



Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



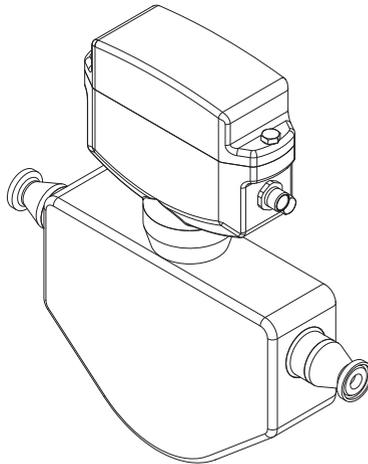
Solutions

## Brief Operating Instructions

# Dosimass

## Coriolis Mass Flow Measuring System

### For filling applications



These Brief Operating Instructions are not intended to replace the Operating Instructions provided in the scope of supply. Detailed information is provided in the Operating Instructions and the additional documentation on the CD-ROM supplied.

The complete device documentation consists of:

- These Brief Operating Instructions
- Depending on the device version:
  - Operating Instructions and the Description of Device Functions
  - Approvals and safety certificates
  - Safety instructions in accordance with the approvals for the device (e.g. explosion protection, pressure equipment directive, etc.)
  - Additional device-specific information

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# 1 Safety instructions

## 1.1 Designated use

- The measuring device should only be used to measure the mass flow rate of liquids and gases. At the same time, the measuring device also measures the density and fluid temperature. These parameters are then used to calculate other process variables such as volume flow.
- Any use other than that described here compromises the safety of persons and the entire measuring system and is, therefore, not permitted.
- The manufacturer is not liable for damage caused by improper or non-designated use.

## 1.2 Installation, commissioning and operation

- The measuring device must only be installed, connected, commissioned and maintained by qualified and authorized specialists (e.g. electrical technicians) in full compliance with the instructions in these Brief Operating Instructions, the applicable norms, legal regulations and certificates (depending on the application).
- The specialists must have read and understood these Brief Operating Instructions and must follow the instructions they contain. If you are unclear on anything in these Brief Operating Instructions, you must read the Operating Instructions (on the CD-ROM). The Operating Instructions provide detailed information on the measuring device.
- The measuring device may only be installed in a de-energized state.
- Repairs may only be performed if a genuine spare parts kit is available and this repair work is expressly permitted.
- If performing welding work on the piping, the welding unit may not be grounded by means of the measuring device.

## 1.3 Operational safety

- The measuring device is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. Relevant regulations and European standards have been observed.
- Observe the technical data on the nameplate!
- The technical staff must ensure that the measuring device has been correctly wired and grounded as per the wiring diagrams.
- With regard to special fluids, including fluids used for cleaning, Endress+Hauser will be happy to assist in clarifying the corrosion-resistant properties of wetted materials. However, minor changes in temperature, concentration or in the degree of contamination in the process may result in variations in corrosion resistance.

For this reason, Endress+Hauser does not accept any responsibility with regard to the corrosion resistance of wetted materials in a specific application. The user is responsible for the choice of suitable wetted materials in the process. A sensor version which allows the sensor housing be monitored should be used for critical fluids.

- **Hazardous areas**  
Measuring devices for use in hazardous areas are labeled accordingly on the nameplate. Relevant national regulations must be observed when operating the device in hazardous areas. The Ex documentation on the CD-ROM is an integral part of the entire device documentation. The installation regulations, connection data and safety instructions provided in the Ex documentation must be observed. The symbol on the front page indicates the approval and certification body (Ⓔ Europe, Ⓒ USA, Ⓒ Canada). The nameplate also bears the documentation number of this Ex documentation (XA\*\*\*D/./..).
- For measuring systems used in SIL 2 applications, the separate manual on functional safety (on the CD-ROM) must be observed.
- **Hygienic applications**  
Measuring devices for hygienic applications have their own special labeling. Relevant national regulations must be observed when using these devices.
- **Pressure instruments**  
Measuring devices for use in systems that need to be monitored are labeled accordingly on the nameplate. Relevant national regulations must be observed when using these devices. The documentation on the CD-ROM for pressure instruments in systems that need to be monitored is an integral part of the entire device documentation. The installation regulations, connection data and safety instructions provided in the Ex documentation must be observed.
- Endress+Hauser will be happy to assist in clarifying any questions on approvals, their application and implementation.

## 1.4 Safety conventions



### Warning!

"Warning" indicates an action or procedure which, if not performed correctly, can result in injury or a safety hazard. Comply strictly with the instructions and proceed with care.



### Caution!

"Caution" indicates an action or procedure which, if not performed correctly, can result in incorrect operation or destruction of the device. Comply strictly with the instructions.



### Note!

"Note" indicates an action or procedure which, if not performed correctly, can have an indirect effect on operation or trigger an unexpected response on the part of the device.

## 2 Installation

### 2.1 Transporting to the measuring point

- Transport the measuring device to the measuring point in the original packaging.
- The covers or caps fitted on the process connections prevent mechanical damage to the sensors during transport and storage. For this reason, do not remove the covers or caps until immediately before installation.

### 2.2 Installation conditions

Measuring device is intended for mounting on rotary and linear filling machines.

#### 2.2.1 Dimensions

For the dimensions of the measuring device → see associated Technical Information on the CD-ROM.

#### 2.2.2 Mounting location

The following mounting locations are recommended:

- Upstream from assemblies such as valves, T-pieces, elbows, etc.
- On the pressure side of pumps (for high system pressure)
- At the lowest point in an ascending pipe (for high system pressure)

The following mounting locations should be **avoided**:

- At the highest point in a pipe (risk of air accumulating)
- In an open down pipe directly upstream from a free pipe outlet. For ways of using the measuring device in down pipes, see the related Operating Instructions on the CD-ROM.

### 2.2.3 Orientation

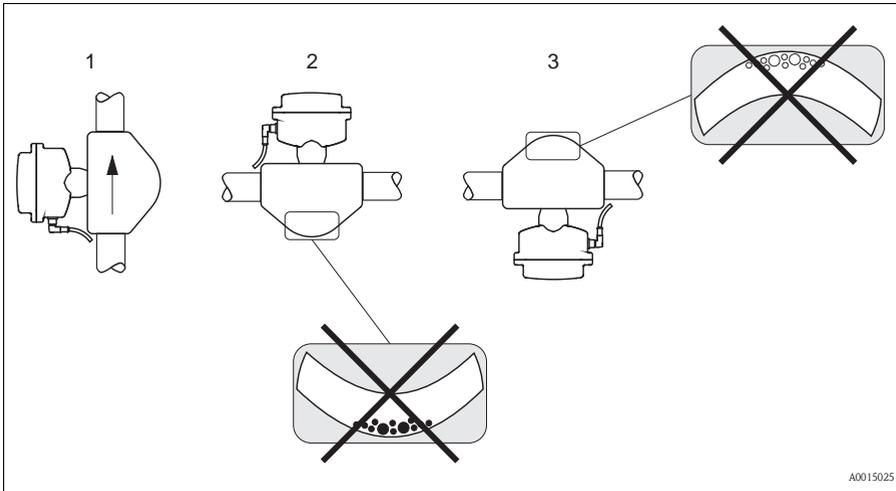
#### *Vertical (view 1):*

Recommended orientation with upward direction of flow. When fluid is not flowing, entrained solids will sink down and gases will rise away from the measuring tube. The measuring tubes can be completely drained and protected against solids buildup.

#### *Horizontal (view 2, 3):*

The measuring tubes of Dosimass must be horizontal and beside each other. When installation is correct, the transmitter housing is above or below the pipe. Always avoid having the transmitter housing in a lateral position.

 **Caution!**  
The measuring tubes of Dosimass are slightly curved. The position of the sensor, therefore, has to be matched to the fluid properties when the sensor is installed horizontally.



A0015025

- 1 Vertical
- 2 Horizontal (transmitter housing above the pipe)  
→ Not suitable for fluids with entrained solids. Risk of solids accumulating!
- 3 Horizontal (transmitter housing below the pipe)  
→ Not suitable for outgassing fluids. Risk of air accumulating!

**Fluid temperature**



**Caution!**

Hot surface temperatures can arise at the housing of the device if fluid temperatures are > 70 °C (158 °F).

In order to ensure that the maximum permissible ambient temperature for the transmitter is not exceeded (-20 to +60 °C (-4 to +140 °F)), we recommend the following orientations (cp. → 6):

	vertical	horizontal
High fluid temperature (> 70 °C (158 °F))	view 1	view 3
Low fluid temperature (≤ 70 °C (158 °F))	view 1	view 2

**2.2.4 Heating**

For information on the heating, please see the Operating Instructions on the CD-ROM.

**2.2.5 Thermal insulation**

For information on the thermal insulation, please see the Operating Instructions on the CD-ROM.

**2.2.6 Inlet and outlet runs**

No inlet and outlet runs are required.

**2.2.7 Vibrations**

No measures are necessary.

**2.3 Post-installation check**

- Is the measuring device damaged (visual inspection)?
- Does the measuring device correspond to the specifications at the measuring point?
- Are the measuring point number and labeling correct (visual inspection)?
- Has the correct sensor orientation been selected in terms of type, fluid properties, fluid temperature?
- Does the arrow on the sensor point in the direction of the flow in the pipe?
- Is the measuring device protected against moisture and sunlight?

### 3 Wiring



#### Warning!

Risk of electric shock! Components carry dangerous voltages.

- Never mount or wire the measuring device while it is connected to the power supply.
- Prior to connecting the power supply, connect the protective ground to the ground terminal on the housing.
- Route the power supply and signal cables so they are securely seated.
- Seal the cable entries and covers so they are airtight.
- The device may only be connected to SELV, PELV or CLASS 2 circuits. This applies both to the power supply and to the outputs.



#### Caution!

Risk of damaging the electronic components!

- Connect the power supply in accordance with the connection data on the nameplate.
- Connect the signal cable in accordance with the connection data in the Operating Instructions or the Ex documentation on the CD-ROM.
- The service interface may not be connected during normal operation.

#### **In addition, for Ex-certified measuring devices:**

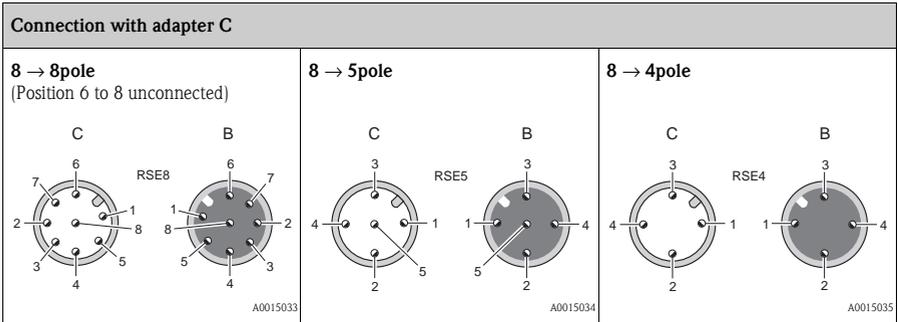
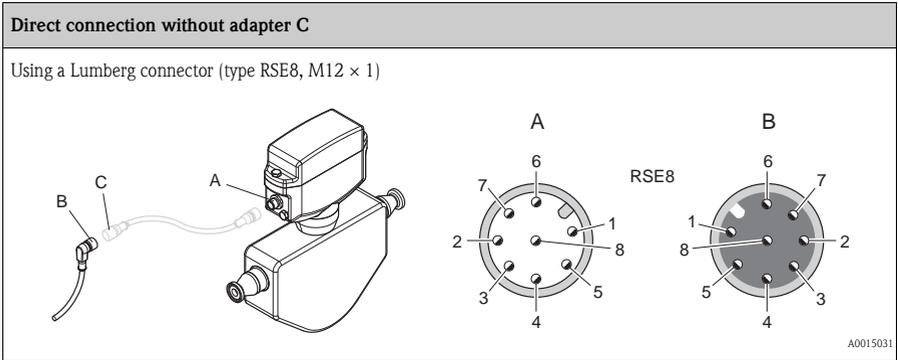


#### Warning!

When wiring Ex-certified measuring devices, all the safety instructions, wiring diagrams, technical information, etc. of the related Ex documentation must be observed

→ Ex documentation on the CD-ROM.

### 3.1 Connection of the device

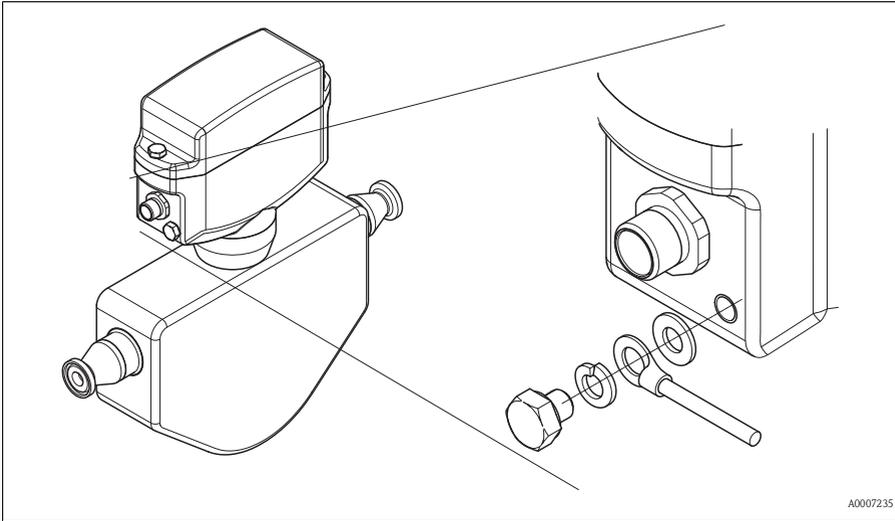


- A Socket at device
- B Cable connector
- C Adapter

- 1 (+), power supply (24 V DC nominal voltage (20 to 30 VDC), 4.3 W)
- 2 (-), power supply (24 V DC nominal voltage (20 to 30 VDC), 4.3 W)
- 3 (+), pulse, status output (max. 30 V)
- 4 (-), pulse output (max. 25 mA)
- 5 (-), status output(max. 25 mA)
- 6 Service interface (may not be connected during normal operation)
- 7 Service interface (may not be connected during normal operation)
- 8 Service interface (may not be connected during normal operation)

### 3.2 Ground connection

The ground connection is established via a cable lug.



### 3.3 Degree of protection

The devices fulfill all the requirements for IP 67.

Compliance with the following points is mandatory following installation in the field or servicing, in order to ensure that IP 67 protection is maintained:

- The housing seals must be clean and undamaged when inserted into their grooves. The seals must be dried, cleaned or replaced if necessary.
- All threaded fasteners and screw covers must be firmly tightened.

### 3.4 Post-connection check

- Are cables or the device damaged (visual inspection)?
- Does the supply voltage match the specifications on the nameplate?
- Are the power supply and signal cables correctly connected?
- Do the cables used comply with the necessary specifications?
- Do the mounted cables have adequate strain relief and are they routed securely?
- Is the cable type route completely isolated? Without loops and crossovers?
- Are all the cable entries installed, correctly tightened and properly sealed?
- Is the housing cover installed and correctly tightened?

## 4 Commissioning

### 4.1 Switching on the measuring device

On completion of the installation (successful post-installation check) and wiring (successful post-connection check) the permitted power supply (see nameplate) can be switched on for the measuring device. The device is now operational.

The measuring device performs a number of power on self-tests. Normal measuring mode commences as soon as startup completes.



Note!

If startup fails, an error message indicating the cause is displayed in the FieldCare operating program.

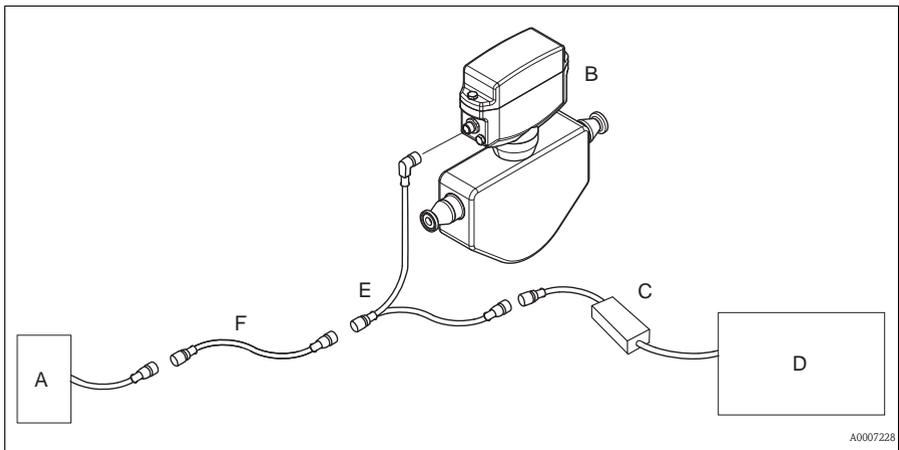
### 4.2 Customer specific configuration via FieldCare

The Dosimass flow measuring device is operated via the "FieldCare" operating program. FieldCare is a universal service and configuration software package from Endress+Hauser. Connection is by means of the Proline service interface (service connector) with a Commubox FXA193.



Note!

You can find more information on FieldCare in the Operating Instructions on the CD-ROM.



Connection to FieldCare

- A Power supply 24 V DC
- B Dosimass
- C Service interface FXA193
- D Computer with "FieldCare" software
- E Service adapter
- F Adapter for pin reduction (facultative)

### 4.3 System requirements

A proper installation and functioning of the "FieldCare" software on your computer requires certain hardware and software. You will find the system requirements on the Endress+Hauser homepage [www.endress.com](http://www.endress.com).

### 4.4 Structure of the function matrix

For information on the structure of the function matrix, please see the associated Operating Instructions on the CD-ROM.

### 4.5 Troubleshooting

Fault conditions that arise during operation are immediately identified by Dosimass and signaled and output in different ways:

- Via a light-emitting diode (LED) on the electronics
- Via the status output
- Via error messages in the "FieldCare" operating program:
  - System error messages
  - Process error messages

If multiple messages are pending, the one with the highest priority is output.



Note!

System and process errors are only differentiated in detail in the FieldCare operating program but not by error signaling via the LED or the status output.

#### 4.5.1 Frequent error messages in the FieldCare

No.	Error message/Type	Cause/Remedy
<b>359</b>	System error (S) / Fault message (F)  PULSE RANGE # 359	Pulse output: Pulse output frequency is out of range.  1. Increase the setting for pulse value. 2. Reduce flow.
<b>701</b>	Process error (P) / Notice (N)  EXCITING CURRENT LIMIT # 701	The maximum current value for the measuring tube exciter coils has been reached, since certain process fluid characteristics are extreme, e.g. high gas or solid content. The instrument continues to work correctly.  In particular with outgassing fluids and/or increased gas content, the following measures are recommended to increase system pressure:  1. Mount the instrument on the pressure side of a pump. 2. Mount the instrument at the lowest point of an ascending pipeline. 3. Install a valve or orifice plate downstream from the measuring device.

A complete description of all the error messages → Operating Instructions on the CD-ROM.

### 4.5.2 Light emitting diode (LED)

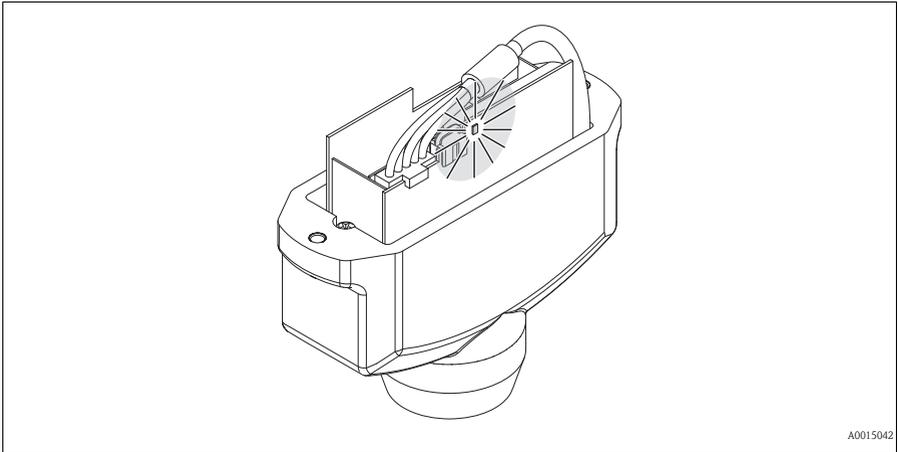
There is a light-emitting diode (LED) on the electronics board by means of which easy fault diagnosis is always possible. This kind of error signaling is particularly important in the following instances:

- If the status output was not configured for outputting errors or notices.
- If fault diagnosis is no longer possible via the FieldCare operating program.



**Warning!**

This kind of fault diagnosis is not possible in Ex-areas since the electronics compartment can only be opened if no voltage is being supplied to the device.



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Status of light-emitting diode (LED)	Status of measuring system
LED lights up green	Measuring system OK, low flow cutoff is active
LED flashes green (once a second)	Measuring system OK, operation
LED does not light up	Measuring system no longer working
LED flashes red (three times a second)	<ul style="list-style-type: none"> <li>- Operation not possible</li> <li>- Error (fault message) pending</li> </ul>
LED flashes red/green (once a second)	<ul style="list-style-type: none"> <li>- Operation possible but may be restricted by application conditions.</li> <li>- Notice message pending</li> </ul>
LED flashes red/green (three times a second)	Zero point adjustment running





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