IMPORTANT SAFETY INSTRUCTIONS
This manual contains important safety instructions that must be followed during installation and maintenance of the inverter.

SAVE THESE INSTRUCTIONS!
Keep this document in a safe place near the inverter for easy access during installation and maintenance.

THE INSTALLER MUST READ THIS DOCUMENT IN ITS ENTIRETY BEFORE INSTALLING OR COMMISSIONING THIS EQUIPMENT.
The purpose of this document is to support the qualified technician, who has received training and/or has demonstrated skills and knowledge in construction, to install and maintain this inverter. This manual does not cover any details concerning equipment connected to the inverter such as the solar modules. Information concerning the connected equipment is available from the respective manufacturers.

Warranty conditions can be found on the MICRO product page of the website. NOTE: Any changes or modifications not approved by the responsible party could void the user authority to operate the equipment.

FCC REMARKS
The equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Introduction and safety</td>
<td>⚠️</td>
</tr>
<tr>
<td>2 - Installation location</td>
<td>🛠️</td>
</tr>
<tr>
<td>3 - Mounting and wiring</td>
<td>🔧</td>
</tr>
<tr>
<td>4 - Operations</td>
<td>📈</td>
</tr>
<tr>
<td>5 - Troubleshooting</td>
<td>🕵️</td>
</tr>
<tr>
<td>6 - Maintenance</td>
<td>🔧</td>
</tr>
<tr>
<td>7 - Appendix</td>
<td>📜</td>
</tr>
</tbody>
</table>
# Contents

**Introduction and safety** ........................................................................................................... 7

- **Warnings in this document** ........................................................................................................ 7
  - Equipment safety warnings ........................................................................................................ 7
  - General installation warnings .................................................................................................... 8
  - Electrical connection warnings .................................................................................................. 8
- **Safety instructions** ....................................................................................................................... 8
  - Thermal and voltage hazard ........................................................................................................ 9
  - Location of safety notices and labels .......................................................................................... 9
- **Appropriate usage** .......................................................................................................................... 9
- **Available models** .......................................................................................................................... 10
  - Regulatory label .......................................................................................................................... 10
  - Product identification label ......................................................................................................... 12

**Installation location** .................................................................................................................... 13

- **Transportation and handling** ...................................................................................................... 13
- **Incoming inspection** .................................................................................................................... 13
- **Overall dimensions and minimum clearances** .......................................................................... 14
- **Environmental check of installation location** ........................................................................... 14
- **Installation position** ................................................................................................................... 15
- **Choice of AC cable** .................................................................................................................... 16

**Mounting and wiring** .................................................................................................................... 19

- **Assembly diagram** ..................................................................................................................... 19
- **Assembly instructions** ................................................................................................................ 20
  - DC grounding electrode conductor coupling all the MICRO inverters ........................................ 21
  - DC grounding electrode conductors for each MICRO inverter ..................................................... 22
  - Installing the AC trunk end cap .................................................................................................... 26
  - Use of the AC trunk unlock tool ................................................................................................. 26
- **Wiring details** ............................................................................................................................... 27
  - Load protection switch (AC disconnect switch) .......................................................................... 27
  - Differential protection downstream of the inverter .................................................................... 28
  - Choosing the interface protection system and device downstream of the inverter .................. 28
- **AC grid connections** .................................................................................................................... 28
  - Characteristics and sizing of the line cable ............................................................................... 29
  - Wiring of AC cable ...................................................................................................................... 29

**Operations** .................................................................................................................................... 31

- **Commissioning** .......................................................................................................................... 31
  - Sequence of operations ............................................................................................................... 31
  - LED indicators ............................................................................................................................. 32
Warnings in this document

This is a list of special safety symbols used in this manual that highlight potential safety risks and/or useful information. The symbol usage is described below:

- **CAUTION**
  The reader should stop, use caution and fully understand the operations explained before proceeding.

- **DANGEROUS VOLTAGE**
  The product works with high voltages. All work on the inverter must follow the described documentation and must comply with all prevailing codes and regulations associated with high voltages.

- **HOT TEMPERATURE**
  Some surfaces may become hot; do not touch the product while it is in operation.

- **UL1741 Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources. CSA-C22.2 No. 107.1-01 - General Use Power Supplies.**

Equipment safety warnings

In addition to the safety and hazard symbols, the following symbols are also used in this installation guide.

- **System earth conductor (equipment ground, protective earth)**

- **Alternating current (AC)**
  - **Phase**

- **Direct current (DC)**
  - **Grounding (earth)**
Introduction and safety

**General installation warnings**

The inverter is designed and tested according to international safety requirements (UL1741/IEEE1547); however, certain safety precautions must be observed when installing and operating this inverter. Read and follow all instructions, cautions and warnings in this installation manual.

It is required that the CDD be installed with any MICRO inverter in compliance with UL1741, for the purpose of indication and resetting of ground faults. The wireless communication system inside the MICRO transmits information to the CDD that analyzes and manages data. See CDD product manual and/or Quick Installation Guide, available on the website, for a description of the CDD.

**Electrical connection warnings**

This grid-tied inverter system operates only when properly connected to the AC utility grid. Before connecting the grid-tied inverter to the AC utility grid, contact the local power distribution company to receive the appropriate approvals. This connection must be made only by qualified technical personnel.

Wiring methods used should be in accordance with the National Electric Code, ANSI/NFPA 70 and/or any prevailing local codes and regulations.

The AC output (neutral) is not bonded to ground. The input and output circuits are isolated from the enclosure and the system grounding must be installed per the requirements of the National Electric Code, ANSI/NFPA 70, and is the responsibility of the installer.

It is the responsibility of the installer to provide external disconnect switches and Overcurrent Protection Devices (OCPD) as required by National Electric Codes and other prevailing regulations.

To reduce the risk of fire, connect only to a circuit provided with 20A maximum branch circuit overcurrent protection in accordance with the National Electric Code (ANSI/NFPA 70).

**Safety instructions**

Normally grounded conductors may be ungrounded and energized when a ground-fault is indicated resulting in risk of electric shock. Always test voltage with a voltmeter before touching.

Install the inverter in accordance with the electrical standards prescribed by the applicable National Electric Code (NEC), and/or by other local codes and regulations.
Thermal and voltage hazard

⚠️ Certain parts may be extremely hot immediately following shut down due to normal elevated surface temperatures (e.g. transformers, accumulators, coils etc.).

Prior to touching any part of the inverter use care to ensure surfaces and equipment are at touch-safe temperatures and voltages before proceeding.

Anytime the inverter has been disconnected from the AC utility grid, use extreme caution as some components can retain charge sufficient to create a shock hazard and may need time to dissipate the charge. To minimize occurrence of such conditions, comply with all corresponding safety symbols and markings present on the unit and in this manual.

Location of safety notices and labels

Note the location of safety notices on the MICRO inverter. Labels must not be hidden with external objects or parts such as rags, boxes, or other such equipment. They should be cleaned periodically and always maintained in view. Technical data in this manual does not supersede the data on the labels affixed to the equipment.

Appropriate usage

The MICRO inverter is designed to transform direct current (DC) coming from a photovoltaic module (PV) into an alternating current (AC) suitable for being fed into the power distribution grid.

- The operating current output during the normal operation MUST NOT exceed the limits documented in the technical specifications.
- Only one photovoltaic module can be connected in the input of the inverter (DO NOT connect batteries or other sources of power supply).
- Adverse environmental condition, such as: sun, rain, snow, wind, too hot or too cold, altitudes, humidity, etc., can lead to a reduction in performance.

Improper or prohibited use

The following actions are dangerous and not consistent with acceptable practice under the terms of the warranty:

- Installing the equipment in environments with flammable conditions or in adverse/constrained environmental conditions (temperature and humidity).
- Using the equipment with safety devices not working or disabled.
- Using the equipment or parts of the equipment by connecting it to other machines or equipment, unless otherwise expressed.
- Cleaning with corrosive products that may corrode parts of the equipment or with products that might generate electrostatic charges.
Available models

There are three models of the MICRO, defined by their rated output power (0.25 kW, 0.3 kW, or 0.3 kW high voltage (HV)). Each version is also available for either a 240Vac split phase or 208Vac single phase AC grid connection. All model dimensions are 10.5” x 9.7” x 1.37” and weigh 3-1/2 lb (1.65kg).

<table>
<thead>
<tr>
<th>Output power</th>
<th>Model number</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 Watts</td>
<td>MICRO-0.25-I-OUTD-US-208/240</td>
</tr>
<tr>
<td>300 Watts</td>
<td>MICRO-0.3-I-OUTD-US-208/240</td>
</tr>
<tr>
<td>300 Watts</td>
<td>MICRO-0.3HV-I-OUTD-US-208/240</td>
</tr>
</tbody>
</table>

Regulatory label

The label shown is affixed to the inverter and provides the following information:

1. Certification
2. Product origin
3. Model number
4. DC input ratings

For More Details Refer to the Instructions Manual
5. AC output ratings

<table>
<thead>
<tr>
<th>AC RATING</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Output Voltage</td>
<td>208 V~ / 220 V~</td>
<td>208 V~ / 240 V~</td>
</tr>
<tr>
<td>Operating Voltage Range</td>
<td>183-228 V~ / 211-264 V~</td>
<td>183-228 V~ / 211-264 V~</td>
</tr>
<tr>
<td>Nominal Output Frequency</td>
<td>60 Hz (factory preset)</td>
<td>60 Hz (factory preset)</td>
</tr>
<tr>
<td>Operating Frequency Range</td>
<td>57 to 59.8 (Adjustable) - 60.5 Hz</td>
<td>57 to 59.8 (Adjustable) - 60.5 Hz</td>
</tr>
<tr>
<td>Output Power Factor</td>
<td>&gt; 0.95</td>
<td>&gt; 0.95</td>
</tr>
<tr>
<td>Max. Output Current</td>
<td>1.44 A (rms)/208 V~ / 1.25 A (rms)/240 V~</td>
<td>1.44 A (rms)/208 V~ / 1.25 A (rms)/240 V~</td>
</tr>
<tr>
<td>Max. Continuous Output Power</td>
<td>300 W @ 65°C amb.</td>
<td>300 W @ 65°C amb.</td>
</tr>
<tr>
<td>Max. Output Overcurrent Protection</td>
<td>20 A</td>
<td>20 A</td>
</tr>
</tbody>
</table>

6. Environmental rating

Operating Ambient Temperature:
-40 to +75 °C (0°F to +167 °F), with Output Power Derating (*)

Type of Enclosure: NEMA 4X
DC Ground Fault Detector/Interrupter is Provided

(*) For More Details Refer to the Instructions Manual

Contains FCC ID: X6W-EMBZ
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

7. Serial number
8. MAC address

SERIAL NUMBER: 3LD3021F400 0000013012

1- Introduction and safety

Product identification label

The sample product shown provides the following information:

- Inverter model
- Inverter Part Number
- Inverter Serial Number
- Week/Year of manufacture
- Inverter MAC address

The identification label on the inverter is shown below. A duplicate identification label, and the product label above, are attached to the inverter in a plastic bag as shown below. Use the small label to create a map of the system for use with the monitoring software. A template to be used for the diagram can be found in part 7. It is recommended to make a copy of the map for the installer.
Transportation and handling

When being transported, the inverter and electronic components must be protected from vibration, mechanical shocks, humidity, etc.

Incoming inspection

It is the customer’s responsibility to examine the condition of the unit. Upon receipt of the inverter check the following:
• Inspect the shipping container for any external damage.
• Inventory the contents against list below; verify receipt of all items.
• Use care not to discard any equipment, parts, or manuals.
• Call the delivering carrier if damage or shortage is detected.
• If inspection reveals damage to the inverter, contact the supplier, or authorized distributor for a repair/return determination and instructions regarding the process.

<table>
<thead>
<tr>
<th>Components supplied with equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-TRUNK SPOOL-41 inches-50 plugs</td>
<td>AC cable (4 conductors), 10 AWG</td>
</tr>
<tr>
<td>AC-TRUNK SPOOL-67 inches-32 plugs</td>
<td>3 sizes available as shown at left</td>
</tr>
<tr>
<td>AC-TRUNK SPOOL-81 inches-27 plugs</td>
<td></td>
</tr>
<tr>
<td>AC trunk plug cap</td>
<td>Insulated AC cap for AC Bus connectors (female)</td>
</tr>
<tr>
<td>AC trunk end cap</td>
<td>End cap for 10 AWG AC cable</td>
</tr>
<tr>
<td>AC trunk unlock tool</td>
<td>Tool for releasing connectors</td>
</tr>
</tbody>
</table>
Overall dimensions and minimum clearances

The following figure illustrates the overall dimensions of the inverter.

The figure below illustrates the minimum clearances above and below the inverter in relation to the PV modules and roof.

Environmental check of installation location

- See technical data in part 7 to check the environmental parameters to be observed (degree of protection, temperature, humidity, altitude, etc.)
- The maximum operational ambient air temperature MUST be considered when choosing the inverter installation location.
- Installing the inverter where operating temperatures exceed the specifications will result in power limiting; it is recommended the inverter be installed within the specified temperature range.
- To avoid overheating, always make sure the flow of air around the inverter is not blocked.
- Do not install in places where gasses or flammable substances may be present.
- Avoid electromagnetic interference that can compromise the correct operation of electronic equipment.
Installation position

When choosing the installation location and position, observe with the following conditions:

- Install only on structures specifically intended for photovoltaic modules (supplied by installation technicians).
- Install the inverter underneath the photovoltaic modules so that they work in the shade; if this condition cannot be met, the inverter could undergo power reduction.
- Any maintenance or replacement of the device could require the technician to dismount the photovoltaic module mounted on the top of the MICRO inverter.
- Ensure that the safety distances are correct for normal test and maintenance operations.
- The distance between MICRO inverters installed on the same system array depends on the type of photovoltaic modules and orientation (horizontal or vertical).
Choice of AC cable

The AC cable is shipped on a reel with the connectors pre-mounted. The available spacing between connectors is: 41", 67", and 81".

The installer is responsible for choosing the AC cable model with the correct spacing on the basis of the orientation (shown below) and type of photovoltaic modules.

⚠️ See technical data in the appendix concerning the maximum number of MICRO inverters permitted for installation at each cable section!

Figures below show AC cable available for horizontal orientation of the PV modules.

- **AC-Trunk Spool – 67 inches, 32 plugs** *

- Ideal for 60-cell or 96-cell PV modules

![AC-Trunk Spool – 67 inches, 32 plugs](image)

- **AC-Trunk Spool – 81 inches, 27 plugs** *

- Ideal for 72-cell PV modules

![AC-Trunk Spool – 81 inches, 27 plugs](image)

*The AC-TRUNK SPOOL will contain a number of connectors indicated by the number of plugs in the part number. The installer can cut the cable to the length needed for the specific installation.*
The figure below shows the AC cable available for vertical orientation of the PV modules.

- AC-Trunk Spool – 41 inches, 50 plugs *
- Ideal for 60-cell, 72-cell, 96-cell PV modules
Assembly diagram

01 photovoltaic module
02 frame
03 junction box
04 MICRO inverter
05 DC cables from PV module
06 AC-TRUNK cable plug (connector)
07 AC-TRUNK cable temporary plug cap
   (discard after installation)
08 AC-TRUNK PLUG CAP
09 MICRO inverter AC drop cable
10 AC-TRUNK UNLOCK TOOL
11 AC-TRUNK END CAP
Assembly instructions

1. Run the AC cable along the racking system used for installing the photovoltaic modules.

   *The cable must be compatible with the expected installation conditions, particularly concerning the number of modules and their orientation (portrait or landscape).*

   *Legislation in force in the country of installation and the installed power will determine the maximum number of MICRO inverters permitted for installation at each AC cable section.*

   *Do NOT exceed the maximum number of MICRO inverters permitted for installation! (See technical data found in the appendix, part 7, of this manual.)*

2. Secure the MICRO inverter to the racking system with the logo side facing downwards.
   - Torque the MICRO inverter fasteners to the values shown below, do not over torque.
     - 6 mm (1/4") mounting hardware: 5 N m (45 to 50 in-lbs).
     - 8 mm (5/16") mounting hardware: 9 N m (80 to 85 in-lbs).
   - Mark the approximate center of each photovoltaic module on the frame in order to facilitate positioning.

3. The inverter and photovoltaic modules must be connected to a DC grounding electrode conductor in accordance with the pertinent legislation in force in the country of installation.

   The inverter can be earth grounded using the clamp secured to the chassis and an adequately-sized conductor.

   There are two possible configurations for grounding the inverters shown on the following pages.

   *The equipment grounding conductor is incorporated in the AC trunk cable.*

   *Incorrect grounding can cause physical injury, death or equipment malfunction and increase electromagnetic interference.*

   *Make sure that grounding conductors are adequately sized as required by safety regulations.*
DC grounding electrode conductor coupling all the MICRO inverters

- The conductor must have a minimum cross section of 6 AWG.
- Tighten with 2Nm (17.7 in-lb) torque.
**DC grounding electrode conductors for each MICRO inverter**

- The conductor linking the assembly to the grounding distribution structure must be at least 6 AWG.
- Tighten with 2Nm (17.7 in-lb) torque.
- Ensure that the quality of the bond made between the conductor and the structure is secure.
- Only a racking system that is certified for use as a grounding structure is permitted to use this method.
4. Fasten the AC-TRUNK cable to the frame with listed cable ties. Each connector is provided with two guides for ideal fastening. Cable ties are not supplied with the inverter or AC-TRUNK cable. Use listed cable ties rated to 75°C.

5. Remove the temporary cap from AC-TRUNK cable connectors and then connect the MICRO inverters. The connectors are coupled correctly when two clicks are heard. Be mindful to keep the connectors in a position accessible to the AC-TRUNK cable coming from the MICRO inverter.

Protect any unused AC-TRUNK cable connectors by fitting the AC-TRUNK PLUG CAP on them to keep them watertight. The temporary caps are only attached for shipping and provide no seal!
6. Fit the appropriate AC-trunk end cap on the unused ends of the AC-trunk cable.

Connect the AC-TRUNK cable/s coming from the MICRO inverters to the junction box or to the AC distribution panel.

8. Use the duplicate label in the attached plastic bag to create a map of the system by placing the adhesive labels on the diagram (found in the appendix, part 7).
9. Plug the DC cables into the corresponding inputs on the MICRO inverters and install the photovoltaic modules.

- It is recommended to install the MICRO inverters underneath the PV modules to operate in the shade.
- Direct sunlight may cause elevated temperatures and consequently power limiting.
- Each module must be connected to the MICRO-Inverter with a DC cable having a length of less than 3m.

10. The inverter will not begin to feed energy into the distribution grid until the association procedure of the CDD (Concentrator Data Device) has been completed. It is required that an CDD be installed with any MICRO inverter in compliance with UL1741, for the purpose of indication and resetting of ground faults.

See the CDD product manual or Quick Installation Guide for the procedures.
Installing the AC trunk end cap

The unused ends of the AC-trunk cable must be terminated; the following is necessary for properly installing the cap:

- Fit the ring nut and gasket around the cross section of the cable to terminate.
- Strip 18-25 mm/0.7in – 1in of the external insulation and separate each conductor.
- Insert the conductors into the recesses inside the cap to seal them.
- Insert the gasket into the cap with slight pressure.
- Screw the ring nut to apply the correct pressure on the gasket (max. 2.45Nm/1.81 ft-lbs).
- Secure the section of the terminated cable to the frame structure with cable ties.

Use of the AC trunk unlock tool

The AC trunk unlock tool must be used to disconnect the AC connector from the MICRO inverter or to remove the AC trunk plug cap from the connectors on the AC trunk cable.

The tool is used to release the two retaining clips on the connectors of the AC trunk cables. The disconnection or cap removal can be performed in three simple steps:

- Insert the AC trunk unlock took in the two holes on the connector or cap.
- Press to release the retaining clips.
- Remove the connector or cap.
The figures below illustrate the use of the AC-trunk unlock tool.

Disconnection of the MICRO inverter AC cable:

1. **Removal of the AC trunk plug cap**

2. **Wiring details**

   **Load protection switch (AC disconnect switch)**

   The dimensions of the thermal-magnetic circuit breaker should be determined by the number of MICRO inverters connected to a single AC line. A 20A thermal-magnetic circuit breaker represents the maximum value permitted for installation in a single AC line, sized based on the AC cable cross section (10 AWG).

   It is the installer’s responsibility to adequately size the overcurrent protection, based on the number and types of MICRO inverters in the system, see table 3-1 below.

<table>
<thead>
<tr>
<th>Protection breaker rating table 3-1</th>
<th>6A</th>
<th>10A</th>
<th>16A</th>
<th>20A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max number of inverters @240VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MICRO-0.25</td>
<td>4</td>
<td>7</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>MICRO-0.3HV</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Max number of inverters @208VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MICRO-0.25</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>MICRO-0.3HV</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>
**Differential protection downstream of the inverter**

ABB Micro inverters with a high frequency transformer are equipped with an isolation transformer for each of the DC/DC converters which operate at high frequency (switch-over frequency of the converter). This transformer allows for high frequency galvanic isolation between the DC and AC side of the system. In addition to this the inverters include protection mechanisms so that they cannot input ground fault currents.

The use of a switch with type A or AC differential magnetothermal protection with IΔn=30mA sensitivity is recommended.

**Choosing the interface protection system and device downstream of the inverter**

The inverter does not include any electromechanical devices (relays, contactors, etc.) for automatic disconnection from the power grid. The system must be provided with external protection for the physical disconnection of the MICRO inverters from the grid, in compliance with the applicable regulations and with the requirements of the installation country’s power distributor.

Such protection is typically composed of an interface protection system that analyzes and controls the grid parameters and, if necessary, sends commands to the interface device, in charge of physically disconnecting the PV installation MICRO inverters line.

CAUTION: To reduce the risk of fire, connect only to a circuit provided with 20A maximum branch circuit overcurrent protection in accordance with the National Electric Code (ANSI/NFPA 70)

**AC grid connections**

*To prevent electrical hazards, all the connection operations must be carried out with the disconnect switch downstream of the inverter (grid side) open and locked.*

- When connecting to the grid, all the AC cables coming from MICRO inverters must be joined inside a junction box.
- A single line cable must then form the connection to the distribution grid.
- Be mindful of the dimensions of the line cable. The grounding connection from the inverters is obligatory.
- A 4-wire AC cable must be used and maximum trunk cable allowed beyond the last inverter is limited to 15 feet.
- All the external connections to the insulated junction box (caps, adapters, etc.) must be made with securely-sealed ABB components.
Characteristics and sizing of the line cable

- The line cable (not supplied by ABB) runs between the junction box and the load distribution panel.
- The cross-section of the AC line conductor must be sized in order to prevent unwanted disconnections of the inverter from the grid due to high impedance of the line that connects the inverter to the power supply point.
- If the impedance is too high, it causes an increase in the AC voltage that, on reaching the limit set by the country of installation, causes the inverter to switch OFF.

The installation technician is responsible for selecting a cable of the appropriate length and cross section; refer to the technical data in the appendix.

Wiring of AC cable

The AC cables from the MICRO inverters have four conductors with different colors to identify the function of each conductor:

| L1 | red | Red AC-trunk spool -41 inches-50 plugs | AC cable (4 conductors): 10 AWG, wheelbase 41" 40 connectors |
| L2 | black | Black AC-trunk spool -67 inches-32 plugs | AC cable (4 conductors): 10 AWG wheelbase 67" 32 connectors |
| Neutral | white | White AC-trunk spool -81 inches-27 plugs | AC cable (4 conductors): 10 AWG wheelbase 81" 27 connectors |
| Ground | Green |

The installation technician is responsible for selecting a junction box with the appropriate dimensions and insulation. Do not reverse the phase with the neutral!

Close the junction box after the wiring is complete. Confirm that the seal is tight.

When connecting the inverter to the distribution grid, the configuration is made with the CDD. It is required that the CDD be installed with any ABB MICRO inverter in compliance with UL1741, for the purpose of indication and resetting of ground faults.
Operations

Commissioning

The MICRO inverter operating state is controlled through the CDD. The MICRO inverters must be acquired using the CDD before commissioning the inverter.

For commissioning and operation of the equipment, it is necessary to have a thorough knowledge of the CDD equipment and the functions that have been enabled in the installation. The CDD Quick Installation Guide is shipped with the CDD and can be found on the website along with the CDD product manual.

- When conducting the checks, confirm that the main AC disconnect (downstream from the system) and any other possible isolator switches are open.
- Confirm that all conductors and protective grounding points are connected.
- Check the position of all connection cables and the tightness of all nuts and terminals.
- Ensure that all electrical safeguards have been correctly installed.

Sequence of operations

- The steps to take for configuring the CDD, acquiring the MICRO inverters in the system and registering at the “AURORA VISION” portal are described in the both the CDD Quick Installation Guide or CDD product manual.
- Close the AC breaker (downstream from the system) and any other isolation switches to connect the system to the AC grid.
- Verify that all inverters are operational and harvesting energy by reviewing the CDD monitoring page. This step can be performed only when the PV modules have sufficient sunlight to harvest energy.

The incoming voltage must not exceed the maximum values shown in the technical data in order to avoid damaging the equipment. Consult the technical data in the appendix, part 7 of this manual for further details.

The following table describes the behavior of the LED during the startup phase and the static phase of the commissioning. For MICRO inverters without an LED on the front panel, the ground fault and other indications are reported on the CDD display and monitoring webpage.
### LED indicators

LED behavior of MICRO inverters with LED on front panel

<table>
<thead>
<tr>
<th>Phase</th>
<th>System Status</th>
<th>Description</th>
<th>DC Power</th>
<th>Grid Connection</th>
<th>Duration</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GREEN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RED</td>
</tr>
</tbody>
</table>

**START UP PHASE** (first 10 seconds during start up, followed by STATIC PHASE)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>DC Power</th>
<th>Grid Connection</th>
<th>Duration</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MICRO virgin</td>
<td>ON</td>
<td>OFF</td>
<td>10sec.</td>
<td>50% DUTY CYCLE, PERIOD 2SEC</td>
</tr>
<tr>
<td>2</td>
<td>MICRO acquired</td>
<td>ON</td>
<td>OFF</td>
<td>10sec.</td>
<td>SOLID GREEN</td>
</tr>
</tbody>
</table>

**STATIC PHASE**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>DC Power</th>
<th>Grid Connection</th>
<th>Duration</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>No DC present</td>
<td>OFF</td>
<td>OFF</td>
<td>Continuous</td>
<td>OFF</td>
</tr>
<tr>
<td>4</td>
<td>Boot issue</td>
<td>ON</td>
<td>OFF</td>
<td>Continuous</td>
<td>OFF</td>
</tr>
<tr>
<td>5</td>
<td>Ground Fault</td>
<td>ON</td>
<td>OFF</td>
<td>Continuous</td>
<td>OFF</td>
</tr>
<tr>
<td>6</td>
<td>Country Standard (CS) issue</td>
<td>ON</td>
<td>OFF</td>
<td>Continuous</td>
<td>OFF</td>
</tr>
<tr>
<td>7</td>
<td>Generic Alarm</td>
<td>ON</td>
<td>OFF</td>
<td>Continuous</td>
<td>50% DUTY CYCLE, PERIOD 2SEC</td>
</tr>
<tr>
<td>8</td>
<td>DC present, no alarm, no Grid Conn.</td>
<td>ON</td>
<td>OFF</td>
<td>Continuous</td>
<td>50% DUTY CYCLE, PERIOD 2SEC</td>
</tr>
<tr>
<td>9</td>
<td>DC present, Grid Connected</td>
<td>ON</td>
<td>ON</td>
<td>Continuous</td>
<td>10% DUTY CYCLE, PERIOD 10SEC</td>
</tr>
</tbody>
</table>

**Phase description**

1. MICRO not yet acquired by first connection of CDD
2. MICRO acquired by CDD
3. No DC source
4. MICRO does not load firmware
5. Ground fault detection
6. Loading country standard not compatible with existing firmware
7. MICRO malfunction or grid issue during running (e.g. voltage or frequency exceeding the limits to disconnection)
8. Grid issue at start up (e.g. voltage or frequency exceeding the limits to connection)
9. Normal running, exporting power
### Alarm messages generated by the MICRO inverter

The equipment communicates errors/warnings via radio to the associated CDD. Any messages received and related codes can be checked on the display for the CDD. To understand and address warning (Wxxx) or error (Exxx) messages generated by the MICRO inverters and displayed on the CDD, refer to the table below.

<table>
<thead>
<tr>
<th>Display code LED status</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>E001 blinking red Input OC</td>
<td>The error appears when the inverter input current exceeds the set overcurrent threshold. This may be caused by: a) sudden sunlight changes that may generate input current surges into the MICRO inverter b) PV module incompatible with the MICRO inverter input characteristics c) Faulty MICRO inverter</td>
<td>a) The error occurs sporadically and no action is required as the MICRO inverter will automatically reset to normal operation b) It is necessary to verify that the photovoltaic module specifications are compatible with the inverter. c) If conditions a) and b) have been verified and the error persists, the malfunction may be caused by an internal inverter fault.</td>
</tr>
<tr>
<td>E004 blinking red Vbulk OV</td>
<td>The error is generated when the voltage at the ends of the bulk capacitors exceeds the Over Voltage threshold. This may be caused by: a) Grid voltage too high b) Internal inverter fault</td>
<td>a) Check that the grid voltage is compatible with the MICRO inverter specifications. In the event of highly abnormal grid voltage, please contact your grid operator to address the problem. b) If no problems are found when checking the grid voltage, the alarm may be caused by internal inverter faults.</td>
</tr>
<tr>
<td>Display code</td>
<td>LED status</td>
<td>Alarm message</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>---------------</td>
</tr>
<tr>
<td>E006</td>
<td>blinking red</td>
<td>Output OC</td>
</tr>
<tr>
<td>E014</td>
<td>blinking green</td>
<td>OverTemp</td>
</tr>
<tr>
<td>Display code</td>
<td>LED status</td>
<td>Alarm message</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>E018</td>
<td>blinking green</td>
<td>Ground fault</td>
</tr>
<tr>
<td>E023</td>
<td>Blinking green</td>
<td>DC Injection</td>
</tr>
<tr>
<td>E024</td>
<td>Blinking red</td>
<td>Internal Error</td>
</tr>
<tr>
<td>Display code</td>
<td>LED status</td>
<td>Alarm message</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>---------------</td>
</tr>
<tr>
<td>E051</td>
<td>Solid red</td>
<td>Country Not Comp</td>
</tr>
<tr>
<td>E052</td>
<td>Solid red</td>
<td>Country mismatch</td>
</tr>
<tr>
<td>E501</td>
<td>Blinking green</td>
<td>Communication fault</td>
</tr>
<tr>
<td>W001</td>
<td>Blinking green</td>
<td>Vpanel Problem</td>
</tr>
<tr>
<td>Display code</td>
<td>LED status</td>
<td>Alarm message</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>---------------</td>
</tr>
<tr>
<td>W003</td>
<td>Blinking green</td>
<td>Grid Fail</td>
</tr>
<tr>
<td>W004</td>
<td>Blinking green</td>
<td>VAC OV</td>
</tr>
<tr>
<td>W005</td>
<td>Blinking green</td>
<td>VAC UV</td>
</tr>
<tr>
<td>W011</td>
<td>Solid red</td>
<td>Vbulk UV</td>
</tr>
<tr>
<td>W032</td>
<td>Blinking green</td>
<td>Pgrid limitation</td>
</tr>
<tr>
<td>W033</td>
<td>Blinking green</td>
<td>Pgrid Fgrid limitation</td>
</tr>
<tr>
<td>W034</td>
<td>Blinking green</td>
<td>Pgrid VAC high limitation</td>
</tr>
<tr>
<td>W035</td>
<td>Blinking green</td>
<td>Fgrid problem</td>
</tr>
</tbody>
</table>
Verification of ground leakage

In the presence of anomalies or report of ground fault, there may be a ground leakage from the photovoltaic module.

To check this, measure the voltage between the positive pole and ground and between the negative pole and ground using a voltmeter.

Behavior of a system without leakage

Due to the capacitive effect of the photovoltaic module, during the first moments that the voltmeter is connected between one of the two poles and ground, it will measure a voltage of about $V_{oc}/2$, which will tend to stabilize to around 0V if there is no ground leakage, as shown in the graph below:

The internal resistance of the voltmeter tends to zero the voltage present on the PV generator due to the capacitive effect

How to make the measurement:

Positive pole Vs Ground

Negative pole Vs Ground
Behavior of a system with leakage

If the voltage measured between one of the two poles and ground does not tend to 0V and stabilizes on a value, there is a ground leakage from the photovoltaic module.

Example: When the measurement is made between positive pole and ground, on a photovoltaic module with $V_{oc}$=37V, a voltage of 7V is measured.

Measuring the insulation resistance of the PV module

To measure the insulation resistance of the photovoltaic module compared to ground, the two poles of the PV generator must be short-circuited (using a suitably sized selector), and verify that the chassis of the module itself is referred to ground (of the inverter).

Once the short-circuit has been made, measure the insulation resistance ($R_{iso}$) using a megohmmeter positioned between the two shorted poles and ground (of the inverter).
If the measured insulation resistance is less than 1Kohm the inverter does not connect to the grid due to a low insulation of photovoltaic module respect to ground.

The insulation resistance is affected by the environmental conditions the photovoltaic module is in (E.g.: photovoltaic module wet from dump or rain); therefore, the measurement must be made immediately after the anomaly.

**Making a service call**

Call technical support at 877-261-1374. The following information is necessary to initiate a call. The model number, serial number, and week of production can be found on the INFORMATION menu of the CDD display and on the product label:

- Model number
- Serial number
- Week of production

State of LED:
- Status of light(s)
- Steady or flashing
- Error message or code

Identify the System structure:
- Information on the PV field
- Brand and model of PV panels

Provide a description of the conditions:
- Can the fault be reproduced? If so, how?
- Is the fault cyclical in nature? If so, how often?
- Was the fault apparent at the time of installation? If so, has it worsened?
- Describe the atmospheric conditions at the time the fault appears/appeared.
Routine maintenance

Routine maintenance is recommended to maintain efficient operation of the PV installation. For cleaning, DO NOT use rags made of filamentary material or corrosive products that may corrode parts of the equipment or generate electrostatic charges. The maintenance schedule may vary depending on the environmental conditions of the installation.

⚠️ *Maintenance operations must be carried out with the equipment disconnected from the grid (power switch open) and the photovoltaic modules obscured or isolated, unless otherwise indicated.*

The table below describes routine maintenance recommended to maintain efficient operation of the installation.

<table>
<thead>
<tr>
<th>Annual operations</th>
<th>Check that there has been no drastic change in the installation conditions that might have a negative influence on radio communication with the MICRO inverter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual cleaning</td>
<td>Conduct an annual visual inspection (where possible) on the various components (DC cables, MICRO inverters, and AC cables) to check for dust, dirt, moisture and water seepage.</td>
</tr>
</tbody>
</table>

⚠️ *Do not attempt to dismantle the equipment or make any internal repairs! In order to preserve the integrity of their safety and insulation, MICRO inverters are not designed to allow internal repairs.*

⚠️ *The AC output wiring harness (AC drop cable on the MICRO inverter) cannot be replaced. If the cord is damaged the equipment should be scrapped.*
Storage and dismantling

If the equipment is not used immediately or is stored for long periods, check that it is packaged correctly and contact customer service for storage instructions. The equipment must be stored in well-ventilated indoor areas in a noncorrosive environment. Restarting after a long period requires the removal of oxidation and dust that may have settled inside the equipment if not suitably protected.

ABB CANNOT be held responsible for disposal of the equipment, displays, cables, batteries, etc. The customer must dispose of these substances, which are potentially harmful to the environment, in accordance with the regulations in force in the country of installation.

If the equipment is dismantled, follow the regulations in force in the country of destination and avoid causing any kind of pollution upon disposal. Use dumps suitable for disposal of the various types of materials listed below.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>MATERIAL OF CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame, brackets, supports</td>
<td>Arc-welded steel FE37</td>
</tr>
<tr>
<td>Casing or covers</td>
<td>ABS, plastic</td>
</tr>
<tr>
<td>Paint and</td>
<td>RAL</td>
</tr>
<tr>
<td>Gaskets and seals</td>
<td>Rubber / Teflon / Viton</td>
</tr>
<tr>
<td>Electrical cables</td>
<td>Copper / Rubber</td>
</tr>
<tr>
<td>Conduits</td>
<td>Polyethylene / Nylon</td>
</tr>
<tr>
<td>Back-up battery</td>
<td>Nickel / Lead / Lithium</td>
</tr>
</tbody>
</table>
The MICRO inverter system

This system is composed of a group of MICRO Inverters that convert direct electric current from a photovoltaic module into alternating electric current and feed it into the utility grid.

Photovoltaic modules transform energy from the sun into direct current (DC) electrical energy (through a photovoltaic field, also called photovoltaic module). In order to use it, it is necessary to transform the type of current into alternating “AC”. This conversion, known as DC to AC inversion, is made efficiently without using rotating parts and only through static electronic devices.

In order to allow inverter operation in safe thermal and electrical conditions, in the event of adverse environmental conditions or unsuitable input voltage values, the unit automatically reduces the value of the power fed into the grid. This way the solar energy system compensates for the energy drawn from the utilities connected to the grid to which it is linked. The solar energy system then powers all connected electrical devices, from lighting to household appliances, etc.

When the photovoltaic system is not supplying sufficient power, the power needed to ensure normal operation of the connected electrical devices is drawn from the utility grid. If, on the other hand, excess power is produced, this is fed directly into the grid, becoming available to other consumers.

In accordance with local and national regulations, the power produced can be sold to the grid or credited towards future consumption. Each inverter will work independently of the others and will supply the grid with the maximum power available from its photovoltaic panel.

Characteristics of MICRO inverters

Unlike systems subdivided into strings controlled by one or several inverters, systems of this sort are built for the incorporation of a MICRO inverter for each photovoltaic module.

Each MICRO inverter works independently of the others, and its own photovoltaic module supplies the maximum power available to the grid. This setup enables a direct control over the production of a single photovoltaic module, consequently optimizing production as much as possible.
Functionality of the equipment

Data transmission and control
The MICRO inverters are monitored remotely through an advanced communications system based on a wireless connection and the CDD. In addition to local monitoring of the system, it is possible to have remote data visualization through an internet access to AURORA® VISION web portal.

Single photovoltaic module management benefit
There are many advantages of having each MICRO inverter monitor a single photovoltaic module:
• Capability of viewing each module’s production
• Possibility of controlling when to clean each module, as necessary
• Ease of service interventions from the possibility of singling out individual modules or inverter that are down.
• Preservation of production even if there is a malfunctioning module or inverter

Protective devices

Anti-Islanding
In accordance with required national standards and laws, in the event of a local grid outage by the utility, or when the grid equipment is switched OFF for maintenance operations, the inverter must be physically and safely disconnected, to ensure protection of personnel working on the grid. To prevent possible islanding, the inverter has an automatic protective disconnection system called “Anti-Islanding”.

Ground fault in the photovoltaic modules
An advanced ground fault protection circuit continuously monitors the ground connection and disconnects the inverter if a ground fault occurs, indicating this condition by means of the red GFI LED on the LED panel of the CDD. It is required that the CDD be installed with any MICRO inverter in compliance with UL1741, for indicating and resetting ground faults.

Protective devices
The inverter is equipped with additional protective devices to facilitate safe operation. These protective devices include:
• Continuous monitoring of the grid voltage to ensure the voltage and frequency values stay within operating limits;
• Control of internal temperatures to automatically limit the power if necessary to ensure the unit does not overheat (derating).
**Efficiency curves**

Graphs of the efficiency curves of all the models of inverter described in this manual are shown below. The efficiency curves are linked to technical parameters that are continually being developed and improved and should therefore is considered approximate.
Power reduction curves

In order to allow inverter operation in safe thermal and electrical conditions, the unit automatically reduces the value of the power fed into the grid. Power reduction can take place due to adverse environmental conditions or due to unsuitable input voltage values.

Power reduction due to temperature

Power reduction and temperature at which it occurs depend on many parameters other than ambient temperature, such as input voltage, grid voltage, etc. The inverters can decrease power output during certain periods of the day according to these parameters.

---

**Temperature derating**

**MICRO-0.25-I**

![Temperature derating MICRO-0.25-I](image)

**Temperature derating**

**MICRO-0.3-I**

![Temperature derating MICRO-0.3-I](image)
Power reduction due to input voltage
The graphs show the automatic reduction of supplied power when input voltage values are too high or too low.

The conditions for power reduction due to environmental conditions and input voltage can also occur at the same time, but the power reduction will always relate to the lower value measured.
Output Power Vs Input voltage derating @ Tamb up to 65°C
MICRO-0.3-I

Output Power Vs Input voltage derating @ Tamb = 75°C
MICRO-0.3-I
Block diagram

The diagram at right summarizes the layout of the MICRO inverter. The main blocks are the DC-DC input converter (the “boost” section) and the DC-AC output inverter. Both work at a high switching frequency, are small and relatively light.

The inverter is equipped with a single input converter with Maximum Power Point Tracking (MPPT) to which it is possible to connect a single photovoltaic module. This means that the modules connected to the MICRO inverters could be installed in different positions and orientations. This inverter is equipped with a high-frequency transformer, in other words with galvanic isolation of the primary (DC side) from the secondary (AC side), while maintaining very high performance in terms of output and energy export. This type of circuit allows for the grounding of the positive input pole.

The inverter is controlled by two independent DSPs (Digital Signal Processors) and a central microprocessor. The connection to the power grid is thus kept under control by two independent monitors, in full compliance with the electric field norms both for power supply to the systems as well as security.

The wireless communication system inside the MICRO inverter transmits the information to the CDD device that analyzes and manages all system data. All this guarantees optimal operation of the entire unit and high efficiency in all insolation and load conditions, always in full compliance with the relevant directives, standards and provisions.
Wiring diagram – 208Vac three phase

If several MICRO inverters are installed in a three-phase AC GRID, it is recommended to distribute the inverters between the phases in order to reduce the power unbalances between the phases. Refer to the local standards.
Wiring diagram – 240Vac split phase

- AC-TRUNK END CAP
- AC-TRUNK SPOOL-41inches-50plugs
- AC-TRUNK SPOOL-67inches-32plugs
- AC-TRUNK SPOOL-81inches-27plugs
- ABB AC cable: Black - L1, Red - L2, White - Neutral, Green - Ground
- Junction Box
- Meter
- Equipment Ground Conductor
- Solar Panel
- Equipment Collector
- AC distribution panel
- Main AC load breaker
- 20A Circuit Breaker per AC trunk
- NEMA 2-15 Receptacle
- Grounding Conductor
- Neutral BUS
- Ground BUS
- NEMA 2-15 Receptacle
- WIFI or Ethernet
- CDD Power Adapter
- Reader
- Up to 15 MICRO-0.25-I-OUTD-US @ 240Vac
- Up to 12 MICRO-0.3-I-OUTD-US @ 240Vac
- CDD (Indoor) Up to 30 MICRO inverters
- AC-TRUNK 4.23L-OUTD-US @ 240Vac
- AC-TRUNK 4.3L-OUTD-US @ 240Vac
- Conduct or other NEC accepted wiring method
- The main AC breaker should be opened prior to disconnecting AC connectors

The diagram includes various electrical components and connectors, illustrating the wiring setup for a 240Vac split phase system.
Template for system installation diagram

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Orientation:

Azimuth: 

Tilt: 

Page of...

Affix the detachable label to each field on the map (located on the rear side of the inverter) bearing the serial number of the PVI-MICRO.
## Technical data and types

<table>
<thead>
<tr>
<th>Type code</th>
<th>MICRO-0.25-I-OUTD</th>
<th>MICRO-0.3-I-OUTD</th>
<th>MICRO-0.3HV-I-OUTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal output power</td>
<td>250W</td>
<td>300W</td>
<td>300W</td>
</tr>
<tr>
<td>Rated grid AC voltage</td>
<td>208V</td>
<td>240V</td>
<td>208V</td>
</tr>
<tr>
<td>Maximum output power</td>
<td>260W</td>
<td>310W</td>
<td>310W</td>
</tr>
<tr>
<td>Input side (DC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum usable DC input power</td>
<td>235°Wp</td>
<td>320°Wp</td>
<td>320°Wp</td>
</tr>
<tr>
<td>Maximum PV panel rating (STC)</td>
<td>300W</td>
<td>360W</td>
<td>360W</td>
</tr>
<tr>
<td>Absolute maximum voltage (Vmax)</td>
<td>65V</td>
<td>65V</td>
<td>79V</td>
</tr>
<tr>
<td>Start-Up voltage (Vstart)</td>
<td>25V</td>
<td>25V</td>
<td>25V</td>
</tr>
<tr>
<td>Full power MPPT voltage range</td>
<td>25-60V</td>
<td>20-60V</td>
<td>30-75V</td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>12-60V</td>
<td>12-60V</td>
<td>12-60V</td>
</tr>
<tr>
<td>Maximum usable current (Ibusmax)</td>
<td>10.5A</td>
<td>10.5A</td>
<td>10.5A</td>
</tr>
<tr>
<td>Maximum short circuit current limit</td>
<td>12.5A</td>
<td>12.5A</td>
<td>12.5A</td>
</tr>
<tr>
<td>DC connection type</td>
<td>Amphenol H4 PV connector</td>
<td>Amphenol H4 PV connector</td>
<td>Amphenol H4 PV connector</td>
</tr>
<tr>
<td>Output side (AC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grid connection type</td>
<td>1Ø/2W</td>
<td>Split-Ø/3W</td>
<td>1Ø/2W</td>
</tr>
<tr>
<td>Adjustable voltage range</td>
<td>183V-228V</td>
<td>211V-264V</td>
<td>183V-228V</td>
</tr>
<tr>
<td>Nominal grid frequency</td>
<td>60Hz</td>
<td>60Hz</td>
<td>60Hz</td>
</tr>
<tr>
<td>Adjustable grid frequency range</td>
<td>57-60.5Hz</td>
<td>57-60.5Hz</td>
<td>57-60.5Hz</td>
</tr>
<tr>
<td>Maximum output current</td>
<td>1.20A</td>
<td>1.04A</td>
<td>1.25A</td>
</tr>
<tr>
<td>Power factor</td>
<td>&lt;0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum number of inverters per string</td>
<td>13</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Grid wiring termination type</td>
<td>18AWG drop cable from inverter to 10AWG AC trunk cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output protection devices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>Yes; polarized PV connectors (Amphenol H4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum efficiency</td>
<td>96.5%</td>
<td>96.5%</td>
<td>96.5%</td>
</tr>
<tr>
<td>CEC efficiency</td>
<td>96%</td>
<td>96%</td>
<td>96%</td>
</tr>
<tr>
<td>Operating performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand-by consumption</td>
<td>&lt;0.5mW</td>
<td></td>
<td>&lt;0.5mW</td>
</tr>
<tr>
<td>Communication</td>
<td>Wireless and web-based monitoring through AURORA CDD (CDD required for compliance to UL1741)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient air operating temperature range</td>
<td>-40°F to +116°F (-40°C to +75°C)</td>
<td>Derating above +149°F (+65°C)</td>
<td></td>
</tr>
<tr>
<td>Ambient air storage temperature range</td>
<td>-40°F to +167°F (-40°C to +80°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>0-100% RH condensing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acoustic noise emission level</td>
<td>&lt; 30 db (A) @1m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum operating altitude without derating</td>
<td>6560 ft (2000 m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical specifications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure rating</td>
<td>NEMA 4X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td>Natural convection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>10.5 x 9.7 x 1.37 in (266 x 246 x 35mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>≤ 3.5 lb (1.6 kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting system</td>
<td>Rack mounting with M6, 1/4&quot; or 5/16&quot; bolt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation level</td>
<td>HF transformer</td>
<td></td>
<td></td>
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<tr>
<td>Safety and EMC standard</td>
<td>UL1741, CSA C22.2 N. 107.1-01, EN61000-6-2, EN61000-6-3, FCC Part 15</td>
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<td></td>
</tr>
<tr>
<td>Warranty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard warranty</td>
<td>10 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available models</td>
<td>MICRO-0.25-I-OUTD  US-208/240</td>
<td>MICRO-0.3-I-OUTD US-208/240</td>
<td>MICRO-0.3HV-I-OUTD US-208/240</td>
</tr>
</tbody>
</table>

1. With derating below 200V for 208Vac operation
2. This is the maximum input power that the inverter will utilize
3. Only use PV modules that satisfy these parameters under all operating conditions.
Further information

For more information on ABB products and services for solar applications, navigate to www.abb.com/solarinverters