bürkert
FLUID CONTROL SYSTEMS

FLOWave SAW flowmeter

- No obstacles inside the measuring tube
- Conforms to hygienic requirements, CIP/SIP compatible
- Ideal for liquids with low or no conductivity
- Digital communication, parameter setting via communicator, display and Wi-Fi
- Compact, lightweight and low energy consumption

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

Can be combined with

Type 8802 ▸
ELEMENT continuous control valve systems - overview

Type 8619 ▸
multiCELL - Multi-channel and multi-function transmitter/controller

Type 8647 ▸
AirLINE SP – electro-pneumatic automation system

Type ME43 ▸
Fieldbus gateway

Type description

The Type 8098 flowmeter is part of the FLOWave product range. It is based on SAW (Surface Acoustic Waves) technology and is mainly designed for applications with the highest hygienic demands. This is achieved by using:

- Suitable stainless steel materials
- A measuring tube free of any wetted parts except for the actual tube
- The ideal outer hygienic design.

FLOWave offers a range of integrated functions, including the advantages of flexibility, ease of cleaning, compact dimensions, lightweight, easy installation and handling, and is compliant with numerous standards.
Optimal measurement results can be achieved with homogeneous liquids, free of air and solid particles. For liquids with high viscosity, an integrated viscosity compensation can be activated. Gas and steam cannot be measured; however, their flow does not have any negative effect on the device or its operation and other liquids flowing through afterwards are measured correctly as before. Special functions derived from further process values (density factor, acoustic transmission factor) offer additional information about the particular liquid in use (for details, see chapter **"7.2. Special functions" on page 23**).

powered by EDIP

3-A 28-06

CERTIFIED EHEDG TYPE EL CLASS I

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Visit product website ▸

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1. General technical data

The Type 8098 flowmeter is available in the FLOWave L version with or without industrial communication, or in the FLOWave S version with only a büS connector and without display.

The FLOWave L version with industrial communication, recognisable by the two M12 female connectors and the M12 male connector, is called the Ethernet version.

1.1. All versions

The following data applies to all versions.

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 12. Detailed information on the materials can be found in chapter "3.2. Material specifications" on page 13.	
Non wetted parts	
Sensor housing	Stainless steel 304/1.4301
Wetted parts	
Measurement tube and clamp	Stainless steel 316L/1.4435 with low delta ferrite content
Dimensions	Detailed information can be found in chapter ""4. Dimensions" on page 16.
Surface quality	
Measurement tube (inner surface)	• Ra < 0.8 µm (30 µin.) or • Ra < 0.4 µm (15 µin.) (electro-polished) according to ISO 4288
Measurement tube (outer surface), housing	Ra < 1.6 µm (excluding welding seams) according to ISO 4288
Measuring range	
Volume flow rate measurement	0…7 m^3/h up to 0…90 m^3/h Detailed information can be found in chapter "10.5. Ordering chart FLOWave L flowmeter with or without industrial communication" on page 27 or "10.6. Ordering chart FLOWave S flowmeter" on page 29.
Temperature measurement	-20…+140 °C (-4…+284 °F)
Special function	• ATF: acoustic transmission factor • DF: density factor Active by default, deselectable upon request. Detailed information can be found in chapter "7.2. Special functions" on page 23.
Performance data	
Volume flow rate measurement	
Under reference conditions i.e. measuring fluid = water free from gas bubbles and solids, ambient and water temperature = 23 °C (73.4 °F), and standard refresh time 130 ms, while maintaining the minimum inlet (40 x DN) and outlet (1 x DN) distances and the appropriate internal diameter of the pipes. Deviation from reference conditions can be adjusted through the use of a built-in K factor adjustment or Teach-in Procedure.	
Measurement deviation	• From 10 % of full scale up to full scale: ±0.4 % of the measured value • From 1 % of full scale up to 10 % of full scale: < ±0.08 % of full scale Detailed information can be found in chapter "5.2. Measurement deviation" on page 20.

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Repeatability	• From 10 % of full scale up to full scale:±0.2 % of the measured value • From 1 % of full scale up to 10 % of full scale: ±0.04 % of full scale
Refresh time	Selectable: 30 ms, 70 ms, 130 ms
Temperature measurement	
Measurement deviation	For T° ≤100 °C (+212 °F): ±1 °C (+33 °F) For 100 °C (+212 °F) < T° <140 °C (+284 °F): ±1.5 %
Refresh time	Approx. 0.1 s
Electrical data	
Operating voltage	The minimum voltage to be supplied depends on the fluid temperature and on the ambient operating temperature. Detailed information can be found in chapter "5.1. Medium temperature" on page 20. • 12…35 V DC filtered and regulated, • Tolerance: ±10 % • Connection to main supply: permanent (through external SELV (Safety Extra Low Voltage) and LPS (Limited Power Source) power supply)
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
DC reverse polarity protection	Yes
Voltage supply cable	
For cable glands	• 0.2…1.5 mm² cross-section • In nickel plated brass: – Cable with maximum operating temperature greater than +90 °C (+194 °F) – 5…14 mm diameter, shielded cable • In stainless steel: – Cable with maximum operating temperature greater than +100 °C (+212 °F) – 6…12 mm diameter, shielded cable
For 5 pin M12 male connector (A-coded)	• Cable with maximum operating temperature greater than +80 °C (+176 °F) • 3…6.5 mm diameter, shielded cable, • 0.75 mm² cross-section to connect to 5 pin M12 female connector (A-coded, not supplied)
For 4 pin M12 female connector (D-coded)	• Cable with maximum operating temperature greater than +90 °C (+194 °F) • 5e / CAT-5 min. category, 100 m max. length, shielded conductor with minimum STP
Medium data	
Fluid	Non-dangerous liquids complying with article 4, §1 of 2014/68/EU directive. Detailed information can be found in chapter "2.3. Pressure Equipment Directive" on page 12.
Temperature	• -20…+110 °C (-4…+230 °F). The maximum fluid temperature can be restricted by the ambient operating temperature. • Max. conditions for sterilisation process: up to +140 °C (+284 °F) for max. 60 min • Maximum temperature gradient: 10 °C/s (18 °F/s) (measured by the integrated sensor on the device)

Pressure (max.)

DN / **Pipe standard**	**DIN 11850**	**ISO 1127**	**ASME BPE**
DN15, ¾", DN25, 1"	PN25	PN25	PN25
DN40	PN25	PN16	–
1½", DN50, 2"	PN16	PN16	PN16

Process/Port connection & communication	
Process connection/pipe size according to	
DIN 32676 series A (DIN 11850)	DN15, DN25, DN40 and DN50
DIN 32676 series B (ISO 1127)	DN15, DN25, DN40 and DN50
DIN 32676 series C (ASME BPE)	¾", 1", 1½", 2"
DIN 11864-2 Form A series A (DIN 11850) or B (ISO 1127)	Aseptic collar flange (BF)[1.)]: DN15, DN25, DN40, DN50
DIN 11864-2 Form A series C (ASME BPE)	Aseptic collar flange (BF)[1.)]: ¾", 1", 1½", 2"
DIN 11864-3 Form A series A (DIN 11850) or B (ISO 1127)	Aseptic collar clamp (BKS)[1.)]: DN15, DN25, DN40, DN50

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DIN 11864-3 Form A series C (ASME BPE)	Aseptic collar clamp (BKS)[1.]: ¾", 1", 1½", 2"
SMS 3017 (SMS 3008)	DN25, DN40, DN50
Data transfer	External communication: Through büS (Bürkert system bus, CANopen protocol) and by status LED according to NAMUR NE 107
Approvals and Certificates	
Standards	
Protection class[2.]	IP65, IP67 (according to IEC/EN 60529), NEMA 4X (according to NEMA250), if the product is wired and if the cable glands are tightened and the covers are screwed tight. Unused cable glands must be sealed with the stopper gaskets provided (mounted upon delivery of the product). An unused M12 fixed connector must be protected by the screwed plug.
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 "2.3. Pressure Equipment Directive" on page 12.
Certificate	• FDA-certificate • Inspection certificate 3.1 • Certification of compliance ASME BPE • Calibration certificate • On request: – ECR1935/2004 declaration – Test report 2.2 – Certification of conformity for the surface quality DIN 4762, EN ISO 4287, EN ISO 4288 – Certification of conformity for passivation and electropolishing processes
Certification	• EHEDG (Type EL - CLASS I)[3.] • 3A (28-06) • UL-Listed for USA and Canada
Environment and installation	
Ambient temperature	
Depends on the fluid temperature. Detailed information can be found in chapter "5.1. Medium temperature" on page 20.	
Storage	-20…+70 °C (-4…+158 °F)
Relative air humidity	≤85 %, 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, when installed outdoors, 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.) in German: BF = Bundflansch, BKS= Bundklemmstutzen

2.) Not evaluated by UL

3.) The EHEDG compliance for Clamp DIN 32676 is only valid if used in combination with gaskets from Combifit International B.V.

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1.2. FLOWave L flowmeter

The FLOWave L flowmeter is available in three variants of the transmitter:

- Stainless steel transmitter with nickel plated brass cable glands and M12 male connector
- Stainless steel transmitter with stainless steel cable glands and M12 male connector (full stainless steel version)
- Stainless steel transmitter with stainless steel M12 female and male connectors and industrial communication (Ethernet version).

The following data applies to all versions.

Product properties				
Material				
Detailed information on the materials can be found in chapter **"3.2. Material specifications" on page 13**.				
Non wetted parts				
Transmitter housing, blind cover	Stainless steel 304/1.4301			
Seal	VMQ silicone (Methyl Vinyl Silicone)			
Display	Float glass, stainless steel 304/1.4301			
Cable glands	Nickel plated brass or stainless steel			
Blind plugs	Black POM (polyoxymethylene) or PA6			
4 pin M12 female connector and screwed plug	Stainless steel			
5 pin M12 male connector and screwed plug	Nickel plated brass or stainless steel			
Pressure compensating element	Diaphragm in ePTFE, o-ring in silicone 60 Shore A, body in stainless steel			
Display module	2.4", monochrome graphic (240 × 160 pixels) German, English, French languages			
Wi-Fi module Approved for Europe, USA and Canada)	• Can be used with or without display module • Wi-Fi module (wireless standard 802.11b/g/n) with integrated web server, offers the same setting options as the display • Transmission power: approx. 50 mW • Radio range limited to approx. 10 m • Integration into existing Wi-Fi infrastructure possible **Requirements:** • Windows 7, 8.1 or 10: IE11, Edge, Google Chrome, from version 53 • Android with Google: Chrome, from version 53 • Apple: Safari, from iOS 9.3.5			
Weight	**DN15 / ¾"**	**DN25 / 1"**	**DN40 / 1½"**	**DN50 / 2"**
Clamp	Approx. 2 kg	Approx. 2.2 kg	Approx. 3 kg	Approx. 3.2 kg
Flange	Approx. 2.4 kg	Approx. 2.7 kg	Approx. 3.6 kg	Approx. 3.8 kg
Performance data				
Frequency resolution	0.05 Hz over 0…2 kHz range			
4…20 mA output uncertainty	±0.04 mA			
4…20 mA output resolution	0.8 µA			

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Electrical data	
Power consumption	Without any consumption of output • For device with 2 x M20 x 1.5 cable glands and 1 x 5 pin M12 connector: max. 5 W • For device with 2 x 4 pin M12 connectors and 1 x 5 pin M12 connector, Ethernet version: max. 8 W • For device with 2 x 4 pin M12 connectors and 1 x 5 pin M12 connector, Ethernet version, with display and Wi-Fi module: max. 9 W

Outputs

3 (1 digital, 1 analogue and 1 configurable: digital or analogue)

Digital outputs	Overload information (through software diagnostics function) Transistor: • Type: NPN or PNP (wiring dependent), open collector, galvanically isolated • Operating modes: pulse (by default), On/Off, threshold, frequency (user configurable) • 0…2 kHz, 5…35 V DC, max. 700 mA, max. pulse duration: 65 ms • Protected against polarity reversals of DC and overloads
Analogue output	Open loop detection (through software diagnostics function) Current: • 4…20 mA • 3.6 mA or 22 mA to indicate an error (only if 4…20 mA scale selected); galvanically isolated • Max. loop impedance: 1300 Ω at 35 V DC, 1000 Ω at 30 V DC, 700 Ω at 24 V DC, 450 Ω at 18 V DC

Process/Port connection & communication	
Electrical connection	2 x M20 x 1.5 cable glands and 1 x 5 pin M12 male fixed connector (A-coded) or Ethernet version: 2 x 4 pin M12 female fixed connectors (D-coded) and 1 x 5 pin M12 male fixed connector (A-coded)

Approvals and Certificates	
Certification	• PROFINET • EtherNet/IP

Environment and installation	
Ambient temperature	
Depends on the fluid temperature. Detailed information can be found in chapter "5.1. Medium temperature" on page 20.	
Operation	• For device with 2 x M20 x 1.5 cable glands and 1 x 5 pin M12 connector: – -10…+70 °C (+14…+158 °F) if -20 °C (4 °F) ≤ fluid temperature ≤ 80 °C (176 °F), – The ambient temperature decreases linearly up to 40 °C (104 °F) at a fluid temperature of 140 °C (284 °F), if fluid temperature > 80 °C (176 °F) • For device with 2 x 4 pin M12 female connectors and 1 x 5 pin M12 connector, Ethernet version: -10…+55 °C (+14…+131 °F)

With industrial communication (Ethernet version)

Industrial Communication	
Supported network protocols	• Modbus TCP • PROFINET • EtherNet/IP • EtherCAT
LEDs	• 2 Link/Act LEDs (green) • 2 Link LEDs (yellow)
Electrical connections	2 ports 4 pin M12 (D-coded)

Modbus TCP protocol

Protocol	Internet protocol, version 4 (IPv4)
Network topology	• Tree • Star • Line (open daisy chain)

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IP configuration	• Static IP address • Not supported: BOOTP (Bootstrap Protocol), DHCP (Dynamic Host Configuration)
Transmission speed	10 or 100 MBit/s
PROFINET protocol	
PROFINET IO specification	V2.3
Network topology	• Tree • Star • Ring (closed daisy chain • Line (open daisy chain)
Network management	• LLDP (Link Layer Discovery Protocol) • SNMP V1 (Simple Network Management Protocol) • MIB (Management Information Base)
IP configuration	• DCP (Discovery and Configuration Protocol) • Manual (Device naming and IP setting)
Transmission speed	100 MBit/s full duplex
Maximum supported conformance class	CC-B
Media Redundancy (for ring topology)	MRP client is supported
GSDml file	See **"Device Description Files"** on the website in the **Software chapter Type 8098** ▸
EtherNet/IP protocol	
Protocol	Internet protocol, version 4 (IPv4)
Network topology	• Tree • Star • Ring (closed daisy chain) • Line (open daisy chain) • Linear (open Daisy Chain)
IP configuration	• Static IP address • BOOTP (Bootstrap Protocol) • DHCP (Dynamic Host Configuration Protocol)
Transmission speed	10 or 100 MBit/s
Duplex modes	Half duplex, full duplex, auto-negotiation
MDI modes (Medium Dependant Interface)	Auto-MDIX
Predefined standard objects	Identity, Message Router, Assembly, Connection Manager, DLR, QoS, TCP/IP Interface, Ethernet Link object
EDS file	See **"Device Description Files"** on the website in the **Software chapter Type 8098** ▸
EtherCAT protocol[1.)]	
Industrial Ethernet interface X1, X2	X1: EtherCAT IN, X2: EtherCAT OUT
Maximum number of cyclic input/output data	512 bytes in total
Maximum number of cyclic input data	1024 bytes
Maximum number of cyclic output data	1024 bytes
Acyclic communication (CoE)	• SDO • SDO master-slave • SDO slave-slave (depends on master capacity)
Type	Complex slave
Fieldbus Memory Management Units (FMMUs)	8
Sync Managers	4
Transmission speed	100 Mbit/s

1.) EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH.

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1.3. FLOWave S flowmeter

The FLOWave S flowmeter is available with a stainless steel transmitter with stainless steel M12 connector:

Product properties				
Material				
Detailed information on the materials can be found in chapter "3.2. Material specifications" on page 13.				
Non wetted parts				
Transmitter housing, cover	Stainless steel 304/1.4301			
Light guide	Polycarbonate (PC) and o-ring in EPDM			
Seal between sensor and transmitter	VMQ silicone (Methyl Vinyl Silicone)			
5 pin M12 male connector and screwed plug	Stainless steel			
Weight	**DN15 / ¾"**	**DN25 / 1"**	**DN40 / 1½"**	**DN50 / 2"**
Clamp	Approx. 1.9 kg	Approx. 2.1 kg	Approx. 2.4 kg	Approx. 3.1 kg
Flange	Approx. 2.3 kg	Approx. 2.6 kg	Approx. 3.0 kg	Approx. 3.7 kg
Electrical data				
Power consumption	Max. 2.5 W			
Process/Port connection & communication				
Electrical connection	1 × 5 pin M12 male fixed connector (A-coded)			
Environment and installation				
Ambient temperature				
Depends on the fluid temperature. Detailed information can be found in chapter"5.1. Medium temperature" on page 20.				
Operation	• -10…+70 °C (+14…+158 °F) if -20 °C (4 °F) ≤ fluid temperature ≤80 °C (176 °F) • The ambient temperature decreases linearly up to 40 °C (104 °F) at a fluid temperature of 140 °C (284 °F), if fluid temperature >80 °C (176 °F),			

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2. Approvals

Note:

- The certification/certificate listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available devices can be supplied with the certification/certificate below.

2.1. Certification

Certificate	Description
	EHEDG (Type EL - CLASS I) The EHEDG compliance is only valid if used in combination with gaskets from Combifit International B.V.
28-06	**3-A Sanitary Standards** The 8098 meets sanitary standards for design and fabrication. Certificate authorization number: 1178
LISTED Measuring Equipment E237737	**UL-Listed for USA and Canada** Products are UL-listed products and comply also with the following standards: • UL 61010-1 • CAN/CSA-C22.2 No.61010-1 Certificate number: 2017-10-27-E237737
	PROFINET Certificate number: Z12446
	EtherNet/IP Document number: 11839

2.2. Certificates

Certificate	Description
	FDA The devices comply in their composition with the Code of Federal Regulations published by the FDA (Food and Drug Administration, USA).
	EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH

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2.3. 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

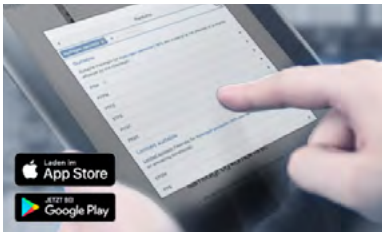
Note:

- 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

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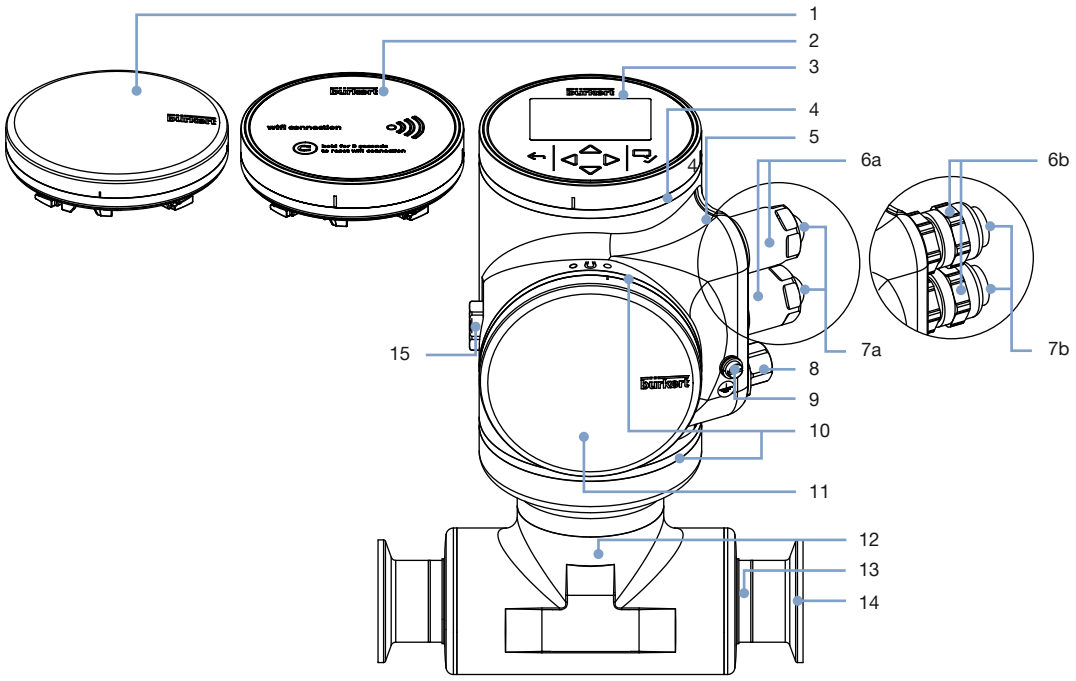
3.2. Material specifications

FLOWave L flowmeter without industrial communication

Note:
The following picture describes a device with 2 x M20 × 1.5 cable glands, 1 × 5 pin M12 male connector and clamp process connection.



No.	Description	Material
1	Blind cover	Stainless steel 304/1.4301
2	Wi-Fi module	Float glass, stainless steel 304/1.4301
3	Display module	Float glass, stainless steel 304/1.4301
4	Multi-colour LED behind seal (used for e.g. to indicate the status of the product, based on the NAMUR NE 107 standard)	VMQ silicone
5	Transmitter housing	Stainless steel 304/1.4301
6a	Cable glands (full stainless steel version)	Stainless steel
6b	Cable glands	Nickel plated brass
7a	Blind plug (full stainless steel version)	PA6
7b	Blind plug	Black POM
8	5 pin M12 male fixed connector (wired to büS) with screwed plug	Stainless steel (if equipped with 6a) or Nickel plated brass (if equipped with 6b)
9	Functional earth	Cylinder screw, washer, washer spring: stainless steel A4 blind rivet nut: stainless steel 1.4578/A4
10	Seal	VMQ silicone
11	Blind cover	Stainless steel 304/1.4301
12	Sensor housing	Stainless steel 304/1.4301
13	Sensor measurement tube	Stainless steel 316L/1.4435 with low delta ferrite content
14	Process connection (either clamp connections or flange connections)	Stainless steel 316L/1.4435 with low delta ferrite content
15	Pressure compensating element	Diaphragm: ePTFE; support: polyester; o-ring: silicone 60 Shore A; body: stainless steel (316L/1.4404)

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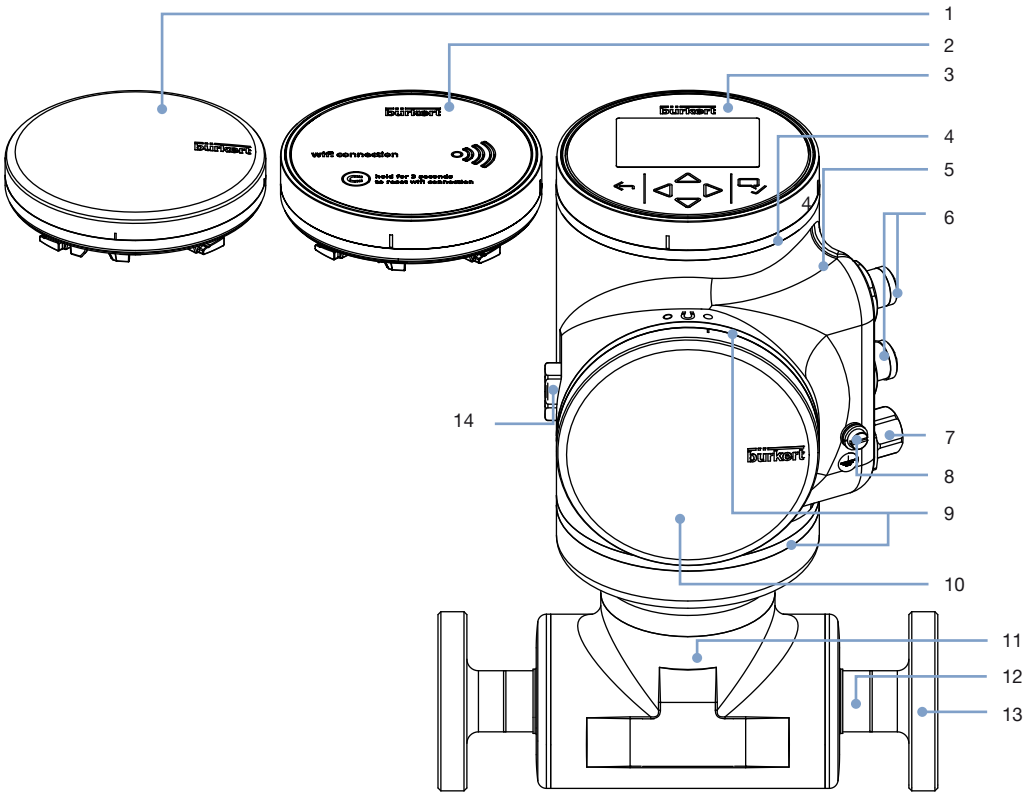
FLOWave L flowmeter with industrial communication

Note:
The following picture describes a device (Ethernet version) with 2 × 4 pin M12 female connectors, 1 × 5 pin M12 male connector and flange process connection.



No.	Description	Material
1	Blind cover or	Stainless steel 304/1.4301
2	Wi-Fi module	Float glass, stainless steel 304/1.4301
3	Display module	Float glass, stainless steel 304/1.4301
4	Multi-colour LED behind seal (used for e.g. to indicate the status of the product, based on the NAMUR NE 107 standard)	VMQ silicone
5	Transmitter housing	Stainless steel 304/1.4301
6	4 pin M12 female fixed connectors with screwed plug	Stainless steel
7	5 pin M12 male fixed connector (wired to büS) with screwed plug	Stainless steel
8	Functional earth	Cylinder screw, washer, washer spring: stainless steel A4 blind rivet nut: stainless steel 1.4578/A4
9	Blind cover	VMQ silicone
10	Seal	Stainless steel 304/1.4301
11	Sensor housing	Stainless steel 304/1.4301
12	Sensor measurement tube	Stainless steel 316L/1.4435 with low delta ferrite content
13	Process connection (either clamp connections or flange connections)	Stainless steel 316L/1.4435 with low delta ferrite content
14	Pressure compensating element	Diaphragm: ePTFE; support: polyester; o-ring: silicone 60 Shore A; body: stainless steel (316L/1.4404)

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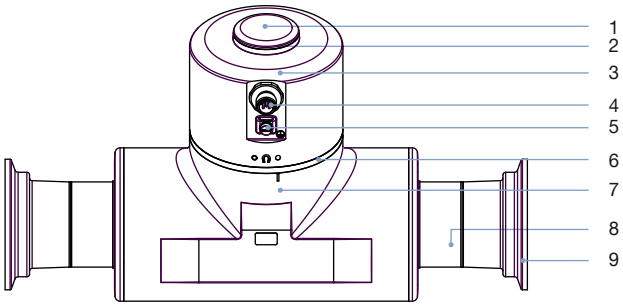
FLOWave S flowmeter

Note:
The following picture shows a device with 1 × 5 pin M12 male connector and clamp process connection.



No.	Description	Material
1	Cover	Stainless steel 304/1.4301
2	Light guide for status display behind seal (used for e.g. indicating the status of the product, based on the NAMUR NE 107 standard)	PC and o-ring in EPDM
3	Transmitter housing	Stainless steel 304/1.4301
4	5 pin M12 male fixed connector (wired to büS) with screwed plug	Stainless steel
5	Functional earth	Cylinder screw, washer, washer spring: stainless steel A4 blind rivet nut: stainless steel 1.4578/A4
6	Seal	VMQ silicone
7	Sensor housing	Stainless steel 304/1.4301
8	Sensor measurement tube	Stainless steel 316L/1.4435 with low delta ferrite content
9	Process connection (either clamp connections or flange connections)	Stainless steel 316L/1.4435 with low delta ferrite content

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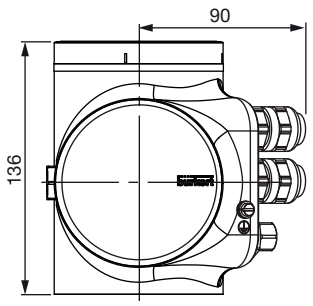
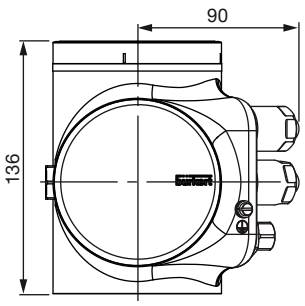
4. Dimensions

4.1. Transmitter of the FLOWave L flowmeter without industrial communication

Note:
Specifications in mm



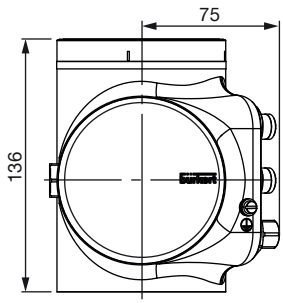
With 2 x M20 x 1.5 cable glands
in nickel plated brass
and 1 x 5 pin M12 male connector



With 2 x M20 x 1.5 cable glands
in stainless steel
and 1 x 5 pin M12 male connector
full stainless steel version

4.2. Transmitter of the FLOWave L flowmeter with industrial communication

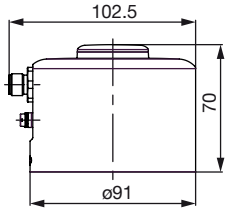
Note:
Specifications in mm



Ethernet version with 2 x 4 pin M12
female connectors and
1 x 5 pin M12 male connector

4.3. Transmitter of the FLOWave S flowmeter

Note:
Specifications in mm



With 1 x 5 pin male connector

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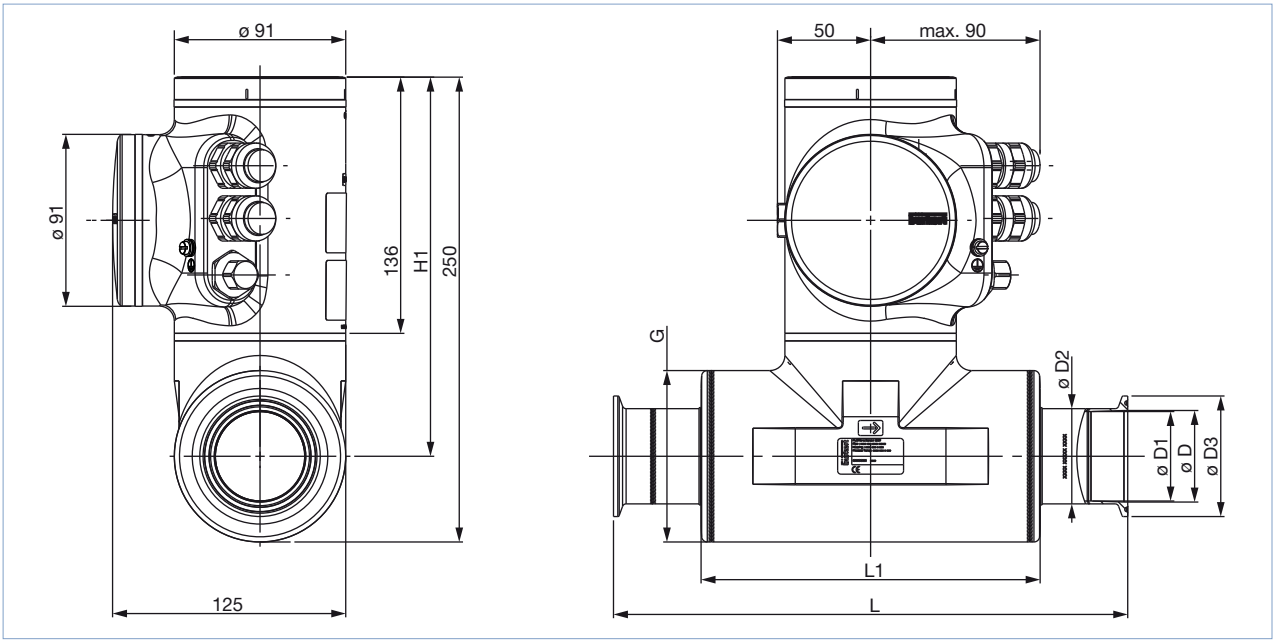
4.4. FLOWave L flowmeter with clamp process connection

Note:

- Specifications in mm (unless otherwise stated)
- Clamp according to DIN 32676 series A, B or C, or SMS 3017



Clamp/pipe size		H1	D1	D	D2	D3	G	L1	L
[mm]	[inch]								
Clamp according to DIN 32676 series A (DIN 11850) and process pipe according to DIN 11866 series A (DIN 11850)									
15[1.)]	–	220	15.75	16.00	19.05	34.00	60.30	105	166
25[1.)]	–	220	22.10	26.00	25.40	50.50	60.30	105	236
40[1.)]	–	200	34.80	38.00	38.10	50.50	91.00	180	326
50[1.)]	–	200	47.50	50.00	50.80	64.00	91.00	180	306
Clamp according to DIN 32676 series B (ISO 1127) and process pipe according to DIN 11866 series B (ISO 1127)									
15	–	220	18.10	18.10	21.30	50.50	60.30	105	168
15[2.)]	–	220	18.10	18.10	21.30	34.00	60.30	105	168
25	–	220	29.70	29.70	33.70	50.50	60.30	120	175
40	–	200	44.30	44.30	48.30	64.00	91.00	180	273
50	–	200	56.30	56.30	60.30	77.50	91.00	180	273
Clamp according to DIN 32676 series C (ASME BPE) and process pipe according to DIN 11866 series C (ASME BPE)									
–	¾	220	15.75	15.75	19.05	25.00	60.30	105	143
–	1	220	22.10	22.10	25.40	50.50	60.30	105	143
–	1½	200	34.80	34.80	38.10	50.50	91.00	180	273
–	2	200	47.50	47.50	50.80	64.00	91.00	180	273
Clamp according to SMS 3017 and process pipe according to SMS 3008									
25[1.)]	–	220	22.10	22.60	25.40	50.50	60.30	105	143
40[1.)]	–	200	34.80	35.60	38.10	50.50	91.00	180	273
50[1.)]	–	200	47.50	48.60	50.80	64.00	91.00	180	273

1.) DIN 32676 series A and SMS 3017 based on ASME BPE pipe dimension with adapted concentric clamp design
Design according to EHEDG DOC8 guidelines

2.) Similar to DIN 32676 series B but with clamp 34.0

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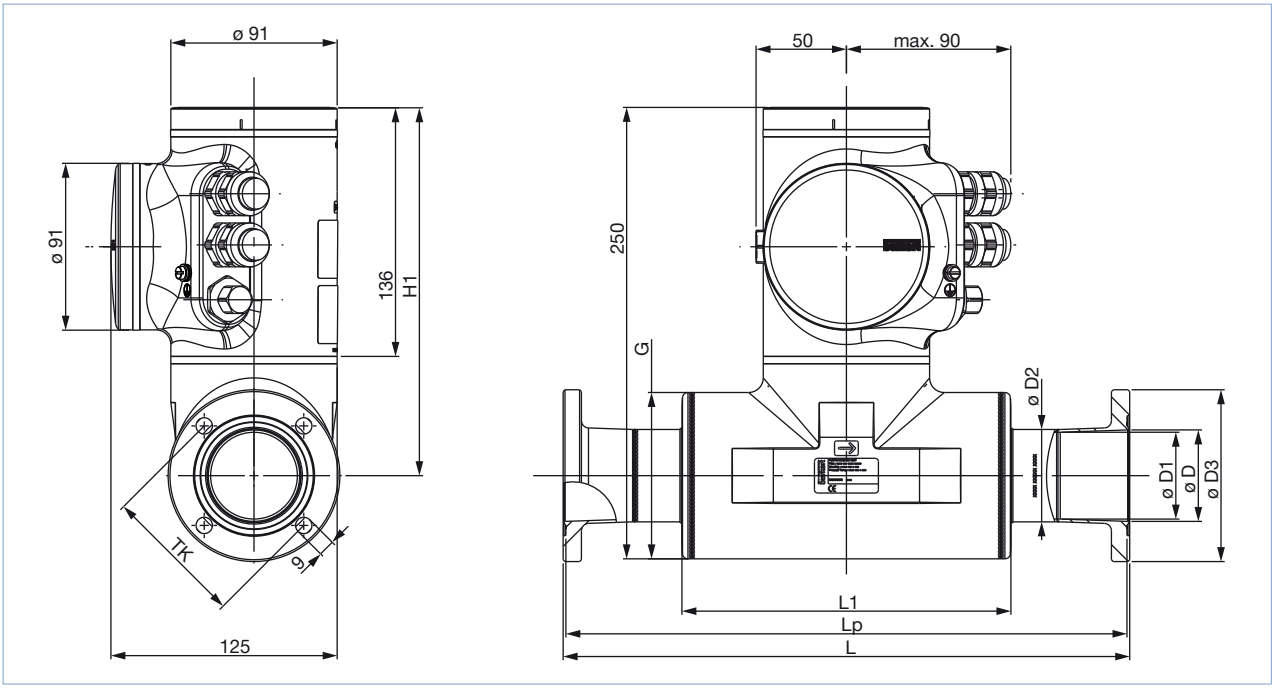
4.5. FLOWave L flowmeter with aseptic collar flange (BF)

Note:

- Specifications in mm (unless otherwise stated)
- Aseptic collar flange (BF) according to DIN 11864-2 form A series A, B or C



Flange/pipe size											
[mm]	[inch]	H1	TK	D1	D	D2	D3	G	L1	Lp	L
Flange according to DIN 11864-2 series A (DIN 11850) and process pipe according to DIN 11866 series A (DIN 11850)											
15[1.)]	–	220	42	15.75	16.00	19.05	59	60.30	105	163	166
25[1.)]	–	220	53	22.10	26.00	25.40	70	60.30	105	237	240
40[1.)]	–	200	65	34.80	38.00	38.10	82	91.00	180	327	330
50[1.)]	–	200	77	47.50	50.00	50.80	94	91.00	180	307	310
Flange according to DIN 11864-2 series B (ISO 1127) and process pipe according to DIN 11866 series B (ISO 1127)											
15	–	220	45	18.10	18.10	21.30	62	60.30	105	170	173
25	–	220	57	29.70	29.70	33.70	74	60.30	120	187	190
40	–	200	71	44.30	44.30	48.30	88	91.00	180	275	278
50	–	200	85	56.30	56.30	60.30	103	91.00	180	262	265
Flange according to DIN 11864-2 series C (ASME BPE) and process pipe according to DIN 11866 series C (ASME BPE)											
–	¾	220	42	15.75	15.75	19.05	59	60.30	105	168	171
–	1	220	49	22.10	22.10	25.40	66	60.30	105	165	168
–	1½	200	62	34.80	34.80	38.10	79	91.00	180	275	278
–	2	200	75	47.50	47.50	50.80	92	91.00	180	275	278

1.) DIN 11864-2 series A based on ASME BPE pipe dimension with adapted concentric clamp design
Design according to EHEDG DOC8 guidelines

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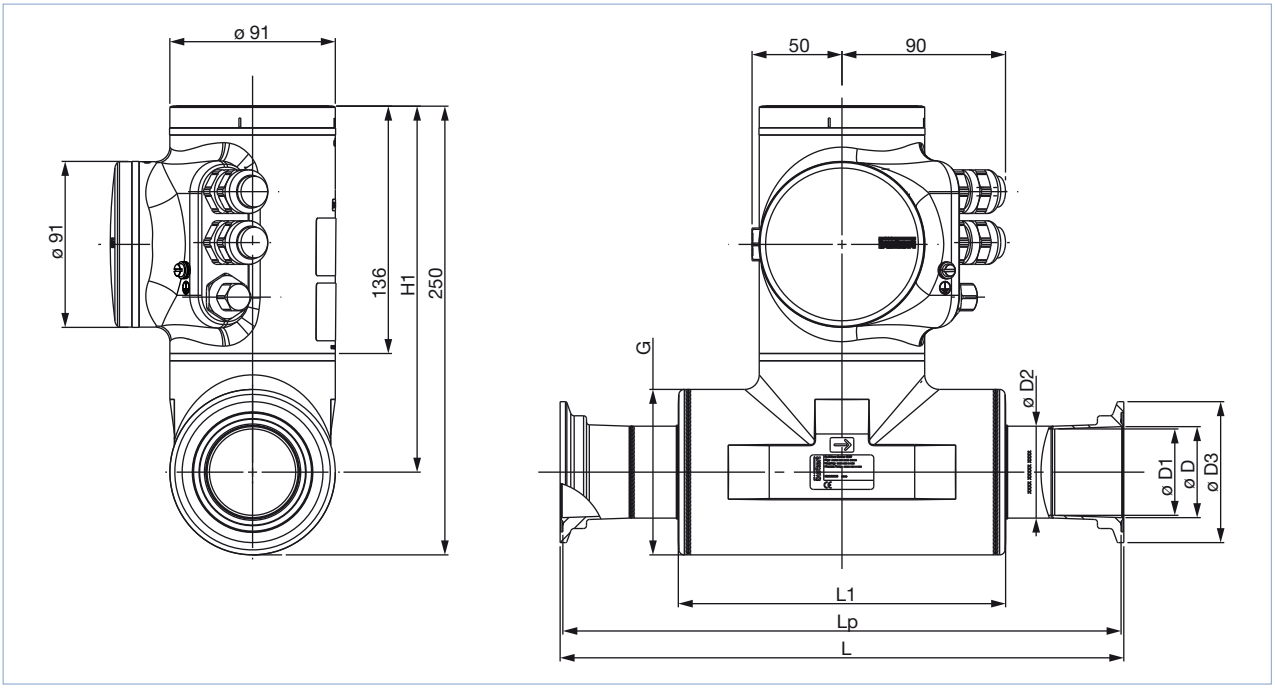
4.6. FLOWave L flowmeter with aseptic collar clamp (BKS) according to DIN 11864-3 form A series A, B or C

Note:

- Specifications in mm (unless otherwise stated)
- Aseptic collar clamp (BKS) according to DIN 11864-3 form A series A, B or C



Clamp/pipe size										
[mm]	[inch]	H1	D1	D	D2	D3	G	L1	Lp	L
Clamp according to DIN 11864-3 series A (DIN 11850) and process pipe according to DIN 11866 series A (DIN 11850)										
15[1.)]	-	220	15.75	16.00	19.05	34.00	60.30	105	163	166
25[1.)]	-	220	22.10	26.00	25.40	50.50	60.30	105	237	240
40[1.)]	-	200	34.80	38.00	38.10	64.00	91.00	180	327	330
50[1.)]	-	200	47.50	50.00	50.80	77.50	91.00	180	307	310
Clamp according to DIN 11864-3 series B (ISO 1127) and process pipe according to DIN 11866 series B (ISO 1127)										
15	-	220	18.10	18.10	21.30	34.00	60.30	105	166	169
25	-	220	29.70	29.70	33.70	50.50	60.30	120	187	190
40	-	200	44.30	44.30	48.30	64.00	91.00	180	277	280
50	-	200	56.30	56.30	60.30	91.00	91.00	180	268	271
Clamp according to DIN 11864-3 series C (ASME BPE) and process pipe according to DIN 11866 series C (ASME BPE)										
–	¾	220	15.75	15.75	19.05	34.00	60.30	105	164	167
–	1	220	22.10	22.10	25.40	50.50	60.30	105	161	164
–	1½	200	34.80	34.80	38.10	64.00	91.00	180	275	278
–	2	200	47.50	47.50	50.80	77.50	91.00	180	276	279

1.) DIN 11864-3 series A based on ASME BPE pipe dimension with adapted concentric clamp design
Design according to EHEDG DOC8 guidelines

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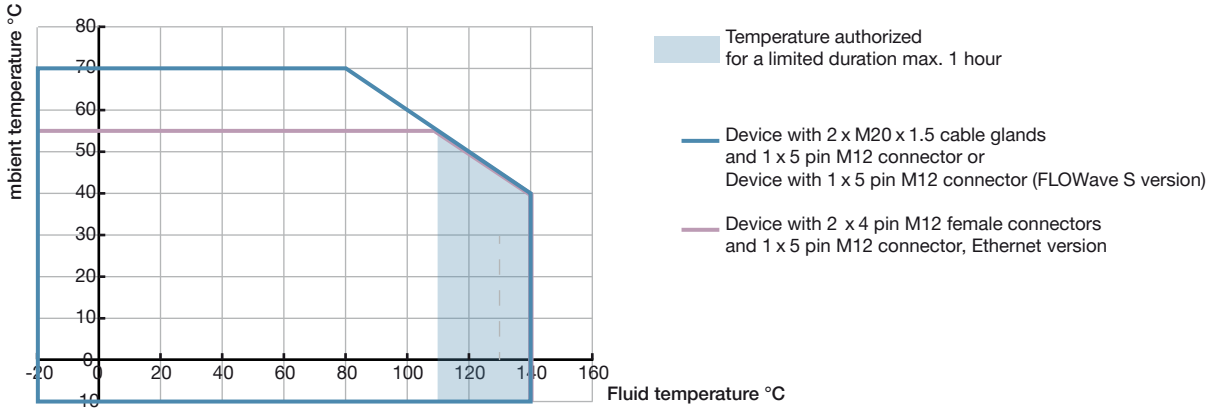
5. Performance specifications

5.1. Medium temperature



5.2. Measurement deviation

Note:
This table shows the measurement deviations according to the pipe connection standards per measuring range.

DN	Pipe standard	Flow velocity in sensor tube [m/s]	0,1		1		10
¾" 15	ASME BPE DIN 11850	Volume flow rate range [m³/h]	0,07	< ± 0,08 % of full scale	0,7	± 0,4 % of measured value	7
15	ISO 1127	Volume flow rate range [m³/h]	0,10	< ± 0,08 % of full scale	1,0	± 0,4 % of measured value	10
1" 25 25	ASME BPE DIN 11850 SMS 3008	Volume flow rate range [m³/h]	0,14	< ± 0,08 % of full scale	1,4	± 0,4 % of measured value	14
25	ISO 1127	Volume flow rate range [m³/h]	0,25	< ± 0,08 % of full scale	2,5	± 0,4 % of measured value	25
1½" 40 40	ASME BPE DIN 11850 SMS 3008	Volume flow rate range [m³/h]	0,35	< ± 0,08 % of full scale	3,5	± 0,4 % of measured value	35
40	ISO 1127	Volume flow rate range [m³/h]	0,56	< ± 0,08 % of full scale	5,6	± 0,4 % of measured value	56
2" 50 50	ASME BPE DIN 11850 SMS 3008	Volume flow rate range [m³/h]	0,64	< ± 0,08 % of full scale	6,4	± 0,4 % of measured value	64
50	ISO 1127	Volume flow rate range [m³/h]	0,90	< ± 0,08 % of full scale	9,0	± 0,4 % of measured value	90

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6. Product installation

6.1. Installation notes

Note:
The flowmeter is not designed for gas and steam flow measurement. However, their flow does not have any negative effect on the device or its operation. Other liquids flowing through again afterwards are measured correctly as before.

The factory calibration of the FLOWave is done under reference conditions with inlet (40 x DN) and outlet (1 x DN) distances and the appropriate internal diameter of the pipes.
Deviation from reference conditions can be adjusted through the use of a built-in K factor adjustment or Teach in procedure. Please contact us!
The device can be installed into either horizontal, oblique or vertical pipes. But an installation on a vertical pipe will be better to prevent air or gas bubbles inside the measurement area. **For proper operation always ensure a totally filled measurement tube.**

Conformity to 3A and EHEDG requires an angle of at least 5° (for SMS or series A connections) or 3° (all others available connections) against horizontal to ensure complete draining however this not necessary for proper operation of the FLOWave.

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

See chapter "6.2. Selection of the nominal diameter" on page 21.

6.2. 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 1:
Flowmeter with process connection according to DIN 32676 series B (ISO 1127) or DIN 11864-2 form A series B

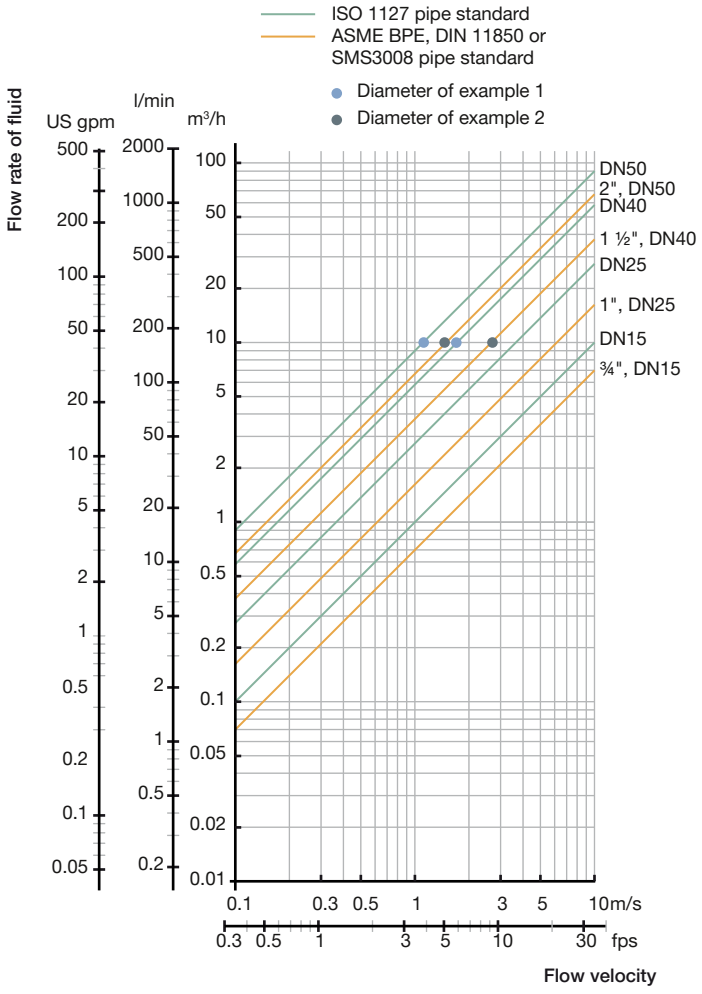
- Nominal flow: 10 m³/h
- Optimal flow rate: 1…3 m/s

Result: Select a pipe size of DN40 or DN50

Example 2:
Flowmeter with process connection according to DIN 32676 series A (DIN 11850) or DIN 11864-2 series A (DIN 11850)

- Nominal flow: 10 m³/h
- Optimal flow rate: 1…3 m/s

Result: Select a pipe size of DN40 or DN50



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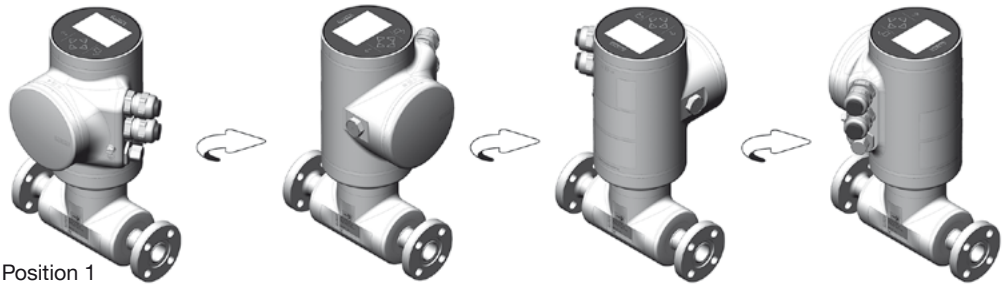
6.3. Mounting options

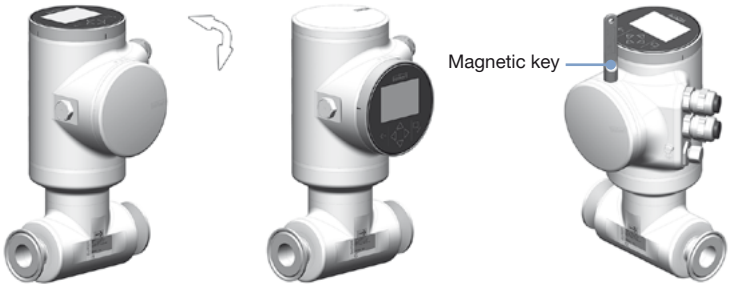
FLOWave L flowmeter

The product is delivered as described in position 1 in the picture below. The position of the transmitter can be changed in 90°steps. The position of the display module and the blind cover can also be changed in steps of 90°both on the top of the unit and on the front face.



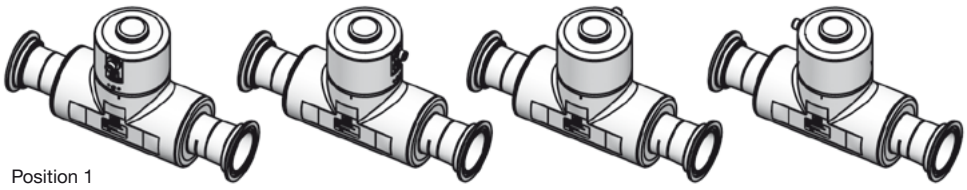
Position 1

For safety reasons the display module and blind cover on the top or front are locked. The display module and blind cover can be unlocked with a magnetic key which is included in the delivery of each device.



FLOWave S flowmeter

The product is delivered as described in position 1 in the picture below. The position of the transmitter can be changed in 90°steps. For safety reasons the transmitter is locked. The transmitter can be unlocked with a magnetic key which is included in the delivery of each device.



Position 1

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7. Product operation

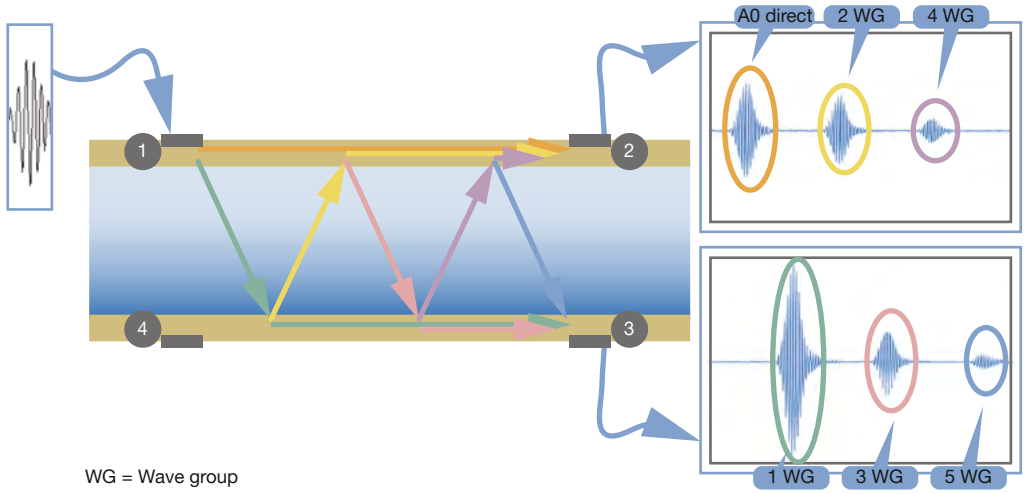
7.1. Measuring principle

The technology used is based on SAW (Surface Acoustic Waves). The type of wave propagation is similar to what happens when an earthquake occurs in nature.

In the case of FLOWave it is a miniaturized signal, not running on the surface of the earth but on a measurement tube. FLOWave uses so called interdigital transducers which are placed on flattened areas of the tube surface. There are at least 4 of them. Each one acts as emitter as well as receiver. Two of them (nos. 1 and 4) emit forward, in the direction of the liquid flow, the others (nos. 2 and 3) backwards, i.e. in the opposite direction to the direction of flow. The propagation time is measured from emitter to receiver. The difference between the forward and backward propagation time of the waves is proportional to the volume flow rate.

The high performance measurement is based on:

- Each emitter creates multiple receiving signals at two other receivers
- The results are based on the reception of the signals that pass through the liquid one or more times.
- Several measurements can be performed based on the collected information. Many properties of the liquid can be derived, including the flow velocity, the fraction of the transmitted signal (“acoustic transmission factor”), and the so-called “density factor” (see below), as well as information about the presence of gas bubbles or solid parts.



WG = Wave group

This figure shows, as an example, the reception signals when interdigital transducer 1 is transmitting.
The emitter excitation produces the SAW with a frequency of more than 1 MHz.

As a result of the emission of these waves, the following effects occur:

- A wave propagates along the surface of the tube (see orange line).
- A wave is emitted (see green line) and passes through the liquid towards the opposite side of the tube at a certain angle, which depends mainly on the speed of propagation on the surface of the tube and in the liquid.
- Upon reaching the opposite side of the tube, two effects take place.
  - A wave is triggered in the tube and propagates (see green line) to receiver 3
  - A wave is triggered in the liquid (see yellow line) and passes through it again to the opposite wall of the tube.

These effects get repeated at each reflection, resulting in all the different colour-coded signals indicated in the figure.

7.2. Special functions

For the detection of gas bubbles and solid particles the latest version of the device (from firmware version 01.05.00) includes a so called “acoustic transmission factor” with a measurement range of 5…120 %. The value of this is continuously measured and is directly dependent on gas bubbles and solids in a fluid.
A “density factor”, with a measuring range of 0.8…1.3, is now available for the detection and differentiation of liquids. This continuously measured value, which uses water as reference fluid, is temperature-compensated and so its value is representative in a tight value range for each liquid. The changes in value of this process measurement enable differentiation between different liquids.

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8. Product design and assembly

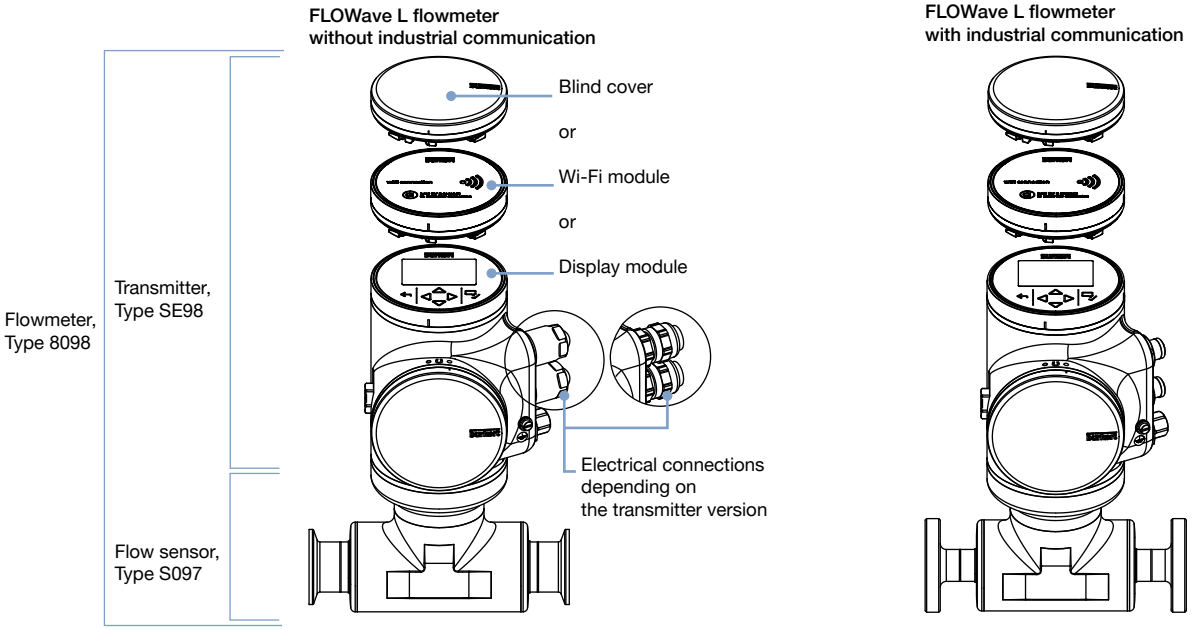
8.1. Product assembly

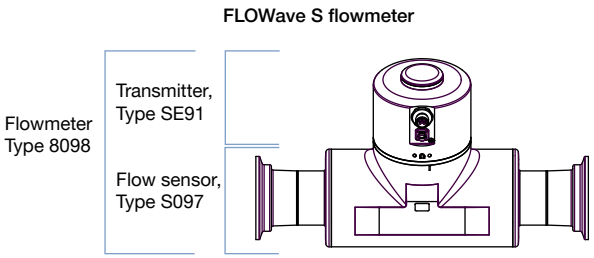
The 8098 flowmeter consists of a S097 flow sensor and a SE98 transmitter (FLOWave L flowmeter) or SE91 transmitter (FLOWave S flowmeter).

The flow sensor includes the measurement tube equipped with interdigital transducers, the sensor housing and the process connections in accordance to the standards ISO, ASME BPE, DIN, SMS. At present the sensor size ranges from DN15 to DN50 or from ¾" to 2".

The FLOWave L flowmeter is available with or without display. The high resolution display includes a capacitive working keypad for all interactive user actions, guided by a user friendly menu system. The output signals include one analogue output and one digital output; while a third output signal can be switched between analogue and digital through parameterization. Electrical connection is done on push-in connectors via two cable glands and/or one M12 connector.

The FLOWave S flowmeter is only available without display. The electrical connection is made via an M12 connector.





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9. Product accessories

Note:
To set up a device without a display, please use the USB-büS interface, Type 8920.

See **Software manual Type 8920** ▶ for more information.

Accessories	No.	Description
	**1**	Quick-Start
	2	Power supply:100…240 V AC/ 24 V DC 1 A
	3	Adaptors for power supply worldwide use
	4	büS terminating resistor on büS Y-splitter
	5	5 pin M12 male connector wired on free end cable
	6	büS stick (USB adaptor: change büS/CANopen)
	7	büS service cable with 5 pin M12 plug, mini USB and circular plug-in connectors for power supply
	8	Magnetic key
	9	CD - Communicator (30-day license without registration, update and licensing over Bürkert home page)

10. Ordering information

10.1. 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

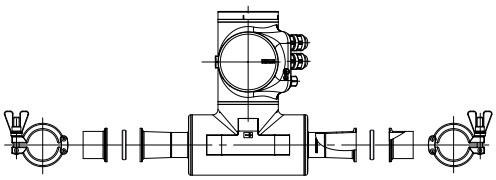
10.2. Recommendation regarding product selection

Note:

- The installation of the flowmeter in a pipe requires the use of counter-connection, seals, fixing elements, etc. depending on the used norm.
- The drawings show the installation with a standard version of the flow meter. The installation is also valid for the compact version.

For instance with middle-sized devices:

- **With clamp according to DIN 32676**
  To insert a FLOWave DN40 with clamps according to DIN 32676 series A (DIN 11850) (with Ra < 0.8 µm) to a pipe according to DIN 11866 series A (DIN 11850), the **correct adapters to be selected and separately ordered** are for instance
  - 2 x **BBS-25** clamp ferrules, Article no. 747237, see **data sheet Type BBS-25** ▶ for more information
  - 2 x the appropriate seals
  - 2 x the corresponding clamps, Article no. 731164



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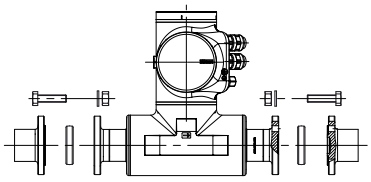
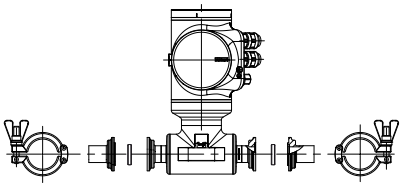
- **With aseptic collar flange (BF) according to DIN 11864-2 form A**
  To insert a FLOWave DN40 with collar flanges according to DIN 11864-2 series B (ISO 1127) (with Ra < 0.8 µm) to a pipe according to DIN 11866 series B (ISO 1127), the **correct adapters to be selected and separately ordered** are for instance
  - 2 x **BBS-06** aseptic groove flange, Article no. 731860, see **data sheet Type BBS-06** ▶ for more information
  - 2 x the appropriate seals
  - 8 x the corresponding screws, flat washers and nuts (please refer to the DIN 11864-2 standard)



- **With aseptic collar clamp (BKS) according to DIN 11864-3 form A**
  To insert a FLOWave 1" with hygienic collar clamps according to DIN 11864-3 series C (ASME BPE) (with Ra < 0.8 µm) to a pipe according to DIN 11866 series C (ASME BPE), the **correct adapters to be selected and separately ordered** are for instance
  - 2 x **BBS-05** aseptic groove clamp, Article no. 730272, see **data sheet Type BBS-05** ▶ for more information
  - 2 x the appropriate seals
  - 2 x the corresponding clamps, Article no. 731164



10.3. 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

10.4. Bürkert 3D Model - Interactive Animation

Bürkert 3D Model - Interactive Animation

3D Model and Interactive Animation are available on the website of the flowmeter Type 8098.

See **website of the Type 8098** ▶ under “Applications and Tools”.

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10.5. Ordering chart FLOWave L flowmeter with or without industrial communication

Note:

- To set up a device without a display, please use the USB-büS interface, Type 8920 (has to be ordered separately - see chapter "9. Product accessories" on page 25 and "10.7. Ordering chart accessories" on page 30).
- Device with Wi-Fi interface available on request.
- All these versions are equipped with the special functions ATF (acoustic transmission factor) and DF (density factor).

Clamp acc. to DIN 32676 series B (ISO 1127) process connection for pipe acc. to DIN 11866 series B (ISO 1127)

Clamp and pipe size	Measurement tube (outer surface), housing	Measurement tube (inner surface)	Clamp dimensions D2 x s – D3 (s = wall thickness)	Maximal flow rate	Display	Certifications		Article no.
[mm]	[µm]	[µm]		[m³/h]		3A (28-06)	EHEDG[1.]	
Version without industrial communication (2 cable glands[2.] M20x1.5+1x5 pin M12 male connector), operating voltage of 12...35 V DC								
15	Ra<1.6	Ra<0.8	21.3×1.6 – 50.5	10	Yes	Yes	Yes	566187
			21.3×1.6 – 34.0				No	566235
			21.3×1.6 – 50.5		No		Yes	566191
			21.3×1.6 – 34.0				No	566236
		Ra<0.4	21.3×1.6 – 50.5		Yes		Yes	566195
			21.3×1.6 – 34.0				No	566237
			21.3×1.6 – 50.5		No		Yes	566199
			21.3×1.6 – 34.0				No	566238
25		Ra<0.8	33.7×2.0 – 50.5	25	Yes		Yes	566188
					No			566192
		Ra<0.4			Yes			566196
					No			566200
40		Ra<0.8	48.3×2.0 – 64.0	56	Yes			566189
					No			566193
		Ra<0.4			Yes			566197
					No			566201
50		Ra<0.8	60.3×2.0 – 77.5	90	Yes			566190
					No			566194
		Ra<0.4			Yes			566198
					No			566202

1.) The EHEDG compliance is only valid if used in combination with gaskets from Combifit International B.V.

2.) Cable gland in nickel plated brass

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Clamp acc. to DIN 32676 series C (ASME BPE) process connection for pipe acc. to DIN 11866 series C (ASME BPE)

Clamp and pipe size	Measurement tube (outer surface), housing	Measurement tube (inner surface)	Clamp dimensions D2 x s – D3 (s = wall thickness)	Maximal flow rate	Display	Certifications			Article no.
[inch]	[µm]	[µm]		[m³/h]		3A (28-06)	EHEDG[1.)]	UL	
Version without industrial communication (2 cable glands[2.)] M20x1.5+1×5 pin M12 male connector), operating voltage of 12…35 V DC									
¾	Ra < 1.6	Ra < 0.8	19.05 × 1.65 – 25.0	7	Yes	Yes	Yes	No	566203
					No				566207
		Ra < 0.4			Yes				566211
					No				566215
					Yes			Yes	569675
1		Ra < 0.8	25.4 × 1.65– 50.5	14	Yes			No	566204
					No				566208
		Ra < 0.4			Yes				566212
					No				566216
					Yes			Yes	569676
1½		Ra < 0.8	38.1 × 1.65 – 50.5	35	Yes			No	566205
					No				566209
		Ra < 0.4			Yes				566213
					No				566217
					Yes			Yes	569677
2		Ra < 0.8	50.8 × 1.65 – 64.0	64 m³/h	Yes			No	566206
					No				566210
		Ra < 0.4			Yes				566214
					No				566218
					Yes			Yes	569678
Version with industrial communication (Ethernet version, 2×4 pin M12 female connectors +1×5 pin M12 male connector), operating voltage of 12…35 V DC									
¾	Ra < 1.6	Ra < 0.4	19.05 × 1.65 – 25.0	7	Yes	Yes	Yes	No	570444
								Yes	569679
1		Ra < 0.4	25.4 × 1.65 – 50.5	14				No	570445
								Yes	569680
1½		Ra < 0.4	38.1 × 1.65 – 50.5	35				No	570446
								Yes	569681
2		Ra < 0.4	50.8 × 1.65 – 64.0	64				No	570447
								Yes	569682

1.) The EHEDG compliance is only valid if used in combination with gaskets from Combifit International B.V.

2.) Cable gland in nickel plated brass

Further versions on request

Process connection[1.)]

- For pipe DIN 11850: Clamp DIN 32676, Clamp DIN 11864-3, Flange DIN 11864-2
- For pipe ISO 1127: Clamp DIN 11864-3, Flange DIN 11864-2
- For pipe ASME BPE: Clamp DIN 11864-3, Flange DIN 11864-2
- For pipe SMS 3008: SMS 3017

Electrical connection

Cable gland in stainless steel

Additional

Wi-Fi module (only for EU and north America))
Without density factor (DF)
Without acoustic transmission factor (ATF)
Ethernet module (Ethernet/IP, PROFINET, Modbus TCP/IP, ETHERCAT)

1.) 3A & EHEDG certificate available

For any other versions, please use the product enquiry form at the end of this data sheet.

10.6. Ordering chart FLOWave S flowmeter

Note:
All these versions are equipped with the special functions ATF (acoustic transmission factor) and DF (density factor).

Clamp acc. to DIN 32676 series B (ISO 1127) process connection for pipe acc. to DIN 11866 series B (ISO 1127)

Clamp and pipe size	Measurement tube (outer surface), housing	Measurement tube (inner surface)	Clamp dimensions D2 x s – D3 (s = wall thickness)	Maximal flow rate	Certifications		Article no.
[mm]	[µm]	[µm]		[m³/h]	3A (28-06)	EHEDG[1.)]	
Electrical connection: 1 x 5 pin M12 male connector, operating voltage of 12…35 V DC							
15	Ra < 1.6	Ra < 0.8	21.3 x 1.6 – 50.5	10	Yes	Yes	573093
			21.3 x 1.6 – 34.0			No	573094
		Ra < 0.4	21.3 x 1.6 – 50.5			Yes	573098
			21.3 x 1.6 – 34.0			No	573099
25		Ra < 0.8	33.7 x 2.0 – 50.5	25		Yes	573095
		Ra < 0.4					573100
40		Ra < 0.8	48.3 x 2.0 – 64.0	56			573096
		Ra < 0.4					573101
50		Ra < 0.8	60.3 x 2.0 – 77.5	90			573097
		Ra < 0.4					573102

Clamp acc. to DIN 32676 series C (ASME BPE) process connection for pipe acc. to DIN 11866 series C (ASME BPE)

Clamp and pipe size	Measurement tube (outer surface), housing	Measurement tube (inner surface)	Clamp dimensions D2 x s – D3 (s = wall thickness)	Maximal flow rate	Certifications			Article no.
[inch]	[µm]	[µm]		[m³/h]	3A (28-06)	EHEDG[1.)]	UL	
Electrical connection: 1 x 5 pin M12 male connector, operating voltage of 12…35 V DC								
¾	Ra < 1.6	Ra < 0.8	19.05 x 1.65 – 25.0	7	Yes	Yes	No	573085
		Ra < 0.4						573089
							Yes	573190
1		Ra < 0.8	25.4 x 1.65 – 50.5	14			No	573086
		Ra < 0.4						573090
							Yes	573191
1½		Ra < 0.8	38.1 x 1.65 – 50.5	35			No	573087
		Ra < 0.4						573091
							Yes	573192
2		Ra < 0.8	50.8 x 1.65 – 64.0	64			No	573088
		Ra < 0.4						573092
							Yes	573193

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Further versions on request

Process connection[1.)]

- For pipe DIN 11850: Clamp DIN 32676, Clamp DIN 11864-3, Flange DIN 11864-2
- For pipe ISO 1127: Clamp DIN 11864-3, Flange DIN 11864-2
- For pipe ASME BPE: Clamp DIN 11864-3), Flange DIN 11864-2
- For pipe SMS 3008: SMS 3017)

1.) 3A & EHEDG certificate available

For any other versions, please use the product enquiry form at the end of this data sheet.

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10.7. Ordering chart accessories

Description	Article no.
Display module, Type ME31	265468
Blind cover in stainless steel 304/1.4301	265467
 Unlocking magnetic key	690309
System Connect	
Type ME43 Gateway / Interface	
büS/Ethernet (Profinet, Ethernet/IP, Modbus TCP, EtherCAT)	307390
büS/Profibus DP	307393
EDIP Accessories	
büS Stick Set	
 USB-büS-Interface Set 1, Type 8920. Detailed information can be found in chapter "9. Product accessories" on page 25.	772426
USB-büS Interface Set 2, Type 8920 (only büS Stick, cable and büS service cable)	772551
Connectors	
 5 pin M12 female straight büS cable plug with plastic threaded locking ring, to be wired	917116
5 pin M12 female straight büS cable plug	772416
5 pin M12 male straight büS cable plug	772417
5 pin M12 female angled büS cable plug	772418
5 pin M12 male angled büS cable plug	772419
büS Y-connector, 5 pin M12 female to 5 pin M12 male and 5 pin M12 female	772420
büS Y-connector, 5 pin M12 female to 5 pin M12 male and 5 pin M12 female (power interrupt)	772421
Adaptor 8 pin to 5 pin male	773286
büS adaptor M12 male A-coded - M12 male A-coded	772867
büS termination, 5 pin M12 male cable plug	772424
büS termination, 5 pin M12 female cable plug	772425
Connectors with cable	
5 pin M12 female angled cable plug moulded on büS cable (0.7 m, with open leads)	772626
5 pin M12 female straight cable plug moulded on büS cable (1 m, with open leads)	772409
5 pin M12 female straight cable plug moulded on büS cable (3 m, with open leads)	772410
5 pin M12 female straight cable plug moulded on büS cable (5 m, with open leads)	772411
5 pin M12 female straight cable plug moulded on büS cable (10 m, with open leads)	772412
Micro USB and 5 pin M12 male straight cable plug moulded on büS service cable (0.3 m)	773254
Extensions	
 5 pin M12 female and male straight cable plug moulded on büS cable (0.1 m, shielded)	772492
5 pin M12 female and male straight cable plug moulded on büS cable (0.2 m, shielded)	772402
5 pin M12 female and male straight cable plug moulded on büS cable (0.5 m, shielded)	772403
5 pin M12 female and male straight cable plug moulded on büS cable (1 m, shielded)	772404
5 pin M12 female and male straight cable plug moulded on büS cable (3 m, shielded)	772405
5 pin M12 female and male straight cable plug moulded on büS cable (5 m, shielded)	772406
5 pin M12 female and male straight cable plug moulded on büS cable (10 m, shielded)	772407
5 pin M12 female and male straight cable plug moulded on büS cable (20 m, shielded)	772408
Type 1573 Power Supplies	
Power supply, 1 A (NEC Class 2 Power Units)	772361
Power supply, 2 A (NEC Class 2 Power Units)	772362
Power supply, 3.8 A (NEC Class 2 Power Units)	772898
Power supply, 10 A	772698

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Product Enquiry Form - FLOWave SAW flowmeter

Thank you for your interest in our products! In order to provide you with optimum advice, please fill out the following form and send it to your **Bürkert representative** or e-mail address: info@burkert.com. All information submitted will of course be kept strictly confidential.

Note: The interactive functions of this PDF may be restricted depending on the PDF reader used.

Personal Information			
Company		**Contact person**	
Customer no.		**Department**	
Street		**Postcode / Town**	
Telephone no.		**Email**	

Delivery			
	Quantity		Required delivery date

Operating data			
Function (Function of the flowmeter in the process / process description)			
Type of medium	○ Fluid		
Process fluid			
Flow rate (Q)[1.]	Min.	Max.	Unit
Temperature	Min.	Max.	Unit
Absolute pressure	Min.	Max.	Unit
Viscosity	Min.	Max.	Unit
Density	Min.	Max.	Unit

1.) Standard unit: Fluid Q =m³/h

Process connection				
Pipe diameter DN	○ 15 ○ ¾"	○ 25 ○ 1"	○ 40 ○ 1½"	○ 50 ○ 2"
Connection[2.]	○ **Pipe DIN 11850**	Clamp DIN 32676	Clamp DIN 11864-3	Flange DIN 11864-2
	○ **Pipe ISO 1127**	Clamp DIN 32676	Clamp DIN 11864-3	Flange DIN 11864-2
	○ **Pipe ASME BPE**	Clamp DIN 32676	Clamp DIN 11864-3	Flange DIN 11864-2
	○ **Pipe SMS 3008**	SMS 3017		

2.) 3A & EHEDG certificate available

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Additional configuration			
Transmitter version	○ FLOWave L	○ FLOWave S	
Electrical connection	○ Cable glands and M12 male connector (A-coded), in nickel plated brass (standard version)	○ Cable glands and M12 male connector (A-coded), in stainless steel (Full stainless steel version)	○ M12 female connectors (D-coded) and M12 male connector (A-coded) in stainless steel (Ethernet version)
Surface finish (inner surface)	○ Ra < 0.8 µm (30 µin.)	○ Ra < 0.4 µm (15 µin.)	
Display module	○ With	○ Without	
Wi-Fi module (only for EU and north America)	○ With	○ Without	
Certification	○ UL listed 1 + CULus ○ Without		
Ethernet protocols	○ Modbus TCP ○ EtherNet/IP ○ Without	○ PROFINET ○ EtherCAT®	
Special functions	○ With density factor (DF) ○ With acoustic transmission factor (ATF)	○ Without density factor (DF) ○ Without acoustic transmission factor (ATF)	

Certification
☐ Test report 2.2 acc. to EN 10204 (article no. 803722)
☐ Inspection certificate 3.1 acc. to EN 10204 (included in delivery)
☐ Certification of conformity for the surface quality DIN 4762; EN ISO 4287; EN ISO 4288 (article no. 804175)
☐ Certification of conformity for passivation and electropolishing processes (article no. 444900)
☐ Certification of compliance ASME BPE (included in delivery)
☐ EHEDG - TYPE EL-CLASS I[1.)] (included in delivery)
☐ 3A -28-06 (included in delivery)
☐ Calibration certificate (included in delivery)
☐ FDA certificate (included in delivery)

1.) The EHEDG compliance is only valid if used in combination with gaskets from Combifit International B.V.

Note: If a certification which is not included in delivery with the FLOWave is requested, please order it separately. If you want to order one or more later, please contact your Bürkert office.

Additional Requirements / Comment

Send form Print form

Delete form

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