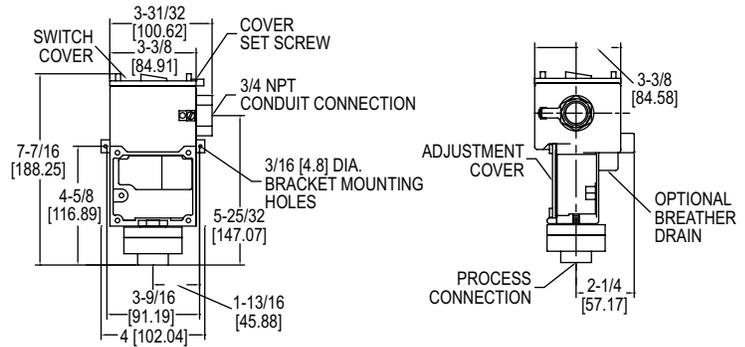




# Series SA1100 Pressure Switches Weatherproof, Explosion-Proof

## Specifications - Installation and Operating Instructions



Series SA1100 Pressure Switches Weatherproof, Explosion-Proof actuate one or two single pole, double throw (SPDT) snap switches in response to increasing or decreasing pressure of compatible gases or liquids. Three field adjustable operating ranges are available allowing setpoints up to 500 psig (35 kg/cm<sup>2</sup>). All models are weather-proof and suitable for hazardous locations as detailed in the chart at lower right. Read and understand these instructions completely before proceeding with installation or operation.

SPECIFICATIONS	
<b>Temperature Limits:</b>	-30 to 180°F (-35° to 82°C) standard; ATEX and IECEx compliant at ambient temperature: -4 to 146°F (-20 to 63.6°C).
<b>Process Temperature:</b>	-4 to 146°F (-20 to 63.6°C).
<b>Maximum Operating Pressure:</b>	1200 psig (82.6 bar).
<b>Maximum Pressure Without Bursting:</b>	3000 psig (210 kg/cm <sup>2</sup> ).
<b>Process Connection:</b>	1/4" or 1/2" female NPT.
<b>Electrical Ratings:</b>	SPDT or DPDT contacts rated 15A @ 125/250/480 VAC (V~), 1/8 HP @ 125 VAC (V~), 1/4 HP @ 250 VAC (V~), 1/2A @ 125 VDC (V---) resistive, 1/4A @ 250 VDC (V---) resistive.
<b>Wiring Connections:</b>	3 screw type.
<b>Conduit Connections:</b>	3/4" female NPT.
<b>Setpoint Adjustment:</b>	7/16" hex nut, field adjustable.
<b>Housing Material:</b>	Die cast aluminum.
<b>Finish:</b>	Textured gray polyurethane.
<b>Connection Material:</b>	Aluminum, brass or 316 SS.
<b>Diaphragm:</b>	Buna-N or fluorocarbon.
<b>Weight:</b>	3-1/2 lbs (1.59 kg).
<b>Enclosure Ratings:</b>	Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups B, C and D; Class II Groups E, F and G. UL-NEMA 4X, CSA-NEMA 4. ATEX Compliant $\text{C} \text{E}$ 2813 $\text{Ex}$ II 2 G Ex d IIC T6 Gb -20 ≤ Tamb ≤63.6°C. Process Temperature ≤63.6°C. Type Certificate No.:KEMA 04ATEX2186 X. IP56 without drain and IP 54 with drain. ATEX Standards: EN 60079-0: 2009; EN60079-1: 2007. IECEx Certified: For Ex d IIC T6 Gb -20 ≤ Tamb ≤63.6°C Process Temperature ≤63.6°C. IECEx Certificate of Conformity: IECEx DEK 11.0095 X; IECEx Standards: IEC 60079-0: 2007; IEC 60079-1: 2007.

MODEL CHART										
<b>Example</b>	SA11	13	E	-A	4	-K	1			SA1113E-A4-K1
<b>Construction</b>	SA11									Series designator, weatherproof NEMA 4X, explosion-proof NEMA 7, 9
<b>Adjustable Pressure Ranges</b>		11								10 to 150 psig (0.7 to 10 bar)
		12								20 to 250 psig (1.4 to 17.2 bar)
		13								30 to 500 psig (2.0 to 34.0 bar)
<b>Circuit (Switch) Options</b>			E							Snap action switch rated 15A @ 125/250/480 VAC, 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 1/2 A @ 125 VDC resistive, 1/4 A @ 250 VDC resistive.
			HS							Hermetically sealed snap action switch rated 5 A @ 125/250 VAC, 5 A resistive @ 30 VDC*
			HG							Hermetically sealed snap action switch with gold contacts rated 1 A @ 125 VAC, 1 A resistive @ 30 VDC*
<b>Pressure Chamber Material</b>				A						Aluminum
				B						Brass
				S						316 SS
<b>Diaphragm Material</b>					4					Buna-N diaphragm and O-ring
					5					Fluorocarbon diaphragm and O-ring
<b>Circuit (Switch) Type</b>						K				SPDT
						L				DPDT (not available with HS or HG switch options)
<b>Process Connection Options</b>							1			1/4" female NPT
							2			1/2" female NPT
								AT		ATEX certified construction
								IEC		IEC IECEx certified construction
								DR		Housing with drain - allows condensate to be drained from inside enclosure (meets NEMA 3R instead of 4X)

\*Options that do not have ATEX.

**Attention:** Units without the "AT" suffix are not Directive 2014/34/EU (ATEX) compliant. These units are not intended for use in potentially hazardous atmospheres in the EU. These units may be CE marked for other Directives of the EU.

### INSTALLATION

- 1. Location:** Select a location where the temperature limits of -30 to 180°F (-35 to 82°C). For standard units and -4 to 146°F (-20 to 63.6°C) for ATEX and IECEx units will not be exceeded. Locate the switch as close as possible to the pressure source for best response. Long lengths of piping will not affect the accuracy of the actuation point but will increase response time.
- 2. Mounting:** Avoid mounting surfaces with excess vibration which could cause false actuation when pressure is near setpoint. Attach switch with two 3/16" screws or bolts (not included) through mounting bracket. The switch must be mounted within 20° of vertical for proper operation.
- 3. Pressure Connection:** The pressure connection is standard 1/4" or 1/2" female NPT. Pipe joint sealing material should be used to insure a pressure tight joint.
- 4. Electrical Connections:** One or two SPDT snap switches are provided, each with normally open contacts closing and normally closed contacts opening when pressure increases beyond the high setpoint. The contacts reverse, returning to their "normal" condition when pressure decreases below the low setpoint. Wire in accordance with local electrical codes.

For convenience, two ground screws are provided. One is located inside the housing and the other on the exterior, adjacent to the 3/4" NPT conduit connection. Internal grounding terminal must be used for equipment grounding and the external terminal is for a supplementary bonding connection where local codes or authorities permit or requires such connection. Replace cover after wiring connections are complete.

### ATEX AND IECEx INSTALLATION INSTRUCTIONS

#### Cable Connection

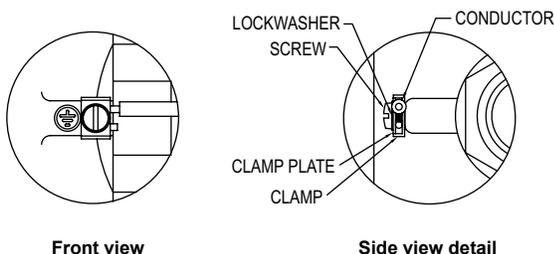
The cable entry device shall be an Ex d certified cable gland suitable for conditions of use and correctly installed. For Tamb 63.6°C, cable gland rated ≥ 80°C shall be used. Use cable rated 30°C higher than maximum Tamb.

#### Conduit Connection

An Ex d certified seal device such as a conduit seal with setting compound suitable for conditions of use and correctly installed shall be provided immediately to the entrance of the electrical housing. For Tamb 63.6°C, conduit seal and setting compound rated ≥ 80°C shall be used. Use cable rated 30°C higher than maximum Tamb.

All wiring, conduit and enclosures must meet applicable codes for hazardous areas. Conduits and enclosures must be properly sealed. For outdoor or other locations where temperatures vary widely, precautions should be taken to prevent condensation inside switch or enclosure. Electrical components must be kept dry at all times.

For units supplied with both internal ground and external bonding terminals, the ground screw inside the housing must be used to ground the control. The external bonding screw is for supplementary bonding when allowed or allowed by local code. When external bonding conductor is required, conductor must be wrapped a minimum of 180° about the external bonding screw.



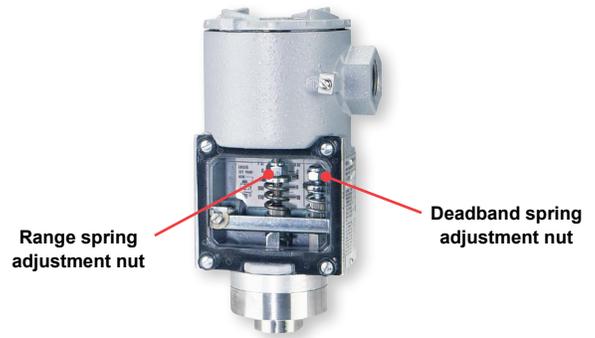
Refer to Certificate No. IECEx 11.0095 X for conditions of safe use for IECEx compliant units.

**Limited Warranty:** The Seller warrants all Dwyer Instruments and equipment to be free from defects in workmanship or material under normal use and service for a period of one year from date of shipment. Liability under this warranty is limited to repair or replacement F.O.B. factory of any parts which prove to be defective within that time or repayment of the purchase price at the Seller's option provided the instruments have been returned, transportation prepaid, within one year from the date of purchase. All technical advice, recommendations and services are based on technical data and information which the Seller believes to be reliable and are intended for use by persons having skill and knowledge of the business, at their own discretion. In no case is Seller liable beyond replacement of equipment F.O.B. factory or the full purchase price. This warranty does not apply if the maximum ratings label is removed or if the instrument or equipment is abused, altered, used at ratings above the maximum specified, or otherwise misused in any way.

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**CAUTION** To prevent ignition of hazardous atmospheres, disconnect the device from the supply circuit before opening. After disconnection, delay 2 minutes before opening. Keep assemblies tightly closed when in use.



### ADJUSTMENT

1. Determine the low and high setpoint pressures.
2. Connect tubing or piping from the pressure port on bottom to one leg of tee. Connect the second leg to a pressure gage of known accuracy and in an appropriate range. The third leg should be connected to a controllable source of pressure.
3. Connect a volt/ohm meter or other circuit tester to the snap switch terminals to indicate when switching occurs.
4. Slowly apply pressure to the system and note the pressure at which switch actuates. If adjustment is necessary, remove the clear plastic cover over the lower half of the switch. It is held in place by four machine screws.
5. Adjust the low setpoint first by using a 7/16" open end wrench on the left, range spring adjustment nut. As viewed from above, turn nut clockwise to increase, counter-clockwise to decrease the low setpoint (deactuation point).
6. Adjust the high setpoint by turning the deadband spring adjustment nut, on right, clockwise to increase, counter-clockwise to decrease, the high setpoint (actuation point).
7. Operate the switch through several pressure cycles to confirm proper setpoint adjustment. Replace plastic cover.

### MAINTENANCE

**WARNING** When cleaning exterior surfaces use a damp cloth to avoid electrostatic charge.

The flame path dimensions differ from EN 60079-1 requirements. Repairs to be by Dwyer Instruments, Inc.

The moving parts of these switches need no maintenance or lubrication. The setpoint is the only user adjustment. On models with optional drain fitting, periodically rotate the small captive screw from side to side several times to keep drain path clear. Units in need of repair should be returned to the factory prepaid.