SU-01

Ultrasonic Flowmeter and Switch

- **Low pressure drop**
- **Two setpoints**
- **Window technology**
- **Optional analogue output**
- **7-segment LED display**
- **Self-monitoring**
- **No inflow and outflow lines**

Description:
The SU-01 series of flowmeters and switches operates according to the method of ultrasonic runtime difference. Two ultrasonic elements function alternatively as transmitter and receiver with the result that a sound signal is accelerated by the flow once as positive and the next as negative. The difference in the time that the signal requires to cover the stretch of measurement is directly proportional to the mean velocity of flow. Consequently, the microprocessor-controlled electronics are capable to calculating the volume of flow on the basis of the known inner diameter of the measuring tube. Depending on the option, this value is displayed on a well-illuminated 7-segment display in l/min, m^3/h, gpm or gph. Two transistor switching outputs can be set as NC-contact or NO-contact and freely programmable in regard to their position, hysteresis and function. Also switching action in window technology is possible. A start-up bridging can be selected between 0 and 99.9 seconds, so also staggering of switching on or off for switching outputs between 0 and 9.9 seconds. If the device is provided with an analogue output, this can be intercepted through software and the flow range can be assigned freely to 4 and 20 mA values.
The SU-01 has an adjustable keypad lock. It is stable for long periods, vibration and shock-proof and its display unit can be rotated in 90° steps.

Range of application:
The new SU-01 flowmeter offers all the advantages of comfortable, accurate and stable flow measurement and monitoring at negligible pressure drop and minimal requirements for inflow and outflow lines. It is well-suited for water and water-like media in the temperature ranges of +4°C to +130°C and pressure levels up to 25 bar. The pricing of the SU-01 product group is far below that of the magnetic-inductive flowmeters. Therefore, the user is enabled to cost-effectively cover such applications which require very low pressure drop over the measuring device and, as much as possible, rule out any moving parts in the measuring system. The high speed of sensor response and the wide range of measurement are the other advantages that make the SU-01 surpass its mechanical siblings. The standard delivery package includes also a peak value memory that can be erased in the operating menu.

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Versions:

In the basic version, the SU-01 is provided with two transistor switching outputs which can be adjusted independent of each other. The position of setpoints, start-up bridging, stagger time and hysteresis can be selected freely. In the next assembly level an additional 4...20 mA output is available which can be intercepted through software and its assignment to flow values can be done while setting the parameters for the device.
Optionally, an impulse output is available.

Operating range: Five different measuring tubes are available that cover the operating ranges 0.04...10 l/min to 0.68...170 l/min. The process connection depends on the size of the selected measuring tube and it can be either G3/4" male, G1" male, G11/4" male or G2" male.

Technical specifications:

Measuring medium:	water and water-like media (without air pockets or particles)
Operating ranges:	10 l/min, 25 l/min, 40 l/min, 100 l/min or 170 l/min
Process connections:	G3/4"-male, G1"-male, G11/4" male, G2" male depending on operating range
In and outflow lines:	integrated into measuring body
Wetted parts:	pressed brass
Electronics housing:	aluminium pressure casting
Seals (Medium):	Klingersil
Keypad:	polyester
Operating elements:	3 press-keypad with perceptible pressure point
Pressure:	25 bar max.
Media temperature:	+4°C...+130°C for separate mounting
Electronics temp.:	-10°C...+70°C
Storage temp.:	-30°C...+80°C

Ordering codes:

Ordering number: **SU-01. | 2. | 1. | 0.**

Ultrasonic Flowmeter and Sensor

Version:
1 = with 2 switching contacts
2 = with 2 switching contacts and analogue output

Operating range:
1 = 0.04...10 l/min with G3/4" connections
2 = 0.1...25 l/min with G3/4" connections
3 = 0.16...40 l/min with G1 " connections
4 = 0.4...100 l/min with G11/4" connections
5 = 0.68...170 l/min with G2" connections

Options:
0 = without
1 = counter plug M12 x 1, 4-pol. or 5-pol.

Linearity error:	+/- 2.5% of measured value at 25°C
Temperature effect:	+/- 0.2% of measured value per 10K
Compensated range:	-10°C...+70°C
Repeatability:	+/- 0.1% of measured value
Scan rate:	500 ms (for peak value memory)
Dimensions:	100 x 140 mm
Weight:	3/4" variant 850 g, 1" variant 1200 g, 11/4" variant 3000 g, 2" variant 4000 g

Electrical specifications:

Supply voltage:	15...32 V DC, polarity-reversal-proof
Power consumption:	approx. 50 mA no load
Protection class:	IP65 / III
El. connection:	plug M12x 1, 4-/5-pole
Display rate:	500 ms
Digital display:	4-digit 7-segment LED display, height of digits 12 mm, red
Error display:	LED yellow and as normal text in the display

Transistor switching outputs:

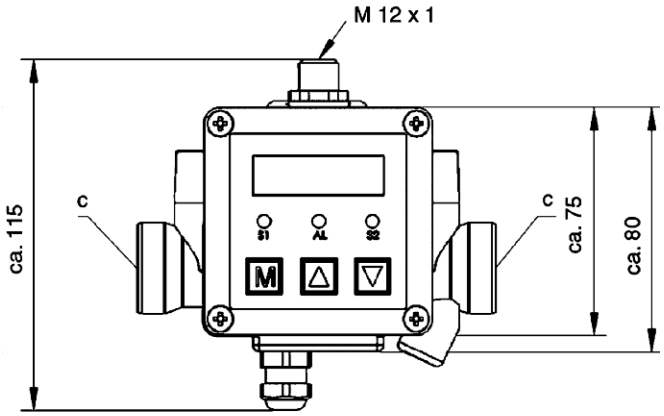
Switching function:	NO-contact / NC-contact, adjustable standard- / window technology, adjustable
Adjustment range:	0...125% of measured value
Reset hysteresis:	0...125% of full scale value
Switching frequency:	max. 100 Hz
Switching current:	max. 500 mA, short-circuit-proof
Stagger time:	0.0...9.9 s, adjustable
Start-up bridging:	0.0...99.9 s, adjustable
Display:	LED(s) green

Analogue output:

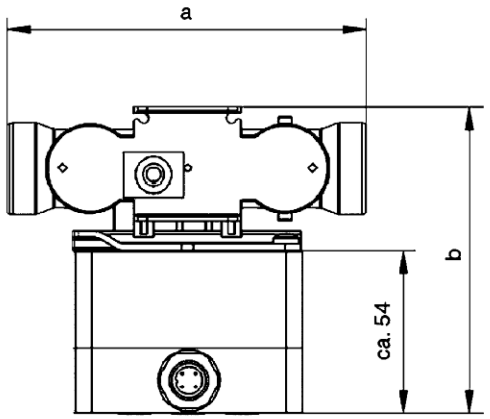
Rate of updating:	500 ms
Resolution:	10 bit
Power output:	4...20 mA
Load:	max. Rl = (Ub-12 V) / 20 mA
Load effect:	0.3% / 100 Ohm
Option:	voltage output 0...10 V DC, max. 10 mA, short-circuit-proof adjustment range 25%...100% of full scale value

Impulse output: on request

Dimensions [in mm]



Type	Dimensions	a	b	c
SU-01.x.1	0…10 l/min	110	100	G 3/4
SU-01.x.2	0…25 l/min	110	100	G 3/4
SU-01.x.3	0…40 l/min	190	100	G 1

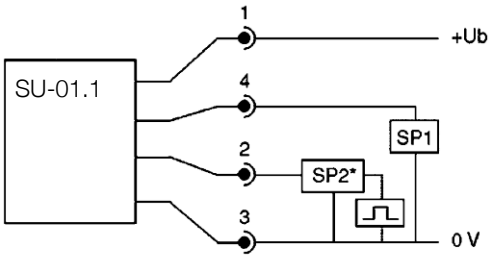


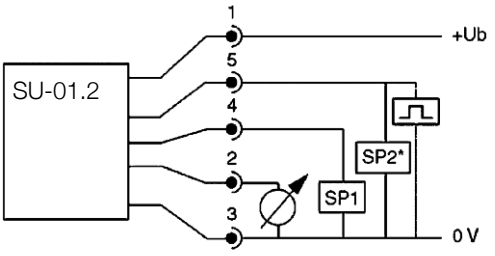
Type	Dimensions	a	b	c
SU-01.x.4	0…100 l/min	260	130	G 11/4
SU-01.x.5	0…170 l/min	300	135	G 2

Table of connections

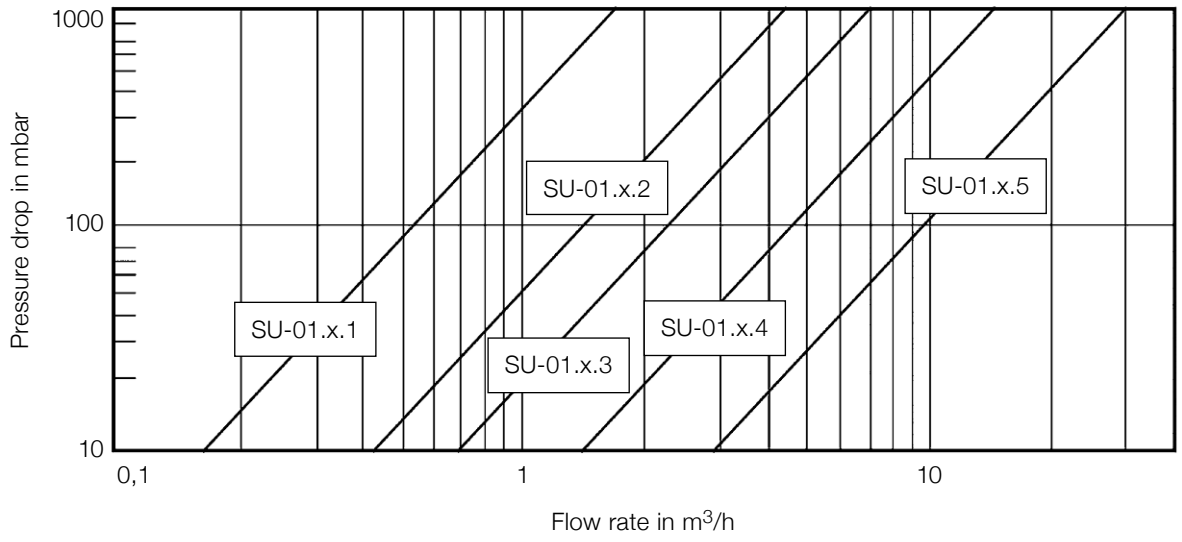
Device plug M12x1, 4-pole	Version with 2 switching outputs	Version with 2 switching outputs and 1 analogue output
Pin 1	+UB (15…32 V DC)	+UB (15…32 V DC)
Pin 2	SP 2 (0.5 A max)	analog
Pin 3	0 V	0 V
Pin 4	SP 1 (0.5 A max)	SP 1 (0.5 A max)
Pin 5		SP 2 (0.5 A max)

Connection layout





Pressure drop



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