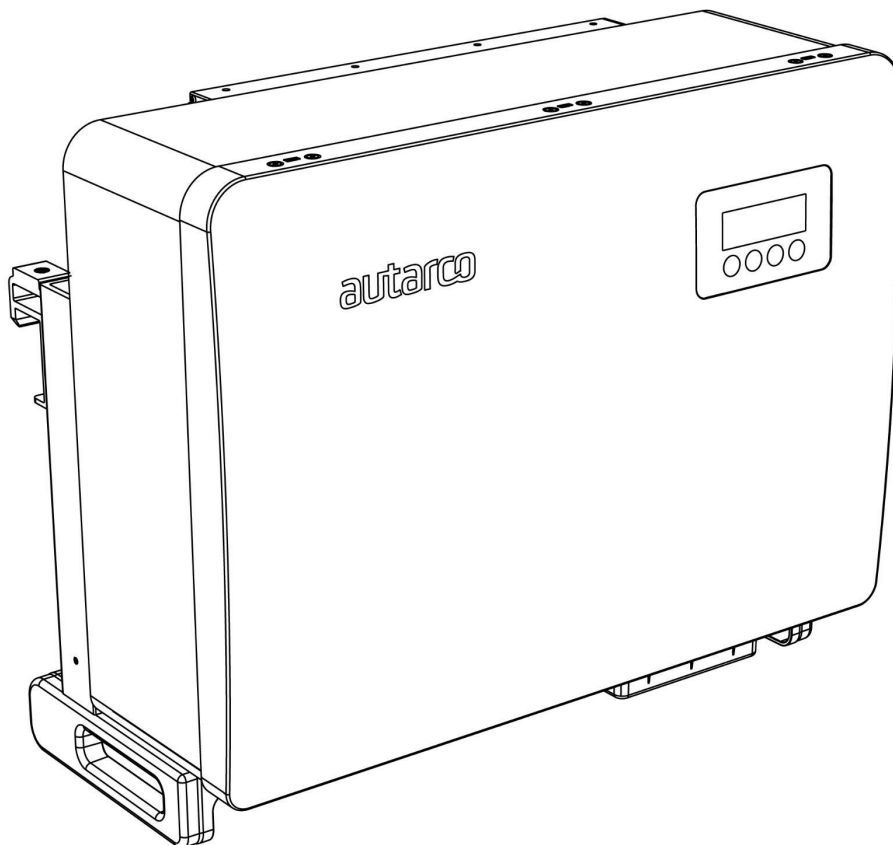




## Installation and Operation Manual

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### Solar Inverters XLX-MII series



## **Contact Information**

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## **Other Information**

This manual is an integral part of the unit. Please read the manual carefully before installation, operation or maintenance. Keep this manual for future reference.

Product information is subject to change without notice. All trademarks are recognized as the property of their respective owners.

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# 1 Introduction

## 1.1 Read this first

This manual contains important information for use during installation and maintenance of the XLX-MII series Autarco inverter.

To reduce the risk of electrical shock, and to ensure the safe installation and operation of the XLX-MII series Autarco inverters, the following safety symbols appear throughout this document to indicate dangerous conditions and important safety instructions.



**WARNING!** Indicates safety instruction, which if not correctly followed, can result in injury or property damages.



**RISK OF ELECTRIC SHOCK!** Indicates safety instructions, which if not correctly followed, could result in electric shock.



**HOT SURFACE!** Indicates safety instructions, which if not correctly followed, could result in burns.

## 1.2 Target Audience

This manual is intended for anyone who uses Autarco XLX-MII series inverter. Before any further action, the operators must first read all safety regulations and be aware of the potential danger to operate high-voltage devices. Operators must also have a complete understanding of this device's features and functions.



**ATTENTION!** Qualified personnel means a person with valid license from the local authority in:

- Installing electrical equipment and PV power systems (up to 1000 V).
- Applying all applicable installation codes and using Personal Protective Equipment.
- Analyzing and reducing the hazards involved in performing electrical work.



**WARNING!** Do not use this product unless it has been successfully installed by qualified personnel in accordance with the instructions in chapter 5 "Installation".

## 1.3 Product versions covered by this document

The main purpose of this user manual is to provide instructions and detailed procedures for installing, operating, maintaining, and troubleshooting the XLX-MII series of Autarco inverters which includes the following models:

For 380/400V AC grid connection:

- S2.XLX25000S-MII
- S2.XLX30000S-MII
- S2.XLX33000S-MII
- S2.XLX36000S-MII
- S2.XLX40000S-MII

The "S2." in the product code means the product is a grid-tied inverter. If the product has an "S" at the end it comes with integrated DC switches. The -MII stands for the Mark II series.

The item code or SKU will include an additional number at the end. The final number references the default grid standard and colour of inverter. For example, S2.XLX25000S-MII.1 is the 20kW model with Dutch grid standard as default, integrated DC switch and Autarco blue cover.

Please keep this user manual available at all times in case of emergency.

## 2 Preparation

### 2.1 Safety instructions



DANGER! Do not touch any internal components whilst the inverter is in operation.



DANGER! Do not stand close to the inverter during severe weather conditions such as lightning, etc.



Make sure you completely cover the surface of all PV arrays with opaque (dark) material before wiring them or make sure the DC circuit breaker or equivalent DC isolator is disconnected.

This is because photovoltaic (PV) arrays create electrical energy when exposed to light, and could cause a hazardous condition.



The XLX-MII series inverter must only be operated with PV arrays of protection class II, in accordance with IEC 61730, class A.



WARNING! The PV inverter will become hot during operation; please don't touch the heat sink or peripheral surface during or shortly after operation.



NOTICE! Do not directly connect AC output of the inverter to any private AC equipment. The PV inverter is designed to feed AC power directly into the public utility power grid.

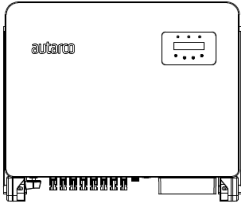


WARNING! The installation, service, recycling and disposal of the inverters must be performed by qualified personnel in compliance with national and local standards and regulations.

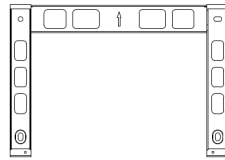
Please contact your dealer to get the information of authorized repair facility for any maintenance or repairmen.

Any unauthorized actions including modification of product functionality of any form will affect the validation of warranty service; Autarco may deny the obligation of warranty service accordingly.

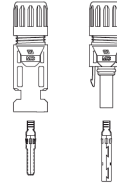
## 2.2 Package contents



*Autarco XLX-MII series inverter*



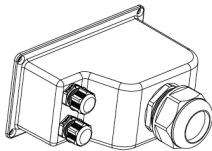
*Mounting bracket  
Incl. screws*



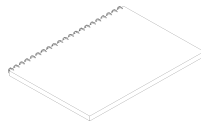
*MC4 connector pairs  
S4.MC4F/MC4M*



*RJ45 connector*



*AC terminal cover*



*Instruction manual*

## 2.3 Internal DC switch

Please verify whether your Autarco XLX-MII series inverter is equipped with an internal DC switch. If there is an internal DC switch the product code will end in an "S". The switch can be found on the bottom of the inverter (see **Error! Reference source not found.**). If there isn't an internal DC switch it is important to apply an external DC disconnecter in order to completely disconnect the solar PV module strings from the inverter.

## 2.4 Explanations of symbols on inverter



### **DANGER - HIGH ELECTRIC VOLTAGE**

This device is directly connected to the public grid. All work to the inverter shall be carried out by qualified personnel only. There might be residual currents in the inverter for up to 10 minutes because of large capacitors.



### **ATTENTION**

This device is directly connected to electricity DC generators and the public AC grid.





**DANGER – HOT SURFACES**

The components inside the inverter will get hot during operation, DO NOT touch aluminum housing during operating.



**ATTENTION**

In case of any work to the inverter, always refer to this manual for detailed product information.



**ATTENTION**

This device SHALL NOT be disposed of in residential waste. Please go to Chapter 10 “Recycling and Disposal” for proper treatments.



**CE MARK**

This equipment conforms to the basic requirements of the EU guideline governing low voltage and electromagnetic compatibility.

## 3 Product information

### 3.1 Summary

Autarco XLX-MII series grid tied inverters are state of the art, high efficiency, robust and reliable grid tied inverters at the best price quality ratio available. They are easy to install and carry a standard 5 year product warranty which is extendable to 15 years. Our rigorous quality control and testing facilities guarantee Autarco inverters meet the highest quality standards possible. These inverters are the key to our international track record of delivering extremely reliable solar power solutions.

Key features:

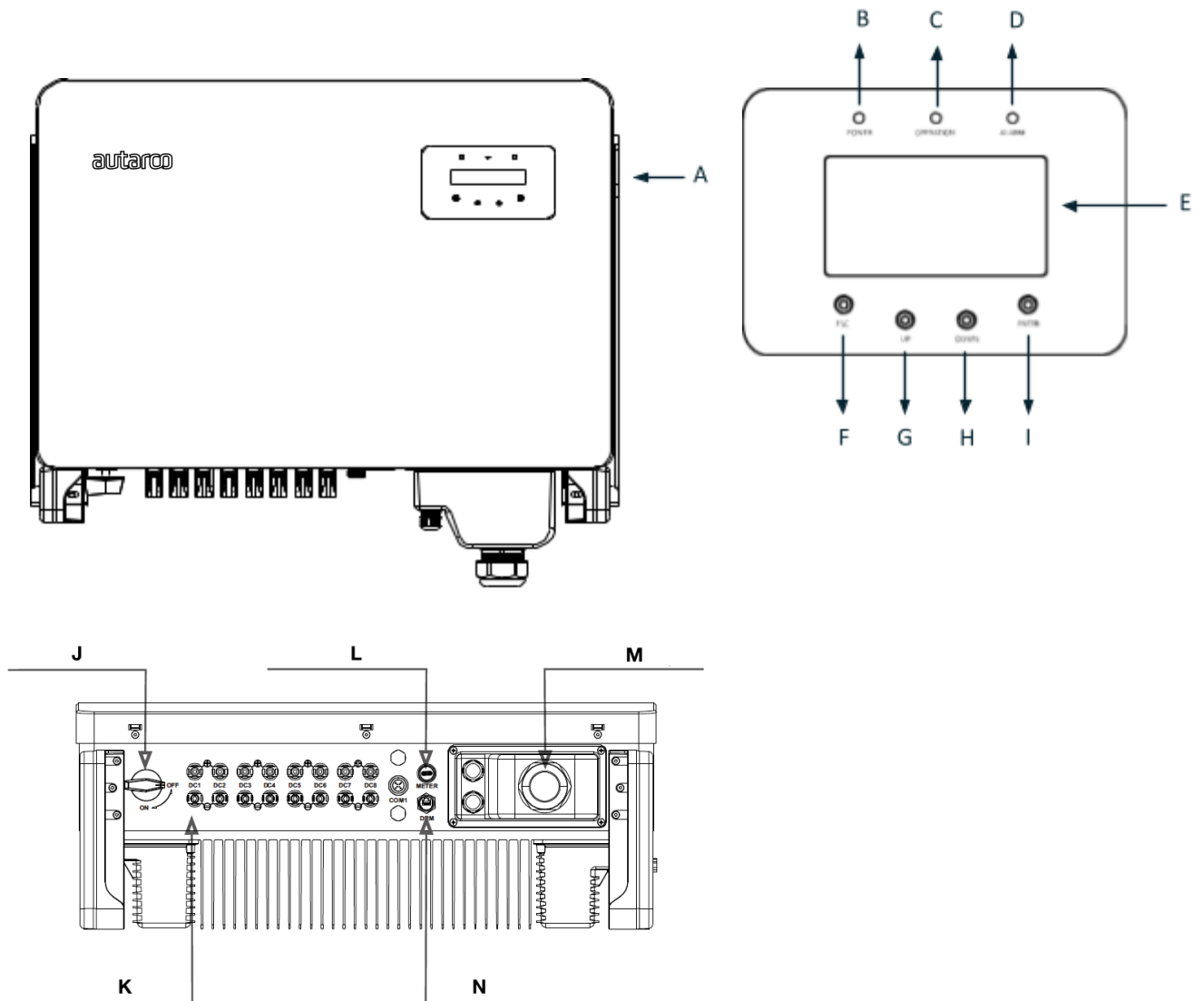
- Maximum efficiency of 98.6%
- 7" LCD colour display
- 3/4 MPPT with wide voltage range
- Low turn off voltage
- High enclosure protection class IP65
- Silent design using convection cooling principle
- Standard 5 year product warranty which is extendable to 15 years
- Standard with wireless monitoring
- Optional integrated DC switch
- High range of protective functions

For full specifications please see chapter 12 "Product specifications".

### 3.2 Product identification

You can identify the inverter by the serial number (S/N) sticker on the side of the inverter. Important electrical specification can also be found on the label which can be found on the right side of the inverter housing. Do not remove the label or the serial number as this voids the product warranty.

### 3.3 Product Overview



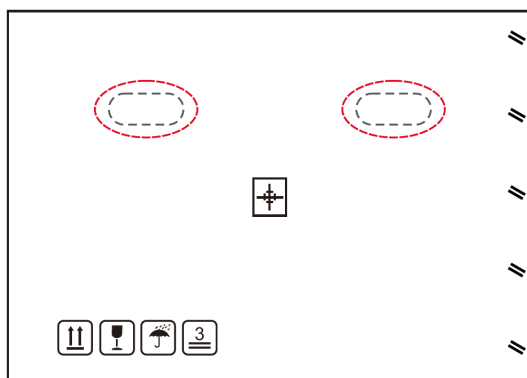
- A. Inverter cover
- B. LED light - POWER
- C. LED light - OPERATION
- D. LED light - ALARM
- E. Display
- F. Escape key
- G. Up key
- H. Down key
- I. Enter key
- J. DC switch
- K. DC inputs
- L. Meter
- M. AC output
- N. DRM

## 4 Handling

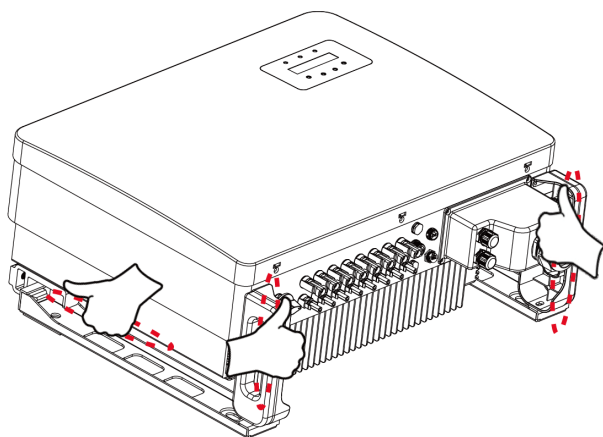
### 4.1 Product handling

Instructions for handling the inverter:

1. The red circles denote cut outs on the product package.
2. Push the cut outs to form handles for moving the inverter.



3. Open the carton, then two people handle both sides of inverter through the area denoted dotted line.



## 5 Installation

### 5.1 Safety



**DANGER!** Do not install the inverter near flammable or explosive items.



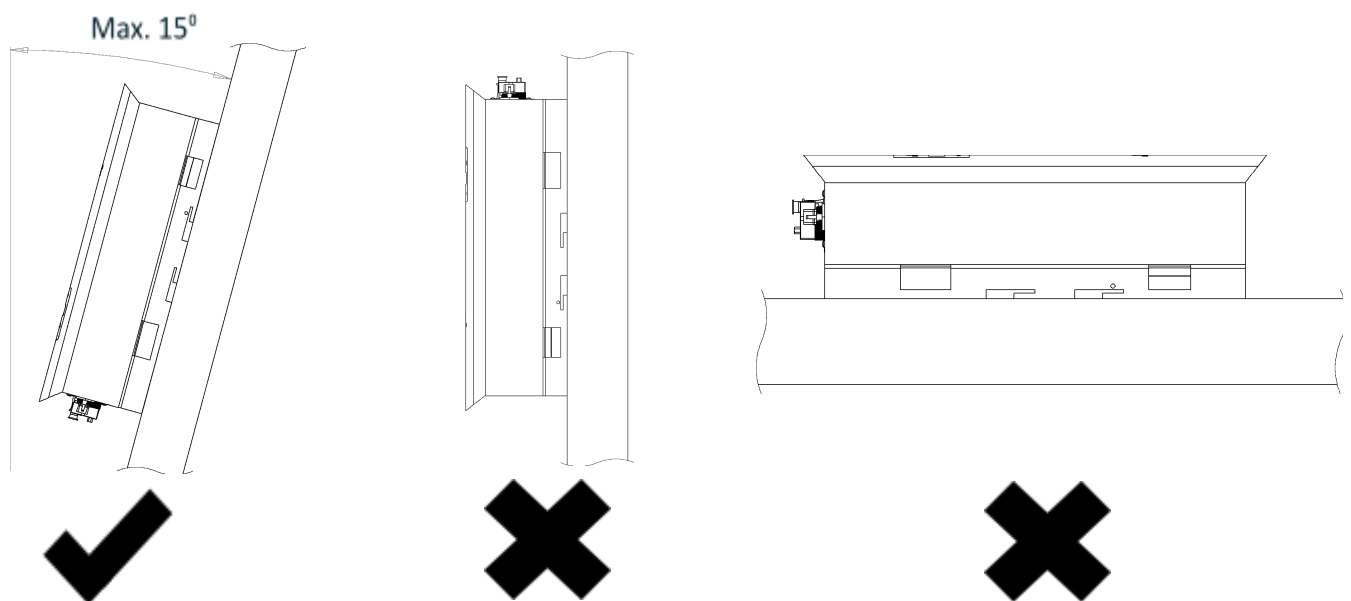
**WARNING!** The installation must be performed by qualified personnel and in compliance with national and local standards and regulations. This inverter will be connected to a high voltage DC power generator and AC grid. Inappropriate installation may also jeopardize the life span of the inverter.



The installation site must have good ventilation conditions. Direct exposure to intense sunshine is not recommended.

### 5.2 Mounting instructions

- The inverter is suitable for outdoor and indoor installation.
- Vertical installation is recommended, with a maximum inclination of 15° backwards.
- Make sure the mounting wall is strong enough to hold the weight of the inverter.
- The ambient temperature of the installation site should be between -20 °C and +60 °C.
- It is not recommended that the inverter is exposed to direct sunshine.
- Make sure of ample ventilation at installation site, insufficient ventilation may reduce the performance of the electronic components inside the inverter and shorten the lifespan of the inverter.

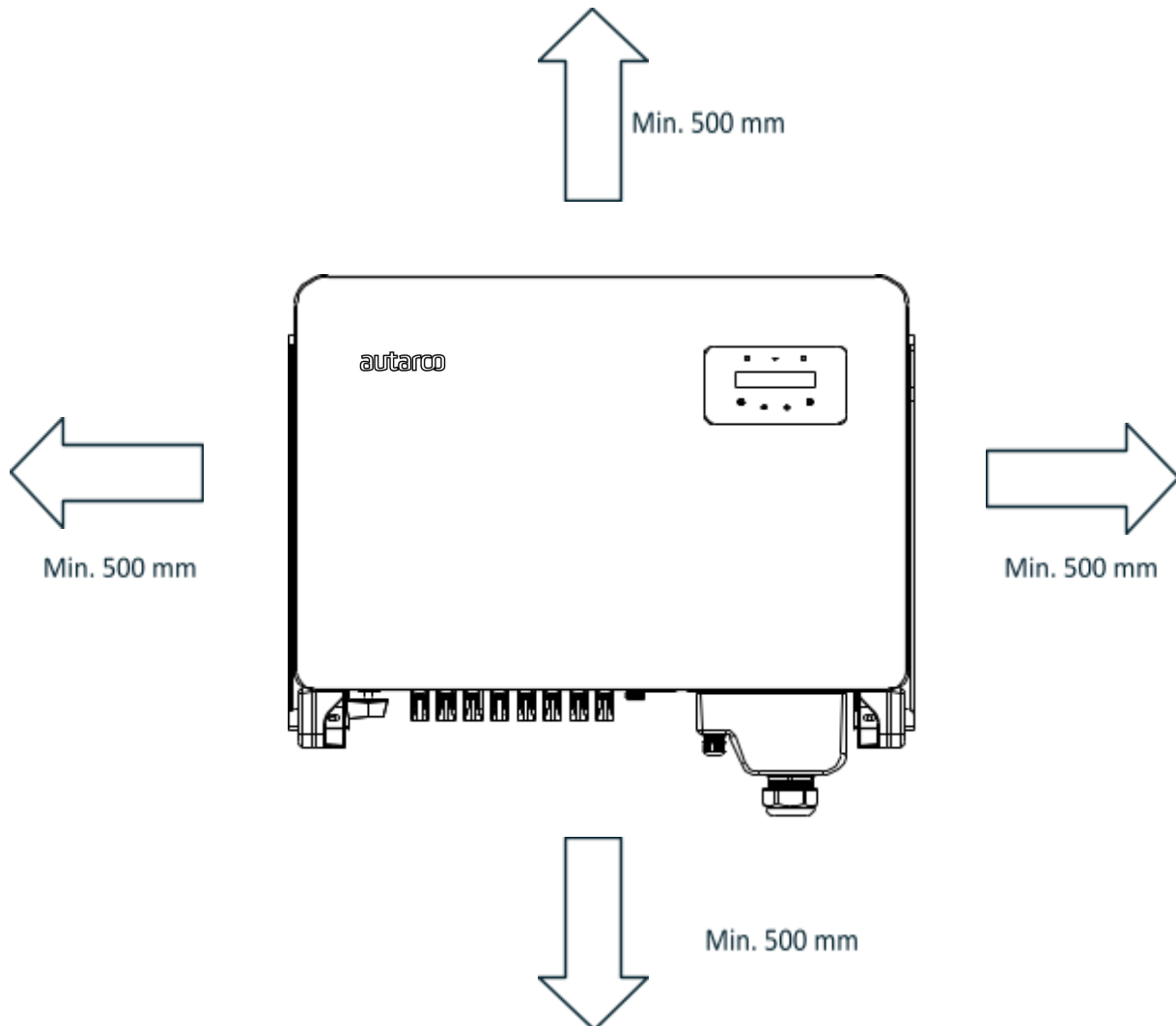


## 5.3 Safety clearance



Caution! Make sure heat sinks are out of reach of children.

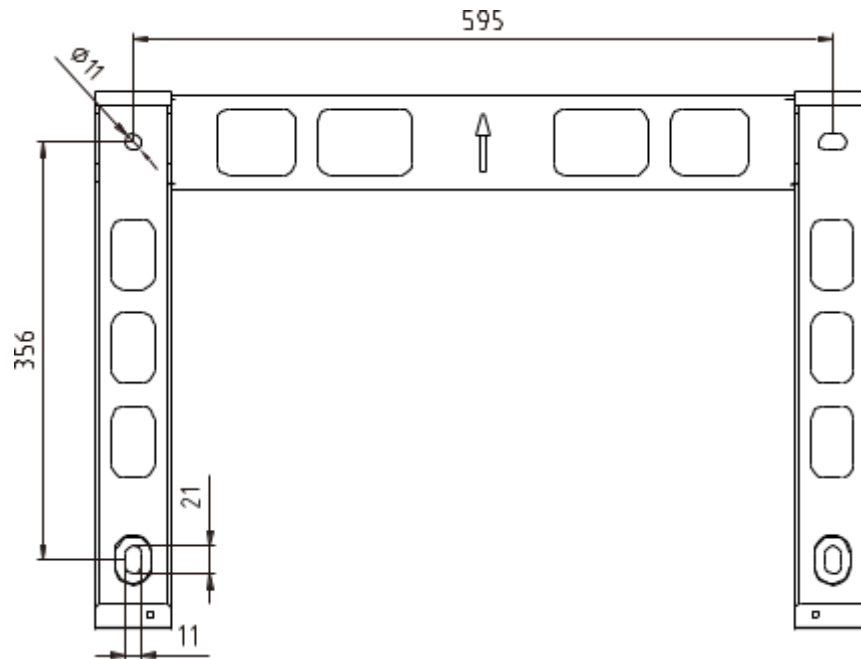
Observe the following minimum clearances to walls and other mounted equipment:



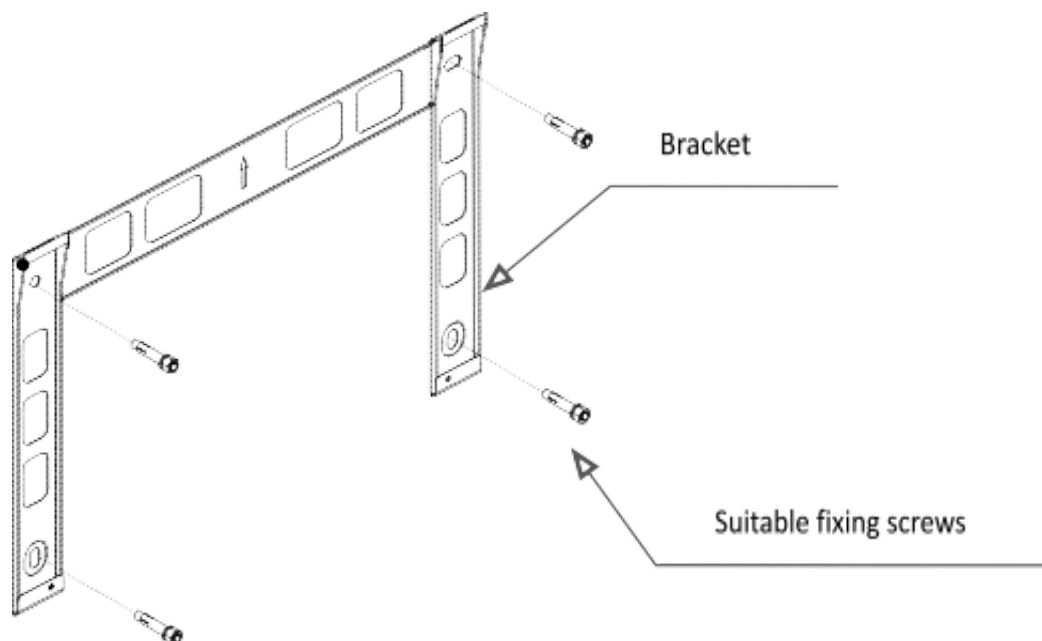
A minimum clearance in front of the inverter of 1000mm is required for maintenance.

## 5.4 Mounting procedure

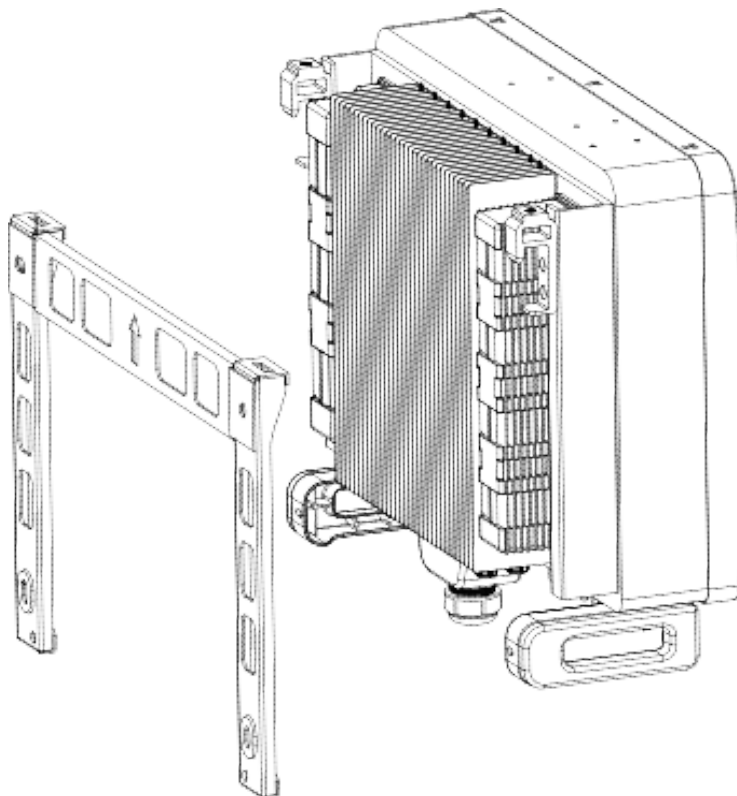
**Step 1 —** The wall bracket has the dimensions below. Please ensure the positions of the holes are suitable for fitting expansion bolts.



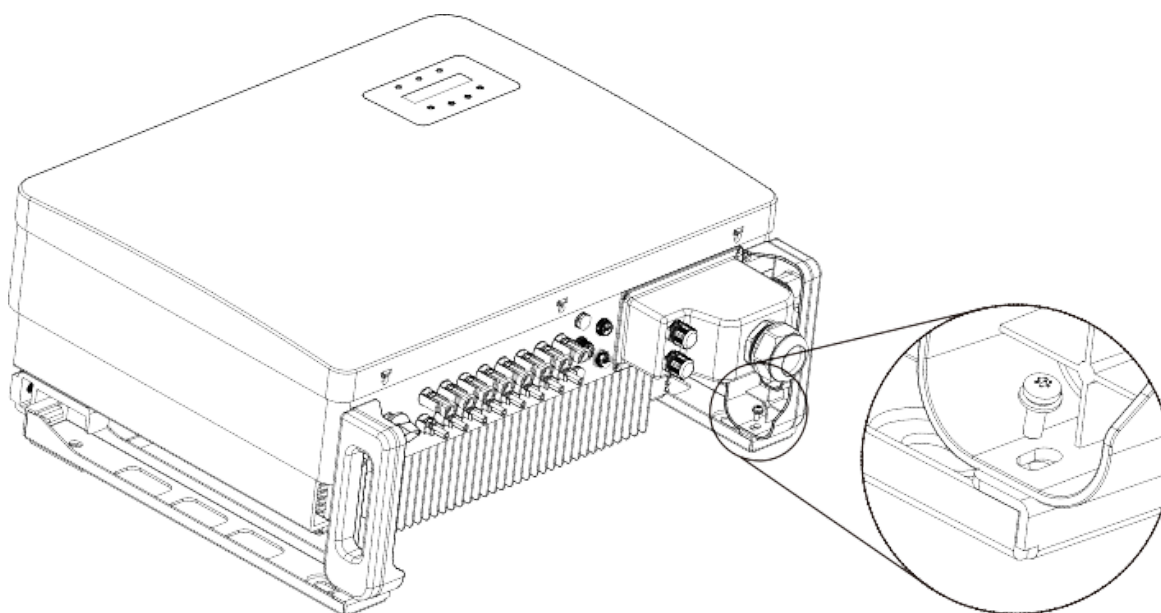
**Step 2 —** Mount the wall bracket onto the mounting wall with appropriate screws plugs.



**Step 3 —** Lower the inverter onto the bracket. The screw holes in the wall bracket should align with the raised convex on the inverter bracket.



**Step 4 —** Fix the bottom of the inverter to the wall bracket with the M4x9mm screws.





## 6 Electrical installation



**DANGER!** This inverter will be connected to a high voltage DC power generator and AC grid. The installation must be performed by qualified personnel and in compliance with national and local standards and regulations

### 6.1 AC connection



**DANGER!** Never connect or disconnect the connectors under load.



**NOTICE!** The AC connection to the electrical distribution grid must be performed only after receiving authorization from the utility that operates the grid.



**NOTICE!** Make sure to set the correct grid standard as part of system commissioning, see chapter 7.6.

The Autarco inverter is equipped with an integrated Residual Current Protective Device (RCPD) and Residual Current Operated Monitor (RCOM). The RCOM will detect the volume of the leakage current and compare it with the expected value, if the leakage current exceeds the permitted range, the RCPD will disconnect the inverter from the AC load.

If regulations in the country of installation stipulate an external Residual Current Device (RCD), you must use a device with a tripping threshold of 100 mA or more. For the XLX-series we recommend to use a 300 mA RCD.

A type "A" RCD can be used in accordance with our "Manufacturer's declaration for usage of residual current devices". Contact Autarco for advice.

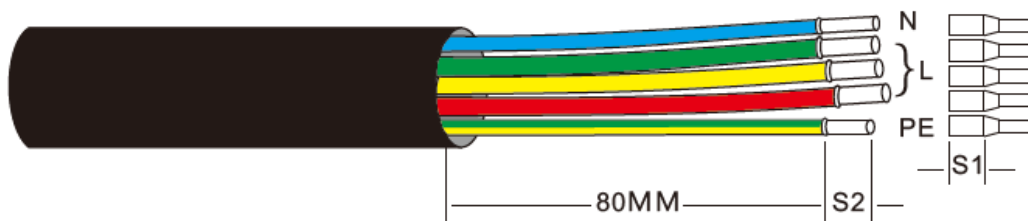
The AC cable used must be dimensioned in accordance with any local and national directives on cable dimensions which specify requirements for the minimum conductor cross-section. Cable dimensioning factors are e.g.: nominal AC current, type of cable, type of routing, cable bundling, ambient temperature and maximum specified line losses.

We recommend 10-35 mm<sup>2</sup> 105°C cable with resistance lower than 1.5 ohm. If the cable is longer than 100m, we recommend to use 16-35 mm<sup>2</sup> cable.

In the table below you find the recommended AC-cable. Make sure that the resistance of the cable is lower than 1.5 ohm.

| Cable specification                              |             | Copper-cored cable |
|--|-------------|--------------------|
| Traverse cross sectional area (mm <sup>2</sup> ) | Range       | 10~35              |
|  | Recommended | 25                 |
| Cable outer diameter (mm)                        | Range       | 22~32              |
|  | Recommended | 27                 |

Strip the AC cable off for 80mm and then strip individual strands at S2 length. S2 must be as long as S1.



Strip the insulation of the wire past the cable crimping area of the OT terminal, then use a hydraulic crimp tool to crimp the terminal. The crimped portion of the terminal must be insulated with heat-shrinkable tube or insulating tape.

If choosing aluminum alloy cable, you must use copper aluminum (bi-metallic) transfer terminal and anti-oxidant grease in order to avoid direct contact between copper bar and Aluminum alloy cable. (Select a copper aluminum transfer terminal based on your cable specification).

Leave the AC breaker disconnected to ensure it does not close unexpectedly.

- Step 1** — Remove the 4 screws on the inverter junction box and remove the junction box cover
- Step 2** — Insert the cable through the nut, sheath, and the AC terminal cover.
- Step 3** — Connect the cable to the AC terminal block in turn, using a socket wrench.
- Step 4** — Tighten the screws on the terminal block. The required torque is 3~4Nm.
- Step 5** — Push the AC terminal along the rail to the inside of the inverter, and then tighten the 4 screws



**WARNING!** Please do not put the insulating layer of the cable into the terminal when tightening the screw, otherwise it will cause poor contact.



**NOTICE!** It is important that the AC wires are connected to the right terminals as indicated by the “L”, “N” and “Earthing” symbols on each AC connector. In some countries a second protective conductor is required as a matter of principle. In each case, observe the applicable regulations for the site.

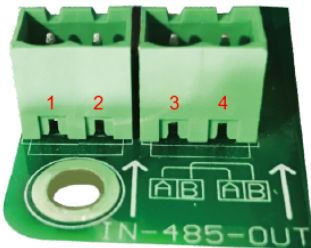


The AC connection to the electrical distribution grid must be performed only after receiving authorization from the utility that operates the grid.

Always use separate fuses for consumer load. Use dedicated circuit breakers with load switch functionality for load switching.

## 6.2 RS485 Connection

Install the RS485 communication cables through the terminal block. Recommended cable cross sectional area is 0.2 - 1.5mm<sup>2</sup>, the cable outer diameter is 5mm -10mm, the cable length shall not exceed 3m.

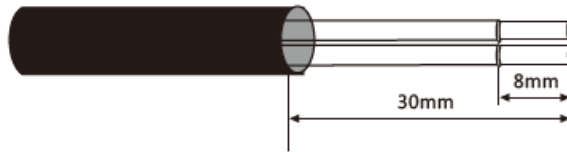


See port definitions below.

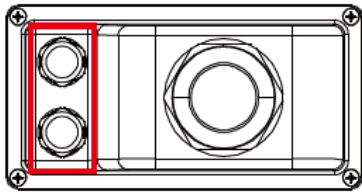
| NO. | Port definition | Description                        |
|-----|-----------------|------------------------------------|
| 1   | RS485A1 IN      | RS485A1,RS485 differential signal+ |
| 2   | RS485B1 IN      | RS485B1,RS485 differential signal- |
| 3   | RS485A2 OUT     | RS485A2,RS485 differential signal+ |
| 4   | RS485B2 OUT     | RS485B2,RS485 differential signal- |

### Terminal block connection

1. Use a wire stripper to peel off the insulation layer of the communication cables to a certain length as shown in the figures below.



2. Screw off the covers of "COM2" and "COM3" on the inverter as shown in Figure 5.29.



3. Insert the communication cables into "COM2" and "COM3" ports.
4. Fasten the cables onto the pluggable terminals provided in the accessory package.
5. Match the pluggable terminals to the terminal block in the inverter and press to fasten it.

(!) After cable installation, fasten the screws of the AC terminal cover to prevent water damage.

## 6.3 Circuit breaker rating

The selection of the mains circuit breaker rating depends on the wiring design (wire cross-section area), cable type, wiring method, ambient temperature, inverter current rating etc. Derating of the circuit breaker rating may be necessary due to self-heating or if exposed to heat.

|   | S2.XLX25000S-<br>MII | S2.XLX30000S<br>-MII | S2.XLX33000S<br>-MII | S2.XLX360<br>00S-MII | S2.XLX4000<br>0S-MII |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| Max. AC current (A)   | 41.8                 | 50.2                 | 55.1                 | 60.2                 | 66.9                 |
| Recommended fuse type<br>gL/gG or comparable<br>automatic circuit breaker<br>rating (A) | 50                   | 63                   | 63                   | 63                   | 80                   |



**DANGER!** No consumer load should be applied between the mains circuit breaker and the inverter.

## 6.4 DC connections

Please always use the MC4 connectors from the inverter box to connect strings to the inverter.



**DANGER!** Never connect or disconnect the connectors under load.

XLX-series inverters have two MPP trackers. The DC characteristics of each model is shown in the table below:

|  | <b>Inverter</b>     | <b>MPP tracker</b> | <b>Max DC power</b> | <b>Max DC voltage</b> | <b>Max. DC current per MPPT</b> |
|--|---------------------|--------------------|---------------------|-----------------------|---------------------------------|
|  | S2.XLX25000S-MI<br> | 3                  | 33kW                | 1100V                 | 3*26A                           |
|  | S2.XLX30000S-MI<br> | 3                  | 39kW                |                       |                                 |
|  | S2.XLX33000S-MI<br> | 3                  | 43kW                |                       |                                 |
|  | S2.XLX36000S-MI<br> | 4                  | 47kW                |                       | 4*26A                           |
|  | S2.XLX40000S-MI<br> | 4                  | 52kW                |                       |                                 |



**DANGER!** Do not connect the strings with an open circuit voltage greater than the Max DC voltage of the inverter.

To connect the PV generator to the inverters we use 4mm<sup>2</sup> or 6mm<sup>2</sup> PV cable and MC4 connectors. For details on how to assemble MC4 connector please refer our MC4 connector manual.



**DANGER!** For protection against electric shock, MC4 connectors must be isolated from the PV array while being assembled or disassembled.



DC connections must not be unplugged while under load. They can be placed in a no-load state by switching off the DC/AC converter or breaking the DC circuit interrupter. Plugging and unplugging while under voltage is permitted.



CAUTION! MC4 connectors are watertight IP67 but cannot be used permanently under water. Do not lay the MC4 connectors on the roof surface.



If any tools or parts are used in the MC4 connector assembly other than those listed in the MC4 connector manual, neither safety nor compliance with the technical data can be guaranteed.

## 6.5 Commissioning and decommissioning sequence

| Turn ON inverter                          | Turn OFF inverter           |
|---|-----------------------------|
| 1. Connect AC side (if not connected yet) | 1. Switch OFF the AC switch |
| 2. Connect DC side (if not connected yet) | 2. Switch OFF the DC switch |
| 3. Switch ON grid supply main switch      |                             |
| 4. Switch ON the DC switch                |                             |
| 5. Switch ON the AC switch                |                             |

If the voltage of PV is higher than the start-up voltage, the inverter will turn on and the initial interface of LCD will show "Current status: Waiting".

Then the inverter will check both its internal parameters and the parameters of the AC and DC input to ensure that they are within the acceptable limits.

After around 30-180 seconds (based on local requirement), the inverter will start to generate power. The green LED will be on continually and the LCD displays "Current status: Generating".



NOTICE! If torn on DC input switch before grid breaker, inverter may show fault messages "No\_Grid" on current status, the fault will be clear if grid voltage is normal.

## 7 Operation

### 7.1 LED indicator lights

There are three LED status indicator lights in the front panel of XLX-MII series inverters. The left POWER light (red) indicates power status of the inverter. The middle OPERATION light (green) indicates the operation status. The right ALARM light (yellow) indicates the alarm status. Table 3.1 explains their meanings.

| Light               | Status   | Description   |
|---------------------|----------|---|
| ● POWER (red)       | ON       | The PV array provides power to the inverter   |
|                     | OFF      | The PV array does not provide power to the inverter                                       |
| ● OPERATION (green) | ON       | The inverter is feeding AC power to the grid  |
|                     | OFF      | The inverter is not feeding AC power to the grid  |
|                     | FLASHING | The inverter is initializing  |
| ● ALARM (yellow)    | ON       | There is a fault. Refer to the inverter display and chapter 11 of this manual for details |
|                     | OFF      | The inverter is operating normally  |

When the inverter DC switch and AC switch have been turned on the inverter will start initializing. After approx. 3 minutes the inverter will start normal operation with the inverter display showing GENERATING.

### 7.2 Inverter display



**NOTICE!** During normal operation, make sure the optional integrated DC switch is switched "on".

The XLX-MII series inverters come with a two line LCD screen. Pressing the ENTER button gives access to the main menu which has four sub menus:

- Information, described in detail in chapter 7.3.
- Settings, described in detail in chapter 7.4.
- Advanced information, described in detail in chapter 7.5.
- Advanced settings, described in details in chapter 7.6.

By pressing UP or DOWN keys you can cycle through these sub menus and click ENTER to go into the submenu.

## 7.3 Information

The XLX-MII series inverters main menu provides access to operational data and information. The information is displayed by selecting "Information" from the main menu. By default the inverter display will scroll through the information states below. Pressing the ENTER key will lock or unlock the current display. You can also press UP or DOWN keys to move to the next screen. By pressing the ESC key returns to the main menu.


| State  | Description  |
|--|--|
| V_DC01 %VALUE% V<br>I_DC01 %VALUE% A               | Shows the input voltage (V) of the MPPT1<br>Shows the input current (A) of the MPPT1   |
| V_DC02 %VALUE% V<br>I_DC2 %VALUE% A                | Shows the input voltage (V) of the MPPT2<br>Shows the input current (A) of the MPPT2   |
| V_DC03 %VALUE% V<br>I_DC03 %VALUE% A               | Shows the input voltage (V) of the MPPT3<br>Shows the input current (A) of the MPPT3   |
| V_DC04 %VALUE% V<br>I_DC04 %VALUE% A               | Shows the input voltage (V) of the MPPT4<br>Shows the input current (A) of the MPPT4   |
| V_A %VALUE% V<br>I_A %VALUE% A                     | Shows the voltage (V) of the grid L1<br>Shows the current (A) of the grid L1   |
| V_B %VALUE% V<br>I_B %VALUE% A                     | Shows the voltage (V) of the grid L2<br>Shows the current (A) of the grid L2   |
| V_C %VALUE% V<br>I_C %VALUE% A                     | Shows the voltage (V) of the grid L3<br>Shows the current (A) of the grid L3   |
| Status: %VALUE%<br>Power: %VALUE% W                | Shows the status of the inverter<br>Shows current output power (W) of the inverter<br><br>For any status other than "Generating" and "Initializing" please refer to chapter 11 for troubleshooting |
| Rea_Power: %VALUE% Var<br>App_Power: %VALUE% VA    | Shows the real power generated<br>Shows the apparent power generated   |
| Grid frequency<br>F_Grid %VALUE% Hz                | Shows current frequency (Hz) of the grid   |
| Total Energy<br>%VALUE% kWh                        | Shows total energy output (kWh)  |
| This Month: %VALUE% kWh<br>Last Month: %VALUE% kWh | Total energy output in this month (kWh)<br>Total energy output of last month (kWh)   |
| Today: %VALUE% kWh                                 | Total energy output in this day (kWh)  |



|  |   |
|--|---|
| Yesterday: %VALUE% kWh                     | Total energy output of yesterday (kWh)  |
| Inverter S/N                               | Serial ID of the inverter   |
| Export_P: %VALUE% W<br>Export_I: %VALUE% A | Shows the exported power<br>Shows the exported current  |
| Work Mode:<br>DRM Number:                  | Demand response mode (only relevant for some markets)<br>The demand response number (1-8) of the inverter |
| I_DC01 %VALUE% A<br>I_DC02 %VALUE% A       | Shows the input current (A) of the DC input 1<br>Shows the input current (A) of the DC input 2            |
| I_DC03 %VALUE% A<br>I_DC04 %VALUE% A       | Shows the input current (A) of the DC input 3<br>Shows the input current (A) of the DC input 4            |
| I_DC05 %VALUE% A<br>I_DC06 %VALUE% A       | Shows the input current (A) of the DC input 5<br>Shows the input current (A) of the DC input 6            |
| I_DC07 %VALUE% A<br>I_DC08 %VALUE% A       | Shows the input current (A) of the DC input 7<br>Shows the input current (A) of the DC input 8            |

## 7.4 Settings

The following options are available under the Settings submenu:

|                   |  |
|-------------------|--|
| Set Time and Date | Press UP/DOWN keys to set change element<br>Press ENTER key to move to next element<br>Press ESC key to save date and return   |
| Set Address       | Assign a number (##) to the inverter to distinguish between multiple inverters when using parallel communication with WIFI-BOX or GPRS-BOX<br><br>Press UP/DOWN keys to set change number<br>Press ENTER key to save the setting<br>Press ESC key to return. |
|                   |  Changing the Address when using WIFI-STICK or LAN-STICK may result in monitoring to stop working.  |

Press ENTER to enter the sub-menu and UP/DOWN to change the setting. Press ENTER to save or move to the next setting. Press the ESC key to cancel and return to the previous menu.

## 7.5 Advanced info



WARNING! Access to this section of the menu is for Autarco qualified and accredited technicians only. Unauthorized access will void the product and system warranty.

Screen can be scrolled through with UP/DOWN keys to see the information as per the table below. Press ENTER key to enter a submenu. Press ESC key to go back to the main menu.

|                    |  |
|--------------------|--|
| Alarm Messages     | Scroll through the last ten alarm messages for trouble shooting purposes.                              |
| Running Message    | The screen shows the internal operation parameters of the inverter                                     |
| Version            | The screen shows the hardware version and operating software version of the inverter                   |
| Communication data | The screen shows information interpretable to qualified technicians only                               |
| Daily Energy       | The screen shows a graph of daily energy output  |
| Monthly Energy     | The screen shows a graph of the monthly energy output  |
| Yearly Energy      | The screen shows a graph of the yearly energy output   |
| Totally Energy     | The screen shows a graph of the inverter total energy detail   |
| Daily records      | The screen shows the inverter work log, the information is interpretable to qualified technicians only |

## 7.6 Advanced Settings



WARNING! Access to this section of the menu is for Autarco qualified and accredited technicians only. Unauthorized access will void the product and system warranty.

Screen can be scrolled through with UP/DOWN keys to see the information as per the table below. Press ENTER key to enter a submenu. Press ESC key to go back to the main menu.



WARNING! Set GRID OFF (see below) before changing this setting.

Press UP/DOWN keys to cycle through available standards

Press ENTER key to save the setting - Press ESC key to cancel and return

When selecting User defined the following upper and lower values have to be set for voltage and frequency:

Select grid standard

OV-G-V1: 300---480V  
 OV-G-V1-T: 0.01---9s  
 OV-G-V2: 300---490V  
 OV-G-V2-T: 0.01---1s  
 UN-G-V1: 173---336V  
 UN-G-V1-T: 0.01---9s  
 UN-G-V2: 132---319V  
 UN-G-V2-T: 0.01---1s

OV-G-F1: 50.2-63Hz  
 OV-G-F1-T: 0.01---9s  
 OV-G-F2: 51-63Hz  
 OV-G-F2-T: 0.01---9s  
 UN-G-F1: 47-59.5Hz  
 UN-G-F1-T: 0.01---9s  
 UN-G-F2: 47-59Hz  
 UN-G-F2-T: 0.01---9s

Press UP/DOWN keys to scroll through these values  
 Press ENTER key to edit the selected value  
 Press UP/DOWN keys to change the selected value  
 Press ENTER key to save and return  
 Press ESC key to cancel and return



WARNING! Set GRID ON (see below) before new standard is activated.



WARNING! Please note that the User-Def standard is not to be used without the agreement of the local grid authority.

Grid ON/OFF


Press UP/DOWN keys to cycle through grid ON/OFF options  
 Press ENTER key to save  
 Press ESC key to return

Clear Energy



Reset the inverters total kWh output to zero.  
 Using this function without previous approval from Autarco will void any existing kWh Guarantees.

|                   |  |
|-------------------|--|
| New Password      | <p>Change the password to enter Advanced Info and Advanced Settings. Enter the current password before setting a new password. Press the DOWN key to move the cursor, Press the UP key to change the digit. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.</p>  |
| Power Control     | <p>Inverter output active power and reactive power control can be set through this menu if the grid is unbalanced:</p> <ol style="list-style-type: none"> <li>1. Set output power</li> <li>2. Set reactive power</li> <li>3. Out_P with restore</li> <li>4. Rea_P with restore</li> <li>5. Select PF curve</li> </ol>  |
| Calibrate Energy  | <p>Maintenance or replacement could clear or cause a different value for total energy. Use this function to allow user to revise the value of total energy to the same value as before.</p> <p>Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.</p>  |
| Special Settings  | <p>Special settings can switch off functions temporarily for testing purposes. These tests should only be done by qualified Autarco personnel or trained installers when requested to do so. Submenu includes:</p> <ol style="list-style-type: none"> <li>1. Grid Filter Set</li> <li>2. Relay_Protect Set</li> <li>3. ILeak_Protect Set</li> <li>4. GROUND_Protect Set</li> <li>5. GRID INTF.02 Set</li> <li>6. MPPT Parallel Mode</li> <li>7. Cnst. Voltage Mode</li> <li>8. LV/FRT Set</li> <li>9. IgZero_COMP. Set</li> <li>10. PI Set</li> <li>11. IgADCheckPRO Set</li> <li>12. NoSmallPulse Set</li> <li>13. VarCompensation</li> <li>14. AFCI Set</li> </ol> |
| STD Mode Settings | <p>STD Mode Settings are used when demand response is required by grid operators.</p> <ol style="list-style-type: none"> <li>1. Working Mode Set</li> <li>2. Power Rate Limit</li> <li>3. Freq Derate Set</li> <li>4. 10mins Voltage Set</li> <li>5. Power Priority</li> <li>6. Initial Settings</li> </ol>  |

| 7. Voltage PCC Set |   |
|--------------------|---|
| Restore Settings   | Restore Settings resets the inverter to factory defaults.   |
| HMI Updater        | Selecting HMI Updater will show the current software version the LCD screen is based on.  |
| Internal EPM Set   | Internal power export management.<br><ol style="list-style-type: none"> <li>1. Mode</li> <li>2. Backflow power</li> <li>3. Fail safe ON/OFF</li> </ol>  |
| External EPM Set   | External power export management.<br><ol style="list-style-type: none"> <li>1. 5G-EPM</li> <li>2. Others-EPM</li> </ol>   |
| Restart HMI        | This function is used to restart reset the HMI software.  |
| Debug parameter    | Shows debug parameters.   |
| Fan test           | Test intelligent fan  |
| DSP Update         | Selecting DSP Update will show the current internal software version.   |
| Compensation Set   | This function is used to calibrate inverter output energy. It will not impact the energy count for inverter with RGM.<br><ol style="list-style-type: none"> <li>1. Power parameter</li> <li>2. Voltage parameter</li> </ol> <div style="display: flex; align-items: center;">  <p>Using this function without previous approval from Autarco will void any existing kWh Guarantees.</p> </div> |
| I/V Curve          | Used to create I/V curves for all DC inputs.<br><ol style="list-style-type: none"> <li>1. Set I/V curve</li> <li>2. I/V curve scan</li> </ol>   |

### 7.6.1 Important Settings and Operation

#### 7.6.1.1 AFCI, I/V-Curve, External EPM Set

|      |  |
|------|--|
| AFCI | <p>Autarco inverters have a built-in AFCI which can detect arc faults in a DC-circuit and shut down the inverter to avoid further damage.<br/>                     Default it is OFF.<br/>                     AFCI ON/OFF<br/>                     AFCI Level</p> <p>Do not change the level unless requested so by maintenance personnel. If an arc-fault is detected more than 5 times in 24 hours, the inverter will shut down. A message will be displayed on the LCD-screen to indicate the string e.g. 03_ARC_FAULT</p> |
|------|--|

|                  |  |
|------------------|--|
| I/V- Curve       | <p>First select I/V curve to select the scanning voltage start point and the voltage interval.<br/>           Start_V: 300.....1000 V<br/>           Interval_V: 001...100 V<br/>           In total 60 data points can be scanned.<br/>           Then go to I/V Curve Scan and press Enter to start. When the scan is complete, it will say Scan OK. Select 'String No. 01' and check the results.</p> |
| External EPM Set | Set to 5G EPM for external PELD.   |

## 8 Monitoring setup and system registration

The instructions about monitoring setup and system registration can be found in separate manuals enclosed in the documentation that came with this Autarco system. For more information manual please contact your Autarco installer or refer to our website [www.autarco.com](http://www.autarco.com).

## 9 Maintenance

The XLX-MII series inverters do not require regular maintenance. However, impurities such as dust and dirt accumulation on the heat sink may negatively affect the inverter's ability to dissipate heat. Any dirt or dust can be removed with a cloth or soft brush.



CAUTION! Do not touch the heat sink when the inverter is in operation. Turn OFF the inverter (see section 0) and allow for cooling down before cleaning.



CAUTION! Never use any solvents, abrasives or corrosive materials to clean the inverter.

## 10 Recycling and Disposal

To comply with European Directive 2002/96/EC on waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Ignoring this EU Directive may have severe effects on the environment and your health.

# 11 Troubleshooting

## 11.1 General

| Display message | Action  |
|-----------------|---|
| Blank screen    | <ul style="list-style-type: none"> <li>• Check that all switches are in the ON position (including internal DC switch if present)</li> <li>• Check AC and DC power supply. If DC power is greater than 10W and string voltage greater than 100V the inverter should start.</li> <li>• If switches are on and AC and DC power supplies are available, please contact installer.</li> </ul> |

## 11.2 Internal component fault

| Error type              | Display message | Error code | Error description | Action   |
|-------------------------|-----------------|------------|-------------------|--|
| Over BUS DC voltage     | OV-BUS          | 1021       | Internal fault    | <ol style="list-style-type: none"> <li>1. Restart inverter (up to three times).</li> <li>2. If error persists contact installer for replacement inverter.</li> </ol> |
| Under BUS DC voltage    | UN_BUS          | 1012       | Internal fault    |  |
| BUS pressure fault      | UNB2_BUS        | 1024       | Internal fault    |  |
| System initial fault    | INI-PRO         | 1031       | Internal fault    |  |
| Relay fault             | Relay_PRO       | 1035       | Internal fault    |  |
| DSP_B fault             | DSP_B_PRO       | 1036       | Internal fault    |  |
| DC injection            | DCInj_PRO       | 1037       | Internal fault    |  |
| 12V under voltage fault | 12Power_PRO     | 1038       | Internal fault    |  |

## 11.3 Grid errors

| Error type      | Display message | Error code | Error description   | Action  |
|-----------------|-----------------|------------|---|---|
| Over voltage    | OV-G-V          | 1010       | Grid voltage exceeds the standard set in the inverter     | <ol style="list-style-type: none"> <li>1. Wait to see if the grid voltage returns within limits.</li> <li>2. If problem persists, check whether the grid standard is set correctly in Advanced Settings (see 6.6).</li> <li>3. Check V_AC, grid voltage, in Information display of inverter (see 6.3) and perform independent measurement of grid voltage to confirm that the inverter reading is correct. If the measured voltage is outside the local grid standard limits, please contact your local utility as it may require monitoring and adjustment</li> <li>4. With agreement from utility it is possible to set a user defined voltage range (see 6.6).</li> </ol>      |
| Under voltage   | UN-G-V          | 1011       | Grid voltage is below the standard set in the inverter    |   |
| Over frequency  | OV-G-F          | 1012       | Grid frequency exceeds the standard set in the inverter.  | <ol style="list-style-type: none"> <li>1. Wait to see if the grid frequency returns within limits.</li> <li>2. If a problem persists, check whether the grid standard is set correct in Advanced Settings (see 6.6).</li> <li>3. Check grid frequency, in Information display of inverter (see 6.3) and perform independent measurement of grid frequency to confirm that the inverter reading is correct. If the measured frequency is outside the local grid standard limits, please contact your local utility as it may require monitoring and adjustment.</li> <li>4. With agreement from utility it is possible to set a user defined frequency range (see 6.6).</li> </ol> |
| Under frequency | UN-G-V          | 1013       | Grid frequency is below the standard set in the inverter. |   |
| Grid impedance  | G-IMP           | 1014       | High grid impedance                                       | <ol style="list-style-type: none"> <li>1. Wait to see if the grid returns within limits.</li> <li>2. If problem persists please contact your local utility as it may require monitoring and adjustment.</li> </ol>  |
| No Grid         | NO Grid         | 1015       | The inverter cannot detect a grid.                        | <ol style="list-style-type: none"> <li>1. Check your AC power connections and switches.</li> <li>2. Restart the inverter.</li> <li>3. Call your local grid to resolve the black out.</li> </ol>   |



## 11.4 System and design fault

| Error type          | Display message | Error code | Error description   | Action   |
|---------------------|-----------------|------------|---|--|
| Over DC voltage     | OV-DC           | 1020       | The DC input of the solar strings exceeds the inverters limits. | <ol style="list-style-type: none"> <li>1. Restart inverter (up to three times).</li> <li>2. Contact installer to:                             <ol style="list-style-type: none"> <li>a. Perform independent measurement of string voltage to confirm that the inverter reading is correct.</li> </ol> </li> <li>3. Rewire strings so that string voltage is within accepted range.</li> </ol>  |
| Over temperature    | TEM-PRO         | 1032       | The internal temperature of inverter exceeds limits.            | <ol style="list-style-type: none"> <li>1. Check location of inverter. Ensure it has adequate ventilation and is not exposed to direct sunlight.</li> <li>2. Contact installer to replace inverter in case problem persists.</li> </ol>   |
| Short circuit fault | SHORT-PRO       | 1030       | A short circuit has been detected in the system.                | <ol style="list-style-type: none"> <li>1. Restart inverter (up to three times).</li> <li>2. Call installer to:                             <ol style="list-style-type: none"> <li>a. Check for pinched, crimped or otherwise damaged cables and connections.</li> <li>b. Check all switches for short circuit.</li> </ol> </li> <li>3. If error persists contact Autarco for replacement inverter.</li> </ol>                                      |
| Ground fault        | GROUND-PRO      | 1033       | Current flow detected through ground conductor.                 | <ol style="list-style-type: none"> <li>1. Restart inverter (up to three times).</li> <li>2. Call installer to:                             <ol style="list-style-type: none"> <li>a. Check if there is any current on the ground conductor using a clamp meter.</li> <li>b. Check for pinched, crimped or otherwise damaged cables and connections.</li> </ol> </li> <li>3. If error persists contact Autarco for replacement inverter.</li> </ol> |
| Current leakage     | lLeak_PRO       | 1034       | A current leak has been detected.                               | <ol style="list-style-type: none"> <li>1. Restart inverter (up to three times).</li> <li>2. Call installer to:                             <ol style="list-style-type: none"> <li>a. Check if there is any current on the ground conductor using a clamp meter.</li> <li>b. Check for pinched, crimped or otherwise damaged cables and connections.</li> </ol> </li> <li>3. If error persists contact Autarco for replacement inverter.</li> </ol> |

## 12 Product specifications

|                                       | S2.XLX25000S<br>-MII                         | S2.XLX30000S<br>-MII | S2.XLX33000S<br>-MII | S2.XLX36000S<br>-MII | S2.XLX40000S<br>-MII |
|---------------------------------------|--|----------------------|----------------------|----------------------|----------------------|
| <b>Input</b>                          |  |                      |                      |                      |                      |
| Max. DC voltage (V)                   | 1100   | 1100                 | 1100                 | 1100                 | 1100                 |
| MPPT voltage range (V)                | 200-1000                                     | 200-1000             | 200-1000             | 200-1000             | 200-1000             |
| Turn on voltage (V)                   | 350  | 350                  | 350                  | 350                  | 350                  |
| Turn off voltage (V)                  | 180  | 180                  | 180                  | 180                  | 180                  |
| # MPPT                                | 3  | 3                    | 3                    | 4                    | 4                    |
| Max. DC current per MPPT (A)          | 26   | 26                   | 26                   | 4*26                 | 4*26                 |
| # Strings per MPPT                    | 2  | 2                    | 2                    |                      |                      |
| Total number of strings               | 8  | 8                    | 8                    |                      |                      |
| DC connection type                    | MC4  | MC4                  | MC4                  | MC4                  | MC4                  |
| <b>Output</b>                         |  |                      |                      |                      |                      |
| Nominal AC power (W)                  | 25000  | 30000                | 33000                | 36000                | 40000                |
| Max. AC power (W)                     | 27500  | 33000                | 36300                | 39600                | 44000                |
| Nominal AC current (A)                | 38.0/36.1                                    | 45.6/43.3            | 50.1/47.6            | 57.7/52.0            | 60.8/57.7            |
| Max. AC current (A) at 380V           | 41.8   | 50.2                 | 55.1                 | 60.2                 | 66.9                 |
| Max. AC current (A) at 400V           | 39.7   | 47.6                 | 52.4                 | 57.2                 | 63.5                 |
| Power connection                      | Three phase                                  |                      |                      |                      |                      |
| Grid voltage range                    | According to VDE4105, UL-1741, G59/3, AS4777 |                      |                      |                      |                      |
| Grid frequency range                  | According to VDE4105, UL-1741, G59/3, AS4777 |                      |                      |                      |                      |
| Power factor                          | >0.99  |                      |                      |                      |                      |
| Harmonic distortion at nominal output | <3%  |                      |                      |                      |                      |
| AC connector                          | Terminal connectors                          |                      |                      |                      |                      |
| Overvoltage category                  | OVC III (MAINS), OVC II (PV)                 |                      |                      |                      |                      |
| <b>Power consumption</b>              |  |                      |                      |                      |                      |
| Nighttime power consumption (W)       | < 1  |                      |                      |                      |                      |
| Standby power consumption (W)         | < 30   |                      |                      |                      |                      |

|                     |       |
|---------------------|-------|
| <b>Efficiencies</b> |       |
| Max. efficiency     | 98.6% |
| Euro efficiency     | 98.3% |
| MPPT efficiency     | 99.9% |

|                                  | S2.XLX25000S-MII  | S2.XLX30000S-MII | S2.XLX33000S-MII | S2.XLX36000S-MII | S2.XLX40000S-MII |
|----------------------------------|-------------------|------------------|------------------|------------------|------------------|
| <b>Safety protection</b>         |                   |                  |                  |                  |                  |
| DC reverse-polarity protection   | Yes               |                  |                  |                  |                  |
| Short circuit protection         | Yes               |                  |                  |                  |                  |
| Output over current protection   | Yes               |                  |                  |                  |                  |
| Output over voltage protection   | Yes               |                  |                  |                  |                  |
| Insulation resistant monitoring  | Yes               |                  |                  |                  |                  |
| Residual current detection       | Yes               |                  |                  |                  |                  |
| Surge protection                 | Yes               |                  |                  |                  |                  |
| Grid monitoring                  | Yes               |                  |                  |                  |                  |
| Islanding protection             | Yes               |                  |                  |                  |                  |
| Temperature protection           | Yes               |                  |                  |                  |                  |
| Integrated DC switch             | Optional          |                  |                  |                  |                  |
| <b>General data</b>              |                   |                  |                  |                  |                  |
| Dimensions (W x H x D) (mm)      | 647 X 629 X 252   |                  |                  |                  |                  |
| Weight                           | 45kg              |                  |                  |                  |                  |
| Installation environment         | Indoor or outdoor |                  |                  |                  |                  |
| Mounting                         | Wall bracket      |                  |                  |                  |                  |
| Operating temperature range (°C) | -25 to 60         |                  |                  |                  |                  |

|                          |                                 |
|--------------------------|---------------------------------|
| Max. relative humidity   | 95% (without condensation)      |
| Maximum altitude         | 4000m                           |
| IP protection rating     | IP65                            |
| Isolation type           | Transformerless                 |
| Cooling concept          | Convection                      |
| Noise level (dBA)        | < 60                            |
| LED indicators           | 3                               |
| LCD display              | 7" LCD color screen             |
| Communication interfaces | 1xRS485                         |
| Optional interfaces      | Wi-Fi, GPRS, Z-Wave, LAN        |
| Standard warranty        | 5 years, extendable to 15 years |
| Integrated DC switch     | Optional                        |