To install the drive with screws
1. Make sure that the markings on the drive are visible and easy to read.
2. Use the included mounting template for frames R3 and R4.
3. Loosen the screws on the front cover.
4. Cut the wires to the correct length.
5. Tighten the screws.

To install the drive to a DIN rail
1. Make sure that the drive is of the correct size for the DIN rail.
2. Assemble thefdbus terminals.
3. Insert the drive into the DIN rail.
4. Tighten the screws.

To install the drive with screws
1. Make sure that the markings on the drive are visible and easy to read.
2. Use the included mounting template for frames R3 and R4.
3. Loosen the screws on the front cover.
4. Cut the wires to the correct length.
5. Tighten the screws.

To install the drive with screws
1. Make sure that the markings on the drive are visible and easy to read.
2. Use the included mounting template for frames R3 and R4.
3. Loosen the screws on the front cover.
4. Cut the wires to the correct length.
5. Tighten the screws.
12. Start up the drive

**WARNING** Before you start up the drive, make sure that the installation is completed. Make sure also that it is safe to start the motor.

Disconnect the motor from other machinery if there is a risk of damage or injury.

The control panel has softkeys below the display to access the related functions. If you activate the automatic fault reset or automatic calibration function, make sure that the installation is completed and the drive is ready to operate. The installation must be clearly marked if these functions are activated, the installation must be clearly marked and the service instructions of the STO warning indication (parameter 31.22) delay: < 1000 ms.

- Push the "?" button to open the help function.
- Markings
  - The drive has a Safe torque off (STO) in accordance with IEC/EN 61800-5-2. It can be used, for example, as the final actuator device of safety circuits that stop the drive in case of danger (such as an emergency stop circuit).

When activated, the STO function disables the control voltage of the power semiconductors of the drive output stage, thus preventing the drive from generating the torque required to rotate the motor. The control panel can be deactivated using the "Enable STO" key. If Safe torque off is activated, it coasts to a stop. Closing the activation switch deactivates the STO. Any faults generated must be reset before restarting.

The STO function has a redundant architecture, that is, both channels must be used in the safety function implementation. The safety data given is calculated for redundant use, and does not apply if both channels are not used.

**WARNING** The STO function does not disconnect the voltage from the mains and auxiliary circuits of the drive.

### Fieldbus settings

If necessary, configure the drive for fieldbus communication. The table below shows the minimum set of parameters required to configure Modbus RTU communication through the embedded fieldbus interface. For a fieldbus adapter, refer to the applicable fieldbus adapter documentation.

<table>
<thead>
<tr>
<th>Fieldbus type</th>
<th>Communication protocol</th>
<th>I/O type</th>
<th>I/O pin assignment</th>
<th>Status bit</th>
<th>Communication parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modbus RTU</td>
<td>Modbus RTU</td>
<td>Digital</td>
<td>0</td>
<td>0</td>
<td>Parity: 8 EVEN 1 (default)</td>
</tr>
</tbody>
</table>

### Warnings and faults

**Warning** Fault descriptions

- ACS: A side-mounted option requires approximately 20 mm (0.8 in) of space on the right side of the drive.

### Fuses and typical power cable sizes

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Current (A)</th>
<th>Voltage (V)</th>
<th>Wire size (AWG)</th>
<th>Wire size (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-core</td>
<td>150</td>
<td>480</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>3-core</td>
<td>150</td>
<td>480</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

**Notes:**

- If stopping by coasting is not acceptable, stop the drive and machinery using the appropriate stop mode before activating the STO.
- The STO function overrides all other functions of the drive.

**Wiring**

The safety contacts must open/close within 200 ms of each other. Double-insulated twisted pair cable is recommended for the connection.

**Validation**

To ensure the safe operation of a safety function, a validation test is required. The test must be carried out on a suitably approved test bench with adequate observation and knowledge of the safety function. The test procedures and reports must be documented and signed by the test body. The test instructions of the STO function can be found in the drive hardware manual.

**Technical data**

- Minimum voltage at IN1 and IN2 to be interpreted as “1”: 13 V DC
- STO reaction time (shortest detectable break): 1 ms
- STO response time: 2 ms (typical), 5 ms (maximum)
- Fault detection time: Channels in different states for longer than 200 ms
- Fault reaction time: 2 ms (typical), 5 ms (maximum)
- STO fault indication (parameter 32.02 delay): + 500 ms
- STO warning indication (parameter 32.02 delay) + 500 ms
- Safety integrity level (EN 62061): SIL 3

The drive STO is a type A safety component as defined in IEC 61508-2. For the full safety data, exact failure rates and failure modes of the STO function, refer to the drive hardware manual.

### Ambient conditions

- Temperature: -10 … +60 °C (14 … 140 °F). No frost permitted.
- Humidity: 0 … 40% RH. No condensation.
- Pollution degree: No conductive dust permitted.
- Surrounding air conditions: Max. pressure at maximum load.

**IEC 61800-5-2:2016**

- IEC 61508:2010, parts 1-2
- EN 60204-1:2018
- EN 61800-5-2:2007
- EN 61800-5-2:2016

### Dimensions and weights

**Free space requirements**

<table>
<thead>
<tr>
<th>Width (mm)</th>
<th>Height (mm)</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>600</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Weight (kg)**

- 11A6-1: 120
- 09A3-1: 100
- 06A9-1: 80
- 04A8-1: 60

**Dimensions (mm)**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Width</th>
<th>Height</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>400</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Maximum</td>
<td>600</td>
<td>600</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Markings**

The applicable markings are shown on the type designation label of the drive.