DATA SHEET

Type SE35 + S077





Inline positive displacement flowmeter or batch controller

- Display for indication of flow rate and volume with two totalizers or dosing
- Automatic calibration using Teach-In
- Inputs (with batch controller) and all outputs can be checked without the need for actual flow
- Total and day counters for batch quantity and number of dosing, volume or mass counter indicator (with batch controller)





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

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

The device Type SE35 + S077 is made up of a compact sensor-fitting with oval rotors (S077) and a transmitter (SE35) quickly and easily connected together by a bayonet catch without having to open the pipeline. The Bürkert designed sensor-fitting system ensures simple installation of the device into all pipelines from DN 15...DN 100.

The flowmeter is specially designed to switch a valve and to establish a monitoring system or an On/Off control loop. The batch controller is designed to carry out a dosing of one or several quantities of liquids, when mounted in series in a pipe with one or two valves.



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General technical data

1.1. General data

Note:

The following data are valid for both the Inline flowmeter and the Inline batch controller.

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 7.

Non	wetted	parts

Housing, cover	PC
Lid	PC
Front panel foil	Polyester
Screws	Stainless steel
Female cable plug/male	Body, contact holder and cable gland in PA
fixed plug	Cable gland seal and flat seal in NBR
Cable glands	PA
Quarter turn system	PC

Wetted parts		
Sensor-fitting body	Aluminium or stainless steel (316L)	
Seal	FKM or FEP/PTFE encapsulated	
Oval gear	PPS, aluminium or stainless steel (316L)	
Shaft	Stainless steel (316L)	
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 9.	
Measuring principle	Oval gear Oval gear	
Compatibility	Any pipe from DN 15DN 100 which is fitted with Bürkert S077 Inline sensor-fitting. For the selection of the nominal diameter of the Inline sensor-fittings, see data sheet Type S077 ▶.	
Display	15×60 mm, 8-digit LCD, alphanumeric,15 segments, 9 mm high	
Pipe diameter	DN 15DN 100	
Measuring range	• Viscosity > 5 mPa.s: 21200 l/min (0.53320 gpm)	
	 Viscosity < 5 mPa.s: 3616 I/min (0.78320 gpm) 	

Performance data

Measurement deviation With K-factor determined with a teach-in procedure or with the specific K-factor, engraved on the sensor-fitting: ±0.5 % of the measured value (at Teach-In flow rate value)

With standard K-factor: ±1% of the measured value

Repeatability	±0.03% of the measured value ^{1.)}
Electrical data	

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

Protection against DC polarity reversal

Yes

Overvoltage protection

Yes

Voltage supply cable

Cable with maximum operating temperature greater than 80 °C (90 °C for UL-Recognized version)

Max. 50 m length, shielded

Medium data

Fluid temperature

With sensor-fitting S077 in:

- Aluminium: -20...+80 °C (-4...+176 °F)
- Stainless steel: -20...+120 °C (-4...+248 °F)

See data sheet Type S077 ▶ for more information.

Fluid pressure (max.)

With sensor-fitting S077 with:

- DN 15: 55 bar (798.05 PSI) (threaded process connection)
- DN 25: 55 bar (798.05 PSI)1.)
- DN 40 or DN 50: 18 bar (261.18 PSI)
- DN 80: 12 bar (174.12 PSI)
- DN 100: 10 bar (145.1 PSI)

See data sheet Type S077 ▶ for more information.



Viscosity



Rate of solid particles	0%	
Process/Port connection &	communication	
Process connection	• Thread: ½"; 1"; 1½"; 2"; 3" (G or NPT)	
	• Flange:	
	- 25; 40; 50; 80 or 100 mm DIN PN 16 flange	
	- 1"; 1½"; 2"; 3" or 4" ANSI 150LB flange	
	See data sheet Type S077 ▶ for more information.	
Approvals and Certificates		
Standards		
Degree of protection ^{2.)} according to IEC/EN 60529	IP65 with device wired and plugs mounted and tightened	
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)	
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 7.	
Certification	UL-Recognized for US and Canada	
Environment and installation	on	
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 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.) Or in accordance to the value of the	e used flanges.	

Max. 1 Pa.s (higher on request)

- 1.) Or in accordance to the value of the used flanges.
- 2.) Not evaluated by UL





1.2. Inline flowmeter

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.

Performance data	
420 mA output uncertainty	±1% of range
Electrical data	
Operating voltage (V+)	 1236 V DC ±10 %, 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
Current consumption	1236 V DC powered measuring device with a standard output signal, with sensor and without pulse output consumption
	With relays: ≤70 mA
	Without relay: ≤25 mA :
Power consumption	115/230 V AC powered measuring device: 3 VA
Outputs	Pulse (potential free transistor):
	 polarized, NPN or PNP (wiring dependant)
	 function: pulse output, adjustable pulse value
	- 0400 Hz
	 536 V DC, 100 mA, voltage drop at 100 mA: 2.5 V DC
	- duty cycle (pulse duration/period): 0.5
	 galvanic insulation and protected against overvoltage, polarity reversals and short circuit
	Relay:
	- 2 relays, hysteresis, adjustable thresholds, normally open
	- non UL recognized device: 230 V AC/3 A or 40 V DC/3 A (resistive load)
	– UL recognized device: 30 V AC/42 V _{peak} /3 A or 60 V DC/1 A
	• Current:
	- 420 mA (3-wire with relays; 2-wire without relay)
	- sourcing or sinking (wiring dependant)
	 max. loop impedance: 900 Ω at 30 V DC, 600 Ω at 24 V DC, 50 Ω at 12 V DC, 800 Ω with a 115/230 V AC voltage supply
	- response time (1090 %) for the measured value: 6 s (default))
Volta <mark>ge</mark> supply cable	External diameter (cable):
	- 58 mm (with cable plug)
	- 612 mm (1 cable per cable gland) or 35 mm when using a multi-way seal (2 cables per cable gland)
	Cross section of wires:
	- 0.251.5 mm² (with cable plug)
	- 0.75 mm² (with cable gland)
	Cross section the local ground wire: max. 0.75 mm²
Process/Port connection & con	
Electrical connection	Cable plug or cable glands M20×1.5
Environment and installation	
Ambient temperature	Operation and storage:
	 Version 1236 V DC: 0+60 °C (+32+140 °F)
	 Version 115/230 V AC: 0+50 °C (+32+122 °F)

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1.3. Inline batch controller

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.

Electrical data	
Operating voltage (V+)	 1236 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
Current consumption	With sensor, without consumption of digital input and pulse output
	With relays:
	- ≤100 mA (at 12 V DC)
	- ≤50 mA (at 36 V DC)
	- ≤55 mA (115/230 V AC)
	Without relay:
	- ≤70 mA (at 12 V DC)
	– ≤35 mA (at 36 V DC)
	- ≤40 mA (115/23 <mark>0 V AC</mark>)
Power consumption	115/230 V AC powe <mark>red</mark> measuring device: 3 VA
Inputs	• DI (1 to 4)
	Switching threshold V _{on} : 536 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	Transistors (DO1 and DO4):
	 NPN or PNP (wiring dependant), potential-free
	 function: pulse output (by default for DO1), batch state (by default for DO4), configurable and parametrisable
	– 0 <mark>3</mark> 00 Hz
	 536 V DC, 100 mA max., voltage drop at 100 mA: 2.7 V DC
	 duty cycle (pulse duration/period): >0.45
	 galvanic insulation, protected against overvoltage, polarity reversals and short-circuits
	Relays (DO2 and DO3):
	 2 relays (normally open), parametrisable (by default: DO2 always configured to control the valve, parametrized of 100 % of the batch quantity and DO3 config- ured as alarm)
	 non UL recognized device: 230 V AC/3 A or 40 V DC/3 A (resistive load)
	 UL recognized device: 30 V AC/42 V_{peak}/3 A or 60 V DC/1 A
	- max. cutting power of 750 VA (resistive load)
Voltage supply cable	External diameter (cable):
	- 612 mm (1 cable per cable gland) or
	 4 mm when using a multi-way seal (2 cables per cable gland)
	Cross section of wires: 0.75 mm ²
Process/Port connection & co	ommunication
Electrical connection	Cable glands M20×1.5





Environment and installation	
Ambient temperature	Operation and storage:
	 Version 1236 V DC: 0+60 °C (+32+140 °F)
	 Version 115/230 V AC: 0+50 °C (+32+122 °F)

2. Approvals

2.1. Certification UL

Certificate	Description
c FU °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

3. Materials

3.1. Chemical Resistance Chart - Bürkert resistApp



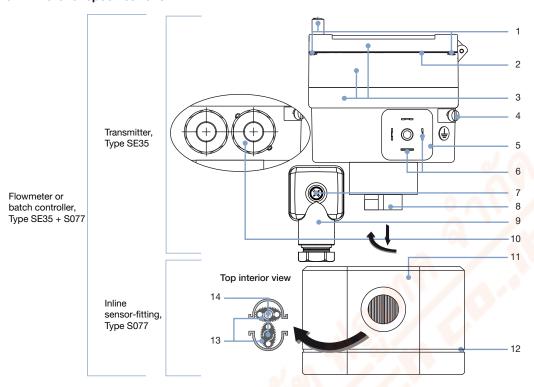
Bürkert resistApp - Chemical Resistance Chart

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	Male fixed plug (EN 175301-803)	PA
6	Electrical contact	Sn
7	Screw	Stainless steel
8	Quarter turn system	PC
9	Female cable plug (EN 175301-803)	Body, contact holder and cable gland in PA
		Cable gland seal and flat seal in NBR
10	M20 x 1.5 cable gland	PA
11	Sensor-fitting body	Stainless steel
12	Seal	FKM or FEP/PTFE encapsulated
13	Oval gear	PPS, aluminium or stainless steel (316L)
14	Axis	Stainless steel (316L)

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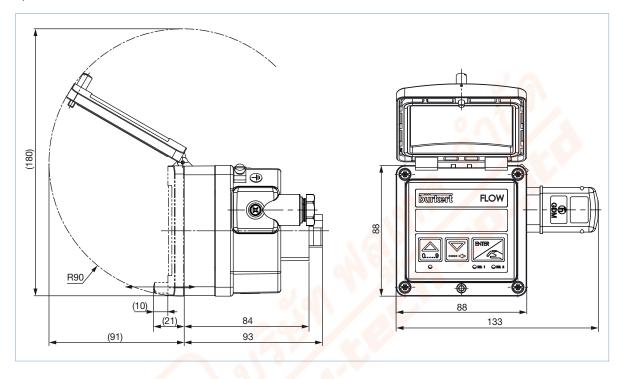
4. Dimensions

4.1. Transmitter SE35

Version with cable plug (EN 175301-803)

Note:

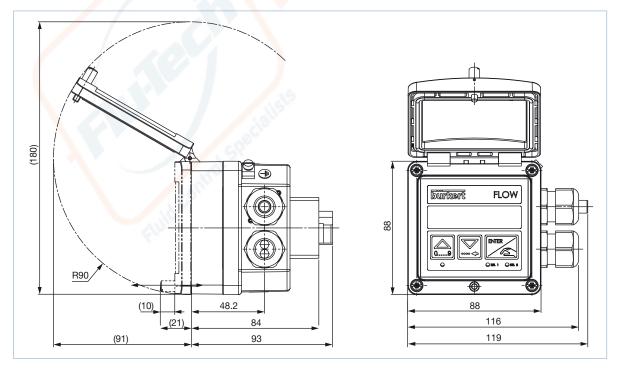
Specifications in mm



Version with M20 x 1.5 cable glands

Note:

Specifications in mm



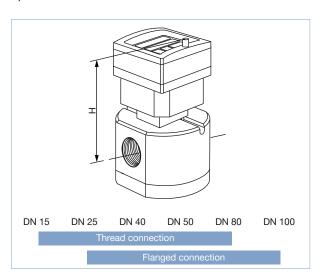




4.2. Transmitter SE35 mounted in a S077 sensor-fitting

Note

Specifications in mm



DN	Н
15	126
25	135
40	147
50	157
80	207
100	223

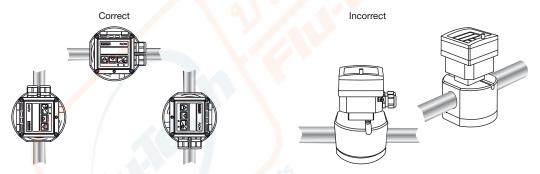
5. Product installation

5.1. Installation notes

Note:

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

The sensor fitting can be installed in any orientation as long as the rotor shafts are always in a horizontal plane.



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.

6. Product operation

6.1. Measuring principle

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 Type S077**. To improve the measurement deviation, a specific K-factor is given with each device on its label.

The electrical connection is provided via a cable plug according to EN 175301-803 or two cable glands (according to the device version).



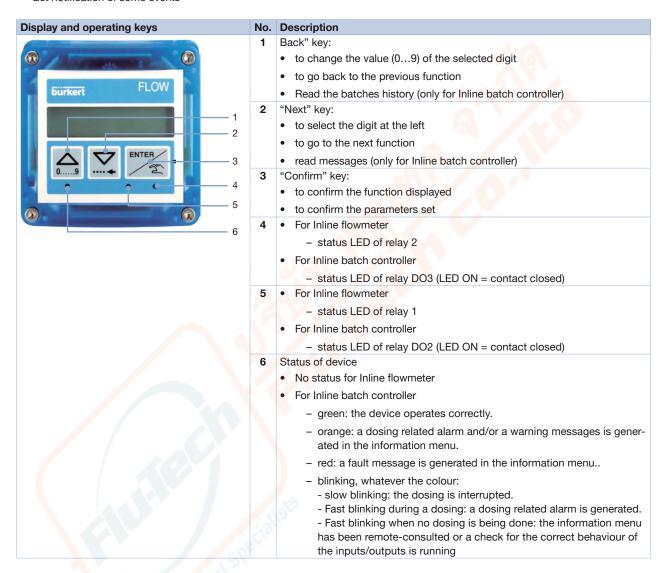


6.2. Functional overview

Display and operating keys

The display is used to:

- Read the value of certain parameters e.g. for the flowmeter, the measured flow rate, the main totalizer
- · Set parameters of the device by means of 3 keys
- · Read the configuration of the device
- · Get notification of some events



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



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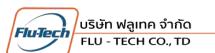
Inline flowmeter

The device has 2 operating levels:

- the process level
- the configuration level, which comprises the parameters and the test menus

Operating level	Functions
Process	Indication of
	 the value of the measured flow
	- the value of the 420 mA output
	 the value of the main totalizer
	- the value of the daily totalizer
	Reset the daily totalizer
	Access to the Parameters and Test menus of the Configuration level
Configuration -	To make the settings needed for operation:
parameters menu	- language
	 engineering units (International measuring units)
	K-factor/Teach-In function
	- 420-mA-current output
	- pulse output
	- relay (on devices with relays)
	- filter (damping)
	- reset both totalizers
Configuration - test	To adjust the Offset and Span of the 420 mA current output
menu	To read the rotational frequency of the paddle wheel
	To check the correct operating of the outputs with simulating a flow rate







Inline batch controller

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
Configuration -	To make the settings needed for operation:
parameters menu	- 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	- 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



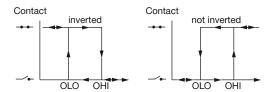


6.3. Function modes

Inline flowmeter

- 4...20 mA output + Pulse
- 4...20 mA output + Pulse + relay output
 Hysteresis switching mode (both relays) for the output, inverted or not

Hysteresis mode



Inline batch controller

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 pre-set quantity: the user selects a quantity which has been pre-set and starts the dosing from the keypad.
- Locally started dosing of free/pre-set quantity: the user enters the quantity to be filled or selects a quantity which has been
 pre-set and starts the dosing from the keypad.
- Dosing controlled by a PLC unit: the user selects a quantity which has been pre-set and starts the dosing using binary inputs.
- Locally/remote selection of pre-set quantity and dosing controlled by a PLC unit: the user selects a quantity which has been pre-set 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.

7. Product design and assembly

7.1. Product assembly

Note:

 The device Type SE35 + S077 is made up of a compact Inline sensor-fitting (S077) equipped with a sensor with oval gear and a transmitter (SE35).

The electronic housing of the SE35 integrates the electronic board with display, keys and also a transducer (Hall).

The S077 Inline sensor-fitting ensures simple installation into pipes from DN 15...DN 100. The SE35 transmitter can easily be
installed into any Bürkert sensor-fitting system, by means of a quarter turn.

See data sheet Type S077 ▶ for more information.







8. Networking and combination with other Bürkert products

Example:



9. Ordering information

9.1. Bürkert eShop - Easy ordering and quick delivery



Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

9.2. Recommendation regarding product selection

Inline flowmeter

A complete flowmeter Type SE35 + S077 consists of a compact SE35 flow transmitter and a Bürkert S077 Inline sensor-fitting.

See data sheet Type S077 ▶ 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 flow transmitter (see chapter "Inline flow transmitter" on page 16)
- Article no. of the selected S077 Inline sensor-fitting (See data sheet Type S077)





Inline batch controller

A complete Inline batch controller Type SE35 + S077 consists of a compact SE35 transmitter and a Bürkert S077 Inline sensor-fitting.

See data sheet Type S077 ▶ 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 batch controller (see chapter "Inline batch controller" on page 17)
- Article no. of the selected S077 Inline sensor-fitting (See data sheet Type S077)

9.3. Bürkert product filter



Bürkert product filter - Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

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9.4. Ordering chart of the Type SE35

Inline flow transmitter

Note:

The S077 Inline sensor-fitting must be ordered separately.

Voltage supply	Output	Relays	Sensor version	UL certification	Electrical connection	Article no.
Inline flow transmitter, 2 totalizers						
1236 V DC	420 mA (2 wires) + Pulse	None	Hall	_	Female cable plug EN 175301-803	444005 ∖≔
				UL-Recognized		570477 📜
				_	2 cable glands	444006 ∖≔
				UL-Recognized		553432 ≒
	420 mA (3 wires) + Pulse	2		_		444007 ≒
				UL-Recognized		553433 ≒
115/2 <mark>30</mark> V AC	420 mA (2 wires) + Pulse	None		_		423922 📜
	420 mA (3 wires) + Pulse	2				423924 📜

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Inline batch controller

Note:

- The S077 Inline sensor-fitting must 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

Voltage supply	Sensor version	UL certification	Electrical connection	Article no.
1236 V DC	Hall	_	2 cable glands	443360 ≒
		UL-Recognized	0.037	564398 ≒
115/230 V AC		_		423926 ≒

9.5. Ordering chart accessories

Description	Article no.		
For Inline flowmeter or batch controller			
Set with 2 cable glands $M20 \times 1.5 + 2$ neoprene flat seals for cable gland or plug +2 screw plugs $M20 \times 1.5 + 2$ 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			
For Inline flowmeter			
Female cable plug EN 175301-803 with cable gland - see Type 2518 ▶	572264 📜		
Female cable plug EN 175301-803 with NPT ½" reduction without cable gland - see Type 2509 ▶			
For Inline batch controller			
Set with 8 FLOW front panel foils	553191 📜		

