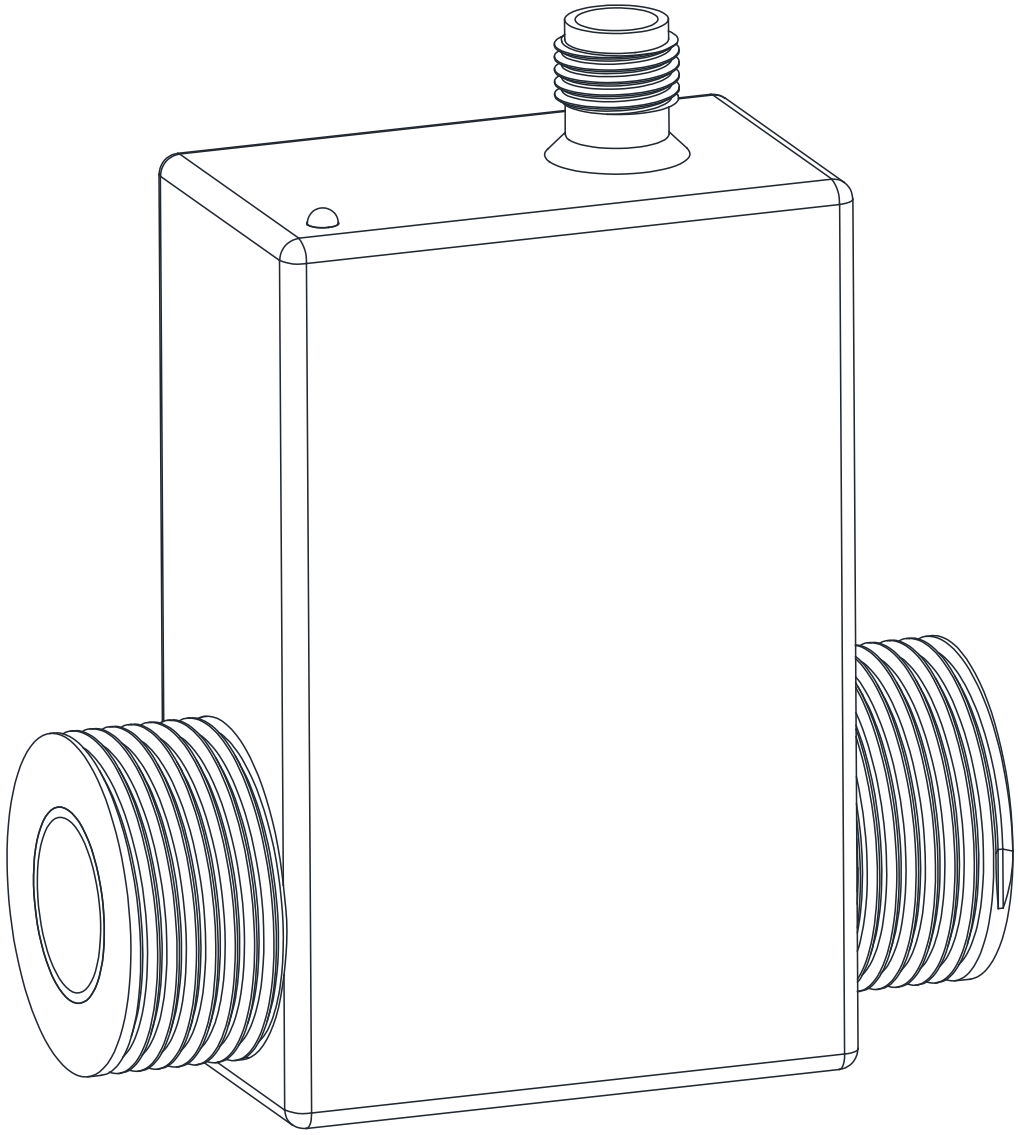
MINIMAG

Electromagnetic flow meter.



Technical documentation IT rev. dated 27/01/2026

sgm lektra

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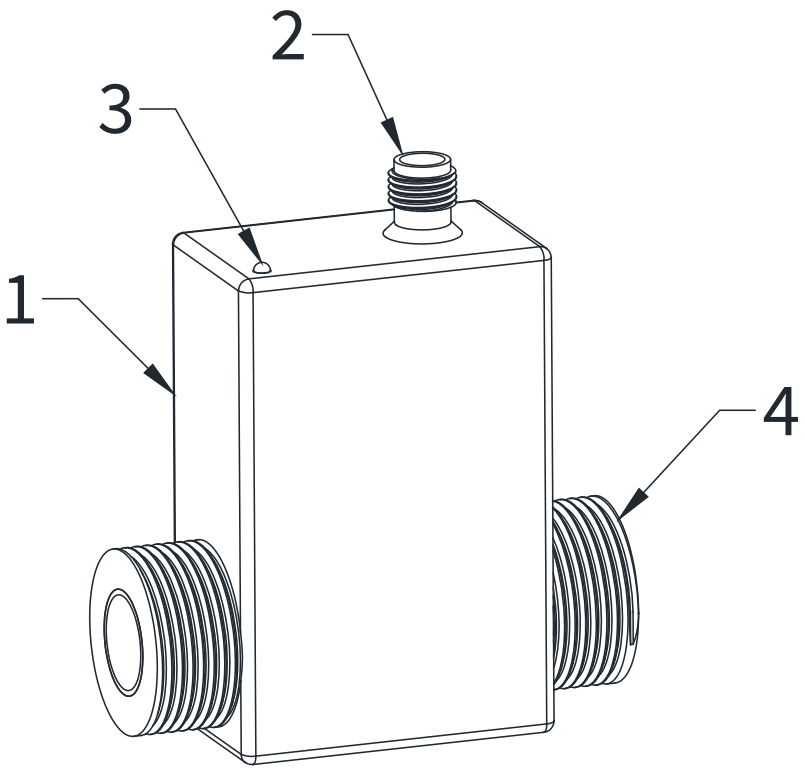
1-WARRANTY

SGM-LEKTRA S.r.l. undertakes to remedy any fault, defect or deficiency occurring within 12 months of the delivery date, provided that it is attributable to the company and has been notified within the specified time limits.
SGM-LEKTRA S.r.l. may choose to repair or replace the defective Products.
Products replaced under warranty will be covered by an additional 12-month warranty.
Products repaired under warranty will be covered by the warranty until the original expiry date.
Parts of Products repaired outside the warranty period will be covered by a 3-month warranty.
The Products are guaranteed to meet specific specifications, technical characteristics or conditions of use only if this is expressly agreed in the Purchase Agreement or in the documents referred to therein.
The warranty provided by SGM-LEKTRA S.r.l. absorbs and replaces any warranties and liabilities, both contractual and non-contractual, arising from the supply, such as compensation for damages, reimbursement of expenses, etc., both towards the Customer and towards third parties.
The warranty shall be void in the event of tampering with or improper use of the Products.

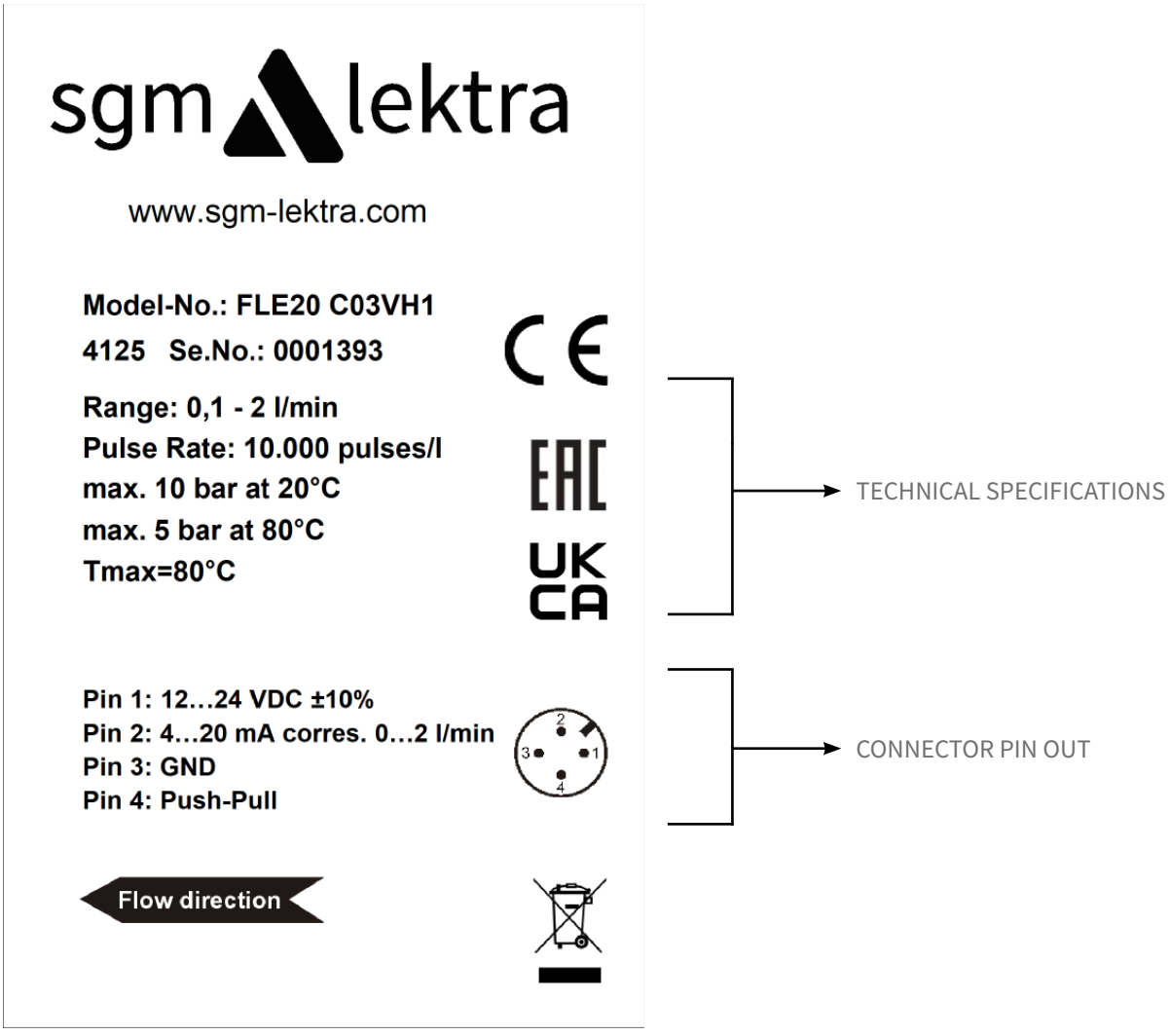
2- PRODUCT



1. Housing
2. Connector
3. LED
4. Process connection

2.1 - IDENTIFICATION

Each instrument has an adhesive identification label on which the main data of the meter are shown.
The following image describes the information and data on the label.



3-TECHNICAL SPECIFICATIONS

Measurement process:	electromagnetic
Range:	see table Y
Fluid:	conductive fluids
Minimum conductivity:	≥ 20 µS/cm
Maximum kinematic viscosity of the fluid:	70 mm2/s
Maximum pressure:	10 bar @ 20°C • 8 bar @40 °C • 6 bar @60 °C • 5 bar @80 °C
Accuracy:	± 0.7% of reading ± 0.3% of range
Repeatability:	± 1%
Response time:	<100ms
Mounting position :	See page 9
Input/output sections (recommended):	10 x DN/5 x DN
Housing :	ABS

Part in contact with the fluid

Fittings and insulated parts:	POM / PVDF
Electrodes:	1.4404 stainless steel / Hastelloy C
Seals:	EPDM (POM) / FKM (PVDF)
Protection:	IP 65
Fluid temperature:	(PVDF) -15°C … +80°C non-freezing / (POM) -15°C … +60°C non-freezing
Ambient/storage temperature:	-15°C … +60°C

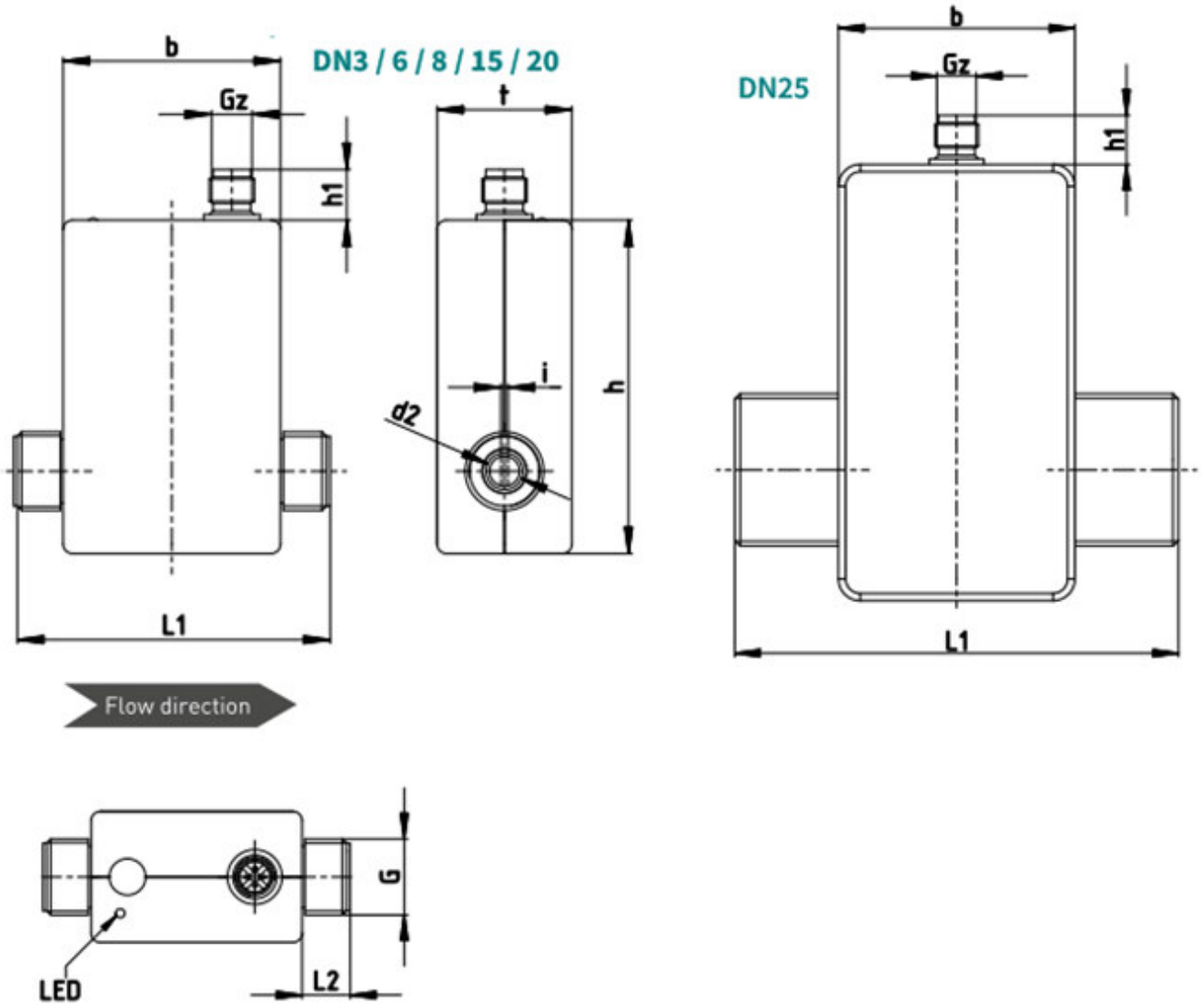
Electrical data

Supply voltage:	12 - 24 VDC, max consumption 3,6W
Pulse output:	Push-Pull (max 100mA)
Analog output:	active, 2 wires, 4-20 mA, max. load 250 Ω
Electrical connection:	M12x1 connector, 4-pin

TABLE "Y":

MODEL	FLE20 03	FLE20 06	FLE20 08	FLE20 15	FLE20 20	FLE20 25
Measurement characteristics						
Flow range [l/min]	0.1…2	0.25…5	1…20	2.5…50	5…200	12.5…250
Lower activation limit of outputs [l/min]	0.05	0.1	0.25	1	2	5
Maximum flow rate [l/min]	2.5	6	25	60	240	300
Response time	< 100 ms					
Indications	Green LED = Instantaneous flow					
Output signal characteristics						
PUSH-PULL pulse output:						
Nominal capacity [pulses/l]	10 000	4000	1000	400	200	80
Resolution [ml/pulse]	0.1	0.25	1.0	2.5	5.0	12.5

4-DIMENSIONS



Dimension [mm]									
Type	**L1**	**L2**	**G**	**d2**	**b**	**h**	**h1**	**t**	**i**
DN3	85	13	G⅜ B	Ø 3	58	89	13.5	36	
DN6	85	13	G½ B	Ø 8	58	89	13.5	36	2
DN8	85	13	G½ B	Ø 8	58	89	13.5	36	
DN15	90	16	G¾ B	Ø 14	58	89	13.5	36	
DN20	90	16	G1 B	Ø 18	58	89	13.5	36	
DN25	122	28,5	G1¼ B	Ø 25	65	120	13.5	60	

5. CAUTION

Read this user manual before unpacking and operating the unit.
Follow the instructions exactly as described in this manual.
The devices must only be used, maintained and repaired by persons who have read this manual and in accordance with local health, safety and accident prevention regulations.
This measuring device may only be used on machines that comply with the requirements of the CE Machinery Directive.

6. INSTRUMENT INSPECTION

The instruments are inspected before shipment and shipped in perfect condition.
If damage is visible on a device, we recommend carefully inspecting the packaging shipping.
In the event of damage, immediately inform your courier/shipping agent, as they are responsible for damage incurred during transport.
Supply:
The standard supply includes:

- Electromagnetic flow meter model: MINIMAG
- User manual

7. USE

The MINIMAG flow meter has been specially developed to measure and transmit the flow rate of conductive liquids.
Any use of the magnetic induction flow meter that deviates from the manufacturer's specifications may invalidate the warranty.
In such cases, the manufacturer shall not be held liable for any consequential damages.
The user assumes all risks associated with improper use of the device.

8. ENVIRONMENT

The MINIMAG device, with its plastic housing, is weatherproof and complies with protection class IP65 when correctly wired.
The meter is designed to operate in both indoor and outdoor installations and complies with Directive 2014/30/EU (Electromagnetic Compatibility).

9. OPERATING PRINCIPLE

9.1 General information

The new MINIMAG flow meter is designed to measure and monitor small and medium flow rates of conductive liquids in pipes.
The device operates on the principle of magnetic induction measurement.
According to Faraday's law of magnetic induction, a voltage is induced in a conductor through a magnetic field.
The electrically conductive process fluid acts as a moving conductor.
The voltage induced on the fluid is proportional to the flow velocity and therefore constitutes a reference value for the volumetric flow rate.
The induced voltage is detected by two electrodes that are in contact with the fluid, and then sent to a measurement amplifier. The volumetric flow rate is calculated based on the diameter of the given pipe.
The measurement does not depend on the process liquid or its physical properties, such as density, viscosity and temperature. The device is equipped with two outputs, one analog in the 4-20mA range and one pulse in PUSH-PULL configuration.

9.2 Minimum electrical conductivity / gas bubbles

In order for the instrument to function correctly, the pipe must be completely full during the measurement phase.
MiniMag is designed to operate with a minimum electrical conductivity of 20uS/cm for the fluid being measured.
The presence of air bubbles in the process causes malfunction or incorrect measurement, therefore it is strongly recommended that all necessary measures be taken to eliminate this type of problem.

9.3 Deposits

Minor deposits on the tube do not generally affect measurement accuracy, unless their conductivity differs significantly from that of the liquid.
If working with liquids that tend to deposit, inspect the meter tube regularly and clean it if necessary.

9.4 Measuring electrodes

MINIMAG uses electrodes that are in direct contact with the process fluid.
The electrodes are made of AISI316L stainless steel, combined with POM fittings, or Hastelloy C, combined with PVDF fittings.

10. MECHANICAL CONNECTION

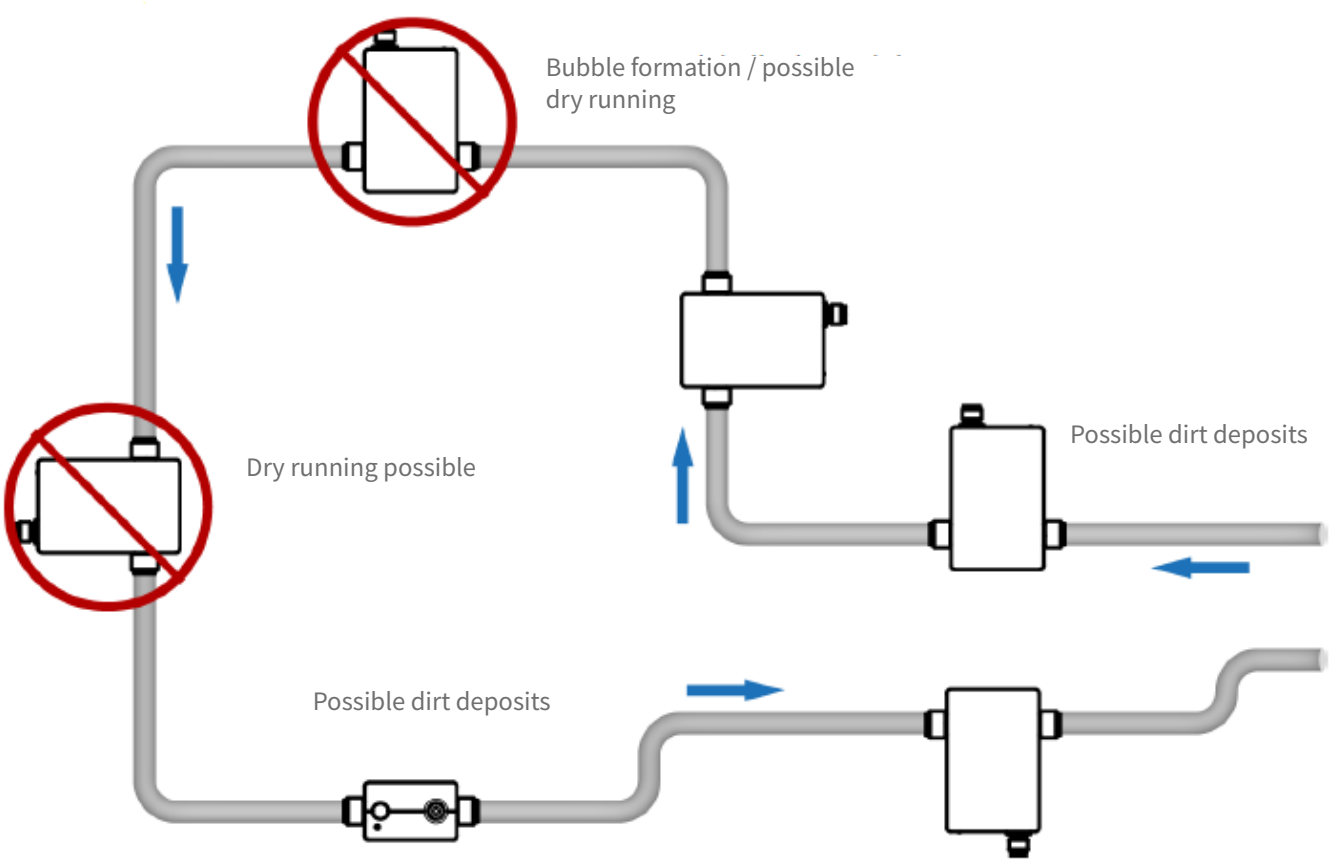
10.1 Control of operating conditions

- Flow rate
- Maximum operating pressure
- Maximum operating temperature

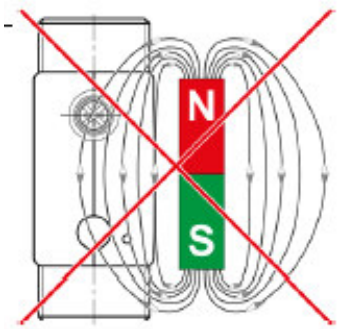
In general, MINIMAG is subject to the same loads as the pipes in which it is installed.
Therefore, it must be kept away from extreme loads, such as pressure surges that cause strong and dynamic movements of the pipes, vibrations near centrifugal pumps, high-temperature fluids, flooding, etc.

10.2 Installation

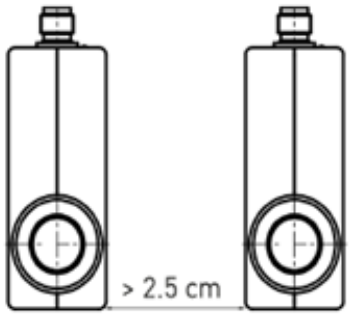
- Remove all packaging materials and transport fasteners and ensure that none remain in the device.
- The device can be installed on vertical, horizontal or ascending pipes. The flow direction is indicated by the arrow.
- Avoid pressure and tensile loads.
- Mechanically secure the inlet and outlet pipes at a distance of 50 mm from the fittings.
- Avoid valves or large reductions on the inlet section (as they increase measurement inaccuracy).
- Check the fittings for leaks.



CAUTION! Risk of malfunction due to external magnetic fields!
Magnetic fields near the device can cause malfunctions and should be avoided.
Ensure that there are no external magnetic fields at the MiniMag installation site.



•Installation can be carried out in horizontal and vertical pipes.
The flow sensor is only suitable for use in fully filled pipe systems.
•In principle, inductive magnetic flow sensors are largely independent of the flow profile.
An inlet section is not necessary for normal operation;
however, to achieve maximum measurement accuracy, straight inlet and outlet sections based on the nominal diameter (DN) must be used.
The inlet section must be at least 10 x DN; the outlet section 5 x DN to achieve the specified accuracy.
•The inlet and outlet sections and seals must have an internal diameter equal to or slightly larger than the measuring tube in order to achieve the required accuracy.
If two or more MINIMAG devices are used side by side, maintain a separation of at least 2.5 cm between adjacent devices.
If adjacent devices are too close to each other, the operation of both devices may be compromised due to mutual interference.



10.3 Mounting

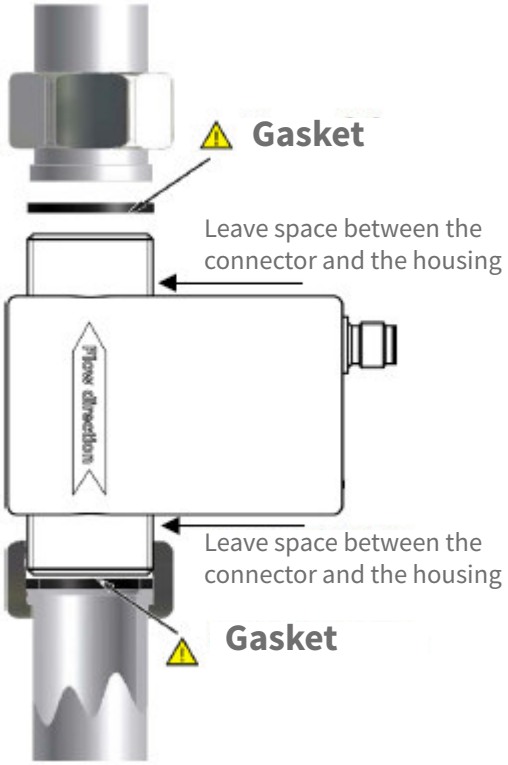
The MiniMag is installed directly on the pipes.
The compact design and light weight of the unit make wall mounting unnecessary.
IMPORTANT INFORMATION:

- Only use seals that are suitable for installation.
- Check the flow direction marked on the housing.
- Check the overall dimensions.
- Select a suitable location for installation.

To ensure the best possible measurement accuracy, a vertical installation position with ascending flow (no accumulation of dirt deposits) is preferable.
Install the fittings properly screwed into place at the installation site.

- Insert the MiniMag together with the seals.
- Screw the coupling nuts of the threaded fittings onto the process connections of the MiniMag. Whentightening, support (counteract) the device by hand only!
- Tighten both coupling nuts to the maximum torque as shown in the following table:

MAXIMUM TIGHTENING TORQUE									
FLE20-03		FLE20-06/08		FLE20-15		FLE20-20		FLE20-25	
POM	PVDF	POM	PVDF	POM	PVDF	POM	PVDF	POM	PVDF
3 Nm	3 Nm	3 Nm	4 Nm	5 Nm	6 Nm	6 Nm	8 Nm	17 Nm	22 Nm



11. ELECTRICAL CONNECTION

11.1 General information

Attention!
Ensure that the voltage values of your system correspond to the voltage values of the measuring unit.

• Ensure that the power supply wires are de-energised during installation.
• Connect the power supply and output signal to the connector pole as shown below.

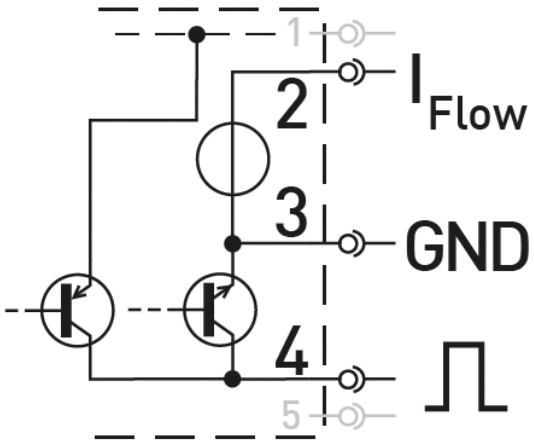
Caution!
The measuring electrodes are galvanically connected to the reference potential of the supply voltage and to the signal output.

11.2 Connections and wiring

- Screw the coupling socket of the connection cable onto the plug of the MiniMag.
- Tighten the knurled nut on the coupling sleeve with a maximum torque of 1 Nm.
- Connect the connection cables according to the following diagrams.

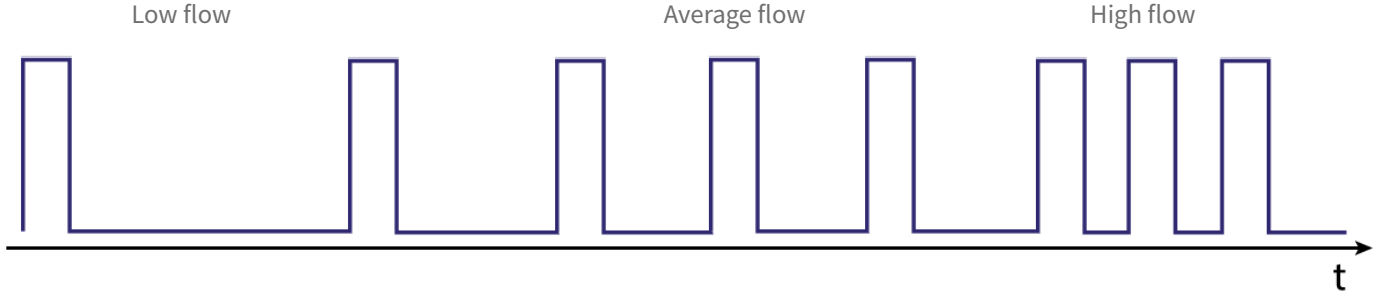
Pinout:
Pin 1: +V
Pin 3: GND
Pin 2: Analog output
Pin 4: PUSH-PULL pulse output

Pin configuration with PUSH-PULL pulse outputs



The green LED flashes at a frequency proportional to the instantaneous flow measured.

The human eye can no longer detect flashing at frequencies above ~30 ... 40 Hz. In this case, the green LED will appear to be permanently lit.
The device provides a square wave pulse signal on the PUSH-PULL output.
The number of pulses depends on the instantaneous flow rate.
The analog output provides a 4-20mA current signal proportional to the instantaneous flow rate.



12-TEST/QUALITY CERTIFICATE

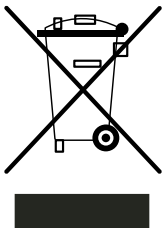
CE

In accordance with production and testing procedures, I certify that the instrument:

(Electromagnetic flow meter))

meets the technical characteristics mentioned in the TECHNICAL DATA section and complies with the construction procedures.

Quality control manager: ..... Date of manufacture and testing: .....



This symbol on the instrument indicates that the product and its electronic accessories must not be disposed of with other household waste at the end of their useful life. To avoid possible damage to the environment or human health resulting from uncontrolled waste disposal, please deliver the appliance directly to a company specialising in recycling, in accordance with local regulations.

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