ABB DRIVES FOR WATER

ACQ580-34 drive modules
Quick installation guide
## List of related manuals

<table>
<thead>
<tr>
<th>Drive hardware manuals and guides</th>
<th>Code (English)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive/ converter/inverter safety instructions</td>
<td>Multilingual code: 3AXD50000037978</td>
</tr>
<tr>
<td>ACQ580-34 drive modules hardware manual</td>
<td>3AXD500000420025</td>
</tr>
<tr>
<td>ACQ580-34 drive modules quick installation guide</td>
<td>3AXD500000424634</td>
</tr>
<tr>
<td>ACX-AP-a Assistant control panels user’s manual</td>
<td>3AAU0000085685</td>
</tr>
<tr>
<td>Recycling instructions and environmental information for ACS880-04, ACS880-14, ACS880-34, ACS5580-04, ACS5580-04 and ACH580-04 drives</td>
<td>3AXD500000137688</td>
</tr>
</tbody>
</table>

### Drive firmware manuals and guides

| ACQ580 pump control program firmware manual | 3AXD50000035867 |
| ACH580 drives with pump control program quick startup guide | 3AXD50000048773 |

### Option manuals and guides

| DPMP-02/03 mounting platform for control panels installation guide | 3AAU00000136205 |
| CPTC-02 ATEX-certified thermistor protection module, Ex II (Z) GD (+L537+Q971) user’s manual | 3AXD50000030058 |
| FOCH du/dt filters hardware manual | 3AFE68577519 |
| Sine filters hardware manual | 3AXD50000016814 |

Manuals and quick guides for I/O extension modules, fieldbus adapters, etc.

You can find manuals and other product documents in PDF format on the Internet. See section Document library on the Internet on the inside of the back cover. For manuals not available in the Document library, contact your local ABB representative.

The code below opens an online listing of the manuals applicable to the product:

![ACQ580-34 manuals](image-url)
EN – Quick installation guide

Contents of this guide
This guide tells you briefly how to install the drive module into a 800 mm wide Rittal VX25 cabinet. For installation examples in different cabinets and more detailed instructions, engineering guide lines, technical data and complete safety instructions, see the hardware manual (www.abb.com/drives, Select Document Library and search for document number 3AXD50000420025 [English]).

Obey the safety instructions
See figures on page 9. If you ignore these instructions, injury or death, or damage to the equipment can occur.

WARNING! Handle the drive module carefully. Open the support legs by pressing each leg a little down and turning it aside (1, 2).

Do not tilt the drive module. It is heavy and its center of gravity is high. The module will overturn from a sideways tilt of 5 degrees. Do not leave the module unattended on a sloping floor.

To prevent the drive module from falling, attach its top lifting lugs with chains to the cabinet frame before you push the module into the cabinet. Work carefully preferably with help from another person. Keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back.

WARNING! If you are not a qualified electrical professional, do not do installation or maintenance work. Go through these steps before you begin any installation or maintenance work.

1. Clearly identify the work location.
2. Disconnect all possible voltage sources.
   - Open the main disconnector of the drive.
   - Make sure that reconnection is not possible. Lock the disconnectors to open position and attach a warning notice to them.
   - Disconnect any external power sources from the control circuits before you do work on the control cables.
   - After you disconnect the drive, always wait for 5 minutes to let the intermediate circuit capacitors discharge before you continue.
3. Protect any other energized parts in the work location against contact.
4. Take special precautions when close to bare conductors.
5. Measure that the installation is de-energized.
   • Use a multimeter with an impedance of at least 1 Mohm.
   • Make sure that the voltage between the drive module input power terminals (L1/U1, L2/V1, L3/W1) and the grounding (PE) busbar is close to 0 V.
   • Make sure that the voltage between the drive module UDC+ and UDC- terminals and the grounding (PE) terminal is close to 0 V.

6. Install temporary grounding as required by the local regulations.

7. Ask for a permit to work from the person in control of the electrical installation work.

Select the power cables
Size the power cables according to local regulations to carry the nominal current given on the type designation label of your drive.

Ensure the cooling
See table on page 9 for the losses and the cooling air flow through the drive. The allowed operating temperature range of the drive without derating is -15 to +40 °C.

Protect the drive and input power cables
See table on page 9.

Installing the drive module and LCL filter module into a cabinet
See appendix Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet.
   • Attach the plinth to the floor.
   • Attach the cabinet frame to the plinth.
   • Make the bottom plate with 360-degree grounding entries for power cables.
   • Attach the bottom plate to the cabinet.
   • Attach the punched section to the back of the cabinet frame.
   • Attach the mounting brackets to the punched section.
   • Install the pedestal to the LCL filter module.
   • Install the cooling fan to the LCL filter module.
   • Attach the LCL filter module pedestal guide plate to the cabinet bottom plate.
   • Attach the telescopic insertion ramp to the pedestal guide plate.
   • To prevent the LCL filter module from falling, attach its lifting lugs with chains to the cabinet frame.
   • Push the LCL filter module carefully into the cabinet along the telescopic insertion ramp. Work preferably with help from another person as shown below. Keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back.
• Unfasten the insertion ramp and attach the LCL filter module to bottom plate.
• Attach the drive module pedestal guide plate to the cabinet bottom plate.
• Attach the telescopic insertion ramp to the pedestal guide plate.
• Remove the sheeting from the clear plastic shrouds of the drive module from both sides.
• Install the top metallic shroud to the drive module.
• Install the back shrouds to the drive module.
• To prevent the drive module from falling, attach its lifting lugs with chains to the cabinet frame.
• Push the drive module carefully into the cabinet along the telescopic insertion ramp. Work preferably with help from another person. Keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back.
• Unfasten the insertion ramp and attach the drive module to the bottom plate.
• Attach the LCL filter module and drive module to the punched section.
• Attach LCL filter module to the drive module from top side. Reinstall the cover.
• Connect the LCL filter busbars to the drive module busbars with the connecting busbars.
• Connect the LCL filter fan power supply cable to connector FAN3:LCL.
• Connect the power cables and install the shrouds as described in section Connecting the power cables and installing the shrouds.
• Connect the control cables.
• Install the air baffles.

Connecting the power cables and installing the shrouds

<table>
<thead>
<tr>
<th>Step</th>
<th>Task (motor cables)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install the grounding terminal to the drive module base.</td>
</tr>
<tr>
<td>2</td>
<td>Run the motor cables to the cabinet. Ground the cable shields 360 degrees at the cabinet entry.</td>
</tr>
<tr>
<td>3</td>
<td>Connect the twisted shields of the motor cables to the grounding terminal.</td>
</tr>
</tbody>
</table>
### Quick installation guide

#### Task (motor cables)

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
</tr>
</thead>
</table>
| 4    | Screw in and tighten the insulators to the drive module by hand. Install the T3/W2 connection terminal to the insulators.  
**WARNING!** Do not use longer screws or bigger tightening torque than given in the installation drawing. They can damage the insulator and cause dangerous voltage to be present at the module frame. |
| 5    | Connect the phase T3/W2 conductors to the T3/W2 terminal. |
| 6    | Install the T2/V2 connection terminal to the insulators. See the warning in step 4. |
| 7    | Connect the phase T2/V2 conductors to the T2/V2 connection terminal. |
| 8    | Install the T1/U2 connection terminal to the insulators. See the warning in step 4. |
| 9    | Connect the phase T1/U2 conductors to the T1/U2 terminal. |
| 10   | Remove the plastic sheeting from the output clear plastic shrouds from both sides. |
| 11   | Install the shrouds to the drive module. |
| 12   | Install the lower front cover to the drive module. |

#### Task (input cables)

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground the input cable shields (if present) 360 degrees at the cabinet entry.</td>
</tr>
<tr>
<td>2</td>
<td>Connect the twisted shields of the input cables and separate ground cable (if present) to the cabinet grounding busbar.</td>
</tr>
</tbody>
</table>
| 3    | Step drill carefully sufficiently big holes to the entry clear plastic shroud for the cables to the connected. Align the holes in the vertical direction according to the alignment holes in the shroud. Smooth the hole edges.  
Attach the cables firmly to the cabinet frame to prevent chafing against the hole edges. |
| 4    | Put the conductors of the input cables through the drilled holes in the clear plastic shroud.  
For drive modules without option +H370: Connect the input cable conductors to the drive module L1/U1, L2/V1 and L3/W1 connection busbars. Go to step 12.  
For option +H370: Do steps 6 to 11. |
| 5    | For drive modules without option +H370: Connect the input cable conductors to the drive module L1/U1, L2/V1 and L3/W1 connection busbars. Go to step 12.  
For option +H370: Do steps 6 to 11. |
| 6    | Screw in and tighten the insulators to the drive module by hand. Install the L1/U1 connection terminal to the insulators.  
**WARNING!** Do not use longer screws or bigger tightening torque than given in the installation drawing. They can damage the insulator and cause dangerous voltage to be present at the module frame. |
| 7    | Connect the L1/U1 conductors to the L1/U1 connection terminal. |
| 8    | Install the L2/V1 connection terminal to the insulators. See the warning in step 6. |
| 9    | Connect the L2/V1 conductors to the L2/V1 connection terminal. |
| 10   | Install the L3/W1 connection terminal to the insulators. See the warning in step 6. |
| 11   | Connect the L3/W1 conductors to the L3/W1 connection terminal. |
| 12   | Install the entry clear plastic shroud. Install the front clear plastic shroud and upper front cover. |
| 13   | Install the side and top clear plastic shrouds to the drive module. |
## Default I/O connections

The default I/O connections of the Water default configuration are shown below.

Wire sizes: 0.14…2.5 mm² (26…16 AWG): All terminals.

Tightening torques: 0.5…0.6 Nm (0.4 lbf-ft).

### Wire sizes:
- 0.14…2.5 mm² (26…16 AWG) for all terminals.

### Tightening torques:
- 0.5…0.6 Nm (0.4 lbf-ft).

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**X1**

- **Reference voltage and analog inputs and outputs**
  - **1:** SCR (Signal cable shield (screen))
  - **2:** A1 (Output frequency/speed reference: 0…10 V)
  - **3:** A2 (Actual feedback: 0…10 V)
  - **4:** +10V (Reference voltage: 10 V DC)
  - **5:** A1 (Reference voltage: 0…10 V)
  - **6:** AO1 (Output frequency: 0…10 V)
  - **7:** AO2 (Output current: 0…20 mA)
  - **8:** AO2 (Output current: 0…20 mA)
  - **9:** AGND (Analog output circuit common)

**X2 & X3**

- **Aux. voltage output and programmable digital inputs**
  - **10:** +24V (Aux. voltage output: +24 V DC, max. 150 mA)
  - **11:** DGND (Aux. voltage output common)
  - **12:** DCOM (Digital input common for all)
  - **13:** UI1 (Stop (0) / Start (1))
  - **14:** UI2 (Not configured)
  - **15:** UI3 (Constant frequency/speed selection)
  - **16:** UI4 (Not configured)
  - **17:** UI5 (Not configured)
  - **18:** UI6 (Not configured)

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**X5**

- **Embedded fieldbus**
  - **29:** EFB (EIA-485)
  - **30:** EFB (EIA-485)
  - **31:** EFB (EIA-485)
  - **32:** EFB (EIA-485)
  - **33:** EFB (EIA-485)
  - **34:** EFB (EIA-485)

**X4**

- **Safe torque off**
  - **35:** OUT (Safe torque off)
  - **36:** OUT (Safe torque off)
  - **37:** OUT (Safe torque off)
  - **38:** OUT (Safe torque off)

**X6**

- **Auxiliary voltage output +24V**
  - **39:** +24V (Aux. voltage output: +24 V DC, max. 250 mA)

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Total load capacity of the Auxiliary voltage output +24V (X2:10) is 6.0 W (250 mA / 24 V DC).
**Drive type**

<table>
<thead>
<tr>
<th>Drive type</th>
<th>ACQ580-34-</th>
<th>Air flow</th>
<th>Losses</th>
<th>Type DIN 43653</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>m³/h</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td><em>U_N</em> = 400 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>246A-4</td>
<td>2100</td>
<td>5280</td>
<td>170M4410</td>
<td></td>
</tr>
<tr>
<td>293A-4</td>
<td>2100</td>
<td>6400</td>
<td>170M5408</td>
<td></td>
</tr>
<tr>
<td>365A-4</td>
<td>2100</td>
<td>8000</td>
<td>170M6410</td>
<td></td>
</tr>
<tr>
<td>442A-4</td>
<td>2100</td>
<td>10000</td>
<td>170M6411</td>
<td></td>
</tr>
<tr>
<td>505A-4</td>
<td>2100</td>
<td>10000</td>
<td>170M6412</td>
<td></td>
</tr>
<tr>
<td>585A-4</td>
<td>2100</td>
<td>12800</td>
<td>170M6414</td>
<td></td>
</tr>
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<td>650A-7</td>
<td>2100</td>
<td>14200</td>
<td>170M6414</td>
<td></td>
</tr>
<tr>
<td><em>U_N</em> = 480 V IEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>246A-4</td>
<td>2100</td>
<td>5220</td>
<td>170M4410</td>
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<td>293A-4</td>
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<td>7830</td>
<td>170M5410</td>
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<tr>
<td>442A-4</td>
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<td>9135</td>
<td>170M6411</td>
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</tr>
<tr>
<td>585A-4</td>
<td>2100</td>
<td>9135</td>
<td>170M6411</td>
<td></td>
</tr>
<tr>
<td>650A-7</td>
<td>2100</td>
<td>10440</td>
<td>170M6412</td>
<td></td>
</tr>
<tr>
<td><em>U_N</em> = 480 V UL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>240A-4</td>
<td>2100</td>
<td>5280</td>
<td>170M4410</td>
<td></td>
</tr>
<tr>
<td>302A-4</td>
<td>2100</td>
<td>6525</td>
<td>170M5408</td>
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<tr>
<td>361A-4</td>
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<td>7830</td>
<td>170M5410</td>
<td></td>
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<td>414A-4</td>
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<td></td>
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<tr>
<td>477A-4</td>
<td>2100</td>
<td>10440</td>
<td>170M6411</td>
<td></td>
</tr>
</tbody>
</table>

**WARNING!** The UDC+ and UDC- terminals of the drive module must not be used for any other than optional external brake chopper connection.
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet

- **Rittal 8806.000**
- **Rittal 8617.140**
- **Tapping screw M6×12**
- **Torx T30 8 N·m**

**Dimensions:**
- 360 °
- 80.5 (3.17)
- 280.5 (11.04)

**Non-ABB part (see dimension drawings)**
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet

- **Combi screw M8×30 Hex**
  - 20 N·m

- **Tapping screw M6×12 Torx T30**
  - (Hex) 8 N·m

Combi screw M8×30 Hex
- 20 N·m

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This diagram illustrates the installation procedure for a standard drive configuration in a Rittal VX25 800 mm wide cabinet. The specific screw types and torque values are indicated for each step, ensuring a precise and secure installation. The illustrations provide a visual guide to assist in understanding the configuration process.
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet

- **Combi screw M4×8 Torx T20 2 N·m**

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1. +B051

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- **Combi screw M4×8 Torx T20 2 N·m**
Combi screw M8
24 N·m

M6 Serpress
8 N·m

Screw M10x30
and washer

M6 Serpress
8 N·m

Combi screw M8
24 N·m
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet.

1. Hex screw M12×35 full thread 70 N·m
2. Hex nut M12 70 N·m
3. L3/W1
4. L2/V1
5. L1/U1
6. UDC-
7. UDC+
8. +B051

Hex screw M12×35 full thread 70 N·m
Hex nut M12 70 N·m
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet

- Combi screw M4×10 Torx T20 2 N·m
- Combi screw M6×20 Torx T25 2 N·m
Step-by-step drawings for an installation example of standard drive configuration in Rittal VX25 800 mm wide cabinet

- Tapping screw M6×12
- Torx T30 (Hex) 8 N·m
- Rear air baffle, non-ABB part (see dimension drawings)
- Front air baffle, non-ABB part (see dimension drawings)
- Right air baffle, non-ABB part (see dimension drawings)
- Left air baffle, non-ABB part (see dimension drawings)

Rittal 8617.730
Rittal 8617.720

Rear air baffle, non-ABB part
Front air baffle, non-ABB part
Right air baffle, non-ABB part
Left air baffle, non-ABB part

Rittal 8617.730
Rittal 8617.720
Further information

Product and service inquiries
Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/searchchannels.

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For information on ABB product training, navigate to www.abb.com/drives and select ABB University.

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