc | 50.4 ... 90V | 230 Vac | 220W | 260VA | 4Apk | 89 % | < 0.11 A |
| 7037 | 110 Vdc | 77 ... 138V | 230 Vac | 220W | 260VA | 4Apk | 90 % | < 0.08 A |
| 7041 | 12 Vdc | 9.5 ... 15V* | 120 Vac | 180W | 260VA | 8Apk | 85 % | < 0.50 A |
| 7043 | 24 Vdc | 16.8 ... 30V | 120 Vac | 200W | 260VA | 8Apk | 87 % | < 0.26 A |
| 7044 | 36 Vdc | 25.2 ... 45V | 120 Vac | 220W | 260VA | 8Apk | 88 % | < 0.21 A |
| 7045 | 48 Vdc | 33.6 ... 60V | 120 Vac | 220W | 260VA | 8Apk | 88 % | < 0.15 A |
| 7046 | 72 Vdc | 50.4 ... 90V | 120 Vac | 220W | 260VA | 8Apk | 88 % | < 0.11 A |
| 7047 | 110 Vdc | 77 ... 138V | 120 Vac | 220W | 260VA | 8Apk | 89 % | < 0.08 A |

(*) Nota: Tensión de arranque $\leq 10.2V$. Paro por subtensión $\leq 9.1V$ / (*) Note: Startup voltage $\leq 10.2V$. Under-voltage shutdown $\leq 9.1V$

| ENTRADA | INPUT | |
|--|--|--|
| Margen de tensión de entrada | Input voltage range | Ver tabla / See table |
| Rizado máximo a la entrada | Maximum input ripple | 5% Vin nom (Vrms, 100Hz) |
| SALIDA | OUTPUT | |
| Tensión de salida nominal (Vonom) | Nominal output voltage (Vonom) | 120 / 230Vac sinusoidal |
| Margen de ajuste | Adjust range | $\pm 5\%$ of Vonom |
| Regulación de carga | Load regulation | 4% |
| Regulación de línea | Line regulation | 0.4% ($\Delta Vin -20...+25\%$), 10% ($\Delta Vin -30...+25\%$) (* Note: 1% ($\Delta Vin -10...+25\%$), 10% ($\Delta Vin -20...+25\%$)) |
| Frecuencia de salida | Output frequency | 50 / 60Hz ± 0.25 Hz |
| Distorsión tensión de salida THD | Output wave distortion THD | < 2% (16 samples average) |
| Rizado tensión salida AF | Output voltage HF ripple | < 20Vpp for 230Vac models, <10Vpp for 120Vac models |
| Corriente de pico máxima Iompk (10ms) | Maximum peak current Iompk (10ms) | 2.2 A for 230Vac models, 4.4A for 120Vac models |
| AMBIENTE | ENVIRONMENTAL | |
| Temperatura de almacenamiento | Storage temperature | -25 a 80°C |
| Temp. de funcionamiento (carga 100%) | Operating temperature (full load) | -25 a 55°C (EN50155 T1) |
| Temp. de funcionamiento (carga 50%) | Operating temperature (50% load) | -25 a 70°C (EN50155 T3) |
| Refrigeración | Cooling | Convección natural / Natural convection |
| MTBF (MIL-HDBK-217-E; G _b , 25°C) | MTBF (MIL-HDBK-217-E; G _b , 25°C) | 250.000 h |
| CEM | EMC | |
| Inmunidad según | Immunity according | EN61000-6-2 EN50121-3-2 |
| Emisiones según | Emissions according | EN61000-6-3 EN50121-3-2 |
| SEGURIDAD | SAFETY | |
| Seguridad según | Safety according to | EN60950 |
| Rigidez dieléctrica: Entrada / salida | Dielectric strength: Input / output | 3000 Vrms / 50Hz / 1min |
| Rigidez dieléctrica: Salida / chasis | Dielectric strength: Output / ground | 1500 Vrms / 50Hz / 1min |
| Rigidez dieléctrica: Entrada / chasis | Dielectric strength: Input / ground | 500 Vrms / 50Hz / 1min |
| Fuego y humo | Fire and smoke | EN45545-2 |
| MECÁNICA | MECHANICAL | |
| Peso | Weight | 350 g |
| Dimensiones | Dimensions | 100 x 220 x 40mm |
| PROTECCIONES | PROTECTIONS | |
| Contra sobrecorrientes de entrada | Against input overcurrents | Fusible interno / Internal fuse |
| Contra sobrecargas de salida <Iompk | Against output overloads < Iompk | lineal / linear |
| Contra sobrecargas de salida >Iompk | Against output overloads > Iompk | Disparada / Triggered |
| CONTROL | CONTROL | |
| Entrada inhibición remota | Remote inhibit input | 4 ... 24 Vdc |
| Alarma de fallo de salida | Output failure alarm | Solid state relay, open when alarm. Max: 60V, 0.3A |



DESCRIPCIÓN

La serie OCS-260 está constituida por convertidores de corriente continua a corriente alterna sinusoidal de 120Vca ó 230Vca, con una frecuencia seleccionable de 50Hz ó 60Hz y aislamiento galvánico entre la entrada y la salida.

Los onduladores OCS-260 están formados por dos convertidores en cascada, un convertidor CC/CC que genera, a partir de la tensión de entrada, una tensión intermedia que es ondulada por un segundo convertidor CC/CA a la tensión y frecuencia de salida seleccionadas.

La topología de la primera etapa es de convertidor en contrafase, el cual conmuta a frecuencia fija y proporciona el aislamiento entre la entrada y la salida. El segundo convertidor es un puente totalmente controlado modulado por ancho de pulso (PWM) mediante microcontrolador también a frecuencia fija, y dotado de un filtro de salida LC, que elimina las componentes frecuenciales de conmutación, proporcionando a la salida una tensión sinusoidal.

El ondulador OCS-260 cuenta con una protección contra inversión de polaridad de entrada mediante fusible. También dispone de una protección de potencia media máxima y otra de corriente de pico de máxima en la salida. Esto protege a los semiconductores incluso ante cortocircuitos en la salida. Además dispone de inhibición por subtensión de entrada

DESCRIPTION

The OCS-260 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 OCS-260 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 topology for the first converter is a fixed frequency push-pull type that provides the isolation between input and output. The second converter consists of a bridge inverter also at fixed frequency and fully PWM controlled by means of microcontroller that is equipped with an LC output filter that removes the switching frequency components and delivers a sine-wave output.

The OCS-260 inverter is equipped with an input polarity protection by means of fuse. It also features maximum average power protection as well as maximum output peak current protection. This protects the semiconductors even when an output short-circuit occurs.

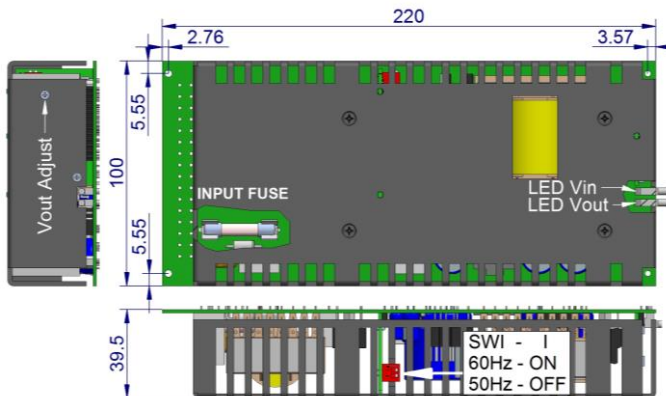
INSTALACIÓN

- Existen tres opciones de conexionado: Regleta de terminales de clip, regleta de FASTON y conector DIN-41612-H15.
- El producto pueden instalarse de varias formas:
 - Sobre un chasis mediante los 4 taladros de las esquinas
 - En portacartas EUROCARD. Pare ello existe un accesorio con la referencia NP-9155 que es frontal estándar de 9Te.
 - Con la base referencia NP-9124. Ésta puede montarse sobre un chasis o en carril DIN añadiendo el accesorio clip NP-9135.

- Efectuar la conexión según la tabla.
- La frecuencia de salida por defecto es 50Hz. Si se requiere 60Hz actuar el dip-switch según la figura.
- El ondulador está protegido contra sobrecargas activas pero no lo está contra sobrecargas reactivas prolongadas, por tanto no debe sobrepasarse la potencia máxima indicada en VA.

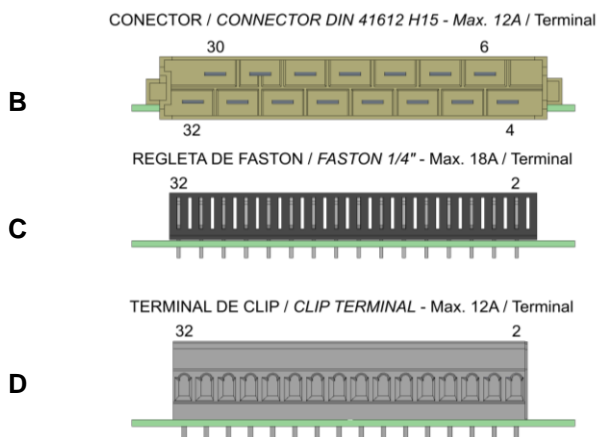
Por motivos de seguridad es necesario:

- Proporcionar al equipo una envolvente de protección conforme a las directivas de seguridad eléctrica del país donde sea instalado.
- Usar conductores de sección apropiada para conectar entradas y salidas. En la tabla siguiente se muestran las corrientes



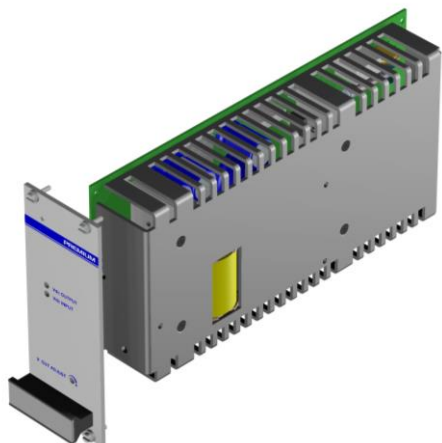
| CONEXIÓN CONNECTION | Terminal |
|---------------------|----------|
| -Vin | 2, 4, 6 |
| +Vin | 8, 10 |
| -Inhibit | 12 |
| +Inhibit | 14 |
| -Alarm | 16 |
| +Alarm | 18 |
| N | 22, 24 |
| L | 28, 30 |
| PE | 32 |

Opciones de conexionado / Connecting options



Accesorios / Accessories

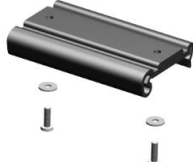
Frontal
 Front plate



Base
 Base



Clip carril
 DIN
 DIN rail clip



máximas y las secciones mínimas de los conductores para cada una de las conexiones de potencia.

INSTALLATION

- There are three connecting options: spring clamp terminal strip, FASTON strip and DIN-41612-H15 connector.
- The product can be mounted in several ways:
 - On a chassis by means of the 4 corner holes.
 - In EUROCARD racks. For this application there is a standard 10Te front plate accessory reference **NP-9289**
 - With the base reference **NP-9124**. This accessory can be mounted on a chassis or in DIN rail adding the clip accessory **NP-9135**.
- 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.

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.
- 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.

| OPCIONES | CÓDIGO DE PEDIDO |
|-----------------------------------|------------------|
| Versión ferroviaria según EN50155 | OCS-260-70xx-T |
| Con conector DIN-41612-H15. | OCS-260-70xx- B |
| Con regleta de FASTON | OCS-260-70xx- C |
| Con regleta de terminales de clip | OCS-260-70xx- D |
| ACCESORIOS | CÓDIGO DE PEDIDO |
| Caratula subrack 19" (3U 10TE) | NP-9289 |
| Base de montaje | NP-9125 |
| Clip carril DIN | NP-9135 |

| OPTIONS | Ordering CODE |
|--------------------------------------|-----------------|
| Railway version according to EN50155 | OCS-260-70xx-T |
| With connector DIN-41612-H15. | OCS-260-70xx- B |
| With FASTON strip | OCS-260-70xx- C |
| With spring clamp terminal strip | OCS-260-70xx- D |
| ACCESSORIES | Ordering CODE |
| Front plate 19" subrack (3U 10TE) | NP-9289 |
| Mounting base | NP-9125 |
| DIN rail clip | NP-9135 |

DECLARACIÓN DE CONFORMIDAD UE



EU DECLARATION OF CONFORMITY

El abajo firmante, en representación de / The undersigned, representing the following:
Fabricante / Manufacturer: PREMIUM, S. A.,
Dirección / Address: C/. Dolors Aleu 19-21, 2º 2ª 08908 L'Hospitalet de Llobregat, SPAIN

declara que el producto / herewith declares that the product:
Tipo / Type: Fuente de alimentación / Power supply

Tipo / Type: Ondulador CC/AC / DC/CA inverter
Modelos / Models: OCS-260-7031 -7033 -7034 -7035 -7036 -7037 -7041 -7043 -7044 -7045 -7046 -7047

es conforme con las disposiciones de las siguientes directivas UE:
is in conformity with the provisions of the following EU directive(s):

- 2014/35/EU [Baja tensión](#) / Low voltage
- 2014/30/EU [Compatibilidad electromagnética](#) / Electromagnetic compatibility

y se han aplicado las normas y/o especificaciones técnicas siguientes:
and that standards and/or technical specifications referenced overleaf have been applied:

- EN 60950: 2005 [Seguridad \(Equipos de tratamiento de la información\)](#) / Safety (Information technology equipment)
- EN 61000-6-3: 2007 [Norma genérica de emisión](#) / Generic emission standard
- EN 61000-6-2: 2005 [Norma genérica de inmunidad](#) / Generic Immunity standard
- EN 50155: 2007* [Aplicaciones ferroviarias. Equipos electrónicos utilizados sobre material rodante](#) / Railway applications. Electronic equipment used on rolling stock material

* [Sólo versión ferroviaria, ver anexo](#) / Railway version only, see annexe

Año del mercado CE / CE marking year: **2014**

Notas / Notes:

Para el cumplimiento de esta declaración el producto debe usarse sólo para el fin que ha sido concebido, teniendo en cuenta las limitaciones establecidas en el manual de instrucciones o ficha técnica.

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, 09-05-2016



Jordi Gazo

Director Gerente / Managing Director

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

ANEXO / ANEXE

| Valores aplicables para los apartados de la norma EN50155: 2007 | | Applicable values for the different sections of the norm EN50155: 2007 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|--|--------------------------|-----------------|----------------------------|------|------|-----------|------------|--------------------|-------------------------|--------------|----------------|-----------------------|----------------------|-----------------------|---------------------|----------------------------|-------|-------------------------|--------------|----------------|--------------|---------------------------|---|-------|--------------------------|---|-----------------|--------------|-------|------|----------------|---|--------|------|----------------|---|--------|------|----------------|---|---|------|----------------|---|-------|--------------|--------------|------|-----------------|---|--------------|------|-----------------|---|--------------|--------------|-------|-----|--------------------------|---|--------|-----|--------------------------|---|--------|-----|--------------------------|---|---|-----|--------------------------|---|----------------|--------------|------------|--------|----------------------|---|----------------------|--------------|------------|--------|-----------------|---|
| 4.1.1 | Altitud de trabajo Working altitude | Up to 1800m | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1.2 | Temperatura ambiente Ambient temperature | Class T1 column 2 (-25 ... 55°C): load at 100% Class T2 column 2 (-25 ... 55°C): load at 100% Class T3 column 2 (-25 ... 55°C): load at 50% Class TX column 2 (-25 ... 55°C): load at 50% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1.3 | Choques y vibraciones Shocks and vibrations | According EN61373:2010 Category 1 class B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1.4 | Humedad relativa Relative humidity | Up to 95% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1.1.1 | Variaciones de la tensión de alimentación Power supply voltage variations | From 0.70 to 1.25 Un continuous From 0.60 to 1.40 Un 0.1s From 1.25 to 1.40 Un 1s without damage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1.1.2 | Interrupciones de la tensión de alimentación Power supply interruptions | Class S1 (without interruptions) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1.1.4 | Factor de ondulación a la entrada Input ripple factor | Up to 15% of Vin nom | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1.3 | Conmutación de la alimentación Power supply switching | Class C1 (0.6 Un during 100ms without interruptions) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.2 | Sobretensiones de alimentación Power supply over-voltages | 1.40 Un 1s (impedance 1 ohm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.5 | CEM Compatibilidad electromagnética EMC Electromagnetic Compatibility EN50121-3-2:2006 EN50121-4:2006 | <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="2">Radiated emissions</td> <td rowspan="2">IEC55011</td> <td rowspan="2">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 rowspan="2">Conducted emissions</td> <td rowspan="2">IEC55011</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 | IEC55011 | Case | 30MHz...230MHz | 40dB(µV/m) Qpk at 10m | 230MHz...1GHz | 47dB(µV/m) Qpk at 10m | Conducted emissions | IEC55011 | Input | 150kHz...500kHz | 99dB(µV) Qpk | 500kHz...30MHz | 93dB(µV) Qpk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Test | Norm | Port | Frequency | Limits | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Radiated emissions | IEC55011 | Case | 30MHz...230MHz | 40dB(µV/m) Qpk at 10m | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 230MHz...1GHz | 47dB(µV/m) Qpk at 10m | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Conducted emissions | IEC55011 | 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>B</td> </tr> <tr> <td>±8kV</td> <td>Contact (conductive parts)</td> <td>B</td> </tr> <tr> <td rowspan="2">Radiated high-frequency</td> <td rowspan="2">IEC61000-4-3</td> <td rowspan="2">X/Y/Z Axis</td> <td>20V/m</td> <td>0.08...1.0GHz M. 80% 1kHz</td> <td>A</td> </tr> <tr> <td>10V/m</td> <td>1.4...2.1GHz M. 80% 1kHz</td> <td>A</td> </tr> <tr> <td rowspan="4">Fast transients</td> <td rowspan="4">IEC61000-4-4</td> <td>Input</td> <td>±2kV</td> <td>Tr/Th: 5/50 ns</td> <td>A</td> </tr> <tr> <td>Output</td> <td>±2kV</td> <td>Tr/Th: 5/50 ns</td> <td>A</td> </tr> <tr> <td>Signal</td> <td>±2kV</td> <td>Tr/Th: 5/50 ns</td> <td>A</td> </tr> <tr> <td>E</td> <td>±1kV</td> <td>Tr/Th: 5/50 ns</td> <td>A</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>Tr/Th: 1.2/50µs</td> <td>B</td> </tr> <tr> <td>Input L to E</td> <td>±2kV</td> <td>Tr/Th: 1.2/50µs</td> <td>B</td> </tr> <tr> <td rowspan="4">Conducted RF</td> <td rowspan="4">IEC61000-4-6</td> <td>Input</td> <td>10V</td> <td>0.15...80MHz M. 80% 1kHz</td> <td>A</td> </tr> <tr> <td>Output</td> <td>10V</td> <td>0.15...80MHz M. 80% 1kHz</td> <td>A</td> </tr> <tr> <td>Signal</td> <td>10V</td> <td>0.15...80MHz M. 80% 1kHz</td> <td>A</td> </tr> <tr> <td>E</td> <td>10V</td> <td>0.15...80MHz M. 80% 1kHz</td> <td>A</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) | B | 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 | A | Fast transients | IEC61000-4-4 | Input | ±2kV | Tr/Th: 5/50 ns | A | Output | ±2kV | Tr/Th: 5/50 ns | A | Signal | ±2kV | Tr/Th: 5/50 ns | A | E | ±1kV | Tr/Th: 5/50 ns | A | Surge | IEC61000-4-5 | Input L to L | ±1kV | Tr/Th: 1.2/50µs | B | Input L to E | ±2kV | Tr/Th: 1.2/50µs | B | Conducted RF | IEC61000-4-6 | Input | 10V | 0.15...80MHz M. 80% 1kHz | A | Output | 10V | 0.15...80MHz M. 80% 1kHz | A | Signal | 10V | 0.15...80MHz M. 80% 1kHz | A | E | 10V | 0.15...80MHz M. 80% 1kHz | A | 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) | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 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 | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Fast transients | IEC61000-4-4 | Input | ±2kV | Tr/Th: 5/50 ns | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Output | ±2kV | Tr/Th: 5/50 ns | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Signal | ±2kV | Tr/Th: 5/50 ns | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | ±1kV | | | Tr/Th: 5/50 ns | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Surge | IEC61000-4-5 | Input L to L | ±1kV | Tr/Th: 1.2/50µs | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Input L to E | ±2kV | Tr/Th: 1.2/50µs | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conducted RF | IEC61000-4-6 | Input | 10V | 0.15...80MHz M. 80% 1kHz | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Output | 10V | 0.15...80MHz M. 80% 1kHz | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Signal | 10V | 0.15...80MHz M. 80% 1kHz | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | E | 10V | 0.15...80MHz M. 80% 1kHz | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P= Performance criteria, L= Line, E= PE (Protective Earth) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.2.6 | Protección inversión de polaridad de entrada Input reverse polarity protection | By fuse | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9.7 | Recubrimiento de protección del PCB PCB protection | PCB conformal coated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.2 | Lista de ensayos Tests list | 1 Visual Inspection 2 Performance test 3 Cooling 4 Dry heat 6 Supply overvoltages 7 Surge, ESD and burst susceptibility 8 RF Interferences 9 Insulation 11 Shocks and vibrations 13 Equipment stress screening: 24h at 40°C and load 100% 14 Low temperature storage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Routine Routine Type Type Type Type Type Routine Type Routine Type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |