



SD-05

Plastic Impeller Flowmeter



Features

- / DN25 to DN50
- / 5 to 1000 l/min in four operating ranges
- / Wetted parts out of PP, ECTFE, ceramic and Viton
- / 4 to 20 mA or pulse output
- / Optionally with switching contacts
- / Intended for operating pressures up to 10 bar

Description:

The SD-05 impeller flowmeter measures thin fluids according to the impeller wheel principle. An impeller wheel made of ECTFE that holds moulded magnetic pins on its five vanes projects into a polypropylene fitting. Since less flow velocity is present at the edge of the pipe than in the centre a torque causes the rotor to rotate proportionally to the flow on the axis made of ceramic. An externally mounted electronic element records the rotating speed of the impeller by means of a Hall effect sensor that emits a voltage impulse whenever a magnet crosses it and, through an amplifier, produces an NPN impulse signal at the PINs of connector. In the version with 2-wire output the impulse signal is readily converted internally into a power signal. In contrast to this, in the case of the 3-wire version, as also in a variant with impulse output and two additional threshold value relays, an SD-05 equipped with a "normal" impulse output can be easily converted into a flowmeter with 3-wire power output or one with a Push-Pull impulse output and threshold value relay by replacing the mating plug.

Application:

The most significant characteristic of flowmeters in the SD-05 series is that the materials used are plastics and, therefore, even the most hostile fluids do not pose any problems. This device offers particularly a dependable solution for deploying it in fully desalinated water where metallic components are often ruled out. The measuring range of all the four available nominal diameters of SD-05 scales at 1:50 which means that minimum 5 and maximum 1000 litres per minute can be recorded. By virtue of its design the SD-05 causes only a negligible pressure drop within the piping system and is, therefore, a cost-effective alternative for measuring low-viscous fluids.



Electrical Specifications:

Pulse output (SD-05.xx.x.x.IM) /

Function:	NPN-open-collector
Supply voltage:	4.5 . .24 VDC
Current:	max. 15 mA at 24 VDC
El. connection:	plug connector as per EN 175301-803A (cubical-shaped)
Protection class:	IP65

Analogue output 2-wire (SD-05.xx.x.x.A2) /

Supply voltage:	15 . .24 VDC
Current:	4 . .20 mA, 2-wire
Damping:	factory adjustable in steps of one second
El. connection:	plug connector as per EN 175301-803A (cubical-shaped)
Protection class:	IP65
Ambient temp. at the plug:	max. +55°C

Analogue output 3-wire (SD-05.xx.x.x.A3) /

Supply voltage:	15 . .24 VDC
Current:	10 . .40 mA
Damping:	factory adjustable in steps of one second
El. connection:	plug connector as per EN 175301-803A (cubical-shaped)
Protection class:	IP65
Ambient temp. at plug connector:	max. +55°C
Mounting:	The electronic modul is easily plugged between the plug connector and the mating plug of the SD-05 and transforms the pulse output into an analogue output. The correlation between analogue output and operating range is adjusted with a REED switch at the plug connector. This electronic modul can be field upgraded at any time.

Pulse output Push-Pull and two additional treshold value relays (SD-05.xx.x.x.FK) /

Supply voltage:	4.5 . .24 VDC
Current:	10 . .220 mA
Outputs:	1 x complementary final stage (11 mA, 24 VDC), 2 x semiconductor relays (0.1 A/24 VDC)
Damping:	factory adjustable in steps of one second

El. connection: plug connector as per EN 175301-803A (cubical-shaped) with one meter cable

Protection class: IP65

Ambient temp. at plug connector: max. +55°C

Mounting: The electronic module can be easily connected between the plug connector and the mating plug of the SD-05, transforming the pulse output into a push-pull pulse signal (suitable for PNP and NPN inputs). It also sets two limit switches on the semiconductor relay available. The measuring and limits are set via a REED switch on the connector. This model can be retrofitted on existing installations.

Technical Specifications:

Measuring principle /	rotating vane
Sensing system /	Hall effect, non-contacting
Operating ranges /	5 . .250 l/min, DN25 10 . .400 l/min, DN32 15 . .600 l/min, DN40 20 . .1000 l/min, DN50 at 0.15 . .10 m/s and 42 Hz per m/s
Accuracy /	± 3% on calibrated range
Repeatability /	< 1% on calibrated range
Operating pressure /	10 bar max. (at +22°C)
Burst pressure /	>15 bar (at +22°C)
Operating temperature /	0 . .+80°C
Viscosity range /	0.5 . .20 cSt
Housing material /	Polypropylene
Rotor /	5 blade rotor from ECTFE with encapsulated magnets
Axis/Bearing /	ceramic Al ₂ O ₃
O-Ring /	FKM (optionally EPDM)

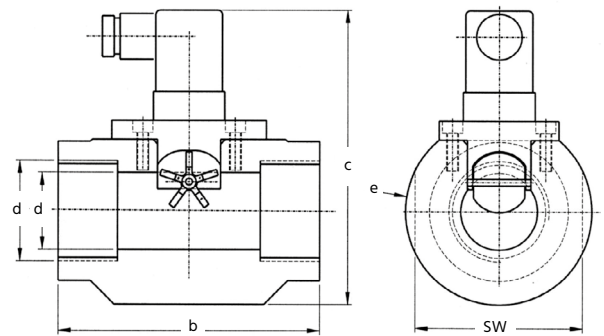
El. Connection:

	SD-05. xx.x.x.IM	SD-05. xx.x.x.A2	SD-05. xx.x.x.A3	SD-05. xx.x.x.FK
Supply +	PIN 1	PIN 1	PIN 1	white
Signal	PIN 2	PIN 2	PIN 2	green
Load	PIN 3		PIN 3	brown
Relays 1-A				yellow
Relays 1-B				grey
Relays 2-A				pink
Relays 2-B				blue

Ordering Codes:

Order number	SD-05.	25.	G.	VI.	A3.	0
SD-05 Plastic Impeller Flowmeter						
Size and Operating range /						
25 = DN25 for 5...250 l/min						
32 = DN32 for 10...400 l/min						
40 = DN40 for 15...600 l/min						
50 = DN50 for 20...1000 l/min						
Process connection /						
G = G-female thread, parallel						
N = NPT-female thread, conical						
Gasket /						
VI = Viton						
EP = EPDM						
Output signal /						
IM = pulse signal NPN open collector, 3-wire						
A2 = analogue signal, 4 to 20 mA, 2-wire						
A3 = analogue signal, 4 to 20 mA, 3-wire						
FK = pulse signal Push-Pull and two setpoints (semiconductor relays)						
Options /						
0 = none						
1 = special issue, please specify in detailed text						

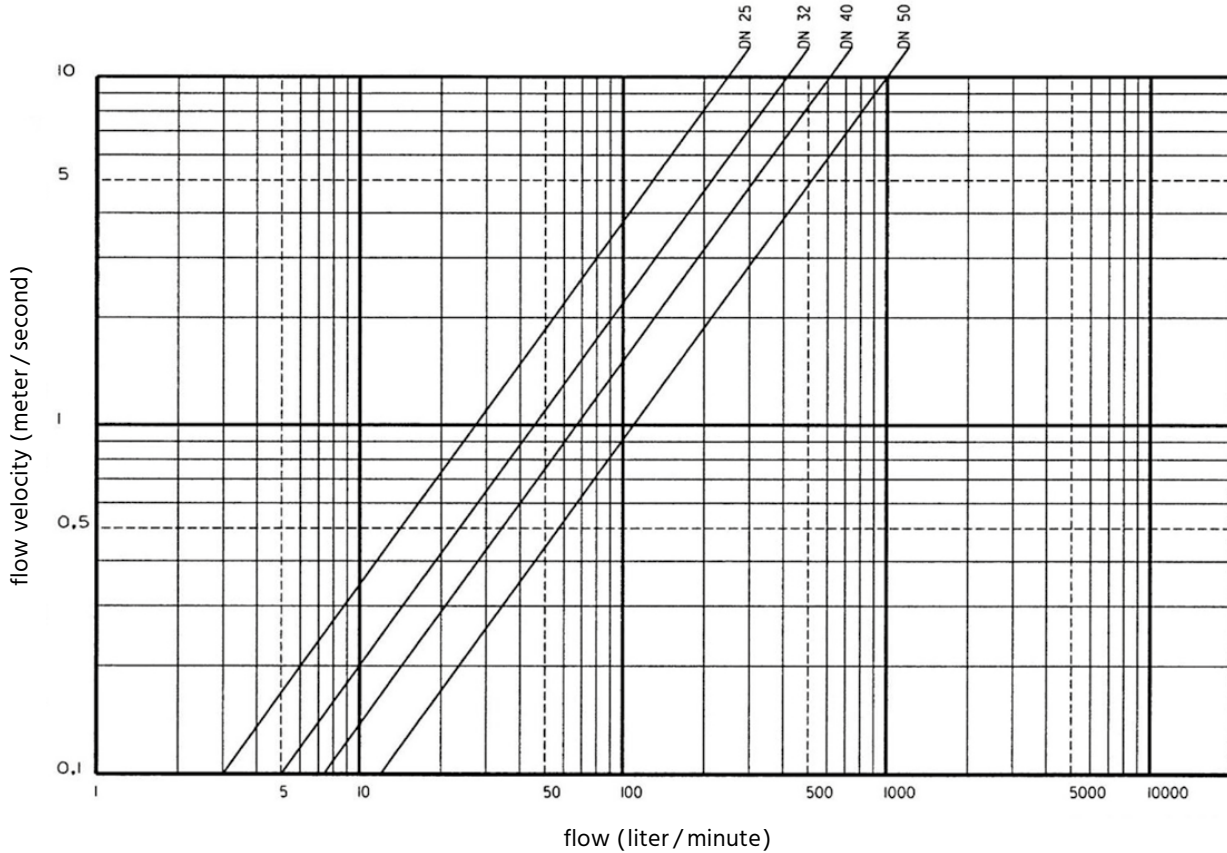
Dimensions:



Diameter a	b [mm]	c [mm]	d [mm]	e [mm]	SW [mm]
DN25 / G1"	110	119	25	74	70
DN32 / G1 1/4"	110	123	32	78	70
DN40 / G1 1/2"	120	125	40	80	75
DN50 / G2"	125	135	50	89	75



Impulse characteristic curve:



Calculation formula for the frequency determination of the flowmeter:

$$\text{Frequency [Hz]} = 42 \times \text{Flow [m/sec]}$$

Example for Frequency determination:

$$500\text{l/min at DN 50} \rightarrow \text{Frequency} = 42 \times 4.9 \text{ [m/sec]} = 205.8 \text{ Hz}$$

Installation Instructions:

Different types of piping and flow obstacles such as fittings, fittings, dirt traps, etc. cause different sized interference profiles whose smoothing is determined in line (pipe) lengths according to DIN 1952. In order to ensure optimum function, the installation should be made according to DIN 1952 as far as possible.

