

Description

The FC01-Ex has been designed to provide monitoring, detection and indication of flow speed, flow volume and medium temperature of liquids, gases and powders.

The FC01-Ex meets the requirements of EC directive 94/9/EG (ATEX 100a) in combination with the calorimetric monitoring head CST-Ex...

The flow meter has been designed for use outside of explosive atmospheres. Only CST-Ex is installed in Zone 0 or Zone 20.



FC01-Ex

EC-type-examination Certificate to EN 60079-0: 2006, EN 60079-11: 2007, EN 61241-0: 2006, EN 61241-11: 2006
 ignition protection type II (1) G [Ex ia] IIC
 II (1) D [Ex iaD]

Features

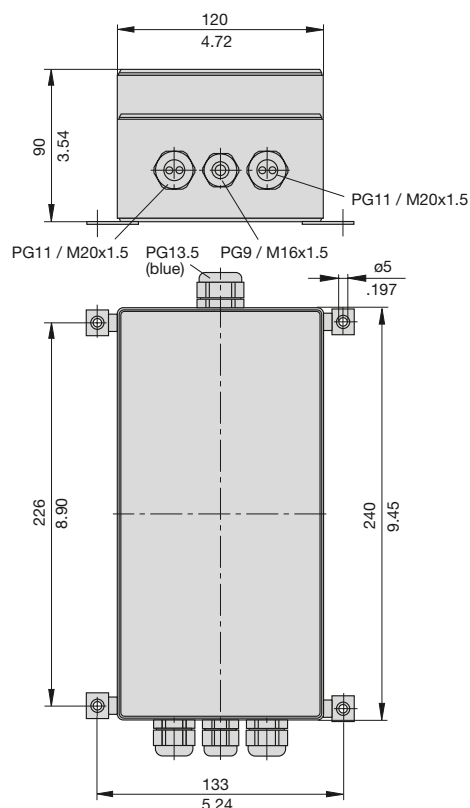
- Menu driven (keypads)
- LCD-display (2 x 16 digits):
 - indication of actual flow velocity, volume flow, temperature
 - bargraph status indication of limit contacts, actual flow velocity/flow quantity or temperature
 - directions for parameter assignment, configuration, diagnosis and error correction
 - peak value indication
- Two scalable analogue outputs
- peak value memory (MIN + MAX)
- Two freely selectable limit contacts
- Quantity related pulse output - counter connection/transistor drive.

Ordering information

Type	
FC01-Ex	Flow Meter, surface mounted (IP54)
	Input voltage
	U1 DC 24 V (19 ... 32 V)
	Signal outputs
	R2 2 relay outputs (2 limit values)
	T4 4 transistor outputs (2 limit values + 2 status or 2 limit values + 1 status + 1 pulse output)
	Analogue outputs
	V1 0/1- 5 Volt
	V2 0/2-10 Volt
	C1 0/4-20 mA (self-powered, physically isolated)
	Certification
	T5 approval to EC directive 94/9/EG (ATEX 100a) *)
	Specification of medium
	xxx
FC01-Ex - U1 R2 V1- T5 ...	ordering example

*) for detailed information please see section 0.

Dimensions FC01-Ex (surface mounted)

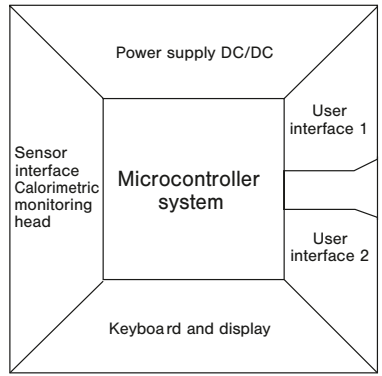


This is a metric design and millimeter dimensions take precedence ($\frac{mm}{inch}$)

TECHNICAL DATA

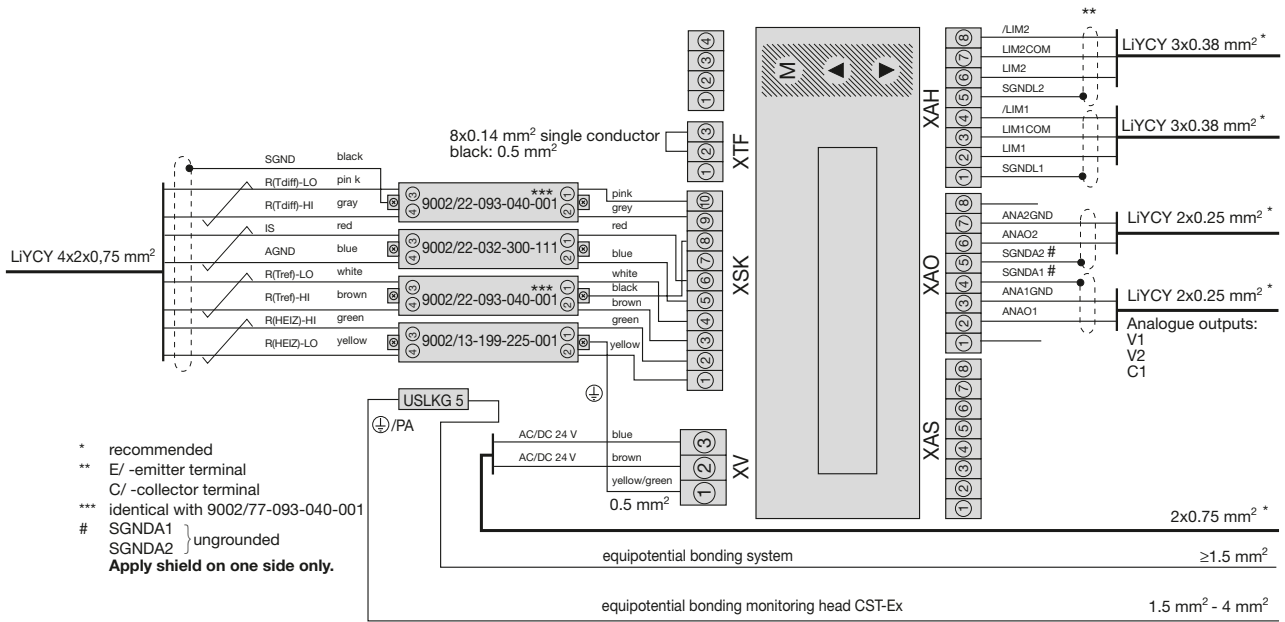
Flow Meter FC01-Ex		with CST-Ex calorimetric monitoring head	
General Data			
Suitable for		water, air, other media (please enquire)	
Measuring function		flow velocity, volume flow, temperature	
Display		2 x 16-digit LC-display	
Parameter assignment, calibration by		keypads	
Temperature range (electronic control unit in circulating air)		+10 ... +43 °C/+50 ... +109 °F (ambient temperature)	
Electrical data			
Input voltage		DC 24 V (19 ... 32 V)	
Current consumption (U _v = 24 V DC)		170 mA / 200 mA *	
Analogue output (flow and temperature)		0/4-20 mA or 0/2-10 V or 0/1-5 V	
Signal outputs	2 relay outputs (2 limit values)	2 SPDT contacts AC/DC 50 V/1 A/50 W	
	4 transistor outputs (2 limit values + 2 status or 2 limit values + 1 status + 1 pulse output)	open collector outputs DC 36 V/150 mA/1,5 W	
Flow measurement			
Measuring range (display range)	water	oil	0,05 ... 3 m/s (0 ... 3,3 m/s) 0.164 ... 9.84 fps (0 ... 10.8 fps)
	air		0,1 ... 20 m/s (0 ... 22 m/s)/0.328 ... 65.6 fps (0 ... 72.2 fps)
Accuracy ⁽⁵⁾ (related to velocity available at sensor)	water, oil	< ± 5 % of measured value (higher accuracy on request)	
	air	< ± 5 % of measured value (higher accuracy on request)	
Repeatability ⁽¹⁾	water, oil	< 1 % of measured value	
	air	< 1 % of measured value	
Temperature drift (electronic control unit)	water, oil	0,35 %/°C/measuring range final value 0,63 %/°F/measuring range final value	
	air	0,1 %/°C/measuring range final value 0,18 %/°F/measuring range final value	
Response delay	water ⁽²⁾ , oil	2,5 s	
	air ⁽³⁾	3 s	
Temperature measurement	measuring range	-40 ... +130 °C/-40 ... +266 °F	
	accuracy	± 1,5 % of measuring range	
Mechanical data (surface-mounted housing)			
Degree of protection		IP54	
Material		polycarbonate	
Housing dimensions (LxWxH)		240 x 120 x 90 mm/9.45 x 4.72 x 3.54 in.	
Weight		1750 g/3.86 lb	
Cables	voltage supply	3x0,75 mm ² (AWG 18)	
	to monitoring head	LiYCY 4 x 2 x 0,75 mm ² (AWG 18), light blue	
	analogue output	2 x LiYCY 2 x 0,25 mm ² (AWG 24)	
	signal outputs	LiYCY 4 x 2 x 0,2 mm ² (AWG 24)	
	Equipotential bonding	≥ 1,5 mm ² (H07V-k 1,5 mm ²) (AWG 26)	
Max. cable length to monitoring head		200 m/656 ft ⁽⁴⁾	
<p>* With output C2, the current consumption may be up to 230 mA ± 10 %.</p> <p>⁽¹⁾ at constant temperature and flow conditions, and stable thermal conductivity</p> <p>⁽²⁾ Delay with the switch point set to 1 m/s / 3.28 fps and the flow at 2 m/s / 6.56 fps, after a sudden complete stop.</p> <p>⁽³⁾ Delay with the switch point set to 10 m/s / 32.8 fps and the flow at 20 m/s / 65.6 fps, after a sudden complete stop.</p> <p>⁽⁴⁾ Mind the equipotential bonding, shield resistance max. 1 Ω (see connection diagram)</p> <p>⁽⁵⁾ The accuracy values were determined under ideal conditions:</p> <ul style="list-style-type: none"> - symmetrical complete flow profile - correct mounting in the pipe - inlets and outlets according to EN ISO 5167-1 			

Block diagram

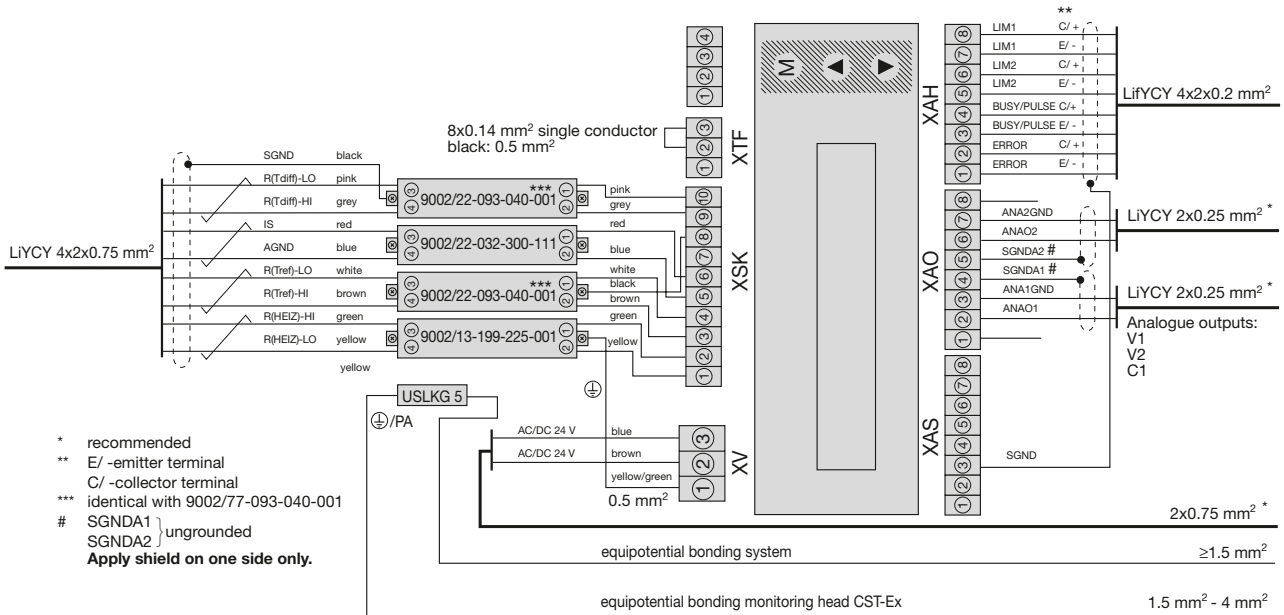


- Input voltage: DC 19 ... 32 V
- Keyboard/display: keypads
LC display
2 x 16 digits
- User interface 1: relay outputs: 2 limit values
transistor outputs: 2 limit values +
1 error indication +
1 busy or quantity-related pulse output (software selected)
- User interface 2: analogue outputs
current or voltage
- Controller system: signal processing
I/O - controlling monitoring
parameter memory
- Sensor interface: calorimetric monitoring head

Connection diagram FC01-Ex for relay and analogue outputs V1, V2, C1

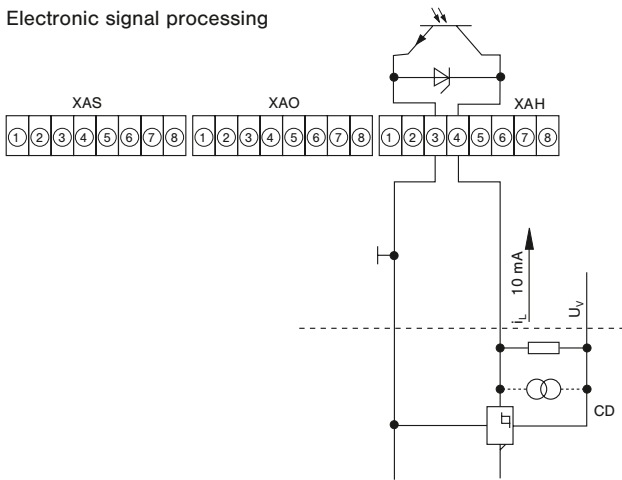


Connection diagram FC01-Ex for transistor and analogue outputs V1, V2, C1

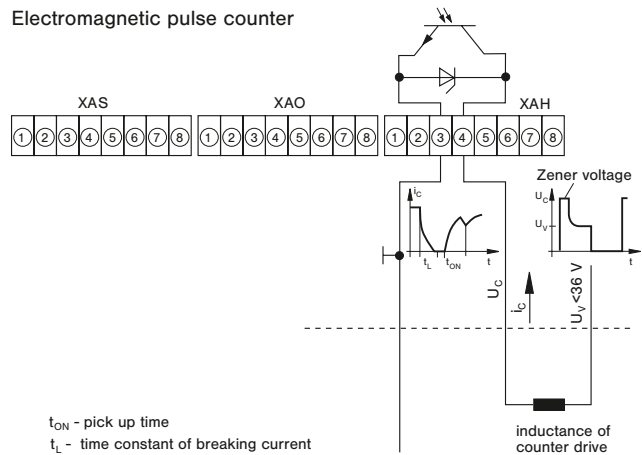


Recommended connection of pulse output

Electronic signal processing



Electromagnetic pulse counter



The FC01-Ex should only be used with monitoring head CTS-Ex..., i.e. the electronic control unit and the monitoring head are supplied as a package.

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.