bürkert
FLUID CONTROL SYSTEMS

Full bore magmeter for low flow volumes

- Combination of sensor Type S051 and transmitter Type SE56
- Continuous measurement or Batch Control
- Clean in place (CIP)
- Flow rate measurement for DN 03…DN 20

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

Can be combined with

Type 8644 ▸
Remote Process Actuation Control System AirLINE

Type 8693 ▸
Digital electropneumatic process controller for the integrated mounting on process control valves

Type description

The complete full bore magflowmeter Type 8051, which consists of a magnetic sensor Type S051 (in compact or remote version) connected to a transmitter Type SE56 (without display in compact version or with display in compact or remote version), is designed for applications with liquids with a minimum conductivity of 5 µS/cm.

Combined with a valve as the actuating element, the complete full bore magflowmeter Type 8051 can also control high-precision dosing and filling operations.

Phase out

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Visit product website ▸

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1. General Technical Data

The 8051 flowmeter is available with different transmitters.
The versions of the transmitter, Type SE56, are:

Standard compact version with display	Standard remote version with display	Basic compact version with or without display	Compact version without display
			

Detailed information can be found in the data sheet of the transmitter for electromagnetic-inductive flow sensors, see **data sheet Type SE56** ▶.

Product properties	
Material	
Non wetted parts	
Sensor housing	Stainless steel 304/1.4301
Wetted parts	
Process connection	• Stainless steel 316L (1.4404) • Stainless steel 304 (1.4301) with full lining version (process connection included)
Electrode	Stainless steel 316L (Alloy C, Titanium, Tantalum, Platinum-rhodium on request)
Lining	PTFE
Seal	FKM (EPDM or FFKM on request)
Dimensions	Detailed information can be found in chapter "3. Dimensions" on page 6.
Pipe diameter	DN 03…DN 20
Measuring principle	Electromagnetic induction Detailed information can be found in chapter "5.1. Measuring principle" on page 8.
Measuring range	0…10 l/h to 0…12500 l/h Detailed information can be found in chapter "6.4. Ordering chart sensor Type S051" on page 9.
Performance data	
Under reference conditions: water temperature = 20 °C, ambient temperature = 25 °C, constant flow rate during the test, liquid speed > 1 m/s	
Measurement deviation	If used with SE56 transmitter: • in standard compact version: ±0.2 % of reading • in standard remote version: ±0.2 % of reading • in Basic compact version: ±0.8 % of reading • in compact version without display: ±0.2 % of reading
Repeatability	If used with SE56 transmitter: • in standard compact version: ±0.1 % • in standard remote version: ±0.1 % • in Basic compact version: ±0.2 % • in compact version without display: ±0.1 %
Vacuum resistance	200 mbar (2.9 PSI) absolute at 100 °C (212 °F)
Medium data	
Fluid temperature	If used with SE56 transmitter: • in standard compact version: -20…+100 °C (-4…+212 °F) • in standard remote version: -20…+130 °C (-4…+266 °F) • in Basic compact version: -10…+100 °C (+14…+212 °F) • in compact version without display: -20…+100 °C (-4…+212 °F), up to 130 °C (up to 266 °F) for max. 1 hour
Fluid pressure	PN 16 (PN 40 on request)
Minimum conductivity	5 µS/cm (or 20 µS/cm with demineralised water)

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Process/Port connection & communication	
Process connection	External thread G ISO 228-1, NPT (DIN 11851, SMS 1145, clamp, ISO 2852 or BS 4825, flange DIN 2501, ANSI on request)
Electrical connection	2 cable glands PG9 (for remote version of the sensor)
Approvals and certificates	
Standards	
Degree of protection according to IEC/EN 60529	If use with SE56 transmitter: • in standard compact version: IP65 and IP67 • in standard remote version: – IP65 – IP68 (if the junction box of the sensor is filled with resin) • in Basic compact version: IP65 • in compact version without display: IP65 and IP67
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	The device is not subject to the requirements of the Pressure Equipment Directive 2014/68/EU, as the nominal flowmeter diameters are smaller than DN 25.
Environment and installation	
Ambient temperature	If used with SE56 transmitter: • in standard compact version: -20…+60 °C (-4…+140 °F) (operation and storage) • in standard remote version: -20…+60 °C (-4…+140 °F) (operation and storage) • in Basic compact version: – -10…+50 °C (+14…+122 °F) (operating) – -20…+50 °C (-4…+122 °F) (storage) • in compact version without display: -20…+40 °C (-4…+104 °F) (operation and storage)
Relative air humidity	≤90 %, without condensation
Height above sea level	Max. 2000 m
Operating conditions	Continuous
Equipment mobility	Fixed device
Application range	Indoor and outdoor (protect the device against electromagnetic interference, ultraviolet rays and against the effects of climatic conditions)
Installation category	Category II according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

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2. Product versions

The flowmeter Type 8051 is available in a compact or remote version.

2.1. Compact version

A compact version of the flowmeter is made of a sensor Type S051 in a compact version and a compact transmitter Type SE56.
The compact flowmeter is also available in 3 versions depending on the used transmitter.

Product details	
Standard transmitter	With display, housing in aluminium or stainless steel
Basic transmitter	With or without display, housing in nylon
Without display transmitter	Without display, housing in stainless steel

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

- **Article no.** of the compact sensor Type S051 (Detailed information can be found in chapter "6.4. Ordering chart sensor Type S051" on page 9)
- **Article no.** of the compact transmitter Type SE56 (see **data sheet Type SE56** ▶)

2.2. Remote version

A remote version of the flowmeter is made of a sensor Type S051 in a remote version and a remote transmitter Type SE56.
The remote flowmeter is available with the following transmitter.

Product details	
Standard transmitter	With display, housing in aluminium or stainless steel

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

- **Article no.** of the remote sensor Type S051 (Detailed information can be found in chapter "6.4. Ordering chart sensor Type S051" on page 9)
- **Article no.** of the remote transmitter Type SE56 (see **data sheet Type SE56** ▶)

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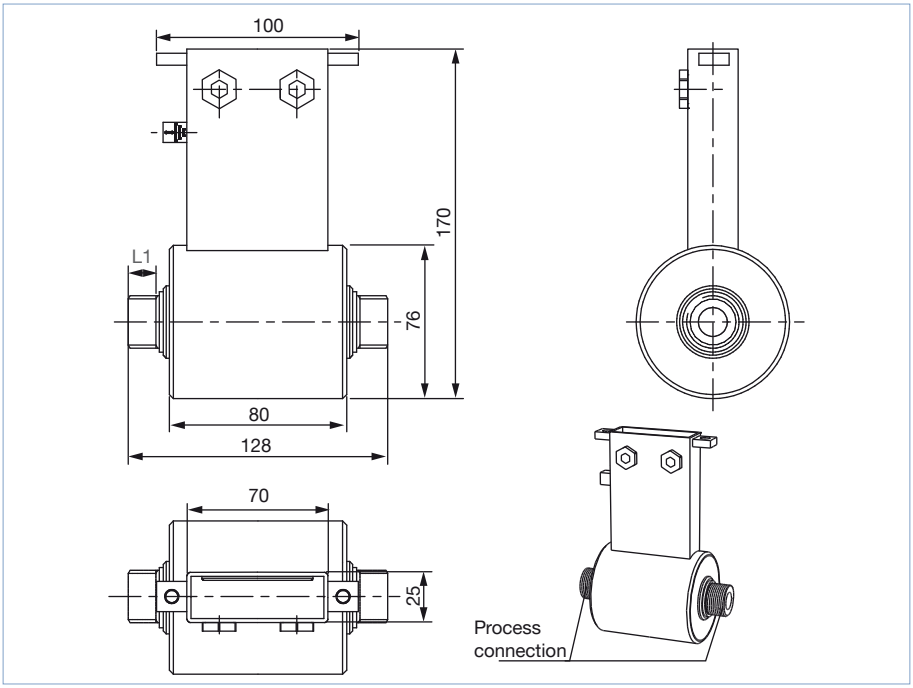
3. Dimensions

3.1. Compact version

Note:

- Detailed information on the dimensions of the SE56 transmitter can be found in **data sheet Type SE56** ▸.
- Dimensions in mm (unless specified differently)

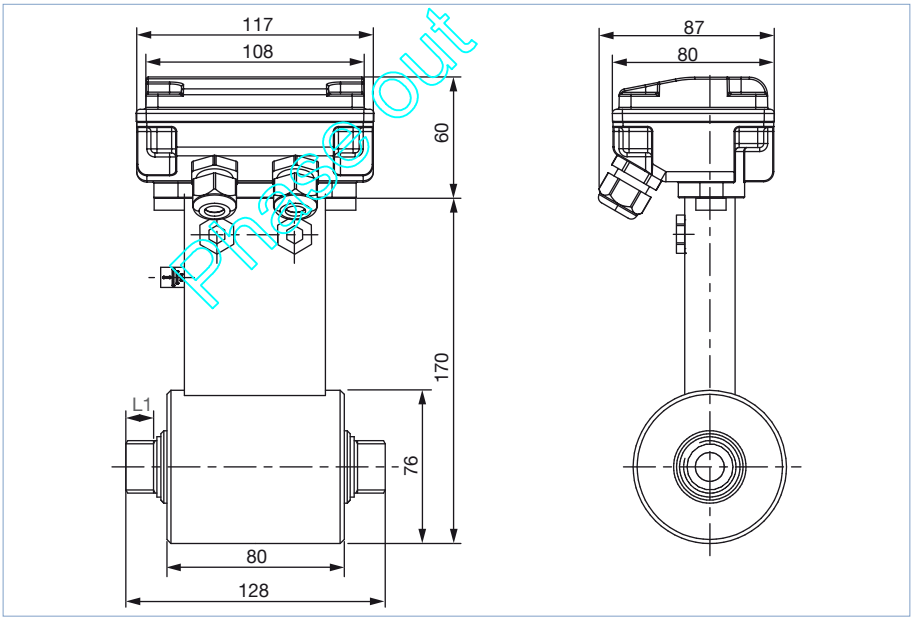


DN	Thread [Inch]	L1
03	G or NPT ¼"	16.4
06	G or NPT ⅜"	16.4
10	G or NPT ½"	17.4
15	G or NPT ¾"	20.0
20	G or NPT 1"	20.0

3.2. Remote version with junction box

Note:

- Detailed information on the dimensions of the SE56 transmitter can be found in **data sheet Type SE56** ▸.
- Dimensions in mm (unless specified differently)



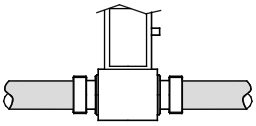
DN	Thread [Inch]	L1
03	G or NPT ¼"	16.4
06	G or NPT ⅜"	16.4
10	G or NPT ½"	17.4
15	G or NPT ¾"	20.0
20	G or NPT 1"	20.0

4. Product installation

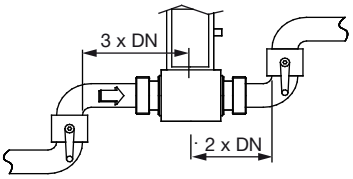
4.1. Installation notes

Note:
The flow meter is not designed for gas and steam flow measurement.

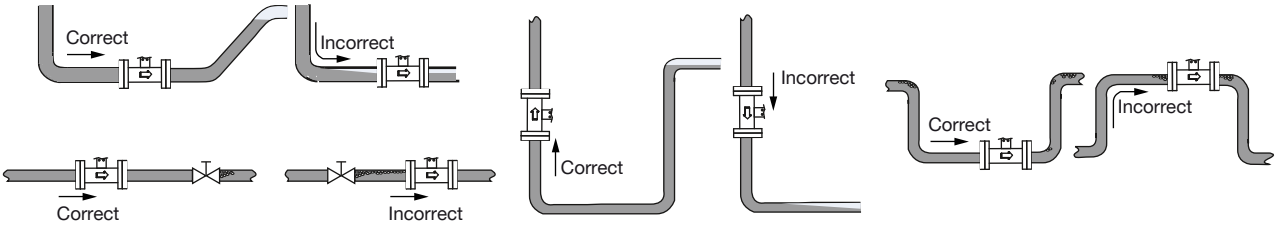
- During flowmeter operation the pipe must be completely full.



- Observe the upstream and downstream distances.



The sensor can be installed into either horizontal or vertical pipes. Mount the sensor in the below as correct indicated ways to obtain an accurate flow measurement.



The suitable pipe size can be selected using the diagram for selecting the nominal diameter of the pipe.

See chapter "4.2. Selection of the nominal diameter" on page 8.

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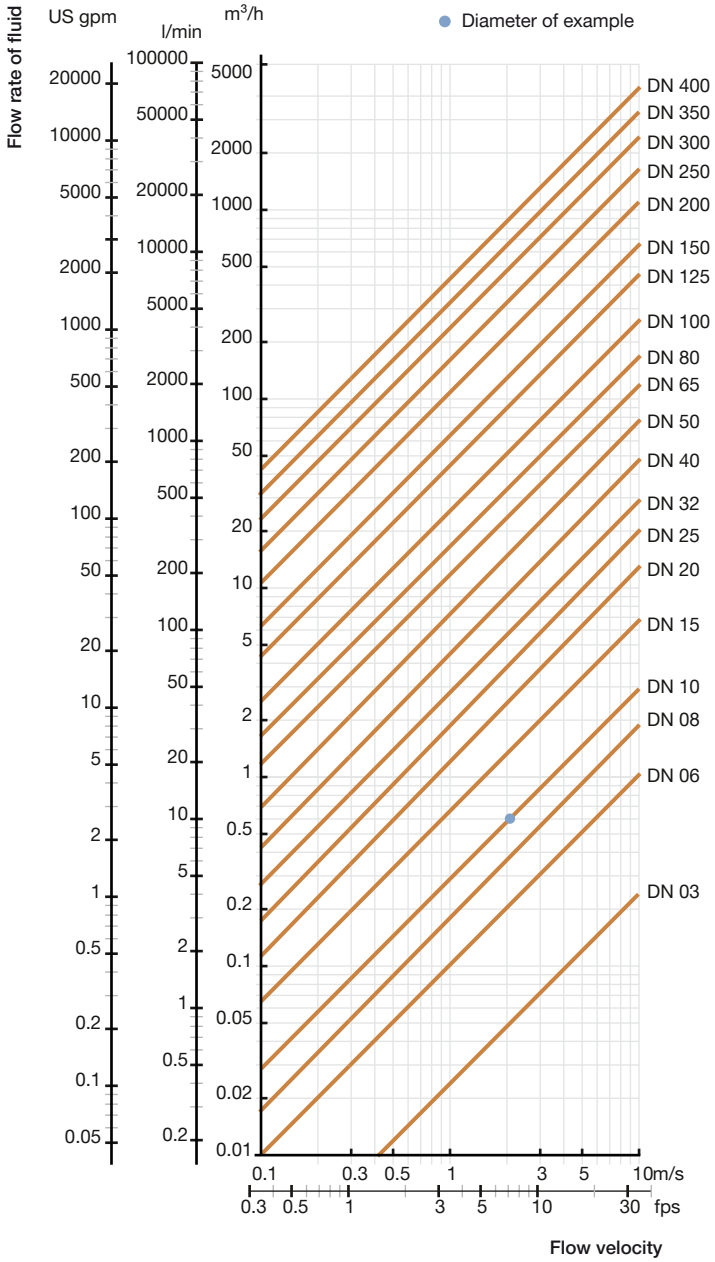
4.2. Selection of the nominal diameter

The graph is used to determine the DN of the pipe and the flowmeter appropriate to the application, according to the fluid velocity and the flow rate. On the chart, the intersection of flow rate and flow velocity gives the appropriate diameter.

Example:

- Flow: 10 l/min
- Optimal flow rate: 2…3 m/s

Result: Select a pipe size of DN 10



5. Product operation

5.1. Measuring principle

Faraday's law serves as the physical basis for magnetic flow measurement.
Magnetic coils are arranged around the pipeline to generate a magnetic field. Conductive liquids flowing through the magnetic field induce a voltage at two opposite metallic electrodes in contact with the medium. These electrodes are used to measure the induced electrical alternating voltage.
The signal of sensor S051 must be amplified and processed by transmitter SE56. The transmitter delivers a signal proportional to the flow velocity or flow rate at its current output (4…20 mA) or at its pulse output. Depending on the application, both the 4 mA and the 20 mA limits can be assigned values in physical units such as l/min.

6. Ordering information

6.1. Bürkert eShop – Easy ordering and quick delivery

Bürkert eShop – Easy ordering and fast delivery

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6.2. Recommendation regarding product selection

A complete 8051 flowmeter consists of a S051 flow sensor (compact or remote version) and a SE56 transmitter (compact or remote version).

See **Data sheet Type SE56** ▸ 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 sensor **Type S051** (see following ordering chart)
- **Article no.** of the transmitter **Type SE56** (see **data sheet Type SE56** ▸ for more information)

6.3. Bürkert product filter

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6.4. Ordering chart sensor Type S051

DN [mm]	Process connection	Flow rate range Min. 0…0.4 m/s	Flow rate range Max. 0…10 m/s	Housing material	Wetted parts materials: Process connection /Electrode[1.)]	Wetted parts materials: Seal	Wetted parts materials: Lining	Article no.
Sensor Type S051, compact version								
03	G ¼" (ISO 228-1)	0…10 l/h	0…250 l/h	Stainless steel 304	Stainless steel 316L	FKM	PTFE	554321
	NPT ¼"							554213
06	G ⅜" (ISO 228-1)	0…40 l/h	0…1000 l/h					553065
	NPT ⅜"							555892
10	G ½" (ISO 228-1)	0…120 l/h	0…3000 l/h					553374
	NPT ½"							555111
15	G ¾" (ISO 228-1)	0…240 l/h	0…6000 l/h					553481
	NPT ¾"							557659
20	G 1" (ISO 228-1)	0…500 l/h	0…12500 l/h					553539
	NPT 1"							553663

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DN [mm]	Process connection	Flow rate range		Housing material	Wetted parts materials			Article no.
		Min. 0...0.4 m/s	Max. 0...10 m/s		Process connection /Electrode[1.)]	Seal	Lining	
Sensor Type S051, remote version with junction box and 10 m electrodes and coils cables (included)								
03	G ¼" (ISO 228-1)	0...10 l/h	0...250 l/h	Stainless steel 304	Stainless steel 316L	FKM	PTFE	448487
06	G ⅜" (ISO 228-1)	0...40 l/h	0...1000 l/h					448488
10	G ½" (ISO 228-1)	0...120 l/h	0...3000 l/h					448489
15	G ¾" (ISO 228-1)	0...240 l/h	0...6000 l/h					448490
20	G 1" (ISO 228-1)	0...500 l/h	0...12500 l/h					448491

1.) Two measuring electrodes

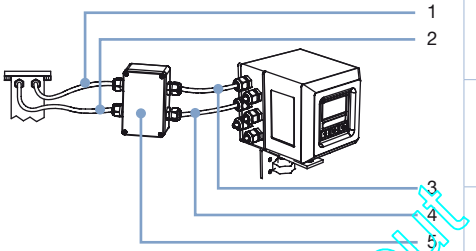
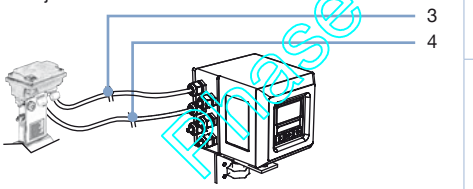
Further versions on request

Process connection
- External thread: DIN 11851, SMS 1145
- Clamp: ISO2852, BS 4825
- Flange: DIN 2501, ANSI

Pressure
PN 40

Material
- Seal: EPDM, FFKM
- Wetted parts (connection): Stainless steel 304 (with full lining in PTFE)
- Electrodes:
  - Alloy C (2 measuring electrodes + 2 ground electrodes)
  - Titanium (2 measuring electrodes + 2 ground electrodes)
  - Tantalum (2 measuring electrodes + 2 ground electrodes)
  - Platinum-rhodium (2 measuring electrodes + 2 ground electrodes)

6.5. Ordering chart accessories

Accessories for remote sensor	No.	Description	Article no.
Without junction box  with junction box 	**1**	10 m cable for electrodes[1.)] For connecting the sensor (**version without junction box**) Type S051, S054, S055 or S056 to the connecting box of the cable extension kit.	448518
	2	10 m cable for coils[1.)] For connecting the sensor (**version without junction box**) Type S051, S054, S055 or S056 to the connecting box of the cable extension kit.	448519
	3	10 m cable for electrodes[1.)] For connecting • the connecting box of the cable extension kit to the transmitter Type SE56 • the sensor (**version with junction box**) Type S051, S054, S055 or S056 to the transmitter Type SE56	562851
	4	10 m cable for coils[1.)] For connecting • the connecting box of the cable extension kit to the transmitter Type SE56 • the sensor (**version with junction box**) Type S051, S054/ S055 or S056 to the transmitter Type SE56	562852
	5	Connecting box of the cable extension kit including No. 1+2+3+4 and resin	562853

1.) Other cables length than 10 m on request (for cables length > 20 m a preamplifier could be needed. **Caution, this will result in a price increase!**)

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