

Pressurized Enclosure System F850S

Use in Ex- Zone 1, 21, 2 and 22
 In accordance to EN 60079
 Compact - Intelligent –Economic
 BVS 06 ATEX E088
 IECEx BVS 12.0033

Characteristics

Compact system, mounting inside hazardous area or inside Ex p-Enclosure
 ATEX and IECEx certified

- Reliable Ex p System with new certificate according to EN 60079: BVS 06 ATEX E 088, DMT 99 ATEX E 003 and IECEx BVS 12.0033

- Function test acc. to EN 954-1, *category 3*
- II 2 G, Ex e m bib [px] IIC T4 Gb
- II 2 D, Ex tb [ib] [p] IIIC T 70°C Db IP65

Ambient temperature:

- -20°C...+45°C at T6
- -20°C...+60°C at T4

Menu guided programmable operation modes:

- Leakage compensation ⇔ Continuous flow
- Digital solenoid valve ⇔ Proportional solenoid valve

Ex p- system containing a proportional working pressure and flow sensory

- No membrane switch, no screws or potentiometer to adjust pressure or flow thresholds or purging time

High availability because of regulated pressure and proportional valve

- High service reliability because of constant pressure
- No purge medium wasting, just the exact quantity to hold pressure is needed
- Increasing leakage caused by e.g. enclosure ageing will be balanced and therefore sudden failure will be prevented
- Almost no flow noise and only a small protective gas consumption using a solid enclosure

Purging with pressure regulation

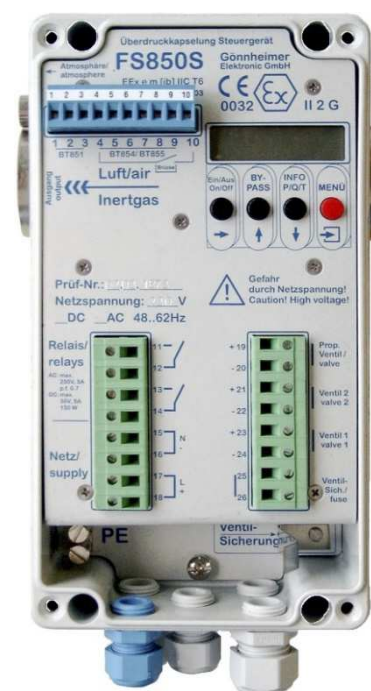
- Pressure sensitive parts of the enclosure, like membrane switch panels or windows, will not be overloaded
- Purge volume accuracy is achieved by integration of the purge medium flow volume on the outlet

Proportional solenoid valve-technique for operation mode continuous flow

- Prevents overload and burst danger of the Ex p- Enclosure caused by disturbances at the outlet

Ex i- operation panel BT851

- For ergonomically use and control of the Ex p- system



The connection to the control unit counts only 3- wire Display

- On-line text messages of operation and malfunction states
- States of pressure or flow are every time available
- Displays menu and messages as plain text
- Available Languages: German, English, French, Spanish, Dutch

Terminal specifications

- 2-pole potential free relays terminals Switching capacity 250 V~, 5A, $\cos \phi > 0,7$
- Integrated intrinsically safe interface for additional safety sensors
- Valve fuse is exchangeable, placed inside the control unit FS850S - no separate Exe- fuse box required
- The build-in spark lattice allows to let off the purge medium direct into the hazardous area

High operation safety

- Alarm messages on LC-Display
- Many years of Experience in pressurized enclosures according to 50016 made the development of this Ex p- system possible

Explosion protection: pressurized enclosure

The use of pressurized enclosures provides the operation of 'non Explosion protected' devices in hazardous areas of Zone 1, 21, 2 and 22. The protection type 'pressurisation' is based on the principle of maintaining a constant pressure using air or a protective gas to prevent an explosive mixture forming near the apparatus inside the pressurized enclosure. This is achieved by placing and operating the non Ex devices inside of an Ex p- housing. This housing has a small but constant overpressure of air or protective gas and prevents the infiltration of combustible gases or dusts. In Zone 1 / 2, the pressurized enclosure must be purged with air or protective gas to remove any Explosive mixture that may be inside the enclosure, before the protected devices are energized.

Ex p- system F850S

The pressurized enclosure system F850S contains at least the control unit FS850S and a solenoid valve. Each can be mounted in- or outside the enclosure. Furthermore several remote controls (operation panels) are available to improve ergonomics of operation. It is also possible to connect intrinsically safe sensors to the control unit FS850S. The pressurized enclosure system F850S operates in two different modes: Pressurisation using leakage compensation and Pressurisation using continuous flow of protective gas.

Leakage compensation

After purging, the control unit FS850S holds the pressure inside the enclosure on at least 0.8 mbar. The minimum and the maximum pressure of the housing are programmable and will be monitored.

The protective gas inlet is controlled in two different solenoid valve techniques: digital working solenoid valve (DSV) technique or proportional working solenoid valve (PSV) technique.

Advantages of pressure feedback control are:

1. Considerable less consumption of protective gas - higher costs for prop. valve will be amortised soon
2. Increased service reliability achieved by constant pressure inside enclosure - increasing leakage caused by e.g. ageing of the enclosure will be balanced and sudden failure will be prevented.
3. Almost no flow noise and only a small protective gas consumption using a solid enclosure.

Another advantage using a proportional solenoid valve is; that pressure control is used even during purging. A pre-defined pressure set-point controls exactly the housing pressure while the purging phase. This definite pressure conserves the pressure sensitive parts of the enclosure. Membrane switch panels or windows will not be overloaded.

Peripherals: Operating panels

The control unit FS850S has intrinsically safe in- and outputs to connect different safety components as well as operating and visualization panels: These operating and visualising panels are very advantageous, particularly if the control unit is mounted inside the enclosure:

1. Common panels: BT854.1 and BT855.1

- On/Off-Switch
- Key-operated switch for bypass
- LED-indicator for READY and ON

2. Intelligent operating panel type BT851

This operation panel indicates operation and malfunction reports as text messages. Using the 4 membrane switches offers total command of the control unit. Status, momentary pressure and flow rate as well as remaining purge time are always available.



Performance and service

The Ex p- system F850S is proved according to EN 60079 (BVS 06 ATEX E 088). The complete System, consisting of Ex p- housing - ignition- capable apparatus - Ex p- system F850S must be checked by an Ex pert of a notified body.

Malux Sweden AB (through Gönnheimer Electronic GmbH) offers you:

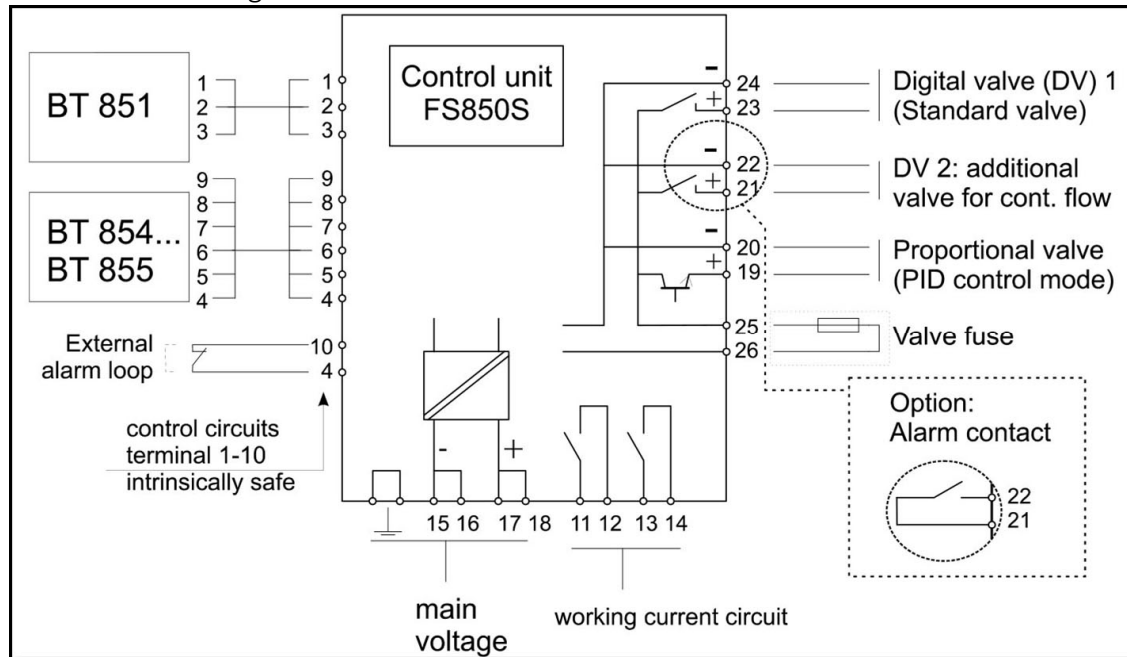
- System F850S - only the components
- System F850S inclusive construction and manufacturing of a custom Ex p- housing
- The **complete Solution**: System F850S with Ex p- housing and mounting of your apparatus inclusive system test and if valid certification by the **EC type certificate DMT 02 ATEX E 086 and IECEx BVS 12.0033 by DEKRA EXAM GmbH** (inclusive documentation and type sign) **We consult you gladly, free of charge and without obligation.**

Table

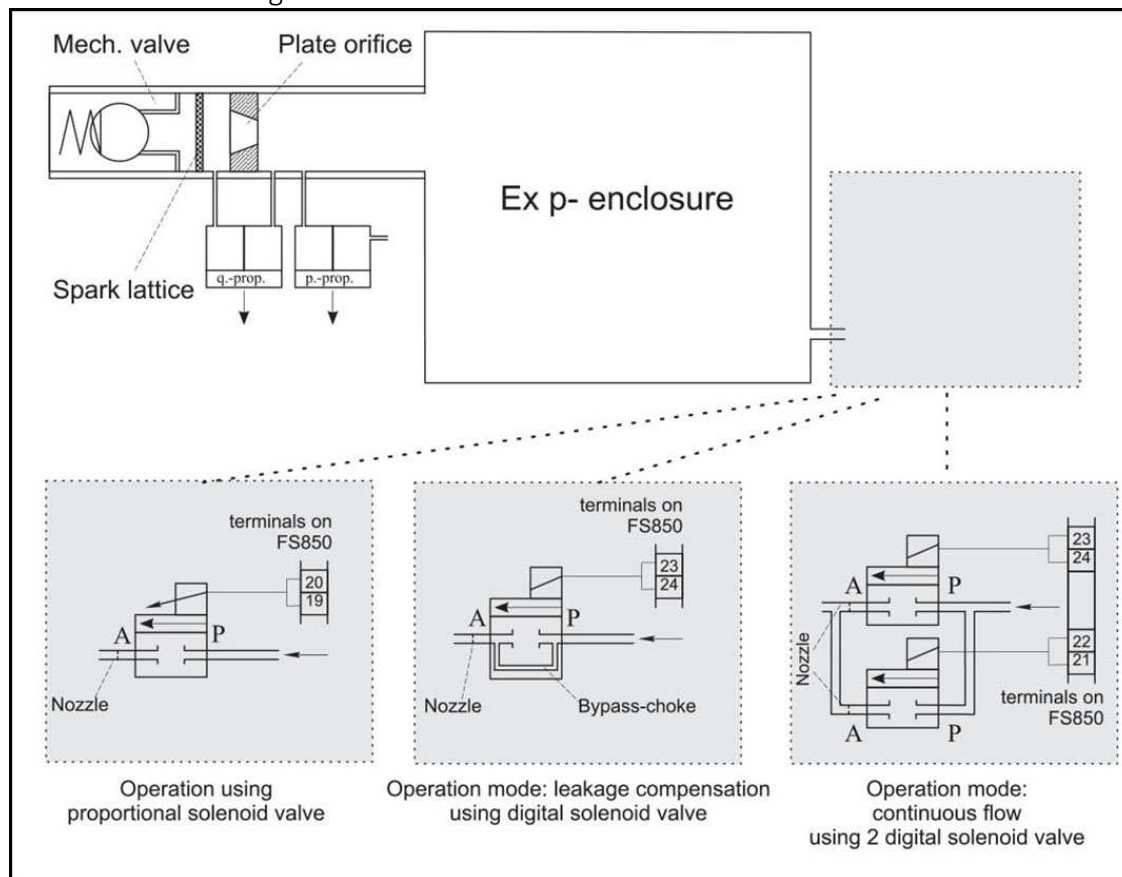
	Control unit FS850S	
General	Mounting	Inside Hazardous Area (Zone 1/21)
	Device group	II 2 G / D
	Ex- protection	II 2 G, Ex e mb ib [px] IIC T4 Gb
		II 2 D, Ex tb [ib] [p] IIIC T 70°C Db IP65
	EC- type examination certificate	DMT 99 ATEX E 003
		BVS 06 ATEX E 088
	Ambient temperature	-20°C ...+45°C at T6
		-20°C ...+60°C at T4
IEC- Ex certificate	IECEx BVS 12.0033	
Humidity	5-95%, non-condensing	
Housing	Dimensions	H x W x D: 220 mm x 120 mm x 90 mm
	Housing material	Aluminum, powder coated, RAL 7035
	Housing protection	IP65 (except purging gas in- and outlet)
	Purging gas in- and outlet	"G1" - inside thread"
Electrical specifications	Mains [V]	(according to type:) AC: 230V, 120V 24V, 48 ...62 Hz, DC: 24V
		+/- 10% Voltage tolerance
	Power consumption	About 2.5 VA (without peripherals)
	Potential free relay contacts (clamps 11/12, 13/14)	AC: max. 250V, 5A at cos (phi) > 0,7
		DC: max. 30 V, 5 A, 150 W
	Ex i- control inputs (Terminal 1..10)	Ex protection class: intrinsically safe EEx ib IIC
		see EC- type exam.cert. for further details
Max. cable diameter	2,5 mm ²	
Pneumatics	Pressure range	0 ... 18 mbar [hPa]
		extended pressure range on demand
	Flow range	0.14 bis zu 4.17 l/s, dependent on upon orifice plate size
	Air quality	pressured air class 533 according to ISO 8573-1
		= particle 40µm (class 5) / dew-point -20°C (class 3) / oil 1 mg/m ³ (class 3)
according to the demands of the buid-in devices inside the cabinet, the air quality should be better		
Ex p-configuration	Parameter input	Menu guided on LC-Display, several languages available: German, English, French, Dutch, Spanish

Block diagrams

Electrical block diagram



Pneumatic block diagram



Dimensions

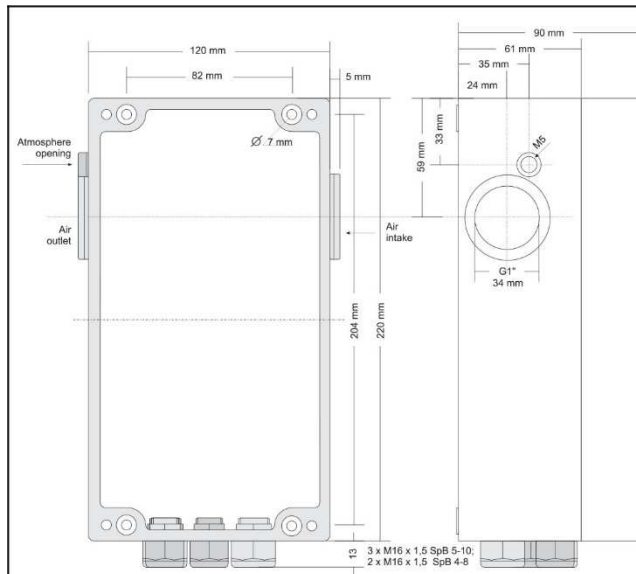


Figure 1: Dimensions FS850S

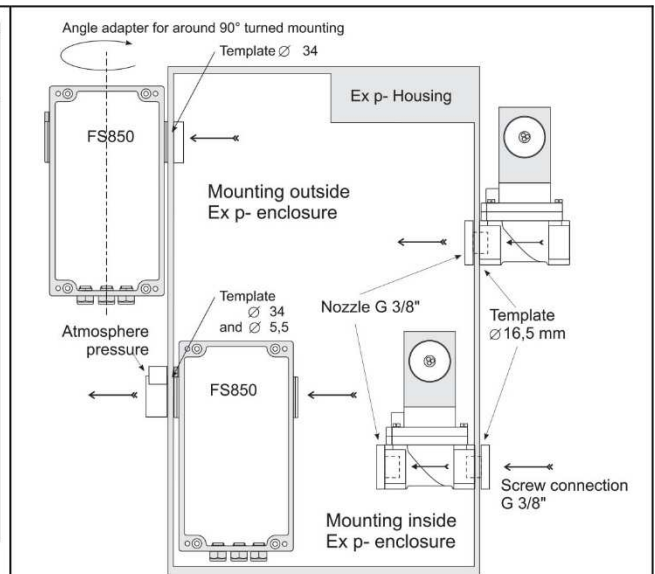


Figure 2: Mounting examples

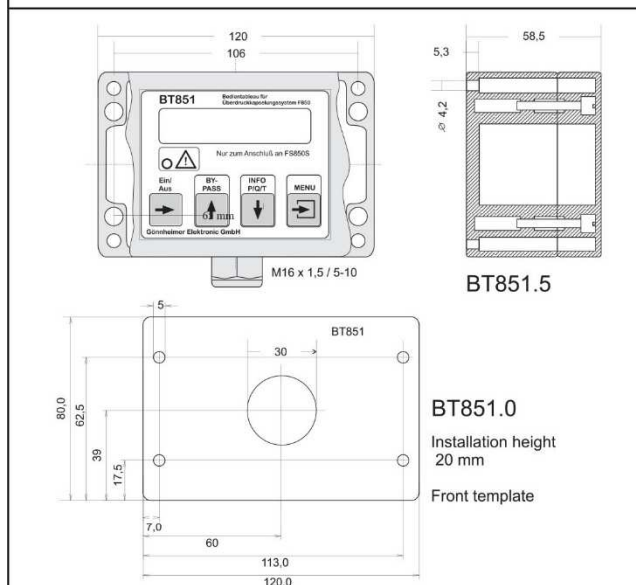


Figure 3: Dimensions and template BT851

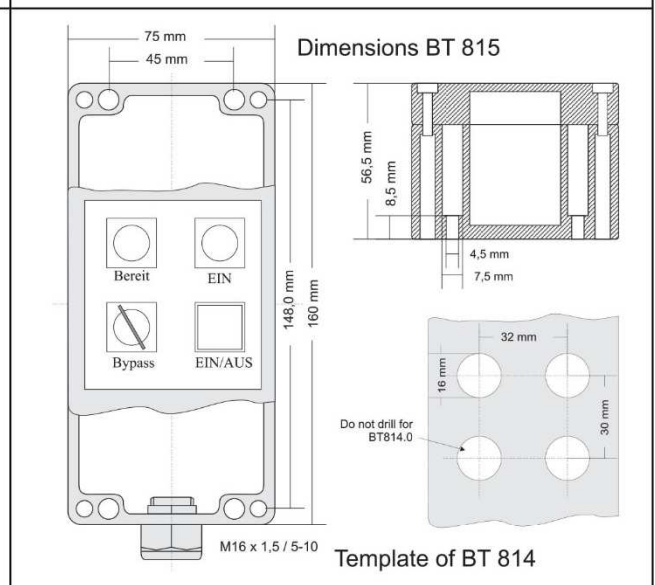


Figure 4: Dimensions BT855, template BT854

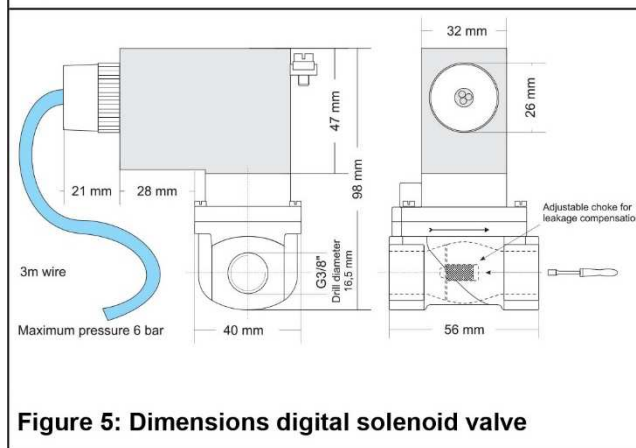


Figure 5: Dimensions digital solenoid valve

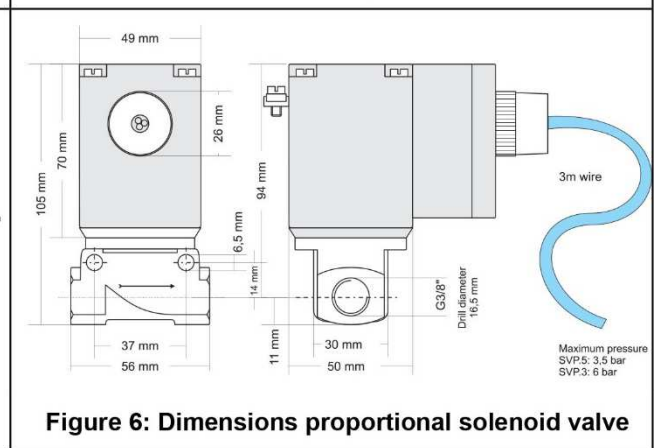


Figure 6: Dimensions proportional solenoid valve