

Pressurized Enclosure-system FS850S

Ex p-system for zone 1, 21, 2, 22
ATEX and IECEx
SIL 2 - safety level



Characteristics

Compact system, mounting inside hazardous area or inside Ex p-Enclosure

Ex-protection

- Ex px system for zones 1, 21
- Ex device group II 2 G/D
- BVS 06 ATEX E 088
- IECEx BVS 12.0033

Operating modes programmable

- Leakage compensation or continuous flow
- Digital valve or proportional valve

Ex p system with proportional pressure and flow sensors

- No membrane switches, no screws or potentiometers for setting pressure and flow switching points or purging times

High availability due to controlled overpressure and proportional valve

- High operational safety due to constant Ex p enclosure pressure
- No purge medium is wasted as only the required quantity is supplied
- Prevents sudden system shutdown due to age-related increase in the leakage rate of the Ex p housing
- Very low operating costs with a sealed housing, practically no flow noise during operation

Purging with pressure control

- Prevents overloading of sensitive housing parts, such as membrane keypads
- Purging volume is measured by integrating the discharge volume

Proportional valve technology for continuous purging mode

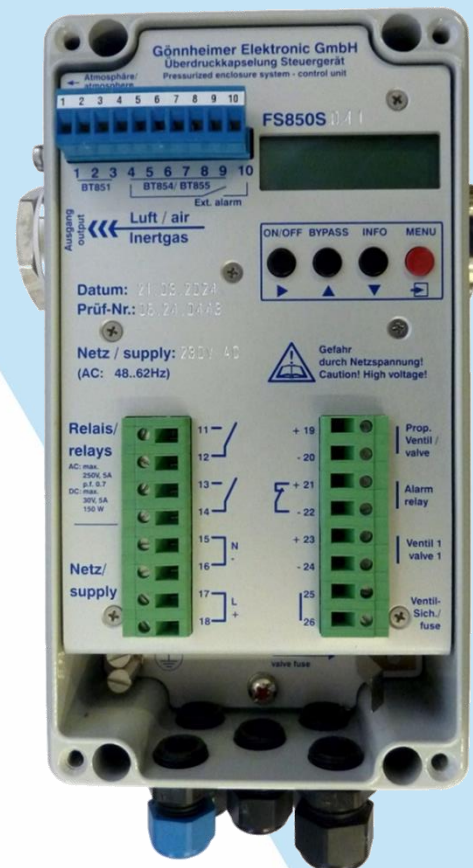
- Prevents overloading and risk of bursting of the Ex p enclosure in the event of faults at the outlet openings

Intrinsically safe control panel BT851

- Enables remote operation and visualization of the operating status of the Ex p system.
- Connection cable for controlling FS850S requires only 3 wires

Visualisation

- Online reporting of operating and error statuses in plain text



- System information such as pressure or flow rate can be called up on the display at any time
- Menu navigation and messages in plain text
- Language selectable: German, English, French, Spanish, Dutch

Connection specifications

- 2-pole potential-free switching contacts
- Switching capacity: 250 V~, 5A, cos phi > 0.7
- Intrinsically safe interfaces available for other safety-relevant sensors
- Replaceable valve fuse integrated in the FS850S control unit - no separate Ex e fuse box required
- Certified spark and particle barrier allows the purge air to escape directly into the hazardous area

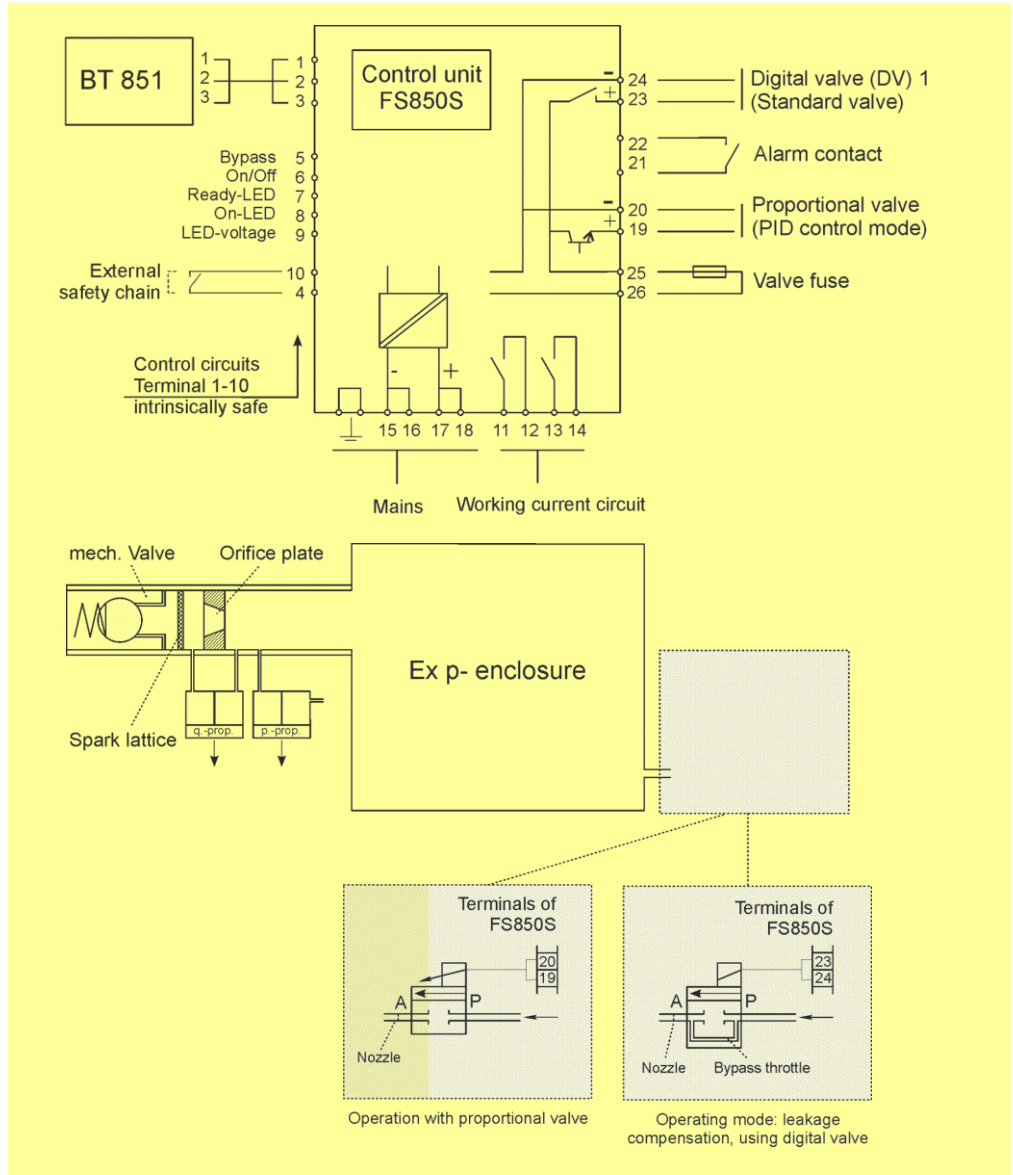
High safety standard

- Approved functional safety SIL 2 in accordance with IEC 61508
- Alarm on LC display in case of occurring errors

Control panel BT851

A control panel can optionally be connected to the FS850S control unit. The BT851 provides an LC display and four integrated buttons with which the FS850S can be fully operated. Current pressure and flow values, residual purge volume, appliance status, etc. are shown on the LC display.

Block diagrams



Electrical block diagram

Pneumatic block diagram

Technical data

		Control unit FS850S
General	Mounting	inside hazardous area
	Ex protection	II 2G Ex e mb [ib] [px] IIC T4/T6 Gb or Ex eb mb [ib] [pxb] IIC T4/T6 II 2D Ex tb [ib] [p] IIIC T70°C Db IP65 or Ex tb [ib] [pb] IIIC T 70°C IP65
	Ambient temperature	Standard: -20°C ...+45°C at T6 and -20°C ...+60°C at T4 High temperature HT: -20°C ...+70°C at T4
	Ex- Certificates	BVS 06 ATEX E 088 / IECEx BVS 12.0033
Housing	Dimensions	H x W x D: 220 mm x 120 mm x 90 mm
	Material	Aluminium, powder-coated, RAL 7035
	Enclosure Protection	IP65 (without consideration of the outlet opening)
	Purge gas inlet and outlet	G1" - inside- thread

	Tightening torque for cable glands and their cap nuts	M16 x 1,5, cable diameter 5-10 mm : 3 Nm M16 x 1,5, cable diameter 4-8 mm : 2 Nm
Electrical specifications	Connection voltages [V]	24VDC, 24VAC, 110 / 120VAC, 230VAC +/- 10% 48 .. 62 Hz
	Power consumption	approx. 2,5 VA without external load
	Working circuits terminal 11, 12, 13, 14	AC: $U \leq 250VAC$, $I \leq 5A$ at $\cos \varphi > 0,7$ DC: $U \leq 30 VDC$, $I \leq 5 A$, $P \leq 150 W$
	Ex i control circuits	see EC type examination certificate
Ex e terminals	Min. and max. tightening torque	min. 0,4 Nm max. 0,5 Nm
	Min. and max. wire cross-sections	rigid: 0,2 – 2,5 mm ² flexible: 0,2 – 2,5 mm ²
Pneumatic	Pressure range	18 mbar / 27 mbar / High pressure up to 1 bar on request
	Flow measuring range	depending on measuring orifice
Mounting	Installation position	Independent of position, care should be taken to ensure that the purge air inlet and outlet are on a horizontal axis
	Relative humidity	5 - 95 %, non-condensing
	Air quality	Class 533 compressed air according to ISO 8573-1 = solids 40µm (class 5) / dew point -20°C (class 3) / oil quality 1 mg/m ³ (class 3)
Configuration	Parameter input	via menu navigation on LC display, language selectable: German, English, French, Spanish, Dutch
Functional Safety	SIL characteristics	HFT = 1 device category 3 PFH = 170 FIT SIL 2

Orifice selection table

Orifice plate [mm]	Standard values for flow measuring range [m ³ /h]	Depending on the purging nozzle used in the inlet valve (flow rate), different measuring orifices are available for the FS850S control unit. It must be ensured that the difference between the incoming purge gas volume and the leakage losses of the housing is within the specified flow measurement range of the orifice plate.
4	0,5 ... 1,1	
6	1,1 ... 2,7	
10	2,5 ... 6,5	
14	6 ... 11	
18	9 ... 15	

Dimension drawings

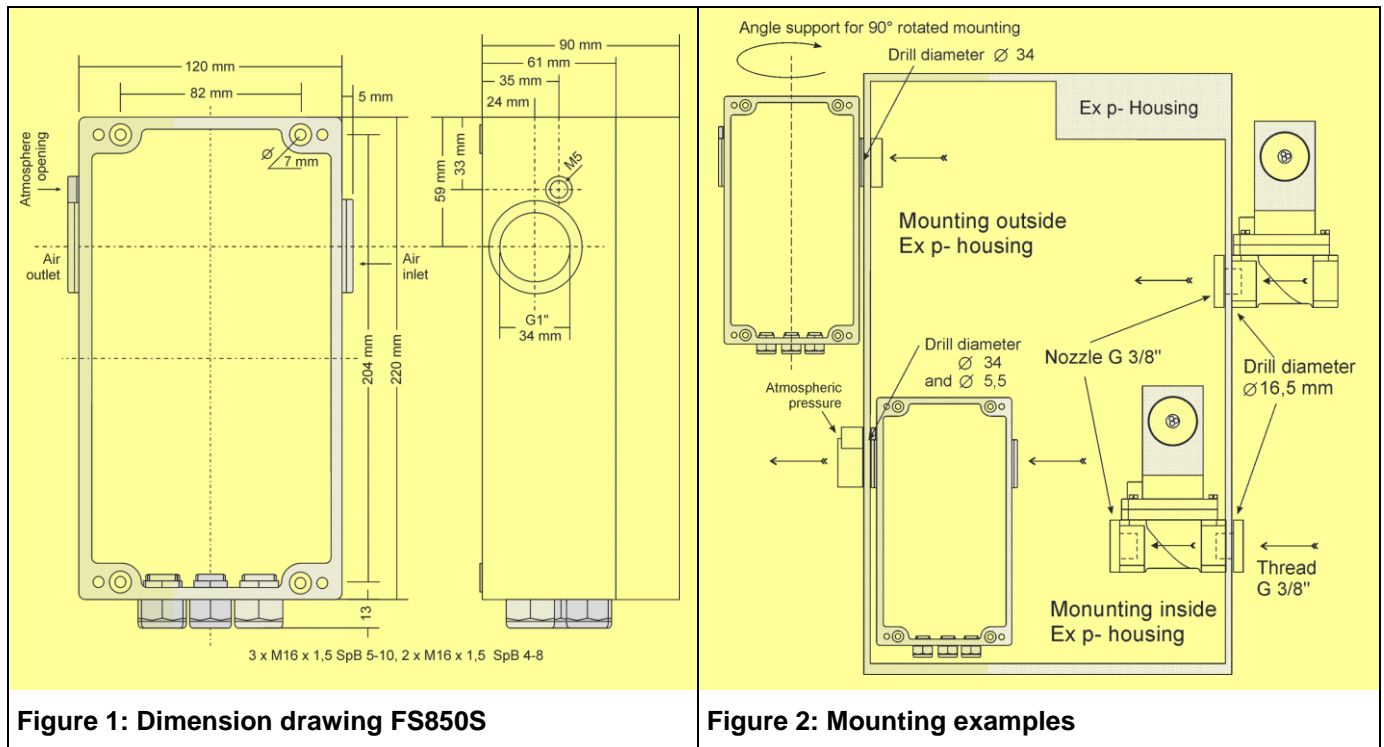


Figure 1: Dimension drawing FS850S

Figure 2: Mounting examples

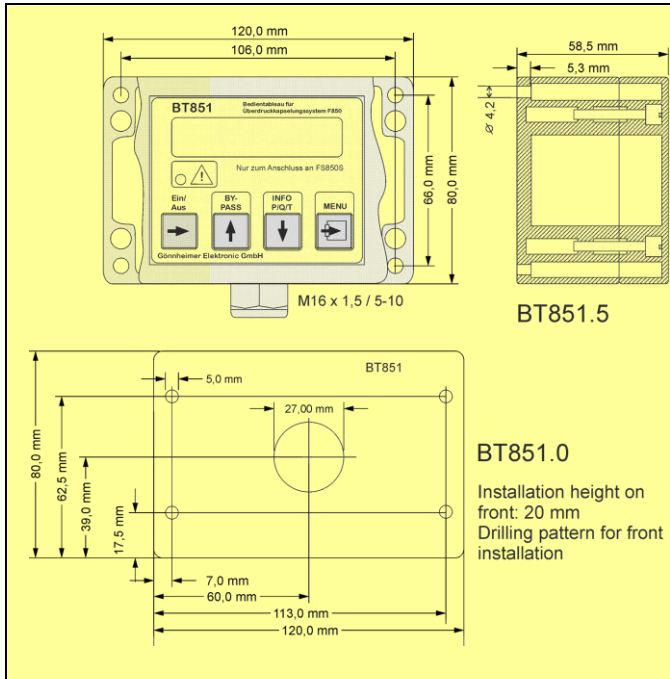


Figure 3:
Dimensional drawing and drilling template of BT851

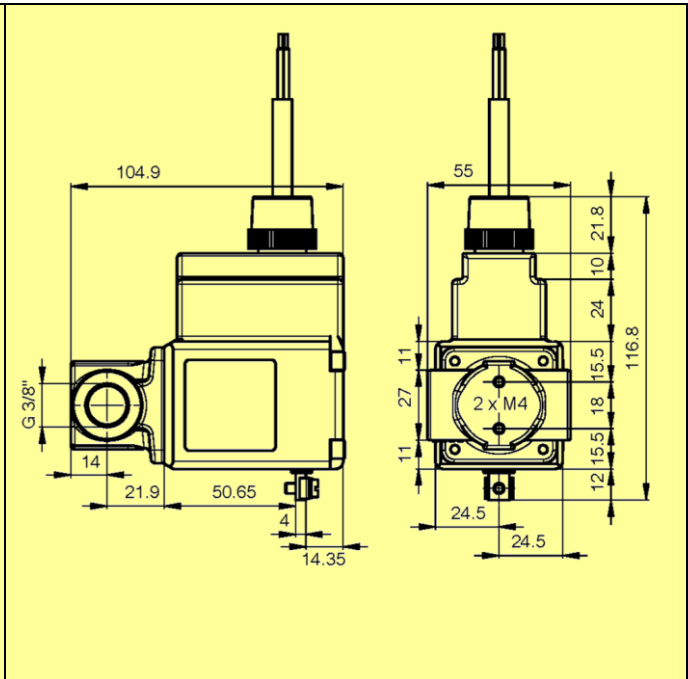


Figure 4:
Dimensional drawing of proportional valve

Type code

Control unit FS850S			
Mains Voltage: 230 VAC.....		.0	
110 - 120 VAC2	
24 VDC6	
Orifice plate: 4 mm; 0,5 ...1,1 m ³ /h.....		.0	
6 mm; 1,1...2,7 m ³ /h.....		.2	
10 mm; 2,5 ...6,5 m ³ /h.....		.4	
14 mm; 6 ...11 m ³ /h6	
18 mm; 9 ...15 m ³ /h8	
Terminal 21, 22 as signalling contact1

Optional: More robust design for extreme ambient conditions (TF design)

Accessories: Viewing window in the housing cover of FS850S (recommended if no control panel is used)

Purge valves

The following purging valves are available:
Proportional valves SVP2 for small housings, SVP3 for medium-sized housings up to 300 l and SVP5 for large housings from 300 l. It is also possible to use a digital valve SVD. The maximum ambient temperature of these valves is 40°C. The SVP3-AI valve can be used up to 60°C.

Ex fuse selection for purging valve
(Ex-version)

Supply	SVP.3/5	SVD / SVP.3-AI	SVP.2
220, 230 VAC	200 mA	100 mA	100 mA
110, 120 VAC	315 mA	200 mA	160 mA
24 VAC/VDC	1,6 A	1 A	630 mA

Ordering codes for Ex fuses
(Ex-Version)

100 mA	SI850.0	630 mA	SI850.5
160 mA	SI850.1	1000 mA	SI850.6
200 mA	SI850.2	1600 mA	SI850.7
315 mA	SI850.3	2000 mA	SI850.8
500 mA	SI850.4		

The Ex fuses for the purging valve must be ordered separately.

Control panel	BT851.x
Intelligent control panel, Ex ib IIC T6, for front panel installation	BT851.0
Intelligent control panel, Ex ib IIC T6, in surface-mounted housing IP65	BT851.5



**Gönnheimer
Elektronik GmbH**

<http://www.goennheimer.de> Email: info@goennheimer.de



Dr.-Julius-Leber-Straße 2
67433 Neustadt/Weinstraße
Postfach 10 05 07
67405 Neustadt
phone: +49 (6321) 49919- 0
fax: +49 (6321) 49919 - 41