

## Description

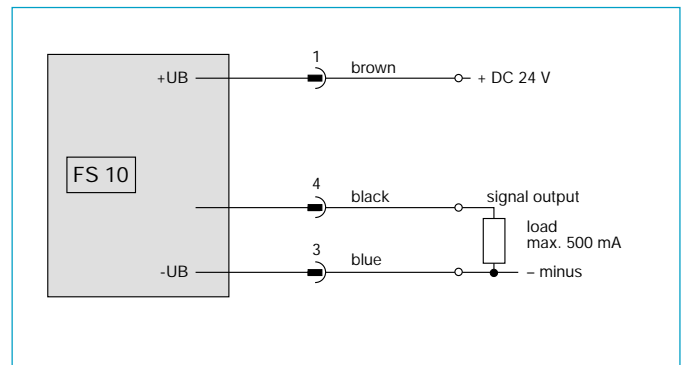
Compact single point flow monitor, MIN or MAX monitoring options, suitable for water, oil, air or media with similar thermal conductivities. With screw-in or plug-in type monitoring head for ease of installation and correct positioning. If the flow rate falls below (MIN) or exceeds (MAX) the pre-adjusted value, the signal output will be switched and the yellow LED will light.



## Features

- wear-resistant compact design, with stainless steel 1.4571 monitoring head and housing
- switch point steplessly adjustable by means of potentiometer
- media temperature range  $-25^{\circ}\text{C} \dots +100^{\circ}\text{C}$
- M12 plug-in electrical connection
- LED fault indication
- signal output with HighSide-FET output
- protected against short circuits and overloads

## Connection diagram FS10



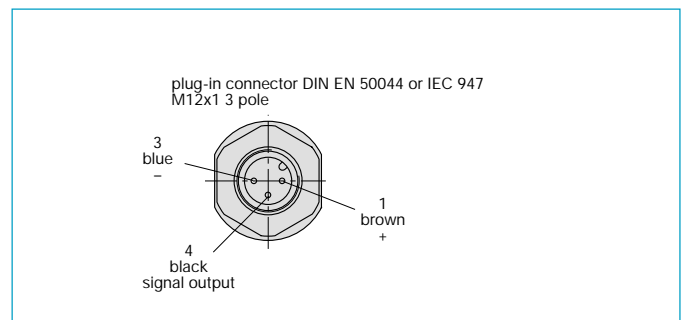
## Ordering information

<b>Flow monitor (calorimetric)</b>	
FS10	flow monitor and integral compact housing
<b>Power supply</b>	
U1	DC 24 V
<b>Flow switch point</b>	
MIN	
MAX	
<b>Process connection</b>	
01	G1/2A (to DIN 3852-A), length 36 mm
02	1/2" - 14NPT, length 36mm
11	plug-in type (following DIN ISO 6149), length 18.2 mm
<b>Media</b>	
A	air
W	water
S	others (e.g. oil) upon request
<b>Fitting material</b>	
M1	stainless steel 1.4571
<b>Electrical connection</b>	
E12	M12x1, 3 pole
<b>Certification</b>	
T0	without certificate (standard) *)

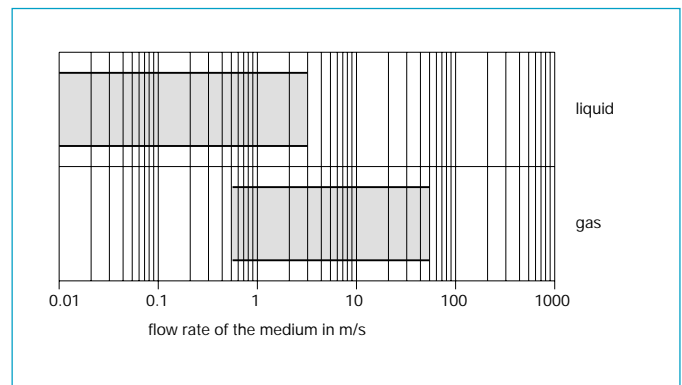
FS10 - U1 MAX 01 W - M1 E12 T0    ordering example

\*) see page 301 for information on certificates.

## Electrical Connection



## Flow rate ranges



## Technical Data (ambient temperature $T_U = 25\text{ °C}$ , operating voltage $U_B = \text{DC } 24\text{ V}$ )

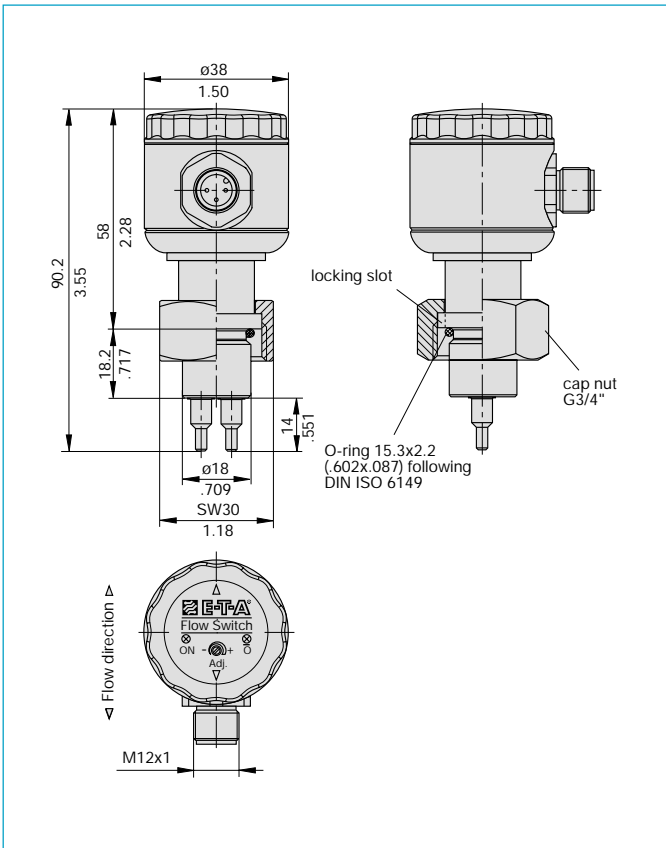
General data		FS 10
Media		liquids, gases
Monitoring function	flow speed	switch point (min/max)
	fault indication	LED (yellow)
	signal output	Power Fet, High Side switch, short circuit proof
max. load		500 mA, inductive load max. 100 mA
Temperature range	media	-25 °C...+100 °C
	ambient	-25 °C...+ 60 °C
<b>Electrical data</b>		
Operating voltage $U_B$		DC 24 V (18...32 V)
Power consumption (without load)	gases	28 mA $\pm$ 5%
	liquids	57 mA $\pm$ 3%
Status indication		LED (green)
Connection to DIN 50044		M 12 plug-in connection, 3 pole
<b>Flow monitoring</b>		
Flow response level adjustment	air	0.5...50 m/s
	water, oil	0.01...3 m/s
Repeatability <sup>(1)</sup>		$\leq \pm 3\%$
Response delay	water	typ. 2 sec <sup>(2)</sup>
	air	typ. 8 sec <sup>(3)</sup>
	oil	typ. 4 sec <sup>(2)</sup>
Switch point drift through temperature change of the medium		approx. $\pm 1.0\%$ /°C
<b>Mechanical data</b>		
Type and size of monitoring head	plug-in	following DIN ISO 6149
	screw-in	G 1/2 A
Pressure resistance of monitoring head	plug-in	100 bar
	screw-in	100 bar
Degree of protection		IP67
Materials (standard)		
	fitting (wetted)	stainless steel 1.4571
	sensor (wetted)	stainless steel 1.4571
	connection sensor/fitting	laser welded
	housing	stainless steel 1.4571
	M12 connector	CuZn, nickel-plated
	cap	PA
Mass		approx. 240 g

<sup>(1)</sup> of the set value, at constant temperature and flow conditions, and stable thermal conductivity

<sup>(2)</sup> delay with the switch point set to 1 m/s and the flow at 2 m/s, after a sudden complete stop

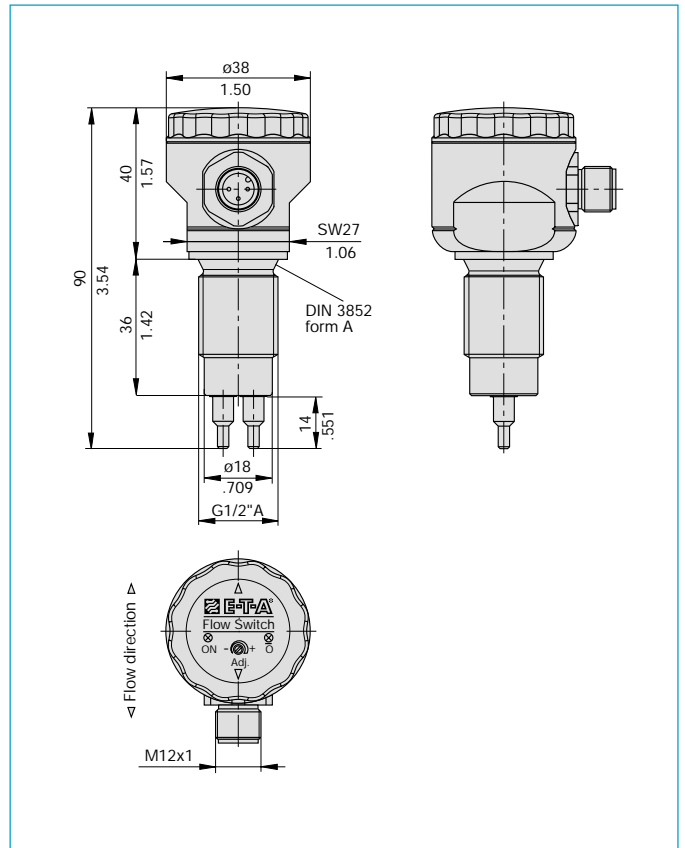
<sup>(3)</sup> delay with the switch point set to 10 m/s and the flow at 20 m/s, after a sudden complete stop

**Dimensions of plug-in type process connection**



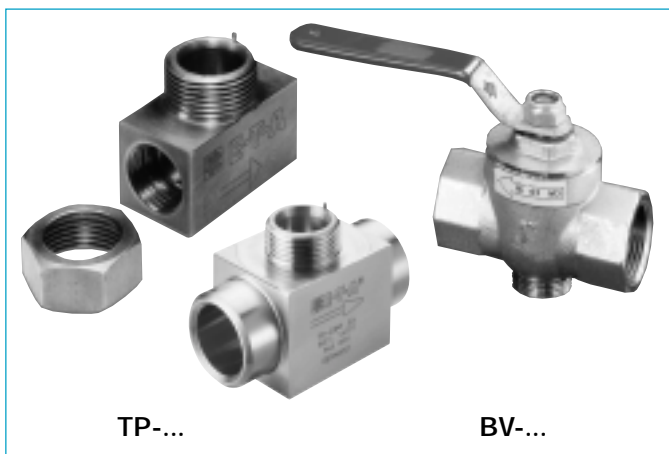
This is a metric design and millimeter dimensions take precedence ( $\frac{mm}{inch}$ )

**Dimensions of screw-in type process connection**



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.

## Sensor adapter TP-.../Ball valve BV-...



TP-...

BV-...

## Description

Sensor adapter TP facilitates correct positioning of CSP monitoring heads and Flow Monitor FS 10.

Ball valve BV enables pressure-free installation or removal of CSP monitoring heads and Flow Monitor FS 10 simply by closing the input and output pipe.

The measuring points are suited to temporary measurements; after completion of the measuring cycle they can be closed by means of blanking plugs.

## Features

- Correct positioning of sensor
- Ease of sensor replacement
- Measuring point can be closed if not used
- Sensor adapter available as screw-in or welding type
- Ball valve also serves as a shutoff valve (both input and out output)

## Ordering information

Type	
BV	ball valve for FS 10, internal thread
Process connection/Nominal size	
03	DN 25 G1A internal thread length: 88 mm
04	DN 32 G1 1/4A internal thread length: 100 mm
05	DN 40 G1 1/2A internal thread length: 110 mm
06	DN 50 G2A internal thread length: 131 mm
Material of the area exposed to medium	
M3	nickel plated brass

BV - 03 M3 ordering example

## Ordering information

Type	
TP	Sensor adapter for FS 10, with internal thread
Process connection/Nominal size	
01	DN 15 G1/2A internal thread length: 50 mm
02	DN 20 G3/4A internal thread length: 64 mm
03	DN 25 G1A internal thread length: 78 mm
04	DN 32 G1 1/4A internal thread length: 94 mm
05	DN 40 G1 1/2A internal thread length: 110 mm
06	DN 50 G2A internal thread length: 138 mm
Material of the area exposed to medium	
M1	stainless steel 1.4571/AISI 316Ti
M3	brass
M5	red brass (only TP-03..)

TP - 01 M3 ordering example

## Accessories

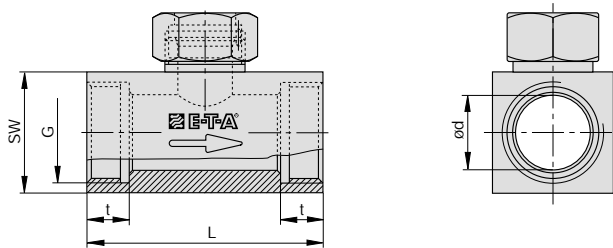
Description	Ref. No.
Blanking plug, brass, with O ring	OZ121Z000186
Union nut, brass	Y 306 901 01
Blanking plug, stainless steel 1.4571/AISI 316 Ti, with viton O ring	OZ121Z000187
Union nut, stainless steel	Y 306 901 02

Type	
TP	Sensor adapter for FS 10, with welding nipples
Process connection/Nominal size	
01	DN 15 G1/2A length: 50 mm
02	DN 20 G3/4A length: 70 mm
03	DN 25 G1A length: 80 mm
04	DN 32 G1 1/4A length: 100 mm
05	DN 40 G1 1/2A length: 110 mm
06	DN 50 G2A length: 140 mm
Material of the area exposed to medium	
M1	stainless steel 1.4571/AISI 316Ti
Process connection	
SA	welded connection

TP - 01 M1 - SA ordering example

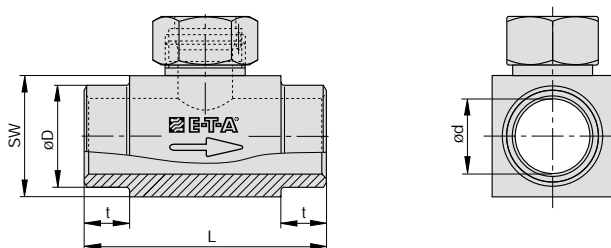
## Dimensions

### TP-... Sensor adapter with internal thread PN 16 bar / 235.2 PSI



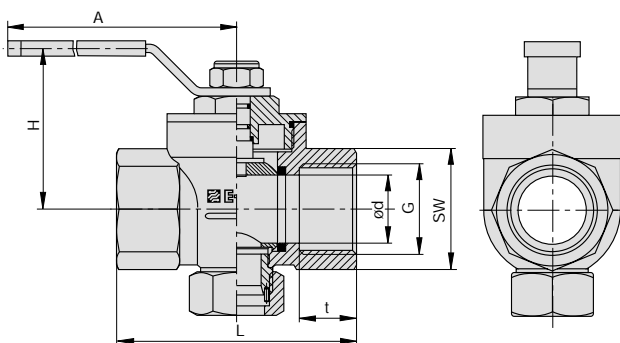
Type	DN		dia. d		G	t		L		SW	
	mm	in.	mm	in.	in.	mm	in.	mm	in.	mm	in.
TP-01 ...	15	.591	16	.630	1/2"	11	.433	50	1.97	27	1.06
TP-02 ...	20	.787	20	.787	3/4"	12	.472	64	2.52	32	1.26
TP-03 ...	25	.984	25	.984	1"	14	.551	78	3.07	40	1.57
TP-04 ...	32	1.26	32	1.26	1 1/4"	15	.591	94	3.70	50	1.97
TP-05 ...	40	1.57	40	1.57	1 1/2"	15	.591	110	4.33	55	2.16
TP-06 ...	50	1.97	50	1.97	2"	19	.748	138	5.43	70	2.76

### TP-...M1-SA Sensor adapter with welding nipples PN 315 bar / 4630.5 PSI



Type	DN		dia. d		dia. D		t		L		SW	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
TP-01M1-SA	15	.591	16	.630	21.3	.839	15	.591	50	1.97	27	1.06
TP-02M1-SA	20	.787	20	.787	26.9	1.06	15	.591	70	2.76	32	1.26
TP-03M1-SA	25	.984	25	.984	33.7	1.33	15	.591	80	3.15	40	1.57
TP-04M1-SA	32	1.26	32	1.26	42.4	1.67	15	.591	100	3.94	50	1.97
TP-05M1-SA	40	1.57	40	1.57	48.3	1.90	15	.591	110	4.33	55	2.16
TP-06M1-SA	50	1.97	50	1.97	60.3	2.37	15	.591	140	5.51	70	2.76

### BV-...M3 Ball valve with internal thread PN 25 bar / 367.5 PSI



Type	DN		dia. d		G	t		L		SW		H		A	
	mm	in.	mm	in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
BV-03M3	25	.984	25	.984	1"	21	.827	88	3.47	41	1.61	59	2.32	115	4.53
BV-04M3	32	1.26	32	1.26	1 1/4"	24	.945	100	3.94	50	1.97	65	2.56	115	4.53
BV-05M3	40	1.57	40	1.57	1 1/2"	24	.945	110	4.33	54	2.13	77	3.03	150	5.91
BV-06M3	50	1.97	50	1.97	2"	28	1.10	131	5.16	70	2.76	85	3.35	150	5.91

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

**Cable type 24**



1

**Description**

M12 plug-in electrical connection.

**Technical data**

**Cable type 24**

**Features:** Protection degree IP 68 (only with connector fitted)  
Resistant to chemicals and oils

Temperature range: -25 °C...90 °C

Contact resistance: < 5 mΩ

Current carrying capacity: 4 A

Insulation resistance: > 10<sup>9</sup> Ω

Withstand voltage: 2,0 kV<sub>eff.</sub> / 60 s

**Cable and cable connector**

**Cable and cable connector**

Do + Ka type 24 - 5 m with connector to IEC60947-5-2, 3 pole  
M12 and PUR insulated cable 3x0.25 mm<sup>2</sup>

Do + Ka type 24 - 5 m ordering example