

# INLINE Flowmeter for hazardous area II 1 G/D - II 3 GD - I M1

SE30 Ex

- Flowmeter with NAMUR or NPN/PNP output signal
- Mounting, dismounting of electronics by a Quarter-Turn
- Intrinsic safety approvals (see ordering chart)



The intrinsic safety flowmeter, SE30 Ex, for continuous flow measurement is especially designed for use in neutral, slightly aggressive, solid-free liquids, in hazardous environments.

The flowmeter SE30 Ex is made up of an electronic module and a measuring element, (sensor fitting S030) and is quickly and easily connected by a Quarter-Turn.

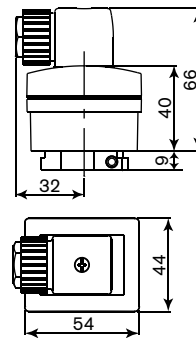
## Technical Data

General data	
<b>Compatibility</b> <sup>1)</sup>	With sensor fitting S030 (please order separately) (see relevant datasheet)
<b>Materials</b>	
Body, cover	PC (NPN/PNP version)
Cable plug	PPS (NAMUR version) glass fibre reinforced PA with silicon seal (NAMUR version), with NBR seal (NPN/PNP version)
<b>Wetted parts</b>	Selection of the appropriate sensor fittings (see datasheet)
<b>Sensor-Fitting S030</b> <sup>1)</sup>	
Body	Brass, Stainless steel, PVDF
Paddle wheel	PVDF
Axis and bearings	Ceramic
Seal	FKM
<b>Electrical connection</b>	
Namur version	Cable plug Form A acc to EN 175301-803 (supplied)
<b>Voltage supply cable</b>	0.5 to 1.5 mm <sup>2</sup> cross section, 5 to 8 mm diameter; shielded, max. 50 m length; line impedance < 50 Ω (not included in delivery)
<b>Environment</b>	
<b>Ambient temperature</b>	0 to +60°C (operating and storage)
<b>Relative humidity</b>	≤ 80%, without condensation
<b>Electrical data</b>	
<b>Power supply</b> <sup>1)</sup>	8 - 15 V DC (NAMUR version, from connected intrinsic safety barrier)
<b>Current consumption (with sensor)</b>	max. 7 mA (NAMUR version);
<b>Output</b>	Depends on the device model and application area: 2-wire current modulation acc. to Namur (0.5 or 2.5 mA)
<b>Reversed polarity (of DC)</b>	Protected

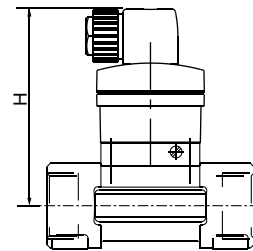
<sup>1)</sup> see datasheet overview: "SAFETY INSTRUCTIONS - NOTICE OF ATEX INSTRUCTIONS", to choose the appropriate sensor fitting for the area of application

## Envelope Dimensions [mm] (see datasheet for details)

### Electronics SE30 Ex



### Mounted on S030 sensor fitting



DN	H
06	96
08	96
15	101
20	98
25	98
32	102
40	106
50	112
65	112

## Technical Data (continued)

Complete device data (sensor fitting + electronic module)	
<b>Pipe diameter</b>	
S030 sensor fitting	DN06 to DN65
<b>Measuring range</b>	
S030 sensor fitting	0.5 to 1200 l/min (velocity 0.3 to 10 m/s)
<b>Medium temperature max.</b>	80°C (176°F)
<b>Fluid pressure max.</b>	
S030 sensor fitting	PN10 (PVDF), PN16 (stainless steel, brass - PN40 on request)
<b>Viscosity</b>	
S030 sensor fitting	300 cSt. max / 1% max. pollution
<b>Accuracy</b>	
S030 + Electronics SE30 Ex	
Teach-In (via remote transmitter)	± 1% of Reading <sup>2)</sup> (at the teach flow rate value)
Standard K-factor	± 2.5% of Reading <sup>2)</sup>
<b>Linearity</b>	± 0.5% of F.S.*
<b>Repeatability</b>	
S030 sensor fitting	± 0.4% of Reading <sup>2)</sup>
Standards, directives and approvals	
<b>Protection class</b>	IP67 with connector plugged-in and tightened acc. to EN 60529
<b>Standard and directives</b>	
ATEX	see "SAFETY INSTRUCTIONS - NOTICE OF ATEX INSTRUCTIONS"
EMC	EN 61000-6-3 EN 61000-6-2
Pressure (with S030 sensor fitting)	Complying with article 3 of Chap. 3 from 97/23/CE directive.*
NAMUR	EN 60947-5-6

<sup>2)</sup> 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.

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

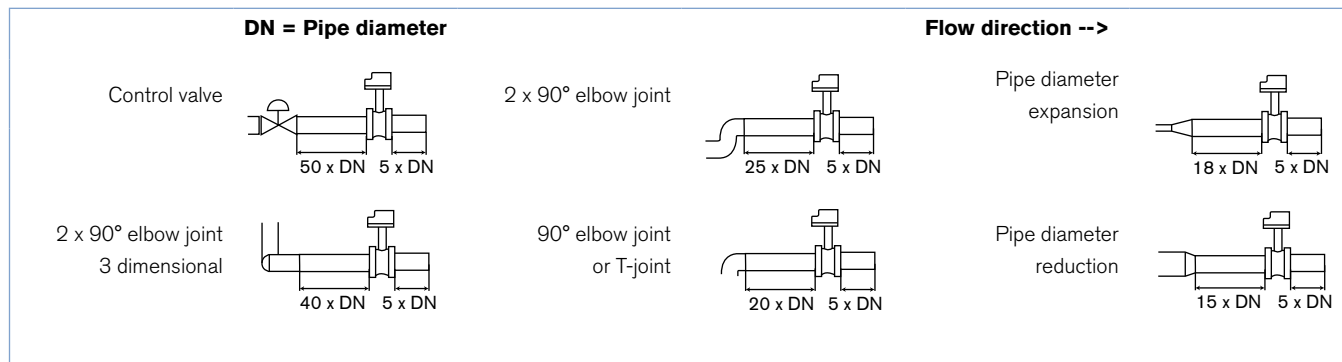
**\*\* For the 97/23/CE pressure directive, the device can only be used under following conditions (dependent on max. pressure, pipe diameter and fluid).**

Type of fluid	Conditions
<b>Fluid group 1, §1.3.a</b>	DN ≤ 25 only
<b>Fluid group 2, §1.3.a</b>	DN ≤ 32 or DN > 32 and PN*DN ≤ 1000
<b>Fluid group 1, §1.3.b</b>	PN*DN ≤ 2000
<b>Fluid group 2, §1.3.b</b>	DN ≤ 200

## Installation

EN ISO 5167-1 prescribes the inlet and outlet distances that must be observed when installing fittings in pipe lines to achieve calm flow conditions. Below you will find the most important layouts that could lead to turbulence in the flow, and the associated prescribed minimum inlet and outlet distances.

Make sure that the measuring point is steady, to ensure good measuring conditions



## Safety Barrier



- **2 or 4 channels, intrinsic safety digital inputs: proximity detectors NAMUR, contacts...**
- **Rail mount on hat profile 35 mm**
- **All connections by removable screw terminals**

### Specifications

<b>Digital inputs</b>	Each of the 4 x intrinsic safety inputs can be configured independently for a contact or a proximity detector NAMUR as per DIN 19234
<b>Intrinsic safety inputs</b>	Proximity detector NAMUR as per DIN 19234 or free potential contacts, relays, pressure or temperature switches or push buttons in hazardous area.
<b>Non intrinsic safety recopy outputs</b>	According to the type of sensor and the chosen logic: a green LED on the front panel displays a free-potential contact for each channel without common wire.
Collector cut-off power	15 V - 60 mA - 0.9 VA - 350 Hz
<b>Selection of the sensor type</b>	Inductive / capacitive intrinsic safety certified NAMUR proximity detector or free-potential contacts.
<b>Selection of the logic</b>	By a mini-DIP choice of active proximity switches or when contact is NO (Normally Open) or NC (Normally Closed).
<b>Fault detector</b>	For all inputs configured as NAMUR, all models are provided with fault detector (broken line or short-circuit). In faulty case, the green front LED switches off, the contact of the defective channel opens and the red LED corresponding to the defective channel switches on. Other channels are not affected.
<b>Power supply</b>	24 V DC $\pm 10\%$ 230 V AC $\pm 10\%$ 1 front panel yellow LED is "ON" when supply is active
<b>Consumption</b>	5 VA
<b>Connections</b>	All connections by removable screw terminals. Supply distribution by means of a flat cable from one unit to the next one.

### Specifications (continued)

<b>Classification for explosive areas</b>	Intrinsic safety associated apparatus. It must be installed in safe area and connected to materials installed in zone 0, 1 or 2 - Gas (G) or in zone 20, 21 or 22 - Dust (D) Classification according to ATEX 94/9/CE: $\text{Ex}$ I/II (M1)/(1) G/D [EE <sub>x</sub> ia] IIC Safety parameters see EC-type certificate LCIE 00ATEX 6034X
<b>Ambient Temperature</b>	
Operating	-20 to +60°C
	-20 to +50°C (recommended)
Storage	-40 to +80°C
<b>Dimensional &amp; mechanical</b>	Housing for symmetrical DIN rail (hat profile 35 mm as per standard NFC63015 / EN50022) - Depth: 120 mm ; - Height: 90 mm - 145 mm overall including space for cables ; Width on rail 29.5 mm. Minimal distance between rails: 180 mm.
<b>Installations conditions</b>	
Mounting on DIN rail:	must take into account thermal dissipation and risk of overheating generated by housings installed side by side. In case of a high concentration inherent safety barrier, we recommend to leave a free space of 10 mm between each group of 8 units (horizontal rail) and between each group of 4 units (vertical rail).
Mounting inside a cabinet:	It is recommended to close the electrical cabinet and to ensure a circulation of fresh air even by means of an air conditioner to keep the inside temperature at the level compatible with the recommended operating temperature among the units.

## Ordering Chart

Description	Voltage supply	Output	Electrical connection	Item no.
<b>Flowmeter Type SE30 Ex for sensor fitting S030</b>				
SE30 Ex - NAMUR II 1 G/D for explosive gas and dust environments: zones 0, 1 or 2 and 20, 21 or 22	8 - 15 V DC - via an intrinsic safety barrier with NAMUR input*	NAMUR current modulation - 2-wire	1 cable plug EN 175301-803	552 901

\* The open circuit voltage for the NAMUR input must be included between 8 and 15 V.

**Note** regarding the ordering of a complete sensor:

A SE30 Ex sensor consists of the Type SE30 Ex electronic module and the INLINE fitting, see datasheet for Type S030

Please order the relevant INLINE fitting and the electronics separately!

## Accessories

Description	Item no.
Cable plug EN 175301-803 with blue cable gland and silicone seal (Type 2508)	167 526

Classifications for explosive areas	Voltage supply	Output	Number of channels	Item no.
Intrinsic safety barrier				
ATEX 94/9/CE I/II (M1 )/ (1) G/D [Ex ia] IIC	24 V DC	open collector, 15 V, 60 mA	2, with NAMUR input	553 456
		open collector, 15 V, 60 mA	4, with NAMUR input	553 457
	230 V AC	open collector, 15 V, 60 mA	2, with NAMUR input	553 458
		open collector, 15 V, 60 mA	4, with NAMUR input	553 459