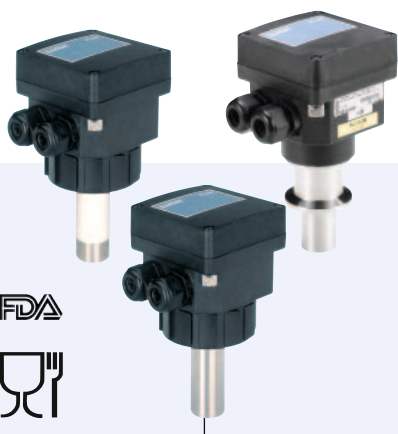
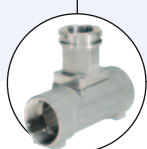


Insertion electromagnetic flowmeter



Type 8041 can be combined with...



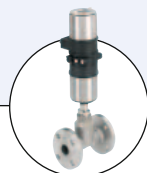
Type S020
INSERTION
T-fitting



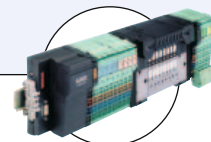
Type 8619
multiCELL
Transmitter/Controller



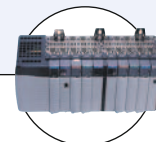
Type 8025
Universal transmitter/
batch controller (remote version)



Type 8802-GD
TopControl System



Type 8644
Valve islands with
electronic I/O



PLC

- Sensor without moving parts
- Flowmeter with On/Off control
- Application related calibration by Teach-In
- Clean in place (CIP)
- FDA conform materials

The electromagnetic flowmeter 8041 is made up of an electronic module and a sensor using PVDF or stainless steel material. It has been designed to measure a flow rate of neutral and slightly aggressive fluids with a conductivity of more than 20 $\mu\text{S}/\text{cm}$ in DN06...DN400 pipes.

It is fitted with a 4...20 mA output, a pulse output and a relay output. The different parameters can be set by means of 5 switches, a push-button and a 10 fields LED bargraph.

It is available:

- with G2" connection for the version with a PVDF sensor
- with G2" or clamp connection for the version with a stainless steel sensor.

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) |
| Stainless steel sensor version | Stainless steel / NBR / PA with neoprene seal |
| Screws / Seal / Cable glands | |
| Wetted parts materials | PVDF or Stainless steel 1.4404/316L |
| Sensor holder | Stainless steel 1.4404/316L |
| Electrodes | G2" connection: FKM or EPDM (conform to FDA), Clamp connection: EPDM or FEP (to be ordered separately) |
| Seals | Stainless steel 1.4404/316L |
| | PEEK (conform to FDA) |
| Earth ring (PVDF sensor version) | |
| Electrode holder (St. Steel sensor version) | |
| Surface finishing quality | Ra < 0.8 μm (Clamp connection) |
| Electrical connections | 2 cable glands M20 x 1.5 |
| Recommended cable | 0.5...1.5 mm ² cross-section, shielded cable, 6...12 mm diameter (if only one cable is used per cable gland) or 4 mm diameter (if two cables are used per cable gland with using the supplied multi-way seal) |
| Environment | |
| Ambient temperature | -10...+60°C (+14...+140°F) (operating) -20...+60°C (-4...+140°F) (storage) |
| Relative humidity | < 80%, without condensation |
| Height above sea level | Max. 2000 m |

| Complete device data (Fitting S020 + flowmeter) | |
|---|---|
| Pipe diameter | |
| G2" connection | DN06...DN400 |
| Clamp connection | DN32...DN100 |
| Measuring range | 0.2...10 m/s |
| Sensor element | Electrodes |
| Fluid temperature | see Pressure/Temperature diagram |
| PVDF sensor version | 0...+80°C (+32...+176°F) (depends on fitting) |
| Stainless steel sensor version | -15...+150°C (+5...+302°F) (depends on fitting) |
| Fluid pressure max. | see pressure/temperature diagram |
| PVDF sensor version | PN10 (145.1 PSI) |
| Stainless steel sensor version | PN10 (145.1 PSI) (with plastic fitting) - PN16 (232.16 PSI) (with metal fitting) |
| Conductivity | min. 20 µS/cm |
| Viscosity | < 1000 mPa.s |
| Measurement deviation¹⁾ | |
| Teach-In | ±0.5% of Reading ²⁾ (at the teach flow rate value) |
| Standard K-factor | ±3.5% of Reading ²⁾ |
| Linearity | ±0.5% of F.S. ²⁾ |
| Repeatability | ±0.25% of Reading ²⁾ |



¹⁾ = "measurement bias" as defined in the standard JCGM 200:2012

²⁾ 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 (at 18 V DC) |
| Output | |
| Signal current | 4...20 mA (sink or source by wiring), 100 ms refresh time; 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), 250 V AC/3 A or 40 V DC/3 A (resistive load) |
| 4...20 mA output uncertainty | ±1% |
| Alarm | |
| Full scale exceeding | 22 mA and 256 Hz |
| Fault signalling | 22 mA and 0 Hz |
| User parameter | Saved in EEPROM |

| Specific technical data of UL-recognized products for US and Canada | |
|---|---|
| Relay output | 30 V AC and 42 V peak max./3A or 60 V DC max./1 A |
| Ambient temperature | 0...+40°C (32...+104°F) |
| Relative humidity | max. 80%, without condensation |
| Intended for an inner pollution | Pollution degree 2 |
| Installation category | Category I |

| Standards, directives and certifications | |
|--|---|
| Protection class | IP65 |
| 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* |
| Pressure | |
| Certificates | |
| FDA declaration of conformity | For stainless steel or PVDF sensor with FKM or EPDM seal |
| ECR1935/2004 declaration | Only for stainless steel sensor with EPDM seal |
| Certification | |
| UL-Recognized  for US and Canada | UL61010-1 + CAN/CSA-C22.2 No.61010-1 |

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

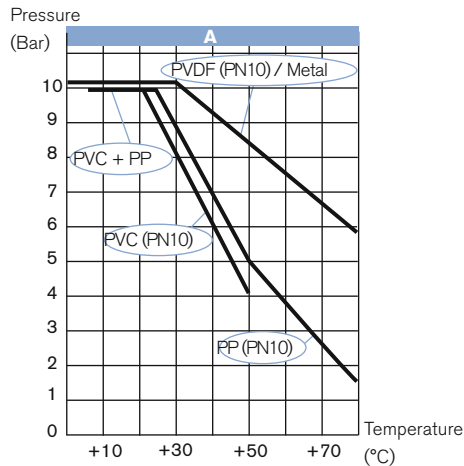
| Type of fluid | Conditions |
|--|---|
| Fluid group 1, article 4, §1.c.i | Forbidden |
| Fluid group 2, article 4, §1.c.i | DN ≤ 32 or PN*DN ≤ 1000 |
| Fluid group 1, article 4, §1.c.ii | DN ≤ 25 or PN*DN ≤ 2000 |
| Fluid group 2, article 4, §1.c.ii | DN ≤ 200 or PN ≤ 10 or PN*DN ≤ 5000 |

Pressure/Temperature diagram

Please be aware of the fluid pressure/temperature dependence according to the respective fitting+flowmeter material as shown in the diagrams.

8041 with a PVDF sensor

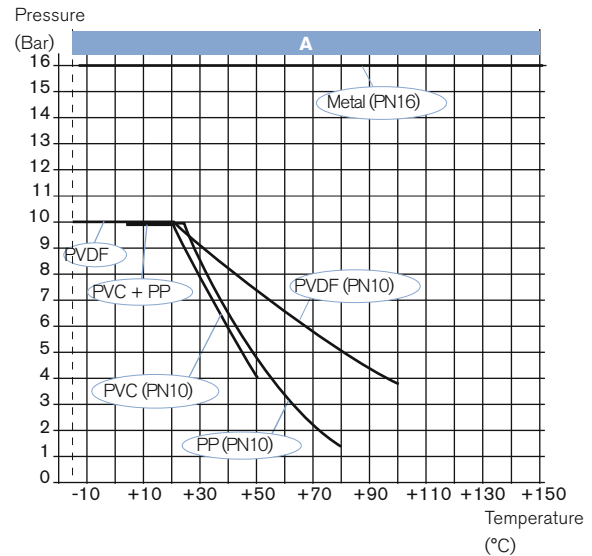
(depending on the fitting material)



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

8041 with a stainless steel sensor

(depending on the fitting material)



Main features and programming

Using as a flowmeter

- Programming of the full scale
 - selection of a predefined measuring range: 0...2, 0...5 or 0...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 delay before switching
- Filter
- Alarm:
 - for full scale exceeding with 22 mA and 256 Hz
 - for fault signalling with 22 mA and 0 Hz

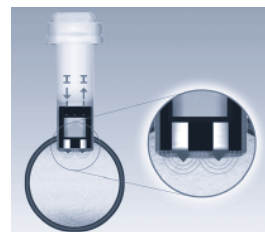
Using as an ON/OFF control

- Flow detection with switching thresholds, defined as a percentage of max. flow rate.
- Adjustment of the full scale of the device accordingly to the customer process full scale.

Possible applications

- Flow control of conductive fluids, contaminated or not:
 - ▶ Waste water treatment
 - ▶ Flow control of drinking water
 - ▶ Laundries: measurement and control of the water consumption
 - ▶ Swimming pools: pump protection and flow control
 - ▶ Food-processing industry: monitoring of the cleaning cycles (conform to FDA)
 - ▶ Irrigation

Design

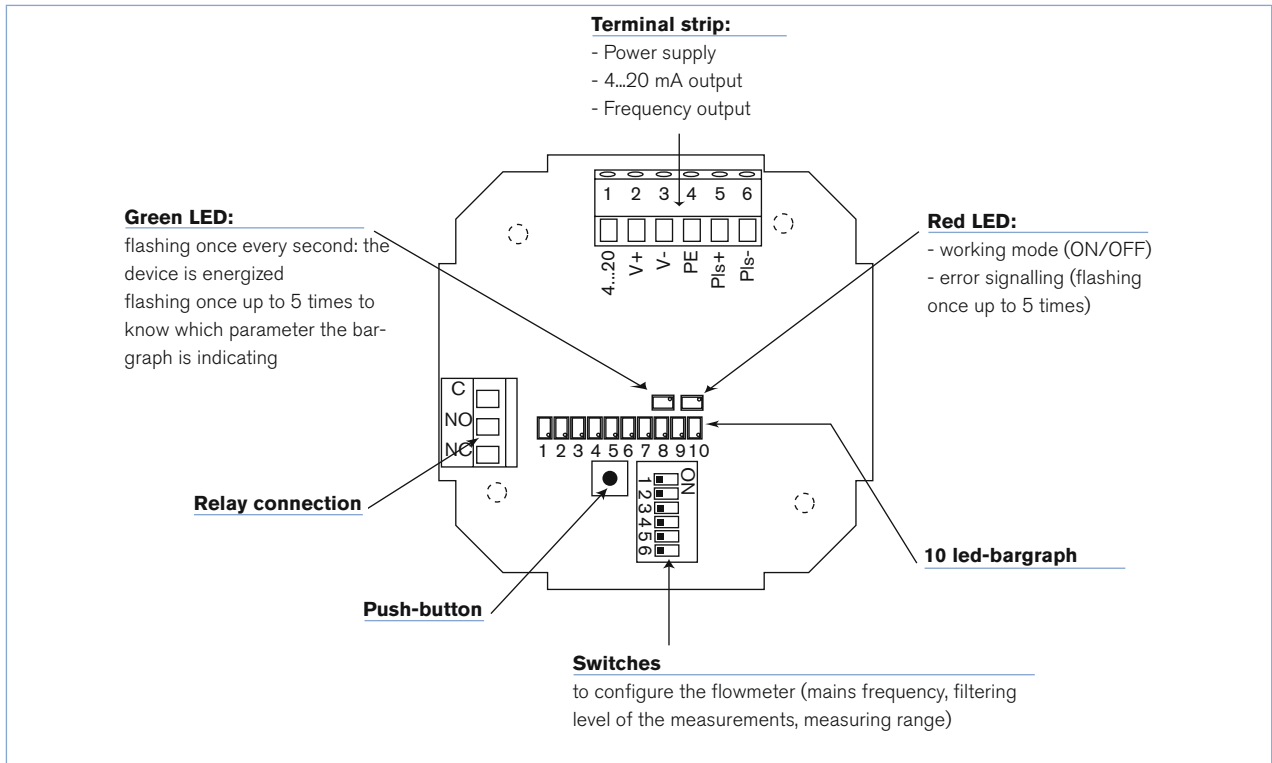


The E-shaped magnetic system inside the sensor induces a magnetic field into the fluid, which is perpendicular to the direction of flow. Two electrodes are in galvanic contact with the liquid.

Based on the Faraday law a voltage can be measured between these electrodes once a liquid (min. conductivity of 20 $\mu\text{S}/\text{cm}$) 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.

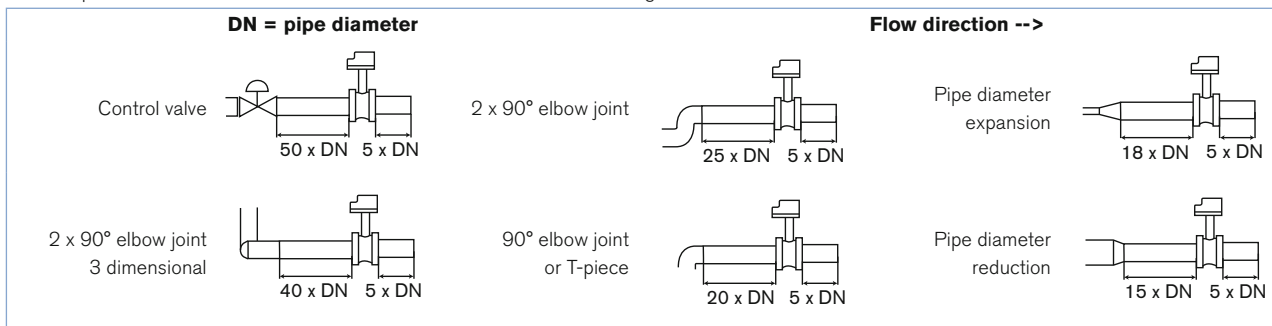
Display on PCB



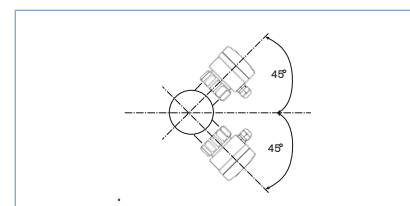
Installation

The 8041 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 result. 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 determined according to the standard EN ISO 5167-1.

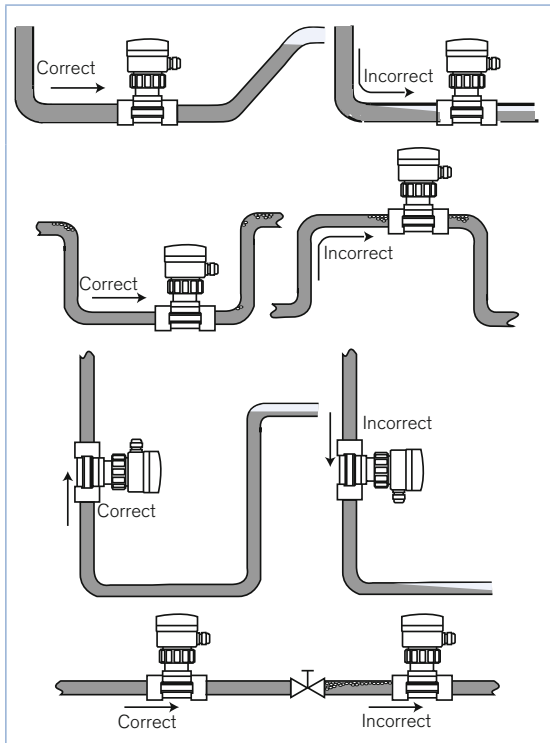


It is advisable to mount the flowmeter at a 45° angle to the horizontal centre of the pipe to avoid having deposits on the electrodes and false measurements due to air bubbles



Installation (continued)

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



Pressure and temperature ratings must be in accordance to the selected fitting material. The suitable pipe size is selected using the diagram Flow/Velocity/DN.

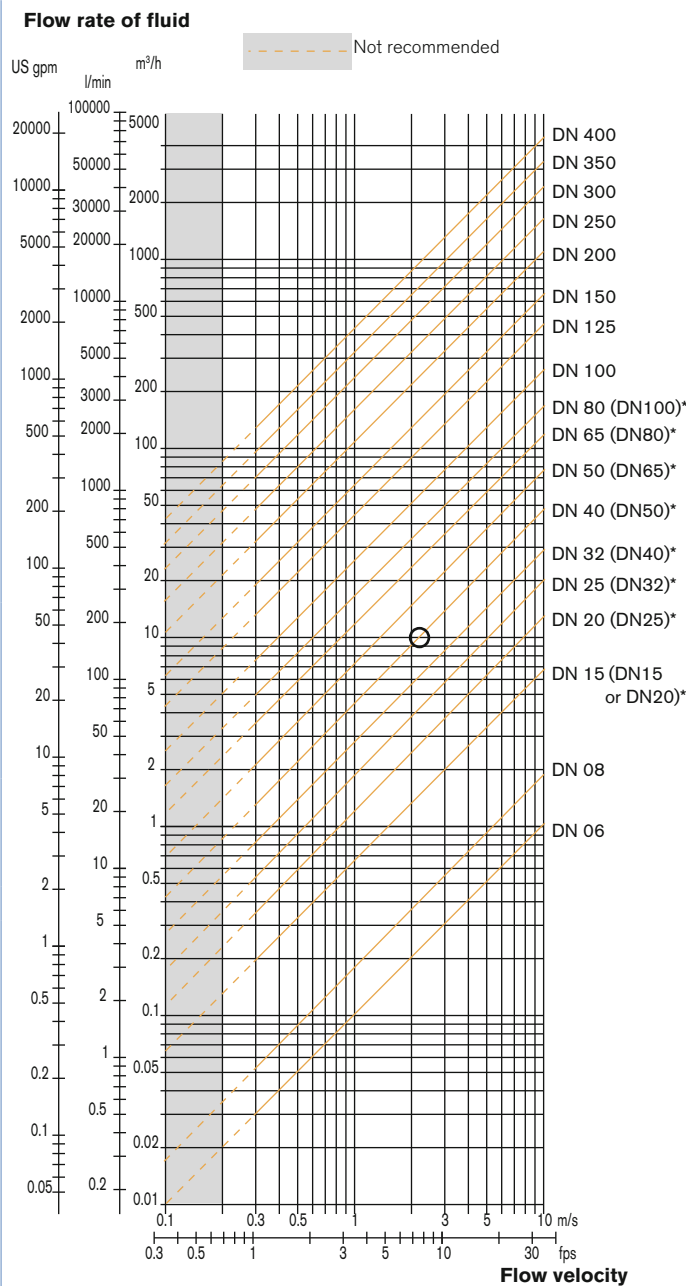
The flowmeter is not designed for gas or steam flow measurement.

Diagram Flow/Velocity/DN

Example:

- Flow: 10 m³/h
- Ideal flow velocity: 2...3 m/s

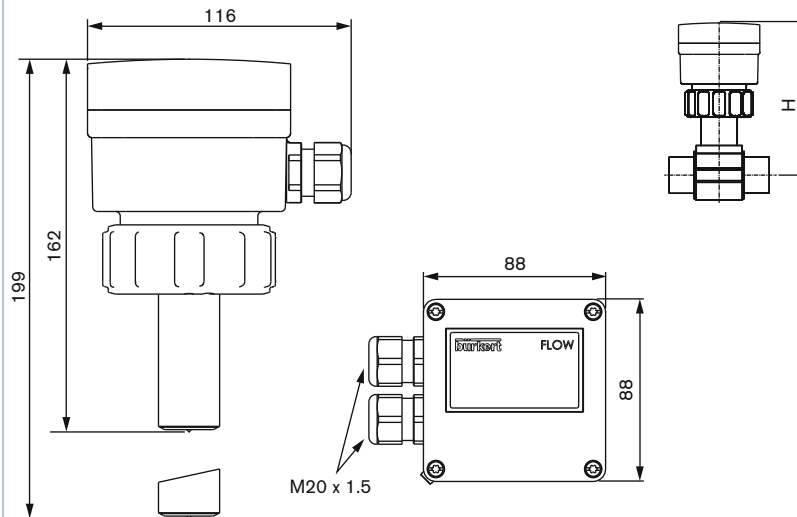
For these specifications, the diagram indicates a pipe size of DN40 [or DN50 for (*) mentioned fittings]



- * for following fittings with:
- external thread acc. to SMS 1145
- weld end acc. to SMS 3008, BS 4825-1/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

Dimensions [mm]

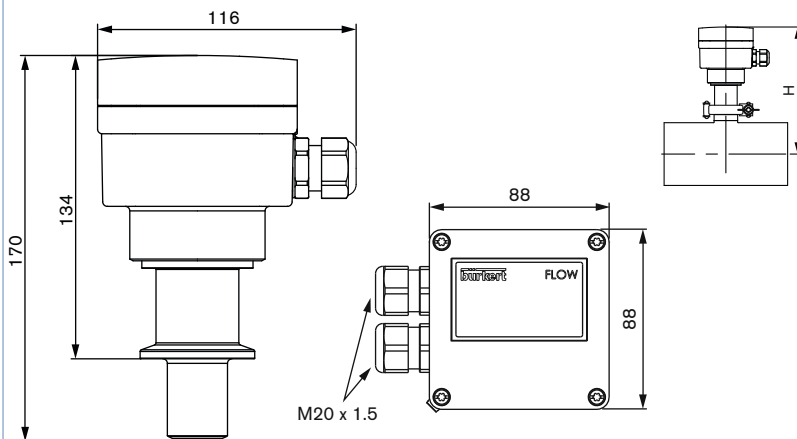
G2" connection version



| DN | H | | | |
|-----|-----------|--------|----------------|--------------|
| | T-Fitting | Saddle | Plastic spigot | Metal spigot |
| 06 | 163 | | | |
| 08 | 163 | | | |
| 15 | 168 | | | |
| 20 | 166 | | | |
| 25 | 166 | | | |
| 32 | 169 | | | |
| 40 | 173 | | | 169 |
| 50 | 179 | 204 | | 174 |
| 65 | 179 | 203 | 187 | 180 |
| 80 | | 207 | 193 | 185 |
| 100 | | 212 | 200 | 195 |
| 110 | | 208 | | |
| 125 | | 215 | 235 | 206 |
| 150 | | 225 | 242 | 217 |
| 180 | | 249 | | |
| 200 | | 261 | 263 | 238 |
| 250 | | | 281 | 298 |
| 300 | | | 293 | 317 |
| 350 | | | 306 | 329 |
| 400 | | | 321 | |

Note: The length of the sensor finger depends on the fitting used.
See data sheet Type S020 or available fitting DN diagram on page 9.

Clamp connection version



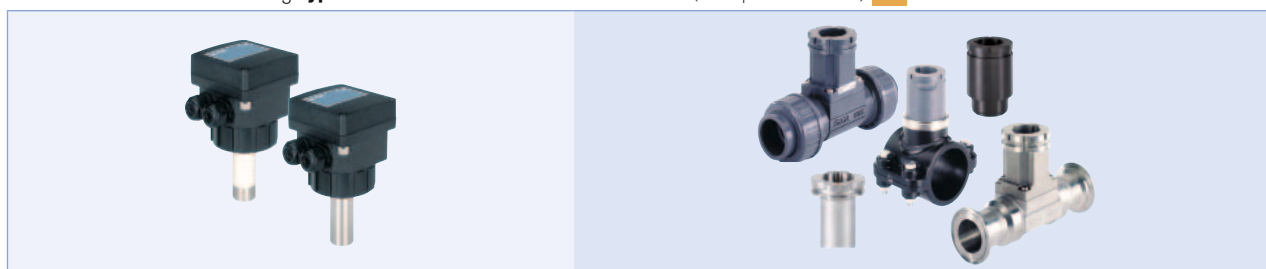
| DN | H |
|-----|-----|
| 32 | 181 |
| 40 | 186 |
| 50 | 191 |
| 65 | 199 |
| 80 | 205 |
| 100 | 211 |

Ordering information and chart for flowmeter Type 8041

• G2" connection to use with S020 Fitting for flowmeter with G2" connection.

A complete flowmeter Type 8041 with G2" connection consists of a flowmeter Type 8041 (with G2" connection) and a Bürkert fitting Type S020
The following information is necessary for the selection of a complete device:

- **Item no.** of the desired flowmeter **Type 8041** (see ordering chart, below)
- **Item no.** of the selected fitting **Type S020** for flowmeter with G2" connection (see separate data sheet)



| Voltage supply | Output | Relay | Housing material | Seals | Sensor version | Certificates | | | Electrical connection | Item no. |
|----------------|----------------------|-------|------------------|-------|-------------------------|--------------|----------------------------|---------------------------------|-----------------------|----------|
| | | | | | | FDA | ECR1935/2004 ¹⁾ | UL ¹⁾ Certifications | | |
| 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) | ✓ | ✓ | ✗ | 2 cable glands | 552 779 |
| | | | | | long, stainless steel | ✓ | ✓ | ✗ | 2 cable glands | 552 780 |
| | | | PPA | FKM | short, stainless steel | ✓ | ✓ | ✓ | 2 cable glands | 561 606 |
| | | | | | long, stainless steel | ✓ | ✓ | ✓ | 2 cable glands | 561 607 |

Note: 1 EPDM seal contained in the kit 551775 , 1 relay connection kit 552 812 are supplied with each flowmeter.
¹⁾ if FKM seal mounted as standard at factory is replaced with the EPDM seal included in the delivery.

• Clamp connection to use with S020 Fitting for flowmeter with clamp connection.

A complete flowmeter Type 8041 with clamp connection consists of a flowmeter Type 8041 (with clamp connection), a Bürkert fitting Type S020, a clamp collar and a fitting/flowmeter seal
The following information is necessary for the selection of a complete device:

- **Item no.** of the desired flowmeter **Type 8041** (see ordering chart, below)
- **Item no.** of the selected fitting **Type S020** for flowmeter with clamp connection (see separate data sheet)
- **Item no.** of the selected fitting/flowmeter seal - EPDM or FEP (see ordering chart, p. 8)
- **Item no.** of the clamp collar (see ordering chart, p. 8)



| Voltage supply | Output | Relay | Housing material | Fitting/flowmeter seals* | Sensor version | Certificates | | Electrical connection | Item no. |
|----------------|----------------------|-------|------------------|--------------------------|------------------------|--------------|----------------------------|-----------------------|----------|
| | | | | | | FDA | ECR1935/2004 ¹⁾ | | |
| 18...36 V DC | 4...20 mA, frequency | 1 | PC | EPDM or FEP | Clamp, stainless steel | ✓ | ✓ | 2 cable glands | 564 688 |

Note: 1 Kit 565384 and 1 relay connection kit 552 812 are supplied with each flowmeter.

* Has to be ordered separately

¹⁾ Only if mounted with EPDM seal.

Ordering chart - accessories for flowmeter 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 |
| 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 declaration of conformity (For stainless steel or PVDF sensor with FKM or EPDM seal) | 803 724 |
| For G2" connection version | |
| 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 seal for the sensor + 1 mounting instruction sheet | 558 102 |
| Snap ring | 619 205 |
| PC union nut | 619 204 |
| PPA union nut | 440 229 |
| Set with 1 green FKM and 1 black EPDM seal | 552 111 |
| For clamp connection version | |
| Set with 1 stopper for unused cable gland M20 x 1.5 + 1 multiway seal 2 x 6 mm for cable gland | 565 384 |
| 1 EPDM fitting/flowmeter seal | 730 837 |
| 1 FEP fitting/flowmeter seal | 730 839 |
| Clamp collar | 731 164 |

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 | 8025 "Universal" , 2 totalizers | 18...30 V DC | 4...20 mA, pulse | None | 8041 | Terminal strip | 419 538 |
| | | | | 2 | 8041 | Terminal strip | 419 537 |
| | 8025 "Batch" , 2 totalizers, 1 flowrate | 18...30 V DC | - | 2 | 8041 | Terminal strip | 419 536 |
| Wall | 8025 "Universal" , 2 totalizers | 18...30 V DC | 4...20 mA, pulse | None | 8041 | 3 cable glands | 419 541 |
| | | | | 2 | 8041 | 3 cable glands | 419 540 |
| | | 115...230 V AC | 4...20 mA, pulse | None | 8041 | 3 cable glands | 419 544 |
| | 8025 "Batch" , 2 totalizers, 1 flowrate | 18...30 V DC | - | 2 | 8041 | 5 cable glands | 433 740 |

Interconnection possibilities with other Bürkert devices

Type 8802-DD - Process control valve
4...20 mA current output

Type 5281 - Solenoid valve
Relay output

Type 8619 - multiCELL transmitter/controller panel- or wall-mounted
Frequency output

Type 8025 - Universal transmitter/batch controller Wall-mounted or panel-mounted
Frequency output

Type 8041 - Electromagnetic flowmeter with clamp connection

Type 8041 - Electromagnetic flowmeter with G2" connection

Type S020 - Insertion fitting for flowmeter with clamp connection (see corresp. data sheet)

Type S020 - Insertion fitting for flowmeter with G2" connection (see corresp. data sheet)

| | | DN06 | DN08 | DN32 | DN50 | DN65 | DN100 | DN200 | DN350 | DN400 |
|---|---|------------------|------|------|--------------|------|-------------|-------|-------|-------|
| Available S020 fittings for flowmeter with connection G2" | T-fitting | (1) Short sensor | | | | | | | | |
| | Welding socket | | | | Short sensor | | Long sensor | | | |
| | Fusion spigot | | | | Short sensor | | Long sensor | | | |
| | Screw-on | | | | | | Long sensor | | | |
| | Saddle | | | | Long sensor | | | | | |
| | Available S020 fittings for flowmeter with connection Clamp | T-fitting | | | | | | | | |
| Welding socket | | | | | | | | | | |

⁽¹⁾ DN06 and DN08 in stainless steel S020 only, 8041 with stainless steel sensor recommended

DTS 1000021534 EN Version: O Status: RL (released | freigegeben | validé) printed: 22.09.2017

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