



# AQUAVAR<sup>®</sup>

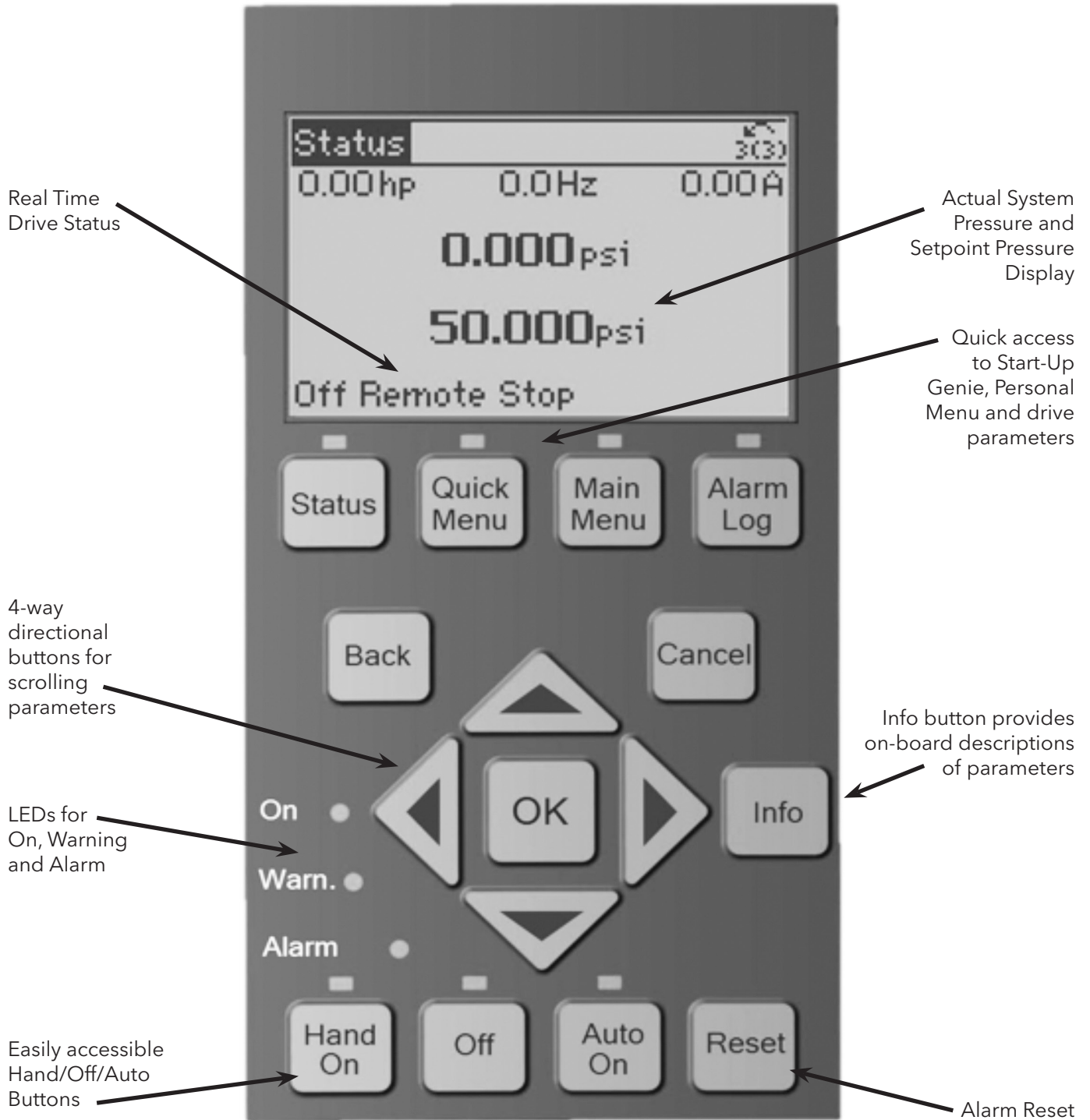
Intelligent Pump Controller

## 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:

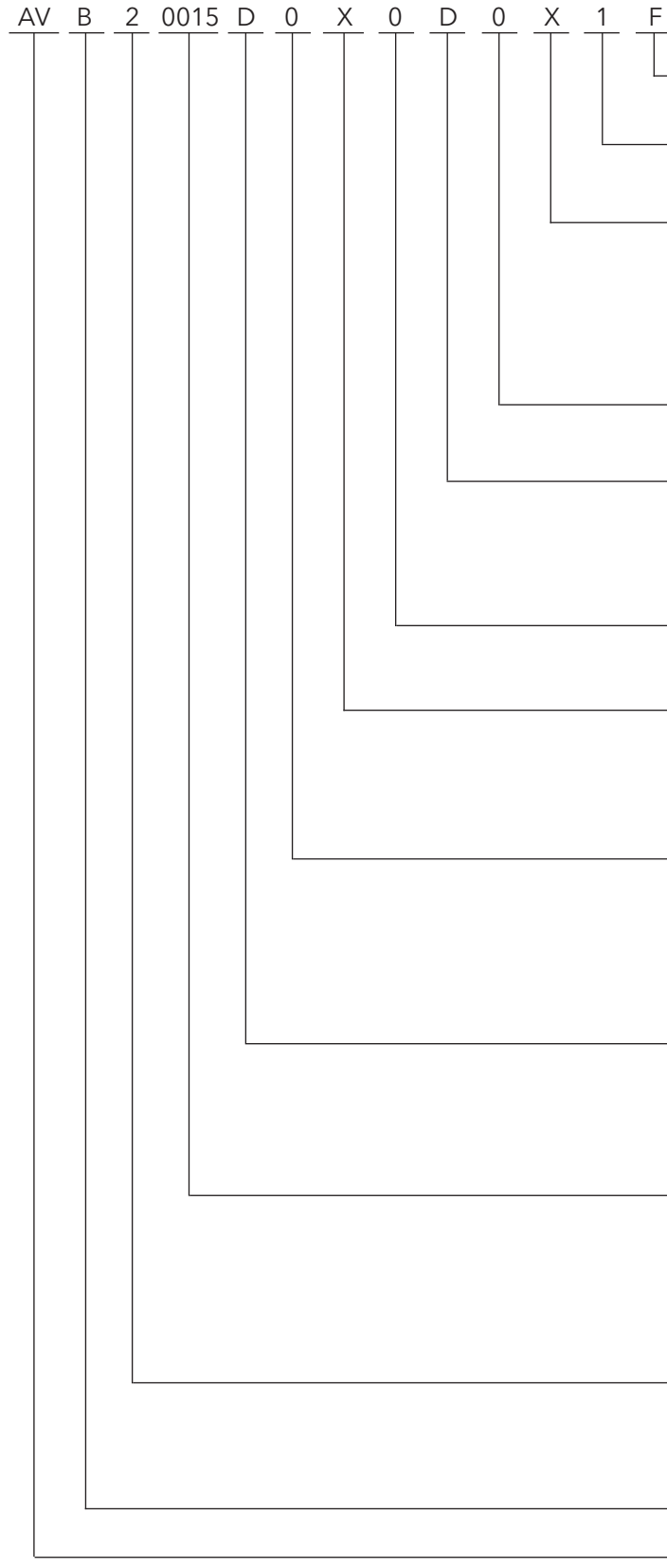
- Application specific *"Start-Up Genie"* guides you through quick and easy commissioning
- Removable, graphical control panel with display
- Fully backlit display with large text makes the control pad easy to read
- Info key activates on board parameter and fault descriptions
- *My Personal Menu* allows 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, BACnet MS/TP, Johnson Controls Metasys® N2 included in standard drive - Other communications available with option cards
- Capable of controlling up to 2 fixed speed pumps, with one standard drive - Option for control of 3 fixed speed pumps using optional relay card
- Duplex variable speed pumping control with auto lead/lag and alternate
- **USB Connectivity - Remotely 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**
- Helps protect the pump from 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

### KEYPAD LAYOUT



### NOMENCLATURE

#### Example Product Code



#### Load Filter

X=No Filter      F=Load Filter

#### Transducer

1=Transducer      2=No Transducer

#### Motor Mounting Options\*\*\*

X = No Hardware      D = 210 Mount      H = 400 Mount  
 A = 56 Mount          E = 250 Mount      J = 440 Mount  
 B = 140 Mount          F = 320 Mount  
 C = 180 Mount          G = 360 Mount

#### Coating Options

0 = Standard Protection      3 = 3C3 Board Coating

#### Disconnect Options

X = No Disconnect  
 S = Standard Disconnect (Single Phase Only)  
 D = Fused Disconnect

#### Backup Options

0 = No Backup      4 = 24VDC Backup

#### Input/Output Options

X = No Additional I/O      C = PTC Thermistor Card  
 A = Analog I/O              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 = IP21 (Type 1)              D = IP66 (Type 4X)  
 B = IP55 (Type 12)            E = IP20 (Open)  
 C = NEMA 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 = 3/460

#### Type - B=Basic Drive

#### Model - AV

\* NEMA 3R enclosures are not available with the 2013 Launch. NEMA 3R enclosure scheduled for release in 2014. Product news will be issued when NEMA 3R are available.

\*\* Single phase 460V are not available with the 2013 Launch. Single phase 460V is scheduled for release in 2014. Product news will be issued when this voltage is available.

\*\*\* Motor mounting options scheduled for release in 2014.

### PRODUCT CHART - IP20 OPEN

INPUT VOLTAGE	INPUT PHASE	IP20 OPEN 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	AVB20015E0X0X0X2X	6.6	5.9	1.5	1.5	A2
		AVB20020E0X0X0X2X	7.5	6.8	2	2	
		AVB20030E0X0X0X2X	10.6	9.5	3	3	
		AVB20050E0X0X0X2X	16.7	15.0	5		A3
		AVB20075E0X0X0X2X	24.2	21.8	7.5	5	B3
		AVB20100E0X0X0X2X	30.8	27.7	10	7.5	
		AVB20150E0X0X0X2X	46.2	41.6	15	10 / 15	B4
		AVB20200E0X0X0X2X	59.4	53.5	20	15	
		AVB20250E0X0X0X2X	74.8	67.3	25	20	C3
		AVB20300E0X0X0X2X	88	79.2	30	25	
		AVB20400E0X0X0X2X	115	103.5	40	30	C4
		AVB20500E0X0X0X2X	143	128.7	50		
		AVB20600E0X0X0X2X	170	153.0	60		
460	3	AVB40015E0X0X0X2X	2.7	2.4	1.5	1	A2
		AVB40020E0X0X0X2X	3.4	3.1	2	1.5	
		AVB40030E0X0X0X2X	4.8	4.3	3	2	
		AVB40050E0X0X0X2X	8.2	7.4	5	3	A3
		AVB40075E0X0X0X2X	11	9.9	7.5	5	
		AVB40100E0X0X0X2X	14.5	13.1	10	7.5	B3
		AVB40150E0X0X0X2X	21	18.9	15	10	
		AVB40200E0X0X0X2X	27	24.3	20	15	B4
		AVB40250E0X0X0X2X	34	30.6	25	20	
		AVB40300E0X0X0X2X	40	36.0	30	25	C3
		AVB40400E0X0X0X2X	52	46.8	40	30	
		AVB40500E0X0X0X2X	65	58.5	50	40	C4
		AVB40600E0X0X0X2X	80	72.0	60	50	
		AVB40750E0X0X0X2X	105	94.5	75	60	C4
		AVB41000E0X0X0X2X	130	117.0	100	75	
		AVB41250E0X0X0X2X	160	144.0	125	100	
		575	3	AVB50015E0X0X0X2X	2.4	2.2	1.5
AVB50020E0X0X0X2X	2.7			2.4	2		
AVB50030E0X0X0X2X	3.9			3.5	3	2	
AVB50050E0X0X0X2X	6.1			5.5	5	3	
AVB50075E0X0X0X2X	9			8.1	7.5	5	
AVB50100E0X0X0X2X	11			9.9	10	7.5	B3
AVB50150E0X0X0X2X	18			16.2	15		
AVB50200E0X0X0X2X	22			19.8	20		B4
AVB50250E0X0X0X2X	27			24.3	25		
AVB50300E0X0X0X2X	34			30.6	30		C3
AVB50400E0X0X0X2X	41			36.9	40		
AVB50500E0X0X0X2X	52			46.8	50		C4
AVB50600E0X0X0X2X	62			55.8	60		
AVB50750E0X0X0X2X	83			74.7	75		
AVB51000E0X0X0X2X	100			90.0	100		C4
AVB51250E0X0X0X2X	131			117.9	125		

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

### PRODUCT CHART - NEMA 1

INPUT VOLTAGE	INPUT PHASE	NEMA 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	AVB10015A0X0X0X1X	6.6	5.9	1.5	1.5	A3
		AVB10020A0X0X0X1X	7.5	6.8	2	2	B1
		AVB10030A0X0X0X1X	10.6	9.5	3	3	
		AVB10050A0X0X0X1X	16.7	15.0	5		
		AVB10075A0X0X0X1X	24.2	21.8	7.5	5	
		AVB10100A0X0X0X1X	30.8	27.7	10	7.5 / 5	B2
		AVB10200A0X0X0X1X	59.4	53.5	20	10	C1
		AVB10300A0X0X0X1X	88	79.2	30	15 & 20	C2
208-230	3	AVB20015A0X0X0X1X	6.6	5.9	1.5	1.5	A2
		AVB20020A0X0X0X1X	7.5	6.8	2	2	
		AVB20030A0X0X0X1X	10.6	9.5	3	3	
		AVB20050A0X0X0X1X	16.7	15.0	5		A3
		AVB20075A0X0X0X1X	24.2	21.8	7.5	5	B1
		AVB20100A0X0X0X1X	30.8	27.7	10	7.5	
		AVB20150A0X0X0X1X	46.2	41.6	15	10 / 15	
		AVB20200A0X0X0X1X	59.4	53.5	20	15	B2
		AVB20250A0X0X0X1X	74.8	67.3	25	20	C1
		AVB20300A0X0X0X1X	88	79.2	30	25	
		AVB20400A0X0X0X1X	115	103.5	40	30	
		AVB20500A0X0X0X1X	143	128.7	50		C2
		AVB20600A0X0X0X1X	170	153.0	60		
460	3	AVB40015A0X0X0X1X	2.7	2.4	1.5	1	A2
		AVB40020A0X0X0X1X	3.4	3.1	2	1.5	
		AVB40030A0X0X0X1X	4.8	4.3	3	2	
		AVB40050A0X0X0X1X	8.2	7.4	5	3	
		AVB40075A0X0X0X1X	11	9.9	7.5	5	A3
		AVB40100A0X0X0X1X	14.5	13.1	10	7.5	A3
		AVB40150A0X0X0X1X	21	18.9	15	10	B1
		AVB40200A0X0X0X1X	27	24.3	20	15	
		AVB40250A0X0X0X1X	34	30.6	25	20	
		AVB40300A0X0X0X1X	40	36.0	30	25	B2
		AVB40400A0X0X0X1X	52	46.8	40	30	
		AVB40500A0X0X0X1X	65	58.5	50	40	
		AVB40600A0X0X0X1X	80	72.0	60	50	C1
		AVB40750A0X0X0X1X	105	94.5	75	60	
		AVB41000A0X0X0X1X	130	117.0	100	75	C2
		AVB41250A0X0X0X1X	160	144.0	125	100	
575	3	AVB50015A0X0X0X1X	2.4	2.2	1.5	1.5	A3
		AVB50020A0X0X0X1X	2.7	2.4	2		
		AVB50030A0X0X0X1X	3.9	3.5	3	2	
		AVB50050A0X0X0X1X	6.1	5.5	5	3	
		AVB50075A0X0X0X1X	9	8.1	7.5	5	
		AVB50100A0X0X0X1X	11	9.9	10	7.5	
		AVB50150A0X0X0X1X	18	16.2	15		B1
		AVB50200A0X0X0X1X	22	19.8	20		
		AVB50250A0X0X0X1X	27	24.3	25		
		AVB50300A0X0X0X1X	34	30.6	30		B2
		AVB50400A0X0X0X1X	41	36.9	40		
		AVB50500A0X0X0X1X	52	46.8	50		
		AVB50600A0X0X0X1X	62	55.8	60		C1
		AVB50750A0X0X0X1X	83	74.7	75		
		AVB51000A0X0X0X1X	100	90.0	100		C2
		AVB51250A0X0X0X1X	131	117.9	125		

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

### PRODUCT CHART - IP55/TYPE 12

INPUT VOLTAGE	INPUT PHASE	IP55/Type 12 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	AVB10015B0X0X0X1X	6.6	5.9	1.5	1.5	A5
		AVB10020B0X0X0X1X	7.5	6.8	2	2	B1
		AVB10030B0X0X0X1X	10.6	9.5	3	3	
		AVB10050B0X0X0X1X	16.7	15.0	5	5	
		AVB10075B0X0X0X1X	24.2	21.8	7.5	7.5 / 5	B2
		AVB10100B0X0X0X1X	30.8	27.7	10	10	C3
		AVB10200B0X0X0X1X	59.4	53.5	20	15 & 20	C4
		AVB10300B0X0X0X1X	88	79.2	30		
208-230	3	AVB20015B0X0X0X1X	6.6	5.9	1.5	1.5	A5
		AVB20020B0X0X0X1X	7.5	6.8	2	2	
		AVB20030B0X0X0X1X	10.6	9.5	3	3	
		AVB20050B0X0X0X1X	16.7	15.0	5	5	B1
		AVB20075B0X0X0X1X	24.2	21.8	7.5	7.5	
		AVB20100B0X0X0X1X	30.8	27.7	10	10 / 15	B2
		AVB20150B0X0X0X1X	46.2	41.6	15	15	C1
		AVB20200B0X0X0X1X	59.4	53.5	20	20	
		AVB20250B0X0X0X1X	74.8	67.3	25	25	C2
		AVB20300B0X0X0X1X	88	79.2	30	30	
		AVB20400B0X0X0X1X	115	103.5	40		
		AVB20500B0X0X0X1X	143	128.7	50		
		AVB20600B0X0X0X1X	170	153.0	60		
460	3	AVB40015B0X0X0X1X	2.7	2.4	1.5	1	A5
		AVB40020B0X0X0X1X	3.4	3.1	2	1.5	
		AVB40030B0X0X0X1X	4.8	4.3	3	2	
		AVB40050B0X0X0X1X	8.2	7.4	5	3	
		AVB40075B0X0X0X1X	11	9.9	7.5	5	
		AVB40100B0X0X0X1X	14.5	13.1	10	7.5	B1
		AVB40150B0X0X0X1X	21	18.9	15	10	
		AVB40200B0X0X0X1X	27	24.3	20	15	
		AVB40250B0X0X0X1X	34	30.6	25	20	B2
		AVB40300B0X0X0X1X	40	36.0	30	25	
		AVB40400B0X0X0X1X	52	46.8	40	30	C1
		AVB40500B0X0X0X1X	65	58.5	50	40	
		AVB40600B0X0X0X1X	80	72.0	60	50	
		AVB40750B0X0X0X1X	105	94.5	75	60	C2
		AVB41000B0X0X0X1X	130	117.0	100	75	
		AVB41250B0X0X0X1X	160	144.0	125	100	
575	3	AVB50015B0X0X0X1X	2.4	2.2	1.5	1.5	A5
		AVB50020B0X0X0X1X	2.7	2.4	2		
		AVB50030B0X0X0X1X	3.9	3.5	3	2	
		AVB50050B0X0X0X1X	6.1	5.5	5	3	
		AVB50075B0X0X0X1X	9	8.1	7.5	5	
		AVB50100B0X0X0X1X	11	9.9	10	7.5	
		AVB50150B0X0X0X1X	18	16.2	15		B1
		AVB50200B0X0X0X1X	22	19.8	20		
		AVB50250B0X0X0X1X	27	24.3	25		
		AVB50300B0X0X0X1X	34	30.6	30		B2
		AVB50400B0X0X0X1X	41	36.9	40		
		AVB50500B0X0X0X1X	52	46.8	50		C1
		AVB50600B0X0X0X1X	62	55.8	60		
		AVB50750B0X0X0X1X	83	74.7	75		
		AVB51000B0X0X0X1X	100	90.0	100		C2
		AVB51250B0X0X0X1X	131	117.9	125		

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

### PRODUCT CHART - NEMA 4X

INPUT VOLTAGE	INPUT PHASE	NEMA 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	AVB10015D0X0X0X1X	6.6	5.9	1.5	1.5	A5	V1K8A03	
		AVB10020D0X0X0X1X	7.5	6.8	2	2	B1		
		AVB10030D0X0X0X1X	10.6	9.5	3	3			
		AVB10050D0X0X0X1X	16.7	15.0	5	5			
		AVB10075D0X0X0X1X	24.2	21.8	7.5	5	B2		V1K25A03
		AVB10100D0X0X0X1X	30.8	27.7	10	7.5 / 5	C3		V1K35A03
		AVB10200D0X0X0X1X	59.4	53.5	20	10	C4		V1K80A03
AVB10300D0X0X0X1X	88	79.2	30	15 & 20		V1K110A03			
208-230	3	AVB20015D0X0X0X1X	6.6	5.9	1.5	1.5	A5	V1K8A03	
		AVB20020D0X0X0X1X	7.5	6.8	2	2			
		AVB20030D0X0X0X1X	10.6	9.5	3	3			
		AVB20050D0X0X0X1X	16.7	15.0	5	5	B1	V1K18A03	
		AVB20075D0X0X0X1X	24.2	21.8	7.5	5		V1K25A03	
		AVB20100D0X0X0X1X	30.8	27.7	10	7.5		V1K35A03	
		AVB20150D0X0X0X1X	46.2	41.6	15	10 / 15	B2	V1K55A03	
		AVB20200D0X0X0X1X	59.4	53.5	20	15		V1K80A03	
		AVB20250D0X0X0X1X	74.8	67.3	25	20	C1	V1K110A03	
		AVB20300D0X0X0X1X	88	79.2	30	25		V1K130A03	
		AVB20400D0X0X0X1X	115	103.5	40	30		V1K160A03	
		AVB20500D0X0X0X1X	143	128.7	50		C2	V1K200A03	
AVB20600D0X0X0X1X	170	153.0	60						
460	3	AVB40015D0X0X0X1X	2.7	2.4	1.5	1	A5	V1K8A03	
		AVB40020D0X0X0X1X	3.4	3.1	2	1.5			
		AVB40030D0X0X0X1X	4.8	4.3	3	2			
		AVB40050D0X0X0X1X	8.2	7.4	5	3			
		AVB40075D0X0X0X1X	11	9.9	7.5	5			
		AVB40100D0X0X0X1X	14.5	13.1	10	7.5	B1	V1K18A03	
		AVB40150D0X0X0X1X	21	18.9	15	10		V1K25A03	
		AVB40200D0X0X0X1X	27	24.3	20	15		V1K35A03	
		AVB40250D0X0X0X1X	34	30.6	25	20	B2	V1K55A03	
		AVB40300D0X0X0X1X	40	36.0	30	25			
		AVB40400D0X0X0X1X	52	46.8	40	30			
		AVB40500D0X0X0X1X	65	58.5	50	40	C1	V1K80A03	
		AVB40600D0X0X0X1X	80	72.0	60	50		V1K110A03	
		AVB40750D0X0X0X1X	105	94.5	75	60		V1K130A03	
AVB41000D0X0X0X1X	130	117.0	100	75	C2	V1K160A03			
AVB41250D0X0X0X1X	160	144.0	125	100					
575	3	AVB50015D0X0X0X1X	2.4	2.2	1.5	1.5	A5	V1K8A03	
		AVB50020D0X0X0X1X	2.7	2.4	2	2			
		AVB50030D0X0X0X1X	3.9	3.5	3	2			
		AVB50050D0X0X0X1X	6.1	5.5	5	3			
		AVB50075D0X0X0X1X	9	8.1	7.5	5			
		AVB50100D0X0X0X1X	11	9.9	10	7.5	B1	V1K12A03	
		AVB50150D0X0X0X1X	18	16.2	15			V1K25A03	
		AVB50200D0X0X0X1X	22	19.8	20			V1K35A03	
		AVB50250D0X0X0X1X	27	24.3	25		B2	V1K55A03	
		AVB50300D0X0X0X1X	34	30.6	30				
		AVB50400D0X0X0X1X	41	36.9	40				
		AVB50500D0X0X0X1X	52	46.8	50		C1	V1K80A03	
		AVB50600D0X0X0X1X	62	55.8	60			V1K110A03	
		AVB50750D0X0X0X1X	83	74.7	75			V1K160A03	
		AVB51000D0X0X0X1X	100	90.0	100		C2		
AVB51250D0X0X0X1X	131	117.9	125						

\* 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".

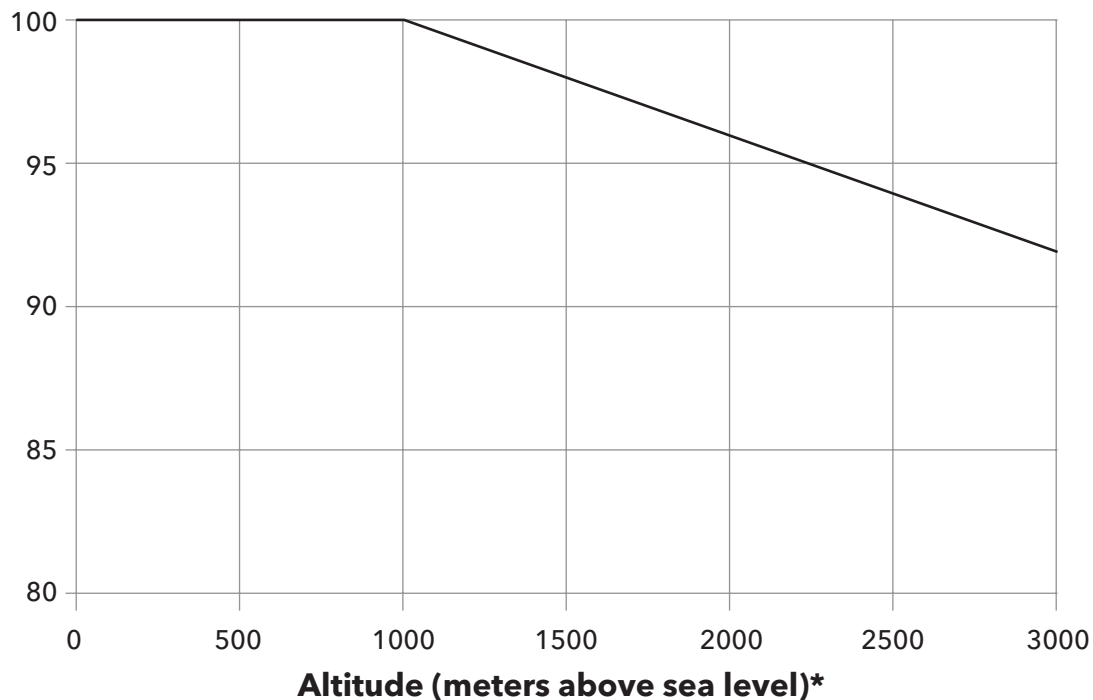


### SPECIFICATIONS

#### Ratings and Enclosures

- IP20 Open, NEMA 1, IP55/Type 12, NEMA 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<sub>OUT</sub>(%)**



#### Electrical Characteristics

- INPUT POWER**
- 3 phase 380 V to 480 V ±10%
  - 1 phase 200 V to 240 V ±10%
  - 3 phase 200 V to 240 V ±10%
  - 3 phase 525 V to 600 V ±10%
  - Frequency 50 or 60 Hz, ±2Hz

- OUTPUT POWER**
- 3 phase from 0 to V<sub>supply</sub>
  - 0 to 120 Hz frequency

### BUILT-IN CONTROL CONNECTIONS

Analog input .....	2, voltage or current, direct or inverse
Programmable digital inputs .....	6, 2 can be used as digital outputs
Programmable analog outputs .....	1, 0-10vdc or 4 - 20 mA
Programmable relay outputs .....	2, standard Form C, 240 VAC, 2 A
Auxiliary voltage .....	+24 V DC, maximum 200 mA

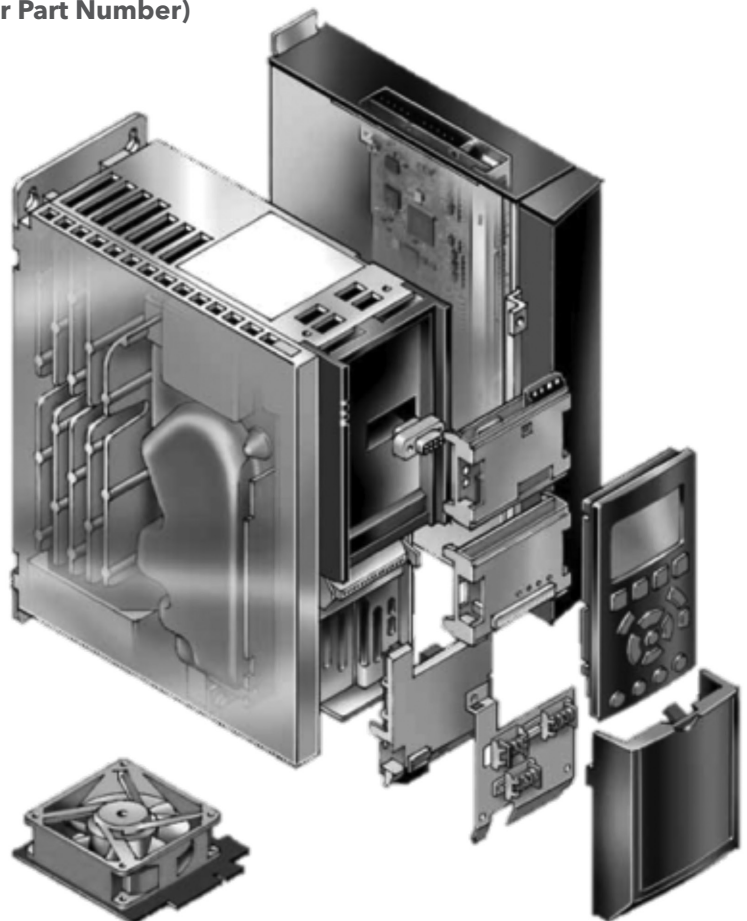
### PUMP AND MOTOR PROTECTIONS

Motor Protections	Pump Protections
Ground Fault	Pump No-Flow
Motor Stall	Pump end of curve
Motor Over Temperature (Predictive and Sensor Based)	Dry Pump
Motor Condensation (Motor Preheat Circuit)	Short-Cycle
Motor Overload (Programmable Action)	Vibration (Programming Automated)

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 EXPANSION OPTIONS (Repair Part Number)

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



### INPUT/OUTPUT EXPANSION 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 0-10VDC	GND	AOUT 0-10VDC	GND	AOUT 0-10VDC	GND
1	2	3	4	5	6	7	8	9	10	11	12

\* Requires 510Ω resistor

### Input / Output Expansion Options

#### 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

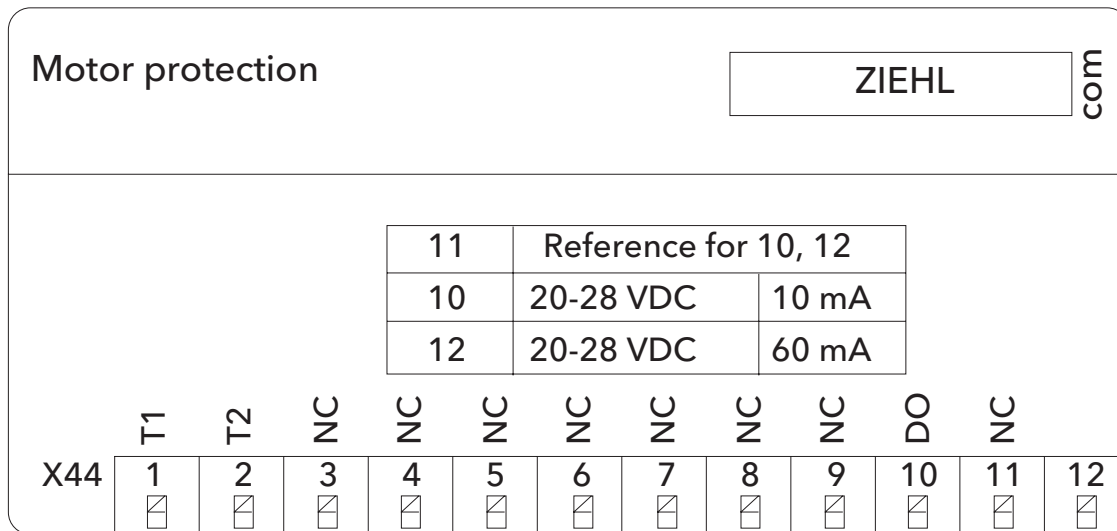
	COM	DIN	DIN7	DIN8	DIN9	GND(1)	DOUT3	DOUT4	AOUT2	24V	GND(2)	AIN3	AIN4
<b>X30/</b>	1	2	3	4	5	6	7	8	9	10	11	12	

### INPUT/OUTPUT EXPANSION OPTIONS

#### PTC THERMISTOR CARD (9K656)

Includes: Twelve terminal PTC card

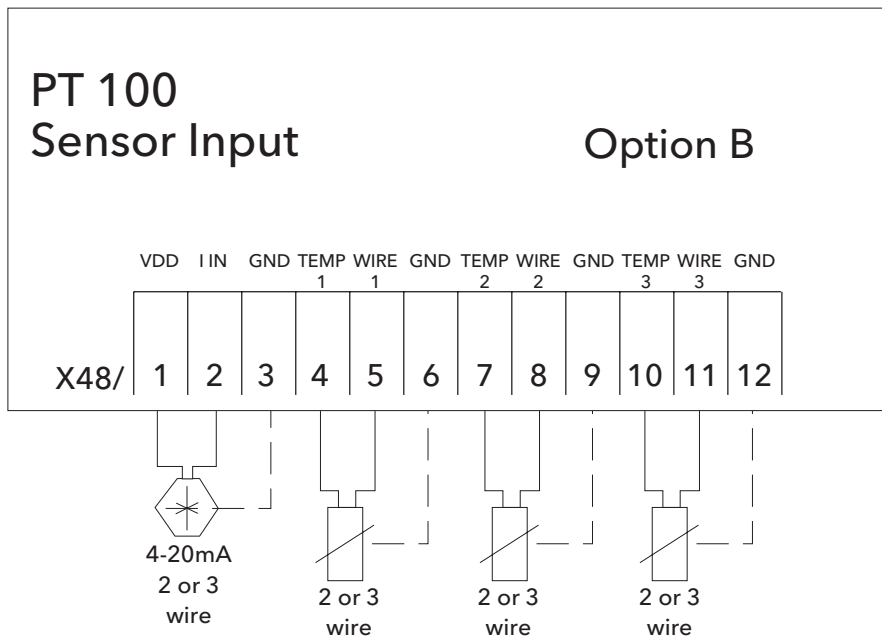
Used for: Monitor temperature of electric motor with PTC thermistor input (PTC Thermistor Card option is Certified for ATEX for use with motors in potentially explosive atmospheres.)



#### PT100 SENSOR INPUT CARD (9K657)

Includes: Twelve terminal PTC100 card

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

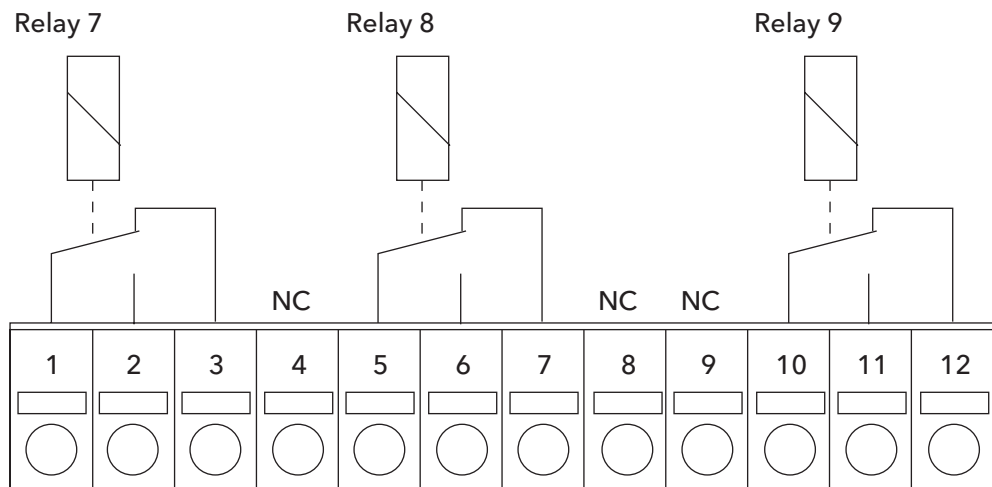


### INPUT/OUTPUT EXPANSION OPTIONS

#### RELAY CARD (9K658)

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

Used for: Extension of the number of output relays

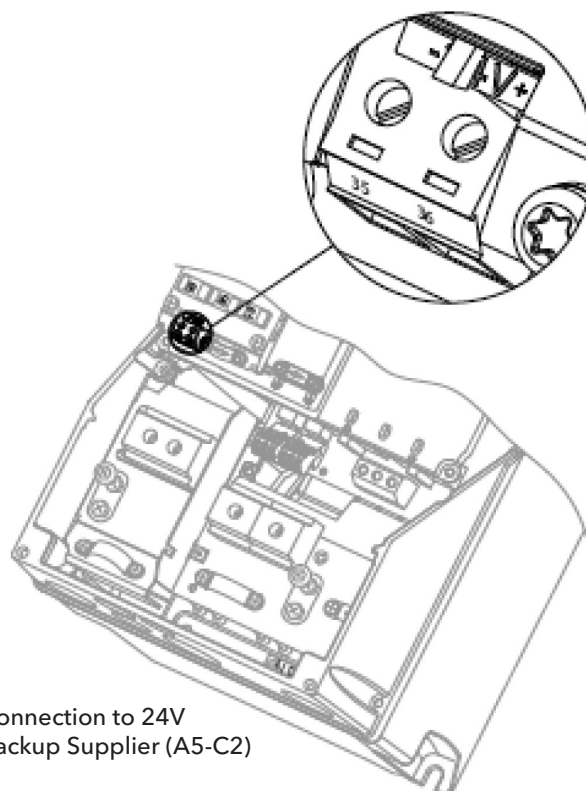


### BACKUP OPTIONS

#### 24VDC BACKUP (9K659)

Includes: Pos and Neg Terminals for 24VDC

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



Connection to 24V Backup Supplier (A5-C2)

### DRIVE OPTIONS

#### FUSED AND STANDARD DISCONNECT

**Includes:** Fused disconnect enclosure includes fused disconnect in 3 phase NEMA 1, IP55/Type 12 & NEMA 4X. Standard disconnect available in single phase enclosures only.

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

### COATING 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.**

### 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!

### ACCESSORIES

#### 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

#### DV/DT FILTERS\*

**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'



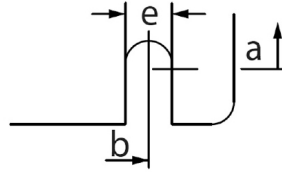
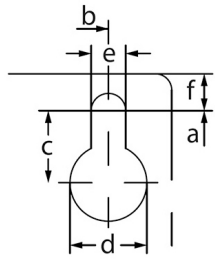
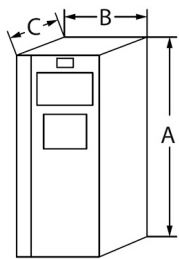
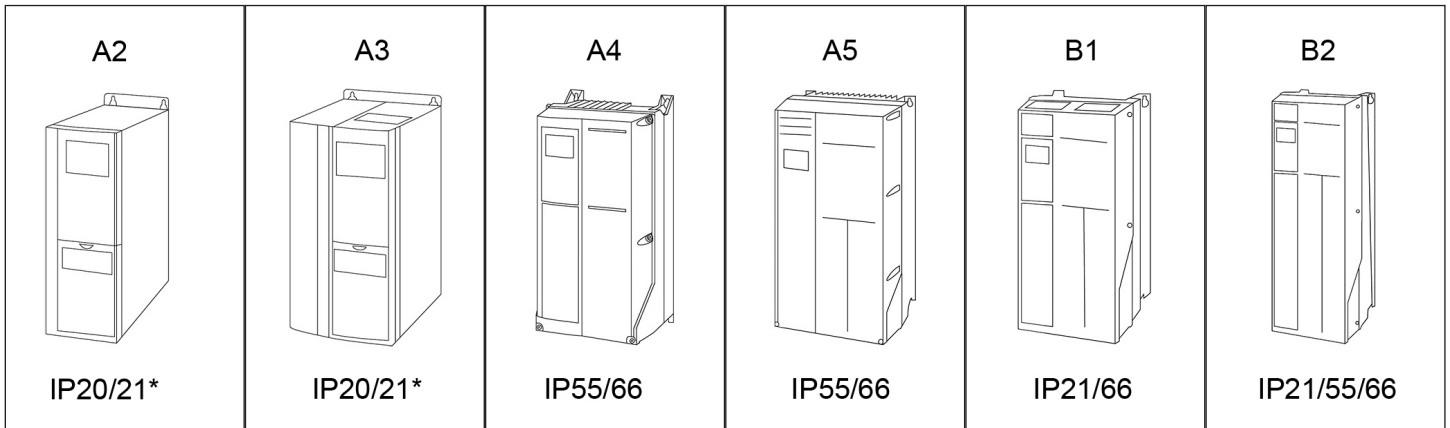
DV / DT filters have been sized in the Product Charts, and will be delivered with your Aquavar when you use the "F" Load Filter character.

### MECHANICAL DIMENSIONS

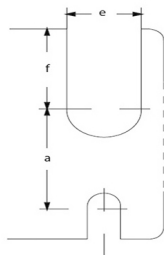
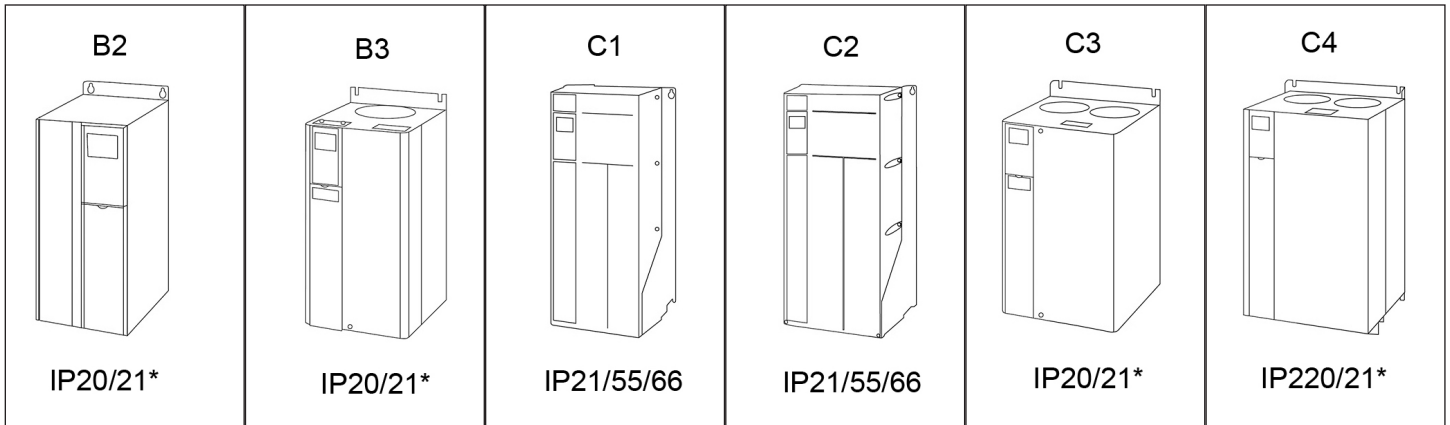
Frame size (HP):	A2		A3		A4	A5	B1	B2	B3	B4	C1	C2	C3	C4
208-230V	1.5-3		5		1.5-3	1.5-5	7.5-15	20	7.5-15	20-25	25-40	50-60	30-40	50-60
380-460V	1.5-5		7.5-10		1.5-5	1.5-10	15-25	30-40	15-25	30-50	50-75	100-125	60-75	100-125
575V			1.5-10			1.5-10	15-25	15-40	15-25	30-50	50-75	50-125	60-75	100-125
Enclosure	IP20 OPEN	NEMA 1	IP20 OPEN	NEMA 1	IP55/ Type 12 NEMA 4X	IP55/ Type 12 NEMA 4X	NEMA 1 IP55/ Type 12 NEMA 4X	NEMA 1 IP55/ Type 12 NEMA 4X	IP20 OPEN	IP20 OPEN	NEMA 1 IP55/ Type 12 NEMA 4X	NEMA 1 IP55/ Type 12 NEMA 4X	IP20 OPEN	IP20 OPEN
<b>Height in (mm)</b>														
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)
<b>Width in (mm)</b>														
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)
<b>Depth in (mm)</b>														
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)
<b>Screw Holes inches (mm)</b>														
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



Top and bottom mounting holes



Top and bottom mounting holes  
(B4 + C3 + C4 only)

**xylem**  
Let's Solve Water

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