Related Manuals
EcoDesign (EU 2018/1981) About this document
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Check the compatibility with IT (ungrounded) system

WARNING! Do not install the drive with the internal EMC filter and shield-visitior connected on an IT system (an ungrounded power system or a high resistance-grounded power (over 100 ohm) system).

If you connect the drive to an IT (ungrounded), disconnect the EMC filter and shield-visitior before connecting the drive to the supply network. Information about how to deal with it, please see chapter Electrical installation of ACH531 firmware manual (3AXD50000728282 [EN]).

Connecting the power cable

Connection diagram

A two protective earth (ground) conductors. Drive safety standard IEC61800-5-1 requires two PE conductors, if the cross-sectional area of the PE conductor is less than 4 mm². The PE conductor must be connected to the PE terminal, and the PE cable shield must be connected to the non-conductive shield of the PE cable.

• Separate a ground cable or PE conductor. The PE cable shield for the wire, if the conductivity of the fourth conductor or shield does not meet the requirements of section 3.6.

360-degree grounding of the cable shield is required for the motor cable and brake. If the PE conductor (if used) is also recommended for the PE power cable.

• Make sure there is a systematically constructed ground cable on the motor cable; instead of the conductive shield, connect the grounding conductor to the grounding terminal at the drive input and motor ends.

Do not use an asymmetrically constructed motor cable for motors above 30 kW. Earthling at the motor input reduces current and power consumption, damages the motor bearing and even the motor.

Motor cables

Prepare the ends of the cable as illustrated in the Figure. Two different motor cable types are shown in the Figure (4.3).

Note: The bare shield will be grounded 360 degrees.

Connection procedure

1. Select the modbus wiring warning indicator in the local language next to the control board.
2. Remove the shield on the power cable terminals by releasing the clips with a screwdriver.
3. Connect the power cables to the motor cables as illustrated in the Figure. Note: The bare shield will be grounded 360 degrees. Mark the digital cable shielded PE conductor for the PE conductor and the PE cable shield green.
4. Slide the cables through the holes of the bottom plate. the motor cable to the right and the input power cable to the left.
5. Connect the motor cable.
6. Ground the shield 360 degrees under the grounding clamp. Connect the twisted cable shield to the cable grounding terminal. The phase conductors of the cable to the L1, L2, L3 and T1 terminals.
7. Connect the power cable shield to the ground plate, PE cable shield to the ground plate, PE cable shield to the control board, PE cable shield to the control board.
8. Connect the control cables with grounding frame.
9. Ground the outer plate of the power cable terminals.
10. Secure the cables with the external cable holder.
11. Ground the motor cable shield at the motor end. For minimum radio frequency interference, ground the motor cable shield 360 degrees at the back of the motor housing. Remove the cable shield (if used). It is also recommended for the input power cable.

Note: Make sure that debris from borings and grindings does not enter the drive when installing.

Make sure that the floor below the drive and the wall where the drive is installed are non-flammable.

Check if capacitors need to be reformed

If the drive has been stored for a year or more, you must reform the capacitors. Use the following method:

1. Do not work on the drive, motor cable or motor when main power is applied. If the drive is already connected to the input power, wait for 5 minutes after disconnecting the input power.
2. Do not work on the control cables when powered on the drive or the external control circuits.
3. Use the lifting eyes of the drive when you lift the drive. Do not lift the drive. The drive is heavy and its center of gravity is high. An overturning drive can cause physical injury.
4. Make sure that debris from borings and grindings does not enter the drive when installing.
5. Make sure that the floor below the drive and the wall where the drive is installed are non-flammable.

Installing the drive vertically, frames size R6…R9

1. Mark the hole locations using the mounting template included in the package. Do not leave the mounting template or the other drive components on the frame's bottom part, the drive frame is heavy.
2. Drill the mounting holes.
3. Insert the screws or bolts into the holes.

Check the insulations of the power cables and the motor

Check the insulation of the input cable according to local regulations before connecting it to the drive.

Check the insulation of the motor cable and motor when connecting it to the drive. Measure the insulation resistance between each phase conductor and the protective earth conductor using a measuring voltage of 500 V DC. The insulation resistance of all the motor cable must exceed 30 MΩ. This value guarantees the insulation resistance of other motors, see the manufacturer’s instructions. Do not transport the drive until the value is achieved. The drive losses during transport will reduce the insulation resistance. If moisture is suspected, dry the motor and reset the measurement.

Installing the drive

Warning! The drive is heavy (40 to 80 kg). Use a suitable lifting device. Do not lift the modular manually. Make sure that the wall and the fixing device can carry the weight.

1. In the Options menu, move to the Default I/O connections (Hand/Auto macro). Press OK button to open the menu.
2. Move to the selection menu.
3. Select the input and output reference (default value).
4. Change the rotation direction.
5. Connect the cable as shown in the Figure. Connect the control cables to the appropriate terminals of the control board according to to L1, L2, L3, T1, T2, T3.
6. The all control cables to the provided cable dresser.

Default I/O connections (Hand/Auto macro)

Note: Make sure that floor below the drive and the wall where the drive is installed are non-flammable.
### Main menu

<table>
<thead>
<tr>
<th>Par. No.</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.01</td>
<td>Motor speed used</td>
<td>-30000.00…30000.00</td>
</tr>
<tr>
<td>01.06</td>
<td>Output frequency</td>
<td>-500.00…500.00</td>
</tr>
<tr>
<td>01.07</td>
<td>Motor current</td>
<td>0.00…30000.00</td>
</tr>
<tr>
<td>01.08</td>
<td>Motor torque</td>
<td>-1600.0…1600.0</td>
</tr>
<tr>
<td>05.11</td>
<td>Inverter temperature</td>
<td>-40.0 … 160.0</td>
</tr>
<tr>
<td>12.17</td>
<td>AI1 min</td>
<td>-22.000 … 22.000 mA or V</td>
</tr>
<tr>
<td>12.18</td>
<td>AI1 max</td>
<td>-22.000 … 22.000 mA or V</td>
</tr>
</tbody>
</table>

### Submenus

1. **Drive type.**
2. **Motor data - motor parameters**
   - Nominal power (A2B3 2330)
   - Nominal voltage (A2B3 2330)
   - Nominal current (A2B3 2330)
   - Nominal speed (A2B3 2330)
   - Nominal torque (A2B3 2330)
   - Motor power factor (A2B3 2330)

### Connection macro

1. **Start mode - Auto, Scan, Dec., LC, DC boost, Ramp.**
2. **Acceleration time**
3. **Deceleration time**
4. **Maximum allowed speed**
5. **Maximum allowed current**
6. **Minimum allowed speed**

### Energy Efficiency

- **Energy efficiency**
- **Backup**

### Fault and Warning

- **Fault:**
- **Warning:**

### Drive and panel communication failure

- The display shows warnings and faults if a problem has been found.
- If you need immediate attention, consult your local representative.
- For detailed information, refer to the Firmware manual.
- The display shows warnings and faults if any.

### Status light

- 

### List of most commonly used parameters

By default, drive shows short parameter list. For the complete list of parameters, refer to the drive firmware manual.

### Terminal data for the power cables

- **Typical power cable size**
  - **Max. wire size (solid/stranded):**
  - **Max. cable torque:**

### Ratings, fuses and power cable dimensions

#### AC/DC 1100

<table>
<thead>
<tr>
<th>Output phase loss</th>
<th>Motor circuit fault due to missing motor connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>(B)</td>
</tr>
</tbody>
</table>

### Markings

The applicable markings are shown on the type label of the product.