Electromagnetic flow sensor without flange (wafer type connection variant)

- For connection to a Type SE58 transmitter (with or without display, in compact or remote variant) for flow measurement
- Variant mainly for use in applications with water
- Flow measurement 25 to approx. 75.000 l/min for DN 25 to DN 400

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

Can be combined with

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

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

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

Type description

The electromagnetic flow sensor Type S054 (compact or remote variant) is suitable for liquids with minimum conductivity and for use in applications with water measurement requirements.

Combining it with the corresponding transmitter Type SE58 S (required minimum conductivity: 20 µS/cm) or Type SE58 M or Type SE58 L transmitters (required minimum conductivity: 5 µS/cm) results in a flowmeter with varying performance, functions, materials, and approvals, suitable for specific applications as per the respective requirements.

Compact devices are built with Type SE58 S, while with Type SE58 M or Type SE58 L, both compact devices and remote variants are available, where the transmitter and sensor are connected with 2 cables up to a maximum distance. Standard process connections for Type S054 are available as wafer type connections.

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Visit product website ▸

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1. General technical data

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

SE58 L or SE58 M	SE58 S

Further 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 C276, Titanium, Tantalum, Platinum-rhodium on request)
Seal	• FKM (EPDM on request) with PP lining • Without seal with ebonite (hard rubber) lining (with PTFE lining on request)
Pipe diameter	DN 25...DN 200 (upper DN on request)
Dimensions	Further information can be found in chapter "4. Dimensions" on page 5.
Measurement principle	Electromagnetic induction Further information can be found in chapter "6.1. Measurement principle" on page 7.
Measuring range	0...0.72 m^3/h to 0...1130 m^3/h (upper on request) Further information can be found in chapter "7.4. Ordering chart" 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 Type SE58 transmitter: • in compact or remote L variant: ≤ ± 0.2 % of the measured value for flow velocity > 0.5 m/s • in compact or remote M variant: ≤ ± 0.8 % of the measured value for flow velocity > 0.5 m/s • in compact S variant: ≤ ± 0.5 % of the measured value for flow velocity > 0.5 m/s See **data sheet Type SE58** ▶
Repeatability	If used with Type SE58 transmitter: • in compact or remote L variant: ≤ ± 0.1 % of the measured value for flow velocity > 0.5 m/s • in compact or remote M variant: ≤ ± 0.4 % of the measured value for flow velocity > 0.5 m/s • in compact S variant: ≤ ± 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, if used with Type SE58 transmitter: – in compact variant: - 0...+ 60 °C (+ 32...+ 140 °F) – in remote variant: - 0...+ 60 °C (+ 32...+ 140 °F) • With ebonite lining, if used with Type SE58 transmitter: – in compact variant: - 5...+ 80 °C (+ 23...+ 176 °F) – in remote variant: - 5...+ 80 °C (+ 23...+ 176 °F) • With PTFE lining (on request), if used with Type SE58 transmitter: – in compact variant: - 20...+ 100 °C (- 4...+ 212 °F) – in remote variant: - 20...+ 110 °C (- 4...+ 230 °F)
Fluid pressure	• PN 16 (232 PSI) with PP or ebonite lining • PN 40 on request, only with PTFE lining up to DN 150
Minimum conductivity	5 µS/cm (or 20 µS/cm with demineralised water)
Product connections	
Pipe connection	Wafer
Electrical connection	2 cable glands PG9 (for remote variant of the sensor)
Approvals and conformities	
Directives	
CE directive	Further information on the CE directive can be found in chapter "2.2. Standards" on page 5.
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 variant of Type SE58 transmitter and its material Further 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
Application range	Indoor and outdoor Protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions.
Degree of protection according to IEC/EN 60529	If use with SE58 transmitter: • in compact L and M variant: IP65, IP67 (IP68 option) or IP65 only (depending on the housing material) • in compact S variant: IP65, IP67 (IP68 optional) • in remote L and M variant: IP68 Further information can be found in the data sheet of the transmitter, 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. Approvals and conformities

2.1. Conformity

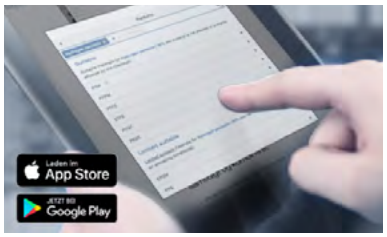
In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

2.2. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

3. Materials

3.1. 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.

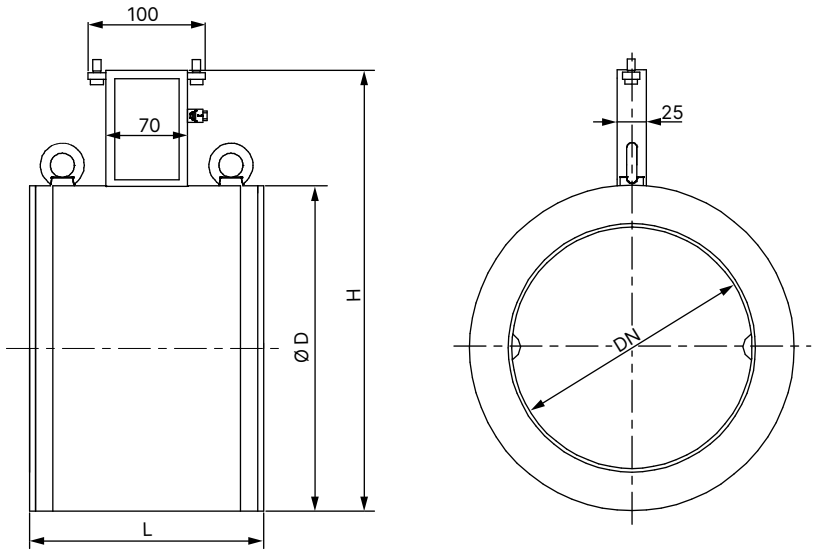
Start chemical resistance check

4. Dimensions

4.1. Compact variant

Note:

- Further information on the dimensions of the Type SE58 transmitter can be found in **data sheet Type SE58** ▶.
- Dimensions in mm, unless otherwise stated



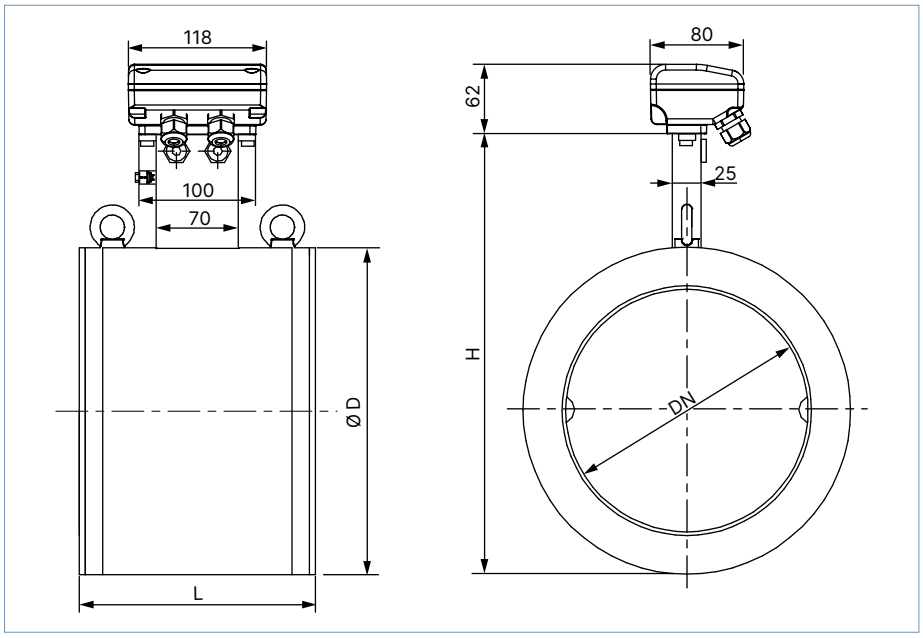
DN	H	L 1.)	ØD
25	147	100	56
32	153	100	62
40	161	100	70
50	177	100	86
65	199	150	108
80	209	150	118
100	235	150	144
125	263	180	172
150	291	180	200
200	362	200	271

1.) tolerance + 0/- 3 mm

4.2. Remote variant with junction box

Note:

- Further information on the dimensions of the Type SE58 transmitter can be found in **data sheet Type SE58** ▶.
- Dimensions in mm, unless otherwise stated



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

1.) Tolerance + 0/- 3 mm

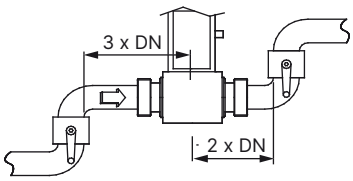
5. Product installation

5.1. Installation notes

Flow measurement

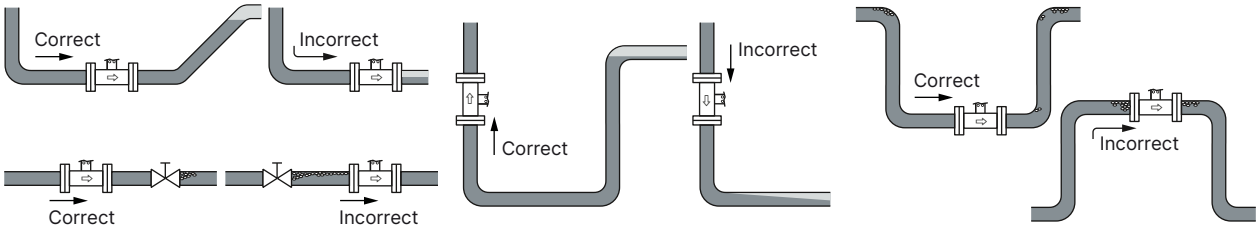
Note:
The device is not suitable for use in gaseous media and steam.

Minimum straight distances upstream and downstream of the sensor must be observed.
.



The device can be installed in either horizontal or vertical pipes, but following additional conditions should be respected:

- The pipe always must be filled with fluid at all times near the device, when it is in operation.
- Mount the sensor in the indicated positions shown below to obtain an accurate flow measurement.



The suitable pipe size is selected using the diagram in the chapter "5.2. Selection of the nominal diameter" on page 7.

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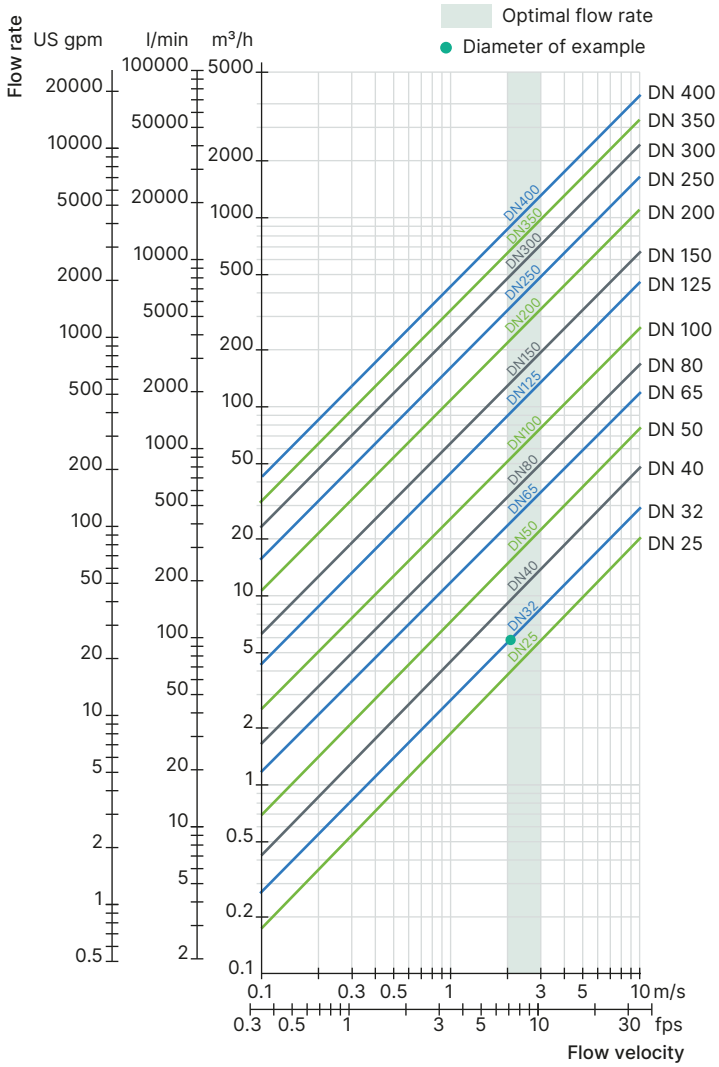
5.2. Selection of the nominal diameter

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

Example:

- Nominal flow: 100 l/min
- Optimal flow velocity: 2...3 m/s

Result: Select a pipe size of DN 32



6. Product operation

6.1. Measurement 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 Type S054 must be amplified and processed by transmitter Type SE58.

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

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7. Ordering information

7.1. Bürkert eShop

Bürkert eShop – Easy ordering and quick delivery

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Order online now

7.2. Recommendation regarding product selection

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

See **data sheet Type SE58** ▶ for more information.

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

- **Article no.** of the sensor **Type S054** (see "7.4. Ordering chart" on page 8)
- **Article no.** of the transmitter **Type SE58** (see **data sheet Type SE58** ▶ for more information)

7.3. 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.

Try out our product filter

7.4. Ordering chart

DN	Flow rate range		Pipe connection	Material				Article no.
[mm]	Min. 0...0.4 m/s	Max. 0...10 m/s		Housing	Electrode [1.)]	Seal	Lining	
Sensor Type S054, compact variant								
25	0...0.72 m³/h	0...18 m³/h	Wafer type	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	0...45.20 m³/h	0...1130 m³/h	Wafer type	Carbon steel	Stainless steel 316L	–	Ebonite (hard rubber)	561912

1.) 3 electrodes (2 measuring electrodes + 1 ground electrode)

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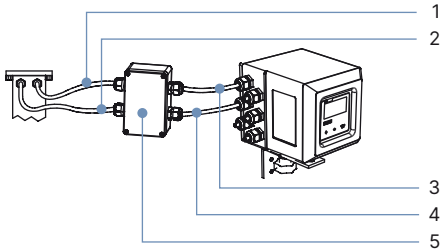
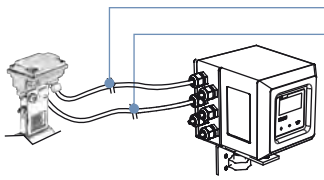
Further variants on request	
Material • Seal: EPDM • Lining: PTFE • Junction box: stainless steel 304 (1.4301) raw or polished • Body: stainless steel 304, stainless steel 316L • Electrodes: – Alloy C276 (2 measuring electrodes + 2 ground electrodes) – Titanium (2 measuring electrodes + 2 ground electrodes) – 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 as standard)

7.5. 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 (**variant without junction box**) Type S051, S054, S055 or S056 to the connecting box of the extension cable set	448518
	2	10 m cable for coils [1.)] For connecting the sensor (**variant without junction box**) Type S051, S054, S055 or S056 to the connecting box of the extension cable set	448519
	3	10 m cable for electrodes [1.)] For connecting • the connecting box of the extension cable set to the transmitter Type SE58 • the sensor (**variant 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 extension cable set to the transmitter Type SE58 • the sensor (**variant with junction box**) Type S051, S054, S055 or S056 to the transmitter Type SE58	562852
	5	Connecting box of the extension cable set including resin	562853

1.) Cable lengths other than 10 m on request (for cables length > 20 m, a preamplifier is supplied for an additional charge).

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