



SM-04

Impeller Flowmeter, Switch and Indicator in Modular Design



Features

- / Robust and compact flow sensor
- / Variety of materials
- / Location-independent
- / Operating range ratios up to 40:1
- / No inflow outflow lines required
- / Different measuring transmitters can be mounted directly or are available for DIN rail mounting

Description:

The SM-04 series of impeller flowmeters consists of a sensor and an optionally available measuring transmitter. The sensor has an impeller that is fitted in a housing made of PPS, brass or stainless steel. The impeller is set into rotation by the streaming medium. Depending on the material version, this rotational movement is tapped by an inductive, optical or Hall sensor-system and output as a frequency signal which is proportional to the flow. For the evaluation of the signal, different types of measuring transmitters are available which can amplify, convert or display the impulse signal from the sensor.

Application:

Due to their modular design, the SM-04 series of impeller flowmeters represents a versatile measuring and monitoring system for all low-viscosity fluids that do not corrode the materials being used.



Technical Specs - Sensor:

max. Pressure /

SM-04.1:	16 bar
SM-04.3/4:	100 bar

max. Temperature /

SM-04.1:	0...+60°C
SM-04.3/4:	0...+100°C

Accuracy / ± 3 % of MV

Reproducibility / ± 1 % of FSV

Electrical Specs - Sensor:

Supply voltage /

PNP/NPN:	10...30 V DC
NAMUR:	7...12 V DC

Power consumption /

Inductive:	10 mA
NAMUR:	7 mA
Hall Sensor:	30 mA

Output current max. /

Inductive:	200 mA
NAMUR:	7 mA
Hall Sensor:	100 mA

Output circuit / PNP, NPN or NAMUR

Short-circuit proof / yes

Polarity-reversal proof / yes

El. connection / 2 m cable or plug connection

Protection class / IP 67

Electrical Specs - Display:

Supply voltage / 18...30 VDC

Power consumption / < 1 W

Output signal / 0/4...20 mA max. load 500 Ω
(or 0/2...10 VDC, min. 1 Ω on request)

Switching outputs / 2 x transistor outputs „Push-Pull“safe against short-circuit and pole-reversal) max. I_{out} = 100 mA

Hysteresis / adjustable, direction of hysteresis depends on MIN and MAX

Technical Specs - Display:

Display / graphical LCD-display 32x16 pixels, backlight, indicates measuring value and unit

LED-indicator / flashes simultaneously with displayed message

Media temp. /

SM-04.1:	0...+60°C
SM-04.3/4:	0...+70°C (0...+100°C with optional gooseneck)

El. connection / for round plug connector M12x1, 5-pole

Protection class / IP 67 (IP 68 when oil-filled)

Materials /

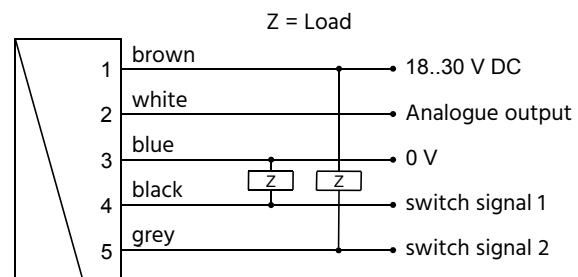
Clamps:	stainless steel (1.4301)
Housing:	stainless steel (1.4305)
Adapter:	CW614N nickel-plated
Glas:	mineralglas hardened
Magnet:	samarium-cobalt
Ring:	POM

El. Specs - Analogue Output:

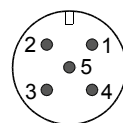
Output current / 4...20 mA at 10...30 VDC

Output voltage / 0...10 V at 15...30 VDC max. 20 mA

El. Connection Sensor:



Connection example: PNP NPN Optional: NAMUR



Plug connection M12x1



Wetted Parts - Sensor:

Type	SM-04.1	SM-04.3	SM-04.4
Housing	PPS (Fortron 1140L4)	brass (CW614N nickel-plated)	stainless steel (1.4305)
Cover	PPS (Fortron 1140L4) (opt. PPS)	brass (CW614N nickel-plated)	stainless steel (1.4305)
Connection	PVDF (opt. stainless steel (1.4305) or CW614N nickel-plated)	brass (CW614N nickel-plated)	stainless steel (1.4305)
Rotor	PVDF with 10 clamps (opt. 2 or 5 clamps)	PVDF with 5 magnets, glued with epoxy resin (opt. 2 magnets)	PVDF with 5 magnets, glued with epoxy resin (opt. 2 magnets)
Clamps	stainless steel (1.4310) (opt. titanium or Hastelloy ®)	-	-
Bearing	Iglidur X	Iglidur X	Iglidur X
Axis	ceramic (ZrO ₂ -TZP)	Keramik (ZrO ₂ -TZP)	Keramik (ZrO ₂ -TZP)
Sealing	FKM (opt. EPDM or NBR)	FKM (opt. EPDM, NBR or Kemraz)	FKM (opt. EPDM, NBR or Kemraz)

Materials for not wetted parts:

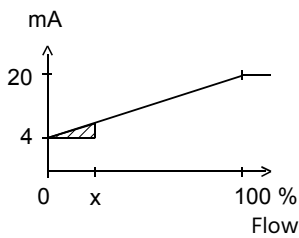
PVC-cable, st. steel (1.4305, 1.4301) and
CW614N nickel-plated

Signal characteristics curve:

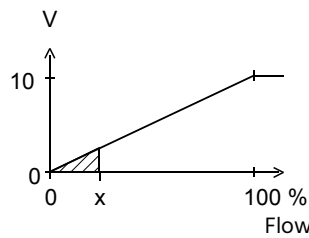
Value x = Beginning of the specific range

= not specified

Current output



Voltage output



Other characteristics on request

Ordering Codes:

Order no. SM-04. 1. 2. 1. 4. 1. 1. 0

SM-04 Flow Sensor with Impeller

Version /

- 1 = with PPS housing, inductive pickup
- 3 = with brass housing, Hall sensor
- 4 = with stainless steel housing, Hall sensor

Size of housing /

- 1 = 50 x 50 mm, for 3/8" tube
- 2 = 70 x 70 mm, for 1" tube

Process connection /

- 1 = female thread G
- 2 = male thread G
- 3 = hose spout
- 9 = other connection, please specify in detailed text

Operating ranges /(applicable for water 25°C):

- SM-04.x.1 only:
- 1 = 0.1 .. 1.5 l/min (0.1 .. 0.5 l/min linearized)
 - 2 = 0.2 .. 10 l/min (0.2 .. 2 l/min linearized)
 - 3 = 0.4 .. 12 l/min (0.4 .. 2 l/min linearized)
- SM-04.x.2 only:
- 4 = 2 .. 30 l/min (2 .. 3 l/min linearized)
 - 5 = 3 .. 60 l/min (3 .. 5 l/min linearized)
 - 6 = 4 .. 100 l/min (4 .. 6 l/min linearized)

Electrical connection /

- 1 = 2 m cable (standard)
- 2 = plug connection M12x1

Output circuit /

- 1 = PNP impulses
- 2 = NPN impulses
- 3 = NAMUR (SM-04.1 only)
- 4 = mounted frequency receiver with a setpoint
- 5 = mounted frequency receiver with power output 4 .. 20 mA, 3-wire
- 5a = mounted frequency receiver with voltage output 0 .. 10V
- 6 = digital mounted transmitter with 2 transistor switching outputs, display and analogue output 4 .. 20mA, 3-wire (0 .. 10 VDC on request)

Options /

- 0 = none
- 1 = with transparent cover PSU (SM-04.1 only)



Dimensions Sensor:

Connection	DN	H/L	L1	B	C	E	X	SW
G 3/8" female	10	50	84	29	12.5	16.5	12	22
G 3/8" male	10	50	84	29	12.5	16.5	14	22
G 1" female	25	70	110	53	23.0	27.5	18	38
G 1" male	25	70	122	53	23.0	27.5	18	38
hose nozzle Ø 11	10	50	96	29	12.5	16.5	21	-
hose nozzle Ø 30	25	70	176	53	23.0	27.5	45	-

