DATA SHEET

Type 8035
Inline batch controller

bürkert
FLUID CONTROL SYSTEMS

Inline batch controller with paddle wheel

- Up to PN16, size of measuring tube: DN06 to DN65
- Dosing
- Automatic calibration using Teach-In
- Inputs and all outputs can be checked without the need for actual flow
- Total and day counters for batch quantity and number of dosings, volume or mass counter indicator

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 8611 ▸
eCONTROL - Universal controller

Type 8619 ▸
multiCELL - Multi-channel and multi-function transmitter/controller

Type 8802 ▸
ELEMENT continuous control valve systems - overview

Type 8644 ▸
Remote Process Actuation Control System AirLINE

Type description

The Type 8035 batch controller is specially designed for use in neutral, slightly aggressive, solid free liquids.
The batch controller is made up of a compact sensor-fitting with paddle wheel (S030) and a transmitter (SE35) which are quickly and easily connected together by a bayonet fitting. The Bürkert designed sensor-fitting system ensures simple installation of the devices into all pipelines from DN06…DN65.

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Visit product website ▸

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1. General technical data

Note:
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.

Product properties	
Material	
Please make sure the device materials are compatible with the fluid you are using. Detailed information can be found in chapter "3.1. Chemical Resistance Chart – Bürkert resistApp" on page 6.	
Non wetted parts	
Housing, cover, lid	PC
Front panel folio	Polyester
Screws	Stainless steel
Cable glands	PA
Wetted parts	
Sensor-fitting body, sensor armature	Brass, stainless steel, PVC, PP or PVDF (depending on S030 version)
Seal	FKM or EPDM (depending on S030 version)
Axis and bearings	Ceramics (Al_2O_3)
Paddle wheel	PVDF
Dimensions	Detailed information can be found in chapter "3. Materials" on page 6.
Compatibility	Any pipe from DN06…DN65 which is fitted with Bürkert S030 Inline sensor-fitting. For the selection of the nominal diameter of the Inline sensor-fittings, see **data sheet Type S030** ▶.
Display	15 × 60 mm, 8-digit LCD, alphanumeric,15 segments, 9 mm high
Pipe diameter	DN06…DN65
Measuring range	Flow rate: 0.5…1000 l/min (0.13…265 gpm) - flow velocity: 0.3…10 m/s
Performance data	
Measurement deviation	• Teach-In: ±1 % of the measured value[1.)] (at Teach-In flow rate value) • Standard K-factor: ±2.5 % of the measured value[1.)]
Linearity	±0.5 % of full scale[1.)]
Repeatability	±0.4 % of the measured value[1.)]
Electrical data	
Operating voltage	• 12…36 V DC, max. tolerance: -5 % or +10 % at 12 V DC, ±10 % at 36 V DC, filtered and regulated Connection to main supply: permanent (through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply • 115/230 V AC 50/60 Hz Voltage supply available inside the device: – supplied voltage: 27 V DC regulated – maximum current: 125 mA – integrated protection: 125 mA time delay fuse – power: 3 VA
Power Source (not supplied)	Limited power source according to UL/EN 60950-1 standards or limited energy circuit according to UL/EN 61010-1 §9.4
DC reverse polarity protection	Yes
Current consumption	With sensor and without consumption of digital input and pulse output. • For version with relay: – ≤100 mA (at 12 V DC) – ≤50 mA (at 36 V DC) – ≤55 mA (115/230 V AC) • For version without relay: – ≤70 mA (at 12 V DC) – ≤35 mA (at 36 V DC) – ≤40 mA (115/230 V AC)

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Inputs	DI (1 to 4): • Switching threshold V_{on}: 5…36 V DC • Switching threshold V_{off} max.: 2 V DC • Min. pulse duration: 100 ms • Input impedance: 9.4 KOhms • Galvanic insulation, protected against polarity reversals and voltage spike
Outputs	• Pulse (transistors DO1 and DO4): – potential-free – NPN or PNP (wiring dependant) – function: pulse output (by default for DO1), batch state (by default for DO4), configurable and parameterizable – 0.6…300 Hz – 5…36 V DC; 100 mA max., line drop at 100 mA: 2.5 V DC – duty cycle (pulse duration/period): >0.45 – galvanic insulation and protected against overvoltage, polarity reversals and short circuit • Relay (DO2 and DO3): – 2 relays, parameterizable (by default: DO2 always configured to control the valve, parameterized of 100 % of the batch quantity and DO3 configured as alarm), normally open – non UL recognized device: 230 V AC/3 A or 40 V DC/3 A (resistive load), max. cutting power of 750 VA (resistive load) – UL recognized device: 30 V AC/42 V_{peak}/3 A or 60 V DC/1 A
Voltage supply cable	• Cable with maximum operating temperature greater than 80 °C (176 °F) (90 °C (194 °F) for UL-Recognized version), max. 50 m length, shielded • External diameter of wire: 6…12 mm (1 cable per cable gland) or 3…5 mm when using a multi-way seal (2 cables per cable gland) • Cross section of wires: max. 0.75 mm²
Medium data	
Fluid temperature	With sensor-fitting in: • PVC: 0…+50 °C (+32…+122 °F) • PP: 0…+80 °C (+32…+176 °F) • PVDF, stainless steel or brass: -15…+100 °C (+5…+212 °F)
Fluid pressure	• Max. PN10 with plastic sensor-fitting • Max. PN16 (PN40 on request) with metal sensor-fitting Detailed information can be found in the data sheet of the Inline sensor-fittings, see **data sheet Type S030** ▸ for more information.
Viscosity	Max. 300 cSt
Rate of solid particles	Max. 1 %
Maximum particle size	0.5 mm
Process/Port connection & communication	
Port connection	• Metal: Internal or external thread, weld ends, clamp or flange • Plastic: true union with nut and solvent/fusion socket, spigot or external thread See **data sheet Type S030** ▸ for more information.
Electrical connection	M20x1.5 cable glands
Approvals and Certificates	
Standards	
Protection class	IP65 according to IEC/EN 60529 with wired device, cover and lid screwed tight and cable glands mounted and tightened or with blanking plug if not used.
Directives	
CE 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)

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Pressure equipment directives	Complying with Article 4, Paragraph 1 of 2014/68/EU directive Detailed information on the pressure equipment directive can be found in chapter "2.2. Pressure Equipment Directive" on page 5.
Certification	UL-Recognized for US and Canada
Environment and installation	
Ambient temperature	Operation and storage: • -10…+60 °C (version 12…36 V DC) • -10…+50 °C (version 115/230 V AC)
Relative air humidity	≤80 %, without condensation
Height above sea level	Max. 2000 m
Operating condition	Continuous
Equipment mobility	Fixed
Application range	Indoor and outdoor (protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions)
Installation category	Category I according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

1.) 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 diameters of the pipes.

2. Approvals

2.1. Certification UL

Certificate	Description
c UL us	**UL-Recognized for USA and Canada** Products are UL-certified products and comply also with the following standards: • UL 61010-1 • CAN/CSA-C22.2 No.61010-1

2.2. Pressure Equipment Directive

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

Device used on a pipe

Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure; DN = nominal diameter of the pipe

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

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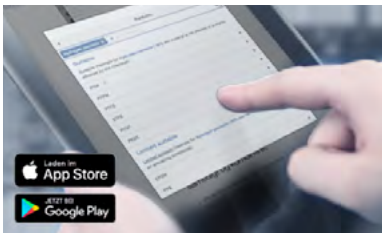
3. Materials

3.1. Chemical Resistance Chart – Bürkert resistApp

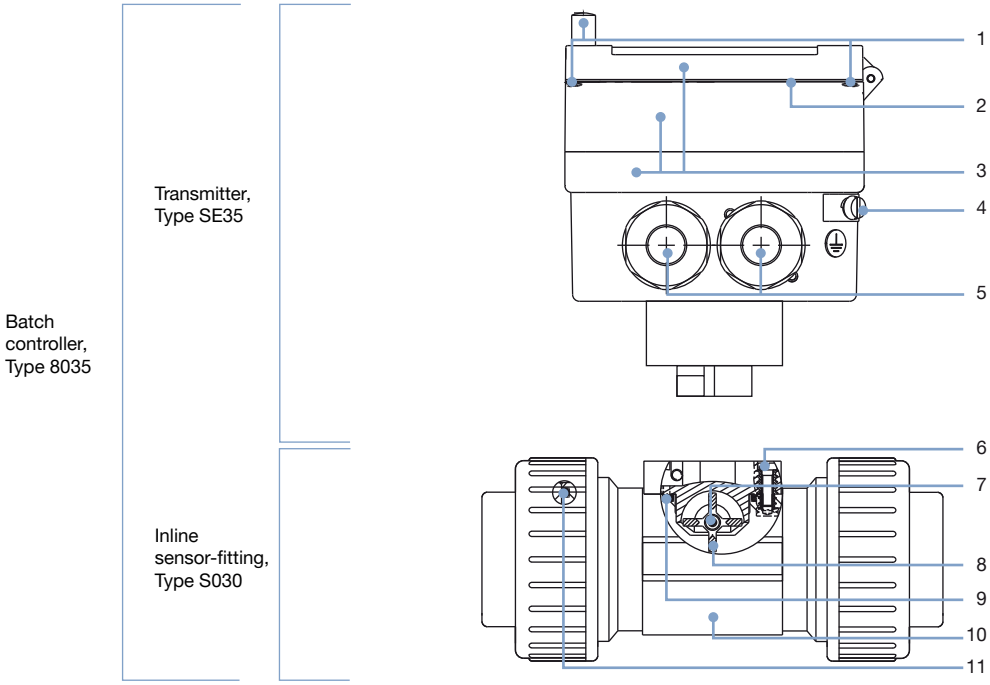


Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start Chemical Resistance Check

3.2. Material specifications



No.	Description	Material
1	Screws	Stainless steel
2	Front panel folio	Polyester
3	Housing, cover, lid	PC
4	Screws	Stainless steel
5	M20x1.5 cable gland	PA
6	Screws	Stainless steel
7	Axis and bearings	Ceramics (Al_2O_3)
8	Paddle wheel	PVDF
9	Seal	FKM or EPDM (depending on S030 version)
10	Sensor-fitting body	Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP, PVDF (depending on S030 version)
11	Seals	FKM or EPDM (depending on S030 version and only for true union connection)

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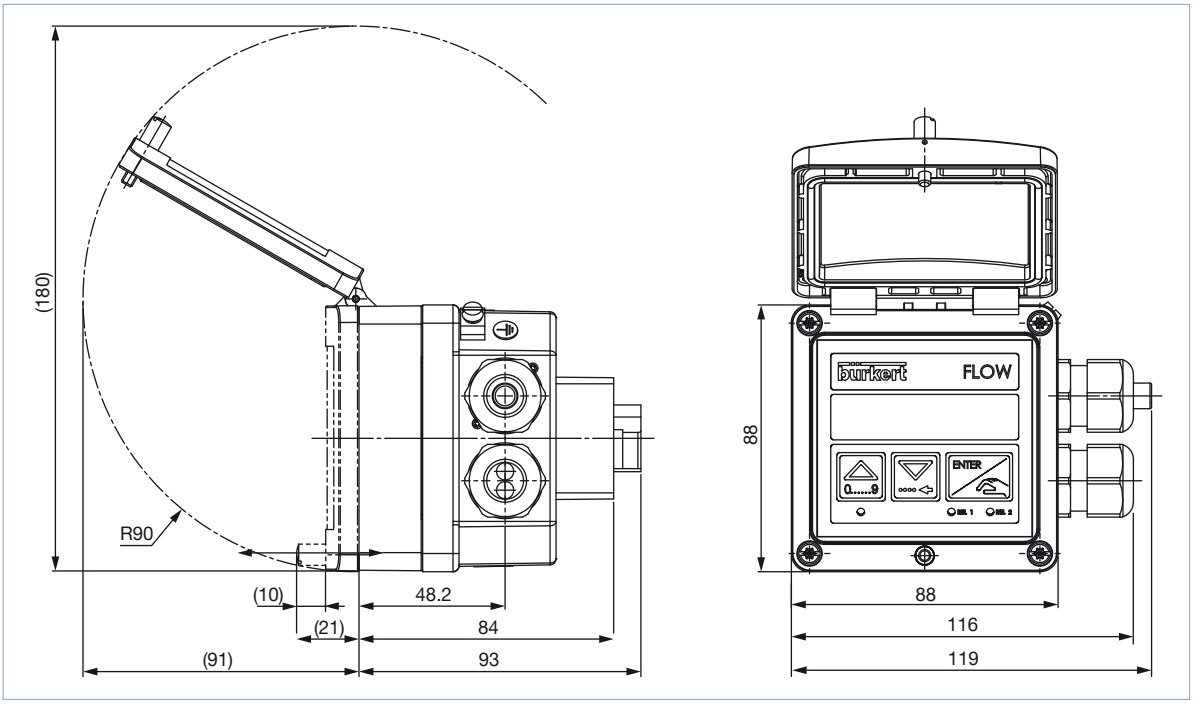
4. Dimensions

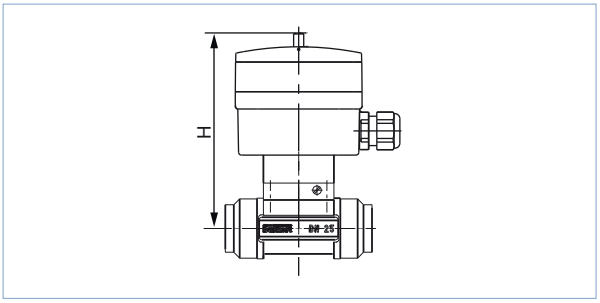
4.1. Transmitter SE35

Note:
Specifications in mm



4.2. Transmitter SE35 mounted in a S030 sensor-fitting

Note:
Specifications in mm



DN	H
06	134
08	134
15	139
20	137
25	137
32	140
40	144
50	151
65	151

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5. Product installation

5.1. Installation notes

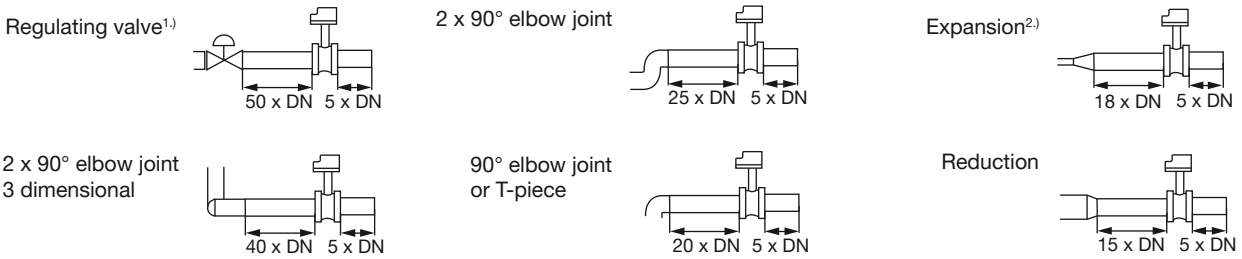
Note:
The batch controller is not designed for gas and steam dosing.

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 specifies 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 specified minimum inlet and outlet distances.

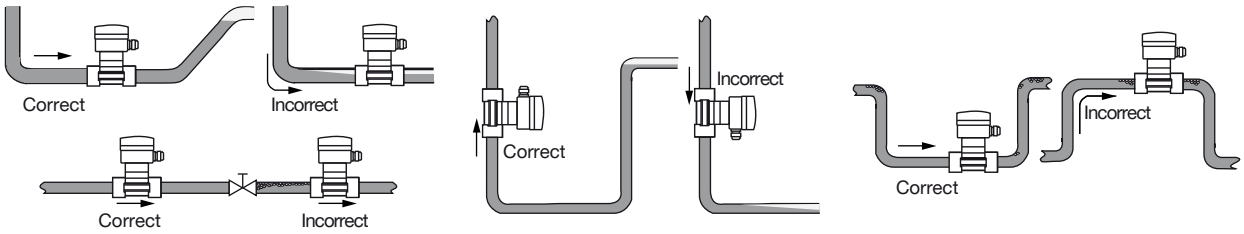
Make sure that the measuring conditions at the point of measurement are calm and problem-free.

DN = Orifice **Fluid direction ⇨**



1.) If the valve cannot be mounted after the measuring device, the minimal distances have to be respected.
2.) If an expansion cannot be avoided, the minimal distances have to be respected.
Please note minimum flow velocity

The batch controller 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 free of bubbles.



Pressure and temperature ratings must be respected according to the selected sensor-fitting material. The suitable pipe size is selected using the diagram for selecting the nominal diameter of the sensor-fitting, see **data sheet Type S030** ▸ for more information.

6. Product operation

6.1. Measuring principle

When liquid flows through the pipe, the paddle wheel with 4 inserted magnets is set in rotation, producing a measuring signal in the sensor (coil or Hall sensor). The frequency modulated induced voltage is proportional to the flow velocity of the fluid.
A K-factor (available in the instruction manual of the S030 sensor-fitting), specific to each pipe (size and material) enables the conversion of this frequency into a flow rate.

The electronic component converts the measured signal and displays the actual value of the volume or mass. The electrical connection is provided via two cable glands.

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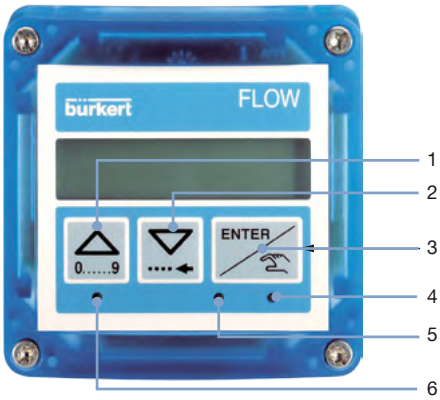
6.2. Functional overview

The display is used to:

- Read the value of certain parameters
- Set parameters of the device by means of 3 keys
- Read the configuration of the device
- Get notification of some events.

Display and operating keys	No.	Description
	**1**	"Back" key: • To change the value (0…9) of the selected digit • To go back to the previous function • Consulting the history of dosings
	2	"Next" key: • Reading the messages • To select the digit at the left • To go to the next function
	3	"Confirm" key: • To confirm the function displayed • To confirm the parameters set
	4	Status LED of relay DO3 (LED ON = contact closed)
	5	Status LED of relay DO2 (LED ON = contact closed)
	6	Status of 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. – Fast blinking when no dosing is being done: the information menu has been remotely consulted or a check of the proper functioning of the digital inputs or outputs is in progress.

The device can be calibrated by means of the K-factor of the fitting used, or via the Teach-In function. User adjustments, such as engineering units, output, filter, bar graph are carried out on site.

The device has 2 operating levels:

- The process level
- The configuration level, which includes the parameters, the test, the information and the history menus

Operating level	Functions
Process	• Starting a dosing • Indication of – The value of the main totalizers of the quantity of fluid counted – The value of the daily totalizers of the quantity of fluid counted – The value of the main totalizers of the performed dosings – The value of the daily totalizers of the performed dosings • Reset – The daily volume or mass totalizer – The daily totalizer of the performed dosings • Access to the parameters, test, information and history menus of the configuration level

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Operating level	Functions
Configuration - parameters menu	• To make the settings needed for operation: – language – engineering units (International measuring units) – K-factor/Teach-In function – Optional/dosing mode – Overfill – Alarm – Outputs – Resetting the 2 volume or mass totalizers – Resetting the 2 totalizers of the performed dosings – Resetting the history menu – Backlight
Configuration - test menu	• Checking: – The inputs functions – The outputs functions – The paddle-wheel operation • Monitoring: – The flow rate in the pipe – The value of the daily volume or mass totalizer – The number of performed dosings • Saving/ Restoring: – The current user configuration – The saved configuration – The default configuration of the device
Configuration - history menu	To consult the quantities dosed in the last 10 dosings performed
Configuration - information menu	To read the fault and warning messages generated

6.3. Function modes

When mounted in a pipe in series with one or two valves, the 8035 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 set to of 100 % of the batch quantity and DO3 configured as alarm output by default)
- 2 volume or mass totalizers and 2 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.

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- **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.

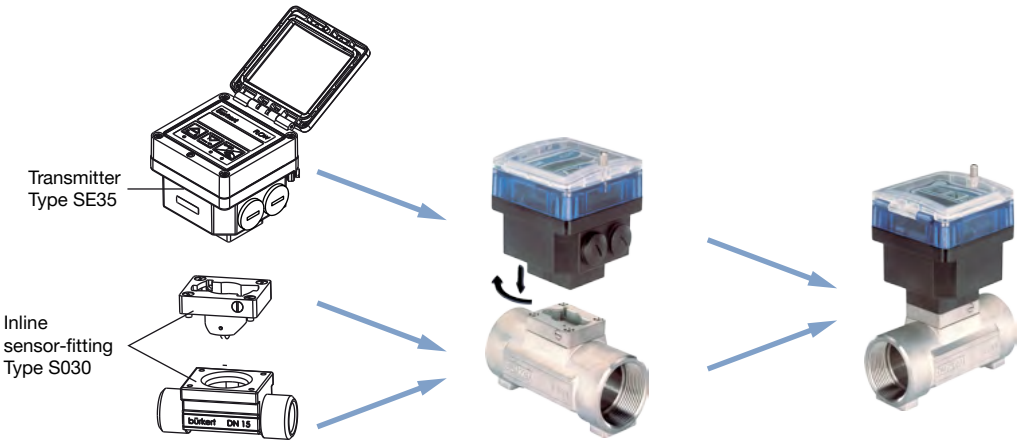
7. Product design and assembly

7.1. Product assembly

Note:

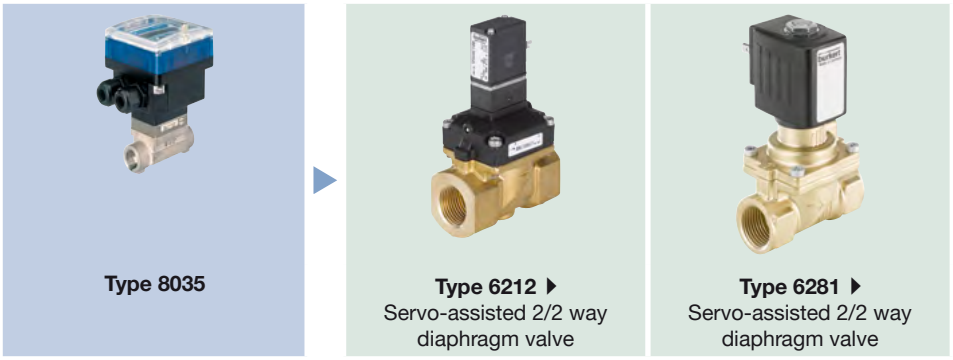
- The 8035 device is made up of a compact Inline sensor-fitting (S030) equipped with a sensor with paddle wheel and a transmitter (SE35).
- The electronic housing of the 8035 integrates the electronic board with display, setting parameter keys and also a transducer (Hall effect).
- The S030 Inline sensor-fitting ensures simple installation into pipes from DN06…DN65. The SE35 transmitter can easily be installed into any Bürkert sensor-fitting system, by means of a quarter turn.

See **data sheet Type S030** ▸ for more information.



8. Networking and combination with other Bürkert products

Example:



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9. Ordering information

9.1. Bürkert eShop – Easy ordering and quick delivery

Bürkert eShop – Easy ordering and fast delivery

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Order online now

9.2. Recommendation regarding product selection

A complete 8035 batch controller consists of a compact SE35 transmitter and a Bürkert S030 Inline sensor-fitting.

See **data sheet Type S030** ▸ for more information.

Two different components must be ordered in order to select a complete device. The following information is required:

- **Article no.** of the desired compact SE35 transmitter (see chapter "9.4. Ordering chart" on page 13)
- **Article no.** of the selected S030 Inline sensor-fitting (See **data sheet Type S030** ▸)

9.3. Bürkert product filter

Bürkert product filter – Get quickly to the right product

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9.4. Ordering chart

Note:
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

Voltage supply	Sensor version	UL certification	Electrical connection	Article no.
12…36 V DC	Hall	–	2 cable glands	443360
		UL-Recognized		564398
115/230 V AC		–		423926

9.5. Ordering chart accessories

Description	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 multi-way 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
Set with 8 FLOW foils	553191

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