



AQUAVAR® CPC

Centrifugal Pump Controller

Quick Start Guide



Overview

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



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.

Prepare for Installation

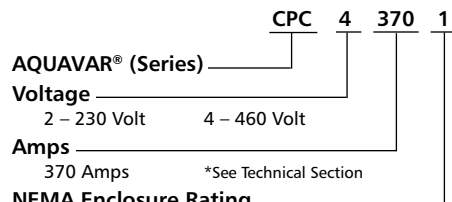
WARNING! The Aquavar should ONLY be installed by a qualified electrician.

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.



Options

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

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 _____

Unpack the Drive

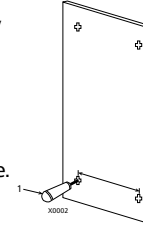
NOTE: Lift the Aquavar by its chassis and **not** by its cover.

1. Unpack the drive.
2. Check for any damage and notify the shipper immediately if damaged components are found.
3. Check the contents against the order and the shipping label to verify that all parts have been received.

Prepare the Mounting Location

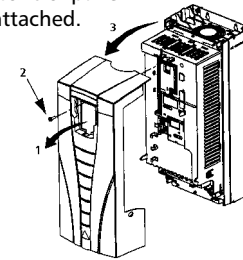
The drive requires a smooth, vertical, solid surface, free from heat and moisture, with free space for air flow – 200 mm (8 in.) above and below, and 25 mm (1 in.) around the sides of the drive.

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



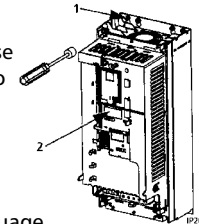
Remove the Front Cover

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.

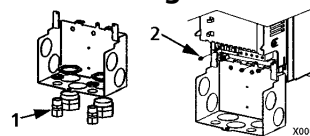


Mount the Drive

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

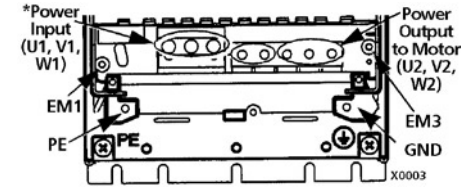


1. Install thin-wall conduit clamps (not supplied) in the conduit/gland box.
2. Install conduit/gland box.

Wiring Power

1. Connect conduit runs to box.
2. Route input power and motor wiring through conduits.
3. Strip wires.
4. Connect power, motor and ground wires to the drive terminals. See "Power Connections" in the instruction manual.

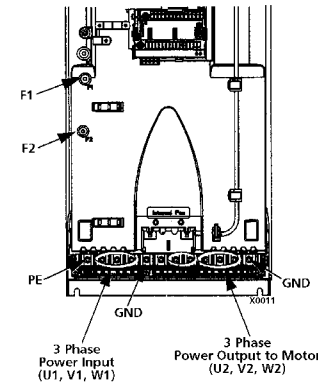
Frame Sizes R1...R4



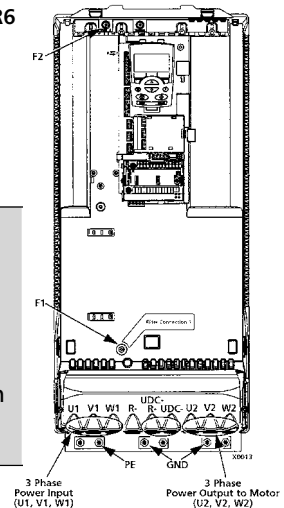
* Single phase input power must use U1, W1 and PE for wiring.

WARNING! For floating networks remove screws at EM1 and EM3 on Frame Sizes R1...R4.

Frame Size R5



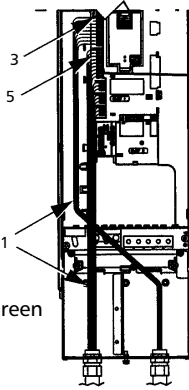
Frame Size R6



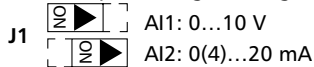
WARNING! For floating networks remove screws at F1 and F2 on Frame Sizes R5 or R6.

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.



Note 1. Jumper Setting: (Analog Input)



Relay Outputs	Terminal	Description
19	RO1C	Relay output 1, programmable. Default ² = run power to drive Maximum: 250 VAC/30 VDC, 2 A Minimum: 500 mW (12 V, 10 mA)
20	RO1A	
21	RO1B	
22	RO2C	Relay output 2, programmable. Default ² = ready, pump is running Maximum: 250 VAC/30 VDC, 2 A Minimum: 500 mW (12 V, 10 mA)
23	RO2A	
24	RO2B	Relay output 3, programmable. Default ² = not used Maximum: 250 VAC/30 VDC, 2 A Minimum: 500 mW (12 V, 10 mA)
25	RO3C	
26	RO3A	
27	RO3B	

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

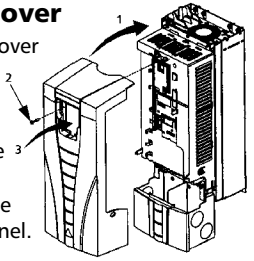
	X1	Control Wiring		X1	Control Wiring	
Transducer Screen/ Shield	1	SCR Terminal for transducer shield. (Connected internally to chassis ground.)	Jumper Wire 11 and 12	Digital Inputs ¹	12	DCOM Digital input common. To activate a digital input, there must be $\geq +10V$ (or $\leq -10V$) between that input and DCOM. The 24V may be provided by the AQUAVAR (X1-10) or by an external 12...24V source of either polarity.
	2	AI1 Analog input channel 1, 2nd transducer. Default ² = frequency reference. Resolution 0.1%, accuracy $\pm 1\%$. J1:AI1 OFF: 0...10 V ($R_i = 312\text{ k}\Omega$) J1:AI1 ON: 0...20 mA ($R_i = 100\ \Omega$)			13	D11 Digital input 1, programmable. Default ² = run enable
	3	AGND Analog input circuit common. (Connected internally to chassis gnd. through 1 MW. Jumper wire to X1-11.)			14	D12 Digital input 2, programmable. Default ² = low water
Analog I/O	4	+10V 10 V/10 mA reference voltage output for analog input potentiometer, accuracy $\pm 2\%$. (Not used.)	15		D13 Digital input 3, programmable. Default ² = E-stop or jumper	
	5	AI2 Analog input channel 2. Resolution 0.1%, accuracy $\pm 1\%$. Transducer input	16		D14 Digital input 4, programmable. Default ² = set point selection	
	6	AGND Analog input circuit common. (Connected internally to chassis gnd. through 1 M Ω)	17		D15 Digital input 5, programmable. Default ² = not used	
Transducer Power Supply (Brown or Red)	7	AO1 Analog output, programmable. Default ² = Not used. Current 0...20 mA (load < 500 Ω)	18	D16 Digital input 6, programmable. Default ² = not used		
	8	AO2 Analog output, programmable. Default ² = Not used. 0...20 mA (load < 500 Ω)				
	9	AGND Analog output circuit common (Connected internally to chassis gnd. through 1 M Ω)				
10-15 E-stop or Jumper	10	+24V Auxiliary voltage output 24 VDC/ 250 mA (reference to GND). Short circuit protected. Transducer/digital input power supply.				
	11	GND Auxiliary voltage output common. (Connected internally as floating.)				

Specifications subject to change without notice.

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Reinstall the Cover

1. Align the cover and slide it on.
2. Tighten the captive screw.
3. Reinstall the control panel.



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. When power is applied to the AQUAVAR, the green LED comes on.

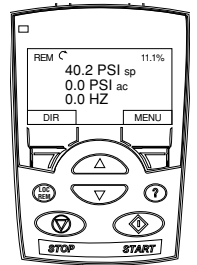
NOTE! Before increasing motor speed, check that the motor is running in the desired direction.

Start-Up

In Start-Up, enter motor data (collected earlier) and, if needed, edit parameters that define how the drive operates and communicates.

Wizards

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.
3. Select Start-Up 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.

Check Installation

Before applying power, perform the following checks.

✓	Check
	Environment conforms to specifications.
	The drive is mounted securely.
	Proper cooling space around the drive.
	Motor and driven equipment are ready for start.
	Floating networks: Internal RFI filter disconnected.
	Drive is properly grounded, with pump/motor.
	Input power (mains) voltage matches the drive nominal input voltage.
	The input power (mains) terminals, U1, V1, W1, are connected and tightened as specified.
	The input power (mains) fuses / mains switch installed.
	The motor terminals, U2, V2, W2, are connected and tightened as specified.
	Motor cable is routed away from other cables.
	NO power factor compensation capacitors are connected to the motor cable.
	Control terminals are wired and tightened as specified.
	NO tools or foreign objects (such as drill shavings) are inside the drive.
	NO alternate power source for the motor is connected - no input voltage is applied to the output of the drive.