Alfa Laval ThinkTop Basic® Intrinsically Safe

Sensing and control

Introduction

The Alfa Laval ThinkTop® Basic Intrinsically Safe is a modular, explosion-safe automated valve control unit that offers cost-effective operation and standard functionality for automated sensing and control of hygienic valves. It provides real-time information about valve operating status 24/7 while boosting productivity.

Application

The ThinkTop Basic Intrinsically Safe is designed to control the fluid handing process in hygienic applications across the dairy, food, beverage, biotechnology, pharmaceutical and many other industries.

Benefits

- Reliable valve sensing and control
- Proven and inherently safe design
- Low total cost of ownership
- Watertight design
- Easy to operate

Standard design

The ThinkTop Basic Intrinsically Safe valve sensing and control unit consists of a proven NAMUR feedback sensor system with light-emitting diodes (LEDs), low voltage solenoid valves, ready for connection to a electrical barriers and to any programmable logic controller (PLC) system with a digital interface. It fits on all Alfa Laval hygienic valves; no adaptor is required.

Working principle

By an indication pin mounted on the valve stem, the NAMUR feedback sensors detects valve stem movement, the position of the valve at any given time, with the adjusted accuracy of the feedback sensors.

The Alfa Laval ThinkTop Basic Intrinsically Safe is fitted with up to two solenoid valves that can convert compressed air and the electrical PLC signal into mechanical energy to activate or deactivate the pneumatic valve actuator.

Certificates

TECHNICAL DATA

Communication	
Interface Intrinsic:	Intrinsic

Sensor board	
Feedback signal #1:	De-energized valve
Feedback signal #2:	Energized valve

Inductive sensor	
Switching element function:	NAMUR NC
Nominal voltage:	8.2 V
Indication of the state:	LED, yellow (Internally)
EMC in accordance with:	EN 60947-5-6
Certificate of conformity:	Gas: PTB01ATEX2191 Dust: BVS04ATEXE153

Solenoid valve	
Air supply:	150-700 kPa (1.5-7 bar)
Type of solenoids:	3/2-ways
Numbers of solenoids:	0-2
Manual hold override:	Yes
Push-in fittings:	Ø6 mm or 1/4"
Certificate of conformity:	DEKRA 11ATEX0273 X

PHYSICAL DATA

Materials	
Steel part:	Stainless steel and Brass
Plastic parts:	Black Nylon PA 6 with SS fibers
Seals:	Nitrile (NBR) rubber

Environment	
Working temperature:	-10 °C to +45 °C
Protection class:	IP66 and IP67
Protection class equivalent:	NEMA 4.4x and 6P
Ex classification code:	Gas: Ex II 2G Ex ib IIC T6 Gb X Dust: Ex II 2D Ex ib IIIC T85 Db X

Cable connection	
Main cable gland:	PG11 5.5 - 8.5 mm
Max. wire size:	0.75 mm² (AWG 19)

Note!
See also the ThinkTop Basic Intrinsically Safe instruction manual

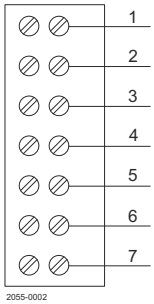
Options

- Solenoid valve configuration
- Pneumatic tubing interface

Accessories

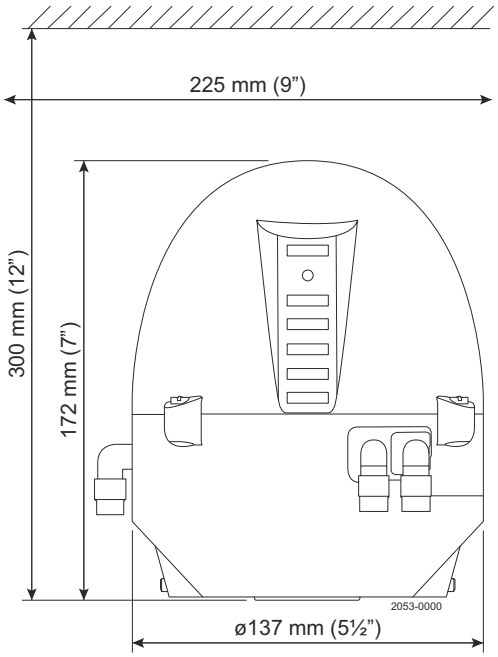
- Threaded plate for indication pin on SRC, SMP-BC and i-SSV valves
- Adaptor for Unique SSSV valves

Electrical connection



1. Sensor 1 [De-energized] (blue) 8 VDC (-)
2. Sensor 1 [De-energized] (brown) (+)
3. Sensor 2 [Energized] (blue) 8 VDC (-)
4. Sensor 2 [Energized] (brown) (+)
5. Common; solenoids (black) 12 VDC (-)
6. Input; solenoid #1 (red) (+)
7. Input; solenoid #3 (red) (+)

Dimensions (mm)



ATEX evaluated Alfa Laval valves

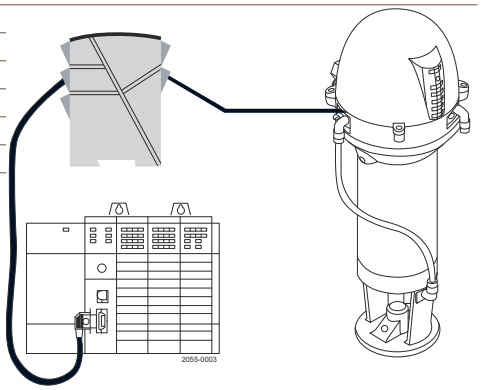
The following table list show the ATEX evaluated Alfa Laval valves which the ThinkTop Basic Intrinsically Safe can be installed on to be accordance with Atex Directive 2014/34/EU.

Valve / Actuator type	ATEX evaluation notes
Unique SSV	Non-electric equipment with no own ignition source which can be used within equipment-group II 2 G/D or II 3 G/D
Unique Mixpoof	Non electric equipment with no own ignition source which can be used within the equipment-group II 2 G/D or II 3 G/D if removing the blue plastic cover from the bottom of the Mixproof valve
SRC (except SRC-LS) SMP-SC, TO, BC LKLA-T Shutter valve SBV	Non electric equipment with no own ignition source which can be used within the equipment-group II 2 G/D or II 3 G/D

Electrical interface

To comply with the ATEX protective system all individual electrical signals from the control unit must be connected to an electrical barrier in the safe area to obtain the intrinsic safe circuit. The electrical barrier must comply with the standard EN 60079-14 and shall always be specified in accordance with the following maximum values as shown in the table below for sensor and solenoid valve (I/O signals).

Sensor			Solenoid valve		
The two inductive NAMUR sensors must be connected to a certified intrinsically safe circuit (e.g. Zener barrier) for apparatus group II 2G/2D with the following maximum values:			The intrinsic safe solenoid valves must also be connected to a certified intrinsically safe circuit (e.g. Zener barrier) for apparatus group II 2G/2D with the following maximum values:		
Max. allowed Voltage (Ul)	15	V	Max. allowed Voltage (Ul)	28	V
Max. allowed Current (Ii)	50	mA	Max. allowed Current (Ii)	225	mA
Max. allowed Power (Pi)	0.120	W	Max. allowed Power (Pi)	1	W
Max. Inductance (Li)	110	µH	Max. Inductance (Li)	0	µH
Max. Capacitance (Ci)	80	nF	Max. Capacitance (Ci)	0	nF



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How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com