

Liquid Level Measurement
Compressed Air Filters
Process Indicators



Food & Beverage
Chemical Processing
Pulp & Paper
Water/Wastewater
General Industrial
Marine

KING-GAGE

A NOSHOK Company

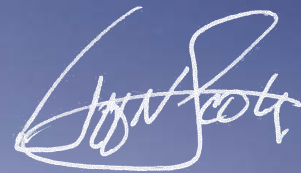


www.king-gage.com

KING-GAGE, an established and respected global supplier to the food & beverage industry for over 80 years, specializes in the design and manufacture of liquid level tank gauging equipment and compressed air filtration components. KING-GAGE products also address the chemical, industrial, offshore, marine and water/wastewater markets.

NOSHOK acquired KING-GAGE in 2019 as a seamless extension to our Measurement Solutions offering. With NOSHOK's strong sales, marketing, engineering and product development resources, and world-class customer support powering the KING-GAGE brand, we look forward to continued growth and expansion in the food, beverage, dairy and marine markets.

KING-GAGE, A NOSHOK Company is committed to providing excellence on every level. Thank you for choosing NOSHOK products.



Jeff N. Scott
CEO



NOSHOK Corporate Headquarters
Your Single Source Instrumentation Company

NOSHOK is a member and actively supports:



NOSHOK is an ISO 9001:2015 registered company

LEVEL TRANSMITTERS

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ES2 Slimline



550 SERIES

- Designed for inventory monitoring
- Robust protection in washdown environments
- Continuous liquid level measurement
- Excellent stability and repeatability
- Two-wire loop powered (4 mA to 20 mA)
- Available retrofit adapters include Cherry-Burrell LevelMatic, Anderson Instrument, Rosemount/Foxboro, Tank Mate and Wizard

APPLICATIONS

- Food & beverage
- Chemical processing
- Power generation
- Pharmaceutical
- Water & wastewater
- Pulp & paper
- Marine

SPECIFICATIONS

Span adjustment range*	Nominal	Minimum	Range of Adjustment
0-5 psig	0-3 psig	0-3 psig	0-83 inH ₂ O through 0-138 inH ₂ O 0-2.1 m through 0-3.5 m water
0-10 psig	0-3 psig	0-3 psig	0-83 inH ₂ O through 0-277 inH ₂ O/ 0-2.1 m through 0-7.0 m water
0-15 psig	0-3 psig	0-3 psig	0-83 inH ₂ O through 0-415 inH ₂ O/ 0-2.1 m through 0-10.5 m water
0-30 psig	0-10 psig	0-10 psig	0-277 inH ₂ O through 0-830 inH ₂ O/ 0-7.0 m through 0-21.0 m water
0-50 psig	0-15 psig	0-15 psig	0-415 inH ₂ O through 0-1384 inH ₂ O/ 0-10.5 m through 0-35.1 m water
Operating limit (maximum pressure)	Pressure above 300% nominal range (over-range) will result in damage to the transmitter (200% may cause a shift in calibration).		
Accuracy	Less than ±0.20% full scale (Includes linearity, hysteresis, non-repeatability errors)		
Pressure media	Gas or liquids compatible with 316 Stainless Steel (diaphragm); Silicone rubber (o-ring). All other wetted parts 316L.		
Electrical	Input (excitation): 14 Vdc to 40 Vdc Output (mA _{dc}): 4 mA to 20 mA		
Linearity (worst case)	Less than ±0.13% full scale Hysteresis (worst case) Less than 0.05% full scale		
Non-repeatability (worst case)	Less than 0.02% full scale		
Operating temperature range	0 °F to 175 °F / -17 °C to 79 °C		

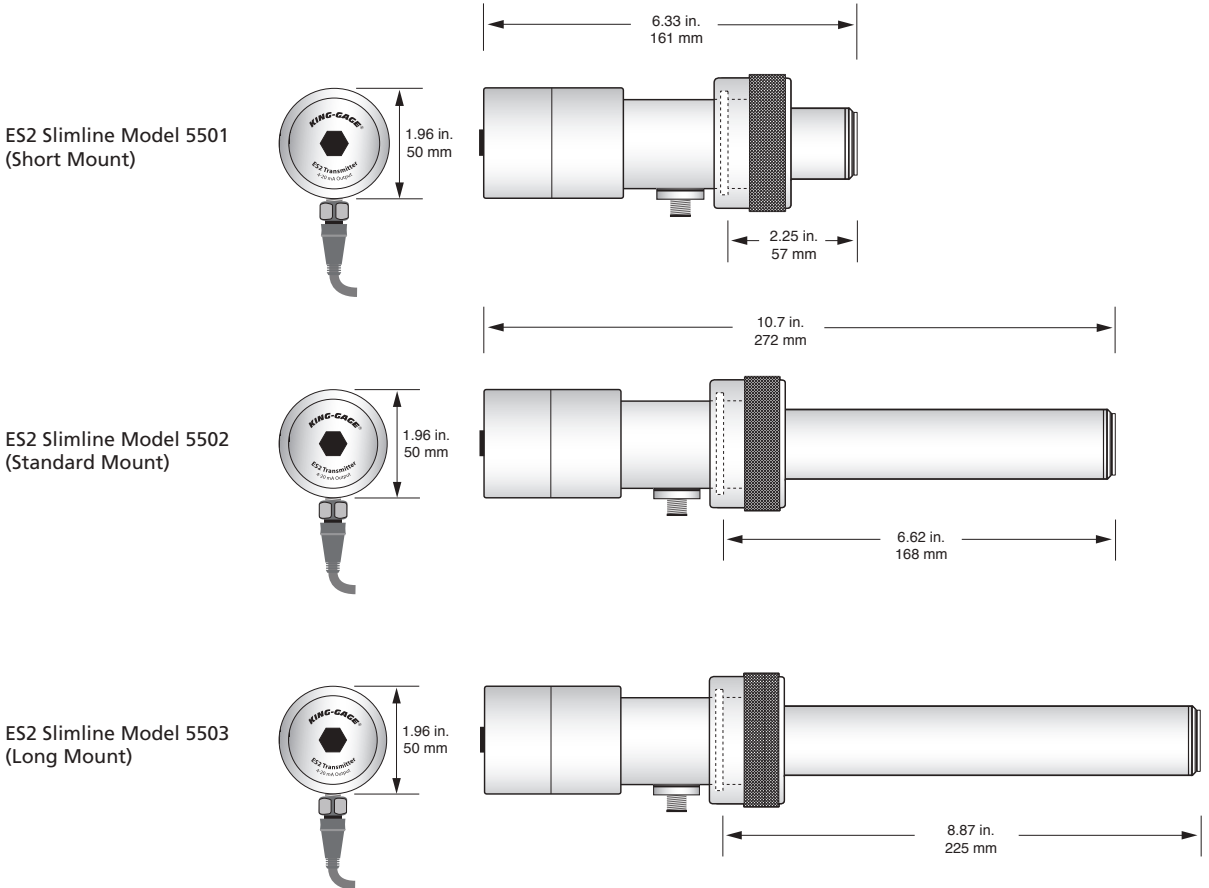
* Transmitter turndown ratio is 3:1 for the 0-15 psig, 0-30 psig and 0-50 psig nominal ranges. IMPORTANT! Accuracy, linearity, and non-repeatability values are based on nominal range.

ORDERING INFORMATION			
SERIES	550		
MOUNTING APPLICATIONS	1 Short mount (single wall, non-insulated tank)	2 Standard mount (insulated wall up to 4.5" / 114 mm; or adapter for non-KING "short" shell)	3 Long mount (insulated wall up to 6.75" / 171 mm; or adapter for non-KING "standard" shell)
CONNECTION/TERMINATION	3 Cable with integral molded connector (M12)		
PRESSURE RANGES	05 0-5 psig / 0-0.3 bar	15 0-15 psig / 0-1.03 bar	50 0-50 psig / 0-3.44 bar
	10 0-10 psig / 0-0.69 bar	30 0-30 psig / 0-2.06 bar	

EXAMPLE

Series550 Series
 Mounting applicationStandard mount
 Connection/terminationCable with integral molded connector (M12)
 Pressure range0-5 psig / 0-0.3 bar

550 2 - 3 - 05



ES3 Sanitary



58 SERIES

- Standard flush mount
- 4:1 turn down
- Multiple process connections
- Electronic (4 mA to 20 mA) output
- Consistent output during CIP cycles
- HART® protocol output available
- All transmitters are fully temperature compensated

APPLICATIONS

- Food & beverage
- Chemical processing
- Power generation
- Pharmaceutical
- Water & wastewater
- Pulp & paper
- Marine

SPECIFICATIONS

Span adjustment range*	Transmitter turndown ratio is 4:1 for all ranges.		
	Nominal	Minimum	Range of Adjustment
	0–5.8 psig	0–1.45 psig	0–40 inH ₂ O through 0–160 inH ₂ O 0–1 m through 0–4 m water
	0–23 psig	5.8 psig	0–160 inH ₂ O through 0–630 inH ₂ O 0–4 m through 0–16 m water
	0–58 psig	0–14.5 psig	0–394 inH ₂ O through 0–1575 inH ₂ O/ 0–10 m through 0–40 m water
	0–145 psig	0–29 psig	
	0–350 psig	0–87 psig	
Operating limit (maximum pressure)	Pressure above 300% nominal range (over-range) will result in damage to the transmitter (200% may cause a shift in calibration).		
Accuracy	Less than ±0.20% Adjusted Span Includes linearity, hysteresis, non-repeatability errors.		
Pressure media	Gas or liquids compatible with Hastelloy (diaphragm); Silicone rubber (o-ring). All other wetted parts 316L.		
Electrical	Input (excitation): 14 Vdc to 36 Vdc Output (mA): 4 mA to 20 mA HART® protocol (optional)		
Linearity (worst case)	Less than ±0.13% full scale Hysteresis (worst case) Less than 0.05% full scale		
Non-repeatability (worst case)	Less than 0.02% full scale		
Operating temperature range	-4 °F to 212 °F / -20 °C to 100 °C		

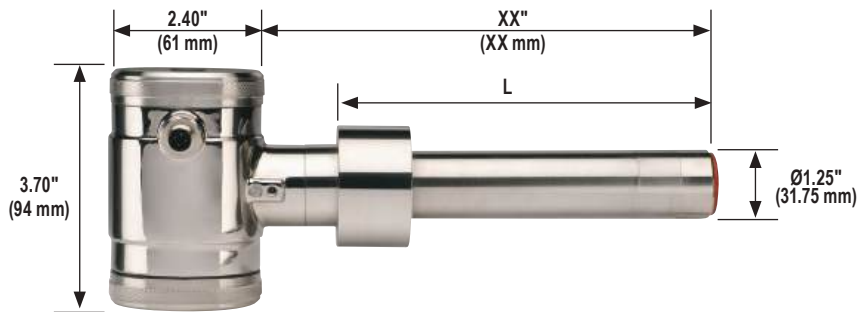
* IMPORTANT! Accuracy, linearity, and non-repeatability values are based on adjusted span range.

ORDERING INFORMATION			
SERIES	58		
PROCESS CONNECTIONS	01 KING Short	02 KING Standard	03 KING Long
OPTIONS	01 Standard options	04 Hart® protocol	
	02 Transparent cover	06 Transparent cover + Hart®	
SPAN RANGES	01 1.5 psi to 5.8 psi	03 14.5 psi to 58 psi	05 87 psi to 350 psi
	02 5.8 psi to 23.2 psi	04 29 psi to 145 psi	

EXAMPLE

Series 58 Series
 Process connection KING short
 Option Transparent cover
 Span range 29 psi to 145 psi

58 01 - 02 - 04



L	
Short	2.19" (55.63 mm)
Standard	6.62" (168.15 mm)
Long	8.81" (223.77 mm)



M12 Connector

CONNECTION 2-WIRE - 4 mA to 20 mA

- 1 - Brown Positive (+)
- 2 - White Negative (-)
- 3 - Blue Not Used
- 4 - Black Not Used

Differential Pressure Transmitter



5600 SERIES

- 4 mA to 20 mA output for broad compatibility
- Better than $\pm 0.02\%$ span repeatability
- Piezoresistive technology for excellent long term stability

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

Accuracy	0-5 psid trans./control	$\pm 0.34\%$ full scale
	0-10 psid trans./control	$\pm 0.27\%$ full scale
	0-15 psid trans./control	$\pm 0.24\%$ full scale
	0-30 psid trans./control	$\pm 0.22\%$ full scale
	0-50 psid trans./control	$\pm 0.21\%$ full scale
Repeatability	$\pm 0.20\%$ of calibrated span	
Temperature Range	0 °F to 120 °F / -16 °C to 54 °C	
Maximum pressure	300% over-range	
Burst pressure	200 psig	
DP Purge control	Unit incorporates differential air flow regulator with flow control orifice Fixed differential set to nominal 10 psid Output is 1:1 pneumatic pressure (hydrostatic force equivalent) Includes an integral differential pressure (D/P) transmitter converting pneumatic pressure into 4 mA _{dc} to 20 mA _{dc} electronic output. Ranges available: 0 psid to 5 psid, 0 psid to 10 psid to 30 psid, 0 psid to 50 psid	
Flow rate (air purge)	Nominal 1 cfh (cubic feet per hour) at specified differential Maximum air consumption under 5 cfh.	
Materials	Machined brass body with acrylic semi-gloss enamel finish; integral filter element is aluminum with acrylic semi-gloss enamel finish	
SafeGard option	An adjustable pressure-limiting control that permits pre-setting a maximum value for pressure output from the Purge Control. SafeGard range available as 25 inH ₂ O to 650 inH ₂ O or 650 inH ₂ O to 1750 inH ₂ O	

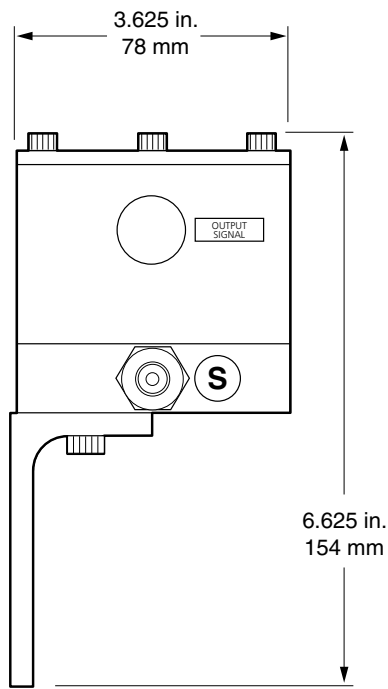
* Unregulated

ORDERING INFORMATION			
SERIES	5600		
FITTINGS	1 None, 1/4" NPT	3 Polyflo; 1/4" tube 1/4" tube X 1/4" NPT	4 Swagelok 1/4" tube 1/4" tube x 1/4" NPT (compatible with copper or poly tubing)
PRESSURE RANGES	0 0-5 psid / 0-0.3 bar	2 0-15 psid / 0-1.03 bar	4 0-50 psid / 0-3.44 bar
	1 0-10 psid / 0-0.69 bar	3 0-30 psid / 0-2.06 bar	5 0-2 psid / 0-0.14 bar

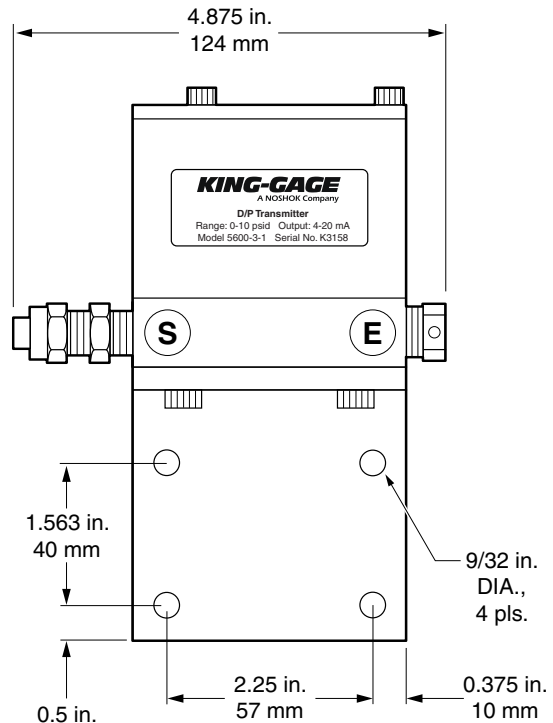
NOTE: Not rated for explosion hazard areas, includes Hubbell nylon cord connector.

EXAMPLE

Series 5600 Series 5600 - 1 - 2
 Fitting None, 1/4" NPT
 Pressure range 0-15 psid / 0-1.03 bar



Side View



Front View



5900 SERIES

- 4 mA to 20 mA output for broad compatibility
- Better than $\pm 0.02\%$ Span repeatability
- Piezoresistive technology for enhanced stability
- Front panel zero/span adjust and meter terminals

APPLICATIONS

- Tank gauging

SPECIFICATIONS

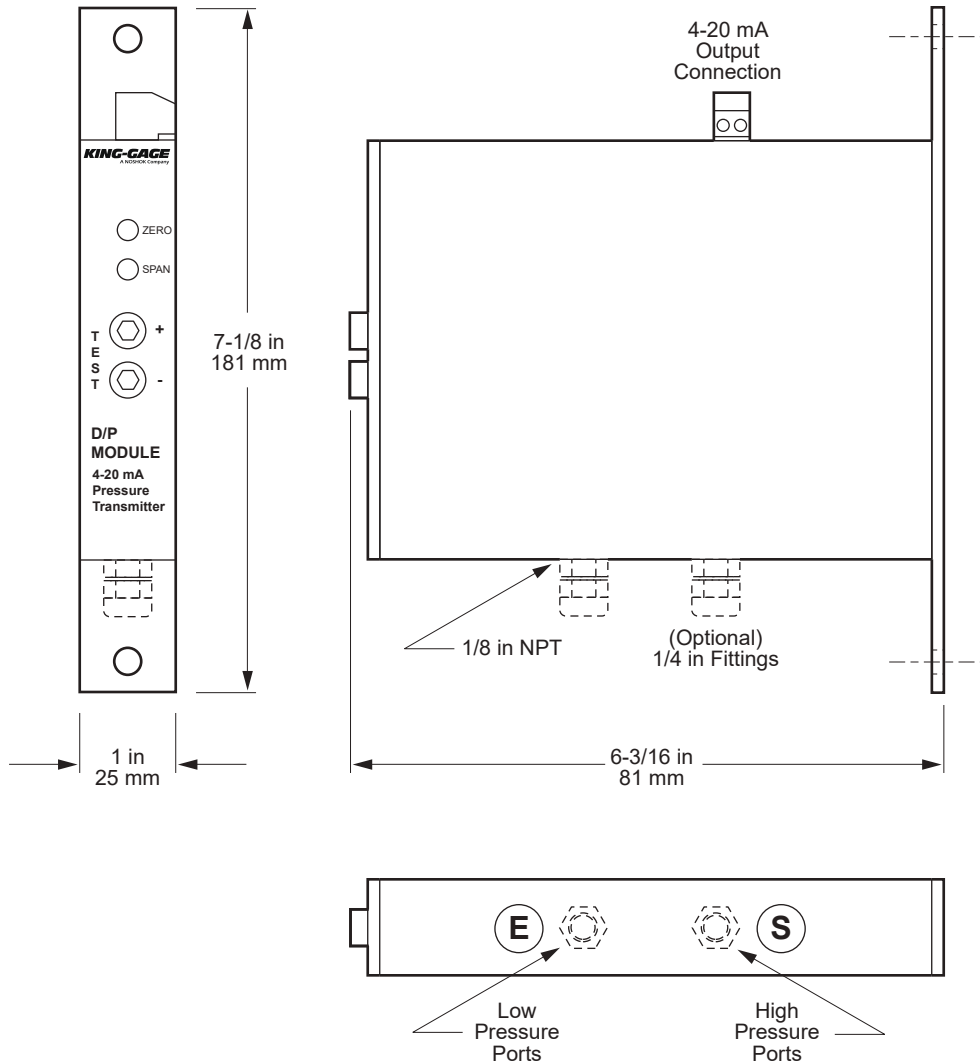
Output signal	4 mAdc to 20 mAdc (milliamperes)
Accuracy	$\pm 0.2\%$ F.S. ($\pm 0.10\%$ F.S., typical) includes non-linearity, hysteresis and non-repeatability
Repeatability	$\pm 0.02\%$ of calibrated span
Temperature range	0 °F to 180 °F/-18 °C to 82 °C (operating range)
Compensated temperature range	32 °F to 120 °F/ 0 °C to 54 °C
Thermal effects (over compensated temperature range)	Less than .007% °F (.011% °C) span shift—sensitivity Less than .007% °F (.011% °C) span shift—zero
Power requirement*	14 Vdc to 40 Vdc
Power supply stability (effect on FSO)	Less than .005% of span change in output per volt change at input terminals
Burst pressure	200 psi

* Unregulated

ORDERING INFORMATION - D/P CONTROL			
SERIES	5900 D/P Module		
FITTINGS	1 None, 1/8" NPT	4 Swagelok; 1/4" tube x 1/8" NPT (compatible with copper or poly tubing)	
PRESSURE RANGES	0 0 psid to 5 psid	2 0 psid to 15 psid	4 0 psid to 50 psid
	1 0 psid to 10 psid	3 0 psid to 30 psid	

EXAMPLE

Series 5900 Series 5900
Fitting None, 1/8" NPT - 1
Pressure range 0 psid to 30 psid - 3



Differential Pressure LiquiSeal™ Purge Control



738 SERIES

- Fully integrated air purge regulator that provides continuous level measurement
- Integral differential pressure transmitter provides 4 mAdc to 20 mAdc output proportional to liquid level
- Reliable proven sensing technique
- A highly refined versions of the basic bubbler air control
- All-pneumatic version available
- Simple to install and maintain

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

Output signal	4 mAdc to 20 mAdc (milliamperes)
Accuracy	0-5 psid trans./control ± 0.34% full scale 0-10 psid trans./control ± 0.27% full scale 0-15 psid trans./control ± 0.24% full scale 0-30 psid trans./control ± 0.22% full scale 0-50 psid trans./control ± 0.21% full scale
Repeatability	± 0.20% of calibrated span
Temperature range	0 °F to 120 °F / -16 °C to 54 °C
Maximum pressure	300% over-range
Burst pressure	200 psig
Power requirement*	14 Vdc to 40 Vdc
Compressed air requirement	35 psig to 150 psig supply pressure at control inlet. (Minimum supply pressure should be at least 20 psig greater than anticipated maximum liquid head pressure.)
Maximum depth measurement	1,937 inH ₂ O(49.0 m)
DP Purge control	Unit incorporates differential air flow regulator with flow control orifice. Fixed differential set to nominal 10 psid. Output is 1:1 pneumatic pressure (hydrostatic force equivalent). Includes an integral differential pressure (D/P) transmitter converting pneumatic pressure into 4 mAdc to 20 mAdc electronic output. Ranges available: 0 psid to 5 psid, 0 psid to 10 psid to 30 psid, 0 psid to 50 psid,
Flow rate (air purge)	Nominal 1 cfh (cubic feet per hour) at specified differential. Maximum air consumption under 5 cfh.
Materials of construction	Machined brass body with acrylic semi-gloss enamel finish; integral filter element is aluminum with acrylic semi-gloss enamel finish.

* Unregulated

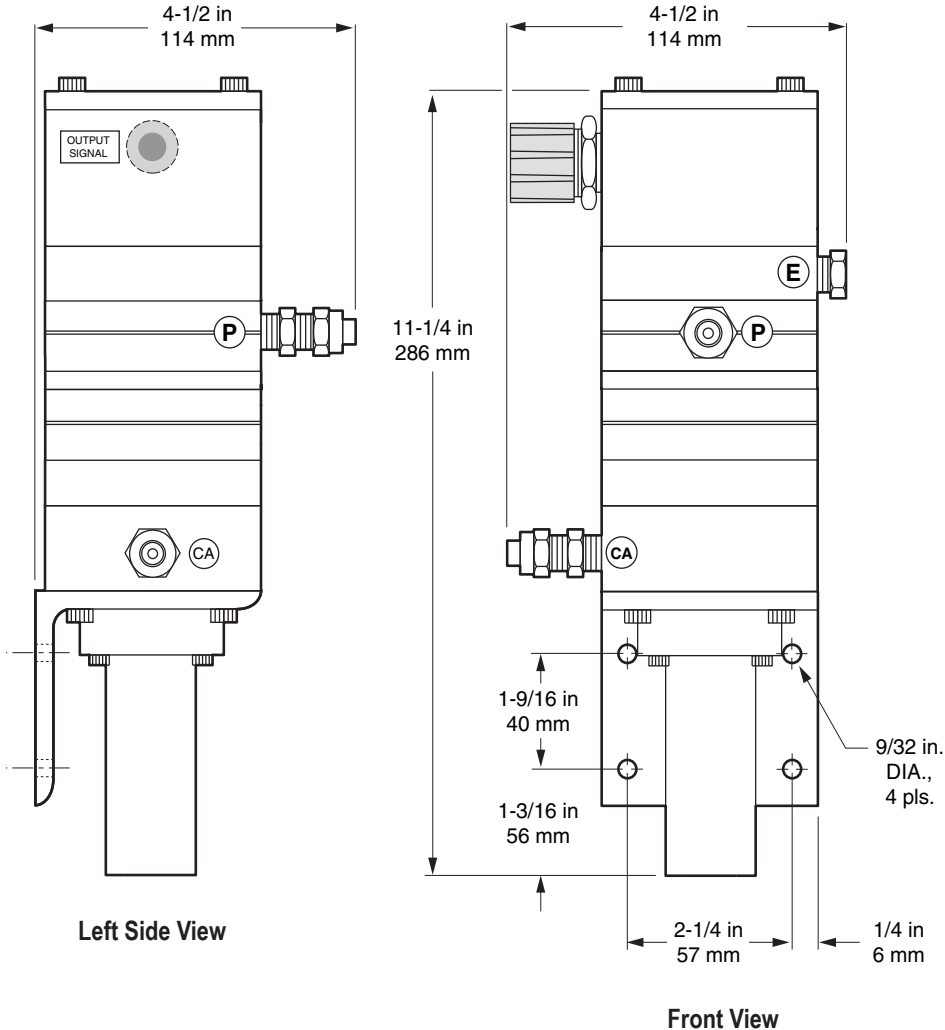
ORDERING INFORMATION			
SERIES	738		
FITTINGS	1918 None, 1/4" NPT	3918 Polyflo; (1) 3/8" tube, (1) 1/4" tube x 1/4" NPT	4918 Swagelok; (1) 3/8" tube, (1) 1/4" tube x 1/4" NPT (compatible with Copper or Poly tubing)
MILLIAMP OUTPUTS	108 4 mAdc to 20 mAdc 0-5 psid	128 4 mAdc to 20 mAdc 0-15 psid	148 4 mAdc to 20 mAdc 0-50 psid
	118 4 mAdc to 20 mAdc 0-10 psid	138 4 mAdc to 20 mAdc 0-30 psid	168 4 mAdc to 20 mAdc 0-2 psid

NOTE: Unit includes (1) water-resistant Hubbell cord grip.

EXAMPLE

Series738 Series
 FittingPolyflo; (1) 3/8" tube, (1) 1/4" tube x 1/4" NPT
 Milliamp output 4 mAdc to 20 mAdc 0-5 psid

738 - 3918 - 108



Differential Pressure Purge Control



788 SERIES

- Generates a constant flow of compressed air to purge a downpipe
- Integral differential pressure transmitter provides 4 mAdc to 20 mAdc output proportional to liquid level
- All-pneumatic design does not include integral transmitter
- Provides 1:1 pressure signal to a compatible indicator or external transducer through 1/4 in. airline tubing
- Holds a fixed pressure differential across a precision orifice to ensure constant flow rate of 1 cfh (cubic foot per hour), making it possible to maintain a linear 1:1 response of the sensing system
- Backpressure sensed is equivalent to the hydrostatic head pressure due to actual liquid depth

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
- Ballast water
- Fuel oil
- Fresh water
- Lube oil
- Brine
- Preload
- Holding

SPECIFICATIONS

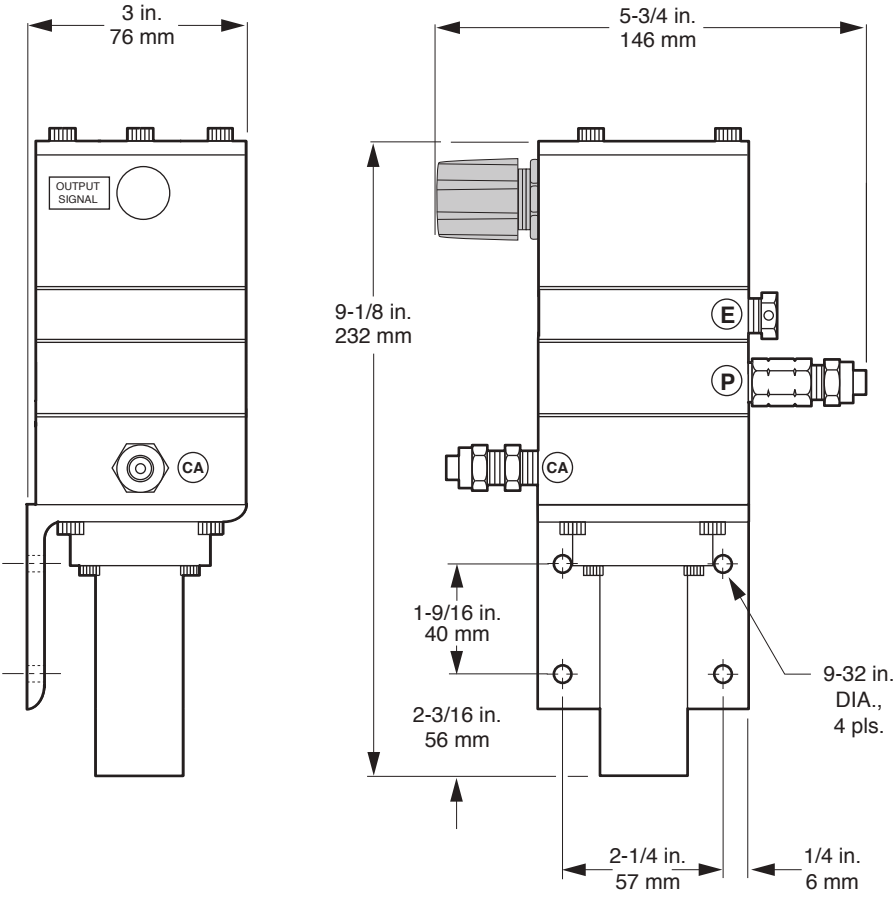
Output signal	4 mAdc to 20 mAdc (milliamperes)	
Accuracy	0-5 psid trans./control	± 0.34% full scale
	0-10 psid trans./control	± 0.27% full scale
	0-15 psid trans./control	± 0.24% full scale
	0-30 psid trans./control	± 0.22% full scale
	0-50 psid trans./control	± 0.21% full scale
Repeatability	± 0.20% of calibrated span	
Temperature Range	0 °F to 120 °F / -16 °C to 54 °C	
Maximum pressure	300% over-range	
Burst pressure	200 psig	
Power requirement*	14 Vdc to 40 Vdc	
Compressed air requirement	35 psig to 150 psig supply pressure at control inlet. (Minimum supply pressure should be at least 20 psig greater than anticipated maximum liquid head pressure.)	
Maximum depth measurement	1,937 inH ₂ O (49.0 m)	
DP Purge control	Unit incorporates differential air flow regulator with flow control orifice Fixed differential set to nominal 10 psid Output is 1:1 pneumatic pressure (hydrostatic force equivalent) Includes an integral differential pressure (D/P) transmitter converting pneumatic pressure into 4 mAdc to 20 mAdc electronic output. Ranges available: 0 psid to 5 psid, 0 psid to 10 psid to 30 psid, 0 psid to 50 psid	
Flow rate (air purge)	Nominal 1 cfh (cubic feet per hour) at specified differential Maximum air consumption under 5 cfh.	
Materials	Machined brass body with acrylic semi-gloss enamel finish; integral filter element is aluminum with acrylic semi-gloss enamel finish	

* Unregulated

ORDERING INFORMATION				
SERIES	788			
FITTINGS	198 None, 1/4" NPT	398 Polyflo; (1) 3/8" tube, (1) 1/4" tube	498 Swagelok; (1) 3/8" tube, (1) 1/4" tube (compatible with copper or poly tubing)	
DP NOMINAL RANGES	148 0 psi to 2 psi	168 0 psi to 10 psi	188 0 psi to 30 psid	198 0 psi to 50 psi

EXAMPLE

Series 788 Series 788 - 398 - 178
 Fitting Polyflo; (1) 3/8" tube, (1) 1/4" tube
 DP Nominal range 0 psi to 15 psi



Differential Pressure Sensor Control



868 SERIES

- 4 mA to 20 mA output for broad compatibility
- Better than $\pm 0.02\%$ span repeatability
- Piezoresistive technology for enhanced stability
- Also offered in hybrid versions combined with an air flow control for pneumatic sensors or downpipe (bubbler) systems

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

Output signal	4 mAdc to 20 mAdc (milliamperes)	
Accuracy	$\pm 0.2\%$ FS ($\pm 0.10\%$ F.S., typical) includes non-linearity, hysteresis and non-repeatability	
Repeatability	$\pm 0.02\%$ of calibrated span	
Temperature range	0 °F to 180 °F / -18 °C to 82 °C (operating range)	
Compensated temperature range	32 °F to 120 °F / 0 °C to 54 °C	
Thermal effects (over compensated temperature range)	Less than .007% °F (.011% °C) span shift—sensitivity Less than .007% °F (.011% °C) span shift—zero	
Power requirement*	14 Vdc to 40 Vdc	
Power supply stability (effect on FSO)	Less than .005% of span change in output per volt change at input terminals	
Burst pressure	200 psi	
Combined accuracy**	0–5 psid trans./control	$\pm 0.34\%$ full scale
	0–10 psid trans./control	$\pm 0.27\%$ full scale
	0–15 psid trans./control	$\pm 0.24\%$ full scale
	0–30 psid trans./control	$\pm 0.22\%$ full scale
	0–50 psid trans./control	$\pm 0.21\%$ full scale
Compressed air requirement	35 psid to 150 psig supply pressure at control inlet	
Maximum depth measurement	1,937 inH ₂ O (49.0 m water)	

* Unregulated

** Combined accuracy refers to the primary accuracy of the sensor in combination with the secondary accuracy of the D/P transmitter.

ORDERING INFORMATION			
SERIES	868 D/P Sensor Control (Air Flow Control)		
FITTINGS	19 None, 1/4" NPT	39 Polyflo; (4) 1/4" tube	49 Swagelok; (4) 1/4" tube (compatible with copper or poly tubing)
MILLIAMP OUTPUTS	108 4 mAdc to 20 mAdc 0-5 psid	128 4 mAdc to 20 mAdc 0-15 psid	148 4 mAdc to 20 mAdc 0-50 psid
	118 4 mAdc to 20 mAdc 0-10 psid	138 4 mAdc to 20 mAdc 0-30 psid	168 4 mAdc to 20 mAdc 0-2 psid

NOTE: Unit includes (1) water-resistant Hubbell cord grip.

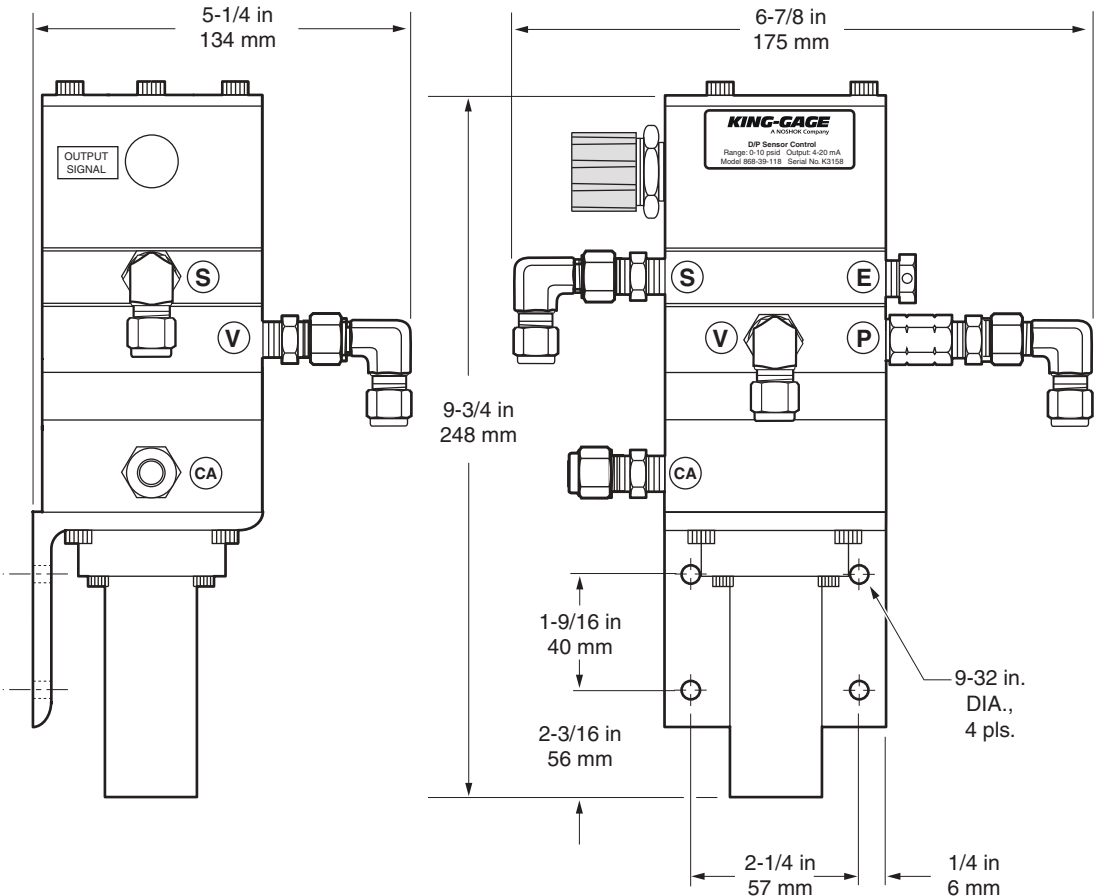
EXAMPLE

Series 868 Series
 Fitting None, 1/4" NPT
 Milliamp output 4 mAdc to 20 mAdc 0-10 psid

868 - 19 - 118

Left Side View

Front View



Purge Control



780 SERIES

- Generates a constant flow of compressed air to purge a downpipe
- All-pneumatic design does not include integral transmitter
- Provides 1:1 pressure signal to a compatible indicator or external transducer through 1/4 in. airline tubing
- Holds a fixed pressure differential across a precision orifice to ensure constant flow rate of 1 cfh (cubic foot per hour), making it possible to maintain a linear 1:1 response of the sensing system
- Back pressure sensed is equivalent to the hydrostatic head pressure due to actual liquid depth

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

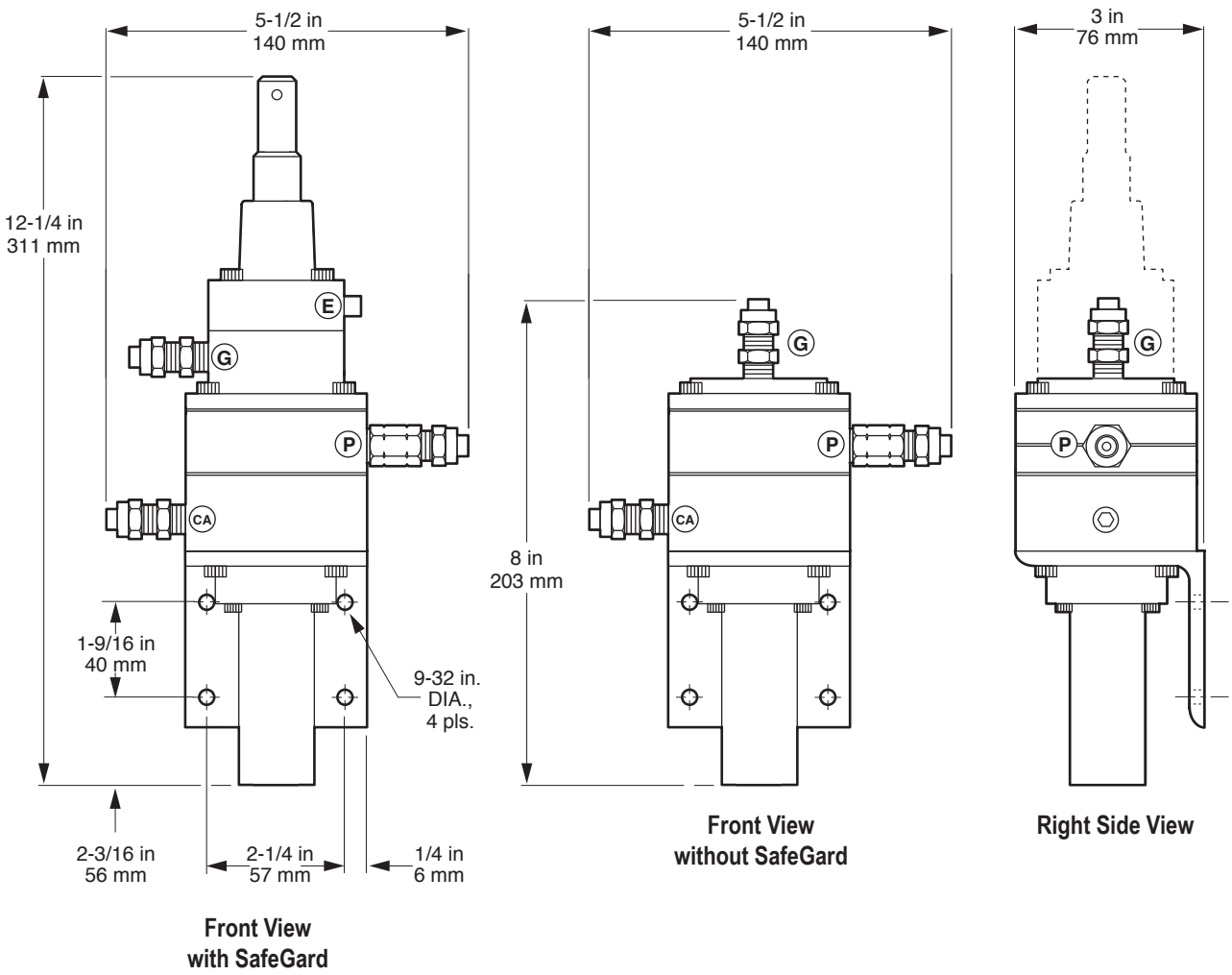
SPECIFICATIONS

Temperature Range	0 °F to 120 °F / -16 °C to 54 °C
Maximum pressure	300% over-range
Burst pressure	200 psig
Compressed air requirement	35 psig to 150 psig supply pressure at control inlet. (Minimum supply pressure should be at least 20 psig greater than anticipated maximum liquid head pressure.)
Maximum depth measurement	1,937 inH ₂ O (49.0 m)
Purge control	Unit incorporates differential air flow regulator with flow control orifice Fixed differential set to nominal 10 psid Output is 1:1 pneumatic pressure (hydrostatic force equivalent)
Flow rate (air purge)	Nominal 1 cfh (cubic feet per hour) at specified differential Maximum air consumption under 5 cfh.
Materials	Machined brass body with acrylic semi-gloss enamel finish; integral filter element is aluminum with acrylic semi-gloss enamel finish
SafeGard option	An adjustable pressure-limiting control that permits pre-setting a maximum value for pressure output from the Purge Control. SafeGard range available as 25 inH ₂ O to 650 inH ₂ O or 650 inH ₂ O to 1750 inH ₂ O

ORDERING INFORMATION			
SERIES	780		
FITTINGS	198 None, 1/4" NPT	398 Polyflo; (1) 3/8" tube, (2) 1/4" tube	498 Swagelok; (1) 3/8" tube, (2) 1/4" tube (compatible with copper or poly tubing)
PRESSURE OUTPUT	68 25"-650" SafeGard range	78 650"-1750" SafeGard range	88 Without SafeGard option

EXAMPLE

Series 780 Series 780 - 398 - 78
 Fitting Polyflo; (1) 3/8" tube, (2) 1/4" tube
 Pressure output 650"-1750" SafeGard range



LiquiSeal™ Purge Control



735 SERIES

- Fully integrated air purge regulator and level transmitter
- Operation based on the control regulating a continuous 1 cfh (cubic foot per hour) flow of compressed air into the tank downpipe
- Provides a 1:1 pressure signal to a compatible indicator or external transducer through 1/4 in. airline tubing
- All LiquiSeal™ purge controls feature an internal isolation diaphragm
- Back pressure created by the continuous purging of the downpipe is applied to this internal diaphragm
- Working as a pneumatic transmitter, an equivalent pressure is generated on the gauge side of the diaphragm, which isolates downstream components from contact with the liquid or vapor releases

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

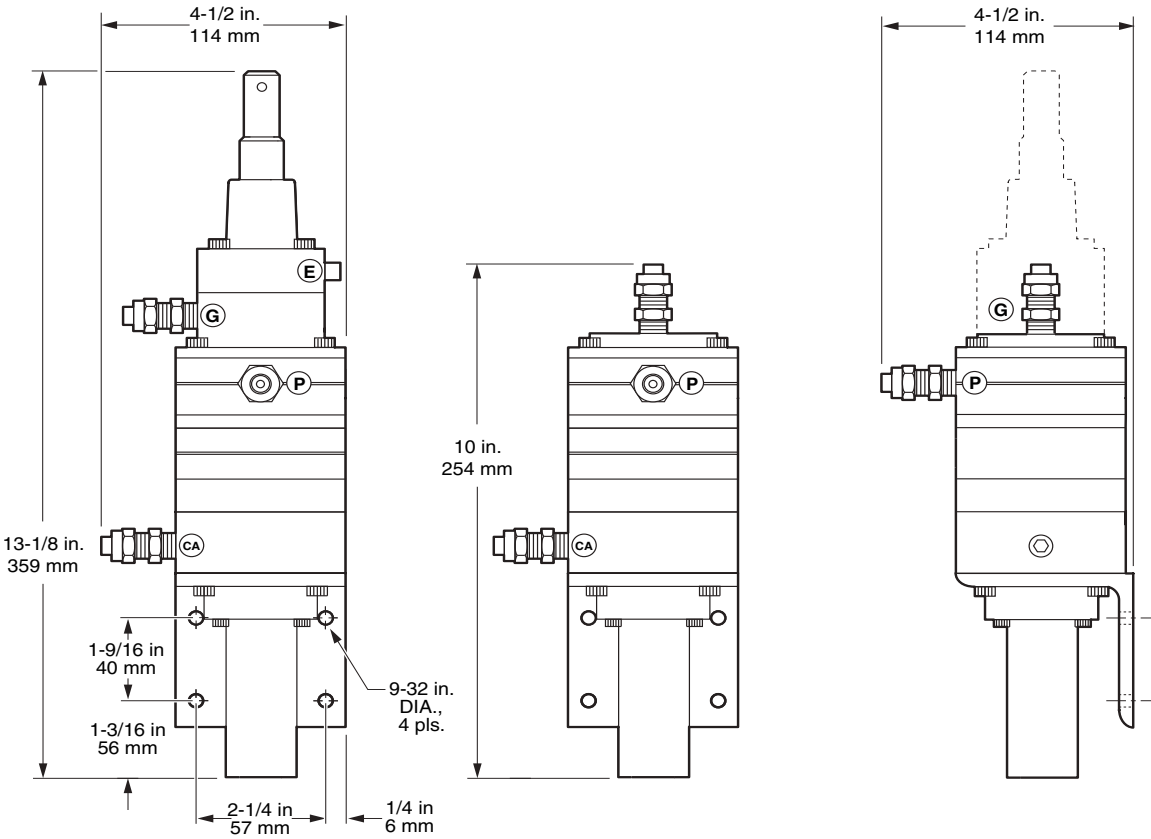
Temperature Range	0 to 120°F / -16 to 54°C
Maximum pressure	300% over-range
Burst pressure	200 psig
Compressed air requirement	35-150 psig supply pressure at control inlet. (Minimum supply pressure should be at least 20 psig greater than anticipated maximum liquid head pressure.)
Maximum depth measurement	1,937 inH ₂ O (49.0 m)
Purge control	Unit incorporates differential air flow regulator with flow control orifice Fixed differential set to nominal 10 psid Output is 1:1 pneumatic pressure (hydrostatic force equivalent)
Flow rate (air purge)	Nominal 1 cfh (cubic feet per hour) at specified differential Maximum air consumption under 5 cfh.
Materials	Machined Brass body with acrylic semi-gloss enamel finish; integral filter element is aluminum with acrylic semi-gloss enamel finish
SafeGard option	An adjustable pressure-limiting control that permits pre-setting a maximum value for pressure output from the Purge Control. SafeGard range available as 25 inH ₂ O to 650 inH ₂ O or 650 inH ₂ O to 1750 inH ₂ O

ORDERING INFORMATION				
SERIES	735			
FITTINGS	1918 None, 1/4" NPT	3918 Polyflo; (1) 3/8" tube, (2) 1/4" tube	4918 Swagelok; (1) 3/8" tube, (2) 1/4" tube (compatible with copper or poly tubing)	
PRESSURE OUTPUT	38 25"-650" SafeGard range	48 650"-1750" SafeGard range	58 Without SafeGard option	

EXAMPLE

Series 735 Series
 Fitting Polyflo; (1) 3/8" tube, (2) 1/4" tube
 Pressure output 650"-1750" SafeGard range

735 - 3918 - 48





APPLICATIONS

- Tank level monitoring for food and beverage

860 SERIES

- Better than $\pm 0.02\%$ span repeatability
- Also offered in hybrid versions combined with an air flow control for pneumatic sensors or downpipe (bubbler) systems

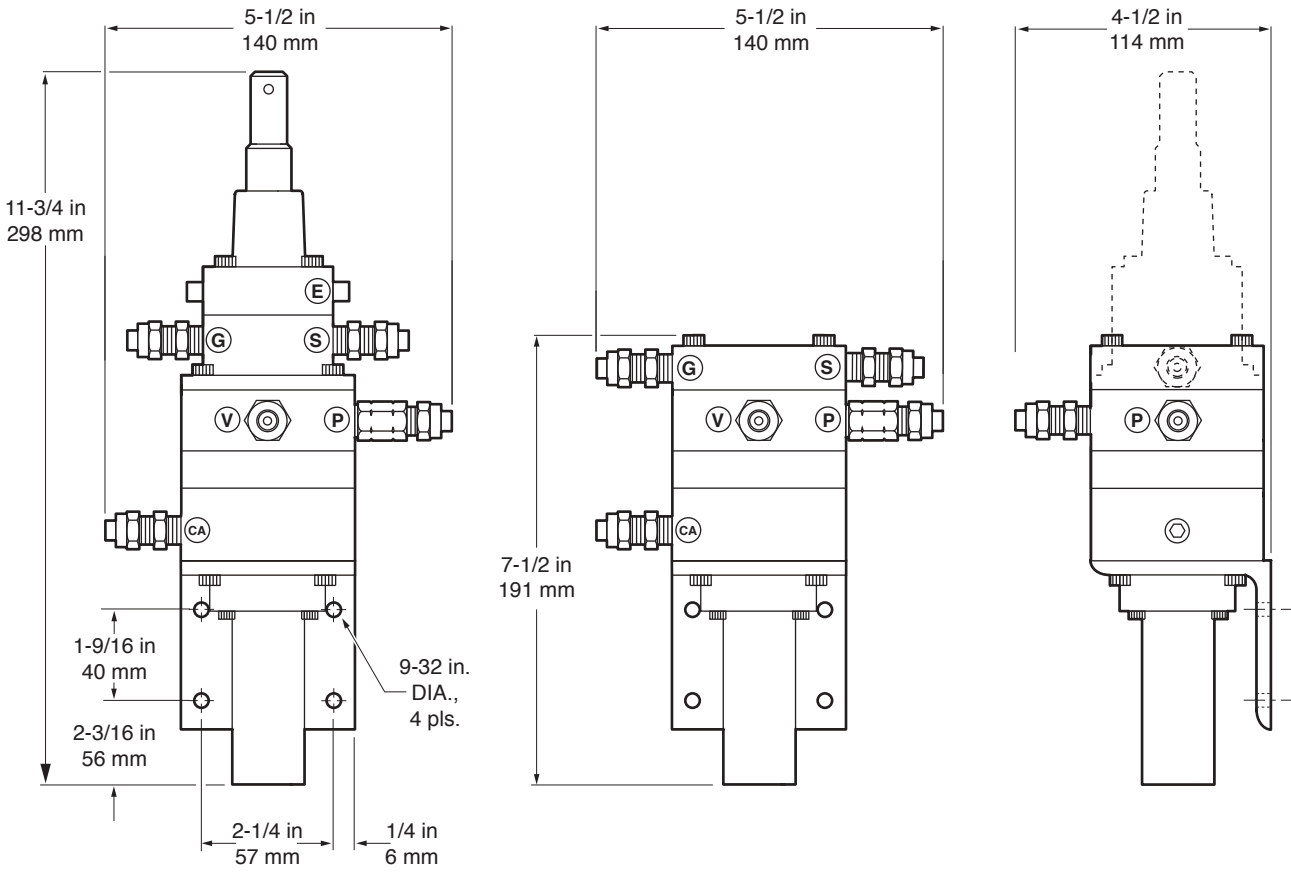
SPECIFICATIONS	
Temperature range	0 °F to 180 °F/-18 °C to 82 °C (operating range)
Compensated temperature range	32 °F to 120 °F/ 0 °C to 54 °C
Thermal effects (over compensated temperature range)	Less than .007% °F (.011% °C) span shift—sensitivity Less than .007% °F (.011% °C) span shift—zero
Power supply stability (effect on full scale)	Less than .005% of span change in output per volt change at input terminals
Burst pressure	200 psi
Compressed air requirement	35 psid to 150 psig supply pressure at control inlet
Maximum depth measurement	1,937 inH ₂ O (49.0 m water)

ORDERING INFORMATION			
SERIES	860 Sensor Control (Air Flow Control)		
FITTINGS	19 None, 1/4" NPT	39 Polyflo; (5) 1/4" tube	49 Swagelok; (5) 1/4" tube (compatible with copper or poly tubing)
PRESSURE OUTPUTS	38 25"-650" SafeGard range	48 650"-1750" SafeGard range	58 Without SafeGard option

EXAMPLE

Series 860 Series
 Fitting Polyflo; (5) 1/4" tube
 Pressure output 650"-1750" SafeGard range

860 - 39 - 48





450 SERIES

- Flush mounting sanitary design
- Pneumatic output, or electronic (4 mA to 20 mA) output when paired with KING-GAGE 860 Series Sensor Control or 868 Series D/P Purge Control
- Field replaceable sensor diaphragm
- Stable output during CIP cycles
- FDA-approved silicone rubber O-ring seal forms a crevice-free, positive compression seal between the diaphragm probe and mounting shell
- Flush weld mountings are available with product contact surfaces of 316L Stainless Steel
- Diaphragm Sensing Unit meets the requirements of 3-A

APPLICATIONS

- Food & beverage
- Chemical processing
- Power generation
- Pharmaceutical
- Water & wastewater
- Pulp & paper
- Marine

SPECIFICATIONS

Sensitivity	Less than .001 psi (± 0.02 inH ₂ O/.508 mm water)
Repeatability	Better than ± 0.002 psi ($\pm .05$ inH ₂ O/1.27 mm water)
Accuracy	± 0.007 psi (± 0.2 inH ₂ O/.508 mm water)
Temperature range	30 °F to 300 °F (0 °C to 149 °C)
Pressure range	Sensor is a 1:1 pneumatic force balance diaphragm capable of repeating hydrostatic pressure as an equivalent pneumatic output. Functional pressure limit is 130 psi (or 3598 inches @ 1.00 specific gravity) determined by supply pressure (35–150 psi) less 20 psi.
Maximum depth measurement	1937 inH ₂ O (49.0 m water)
Wetted materials	Silicone rubber O-ring (meets the requirements of 3-A) Titanium diaphragm, commercially pure (meets the requirements of 3-A 74-07). Optional diaphragm materials: Silicone rubber Fittings/adaptor wetted surfaces are typically 316L Stainless Steel (as supplied by KING-GAGE).
Air Consumption	Total air consumption of sensor package (including sensor control) is less than 10 CFH or 0.16 scfm.
D/P sensor control combined accuracy*	0 psid to 5 psid transmitter/control $\pm 0.34\%$ full scale 0 psid to 10 psid transmitter/control $\pm 0.27\%$ full scale 0 psid to 15 psid transmitter/control $\pm 0.24\%$ full scale 0 psid to 30 psid transmitter/control $\pm 0.22\%$ full scale 0 psid to 50 psid transmitter/control $\pm 0.21\%$ full scale
Voltage supply requirements	14 Vdc tp 40 Vdc (unregulated) to power signal loop using 868 D/P Sensor Control.
Compressed air supply requirements	35 psig to 150 psig (2.4–10.3 bar); clean, dry air (or inert gas)

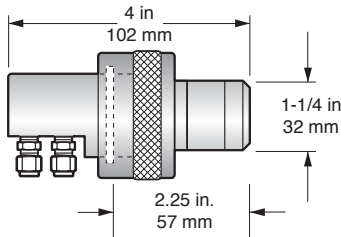
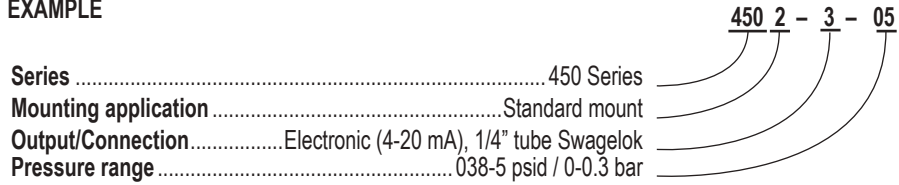
* Combined accuracy refers to the primary accuracy of the sensor in combination with the secondary accuracy of the D/P transmitter.

ORDERING INFORMATION			
SERIES	450		
MOUNTING APPLICATIONS	1 Short mount (single wall, non-insulated tank) *	2 Standard mount (insulated wall up to 4.5" / 114 mm; or adapter for non-KING-GAGE "short" shell) **	3 Long mount (insulated wall up to 6.75" / 171 mm; or adapter for non-KING-GAGE "standard" shell) ***
OUTPUT / CONNECTIONS	0 Pneumatic (pressure) 1/4" tube Swagelok	3 Electronic (4-20 mA), 1/4" tube Swagelok	
	1 Pneumatic (pressure) 1/4" tube Polyflo	4 Electronic (4-20 mA) 1/4" tube Polyflo	
PRESSURE RANGES	02 0-2 psid / 0-0.14 bar	15 0-15 psid / 0-1.03 bar	38 Pneumatic, includes SafeGard option (25-650" range)
	05 038-5 psid / 0-0.3 bar	30 0-30 psid / 0-2.06 bar	48 Pneumatic, includes SafeGard option (650-1750" range)
	10 0-10 psid / 0-0.69 bar	50 0-50 psid / 0-3.44 bar	58 Pneumatic, none

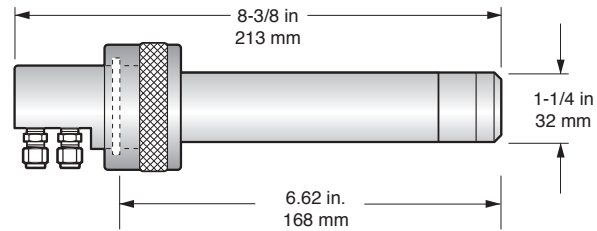
NOTE: AcraSensor packages listed include diaphragm sensing unit, 860 Series Sensor Control or 868 Series D/P Purge Control, Swagelok or PolyFlo fittings, and bundled 3-tube airline cable

- * Use with weld-in shell 1777-2 or to fit 2" sanitary clamp fitting adapter
- ** Use with weld-in shell 1777 or to fit adapter for non-KING-GAGE "short" shell
- *** Use with weld-in shell 1777-3 or to fit adapter for non-KING-GAGE "standard" shell

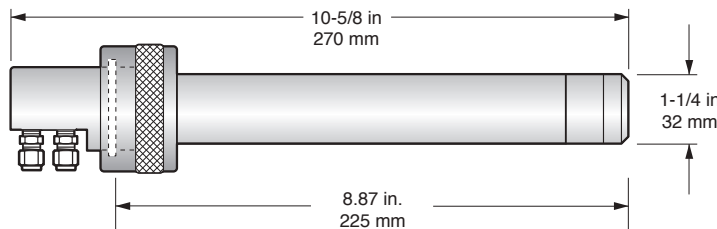
EXAMPLE



Short Mount AcraSensor



Standard Mount AcraSensor



Long Mount AcraSensor

92 SERIES



- External mounting at tank
- Pneumatic output, or electronic (4 mA to 20 mA) output when paired with KING-GAGE 860 Series Sensor Control or 868 Series D/P Purge Control
- Unaffected by foam or vapor
- Safe for hazardous environments
- Virtually free from long term drift, hysteresis and temperature sensitivity unlike strain measurements (including load cells) since mechanical deflection of the diaphragm is not directly measured
- The compensating pneumatic balance pressure which effectively isolates the sensor is converted to a proportional 4 mAdc to 20 mAdc signal or can be directly output to a suitable gauge

APPLICATIONS

- Chemical processing
- Power generation
- Pharmaceutical
- Water & wastewater
- Pulp & paper
- Marine

SPECIFICATIONS

Sensitivity	Better than .001 psi ($\pm .02$ inH ₂ O/.508 mm water)
Repeatability	Better than $\pm .002$ psi ($\pm .05$ inH ₂ O/1.27 mm water)
Primary accuracy	$\pm .007$ psi (± 0.2 inH ₂ O/.508 mm water)
Temperature range	30 °F to 300 °F (0 °C to 149 °C)
Pressure range	Sensor is a 1:1 pneumatic force balance diaphragm capable of repeating hydrostatic pressure as an equivalent pneumatic output. Functional pressure limit is 130 psi (or 3598 inches @ 1.00 specific gravity) determined by supply pressure (35–150 psi) less 20 psi.
Maximum depth measurement	1937 inH ₂ O (49.0 m water)
Wetted materials	FKM O-ring, Titanium diaphragm, commercially pure. Optional diaphragm materials: Silicone rubber Mounting flange options: 316L Stainless, PVC, brewery special flange
Air Consumption	Total air consumption of sensor package (including sensor control) is less than 10 CFH or 0.16 scfm
Compressed air supply requirements	35 psig to 150 psig (2.4–10.3 bar); clean, dry air (or inert gas)

ORDERING INFORMATION			
SERIES	92		
FLANGE SIZES*	2 2" Flange	3 3" Flange	4 4" Flange
FLANGE MATERIALS	71 316 Stainless Steel	91 PVC	
FITTINGS	1 None, 1/4" NPT	3 Polyflo; (4) 1/4" tube	4 Swagelok; (4) 1/4" tube (compatible with copper or poly tubing)

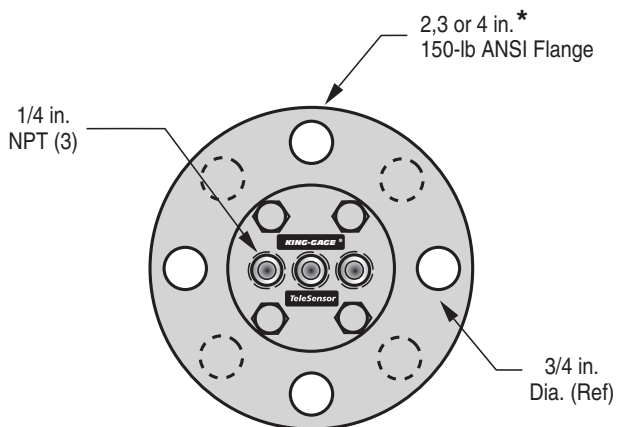
NOTES: 3-tube cable (15 ft./4.5 m) included with shipment.

* Flanges have a titanium diaphragm, silicone rubber diaphragm configuration available, consult factory.
 4" flange has a 8 bolt circle. 2" and 3" flanges have a 4 bolt circle.
 All flanges are 150 lb. ANSI.
 Special 3" 304 Stainless Steel brewery flange is available, consult factory.

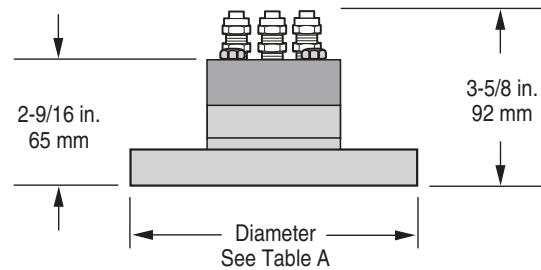
EXAMPLE

Series 92 Series
 Flange size 2"
 Flange material 316 Stainless Steel
 Fitting Polyflo; (4) 1/4" tube

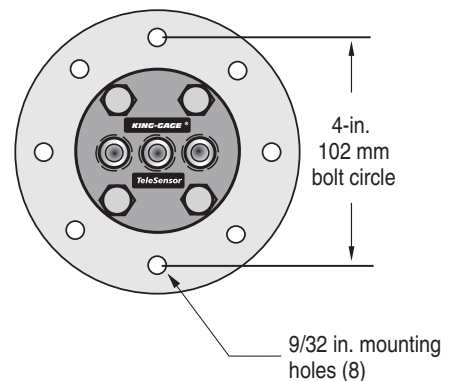
92 2 - 71 3



* 4 in. Flange has 8 bolt circle, 2 and 3 in. Flange have 4 bolt circle.



TeleSensor w/ Special 3-in. Brewery Flange (304 SS)

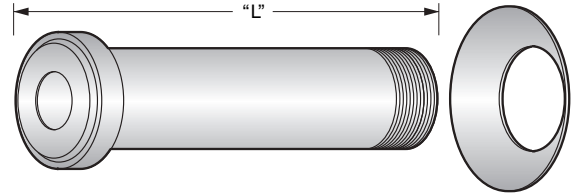


Options & Accessories

Retrofit Adaptors

Flush Weld Tank Shell (For 550 & 58 Series)

- 1777-2 Weld-in tank shell, short length sensor, 316L SS, length 1-7/8" (48 mm)
Use for single wall (non-insulated) tank only
- 1777 Weld-in tank shell, standard length sensor, 316L SS, length 6-1/4" (159 mm)
Use for single wall or insulated wall up to 4-1/2" thick
- 1777-3 Weld-in tank shell, long length sensor, 316L SS, length 8-1/2" (216 mm)
Use for insulated wall up to 6-3/4" thick

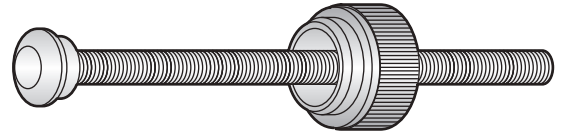


Receiver for sensor is designed to be flush-welded to the inside tank wall. Provides for flush mounting of sensor in accordance with 3-A Sanitary Standard for CIP (clean-in-place) installation.

NOTE: Flush weld tank shells include leak detection port per 3-A Standard 74-07.

Shell Welding Protector (For 550 & 58 Series)

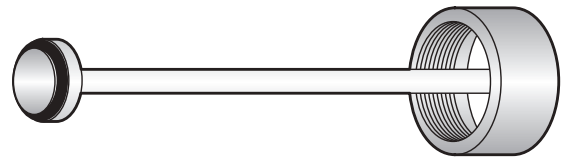
- 5664-1 Shell face protector, fits all weld-in shell



These shell inserts are used to protect the face of the King Shell during the welding and grinding/blending operations.

Shell Seal Plug (For 550 & 58 Series)

- 2584-4 Shell plug, fits short shell
- 2584-3 Shell plug, fits standard shell, Tri-clamp, & short adaptors
- 2584-6 Shell plug, fits long shell, long adaptors



Used to seal an installed tank shell or adaptor. Permits use of tank prior to sensor installation or when sensor is removed for service.

Tri-Clamp Adaptor (For 550, 58 & 92 Series)

- 1749-25 Tri-clamp MP-2", 316L SS; short length sensor
- 1749-27 Tri-clamp MP-2", 316L SS; standard length sensor



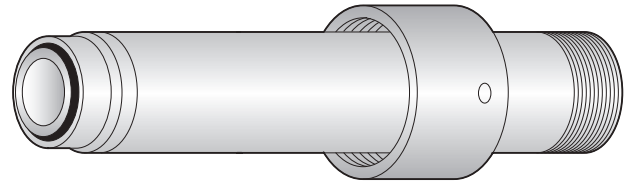
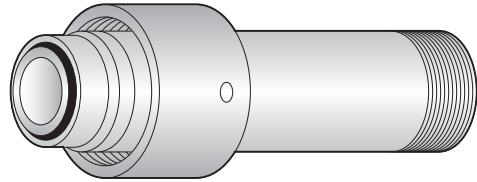
External mount adaptor mates to Tri-Clover MP-2" quick release sanitary fitting. Adaptor package does not include gasket or clamp assembly. Compatible with ES2 Model 5501 or AcraSensor Model 4501 / 8999-1-3 (short adaptor); compatible with ES2 Model 5502 or AcraSensor Model 4502 / 8999-2-3 (standard adaptor).

Cherry-Burrell Shell Adaptors, 304 Stainless Steel
(For 550, 58 & 92 Series) Adaptors available in 304 SS only.

- 5640-1 Short Cherry-Burrell shell, use standard sensor
- 5640-2 Long Cherry-Burrell shell, use long sensor

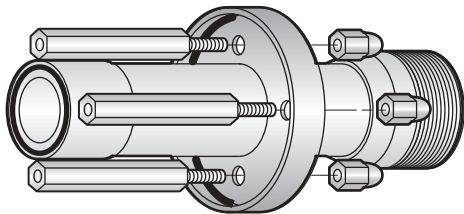
Short Cherry-Burrell adaptor is compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package.

Long Cherry-Burrell adaptor is compatible with ES2 Model 5503 long mount transmitter or AcraSensor Model 4503 / 8999-3-3 long mount package..

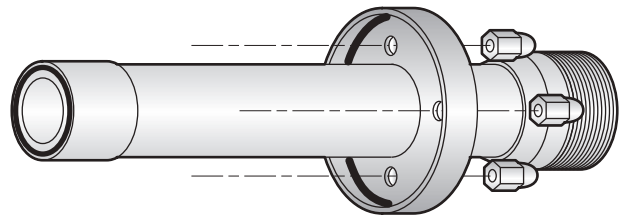


Tank-Mate Shell Adaptors, 304 Stainless Steel (For 550 & 58 Series)

- 5641-1 Short Tank-Mate shell, use standard sensor
- 5641-2 Long Tank-Mate shell, use long sensor



Short Tank Mate adaptor is compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package.

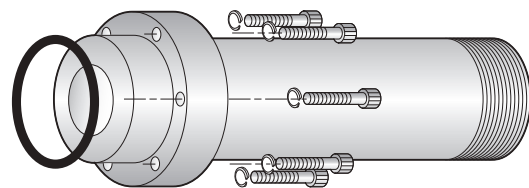


Long Tank Mate adaptor is compatible with ES2 Model 5503 long mount transmitter or AcraSensor Model 4503 / 8999-3-3 long mount package.

Continental/Floe/Wizard Shell Adaptor, 304 Stainless Steel (For 550 & 58 Series)

- 5665-1 Continental/Floe/Wizard shell, use standard sensor

Continental/Floe/Wizard adaptor is compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package. Adaptor includes cap screws and O-ring.

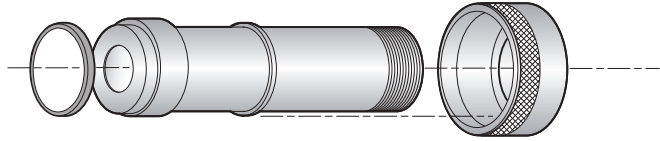


Options & Accessories

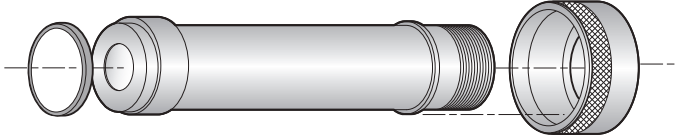
Anderson Shell Adaptors, 304 Stainless Steel (For 550 & 58 Series)

- 5878-1 Short Anderson shell, use standard sensor
- 5878-2 Long Anderson shell, use long sensor

Short adaptor for Anderson Instrument is compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package.

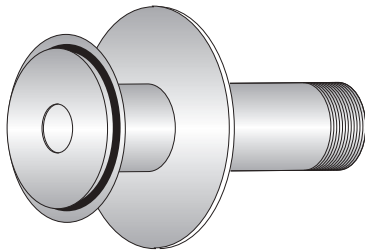


Long adaptor for Anderson Instrument is compatible with ES2 Model 5503 long mount transmitter or AcraSensor Model 4503 / 8999-3-3 long mount package.

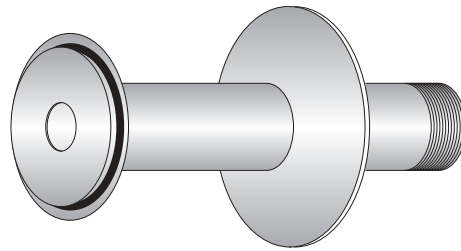


Foxboro/Rosemount Shell Adaptors, 304 Stainless Steel (For 550 & 58 Series)

- 5905-1 2" ext. Foxboro/Rosemount, use standard sensor*
- 5905-2 6" ext. Foxboro/Rosemount, use long sensor*



Standard Foxboro adaptor is compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package.



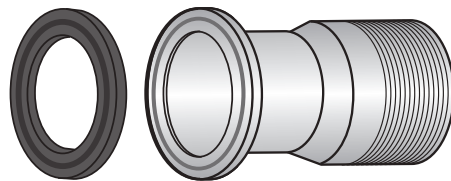
Long Foxboro adaptor is compatible with ES2 Model 5503 long mount transmitter or AcraSensor Model 4503 / 8999-3-3 long mount package.

* Minimum 5 pcs order required (special)

Liquid Scale Adaptor, 304 Stainless Steel (For 550 & 58 Series)

- 1749-35-1 Liquid scale adaptor package, use long sensor

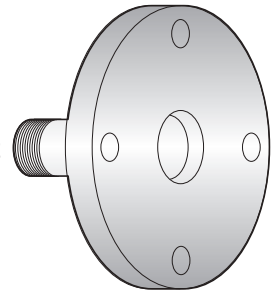
Compatible with ES2 Model 5503 long mount transmitter or AcraSensor Model 4503 / 8999-3-3 long mount package. Adaptor includes gasket.



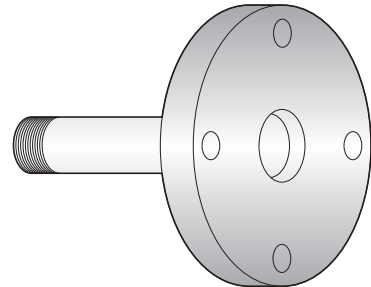
**Flange Mount Adaptor, 316L Stainless Steel
(For 550 & 58 Series)**

- 5527-3 2"- flange 316L Stainless Steel, short mount
- 5527-5 1-1/2"- flange 316L Stainless Steel, short mount
- 5527-13 3"- flange 316L Stainless Steel, short mount
- 5527-15 1"- flange 316L Stainless Steel, short mount
- 5527-23 4"- flange 316L Stainless Steel, short mount
- 5627-3 2"-150 class 316L Stainless Steel flange, standard mount
- 5627-13 3"-150 class ANSI, 316L Stainless Steel
- 5627-23 4"-150 class ANSI, 316L Stainless Steel

Compatible with ES2 Model 5501 short mount transmitter. (For pneumatic flange mount sensor see TeleSensor series.)



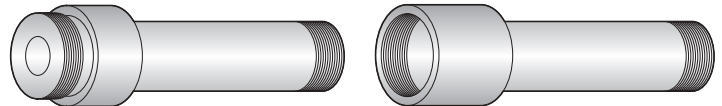
Compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package.



**2" Pipe Mount Adaptor, 304 Stainless Steel
(For 550 & 58 Series)**

Available in 304 Stainless Steel only

- 5872-1-2 Adaptor, NPT-M (male) thread, use standard sensor
- 5872-2-2 Adaptor, NPT-F (female) thread, use standard sensor



Compatible with ES2 Model 5502 standard mount transmitter or AcraSensor Model 4502 / 8999-2-3 standard mount package. Mates to 2" NPT common tapered pipe thread.

SafeGard Option (For 735, 780 & 788 Series)

A precision pneumatic control valve which will instantly close bubble-tight when subjected to a preset pressure. It is used to prevent over-pressuring an indicator. To order, see Ordering Information Chart and Part Number Example on product pages.

Options & Accessories

Diaphragm Sensing Units (For 450 Series)

AcraSensor (Titanium with Silicone rubber o-ring)

- 8999-1-4 Short length, titanium diaphragm
- 8999-2-4 Standard length, titanium diaphragm
- 8999-3-4 Long length, titanium diaphragm

AcraSensor (Titanium diaphragm with PTFE o-ring)

- 8999-1-5 Short length, S-1618-3 diaphragm
- 8999-2-5 Standard length, S-1618-3 diaphragm
- 8999-3-5 Long length, S-1618-3 diaphragm

Standard Length: Use with 1777 weld-in shell for single wall or insulated wall (up to 4.5" thick; also fits adaptors for non-KING-GAGE "short" shells.

Long Length: Use with 1777-3 weld-in shell for Crepaco silo or other thicker wall (up to 6.75") vessels; also fits adaptors for non-KING-GAGE standard (insulated wall) shells.

Short Length: For single wall (non-insulated) tanks; fits KING-GAGE short shell.

NOTE: Laser-fused Titanium diaphragm units are generally recommended for both sanitary and industrial applications.

AcraSensor Diaphragms

- 7904-1 AcraSensor Titanium diaphragm assembly with Silicone o-ring
- S-1618-3 AcraSensor Titanium diaphragm assembly with PTFE o-ring
- 6448-12-5 Silicone (white rubber) diaphragm 2-pack
(Rubber diaphragm is used with 7899-3 body)

D/P Capsule Replacement (For 92 & 450 Series)

Replacement D/P capsule (sensor/transmitter assembly) for Model 868 D/P Sensor Controls. Signal input connection is 1/4 NPT - part numbers below do not include fitting.

- S-1565-1-5-1 D/P replacement capsule kit (0-2 psid)
- S-1565-1-0-1 D/P replacement capsule kit (0-5 psid)
- S-1565-1-1-1 D/P replacement capsule kit (0-10 psid)
- S-1565-1-2-1 D/P replacement capsule kit (0-15 psid)
- S-1565-1-3-1 D/P replacement capsule kit (0-30 psid)
- S-1565-1-4-1 D/P replacement capsule kit (0-50 psid)

3-Tube Cable, Replacement, or Non-Standard Lengths (For 92 & 450 Series)

Use for interconnection between AcraSensor and Sensor Control

- 1766-15 Cable, 15 ft (4.5 m) total length, trimmed
- 8014-* Cable quantity discount, minimum purchase 50 feet

* = Total length

Downpipe Check Valve (For All Level Transmitters)

6563 Downpipe float check valve, 3/4" NPT connections
 6563-10 Downpipe float check valve, 3/4" NPT outlet, 3/8" tube inlet

- Prevents siphoning or backflow of liquid through a downpipe installed in tank level gauging applications
- Utilizes a specially designed float pin that rises up to seal the valve shut when liquid enters from the downpipe through the bottom of the unit
- The advantage of a float check is that it doesn't create a pressure drop that would affect the level gauge reading (Spring-loaded check valves can impact the accuracy of a downpipe or bubbler system if installed at the tank entry point)

NOTE: Not recommended for use with heavy diesel fuel oil or other high viscosity liquids. Installation in conjunction with a gate valve will permit removal of check valve for inspection and cleaning. (We recommend cleaning the check valve once per year to ensure reliability.)

Material: 304 Stainless Steel, Nylon (float), FKM (seals)
Max. Pressure: 150 psig
Inlet/Outlet: 3/4" NPT-female
Weight: 1.2 lb (0.5 kg)



Tank Mount Fittings & Adaptors (For Mechanical Level Transmitters Only)

1-1/2" NPT Tank Top Fitting (for 3/4" Pipe) single purge line connection with tube fitting

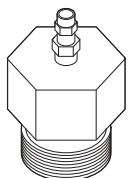
7746-13 Carbon Steel, Polyflo 3/8" tube
 7746-15 Carbon Steel, Swagelok 3/8" tube
 7746-18 316 Stainless Steel, Swagelok 3/8" tube

1-1/2" NPT Tank Top Fitting (for 3/4" Pipe) with single 1/4" NPT purge port connection

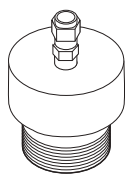
2000FA Carbon Steel
 2000PA PVC
 2000SG 316 Stainless Steel

1-1/2" NPT Tank Top Fitting (for 3/4" Pipe) with two 1/4" NPT purge/equalizer connection

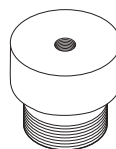
2000FA-2 Carbon Steel
 2000PA-2 PVC
 2000SG-2 316 Stainless Steel



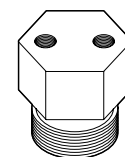
Carbon Steel
w/ Polyflo fitting



Stainless Steel or PVC
w/ Swagelok fitting



Stainless Steel or PVC



Non-Vented Application
Purge and Equalizer

Ultra -C 20 SCFM



U200/U201 U202/U203 SERIES

- Demanding ultra clean compressed air filter for packaging, paint/coating systems, machine tools, and pneumatic instrumentation
- The high efficiency two-stage filter uses a self-draining coalescing element to remove large amounts of solid and liquid contaminants from the airline

APPLICATIONS

- Instrumentation
- Fluidics
- Packaging
- Laboratory

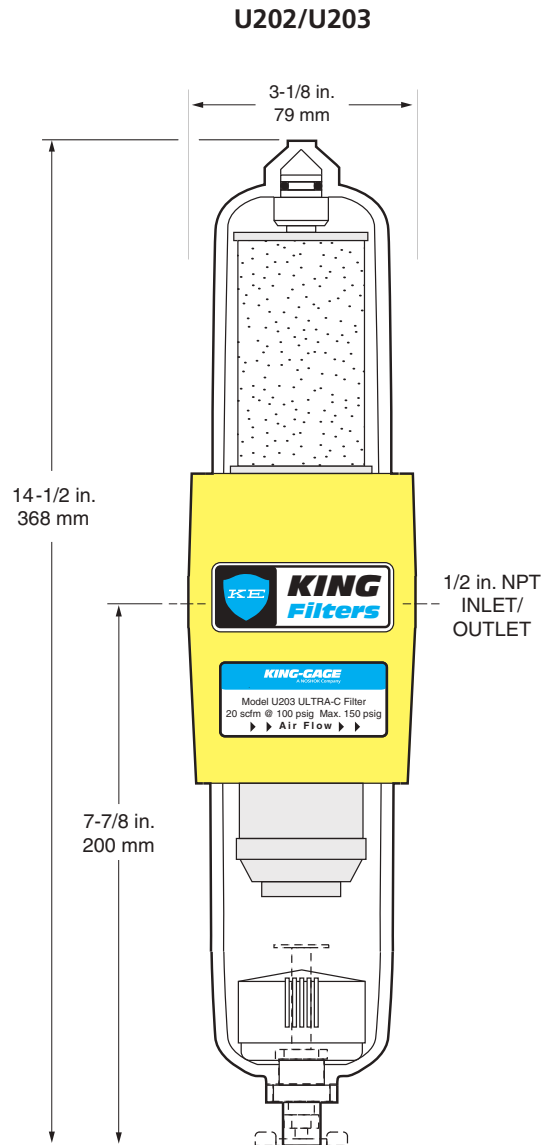
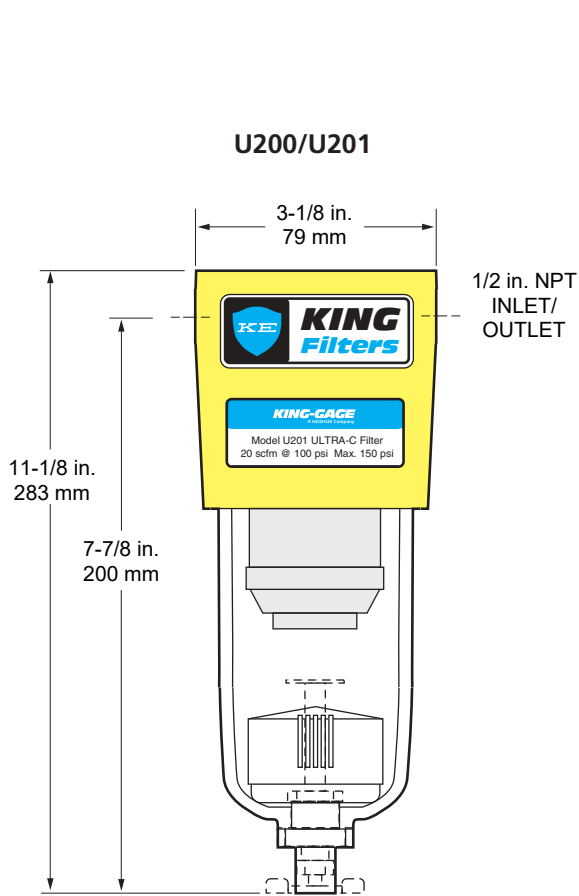
SPECIFICATIONS

Maximum inlet pressure	150 psig (10.3 bar)
Capacity (flow)	20 scfm @ 100 psig (34 m3/hr @ 7 bar)
Rated efficiency	99.9% @ 0.1 micron
Connections (inlet/outlet)	1/2" NPT, female
Housing material	Cast aluminum
Sump material	Polycarbonate
Sump drain	U201/U203: auto drain U200/U202: manual drain
Cartridge elements	U202/U203: Dual cartridge, 1st stage scrubber, 2nd stage polisher U3002 scrubber (type 750) U3003 indicating polisher (type 750) U200/U201: Single cartridge coalescing scrubber U3002 scrubber (type 750)
Weight	2 lb/1 kg

U200/U201/U202/U203 SERIES

ORDERING
INFORMATION
DIMENSIONS

ORDERING INFORMATION		
SERIES	U200 Single stage with manual drain	U202 Dual stage with manual drain
	U201 Single stage with auto drain	U203 Dual stage with auto drain



**U3002 Ultra-C
Scrubber Cartridge**



**U3003 Ultra-C
Color Change Polisher**



Ultra -C Air Control Station 20 SCFM

U205/206 SERIES



- Provides clean, dry, oil-free compressed air
- Color change cartridge life indicator
- Filter, regulator, and auto drain trap

SPECIFICATIONS

Maximum inlet pressure	150 psig (10.3 bar)
Capacity (flow)	20 scfm @ 100 psig (34 m ³ /hr @ 6.9 bar)
Rated efficiency	99.98% @ 0.1 micron
Regulated pressure range	0–100 psig (0–6.9 bar)
Dial pressure gauge	0–160 psig (0–11.0 bar)
Connections (inlet/outlet)	1/2" NPT, female
Temperature limit	125 °F/52 °C
Materials of construction	Housing: Cast aluminum Upper bowl: Polycarbonate Sump: Polycarbonate Regulator: Cast zinc
Sump drain	U205: Auto drain U206: Manual drain
Cartridge elements	Dual cartridge, 1st stage scrubber, 2nd stage polisher U3002 scrubber (type 750) U3003 indicating polisher (type 750)
Weight	5.5 lb/2.5 kg

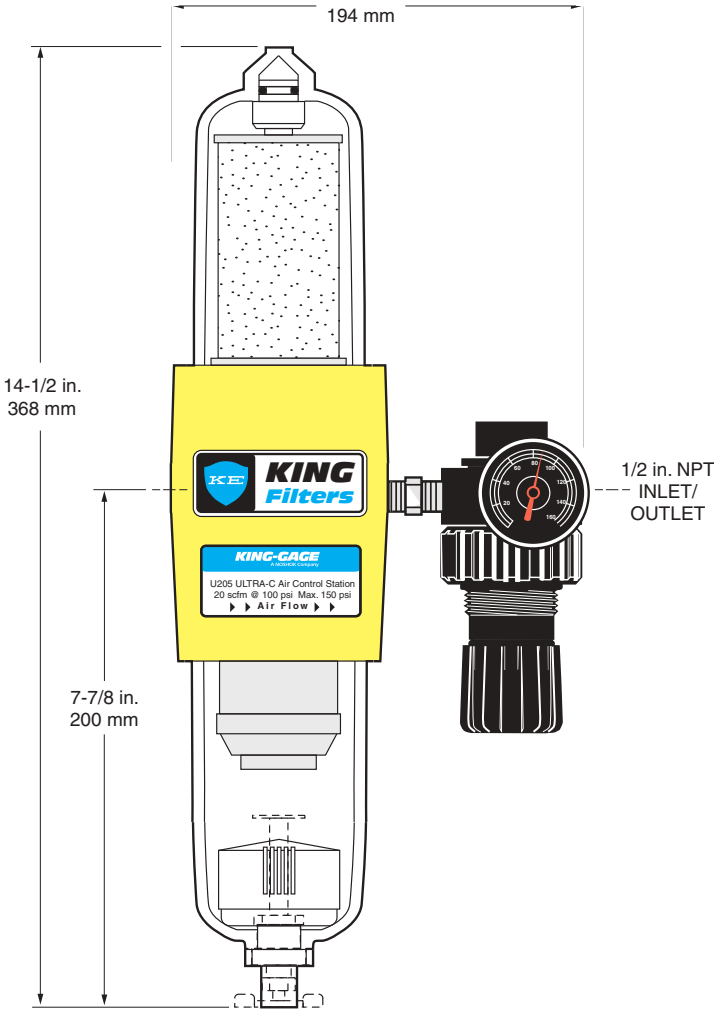
APPLICATIONS

- Light duty service environments
- Air operated packaging equipment
- Air preparation for painting/coating systems
- Improved machinery performance and reduced maintenance
- Pneumatic Instruments installed upstream of the main take off to individual components, the filter provides clean, regulated compressed air (One air control station can service dozens of individual pneumatic tank sensors)

U205/U206 SERIES

ORDERING
INFORMATION
DIMENSIONS

ORDERING INFORMATION		
SERIES	U205 Control station with auto drain	U206 Control station with manual drain



**U3002 Ultra-C
Scrubber Cartridge**



**U3003 Ultra-C
Color Change Polisher**



Air-Guard Bronze Filter 20 SCFM



9313 SERIES

- Provides clean, dry and oil-free compressed air
- Long life cartridges reduce filter maintenance
- Rugged bronze construction for marine applications
- Air-conserving automatic, sump discharges only when needed

SPECIFICATIONS

Maximum pressure	150 psi
Rated flow	20 scfm @ 100 psig
Connections	1/2" NPT
Filter type	Dual cartridge coalescing elements
Housing	Bronze
Efficiency	99.98% of 0.1 micron or greater
Weight	15.0 lb/7 kg

APPLICATIONS

- Tank level and draft indicating systems for the marine and offshore industries
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

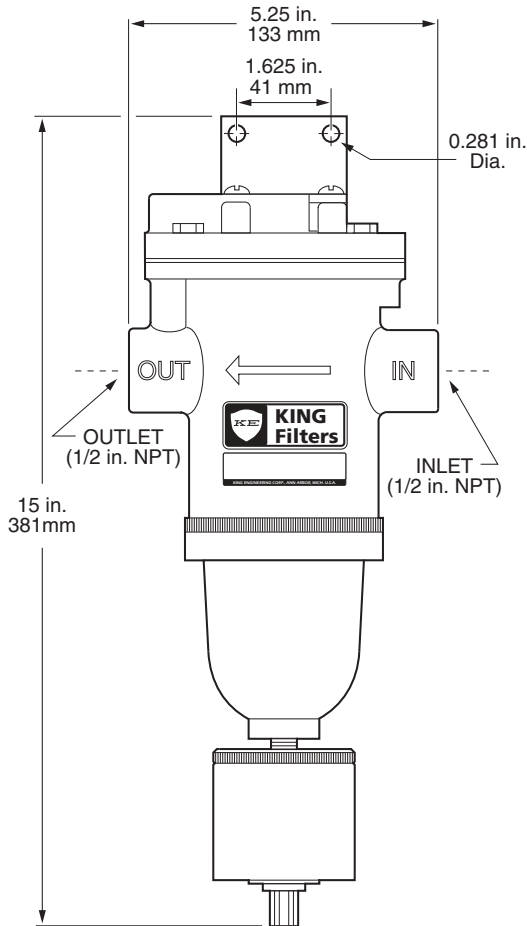
ORDERING INFORMATION		
SERIES	9313 Air-Guard Bronze Filter 20 SCFM	
DRAIN TYPES	24 With manual drain	24T With auto drain
EFFICIENCY	1-1 98% @ 2.0 micron	6-5 99.998% @ 0.1 micron

NOTE: Type 750/800 cartridge set included with 6-5 efficiency model,
Type 300/300 cartridge set included with the 1-1 efficiency model

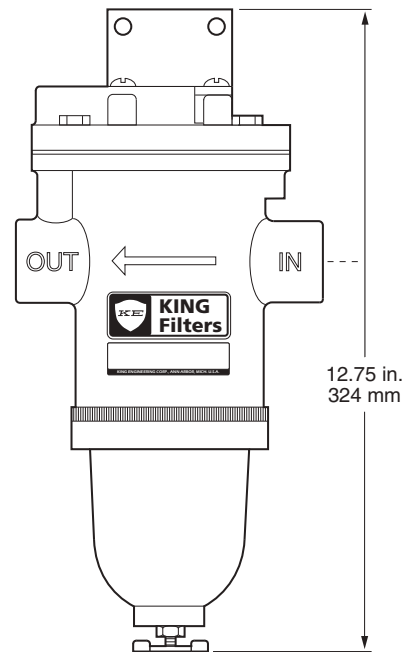
EXAMPLE

Series9313 Series
 Drain type..... With auto drain
 Efficiency 98% @ 2.0 micron

9313 - 24T - 1-1



**Air-Guard Filter
with Automatic Drain
Model 9313-24T**



**Air-Guard Filter
with Manual Petcock Drain
Model 9313-24**

Replacement Cartridge Sets
A22-11-6-5 - Type 750/800 (0.1 micron)
A22-11-1-1 - Type 300/300 (2.0 micron)

Air-Guard Bronze Air Control Station 20 SCFM

72/74 SERIES

- Provides clean, dry, oil-free compressed air
- Rugged bronze filter for marine applications
- Dual cartridges ensure long service life
- Air-conserving automatic drain sump



SPECIFICATIONS

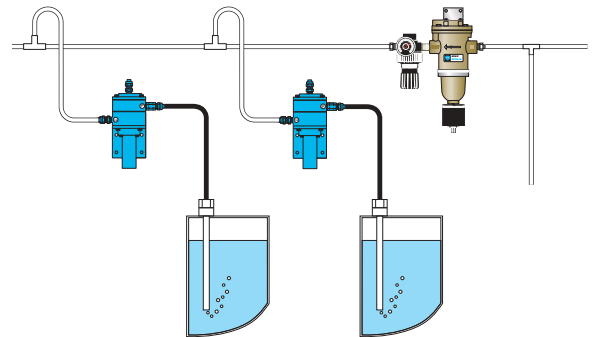
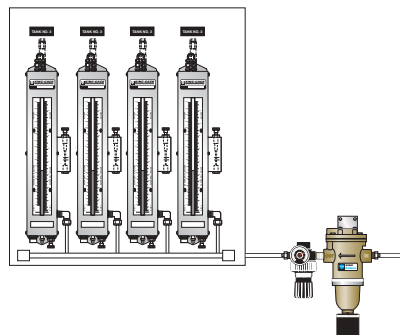
Maximum pressure	150 psi
Rated flow	20 scfm @ 100 psig
Connections	1/2" NPT
Filter type	Dual cartridge coalescing elements
Housing	Bronze
Efficiency	99.98% of 0.1 micron or greater
Weight	17 lb./7.7 kg

APPLICATIONS

- Tank level and draft indicating systems for the marine and offshore industries
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

Marine Applications

Pneumatic components and instrumentation will be more dependable and require less maintenance when supplied clean air through the KING-GAGE Air Control Station. Installed upstream of tank gauges or Purge Control level transmitters, they provide complete filtration and point-of-use supply pressure regulation. Typical installations shown.



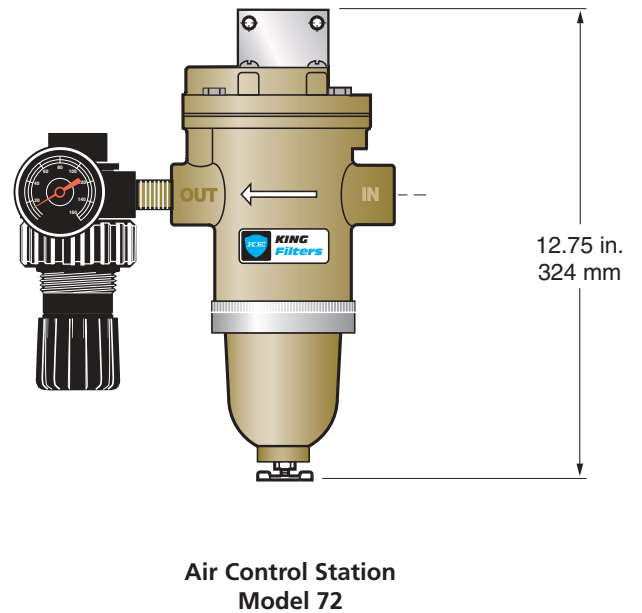
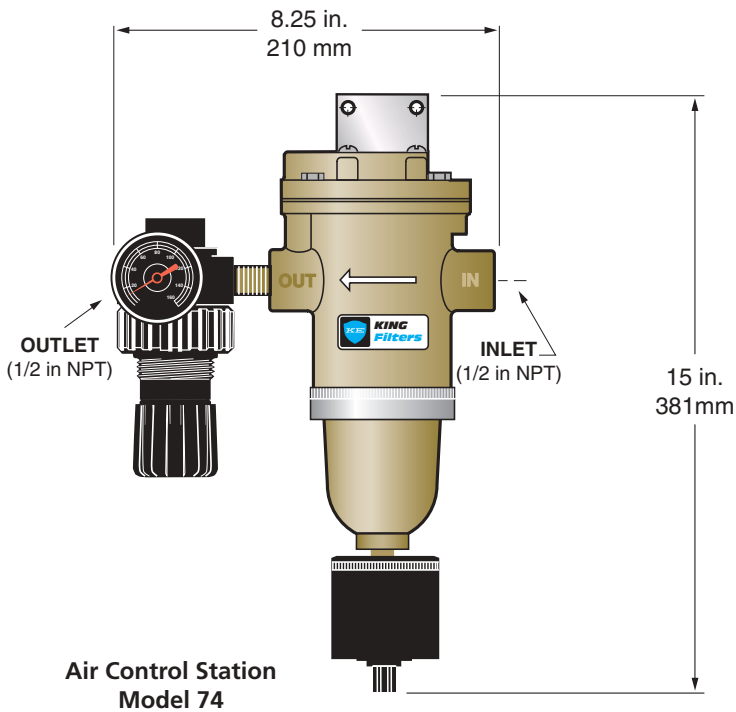
ORDERING INFORMATION		
SERIES	72 Air-Guard Bronze Air Control Station 20 SCFM with manual drain	74 Air-Guard Bronze Air Control Station 20 SCFM with auto drain
FIXED CONFIGURATION	024-6-25	

NOTES: Includes Type 750/800 cartridge set.
For U.S. Navy Service specifications, please contact factory.

EXAMPLE

Series 74 Series with auto drain
Fixed configuration

74 - 024-6-25



Replacement Cartridge
9326-241 - Type 750/800 Type 800 (0.1 micron)

Air-Guard Dual Stage Filter 100 SCFM



2260 SERIES

- 100 scfm flow rating offers high efficiency coalescing action to deliver clean, dry, and oil-free air
- Ideal for installation in main distribution air piping to remove residual oil, condensed water, and abrasive particulates
- Dual cartridge design provides long service life
- Supplied with KING Type 750/800 element set that includes coalescing scrubber and adsorptive polisher cartridges, Type 300/300 element set is optional

SPECIFICATIONS

Maximum pressure	150 psi
Rated flow	100 scfm @ 100 psig; 2832 l/min @ 7 Kg/cm ² ; 170 m ³ /hr @ 7 bar
Connections	1" NPT
Filter type	Dual cartridge coalescing elements
Housing	Aluminum
Efficiency	99.998% @ 0.1 micron
Weight	30.0 lb/13.6 kg

APPLICATIONS

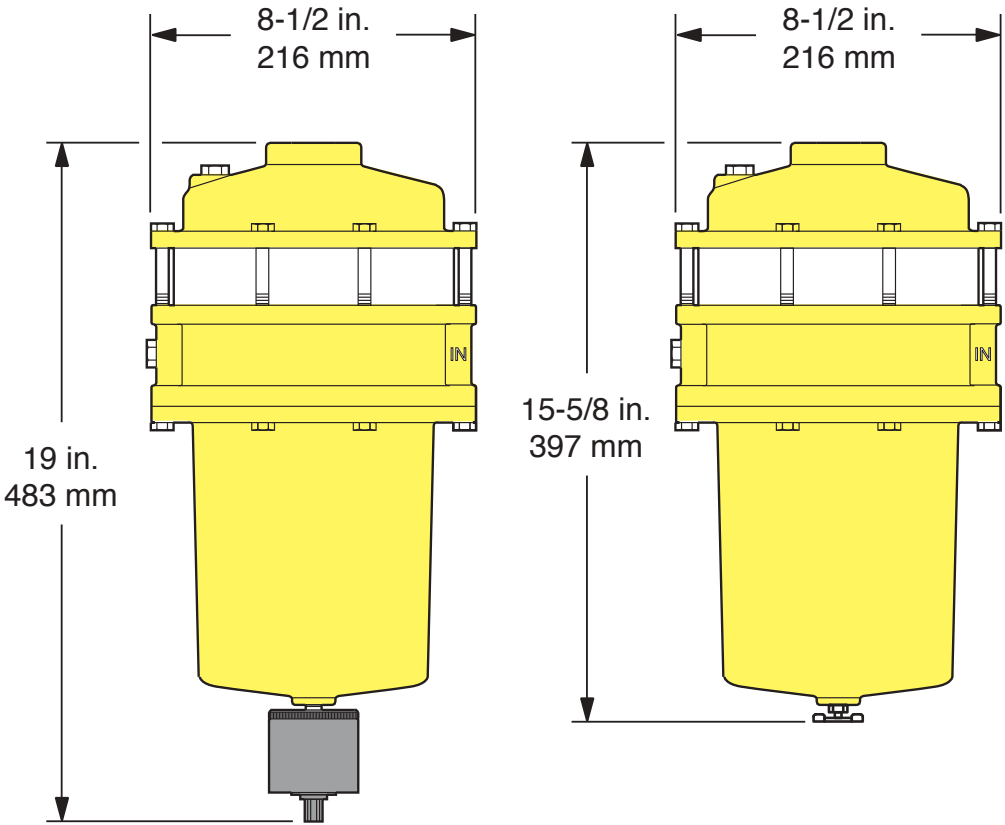
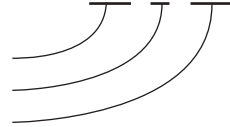
- Main distribution air piping to remove residual oil, condensed water, and abrasive particulates

ORDERING INFORMATION		
SERIES	2160 Air-Guard Dual Stage Filter 100 SCFM	
DRAIN TYPES	1 With manual drain	1T With auto drain
EFFICIENCY	1-1 98% @ 2.0 micron	6-5 99.998% @ 0.1 micron

EXAMPLE

Series2160 Series
 Drain type.....With manual drain
 Efficiency.....99.998% @ 0.1 micron

2160 - 1 - 6-5



Replacement Cartridge Sets
A22-51-6-5 - Type 750/800 (0.1 micron)
A22-51-1-1 - Type 300/300 (2.0 micron)

Air-Guard Dual Stage Filter 80 SCFM



2479 SERIES

- Large capacity filter designed to remove particulate dust, water/oil aerosols, and condensation often present in main compressed air supply lines
- Supplied with KING Type 750/800 element set that includes coalescing scrubber and adsorptive polisher cartridges, Type 300/300 element set is optional

SPECIFICATIONS

Maximum pressure	150 psi
Rated flow	80 scfm @ 100 psig; 2265 l/min @ 7 Kg/cm ² ; 136 m ³ /hr @ 7 bar
Connections	1" NPT
Filter type	Dual cartridge coalescing elements
Housing	Aluminum
Sump	Aluminum
Efficiency	99.98% @ 0.1 micron
Weight	15.0 lb/7 kg

APPLICATIONS

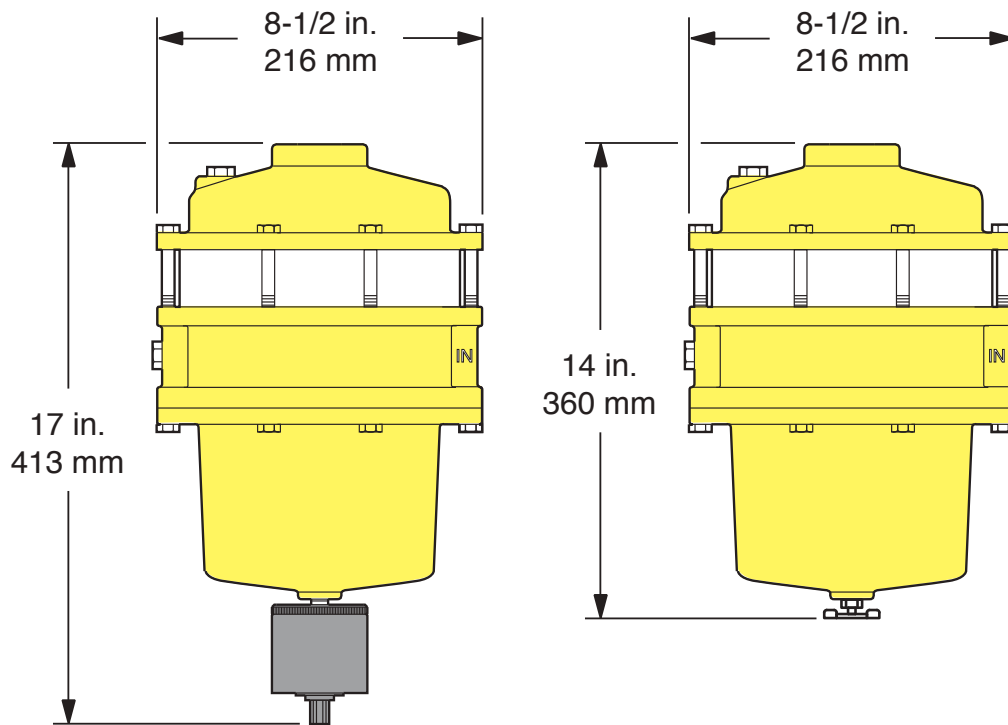
- Provides clean air to meet individual process requirements

ORDERING INFORMATION		
SERIES	2479 Air-Guard Dual Stage Filter 80 SCFM	
DRAIN TYPES	1 With manual drain	1T With auto drain
EFFICIENCY	6-5 99.998% @ 0.1 micron	1-1 98% @ 2.0 micron

EXAMPLE

Series2479 Series
 Drain type..... With auto drain
 Efficiency 98% @ 2.0 micron

2479 - 1T - 1-1



Replacement Cartridge Sets
22-41-6-5 - Type 750/800 (0.1 micron)
22-41-1-1 - Type 300/300 (2.0 micron)

Air-Guard Dual Stage Filter 60 SCFM

9460 SERIES



- Designed for main supply line applications where pipe scale, residual oil aerosols, and condensation can degrade air quality
- Dual cartridge design provides long service life
- Supplied with KING Type 750/800 element set that includes coalescing scrubber and adsorptive polisher cartridges, Type 300/300 element set is optional

SPECIFICATIONS

Maximum pressure	150 psi
Rated flow	60 scfm @ 100 psig; 1699 l/min @ 7 Kg/cm ² ; 102 m ³ /hr @ 7 bar
Connections	1" NPT
Filter type	Dual cartridge coalescing elements
Housing	Aluminum
Sump	Aluminum
Efficiency	99.998% @ 0.1 micron
Weight	25.0 lb/11.3 kg

APPLICATIONS

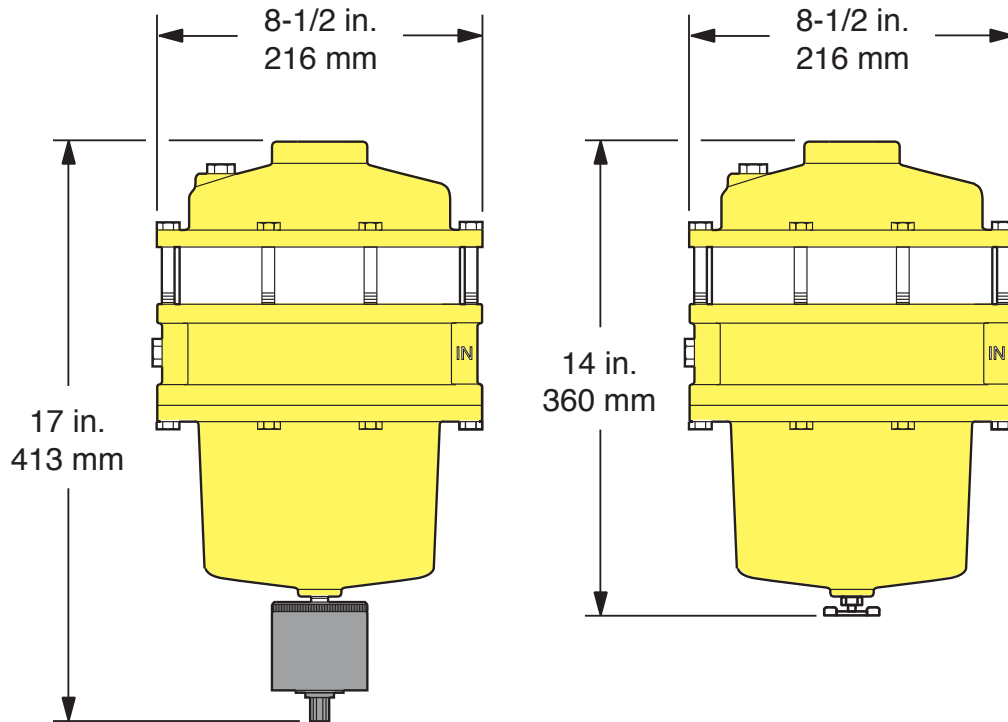
- Main supply line applications where pipe scale, residual oil aerosols, and condensation can degrade air quality

ORDERING INFORMATION		
SERIES	9460 Air-Guard Dual Stage Filter 60 SCFM	
DRAIN TYPES	3 With manual drain	3T With auto drain
EFFICIENCY	6-5 99.998% @ 0.1 micron	1-1 98% @ 2.0 micron

EXAMPLE

Series 9460 Series
 Drain type With auto drain
 Efficiency 98% @ 2.0 micron

9460 - 3T - 1-1



Replacement Cartridge Sets
22-31-6-5 - Type 750/800 (0.1 micron)
22-31-1-1 - Type 300/300 (2.0 micron)

Aerosol Filter 100 SCFM



2160 SERIES

- Designed for final clean-up of compressed air
- Utilizes media with a natural affinity for fine droplets (aerosols) of oils and water
- Adsorptive element removes even the smallest sub-micron particles and contaminants to deliver clean, dry, and oil-free air
- Recommended for end use applications having higher air consumption such as blow molding, packaging, and paint/coatings systems (Aerosol filter should be used in conjunction with an upstream coalescing compressed air filter such as the KING Air-Guard 2260)

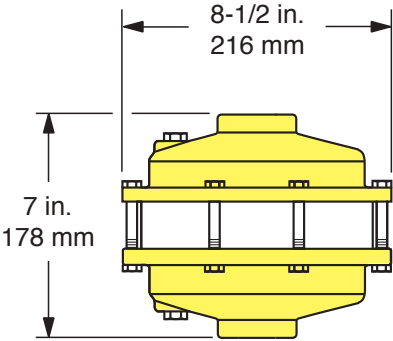
SPECIFICATIONS

Maximum pressure	150 psi
Rated flow	100 scfm @ 100 psig; 2832 l/min @ 7 Kg/cm ² ; 170 m ³ /hr @ 7 bar
Connections	1" NPT
Filter type	Single adsorptive element
Housing	Aluminum
Efficiency	98% @ 0.1 micron
Weight	16.0 lb/7.3 kg

APPLICATIONS

- Recommended for end use applications having higher air consumption such as blow molding, packaging, and paint/coatings systems (Aerosol filter should be used in conjunction with an upstream coalescing compressed air filter such as the KING Air-Guard 2260)

ORDERING INFORMATION	
SERIES	2160-3-5 Aerosol Filter



Replacement Cartridge
9326-241 - Type 750/800 Type 800 (0.1 micron)

Aerosol Strainer



2201 SERIES

- Designed for low-volume point of use
- Disposable strainer that can remove even sub-micron sized contaminants often present in compressed air
- Ideal for low volume discharge such as air guns, air cylinders or use it as disposable inline protection (Aerosol strainer should be used in conjunction with upstream coalescing compressed air filters.)

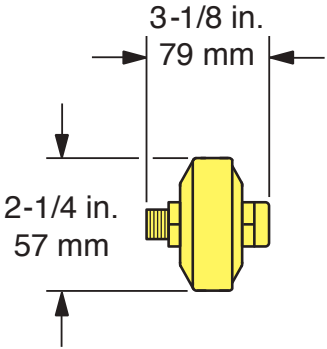
APPLICATIONS

- Low volume discharge such as air guns, air cylinders or use it as disposable inline protection. (Aerosol strainer should be used in conjunction with upstream coalescing compressed air filters.)

SPECIFICATIONS

Maximum pressure	25 psi
Rated flow	2 scfm @ 100 psig; 566 l/min @ 7 Kg/cm ² ; 3 m ³ /hr @ 7 bar
Connections	1/4" NPT
Filter type	Single adsorptive element
Housing	Steel/Zinc
Efficiency	97% @ 0.3 micron
Weight	1.0 lb/5 kg

ORDERING INFORMATION			
SERIES	2201-14-12-1	Aerosol Strainer	1/4" NPT male inlet/female outlet
	2201-32-12-1	Aerosol Strainer	1/4" NPT female inlet/male outlet
	2201-34-12-1	Aerosol Strainer	1/4" NPT female inlet/female outlet



Metl-Guard/Visi-Guard Desiccant Dryer 12 SCFM, Without Sump



1716-10 Visi-Guard model shown

1716 SERIES

- These compressed air dryers are intended for instrumentation, laboratory applications and other low-flow uses that require extremely dry or oil-free air
- Removes contaminants in vapor form, which cannot be removed by filtration
- The type of application should be specified as to whether dew point reduction (water vapor) or the removal of oil vapor is required

SPECIFICATIONS

Maximum pressure	150 psi
Rated flow	12 scfm @ 100 psig; 340 l/min @ 7 Kg/cm ² ; 20 m ³ /hr @ 7 bar
Connections	1/2" NPT
Filter type	Desiccant bed
Housing	Aluminum/Acrylic
Efficiency	Water vapor (-50 °F/-45 °C dew point) with SG-1 desiccant, Water vapor (-100 °F/-73 °C dew point) with MS-1 desiccant, Oil vapor (≤ 0.5 ppm w/w) with AC-1 desiccant
Weight	15.0 lb/7 kg

APPLICATIONS

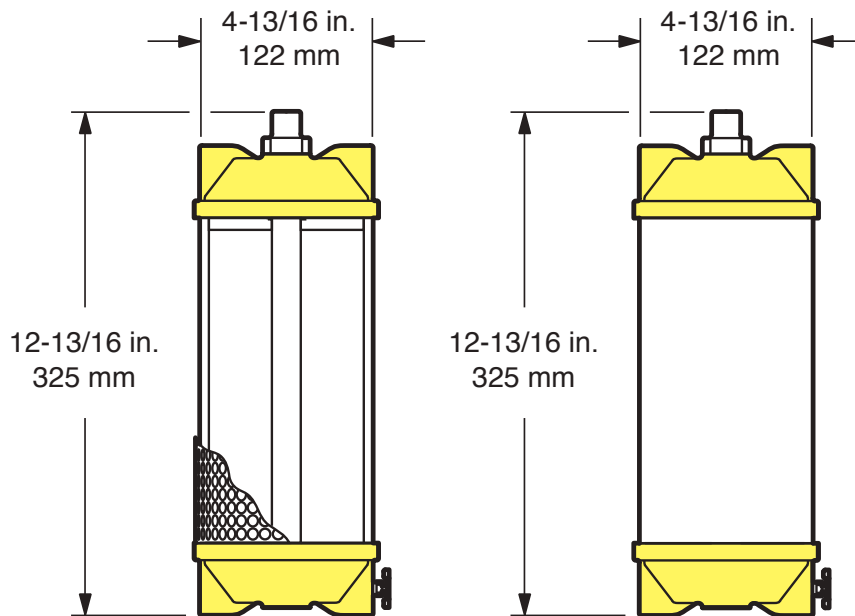
- Used for applications that require extremely dry or oil free air

ORDERING INFORMATION		
SERIES	1716 Visi-Guard & Metl-Guard Desiccant Dryer 12 SCFM	
FILTER TYPES	6 Metl-Guard, solid aluminum housing	10 Visi-Guard, aluminum/acrylic housing with shatter guard for desiccant visibility
EFFICIENCY	1 With SG-1 desiccant, water vapor (-50°F/-45°C dew point) 4 With AG-1 desiccant, oil vapor (≤ 0.5 ppm w/w)	5 With MS-1 desiccant, water vapor (-100°F/-73°C dew point)

EXAMPLE

Series 1716 Series
 Filter type Metl-Guard, solid aluminum housing
 Efficiency With SG-1 desiccant, water vapor (-50°F/-45°C dew point)

1716 - 6 - 1



Visi-Guard Filter/Dryer 12 SCFM, Polycarbonate Sump



4532 SERIES

- Combination coalescing filter and desiccant dryer provides a complete solution for critical end use applications
- Incorporates a first stage submicron filter element and second stage vapor removal (oil or water) for applications including product packaging and precision laboratory equipment and instrumentation
- Desiccant selection determines application: AC-1 reduces oil vapor to ≤ 0.5 ppm (w/w); water vapor reducing desiccants allow for dew points as low as $-100^{\circ}\text{F}/-73^{\circ}\text{C}$ (MS-1) or $-50^{\circ}\text{F}/-45^{\circ}\text{C}$ (SG-1)

APPLICATIONS

- Product packaging and precision laboratory equipment and instrumentation

APPLICATION NOTES

- Polycarbonate sumps and/or acrylic plastic housings will be damaged if exposed to phosphate ester (syn-thetic) lubricants, chlorinated hydro-carbon solvents, methanol, acetone, ketones or lacquer solvents
- Continued exposure to these compounds may result in premature failure of the pressure housing
- Use only metal sumps/housings in environments where these materials and/or vapors are present
- Use of metal safety guards is generally recommended in certain instances, occupational safety regulations may require the use of metal guards or metal pressure housings
- Manufacturer's warranties are void in the event of misapplication or negligence and manufacturer assumes no responsibility for loss under such circumstances.

SPECIFICATIONS

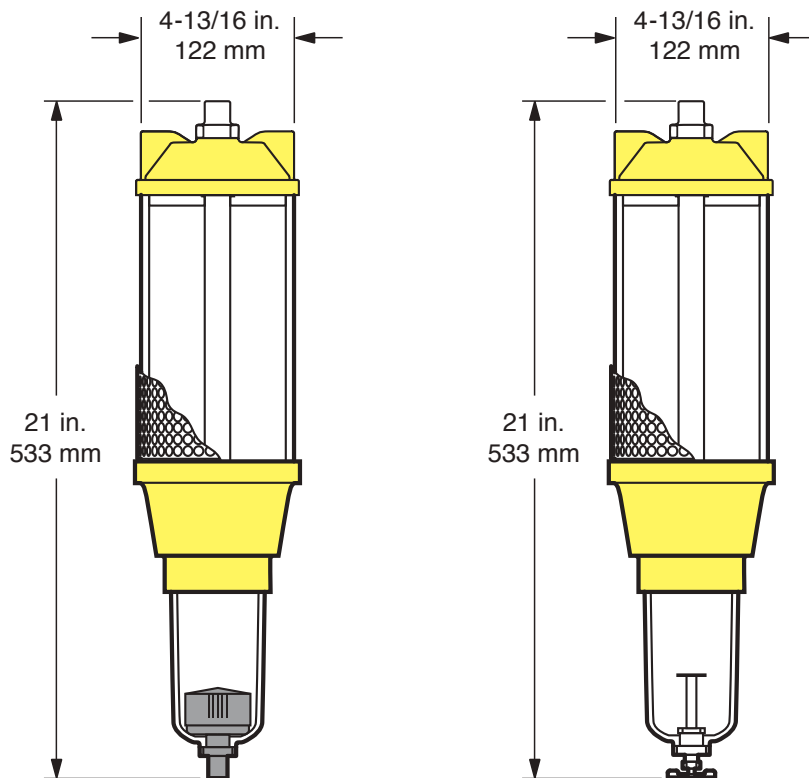
Maximum pressure	150 psi
Rated flow	12 scfm @ 100 psig; 340 l/min @ 7 Kg/cm ² ; 20 m ³ /hr @ 7 bar
Connections	1/2" NPT
Filter type	Coalescing element, 2nd stage desiccant bed
Housing	Aluminum/Acrylic
Efficiency	99.9% @ 0.1 micron, vapor content ≤ 0.5 ppm
Weight	15.0 lb/7 kg

ORDERING INFORMATION		
SERIES	4532 Visi-Guard Filter/Dryer 12 SCFM	
SUMP TYPES	23 Polycarbonate, with manual drain	23T Polycarbonate, with auto drain
EFFICIENCY	6-1 With SG-1 desiccant, 99.9% @ 0.1 micron, water vapor (-50°F/-45°C dew point)	6-5 With MS-1 desiccant, 99.9% @ 0.1 micron, water vapor (-100°F/-73°C dew point)
	6-4 With AC-1 desiccant, 99.9% @ 0.1 micron, oil vapor (≤ 0.5 ppm w/w)	

EXAMPLE

Series4532 Series
 Sump type With manual drain
 Efficiency With MS-1 desiccant, 99.9% @ 0.1 micron, water vapor (-100°F/-73°C dew point)

4532 - 23 - 6-5



Replacement Cartridge
9318-80 - Type 750 Scrubber

Replacement Cartridge Sets

KING-GAGE compressed air filter cartridges are available in different grades. Recommended options are listed below. Our Ultra-C and Type 750/800 cartridges meet the particulate requirements of ISO 8573-1* Quality Class 1 specification for compressed air. Type 300/300 cartridge sets provide lower pressure drop in applications and meet ISO 8573-1 Quality Class 3 specification for particulate removal.

KING filter cartridge elements provide equal efficiency regardless of flow rate. Filtering efficiency does not diminish during the life of the cartridges so you can be assured of consistent performance and air quality.

Without question, most compressed air systems contain solid and liquid contaminants that affect performance and increase wear on equipment. Precision pneumatic instrumentation including KING-GAGE tank level gauging systems require clean, dry, and oil-free compressed air for trouble free operation.

**ISO 8573-1:2010 specifies purity classes of compressed air with respect to particles, water and oil independent of the location in the compressed air system at which the air is specified or measured. ISO Class noted is for particulate removal only.*

20 scfm cartridge sets					
0.1 micron U3002, U3003	99.998%		Ultra-C scrubber		Ultra-C polisher
0.1 micron A22-11-6-5 cartridge set	99.998%		Type 750 scrubber		Type 800 polisher
2.0 micron A22-11-1-1 cartridge set	98.0%		Type 300 scrubber		Type 300 polisher
60 scfm cartridge sets					
0.1 micron 22-31-6-5 cartridge set	99.998%		Type 750 scrubber		Type 800 polisher
2.0 micron 22-31-1-1 cartridge set	98.0%		Type 300 scrubber		Type 300 polisher



80 scfm cartridge sets

0.1 micron 22-41-6-5 cartridge set	99.998%		Type 750 scrubber		Type 800 polisher
2.0 micron 22-41-1-1 cartridge set	98.0%		Type 300 scrubber		Type 300 polisher

100 scfm cartridge sets

0.1 micron A22-51-6-5 cartridge set	99.998%		Type 750 scrubber		Type 800 polisher
2.0 micron A22-51-1-1 cartridge set	98.0%		Type 300 scrubber		Type 300 polisher

12 scfm cartridge & desiccant

0.1 micron 9318-80	99.9%		Type 750 scrubber		See desiccant selections below
1730	SG-1 desiccant		Water vapor (-50° F / -45° C dew point)		Service Temp. 100° F / 38° C
1730-5	MS-1 desiccant		Water vapor (-100° F / -73° C dew point)		Service Temp. 200° F / 93° C
1730-4	AC-1 desiccant		Oil vapor (≤ 0.5 ppm w/w)		Service Temp. 120° F / 49° C

Tank Level Measurement System

LP3 SERIES



- Ethernet/IP, DF1 over ethernet/IP, Allen-Bradley DH485, Modbus TCP/IP
- Graphic 10.4" color LCD touch screen terminal HMI
- 8-tank, 16-tank, 24-tank, 32-tank system options
- Pre-configured tank capacity (volumetric) database

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

HMI display panel	Color 10.4-in. LCD, active matrix (TFT), 640 x 480 VGA (256 colors), resistive analog touch screen
External memory	CompactFlash Type II slot
Network drivers	Ethernet/IP Allen-Bradley DF1 over TCP Allen-Bradley DF1 / DH485 Modbus TCP/IP Kingbus ASCII
Serial ports	Ethernet 10 Base-T/100 Base-TX (RJ45) RS485 (RJ12) RS232 (RJ12) USB 1.1 (Type B)
External power requirements	110-120 Vac, 50/60 Hz, 2.8 Amperes (internally fused at 6.3 A)
Signal inputs	4 mA to 20 mA, two wire (w/ 24 Vdc excitation option); 8-32 input channels
Operating temperature range	32 °F to 125 °F (0 °C to 50 °C)
Enclosure	Type 4X (UL50), IP 66, 304 Stainless Steel, hinged latching cover

Standard system configurations: 8-tank system; 16-tank system; 24-tank system; 32-tank system (includes HMI, analog inputs, power supply)

Enhanced system configurations: 8-tank system; 16-tank system; 24-tank system; 32-tank system (includes HMI, analog inputs, analog outputs, power supply)

ORDERING INFORMATION			
SERIES	LP3 Tank Level Measurement System		
SYSTEMS	00	Satellite w/ Compact Flash card	24 24-tank system
	08	8-tank system	32 32-tank system
	16	16-tank system	

NOTES: Complete tank gauging system includes color touch screen LCD display, signal input modules, and 24 Vdc for powering typical two wire 4-20 mAdc transmitters. Requires 100-240 Vac 50/60 Hz for operation. 304 Stainless Steel enclosure for wall mounting intended to meet NEMA 4X.

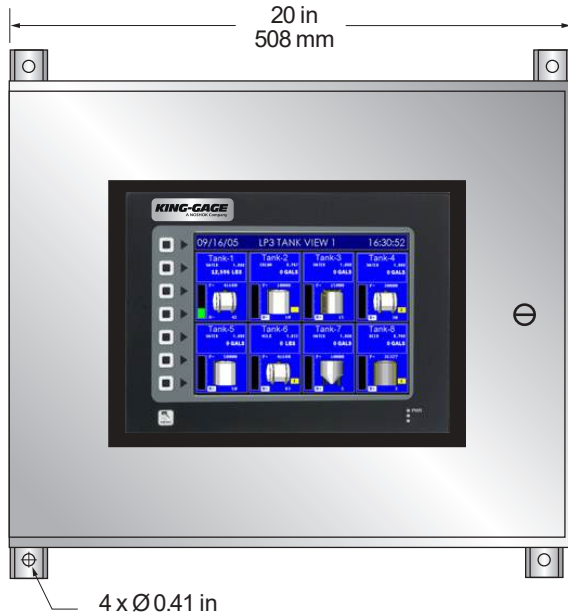
Engineered Stainless Steel enclosures listed are splash-proof and UL-listed. Intended to meet NEMA 4X. Includes Hubbell cable relief fittings (3), suitable for splash-tight installation. 10.4 color touch screen display is UL listed and has IP68 rating.

iButton Datapack (application programming), part number 4223, can be added separately for each tank

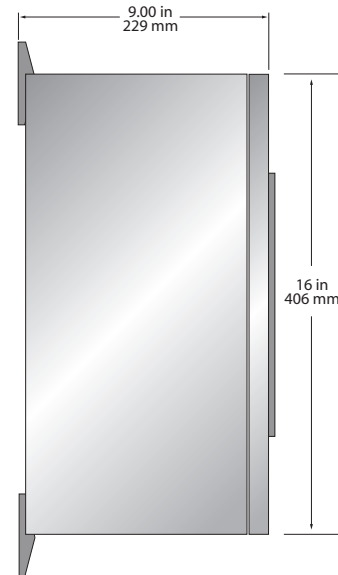
EXAMPLE

SeriesLP3 Series
 System16-tank system

LP3 16



Front View



Side View

LP2 Multiple Tank Indicator With Optional Set Point Controller



LP2 Multiple Tank Display



LP2 Multiple Tank Display With Optional SP Set Point Controller

4641 SERIES

LP2 Multiple Tank Display

- 8 tank input channels
- Dual serial communications ports
- Nonvolatile datapack iButton memory
- Provides a 24 Vdc transmitter excitation
- Operator interface keypad

LP2 Multiple Tank Display With Optional SP Set Point Controller

- Includes multiple tank display for continuous measurement of liquid inventory in storage or processing tanks
- Direct entry of digital setpoints
- Dual SPDT controller relays per channel

SPECIFICATIONS

Power requirements	100-240 Vac, 50-60 Hz, 25 watts (fused internally for 2.5 A 120/250 V)
Temperature range (Environmental)	30 °F to 120 °F (-1 °C to 49 °C) operating range
Signal input	4 mA to 20 mA (mAdc)
Input channels	8 input channels; two wire 4 mA to 20 mA analog signal
Keypad	Membrane numeric keypad, five (5) function keys, positive tactile response
Power output	24 Vdc nominal; fused @ 0.5 Amp
Input impedance (Resistance)	120 ohm nominal (2.4 Vdc drop @ 20 mAdc)
Memory	Nonvolatile 64kbit memory iButton
Digital readout	Alphanumeric 0.3173 in. (8 mm)16-character x 2-line LCD; numeric 8-digit (0-9999999 maximum)
Accuracy	±0.048% Full scale (±0.024% Full scale, typical)
Resolution	±0.024% FS maximum (±0.004 mA)
Communications	Two (2) serial EIA RS-485 ports; two wire multidrop
Setpoint relays (SP version)	Sixteen (16) independent user setpoints; two (2) setpoints per tank channel; SPDT (form-C) relays, maximum 3.0 A @ 115 Vac. Rated for minimum 100,000 cycle/life at rated load.; continuously adjustable over full input range.
Status display panel (SP version)	LED setpoint indicators for visual confirmation when individual SPDT relays are energized.
Enclosures	LP2 Single & Multiple Tank Display: Engineered thermoplastic (NO-RYL) enclosure; UL 50, NEMA type 3, 3S, 4, 4X, 12; hinged cover with dual latching screws. Optional 14 gauge Stainless Steel enclosure; UL 50 type 4, 4X, 12, 13; hinged cover with dual latching screw lugs. LP2 SP Multiple Tank Indicator/Setpoint Controller: Fiberglass-reinforced polyester (FRP) enclosure; U.L. listed (U.L. 508) types 3, 3R, 3S, 4, 4X, and 12. Optional 304 Stainless Steel enclosure; overall maximum dimensions 5-1/2" H x 13" W x 6" D.

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

ORDERING INFORMATION			
SERIES	4641 LP2 Multiple Tank Indicator With Optional Set Point Controller		
ENCLOSURE OPTIONS	2 FRP enclosure, standard	3 304 Stainless Steel	4 Flush mount (Multiple tank version only)
CONFIGURATIONS *	0 Multiple tank	1 L/H SETPT1 low, SETPT2 high (Optional Set Point Controller version)	2 H/H SETPT1 high, SETPT2 high (Optional Set Point Controller version)

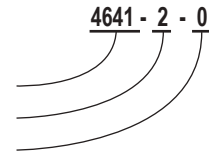
NOTE: Engineered FRP and Stainless Steel enclosures listed are splash-proof and UL-listed. Intended to meet NEMA 4X. Includes Hubbell cable relief fittings (3), suitable for splash-tight installation.

* Must be ordered with Part Number 4223 iButton Datapack (application programming) Part Number 4223, see page 74 for details.

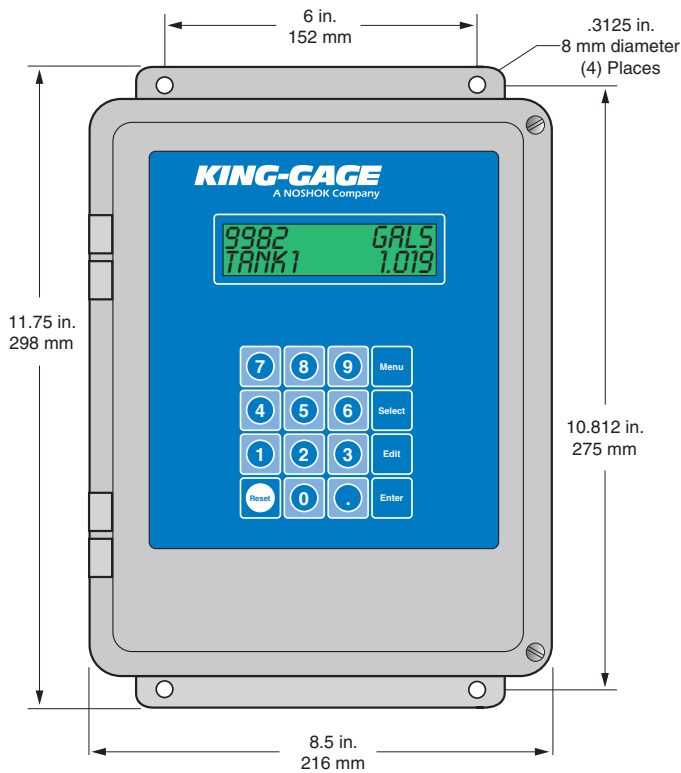
EXAMPLE

Series 4641 Series
 Enclosure option FRP
 Configuration Multiple tank

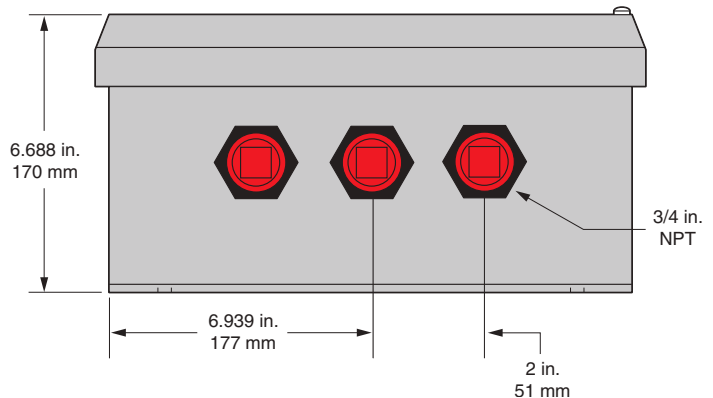
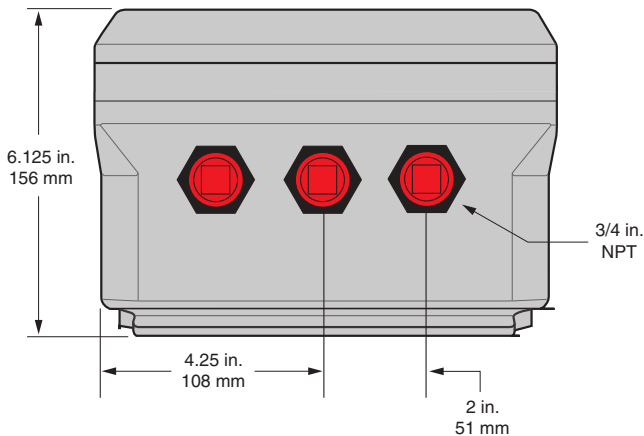
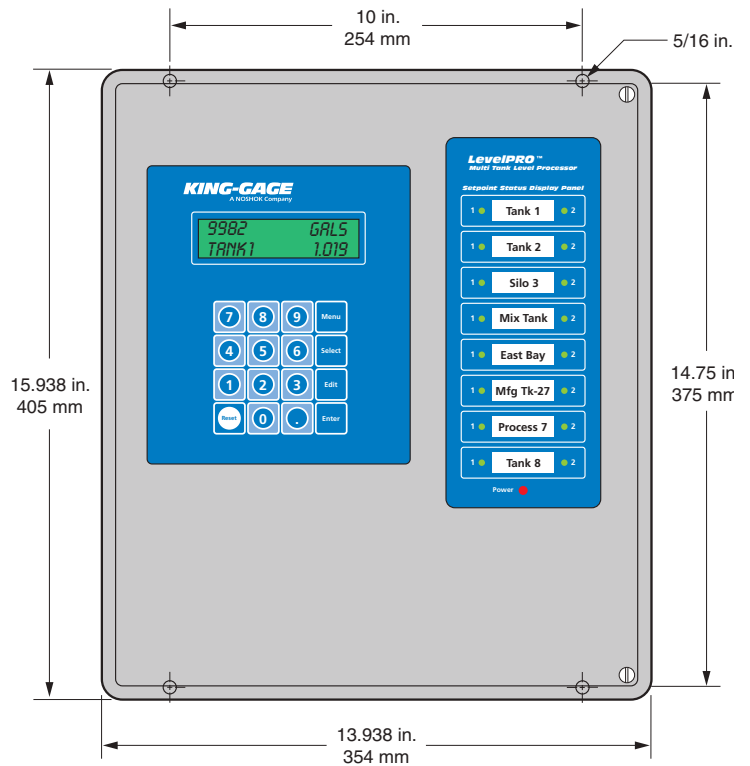
4641 - 2 - 0



LP2 Multiple Tank Display



LP2 SP Set Point Controller



LP2 Single Tank Level Indicator



4640 SERIES

- Direct reading by volume or weight
- Nonvolatile datapack iButton memory
- Provides 24 Vdc transmitter excitation
- Dual serial communications ports

APPLICATIONS

- Tank level indication

SPECIFICATIONS

Power requirements	100-240 Vac, 50-60 Hz, 25 watts (fused internally for 2.5 A 120/250 V)
Temperature range (Environmental)	30°F to 120°F (0°C to 50°C) operating range
Signal input	4 mA to 20 mA (mAdc)
Power output	24 Vdc nominal; fused @ 0.5 Amp
Input impedance (Resistance)	120 ohm nominal (2.4 Vdc drop @ 20 mAdc)
Memory	Nonvolatile 64kbit memory iButton
Digital readout	Alphanumeric 0.3173 in. (8 mm)16-character x 2-line LCD; numeric 8-digit (0-99999999 maximum)
Accuracy	±0.048% Full scale (±0.024% Full scale, typical)
Resolution	±0.024% FS maximum (±0.004 mA)
Communications	Two (2) serial EIA RS-485 ports; two wire multidrop
Enclosures	14 gauge Stainless Steel enclosure; UL 50 types 4, 4X, 12, 13; hinged cover with dual latching screw lugs.

ORDERING INFORMATION			
SERIES	4640 LP2 Single Tank Level Indicator		
ENCLOSURE OPTIONS*	1 Flush mount	2 FRP enclosure, standard	3 304 Stainless Steel

* Engineered FRP and Stainless Steel enclosures listed are splash-proof and UL-listed. Intended to meet NEMA 4X. Includes Hubbell cable relief fittings (3), suitable for splash-tight installation. Flush mount option must be ordered with 4243 iButton Datapack.

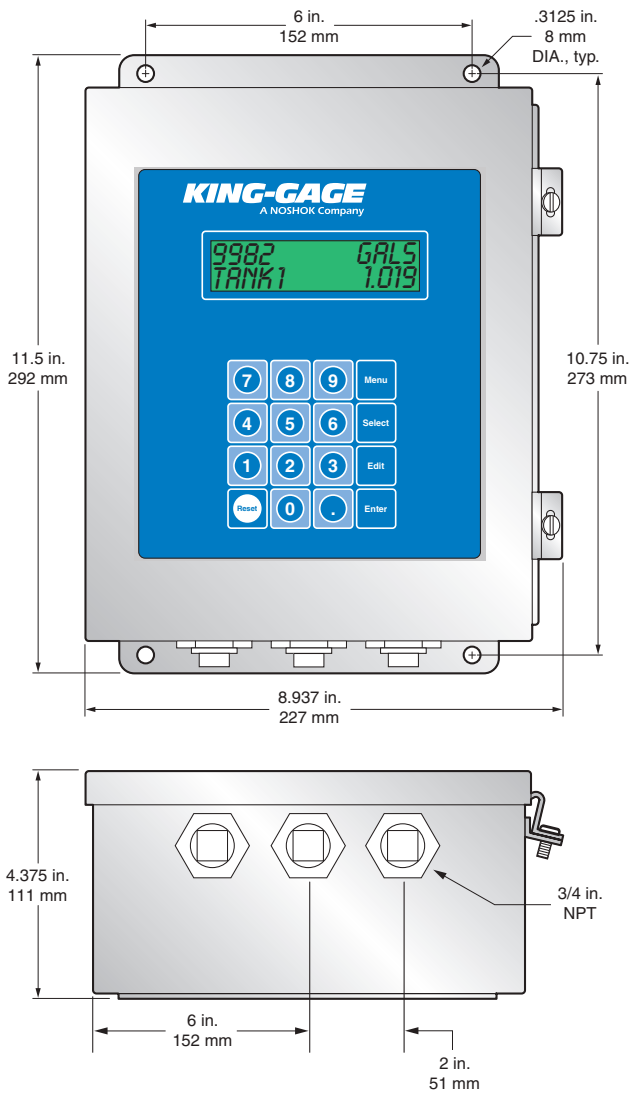
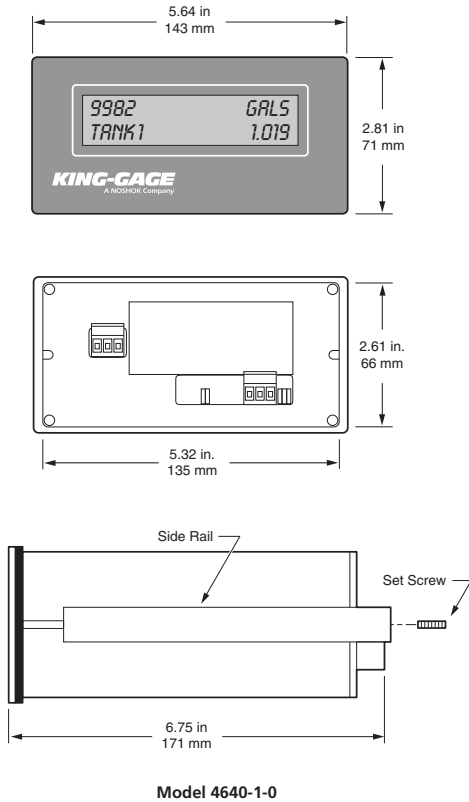
EXAMPLE

4640 - 2 - 1

Series 4640 Series

Enclosure option FRP

Setpoint configuration L/H SETPT1 low, SETPT2 high



LevelBAR Electronic Column Indicator



5111 SERIES

- High visibility tank level display
- Individually calibrated indicator scale
- Electronic (4 mA to 20 mA) or pneumatic input
- Direct replacement for manometer gauges

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
- Ballast water
- Fuel oil
- Fresh water
- Lube oil
- Brine
- Preload
- Holding

SPECIFICATIONS

Display accuracy/resolution	1%
Display type	100-segment LED (light emitting diode)
Display length	10"/254 mm
Input power	100–240 Vac, 50/60 Hz
Output power	24 Vdc (transmitter excitation)
Input impedance (resistance)	150 ohm nominal (3.0 Vdc drop @ 20 mA)
Current limiting (overload)	Automatic trip/reset circuit using PTC (positive temperature coefficient) resistor holds maximum current level within operating range of internal components.
Temperature range (Environmental)	30 °F to 120 °F (-1 °C to 49 °C) operating range
Signal input (Electronic input model)	4–12 mAdc (min.) to 4–20 mAdc full scale range
Pressure ranges (D/P option models)	0–5, –10, –15, –30, –50 psid fixed range transmitter element (accepts clean, dry air/gas pressure input). Maximum pressure rating is 300% FS. Minimum pressure range for proper operation is 50% of nominal. The lowest acceptable input pressure range is 0–2.5 psid using the 0–5 psid transducer element.
Transmitter accuracy (D/P option models)	0.5% FS
Output (D/P option models)	4–20 mAdc (assumes FSO)
Maximum load capacity (D/P option models)	1400 ohms @ 40 Vdc (external power) 600 ohms @ 24 Vdc (internal power)
Physical data	304 Stainless Steel housing and cover with gasket seal, transparent polycarbonate display window. Intended to meet splash proof requirements. The use of waterproof conduit hubs or fittings may be required during installation. Not rated for continuous explosion hazard areas.

ORDERING INFORMATION			
SERIES	5111 LevelBAR Electronic Column Indicator		
INPUT TYPES/RANGES			
Pneumatic Input with Internal D/P Transmitter	20 0-5 psid nominal range; Min. Full Scale: 0-69 in. water depth (0-1.8 m water); Max. Full Scale: 0-138 in. water depth (0-3.5 m water)	22 0-15 psid nominal range; Min. Full Scale: 0-207 in. water depth (0-5.3 m water); Max. Full Scale: 0-415 in. water depth (0-10.5 m water)	24 0-50 psid nominal range; Min. Full Scale: 0-692 in. water depth (0-17.6 m water); Max. Full Scale: 0-1384 in. water depth (0-35.1 m water)
	21 0-10 psid nominal range; Min. Full Scale: 0-138 in. water depth (0-3.5 m water); Max. Full Scale: 0-276 in. water depth (0-7.0 m water)	23 0-30 psid nominal range; Min. Full Scale: 0-415 in. water depth (0-10.5 m water); Max. Full Scale: 0-830 in. water depth (0-21.0 m water)	25 0-2 psid nominal range; Min. Full Scale: 0-28 in. water depth (0-0.7 m water); Max. Full Scale: 0-83 in. water depth (0-2.1 m water)
mA Input	10 4-12 mAdc through 4-20 mAdc		
Hand Pump Operation for Downpipe Purge*	30 0-5 psid w/ hand pump; Min. Full Scale: 0-69 in. water depth (0-1.8 m water); Max. Full Scale: 0-138 in. water depth (0-3.5 m water)	31 0-10 psid w/ hand pump; Min. Full Scale: 0-138 in. water depth (0-3.5 m water); Max. Full Scale: 0-276 in. water depth (0-7.0 m water)	35 0-2 psid w/ hand pump; Min. Full Scale: 0-28 in. water depth (0-0.7 m water); Max. Full Scale: 0-83 in. water depth (0-2.1 m water)

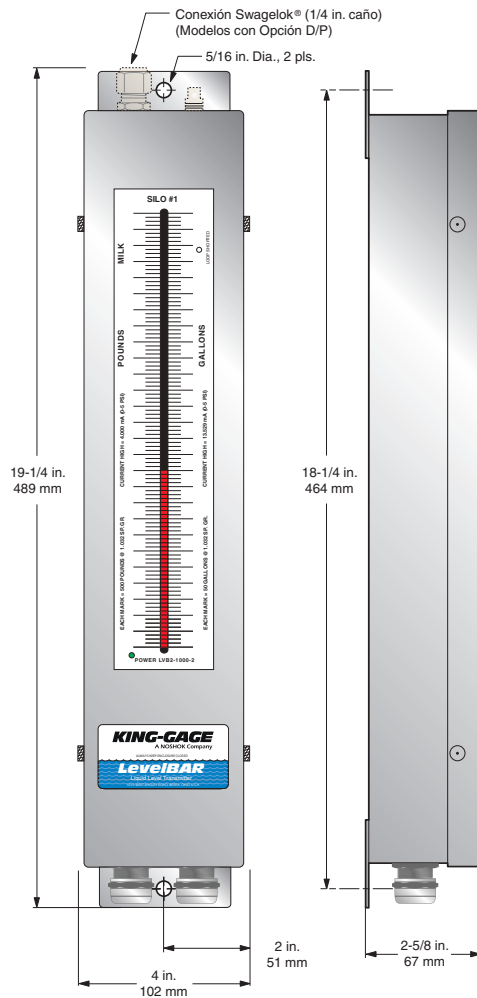
NOTE: Scale information must be supplied when order is placed

* Typical applications should not exceed 10 feet / 3 meters. Greater depth will require excessive hand pumping.

EXAMPLE

Series 5111 Series
 Input type/range 0-5 psid w/ hand pump; Min. Full Scale: 0-69 in. water depth (0-1.8 m water); Max. Full Scale: 0-138 in. water depth (0-3.5 m water)

5111 - 30



Pneumatic Column Indicator



7750 SERIES

- Visually displays tank level
- Used with bubblers or pneumatic tank sensors that produce a pressure output signal, provides local or remote tank level indication
- Uses the Hydrostatic Manometer Principle to provide high accuracy
- Custom calibrated scale permits direct reading in units of volume, weight or depth.
- All pneumatic operation eliminates any need for additional intrinsic safety provisions
- Easy maintenance, proven long-term dependability

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
- Ballast water
- Fuel oil
- Fresh water
- Lube oil
- Brine
- Preload
- Holding

SPECIFICATIONS

Operation principle	Well-type manometer acts as a frictionless hydrostatic force-balance. A liquid fill is raised in direct proportion to the magnitude of pressure applied. (Varies based on type of indicating liquid employed)
Resolution	Infinite based on type of indicating liquid employed.
Input connection(s)	1/4" NPT tapped connection for typical tube fittings. Accepts pneumatic air/gas pressure input; high and low pressure inputs.
Materials of construction	Formed channel indicator housing; brushed Stainless Steel (Type 304). Heavy plate glass window; acrylic plastic window available as special order.
Wetted parts	316 Stainless Steel liquid well and tubing
Indicating tube	High strength, fully annealed glass (Pyrex®)
KING-GAGE indicator	Single display tube, available in wall mount housing only Scale Ranges: 20", 35", 43", 51", 66", 81"
KING-GAGE multi-tube indicator	Multiple display tubes; 2-, 4-, 6-, 8-, 10-tube configurations. Tubes are spaced on 2-5/16" centerlines. Available in either wall mount or flush panel mount housing with front bezel assembly. Scale ranges: 20", 30", 40", 50", 60", 80"
Overflow check valve	Included as standard with all indicator packages

* Unregulated

** ®Pyrex is a registered trademark of Corning, Inc.

ORDERING INFORMATION				
SERIES	7750S Pneumatic Column Indicator			
SCALES	20	Stainless Steel case, 20" scale, 1 unit	43	Stainless Steel case, 43" scale, 1 unit
	35	Stainless Steel case, 35" scale, 1 unit	51	Stainless Steel case, 51" scale, 1 unit
LIQUID*	R Red liquid			
FITTINGS	1	None, 1/4" NPT	4	Swagelok 1/4" tube (compatible with Copper or Polyflo tubing)
	3	Polyflo 1/4" tube		

* Red Liquid 2.94 sp. gr.; scale factor = 0.337

NOTE: Scale information must be supplied when order is placed. Package includes overflow check valve and Swagelok fitting (1/4" tube x 1/4 NPT) compatible with copper or poly tubing.

EXAMPLE

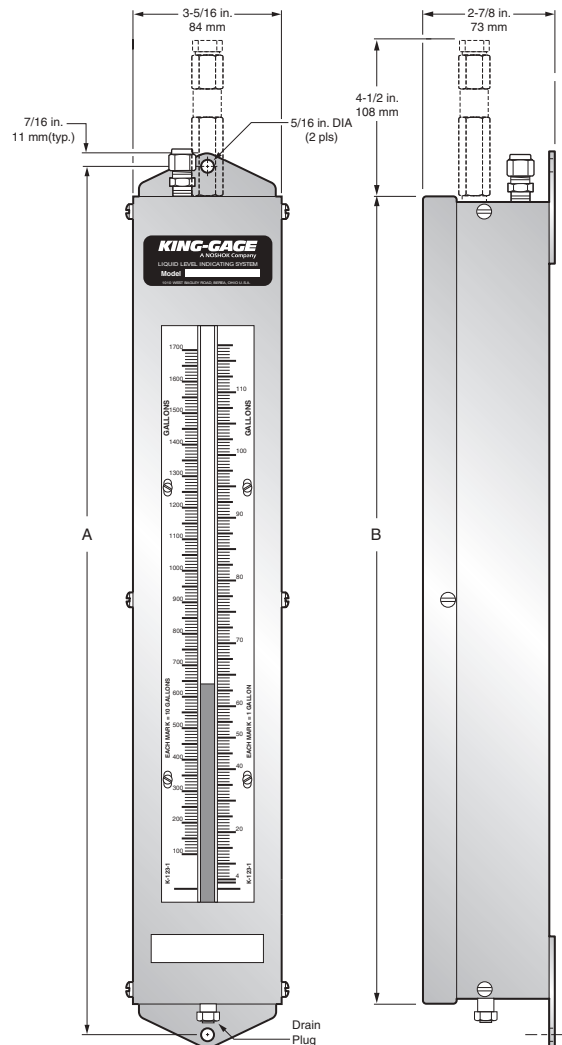
7750S - 35 R - 1

Series 7750 Series

Scale Stainless Steel case, 35" scale, 1 unit

Liquid Red liquid

Fitting None, 1/4" NPT



Rotameter Bubbler Gauge



5993 SERIES

- Provides continuous indication of liquid level
- Remote reading volume, depth or weight
- Accurate, reliable, proven technique
- Low cost installation, easy to maintain
- All pneumatic (non-electrical) operation

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

Operation principle	Well-type manometer acts as a frictionless hydrostatic force-balance. A liquid fill is raised in direct proportion to the magnitude of pressure applied. (Varies based on type of indicating liquid employed)	
Resolution	Infinite based on type of indicating liquid employed.	
Input connection(s)	1/4" NPT tapped connection for typical tube fittings. Accepts pneumatic air/gas pressure input; high and low pressure inputs.	
Materials of construction	Formed channel indicator housing; brushed Stainless Steel (Type 304). Heavy plate glass window; acrylic plastic window available as special order.	
Wetted parts	316 Stainless Steel liquid well and tubing	
Indicating tube	High strength, fully annealed glass (Pyrex®)	
Compressed air supply	Compressed air supply that is clean dry and oil-free is required for operation of the system. Under normal operating conditions, supply pressure required is 55-60 psig.	
Scale ranges	20", 35", 43", 51", 66"	
Dimensions (inches)	Range	Overall Dim. (H x W x D)
	20	29" x 4-3/8" x 2-7/8"
	35	45" x 4-3/8" x 2-7/8"
	43	53" x 4-3/8" x 2-7/8"
	51	61" x 4-3/8" x 2-7/8"
	66	77" x 4-3/8" x 2-7/8"

* Unregulated

** ® Pyrex is a registered trademark of Corning, Inc.

ORDERING INFORMATION				
SERIES	5993S Rotameter Bubbler Gauge			
SCALES	20	Stainless Steel case, 20" scale, 1 unit	43	Stainless Steel case, 43" scale, 1 unit
	35	Stainless Steel case, 35" scale, 1 unit	51	Stainless Steel case, 51" scale, 1 unit
LIQUID*	R Red liquid			

* Red Liquid 2.94 sp. gr.; scale factor = 0.337

NOTE: Scale information must be supplied when order is placed. Package includes overflow check valve and Swagelok fitting (3/8" tube x 1/4 NPT) compatible with copper or poly tubing.

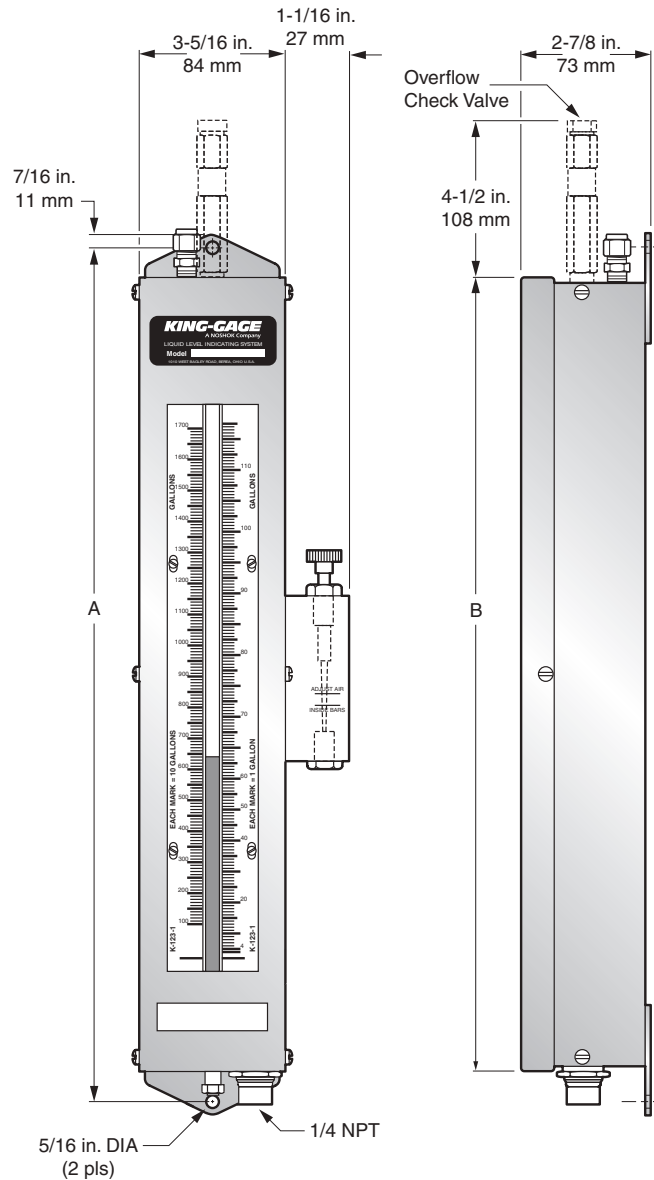
EXAMPLE

5993S - 35 R

Series 5993 Series

Scale Stainless Steel case, 35" scale, 1 unit

Liquid Red liquid



Hand Pump Bubbler Gauge



5992S SERIES

- Remote reading volume, depth or weight
- Accurate, reliable, proven technique
- Low cost installation, easy to maintain
- All pneumatic (non-electrical) operation
- Provides on-demand indication (not continuous monitoring) for short and medium height tanks
- Uses an integral hand pump to pressurize and purge the liquid from the downpipe
- Simply pump the gauge to quickly get indication of current tank level
- Can be positioned up to 100 feet from the tank, indoors or outside

APPLICATIONS

- Tank level indication
- Marine
 - Tank level, draft monitoring and vessel management
 - Ballast water
 - Fuel oil
 - Fresh water
 - Lube oil
 - Brine
 - Preload
 - Holding

SPECIFICATIONS

Operation principle	Well-type manometer acts as a frictionless hydrostatic force-balance. A liquid fill is raised in direct proportion to the magnitude of pressure applied. (Varies based on type of indicating liquid employed)	
Resolution	Infinite based on type of indicating liquid employed.	
Input connection(s)	1/4" NPT tapped connection for typical tube fittings. Accepts pneumatic air/gas pressure input; high and low pressure inputs.	
Materials of construction	Formed channel indicator housing; brushed Stainless Steel (Type 304). Heavy plate glass window; acrylic plastic window available as special order.	
Wetted parts	316 Stainless Steel liquid well and tubing	
Indicating tube	High strength, fully annealed glass (Pyrex®)	
Scale ranges	20", 35", 43", 51", 66"	
Dimensions (inches)	Range	Overall Dim. (H x W x D)
	20	29" x 4-3/8" x 2-7/8"
	35	45" x 4-3/8" x 2-7/8"
	43	53" x 4-3/8" x 2-7/8"
	51	61" x 4-3/8" x 2-7/8"
	66	77" x 4-3/8" x 2-7/8"

* Unregulated

** ®Pyrex is a registered trademark of Corning, Inc.

ORDERING INFORMATION			
SERIES	5992S	Hand Pump Bubbler Gauge	
SCALES*	20	Stainless Steel case, 20" scale, 1 unit	43
	35	Stainless Steel case, 35" scale, 1 unit	Stainless Steel case, 43" scale, 1 unit
LIQUID**	R	Red liquid	

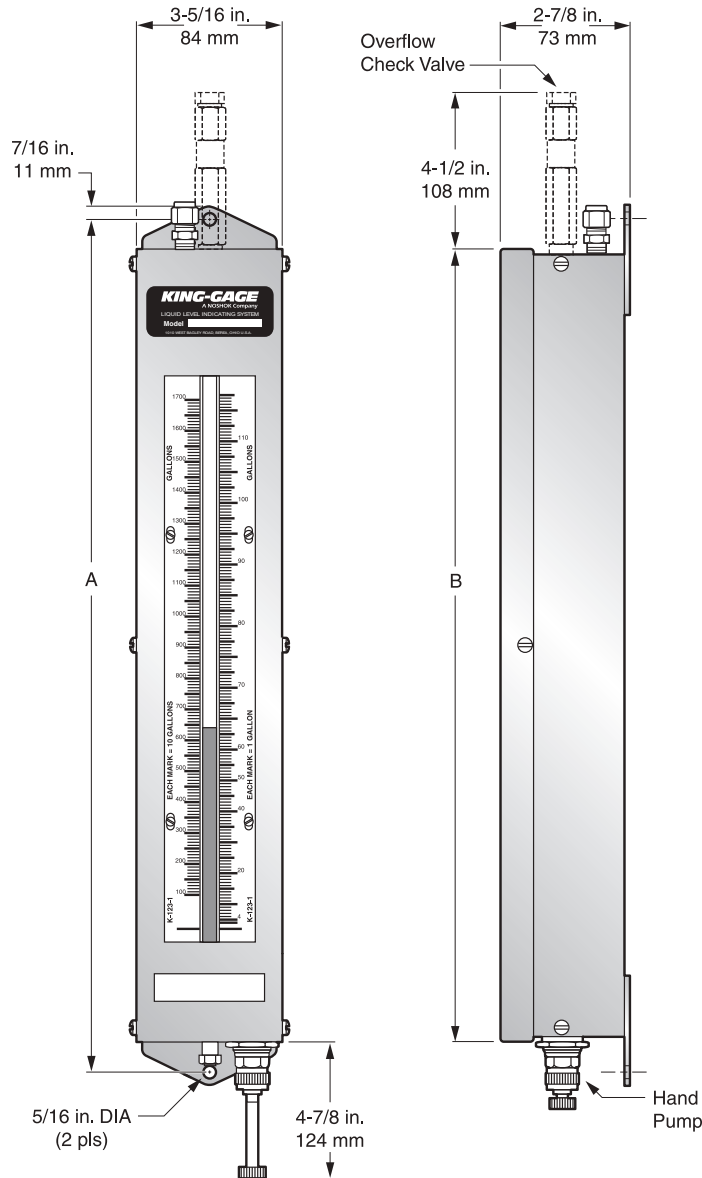
* 2-unit scale available, consult factory.
 ** Red Liquid 2.94 sp. gr.; scale factor = 0.337

NOTE: Scale information must be supplied when order is placed. Package includes overflow check valve and Swagelok fitting (3/8" tube × 1/4 NPT) compatible with copper or poly tubing.

EXAMPLE

5992S - 35 R

Series5992S Series
 ScaleStainless Steel case, 35" scale, 1 unit
 LiquidRed liquid



Multi-Point Process Switch



5880-1 SERIES

- Used to control continuous process operations, provide Fail-safe limiting or alarm functions
- 4 Adjustable set points
- Controls simple process functions
- Independent SPDT (Form C) relays
- For process transmitters with 4 mA to 20 mA output

APPLICATIONS

- Can monitor process variables within any industrial control environment
- In a level application, the switch can be used to actuate pumps, outlet valves or even to initiate CIP cycles.

SPECIFICATIONS

Power requirements	Nominal 115 Vac./60 Hz. (unregulated) 3.45 Watt/0.03 Amp – fused @ 0.1 Amp
Temperature range (Environmental)	32° F to 158° F/0° C to 70° C – operating (-40° F to 158° F/-40° C to 70° C – storage)
Input	DC current: 4 mA to 20 mA
Current limiting (overload)	70 mAdc maximum; automatic trip/reset using PTC resistor (positive temperature coefficient) circuit
Input Impedance	132 Ohm resistance (3 Vdc drop @ 20 mAdc)
Set points	(4) four independent user set-points; continuously adjustable over full input range. Front panel LED status indicator gives visual confirmation when set-point value has been exceeded.
Sensitivity (adjustment)	Set-points can be adjusted to better than 0.05% FS/0.008 mAdc
Repeatability	Set-point settings are repeatable to better than 0.05% (long-term repeatability: better than 0.1% FS)
Deadband	Single deadband potentiometer controls all four set-point settings. Deadband adjustable from 1.0%-12.5% FS. (Factory preset to 1% FS.)
Output	(4) independent SPDT (form-C) relays; maximum 3.0 Amp @ 115 Vac. or 24 Vdc (resistive). Rated for 100,000 cycles/life at rated load.
Weight	22 oz./624 g

ORDERING INFORMATION

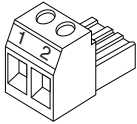
SERIES **5880-1** Multi-Point Process Switch

NOTE: Process switch is compatible with any 4 mA to 20 mA output device such as the Electronic Sensor or D/P Transmitter. Requires 115 Vac.

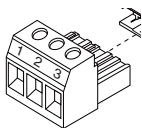
Replacement Fuses/Terminal Connectors

7469-21-0 500 mA 250V fast acting (AGC) fuse,
0.25 x 1.25 in., replacement 5-pack

5858-2 2-terminal socket connector
5858-3 3-terminal socket connector
5858-12 12-terminal socket connector

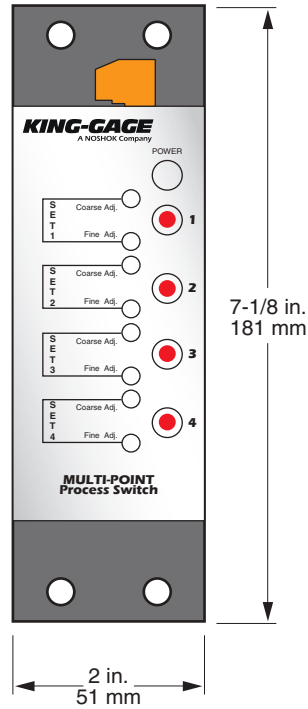


**2-Terminal Connector
(Signal)**

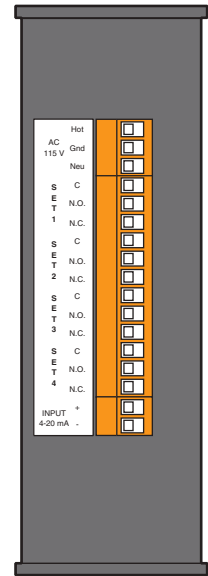


**3-Terminal Connector
(AC Power)**

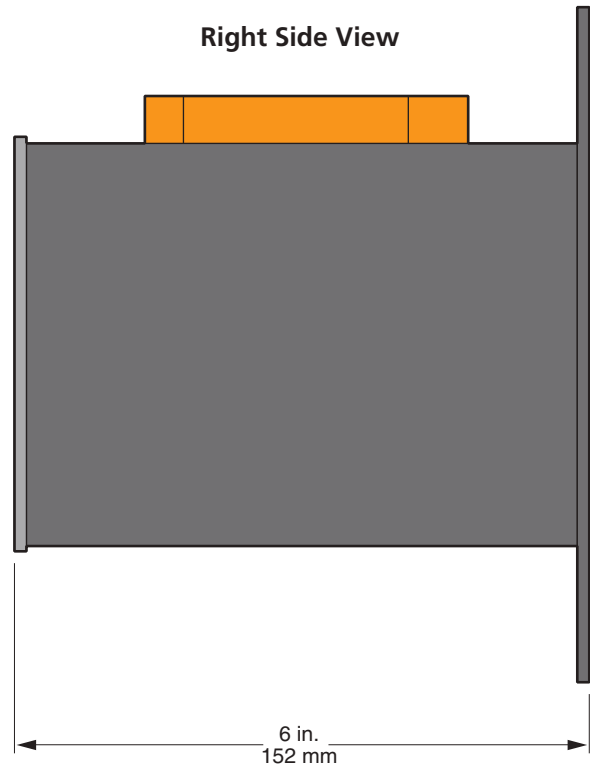
Front View



Top View



Right Side View



Options & Accessories

4223-M iButton Datapack For Application Programming/Adding Tanks (For LP3 & 4641 Series)

* = Number of tanks

Installation

- 1 = Field installed kit
- 2 = Factory installed

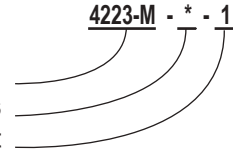
Baud Rate

- 960
- 19200 (default)

EXAMPLE

Model..... Model 4223-M
 Tanks Number of tanks
 Installation Field installed kit

4223-M - * - 1



5680-4 LP3 Programmed Compact Flash Card (For LP3 Series)

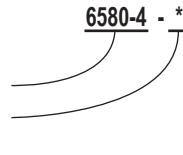
USER DISPLAY SETTINGS: Display settings on the LP3 can be modified by the end user, including editing the menu list of products selections, and/or specific gravities. Using the “administrator” access, they can even change the tank display arrangement on each screen page.

NOTE: Unless a copy of these changes (via CF card) is provided to KING-GAGE, A NOSHOK Company, the configuration update file we provide when revised or duplicate iButton datapacks are ordered will not replicate the edited user display settings.

EXAMPLE

Model..... Model 6580-4
 Tanks Number of tanks
 Installation Field installed kit

6580-4 - *



iButton Datapack (For 4640 Series)

4223-S-1-* (* = Installation)

Installation

- 1 = Field installed kit
- 2 = Factory installed

Baud Rate

- 960
- 19200 (default)

Adaptor Plate (For 4640 Series)

5936-1 Adaptor plate for replacing 5300 or 8900 Single Tank Digital Indicators and 5100 Multiple Tank Digital Indicators with LP2 Tank Displays.

Scale Ordering Information (For 5111 Series)

A standard 1-unit scale is included in the package price listed for LevelBAR models. The LevelBAR scale is custom marked in any specified unit of measurement (gallons, liters, barrels, etc.). An optional 2-unit scale can combine any two different measurements such as weight and volume, or volume and depth.

When ordering, the following information must be supplied. If replacing an existing scale, also provide the original serial number.

- Specific Gravity (Density) of Tank Contents
- Product Designation (tank contents)
- Description of Tank (e.g., Walker 6000 gal silo)
- Tank Dimensions
- Tank Name (to be noted on scale)
- Pressure Range of transmitter or LevelBAR
- Scaling Units (e.g., lbs, gals, liters, etc.)

Scales are calculated for the individual tank geometry and product specific gravity. Scaling adjustments setting (REF HIGH) is noted on the side of the scale. This is used to set the full scale display based on pressure range of the transmitter and maximum pressure created by depth of tank product.

Tank Calibrations - The LevelBAR indicator should not be used for physical water calibrations of tanks. Use of a pressure standard or other high accuracy pressure measurement instrument is recommended.

Replacement Scales (For 5111 Series)

5980-11	Replacement 1-unit LevelBAR scale assembly
5980-21	Replacement 2-unit LevelBAR scale assembly

Replacement Fuses/Terminal Connectors (For 5111 Series)

7469-21-0	500 mA 250V fast acting (AGC) fuse, 0.25 x 1.25 in, replacement 5-pack
5858-2	2-terminal socket connector
5858-3	3-terminal socket connector

Options & Accessories

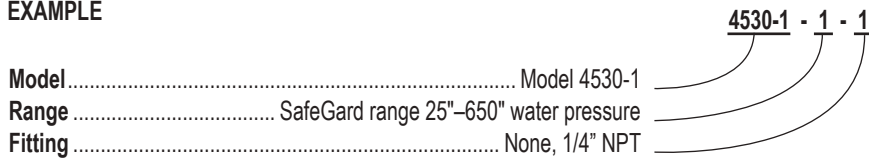
Replacement Indicator Scales (For 5992S, 593 & 7750 Series)

7083-20	Left & right side pair, 20" scale, 1-unit
7083-35	Left & right side pair, 35" scale, 1-unit
7083-43	Left & right side pair, 43" scale, 1-unit
7083-51	Left & right side pair, 51" scale, 1-unit
7083-66	Left & right side pair, 66" scale, 1-unit
7084-20	Left & right side pair, 20" scale, 2-units
7084-35	Left & right side pair, 35" scale, 2-units
7084-43	Left & right side pair, 43" scale, 2-units
7084-51	Left & right side pair, 51" scale, 2-units
7084-66	Left & right side pair, 66" scale, 2-units

Gauge Accessories (For 5992S, 593 & 7750 Series)

8838	Overflow check valve 1/4" NPT gauge connection
7461-2	Overflow return reservoir
4530-1-1-*	SafeGard range 25"–650" water pressure
4530-1-2-*	SafeGard range 650"–1750" water pressure

EXAMPLE



- * =
- 1 - none, 1/4" NPT
 - 3 - Polyflo 1/4" tube
 - 4 - Swagelok 1/4" tube x 1/8" NPT (compatible with Copper or Polyflo tubing)

5181-1 Glass Tube Packing Seal Kit (For 5992S, 593 & 7750 Series)

- Nut, qty. 2
- Washer, qty. 2
- O-Rings, qty. 4

NOTE: This kit is part of Glass Tube Replacement Kit, p/n 5159-xx.

Indicating Liquids (For 5992S, 593 & 7750 Series)

2992-8 Red Liquid No. 294, 8 fl oz.
 2992-16 Red Liquid No. 294, 16 fl oz.

Indicator Liquid Required	
Range	Ounces of Red Liquid
20"	0.5 oz
28"	0.7 oz
35"	0.8 oz
43"	1.5 oz
51"	1.7 oz
66"	2.1 oz

Tank Mount Fittings & Adaptors (For Mechanical Level Transmitters Only)

1-1/2" NPT Tank Top Fitting (for 3/4" Pipe) single purge line connection with tube fitting

7746-13 Carbon Steel, Polyflo 3/8" tube
 7746-15 Carbon Steel, Swagelok 3/8" tube
 7746-18 316 Stainless Steel, Swagelok 3/8" tube

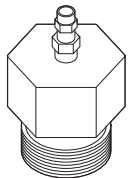


1-1/2" NPT Tank Top Fitting (for 3/4" Pipe) with single 1/4" NPT purge port connection

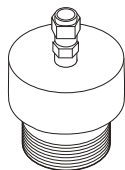
2000FA Carbon Steel
 2000PA PVC
 2000SG 316 Stainless Steel

1-1/2" NPT Tank Top Fitting (for 3/4" Pipe) with two 1/4" NPT purge/equalizer connection

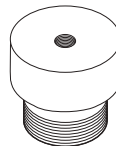
2000FA-2 Carbon Steel
 2000PA-2 PVC
 2000SG-2 316 Stainless Steel



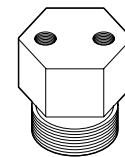
Carbon Steel
w/ Polyflo fitting



Stainless Steel or PVC
w/ Swagelok fitting



Stainless Steel or PVC



Non-Vented Application
Purge and Equalizer

NOTES



A series of horizontal lines for writing notes, overlaid on a background graphic. The graphic features a diagonal line from the top-left to the bottom-right, and two large, stylized, light-gray letters: a large 'N' on the left and a large 'C' on the right.

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