

AQUAPHASE DATA SHEET MODEL: AP210/AP410



AquaPhase AP Series pump converters are purpose-built phase converting variable frequency drives designed specifically for operating three-phase pumps on single-phase service.

Input Module

The input stage is a power factor corrected, voltage boosting rectifier with L/C filter. Models can be specified for either 240V or 480V single-phase input.

Low Input Harmonics

Electronic power factor correction on the input module allows the converter to draw the input current as a sine wave, eliminating the harmonics associated with diode bridge rectifiers. Input line reactors and harmonic filters are never required and installations should easily comply with IEEE519, the international standard for allowable harmonic distortion on utility mains.

Voltage Boosting

Unlike a diode bridge rectifier, the input module can significantly boost the DC bus voltage. This allows models with 240V input to produce 480V three-phase output.

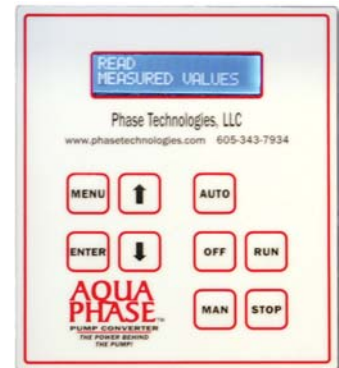
Inverter Output

The output is 480V three-phase, pulse-width-modulated (PWM), variable voltage and frequency. The AP Series employs either v/f control or sensorless vector control for outstanding low-speed performance and control.

Keypad and Display

When equipped with the optional keypad and display, the AP Series converter is capable of many advanced, easy to use features. This powerful tool is easy to use and understand, with 32 character text messages and an intuitive interface specifically tailored for pumping applications. Functions include:

- Operating status readouts
- Ability to read measured values such as current, voltage and power
- Clocks to record run time of the motor and the converter
- Fault Logs
- Adjustable parameters for motor and pump protection, constant pressure water systems, pump duplexing, motor control and more



Constant Pressure Water Systems

Only AquaPhase offers the choice of a digital or analog constant pressure system. Both systems provide smooth, steady control of pressure in response to fluctuating demand for water. Factory default settings of the constant pressure parameters provide satisfactory operation in most applications—simply install the sensors, set the desired pressure and begin pumping. If adjustments are required, a number of adjustable parameters allow fine tuning of the system to meet the users need.

Precharge Mode

Fills large plumbing systems at a slower pump speed to prevent sprinkler head blow-off or burst pipes when the system reaches the full point. AquaPhase automatically returns to normal operation when the precharge interval is terminated.

Duplex Pump Control

AquaPhase is equipped with a duplex pump feature that allows for integrated control of two pumps in the same water system. The duplex pump feature alternates the pumps on a regular schedule, and can call on the standby pump to maintain pressure in high flow conditions. No extra equipment is required—simply configure both pumps as constant pressure systems and activate the duplex mode feature.

Control Terminals

An AP Series converter is equipped with Control Terminals that allow a number of control functions, including remote ON/OFF control, analog input signals, analog output signals, remote notification and operation of constant pressure water systems.

Control Terminal Specifications

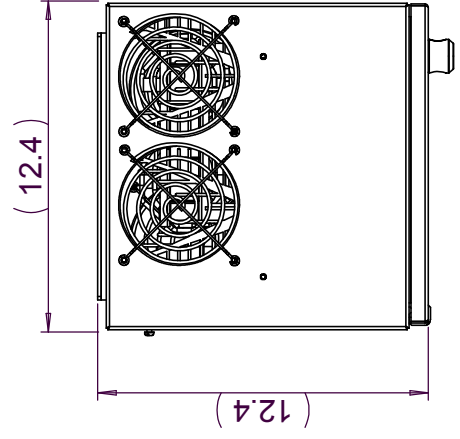
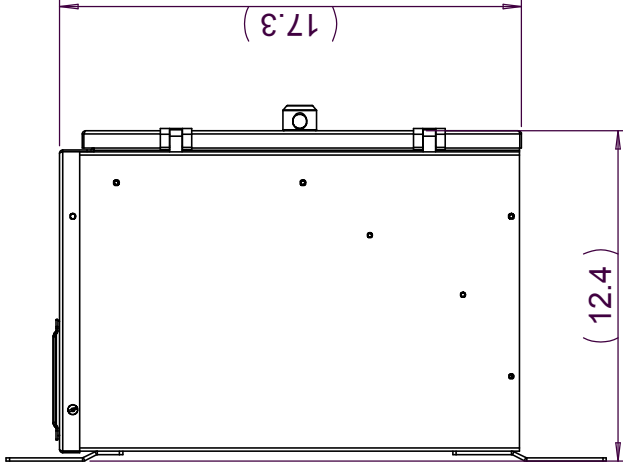
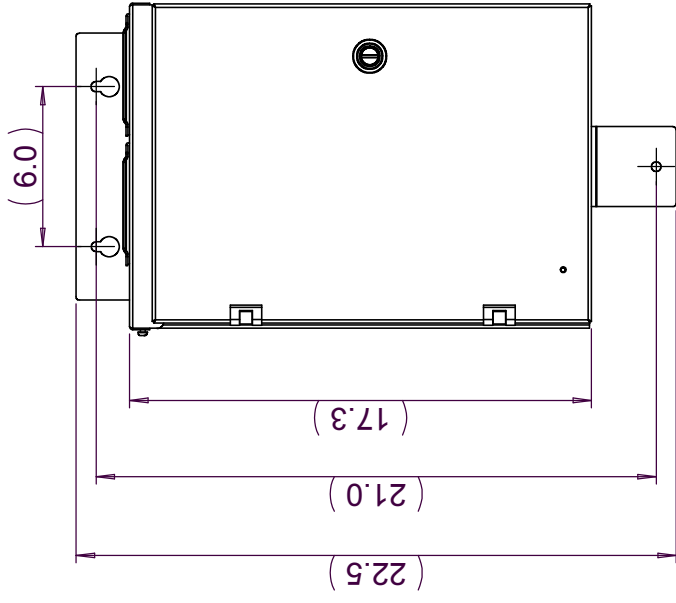
Terminal	Rating	Description
COM	240V, 1A	Common terminal for use with either NC or NO terminal
NC	240V, 1A	Normally closed remote notification terminal.
NO	240V, 1A	Normally open remote notification terminal.
AUX1	< 5 volts, galvanically isolated	Remote ON/OFF terminal 1. Dry contact closure between the terminals will start the drive and connected load. In a digital CP system, the primary pressure switch is attached to AUX1.
AUX2	< 5 volts, galvanically isolated	Remote ON/OFF terminal 2. Dry contact closure between the terminals will start the drive and connected load. In digital and analog CP systems, the emergency over-pressure limit switch is attached to AUX2.
OUT 0-5V	0-5 VDC	Analog output. Factory default for motor torque. Other outputs available.
INPUT 0-5V	0-5 VDC	Analog input to control motor speed.
INPUT 4-20MA	4-20 mA	Analog input to control motor speed. Pressure transducer in analog CP system is attached to this terminal.

Product Specifications

Model:	AP210	AP410
Rated HP	10	
Rated Output Current	18 amps	
Rated Output voltage	480 VAC, 3-phase, 60 Hz	
Rated Capacity (460V) KVA	15 KVA	
Rated Input voltage	240 VAC	480 VAC
Rated Input Current (240V/480V) single-phase	58 amps	29 amps
Input Current Characteristics	Sinusoidal, Power Factor .98	
Overload Capacity	300% for 10 seconds	
Voltage/Frequency Characteristic	v/f control or sensorless vector control	
Output Inverter Control Method	Pulse Width Modulation (PWM) Control	
Altitude	De-rate above 2,000 meters	
Operating Temperature	-10 to 40° C	
Output Frequency Range	0 to 120 Hz	
Efficiency	95% typical	
Enclosure	Type 1 indoor or 3R rain proof, powder coated galvanealed steel	
Weight, Indoor/Outdoor	65/74 lb.	62/71 lb.
Dimensions (H x W x D in.)		
Type 1 indoor	17 x 12 x 12	
Type 3R rainproof	22 x 12 x 16	

*Specifications subject to change without notice

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Phase Technologies LLC

AP210 / AP410
V1.2
Indoor

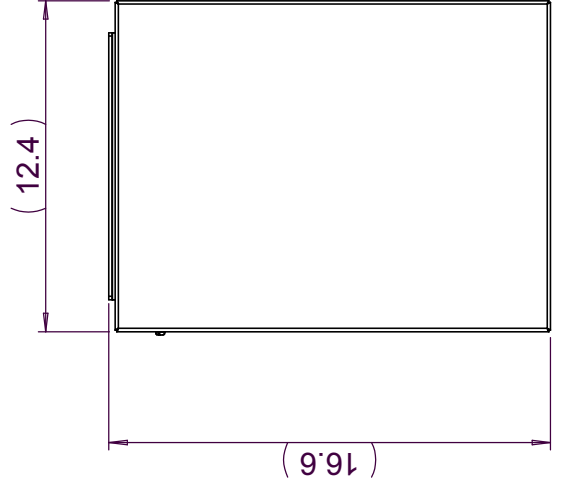
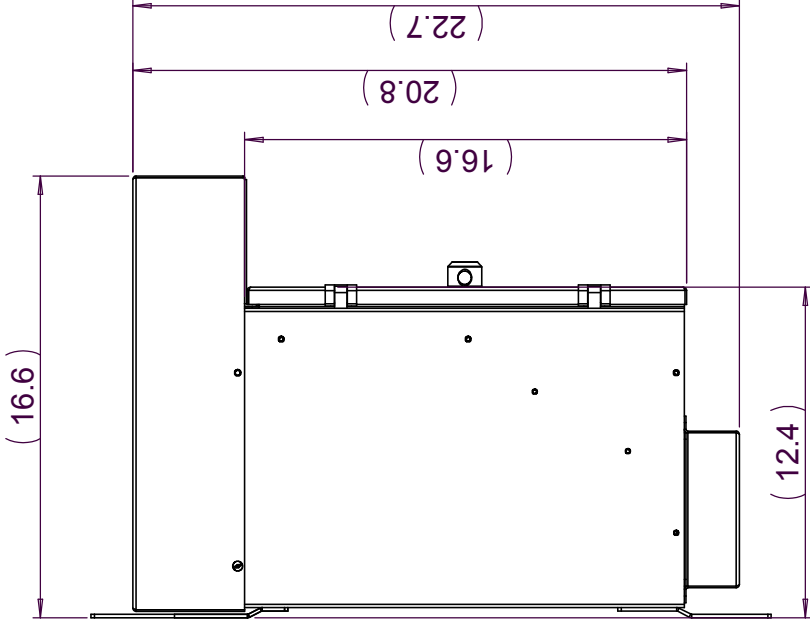
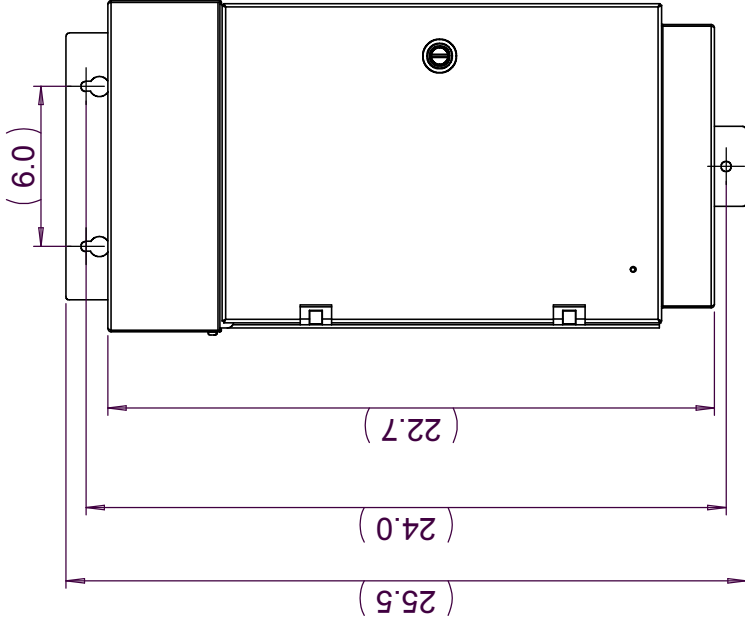
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Phase Technologies LLC

AP210 / AP410
V1.2
Outdoor

Date 11/2009

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