

Positive displacement batch controller



- Compact version for DN15...DN100
- 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 SE35 + S077 can be combined with...



Type 2100 (8692)

Control valve with TopControl



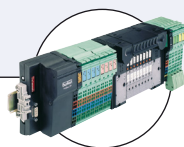
Type 8619

multiCELL transmitter/controller



Type 8792

Continuous SideControl



Type 8644-P AirLINE

Valve island with electronic I/O



PLC

This positive displacement flow batch controller with display is designed for use in highly viscous fluid like glue, honey or oil.

The batch controller displays the actual value of the volume or mass.

| General data | |
|-------------------------------|---|
| Compatibility | with sensor fittings S077 (see corresponding data sheet) |
| Materials | Housing, cover, lid, nut Front panel foil / Screws Cable glands Wetted parts materials Sensor fitting body Rotor Shaft / Seal |
| | PC Polyester / Stainless steel PA Aluminium or stainless steel (316L) PPS, aluminium or stainless steel (316L) Stainless steel (316L) / FKM or FEP/PTFE encapsulated |
| Display | 15 x 60 mm, 8-digit LCD, alphanumeric, 15 segments, 9 mm high |
| Electrical connections | Cable glands M20 x 1.5 |
| Recommended cable | max. 50 m, shielded, 1.5 mm ² max. cross-section |


| Complete device data (sensor fitting S077 + electronic module SE35) | |
|---|---|
| Pipe diameter | DN15...DN100 |
| Thread connection | 1/2"; 1"; 1 1/2"; 2"; 3" (G or NPT) |
| Flange connection | 25; 40; 50; 80 or 100 mm DIN PN16 flange 1"; 1 1/2"; 2"; 3" or 4" ANSI 150LB flange |
| Measuring range | |
| Viscosity > 5 mPa.s | 2 ... 1200 l/min (0.53... 320 gpm) |
| Viscosity < 5 mPa.s | 3 ... 616 l/min (0.78... 320 gpm) |
| Medium temperature with body | |
| in aluminium / in stainless steel | -20 ... +80 °C (-4... +176 °F) / -20 ... +120 °C (-4... 248 °F) |
| Fluid pressure max. | |
| DN15 | 55 bar (798.05 PSI) (threaded process connection) |
| DN25 / DN40 or DN50 | 55 bar (798.05 PSI) ¹⁾ / 18 bar (261.18 PSI) |
| DN80 / DN100 | 12 bar (174.12 PSI) / 10 bar (145.1 PSI) |
| Viscosity | 1 Pa.s max. (higher on request) |
| Measurement deviation | ± 1 % of Reading (if "standard" K-factor is used) ± 0.5 % of Reading (if "specific" K-factor is used, on label of the product) |
| Repeatability | ± 0.03 % of Reading |

¹⁾ or in accordance to the value of the used flanges

SE35 + S077 Batch Controller

bürkert

| 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 to⁴) | 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 DO ⁴) | NPN or PNP (wiring dependent), potential free; function: pulse output (by default for DO ¹), batch state (by default for DO ⁴), 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 over-voltage, polarity reversals and short-circuits |
| Relays (DO2 and DO ³) | 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 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) (version 12...36 V DC) -10...+50 °C (14...122 °F) (version 115/230 V AC) |
| Height above sea level | max. 2000 m |
| Relative humidity | ≤ 80%, without condensation |
| Standards, directives and approvals | |
| Protection class (according to EN60529) | IP65 with cable gland mounted and tightened or with obturator locked if not used. |
| Standard and directives EMC Safety Pressure (Sensor fitting S077, DN15...DN100, in aluminium or stainless steel) Vibration Shock | EN 61000-6-2, EN 61000-6-3 EN 61010-1 Complying with article 3 of chap. 3 from 97/23/CE directive.* EN 60068-2-6 EN 60068-2-27 |
| Approvals | CE; UL-Recognized for US and Canada (61010-1 + 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 |

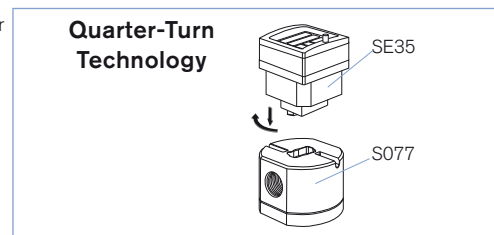
* For the 97/23/CE pressure directive, the device can only be used under following conditions (dependent on max. pressure, pipe diameter and fluid).

| Type of fluid | Conditions |
|----------------------------|--------------------------------------|
| Fluid group 1, chap. 1.3.a | Forbidden |
| 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 |

Design and principle of operation

The batch controller is built up with an electronic module SE35 Batch associated to a sensor fitting S077 with integrated measurement oval rotor. This connection is made by means of a Quarter-Turn.

The output signal are provided via two cable gland.

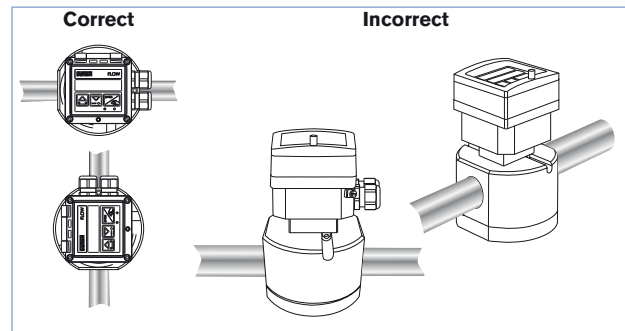


When liquid flows through the pipe, the rotors turn. This rotation produces a measuring signal in the associated hall sensor. The frequency and amplitude are proportional to the flow. The volume of the fluid being transferred in this way is exactly determined through the sensor geometry. A conversion coefficient, specific to each meter size, enables the conversion of this frequency into a flow rate. The standard K-factor depending on the meter size is available in the instruction manual of the sensor fitting S077, or to improve the measurement deviation, a specific K-factor is given with each device on its label

Installation

The sensor fitting can be installed in any orientation as long as **the rotor shafts are always in a horizontal plane** (see figures to the right).

The pipe must be filled with liquid and free from air bubbles. Avoid air purge of the system which would cause damages and to prevent damage from dirt or foreign matter, we strongly recommend the installation of a 250 µm strainer as close as possible to the inlet side of the meter.



Operation and display

When mounted in a pipe in series with one or two valves, the 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.

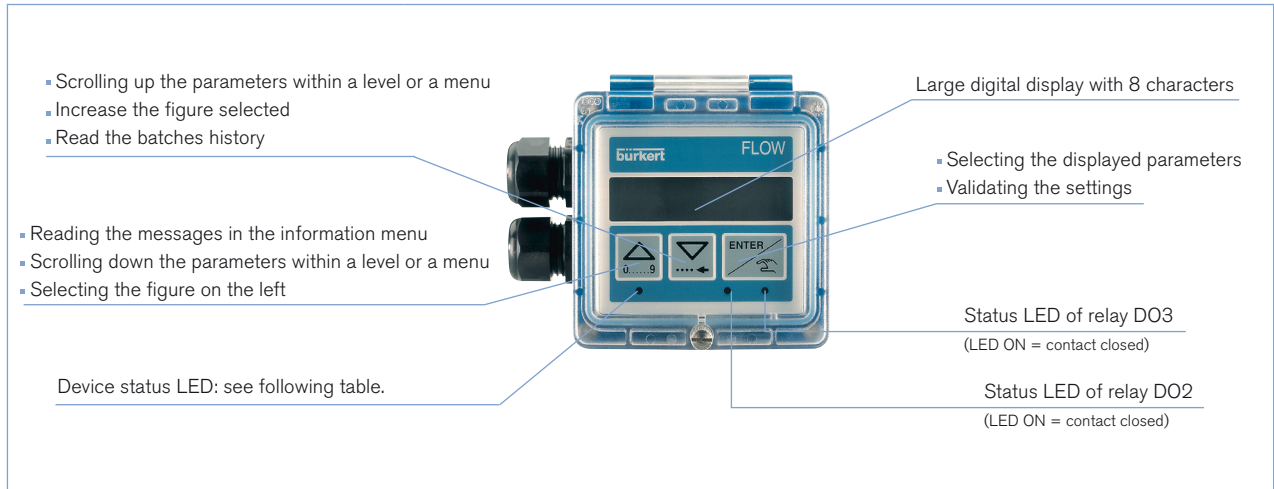
The device is calibrated by means of the K-factor which is either entered or determined via the Teach-In functions.

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: - 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. |

Dimensions

Electronics SE35

180
 91
 21
 88
 116
 88
 105
 75
 104
 114
 H

| Orifice | H |
|---------|-----|
| 15 | 126 |
| 25 | 135 |
| 40 | 147 |
| 50 | 157 |
| 80 | 207 |
| 100 | 223 |

DN15 DN25 DN40 DN50 DN80
 Threaded connection

DN25 DN40 DN50 DN80 DN100
 Flanged connection

Ordering information for complete batch controller Type SE35 + S077

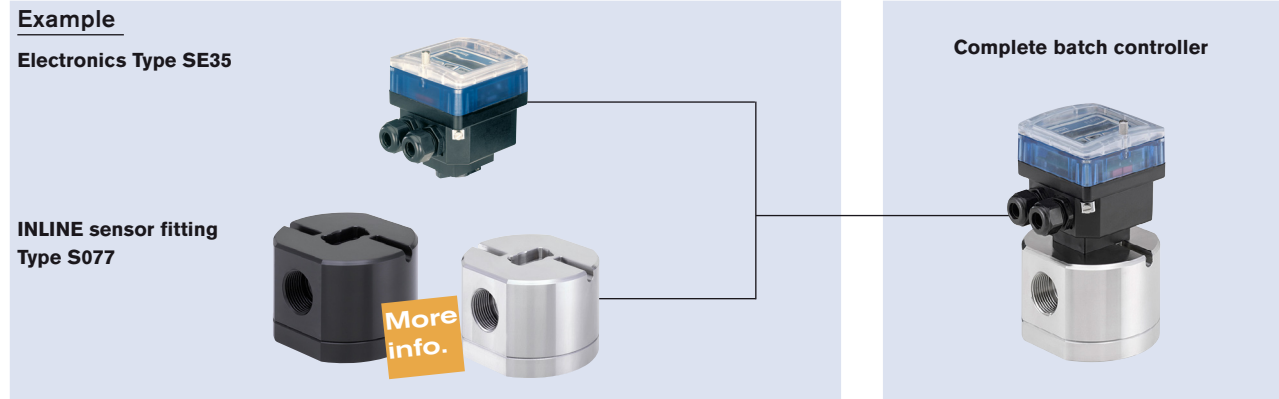
A complete batch controller consists of an electronics Type SE35 and a Bürkert INLINE sensor fitting Type S077

The following information is necessary for the selection of a complete device:

- **Article no.** of the desired electronics **Type SE35** (see Ordering chart, below)
- **Article no.** of the selected INLINE sensor fitting **Type S077** (see separate data sheet- has to be ordered separately)

You have to order two components.

When you click on the orange box "More info." below, you will come to our website for the resp. product where you can download the data sheet.



Ordering chart for electronics Type SE35

All these versions have as minimum:

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

| Specifications | Voltage supply | Sensor version | Electrical connection | Article no. |
|--|----------------|----------------|-----------------------|-------------|
| Batch controller, compact version | 12 ... 36 V DC | Hall | 2 cable glands | 443360 |
| Batch controller, compact version, UL-Recognized for US and Canada | 12 ... 36 V DC | Hall | 2 cable glands | 564398 |
| Batch controller, compact version | 115/230 V AC | Hall | 2 cable glands | 423926 |

NOTE: For remote version, please refer to data sheet Type 8025 Batch controller

Ordering chart for accessories (has to be ordered separately)

| Specifications | Article 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 | 449755 |
| Set with 2 reductions M20 x 1.5 /NPT 1/2" + 2 neoprene flat seals for cable gland or plug + 2 screw-plugs M20 x 1.5 | 551782 |
| 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 | 551775 |
| Set with 8 FLOW foils | 553191 |

To find your nearest Bürkert office, click on the orange box →

www.burkert.com

In case of special application conditions, please consult for advice.

Subject to alteration.
© Christian Bürkert GmbH & Co. KG

1803/1_EU-en_00895306