

Digital batch controller



- Compact or remote version for DN06 to DN400, PN10
- Dosing
- On site calibration by Teach-In
- Check of input/output signals
- Total and daily totalizers for batch quantity and number of batches, volume or mass totalizers displayed

Type 8025 can be combined with...



Type S020
INSERTION fitting



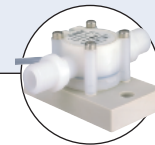
Type 8070
Positive displacement flowmeter



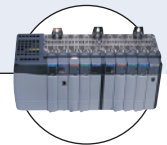
Type 8030
INLINE flowmeter



Type 2301 (8692/8693)
TopControl System



Type 8031
Flow sensor



PLC

The batch controller is specially designed for use in neutral, slightly aggressive, solid-free liquids.

The device is available in different models:

- **The compact batch controller:**
Compact batch controller with integrated paddle-wheel sensor
(page 4 to 8)
- **The remote batch controller :**
Remote batch controller for panel or wall mounting for connection to Bürkert 8020/8030/8031/8041/8071 flowmeter or any flow sensors from the market; flow sensors with open collector output, relay reed output, TTL, CMOS or coil can be operated by this batch controller.
(page 9 to 11)

Technical data (common to the various versions)

General data

Display	15 x 60 mm, 8-digit LCD, alphanumeric, 15 segments, 9 mm high
Recommended cable	max. 50 m, shielded, 1.5 mm ² max. cross-section

Environment

Height above sea level	max. 2000 m
Relative humidity	≤ 80%, without condensation

Standards, directives and approvals

Standard	
EMC	EN 61000-6-2, EN 61000-6-3
Safety	EN 61010-1
Vibration	EN 60068-2-6
Shock	EN 60068-2-27

Operation and display (common to the various versions)

When mounted in a pipe (compact version) or connected to a flowmeter (remote version) in series with one or two valves, the 8025 batch controller makes it possible to carry out a dosing of one or several quantities of liquids. The unit controls the opening of the valves and measures the quantity of the fluid which flows. The unit also closes the valves when the preset quantity has been delivered.

The electronic component needs a voltage supply of 12...36 V DC or 115/230 V AC.

The device is equipped with 4 digital inputs (DI1 up to DI4), 2 transistor outputs (DO1 configured as a pulse output and DO4 configured as state output, by default), 2 relay outputs (DO2 always configured to control the valve and by default parameterize of 100% of the batch quantity and DO3 configured as alarm output by default), two volume or mass totalizers and two batch totalizers.

The second relay output can be used to activate another valve, to initiate alarms or to generate warnings.

The following dosing modes are possible:

- **Locally started dosing of free quantity:**
the user enters the quantity to be filled and starts the dosing from the keypad.
- **Locally started dosing of preset quantity:**
the user selects a quantity which has been preset and starts the dosing from the keypad.
- **Locally started dosing of free/preset quantity**
the user enters the quantity to be filled or selects a quantity which has been preset and starts the dosing from the keypad.
- **Dosing controlled by a PLC unit**
the user selects a quantity which has been preset and starts the dosing using binary inputs.
- **Locally/remote selection of preset quantity and dosing controlled by a PLC unit:**
the user selects a quantity which has been preset from the keypad or using binary inputs and starts the dosing using binary inputs.
- **Automatic dosing controlled by variation of pulse duration:**
the quantity of the dosing is directly proportional to the duration of a pulse.
- **Remote dosing determined by Teach-In:**
Teach-In of the dosing quantity using binary inputs.
- **Local dosing determined by Teach-In:**
Teach-In of the dosing quantity from the keypads.

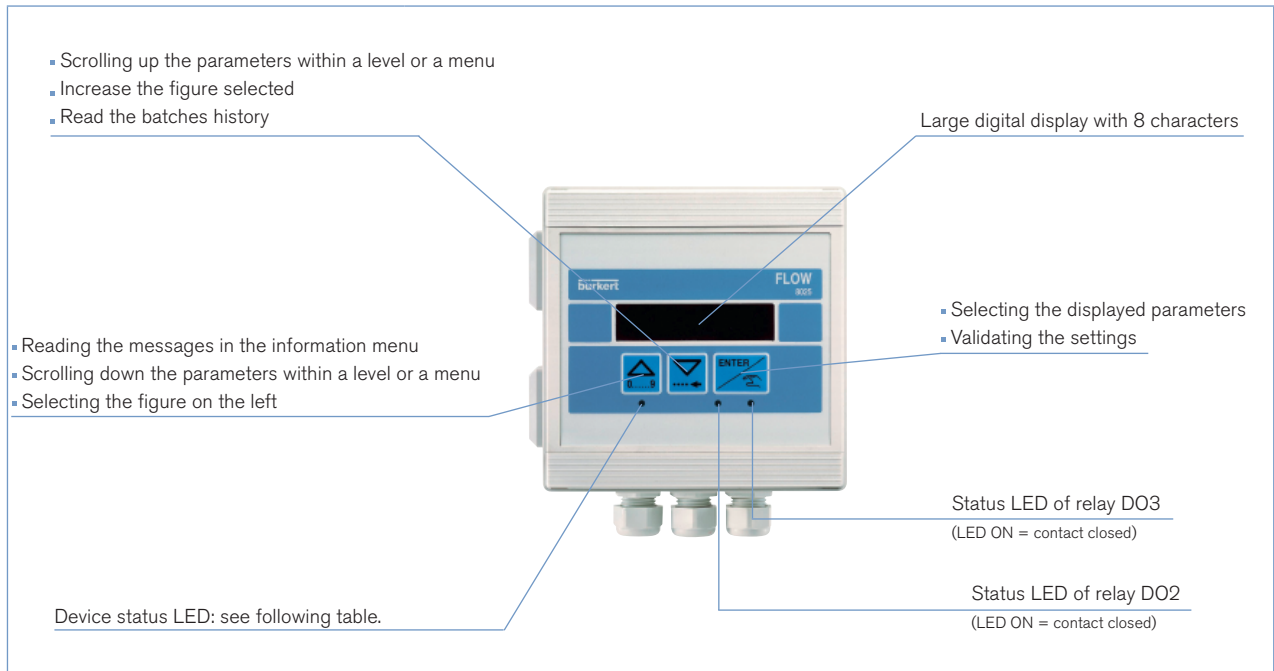
The device is calibrated by means of the K-factor which is either entered or determined via the Teach-In functions.

User adjustments, such as measuring range, engineering units, pulse output, etc. are carried out via the device operators interface.

The operation is specified according to five levels:

Indication in operating mode/ display	Parameter definition	Test	Information	History
<ul style="list-style-type: none"> ▪ dosing amount ▪ dosing mode ▪ main quantity totalizer ▪ daily quantity totalizer with reset function ▪ main batch totalizer ▪ daily batch totalizer with reset function 	<ul style="list-style-type: none"> ▪ language ▪ engineering units ▪ K-factor/Teach-In function ▪ selection of dosing mode ▪ over run correction ▪ alarm ▪ outputs configuration ▪ reset both quantity/batch totalizers (main and daily) ▪ Brightness of the display (backlight) 	<ul style="list-style-type: none"> ▪ input test ▪ output test ▪ frequency test ▪ warning and fault messages generating ▪ configuration mode 	<ul style="list-style-type: none"> ▪ Display of error, alarm and/or warning messages 	<ul style="list-style-type: none"> ▪ Display of the 10 latest batches

Description of the navigation keys and the status LEDs



Device status LED	Status of the device
Green	The device operates correctly.
Orange	A dosing related alarm and/or a warning messages is generated in the information menu.
Red	A fault message is generated in the information menu.
Blinking, whatever the colour	<ul style="list-style-type: none"> Slow blinking: The dosing is interrupted. Fast blinking: <ul style="list-style-type: none"> - during a dosing: a dosing related alarm is generated. - dosing not active: the information menu has been remote-consulted or a check for the correct behaviour of the inputs/outputs is running.

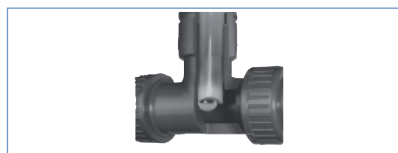
The compact batch controller



The compact batch controller combines a paddle-wheel flow sensor and an electronic module with a display in an IP65 enclosure. The electrical connection is provided via two cable glands.

Bürkert designed fitting S020 ensures simple installation of the Bürkert sensor into pipes from DN20 to DN400.

Principle of operation



When liquid flows through the pipe, the 4 magnets, inserted in the paddle-wheel set in rotation, produce a measuring signal in the transducer (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 a volume or a mass.

The electronic component converts the measured signal and displays the actual value of the volume or mass.

Technical data															
General data															
Compatibility	with fittings S020 (see corresponding data sheet)														
Materials	<table border="0"> <tr> <td>Housing, cover, lid, nut</td> <td>PC</td> </tr> <tr> <td>Front panel foil / Screws</td> <td>Polyester / Stainless steel</td> </tr> <tr> <td>Cable glands</td> <td>PA</td> </tr> <tr> <td>Wetted parts materials</td> <td></td> </tr> <tr> <td> Fitting</td> <td>Brass, stainless steel 1.4404/316L, PVC, PP or PVDF</td> </tr> <tr> <td> Sensor holder, paddle-wheel</td> <td>PVDF</td> </tr> <tr> <td> Axis and bearing / Seal</td> <td>Ceramics / FKM (EPDM option)</td> </tr> </table>	Housing, cover, lid, nut	PC	Front panel foil / Screws	Polyester / Stainless steel	Cable glands	PA	Wetted parts materials		Fitting	Brass, stainless steel 1.4404/316L, PVC, PP or PVDF	Sensor holder, paddle-wheel	PVDF	Axis and bearing / Seal	Ceramics / FKM (EPDM option)
Housing, cover, lid, nut	PC														
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Cable glands	PA														
Wetted parts materials															
Fitting	Brass, stainless steel 1.4404/316L, PVC, PP or PVDF														
Sensor holder, paddle-wheel	PVDF														
Axis and bearing / Seal	Ceramics / FKM (EPDM option)														
Electrical connections	Cable glands M20 x 1.5														
Device data (Fitting S020 + batch controller)															
Pipe diameter	DN20...DN400														
Measuring range	0.3...10 m/s (Hall transducer version)														
Fluid temperature with fitting in	<table border="0"> <tr> <td>PVC / PP</td> <td>0...+50°C (+32...+122°F) / 0...+80°C (+32...+176°F)</td> </tr> <tr> <td>PVDF, brass or stainless steel</td> <td>-15...+80°C (+5...+176°F)</td> </tr> </table>	PVC / PP	0...+50°C (+32...+122°F) / 0...+80°C (+32...+176°F)	PVDF, brass or stainless steel	-15...+80°C (+5...+176°F)										
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PVDF, brass or stainless steel	-15...+80°C (+5...+176°F)														
Fluid pressure max.	PN10 (145.1 PSI) (see pressure/temperature diagram on page 5)														
Viscosity / Pollution	300 cSt. max. / 1% max.														
Measurement deviation	<table border="0"> <tr> <td>Teach-In</td> <td>± 1% of Reading¹⁾ (at the teach flow rate value)</td> </tr> <tr> <td>Standard K-factor</td> <td>± 2.5% of Reading¹⁾</td> </tr> </table>	Teach-In	± 1% of Reading ¹⁾ (at the teach flow rate value)	Standard K-factor	± 2.5% of Reading ¹⁾										
Teach-In	± 1% of Reading ¹⁾ (at the teach flow rate value)														
Standard K-factor	± 2.5% of Reading ¹⁾														
Linearity	± 0.5% of F.S. ¹⁾														
Repeatability	± 0.4% of Reading ¹⁾														
Electrical data															
Power supply (V+)	12...36 V DC (max tolerance: -5% or +10% at 12 V DC; ±10% at 36 V DC), filtered and regulated, SELV (safety extra low voltage), circuit with a non dangerous energy level or 115/230 V AC 50/60 Hz (see technical specifications 115/230 V AC)														
Reversed polarity of DC	protected														
Current consumption with sensor (without consumption of digital input and pulse output)	with relays ≤ 90 mA at 12 V DC; ≤ 45 mA at 36 V DC														
Inputs DI (1 to 4)	Switching threshold Von: 5...36 V DC; Switching threshold Voff max: 2 V DC; Input impedance: 9.4 KOhms; Galvanic insulation, protected against polarity reversals and voltage spike														
Outputs															
Transistors (DO1 and DO4)	NPN or PNP (wiring dependent), potential free; function: pulse output (by default for DO1), batch state (by default for DO4), configurable and parameterizable 0.6...2200 Hz, 5...36 V DC, 100 mA max., line drop 2.7 V DC at 100 mA duty cycle: ■ > 0.45 if 0.6 < frequency < 300 Hz ■ > 0.4 if 300 < frequency < 1500 Hz ■ < 0.4 if 1500 < frequency < 2200 Hz Galvanic insulation, protected against overvoltage, polarity reversals and short-circuits														
Relays (DO2 and DO3)	2 relays (normally open), parameterizable (by default: DO2 always configured to control the valve, parameterized of 100% of the batch quantity and DO3 configured as alarm), 230 V AC/3 A or 40 V DC/3 A (resistive load), max. cutting power of 750 VA (resistive load)														
Environment															
Ambient temperature (operation and storage)	<table border="0"> <tr> <td>-10...+60°C (+14...+140°F) (version 12...36 V DC)</td> </tr> <tr> <td>-10...+50°C (+14...+122°F) (version 115/230 V AC)</td> </tr> </table>	-10...+60°C (+14...+140°F) (version 12...36 V DC)	-10...+50°C (+14...+122°F) (version 115/230 V AC)												
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-10...+50°C (+14...+122°F) (version 115/230 V AC)															

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

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

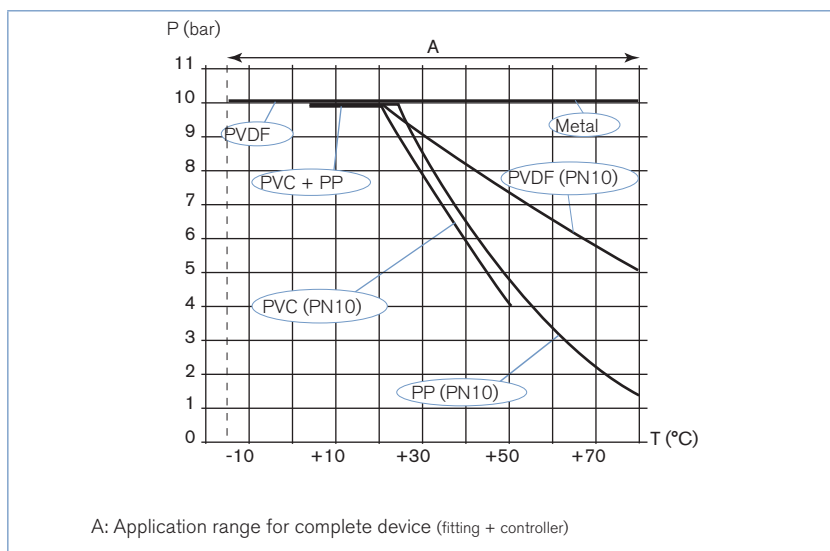
8025 Batch controller INSERTION COMPACT

Technical specifications 115/230 V AC	
Voltage supply available inside the device	27 V DC regulated, max. current: 125 mA integrated protection: fuse 125 mA temporised power: 3 VA
Standards, directives and approvals	
Protection class (according to EN60529)	IP65 with cable gland mounted and tightened or with obturator locked if not used.
Standards and directives Pressure	Complying with article 3 of chap. 3 from 97/23/CE directive*
Approvals	CE; UL-Recognized for US and Canada (UL61010-1 + CAN/CSA-C22.2 No. 61010-1)
Specific technical data of UL-recognized products for US and Canada	
Relay output	30 V AC and 42 V peak max./3 A or 60 V DC max./1 A
Ambient temperature	-10...+60°C (+14...+140°F)
Relative humidity	max. 80 %, without condensation
Intended for an inner pollution	Pollution degree 2, according to EN61010-1
Installation category	Category I, according to UL61010-1

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

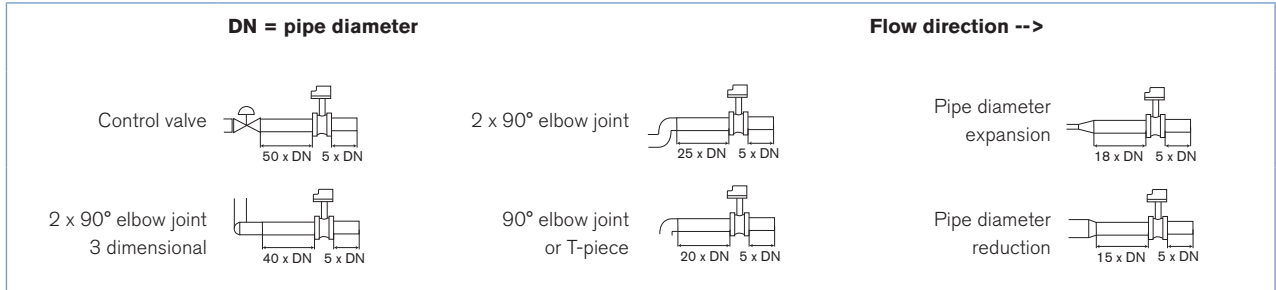
Type of fluid	Conditions
Fluid group 1, chap. 1.3.a	DN25 only
Fluid group 2, chap. 1.3.a	DN ≤ 32, or DN > 32 and PN*DN ≤ 1000
Fluid group 1, chap. 1.3.b	PN*DN ≤ 2000
Fluid group 2, chap. 1.3.b	DN ≤ 200

Pressure/Temperature diagram

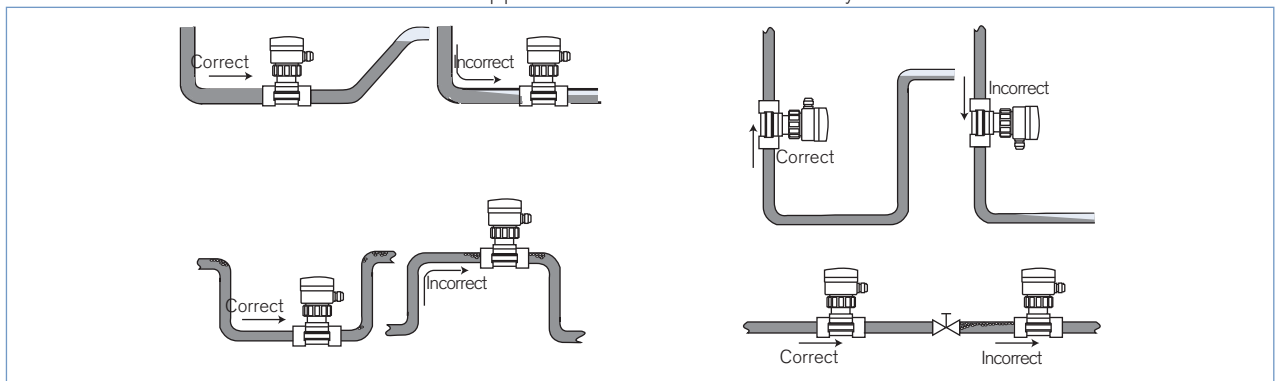


Installation

The 8025 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.



The device can be installed into either horizontal or vertical pipes. Mount the 8025 in these 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.

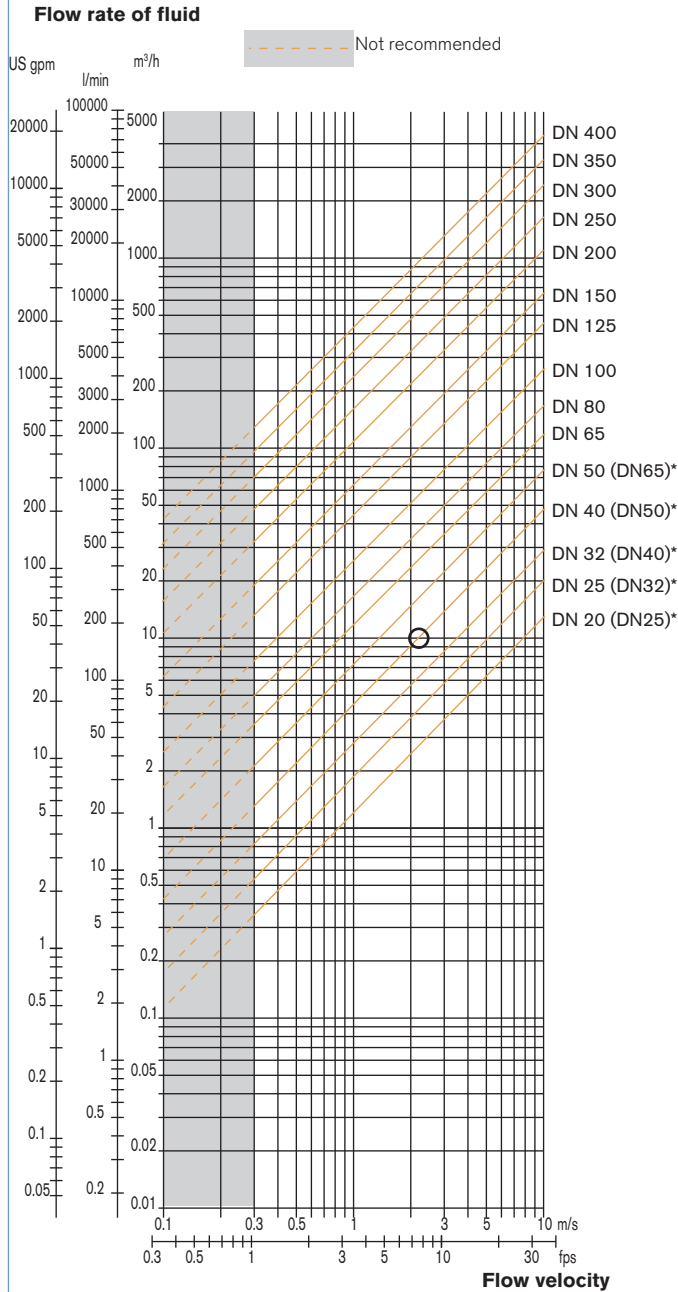
The batch controller is not designed for gas or steam

Diagram Flow/Velocity/DN

Example:

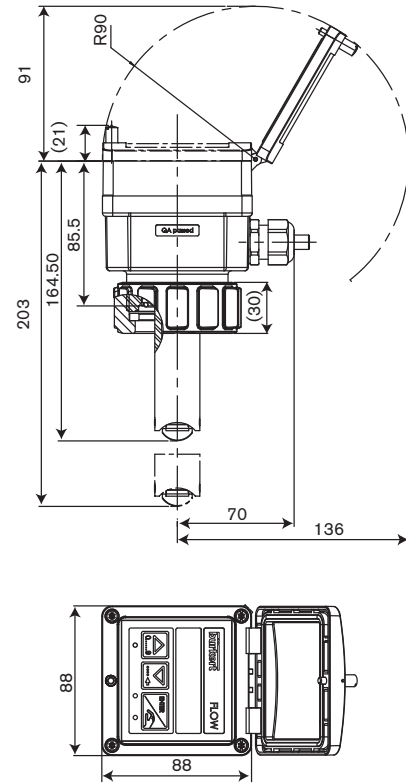
- Flow: 10 m³/h
- Ideal flow velocity: 2...3 m/s

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]

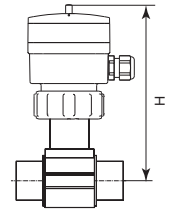


Note:

The length of the sensor finger depends on the fitting used.

See data sheet Type S020.

More info.



DN	H			
	T-Fitting	Saddle	Plastic spigot	Metal spigot
20	185			
25	185			
32	188			
40	192			
50	198	223		193
65	198	221	206	199
80		226	212	204
100		231	219	214
110		227		
125		234	254	225
150		244	261	236
180		268		
200		280	282	257
250			300	317
300			312	336
350			325	348
400			340	

Ordering chart for compact batch controller Type 8025

Compact batch controller with integrated paddle-wheel sensor

A compact batch controller Type 8025 consists of:

- an INSERTION batch controller 8025
- an INSERTION fitting Type S020 (DN20 - DN400) (Refer to corresponding data sheet - has to be ordered separately)

All these versions have as minimum:

- 2 transistor outputs (DO1 and DO4)
- 2 relay outputs (DO2 and DO3)
- 4 digital inputs (DI1...DI4)
- 2 volume or mass totalizers
- 2 batch totalizers

Specifications	Voltage supply	Sensor version	Electrical connection	Item no.
Batch controller, compact version	12...36 V DC	Hall, short	2 cable glands	419 520
		Hall, long	2 cable glands	419 522
Batch controller, compact version, UL-Recognized for US and Canada	12...36 V DC	Hall, short	2 cable glands	564 414
Batch controller, compact version	115/230 V AC	Hall, short	2 cable glands	419 521
		Hall, long	2 cable glands	419 529

Note: FKM seal in standard; 1 set including a black EPDM seal for the sensor, an obturator for an M20 x 1.5 cable gland, a 2 x 6 mm multiway seal and a mounting instruction sheet is supplied with each batch controller.

Ordering chart - accessories for compact batch controller Type 8025 (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 black EPDM seal for the sensor + 1 mounting instruction sheet	551 775
Ring	619 205
Union nut	619 204
Set with 8 FLOW foils	553 191
Set with 1 green FKM and 1 black EPDM seal	552 111

Interconnection possibilities with Bürkert fitting

Available S020 fitting DN	DN20	DN50	DN65	DN100	DN200	DN350	DN400
T-fitting	Short sensor						
Weld-in socket		Short sensor		Long sensor			
Fusion spigot		Short sensor		Long sensor			
Screw-on S020				Long sensor			
Saddle S020		Long sensor					

The remote batch controller

The remote 8025 batch controller can be associated with Bürkert flowmeters 8020, 8030, 8070...(see interconnection chart on page 11) or another flow sensor which emits a frequency signal (with pulse output signal).

The remote 8025 is a batch controller with display, available in wall-mounted and panel versions:

The panel version

is made up of an electronics integrated in an open housing with display. The electrical connection is carried out on the terminal blocks of the electronic board



The wall-mounted version

is made up of an electronics integrated in a housing with cover, display. The electrical connection is carried out on the terminal blocks of the electronic board via 5 cable glands.



Technical data	
General data	
Compatibility	Bürkert flow sensor with frequency output (8020, 8030, 8030HT, 8041, 8031, 8070, 8071) or other sensors with compatible electrical data.
Materials	Housing, cover: PC (panel-mounted version); ABS (wall-mounted version) Front panel foil: Polyester Screws: Stainless steel Cable glands / Cable clips: PA (wall-mounted version) / PA (panel-mounted version)
Electrical connections	Terminals (panel-mounted version) or terminals via gland (wall-mounted version)
Recommended cable	0.2...1.5 mm ² cross-section, shielded cable, 4...8 mm diameter (for the cable glands of the wall-mounted version)
Electrical data	
Power supply (V+)	Panel- and wall-mounted version: 12...36 V DC (max tolerance: -5% or +10% at 12 V DC; ±10% at 36 V DC), filtered and regulated, SELV (safety extra low voltage) circuit with a non dangerous energy level, 115/230 V AC 50/60 Hz (see technical specifications 115/230 V AC) Wall-mounted version: 115/230 V AC 50/60 Hz (see technical specifications 115/230 V AC)
Reversal polarity of DC	Protected
Current consumption with sensor	(without consumption of current output of the flowmeter) ≤ 90 mA (at 12 V DC); ≤ 45 mA (at 36 V DC); ≤ 55 mA (115/230 V AC)
Controller input (from sensor)	Frequency range: 0.6 Hz...2.2 kHz, max. voltage: 36 V DC Open collector NPN (with 470 Ω or 2.2 kΩ resistance) or PNP, Coil, TTL, CMOS (with 39 kΩ resistance)
Controller output (to sensor)	Voltage supply: - with a 12...36 V DC powered controller: ■ 10.5...34.5 V DC [= (V+) - 1.5 V DC], 140 mA max. ■ 0...23.5 V DC [= (V+) - 12.5 V DC], 80 mA max. non regulated ■ 5 V DC, 30 mA max. - with a 115/230 V AC powered controller: ■ +27 V DC, 80 mA max. ■ +14.5 V DC [= (V+) - 12.5 V DC], 80 mA max. non regulated ■ 5 V DC, 30 mA max.
Inputs DI (1 to 4)	Switching threshold Von: 5...36 V DC; Switching threshold Voff max: 2 V DC; Input impedance: 9.4 KOHms; Galvanic insulation, protected against polarity reversals and voltage spike
Outputs	Transistors (DO1 and DO4): NPN or PNP (wiring dependent), potential free; function: pulse output (by default for DO1), state (by default for DO4), configurable and parameterizable 0.6...2200 Hz, 5...36 V DC, 100 mA max., line drop 2.7 V DC at 100 mA duty cycle: ■ > 0.45 if 0.6 < frequency < 300 Hz ■ > 0.4 if 300 < frequency < 1500 Hz ■ < 0.4 if 1500 < frequency < 2200 Hz Galvanic insulation, protected against overvoltage, polarity reversals and short-circuits Relays (DO2 and DO3): 2 relays (normally open), parameterizable (by default: DO2 always configured to control the valve, parameterized of 100% of the batch quantity and DO3 configured as alarm), 230 V AC/3 A or 40 V DC/3 A (resistive load), max. cutting power of 750 VA (resistive load)
Technical specifications	Wall-mounted version: Voltage supply: 27 V DC regulated, Max. current: 250 mA Integrated protection: fuse 250 mA temporised Power: 6 VA
115/230 V AC available inside the device	

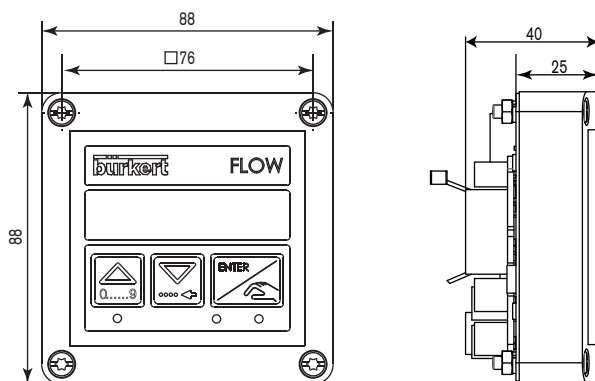
8025 Batch controller INSERTION REMOTE



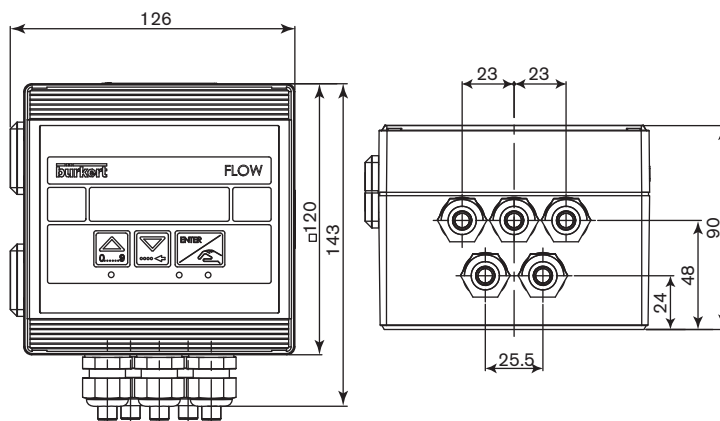
Environment	
Ambient temperature	-10...+60°C (+14...+140°F) (operation and storage)
Standards, directives and approvals	
Protection class (according to EN60529)	IP65 (panel-mounted and wall-mounted version) device wired and cable glands tightened screwed tight IP20 (panel-mounted version, inside the cabinet)
Approvals	CE; UL-Recognized for US and Canada (UL61010-1 + CAN/CSA-C22.2 No. 61010-1)
Specific technical data of UL-recognized products for US and Canada	
Relay output	30 V AC and 42 V peak max./3 A or 60 V DC max./1 A
Ambient temperature	-10...+60°C (+14...+140°F)
Relative humidity	max. 80 %, without condensation
Intended for an inner pollution	Pollution degree 2, according to EN61010-1
Installation category	Category I, according to UL61010-1

Dimensions [mm]

Panel-mounted version



Wall-mounted version



Ordering chart for remote batch controller Type 8025

Remote 8025 batch controller (panel- or wall-mounted) for connection to Bürkert or other flow sensors.

A complete remote batch controller Type 8025 consists of:
 - a remote batch controller Type 8025 (wall-mounted or panel-mounted)
 - a Bürkert flowmeter or other flow sensors (has to be ordered separately)

All these versions have as minimum:

- 2 transistor outputs (DO1 and DO4)
- 2 relay outputs (DO2 and DO3)
- 4 digital inputs (DI1...DI4)
- 2 volume or mass totalizers
- 2 batch totalizers

Specifications	Voltage supply	Sensor version	Electrical connection	Item no.
Batch controller, panel mounted	12...36 V DC	see note	Terminal strip	419 536
Batch controller, panel mounted UL-Recognized for US and Canada	12...36 V DC	see note	Terminal strip	564 415
Batch controller, wall-mounted	12...36 V DC	see note	3 cable glands	433 740
	115/230 V AC	see note	3 cable glands	433 741

NOTE: See the chart about compatible and recommended interconnection possibilities with Bürkert flowmeters on page 11 [go to page](#)

Ordering chart - accessories for remote batch controller Type 8025 (has to be ordered separately)

Specifications	Item no.
Spare part, panel version	
Mounting set (screws, washer, nuts, cable clips)	554 807
Seal	419 350
Set with 8 FLOW foils	553 191
Spare part, wall version	
Power supply board 115/230 V AC + mounting instruction sheet	555 722

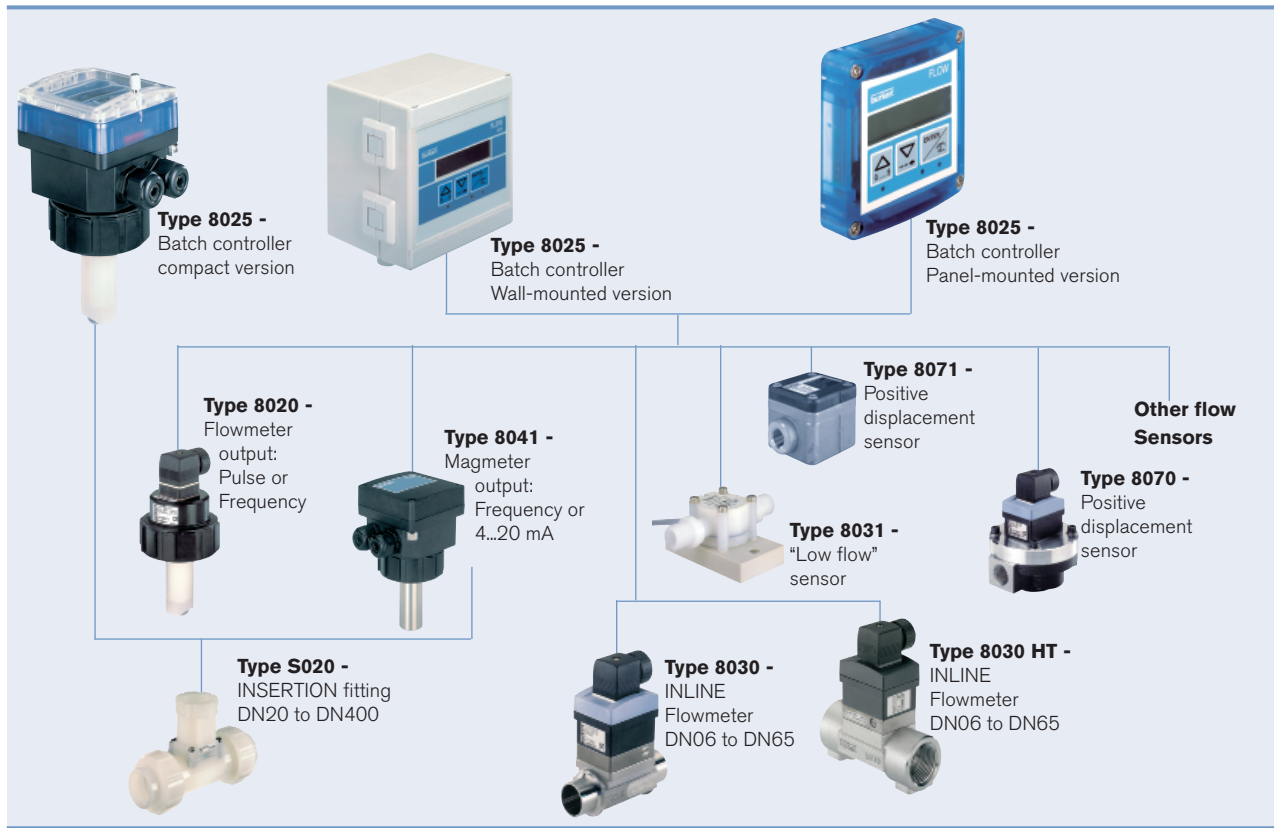
Interconnection possibilities with other Bürkert flowmeter

Sensor Type	Remote batch controller	
	Panel-mounted	Wall-mounted
8020 Hall version (short or long) - Frequency output with pulse signal (NPN, PNP, Open Collector)	X	X
8020 Hall "Low Power" version (short or long) - Frequency output with pulse signal (NPN, Open Collector)	X	X
8030/8070 Hall version - Frequency output with pulse signal (NPN, PNP, Open Collector)	X	X
8030/8070 Hall "Low Power" version - Frequency output with pulse signal (NPN, Open Collector)	X	X
8030 High temperature - Frequency output with pulse signal (NPN, PNP, Open Collector)	X	X
SE30 Ex	X	X
8031 - Frequency output with pulse signal (NPN)	X	X
8041 - Frequency output with pulse signal (NPN)	X	X ¹⁾
8071 - Frequency output with pulse signal (NPN)	X	X

X = Compatible or recommended interconnection possibilities

¹⁾ except sensor with Item no. 419543

Interconnection possibilities with other Bürkert flowmeters



DTS 1000011078 EN Version: V Status: RL (released | freigegeben | valide) printed: 03.09.2015

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