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MOUNTING AND OPERATING INSTRUCTIONS

eH Series

IdroMAP

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1. IMPORTANT NOTES

1.1 GENERAL INFORMATION

Electrical installation work may only be performed by skilled electrical personnel (see CEI 11-27 - PEI requirement - or analogous regulations and guidelines in the country where the product is to be installed and operated). Other persons may only perform electrical activities described in these instructions if

- They have received proper and professional instructions;
- Their tasks and activities have been precisely defined and understood;
- Activities are performed under the oversight and supervision of experienced and expert personnel.

When working with these mounting and installation instructions, special attention must be paid to the notes marked with symbols and key words as follows.

This Manual is available and always updated from the Cloud, scan the QR code of the cabinet label.

1.2 LIABILITY AND GUARANTEE

All indications and notes in these mounting and installation instructions were compiled taking account of the regulations in effect, the state of the art, and our knowledge and experience. The mounting and installation instructions are sent at the time of the delivery to the customer, and are available anytime from the online cloud accessed from the QR code printed in the cabinet. These instructions must be available at all times to the final customer and to all persons who work on or with the device. These mounting and installation instructions must be read carefully before the start of all work performed on or with the device.

1.3 COPYRIGHT PROTECTION

The mounting and installation instructions are to be handled confidentially. They are exclusively for the use of persons engaged in work on and with the device. All indications, texts, drawings, images and other representations contained in the instructions are protected by copyright law **IdroMOP ©2024.**

1.4 SPARE PARTS

Only use original spare parts from the manufacturer. Incorrect or faulty spare parts can cause damage, malfunc tioning or the complete failure of the device.

⚠ WARINING !

The use of unapproved spare parts causes all guarantee, service, damage and liability claims to be forfeited.

1.5 DISPOSAL

If no return or disposal agreement has been reached, disassembled components are to be conveyed to be recycled after appropriate dismounting.

2. SAFETY

2.1 GENERAL

The device is constructed according to the accepted state-of-the-art technology in effect at the time it was developed and produced, and is classified as safe. However, this device can present risks if it is used by personnel without specialist training, or is used inappropriately or in an unapproved manner.

These instructions and operating tasks must be observed.

Observe the CEI (or analogous regulations and guidelines in the country where the product is to be installed and operated) standards and regulations.

Ensure that the requirements of the technical construction regulations for your state are complied with.

Follow the CEI (or analogous regulations and guidelines in the country where the product is to be installed and operated) sample guideline for cable and pipe installation.

Ensure that the enclosure shows no signs of damage, such as cracks or cables displacement of the insulation.

Ensure that the internal enclosure is always closed while in operation.

Ensure that the pivoting range of the door is always unobstructed.

Ensure that the enclosure is stable.

The repair of any damage or malfunctioning must be performed by authorised personnel.

Ensure compliance with the additional notes of the current relevant prospectus.

The regulations of the general technical approval for CE marking and CEI (or analogous regulations and guidelines in the country where the product is to be installed and operated) standards, regarding design, mounting, cable entry point, etc. must be observed.

2.2 CONTENT OF THE MOUNTING AND OPERATING INSTRUCTIONS

All persons assigned to perform work on or with the device must read and understand the operating instructions before beginning work on the device. This also applies if the person concerned has already worked with an identical or similar device or has been trained by the manufacturer.

2.3 CHANGES AND MODIFICATIONS TO THE PRODUCT

To avoid the risk of danger and to ensure optimal performance, no changes or modifications may be carried out on the device unless expressly approved by the manufacturer.

2.4 RESPONSIBILITY OF THE OPERATOR

These operating instructions must be stored in the immediate vicinity of the device or must be available from online access and download. These operating instructions must be available at all times to the persons engaged in work on and with the device.

The device may only be used when it is technically sound and operationally safe. The device must be checked for soundness before the beginning of every operation. The specifications in the operating instructions must be adhered to completely and thoroughly.

2.5 PERSONNEL REQUIREMENTS

Only trained and authorised skilled personnel may work on and with the device. The personnel must have received instructions regarding potential sources of danger. Skilled personnel refers to those able to rely on specialist training, knowledge and experience, as well as knowledge of the relevant regulations, to evaluate the work assigned to them and recognise potential danger.

2.6 OPERATIONAL SAFETY

Personal injury and property damage during work on and with the device can be avoided by following the safety advice and directions provided in these operating instructions.

3. TECHNICAL DATA

3.1 MOUNTING MODELS

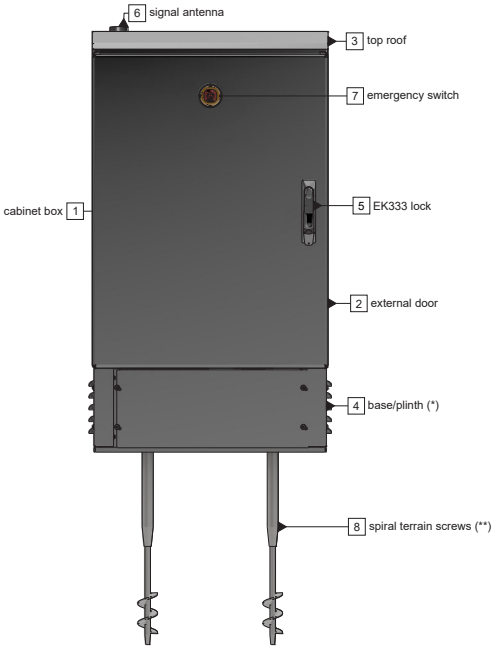
	Chassis	**Field**	**Wall**
Material	Inox Steel AISI 304	Inox Steel AISI 304	Inox Steel AISI 304
Material Thickness	1.5 [mm]	1.5 [mm]	1.5 [mm]
Max Storage Temperature	50 [°C]	50 [°C]	50 [°C]
Max Operating Temperature	42 [°C]	42 [°C]	42 [°C]
Type of protection	IP54	IP54	IP54
Insulation class	|	|	|
Dimensions (HxWxD)	1460x800x550 [mm]	1460x800x550 [mm]	1260x800x550 mm]
Weight	160 to 180 [kg]	160 to 180 [kg]	150 to 170 [kg]
External door	EK333 key	EK333 key	EK333 key
Blind Internal door	Double-bit key	Double-bit key	Double-bit key

3.2 ELECTRICAL MODELS

	75 [kW]	90 [kW]	110 [kW]	132 [kW]
Rated Voltage	400 [V]	400 [V]	400 [V]	400 [V]
Phases	3AC	3AC	3AC	3AC
Frequency	50 [Hz]	50 [Hz]	50 [Hz]	50 [Hz]
Rated Current	151 [A]	185 [A]	212 [A]	256 [A]
Short circuit capacity	36 [kA]	36 [kA]	36 [kA]	36 [kA]
Line Protection Current	200 [A]	250 [A]	400 [A]	400 [A]
Drive Sections Range	35 to 120 [mm^2]	35 to 120 [mm^2]	35 to 120 [mm^2]	35 to 120 [mm^2]
Power IN / OUT Section	120 [mm^2]	120 [mm^2]	120 [mm^2]	120 [mm^2]
Signal Section Range	0.5 to 1.5 [mm^2]	0.5 to 1.5 [mm^2]	0.5 to 1.5 [mm^2]	0.5 to 1.5 [mm^2]
Signal Section	1 [mm^2]	1 [mm^2]	1 [mm^2]	1 [mm^2]

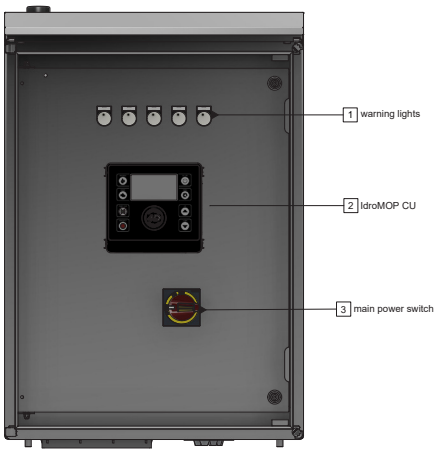
4. LAYOUT

4.1 EXTERNAL



(*)=Only on field or chassis mounting model;
(**)=Only on field mounting model.

4.2 INTERNAL DOOR



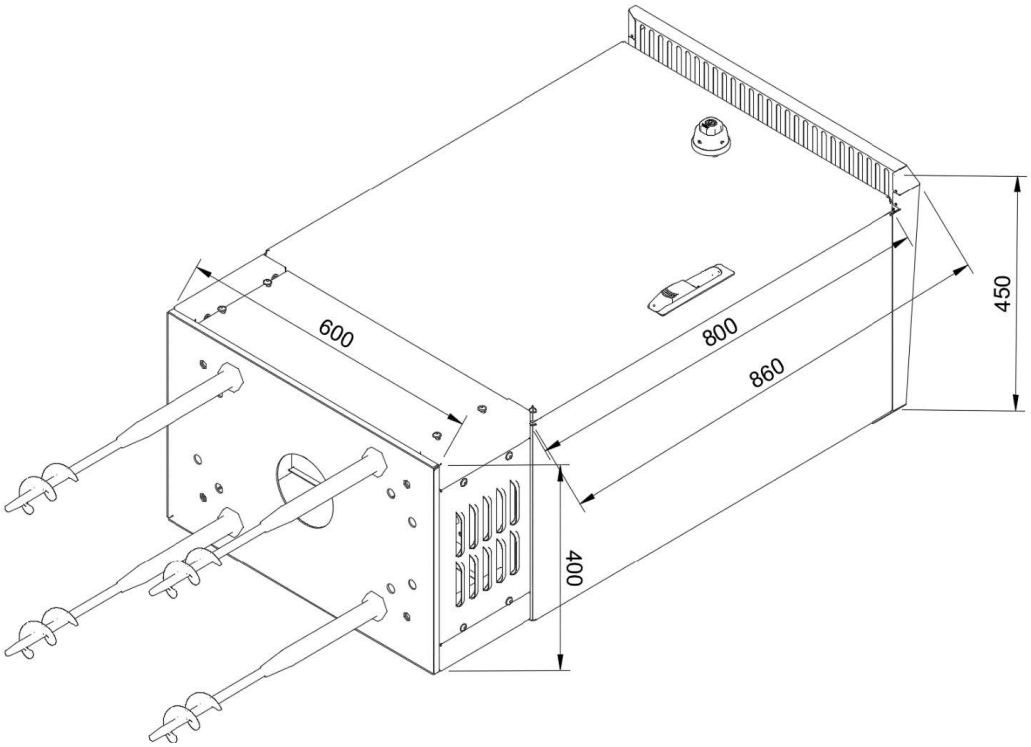
4.3 INSIDE CABINET

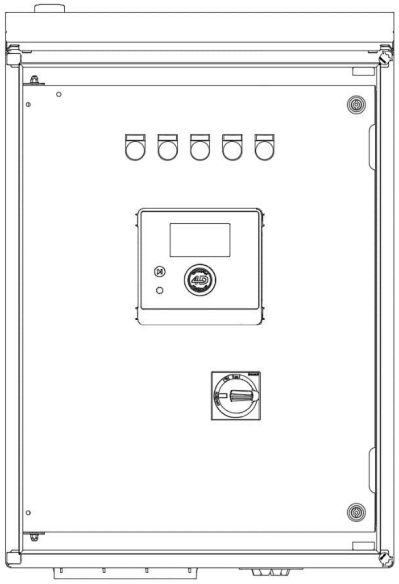
- Forced fan;
- Safety switch on door;
- 24V dc line switch;
- 24V dc power supply;
- L1-L2-L3 phase distribution ⚠;
- 230V pack;
- 24V dc fuses;
- L1-L2-L3 light fuses ⚠;
- Power line switch ⚠;
- Anti-condensation heater ❗
- PE bar ⚠;
- G120X power drive ⚠;
- IdroMOP CU connector;
- Door lights connector ⚠;
- Customer signal connector.

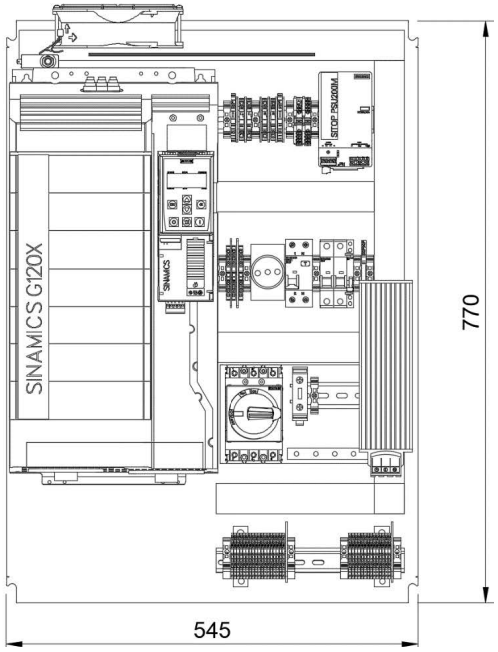
⚠ = WARNING! ; ❗ = HOT!

Layout can change based on different version or model.
Refers to the wiring and electrical diagram for devices identification

4.4 DIMENSIONS







5. TRANSPORT AND STOCK

The cabinet or enclosure must remain closed during transport or stock .
Doors must remain closed when the device is turned over. When positioning the cabinet, and espe cially when turning it over, avoid creating any strain, as this could potentially cause damage, thereby impairing the functioning of the enclosure.

> **! NOTE**
>
> Improper handling during transport can cause damage to the enclosure or the insulation, thereby impairing functioning.

5.1 TRANSPORT

Transport must be carried out taking care of temperature range from -30 °C to +60 °C.

Depending on the means of transport (vehicle, train, ship or plane) and the distance between the manufacturing company and the place of installation, the packaging may be of different types indicated below:

- Covered with a plastic film;
- Protection of edges, components and protruding instruments with rigid polystyrene panels and covered with plastic film;
- Closed in a wooden box;
- Closed in a wooden box, covered with a plastic film (for naval transport).

Upon arrival of the packaged units, check that they correspond to the Transport Document and check for any damage to the packaging or to the product happened during transport (any kind of damage, breaks, dents, scratches, abrasions) or the visible presence of water, humidity or oxidation. This operation must be done before the unloading. Take clear photos of any discrepancy.

If there is a discrepancy between the Transport Document and the actual contents of the shipment and/or any damage, immediately inform the supplier by e-mail (attach photographic documentation) so that the problems can be ascertained and correctly treated.

Once unloaded from the transport vehicle, from here to the warehouse and/or towards the final installation site:

- If eyebolts are present, product must be lifted by a crane or a lifting trolley with steel cables hooked to the eyebolts [Figure 5.1].

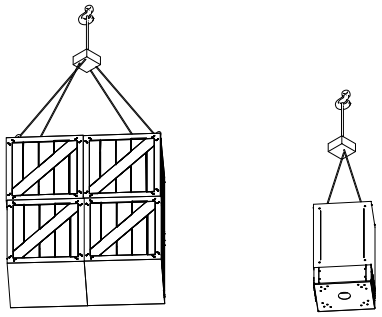


Figure 5.1

- If the panel is closed in a container or wooden crate (inaccessible eyebolts), or in case of lack of eyebolts (whole eM-Series) the packaged unit must be moved with a forklift [Figure 5.2] or by lifting it with steel cables [Figure 5.3].

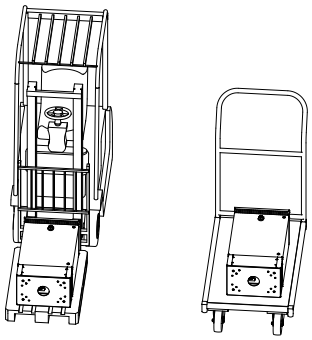


Figure 5.2

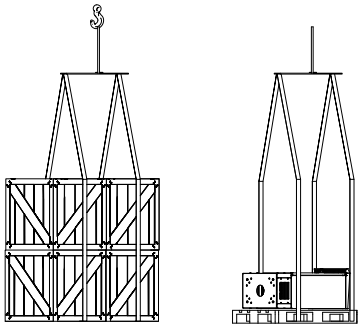


Figure 5.3

Transport must be treated taking care and for no reason product can be turned upside down.
The packaging must be opened avoiding damage to the external surfaces of the panel and to the components mounted on it.

5.2 STOCK

Stock of the product must be carried out taking care of temperature range from -15 °C to +50 °C, placing it a dry and covered place.

6. MECHANICAL INSTRUCTIONS

! NOTE

The process of screwing on must not subject the enclosure to any mechanical tension to the structure.

The indoor dry environment of the cabinet must not compromised due to the installation location. Take care of the installation location to ensure that setup or mounting of the electrical cabinet does not impair the stability and safety.

Be careful of rough terrain, floods, movement of heavy vehicles nearby, movement of gates or semi-movable parts, underground construction works adjacent to the installation site, cables or corrugated cables passing through the installation site, underground water systems using pipes, etc.

6.1 CHASSIS MODEL

6.1.1 COMPONENT LIST

- n.1 x cabinet H 1260 x L 800 x D 550 [mm] [Figure 6.1].

Figure 6.1

- n.1 x base/plinth H200 x L 800 x D 550 [mm] + n.16 x M6 hexagon head screw [Figure 6.2].

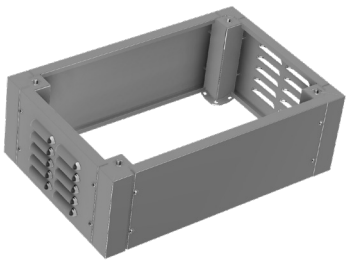


Figure 6.2

- n.8 x M12 hexagon head screw + n.4 washer [Figure 6.3].

Figure 6.3

- 4 x square cork M12x1.75, L 20 [mm] [Figure 6.4].

Figure 6.4

- 1 x support base L 800 x D 500 + n.8 x M6 hexagon head screw [Figure 6.5].

Figure 6.5

- 1 x filter [Figure 6.6].

Figure 6.6

- 1 x default cable holder [Figure + 1 x steel plate [Figure 6.7].

Default cable holder is prepared for 7 holes:
- N.1 cables ext. diameter 30mm to 60mm
- N.4 cables ext. diameter 10mm to 14mm
- N.2 cables ext. diameter 24mm to 54mm

Steel plate is provided in any case if custom entry cable holes are needed from the customer.

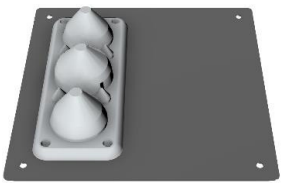


Figure 6.7

6.1.2 INSTRUCTIONS

To fix the cabinet on the chassis, these are the following steps:

- Prepare the chassis to be able to fix the base/plinth of the cabinet. 2 ways:
  - Through the 4 square cork [Figure 6.8] into the M12 stud bolts of the chassis. The four columns of the base plinth are inserted here. Dimensions below [Figure 6.9].

Figure 6.8

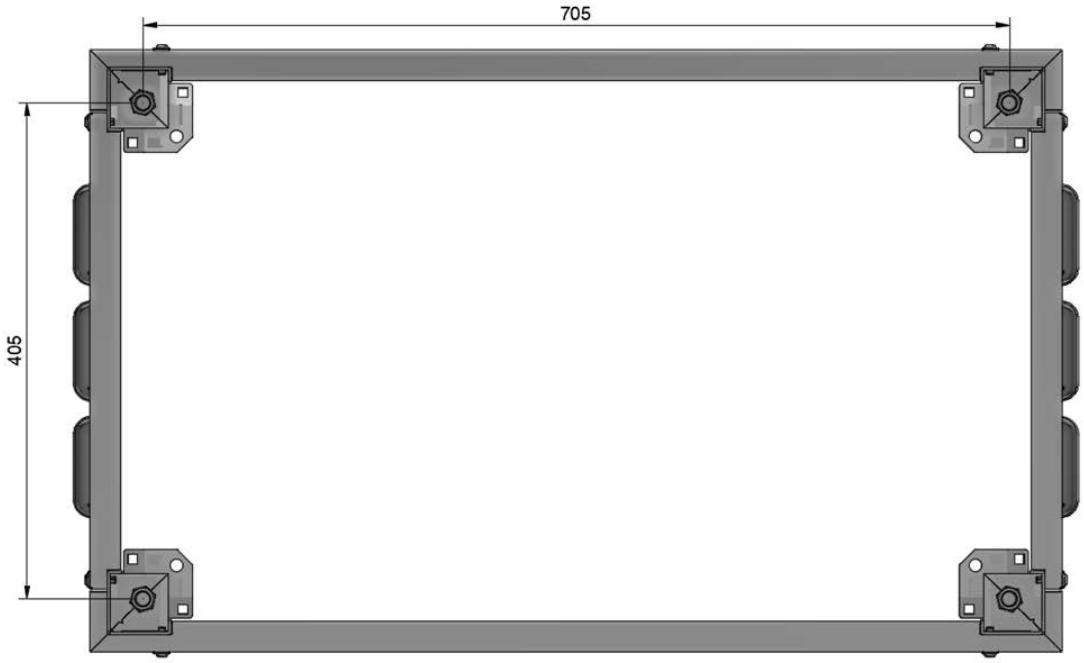


Figure 6.9

- Through the 4 holes by the side of the columns, dimensions below [Figure 6.10].

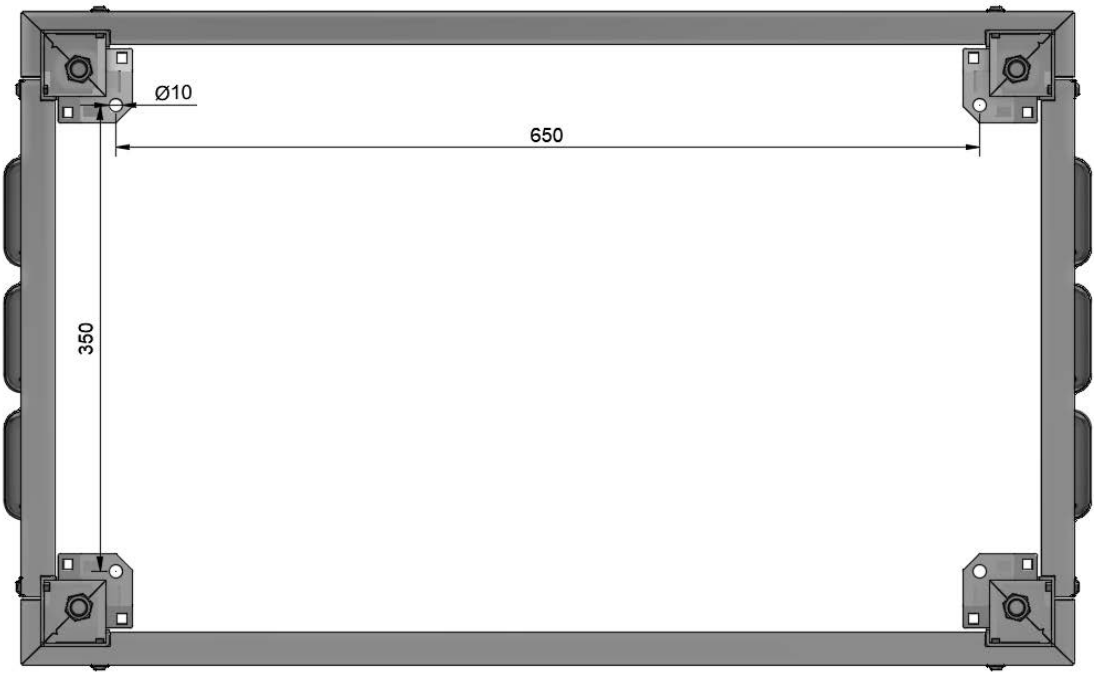


Figure 6.10

- Mount the base/plinth [Figure 6.11] with the n.16 x M6 hexagon head screw [Figure 6.12].

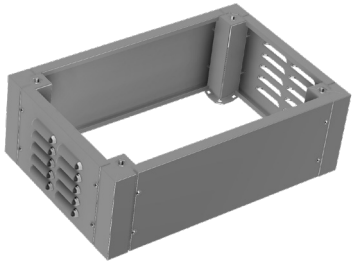


Figure 6.11

Figure 6.12

- Drill the support base with the desired hole dimension for the cable entry. Fix it into the cabinet plinth [Figure 6.13] through the given screws [Figure 6.14].

Figure 6.13

Figure 6.14

- Fix the base plinth taking care of the cables. For the cables, in case of some other holes needed (ex. For the sensor or external signal cables), it's suggested to make it on the back side of the base plinth complying with the correct cable gland needed.

- Put the cabinet over the plinth, fix it through n.4 x M12 screws [Figure 6.15]. Do not fix at all, to be able to open one panel side of the plinth.

Figure 6.15

- Open one panel at the side of the base plinth (suggested the front panel).
  Insert filter and cable holder from inside [Figure 6.16] and pass cables onto it. See electrical instructions [paragraph 7] for further details about cabling.

Figure 6.16

- Mount the side panel and fix the cabinet onto the plinth at all.

6.2 FIELD MODEL

6.2.1 COMPONENT LIST

- n.1 x cabinet H 1260 x L 800 x D 550 [mm] [Figure 6.17].

Figure 6.17

- n.1 x base/plinth H200 x L 800 x D 500 [mm] + n.16 x M6 hexagon head screw [Figure 6.18].

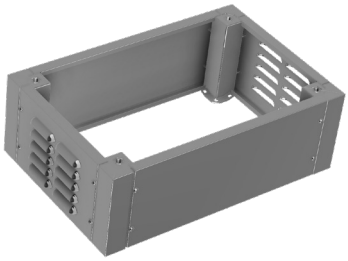


Figure 6.18

- n.8 x M12 hexagon head screw + n.4 washer [Figure 6.19].

Figure 6.19

- 4 x M10 allen head screws [Figure 6.20].

Figure 6.20

- 1 x support base L 800 x D 500 + n.4 x M46 spiral terrain screws [Figure 6.21].

Figure 6.21

- 1 x filter [Figure 6.22].

Figure 6.22

- 1 x default cable holder + 1 x steel plate [Figure 6.23].

Default cable holder is prepared for 7 holes:
- N.1 cables ext. diameter 30mm to 60mm;
- N.4 cables ext. diameter 10mm to 14mm;
- N.2 cables ext. diameter 24mm to 54mm;

Steel plate is provided in any case if custom entry cable holes are needed from the customer.

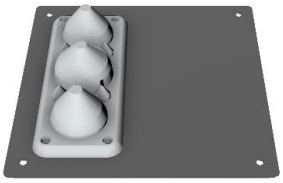


Figure 6.23

6.2.2 INSTRUCTIONS

To fix the cabinet on field, these are the following steps:

- Screw the four M46 spirals [Figure 6.24] on the terrain. There are 3 possible holes for each angle of the base, dimensions below [Figure 6.25].

Figure 6.24

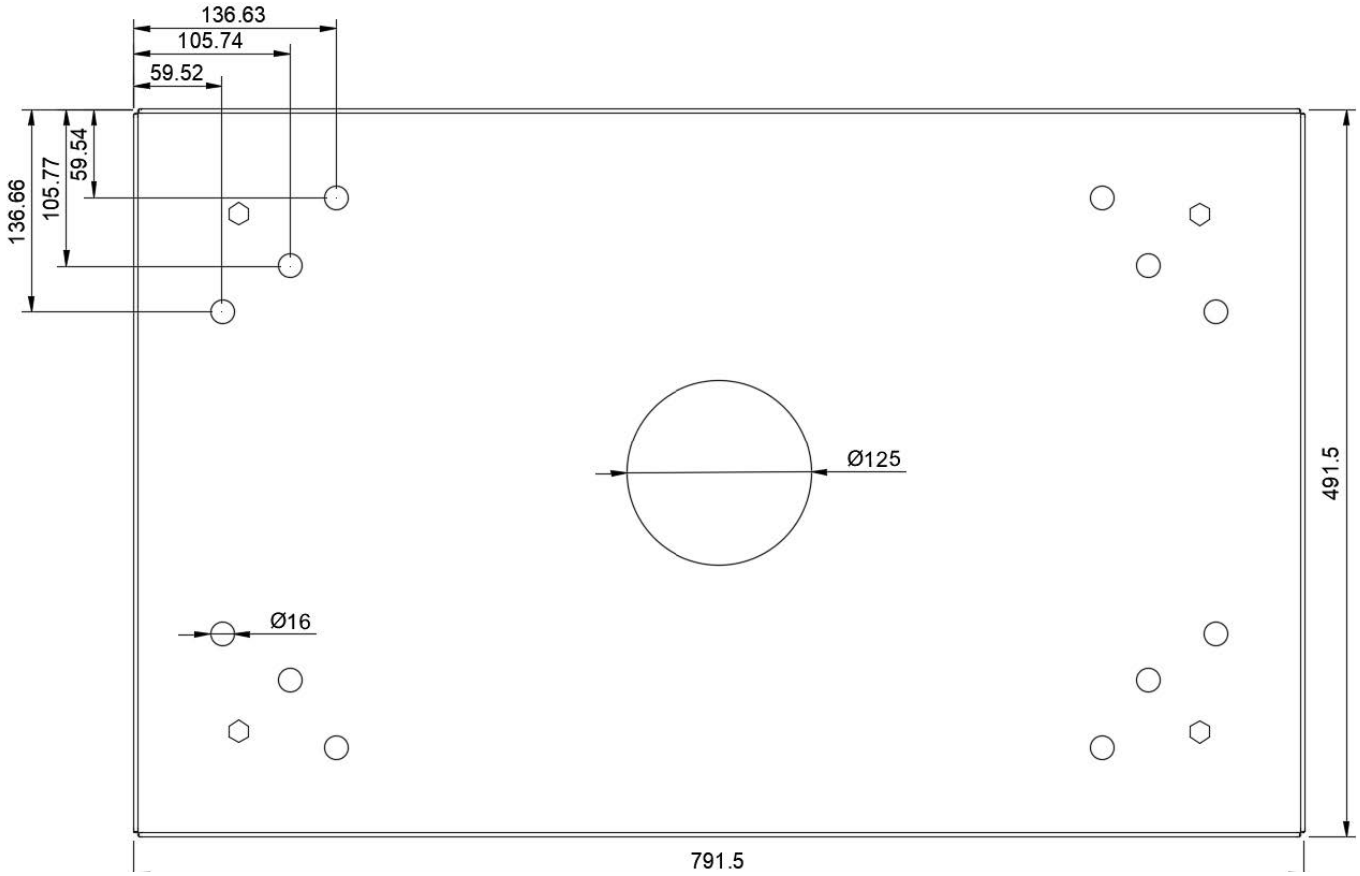


Figure 6.25

- Mount the base/plinth [Figure 6.26] with the n.16 x M6 hexagon head screw [Figure 6.27].

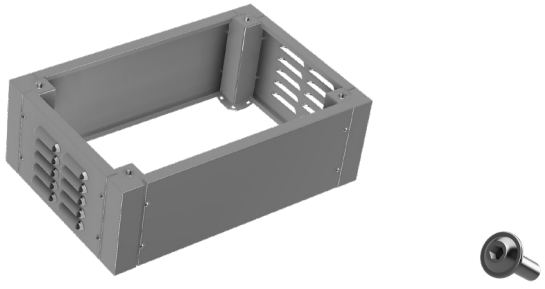


Figure 6.26 Figure 6.27

- Fix the base plinth through the 4x M10 allen head screws [Figure 6.28], taking care of the cables. For the cables, in case of some other holes needed (ex. For the sensor or external signal cables), it's suggested to make it on the back side of the base plinth complying with the correct cable gland needed.

Figure 6.28

- Put the cabinet over the plinth, fix it through n.4 x M12 screws [Figure 6.29]. Do not fix at all, to be able to open one panel side of the plinth.

Figure 6.29

- Open one panel at the side of the base plinth (suggested the front panel).
  Insert filter and cable holder from inside [Figure 6.30] and pass cables onto it. See electrical instructions [paragraph 7] for further details about cabling.

Figure 6.30

- Mount the side panel and fix the cabinet onto the plinth at all.

6.3 WALL COMPONENT

6.3.1 COMPONENT LIST

- n.1 x cabinet H 1260 x L 800 x D 550 [mm] [Figure 6.31].

Figure 6.31

- 1 x filter [Figure 6.32].

Figure 6.32

- 1 x default cable holder + 1 x steel plate [Figure 6.33].

  Default cable holder is prepared for 7 holes:
  - N.1 cables ext. diameter 30mm to 60mm;
  - N.4 cables ext. diameter 10mm to 14mm;
  - N.2 cables ext. diameter 24mm to 54mm;

Steel plate is provided in any case if custom entry cable holes are needed from the customer;

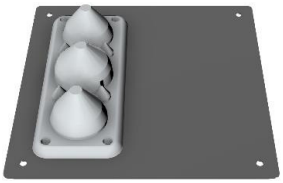


Figure 6.33

- 4 x wall kit support.

6.3.2 INSTRUCTIONS

To fix the cabinet on wall, these are the following steps:

- Make 4 holes on the wall and fix the cabinet through the 4 x wall supports, dimensions for the holes below [Figure 6.34].

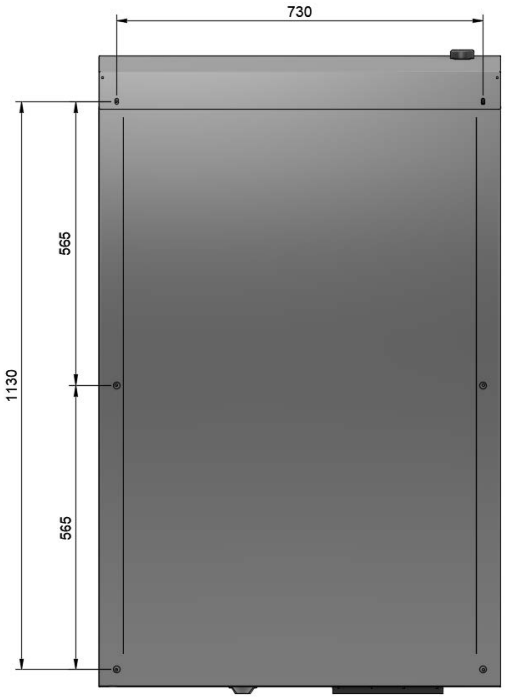


Figure 6.34

- Insert filter from outside, and cable holder from inside [Figure 6.35] and pass cables onto it. See electrical instructions [paragraph 7] for further details about cabling.

Figure 6.35

7. ELECTRICAL INSTRUCTIONS

⚠ DANGER !

ELECTRICAL HAZARD.

Only trained and authorised skilled personnel may work on and with the device according to CEI (or analogue base d on the country of installation) standard.
All types of cable insertion must be performed by specialists.

It must be ensured that cables with circuit and insulation integrity are inserted in the enclosure vertically and without tension.

⛔ NO ACCESS!

Opening the internal door give access to the cabinet devices. It's strictly forbidden to open the internal door when power is ON or by-passing the main switch lock. Before opening the door, main power switch must be turned OFF and must wait up to 5 minutes until inverter capacitor are discharged to be sure there is no residual voltage

7.1 CABLING

Wiring and Electric Diagram is always updated and available from the cloud. Scan the QR code printed in the cabinet door.
Cables passes through cable holder from the bottom of the cabinet [Figure 7.1].

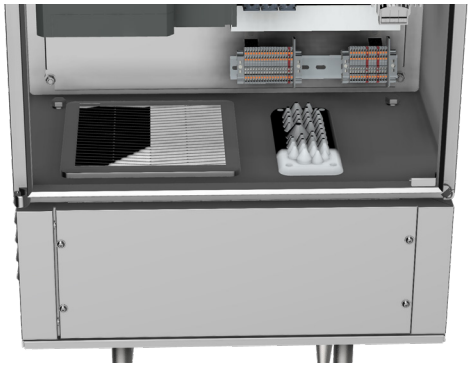


Figure 7.1

Connection cable list:

- **Main power** from customer line [Figure 7.2]:
  - 3 power cables: 3 x L1-L2-L3 400V 50Hz;
  - 1 x Neutral (*), 1 x PE;
  - Refers to Wiring diagrams – Sheet CB10 of CB30.
- **Power OUT** for motor pump [Figure 7.2]:
  - 4 cables: 3 x U-V-W, 1 x PE;
  - Refers to Wiring diagrams – Sheet CB22 of CB30.
- **External signals** for Customer connections **-XCust**:
  - Up to 18 cables for external signals and sensors;
  - Refers to Wiring diagrams – Sheet CB24 of CB30.

(*) : only in case of 230V utility pack included

Figure 7.2

Main switch connection:

- Connection through CU bar or cable lugs [Figure 7.3]

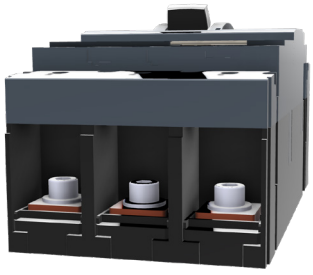


Figure 7.3 - Main switch accessory for cable lugs or bars

7.2 COMMISSIONING

- Inspection: the enclosure is to be inspected for proper installation done;

- Switch on main power [Figure 7.4].

⚠ Take care - Switch OFF the main power switch for any hazard concerned to the power / line voltage.

Figure 7.4

⚠ Take care - Press the emergency button [Figure 7.5] for any hazard concerned to the motor pump / line pressure / power drive.

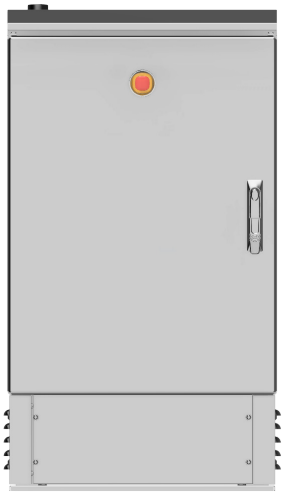


Figure 7.5

8. PREPARING FOR COMMISSIONING

⚠ DANGER !

Malfunctions of the machine as a result of incorrect or changed parameter settings.

As a result of incorrect or changed parameterization, machines can malfunction, leading to breakage or melting of the motor windings.

- Once the converter has been installed, proceed with the parameterization of the motor by overriding the motor parameters used during testing;
- Whenever the motor and/or cables are changed, proceed with changing the parameters again;
- Protect the parameterization against unauthorized access.

8.1 COLLECTING MOTOR DATA

Data for a standard induction motor.
Before starting commissioning, you must know the following data:

- **Which motor is connected to the converter?**
  Note down the Article No. of the motor and the motor's nameplate data.

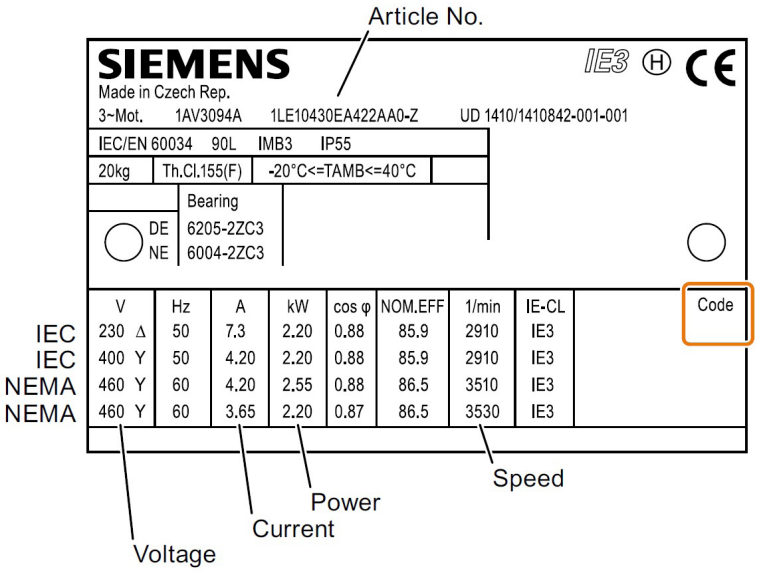


Figure 5-1 Example of the rating plate for a standard induction motor.

- **In which region of the world is the motor to be used?**
  - Europe IEC: 50 Hz [kW];
  - North America NEMA: 60 Hz [hp] or 60 Hz [kW].

- **How is the motor connected?**
  Pay attention to the connection of the motor (star connection [Y] or delta connection [Δ]).
  Note the appropriate motor data for connecting.

8.2 STARTING QUICK COMMISSIONING

8.2.1 REQUIREMENT

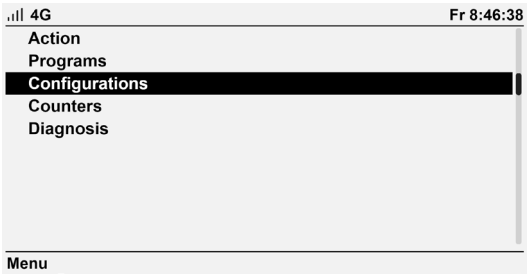
The following requirements apply:

- The power supply is switched on;

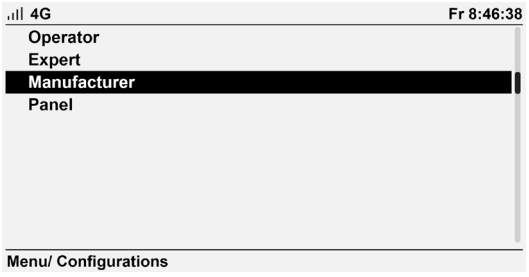
- The Control Unit is on communication whit the drive.

8.2.2 FUNCTION DESCRIPTION

Procedure

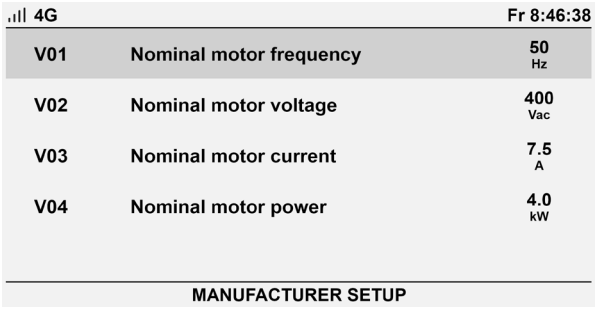


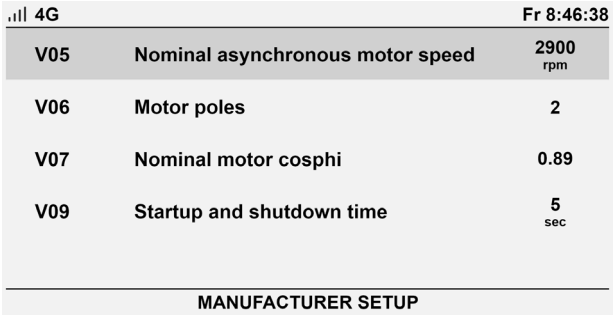
1. Press the MENU key;
2. Select CONFIGURATION page;



3. Select MANUFACTURER page;
4. Insert your personal access code.

Contact the supplier for the access code.



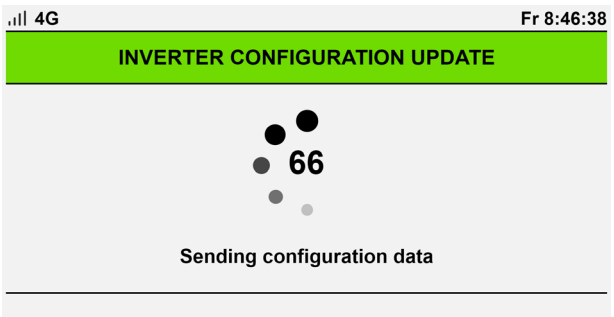


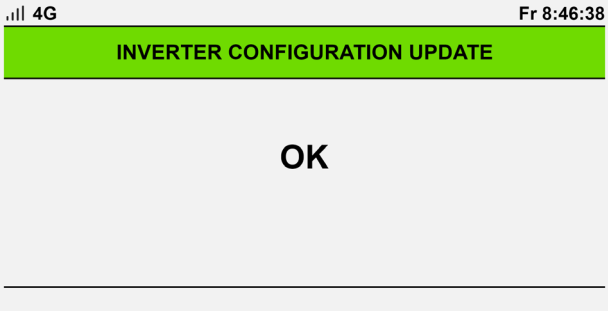
5. Now you need to set the motor data, collected previously from the rating plate.

V01 – Rated motor frequency;
V02 – Rated motor voltage;
V03 – Rated motor current;
V04 – Rated motor power;
V05 – Rated motor speed;
V06 – Rated motor number of poles;
V07 – Rated motor Cosφ;
V09 – Rated pump start-up and shutdown time.

Contact the pump supplier for information.

Number of poles	Synchronus speed Mains frequency of line	
	50 Hz	60 Hz
2	3.000 rpm	3.600 rpm
4	1.500 rpm	1.800 rpm
6	1.000 rpm	1.200 rpm





6. Select SAVE AND EXIT. Wait the Invert configuration update be done. Go back to the main manu page.

8.3 AUTO IDENTIFICATION OF THE MOTOR

⚠ DANGER !

Movement of the pump after the identification of the motor.

Once the motor identification is completed the pump runs at the reference speed. Secure dangerous machine parts before starting motor data identification:

- Before switching on, ensure that nobody is working on the machine;
- Secure the machine's work area against unintended access;
- Be sure that the pump is primed.

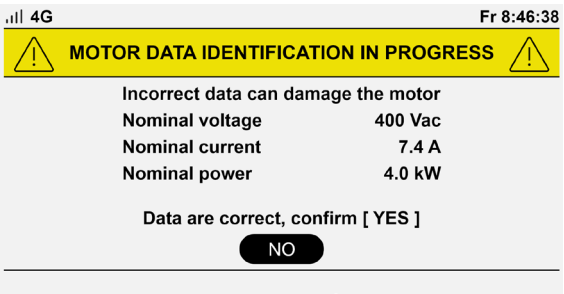
8.3.1 REQUIREMENT

The following requirements apply:

- The power supply is switched on;
- The pump must be connected to the inverter and able to operate normally.

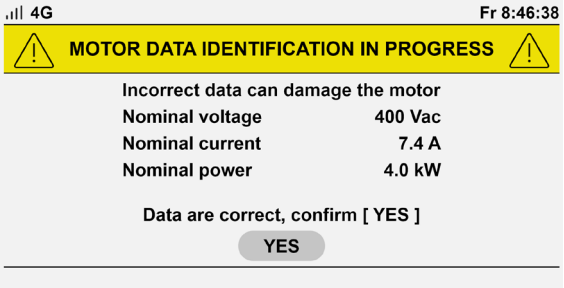
8.3.2 FUNCTION DESCRIPTION

Procedure

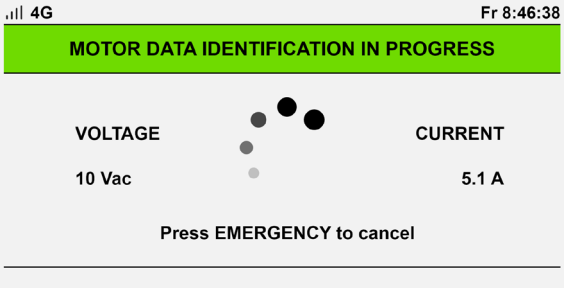


1. Press the START/STOP key;

2. Read the motor data carefully;



3. By rotating the knob clockwise, select confirmation of the above data. Then select YES;



4. Wait for the procedure to complete.

⚠ WARINING !

Identification of the motor.

Using the motor data identification,the converter measures the data of the stationary motor. In addition, based on the response of the rotating motor, the converter can determine a suitable setting for the vector control.

Depending on the size of the motor, this can take up to 1 minute. If Voltages and Currents outside the limits of the motor's nominal values are displayed, press Emergency to stop the process.

9. MAINTENANCE

⚠ **DANGER !**

ELECTRICAL HAZARD.

Only trained and authorised skilled
personnel may work on and with the device according to CEI (or analogue based on the country of installation) standard.
All types of cable insertion must be performed by specialists.

It must be ensured that cables with circuit and insulation integrity are inserted in the enclosure vertically and without tension.

⛔ **NO ACCESS!**

Opening the internal door give access to the cabinet devices.
It's strictly forbidden to open the internal door when power is ON or by-passing the main switch lock. Before opening the door, main power switch must be turned OFF and must wait up to 5 minutes until inverter capacitor are discharged to be sure there is no residual voltage.

9.1 GENERAL NOTES

The surface of the enclosure is made of inox steel and can be cleaned with conventional maintenance agents. The enclosure should be checked at least once a year, depending on installation location, and the seals, filter pads and cable bulkhead should also be visually inspected. If on site conditions are aggravated, the enclosure should be inspected more often.

Before carrying out any type of maintenance and/or repairs on the product, it is necessary to isolate the electrical panel from the electricity supply and other energy sources.

All the disconnecting devices must be able to be locked in the "isolated circuit" position, so that the operators who intervene on the electrical panel can ensure that no element of the same can be started while the intervention is in progress, using a procedure of this type :

Before working on the electrical panel, each operator blocks all the disconnectors of the external power sources and takes the opening keys with him. Each operator reactivates the disconnectors only once the work on the electrical panel has been completed.

9.2 SCHEDULED MAINTENANCE

Task	Timing
Visible Inspection	Twice a year
Cabinet Cleaning	Once a year
Replacing the air filters	Once a year
Checking the correct functioning of the anti-condensation heaters (if applicable)	Once a year
Checking the correct functioning of the ventilation (if applicable)	Once a year
Checking the tightening of the screws of the terminals and components	Once a year
Checking the voltage presence indicators lights	Once a year
Checking the correct functioning of the differential (if applicable)	Once a year
Check the integrity and correct functioning of the interlocks switchs	Once a year
Insulation test of conductive parts	Once a year
Continuity test of equipotential protection circuits (grounding PE)	Once a year

Each maintenance intervention must be recorded on the appropriate form below:

PERIODIC CHECK ELECTRICAL CABINET		**Date** _____ **Operator** _____
Model Nr. _____ **S/N:** _____	**Site** _____	**Last Check Date** _____
Device	**Anomalies / Problems**	**Task Performed**
General Cabinet Status:		
Notes:		

9.3 EXTRAORDINARY MAINTENANCE

Extraordinary maintenance essentially concerns the replacement of equipment damaged due to wear or accidental overloading. Please refer to the wiring diagram and the list of materials to request official spare parts.

9.4 IMPORTANT WARNING

To avoid possible danger to people or devices, short circuits or overloading, strict monitoring and check of the device must be carried out in these cases [Figure 9.1]:

In case of automatic switch OFF of the automatic protection devices [Figure 9.1]:

- 24V dc line switch;
- 230V ac line switch (*);
- 400V L1-L2-L3 main power IN line switch.

In case of 24V dc blown fuses [Figure 9.1].

In case of L1-L2-L3 blown fuses [Figure 9.1].

Figure 9.1

(*) : only in case of 230V utility pack included.

9.5 FUSE CHANGE

⚠ In case of a blow fuse:

- Switch OFF main power and wait up to 5 minutes until inverter capacitor are discharged to be sure there is no residual voltage
- Open the fuse case [Figure 9.2] and change fuse
- Switch ON main power, check normal operation

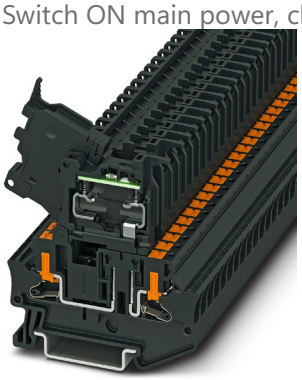


Figure 9.2

www.idromop.com

Viale del lavoro 9
36049 Sovizzo (VI), IT

+39 0444 1240784

info@idromop.com