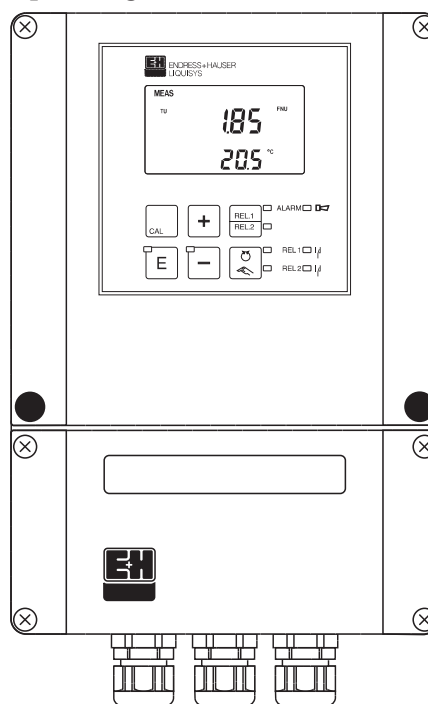
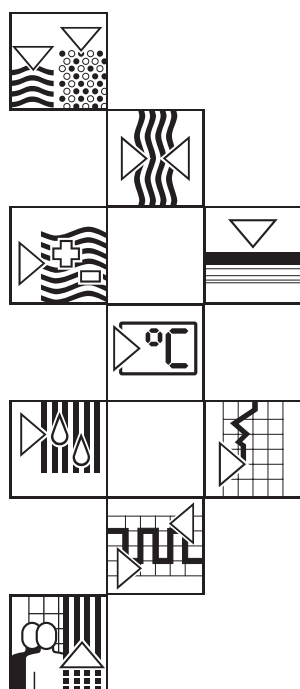


BA 174C/07/en/01.98
No. 50088699
Software version 1.0 or later

liquisys **CUM 252** Transmitter for Turbidity and Solids Content

Operating Instructions



Please familiarise yourself with the instrument before you take any other steps:



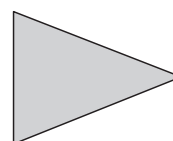
1 General information



2 Safety



3 Description



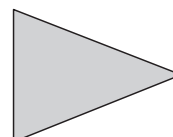
**You wish to install and start up the instrument.
The required steps are described in these chapters:**



4 Installation



5 First start-up



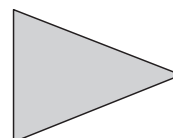
**You wish to operate or reconfigure the instrument.
The operating concept is explained in these chapters:**



6 Operation



7 Instrument configuration



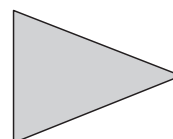
Need help with problems or maintenance?



8 Diagnostics



9 Maintenance and service



**See the back cover for a fold-out overview
of the menu structure.**

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**1**

1 General information

1.1 Symbols used

**Warning:**

This symbol alerts to hazards which may cause serious injuries as well as damage to the instrument, measuring system or other equipment if ignored.

**Caution:**

This symbol alerts to possible malfunction due to operator error.

**Note:**

This symbol indicates important items of information.

1.2 Conformity statement

The Liquisys CUM 252 measuring transmitter has been developed and manufactured in accordance with the applicable European standards and directives.

**Note:**

The corresponding certificate of conformity may be requested from Endress+Hauser.



2 Safety

2.1 Intended use

The measuring transmitter Liquisys CUM 252 is a field-tested and reliable measurement device for determining turbidity or solids concentration. It is equipped with two current outputs and two switched outputs for connection to automated process controllers.

2.2 General safety notes



Warning:

Operation of the device in a manner other than as described in these operating instructions may lead to unsafe and improper functioning of the measuring system.

Installation, start-up, operation

The Liquisys CUM 252 instrument has been designed for safe operation according to the state of the art in engineering and in keeping with the applicable regulations and EC directives; see "Technical data". However, if used improperly or other than for the intended purpose, it may pose a hazard, e.g. due to improper connection.

Installation, electrical connection, start-up, operation and maintenance of the measuring system must therefore be performed exclusively by trained specialists authorised by the system operator. This personnel must have read and understood these operating instructions and must adhere to them.

2.3 Safety devices

- **Access code:**
Unauthorised access to the calibration and configuration data of the measuring transmitter is effectively prevented by access codes. The instrument settings can be read at any time without entry of an access code.
- **Alarm function:**
Continuous violation of the limit settings, sensor failure or process-related problems will activate an alarm. This condition is indicated by an LED on the control panel and via a switched output. The alarm contact has been designed as a fail-safe switch, i.e. the alarm condition will be immediately signalled in case of a power failure (requires two separate current supply circuits). The alarm contact is also activated by internal system errors (see 8.2).
- **Data protection:**
The instrument configuration is retained even after a power failure.
- **Immunity to interference:**
This instrument is protected against interference, such as pulse-shaped transients, high frequency and electrostatic discharges, according to the applicable European standards. This is, however, only the case for instruments connected as outlined in these operating instructions.

3 Instrument description

3.1 Areas of application

The measuring transmitter Liquisys CUM 252 is an excellent choice for measuring and control tasks in the following areas of application:

- Sewage treatment plants, solids concentration measurement
- Effluent treatment
- Water treatment and water monitoring
- Drinking water
- Surface water (rivers, lakes, dams, ocean)
- Service water
- Indirect discharge
- Water recycling

3.2 Measuring system

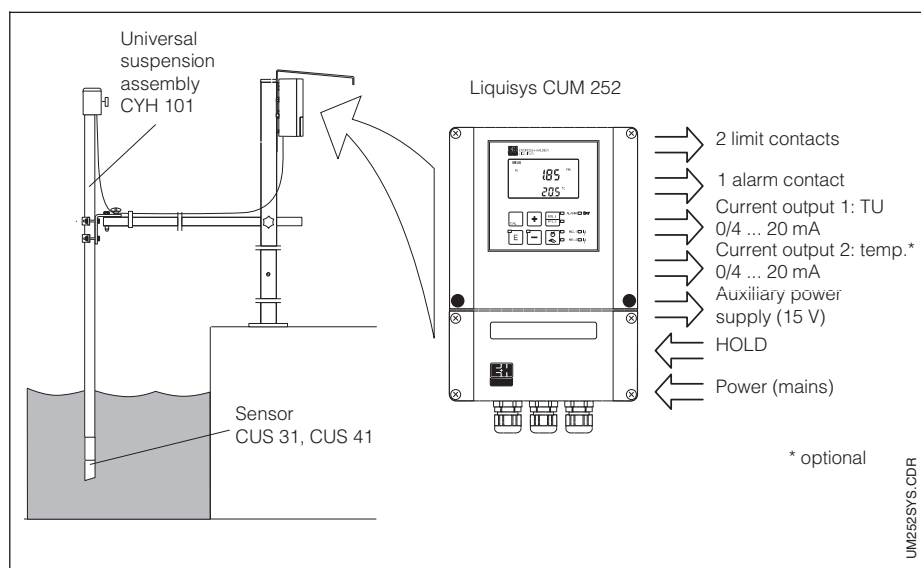


Fig. 3.1 Example of a complete measuring system

A typical measuring system comprises:

- a CUS 31 or CUS 41 sensor with an integrated temperature sensor
- an appropriate immersion, flow or retractable assembly
- an extension cable (shielded standard cable / 2 × 2 wires, twisted pair) with junction box VBM if necessary
- the Liquisys CUM 252 measuring transmitter

3.3 Essential features

- Field housing with protection type IP 65
- Measuring ranges 0 ... 9999 FNU, 0 ... 3000/9999 ppm, 0 ... 3/300 g/l, 0 ... 200% (depending on sensor and sample)
- Temperature measuring range –5.0 ... + 70.0 °C
- Easy to read, two-line display
- Simple configuration with only three keys
- Configuration protected by access code
- Quick calibration using the “CAL” key
- Two switched outputs which can be configured as limit contacts
- One contact which can be configured as a spray cleaning contact
- One switched output for alarm signalling in cases of limit violation
- Two current outputs with selectable measurement range, switchable between 0 ... 20 or 4 ... 20 mA proportional (switching affects both outputs)
- Automatic “hold” function to “freeze” the current outputs and switched outputs during calibration, configuration and cleaning
- “Hold” function can be controlled via a galvanically separated input using an external or internal auxiliary voltage
- Interference-free communication with the sensor via digital interface
- Wiper control via digital interface

3.4 Instrument variants

Order code

Version / measuring range

TU Turbidity / solids content measuring transmitter
in PC/ABS protection housing, 247 × 170 × 115 mm (H × W × D),
2-line display, protection type IP 65
Application units FNU, ppm, g/l and % or % DM

Power supply

0 Power supply: 230 V AC
1 Power supply: 115 V AC
2 Power supply: 200 V AC
3 Power supply: 24 V AC
5 Power supply: 100 V AC
8 Power supply: 24 V DC
9 Special version to customer specifications

Measurement output

0 Meas. output: turbidity / solids content (DM)
1 Meas. output: turbidity / solids content and temperature
9 Special version to customer specifications

Additional features

10 Base version
20 Moisture protection lacquering
99 Special version to customer specifications

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You can identify the device variant and the mains supply type by the order code on the nameplate of the instrument.

Fig. 3.2 Nameplate of Liquisys CUM 252

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