

# ODX-3000

## 2400...3000 VA DC/AC INVERTER

### GENERAL FEATURES:

Sine wave output voltage  
 Suitable for motors control  
 Selectable output frequency: 50/60 Hz  
 Adjustable output voltage  
 High input-output isolation 3000 Vrms  
 Remote inhibit  
 Configurable input: Reverse or Mid power  
 Remote control via RS232  
 Alarms by isolated relay contacts  
 Remote off opto-coupled  
 Optional railway version EN50155  
 Fire and smoke: EN45545-2 approved



|         | 24 Vdc<br>16.8 ... 30 V        | 36 Vdc<br>25.2 ... 45 V        | 48 Vdc<br>33.6 ... 60 V        | 72 Vdc<br>50.4 ... 90 V        | 110 Vdc<br>77 ... 138 V        |
|---------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 230 Vac | <b>ODX-3000-7413</b><br>2400 W | Available under request        | Available under request        | Available under request        | <b>ODX-3000-7417</b><br>3000 W |
| 400 Vac | <b>ODX-3000-7403</b><br>2400 W | <b>ODX-3000-7404</b><br>3000 W | <b>ODX-3000-7405</b><br>3000 W | <b>ODX-3000-7406</b><br>3000 W | <b>ODX-3000-7407</b><br>3000 W |

Several references are subjected to special MOQs and lead times. Please consult Premium's Sales Dept. and web site.



## INPUT

|                      |                           |
|----------------------|---------------------------|
| Input voltage range  | -30, +25 % Vin nom        |
| Maximum input ripple | 5% Vin nom (Vrms, 100 Hz) |

## OUTPUT

|                                |  |
|--------------------------------|--|
| Nominal output voltage (Von)   | See table  |
| Output voltage range           | 50 ... 230 Vac (models of 230 Vac output) via RS232<br>50 ... 400 Vac (models of 400 Vac output) via RS232 |
| Output frequency               | 50 / 60 Hz via DIP-switch, 5...75 Hz via RS-232  |
| Load regulation                | < 4 %  |
| Line regulation                | < 2 % Vin -25 % ... +25 %<br>< 10 % Vin -30 % ... +25 %<br>< 20 % Vin -40 % ... +40 % (100ms)              |
| Output waveform distortion THD | < 2 % (average of 16 samples)  |
| Output HF ripple               | < 2.5 %  |

## ENVIRONMENTAL

|   | Options B and T   | Option L (Note-1)           |
|---|---|-----------------------------|
| Storage temperature                           | -25 ... 80 °C   | -40 ... 80 °C               |
| Operating temperature: Full load              | -25 ... 55 °C (EN50155 OT1)   | -40 ... 55 °C (EN50155 OT2) |
| Operating temperature: 62.5 % load            | -25 ... 70 °C (EN50155 OT3)   | -40 ... 70 °C (EN50155 OT4) |
| Relative humidity                             | 5 ... 95 %  |                             |
| Maximum altitude                              | 2000m at full load, 2500m at 95% of load                                |                             |
| Cooling                                       | Controlled internal fan   |                             |
| Shock and vibration                           | According to EN61373:2010 + Corr 1:2011 Category 1 class B body mounted |                             |
| MTBF (MIL-HDBK-217-E; G <sub>b</sub> , 25 °C) | 100.000 h   |                             |

## EMC

|                     |                          |
|---------------------|--------------------------|
| Immunity according  | EN61000-6-2, EN50121-3-2 |
| Emissions according | EN61000-6-4, EN50121-3-2 |

## SAFETY

|   | Options B and T  | Option L                  |
|---|--|---------------------------|
| Dielectric strength: Input / Output               | 3000 Vrms / 50 Hz / 1 min                              | 3000 Vrms / 50 Hz / 1 min |
| Dielectric strength: Output / PE                  | 1500 Vrms / 50 Hz / 1 min                              | 2500 Vrms / 50 Hz / 1 min |
| Dielectric strength: Input / PE                   | 1000 Vrms / 50 Hz / 1 min                              | 2500 Vrms / 50 Hz / 1 min |
| Dielectric strength: Signals (Note-2) / PE, Input | 1500 Vrms / 50 Hz / 1 min                              | 1500 Vrms / 50 Hz / 1 min |
| Dielectric strength: Signals (Note-2) / Output    | 1500 Vrms / 50 Hz / 1 min                              | 2500 Vrms / 50 Hz / 1 min |
| Safety according to                               | EN62368-1  |                           |
| Fire and smoke according to                       | EN45545-2 (only for options T and L, railway versions) |                           |

## MECHANICAL

|        |          |
|--------|----------|
| Weight | < 7150 g |
|--------|----------|

## PROTECTIONS

|                          |  |
|--------------------------|--|
| Against overloads        | Current and I <sup>2</sup> T limited (see overload protection) |
| Against over-temperature | Shutdown with auto-recovery                                    |

## CONTROL

|  |   |
|--|---|
| Output OK LED                                      | Green   |
| Input OK LED                                       | Green   |
| Input alarm  | Open when alarm. Maximum rating: 0.16 A at 160 Vdc            |
| Output alarm                                       | Open when alarm. Maximum rating: 0.16 A at 160 Vdc            |
| Remote OFF input                                   | OFF: applying 15...154 Vdc (acc. to EN50155), Impedance >35kΩ |
| Configurable input (reverse rotation or mid-power) | ON: applying 15...154 Vdc (acc. to EN50155), Impedance >35kΩ  |

Note-1: Is not recommended to handle connectors below -25°C

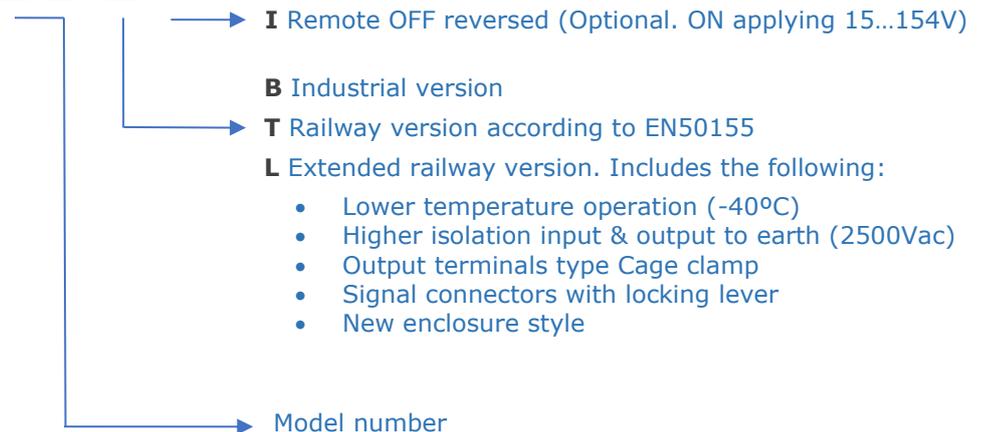
Note-2: Signals include RS-232 port, control inputs and alarms outputs

## ORDERING CODES

| Model                | Input   |           |         |       | Output  |        |       |           |        |           | Effic |
|----------------------|---------|-----------|---------|-------|---------|--------|-------|-----------|--------|-----------|-------|
|                      | Voltage |           | Current |       | Voltage | Power  |       | Current   |        |           |       |
|                      | Nom     | range     | No load | Max   | Nom     | Active | Appar | Cont. rms | 5s rms | 10ms Iopk |       |
|                      | [V]     | [V]       | [A]     | [A]   | [V]     | [W]    | [VA]  | [A]       | [A]    | [A]       |       |
| <b>ODX-3000-7403</b> | 24      | 16.8 - 30 | <1.58   | 160,5 | 400     | 2400   | 2400  | 3.46      | 5.25   | 11        | 89    |
| <b>ODX-3000-7404</b> | 36      | 25.2 - 45 | <1.05   | 132,3 | 400     | 3000   | 3000  | 4.33      | 6.6    | 11        | 90    |
| <b>ODX-3000-7405</b> | 48      | 33.6 - 60 | < 0.79  | 98,1  | 400     | 3000   | 3000  | 4.33      | 6.6    | 11        | 91    |
| <b>ODX-3000-7406</b> | 72      | 50.4 - 90 | < 0.52  | 65,4  | 400     | 3000   | 3000  | 4.33      | 6.6    | 11        | 91    |
| <b>ODX-3000-7407</b> | 110     | 77 - 138  | < 0.34  | 42,3  | 400     | 3000   | 3000  | 4.33      | 6.6    | 11        | 92    |
| <b>ODX-3000-7413</b> | 24      | 16.8 - 30 | <1.58   | 160,5 | 230     | 2400   | 2400  | 6.00      | 9.0    | 19        | 89    |
| <b>ODX-3000-7417</b> | 110     | 77 - 138  | < 0.34  | 42,8  | 230     | 3000   | 3000  | 7.55      | 11.3   | 19        | 91    |

Several references are subjected to special MOQs and lead times. Please consult Premium's Sales Dept. and web site.

ODX-3000-74 \_ \_ - \_ \_



Options B and T



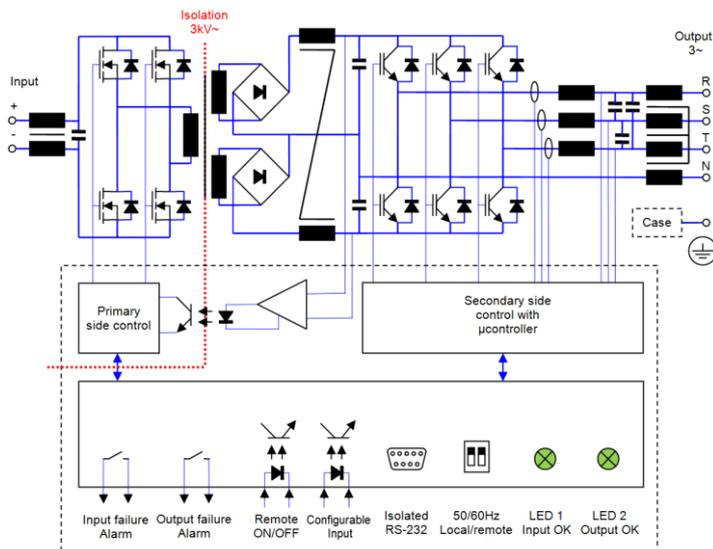
Option L



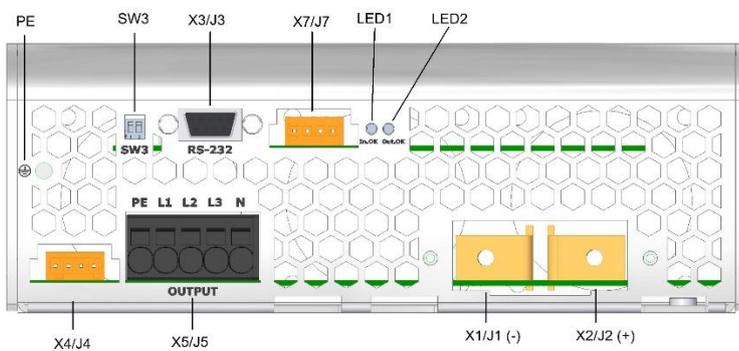
Accessories must be ordered in a separate order line



## BLOCKS DIAGRAM



## CONNECTIONS



|            |                      |   |
|------------|----------------------|---|
| X1/J1      | -Vin                 | Terminals M6 (Rec. torque 6 Nm)   |
| X2/J2      | +Vin                 |   |
| PE         | Protective Earth     | Stud M5 (Rec. torque 3.8 Nm)  |
| X5/J5 - 1  | Protective Earth     | Cables 1.5 ... 2.5 mm <sup>2</sup>  |
| X5/J5 - 2  | Output R             |   |
| X5/J5 - 3  | Output S             |   |
| X5/J5 - 4  | Output T             |   |
| X5/J5 - 5  | Output Neutral       |   |
| X4/J4 - 1  | + Configurable input | Cables 0.25 ... 1.5 mm <sup>2</sup><br><b>Option B and T</b><br>Phoenix Contact MC1.5/4-G-3.81<br>Includes female: FK-MCP 1.5/4-ST-3.81 |
| X4/J4 - 2  | - Configurable input |   |
| X4/J4 - 3  | + Remote ON/OFF      |   |
| X4/J4 - 4  | - Remote ON/OFF      |   |
| X7/J7 - 1  | Output alarm         | <b>Option L</b><br>Wago 734-264<br>Includes female: 734-204/037-000   |
| X7/J7 - 2  | Output alarm         |   |
| X7/J7 - 3  | Input alarm          |   |
| X7/J7 - 4  | Input alarm          |   |
| X3/J3 - 2  | RS-232 Rx            | Sub-DB9 female  |
| X3/J3 - 3  | RS-232 Tx            |   |
| X3/J3 - 5  | RS-232 GND           |   |
| X3/J3 rest | Not connected        |   |
| SW3        | Options switch       | ON is position down   |

**X: Options B and T**  
**J: Option L**

## DESCRIPTION

The ODX-3000 consists of three phase sine-wave DC-AC inverters with galvanic isolation between input and output.

The unit allows:

- Three working modes configurable via switch SW3:

| SW3-1     | SW3-2            | Working mode  |
|-----------|------------------|---|
| OFF (UP)  | OFF (UP)         | Output frequency: 50Hz or the one programmed by default via RS232, if different from 50Hz.<br>Output enabled by default.  |
| OFF (UP)  | ON (DOWN)        | Output frequency: 50Hz or the one programmed by default via RS232, if different from 50Hz.<br>Output disabled by default. It is enabled by the PRG3999.9 command (RS232). |
| ON (DOWN) | OFF/ON (UP/DOWN) | Output frequency: 60Hz.   |

When SW3-2 is ON (down position), the AC output must be enabled by means of the command PRG3999.9. You will find more information about this and other commands in the table "RS232 communication port" in the section below (see page 6/10).

- Shutdown applying voltage output 15 to 154 V on pins 3 and 4 of X4/J4
- Start-up motors by means of a soft start. In the start-up, the output voltage rises linearly from 0 V to set voltage and the frequency from the initial to the set one. The start-up ramp slope may be changed via RS-232
- Set the rotation speed of a motor according to the appropriate Voltage/Frequency ratio.
- Configurable input (pin 1 and 2 of X4/J4):
  - Reverse mode: Changing the rotation direction for the next start-up of a motor by applying voltage between 15 and 154 V
  - Mid power mode: Changing the output frequency in V/F mode from nominal to a mid-power frequency by applying voltage between 15 and 154 V.
- Monitoring the status of the input and output voltage through the contacts of two separate solid-state relays.
- Set and monitor parameters via RS-232.

The ODX-3000 is equipped with a maximum average power protection as well as maximum output peak current protection. This protects the semiconductors 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.

## INSTALLATION

- The unit has 4 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 an air flow reduction (minimum recommended distance to other objects 50 mm).
- Make connections as shown in the figure.
- The ground connection can be made through the terminal strip (X5/J5-1) or the ground stud on the front side indistinctly.



## POWER DERATING vs AMBIENT TEMP.



- The default output frequency is 50 Hz. For 60 Hz 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<br>24 V                | Input<br>36 V                | Input<br>48 V                | Input<br>72 V                | Input<br>110 V               | Output<br>230 V               | Output<br>400 V               |
|------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|-------------------------------|
| Maximum<br>current     | 161 A                        | 132 A                        | 98 A                         | 66 A                         | 43 A                         | 7.55 A                        | 4.4 A                         |
| Cable<br>cross-section | <b>50</b><br>mm <sup>2</sup> | <b>50</b><br>mm <sup>2</sup> | <b>25</b><br>mm <sup>2</sup> | <b>16</b><br>mm <sup>2</sup> | <b>10</b><br>mm <sup>2</sup> | <b>1.5</b><br>mm <sup>2</sup> | <b>1.5</b><br>mm <sup>2</sup> |



## RS232 communication port

It is possible to control and monitor the unit via RS232 by means of a terminal emulator like "Tera Term" or "Putty".  
Check our guide: <https://premiumpsu.com/wp-content/uploads/2025/09/Serial-Connection-Guide.pdf>

Also it is possible to control and monitor the unit directly using the protocol showed in table:



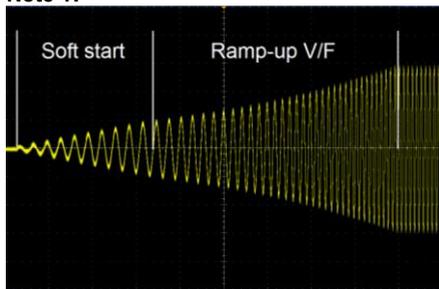
**Protocol configuration:** ASCII code, 9600 bauds, parity none, 8 bits, 1bit stop

| Header | Function | Parameter | Returns                                | Explanation  |   |   |
|--------|----------|-----------|--|--|---|---|
| P      | L        | V         | PTV####.■                              | Input voltage in Volts   |   |   |
|        |          | v         | PTv####.■                              | Input voltage ripple in Volts  |   |   |
|        |          | U         | PTURS=####[13]UST=####[13]<br>UTR=#### | Output voltage in Volts RMS<br>([13] = char 13 of ASCII code)  |   |   |
|        |          | I         | PTIR=####[13]IS=####[13]<br>IT=####    | Output current in Amps RMS<br>([13] = char 13 of ASCII code)   |   |   |
|        |          | T         | PTT####.■                              | Internal temperature in K  |   |   |
|        |          | F         | PTF####.■                              | Nominal output frequency in Hz   |   |   |
|        |          | f         | PTf####.■                              | Actual output frequency in Hz  |   |   |
|        |          | u         | PTu####.■                              | Actual output voltage set-point in V   |   |   |
|        |          | S         | PTS####.■                              | Inverter state<br>999.9 → Enabled<br>000.0 → Disabled<br>222.2 → Blocked by overload<br>111.1 → Blocked by overload or short-circuit |   |   |
|        |          | M         | PTM####                                | Model number   |   |   |
|        |          | R         | PTR####                                | Firmware version   |   |   |
|        |          | Other     | PTE                                    | Command not supported  |   |   |
|        |          | G         | 1                                      | ####.■   | OK / ERR  | Set the low input voltage timed shutdown in V |
|        |          |           | 2                                      | ####.■   | OK / ERR  | Set the minimum alarm input voltage in V      |
|        | 3        |           | ####.■                                 | OK / ERR   | Change the status bit (after start-up enabled with SW3 =LOCAL and disabled with SW3 =REMOTE)<br>999.9 → Inverter enabled<br>000.0 → Inverter disabled                               |   |
|        | 4        |           | ####.■                                 | OK / ERR   | Set the output voltage in Vrms (Vo). (output must be stopped)<br>050.0 ≤ ####.■ ≤ 232.0 (models of 230V output)<br>050.0 ≤ ####.■ ≤ 405.0 (models of 400V output)                   |   |
|        | 5        |           | ####.■                                 | OK / ERR   | Set the maximum output current in Arms<br>20% I <sub>nom</sub> ≤ ####.■ ≤ 100% I <sub>nom</sub>   |   |
|        | 6        |           | ####.■                                 | OK / ERR   | Set the nominal output frequency in Hz (Fo) (output must be stopped)<br>005.0 ≤ ####.■ ≤ 075.0  |   |
|        | 7        |           | ####.■                                 | OK / ERR   | Set the alarm maximum output current in Arms<br>0 < ####.■ ≤ 100% I <sub>max_warning</sub>  |   |
|        | 8        |           | ####.■                                 | OK / ERR   | 111.1 → Reset the inverter  |   |
|        | L        |           | ####.■                                 | OK / ERR   | Set the minimum input starting voltage in Volts   |   |
|        | O        |           | ####.■                                 | OK / ERR   | Set the initial frequency in the start-up (Fi)<br>005.0 ≤ ####.■ ≤ 075.0  |   |
|        | P        |           | ####.■                                 | OK / ERR   | Set the ramp-up in increment of "N" cycles per Hz in mode V/F, frequency changes or start-up (Note-1)<br>001.0 ≤ ####.■ ≤ 100.0   |   |
|        | Q        |           | ####.■                                 | OK / ERR   | Set the ramp-down in decrement of "N" cycles per Hz in mode V/F (Note-1)<br>002.0 ≤ ####.■ ≤ 100.0  |   |
|        | Y        |           | ####.■                                 | OK / ERR   | * Change the working mode of the input X4/J4-1,X4/J4-2<br>111.1 → Input as reverse phase control (default)<br>222.2 → Input as mid-power control                                    |   |
|        | X        |           | ####.■                                 | OK / ERR   | * Set the mid-power frequency for V/F mode by the use of input X4/J4-1,X4/J4-2<br>005.0 ≤ ####.■ ≤ 75.0   |   |
|        | M        | 1         | ####.■                                 | OK / ERR   | Set a new output frequency in Hz (output must be run and not stored in memory)<br>005.0 ≤ ####.■ ≤ 075.0  |   |
|        |          | 2         | ####.■                                 | OK / ERR   | Set a new output voltage in Volts (output must be run and not stored in memory)<br>050.0 ≤ ####.■ ≤ 232.0 (models of 230V output)<br>050.0 ≤ ####.■ ≤ 405.0 (models of 400V output) |   |
|        |          | 3         | ####.■                                 | OK / ERR   | Set a new output frequency in Hz in mode V/F (output must be run and not stored in memory)<br>005.0 ≤ ####.■ ≤ 075.0  |   |
|        |          | 4         | ####.■                                 | OK / ERR   | Changes the output phase order (output must be run and not stored in memory)<br>111.1 → Phase RST (direct phase)<br>222.2 → Phase SRT (reverse phase)                               |   |

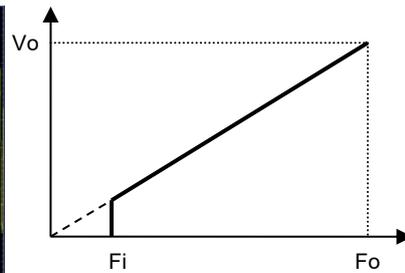
\* Parameters are only useful from version 6.0 of firmware



**Note 1:**

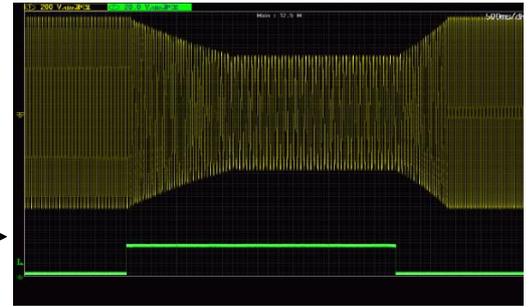


Example for N=1: start-up time = N x 1.7 s for changes from 16 Hz to 50 Hz



Mode V/F curve

**Note 2:**

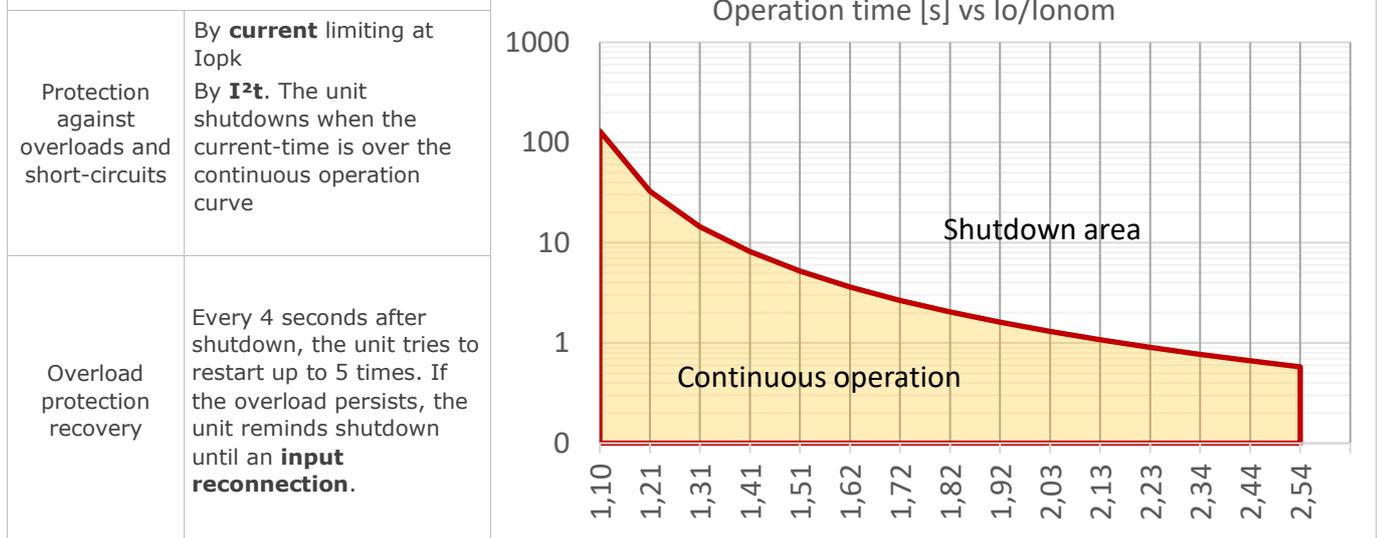


Example for change from 50Hz / 400 V to 30 Hz and 240 V with ramp-down of 2 cycles / Hz and ramp-up de 1 Cycle/Hz. Yellow: output voltage and Green: Mid-Power input signal

**WORKING PARAMETERS** (Configurable parameters underlined>)

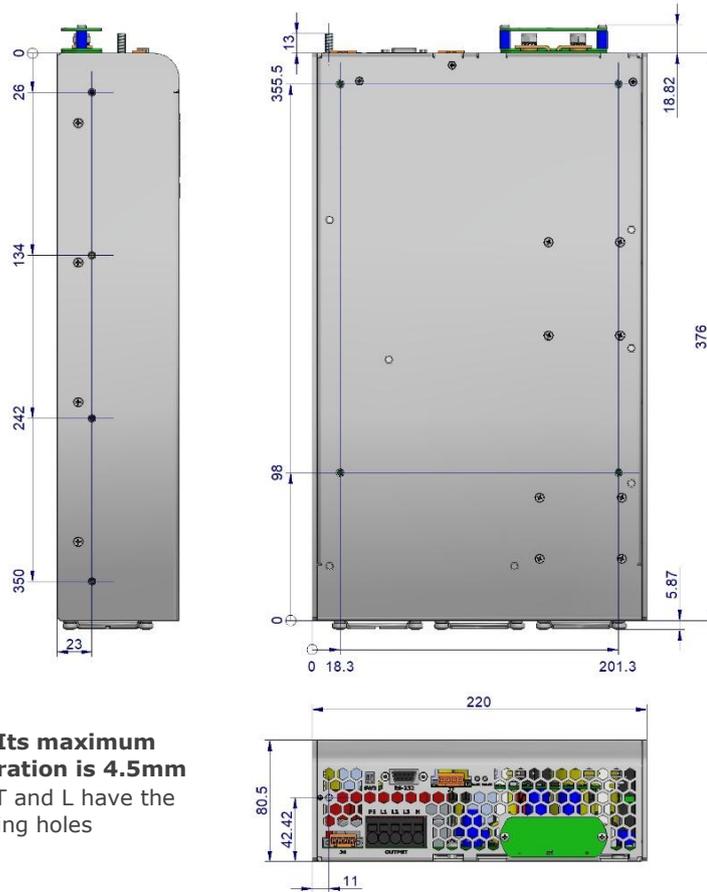
| Thermal protection  | 7403...7417              |               |       |               |              |     |     |
|---|--------------------------|---------------|-------|---------------|--------------|-----|-----|
| Internal warning temperature(output alarm)                | 82                       |               |       |               |              |     | °C  |
| Internal shutdown temperature                             | 98                       |               |       |               |              |     | °C  |
| Internal restart temperature                              | 87                       |               |       |               |              |     | °C  |
| Internal temperature of fan start-up                      | 45                       |               |       |               |              |     | °C  |
| Input voltage parameters                                  | 7403<br>7413             | 7404          | 7405  | 7406          | 7407<br>7417 |     |     |
| High input voltage shutdown instantaneous                 | 33.6                     | 50.4          | 67.2  | 100.8         | 154.0        | Vdc |     |
| High input voltage timed shutdown (t) (Input alarm)       | 31.2                     | 46.8          | 62.4  | 93.6          | 143.0        | Vdc |     |
| <u>Low start-up input voltage</u>                         | 16.8                     | 25.2          | 33.6  | 50.4          | 77.0         | Vdc |     |
| <u>Low input voltage timed shutdown (t) (Input alarm)</u> | <16.8                    | <25.2         | <33.6 | <50.4         | <77.0        | Vdc |     |
| Low input voltage instantaneous shutdown                  | <14.4                    | <21.6         | <28.8 | <43.2         | <66.0        | Vdc |     |
| Time to shutdown (t)                                      | 500                      |               |       |               |              |     | ms  |
| Output voltage parameters                                 | 7403...7407              |               |       | 7413...7417   |              |     |     |
| <u>Output voltage</u>                                     | 400                      |               |       | 230           |              |     | Vac |
| Output under-voltage shutdown                             | < 85% of setting 1000 ms |               |       |               |              |     |     |
| Warning voltage (output alarm)                            | < 90% of setting 200 ms  |               |       |               |              |     |     |
| <u>Initial start-up frequency</u>                         | 16                       |               |       |               |              |     | Hz  |
| <u>Soft start duration</u>                                | 10 cycles                |               |       |               |              |     |     |
| <u>Ramp-up V/F</u>  | 1 Hz/cycle               |               |       |               |              |     |     |
| Output current parameters                                 | 7403                     | 7404 ... 7407 | 7413  | 7414 ... 7417 |              |     |     |
| Maximum continuous output current                         | 3.46                     | 4.33          | 6.30  | 7.55          | A            |     |     |
| <u>Warning current (output alarm)</u>                     | 3.46                     | 4.33          | 6.30  | 7.55          | A            |     |     |
| Maximum overload I <sup>2</sup> t                         | See figure below         |               |       |               |              |     |     |
| Time between restart attempts                             | 4000                     |               |       |               |              |     | ms  |
| Number of attempts of consecutive overload                | 5                        |               |       |               |              |     |     |
| Working failures and reset                                | 7403...7417              |               |       |               |              |     |     |
| Lock for continuous overload or internal failure          | Unlimited time           |               |       |               |              |     |     |
| Reset time by input disconnection                         | > 2                      |               |       |               |              |     | min |

**OVERLOAD PROTECTION**





## DIMENSIONS

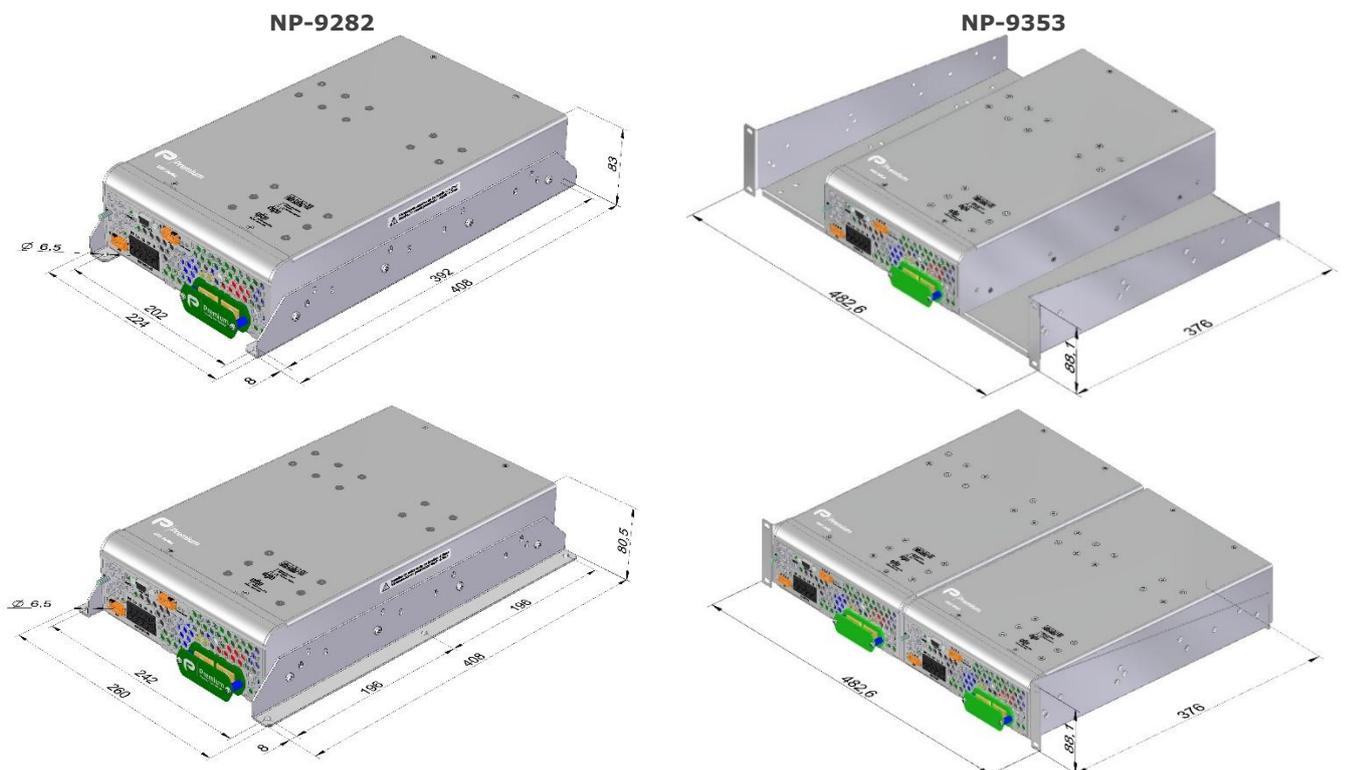


Remarks:

- The fixing holes are M4. **Its maximum allowable depth penetration is 4.5mm**
- Enclosures of models B, T and L have the same dimensions and fixing holes

## ACCESSORIES

| Description               | Notes                                    | CODE    |
|---------------------------|--|---------|
| Mounting brackets kit     | Contains two brackets and screws         | NP-9282 |
| 2U 19" rackmount tray kit | It allows to install one or two ODX-3000 | NP-9353 |





# 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**  
Brand: **Premium**  
Models: **ODX-3000-7403, ODX-3000-7404, ODX-3000-7405, ODX-3000-7406, ODX-3000-7407, ODX-3000-7413, ODX-3000-7417**  
with any of the suffixes **B, T, L** or **I**

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

|   |  |
|---|--|
| 2014/35/EU  | Low voltage / The electrical equipment (safety) regulations  |
| 2014/30/EU  | EMC / Electromagnetic compatibility regulations  |
| 2011/65/EU Annex II and its amendment 2015/863/EU | RoHS / Restriction of the use of certain hazardous substances in electrical and electronic equipment |

This declaration applies to all specimens manufactured identical to the samples submitted for testing/evaluation.

Assessment of compliance of the product with the requirements relating to aforementioned directives, was performed by Premium S.A. and is based on the following standards:

|                             |  |
|-----------------------------|--|
| EN IEC62368-1:2024 A11:2024 | Safety. Audio/video information and communication technology equipment   |
| EN IEC61000-6-4:2019        | Generic emission standard  |
| EN IEC61000-6-2:2019        | Generic Immunity standard  |
| EN IEC63000:2018            | Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances |
| EN50155: 2021*              | Railway applications. Electronic equipment used on rolling stock material  |
| EN50121-3-2: 2016* A1:2019  | Railway applications. EMC Rolling stock equipment  |

\* Optional, see annexe

CE marking year: **2013**

### 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, 19-03-2025

Manuel Camacho  
Technical Director

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



## 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 products:

Type: **DC/AC Inverter**

Brand: **Premium**

Models: **ODX-3000-7403, ODX-3000-7404, ODX-3000-7405, ODX-3000-7406, ODX-3000-7407, ODX-3000-7413, ODX-3000-7417**  
with any of the suffixes **B, T, L** or **I**

Complies with the essential protection requirements of the following regulations:

|                  |  |
|------------------|--|
| SI 2016 No 1101  | Low voltage / The electrical equipment (safety) regulations  |
| SI 2016 No 1091  | EMC / Electromagnetic compatibility regulations  |
| SI 2012 No. 3032 | RoHS / Restriction of the use of certain hazardous substances in electrical and electronic equipment |

This declaration applies to all specimens manufactured identical to the samples submitted for testing/evaluation.

Assessment of compliance of the product with the requirements relating to aforementioned regulations, was performed by Premium S.A. and is based on the following standards:

|                               |  |
|-------------------------------|--|
| EN IEC62368-1:2024 + A11:2024 | Safety. Audio/video information and communication technology equipment   |
| EN IEC61000-6-4:2019          | Generic emission standard  |
| EN IEC61000-6-2:2019          | Generic Immunity standard  |
| EN IEC63000:2018              | Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances |
| EN50155: 2017*                | Railway applications. Electronic equipment used on rolling stock material  |
| EN50121-3-2: 2016*            | Railway applications. EMC Rolling stock equipment  |
| EN50121-4: 2016* +A1:2019     | Railway applications. EMC of the signalling and telecommunications apparatus   |

\* Optional, see annexe

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, 19-03-2025

Manuel Camacho  
Technical Director

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

## ANNEXE

| Applicable values for the different sections of the norm EN50155: 2021 |  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|--|--|--|------------------------|-----------------------------|--------------------|--------------------------|---------------------|--------------------|---------------------------------|--------------|------------------|-------------------------|--------------------------------|-------------------------|-------------------|----------------------------|-------------------------|--------------------------|---------------------|----------|-------------------------------|-------------------|--|----------------------------|------------------------------------|-----------------------------|-------------------------------------|--------------------------|-------------------|--------------|-------|-------|----------------|---|--------|--------|-------|--------------|----|-------|------------------|---|--------------|---------------|--------------|--------------|-------|------|----------------------------|---|--------|--------|----|
| 4.4.1  | Working altitude   | Up to 2000m at full load<br>Up to 2500m at 95% of load   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4.2.2  | Ambient temperature  | For options B and T: Class OT1 (-25 to 55 °C): load < 100 %<br>For options B and T: Class OT3 (-25 to 70 °C): load <62.5 %<br>For option L: Class OT2 (-40 to 55 °C): load < 100 %<br>For option L: Class OT4 (-40 to 70 °C): load <62.5 %   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4.4.3  | Switch-on extended operating temp.                               | ST1: OTx + 15 °C, test cycle B   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4.4.4  | Rapid temperature variations                                     | H1   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4.4.5  | Shocks and vibrations  | According EN61373:2010 + Corr 1:2011 Category 1 class B  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4.4.6  | EMC Electromagnetic Compatibility<br>EN50121-3-2:2016<br>A1:2019 | <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">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>Do not apply</td> </tr> <tr> <td>3...6 GHz</td> <td>Internal freq. &lt; 108 MHz</td> </tr> <tr> <td rowspan="2">Conducted emissions</td> <td rowspan="2">IEC55016</td> <td rowspan="2">Input &amp; output</td> <td>150 kHz...500 kHz</td> <td>99 dB(μV) Qpk</td> </tr> <tr> <td>500 kHz...30 MHz</td> <td>93 dB(μV) Qpk</td> </tr> </tbody> </table>  | Test                   | Norm                        | Port               | Frequency                | Limits              | Radiated emissions | IEC55016                        | Case         | 30 MHz...230 MHz | 40 dB(μV/m) Qpk at 10 m | 230 MHz...1 GHz                | 47 dB(μV/m) Qpk at 10 m | 1...3 GHz         | Do not apply               | 3...6 GHz               | Internal freq. < 108 MHz | Conducted emissions | IEC55016 | Input & output                | 150 kHz...500 kHz | 99 dB(μV) Qpk                          | 500 kHz...30 MHz           | 93 dB(μV) Qpk                      |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Test   | Norm                   | Port                        | Frequency          | Limits                   |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Radiated emissions   | IEC55016               | Case                        | 30 MHz...230 MHz   | 40 dB(μV/m) Qpk at 10 m  |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  |                        |                             | 230 MHz...1 GHz    | 47 dB(μV/m) Qpk at 10 m  |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  |                        |                             | 1...3 GHz          | Do not apply             |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  |                        |                             | 3...6 GHz          | Internal freq. < 108 MHz |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Conducted emissions  | IEC55016               | Input & output              | 150 kHz...500 kHz  | 99 dB(μV) Qpk            |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  |                        |                             | 500 kHz...30 MHz   | 93 dB(μV) Qpk            |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <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>±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="3">Fast transients</td> <td rowspan="3">IEC61000-4-4</td> <td>Input</td> <td rowspan="3">±2 kV</td> <td rowspan="3">Tr/Th: 5/50 ns</td> <td rowspan="3">A</td> </tr> <tr> <td>Output</td> </tr> <tr> <td>Signal</td> </tr> <tr> <td rowspan="3">Surge</td> <td rowspan="3">IEC61000-4-5</td> <td>PE</td> <td rowspan="3">±1 kV</td> <td rowspan="3">Tr/Th: 1.2/50 μs</td> <td rowspan="3">B</td> </tr> <tr> <td>Input L to L</td> </tr> <tr> <td>Input L to PE</td> </tr> <tr> <td rowspan="4">Conducted RF</td> <td rowspan="4">IEC61000-4-6</td> <td>Input</td> <td rowspan="4">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> </tr> <tr> <td>Signal</td> </tr> <tr> <td>PE</td> </tr> </tbody> </table> | Test                   | Norm                        | Port               | Severity                 | Conditions          | P                  | Electrostatic discharge         | IEC61000-4-2 | Case             | ±8 kV                   | Air (isolated parts)           | B                       | ±8 kV             | Contact (conductive parts) | Radiated high-frequency | IEC61000-4-3             | X/Y/Z Axis          | 20 V/m   | 0.08...1.0 GHz M. 80% 1 kHz   | A                 | 10 V/m                                 | 1.4...2.1 GHz M. 80% 1 kHz | 5 V/m                              | 2.1...2.5 GHz M. 80% 1 kHz  | 3 V/m                               | 5.1...6 GHz M. 80% 1 kHz | Fast transients   | IEC61000-4-4 | Input | ±2 kV | Tr/Th: 5/50 ns | A | Output | Signal | Surge | IEC61000-4-5 | PE | ±1 kV | Tr/Th: 1.2/50 μs | B | Input L to L | Input L to PE | Conducted RF | IEC61000-4-6 | Input | 10 V | 0.15...80 MHz M. 80% 1 kHz | A | Output | Signal | PE |
|  |  | Test   | Norm                   | Port                        | Severity           | Conditions               | P                   |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| Electrostatic discharge  | IEC61000-4-2   | Case   | ±8 kV                  | Air (isolated parts)        | B                  |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  | ±8 kV                  | Contact (conductive parts)  |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| Radiated high-frequency  | IEC61000-4-3   | X/Y/Z Axis   | 20 V/m                 | 0.08...1.0 GHz M. 80% 1 kHz | A                  |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  | 10 V/m                 | 1.4...2.1 GHz M. 80% 1 kHz  |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  | 5 V/m                  | 2.1...2.5 GHz M. 80% 1 kHz  |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  |  | 3 V/m                  | 5.1...6 GHz M. 80% 1 kHz    |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| Fast transients  | IEC61000-4-4   | Input  | ±2 kV                  | Tr/Th: 5/50 ns              | A                  |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Output   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Signal   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| Surge  | IEC61000-4-5   | PE   | ±1 kV                  | Tr/Th: 1.2/50 μs            | B                  |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Input L to L   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Input L to PE  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| Conducted RF   | IEC61000-4-6   | Input  | 10 V                   | 0.15...80 MHz M. 80% 1 kHz  | A                  |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Output   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | Signal   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | PE   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | <b>P</b> = Performance criteria, L= Line, PE= Protective Earth   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4.4.7  | Relative humidity  | Up to 95%  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 5.2.2  | DC power supply range  | From 0.60 to 0.70 Un 0.1s  | Performance criteria A |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | From 0.70 to 1.25 Un continuous  | Performance criteria A |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | From 1.25 to 1.40 Un 0.1s  | Performance criteria A |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
|  |  | From 1.25 to 1.40 Un 1s  | Performance criteria C |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 5.2.4  | Interruptions of voltage supply                                  | Class S2   |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 5.2.5  | Supply change-over   | Class C1 (0.6 Un duration 100ms without interruptions. Performance criterion A)  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 5.2.7  | Input ripple factor  | 10% peak to peak with a DC Ripple Factor of 5 %  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 7.2.7  | Input reverse polarity protection                                | By fuse  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 10.7   | Protective coating for PCB assemblies                            | Class PC2  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 13.3   | Tests list   | <table style="width: 100%; border-collapse: collapse;"> <tbody> <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>Type</td></tr> <tr><td>4 Low temperature start-up test</td><td>Type</td></tr> <tr><td>5 Dry heat test</td><td>Type</td></tr> <tr><td>6 Low temperature storage test</td><td>-</td></tr> <tr><td>7 Insulation test</td><td>Routine</td></tr> <tr><td>8 Cyclic damp heat test</td><td>Type</td></tr> <tr><td>9 EMC test</td><td>Type</td></tr> <tr><td>10 Shocks and vibrations test</td><td>Type</td></tr> <tr><td>11 Enclosure protection test (IP code)</td><td>-</td></tr> <tr><td>12 Equipment stress screening test</td><td>Routine: 40°C and load 100%</td></tr> <tr><td>13 Rapid Temperature variation test</td><td>-</td></tr> <tr><td>14 Salt mist test</td><td>-</td></tr> </tbody> </table>   | 1 Visual Inspection    | Routine                     | 2 Performance test | Routine                  | 3 Power supply test | Type               | 4 Low temperature start-up test | Type         | 5 Dry heat test  | Type                    | 6 Low temperature storage test | -                       | 7 Insulation test | Routine                    | 8 Cyclic damp heat test | Type                     | 9 EMC test          | Type     | 10 Shocks and vibrations test | Type              | 11 Enclosure protection test (IP code) | -                          | 12 Equipment stress screening test | Routine: 40°C and load 100% | 13 Rapid Temperature variation test | -                        | 14 Salt mist test | -            |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 1 Visual Inspection  | Routine  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 2 Performance test   | Routine  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 3 Power supply test  | Type   |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 4 Low temperature start-up test  | Type   |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 5 Dry heat test  | Type   |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 6 Low temperature storage test   | -  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 7 Insulation test  | Routine  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 8 Cyclic damp heat test  | Type   |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 9 EMC test   | Type   |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 10 Shocks and vibrations test  | Type   |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 11 Enclosure protection test (IP code)                                 | -  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 12 Equipment stress screening test                                     | Routine: 40°C and load 100%                                      |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 13 Rapid Temperature variation test                                    | -  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |
| 14 Salt mist test  | -  |  |                        |                             |                    |                          |                     |                    |                                 |              |                  |                         |                                |                         |                   |                            |                         |                          |                     |          |                               |                   |  |                            |                                    |                             |                                     |                          |                   |              |       |       |                |   |        |        |       |              |    |       |                  |   |              |               |              |              |       |      |                            |   |        |        |    |