

Insertion Paddle Wheel Flowmeter, ELEMENT design



Type 8026 can be combined with...



Type S020
INSERTION fitting



Type 8692
Digital electro-pneumatic positioner



Type 2030
Pneumatically diaphragm valve



Type 8644
Valve islands



Type 2101
Globe valve



Type 8611
eCONTROL universal controller

- PN10, DN15 to DN400 fluidic process connection
- Programmable outputs : one or two transistor output(s) and single or dual 4...20 mA analog output(s)
- Removable backlit display of flow and/or two totalized volumes
- Automatic-calibration: TEACH-IN, simulation of outputs signals provided without the need for real flow

The Bürkert flowmeter Type 8026 is a compact device, specially designed for measuring the flow rate in solid-free liquids, in a variety of applications (water, waste water monitoring, chemical processing...).

The device is equipped of a sensor with paddle-wheel, available in long or short version (depend on DN of used fitting). This sensor holder is plugged-in and pinned to an enclosure with cover, containing the electronic module. A removable display completes this flowmeter.

The flowmeter can operate without the display, but it will be required for programming the device (i.e. set parameters, restore default parameters, programme information to be displayed, programme access codes, adjust 4...20 mA output(s)...) and also for visualizing continuously the measured and processed data.

The device Type 8026 is available with:

- 2 programmable outputs: one transistor output (NPN) and one 4...20 mA current output (2-wire)
- 3 programmable outputs: two transistor outputs (NPN/PNP) and one 4...20 mA current output (2-wire)
- 4 programmable outputs: two transistor outputs (NPN/PNP) and two 4...20 mA current outputs (3-wire)

The device Type 8026 converts the measured signal, displays different values in different units (if display mounted) and computes the output signals, which are provided via one or two M12 fixed connectors. Thanks to 1 or 2 transistor outputs, the flowmeter can be used to switch a solenoid valve, activate an alarm and, thanks to 1 or 2 current outputs, establish one or two control loops.

General data	
Compatibility	Any pipe from DN15...DN400 which are fitted out with Bürkert INSERTION Fitting S020 (see corresponding data sheet)
Materials	See exploded view, on next page Housing Stainless steel 1.4404, PPS Cover PC Seals EPDM, silicone Screws Stainless steel Fixed connector mounting plate Stainless steel 1.4404 (316L) Fixed connector Brass nickel plated Display PC Navigation key PBT Nut PC Wetted part materials Sensor finger PVDF Seal FKM (standard) Axis and bearings Ceramics (Al ₂ O ₃) Paddle-wheel PVDF
Display (accessories)	Grey dot matrix 128 x 64 with backlighting
Electrical connections	2 or 3 outputs transmitter 1 x 5-pin M12 male fixed connector 4 outputs transmitter 1 x 5-pin M12 male and 1 x 5-pin M12 female fixed connectors
Connection cable	Shielded cable
Environment	
Ambient temperature	-10...+60°C (+14...+140°F) (operating and storage)
Relative humidity	≤ 85%, without condensation

8026 ELEMENT

Complete device data (Pipe + flowmeter)	
Pipe diameter	DN15...DN400
Measuring range	0.3...10 m/s
Medium temperature with fitting in PVC / PP PVDF, brass or stainless steel	0...+50°C (+32...+122°F) / 0...+80°C (+32...+176°F) -15...+100°C (+5...+212°F)
Medium pressure max.	PN10 (145 PSI) - see pressure/temperature chart
Viscosity / Particles rate	300 cSt max. / 1% max.
Measurement deviation Teach-In Standard K-factor	±1% of Reading (at Teach-In flow rate value) ¹⁾ ±2.5% of Reading ¹⁾
Linearity	±0.5% of F.S.* ¹⁾
Repeatability	±0.4% of Reading ¹⁾

¹⁾ Under reference conditions i.e. measuring fluid=water, ambient and water temperature=20°C (68°F), applying the minimum inlet and outlet pipe straights, matched inside pipe dimensions.

* F.S.=Full scale (10 m/s)

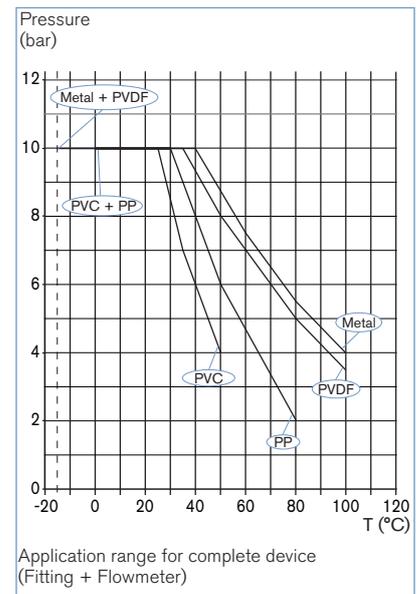
Electrical data	
Power supply 2 or 3 outputs transmitter (2-wire) 4 outputs transmitter (3-wire)	14...36 V DC, filtered and regulated 12...36 V DC, filtered and regulated
Characteristics of the power source (not provided) of UL recognized devices	Limited power source (according to § 9.3 of the UL61010-1 standard) or, Class 2 type power source (according to the 1310/1585 and 60950-1 standards)
Current consumption with sensor 2 or 3 outputs transmitter (2-wire) 4 outputs transmitter (3-wire)	≤ 1 A (with transistors load) ≤ 25 mA (at 14 V DC without transistors load, with current loop) ≤ 5 mA (at 12 V DC without transistors load, without current loop)
Power consumption	40 W max.
Reversed polarity of DC	Protected
Voltage peak	Protected
Short circuit	Protected for transistor outputs
Output Transistor 1 transistor output (Transmitter 2-wire)	NPN, open collector, 1...36 V DC, max. 700 mA
2 transistor outputs (Transmitter 2 or 3-wire)	Configurable as sourcing or sinking (respectively both as PNP or NPN), open collector, max. 700 mA, 0.5 A max. per transistor if the 2 transistor outputs are wired NPN-output: 1...36 V DC PNP-output: Power supply
Current 1 current output (Transmitter 2-wire)	4...20 mA programmable as sourcing or sinking (in the same mode as transistor), max. loop impedance: 1100 Ω at 36 V DC ; 610 Ω at 24 V DC; 180 Ω at 14 V DC
2 current outputs (Transmitter 3-wire)	max. loop impedance: 1100 Ω at 36 V DC; 610 Ω at 24 V DC; 100 Ω at 12 V DC
4...20 mA output uncertainty	±1%

Standards, directives and certifications	
Protection class	IP65, IP67 (according to EN60529), NEMA 4X (according to NEMA250) with device wired and M12 cable plug mounted and tightened and cover fully screwed down
Standard and directives 	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable) Complying with article 4, §1 of 2014/68/EU directive*
Certification UL-Recognized for US and Canada 	UL61010-1 + CAN/CSA-C22.2 No.61010-1

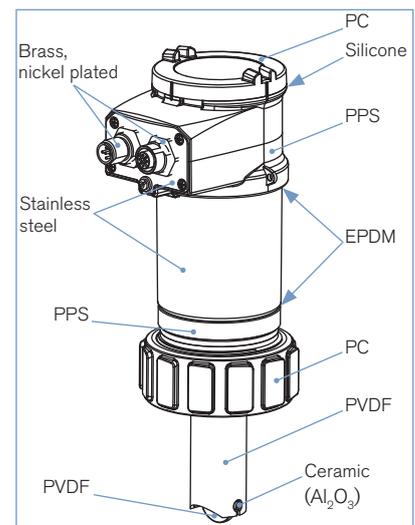
 If the device is mounted in a humid environment or outside the maximum allowed voltages are **35 V DC** instead of 36 V DC.

bürkert

Pressure/temperature chart



Materials view



* For the 2014/68/EU pressure directive, the device can only be used under following conditions (depend on max. pressure, pipe diameter and fluid).

Type of fluid	Conditions
Fluid group 1, article 4, §1.c.i	DN ≤ 25
Fluid group 2, article 4, §1.c.i	DN ≤ 32 or PN*DN ≤ 1000
Fluid group 1, article 4, §1.c.ii	DN ≤ 25 or PN*DN ≤ 2000
Fluid group 2, article 4, §1.c.ii	DN ≤ 200 or PN ≤ 10 or PN*DN ≤ 5000

Principle of operation

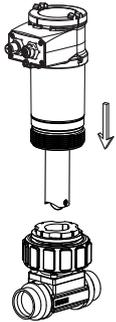
When liquid flows through the pipe, the paddle-wheel with 4 inserted magnets is set in rotation, producing a measuring signal in the sensor (Hall sensor). The frequency modulated induced voltage is proportional to the flow velocity of the fluid.

A conversion coefficient (K-factor, available in the instruction manual of the S020 fitting), specific to each pipe (size and material) enables the conversion of this frequency into flow rate.

The electronic component converts the measured signal into several outputs (according to the flowmeter version) and displays the actual value. Counters are used to obtain the volume of fluid passed through the pipe.



In-line installation



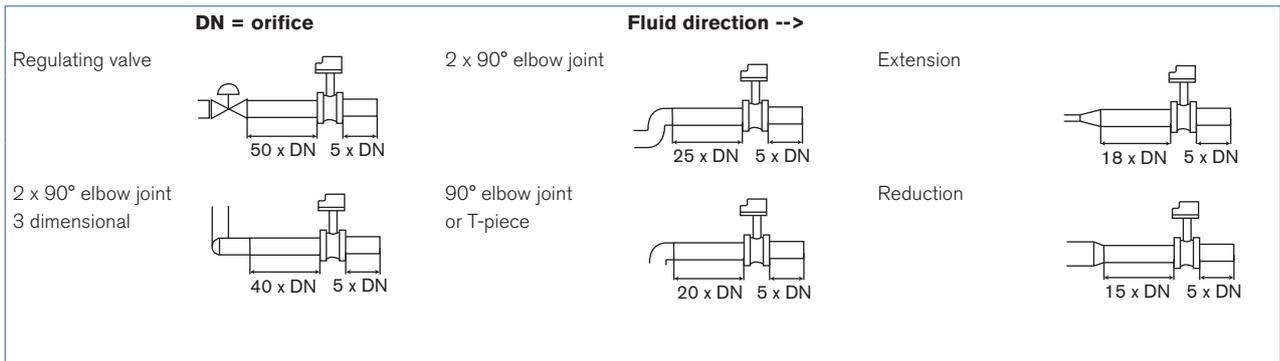
The 8026 flowmeter can easily be installed into any Bürkert INSERTION fitting system (S020), by just fixing the main nut.

Minimum straight upstream and downstream distances must be observed. According to the pipe's design, necessary distances can be bigger or use a flow conditioner to obtain the best accuracy.

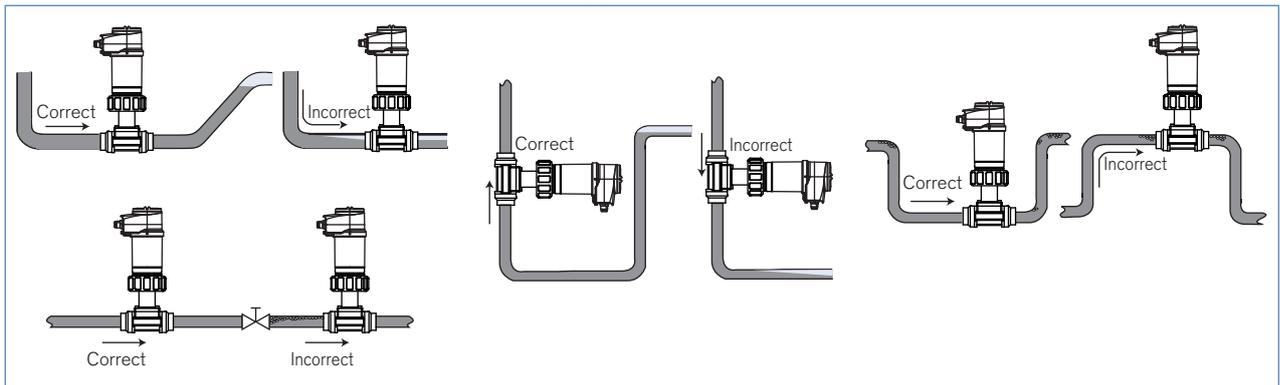
For more information, please refer to EN ISO 5167-1.

EN ISO 5167-1 prescribes the straight inlet and outlet distances that must be complied with when installing fittings in pipe lines in order to achieve calm flow conditions. The most important layouts that could lead to turbulence in the flow are shown below, together with the associated prescribed minimum inlet and outlet distances.

These ensure calm, problem-free measurement conditions at the measurement point.



The flow rate sensor can be installed into either horizontal or vertical pipes.



Pressure and temperature ratings must be respected according to the selected fitting material.

The suitable pipe size is selected using the diagram Flow/Velocity/DN.

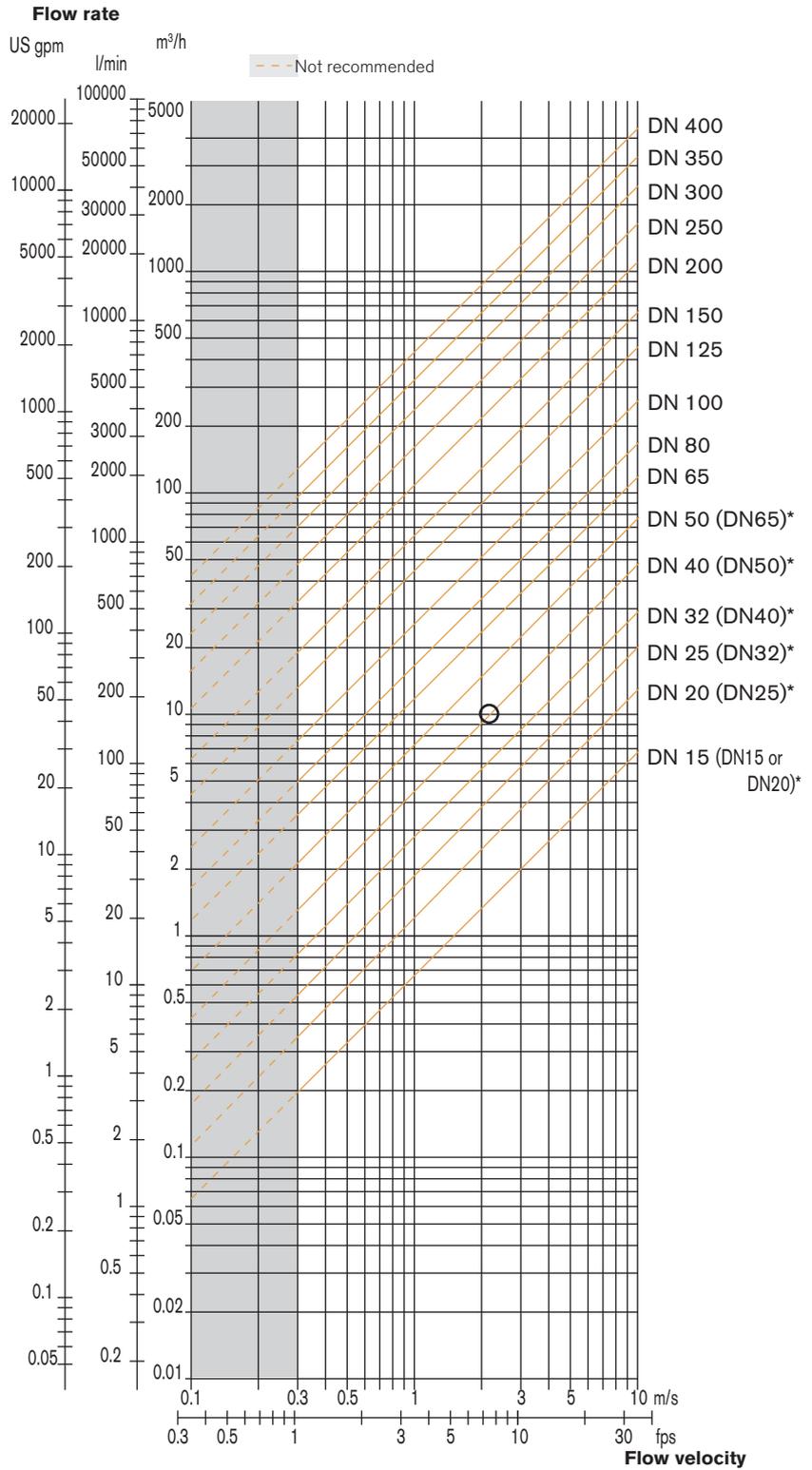
The flowmeter is not designed for gas flow measurement.

Selection of fitting/pipe size

Example:

- Specification of nominal flow: 10 m³/h
- Ideal flow velocity: 2...3 m/s

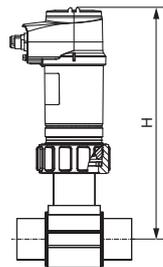
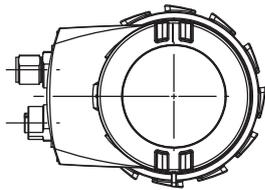
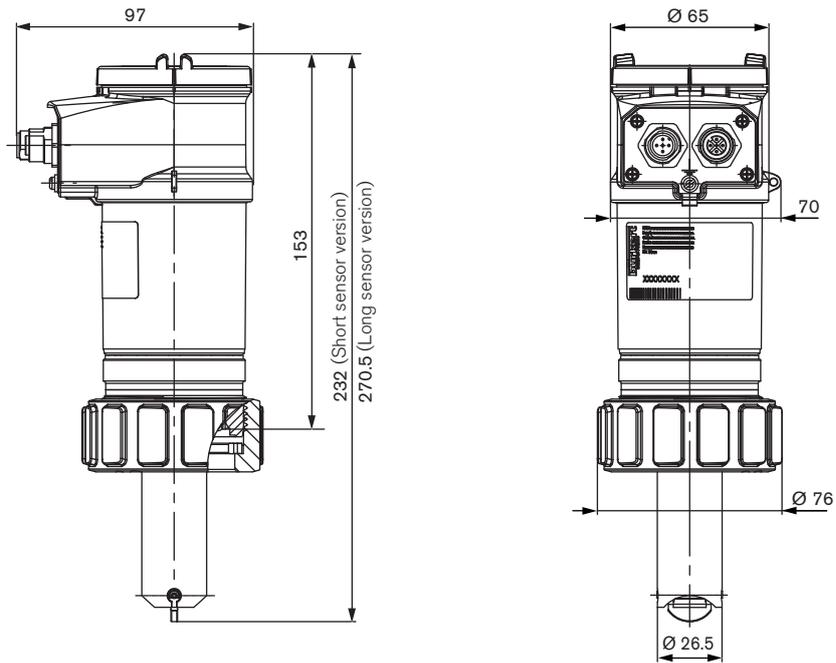
For these specifications, the diagram indicates a pipe size of DN40 [or DN50 for (*) mentioned fittings]



* for following fittings with:
 - external threads acc. to SMS 1145
 - weld ends acc. to SMS 3008, BS4825-1/ASME BPE/DIN 11866 series C or DIN 11850 series 2/DIN 11866 series A/DIN EN 10357 series A
 - Clamp acc. to SMS 3017, BS 4825-3/ASME BPE or DIN 32676 series A

DTS 1000128706 EN Version: H Status: RL (released | freigegeben | valide) printed: 24.10.2016

Dimensions [mm] of flowmeter Type 8026



DN [mm]	H with S020 fitting [mm]			
	T-Fitting	Saddle	Plastic spigot	Metal spigot
15	233.5			
20	231.5			
25	231.5			
32	234.5			
40	238.5			
50	244.5	269.5		239.5
65	244.5	267.5	252.5	245.5
80		272.5	258.5	250.5
100		277.5	265.5	260.5
110		273.5		
125		280.5	300.5	271.5
150		250.5	307.5	282.5
180		314.5		
200		326.5	328.5	303.5
250			346.5	363.5
300			358.5	382.5
350			371.5	394.5
400			386.5	

Ordering information for compact flowmeter Type 8026

A complete flowmeter with integrated paddle-wheel sensor Type 8026 consists of a compact flow ELEMENT flowmeter Type 8026, a removable display/programmer and a Bürkert INSERTION fitting Type S020

The following information is necessary for the selection of a complete device:

- **Item no.** of the desired compact flowmeter **Type 8026** (see ordering chart on p. 7)
- **Item no.** of the selected INSERTION fitting **Type S020** (see separate data sheet)



You have always to order separately two components.

Attention!

When you order devices without display, please take care that you also order at least one display module for the operation.

Order no. of the removable display / programming module (see ordering chart on p. 7)

When you click on the orange box "More info." below, you will come to our website for the resp. product where you can download the data sheet.

Example

Compact flowmeter with display Type 8026



Compact flowmeter without display Type 8026



Removable display/programmer



INSERTION fitting Type S020



Complete flowmeter Type 8026



Ordering chart for compact flowmeter Type 8026

Specifications	Voltage supply	Output	Sensor version	Electrical connection	UL Certification	Item no.	
						without display	with display
2 outputs	14...36 V DC	1 x transistor NPN + 1 x 4...20 mA (2-wire)	Short	5-pin M12 male fixed connector	No	560 860	561 860
					 Recognized	560 863	561 863
			Long	5-pin M12 male fixed connector	No	560 870	561 870
					 Recognized	560 873	561 873
3 outputs	14...36 V DC	2 x transistors NPN/ PNP + 1 x 4...20 mA (2-wire)	Short	5-pin M12 male fixed connector	No	560 861	561 861
					 Recognized	560 864	561 864
			Long	5-pin M12 male fixed connector	No	560 871	561 871
					 Recognized	560 874	561 874
4 outputs	12...36 V DC	2 x transistors NPN/ PNP + 2 x 4...20 mA (3-wire)	Short	5-pin M12 male and 5-pin M12 female fixed connectors	No	560 862	561 862
					 Recognized	560 865	561 865
			Long	5-pin M12 male and 5-pin M12 female fixed connectors	No	560 872	561 872
					 Recognized	560 875	561 875

Note: FKM seal in standard; 1 Kit including a black EPDM seal and a mounting instruction sheet is supplied with each flowmeter.

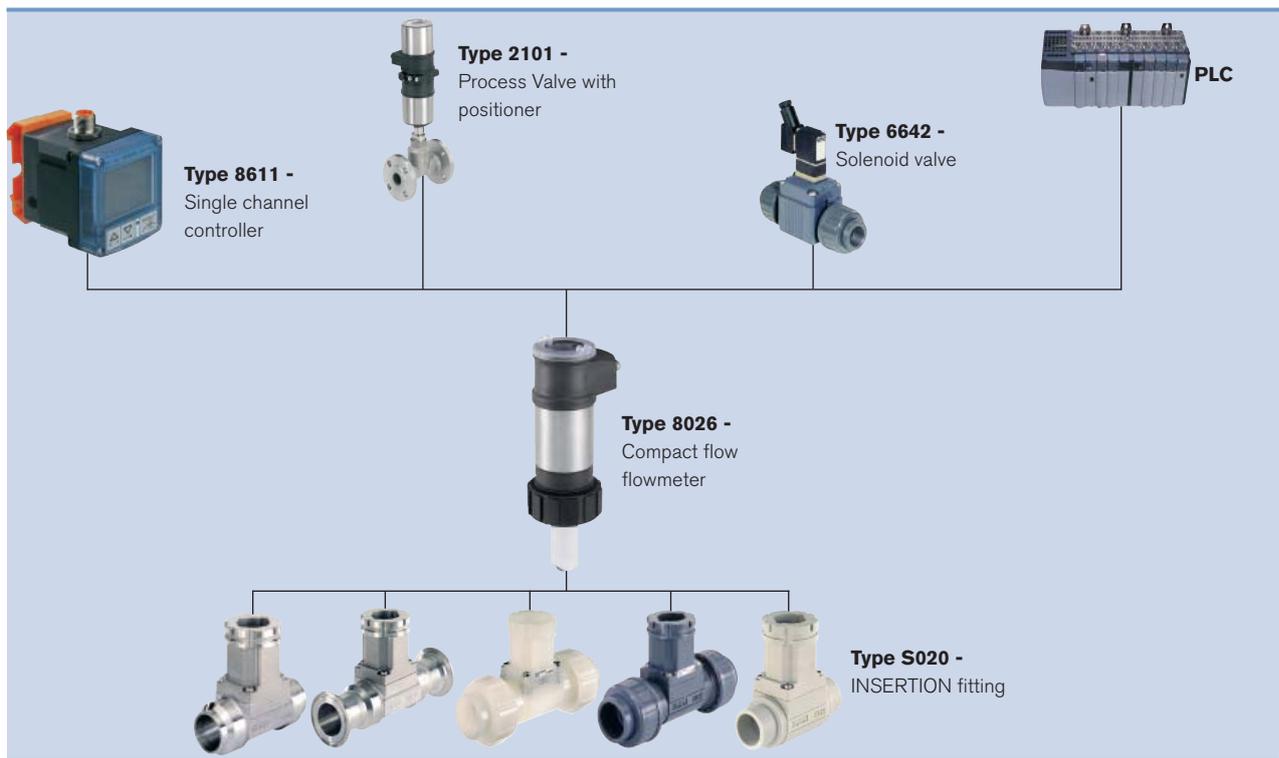
Note: Order separately (see accessories)

- M12 cable plugs (only female for one 4...20 mA output, 1 male + 1 female for two 4...20 mA outputs flowmeter)

Ordering chart for accessories

Description	Item no.
Removable display/programmer module (with instruction sheet)	559 168
Blind cover with EPDM seal	560 948
Transparent cover with EPDM seal	561 843
Ring	619 205
Nut	619 204
Set with 1 green FKM and 1 black EPDM seal	552 111
 5 pin M12 female straight cable plug with plastic threaded locking ring, to be wired	917 116
 5 pin M12 male straight cable plug with plastic threaded locking ring, to be wired	560 946
 5 pin M12 female straight cable plug moulded on cable (2 m, shielded)	438 680
 5 pin M12 male straight cable plug moulded on cable (2 m, shielded)	559 177

Interconnection possibilities with other Bürkert devices



DTS 1000128706 EN Version: H Status: RL (released | freigegeben | valide) printed: 24.10.2016

To find the nearest Bürkert, click on the orange box →

www.burkert.com

In case of special application conditions,
please consult for advice.

Subject to alteration
© Christian Bürkert GmbH & Co. KG

1607/8_EU-en_00895129