

DR04

Paddle Wheel Flowmeter, switch and monitor also for high pressure

- for liquids
- robust and compact flow sensor
- large material variety
- position-independent
- measuring range ratios up to 40:1
- no inlet and outlet sections required
- high process pressures up to 100 bar



Description:

The impeller flowmeters of the DR04 series consist of a sensor and an optional transmitter. The sensor has an impeller which is mounted in a housing made of PPS, PVDF, MS or stainless steel and is rotated by the flowing medium. Depending on the material version, this rotary motion is measured inductively or by a Hall sensor system and output as a flow-proportional frequency signal. A transmitter integrated in the housing with various output signals is optionally available for evaluating the signal.

Typical Applications:

The DR04 impeller flowmeters are a versatile measuring and monitoring system for all low-viscosity liquids, which do not attack the materials used, due to their design. The metal version allows high process pressures up to 100 bar, therefore the instruments can also be used under difficult process conditions.

Models:

DR04.1: PPS housing, inductive tap (10 st. st. clamps)
 DR04.2: PVDF housing, inductive tap (10 st. st. clamps)
 DR04.3: brass housing, hall sensor (5 magnets)
 DR04.4: st. steel housing, hall sensor (5 magnets)

Technical Data:

Max. pressure: DR04.1/2: 16 bar
 DR04.3/4: 100 bar

Max. temperature: DR04.1/2: 60 °C
 DR04.3/4: 100 °C

Process connection:

	housing size 50 x 50 mm	housing size 70 x 70 mm
pipe size 3/8"	G 3/8 female G 3/8 male hose nozzle (Ø 11 mm)	
pipe size 1"		G 1 female G 1 male hose nozzle (Ø 30 mm)

Materials:

	DR04.1	DR04.2	DR04.3	DR04.4
Housing	PPS	PVDF	brass, nickel plated	st. steel 1.4305
Cover	PSU transparent	PVDF	brass (optional Makrolon)	1.4305 (optional Makrolon)
Connection	PVDF (optional brass, st. steel)	PVDF (optional brass, st. steel)	brass (optional flange)	1.4305 (optional flange)
Rotor	PVDF with 1.4310 st. steel clamps (titan on request)	PVDF with 1.4310 st. steel clamps (titan on request)	PVDF with 5 magnets	PVDF with 5 magnets
Axle	ceramic	ceramic	ceramic	ceramic
Bearing	Iglidur x (optional ceramic)	Iglidur x (optional ceramic)	Iglidur x (optional ceramic)	Iglidur x (optional ceramic)
Magnets	---	---	5xSm2Co5 (bonded with epoxy resin)	5xSm2Co5 (bonded with epoxy resin)
O-Ring	FKM (optional EPDM / NBR)	FKM (optional EPDM / NBR)	FKM (optional EPDM / NBR)	FKM (optional EPDM / NBR)

Measuring Range / Impulses:

Code	Measuring range [l/min] H ₂ O	Impulses/ DR04.1/2	Impulses/ DR04.3/4	Pipe size
1.	0,5...1,5	10200	4955	3/8"
2.	2...10	3345	1632	3/8"
3.	2...12	1755	860	3/8"
4.	3...30	1216	544	1"
5.	5...60	607	295	1"
6.	6...100	252	126	1"

Flow

Electrical Data:

Power supply: 10–30 VDC
 NAMUR: 7...12 VDC

Current input: DR04.1/2: 10 mA,
 NAMUR: max. 7 mA
 DR04.3/4: 30 mA

Output current max.: DR04.1/2: 200 mA,
 NAMUR: max. 7 mA
 DR04.3/4: 100 mA

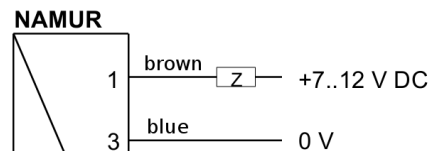
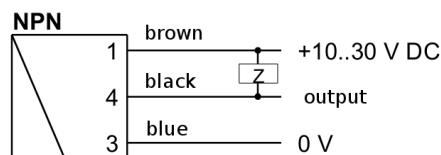
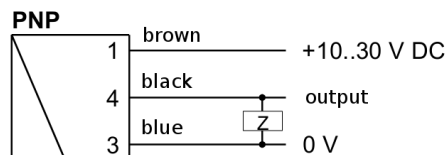
Output signal: square wave signal

Output: DR04.1/2: PNP, NPN, or NAMUR
 DR04.3/4 Push-Pull

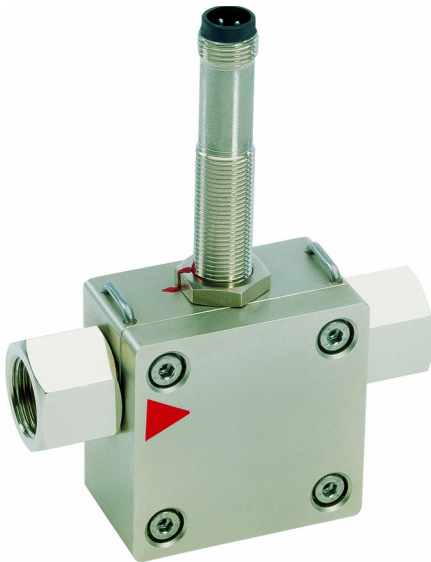
Connection: 2 m cable or M12x1, 4-pin

Protection class: IP67

Electrical Connection:



**Flow meter with transmitter
(integrated in connection housing):**



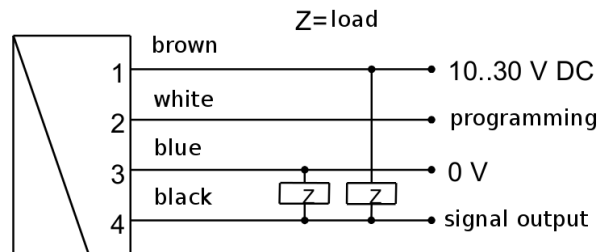
Measuring Range:

Code	Measuring range [l/min] water	Qmax [l/min] water	Pipe size
1M.	0,1...1,5	1,8	3/8"
2M.	0,2...10	12,0	3/8"
3M.	0,4...12	14,4	3/8"
4M.	2...30	36	1"
5M.	3...60	72	1"
6M.	4...100	120	1"

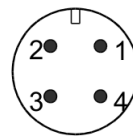
Technical Data:

- Power supply:** 10..30 V DC
with voltage output. 10 V: 15..30 VDC
- Power consumption:** < 1 W (with unloaded outputs)
- Source data:** all outputs are short-circuit proof and reverse polarity protected
- MI current output:** 4...20 mA
- MU voltage output:** 0..10 V current output max. 20 mA
- MF frequency output:** transistor output "Push-Pull"
I_{out} = 100 mA max. output frequency depending on measuring range, standard 500 Imp/l (corresponds to 666,7 Hz at 80 l/min) small quantity range: 5000 Imp/l (corresponds to 500 Hz at 6 l/min) (other frequencies on request)
- MZ counting pulse:** transistor output "Push-Pull"
I_{out} = 100 mA max.
pulse width 50 ms
pulse/quantity is to be indicated with the order
- MS switching output:** transistor output „Push-Pull“
I_{out} = 100 mA max.
- Electr. connection:** for round plug M12x1, 4-pole.
- Display:** yellow LED shows
MI / MU: operating voltage
MF / MZ: initial state
MS: ON = normal / OFF = alarm
(fast flashing = programming)
- Protection class:** IP67

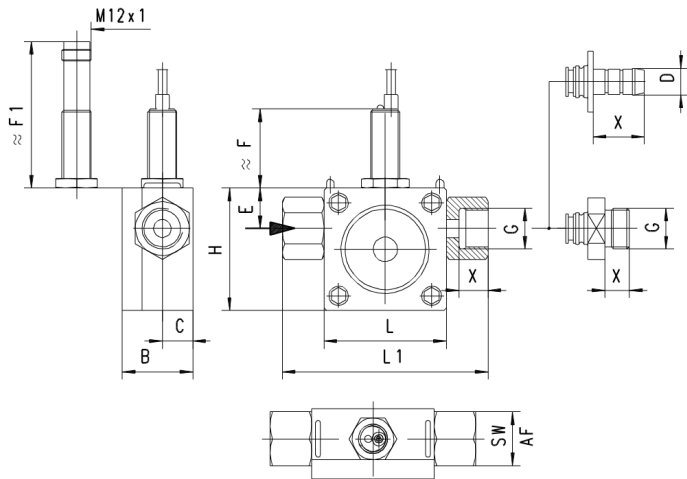
Connection Diagram:



connection example: PNP NPN



Dimensions:



Conne- ction	H/L	L1	B	C	E	F*	F1	X	SW
G 3/8 f	50	84	29	12,5	16,5	33	60	12	22
G 3/8 m								14	
G 1 f	70	110	53	23	27,5	28	55	18	38
G 1 m		122							
Hose nozzle plastic housing:									
Ø 11	50	96	11	12,5	16,5	32	60	21	--
Ø 30	70	176	30	23	27,5	27	55	45	--
Hose nozzle metal housing:									
Ø 11	50	96	29	12,5	16,5	33	60	21	--
Ø 30	70	176	53	23	27,5	28	55	45	--

All dimensions in mm

*with integrated transmitter dimension for F:

¾" or hose nozzle Ø 11 mm: **56 mm**

1" or hose nozzle Ø 30 mm: **51 mm**

Accessory:



Order code: **SM12. 4. 2. G. 0**

M12-plug with PVC cable

Number of pins:

4 = 4-pin

Cable length:

0 = without cable for self assembly

2 = 2 m PVC cable (standard)

5 = 5 m PVC cable

10 = 10 m PVC cable

Version:

G = straight

W = angled

Options:

0 = without

9 = please specify in plain text

Order Code:

Order number: **DR04. 1. 2. 1. 4. 1. 1. 0**

Paddle wheel flowmeter, switch and monitor also for high pressure

Models:

- 1 = with PPS housing, inductive tap
(10 stainless steel clamps)
- 2 = with PVDF housing, inductive tap
(10 stainless steel clamps)
- 3 = with brass housing (nickel plated),
hall sensor
- 4 = with st. steel housing, hall sensor

Housing- / pipe sizes

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

Process connection:

- 1 = female thread G (standard)
- 2 = male thread G
- 3 = hose nozzle
- 9 = special connection, please specify in plain text

Measuring range (valid for water):

DR04.x.1 (3/8" connection) only:

1 = 0,5...1,5 l/min

2 = 2...10 l/min

3 = 2...12 l/min

DR04.x.2 (1" connection) only:

4 = 3...30 l/min

5 = 5...60 l/min

6 = 6...100 l/min

for devices with integrated transmitter:

DR04.x.1 (3/8" connection) only:

1M = 0,1...1,5 l/min

2M = 0,2...10 l/min

3M = 0,4...12 l/min

DR04.x.2 (1" connection) only:

4M = 2...30 l/min

5M = 3...60 l/min

6M = 4...100 l/min

Electrical connection:

1 = 2 m cable (standard for devices without transmitter)

2 = plug connection M12 x 1, 4-pin, without mating connector
(standard for devices with transmitter)

Output:

1 = PNP (standard)

2 = NPN

Output with transmitter

MI = 4...20 mA

MU = 0...10 V

MF* = frequency output 2000 Hz

(factory-set adjustable on request)

MZ* = counting pulse (factory-set adjustable)

MS = switching output (Push-Pull)

Options:

0 = without

9 = please specify in plain text

*For frequency output and counting pulse please specify desired data.