ACS510 drives
Quick installation and start-up guide

Safety instructions

**WARNING!** Obey these instructions. If you ignore them, injury or death, or damage to the equipment can occur. If you are not qualified electrically, professional, do not do electrical installation or maintenance work.

- Do not do work on the drive, motor, cable, or control cables when the drive is connected to the input power. Before you start work, isolate the drive from all dangerous voltage sources and make sure that it is safe to start the work. Always wait for 5 minutes after disconnecting the input power to let the transistor cool down. Do not do work on the drive when a rotating permanent magnet motor is connected to it. A rotating permanent magnet motor energizes the drive, including its input and output terminals.

1. Unpack the delivery

Keep the drive in its package until you are ready to install it. After unpacking, protect the drive from dust, debris and moisture. Make sure that these items are anchors.

2. Reform the capacitors

- If the drive has not been powered up for a year or more, you must reform the DC link capacitors. The insulation resistance of an ABB motor must be at least 200 Mohms (at 25°C / 77°F). For the insulation resistance of other motors, refer to the manufacturer’s documentation. Moisture in the motor decreases the insulation resistance. If you think that there is moisture in the motor, dry it and do the measurement again.

3. Measure the insulation resistance

- Measuring the insulation is typically not required in North America. Drive: Do not do voltage tolerance or insulation resistance tests on the drive, because this can cause damage to the drive.

4. Select the cables and fuses

- Select the power cables. Obey the local regulations.

5. Examine the site where you will install the drive. Make sure that:

- There is sufficient space around the drive for cooling, maintenance, and operation. For the minimum free space requirements, refer to the Installation manual (available from ABB).

6. Attach the clamping plates

- Make sure that the motor cable is connected to the motor and disconnected from the drive output terminals U2, V2 and W2.

7. Power up the drive

- Make sure that the drive is correctly installed.

8. Make sure that the drive is compatible with the grounding system

- Use symmetrical shielded cable (VFD cable) for the best EMC performance. Symmetrical shielded cable also reduces radiating currents, wear, and stress on motor insulation.

9. Select the application macro

- Use symmetrical shielded cable (VFD cable) for the best EMC performance. Symmetrical shielded cable also reduces radiating currents, wear, and stress on motor insulation.

10. Connect the control cables

- Do the connections according to the default control connections of the application macro (ABB STANDARD).

- Refer to Fuses and typical power cable sizes for the typical cable selection.

11. Start up the drive

- Make sure that it is safe to start the motor. Disconnect the drive from all dangerous voltage sources and make sure that it is safe to start the drive.

Before you start up the drive, make sure that the installation is completed and that you have the motor nameplate data available.
Fault codes

F0022 INPUT PHASE LOSS - The intermediate circuit DC voltage oscillates because of a phase loss.

F0016 EARTH FAULT - There is an earth (ground) fault in the motor or motor cable.

F0009 MOT OVERTEMP - The motor temperature is too high or the start-up data is incorrect.

F0006 DC UNDERVOLT - The intermediate circuit DC voltage is too low.

F0004 SHORT CIRC - There is a short-circuit in the motor cable(s) or motor.

F0003 DEV OVERTEMP - Drive IGBT temperature is too high.

F0002 DC OVERVOLT - The intermediate circuit DC voltage is too high.

F0001 OVERCURRENT - The output current is higher than the trip limit.

Accelerate/decelerate times

I1N (480 V) continuous rms input current (for dimensioning cables and fuses) for drives with 480 V input voltage.

I2,1/10 maximum (50% overload) current permitted for one minute every ten minutes.

I2N continuous rms current. 50% overload is permitted for one minute every ten minutes.

Ambient conditions

- Temperature: -10 … +50 °C (-14 … 122 °F). No frost permitted. The rated output must be derated by 1% for each 100 m (328 ft) above 1000 m (3280 ft). Relative humidity: 0 … 95%. No condensation permitted. Maximum permitted relative humidity is 60% in the presence of corrosive gases.

Fuses and typical power cable sizes

<table>
<thead>
<tr>
<th>Frame size</th>
<th>UL, V1, W1, UL, V2, W2, BRK+, BRK-</th>
<th>PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>169 x 6.65</td>
<td>24 x 6.0/4.0</td>
<td>10</td>
</tr>
<tr>
<td>202 x 7.95</td>
<td>30 x 6.7/4.0</td>
<td>15</td>
</tr>
<tr>
<td>239 x 9.41</td>
<td>38 x 8.3/5.3</td>
<td>22</td>
</tr>
</tbody>
</table>

Fuses - Size of conductor (Cu)

<table>
<thead>
<tr>
<th>Min. Wire Size</th>
<th>Max. Wire Size (Cu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25/0.2</td>
<td>4</td>
</tr>
<tr>
<td>0.25/0.2</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Terminal data for the power cables

<table>
<thead>
<tr>
<th>UL, V1, W1, UL, V2, BRK+, BRK-</th>
<th>PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>220 V 25/35 DIN 47250</td>
<td>15</td>
</tr>
<tr>
<td>220 V 16/20 DIN 47250</td>
<td>15</td>
</tr>
<tr>
<td>220 V 10/10 DIN 47250</td>
<td>15</td>
</tr>
</tbody>
</table>

Dimensions and weights

Free space requirements

Related documents

ACS150 user’s manual
ACS150 manual list
Ecodesign information

Set the acceleration time 1 (2202) and deceleration time 1 (2203).

Select the direction of the motor rotation.

2) Stop driving a napping defined by parameters.

The terminals do not accept a conductor that is one size larger than the maximum specified wire size.

The number of conductors per terminal is 1.

Ambient conditions

- Installation altitude: 0 … 2000 m (0 … 6600 ft) above see level. The rated output must be derated by 1% for each 100 m (328 ft) above 1000 m (3280 ft).

- Surrounding air temperature: -10 to 40 °C (-14 to 104 °F). No frost permitted. The rated output current must be derated by 1% for each 1 °C (1.8 °F) above 40 °C (104 °F).

- Relative humidity: 0 … 90%. No condensation permitted. Maximum permitted relative humidity is 60% in the presence of corrosive gases.

- Contamination levels: NEMA 4 (solid or PE Brake) or motors.

- UL Class: UL Class 2.

- CSA (A) Class: CSA (A) Class 2.

- CE: CE Class 2.

Markings

- The applicable markings are shown on the type designation label.