

LCIE 20 ATEX 1004 X / IECEx LCIE 21.0002X Type 8098 FLOWave L

SAW flowmeter with ATEX approval and IECEx approval
SAW-Durchflussmessgerät mit ATEX-Zulassung und IECEx-Zulassung
Débitmètre SAW avec certification ATEX et IECEx



Additional Instructions

Zusatzanleitung
Instructions supplémentaires



We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modifications techniques.

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1 ABOUT THE ADDITIONAL INSTRUCTIONS

The additional instructions for the use in potentially explosive environments describe the entire life cycle of the product. Keep these instructions in a location which is easily accessible to every user and make these instructions available to every new owner of the product.

Important safety information.

Read the additional instructions carefully and thoroughly.

- ▶ The additional instructions must be read and understood.

The additional instructions describe safety instructions and information for the use in a potentially explosive environment.

All other descriptions and instructions can be found in the Operating Instructions for the Type 8098 FLOWave L.



The Operating Instructions can be found on the Internet at: country.burkert.com

1.1 Definition of terms / abbreviation

In these instructions, the term product refers to the Type 8098 flowmeter with ATEX approval or with IECEx approval.



In these instructions, the abbreviation "Ex" always refers to "potentially explosive".

1.2 Characteristics of the ATEX and the IECEx products

The ATEX and the IECEx products have the following characteristics:

Pipe size	<ul style="list-style-type: none"> • DN8...DN80 • 3/8" ...3"
Display module	With or without display module
Electrical connections	<ul style="list-style-type: none"> • Two M20x1,5 cable glands • One 5-pin M12 male connector (A coded)
Material of the electrical connections	<ul style="list-style-type: none"> • Cable glands in stainless steel, seal in EPDM, blind plug in polyamide • 5-pin M12 male connector in stainless steel, seal in VMQ silicone, screwed plug in stainless steel
Outputs	<ul style="list-style-type: none"> • 1 x CANopen or bus • 1 x analogue output • 1 x analogue or digital output • 1 x digital output

2 SYMBOLS

The following symbols are used in these instructions.



DANGER

Warns of an immediate danger.

- ▶ Failure to observe the warning results in death or serious injury.



WARNING

Warns of a potentially dangerous situation.

- ▶ Failure to observe the warning may result in a serious injury or death.



CAUTION

Warns of a possible danger.

- ▶ Failure to observe this warning may result in a moderate or minor injury.

NOTICE

Warns of material damage.



Important advice and recommendations.



Refers to information in these instructions or in other documentation.

- ▶ Designates instructions for risk prevention.
- Designates a work step which you must carry out.

3 INTENDED USE

Incorrect use of the Type 8098 FLOWave L flowmeter can be dangerous to people, nearby equipment and the environment.

- ▶ The product was designed for the use in the following explosion groups:
 - II 3G Ex ec IIC T4 Gc
 - II 3D Ex tc IIIC T110 °C Dc or T130 °C Dc
- ▶ Observe the admissible data, the operating conditions and the conditions of use specified in the contract documents, in the Operating Instructions of the product and on the Type label of the product.
- ▶ Use the product only in conjunction with third-party instruments and components recommended and authorized by Bürkert.
- ▶ Correct transportation, storage and installation, as well as careful use and maintenance are essential for reliable and faultless operation.
- ▶ Use the product as intended.

4 PARTICULAR SAFETY INSTRUCTIONS



DANGER

To prevent the risk of explosion, observe not only the safety instructions in the Operating Instructions for operation in the Ex-area, but also the following:

- ▶ Observe information on temperature class, ambient temperature, protection rating, torque and voltage.
- ▶ Do not use the product in areas where there is gas or dust with a lower ignition temperature than indicated on the label for Ex-area.
- ▶ Installation, operation and maintenance must be performed by qualified technicians only.
- ▶ Observe the applicable safety regulations and the applicable national safety regulations as well as the general rules of technology for installation and operation.
- ▶ Do not repair the product yourself, but replace it with an equivalent product.
- ▶ The product must only be repaired by the manufacturer.
- ▶ Do not expose the product to any mechanical or thermal stresses which will exceed the limits that are given in the Operating Instructions.
- ▶ Use only cables that observe the requirements of standard IEC 60079-14 and of local regulation.



DANGER

Risk of explosion when removing a connector.

- ▶ Secure the M12 female connector. Observe the recommendations that are given by the manufacturer of the female connector.
- ▶ Before removing a connector de-energize the product.

Risk of explosion when opening the product.

- ▶ Only open the product if no Ex-atmosphere is present.
- ▶ Before product commissioning, tightly close the product and make sure the covers are locked. A cover is locked if you cannot open it without the magnetic unlocking key.

Risk of explosion due to electrostatic discharge.

In the event of a sudden discharge, electrostatically charged products or persons present a risk of explosion in the Ex-area.

- ▶ Make sure that no electrostatic charging can occur in the Ex-area.
- ▶ To clean the product surface, gently wipe the surface with a damp cloth or anti-static cloth.

Risk of explosion if the product is not connected to the earth.

- ▶ To earth the product, observe the requirements of standard IEC 60079-14 and local regulation.
- ▶ To earth the product, use the external earthing screw.

4.1 Specific conditions of use

- ▶ Make sure that the transient protection has been set to a value which does not exceed 140% of the measured peak-voltage value at the supply connections of the product.
- ▶ Only use the product in an area with at least pollution degree 2, as defined in standard EN/IEC 60664-1.
- ▶ Do not use the product in dust atmospheres in which intensive charging processes can be expected.
- ▶ To clean the product surface, gently wipe the surface with a damp cloth or anti-static cloth.

4.2 Additional marking for Ex-areas

LCIE 20 ATEX 1004 X
 II 3G Ex ec IIC T4 Gc
 II 3D Ex tc IIIC T110°C Dc or T130°C Dc

IECEX LCIE 21.0002X
 Ex ec IIC T4 Gc
 Ex tc IIIC T110°C Dc or T130°C Dc

-10°C ≤ Tamb ≤ 40°C *refer to manual
 -20°C ≤ Tfluid ≤ 130°C *refer to manual

Warning:
 * DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED
 * DO NOT OPEN WHEN ENERGIZED
 * POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTIONS (only in dust atmosphere)

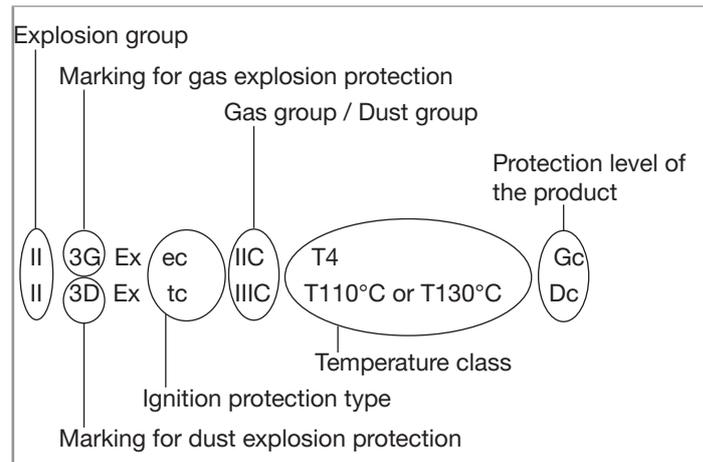


Fig. 1: Additional marking for Ex-areas

4.3 Fluid temperature and ambient temperature

→ Observe the ambient temperature for use in Ex-areas and given in [Tab. 1](#).

Tab. 1: Ambient temperature and fluid temperature

Ambient temperature	-10 °C...+40 °C
Fluid temperature	<ul style="list-style-type: none"> • -20 °C...+110 °C for permanent operation • +110 °C...+130 °C for max. 1 hour

→ Respect the dependency between the fluid temperature and the ambient temperature. Refer to [Fig. 2](#) and [Tab. 2](#).

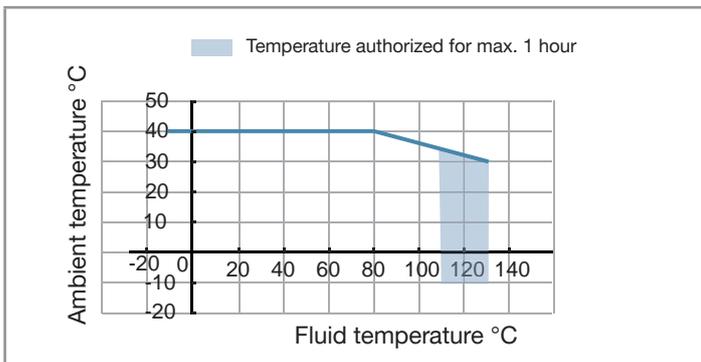


Fig. 2: Fluid temperature depending on the ambient temperature for an ATEX or an IECEx product

Tab. 2: Continuous operation depending on the fluid temperature and the ambient temperature for an ATEX or an IECEx product

	Fluid temperature [°C]	Ambient temperature [°C]
Continuous operation is allowed	-20	40
	-10	40
	0	40
	10	40
	20	40
	30	40
	40	40
	50	40
	60	40
	70	40
	80	40
	90	38
	100	36
110	34	
Operation is allowed for maximum 1 hour	120	32
	130	30

4.4 IP code in Ex-areas

IP64, if the product is wired and if the cable glands are tightened and the covers are screwed tight.

- Seal an unused cable gland with a stopper gasket. A stopper gasket is mounted in each cable gland upon delivery of the product.
- Protect an unused M12 connector with the screwed plug. Tighten the plug to the 5-pin M12 male connector to a torque of 2 N·m.

4.5 Cleaning in the Ex-area



Make sure that cleaning agent is approved for the use in explosive atmospheres.

4.6 Tightening torque of the M12 screw-plug



Tighten the plug to the 5-pin M12 male connector to a torque of 2 N·m.

4.7 Ex-certification

The Ex-certification is only valid if the Bürkert product is used as described in these additional instructions.

If unauthorized changes are made to the product, the Ex-certification becomes invalid.

5 INSTALLATION

Degree of pollution	Degree 2 according to EN/IEC 61010-1
Electrical features	
• Operating voltage	<ul style="list-style-type: none"> • 12...35 V DC, filtered and regulated • Tolerance: $\pm 10\%$ • The product must be connected permanently to a Safety Extra-Low Voltage circuit (SELV circuit)
• Power consumption	• ≤ 5 W, without the consumption of the outputs
Outputs	
• Analogue output	<ul style="list-style-type: none"> • 12...35 V DC • 0...22.5 mA • functional insulation
• Digital output	<ul style="list-style-type: none"> • 5...35 V DC • max. 700 mA • functional insulation

<ul style="list-style-type: none"> Analogue output or digital output 	<ul style="list-style-type: none"> Analogue output: 12...35 V DC, 0...22.5 mA Digital output: 5...35 V DC, max. 700 mA functional insulation
<ul style="list-style-type: none"> Communication interface 	<ul style="list-style-type: none"> CANopen or bÜS

- Observe the mounting instructions of the cable glands from WISKA, Type ESSKE-4 20.
- Wire the product according to standard IEC 60079-14 and to local regulations.

- ▶ If you wire the circular male connector, the mating female connector must be provided by the product user.
 - The mating female connector is not part of the approval.
 - The mating female connector must comply with the requirements of IEC 60079-0, IEC 60079-7, IEC 60079-31.
 - The protection class of the mating female connector must be at least IP65 according to IEC 60529.

→ Observe the cable specifications that are given in [Tab. 3](#).

Tab. 3: Specifications of the cables for the M20x1.5 cable glands

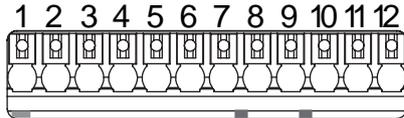
Specification of the cables	Recommended value
Electromagnetic protection (EMC)	Shielded
Diameter	6...13 mm
Maximum operating temperature of the cable	90 °C or higher

- To wire the product, refer to the Operating Instructions Type 8098.
- Observe the specifications for the conductors that are given in [Tab. 4](#).

Tab. 4: Specifications of the conductors for the terminal strip

Specification of the conductors	Recommended value range
Cross section of a solid conductor H05(07) V-U	0.25...1.5 mm ²
Cross section of a stranded conductor H05(07) V-K, with a wire ferrule but without collar	0.25...1.5 mm ²
Cross section of a stranded conductor H05(07) V-K, with a wire ferrule with a plastic collar	0.25...0.75 mm ²
Cross section of other kinds of conductors	0.2...1.5 mm ² (AWG24... AWG16)

→ Observe the terminal assignment of the 12 push-in terminal strip in the following table.



- Terminal 1: GND (blue conductor, factory wired, internally connected to the 5-pin M12 male connector)
- Terminal 2: CAN_L (grey conductor, factory wired, internally connected to the 5-pin M12 male connector)
- Terminal 3: CAN_shield (brown conductor, factory wired, internally connected to the 5-pin M12 male connector)
- Terminal 4: CAN_H (black conductor, factory wired, internally connected to the 5-pin M12 male connector)
- Terminal 5: 12...35 V DC (white conductor, factory wired, internally connected to the 5-pin M12 male connector)
- Terminal 6: GND (for the connection of the power supply through the M20x1,5 cable glands)
- Terminal 7: negative output 3 (analogue output or digital output)
- Terminal 8: positive output 3 (analogue output or digital output)
- Terminal 9: negative output 2 (digital output)
- Terminal 10: positive output 2 (digital output)
- Terminal 11: negative output 1 (analogue output)
- Terminal 12: positive output 1 (analogue output)

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