DATA SHEET

Type S054

bürkert
FLUID CONTROL SYSTEMS

Magnetic inductive sensor without flange (wafer connection)

- For connection to a transmitter Type SE58 (with or without display, in compact or remote version) for flow measurement
- Design mainly for use in applications with water
- Flow measurement 25…approx. 75,000 l/min for DN 25...DN 400

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

Can be combined with

Type SE58 ▸
Version L of the transmitter for electromagnetic-inductive flow sensors

Type SE58 ▸
Version M of the transmitter for electromagnetic-inductive flow sensors

Type SE58 ▸
Version S of the transmitter for electromagnetic-inductive flow sensors

Description du Type

The Type S054 magnetically inductive flow sensor (compact or separate version) is suitable for liquids with a minimum conductivity and for use in applications with requirements in areas of water measurements.

The combination with the dedicated SE58 S transmitter (minimum required conductivity: 20 µS/cm) or with the SE58 M or SE58 L transmitters (minimum conductivity required: 5 µS/cm) results in a flowmeter with different performance, functions, materials and approvals, with the corresponding suitability for the respective applications depending on the respective requirements.

With the SE58 S you get a compact device, with the SE58 M and SE58 L compact devices or remote versions are created for which the transmitter and sensor are connected by 2 cables up to a maximum length.
Standard process connections available for the S054 are wafer connections.

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1. General technical data

The S054 electromagnetic flow sensor in a compact or remote version is intended for use with transmitter Type SE58, which is available in three versions L, M or S.

SE58 L or SE58 M	SE58 S
	

Detailed information can be found in the data sheet of the transmitter, see **data sheet Type SE58** ▶.

Product properties	
Material	
Non wetted parts	
Sensor housing	Carbon steel painted (stainless steel 304 or 316 on request)
Junction box	Only for remote sensor: painted aluminium (on request: stainless steel 304 (1.4301) raw or polished)
Wetted parts	
Lining	PP or ebonite (hard rubber) (PTFE on request)
Electrode	Stainless steel 316L (Alloy C, Titanium, Tantalum, Platinum-rhodium on request)
Seal	• FKM (EPDM on request) with PP lining • Without gasket with ebonite (hard rubber) lining (with PTFE lining on request)
Pipe diameter	DN 25…DN 200 (upper DN on request)
Dimensions	Detailed information can be found in chapter **"2. Dimensions" on page 5**.
Measuring principle	Electromagnetic induction Detailed information can be found in chapter **"4.1. Measuring principle" on page 7**.
Measuring range	0…0.72 m³/h to 0…1130 m³/h (upper on request) Detailed information can be found in chapter **"5.4. Ordering chart sensor Type S054" on page 8**.
Performance data	
At reference conditions and according to internal test procedures: • At room temperature • Constant flow rate during the test, liquid speed > 1 m/s • Pressure: > 30 Kpa • Flow condition: observed inlet and outlet conditions • Zero point stability: ± 0.005 %	
Measurement deviation	If used with SE58 transmitter: • in compact or remote L version: ≤ ± 0.2 % of the measured value for flow velocity > 0.5 m/s • in compact or remote M version: ≤ ± 0.8 % of the measured value for flow velocity > 0.5 m/s • in compact S version: ≤ ± 0.5 % of the measured value for flow velocity > 0.5 m/s See **data sheet Type SE58** ▶
Repeatability	If used with SE58 transmitter: • in compact or remote L version: ≤ ± 0.1 % of the measured value for flow velocity > 0.5 m/s • in compact or remote M version: ≤ ± 0.4 % of the measured value for flow velocity > 0.5 m/s • in compact S version: ≤ ± 0.25 % of the measured value for flow velocity > 0.5 m/s See **data sheet Type SE58** ▶
Vacuum resistance	200 mbar (2.9 PSI) absolute at 100 °C (212 °F) for PTFE, at 60 °C (140 °F) for PP and at 80 °C (176 °F) for ebonite

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Medium data	
Fluid temperature	• With PP lining used with SE58 transmitter: – in compact version: -0…+60 °C (+32…+140 °F) – in remote version: -0…+60 °C (+32…+140 °F) • With ebonite lining used with SE58 transmitter: – in compact version: -5…+80 °C (+23…+176 °F) – in remote version: -5…+80 °C (+23…+176 °F) • With PTFE lining (on request) used with SE58 transmitter: – in compact version: -20…+100 °C (-4…+212 °F) – in remote version: -20…+110 °C (-4…+230°F)
Fluid pressure	• PN 16 (232 PSI) with PP or ebonite lining • PN40 on request, only with PTFE lining up to DN 150
Minimum conductivity	5 µS/cm (or 20 µS/cm with demineralised water)
Process/Port connection & communication	
Process connection	Wafer
Electrical connection	2 cable glands PG9 (for remote version of the sensor)
Approvals and certificates	
Directives	
CE directive	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 directive	The device is subject to the requirements of the Pressure Equipment Directive 2014/68/EU. Category II device for group 1 and 2 fluids under the following conditions: • maximum allowable pressure (PS) ≤ 40 bar • minimum/maximum temperature (TS): -10/+130 °C • within the following limits for liquids of group 2: – PN 10 for DN 400…DN 500 – PN 16 for DN 250…DN 300 – PN 25 for DN 200…DN 250 – PN 40 for DN 40…DN 250 • within the following limits for liquids of group 1 with a vapour pressure at the maximum allowable temperature not exceeding 0.5 bar (g): for diameters above DN 25 and PS x DN > 2000
Environment and installation	
Ambient temperature	According to the used version of SE58 transmitter and its material Detailed information can be found in the data sheet of the transmitter, see **data sheet Type SE58** ▶.
Relative air humidity	≤ 90 %, without condensation
Height above sea level	Max. 2000 m
Operating condition	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)
Degree of protection according to IEC/EN 60529	If use with SE58 transmitter: • in compact L and M version: IP67 (IP68 optional) • in compact S version: IP67 (IP68 optional) • in remote L and M version: IP68 See **data sheet Type SE58** ▶
Installation category	Category II according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

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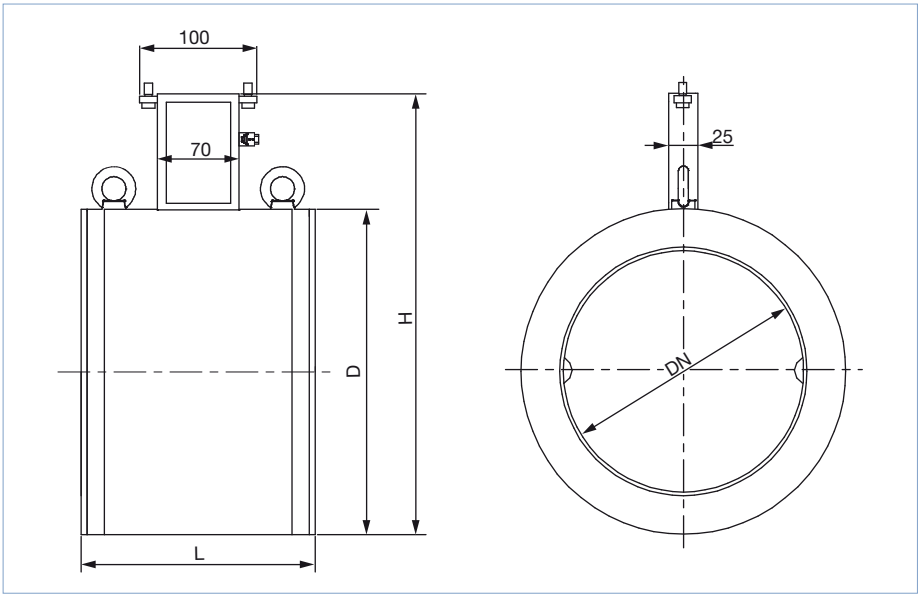
2. Dimensions

2.1. Wafer compact version

Note:

- Detailed information on the dimensions of the SE58 transmitter can be found in **data sheet Type SE58 ▶**.
- Dimensions in mm (unless specified differently)



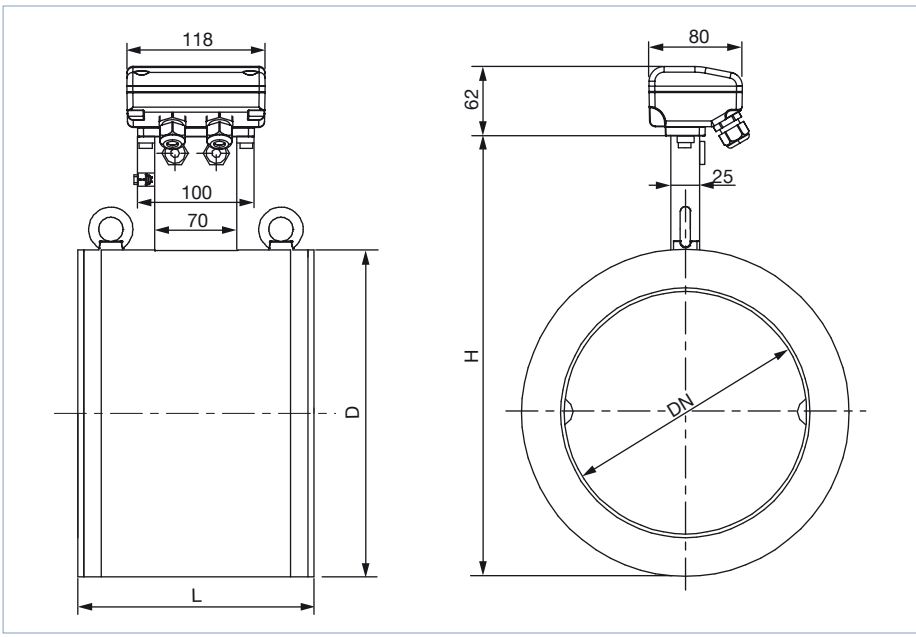
DN	L[1.)]	H	D
25	100	147	56
32	100	153	62
40	100	161	70
50	100	177	86
65	150	199	108
80	150	209	118
100	150	235	144
125	180	263	172
150	180	291	200
200	200	362	271

1.) tolerance +0/-3 mm

2.2. Wafer remote version with junction box

Note:

- Detailed information on the dimensions of the SE58 transmitter can be found in **data sheet Type SE58 ▶**.
- Dimensions in mm (unless specified differently)



DN	L[1.)]	H	D
25	100	147	56
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125	180	263	172
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200	200	362	271

1.) tolerance +0/-3 mm

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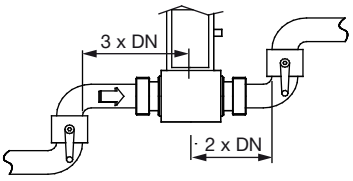
3. Product installation

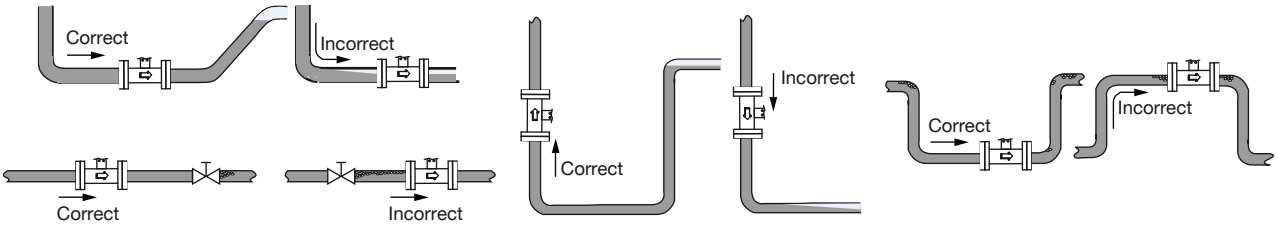
3.1. Installation notes

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 indicated positions shown below to obtain an accurate flow measurement.



The suitable pipe size can be selected using the nominal pipe size selection chart. See chapter **"3.2. Selection of the nominal diameter" on page 7**.

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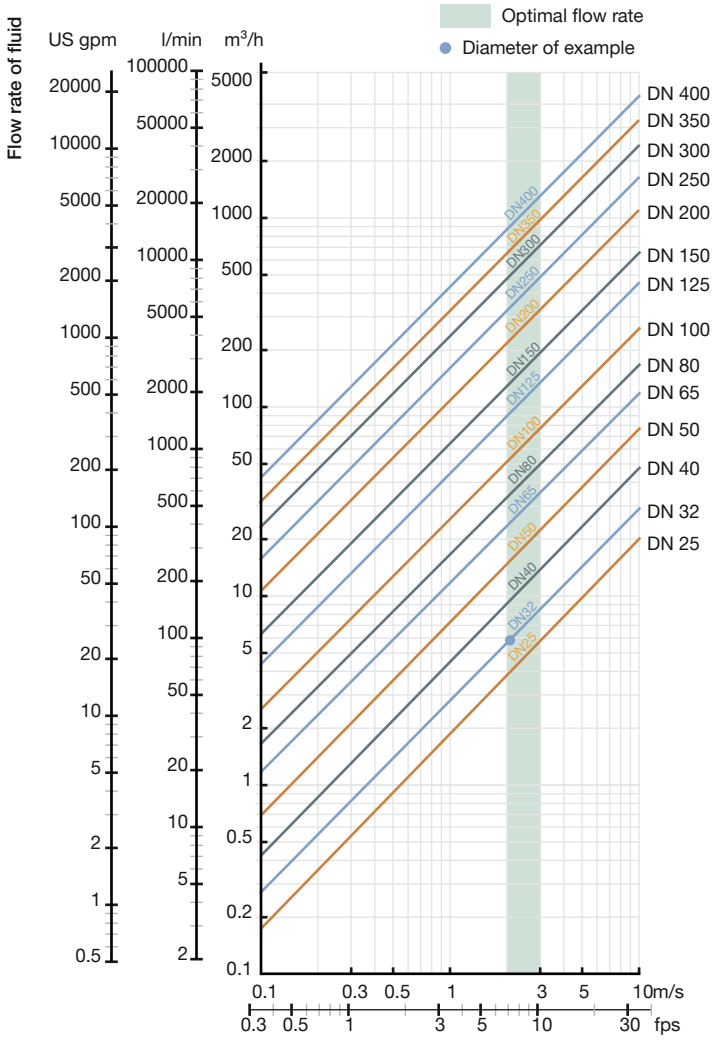
3.2. Selection of the nominal diameter

The graph is used to determine the DN of the pipe 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: 100 l/min
- Optimal flow rate: 2…3 m/s

Result: Select a pipe size of DN 32



4. Product operation

4.1. 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 S054 must be amplified and processed by transmitter SE58.

Detailed information on the dimensions of the SE58 transmitter can be found in **data sheet Type SE58 ▸**.

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5. Ordering information

5.1. Bürkert eShop – Easy ordering and quick delivery

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5.2. Recommendation regarding product selection

A complete flowmeter consists of a S054 (compact or remote version) and a SE58 transmitter (compact or remote version).

See **data sheet Type SE58** ▸ 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 S054** (Detailed information can be found in chapter "5.4. Ordering chart sensor Type S054" on page 8))
- **Article no.** of the transmitter **Type SE58** (see **data sheet Type SE58** ▸ for more information)

5.3. Bürkert product filter

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5.4. Ordering chart sensor Type S054

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 Electrode[1.)]	Wetted parts materials Seal	Wetted parts materials Lining	Article no.
Sensor Type S054, compact version								
25	Wafer type	0…0.72 m³/h	0…18 m³/h	Carbon steel	Stainless steel 316L	FKM	PP	554532
32		0…1.16 m³/h	0…29 m³/h					559435
40		0…1.80 m³/h	0…45 m³/h					554101
50		0…2.88 m³/h	0…72 m³/h					554700
65		0…4.80 m³/h	0…120 m³/h					559436
80		0…7.20 m³/h	0…180 m³/h					554142
100		0…11.20 m³/h	0…280 m³/h					554342
125		0…18.00 m³/h	0…450 m³/h					562953
150		0…25.60 m³/h	0…640 m³/h					562954
200	Wafer type	0…45.20 m³/h	0…1130 m³/h	Carbon steel	Stainless steel 316L	–	Ebonite (hard rubber)	561912

1.) Three electrodes (2 measuring electrodes + 1 ground electrode)

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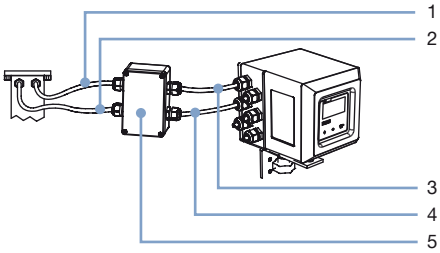
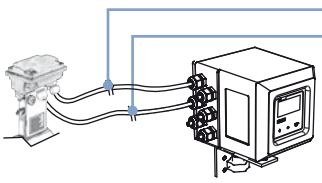
Further versions on request	
Material • Seal: EPDM • Lining: PTFE • Junction box: stainless steel 304 (1.4301) raw or polished • Body: stainless steel 304, stainless steel 316L • Electrodes: – Alloy C (2 measuring electrodes + 2 ground electrodes) – Titanium (2 measuring electrodes + 2 ground electrodes) – Tantalum (2 measuring electrodes + 2 ground electrodes) – Platinum-rhodium (2 measuring electrodes + 2 ground electrodes)	**Orifice** DN > 200[1.)] **Pressure** PN 10, PN 25, PN 40

1.) Ebonite (hard rubber) or PTFE lining material (if PTFE not selected then Ebonite (hard rubber) in standard)

5.5. 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 SE58 • the sensor (**version with junction box**) Type S051, S054, S055 or S056 to the transmitter Type SE58	562851
	4	10 m cable for coils[1.)] For connecting • the connecting box of the cable extension kit to the transmitter Type SE58 • the sensor (**version with junction box**) Type S051, S054, S055 or S056 to the transmitter Type SE58	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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