

**TECHNICAL BROCHURE**  
GWT-BCPVFDACC R6



**Float Switches** -  
tested for use with  
Aquavar SOLO  
Controllers



**6K210** Gauge Guard



**9K585** Moisture  
Sensor with Relay



**Filters**



**9K589** Over-Pressure  
Switch for use with  
Aquavar SOLO or  
"S-Drive" Controllers



**Line / Load  
Reactors**



**Sine Wave  
Filters**

# VFD Accessories

### 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



Undetected water damage, such as that caused by leaking pipes or corroded water heaters, cost homeowners tens of thousands of dollars each year. Such repairs are time consuming and costly to correct. Applications could include computer room sub-floor areas, telephone equipment rooms, bathrooms, laundry rooms, any areas adjacent to a water storage tank or piping. Also evaporative air conditioners, drip pans, overflows and /or drains.

Using no mechanical parts, the GRI Water Sensors are triggered by a moisture bridge across the sensor contacts. The GRI Water Sensors can be installed to detect a layer of water as minute as 1/16 of an inch in depth.

The 9K585 Closed Loop Sensors use an external power source to energize a built-in relay contact so battery power is not recommended. Used in a closed loop configuration, an alarm condition will occur when moisture is detected, or if power to the sensor is lost, and if the sensor should fail. The relay output can be wired directly to any alarm panel or can be used to actuate an external device, i.e. transmitter, annunciator, etc.

See IM234 for wiring instructions.

### 9K589 OVER-PRESSURE SWITCH FOR USE WITH AQUAVAR SOLO OR "S-DRIVE" CONTROLLERS

#### Features

- 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.
- Installation instructions and applications are detailed in the Aquavar SOLO IOM, IM229.
- NEMA 4, 13 (outdoor use)



This is the only pressure switch we have tested and approved for use with our variable speed drives. Standard pressure switch contacts tend to corrode and malfunction when used with dry contacts.

### FLOAT SWITCHES - Tested For Use with Aquavar SOLO Controllers

The A2X Series of Float Switches have been tested and approved for use with Goulds Water Technology Variable Speed Controllers. The Float Switches come in various lengths and in Normally Open (N.O.) type for pumping down or emptying a tank as well as Normally Closed (N.C.) type, identified by a U Suffix, for pumping up, filling a tank or pond. Instructions for using these switches are in the SOLO IOM, IM229. The Float Switch bulletin is in the SES catalog and the wastewater section of our website, literature code is BCPFS.

#### Float Switch Order Numbers

##### Normally Open

A2X13 10'

A2X33 20'

A2X53 30'

##### Normally Closed

A2X23U 15'

A2X33U 20'

A2X53U 30'

#### Features

- 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
- Installation and application information is in the Aquavar SOLO IOM.



### 6K210 GAUGE GUARD

#### Features

- Low unit cost - makes it feasible to protect even moderate priced instruments.
- Compact size makes these isolators ideal for limited-space installations.
- + 4% accuracy, will handle most applications.
- Hermetically-sealed, molded uni-body construction - avoids possibility of leaks.
- Glass-filled Polypro bodies for chemical compatibility and maximum temperatures to 100° F
- Housing is glass filled Polypropylene.
- Each Gauge Guard features a durable and flexible Buna-N diaphragm which serves as a protective barrier between the process fluid and instrument.
- Simple to fill and install. Completely fill the internal space on the instrument side of the diaphragm with mineral or vegetable oil in order to transmit the process pressure to the instrument.



#### Maximum Pressure Ratings

##### Liquids

200 PSI (13.8 bars)

##### Gases

100 PSI (6.9 bars)

**Maximum Temperature:** 100°F ( 38°C)

### TCI MODEL KDR OPTIMIZED LINE REACTOR

KDR line reactors reduce harmonic current and help prevent nuisance tripping.

#### FEATURES

- High Z (Application where 5% reactor would be applied)
- 208/240V
- NEMA 3R Enclosure
- Ambient Temperature 40° C
- Fundamental Frequency: 50/ 60Hz
- 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
- Maximum Altitude: 6,000 feet (Derate for applications above 6,000 feet)



#### BENEFITS

- Cost effective
- Improve power factor of supply
- Increase life of drive
- Reduce nuisance tripping
- Protect drives and other sensitive equipment
- Reduce transient voltages
- Dampen overshoot peak voltage
- Balance drive input currents
- Reduce motor heating
- Reduce motor noise

Goulds Drive Model Number	Part Number	Current Rating (Amps)
1AS15	KDRULD21HE3R	30.8
3AS20	KDRULD21HE3R	30.8
3AS30	KDRULD21HE3R	30.8
3AS50	KDRULD22HE3R	46.2
1151AB2	KDRULB25HE3R	16.7
1AB2	KDRULB25HE3R	16.7
2AB2	KDRULB26HE3R	24.2
3AB2	KDRULD21HE3R	30.8
5AB2	KDRULD22HE3R	46.2

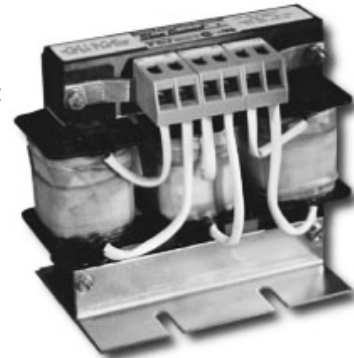
KDR Reactor is designed for three phase use. For single phase use, connect input to Terminals A and C.

### TCI MODEL KLR HEAVY DUTY LINE / LOAD REACTOR

TCI KLR™ series three phase AC reactors are intended for use as input or output filters for AC-PWM variable frequency drives.

#### FEATURES

- 3 Phase 240 - 600V
- NEMA 3R Enclosure
- 6% Reactor
- Ambient Temperature 40° C
- Gapped Iron Core Inductor - All Copper Windings
- K-Rated, UL/ULC Recognized; CSA Certified; RoHS Compliant
- Short term overload rating - 200% rated current for min. of 3 minutes
- Inductance Characteristics
  - Min 95% L at 110% Load
  - Min 80% L at 150% Load
- \*Maximum Altitude: 3,000 feet (Derate for applications above 3,000 feet)



#### BENEFITS

- Reduce voltage notching
- Limit magnitude of inrush current
- Prevent drive shutdown / overcurrent tripping
- Reduce harmonic distortion
- Improve phase to phase voltage imbalance
- Improve true power factor
- Protect VFD from damage

Controller Model Number	Part Number	Current Rating (Amps)
1AS15	KLRUL25ATBE3R	25
3AS20	KLRUL25ATBE3R	25
3AS30	KLRUL35ATBE3R	35
3AS50	KLRUL45ATBE3R	45
1151AB2	KLRUL18ATBE3R	18
1AB2	KLRUL18ATBE3R	18
2AB2	KLRUL18ATBE3R	18
3AB2	KLRUL35ATBE3R	35
5AB2	KLRUL45ATBE3R	45

KLR Reactor is designed for three phase use. For single phase use, connect input to Terminals A and C.

### TCI MODEL HG7 HARMONIC FILTER

HG7 harmonic filter provides a low impedance path for the major harmonic currents demanded by the drive.

#### FEATURES

- Meets IEEE-519 1992
- 3 Phase 240 - 600V
- NEMA 3R Enclosure
- Ambient Temperature 40° C
- Typical Efficiency: 98 - 99%
- Internal fusing protection
- Fundamental Frequency: 60Hz (50Hz for 400V)
- Agency Approvals: UL, cUL
- Maximum Altitude: 6,000 feet (Derate for applications above 6,000 feet)
- Performance guarantee



#### BENEFITS

- Harmonic Reduction: < 7%
- High quality capacitors
  - Designed, built and tested specifically for use in harmonically rich environments
- Easy Installation
  - Fits easily into motor control centers and ships ready to install
- Uninterrupted operation
  - Drive continues to operate in the event of an HG7 shutdown
- Protect drives and other sensitive equipment
- Eliminates nuisance tripping
- Increase drive uptime dramatically
- Improves power factor
- Improves system efficiency and reliability
- Extends equipment life

TCI Part Number	Current Rating (Amps)
HG8BW03ST	22
HG10BW03ST	28
HG15BW03ST	42
HG20BW03ST	54

### TCI MODEL HSP SINGLE PHASE HARMONIC FILTER

The TCI HSP Single-Phase Line to Line Harmonic Filter is an optimal solution for mitigating harmonics in single-phase applications.

#### FEATURES

- 60Hz, 1 Phase, 240 & 480 Volt
- NEMA 3R Enclosure
- Ambient Temperature: -40° C to 50° C
- \*Agency Approvals: UL, cUL
- Maximum Altitude: 3,300 feet (Derate for applications above 3,300 feet)

#### BENEFITS

- Harmonic Reduction to 12% THID
- High quality capacitors
  - Designed, built and tested specifically for use in harmonically rich environments
- Small footprint and rugged outdoor enclosure
- Large range of amp ratings to meet varying demands
- Easy Installation
- Protects inverter against voltage spikes caused by capacitor switching and other rapidly changing loads
- Protects upstream components (circuit breakers, fuses, conductors, transformers) from damage caused by harmonics



Controller Model		Current Rating
Number	Part Number	(Amps)
1AS15	HSP028BG3SC	28
3AS20	HSP028BG3SC	28
3AS30	HSP042BG3SC	42
3AS50	HSP052BG3SC	52
1151AB2	HSP028BG3SC	28
1AB2	HSP028BG3SC	28
2AB2	HSP028BG3SC	28
3AB2	HSP042BG3SC	42
5AB2	HSP052BG3SC	52

### TCI MODEL V1K DV/DT MOTOR PROTECTION OUTPUT FILTERS

V1K provides motor protection by limiting voltage spikes below 1,000 volts for long lead applications. For lead lengths above 1500 feet, consult factory.

#### 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)



Order Number	Rated AMPS	Nominal HP* (240V)	Nominal HP* (480V)	Nominal HP* (600V)	Recommended ABII Number	Recommended SPD Number 1 Phase In	Recommended SPD Number 3 Phase In
V1K8A03	8	2	5	5	1AB2, 2AB2	SPD20050	
V1K12A03	12	3	7.5	10	3AB2	SPD20075	SPD40050
V1K16A03	16	5	10				SPD40075
V1K18A03	18			15	5AB2	SPD20100	SPD20050
V1K21A03	21		15				SPD40100
V1K25A03	25	7.5		20			SPD40150
V1K27A03	27		20	25		SPD20150	SPD20075
V1K35A03	35	10	25	30		SPD20200	SPD40200
V1K45A03	45	15	30	40		SPD20250	SPD20100 SPD40250
V1K55A03	55	20	40	50		SPD20300	SPD20150 SPD40300
V1K80A03	80	25 - 30	50 - 60	75		SPD20400 SPD20500	SPD20200 SPD20250 SPD40400 SPD40500
V1K110A03	110	40	75	100		SPD20600	SPD20300 SPD40600
V1K130A03	130	50	100	125			SPD20400 SPD40750

\* Horsepower values are for reference purposes only.

Size filter by full load amperage draw.

## SINEWAVE OUPUT FILTERS



Sinewave Filters improves system performance by protecting the motor from the harmful effects of reflected waves and preventing motor failure associated with insulation failure, overheating, and noise. These filters are designed to extend motor life in variable torque applications such as fans

and pumps with lead lengths up to 15,000 feet.

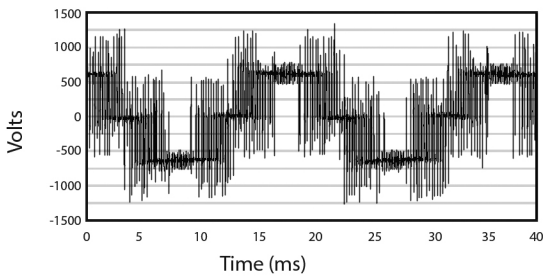
### TYPICAL APPLICATIONS

- Mining
- Power Plants
- Material Handling
- Oil & Gas
- Data Centers
- HVAC Systems
- Pulp & Paper
- Renewable Energy
- Chemical Processing

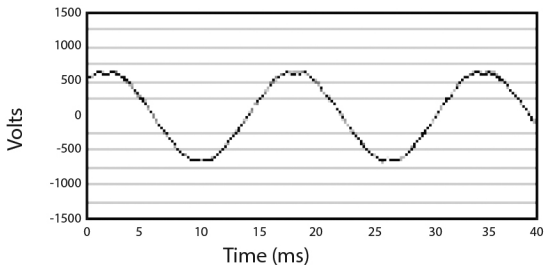
### OTHER FEATURES

- Nema 3R Enclosure
- Output Frequency to 80 Hz
- UL & cUL Listed
- Carrier Frequency 2 kHz to 16 kHz

### Motor Input Waveform Without MotorShield



### Motor Input Waveform With MotorShield



### 460 Volt

Part Numbers	Description	Enclosure
MSD0009A300	5 HP 9AMP 460V Sine Wave Filter	NEMA 3R
MSD0012A300	7.5 HP 12AMP 460V Sine Wave Filter	
MSD0016A300	10 HP 16AMP 460V Sine Wave Filter	
MSD0023A300	15 HP 23AMP 460V Sine Wave Filter	
MSD0030A300	20 HP 30AMP 460V Sine Wave Filter	
MSD0035A300	25 HP 35AMP 460V Sine Wave Filter	
MSD0045A300	30 HP 45AMP 460V Sine Wave Filter	
MSD0055A300	40 HP 55AMP 460V Sine Wave Filter	
MSD0065A300	50 HP 65AMP 460V Sine Wave Filter	
MSD0080A300	60 HP 80AMP 460V Sine Wave Filter	
MSD0110A300	75 HP 110AMP 460V Sine Wave Filter	
MSD0130A300	100 HP 130AMP 460V Sine Wave Filter	
MSD0160A300	125 HP 160AMP 460V Sine Wave Filter	
MSD0200A300	150 HP 200AMP 460V Sine Wave Filter	
MSD0250A300	200 HP 250AMP 460V Sine Wave Filter	
MSD0305A300	250 HP 305AMP 460V Sine Wave Filter	
MSD0362A300	300 HP 362AMP 460V Sine Wave Filter	
MSD0420A300	350 HP 420AMP 460V Sine Wave Filter	
MSD0480A300	400 HP 480AMP 460V Sine Wave Filter	

### 575 Volt

Part Numbers	Description	Enclosure
MSD0008C300	5 HP 8AMP 575V SINEWAVE FILTER	NEMA 3R
MSD0010C300	10 HP 10AMP 575V SINEWAVE FILTER	
MSD0012C300	15 HP 12 AMP 575V SINEWAVE FILTER	
MSD0020C300	15 HP 20 AMP 575V SINEWAVE FILTER	
MSD0025C300	20 HP 25 AMP 575V SINEWAVE FILTER	
MSD0028C300	25 HP 28 AMP 575V SINEWAVE FILTER	
MSD0035C300	30 HP 35 AMP 575V SINEWAVE FILTER	
MSD0045C300	40 HP 45 AMP 575V SINEWAVE FILTER	
MSD0055C300	50 HP 55 AMP 575V SINEWAVE FILTER	
MSD0065C300	60 HP 65 AMP 575V SINEWAVE FILTER	
MSD0080C300	75 HP 80 AMP 575V SINEWAVE FILTER	
MSD0110C300	100 HP 110 AMP 575V SINEWAVE FILTER	
MSD0130C300	125 HP 130 AMP 575V SINEWAVE FILTER	
MSD0160C300	150 HP 160 AMP 575V SINEWAVE FILTER	
MSD0200C300	200 HP 200 AMP 575V SINEWAVE FILTER	
MSD0250C300	250 HP 250 AMP 575V SINEWAVE FILTER	
MSD0305C300	300 HP 305 AMP 575V SINEWAVE FILTER	
MSD0362C300	350 HP 362 AMP 575V SINEWAVE FILTER	
MSD0420C300	400 HP 420 AMP 575V SINEWAVE FILTER	
MSD0450C300	450 HP 450 AMP 575V SINEWAVE FILTER	



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