



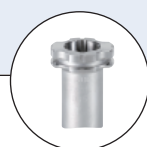
Electromagnetic Flow Transmitter

- Sensor in solid state technology
- Working as a transmitter and/or as an On/Off controller
- Automatic-calibration of full scale: Teach-In
- Clean in place (CIP)
- FDA approved

Type 8041 can be combined with...



Type S020
INSERTION
T-fitting



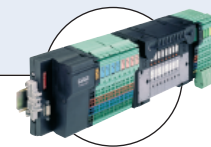
Type S020
Spigot



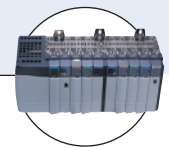
Type 8025
Universal transmitter /
batch controller (remote v.)



Type 8802-GD
Globe control valve



Type 8644
Valve islands with
electronic I/O



PLC

The electromagnetic flow transmitter 8041 has been designed for pipes with diameters ranging from DN 06 to DN 400 and liquids having a conductivity > 20 µS/cm.

The transmitter is a magmeter made up of an electronic module and a sensor which armature is in PVDF or stainless steel.

It is fitted with a 4-20 mA output, a pulse rate output and a relay output. The different parameters can be programmed by means of 5 switches, a push-button and a 10 led bargraph. The version with a stainless steel sensor can be used in applications with higher pressures (PN16) and higher temperatures (150°C).

Technical data

General data

Compatibility	with fittings S020 (see corresp. datasheet)
Materials	
Housing, cover, nut	PC (glass fibre reinforced for housing)
PVDF sensor version	PPA (glass fibre reinforced)
St.St. sensor version	Stainless steel / EPDM / PA
Screws / Seal / Cable glands	
Wetted parts materials	
Sensor armature	PVDF or Stainless steel 1.4404/316L
Electrodes	Stainless steel 1.4404/316L
Gaskets	FKM (FDA agreements)
Earth ring (PVDF sensor version)	Stainless steel 1.4404/316L
Electrode holder (St.St. sensor version)	PEEK (FDA agreements)
Electrical connections	Cable glands M20 x 1.5 - 1.5 mm ² cross-section, shielded

Complete device data (Fitting S020 + transmitter)

Pipe diameter	DN 06 to 400
Measuring range	0.2 to 10 m/s
Sensor element	Electrodes
Fluid temperature	
PVDF sensor version	0 up to 80°C (32 to 176°F) (depends on fitting)
St.St. sensor version	-15 up to 150°C (5 to 302°F) (depends on fitting)
Fluid pressure max.	see pressure/temperature diagram
PVDF sensor version	PN10 (145.1 PSI)
St.St. sensor version	PN10 (145.1 PSI) (with plastic fitting) - PN16 (232.16 PSI) (with metal fitting)
Conductivity	min. 20 µS/cm
Accuracy	(for measured value from 1 to 10 m/s and -15°C (5°F) < T° < 130°C (266°F) for st. st. sensor, or 0°C (32°F) < T° < 80°C (176°F) for PVDF sensor)
Teach-In	±2% of Reading ¹⁾
Standard K-factor	±4% of Reading ¹⁾
Linearity	±(1% of Reading + 0.1% of F.S.*) ¹⁾
Repeatability	≤0.25% 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	18-36 V DC filtered and regulated (3 wires)
Reversed polarity of DC	protected
Current consumption	≤ 220 mA
Output	
Signal current	4-20 mA, 100 ms refresh rate; max. loop impedance: 1100 Ω at 36 V DC; 330 Ω at 18 V DC.
Frequency	0-240 Hz, duty cycle = 50%±1%; 100 mA max., protected against short-circuits and polarity reversals.
Relay	Normally open or normally closed (depending on wiring), 3A, 250 V AC
Alarm	
Full scale exceeding	22 mA and 256 Hz
Fault signalling	22 mA and 0 Hz
User parameter	Saved in EEPROM
Environment	
Ambient temperature	-10 up to +60°C (14 to 140°F) (operating) -20 up to +60°C (-4 to 140°F) (storage)
Relative humidity	< 80%, without condensation
Altitude max. for operating	2000 m
Standards, directives and approvals	
Protection class	IP65
Standards and directives	
EMC	EN 50081-1, EN 61000-6-2
Low voltage	EN 61010-1
Pressure	Complying with article 3 of §3 from 97/23/CE directive.*
Vibration	EN 60068-2-6
Shock	EN 60068-2-27
Approval	FDA

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

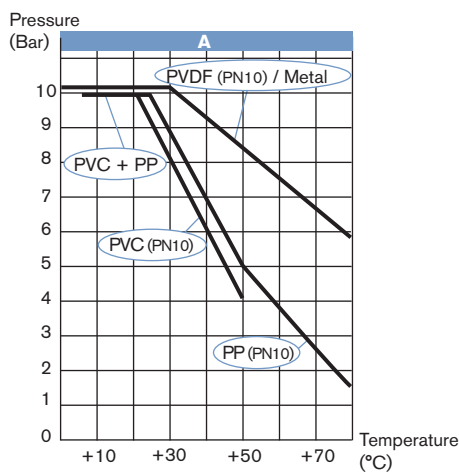
Type of fluid	Conditions
Fluid group 1, §1.3.a	Forbidden
Fluid group 2, §1.3.a	DN ≤ 32, or DN > 32 and PN*DN ≤ 1000
Fluid group 1, §1.3.b	PN*DN ≤ 2000
Fluid group 2, §1.3.b	DN ≤ 200 or PN ≤ 10 or PN*DN ≤ 5000

Pressure / Temperature diagram

Please be aware of the fluid pressure-temperature dependance according to the respective fitting+transmitter material as shown in the diagrams.

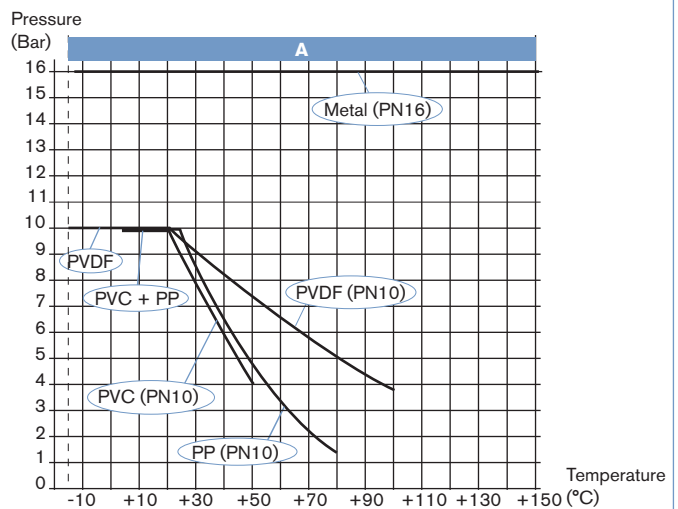
8041 with a PVDF sensor

(depending on the fitting material)



8041 with a stainless steel sensor

(depending on the fitting material)



A: Application range for complete device (fitting + transmitter)

Main features and programming

Using as a transmitter

- Programming of the full scale
 - selection of a predefined measuring range: 0 to 2, to 5 or to 10 m/s
 - selection by Teach-In: with the actual max. flow velocity of the application
- 4-20 mA current output
- 0-240 Hz frequency output
- Relay output: switching mode either window or hysteresis, on low or high switching threshold
- Relay time-out
- Filter
- Alarm:
 - for full scale exceeding with 22 mA and 256 Hz
 - for fault signalling with 22 mA and 0 Hz

Using as an ON/OFF control

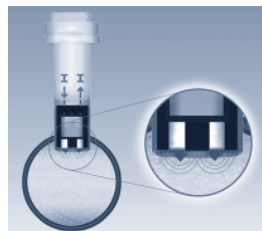
- Flow detection with switching thresholds, defined as a percentage of max. flow rate.
Teach-In of the full scale with an unknown max. flow rate.

Possible applications

Flow control of fluids, contaminated or not:

- ▶ Waste water treatment
- ▶ Flow control of drinking water (FDA approval)
- ▶ Laundries: measurement and control of the water consumption
- ▶ Swimming pools: pump protection and flow control
- ▶ Food-processing industry: monitoring of the cleaning cycles (FDA approval)
- ▶ Irrigation

Design



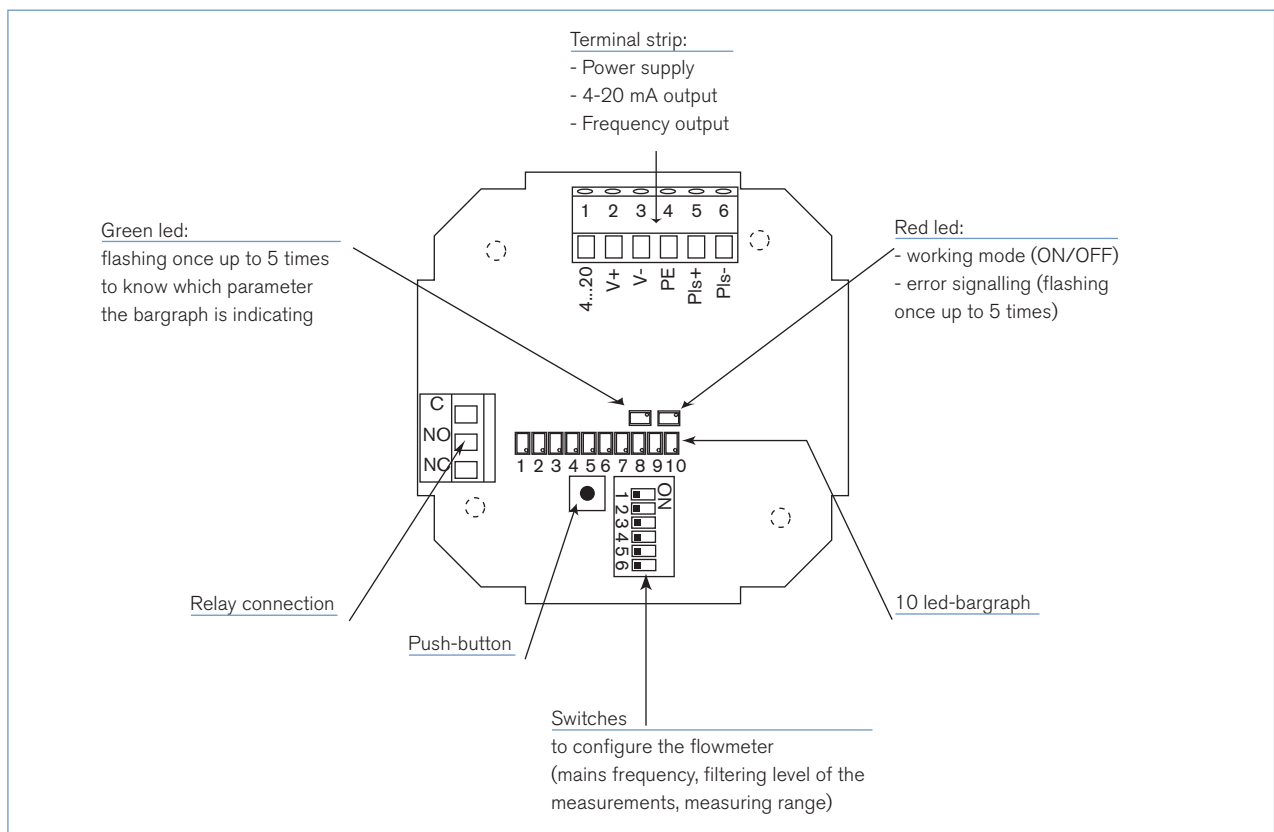
The E-shaped magnetic system inside the sensor induces a magnetic field into the fluid, which is perpendicular to the direction of flow.

Two electrodes are in galvanic contact with the liquid.

Based on the Faraday law a voltage can be measured between these electrodes once a liquid (min. conductivity of 20 µS/cm)

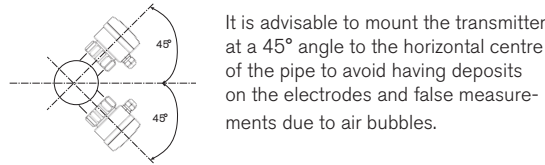
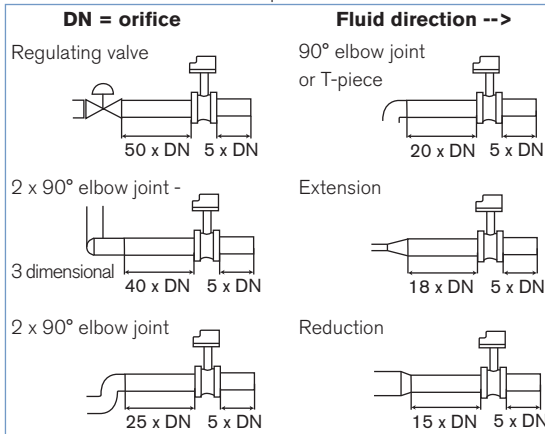
flows along the pipe. This voltage is proportional to the flow velocity. Using the K-factor for the individual pipe diameter the speed of flow is converted into volume per time.

Display on PCB

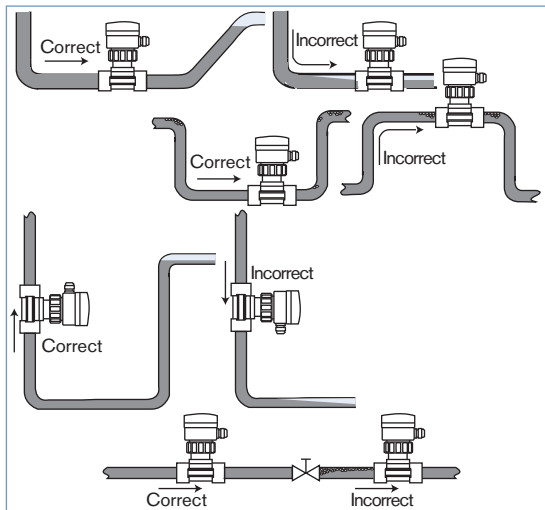


Installation

The 8041 transmitter 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 transmitter can be installed into either horizontal or vertical pipes. Mount the 8041 transmitter in these correct ways to obtain an accurate flow measurement.



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.

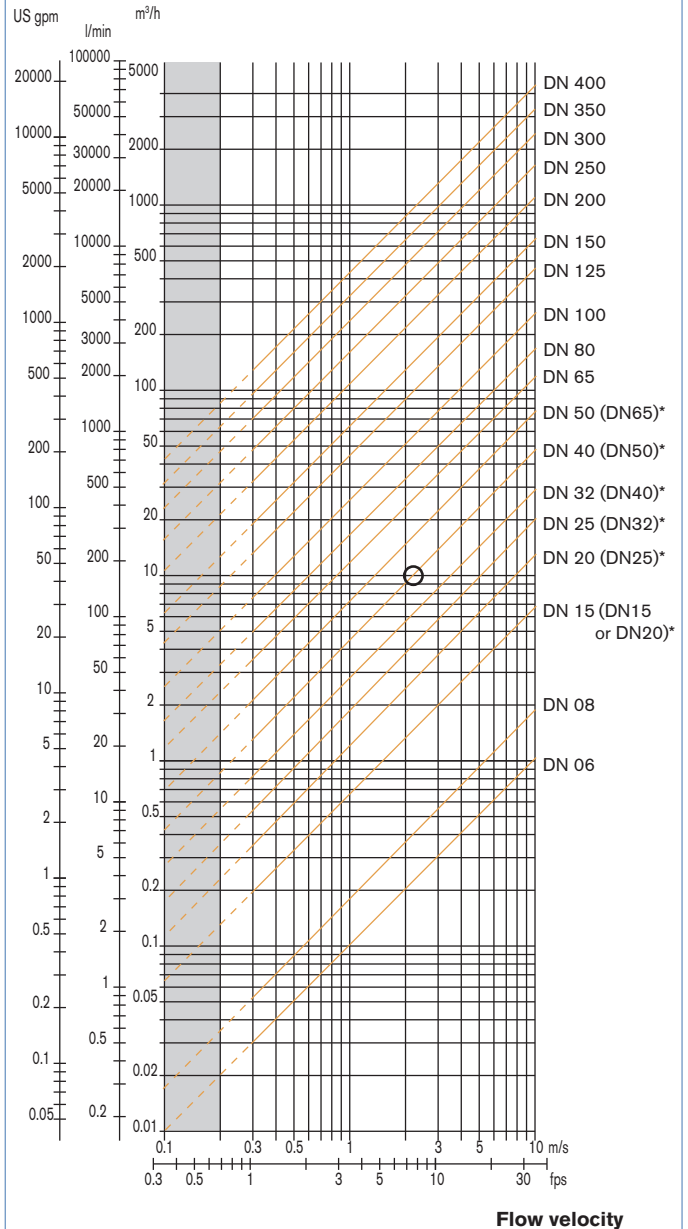
The flow transmitter is not designed for gas flow measurement.

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]

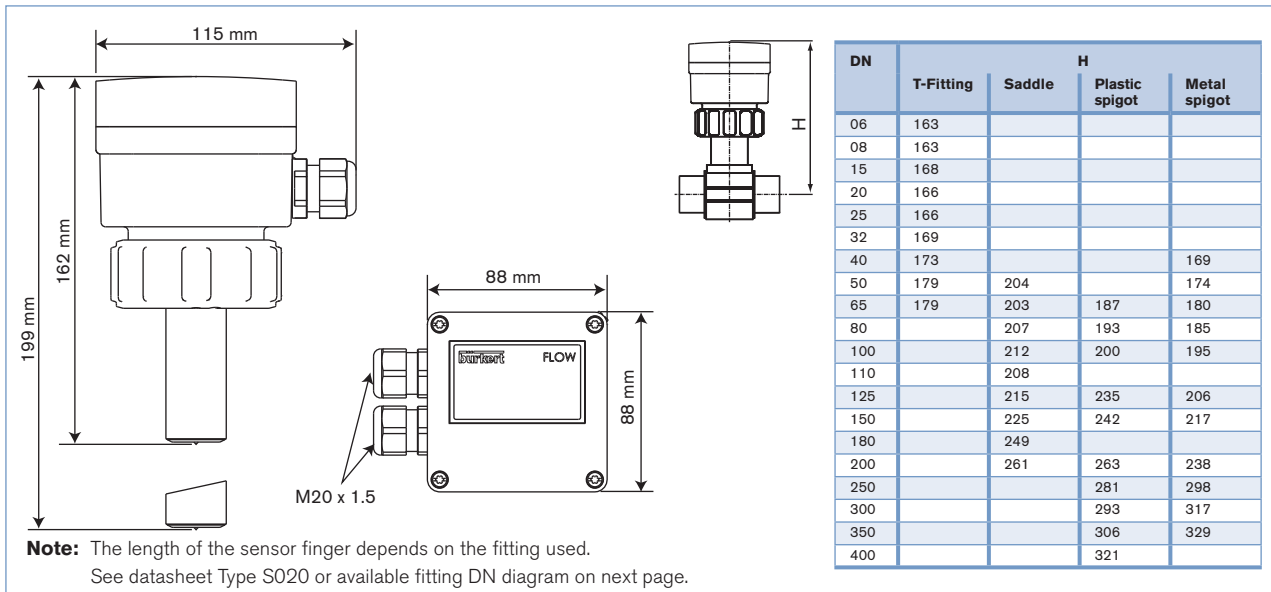
Flow rate



* for following fittings:

- with external threads acc. to SMS 1145
- with weld-ends acc. to SMS 3008, BS 4825 / ASME BPE or DIN 11850 Series 2
- Clamp acc. to SMS 3017 / ISO 2852, BS 4825 / ASME BPE or DIN 32676

Dimensions [mm]



Ordering chart for transmitter Type 8041 - for fitting S020 (see corresp. data sheet)

Voltage supply	Output	Relay	Housing material	Gaskets	Sensor version	Electrical connection	Item no.
18-36 V DC	4-20 mA, frequency	1	PC	FKM	short, PVDF	2 cable glands	558 064
					long, PVDF	2 cable glands	558 065
			PPA	FKM	short, stainless steel (FDA)	2 cable glands	552 779
					long, stainless steel (FDA)	2 cable glands	552 780

Note: 1 Kit 558 102, 1 relay connection kit 552 812 and 1 EPDM gasket are supplied with each transmitter.

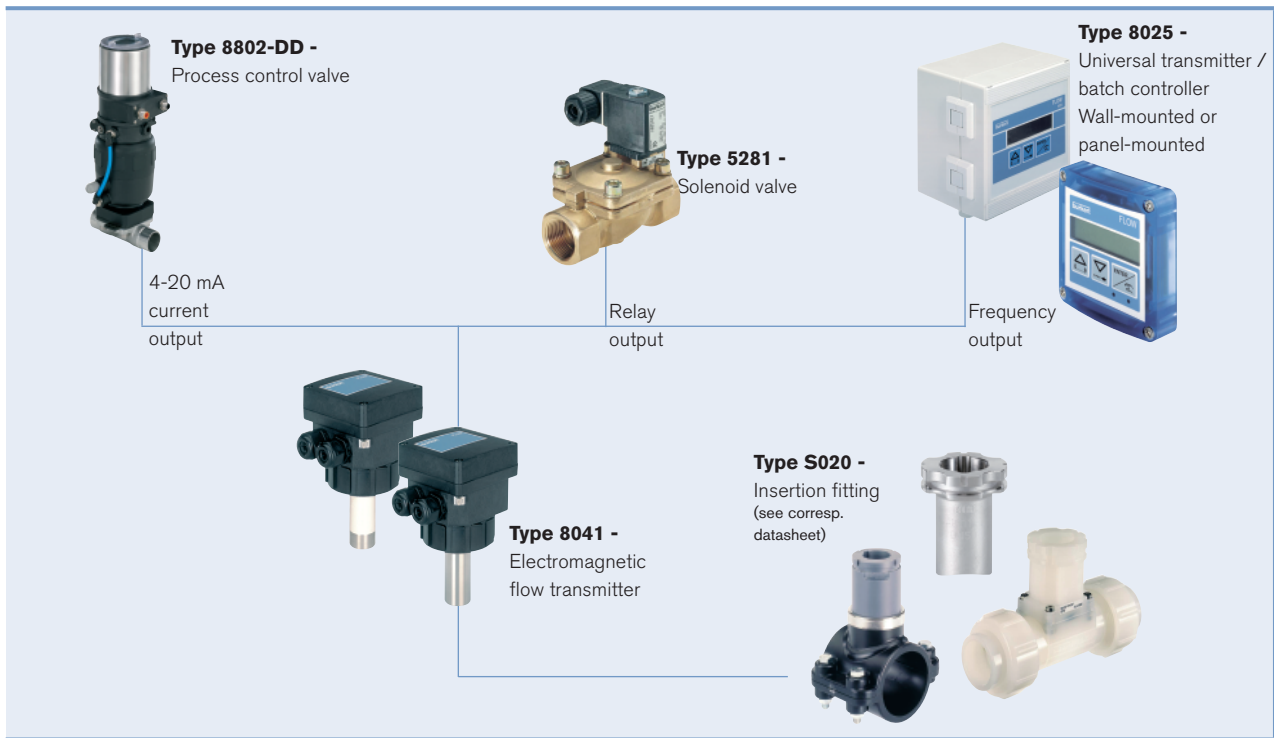
Ordering chart - accessories for transmitter Type 8041 (has to be ordered separately)

Specifications	Item no.
Set with 2 cable glands M20 x 1.5 + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20 x 1.5 + 2 multiway seals 2 x 6 mm	449 755
Set with 2 reductions M20 x 1.5 /NPT1/2" + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20 x 1.5	551 782
Set with 1 stopper for unused cable gland M20 x 1.5 + 1 multiway seal 2 x 6 mm for cable gland + 1 green FKM gasket for the sensor + 1 mounting instruction sheet	558 102
Ring	619 205
PC union nut	619 204
PPA union nut	440 229
Set with 1 green FKM and 1 black EPDM gasket	552 111
Relay connection kit with 1 screw terminal strip + 1 protection cap + 1 rilsan + 1 mounting instruction sheet	552 812
3 points calibration certificate (device combined with a S020 fitting, only for DN ≤ 200)	550 676
FDA - Approval (only stainless steel sensor version)	449 788

Ordering chart for remote electronics Type 8025 which can be connected to the 8041

Version	Description	Voltage supply	Output	Relays	Sensor version	Electrical connection	Item no.
Panel	Type 8025 "Universal", 2 totalizers	18-30 V DC	4-20 mA, pulse	None	8041	Terminal strip	419 538
	Type 8025 "Batch", 2 totalizers, 1 flowrate	18-30 V DC	-	2	8041	Terminal strip	419 537
Wall	Type 8025 "Universal", 2 totalizers	18-30 V DC	4-20 mA, pulse	None	8041	3 cable glands	419 541
		115-230 V AC	4-20 mA, pulse	2	8041	3 cable glands	419 540
	Type 8025 "Batch", 2 totalizers, 1 flowrate	18-30 V DC	-	None	8041	3 cable glands	419 544
		18-30 V DC	-	2	8041	5 cable glands	433 740

Interconnection possibilities with other Bürkert flow sensors



Available S020 Fitting DN	T-fitting S020	DN 06	Short sensor		DN65
		(1)			
Welding tab S020				DN50	DN200 DN350
				Short sensor	Long sensor
Fusion spigot S020			DN65	DN100	DN400
			Short sensor	Long sensor	
Screw-on S020				DN100	DN400
				Long sensor	
Saddle S020			DN50		DN200
				Long sensor	

(1) DN 06 and DN 08 in stainless steel S020 only, 8041 with stainless steel sensor recommended

To find your nearest Bürkert facility, 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

1010/10_EU-en_00891911