Leave Surveillance to the Top

ThinkTop® Basic Intrinsically Safe II 2G EEx ia IIC T6

Application

The ThinkTop Basic Intrinsically Safe is designed to ensure optimum valve control in conjunction with Alfa Laval sanitary valves and it is compatible with all major PLC systems (Programmable Logic Controller). It is for use in Breweries, Personal Care, Chemical, Biopharmaceutical installations and in Pharmaceutical applications.

The ThinkTop Basic Intrinsically Safe is a fully equipped control unit that complies with the ATEX Directive 94/9/EC and applies to equipment and protective systems, like all ancillary sanitary processing valves used in areas endangered by potentially explosive atmospheres.

According to the ATEX directive the ThinkTop Basic Intrinsically Safe is approved and classified under Group II, Category 2 (Gas) and Category 3 (Gas) and explosion group II 2G EEx ia IIC T6.

Working Principle

The ThinkTop Basic Intrinsically Safe consists of NC inductive NAMUR sensors and solenoid valves to control processing valves. It is used to control and supervise pneumatic valves and is mounted on top of the valve. It receives signals from a PLC to control the solenoid valve and it returns the valve status signals back to the PLC.

The ATEX addendum EC declaration of conformity is part of the Instruction Manual. It is important that the end user reads this PD sheet prior to start up.

Electrical Signals

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.

The valve positions are detected by the inductive NAMUR sensor 8 VDC working as NC (Normally Closed) and PNP or NPN interface is available as mechanical setup on the electrical barrier.

ThinkTop® Basic Intrinsically Safe

Standard Design

The ThinkTop has a simple, modular and robust design which ensures a quick and easy assembly/disassembly. It consists of a base containing a frame carrying the sensors, an indication pin, terminals for internal electrical connection, solenoid valves and a shell. See also Fig. 1 "Basic Intrinsically Safe Design". The design is hygienic and easy to clean.

Important!

It will be the responsibility of the end user to perform the explosion risk assessment and to classify the group and the corresponding zone (dust or gas) in accordance with the Directive 1999/92/EC.

II 2G EEx ia IIC T6

The following table shows the ATEX evaluated Alfa Laval sanitary valves on which ThinkTop Basic Intrinsically Safe can be installed in accordance with the ATEX Directive 94/9/EC.

Valve / actuator type	ATEX evaluation notes
Unique SSV ATEX	 II 2 G D c T4
Unique Mixproof	Non electric equipment with no own ignition source which can be used within the equipment-group II 2 D/G or II 3 D/G if removing the blue plastic cover from the bottom of the Mixproof valve
SRC (except SRC-LS) SMP-SC SMP-TO SMP-BC LKLA-T Koltek MH SBV	Non electric equipment with no own ignition source which can be used within the equipment group II 2 D/G or II 3 D/G

Note! Contact customer support to get the "ATEX Product Statement 2009" with listed valves inside/outside the scope of the ATEX Directive 94/9/EC

Solenoid Valves

0 to 2 solenoid valves are possible in each unit.

Type: . . . . . .3/2 way solenoid valve
Air supply: . . . . . .0.15 - 0.7 MPa (1.5 - 7 Bar)
Filtered air, max. particles or dirt: . . . . .5 mm 5-5 mg/m^3
Max. flow: . . . . . .180 l/min
Max. oil content: . . . . . .1 mg/m^3
Max. water content: . . . . . .0.88 g/m^3 -20 °C compressed air
Throughput: . . . . . .ø2.5 mm
Manual hold override: . . . . . .Yes
External air tube connection: . . . . . .ø6 mm
Nominal voltage: . . . . . .12 VDC
Nominal power: . . . . . .0.52 W
Allowable voltage fluctuation . . . . . .±10% of rated voltage
Silencer/filter **): . . . . . .Connection possible via ø6 mm
Certificate of conformity: . . . . . .KEMA 08 ATEX 0093 X

**): Filter recommended in tropical regions.

Inductive sensor

Switching element function: . . . . . .NAMUR NC
Nominal voltage: Uo . . . . . .8 V
Measuring plate not detected: . . . . . .3 mA
Measuring plate detected: . . . . . .1 mA
Indication of the switching state: . . . . .LED, yellow
EMC in accordance with: . . . . . .IEC / EN 60947-5-2:2004; NE 21
Standards: . . . . . .DIN EN 60947-5-6 (NAMUR)
Certificate of conformity: . . . . . .PTB 00 ATEX 2032 X

Technical Data

Materials

Plastic parts: . . . . . .Nylon PA 6, reinforced, stainless steel fibers
Steel parts: . . . . . .Stainless steel ASI 304/316
Air fitting: . . . . . .Special coated brass (FDA approved)
Seals: . . . . . .Nitrile (NBR)
Gore Vent. membrane . . . . . .PBT plastic

Electrical connection

Direct main cable gland entry (hard wired) PG11 (ø4 - ø10 mm) Direct external/sensor cable gland entry PG7 (ø3 - ø6.5 mm).

Terminals

The terminal row of the frame board is equipped with screw terminals for both internal as well as external cables and wires. The terminals are suitable for wires up to 0.75 mm^2 (AWG 19).

Micro environment demand specifications

Temperature Working: Storage: Temperature change:	 -10°C to +45°C -40°C to +85°C -25°C to +70°C	 EN 50020 IEC 68-2-1/2 IEC 68-2-14
Vibration	10-55 Hz, 0.7 mm 55-500 Hz, 10g 3 x 30 min, 1 octave/min	IEC 68-2-6
Drop test		IEC 68-2-32
Humidity Constant humidity: Cyclic humidity: (working)	 +40°C, 21 days, 93% R.H. +15°C/+45°C 12 cycles 93% R.H.	 IEC 60068-2-78 EN 60068-2-30 IEC 68-2-30
Protection class	IP66 and IP67	EN 60529
Surface resistance	< 1GΩ	EN 60079-0
Type of explosion group	Ex II 2G EEx ia IIC T6	ATEX directive 94/9/EC

The ThinkTop Basic Intrinsically Safe must always be installed in an intrinsic safe circuit.

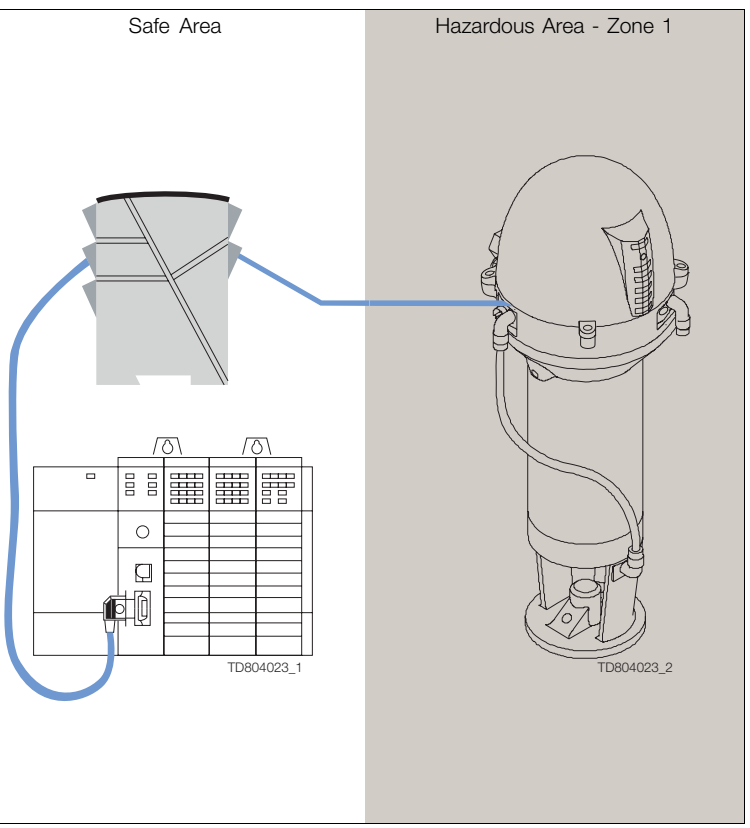
Sensor
The two inductive NAMUR sensors must be connected to a certified intrinsically safe circuit (e.g. Zener barrier) for apparatus group IIC with the following maximum values:

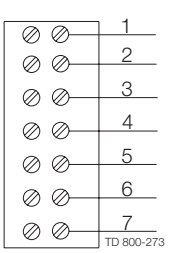
U_i = 15V
I_i = 50mA
P_i= 1W
L_i = 100µH
C_i= 100nF

Solenoid valve
The intrinsic safe solenoid valves must also be connected to a certified intrinsically safe circuit (e.g. Zener barrier) for apparatus group IIC with the following maximum values:

U_i = 28V
I_i = 225mA
P_i= 1W
L_i = 0µH
C_i = 0nF

The electrical installation of ThinkTop Basic Intrinsically Safe must be done according to the standard EN 60079-14.





Electrical connections, internal

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)

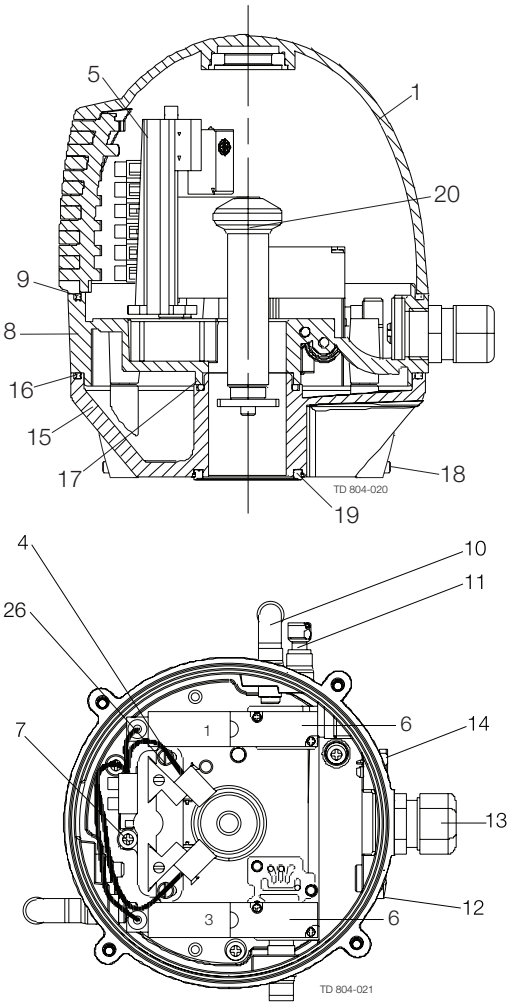


Fig. 1. Basic Intrinsically Safe design, ThinkTop Basic Intrinsically Safe.

1. Shell
4. Washer
5. Frame cpl. with sensors
6. Solenoid valve (3/2)
7. PT screw
8. Base
9. Special X-ring, grey
10. Air fittings
11. Blow-off valve
12. Thread plug, PG7
13. Cable gland, PG11
14. Gore Vent. membrane
15. Adapter
16. Special X-ring, black
17. O-ring
18. Allen screw
19. Special X-ring
20. Indication pin
26. Screw

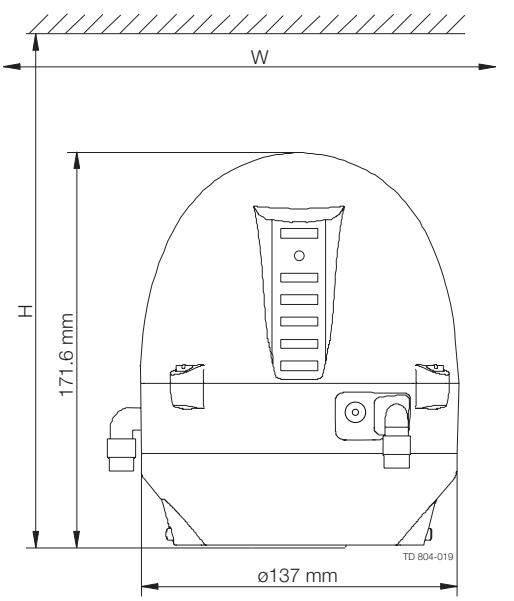


Fig. 2. Dimensions.

Note! This is the basic design.		
Valve Type	**H**	**W**
Unique SSV ATEX NC	225	250
SRC NC	225	250
SMP-SC/-BC/-TO	225	250
Unique Mixproof	225	250
Koltek MH	225	250
SBV	225	250
Unique SSV ATEX NO	225	320
SRC NO	225	320
LKLA-T	225	300

Ordering

Please state the following when ordering:

- ThinkTop Basic Intrinsically Safe
- Number of solenoids (0-2)
- Air connection ø6 mm or 1/4"
- ThinkTop Basic Intrinsically Safe does not support Unique SSV-LS and SRC-LS

Note!

For further details, see also instruction manual ESE00810.

ESE00812EN 0904

How to contact Alfa Laval
Contact details for all countries
are continually updated on our website.
Please visit www.alfalaval.com to
access the information direct.