



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

CUM740

Transmitter for turbidity and solids content measurement



The CUM 740 is used for optical solid matter content measurement in clear and turbid water and in sludge.

The transmitter covers a wide range of measuring sensors from low to high solids concentrations.

Applications

- Closed sewage treatment plant areas such as inflow, preclarifier, and sludge removal
- Process monitoring in high-temperature and hazardous areas in the chemical industry, waste incinerators and steam generation plants

Features and benefits

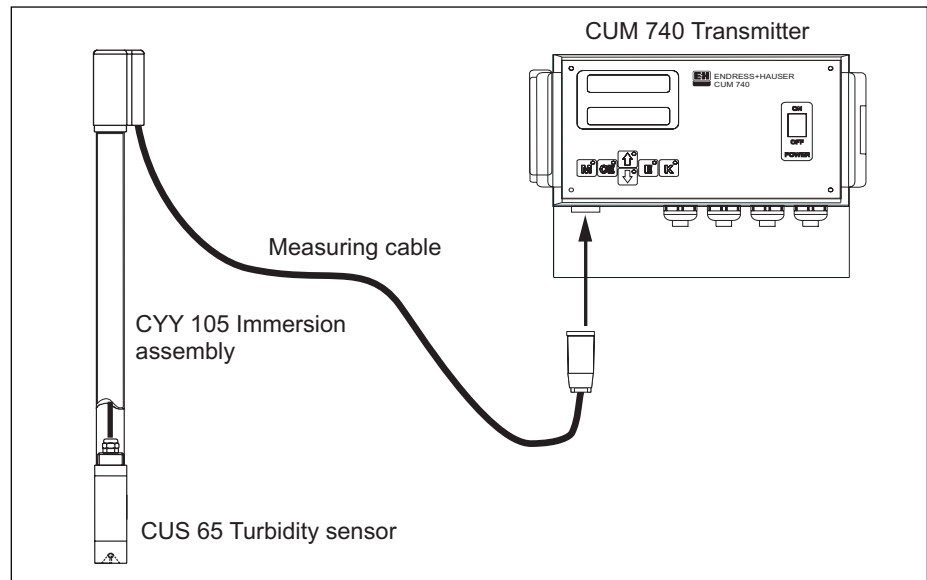
- Large selection of sensors for four-beam pulsed light systems
- Large two line LCD for set up and measured value display
- Large LED display for separate measured value display
- Large concentration range from 2 FNU to 150 g/l (150 ppm)
- Measuring units in g/l, ppm, mg/l, TEF, %
- Menu controlled set up and calibration in plain text
- Measured value processing is done in the sensor, giving low transmission sensitivity
- Five relay outputs (sensor cleaning, error message, two configurable limit relays, Hold)
- Battery-powered measured value storage
- One or two channel versions

Function and system design

Measuring system

The complete measuring system consists of:

- Turbidity transmitter CUM 740
- Turbidity sensor, e.g. TurbiMax W CUS 65 with measuring cable
- Sensor installation holder or immersion assembly



Complete measuring system

Measuring principle

Signal processing:

Measured value preprocessing takes place in the sensor electronics. The connectable sensors operate using the four-beam pulsed light method. Depending on the sensor version connected, turbidity is determined by different optical measuring methods.

- Absorption light method
- Backscatter light method
- 90° scattered light method

The sensor generates a turbidity or solids concentration signal which is converted into a frequency signal. The frequency signals are assigned to corresponding turbidity units and solids concentration content, and are indicated on the transmitter display.

Turbidity sensors

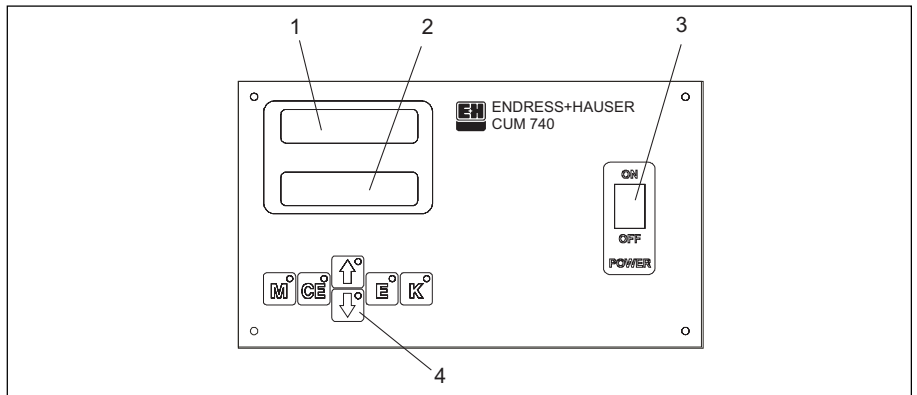
Endress+Hauser offers the following turbidity sensors for connection to the CUM 740 transmitter:

- CUS 65 - A, absorption light method, measuring range 0 to 12 g/l (ppm)
- CUS 65 - B, absorption light method, measuring range 0 to 40 g/l (ppm)
- CUS 65 - C, absorption light method, measuring range 0 to 50 g/l (ppm)
- CUS 65 - D, 90° scattered light method, measuring range 1 to 1000 FNU
- CUS 65 - E, backscattered light method, measuring range 10 to 150 g/l (ppm)

Operation

The CUM 740 is fully set up and calibrated in a menu-assisted software using a dirt-proof membrane keypad. The operator is guided interactively through the operating menu. The interface is a two-line plain text display.

Programming levels which go beyond everyday operation processes are only accessible by entering a password. All the calibration data and parameters are retained if there is a power failure or when the device is shut down (non-volatile RAM).



Operating panel

- 1 LED display (measured value display)
- 2 LCD (plain text display)
- 3 Main power switch
- 4 Membrane keypad

Functions

The 16-bit processor offers the following possibilities for signal evaluation:

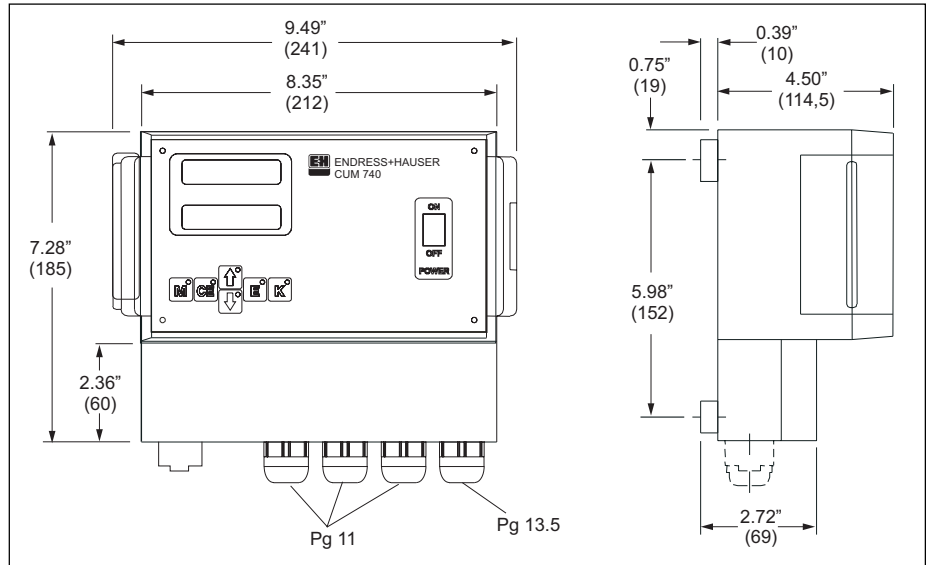
- Measured value detection, display and evaluation
- Menu control with alph-numeric LCD
- Measuring system monitoring including sensor
- User parameter storage and management

Instrument control functions are arranged in a logical menu structure.

Operating panel	Function
MEASUREMENT	Detection, evaluation and display of sensor signal, analog current and sensor frequency
PARAMETER ENTRY	Measuring range selection, limit setting, measured value damping setting, cleaning interval setting
CALIBRATION	Sensor calibrated using stored calibration curves or using application specific customer standards
ASSIGN	Calibration value assignment to appropriate sensor signals
FREQUENCY	Retrieval and option for manually editing measuring frequencies determined during calibration
CONFIGURATION	Sensor type selection, measuring unit selection, calibration factor setting, analog output configuration, alarm relay configuration
LANGUAGE	User interface in your own language
ERROR DISPLAY	Error message display

Installation

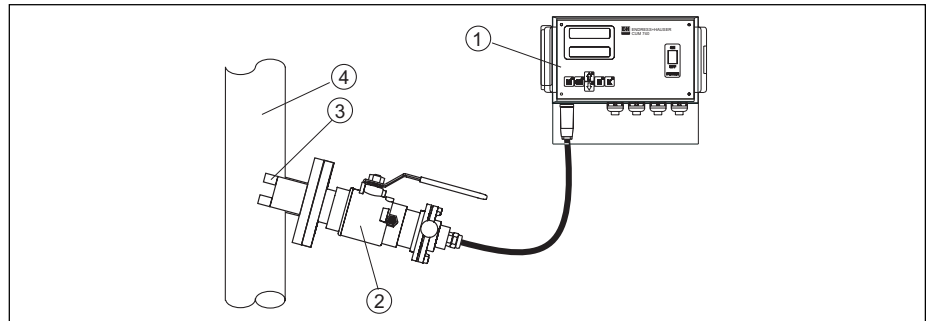
Dimensions



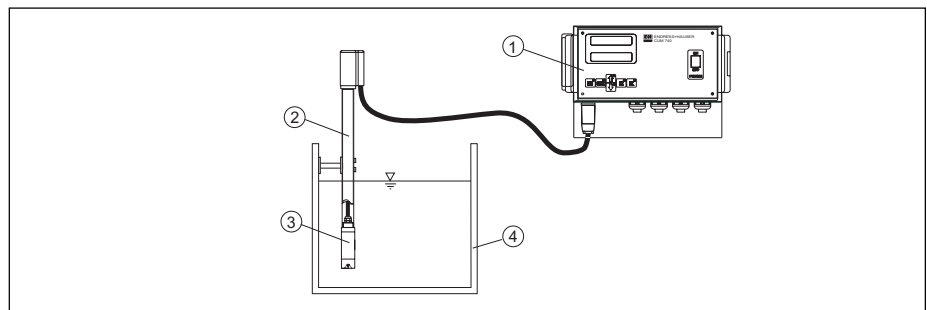
Dimensions are in inches (mm)

Installation

The CUM 740 can be installed indoors or outdoors. For outdoor installations, a weather protection cover is recommended (see accessories). The ambient temperature limits must be observed for proper instrument operation.



- 1 CUM 740 turbidity transmitter
- 2 CUA 451 retractable holder
- 3 CUS 65-A turbidity sensor
- 4 Process pipe

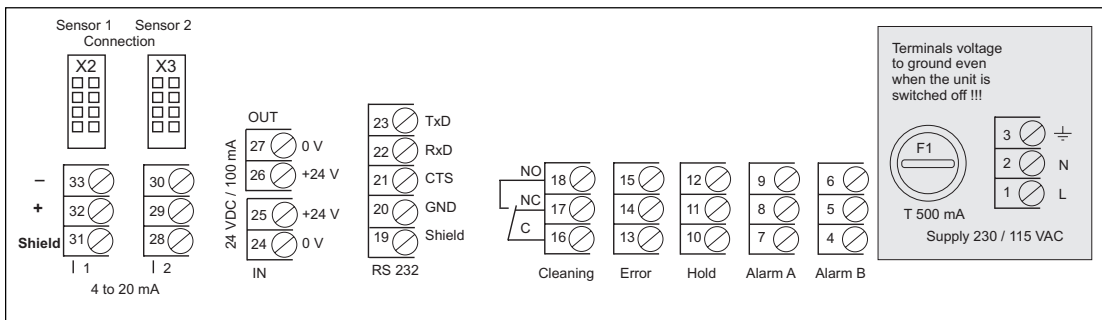


- 1 CUM 740 turbidity transmitter
- 2 CYY 105 immersion holder assembly
- 3 CUS 65-C turbidity sensor
- 4 Process basin or channel

Power supply

115 / 230 VAC, 50/60 Hz, +6 to -10%, 24 VAC / VDC

Electrical connection



Input

Parameters	Turbidity and solids content measurement
Measuring principle	Four-beam pulsed light method
Measuring light	Infrared light
Wavelength	880 nm (absorption maximum)
Measuring range	Dependent on sensor, see page 2
Accuracy	≤ 1% from measuring range end value
Reproducibility	0.5%

Output

Signal output	0/4 to 20 mA
Number of signal outputs	Maximum two
Load	Maximum 500 Ω
Switching outputs	1 relay contact for sensor cleaning, 1 relay contact for Hold function, 1 relay contact for error messages, 2 limit relays freely configurable
Switching power	3A at 115/230 VAC, 1A at 24 VAC/VDC

Environment

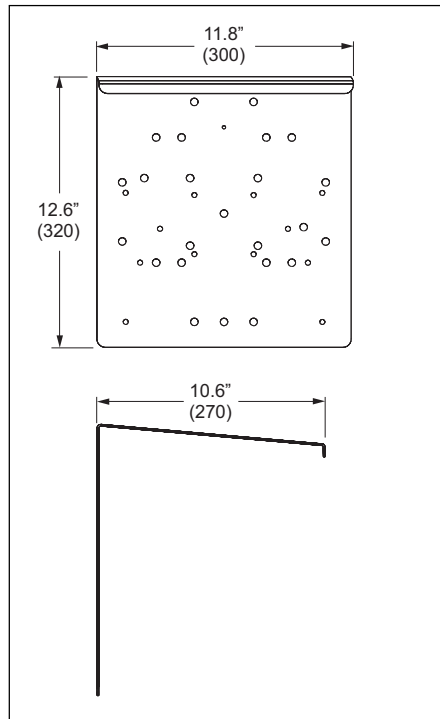
Ambient temperature	-4° to +140°F (-20 to +60°C)
Ingress protection	NEMA 4 (IP 65)

Mechanical construction

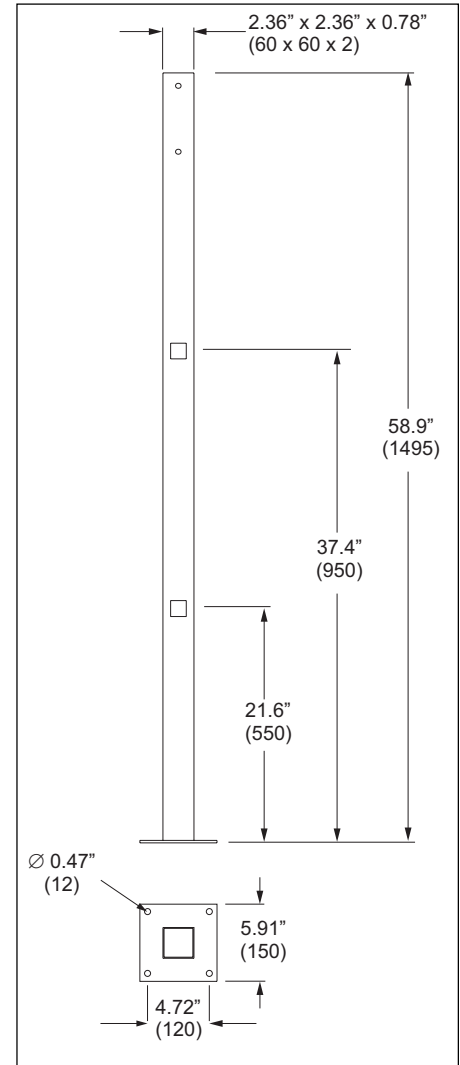
Materials	Housing, Polycarbonate Cover, Plexiglas®
Weight	3.5 lb (1.6 kg)
Display	LED display, 0.5" (12 mm) height for measured value display, 2-line LCD 0.2" (5 mm) height for set up
Interfaces	RS 232, port for bus extension

Accessories

Weather protection cover for wall mounting,
316 SS
Order number: CYY101-A



Upright mounting post, 316 SS, for cover and
CUM 740 transmitter mounting
Order number: CYY102-A



Supplemental documentation

TurbiMax W CUS 65 sensor
Operating instructions, CUM740

TI 379C/24/ae
BA232CEN

Ordering information

Product structure

CUM 740 transmitter for turbidity and solids content measurement

CUM 740 - 10 20 30 40

- 10 Power supply
 - 0 230 VAC
 - 1 115 VAC
 - 8 24 VAC / VDC
- 20 Communication
 - A RS 232 and 0/4 to 20 mA
- 30 Type
 - 1 Single channel
 - 2 Two channel
- 40 Additional equipment
 - A Standard version

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