Prepare for Installation

**WARNING!** The Aquavar should ONLY be installed by a qualified electrician.

Check:
- Motor Compatibility - Motor type, nominal current, frequency and voltage range must match drive specifications (3 phase motor only).
- Suitable Environment - Drive requires heated, indoor controlled environment that is suitable for the selected enclosure.
- Wiring - Follow local codes for wiring and fusing requirements. Refer to NEC. Refer to the Installation Operation Manual and confirm that all preparations are complete.

Tools Required:
- Screwdrivers, wire stripper, tape measure, mounting screws or bolts, and drill.

Use the following chart to interpret the type code found on the drive label.

<table>
<thead>
<tr>
<th>AQUAVAR® (Series)</th>
<th>CPC 4 370 1</th>
</tr>
</thead>
</table>

Prepare the Mounting Location

The drive requires a smooth, vertical, solid surface, free from heat and moisture, with free space for air flow - 200 mm (8 in.) above and below, and 25 mm (1 in.) around the sides of the drive.

1. Mark the mounting points.
2. Drill the mounting holes.

Remove the Front Cover

1. Remove the control panel (display), if attached.
2. Loosen the captive screw at the top.
3. Pull near the top to remove the cover.

Mount the Drive

1. Position the AQUAVAR and use screws or bolts to securely tighten all four corners.
2. Attach a warning sticker in the appropriate language on the inside plastic shell.

Install the Wiring

1. Install thin-wall conduit clamps (not supplied) in the conduit/gland box.
2. Install conduit/gland box.

Wiring Power

1. Connect conduit runs to box.
2. Route input power and motor wiring through conduits.

Frame Sizes R1…R4

- Power Input (U1, V1, W1)
- Power Output to Motor (U2, V2, W2)
- EM1
- EM2
- EM3
- PE
- GND
- X003

* Single phase input power must use U1, W1 and PE for wiring.

Frame Size R5

- F1
- F2
- PE
- GND

Frame Size R6

- F1
- F2
- PE
- GND

* Single phase input power must use U1, W1 and PE for wiring.

Unpack the Drive

**NOTE:** Lift the Aquavar by its chassis and not by its cover.

1. Unpack the drive.
2. Check for any damage and notify the shipper immediately if damaged components are found.

Collect Motor Data

Collect the following data from the motor nameplate for later use in the Aquavar startup:
- Voltage_________________________
- Nominal Motor Current_____________
- Nominal Frequency________________
- Nominal Speed____________________
- Nominal Power____________________

Options

A – Field Bus Card (Devicenet, Profibus)
* Consult factory for other options, if available. Not all combinations may be available.

Apply power

Start-Up Wizards

Collect Motor Data

Check installation

Reinstall the cover

Apply power

Start-Up Wizards

Overview

The installation of the AQUAVAR CPC adjustable speed drive follows the outline below.

**Task**

- **PREPARE** for installation
- **UNPACK** the drive
- **PREPARE** mounting location
- **REPLACE** the front cover
- **MOUNT** the drive
- **INSTALL** wiring
- **CHECK** installation
- **REINSTALL** the cover
- **APPLY** power
- **START-UP** Wizards

Application

This guide provides a quick reference for installing Aquavar CPC drives having a standard enclosure (NEMA 1).

**NOTE:** This guide does not provide detailed installation, safety or operational instructions. See the Installation Operation Manual for complete information.
### Wiring the Transducer

1. Route the transducer cable through the conduit.
2. Strip the transducer cable sheathing and twist the screen wire.
3. Connect the screen wire of the transducer to terminal X1-1.
4. Connect the power supply wire of the transducer (red or brown) to terminal X1-10.
5. Connect analog output wire from the transducer (white or black) to X1-5. See chart in next column.

#### X1 Control Wiring

<table>
<thead>
<tr>
<th>X1</th>
<th>Control Wiring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SCR</td>
<td>Terminal for transducer shield. (Connected internally to chassis ground.)</td>
</tr>
<tr>
<td>2 A1</td>
<td>Analog input channel 1, 2nd transducer. Default = frequency reference. Resolution 0.1%, accuracy ±1%.</td>
</tr>
<tr>
<td>3 AGND</td>
<td>Analog input circuit common. (Connected internally to chassis gnd. through 1 MW. Jumper wire to X1-11.)</td>
</tr>
<tr>
<td>4 AO1</td>
<td>Analog output, programmable. Default = Not used. Current 0...20 mA (load &lt; 500 Ω)</td>
</tr>
<tr>
<td>5 AO2</td>
<td>Analog output, programmable. Default = Not used. 0...20 mA (load &lt; 500 Ω)</td>
</tr>
<tr>
<td>6 AGND</td>
<td>Analog input circuit common. (Connected internally to chassis gnd. through 1 MΩ)</td>
</tr>
<tr>
<td>7 A11</td>
<td>Analog input/output circuit common. (Connected internally to chassis gnd. through 1 MΩ)</td>
</tr>
<tr>
<td>8 A21</td>
<td>Analog output, programmable. Default = Not used. 4-20 mA</td>
</tr>
<tr>
<td>9 AGND</td>
<td>Analog input circuit common. (Connected internally to chassis gnd. through 1 MΩ)</td>
</tr>
<tr>
<td>10 AO3</td>
<td>Auxiliary voltage output 24 VDC / 250 mA (reference to GND). Short circuit protected. Transducer/digital input power supply.</td>
</tr>
<tr>
<td>11 GND</td>
<td>Auxiliary voltage output common. (Connected internally as floating.)</td>
</tr>
</tbody>
</table>

#### Relay Outputs

<table>
<thead>
<tr>
<th>Relay Outputs</th>
<th>Jumper Wire</th>
<th>Control Wiring</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 RO1C</td>
<td>Relay output 1, programmable. Default = run power to drive</td>
<td></td>
</tr>
<tr>
<td>20 R01A</td>
<td>Maximum: 250 VAC/30 VDC, 2 A</td>
<td></td>
</tr>
<tr>
<td>21 R01B</td>
<td>Minimum: 500 mW (12 V, 10 mA)</td>
<td></td>
</tr>
<tr>
<td>22 RO2C</td>
<td>Relay output 2, programmable. Default = ready, pump is running</td>
<td></td>
</tr>
<tr>
<td>23 RO2A</td>
<td>Maximum: 250 VAC/30 VDC, 2 A</td>
<td></td>
</tr>
<tr>
<td>24 RO2B</td>
<td>Minimum: 500 mW (12 V, 10 mA)</td>
<td></td>
</tr>
<tr>
<td>25 RO3C</td>
<td>Relay output 3, programmable. Default = not used</td>
<td></td>
</tr>
<tr>
<td>26 RO3A</td>
<td>Maximum: 250 VAC/30 VDC, 2 A</td>
<td></td>
</tr>
<tr>
<td>27 RO3B</td>
<td>Minimum: 500 mW (12 V, 10 mA)</td>
<td></td>
</tr>
</tbody>
</table>

6. Install the conduit/gland box cover (1 screw).

---

### Digital Inputs

#### Jumper Setting: (Analog Input)

- J1: A11, A12, A21, A22
- AO1: 0...10 V
- AO2: 0...20 mA

#### Analog I/O

- AO1: 0...10 V (or 4-20 mA)
- AO2: 0...20 mA
- AGND: Screen/shield.
- AO1 and AO2: transducer/digital input circuits separated. (Connected internally to chassis ground.)
- AO1 and AO2: auxiliary voltage output circuits (reference to GND). Short circuit protected.
- AO1 and AO2: auxiliary voltage output common. (Connected internally as floating.)

---

### Start-Up

#### Check Installation

Before applying power, perform the following checks.

<table>
<thead>
<tr>
<th>V</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Environment conforms to specifications.</td>
</tr>
<tr>
<td></td>
<td>The drive is mounted securely.</td>
</tr>
<tr>
<td></td>
<td>Proper cooling space around the drive.</td>
</tr>
<tr>
<td></td>
<td>Motor and driven equipment ready for start.</td>
</tr>
<tr>
<td></td>
<td>Floating networks Internal RTD not disconnected.</td>
</tr>
<tr>
<td></td>
<td>Drive is properly grounded with pump/motor.</td>
</tr>
<tr>
<td></td>
<td>Power input (mains) voltage matches the drive nominal input voltage.</td>
</tr>
<tr>
<td></td>
<td>The input power (mains) terminals, U1, V1, W1, are connected and tightened as specified.</td>
</tr>
<tr>
<td></td>
<td>The input power (mains) fuses/mains switch installed.</td>
</tr>
<tr>
<td></td>
<td>The motor terminals, U2, V2, W2, are connected and tightened as specified.</td>
</tr>
<tr>
<td></td>
<td>Motor cables routed away from other cables.</td>
</tr>
<tr>
<td></td>
<td>Power factor compensation capacitors are connected to the motor cable.</td>
</tr>
<tr>
<td></td>
<td>Control terminals are wired and tightened as specified.</td>
</tr>
<tr>
<td></td>
<td>NO tools or foreign objects (such as drill shavings) are inside the drive.</td>
</tr>
<tr>
<td></td>
<td>NO alternate power source for the motor is connected - no input voltage is applied to the output of the drive.</td>
</tr>
</tbody>
</table>

---

### Apply Power

Always reinstall the front cover before turning power on.

**WARNING!** The AQUAVAR will start up automatically at power up, if the external run command is on.

- 1. Apply input power.
- 2. When power is applied to the AQUAVAR, the green LED comes on.

#### NOTE!
Before increasing motor speed, check that the motor is running in the desired direction.

### Wizards

#### The Start-Up Wizard

The Start-Up Wizard steps through typical start-up selections and runs automatically upon the initial power up. At other times, use the steps below to run the Start-Up Wizard.

1. Use the MENU key to access the Menu list.
2. Select Wizards.
4. Follow the screen instructions to configure the system.

**NOTE!** For common parameters and menu items, use the Help Key to display descriptions. If you encounter Alarms or Faults, use the Help Key or refer to the Diagnostic section of the instruction manual.