



AQUAVAR[®]

Intelligent Pump Controller

INTRODUCTION

The **Aquavar®** Intelligent Pump Controller from CentriPro utilizes an all new Aquavar platform, and combines it with over 20 years of variable speed pumping experience. The Aquavar is designed to provide variable frequency pumping control of speed, pressure, flow and level over a wide range of submersible and above ground applications. Here are just a few of the features and benefits of this versatile product:

- Application specific "Start-Up Genie" guides you through quick and easy commissioning
- Removable, graphical control panel with display
- Fully backlit display with large text makes the control pad easy to read
- Info key activates on board parameter and fault descriptions
- *My Personal Menu* allows user to focus on specific user selected and saved parameters
- Alarm Log key for quick access to alarms and maintenance events
- Alarm Log records the last 5 alarms
- Hand on, Auto on, and Off buttons for easy pump operation at the keypad - No toggling between local and remote operation!
- Modbus® RTU included in standard drive - Other communications available with option cards
- Capable of controlling up to 2 fixed speed pumps, with one standard drive
- Duplex variable speed pumping control with auto lead/lag and alternate
- **USB Connectivity - Commission and monitor through PC software**
- Transducer assembly (0-300 psi) and 16' foot shielded cable
- Standard dual DC-link reactors - Reduces the level of harmonics similar to a 5% AC line reactor without the voltage drop across the full load range!
- EMC/RFI filters designed to reduce drive noise emissions and interference to strict standards.
- **Automatic Motor Adaption - For optimized performance and efficiency**
- **Automized Energy Optimization - Regulates output voltage to improve system efficiency as loads change**
- Protects the pump from damage due to cavitation, dead head and blocked suction.
- Helps protect the motor from short circuit, phase loss, overload, undervoltage, overvoltage
- Large connection area allows more space for incoming power and motor wiring

TRANSDUCER

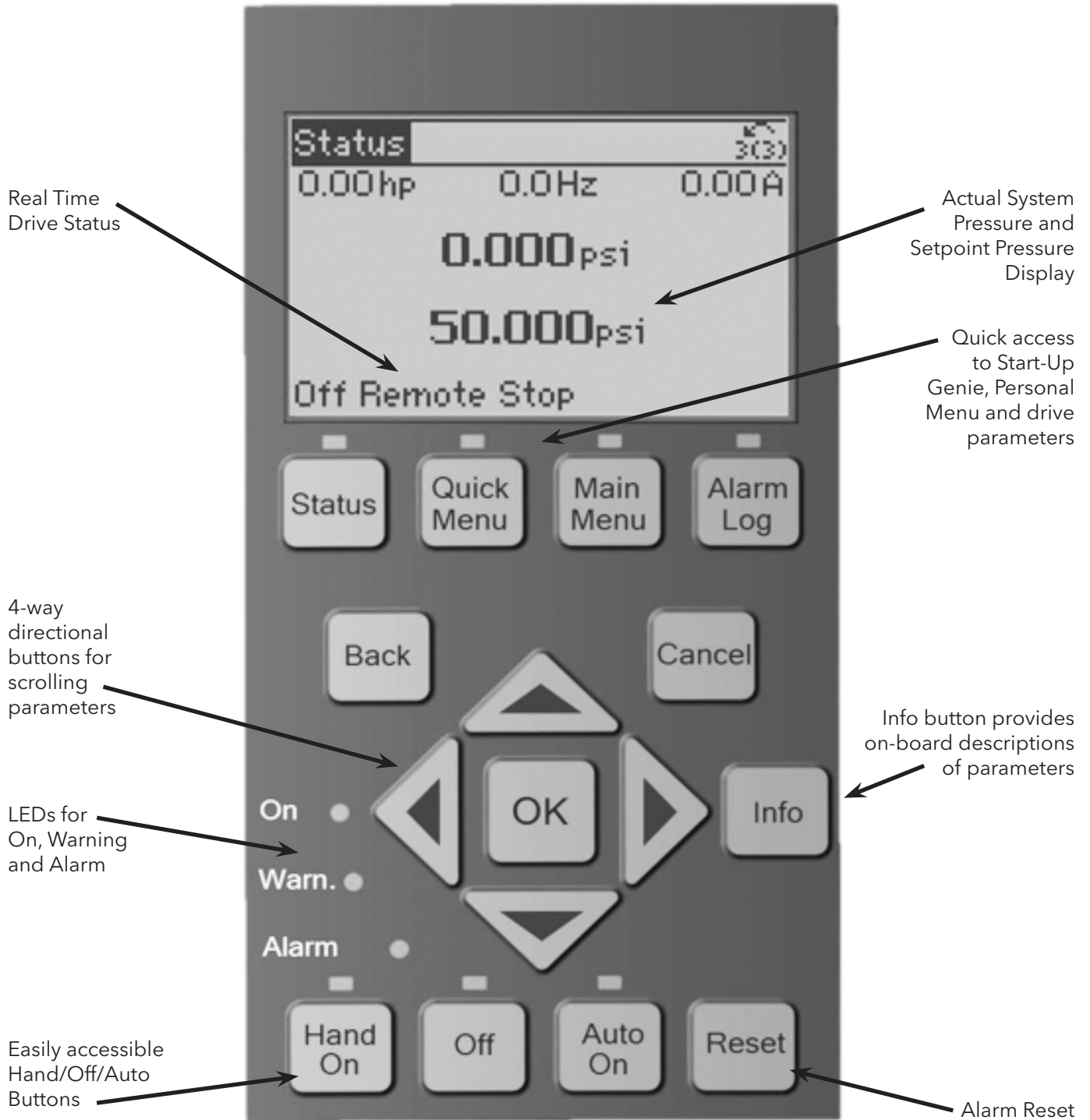
Includes: 4-20mA, 300psi transducer and 16' cable

Used for: Pressure transducer for constant pressure applications.
Transducer will be delivered with your drive when you use the "1" Transducer character.

NOTE: 9K515 - Repair part number for the transducer
9K391 - Repair part number for the transducer and 16' cable

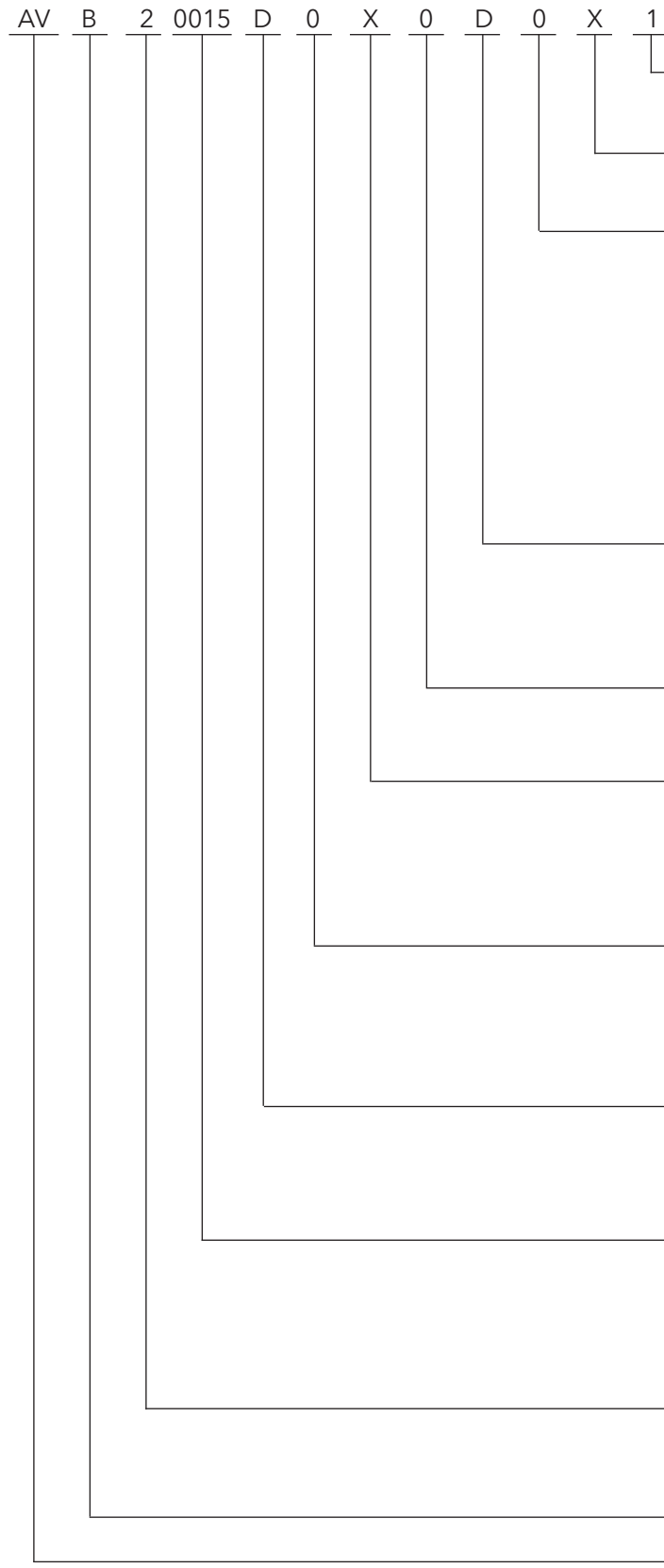


KEYPAD LAYOUT



NOMENCLATURE

Example Product Code



Transducer

1=Transducer 2=No Transducer

Motor Mounting Options*

X = No Accessories M = Motor Mount Hardware

Coating / EMC Filter Options**

0 = Standard Protection w/ H2 EMC Filter (Standard EMC Filter)

1 = Standard Protection w/ H3 EMC Filter

2 = Standard Protection w/ H1 EMC Filter

3 = 3C3 Board Coating w/ H2 EMC Filter (Standard EMC Filter)

4 = 3C3 Board Coating w/ H3 EMC Filter

5 = 3C3 Board Coating w/ H1 EMC Filter

Disconnect Options

X = No Accessories

S = Standard Disconnect (Single Phase Only)

D = Fused Disconnect

Backup Options

0 = No Backup

4 = 24VDC Backup

(Requires External Power)

Input/Output Options

X = No Additional I/O

C = PTC Thermistor Card

A = Analog I/O and Real-time Clock

D = PT100 Sensor Input

B = General Purpose I/O

E = Relay Card

Communications Options

0 = Standard Communication

1 = Modbus TCP

4 = LonWorks

2 = Profibus

5 = Profinet

3 = DeviceNet

6 = Ethernet IP

Enclosure

A = TYPE 1 (IP21)

D = TYPE 4X (IP66)

B = TYPE 12 (IP55)

E = IP20 (Chassis)

C = TYPE 3R

Nominal HP

0015 0075 0250 0600

0020 0100 0300 0750

0030 0150 0400 1000

0050 0200 0500 1250

Phase/Voltage

1 = 1/230 3 = 1/460*** 5 = 3/575

2 = 3/230 4 = 3/380-460

Type - B=Basic Drive

Model - AV

* Motor mounted units are not available in the initial launch. Product news will be issued when this configuration is available.

** 575V and single phase 10, 20, and 30HP are not available with EMC filter. These are sold without filter as standard.

*** Single phase 460V are not available with the initial Launch. Product news will be issued when this voltage is available.

PRODUCT CHART - IP20 CHASSIS

Input Voltage	Input Phase	IP20 Chassis Base Model	Continuous Output Amps @ 45°C Ambient	Continuous Output Amps @ 50°C Ambient	Nominal Surface Motor HP*	Nominal Sub. Motor HP* 4" / 6" & Up	Frame Size
208-230	3	AVB20015E0X0X0X2	6.6	5.9	1.5	1.5	A2
		AVB20020E0X0X0X2	7.5	6.8	2	2	
		AVB20030E0X0X0X2	10.6	9.5	3	3	
		AVB20050E0X0X0X2	16.7	15.0	5		A3
		AVB20075E0X0X0X2	24.2	21.8	7.5	5	B3
		AVB20100E0X0X0X2	30.8	27.7	10	7.5	
		AVB20150E0X0X0X2	46.2	41.6	15	10 / 15	B4
		AVB20200E0X0X0X2	59.4	53.5	20	15	
		AVB20250E0X0X0X2	74.8	67.3	25	20	C3
		AVB20300E0X0X0X2	88	79.2	30	25	
		AVB20400E0X0X0X2	115	103.5	40	30	C4
		AVB20500E0X0X0X2	143	128.7	50		
		AVB20600E0X0X0X2	170	153.0	60		
380-460	3	AVB40015E0X0X0X2	2.7	2.4	1.5	1	A2
		AVB40020E0X0X0X2	3.4	3.1	2	1.5	
		AVB40030E0X0X0X2	4.8	4.3	3	2	
		AVB40050E0X0X0X2	8.2	7.4	5	3	A3
		AVB40075E0X0X0X2	11	9.9	7.5	5	
		AVB40100E0X0X0X2	14.5	13.1	10	7.5	B3
		AVB40150E0X0X0X2	21	18.9	15	10	
		AVB40200E0X0X0X2	27	24.3	20	15	
		AVB40250E0X0X0X2	34	30.6	25	20	B4
		AVB40300E0X0X0X2	40	36.0	30	25	
		AVB40400E0X0X0X2	52	46.8	40	30	C3
		AVB40500E0X0X0X2	65	58.5	50	40	
		AVB40600E0X0X0X2	80	72.0	60	50	C4
		AVB40750E0X0X0X2	105	94.5	75	60	
		AVB41000E0X0X0X2	130	117.0	100	75	C4
		AVB41250E0X0X0X2	160	144.0	125	100	
		575	3	AVB50015E0X0X0X2	2.4	2.2	1.5
AVB50020E0X0X0X2	2.7			2.4	2		
AVB50030E0X0X0X2	3.9			3.5	3	2	
AVB50050E0X0X0X2	6.1			5.5	5	3	
AVB50075E0X0X0X2	9			8.1	7.5	5	
AVB50100E0X0X0X2	11			9.9	10	7.5	B3
AVB50150E0X0X0X2	18			16.2	15		
AVB50200E0X0X0X2	22			19.8	20		
AVB50250E0X0X0X2	27			24.3	25		
AVB50300E0X0X0X2	34			30.6	30		
AVB50400E0X0X0X2	41			36.9	40		
AVB50500E0X0X0X2	52			46.8	50		B4
AVB50600E0X0X0X2	62			55.8	60		
AVB50750E0X0X0X2	83			74.7	75		C3
AVB51000E0X0X0X2	100			90.0	100		C4
AVB51250E0X0X0X2	131			117.9	125		

* Nominal HP values are for reference only. Size Aquavar by maximum output amps of the motor.

PRODUCT CHART - TYPE 1

Input Voltage	Input Phase	TYPE 1 Base Model	Continuous Output Amps @ 45°C Ambient	Continuous Output Amps @ 50°C Ambient	Nominal Surface Motor Hp*	Nominal Sub-Motor HP* 4" / 6" & Up	Frame Size
208-230	1	AVB10020A0X0X0X1	7.5	6.8	2	2	B1
		AVB10030A0X0X0X1	10.6	9.5	3	3	
		AVB10050A0X0X0X1	16.7	15.0	5		
		AVB10075A0X0X0X1	24.2	21.8	7.5	5	B2
		AVB10100A0X0X0X1	30.8	27.7	10	7.5 / 5	
		AVB10200A0X0X0X1	59.4	53.5	20	10	
		AVB10300A0X0X0X1	88	79.2	30	15 & 20	
208-230	3	AVB20015A0X0X0X1	6.6	5.9	1.5	1.5	A2
		AVB20020A0X0X0X1	7.5	6.8	2	2	
		AVB20030A0X0X0X1	10.6	9.5	3	3	
		AVB20050A0X0X0X1	16.7	15.0	5		A3
		AVB20075A0X0X0X1	24.2	21.8	7.5	5	B1
		AVB20100A0X0X0X1	30.8	27.7	10	7.5	
		AVB20150A0X0X0X1	46.2	41.6	15	10 / 15	B2
		AVB20200A0X0X0X1	59.4	53.5	20	15	
		AVB20250A0X0X0X1	74.8	67.3	25	20	C1
		AVB20300A0X0X0X1	88	79.2	30	25	
		AVB20400A0X0X0X1	115	103.5	40	30	C2
		AVB20500A0X0X0X1	143	128.7	50		
		AVB20600A0X0X0X1	170	153.0	60		
		380-460	3	AVB40015A0X0X0X1	2.7	2.4	1.5
AVB40020A0X0X0X1	3.4			3.1	2	1.5	
AVB40030A0X0X0X1	4.8			4.3	3	2	
AVB40050A0X0X0X1	8.2			7.4	5	3	
AVB40075A0X0X0X1	11			9.9	7.5	5	A3
AVB40100A0X0X0X1	14.5			13.1	10	7.5	
AVB40150A0X0X0X1	21			18.9	15	10	B1
AVB40200A0X0X0X1	27			24.3	20	15	
AVB40250A0X0X0X1	34			30.6	25	20	B2
AVB40300A0X0X0X1	40			36.0	30	25	
AVB40400A0X0X0X1	52			46.8	40	30	C1
AVB40500A0X0X0X1	65			58.5	50	40	
AVB40600A0X0X0X1	80			72.0	60	50	C2
AVB40750A0X0X0X1	105			94.5	75	60	
AVB41000A0X0X0X1	130			117.0	100	75	C2
AVB41250A0X0X0X1	160			144.0	125	100	
575	3	AVB50015A0X0X0X1	2.4	2.2	1.5	1.5	A3
		AVB50020A0X0X0X1	2.7	2.4	2		
		AVB50030A0X0X0X1	3.9	3.5	3	2	
		AVB50050A0X0X0X1	6.1	5.5	5	3	
		AVB50075A0X0X0X1	9	8.1	7.5	5	
		AVB50100A0X0X0X1	11	9.9	10	7.5	
		AVB50150A0X0X0X1	18	16.2	15		B1
		AVB50200A0X0X0X1	22	19.8	20		
		AVB50250A0X0X0X1	27	24.3	25		B2
		AVB50300A0X0X0X1	34	30.6	30		
		AVB50400A0X0X0X1	41	36.9	40		C1
		AVB50500A0X0X0X1	52	46.8	50		
		AVB50600A0X0X0X1	62	55.8	60		C2
		AVB50750A0X0X0X1	83	74.7	75		
		AVB51000A0X0X0X1	100	90.0	100		C2
		AVB51250A0X0X0X1	131	117.9	125		

* Nominal HP values are for reference only. Size Aquavar by maximum output amps of the motor.

PRODUCT CHART - TYPE 12 & TYPE 3R

Input Voltage	Input Phase	TYPE 12 Base Model	TYPE 3R Base Model	Cont. Output Amps @ 45°C Ambient	Cont. Output Amps @ 50°C Ambient	Nominal Surface Motor HP*	Nominal Sub. Motor HP* 4" / 6" & Up	Frame Size	DV / DT Load Filter NEMA 3R**	
208-230	1	AVB10015B0X0X0X1	AVB10015C0X0X0X1	6.6	5.9	1.5	1.5	A5	V1K8A03	
		AVB10020B0X0X0X1	AVB10020C0X0X0X1	7.5	6.8	2	2	B1	V1K8A03	
		AVB10030B0X0X0X1	AVB10030C0X0X0X1	10.6	9.5	3	3		V1K12A03	
		AVB10050B0X0X0X1	AVB10050C0X0X0X1	16.7	15.0	5			V1K18A03	
		AVB10075B0X0X0X1	AVB10075C0X0X0X1	24.2	21.8	7.5	5	V1K25A03		
		AVB10100B0X0X0X1	AVB10100C0X0X0X1	30.8	27.7	10	7.5 / 5	B2	V1K35A03	
		AVB10200B0X0X0X1	AVB10200C0X0X0X1	59.4	53.5	20	10	C1	V1K80A03	
	AVB10300B0X0X0X1	AVB10300C0X0X0X1	88	79.2	30	20 / 15	C2	V1K110A03		
	3	AVB20015B0X0X0X1	AVB20015C0X0X0X1	6.6	5.9	1.5	1.5	A5	V1K8A03	
		AVB20020B0X0X0X1	AVB20020C0X0X0X1	7.5	6.8	2	2		V1K8A03	
		AVB20030B0X0X0X1	AVB20030C0X0X0X1	10.6	9.5	3	3		V1K12A03	
		AVB20050B0X0X0X1	AVB20050C0X0X0X1	16.7	15.0	5		V1K18A03		
		AVB20075B0X0X0X1	AVB20075C0X0X0X1	24.2	21.8	7.5	5	B1	V1K25A03	
		AVB20100B0X0X0X1	AVB20100C0X0X0X1	30.8	27.7	10	7.5	V1K35A03		
		AVB20150B0X0X0X1	AVB20150C0X0X0X1	46.2	41.6	15	10 / 15	V1K55A03		
		AVB20200B0X0X0X1	AVB20200C0X0X0X1	59.4	53.5	20	15	B2	V1K80A03	
		AVB20250B0X0X0X1	AVB20250C0X0X0X1	74.8	67.3	25	20	C1	V1K80A03	
		AVB20300B0X0X0X1	AVB20300C0X0X0X1	88	79.2	30	25		V1K110A03	
		AVB20400B0X0X0X1	AVB20400C0X0X0X1	115	103.5	40	30		V1K130A03	
		AVB20500B0X0X0X1	AVB20500C0X0X0X1	143	128.7	50		C2	V1K160A03	
		AVB20600B0X0X0X1	AVB20600C0X0X0X1	170	153.0	60			V1K200A03	
		380-460	3	AVB40015B0X0X0X1	AVB40015C0X0X0X1	2.7	2.4	1.5	1	A5
AVB40020B0X0X0X1				AVB40020C0X0X0X1	3.4	3.1	2	1.5	V1K8A03	
AVB40030B0X0X0X1	AVB40030C0X0X0X1			4.8	4.3	3	2	V1K8A03		
AVB40050B0X0X0X1	AVB40050C0X0X0X1			8.2	7.4	5	3	V1K12A03		
AVB40075B0X0X0X1	AVB40075C0X0X0X1			11	9.9	7.5	5	V1K12A03		
AVB40100B0X0X0X1	AVB40100C0X0X0X1			14.5	13.1	10	7.5	V1K18A03		
AVB40150B0X0X0X1	AVB40150C0X0X0X1			21	18.9	15	10	B1	V1K25A03	
AVB40200B0X0X0X1	AVB40200C0X0X0X1			27	24.3	20	15	V1K35A03		
AVB40250B0X0X0X1	AVB40250C0X0X0X1			34	30.6	25	20	V1K35A03		
AVB40300B0X0X0X1	AVB40300C0X0X0X1			40	36.0	30	25	B2	V1K55A03	
AVB40400B0X0X0X1	AVB40400C0X0X0X1			52	46.8	40	30		V1K55A03	
AVB40500B0X0X0X1	AVB40500C0X0X0X1			65	58.5	50	40	C1	V1K80A03	
AVB40600B0X0X0X1	AVB40600C0X0X0X1			80	72.0	60	50		V1K80A03	
AVB40750B0X0X0X1	AVB40750C0X0X0X1			105	94.5	75	60		V1K110A03	
AVB41000B0X0X0X1	AVB41000C0X0X0X1			130	117.0	100	75	C2	V1K130A03	
AVB41250B0X0X0X1	AVB41250C0X0X0X1	160	144.0	125	100	V1K160A03				
575	3	AVB50015B0X0X0X1	AVB50015C0X0X0X1	2.4	2.2	1.5	1.5	A5	V1K8A03	
		AVB50020B0X0X0X1	AVB50020C0X0X0X1	2.7	2.4	2			V1K8A03	
		AVB50030B0X0X0X1	AVB50030C0X0X0X1	3.9	3.5	3	2		V1K8A03	
		AVB50050B0X0X0X1	AVB50050C0X0X0X1	6.1	5.5	5	3		V1K8A03	
		AVB50075B0X0X0X1	AVB50075C0X0X0X1	9	8.1	7.5	5		V1K12A03	
		AVB50100B0X0X0X1	AVB50100C0X0X0X1	11	9.9	10	7.5		V1K12A03	
		AVB50150B0X0X0X1	AVB50150C0X0X0X1	18	16.2	15		B1	V1K18A03	
		AVB50200B0X0X0X1	AVB50200C0X0X0X1	22	19.8	20		V1K25A03		
		AVB50250B0X0X0X1	AVB50250C0X0X0X1	27	24.3	25		V1K35A03		
		AVB50300B0X0X0X1	AVB50300C0X0X0X1	34	30.6	30		B2	V1K35A03	
		AVB50400B0X0X0X1	AVB50400C0X0X0X1	41	36.9	40			V1K55A03	
		AVB50500B0X0X0X1	AVB50500C0X0X0X1	52	46.8	50		V1K55A03		
		AVB50600B0X0X0X1	AVB50600C0X0X0X1	62	55.8	60		C1	V1K80A03	
		AVB50750B0X0X0X1	AVB50750C0X0X0X1	83	74.7	75			V1K110A03	
		AVB51000B0X0X0X1	AVB51000C0X0X0X1	100	90.0	100			V1K110A03	
AVB51250B0X0X0X1	AVB51250C0X0X0X1	131	117.9	125		C2	V1K160A03			

* Nominal HP values are for reference only. Size Aquavar by maximum output amps of the motor.

** dv/dt filter recommended for applications with motor leads longer than 50'. It is recommended to use the dv/dt filter with all submersible applications. dv/dt filter is supplied with all Aquavar ordered with Accessories code "F".

PRODUCT CHART - TYPE 4X

Input Voltage	Input Phase	TYPE 4X Base Model	Continuous Output Amps @ 45°C Ambient	Continuous Output Amps @ 50°C Ambient	Nominal Surface Motor HP*	Nominal Submersible Motor HP* 4" / 6" & Up	Frame Size	DV / DT Load Filter NEMA 3R**
208-230	1	AVB10015D0X0X0X1	6.6	5.9	1.5	1.5	A5	V1K8A03
		AVB10020D0X0X0X1	7.5	6.8	2	2	B1	
		AVB10030D0X0X0X1	10.6	9.5	3	3		
		AVB10050D0X0X0X1	16.7	15.0	5	5		
		AVB10075D0X0X0X1	24.2	21.8	7.5	5	B2	V1K18A03
		AVB10100D0X0X0X1	30.8	27.7	10	7.5 / 5		V1K25A03
		AVB10200D0X0X0X1	59.4	53.5	20	10	C3	V1K35A03
AVB10300D0X0X0X1	88	79.2	30	15 & 20	C4	V1K80A03		
208-230	3	AVB20015D0X0X0X1	6.6	5.9	1.5	1.5	A5	V1K110A03
		AVB20020D0X0X0X1	7.5	6.8	2	2		
		AVB20030D0X0X0X1	10.6	9.5	3	3		
		AVB20050D0X0X0X1	16.7	15.0	5	5		
		AVB20075D0X0X0X1	24.2	21.8	7.5	5	B1	V1K25A03
		AVB20100D0X0X0X1	30.8	27.7	10	7.5		V1K35A03
		AVB20150D0X0X0X1	46.2	41.6	15	10 / 15		V1K55A03
		AVB20200D0X0X0X1	59.4	53.5	20	15	B2	V1K80A03
		AVB20250D0X0X0X1	74.8	67.3	25	20		
		AVB20300D0X0X0X1	88	79.2	30	25	C1	V1K110A03
		AVB20400D0X0X0X1	115	103.5	40	30		V1K130A03
		AVB20500D0X0X0X1	143	128.7	50		C2	V1K160A03
		AVB20600D0X0X0X1	170	153.0	60			V1K200A03
380-460	3	AVB40015D0X0X0X1	2.7	2.4	1.5	1	A5	V1K8A03
		AVB40020D0X0X0X1	3.4	3.1	2	1.5		
		AVB40030D0X0X0X1	4.8	4.3	3	2		
		AVB40050D0X0X0X1	8.2	7.4	5	3		
		AVB40075D0X0X0X1	11	9.9	7.5	5		
		AVB40100D0X0X0X1	14.5	13.1	10	7.5	B1	V1K12A03
		AVB40150D0X0X0X1	21	18.9	15	10		
		AVB40200D0X0X0X1	27	24.3	20	15		
		AVB40250D0X0X0X1	34	30.6	25	20	B2	V1K18A03
		AVB40300D0X0X0X1	40	36.0	30	25		V1K25A03
		AVB40400D0X0X0X1	52	46.8	40	30	C1	V1K35A03
		AVB40500D0X0X0X1	65	58.5	50	40		
		AVB40600D0X0X0X1	80	72.0	60	50	C2	V1K55A03
		AVB40750D0X0X0X1	105	94.5	75	60		
		AVB41000D0X0X0X1	130	117.0	100	75		
AVB41250D0X0X0X1	160	144.0	125	100		V1K80A03		
							V1K110A03	
							V1K130A03	
							V1K160A03	
575	3	AVB50015D0X0X0X1	2.4	2.2	1.5	1.5	A5	V1K8A03
		AVB50020D0X0X0X1	2.7	2.4	2			
		AVB50030D0X0X0X1	3.9	3.5	3	2		
		AVB50050D0X0X0X1	6.1	5.5	5	3		
		AVB50075D0X0X0X1	9	8.1	7.5	5		
		AVB50100D0X0X0X1	11	9.9	10	7.5	B1	V1K12A03
		AVB50150D0X0X0X1	18	16.2	15			
		AVB50200D0X0X0X1	22	19.8	20			
		AVB50250D0X0X0X1	27	24.3	25		B2	V1K25A03
		AVB50300D0X0X0X1	34	30.6	30			V1K35A03
		AVB50400D0X0X0X1	41	36.9	40		C1	V1K55A03
		AVB50500D0X0X0X1	52	46.8	50			
		AVB50600D0X0X0X1	62	55.8	60			
		AVB50750D0X0X0X1	83	74.7	75		C2	V1K80A03
		AVB51000D0X0X0X1	100	90.0	100			V1K110A03
AVB51250D0X0X0X1	131	117.9	125			V1K160A03		

* Nominal HP values are for reference only. Size Aquavar by maximum output amps of the motor.

** dv/dt filter recommended for applications with motor leads longer than 50'. It is recommended to use the dv/dt filter with all submersible applications.

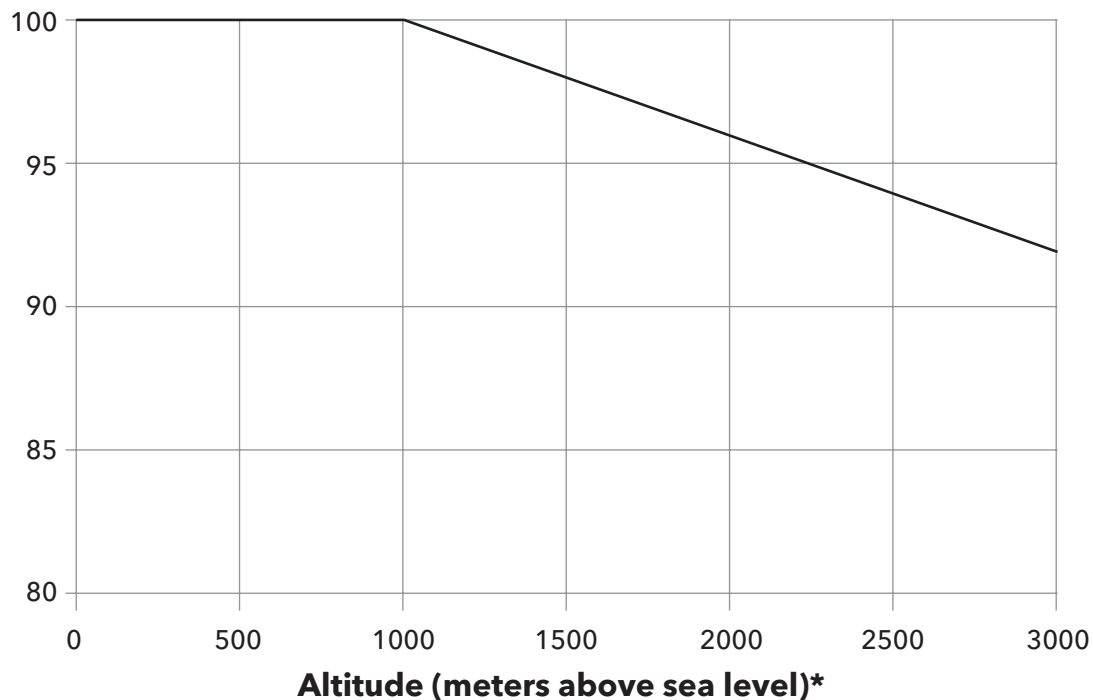
SPECIFICATIONS

Ratings and Enclosures



- IP20 Open, TYPE 1, TYPE 12, TYPE 3R, TYPE 4X
- 1.5 - 125 HP (frame A - C) wall or motor mounted
- Relative humidity lower than 95% without condensation.
- Ambient temperature 14° F - 113° F (-10°C - 45°C). Higher temperatures can be achieved by derating the output amperage of the drive 10% for up to 122° F (50°C).
- At altitudes from 0 to 1000 meters (0 to 3300 feet) rated current is available. For altitudes above 1000 meters (3300 feet) use table listed below. Maximum 3000 meters (9900 feet). (Consult factory above 3000 meters (9900 feet)). See chart below for derate in % of output current.

$I_{OUT}(\%)$



Electrical Characteristics

- INPUT POWER**
- 3 phase 380 V to 480 V $\pm 10\%$
 - 1 phase 200 V to 240 V $\pm 10\%$
 - 3 phase 200 V to 240 V $\pm 10\%$
 - 3 phase 525 V to 600 V $\pm 10\%$
 - Frequency 50 or 60 Hz, $\pm 2\text{Hz}$

- OUTPUT POWER**
- 3 phase from 0 to V_{supply}
 - 0 to 120 Hz frequency

BUILT-IN CONTROL CONNECTIONS

Analog input	1 current (0/4-20mA); 1 current/voltage (0/4-20mA/0-10vdc)
Programmable digital inputs	6, 2 can be used as digital outputs
Analog output	1, 0/4-20 mA
Programmable relay outputs	2, standard Form C, 240 VAC, 2 A
Auxiliary voltage	+24 V DC, maximum 200 mA

PUMP AND MOTOR PROTECTIONS

Motor Protections

- Ground Fault
- Motor Stall
- Motor Over Temperature (Predictive and Sensor Based)
- Motor Condensation (Motor Preheat Circuit)
- Motor Overload (Programmable Action)

Pump Protections

- Pump No-Flow
- Under Pressure
- No Water / Loss of Prime
- Short-Cycle
- Vibration (Programming Automated)

WEATHER SHIELD

The weather shield is intended to provide additional protection of outdoor rated drives when there is a risk of snow collecting on the top of the drive or excessive rain, which could sub cool the drive, leading to internal condensation. The weather shield is made of corrosion resistant stainless and AISI316 and is also suitable for installation in coastal areas and marine environments.

The weather shield is also to be used if there is a risk of direct sunlight on the display, since heat generated by the sun radiation might damage the LCD as well as limit the maximum ambient temperature.

NOTE: The weather shield should only be used together with outdoor rated drives and will not provide sufficient protection for outdoor installation of drives not designed for this purpose.

Weather shield selection:

Frame Size	Ordering Number
A4, A5, B1, B2	9K655
C1, C2	9K698

Aquavar expansion cards can be included in the drive using the smart part number on page 4. Expansion cards can also be ordered as a field installable option using the "K" part numbers listed.

COMMUNICATION OPTIONS (Repair Part Number)

Modbus TCP (9K667)	DeviceNet (9K669)	Profinet (9K671)
Profibus (9K668)	LonWorks (9K670)	Ethernet IP (9K672)

INPUT/OUTPUT OPTIONS (Repair Part Number)

ANALOG I/O CARD (9K653)

Includes: 3 Analog IN for 0 - 10VDC

OR

0-20mA*

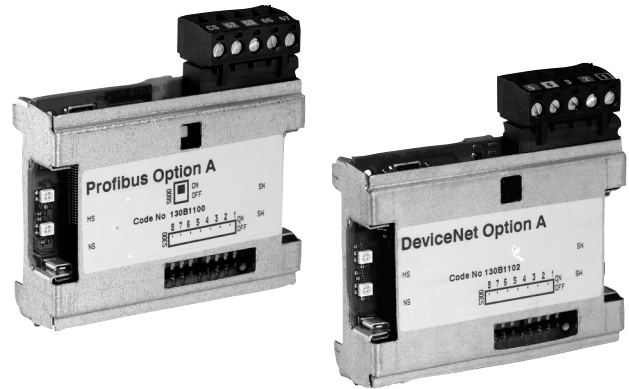
4-20mA*

Ni1000 Temperature Sensor

Pt1000 Temperature Sensor

3 Analog OUT for 0 - 10VDC

Battery backup for real-time clock



Used for: Providing battery backup of clock function during loss of power (real-time clock is native to the drive, and will reset to zero during power outage without Analog I/O card.)

Extension of analog I/O on control card (multi zone with 3 sensors)

Extended PID controllers with I/O's (set point inputs, sensor inputs and outputs)

AIN	GND	AIN	GND	AIN	GND	AOUT O-10VDC	GND	AOUT O-10VDC	GND	AOUT O-10VDC	GND
1	2	3	4	5	6	7	8	9	10	11	12

* Requires 510Ω resistor

GENERAL I/O CARD (9K654)

Includes: 3 Digital IN, 2 Digital OUT, 2 Analog IN (voltage), 1 Analog OUT (current)

Used for: Extension of number of digital and analog inputs and outputs

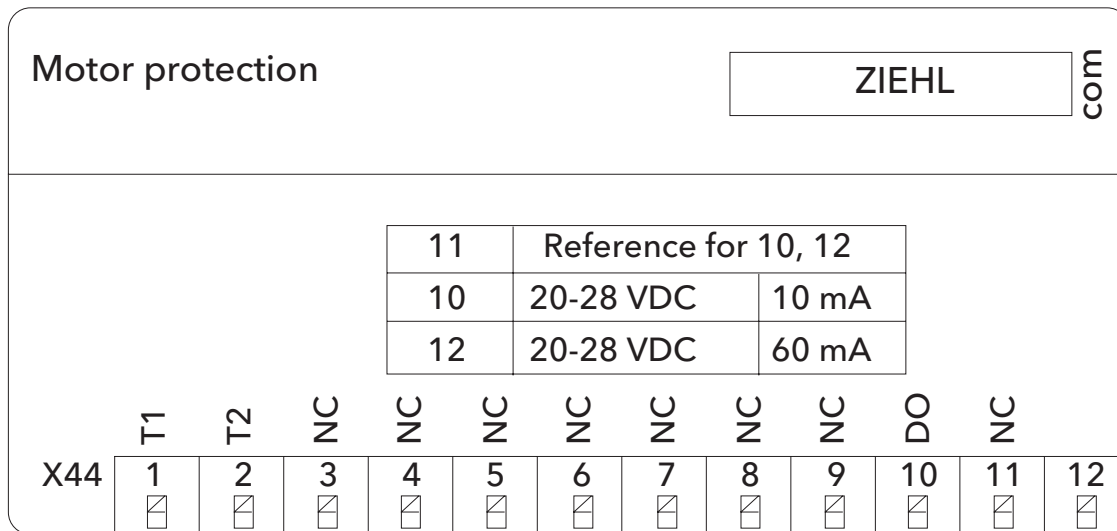
COM	DIN	DIN7	DIN8	DIN9	GND(1)	DOUT3	DOUT4	AOUT2	24V	GND(2)	AIN3	AIN4
X30/	1	2	3	4	5	6	7	8	9	10	11	12

INPUT/OUTPUT OPTIONS *(continued)*

PTC THERMISTOR CARD (9K656)

Includes: Twelve terminal PTC card

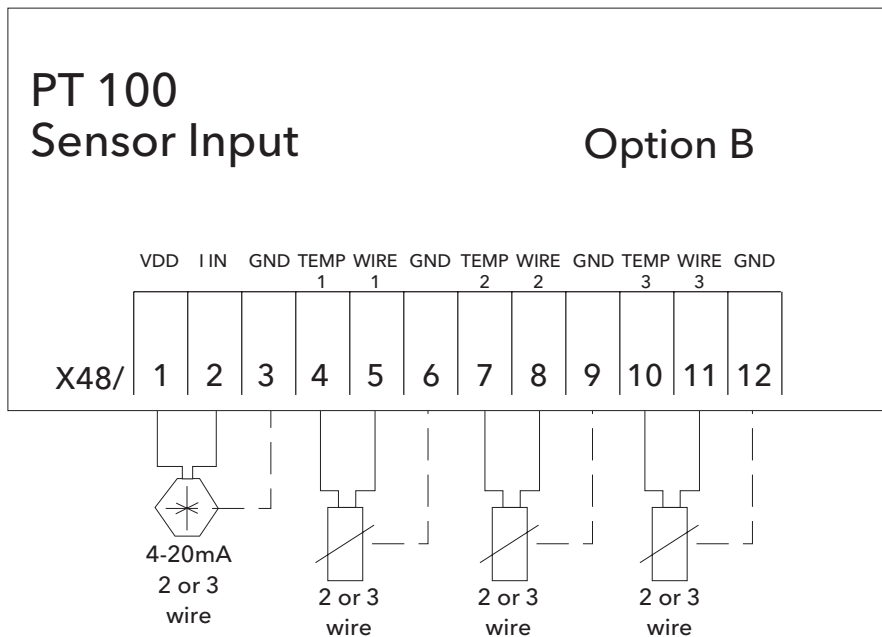
Used for: Monitor temperature of electric motor with PTC thermistor input (PTC Thermistor Card option is Certified for ATEX for use with motors in potentially explosive atmospheres.)



PT100 SENSOR INPUT CARD (9K657)

Includes: Twelve terminal PTC100 card

Used for: Sensor Input for PT100 and PT1000 temperature sensors for motor bearing temperatures

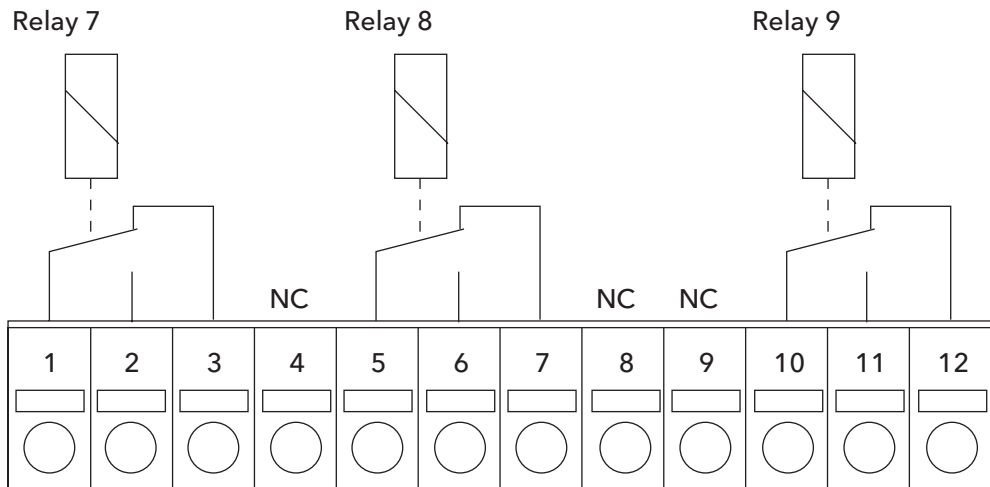


INPUT/OUTPUT OPTIONS *(continued)*

RELAY CARD (9K658)

Includes: 3 standard Form C, 240 VAC, 2 A

Used for: Extension of the number of output relays

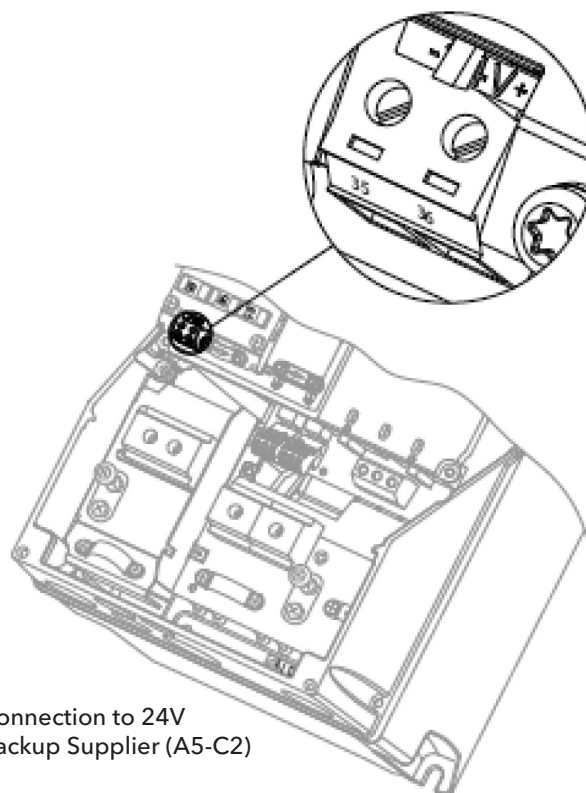


BACKUP OPTIONS

24VDC BACKUP (9K659)

Includes: Pos and Neg Terminals for 24VDC

Used for: Interface to external 24 VDC auxiliary power supply
(Enables full LCP operation without line voltage supplied.)



Connection to 24V
Backup Supplier (A5-C2)

DISCONNECT OPTIONS

FUSED AND STANDARD (NON-FUSED) DISCONNECT

Includes: Fused disconnect enclosure includes fused disconnect in 3 phase NEMA 1, NEMA 12 & NEMA 4X. Standard disconnect available in single phase enclosures only.

Used for: Local disconnect of supply power to the drive.

COATING/EMC FILTER OPTIONS

3C3 BOARD COATING

Includes: Additional protection for printed circuit board (PCB) above the standard protection to 3C2.

Used for: Aggressive environments where drive may be subject to corrosive gases. **NOTE: THIS IS NOT A SUBSTITUTE FOR SIZING THE PROPER ENCLOSURE. ENCLOSURE SHOULD BE SELECTED BASED UPON ENVIRONMENT.**

EMC OPTIONS

Includes: H2 filter (EN 55011 Class A2) standard on all models except 575V and single phase, 10, 20 and 30 HP. 575V and single phase, 10, 20 and 30 HP drives are not available with EMC filter.

Options: H1 or H3 (EN 55011 Class A1/B)

Used for: Increased level of EMC and RFI noise dampening

MOTOR MOUNTING OPTIONS

MOTOR MOUNTING

Includes: Two motor mounting plate adapters sized for motors 56C through 440 frame

Used for: Intended for motor mounting of the VFD. Requires a vertical configuration and the vertical motor to have a mounting foot. The Aquavar with adapter plates mounts right to the motor foot!

DV/DT FILTERS* (ORDER SEPARATELY)

Includes: NEMA 3R dv/dt filter

Used for: Provides motor protection by limiting voltage spikes below 1,000 volts for long lead (submersible) applications.

FEATURES:

- 2 - 130 amps; 240V - 600V; 2 - 125HP
- NEMA 3R Enclosure
- Carrier Frequency: 1 - 12 kHz
- Fundamental Frequency: 0 - 60Hz
- Efficiency: > 98%
- Insulation Rating 600V Class
- Agency Approvals: UL, cUL
- Maximum Altitude: 6,000 feet
 - (Derate for applications above 6,000 feet)

* dv/dt filters are recommended on all pumping applications with Motor leads longer than 50'



DV / DT filters have been sized in the outdoor rated Product Charts (Page 8). DV /DT filters to be ordered separately to mount near the drive.

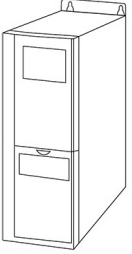
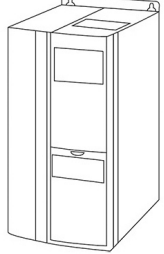
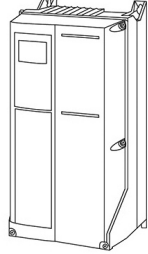
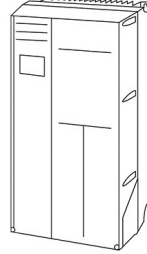
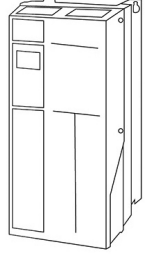
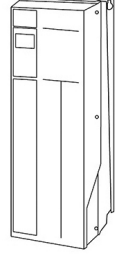
Residential Water Systems

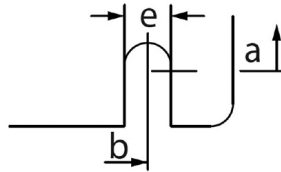
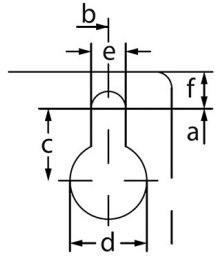
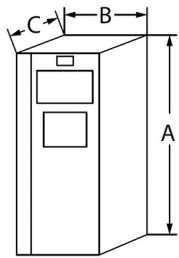
MECHANICAL DIMENSIONS

Frame size (HP):	A2		A3		A4	A5	B1	B2	B3	B4	C1	C2	C3	C4
208-230V	1.5-3		5		1.5-3	1.5-5	7.5-15	20	7.5-15	20-25	25-40	50-60	30-40	50-60
380-460V	1.5-5		7.5-10		1.5-5	1.5-10	15-25	30-40	15-25	30-50	50-75	100-125	60-75	100-125
575V			1.5-10			1.5-10	15-25	15-40	15-25	30-50	50-75	50-125	60-75	100-125
Enclosure Options	IP20 OPEN	TYPE 1	IP20 OPEN	TYPE 1	TYPE 12 TYPE 3R TYPE 4X	TYPE 12 TYPE 3R TYPE 4X	TYPE 1 TYPE 12 TYPE 3R TYPE 4X	TYPE 1 TYPE 12 TYPE 3R TYPE 4X	IP20 OPEN	IP20 OPEN	TYPE 1 TYPE 12 TYPE 3R TYPE 4X	TYPE 1 TYPE 12 TYPE 3R TYPE 4X	IP20 OPEN	IP20 OPEN
Height in (mm)														
Enclosure	9.69 (246)	14.65 (372)	9.69 (246)	14.65 (372)	15.35 (390)	16.54 (420)	18.90 (480)	25.59 (650)	13.78 (350)	18.11 (460)	26.77 (680)	30.31 (770)	19.29 (490)	23.62 (600)
with De-coupling Plate	14.72 (374)	-	14.72 (374)	-	-	-	-	-	16.5 (419)	23.43 (595)	-	-	24.8 (630)	31.5 (800)
Backplate	10.55 (268)	14.76 (375)	10.55 (268)	14.76 (375)	15.35 (390)	16.54 (420)	18.90 (480)	25.59 (650)	15.71 (399)	20.47 (520)	26.77 (680)	30.31 (770)	21.65 (550)	25.98 (660)
Distance Between Mounting Holes	10.12 (257)	13.78 (350)	10.12 (257)	13.78 (350)	15.79 (401)	15.83 (402)	17.87 (454)	24.57 (624)	14.96 (380)	19.49 (495)	25.51 (648)	29.09 (739)	20.51 (521)	24.84 (631)
Width in (mm)														
Enclosure	3.54 (90)	3.54 (90)	5.12 (130)	5.12 (130)	7.87 (200)	9.53 (242)	9.53 (242)	9.53 (242)	6.50 (165)	9.09 (231)	12.13 (308)	14.57 (370)	12.13 (308)	14.57 (370)
Backplate	3.54 (90)	3.54 (90)	5.12 (130)	5.12 (130)	7.87 (200)	9.53 (242)	9.53 (242)	9.53 (242)	6.50 (165)	9.09 (231)	12.13 (308)	14.57 (370)	12.13 (308)	14.57 (370)
Distance Between Mounting Holes	2.76 (70)	2.76 (70)	4.33 (110)	4.33 (110)	6.73 (171)	8.46 (215)	8.27 (210)	8.27 (210)	5.51 (140)	7.87 (200)	10.71 (272)	13.15 (334)	10.63 (270)	12.99 (330)
Depth in (mm)														
Without A/B Option Card*	8.07 (205)	8.07 (205)	8.07 (205)	8.07 (205)	6.89 (175)	7.87 (200)	10.24 (260)	10.24 (260)	9.76 (248)	9.53 (242)	12.20 (310)	13.19 (335)	13.11 (333)	13.11 (333)
With A/B Option Card*	8.66 (220)	8.66 (220)	8.66 (220)	8.66 (220)	6.89 (175)	7.87 (200)	10.24 (260)	10.24 (260)	10.31 (262)	9.53 (242)	12.20 (310)	13.19 (335)	13.11 (333)	13.11 (333)
Screw Holes inches (mm)														
Screw Hole c	0.31 (8)	0.31 (8)	0.31 (8)	0.31 (8)	0.32 (8.2)	0.32 (8.2)	0.47 (12)	0.47 (12)	0.31 (8)	-	0.47 (12)	0.47 (12)	-	-
Screw Hole d	0.43 (11)	0.43 (11)	0.43 (11)	0.43 (11)	0.47 (12)	0.47 (12)	0.75 (19)	0.75 (19)	0.47 (12)	-	0.75 (19)	0.75 (19)	-	-
Screw Hole e	0.22 (5.5)	0.22 (5.5)	0.22 (5.5)	0.22 (5.5)	0.26 (6.5)	0.26 (6.5)	0.35 (9)	0.35 (9)	0.27 (6.8)	0.33 (8.5)	0.35 (9)	0.35 (9)	0.33 (8.5)	0.33 (8.5)
Screw Hole f	0.35 (9)	0.35 (9)	0.35 (9)	0.35 (9)	0.24 (6)	0.35 (9)	0.35 (9)	0.35 (9)	0.31 (7.9)	0.59 (15)	0.39 (9.8)	0.39 (9.8)	0.67 (17)	0.67 (17)
Max. Weight - lb (kg)	11 (5)	12 (5.5)	15 (6.8)	16 (7.3)	22 (10)	31 (14.1)	51 (23.1)	60 (27.2)	27 (12.2)	52 (23.6)	100 (45.4)	144 (65.3)	78 (35.4)	111 (50.4)

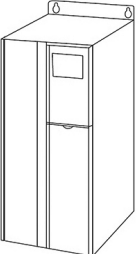
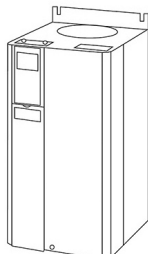
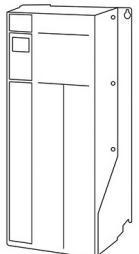
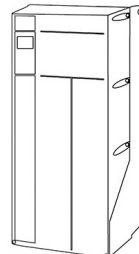
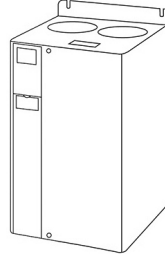
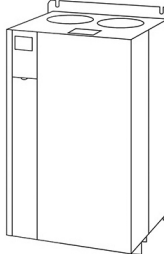
* Depth of enclosure will vary with different options installed.

DIMENSIONS

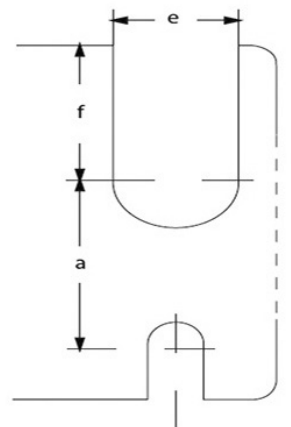
A2  IP20/21* OPEN/TYPE 1	A3  IP20/21* OPEN/TYPE 1	A4  IP55/66 TYPE 12/4X	A5  IP55/66 TYPE 3R/12/4X	B1  IP21/55/66 TYPE 1/3R/12/4X	B2  IP21/55/66 TYPE 1/3R/12/4X
--	--	--	---	--	--



Top and bottom mounting holes

B3  IP20/21* OPEN/TYPE 1	B4  IP20/21* OPEN/TYPE 1	C1  IP21/55/3R/66 TYPE 1/3R/12/4X	C2  IP21/55/3R/66 TYPE 1/3R/12/4X	C3  IP20/21* OPEN/TYPE 1	C4  IP20/21* OPEN/TYPE 1
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Top and bottom mounting holes
(B4 + C3 + C4 only)



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