

FLOWMETER SERIES FLUX 0

The flowmeters FLUX 0 series are miniaturized devices used to measure air flow rate. They come complete with push-in pipe fittings. Numerous functions can be viewed and set on a three-colour display. They have 2 digital and one analogue outputs, each of which can be freely set to measure the instantaneous flow rate, the accumulated flow rate or the pressure, therefore they can perform the function of flowmeter, flow switch, pressure gauge or pressure switch. They feature reduced dimensions, with a width of only 17 mm. The FLUX 0 flowmeters comes in two models: one for flow rates up to 50 NI/min, the other up to 200 NI/min, and are can be powered at 12 and 24 VDC.



TECHNICAL DATA		FLUX 0 50 L	FLUX 0 200 L
Measured flow range	NI/min	0 - 50	0 - 200
Direction of flow		Unidirectional	
Working pressure range	bar	-0.9 to 8	
	MPa	-0.09 to 0.8	
	psi	-13 to 116	
Maximum admissible pressure	bar	10	
Pipe diameter for push-in fitting	mm	8	
Connecting cable	VDC	12 to 24 ± 10%, ripple max 10%	
Current consumption	mA	≤ 50	
Power cable		Cable Ø 4 length 2 m, oil resistant, 26 AGW (6 x 0.15 mm ²)	
Weight	g	100 (including cable)	
DISPLAY			
Instant flow rate			
Display range	NI/min	0 - 50	0 - 200
Minimum setting scale	NI/min	0.1	1
	ft ³ /min	1	1
Cumulative flow rate			
Display range		9999999.9	99999999
Minimum setting scale	NI	0.1	1
	ft ³	1	1
Pressure			
Display range	kPa	-100 to 1000	
Minimum setting scale	kPa	1	
	bar	0.01	
	psi	0.1	
PRECISION			
Flow rate			
Guaranteed measuring range		2 to 100 % FS	
Display accuracy		± 3 % FS ± 1 digit ▲	
Analogue output accuracy		± 5 % FS ▲	
Repeatability		± 1 % FS ± 1 digit ■	
Linearity		± 3 % FS ■	
Temperature characteristic		± 2 % FS for a temperature range of 15-35°C; ± 5 % FS for a temperature range of 0-15°C or 35-50°C ■	
Pressure characteristic		± 5 % FS ± 1 digit *	
Pressure			
Guaranteed measuring range		0 to 100 % FS	
Display accuracy		± 2 % FS ± 1 digit ●	
Analogue output accuracy		± 2.5 % FS ●	
Repeatability		± 0.2 % FS ± 1 digit ●	
Linearity		± 1 % FS ●	
Temperature characteristic		± 2 % FS ●	

▲ Data valid under these conditions: input pressure 3 bar, output pressure 1 bar, temperature 25°C

■ Data valid under these conditions: output pressure 1 bar, temperature 25°C

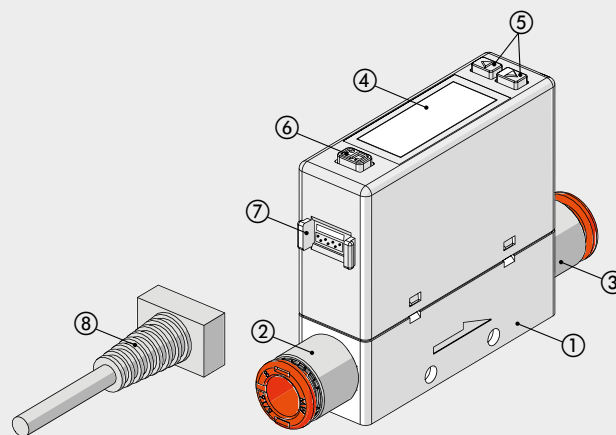
* Data valid under these conditions: -90 to 800 kPa, output pressure 1 bar, temperature 25°C

● Data valid under these conditions: flow rate 0 NI/min, temperature 25°C

TECHNICAL DATA	FLUX 0 50 L	FLUX 0 200 L
DIGITAL OUTPUTS		
N ° outputs		2 PNP
Max current	mA	125
Max voltage	VDC	24
Residual voltage	V	≤ 1.5 V
Response time, with flow rate setting	ms	50, 80, 120, 200, 400, 800, 1500 (default 800)
Response time, with pressure setting	ms	2.5, 25, 100, 250, 500, 1000, 1500 (default 2.5)
Response mode, with flow rate setting		Hysteresis mode, window comparison mode, cumulative mode, cumulative pulse mode ♦ Normally open or normally closed
Response mode, with pressure mode setting		One-point setting mode, hysteresis mode, window comparison mode. Normally open or normally closed ♦
Hysteresis		Adjustable
Short-circuit protection at output		Yes
Cumulative pulse output	Nl/impulse	2
	ft ³ /impulse	7
ANALOGUE OUTPUT		
Version with voltage	V	1 to 5, 1 kΩ impedance
Version with current	mA	4 to 20, with ≤ 300 Ω impedance
Response time, with flow rate setting	ms	≤ 100
Response time, with pressure setting	ms	≤ 50
AMBIENT CONDITIONS		
Fluid		Filtered, dried and unlubricated air, inert non-corrosive and non-explosive gas. A 5 μm filter and a 0.01 μm oil purifier are recommended
Degree of protection		IP 40
Temperature range	°C	0 to 50
Storage temperature	°C	0 to 60, but without condensate or ice
Ambient humidity		35 to 85% relative humidity; no condensate
Insulation voltage		1000 VAC for one minute between casing and cable
Resistance of Insulation		Min. 50 MΩ (at 500VDC between casing and cable)
Vibration admitted		1.5 mm amplitude or 10 g with scanning every minute from 10 to 55 Hz at 10 Hz, for 2 hours in each direction x, y and z
Impact		100 m/s ² (10 g), 3 times in each direction x, y and z
Electromagnetic compatibility (EMC)		IEC 61000-6-2, IEC 61000-6-4

♦ Refer to the user manual for further details

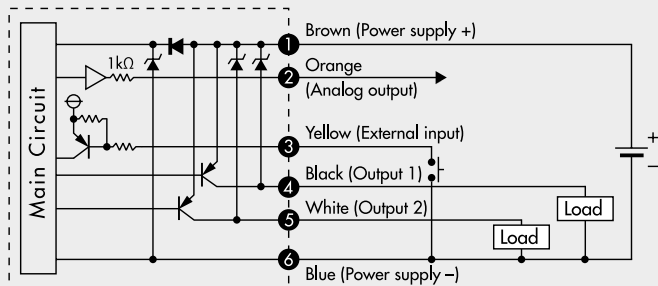
COMPONENTS



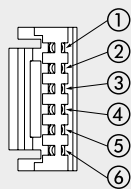
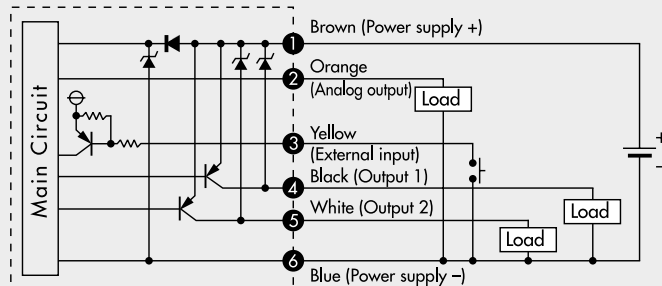
- ① BODY: technopolymer
- ② INPUT AUTOMATIC FITTING: nickel-plated brass and technopolymer
- ③ OUTPUT AUTOMATIC FITTING: nickel-plated brass and technopolymer
- ④ DISPLAY LCD
- ⑤ BUTTON: silicone.
Used to select the operating mode, ON/FF switching and value setting
- ⑥ BUTTON: silicone.
Used to select the operating mode and confirm the set values
- ⑦ CONNECTOR
- ⑧ CONNECTOR WITH CABLE: length 2 meters

WIRING DIAGRAMS

Analog voltage output / external input

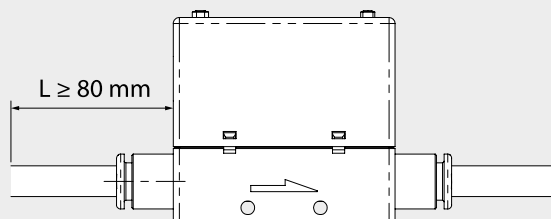


Analog current output / external input



PIN	Cable color	Function
1	Brown	Power supply (12 to 24 VDC)
2	Orange	Analog voltage output: 1 to 5 V Analog current output: 4 to 20 mA
3	Yellow	External input
4	Black	Output 1 (Max. load current: 125 mA)
5	White	Output 2 (Max. load current: 125 mA)
6	Blue	0V (GND)

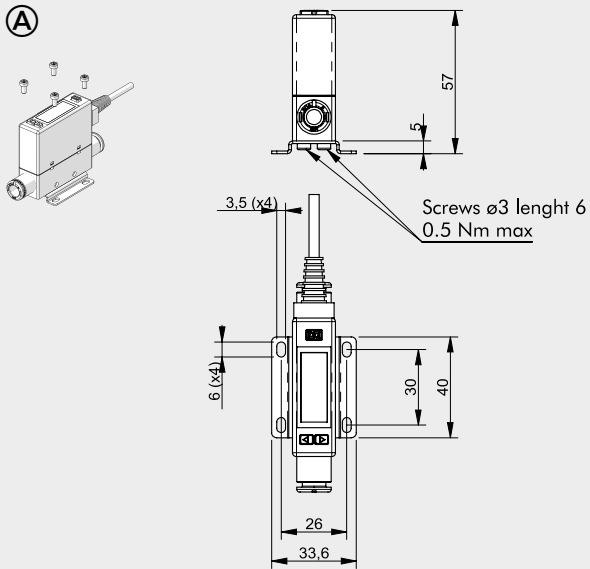
PNEUMATIC CONNECTION



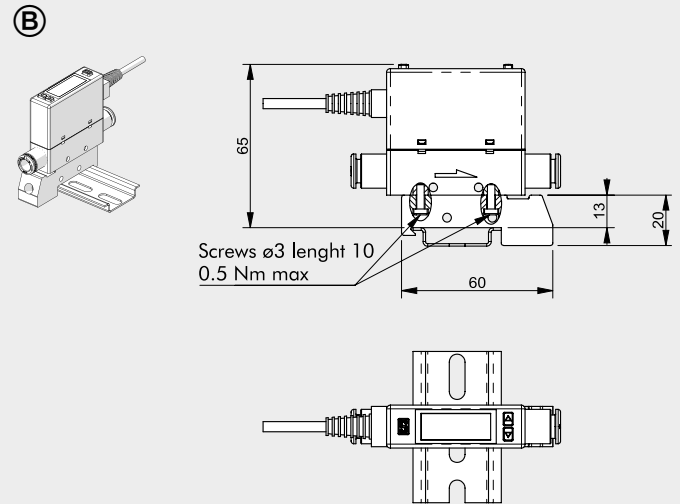
The input pipe must have a straight section of at least 80 mm in length or more, otherwise the measurement will be inaccurate.

NOTES

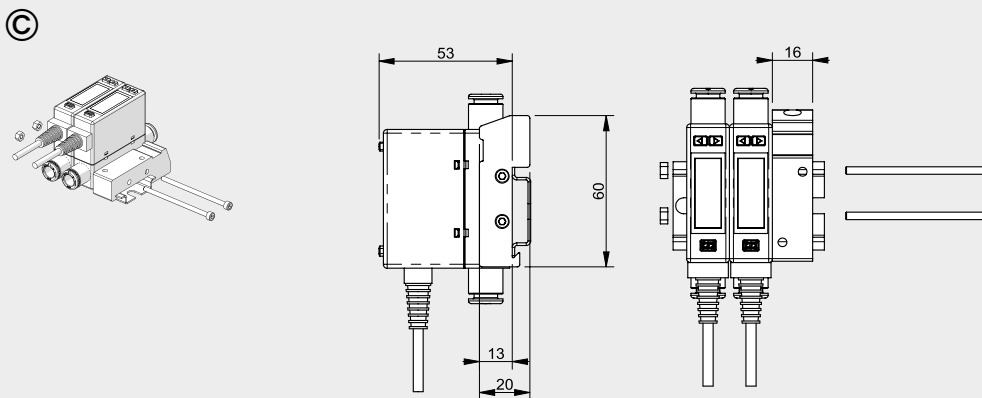
FIXING OPTIONS



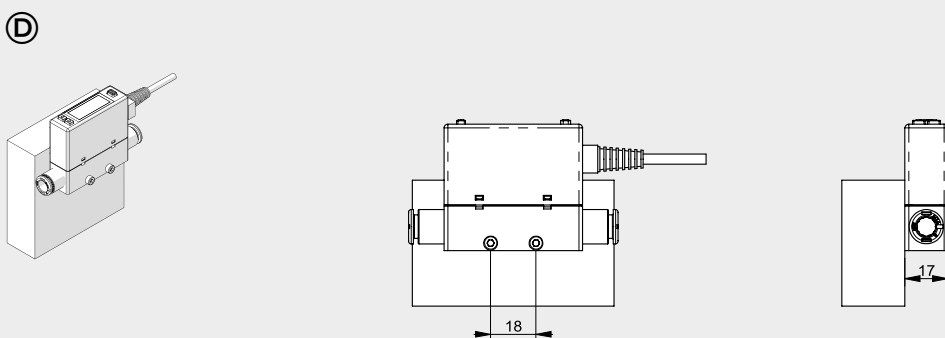
Fixing with bracket code 90009A001 using the included $\varnothing 3$ self-tapping screws and M3 screws



Single fixing on DIN bar with code bracket 90009A002 using the included $\varnothing 3$ self-tapping screws

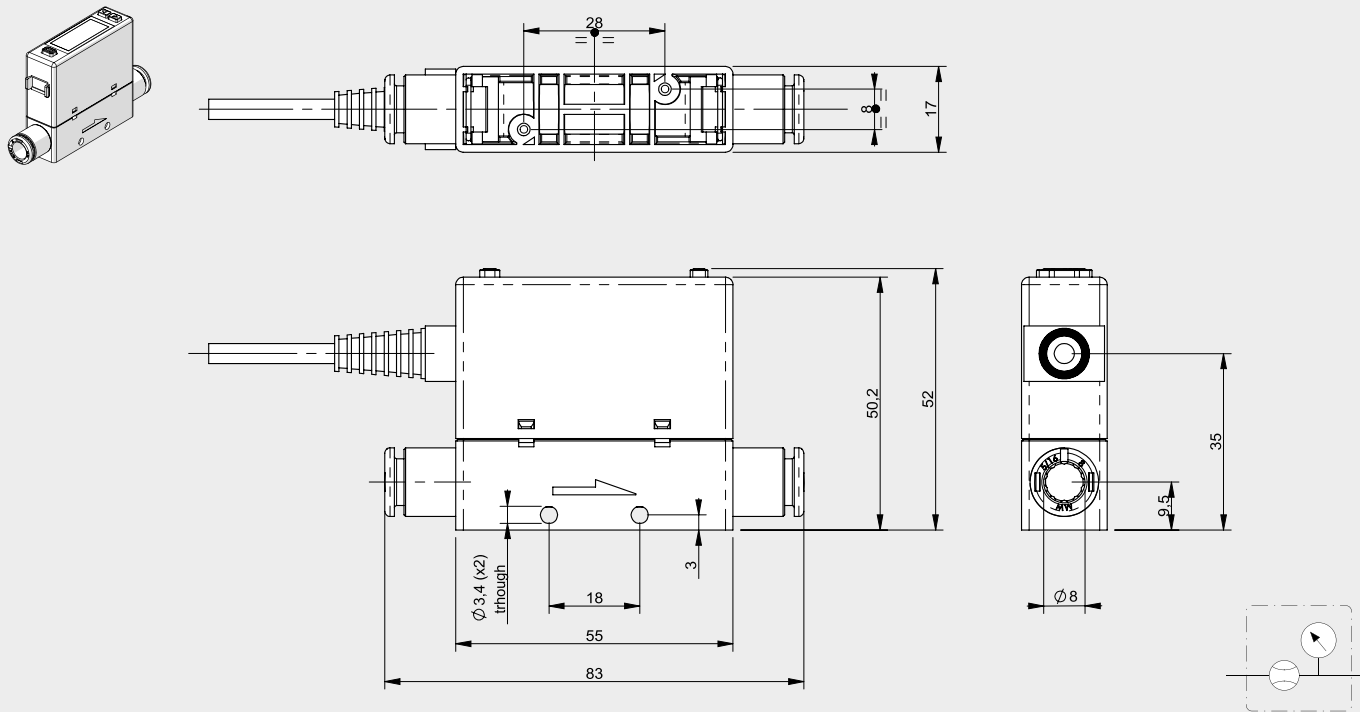


Multiple fixing on DIN bar with code bracket 90009A002 using the lateral holes $\varnothing 3.4$ with M3 screws and nuts



Side fixing using M3 screws, minimum length 23 mm

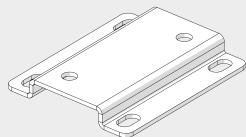
DIMENSIONS AND ORDERING CODES



Code	Description
9000958A2	Flowmeter FLUX 0 50L Ø8 PNP 4-20 mA 2 m
9000958V2	Flowmeter FLUX 0 50L Ø8 PNP 1-5V 2 m
9000978A2	Flowmeter FLUX 0 200L Ø8 PNP 4-20 mA 2 m
9000978V2	Flowmeter FLUX 0 200L Ø8 PNP 1-5V 2 m

ACCESSORIES

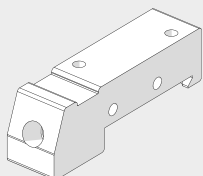
FIXING BRACKET



Code	Description
90009A001	Fixing bracket FLUX 0

Note: Comes complete with two 3x6 screws for plastic (max. torque 0.5 Nm)

CONNECTION BRACKETS ON BAR OMEGA (DIN EN 50022)



Code	Description
90009A002	Connection brackets on DIN bar FLUX 0

Note: Comes complete with two 3x10 screws for plastic (max. torque 0.5 Nm)

FLOWMETER SERIES FLUX 1 - 2

FLUX 1 and FLUX 2 flowmeters are devices used to measure the flow rate of compressed air in various areas of a pneumatic system.

The FLUX 1 comes with an anodized aluminium body and 1/2" threaded inlets and outlets for flow rates of up to 2,000 NI/min, while the FLUX 2 has an anodized aluminium body and 1" threaded inlets and outlets for flow rates of up to 4,000 NI/min. They are both available in the versions with or without display, with an M12 connector for power supply and signal control. The versions with display also feature a pressure and temperature transducer that minimises measurement error within the operating temperature range thanks to the algorithm implemented in the device software.

Flow rate, pressure and temperature values as well as graphs of instantaneous and cumulative values are displayed.

The electrical power used to produce the measured flow is also calculated and displayed.

A digital output (configurable for flow rate, pressure or total consumption) and an analogue output (configurable for voltage or current) are available for both sizes. Versions with IO-Link interface with similar characteristics are also available.

All FLUX flowmeters can be supplied with voltage ranging from 12VDC and 24VDC and perform the functions of a flowmeter and flow switch; all versions with a display can also be used as a pressure gauge or pressure switch.

The inner air ducts of the flowmeters are designed to ensure precise flow readings at all times without creating pressure drops between instrument inlet and outlet.



TECHNICAL DATA		FLUX 1	FLUX 2
Measured flow range	NI/min	0 to 2000	0 to 4000
Fluid		Compressed air free of any lubricants and inert gases	
Fluid temperature	°C	0 to 50	
Direction of flow		Unidirectional	
Measuring method		Thermal	
Working pressure range	bar	0 to 10	
	MPa	0 to 1	
	psi	0 to 145	
Pressure drop		None	
Temperature range	°C	0 to 50	
Threaded ports		1/2"	1"
Degree of protection		IP65	
Weight	g	585	705
IO-Link supply voltage range	VDC	15 - 27 (with IO-Link Master)	
Current consumption	mA	80 mA (at 24VDC)	
Power supply voltage range in the analogue version	VDC	12 -10% 24 +30%	
Maximum admissible voltage	VDC	32 ▲	
Current absorption	mA	min 50 - max 120	
DISPLAY			
Instant flow rate	NI/min	0 to 2200	0 to 4400
Cumulative flow rate	NI	999.999.999	
	Nm ³	999.999	
	Nff ³	35.320.000	
Pressure ■	bar	0 to 10	
Resolution	bar	0.01	

▲ IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

■ In versions with pressure transducer.

TECHNICAL DATA	FLUX 1	FLUX 2
PRECISION ●		
Flow rate		
Measuring range	0 to 100% of the full scale	
Single unit display accuracy	from 0 to 20% of the FS - better than $\pm 1\%$ of the FS from 20% to 100% of the FS - better than $\pm 3\%$ of the FS	
Display accuracy of unit installed in an SY unit ▲	from 0 to 20% of the FS - better than $\pm 2\%$ of the FS from 20% to 100% of the FS - better than $\pm 6\%$ of the FS	
Repeatability	$\pm 1\%$ of the FS	
Temperature characteristic	Automatic compensation of fluid temperature from 0 to 50° Between 0 and 15°C and between 35 and 50°C $\pm 0.6\%$ of the FS every °C	
Version with pressure transducer	Without compensation, between 0 and 15°C and between 35 and 50°C $\pm 1.2\%$ of the FS every °C	
Version without pressure transducer		
Pressure		
Measuring range	bar	
Display accuracy	0 to 10 $\pm 2\%$ of the FS	
Analogue output		
Output signal		
Analogue output powered	0 to 10 VDC or 0 to 5 VDC (I max 20 mA) Output impedance about 1 k Ω	
Analogue output current	4 to 20 mA Max. load impedance 500 Ω $\pm 0.1\%$ of the value read	
Analogue output accuracy		
DIGITAL OUTPUT		
Maximum current	mA	
Residual voltage	VDC	
Operating mode, if set on flow rate	n° 1 open collector output NC / NO - PNP / NPN 100 mA 20 mV (with load)	
Min. accumulated volume by pulse (pulse width 100 msec)	Nl	Level switch, Band switch, Value switch, Cyclic pulse
	Nm ³	10 20
	Nlf ³	1 1
Response mode, with pressure mode setting	Level switch, Band switch	
Hysteresis	Adjustable	
Short-circuit protection at output	Yes	
DIGITAL INPUT ◆		
Type of input	n° 1 input for the reset of the consumption counters NO - PNP/NPN	
Activation time	Voltage 12 -10% 24 +30% min 1 sec	

● At a pressure of 5 bar and a fluid temperature of 25°C $\pm 10^\circ\text{C}$.

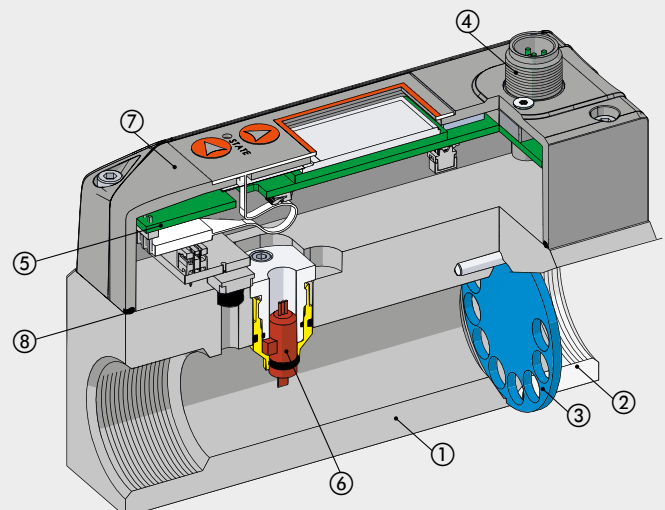
▲ In order to guarantee the stated measurement accuracy and to prevent lubricant residues from damaging the measurement sensor, a filter has to be mounted at the FLUX inlet.

If the device is fitted with a Syntesi® filter, the SYN filter parameter must be enabled in the system menu to guarantee the stated accuracy (function available only for the version with display).

◆ Version without display: the digital input selects the type of analogue output from 0 to 10 V and 4 to 20 mA.

COMPONENTS

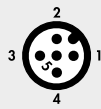
- ① BODY: anodized aluminium
- ② INLET BUSHING: anodized aluminium
- ③ FLOW RECTIFIER DISC: passivated aluminium
- ④ CONNECTOR M12: technopolymer
- ⑤ ELECTRONIC BOARD
- ⑥ FLOW SENSOR
- ⑦ COVER: technopolymer
- ⑧ GASKETS: NBR



WIRING DIAGRAMS

Wiring diagram, analogue version

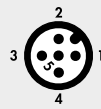
M12 male connector, A encoding



Pin	Function description	Lead colour
1	+24VDC power supply	Brown
2	Digital output	White
3	0VDC power supply	Blue
4	Digital input	Black
5	Analogue output	Gray

Wiring diagram, IO-Link version

M12 male connector, A encoding



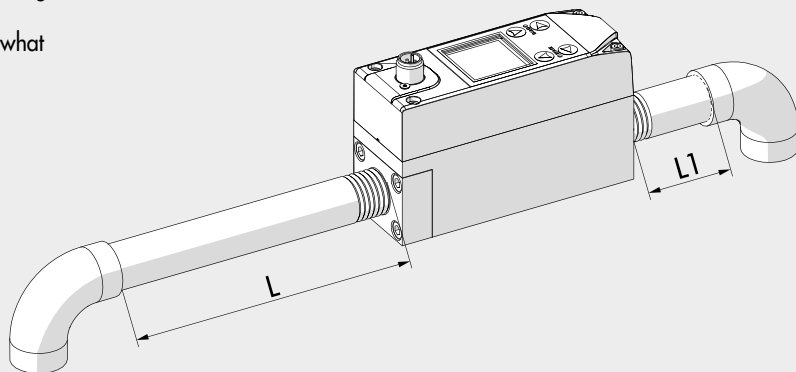
Port Class A
 1 = L+
 2 = NC
 3 = L-
 4 = C/Q
 5 = NC

Pin	Signal	Description of Port Class A	Lead colour
1	L+	+24VDC power supply	Brown
2	NC	/	White
3	L-	0VDC power supply	Blue
4	C/Q	IO-Link communication	Black
5	NC	/	Gray

PNEUMATIC CONNECTION

To connect the inlet side, use a straight pipe* at least 150 mm-long for FLUX 1 and at least 200 mm-long for FLUX 2.
 If straight piping is not installed, the accuracy may vary from what is stated.

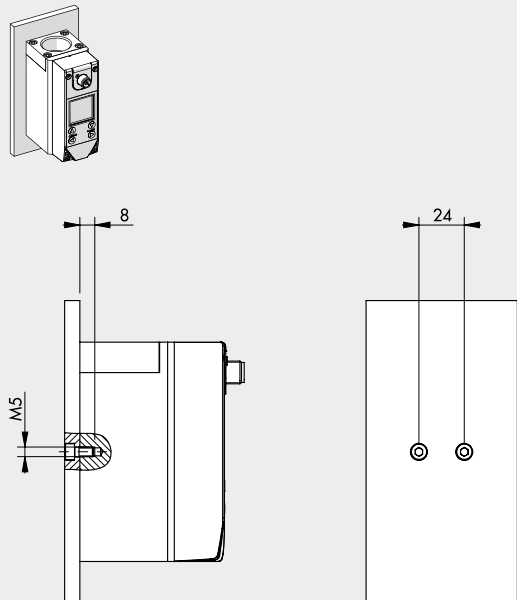
* **Straight pipe:** the pipe must be straight with a constant cross-section.



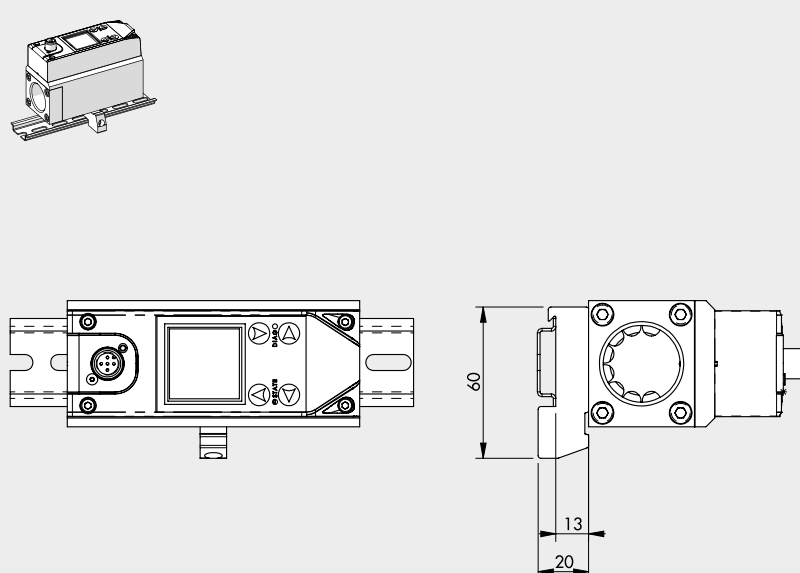
FLUX 1	L ≥ 150 mm	L1 ≥ 50 mm
FLUX 2	L ≥ 200 mm	L1 ≥ 50 mm

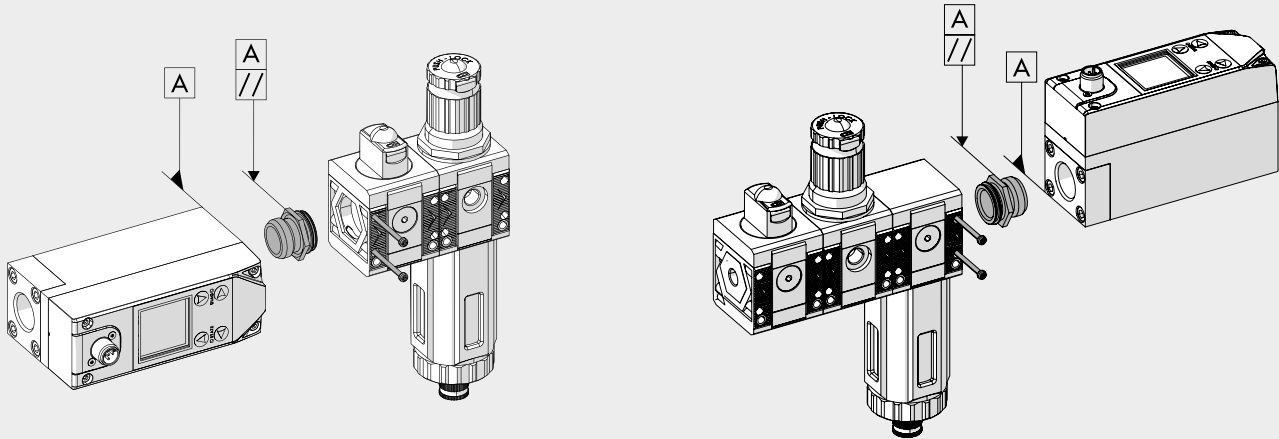
FIXING OPTIONS

Wall mounting by means of two M5 screws.

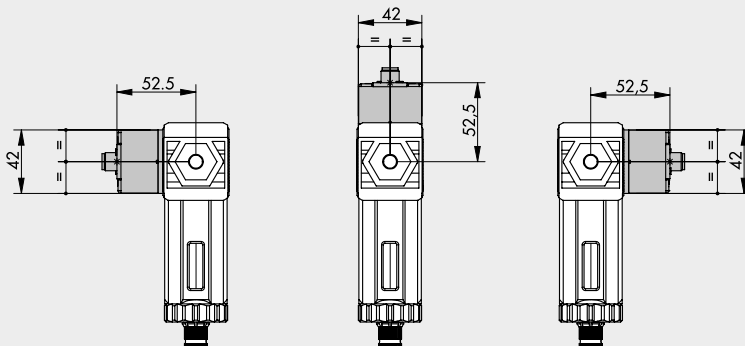
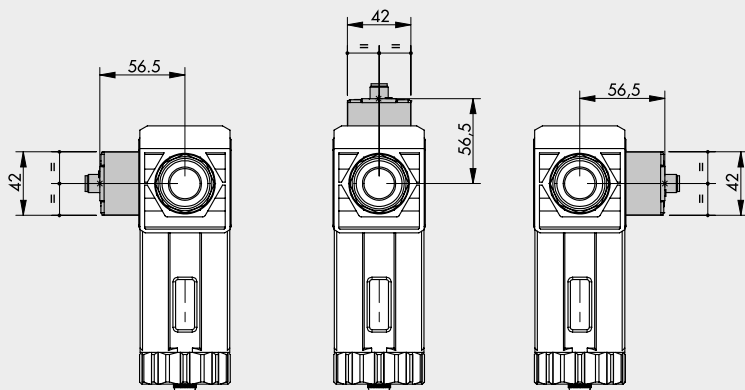


DIN rail mounting with bracket code 900099A001, using the M5x14 screws provided.



ASSEMBLY DIAGRAM WITH SYNTESI®


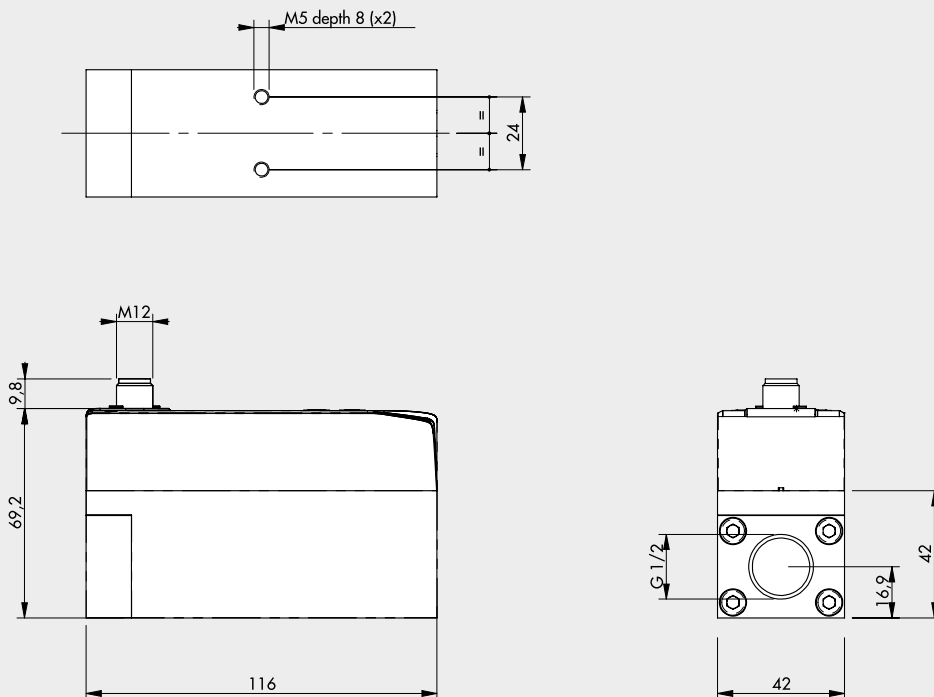
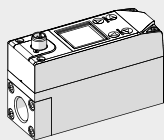
- 1) Tighten the connection bushing on the flowmeter until it is flush (it is advisable to use sealant on the male thread of the bushing to ensure a perfect seal).
- 2) Unscrew the bushing slightly until two surfaces of the hexagon are parallel to the body of FLUX.
- 3) Insert the bushing into the Syntesi® unit.
- 4) Tighten the two self-tapping screws in the Syntesi® unit to a torque of 0.4 Nm for size 1 and torque 2.5 Nm for size 2.

FLUX 1 + SYNTESI® 1

FLUX 2 + SYNTESI® 2


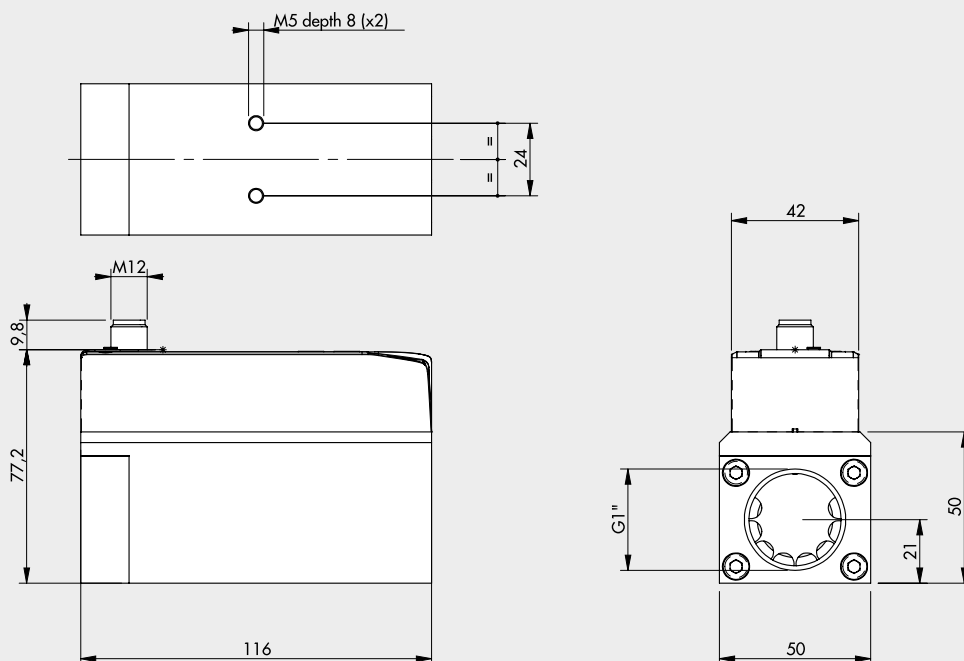
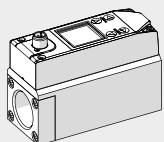
N.B.: If the FLUX is used downstream a Syntesi® filter, fit it in one of the three positions shown in the figure.

DIMENSIONS AND ORDERING CODES

FLUX 1



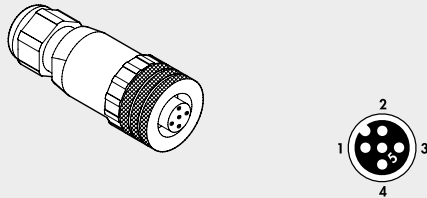
FLUX 2



Symbol	Code	Description
	9000991000	Flowmeter FLUX 1, coupling 1/2", digital output PNP, analog output 0-10V 4-20 mA
	9000991200	Flowmeter FLUX 1, coupling 1/2", IO-Link
	9000992000	Flowmeter FLUX 2, coupling 1", digital output PNP, analog output 0-10V 4-20 mA
	9000992200	Flowmeter FLUX 2, coupling 1", IO-Link
	9000991510	Flowmeter FLUX 1, coupling 1/2", digital output PNP 0-10V 4-20 mA, with display and pressure sensor
	9000991610	Flowmeter FLUX 1, coupling 1/2", IO-Link with display and pressure sensor
	9000992510	Flowmeter FLUX 2, coupling 1", digital output PNP 0-10V 4-20 mA, with display and pressure sensor
	9000992610	Flowmeter FLUX 2, coupling 1", IO-Link with display and pressure sensor

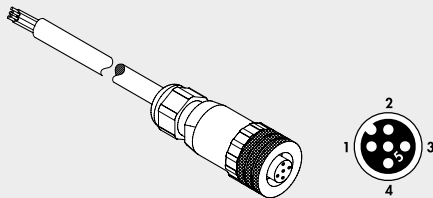
ACCESSORIES

STRAIGHT CONNECTOR



Code	Description
W0970513001	5-PIN M12x1 straight connector

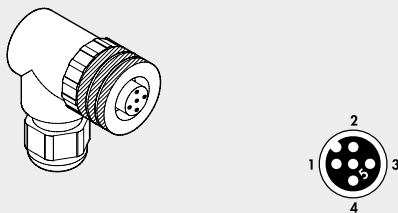
STRAIGHT CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

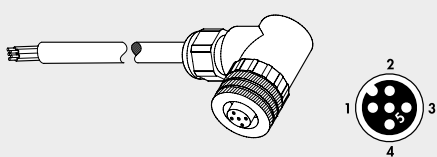
Code	Description
W0970513002	5-PIN M12x1 straight connector with wire L = 5 m

90° CONNECTOR



Code	Description
W0970513003	M12x1 5-PIN 90° connector

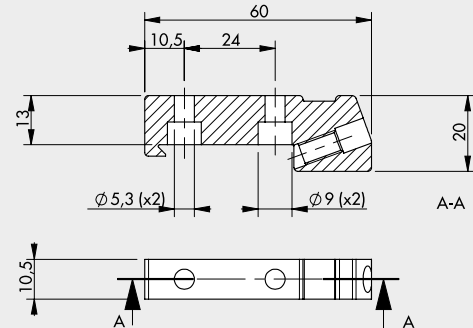
90° CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

Code	Description
W0970513004	M12x1 5-PIN 90° connector with wire L = 5 m

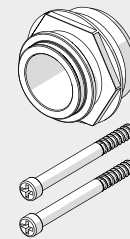
CONNECTION BRACKETS ON THE BAR (DIN EN50022)



Code	Description
900099A001	Connection brackets on DIN bar, FLUX 1 - 2

Note: complete with 2 M5x14 screws and 1 M6 grub screw

SY1 - SY2 KIT FOR CONNECTION



Code	Description
900099A002	Adapter FLUX 1 - SY1
900099A003	Adapter FLUX 2 - SY2

Max torque for screw, 0.4 Nm for SY1
Max torque for screw, 2.5 Nm for SY2

NOTES