

Flowmeter for continuous flow measurement

8012

- Economic integration in pipe systems without any additional piping
- Optic measuring principle
- Configurable output: 1 analog 4 - 20 mA and/or 1 transistor output (frequency or switch)
- Outputs configurable (through interface on USB port with PC)



The flow meter with paddle wheel is particularly useful in the optical version for use in infrared transparent liquids.

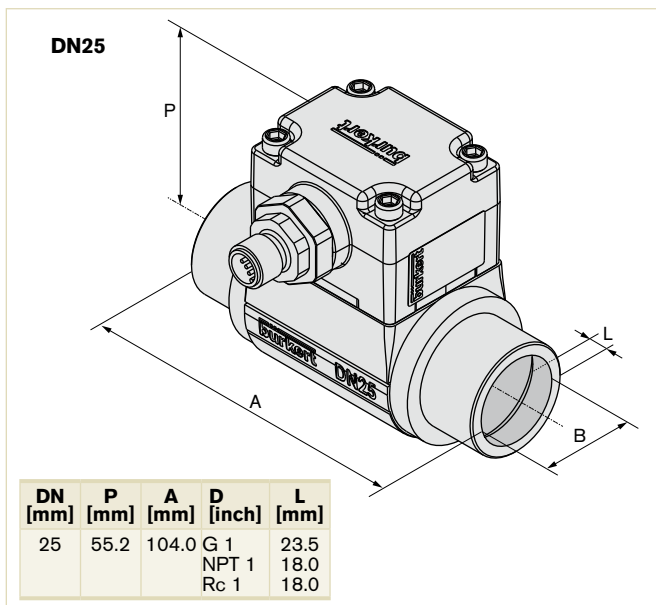
Type 8012 is made up of a fitting (S012) and an electronic module (SE12) connected together with screws. The Bürkert designed fitting system ensures simple installation into all pipes from DN06 to DN65. It can also be installed in fluid block systems.

Type 8012 produces a programmable frequency pulse signal, proportional to the flow rate, which can easily be transmitted and processed by a Bürkert remote transmitter/controller, or a programmable switch output or a 4 - 20 mA signal.

Technical Data

General data	
Compatibility	with fittings S012
Materials	
Housing / Seal	PPS / EPDM
Fixed connector M12, (gland on request)	PA
1 meter cable	PVC
Wetted parts materials	
Fitting	Brass, stainless steel 1.4404/316L
Paddle wheel / Holder	PVDF
Axis and bearing / Seal	Ceramics (Al ₂ O ₃) / FKM (EPDM option)
Electrical connection	Free positionable fixed connector M12-5 pin (or with 1 m cable length, on request)
Connection cable	1.5 mm ² max. cross-section
Complete device data (fitting + electronic module)	
Pipe diameter	DN06-50 mm (DN65 mm on request)
Measuring range	0.3 to 10 m/s
Measuring element	Optical - infra-reds (or magnetic paddle-wheel, on request)
Medium temperature with	
PVC fitting	0 °C to +60 °C
PP fitting	0 °C to +80 °C
Stainless steel or brass fitting	-15 °C to +100 °C (if T ^{ambient} ≤ 45 °C) or -15 °C to +90 °C (if 45 °C ≤ T ^{ambient} ≤ 60 °C)
Fluid pressure max.	PN10 (with plastic fitting) PN16 (with metal fitting)
Viscosity / Pollution	300 cSt. max./max. 1% (size of particles 0.5 mm max.)
Accuracy	with standard K-factor ±(0.5% of FS.* + 2.5% of Reading) ¹⁾
Linearity	±0.5% of FS.* (at 10 m/s)
Repeatability	±0.4% of Reading ¹⁾

Envelope Dimensions [mm] (see datasheet for details)



* FS. = Full scale (10 m/s)

¹⁾ Under reference conditions i.e. measuring fluid = water, ambient and water temperature = 20 °C, applying the minimum inlet and outlet pipe straights, matched inside pipe dimensions.

Technical Data (continued)

Electrical data	
Operating voltage (V+)	12 - 36 V DC, filtered and regulated
Current consumption	< 60 mA (at 12 V DC for current version - without load)
Reversed polarity of DC	Protected
Voltage peak	Protected
Short circuit	Protected for transistor output
Output	
Transistor version	Transistor NPN (default setting) / PNP (configurable on request), open collector, max. 700 mA, NPN output: 0.2 - 36 V DC (default setting) PNP output: operating voltage frequency or switching mode
Current version (configurable on request)	4 - 20 mA, sinking (default setting), image of flow velocity (default setting), configurable on request (sourcing mode); Loop impedance max.: 1125 W at 36 V DC; 650 W at 24 V DC; 140 W at 12 V DC
4... 20 mA measurement error	±1%

Environment

Ambient temperature	-15 °C to +60 °C (operating and storage)
Relative humidity	≤ 80%, without condensation
Standards, directives and approvals	
Protection class	IP67 with multipin M12 (IP65 with cable)

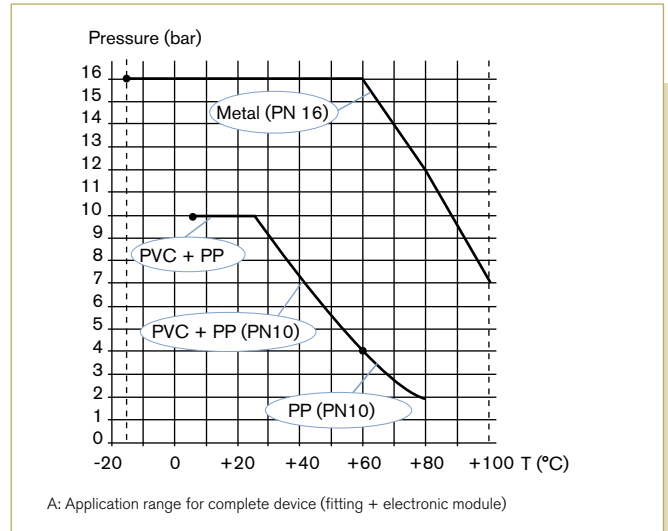
Standard and directives	
EMC	EN 61000-6-3, EN 61000-6-2
Pressure	Complying with article 3 of §3 from 97/23/CE directive.*
Vibration	EN 60068-2-6
Shock	EN 60068-2-27

Approval / Certificate on request	
	3.1 certificate; 2.2 certificate; Surface finish certificate; Calibration certificate; FDA (only for device with EPDM seal and stainless steel fitting) KTW (only for device in magnetic measuring version with EPDM seal and stainless steel or brass fitting)

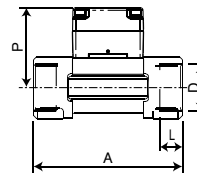
Type of fluid	Conditions
Fluid group 1, §1.3.a	DN ≤ 25 only
Fluid group 2, §1.3.a	DN ≤ 32, or DN > 32 and PN*DN ≤ 1000
Fluid group 1, §1.3.b	PN*DN ≤ 2000
Fluid group 2, §1.3.b	DN ≤ 200

* For the 97/23/CE pressure directive, the device can only be used under following conditions (depend on max. pressure, pipe diameter and fluid).

Pressure/temperature diagram



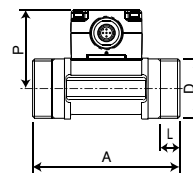
Envelope Dimensions [mm] (see datasheet for details)



8012 with internal thread connection

G, NPT or Rc
in stainless steel
(316L - 1.4404) or
brass (CuZn39Pb2)

DN [mm]	P [mm]	A [mm]	D [inch]	L [mm]
15	57.5	84.0	G 1/2 NPT 1/2 Rc 1/2	16.0 17.0 15.0
20	55.0	94.0	G 3/4 NPT 3/4 Rc 3/4	17.0 18.3 16.3
25	55.2	104.0	G 1 NPT 1 Rc 1	23.5 18.0 18.0
32	58.8	119.0	G 1 1/4 NPT 1 1/4 Rc 1 1/4	23.5 21.0 21.0
40	62.6	129.0	G 1 1/2 NPT 1 1/2 Rc 1 1/2	23.5 20.0 19.0
50	68.7	148.5	G 2 NPT 2 Rc 2	27.5 24.0 24.0



8012 with external thread connection

G, NPT or Rc
in stainless steel
(316L - 1.4404),
brass (CuZn39Pb2) or PVC

DN [mm]	P [mm]	A [mm]	D [inch]	L [mm]
06	52.5	90.0	G 1/2	14.0
08	52.5	90.0	** 1/2	M 16 x 1.5 14.0

** G, NPT, RC according to fitting version

Main features

8012 with optical (standard) or magnetic (on request) principle

Version with Transistor output

- ▶ Transistor output: NPN (standard) or PNP (on request) operation
- ▶ With one configured transistor output mode (4 possibilities)
 - Raw frequency (standard) - (2 pulses per paddle wheel rotation)
 - Proportional frequency (on request) - (e.g. 5 pulses per litre)
- Switching mode
 - 2 switching modes for the output, either hysteresis or window, inverted or not, depending on transistor output version
 - Configurable delay before switching

- Detection of flow direction - only with optical principle

Version with Transistor and current outputs

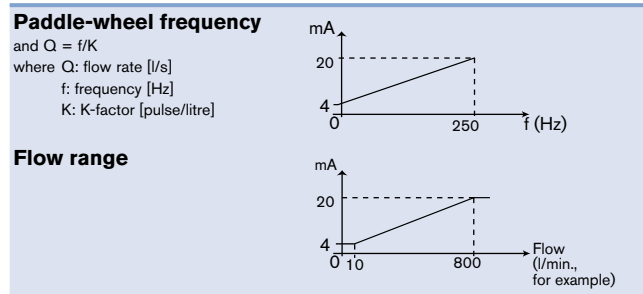
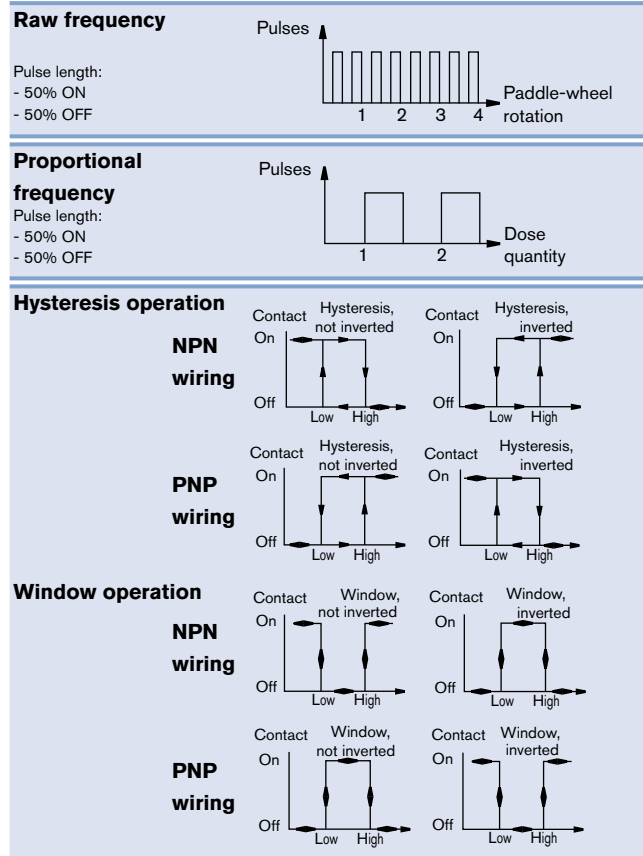
Transistor output:

- ▶ Same features described as above

Current output:

- ▶ with sinking (standard) or sourcing (on request) wiring
- ▶ 8012 with configurable current output
 - 4 - 20 mA current corresponding to paddle wheel frequency (0 - 250 Hz) - (standard)
 - 4 - 20 mA current corresponding to a flow range - (on request)

- Damping of fluctuation of current output through filter function
- Generation of an alarm current (22 mA) - when fluid circulation is opposite to the direction indicated by the arrow on the side of the housing (only versions with optical principle) or when full scale has been exceeded (versions with optical or magnetic principle)



Ordering Chart

For Type 8012, 12 - 36 V DC, 5-pin M12											
Process connection	Standard	Output	Item no. DN 06 - 1/4"	Item no. DN 06 - 1/2"	Item no. DN 08 - 1/2"	Item no. DN 15	Item no. DN 20	Item no. DN 25	Item no. DN 32	Item no. DN 40	Item no. DN 50
Brass - Medium temperature max. 100 °C, PN16											
Internal thread	G (ISO 228)	Pulse + 4 - 20 mA	-	-	-	556 012	556 013	556 014	556 015	556 016	556 017
External thread	G (ISO 228)	Pulse + 4 - 20 mA	556 009	556 010	556 011	-	-	-	-	-	-
Stainless steel - Medium temperature max. 100 °C, PN16											
Internal thread	G (ISO 228)	Pulse + 4 - 20 mA	-	-	-	556 054	556 055	556 056	556 057	556 058	556 059
External thread	G (ISO 228)	Pulse + 4 - 20 mA	556 051	556 052	556 053	-	-	-	-	-	-

8012

Accessories

Specification	Item no.
4 short screws (M4 x 35 - A4) + 4 long screws (M4 x 60 -A4)	555 775
5-pin M 12 female connector moulded on cable (2 m, shielded)	438 680
5-pin M 12 female connector with plastic threaded locking ring	917 116
O-ring set for metal fitting - FKM - DN 06 to 50	426 340