

**xylem**

Let's Solve Water

**TECHNICAL BROCHURE**

BCPAQIPC R6



# AQUAVAR IPC

## Variable Speed Controller

## Aquavar IPC

The Aquavar IPC variable speed controller brings the latest in pump drive technology and programming. The drive and interface are designed to give you advanced capabilities that help you effectively and efficiently operate your system.

### Optimized for Pumps

- Wide range of standard and permanent magnet motors with power up to 90 kw / 450 hp
- Developed by pump experts and optimized for controlling pumps
- Submersible and above ground applications

### Quick set up and ease of use

- Easier start-up and programming with Start-Up Genie
- Two wire multi-pump connection for faster installation
- Hand on, Off, and Auto-On buttons available for easy pump operation at the keypad. No toggling between local and remote operation

### Helping to Improve Your Performance

- Multi-pump configuration for up to four (4) pumps - no need for PLC
- System redundancy with multi-master control in case of drive failure

### Standard for every drive

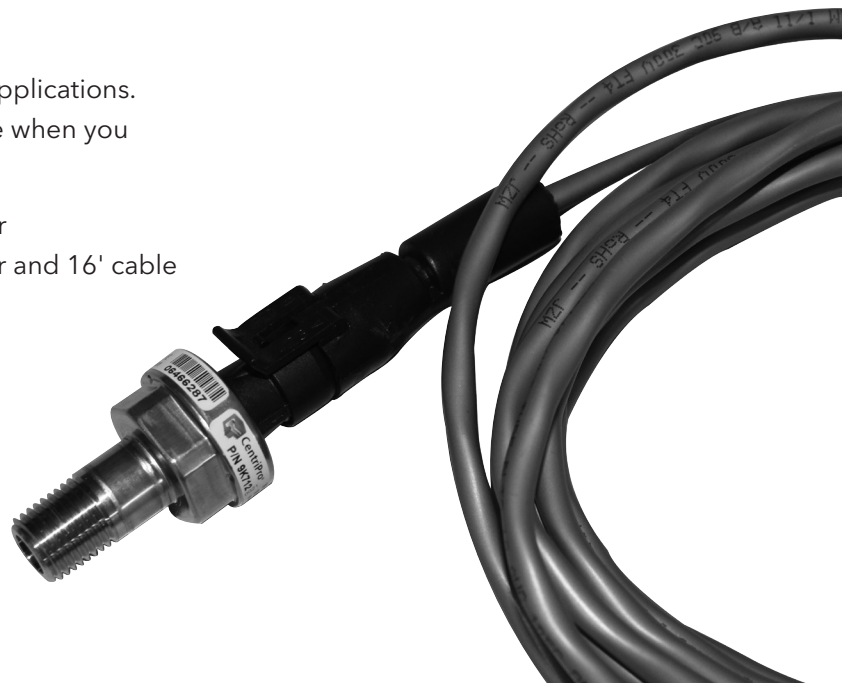
- Wide range of voltage and enclosure options
- True 208V coverage
- Dedicated single phase input
- Remote commissioning and monitoring with USB Connectivity and software
- In-panel or handheld keypad with backlit display
- Alarm Log for last 5 alarms and maintenance events
- EMC/RFI filters and Dual DC-link reactors to reduce drive noise emissions and interference I/O expansion cards, factory installed or field configured

### TRANSDUCER

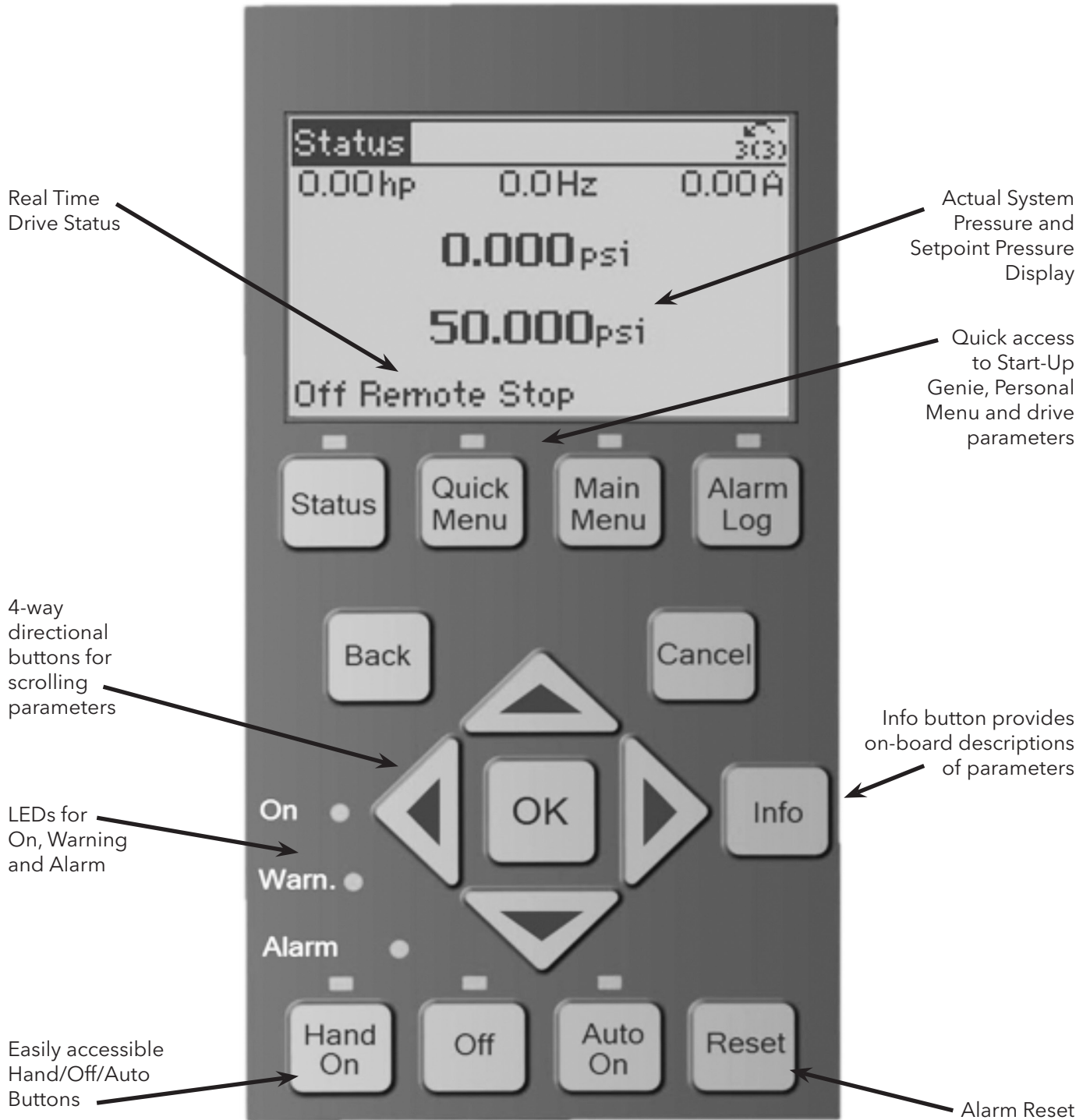
**Includes:** 4-20mA, 300psi transducer and 16' cable

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

**NOTE:** 9K712 - Repair part number for the transducer  
9K755 - Repair part number for the transducer and 16' cable



### KEYPAD LAYOUT



### NOMENCLATURE

#### Example Product Code

AV A 2 0015 D 0 F 0 D 0 X 1

#### 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

A = Analog I/O and Real-time Clock

B = General Purpose I/O

C = PTC Thermistor Card

D = PT100 Sensor Input

E = Relay Card

F = Co-Processor

#### Communications Options

0 = Standard Communication

1 = Modbus TCP

2 = Profibus

3 = DeviceNet

4 = LonWorks

5 = Profinet

6 = Ethernet IP

7 = Co-Processor

#### Enclosure

A = TYPE 1 (IP21)

B = TYPE 12 (IP55)

C = TYPE 3R

D = TYPE 4X (IP66)

E = IP20 (Chassis)

#### 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** - A= Advanced

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.

### NOMENCLATURE

#### Example Product Code

AV A 2 2500 A 0 F 0 D 3 X 1

#### Transducer

1=Transducer 2=No Transducer

#### Motor Mounting Options

X = No Accessories

#### Coating Options

3 = 3C3 Board Coating with H2 EMC Filter  
(Standard RFI Filter)

4 = 3C3 Board Coating with H3 EMC Filter

5 = 3C3 Board Coating with H1 EMC Filter

#### Disconnect Options

X = No Disconnect (Open Chassis and NEMA 3R Only)

D = Fused Disconnect (NEMA 1 and NEMA 12 Only)

#### Backup Options

0 = No Backup

4 = 24VDC Backup

(Requires External Power)

#### Input/Output Options

X = No Additional I/O

A = Analog I/O and  
Real-time Clock

B = General Purpose I/O

C = PTC Thermistor Card

D = PT100 Sensor Input

E = Relay Card

F = Co-Processor

#### Communications Options

0 = Standard Communication

1 = Modbus TCP

2 = Profibus

3 = DeviceNet

4 = LonWorks

5 = Profinet

6 = Ethernet IP

7 = Co-Processor

#### Enclosure

A = NEMA 1 (IP21)

B = NEMA 12 (IP55)

C = NEMA 3R (IP54 drive - Separate 3R Cover Required)

E = IP20 / IP00 (Chassis)

#### Nominal HP

1500	2500	3500	4500	5500**
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2000	3000	4000*	5000	6000
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#### Phase/Voltage

4 = 3/460 5 = 3/575

**Type** - A= Advanced

B=Basic Drive

**Model** - AV

\* Available on 575V only.

\*\* Available on 460V only.

### 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	AVA20015E0FOX0X2	6.6	5.9	1.5	1.5	A2
		AVA20020E0FOX0X2	7.5	6.8	2	2	
		AVA20030E0FOX0X2	10.6	9.5	3	3	
		AVA20050E0FOX0X2	16.7	15.0	5		A3
		AVA20075E0FOX0X2	24.2	21.8	7.5	5	B3
		AVA20100E0FOX0X2	30.8	27.7	10	7.5	
		AVA20150E0FOX0X2	46.2	41.6	15	10 / 15	B4
		AVA20200E0FOX0X2	59.4	53.5	20	15	
		AVA20250E0FOX0X2	74.8	67.3	25	20	C3
		AVA20300E0FOX0X2	88	79.2	30	25	
		AVA20400E0FOX0X2	115	103.5	40	30	C4
		AVA20500E0FOX0X2	143	128.7	50		
		AVA20600E0FOX0X2	170	153.0	60		
380-460	3	AVA40015E0FOX0X2	2.7	2.4	1.5	1	A2
		AVA40020E0FOX0X2	3.4	3.1	2	1.5	
		AVA40030E0FOX0X2	4.8	4.3	3	2	
		AVA40050E0FOX0X2	8.2	7.4	5	3	A3
		AVA40075E0FOX0X2	11	9.9	7.5	5	
		AVA40100E0FOX0X2	14.5	13.1	10	7.5	B3
		AVA40150E0FOX0X2	21	18.9	15	10	
		AVA40200E0FOX0X2	27	24.3	20	15	
		AVA40250E0FOX0X2	34	30.6	25	20	B4
		AVA40300E0FOX0X2	40	36.0	30	25	
		AVA40400E0FOX0X2	52	46.8	40	30	C3
		AVA40500E0FOX0X2	65	58.5	50	40	
		AVA40600E0FOX0X2	80	72.0	60	50	C4
		AVA40750E0FOX0X2	105	94.5	75	60	
		AVA41000E0FOX0X2	130	117.0	100	75	C4
		AVA41250E0FOX0X2	160	144.0	125	100	
		575	3	AVA50015E0FOX0X2	2.4	2.2	1.5
AVA50020E0FOX0X2	2.7			2.4	2		
AVA50030E0FOX0X2	3.9			3.5	3	2	
AVA50050E0FOX0X2	6.1			5.5	5	3	
AVA50075E0FOX0X2	9			8.1	7.5	5	
AVA50100E0FOX0X2	11			9.9	10	7.5	B3
AVA50150E0FOX0X2	18			16.2	15		
AVA50200E0FOX0X2	22			19.8	20		
AVA50250E0FOX0X2	27			24.3	25		B4
AVA50300E0FOX0X2	34			30.6	30		
AVA50400E0FOX0X2	41			36.9	40		C3
AVA50500E0FOX0X2	52			46.8	50		
AVA50600E0FOX0X2	62			55.8	60		C4
AVA50750E0FOX0X2	83			74.7	75		
AVA51000E0FOX0X2	100			90.0	100		C4
AVA51250E0FOX0X2	131			117.9	125		

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

### PRODUCT CHART - IP20/IP00 CHASSIS

Input Voltage	Input Phase	IP20 Chassis Base Model	Continuous Output Amps* @ 45°C (113°F) Ambient	Continuous Output Amps* @ 50°C (122°F) Ambient	Nominal Surface Motor HP**	Frame Size
460	3	AVA41500E0F0X3X2	190	175	150	D3
		AVA42000E0F0X3X2	240	221	200	
		AVA42500E0F0X3X2	302	278	250	
		AVA43000E0F0X3X2	361	332	300	D4
		AVA43500E0F0X3X2	443	408	350	
		AVA44500E0F0X3X2	535	492	450	
575		AVA51500E0F0X3X2	155	143	150	D3
		AVA52000E0F0X3X2	192	177	200	D4
		AVA52500E0F0X3X2	242	223	250	
		AVA53000E0F0X3X2	290	267	300	
		AVA53500E0F0X3X2	344	316	350	
		AVA54000E0F0X3X2	400	368	400	

\* With Switching Frequency (Parameter 14-10) set to 2 kHz.

\*\* 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 (113°F) Ambient	Continuous Output Amps* @ 50°C (122°F) Ambient	Nominal Surface Motor HP**	Frame Size
460	3	AVA41500A0F0D3X1	190	175	150	D5
		AVA42000A0F0D3X1	240	221	200	
		AVA42500A0F0D3X1	302	278	250	
		AVA43000A0F0D3X1	361	332	300	D7
		AVA43500A0F0D3X1	443	408	350	
		AVA44500A0F0D3X1	535	492	450	
575		AVA51500A0F0D3X1	155	143	150	D5
		AVA52000A0F0D3X1	192	177	200	D7
		AVA52500A0F0D3X1	242	223	250	
		AVA53000A0F0D3X1	290	267	300	
		AVA53500A0F0D3X1	344	316	350	
		AVA54000A0F0D3X1	400	368	400	

\* With Switching Frequency (Parameter 14-10) set to 2 kHz.

\*\* 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	AVA10020A0F0X0X1	7.5	6.8	2	2	B1
		AVA10030A0F0X0X1	10.6	9.5	3	3	
		AVA10050A0F0X0X1	16.7	15.0	5		
		AVA10075A0F0X0X1	24.2	21.8	7.5	5	B2
		AVA10100A0F0X0X1	30.8	27.7	10	7.5 / 5	
		AVA10200A0F0X0X1	59.4	53.5	20	10	
		AVA10300A0F0X0X1	88	79.2	30	15 & 20	
208-230	3	AVA20015A0F0X0X1	6.6	5.9	1.5	1.5	A2
		AVA20020A0F0X0X1	7.5	6.8	2	2	
		AVA20030A0F0X0X1	10.6	9.5	3	3	
		AVA20050A0F0X0X1	16.7	15.0	5		A3
		AVA20075A0F0X0X1	24.2	21.8	7.5	5	
		AVA20100A0F0X0X1	30.8	27.7	10	7.5	B1
		AVA20150A0F0X0X1	46.2	41.6	15	10 / 15	
		AVA20200A0F0X0X1	59.4	53.5	20	15	B2
		AVA20250A0F0X0X1	74.8	67.3	25	20	
		AVA20300A0F0X0X1	88	79.2	30	25	C1
		AVA20400A0F0X0X1	115	103.5	40	30	
		AVA20500A0F0X0X1	143	128.7	50		C2
		AVA20600A0F0X0X1	170	153.0	60		
		380-460	3	AVA40015A0F0X0X1	2.7	2.4	1.5
AVA40020A0F0X0X1	3.4			3.1	2	1.5	
AVA40030A0F0X0X1	4.8			4.3	3	2	
AVA40050A0F0X0X1	8.2			7.4	5	3	
AVA40075A0F0X0X1	11			9.9	7.5	5	A3
AVA40100A0F0X0X1	14.5			13.1	10	7.5	
AVA40150A0F0X0X1	21			18.9	15	10	B1
AVA40200A0F0X0X1	27			24.3	20	15	
AVA40250A0F0X0X1	34			30.6	25	20	B2
AVA40300A0F0X0X1	40			36.0	30	25	
AVA40400A0F0X0X1	52			46.8	40	30	C1
AVA40500A0F0X0X1	65			58.5	50	40	
AVA40600A0F0X0X1	80			72.0	60	50	C2
AVA40750A0F0X0X1	105			94.5	75	60	
AVA41000A0F0X0X1	130			117.0	100	75	C2
AVA41250A0F0X0X1	160			144.0	125	100	
575	3	AVA50015A0F0X0X1	2.4	2.2	1.5	1.5	A3
		AVA50020A0F0X0X1	2.7	2.4	2		
		AVA50030A0F0X0X1	3.9	3.5	3	2	
		AVA50050A0F0X0X1	6.1	5.5	5	3	
		AVA50075A0F0X0X1	9	8.1	7.5	5	
		AVA50100A0F0X0X1	11	9.9	10	7.5	
		AVA50150A0F0X0X1	18	16.2	15		B1
		AVA50200A0F0X0X1	22	19.8	20		
		AVA50250A0F0X0X1	27	24.3	25		B2
		AVA50300A0F0X0X1	34	30.6	30		
		AVA50400A0F0X0X1	41	36.9	40		C1
		AVA50500A0F0X0X1	52	46.8	50		
		AVA50600A0F0X0X1	62	55.8	60		C2
		AVA50750A0F0X0X1	83	74.7	75		
		AVA51000A0F0X0X1	100	90.0	100		C2
		AVA51250A0F0X0X1	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	AVA10015B0FOX0X1	AVA10015C0FOX0X1	6.6	5.9	1.5	1.5	A5	V1K8A03	
		AVA10020B0FOX0X1	AVA10020C0FOX0X1	7.5	6.8	2	2	B1	V1K8A03	
		AVA10030B0FOX0X1	AVA10030C0FOX0X1	10.6	9.5	3	3		V1K12A03	
		AVA10050B0FOX0X1	AVA10050C0FOX0X1	16.7	15.0	5	5		V1K18A03	
		AVA10075B0FOX0X1	AVA10075C0FOX0X1	24.2	21.8	7.5	5	V1K25A03		
		AVA10100B0FOX0X1	AVA10100C0FOX0X1	30.8	27.7	10	7.5 / 5	B2	V1K35A03	
		AVA10200B0FOX0X1	AVA10200C0FOX0X1	59.4	53.5	20	10	C1	V1K80A03	
	AVA10300B0FOX0X1	AVA10300C0FOX0X1	88	79.2	30	20 / 15	C2	V1K110A03		
	3	AVA20015B0FOX0X1	AVA20015C0FOX0X1	6.6	5.9	1.5	1.5	A5	V1K8A03	
		AVA20020B0FOX0X1	AVA20020C0FOX0X1	7.5	6.8	2	2		V1K8A03	
		AVA20030B0FOX0X1	AVA20030C0FOX0X1	10.6	9.5	3	3		V1K12A03	
		AVA20050B0FOX0X1	AVA20050C0FOX0X1	16.7	15.0	5	5	B1	V1K18A03	
		AVA20075B0FOX0X1	AVA20075C0FOX0X1	24.2	21.8	7.5	5		V1K25A03	
		AVA20100B0FOX0X1	AVA20100C0FOX0X1	30.8	27.7	10	7.5	B1	V1K35A03	
		AVA20150B0FOX0X1	AVA20150C0FOX0X1	46.2	41.6	15	10 / 15		V1K55A03	
		AVA20200B0FOX0X1	AVA20200C0FOX0X1	59.4	53.5	20	15	B2	V1K80A03	
		AVA20250B0FOX0X1	AVA20250C0FOX0X1	74.8	67.3	25	20	C1	V1K80A03	
		AVA20300B0FOX0X1	AVA20300C0FOX0X1	88	79.2	30	25		V1K110A03	
		AVA20400B0FOX0X1	AVA20400C0FOX0X1	115	103.5	40	30		V1K130A03	
		AVA20500B0FOX0X1	AVA20500C0FOX0X1	143	128.7	50	50	C2	V1K160A03	
		AVA20600B0FOX0X1	AVA20600C0FOX0X1	170	153.0	60	60		V1K200A03	
		380-460	3	AVA40015B0FOX0X1	AVA40015C0FOX0X1	2.7	2.4	1.5	1	A5
AVA40020B0FOX0X1				AVA40020C0FOX0X1	3.4	3.1	2	1.5	V1K8A03	
AVA40030B0FOX0X1	AVA40030C0FOX0X1			4.8	4.3	3	2	V1K8A03		
AVA40050B0FOX0X1	AVA40050C0FOX0X1			8.2	7.4	5	3	V1K12A03		
AVA40075B0FOX0X1	AVA40075C0FOX0X1			11	9.9	7.5	5	V1K12A03		
AVA40100B0FOX0X1	AVA40100C0FOX0X1			14.5	13.1	10	7.5	V1K18A03		
AVA40150B0FOX0X1	AVA40150C0FOX0X1			21	18.9	15	10	B1	V1K25A03	
AVA40200B0FOX0X1	AVA40200C0FOX0X1			27	24.3	20	15		V1K35A03	
AVA40250B0FOX0X1	AVA40250C0FOX0X1			34	30.6	25	20	B2	V1K35A03	
AVA40300B0FOX0X1	AVA40300C0FOX0X1			40	36.0	30	25		V1K55A03	
AVA40400B0FOX0X1	AVA40400C0FOX0X1			52	46.8	40	30	C1	V1K55A03	
AVA40500B0FOX0X1	AVA40500C0FOX0X1			65	58.5	50	40		V1K80A03	
AVA40600B0FOX0X1	AVA40600C0FOX0X1			80	72.0	60	50	C1	V1K80A03	
AVA40750B0FOX0X1	AVA40750C0FOX0X1			105	94.5	75	60		V1K110A03	
AVA41000B0FOX0X1	AVA41000C0FOX0X1			130	117.0	100	75	C2	V1K130A03	
AVA41250B0FOX0X1	AVA41250C0FOX0X1			160	144.0	125	100		V1K160A03	
575	3			AVA50015B0FOX0X1	AVA50015C0FOX0X1	2.4	2.2	1.5	1.5	A5
		AVA50020B0FOX0X1	AVA50020C0FOX0X1	2.7	2.4	2	2	V1K8A03		
		AVA50030B0FOX0X1	AVA50030C0FOX0X1	3.9	3.5	3	2	V1K8A03		
		AVA50050B0FOX0X1	AVA50050C0FOX0X1	6.1	5.5	5	3	V1K8A03		
		AVA50075B0FOX0X1	AVA50075C0FOX0X1	9	8.1	7.5	5	V1K12A03		
		AVA50100B0FOX0X1	AVA50100C0FOX0X1	11	9.9	10	7.5	B1	V1K12A03	
		AVA50150B0FOX0X1	AVA50150C0FOX0X1	18	16.2	15	15		V1K18A03	
		AVA50200B0FOX0X1	AVA50200C0FOX0X1	22	19.8	20	20	B1	V1K25A03	
		AVA50250B0FOX0X1	AVA50250C0FOX0X1	27	24.3	25	25		V1K35A03	
		AVA50300B0FOX0X1	AVA50300C0FOX0X1	34	30.6	30	30	B2	V1K35A03	
		AVA50400B0FOX0X1	AVA50400C0FOX0X1	41	36.9	40	40		V1K55A03	
		AVA50500B0FOX0X1	AVA50500C0FOX0X1	52	46.8	50	50	C1	V1K55A03	
		AVA50600B0FOX0X1	AVA50600C0FOX0X1	62	55.8	60	60		V1K80A03	
		AVA50750B0FOX0X1	AVA50750C0FOX0X1	83	74.7	75	75	C1	V1K110A03	
		AVA51000B0FOX0X1	AVA51000C0FOX0X1	100	90.0	100	100		V1K110A03	
		AVA51250B0FOX0X1	AVA51250C0FOX0X1	131	117.9	125	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 - NEMA 12

Input Voltage	Input Phase	NEMA 12 Base Model	Continuous Output Amps* @ 45°C (113°F) Ambient	Continuous Output Amps* @ 50°C (122°F) Ambient	Nominal Surface Motor HP**	Frame Size
460	3	AVA41500B0F0D3X1	190	175	150	D5
		AVA42000B0F0D3X1	240	221	200	
		AVA42500B0F0D3X1	302	278	250	
		AVA43000B0F0D3X1	361	332	300	D7
		AVA43500B0F0D3X1	443	408	350	
		AVA44500B0F0D3X1	535	492	450	
575		AVA51500B0F0D3X1	155	143	150	D5
		AVA52000B0F0D3X1	192	177	200	D7
		AVA52500B0F0D3X1	242	223	250	
		AVA53000B0F0D3X1	290	267	300	
		AVA53500B0F0D3X1	344	316	350	
		AVA54000B0F0D3X1	400	368	400	

\* With Switching Frequency (Parameter 14-10) set to 2 kHz.

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

### PRODUCT CHART - NEMA 3R

Input Voltage	Input Phase	NEMA 3R Base Model	Continuous Output Amps* @ 45°C (113°F) Ambient	Continuous Output Amps* @ 50°C (122°F) Ambient	Nominal Surface Motor HP**	Frame Size	NEMA 3R Cover Kit Part Number***	DV / DT Load Filter NEMA 3R****
460	3	AVA41500C0F0X3X1	167	143	150	D1	9K715	V1K200A03
		AVA42000C0F0X3X1	211	180	200			V1K250A03
		AVA42500C0F0X3X1	266	227	250			V1K305A03
		AVA43000C0F0X3X1	318	271	300	D2	9K716	V1K362A03
		AVA43500C0F0X3X1	390	332	350			V1K420A03
		AVA44500C0F0X3X1	475	405	450			V1K480A03
575		AVA51500C0F0X3X1	136	116	150	D1	9K715	V1K160A03
		AVA52000C0F0X3X1	169	144	200			V1K200A03
		AVA52500C0F0X3X1	213	182	250			D2
		AVA53000C0F0X3X1	255	218	300	V1K305A03		
		AVA53500C0F0X3X1	303	258	350			
		AVA54000C0F0X3X1	352	300	400		V1K362A03	

\* With Switching Frequency (Parameter 14-10) set to 4 kHz.

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

\*\*\* NEMA 3R Cover Kit is required to be used with the base model number for NEMA 3R outdoor protection.

\*\*\*\* dv/dt filter recommended for applications with motor leads longer than 50'.

### 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	AVA10015D0F0X0X1	6.6	5.9	1.5	1.5	A5	V1K8A03
		AVA10020D0F0X0X1	7.5	6.8	2	2	B1	
		AVA10030D0F0X0X1	10.6	9.5	3	3		
		AVA10050D0F0X0X1	16.7	15.0	5	5		
		AVA10075D0F0X0X1	24.2	21.8	7.5	5	B2	V1K25A03
		AVA10100D0F0X0X1	30.8	27.7	10	7.5 / 5	C3	V1K35A03
		AVA10200D0F0X0X1	59.4	53.5	20	10	C4	V1K80A03
		AVA10300D0F0X0X1	88	79.2	30	15 & 20		V1K110A03
208-230	3	AVA20015D0F0X0X1	6.6	5.9	1.5	1.5	A5	V1K8A03
		AVA20020D0F0X0X1	7.5	6.8	2	2		
		AVA20030D0F0X0X1	10.6	9.5	3	3		
		AVA20050D0F0X0X1	16.7	15.0	5	5		
		AVA20075D0F0X0X1	24.2	21.8	7.5	5	B1	V1K25A03
		AVA20100D0F0X0X1	30.8	27.7	10	7.5		
		AVA20150D0F0X0X1	46.2	41.6	15	10 / 15		
		AVA20200D0F0X0X1	59.4	53.5	20	15	B2	V1K35A03
		AVA20250D0F0X0X1	74.8	67.3	25	20	C1	V1K80A03
		AVA20300D0F0X0X1	88	79.2	30	25		
		AVA20400D0F0X0X1	115	103.5	40	30	C2	V1K110A03
		AVA20500D0F0X0X1	143	128.7	50			
AVA20600D0F0X0X1	170	153.0	60					
						V1K130A03		
380-460	3	AVA40015D0F0X0X1	2.7	2.4	1.5	1	A5	V1K8A03
		AVA40020D0F0X0X1	3.4	3.1	2	1.5		
		AVA40030D0F0X0X1	4.8	4.3	3	2		
		AVA40050D0F0X0X1	8.2	7.4	5	3		
		AVA40075D0F0X0X1	11	9.9	7.5	5		
		AVA40100D0F0X0X1	14.5	13.1	10	7.5	B1	V1K12A03
		AVA40150D0F0X0X1	21	18.9	15	10		
		AVA40200D0F0X0X1	27	24.3	20	15		
		AVA40250D0F0X0X1	34	30.6	25	20	B2	V1K18A03
		AVA40300D0F0X0X1	40	36.0	30	25		
		AVA40400D0F0X0X1	52	46.8	40	30	C1	V1K25A03
		AVA40500D0F0X0X1	65	58.5	50	40		
		AVA40600D0F0X0X1	80	72.0	60	50		
		AVA40750D0F0X0X1	105	94.5	75	60	C2	V1K35A03
AVA41000D0F0X0X1	130	117.0	100	75				
AVA41250D0F0X0X1	160	144.0	125	100				
						V1K55A03		
575	3	AVA50015D0F0X0X1	2.4	2.2	1.5	1.5	A5	V1K8A03
		AVA50020D0F0X0X1	2.7	2.4	2			
		AVA50030D0F0X0X1	3.9	3.5	3	2		
		AVA50050D0F0X0X1	6.1	5.5	5	3		
		AVA50075D0F0X0X1	9	8.1	7.5	5		
		AVA50100D0F0X0X1	11	9.9	10	7.5	B1	V1K12A03
		AVA50150D0F0X0X1	18	16.2	15			
		AVA50200D0F0X0X1	22	19.8	20			
		AVA50250D0F0X0X1	27	24.3	25		B2	V1K25A03
		AVA50300D0F0X0X1	34	30.6	30			
		AVA50400D0F0X0X1	41	36.9	40		C1	V1K35A03
		AVA50500D0F0X0X1	52	46.8	50			
		AVA50600D0F0X0X1	62	55.8	60			
		AVA50750D0F0X0X1	83	74.7	75		C2	V1K55A03
		AVA51000D0F0X0X1	100	90.0	100			
AVA51250D0F0X0X1	131	117.9	125					

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

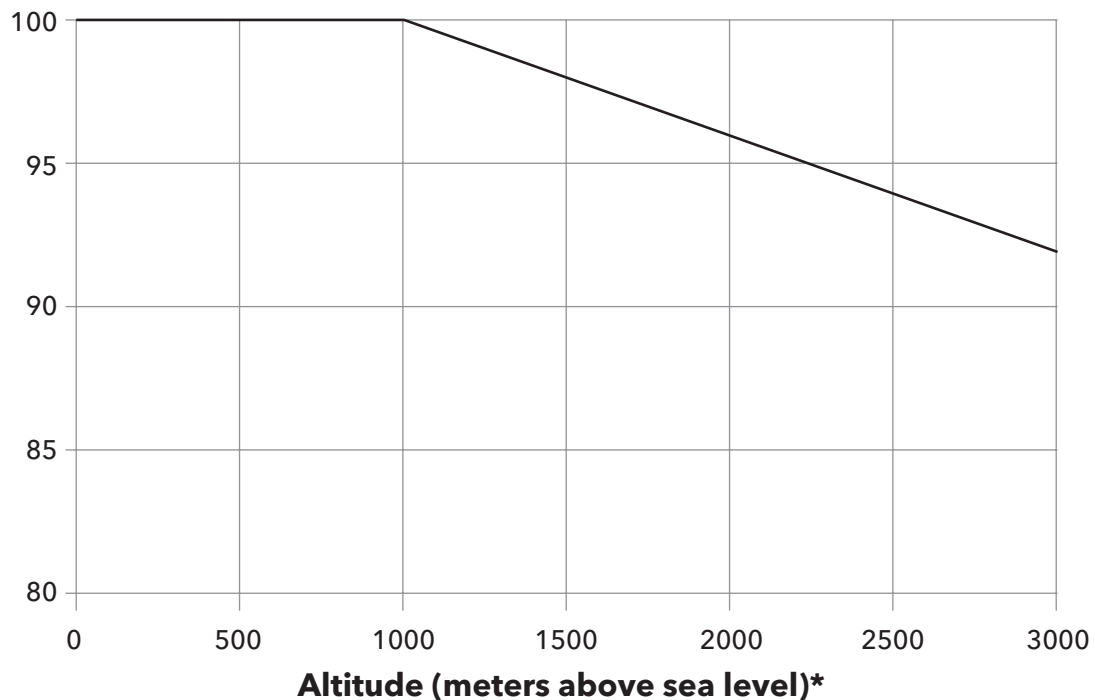
\*\* dv/dt filter recommended for applications with motor leads longer than 50'. It is recommended to use the dv/dt filter with all submersible applications.

### SPECIFICATIONS

#### Ratings and Enclosures

- IP20 Open, TYPE 1, TYPE 12, TYPE 3R, TYPE 4X
- 1.5 - 125 HP (frame A - C), 150 - 450 HP (frame D), 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 .....	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

### NEMA 3R COVER KIT

The NEMA 3R Cover Kits are designed for NEMA 3R base model drives with AVAXXXXXC... part numbers. These kits add a cover to the outside vents of the IPC and provides NEMA 3R compliant protection against weather and hosed water. The kit is used only with IPC drives that have the enclosure code "C".



The NEMA 3R Cover Kit includes:

- Top Plate
- Gland plate with attached gasket
- NEMA 3R Cover
- Adhesive label
- Installation hardware

Cover Kit Selection:

Frame Size	Ordering Number
D1	9K715
D2	9K716

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

### INPUT/OUTPUT OPTIONS (Repair Part Number)

#### ANALOG I/O CARD (9K783) OPTION B

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

#### GENERAL I/O CARD (9K789) OPTION B

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

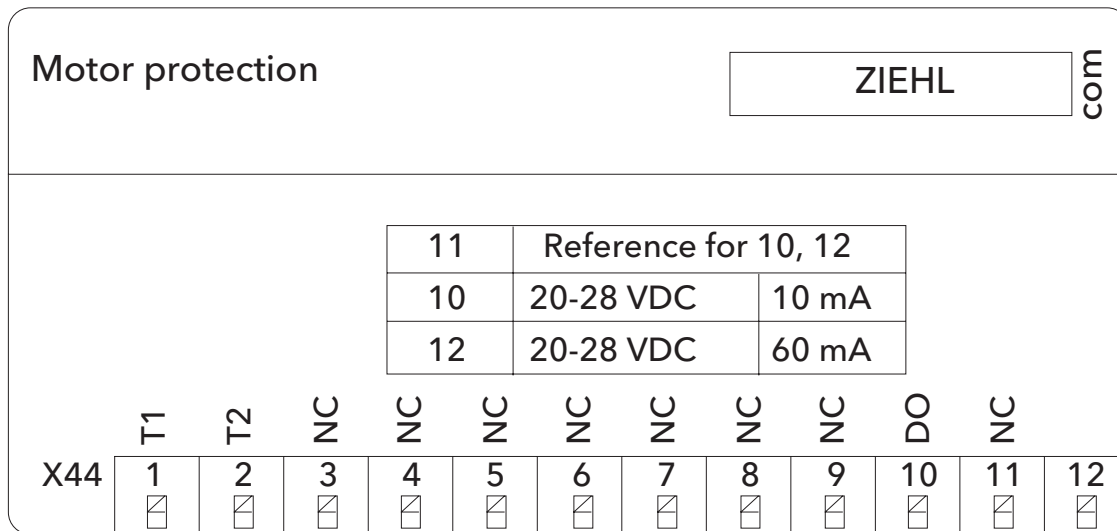
COM	DIN	DIN7	DIN8	DIN9	GND(1)	DOUT3	DOUT4	AOUT2	24V	GND(2)	AIN3	AIN4
<b>X30/</b>	1	2	3	4	5	6	7	8	9	10	11	12

### INPUT/OUTPUT OPTIONS *(continued)*

#### PTC THERMISTOR CARD (9K785) OPTION B

Includes: Twelve terminal PTC card

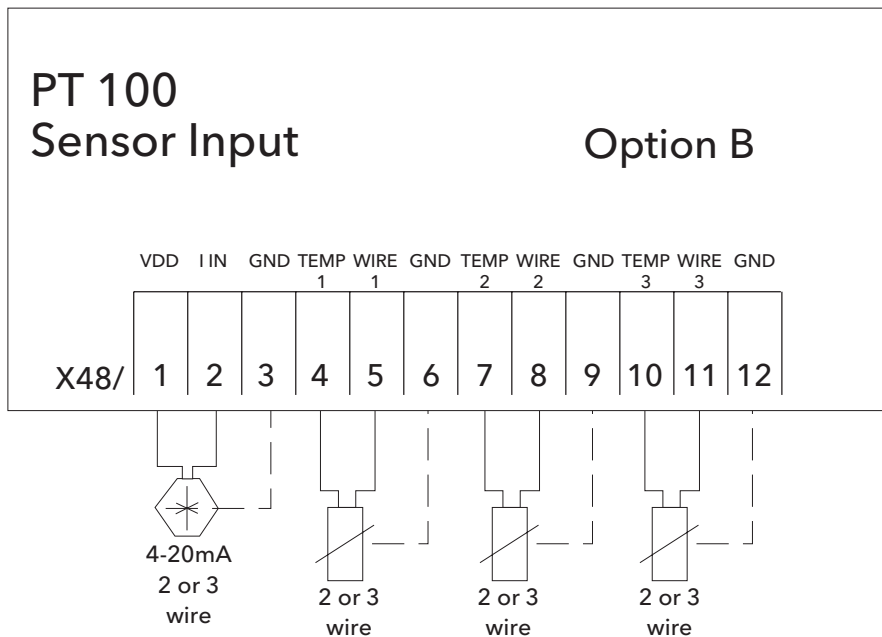
Used for: Monitor temperature of electric motor with PTC thermistor input (PTC Thermistor Card option is Certified for ATEX for use with motors in potentially explosive atmospheres.)



#### PT100 SENSOR INPUT CARD (9K786) OPTION B

Includes: Twelve terminal PTC100 card

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

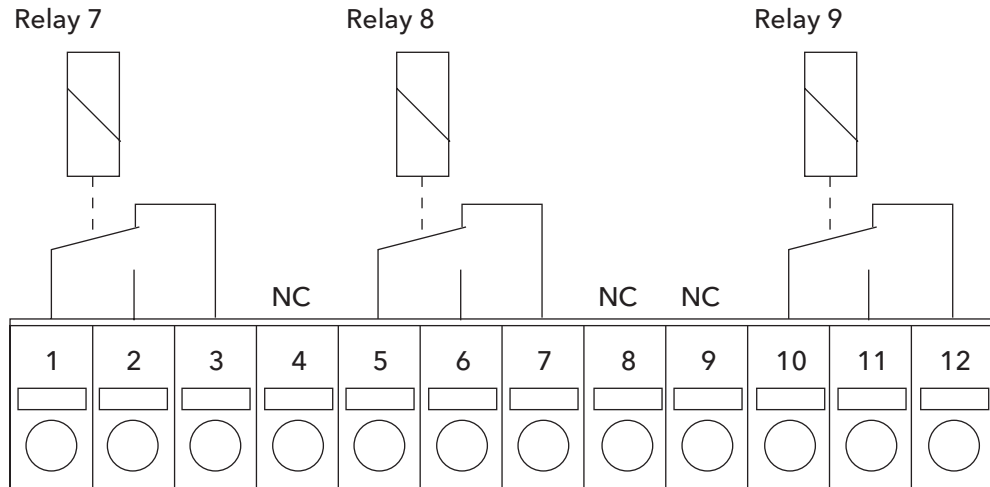


### INPUT/OUTPUT OPTIONS *(continued)*

#### RELAY CARD (9K787) OPTION B

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

Used for: Extension of the number of output relays

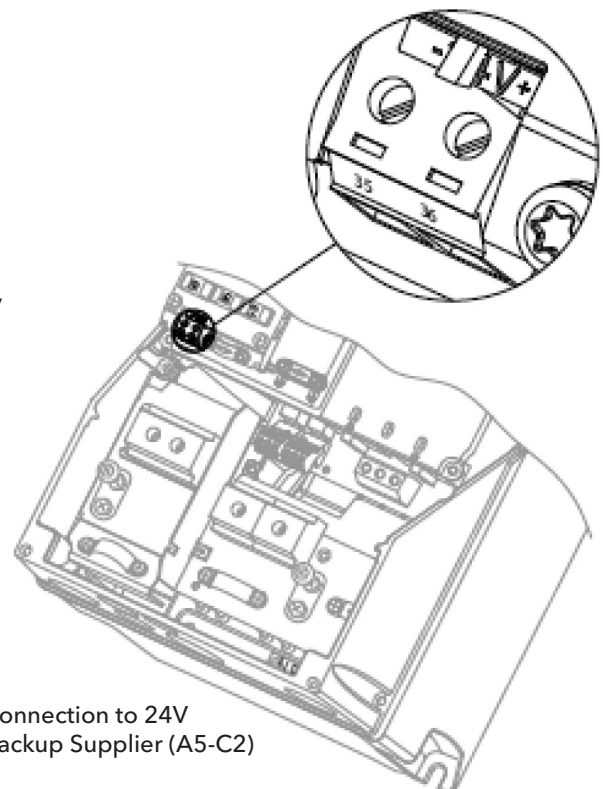


### BACKUP OPTIONS

#### 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 - 125 hp
- NEMA 3R Enclosure
- Carrier Frequency: 1 - 12 kHz
- Fundamental Frequency: 0 - 60 Hz
- 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'



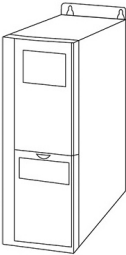
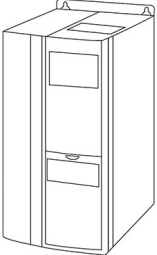
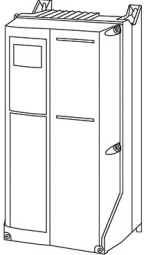
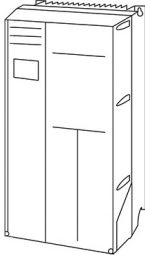
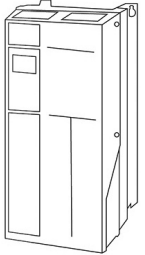
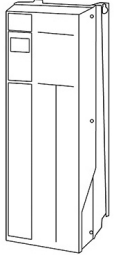
DV / DT filters have been sized in the outdoor rated Product Charts (Page 8). DV /DT filters to be ordered separately to mount near the drive.

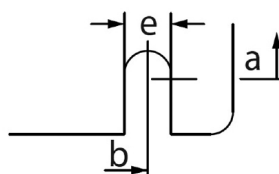
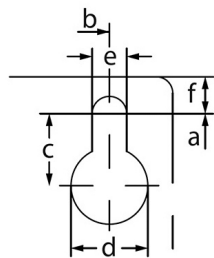
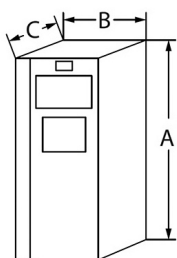
### MECHANICAL DIMENSIONS

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
<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)

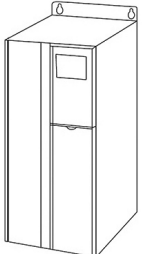
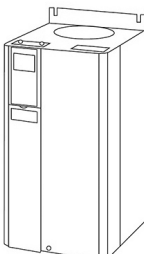
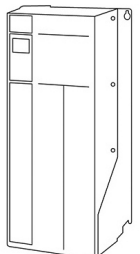
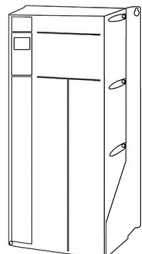
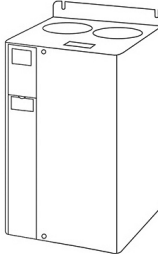
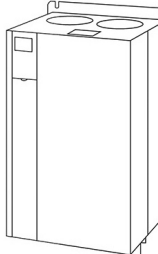
\* Depth of enclosure will vary with different options installed.

### DIMENSIONS

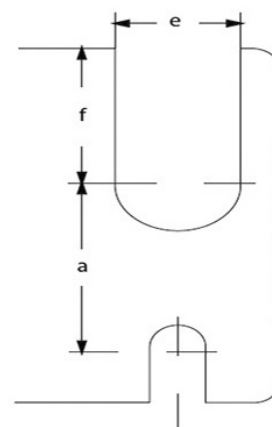
<p>A2</p>  <p>IP20/21*</p>	<p>A3</p>  <p>IP20/21*</p>	<p>A4</p>  <p>IP55/66 TYPE 12/4X</p>	<p>A5</p>  <p>IP55/66 TYPE 3R/12/4X</p>	<p>B1</p>  <p>IP21/55/66 TYPE 1/3R/12/4X</p>	<p>B2</p>  <p>IP21/55/66 TYPE 1/3R/12/4X</p>
<p>OPEN/TYPER 1</p>					



Top and bottom mounting holes

<p>B3</p>  <p>IP20/21*</p>	<p>B4</p>  <p>IP20/21*</p>	<p>C1</p>  <p>IP21/55/3R/66 TYPE 1/3R/12/4X</p>	<p>C2</p>  <p>IP21/55/3R/66</p>	<p>C3</p>  <p>IP20/21*</p>	<p>C4</p>  <p>IP20/21*</p>
<p>OPEN/TYPER 1</p>				<p>OPEN/TYPER 1</p>	

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

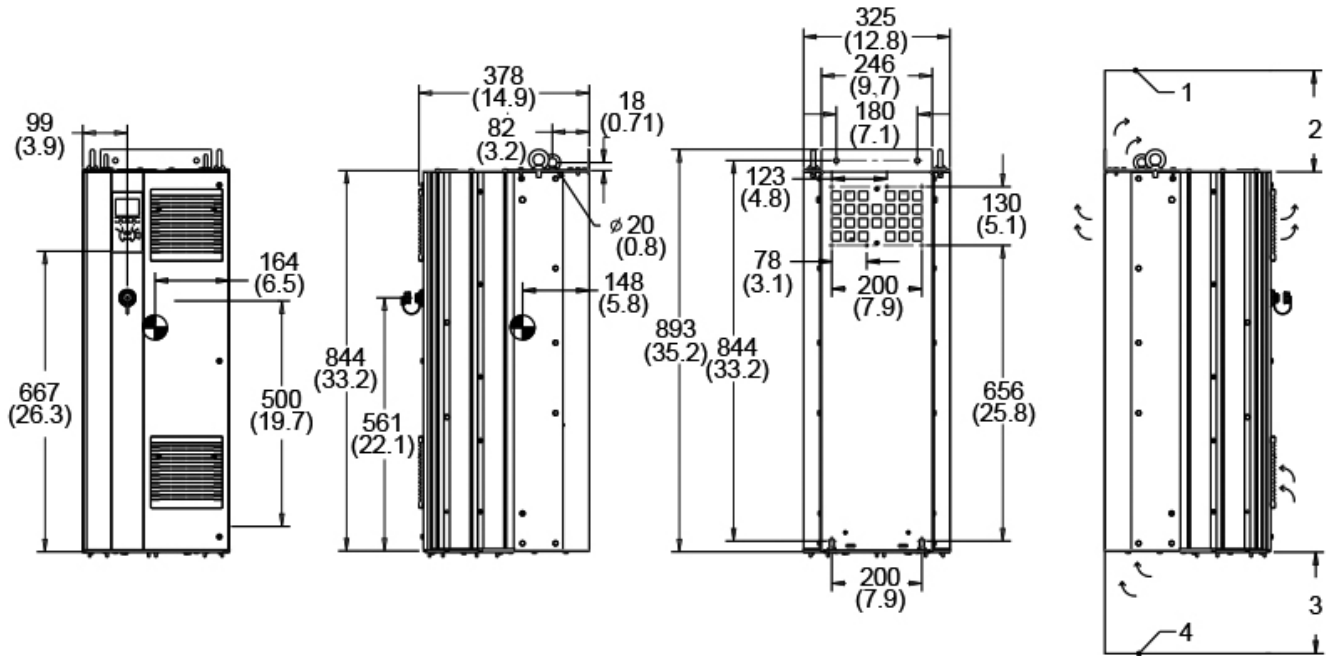


## Aquavar IPC

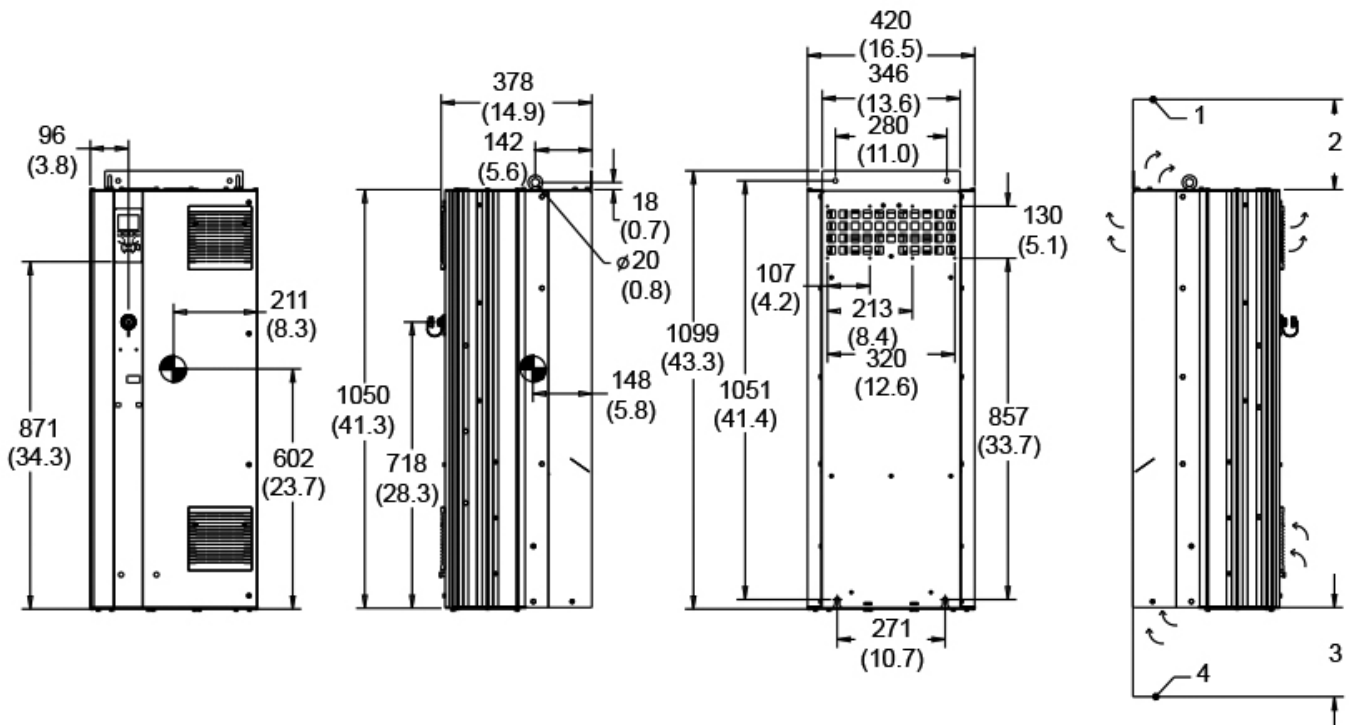
### DIMENSIONS

Please note airflow directions

D1 ENCLOSURE, CABINET MOUNT - Dimensions in mm (in.)



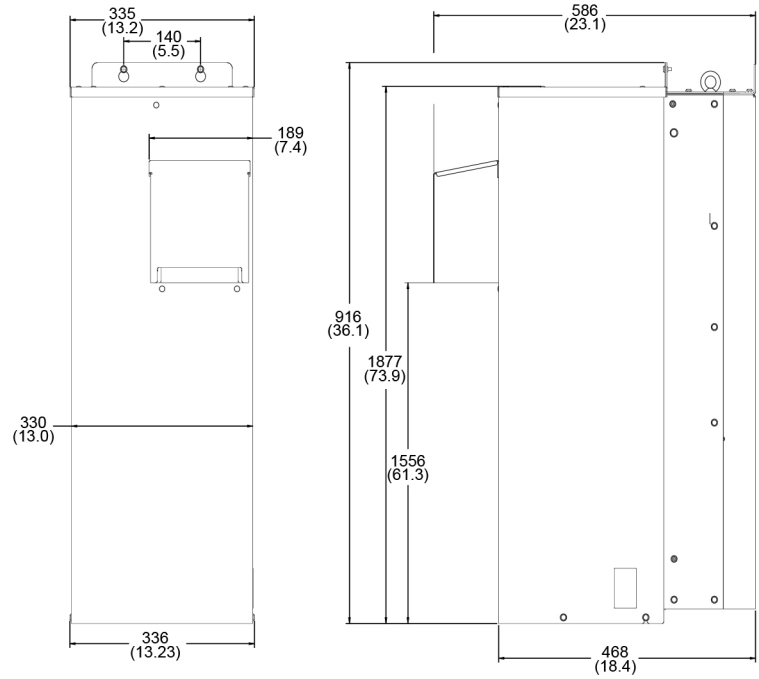
D2 ENCLOSURE, CABINET MOUNT - Dimensions in mm (in.)



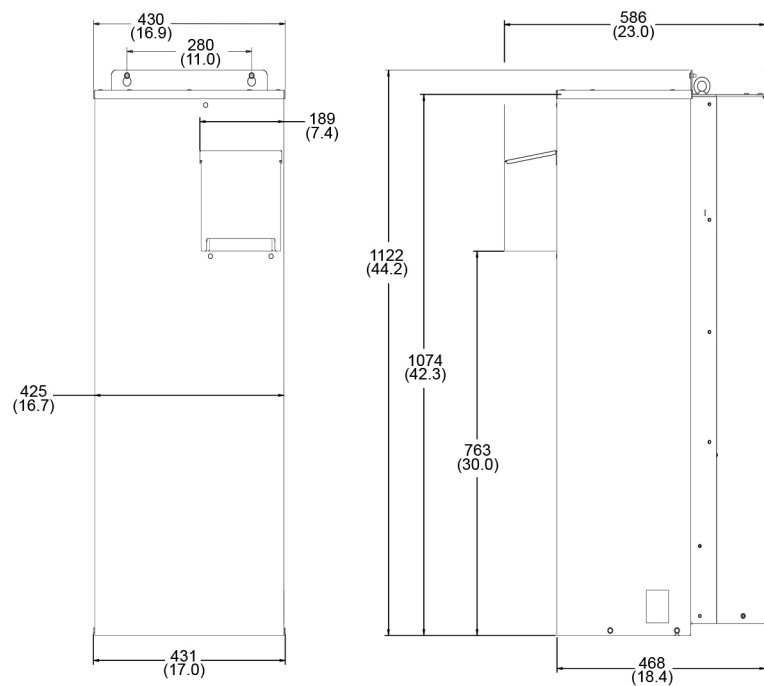
### DIMENSIONS

Please note airflow directions

#### EXTERIOR DIMENSIONS FOR D1H WITH NEMA 3R KIT (9K715) - Dimensions in mm (in.)



#### EXTERIOR DIMENSIONS FOR D2H WITH NEMA 3R KIT (9K716) - Dimensions in mm (in.)

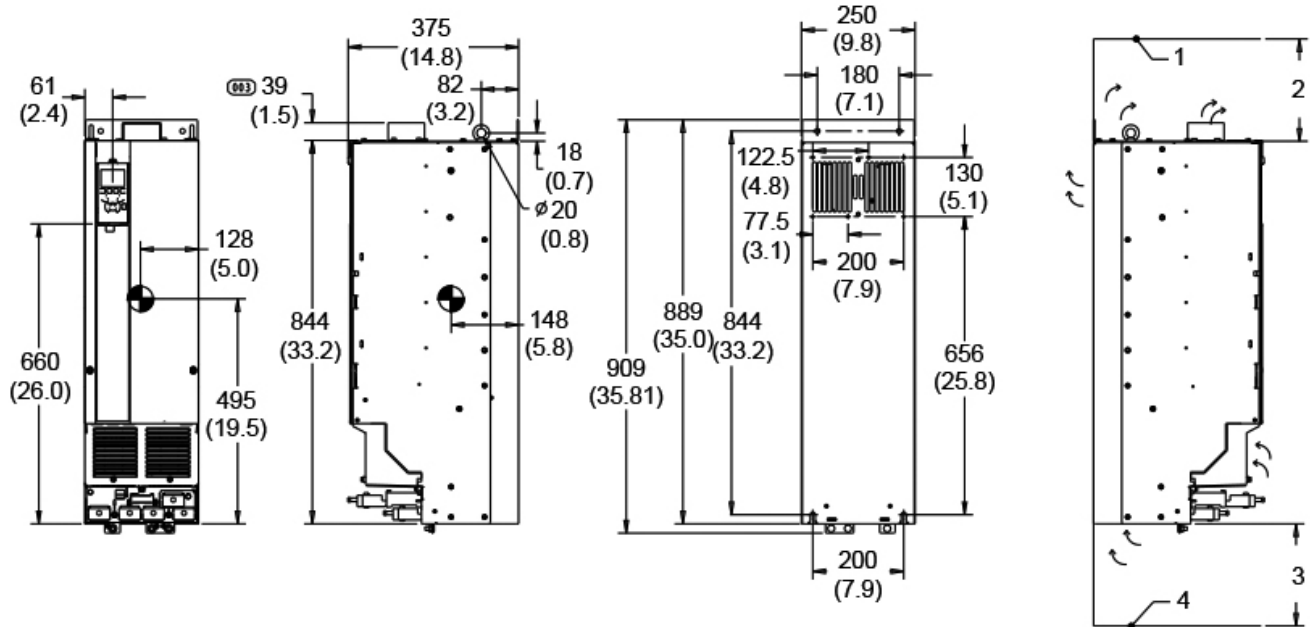


## Aquavar IPC

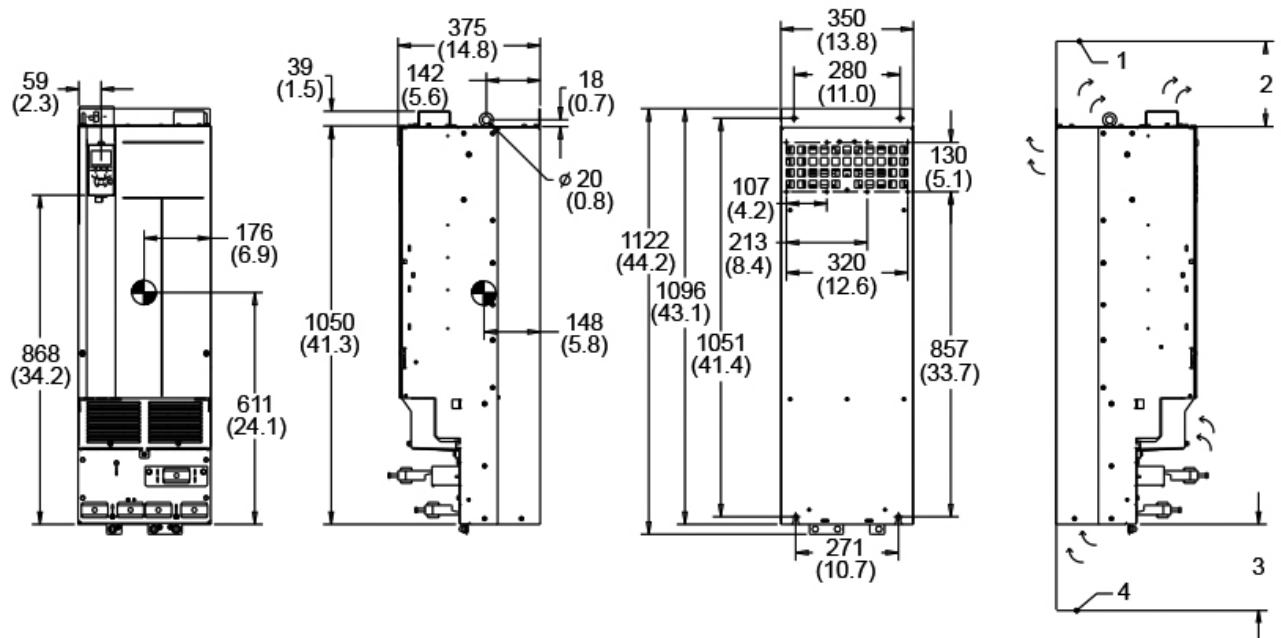
### DIMENSIONS

Please note airflow directions

D3 ENCLOSURE, CABINET MOUNT - Dimensions in mm (in.)



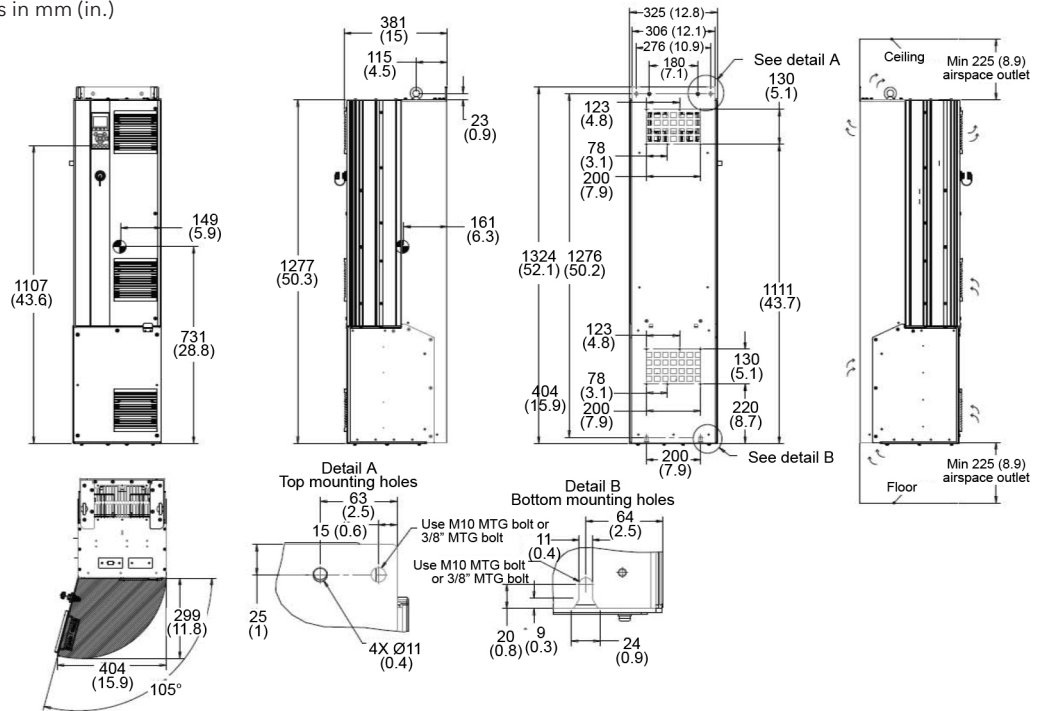
D4 ENCLOSURE, CABINET MOUNT - Dimensions in mm (in.)



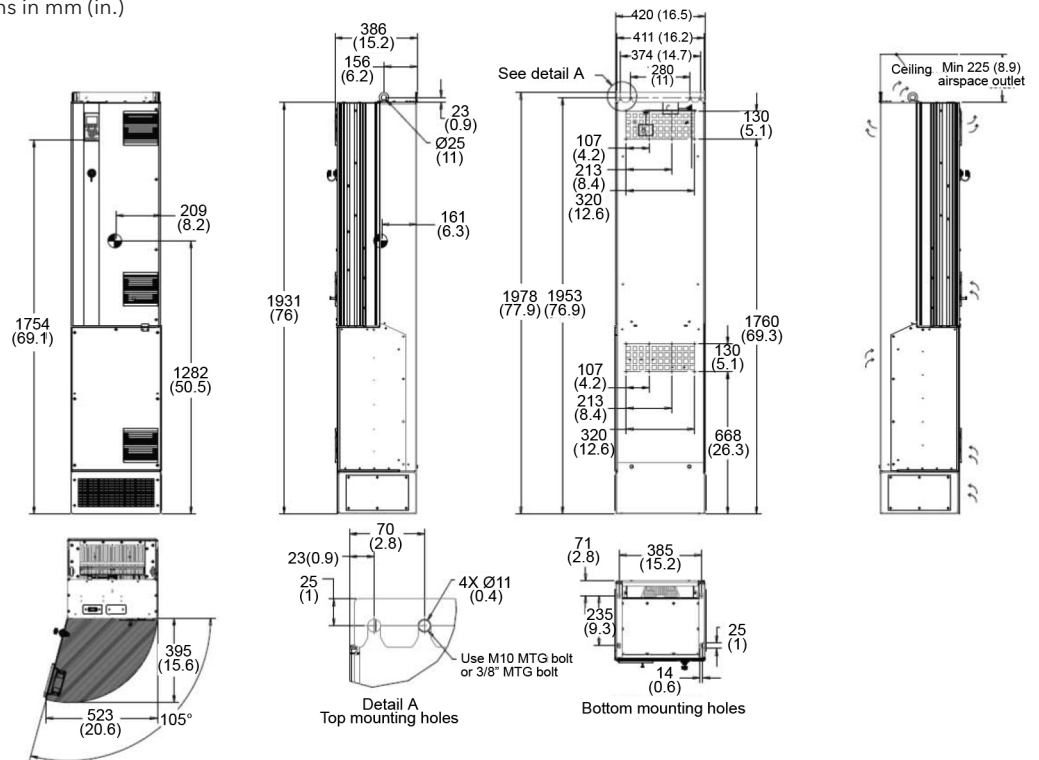
## Aquavar IPC

### DIMENSIONS

#### D5 ENCLOSURE - Dimensions in mm (in.)



#### D7 ENCLOSURE - Dimensions in mm (in.)



# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

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