



# Variable Speed Controllers and Soft Starters

# Variable Speed Product Line

Since 1997, CentriPro has been providing variable speed pump control solutions to its customers. The first product was the AQUAVAR® variable speed controller. Today, the AQUAVAR controls family offers a wide range of capabilities for the variable speed pump control market. Our philosophy has not changed: To provide quality, variety and systems solutions for our pump customers.



# Our variable speed products include the following:



## 1 AQUAVAR IPC

The Aquavar IPC variable speed controller brings the latest in pump drive technology and programming. It is designed to provide variable frequency pumping control of speed, pressure, flow and level. The drive and interface are designed to give you advanced capabilities that help you effectively and efficiently operate your system.

### APPLICATIONS

For submersible and above ground applications.

### FEATURES

#### Optimized for Pumps

- Wide range of standard and permanent magnet motors with power up to 90kw/600hp
- Developed by pump experts and optimized for controlling pumps
- Submersible and above ground applications

#### Quick set up and ease of use

- Easy 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

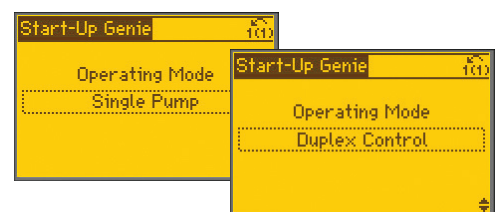


### SPECIFICATIONS

Input supply	1.5 - 600 HP (frame A - D) wall or base mounted	
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).	
Communication	Modbus® RTU, Metasys N2, FLN, and BACnet standard. Others available with option cards	
Altitudes	At altitudes from 0 to 1000 meters (0 to 3300 feet) nameplate rated current is available. Derate for altitudes above 1000 (3300 feet) with a maximum operating altitude of 3000 meters (9900 feet). Consult factory for applications above 3000 meters (9900 feet)	
Relative humidity	Lower than 95% without condensation	
Electrical - input power	1 phase 200 V to 240 V ±10% 3 phase 380 V to 480 V ±10% 3 phase 200 V to 240 V ±10%	3 phase 525 V to 600 V ±10% Frequency 50 or 60 Hz, ±2Hz
Electrical - output power	3 phase from 0 to V supply	

### It's an easy start with the Aquavar Genie

The Aquavar Controller Genie quickly and easily guides you through setup in as little as 15 minutes. Asking for only the required parameters, the Genie will automatically configure your set up to the optimal settings for the specific application - eliminating the guesswork in set up. The Aquavar controller can be further customized through the Genie for those applications with pump protections, I/O options, and multi-pump operation to get your pump system working just the way you need.





## 2 AQUAVAR SOLO

The AquaVar SOLO<sup>2</sup> variable speed controller is designed for submersible well pumps to help deliver constant water pressure.

### APPLICATIONS

For residential, irrigation and greenhouse applications.

### FEATURES

#### Easy set up

- Simple menu set-up
- Dual system set points for advanced system application
- Programmable output relay for optional accessories such as a chlorinator or home monitoring system
- Pressure sensor and shielded cable included

#### Easy to use

- Fade-resistant LED display indicates system pressure, speed and current
- Easy to adjust pressure with control push buttons
- Display gives quick reference for troubleshooting
- Error log - displays last four faults and can be reset
- Auto cooling fan with filter
- Built-in surge protection
- Adjustable current overload protection to match motor Service Factor.

#### Retrofittable

- Turns virtually any conventional system into a constant pressure system

### SPECIFICATIONS

Outdoor enclosures	Painted steel, NEMA 3R
Input supply	1Ø Input 208-230 volt Wall mounted with fan cooling
Ambient temperature	up to 122° F
Electrical - output power	Single phase - ½ - 2 HP motors Three phase - ¾ - 5 HP motors

The AquaVar Solo<sup>2</sup> controllers and GS stainless steel submersible pumps are available in convenient ProPak kits.

### AqWiFi - Remote Monitoring System

Provides continuous monitoring of the well system and relays real-time alerts and notifications to the installer or homeowner.



### FEATURES

- For indoor and outdoor use
- Easy installation and set-up
- Uses WiFi connection
- App available to monitor single or multiple installations
- Text and/or email notifications in case of faults with date and time stamps included.
- Stores up to one year of system history for easy troubleshooting, including Pressure, Speed, Output Current, Input Voltage and Faults.



## 3 AQUAVAR e-ABII

AQUAVAR e-ABII is a self-diagnostic, variable speed, constant pressure controller. Think of it as cruise control for your pump. The Aquavar e-ABII controller provides an economical answer for municipal and private water systems with low water pressure. Both domestic and light commercial above ground boosters can benefit. As water use increases, the controller changes pump speed to maintain pressure. Large supply tanks are eliminated and up to 50% of the energy required by a full speed pump is saved.

It is available as a stand-alone unit or with a packaged system. The pre-packaged systems include: pump/motor, pressure tank\*, pressure transducer, piping tee, pressure gauge, wiring with flexible conduit. Three horsepower and 5 horsepower packages offer duplex operation for lead/lag and alternation applications. These configurations are not prewired and do not include tank and piping tee.

### SPECIFICATIONS

Outdoor enclosures	NEMA 3R enclosure, rain-tight; NEMA 1 option for 3 HP and 5 HP sizes
Input supply	1Ø Input 115 volt 1 HP 1Ø Input 208-230 volt 1 - 5 HP Wall mounted with convection air cooling
Ambient temperature	Maximum 104° F
Electrical - output power	Three phase 208 - 230 volt, $\pm 10\%$

### APPLICATIONS

For low water pressure, domestic and light commercial, homes with multiple showers/baths and irrigation applications.

### FEATURES

- Simple installation
- Field setting for booster pumps
- Factory set pressure for 50 psi
- Field programmable pressure setting up to 80 psi, through 60 GPM packaged system
- Self-diagnostic, plug-in display not needed
- Status lights for pump running, faults, and stopped
- FCC compliant for interference
- NSF / ANSI 61 (ANNEX G) certified
- UL, CUL, CE approvals
- Flows up to 100 GPM, with 5 HP pump



## 4 AQUAVAR SPD™

The AQUAVAR SPD is a variable speed pump controller made specifically for single pump booster applications. It comes complete with pressure transducer and standard NEMA 3R outdoor rated enclosure.

### FEATURES

- **Easy Set-up:** Pre-set for surface motor characteristics. Pre-wired and tested transducer. Touch button pressure setting. No complicated menus or electrical jargon to cope with. Total set up time including wiring is less than 30 minutes.
- **Dual Phase:** The same drive can be used for either three phase or single phase input (de-rated). Both configurations are UL/CUL approved for inventory flexibility.
- **Transducer:** the pressure transducer is included with the drive so there is no need for separate sourcing and compatibility checks. The transducer is pre-wired and tested.
- **Full Diagnostics:** In addition to typical electrical protection and diagnostics, it has a full range of pump protection features such as bound pump or motor shut down, low water or loss of prime shut down. These added features require no added input devices.
- **Program Security:** The flashing LED status indicator will not fade in outdoor use the way LCD screens do, and the internal single push button discourages tampering by untrained operating or maintenance personnel.
- **Hand/Auto Option:** Allows the drive to be run full speed for longer periods of time as in the case of system start up. Turning the control back to auto resumes the automatic pressure tracking and control.
- **Remote on/off:** Permits external control by timers (irrigation), float or pressure switches (tank draining) or manual control. Reduces the need for separate patch panels.
- **Remote Monitoring:** External monitors may be connected to the drive for pump running speed (Hz), pump on, and system fault. The fault indicator can also be connected to devices like an auto-dialer. This enables control of pumps and drives in un-manned locations.
- **Dual Set Point:** The SPD has the capability to be programmed with two pressure set points. An external contact such as a timer can be used to change between them, so that a booster pump serving both a building and an irrigation system can do both jobs without manual resets.

### APPLICATIONS

For water pumps serving commercial buildings, pressure boosting for light industry, wash systems, filtration, rural water and municipal systems and groundwater/Irrigation applications.

### SPECIFICATIONS

Indoor enclosures	IP20 Open, TYPE 1, TYPE 12
Outdoor enclosures	NEMA 3R
Input supply	1Ø Input 208-230 volt 2 - 15 HP 3Ø Input 208-230 volt 5 - 30 HP 3Ø Input 380-460 volt 5 - 30 HP Wall mounted with fan cooling
Ambient temperature	-22° F to 122° F
Electrical - input power	Dual Phase – The same drive can be used for either three phase or single phase input (de-rated).
Electrical - output power	3 phase



## 5 AQUAVAR CPC

The Aquavar CPC variable speed controller is offered in a wall or floor mounted design up to 550 hp, 460 volt\*, single phase input up to 50 hp, 208-230 volt and three phase 208-230 volt up to 100 hp\*. The software provides more versatility and flexibility with centrifugal pump applications than ever before!

### APPLICATIONS

For single- or multi-pump systems in submersible or above ground applications.

### FEATURES

- Easy set up and programming with wizards and help text
- Multi-pump configuration with automatic lead-lag and alternation for up to four (4) pumps - no need for additional PLC
- Programmable fixed speed control relays for up to three fixed speed pumps (additional motor starters required).
- Analog input control (4 - 20mA) based on pressure, flow, level or differential pressure
- Dual pressure control with programmable differential pressure starting.
- Pressure Transducer included with drive: 316 SS, 17-4 PH stainless steel, 1/4" NPT connection, shielded two wire cable, 0 - 300 PSI range.
- Pump protection built in based on Run Dry, Deadheading, Cavitation and Run-out conditions
- Motor protection built in based on Overcurrent, Over/Under Voltage, Phase Loss, Short Circuit, Ground Fault, Over Temperature
- Built-in line choke. Similar to a line reactor, it provides the equivalent of 3% impedance against transient voltage spikes and surges. Reduces harmonic distortion.
- EMC/RFI filters reduce drive noise interference and emissions
- UL, CUL, CE approvals.
- Preventative maintenance reminders.

### SPECIFICATIONS

Indoor enclosures	NEMA 1 standard design
Outdoor enclosures	NEMA 12
Input supply	1Ø Input 208-230 volt 1 - 50 HP 3Ø Input 208-230 volt 1 - 100 HP 3Ø Input 380-460 volt 3 - 550 HP 3Ø Input 575 volt 2 - 150 HP Wall or floor mounted with fan cooling
Ambient temperature	up to 104° F (Up to 122° F with 10% derate)
Communication	MODBUS® compatible. MODBUS is standard protocol with SCADA networks.
Electrical - output power	3 phase 380 V to 480 V +10%/-15% 1 phase 208 V to 240 V +10%/-15% 3 phase 208 V to 240 V +10%/-15% 3 phase 575 V +10%/-15% Frequency 48 to 63 Hz .98 power factor



## Pump Mounted Variable Speed Controller

### FEATURES

#### Easy Set-up and Commissioning

- Install directly on any TEFC motor without running new power to a wall-mounted control system
- Quick start-up guide and intuitive menu system
- Advanced programming features to optimize for almost any application.
- Large LCD display with easy to read pump language - pump on, system pressure, fault codes and system conditions

#### Control

- Control up to 8 pumps in parallel
- Constant pressure
- Constant flow
- Via 4-20mA or 0-10 V external signal

#### Safety

- Embedded THDi filter to reduce harmonic interference
- Stops the pump at zero flow
- Integrated soft start/stop: no water hammer and lower starting current
- Dry relay contacts available for pump run and fault.
- Built-in protection
  - ~ Over / under voltage
  - ~ Overcurrent / output short protection
  - ~ Low water level
  - ~ Sensor failure
  - ~ Motor over temperature
  - ~ Inverter over temperature
  - ~ Minimum threshold / conveyor limit

## 6 HYDROVAR®

The Hydrovar variable speed controller matches performance to system demand. The Hydrovar is easily mounted directly on the motor of the pump and will fit on any standard TEFC NEMA motor. This makes the Hydrovar an excellent choice for retrofitting and upgrading fixed speed systems. There's no need for an external control panel when using Hydrovar.

### APPLICATIONS

For centrifugal pump systems requiring constant pressure, flow control or differential pressure in commercial and municipal applications.

### SPECIFICATIONS

Indoor enclosures	NEMA 1. Avoid excessive dust, corrosives, salts and direct sunlight.
Input supply	Power: from 2 hp to 30 hp
	1Ø Input 208/230 volt 2 - 5 hp (208-240V ± 10%)
	3Ø Input 208/230 volt 2 - 15 hp (208-240V ± 10%)
Input supply	3Ø Input 460 volt 2 - 30 hp (380-460V ± 10%)
	Motor mount to fan cover of TEFC motor for a packaged unit with a small footprint
Ambient temperature	Maximum 104° F
Communication	RS485 interface, BACnet, Modbus
Power	Speed from 15-70 Hz Power supply: single or three phase 50 or 60 Hz
Motor Requirements	3 phase, TEFC, 208 - 230V or 460V, 0 - 60 HZ, Class F insulation, NEMA design A or B
Other	Pressure Transducer included with drive: 316 SS, 17-4 PH stainless steel, ¼" NPT connection, shielded two wire cable, 0 - 300 PSI range



## 7 AQUASTART COMBINATION SOFT STARTERS

AquaStart is a combination soft starter that allows easy installation with factory pre-set pump parameters. It is designed to work directly with centrifugal and submersible pumps with ease of installation. AquaStart utilizes Thermal Image Motor Protection (TIMP) to get the highest level of motor performance while fully protecting the motor for longer life.

### APPLICATIONS

Enhanced motor and system protection for irrigation, commercial and industrial pumping applications.

### FEATURES

- Built-in fusible disconnect
- Optional keypad control available
- Standard, built-in AC1 Run Rated Bypass, between start and stop
- AC3 Bypass Contactor and DOL selector switch as option (ability to bypass SSW-07 for DOL start and stop)
- 3 programmable inputs (120V)
- 2 relay outputs with NO contacts
- 240V, 11A programmable output
- Adjustable current, ramp time and voltage overloads
- Protection from: Excess starting time, Locked rotor, Current imbalance, Phase loss, Over / under current, Under voltage
- cULus Certified, CE available as option

### SPECIFICATIONS

Outdoor enclosures	Standard NEMA 4
Input supply	3Ø Input 208-230 volt 5 - 175 HP
	3Ø Input 380 volt 10 - 200 HP
	3Ø Input 460 volt 10 - 200 HP
	3Ø Input 575 volt 15 - 200 HP
	Wall-mounted enclosure - Frames A-D. Floor mount kit for Frame Size E
Ambient temperature	Maximum 131° F
Electrical - output power	3 phase

# 8 ACCESSORIES

## FLOAT SWITCHES

- Gold plated contacts for low current applications
- Operates on a 45° differential, above or below horizontal
- Includes a mounting clamp for attaching to pipe (as shown)
- Not sensitive to rotation
- 18 gauge, 2 conductor wire
- Maximum submergence is 30'
- Maximum water temperature 140° F
- Polypropylene float housing is impact and corrosion resistant



## 9K589 - OVER PRESSURE SWITCH

- Range scale from 60 - 120 PSI
- Factory set at 80 PSI
- Lead-free brass construction
- Gold plated contacts for long life
- Use as over-pressure protection on Aquavar SOLO or S-Drive Controller
- Normally Closed contacts - connect leads to Secondary (dry) Contact Switch
- Wire length - 72 inches
- Use a 5/32" Allen wrench to unlock barrel to change pressure setting
- Snap action, opens and closes on  $\pm 1 - 2$  PSI range, not a differential pressure switch.



## 9K585 - MOISTURE SENSOR WITH RELAY

- 5 VDC power supply is provided by VFD
- Will detect any conductive non-flammable liquid
- Ideal anywhere water damage could occur
- Automatic reset



## 6K210 GAUGE GUARD

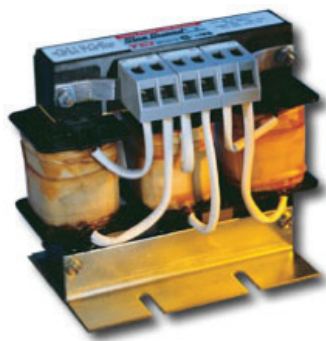
- Low unit cost - makes it feasible to protect even moderate priced instruments.
- Compact size makes these isolators ideal for limited-space installations.
- Hermetically-sealed, molded uni-body construction - avoids possibility of leaks
- Glass-filled Polypro bodies for chemical compatibility and maximum temperatures to 100° F
- Each Gauge Guard features a durable and flexible Buna-N diaphragm which serves as a protective barrier between the process fluid and instrument





### LINE/LOAD REACTORS

- High Z (Application where 5% reactor would be applied)
- 208/240V
- NEMA 3R Enclosure
- Ambient Temperature 40° C
- Fundamental Frequency: 50/60 Hz
- Agency Approvals: UL, cUL; UL Recognized, CE Marked
- Short term overload rating – 200% rated current for minimum of 3 minutes
- Inductance Characteristics
  - Min 95% L at 110% Load
  - Min 80% L at 150% Load



### TCI MODEL V1K DV/DT FILTERS

- 2 - 130 amps; 240V - 600V;  
2 - 125HP
- NEMA 3R Enclosure
- Carrier Frequency:  
1 - 12 kHz
- Fundamental Frequency:  
0 - 60 Hz
- Efficiency: > 98%
- Insulation Rating  
600V Class



### TCI MODEL HG7 HARMONIC FILTER

- 3 Phase 240 - 600V
- NEMA 3R Enclosure
- Ambient Temperature  
40° C
- Typical Efficiency:  
98 - 99%
- Internal fusing protection
- Fundamental Frequency:  
60 Hz (50 Hz for 400V)
- Agency Approvals: UL, cUL
- Maximum Altitude: 6,000 feet





Whatever your application; whether it is for above ground booster systems or controlling a submersible pump, CentriPro brand of high quality pumps and controls are behind you with over 100 years of experience.

Ask your authorized CentriPro distributor or check us out on the web at [www.centripro.com](http://www.centripro.com).



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