bürkert
FLUID CONTROL SYSTEMS

Insertion batch controller with paddle wheel and remote batch controller

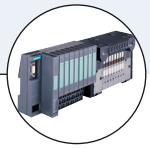
- Up to PN10, size of measurement pipes: DN06 to DN400
- Dosing
- Automatic calibration using Teach-In
- Inputs and outputs can be checked without the need of actual flow
- Total and daily totalized for batch quantity and number of batches, volume or mass totalizers displayed

Type 8025 can be combined with…

Type 8611
Universal controller
eControl

Type 8619
multiCELL
transmitter/controller

Type 8802
ELEMENT
control valve system



Type 8644
Process actuation
control system
AirLINE

The 8025 batch controller is specially designed for use with neutral, slightly aggressive, solid-free liquids.

Type 8025 batch controller is offered in different models:

- **The compact batch controller** with paddle wheel sensor (page 4…9)
- **The remote batch controller** for panel or wall-mounted versions, which can be connected to the Bürkert 8020/8030/8031/8041/SE30+S077 flowmeter or any sensors already on the market; sensors with open collector output,reed relay output, TTL, CMOS or coil can be operated by this batch controller (page 10…12).

General technical data (common to the various versions)	
Display	15 × 60 mm, 8-digit LCD, alphanumeric,15 segments, 9 mm high
Connection cable	Cable with maximum operating temperature greater than 80 °C (90 °C for UL-Recognized version) max. 50 m, shielded, 0.2…1.5 mm² max. cross-section
Environment	
Height above sea level	max. 2000 m
Relative humidity	≤ 80 %, without condensation
Standards, directives and certifications	
Standards and directives CE	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)
Certification UL-Recognized for US and Canada c UL us	UL 61010-1 + CAN/CSA-C22.2 No. 61010-1

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

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 d**osing 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.

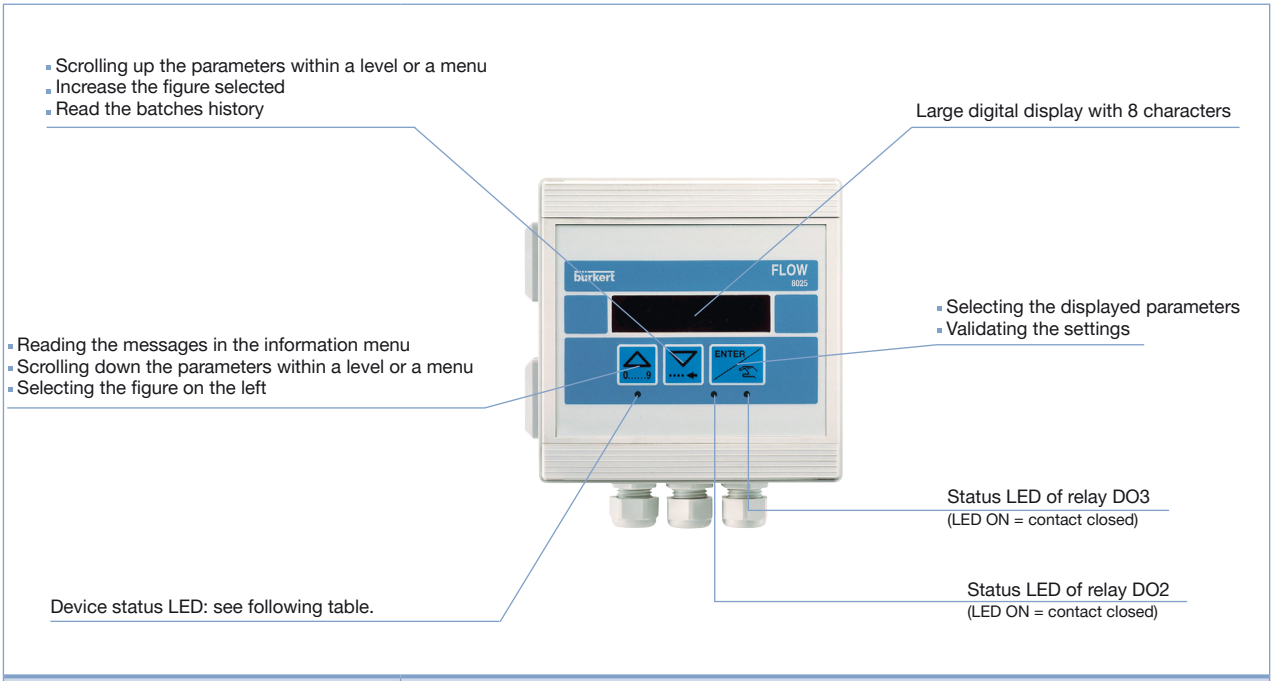
The device is calibrated by means of the K-factor which is either entered or determined via the Teach-In functions.
User adjustments, such as measuring range, engineering units, pulse output, etc. are carried out via the device operators interface.

The operation is specified according to five levels:

Indication in operating mode/ display	Parameter definition	Test	Information	History
• dosing amount • dosing mode • main quantity totalizer • daily quantity totalizer with reset function • main batch totalizer • daily batch totalizer with reset function	• 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 (back-light)	• input test • output test • frequency test • warning and fault messages generating • configuration mode	• Display of error, alarm and/or warning messages	• Display of the 10 latest batches

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

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	▪ **Slow blinking**: The dosing is interrupted. ▪ **Fast blinking:** - 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.

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

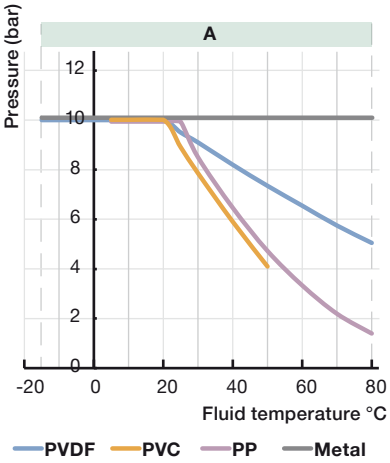
bürkert

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…DN400.

Pressure/temperature chart



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

General data	
Compatibility	With Bürkert Insertion fitting S020 (see corresponding datasheet)
Materials	
Housing, cover, lid, nut	PC
Front panel foil / Screws	Polyester / Stainless steel
Cable glands	PA
Wetted parts	
Sensor holder, paddle wheel	PVDF
Seal	FKM standard (EPDM included, but not mounted)
Axis and bearings	Ceramics (Al_2O_3)
Electrical connections	Cable glands M20 × 1.5
Connection cable	
External diameter	6…12 mm or 4 mm when using a multiway seal
Complete device data (Fitting + batch controller)	
Pipe diameter	DN20…DN400
Measuring range	0.3…10 m/s
Fluid temperature with fitting in	
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)*
Fluid pressure max.	PN10 *(145 PSI)* - see pressure/temperature chart
Viscosity / Particles rate	300 cSt max. / 1 % max. (size: 0.5 mm max.)
Measurement deviation[1]	
Teach-In	±1 % of the measured value (at Teach-In flow rate value)[2]
Standard K-factor	±2.5 % of the measured value[2]
Linearity	±0.5 % of F.S.*[2]
Repeatability	±0.4 % of the measured value[2]
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)
Characteristics of the power source (not provided) of UL-Recognized devices	Limited power source (according to § 9.4 of the UL 61010-1 standard) or, Class 2 type power source (according to the 1310/1585 and 60950-1 standards)
Reversed polarity of DC	protected
Current consumption with sensor	Without consumption of digital input and pulse output
Version with relay	≤100 mA (at 12 V DC); ≤50 mA (at 36 V DC); ≤55 mA (115/230 V AC)
Version without relays	≤70 mA (at 12 V DC); ≤35 mA (at 36 V DC); ≤40 mA (115/230 V AC)
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)

[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)*, while maintaining the minimum inlet and outlet distances and the appropriate internal diameter of the pipes.

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

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

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

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
Environment	
Ambient temperature (operation and storage)	-10…+60 °C *(+14…+140 °F)* (12…36 V DC version) -10…+50 °C *(+14…+122 °F)* (115/230 V AC version)
Standards, directives and certifications	
Protection class (according to EN 60529)	IP65 with device wired, cover and lid screwed tight and cable glands mounted and tightened or with blind plug if not used.
Standards and directives CE Pressure	Complying with article 4, §1 of 2014/68/EU directive*
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	0…+40 °C *(+32…+104 °F)*
Relative humidity	max. 80 %, without condensation
Intended for an inner pollution	Pollution degree 2 according to EN 61010-1
Installation category	Category I according to UL 61010-1 – indoor use

*** For the 2014/68/EU pressure directive, the device can only be used under the following conditions (depends 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

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

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 in Pulse/l available in the instruction manual of the sensor-fitting), specific to each pipe (size and material) enables the conversion of this frequency into flow rate.

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

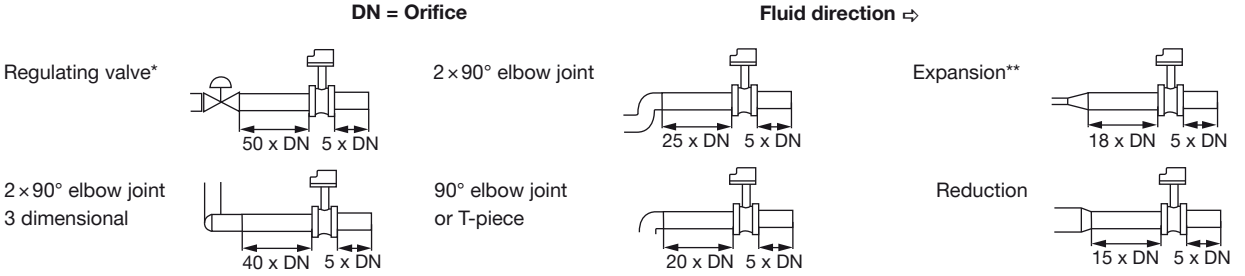
Installation

The 8025 batch controller 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.
Fore more information, please refer to EN ISO 5167-1.

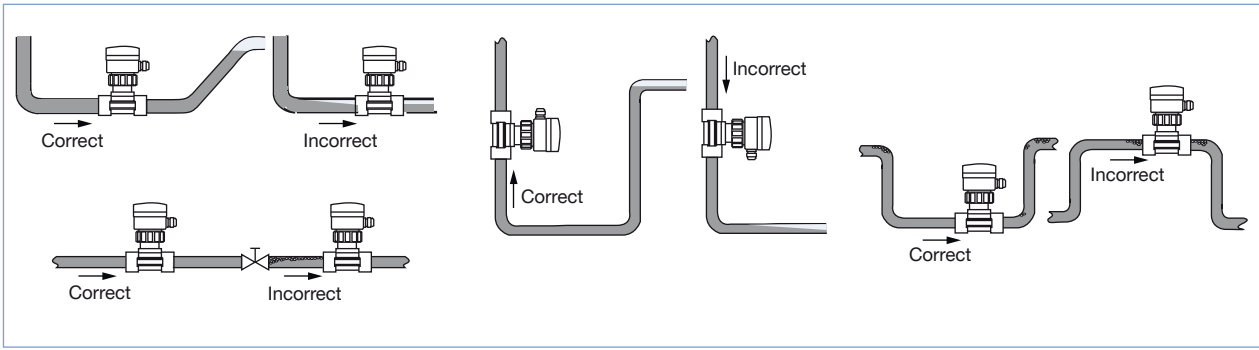
EN ISO 5167-1 prescribes the straight inlet and outlet distances that must be complied with when installing fittings in pipe lines in order to achieve calm flow conditions. The most important layouts that could lead to turbulence in the flow are shown below, together with the associated prescribed minimum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

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



* If the valve cannot be mounted after the measuring device, the minimal distances have to be respected.
** If an expansion cannot be avoided, the minimal distances have to be respected.

The device can be installed into either horizontal or vertical pipes.
Important criteria for this are; ensure that the measurement pipe is fully filled and that the measurement pipe is air bubble free.



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 batch controller is not designed for gas and steam flow measurement.

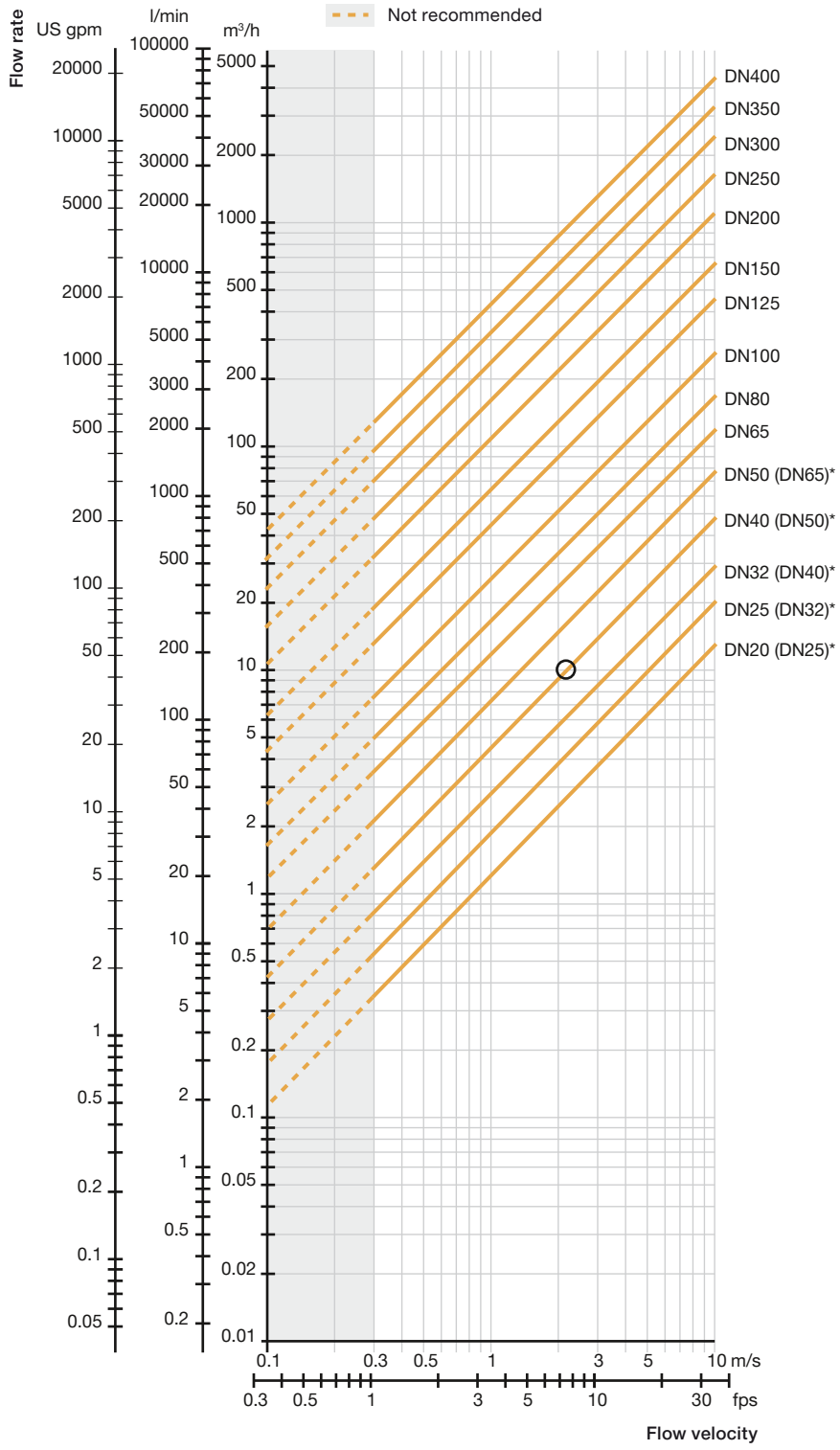
DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

Diagram Flow/Velocity/DN

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 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

Dimensions [mm] of batch controller

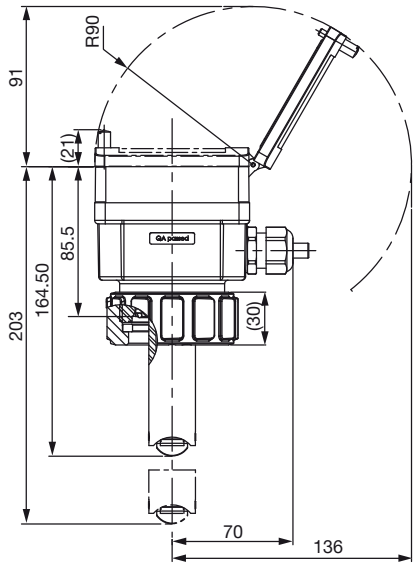
Batch controller

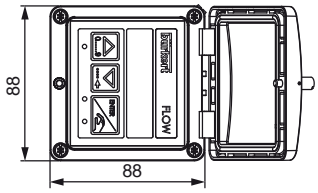
Note:

The length of the flow probe depends on the fitting used.

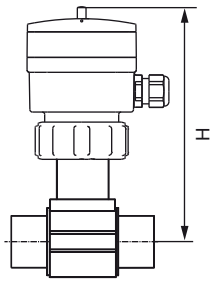
See datasheet Type S020.

More info.





Batch controller with S020 fitting



DN	H with S020 fitting			
	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	

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

Ordering information and chart for compact batch controller

A complete 8025 batch controller with integrated paddle wheel sensor consists of a compact 8025 batch controller and a Bürkert S020 Insertion fitting.

The following information is necessary for the selection of a complete device:
- **Article no.** of the desired compact **8025** batch controller (see ordering chart below)
- **Article no.** of the selected **S020** Insertion fitting (see separate datasheet) More info.

→ You have to order the two components separately.

When you click on the orange box “More info.”, you will come to our website for the resp. product where you can download the datasheet.

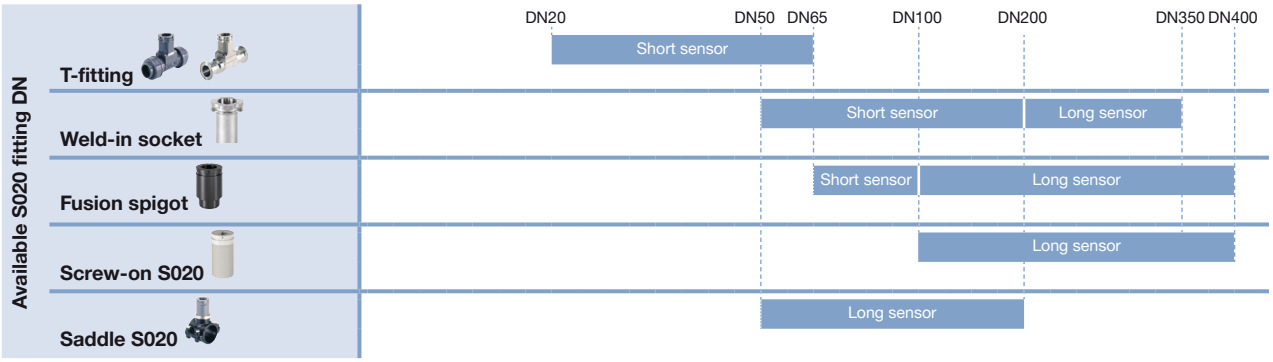
All these versions have as minimum:
- 2 transistor outputs (DO1 and DO4)
- 2 relay outputs (DO2 and DO3)
- 4 digital inputs (DI1…DI4)
- 2 volume or mass totalizers
- 2 batch totalizers

Specifications	Voltage supply	Sensor version	Electrical connection	Article no.
Batch controller, compact version	12…36 V DC	Hall, short	2 cable glands	419520
		Hall, long	2 cable glands	419522
Batch controller, compact version, UL-Recognized for US and Canada	12…36 V DC	Hall, short	2 cable glands	564414
Batch controller, compact version	115/230 V AC	Hall, short	2 cable glands	419521
		Hall, long	2 cable glands	419529

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

Ordering chart - accessories (has to be ordered separately)

Specifications	Article no.
Set with 2 cable glands M20×1.5 + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20×1.5 + 2 multiway seals 2×6 mm	449755
Set with 2 reductions M20×1.5 /NPT ½" + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20×1.5	551782
Set with 1 stopper for unused cable gland M20×1.5 + 1 multiway seal 2×6 mm for cable gland + 1 black EPDM seal for the sensor + 1 mounting instruction sheet	551775
Ring	619205
Union nut	619204
Set with 8 FLOW foils	553191
Set with 1 green FKM and 1 black EPDM seal	552111



DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

bürkert

The remote batch controller

The remote 8025 batch controller can be associated with Bürkert flowmeters 8020, 8030, 8070…(see interconnection chart on page 13) 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.

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

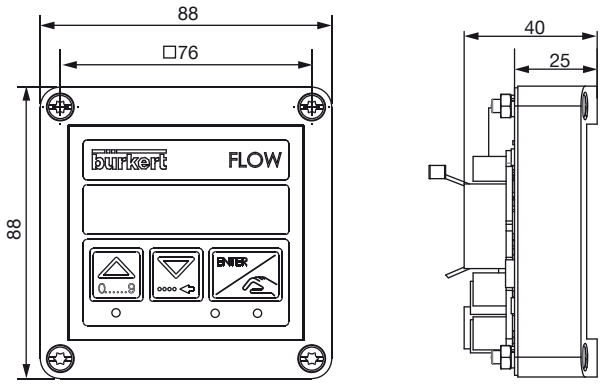
General data	
Compatibility	Bürkert flow sensor with frequency output (8020, 8030, 8030HT, 8041, 8031, 8070, 8071) or other sensors with compatible electrical data.
Materials	
Housing, cover	PC (panel-mounted version); ABS (wall-mounted version)
Front panel foil	Polyester
Screws	Stainless steel
Cable glands / Cable clips	PA (wall-mounted version) / PA (panel-mounted version)
Electrical connections	Terminals (panel-mounted version) or terminals via gland M16 x 1.5 (wall-mounted version)
Connection cable	5…8 mm external 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 VC; ±10 % at 36 V DC), filtered and regulated, SELV (safety extra low voltage) circuit with a non dangerous energy level,
Wall-mounted version	115/230 V AC 50/60 Hz (see technical specifications 115/230 V AC)
Characteristics of the power source (not provided) of UL-Recognized devices	Limited power source (according to § 9.4 of the UL 61010-1 standard) or, Class 2 type power source (according to the 1310/1585 and 60950-1 standards)
Reversed polarity of DC	protected
Current consumption with sensor	without consumption of the 4…20 mA output of the flowmeter
Version with relay	≤ 70 mA (at 12 V DC); ≤ 45 mA (at 36 V DC); ≤ 55 mA (for 115/230 V AC wall-mounted version)
Version without relays	≤ 50 mA (at 12 V DC); ≤ 30 mA (at 36 V DC); ≤ 35 mA (for 115/230 V AC wall-mounted version)
Controller input (from sensor)	Frequency range: 0.6 Hz…2.2 kHz; max. voltage: 36 V DC; Type of the signal: 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. ■ 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. ■ 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)

DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

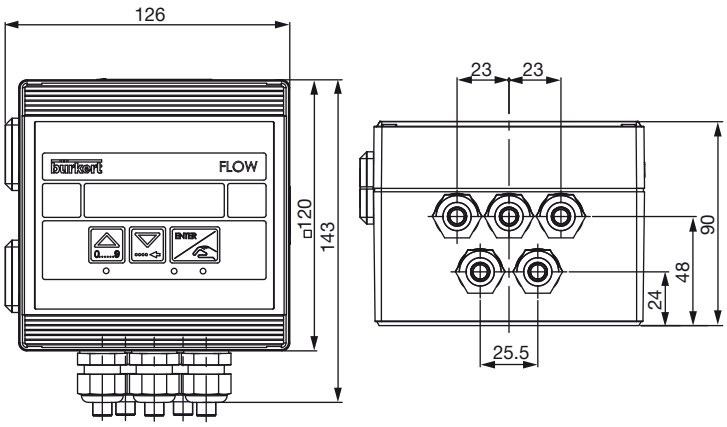
Technical specifications 115/230 V AC	
Voltage supply available inside the device	Wall-mounted version: 27 V DC regulated Max. current: 250 mA Integrated protection: fuse 250 mA temporised Power: 6 VA
Environment	
Ambient temperature	-10…+60 °C *(+14…+140 °F)* (operation and storage)
Standards, directives and certifications	
Protection class Wall-mounted version Panel-mounted version	(according to EN 60529) IP65 with device wired, cover screwed tight and cable glands tightened. Front side: IP65 installation completed and closed cabinet Rear side: IP20, inside the closed cabinet
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	0…+40 °C *(+32…+104 °F)*
Relative humidity	max. 80 %, without condensation
Intended for an inner pollution	Pollution degree 2 according to EN 61010-1
Installation category	Category I according to UL 61010-1 – indoor use

Dimensions [mm]

Panel-mounted version



Wall-mounted version



DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

Ordering information and chart for remote batch controller

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

The following information is necessary for the selection of a complete device:
- **Article no.** of the desired remote **8025** batch controller (see ordering chart below)
- **Article no.** of the selected **flowmeter or flow sensor** (see corresponding data sheets)

→ You have to order the two components 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	Article no.
Batch controller, panel mounted	12…36 V DC	see note	Terminal strip	419536
Batch controller, panel mounted UL-Recognized for US and Canada	12…36 V DC	see note	Terminal strip	564415
Batch controller, wall-mounted	12…36 V DC	see note	3 cable glands	433740
	115/230 V AC	see note	3 cable glands	433741

NOTE: See the chart about compatible and recommended interconnection possibilities with Bürkert flowmeters on page 13 .

Ordering chart - accessories (has to be ordered separately)

Specifications	Article no.
Spare part, panel version	
Mounting set (screws, washer, nuts, cable clips)	554807
Seal	419350
Set with 8 FLOW foils	553191
Spare part, wall version	
Power supply board 115/230 V AC + mounting instruction sheet	555722

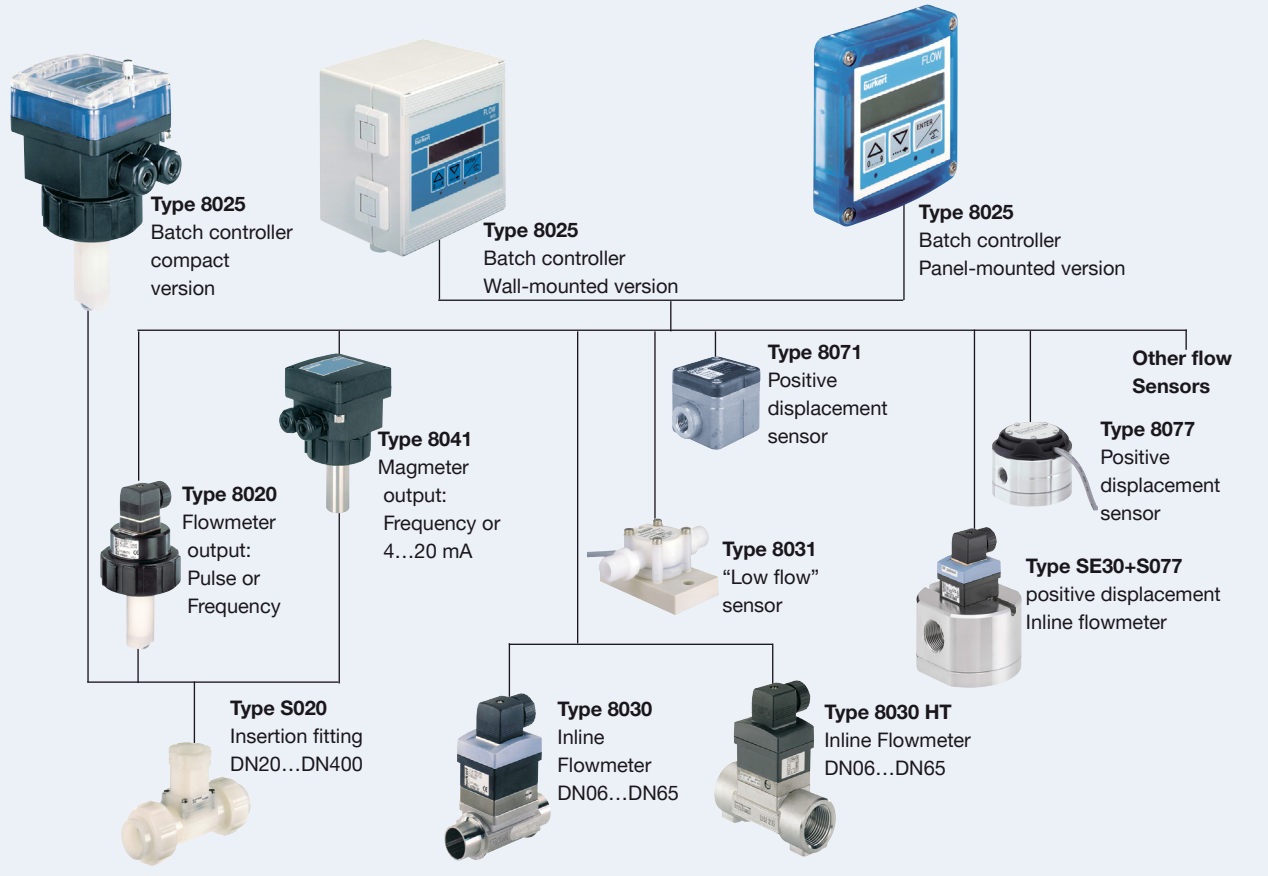
DTS 1000011078 EN Version: W Status: RL (released | freigegeben | validé) printed: 06.04.2018

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
8077 - Frequency output with pulse signal (NPN)	X	X

X = Compatible or recommended interconnection possibilities

[1)] except sensor with article no. 419543



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.

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