Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Turbimax CUE23 / CUE24

Turbidimeter for laboratory measurement

Application

Turbimax CUE23 / CUE24 are turbidimeters for measurement in laboratories. They are suitable for the following fields of application:

- Drinking water
- Process water
- Wastewater

Your benefits

- Versions with white light source and infrared light source available
- Auto ranging 0 to 1000 NTU / FNU
- Automatic alert when calibration is needed
- Simple calibration procedures
- RS-232 output for printing or recording of measured values
- Reusable calibration standards

TI396C/07/en/07.06
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Endress+Hauser

People for Process Automation

Function and system design

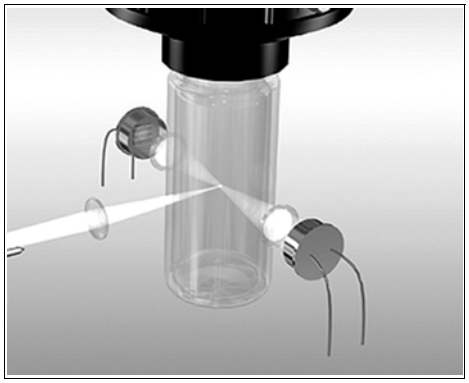
Measuring principle

Turbidity measurement
For turbidity measurement a light beam is sent through the medium and is diverted from its original direction by optically denser particels, e.g. solid matter particles.

Measuring methods

90° WL scattered light method
The measurement uses the standardised 90° scattered light method acc. to U.S. EPA 180.1.
The turbidity of the medium is determined by the amount of scattered light. The transmitted white light beam is scattered by the solid matter particles in the medium. The scattered beams are detected by scattered light receivers which are arranged at an angle of 90° to the white light source.

90° NIR scattered light method
The measurement uses the standardized 90° scattered light method acc. to ISO 7027 / EN 27027.
The turbidity of the medium is determined by the amount of scattered light. The transmitted light beam with a wavelength in the near-infrared range is scattered by the solid matter particles in the medium. The scattered beams are detected by scattered light receivers which are arranged at an angle of 90° to the infrared light source.



90° scattered light method

Functions

IR or white light measurement
The Turbimax is available as infrared version, CUE23, to meet the design criteria specified in ISO 7027 and DIN 27027. The white light version, CUE24, meets the design criteria on turbidity measurement specified by the US EPA 180.1. Both versions have long life lamps.

Auto ranging 0 to 1000 NTU
Turbimax CUE23 / CUE24 senses the turbidity level of a sample and automatically adjusts to the appropriate measuring range.

Auto alert calibration prompt
The instrument automatically alerts the operator when calibration is needed.

Simple calibration procedures
Calibration initiated with the push of a button ensures accurate readings.

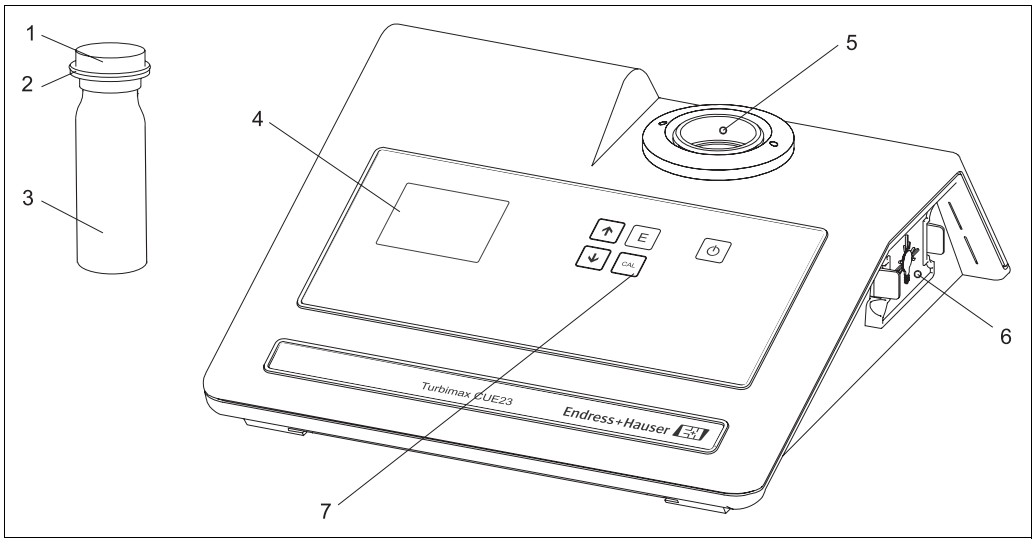
RS-232 output
The RS-232 output allows you to connect the Turbimax to a serial printer or a data recorder to print or record date, time and turbidity level of the measured sample.

Reusable calibration standards
The calibration standards allow quick and easy calibration across all ranges without the need to mix Formazin. The standards have a minimum shelf life of 12 months.

Measuring system

The measuring system comprises:

- Turbimax CUE23 / CUE24 turbidimeter
- Power supply unit
- Sample cuvette with light shield
- Indexing ring



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Turbimax CUE23 measuring system (example)

1 Black light-shield
2 Indexing ring
3 Sample cuvette
4 Display
5 Optical well
6 Lamp module
7 Touch pad

Input

Measured variables

Turbidity

Measuring range

0 to 1000 NTU / FNU

Output

Recorder output

Uni-directional RS-232 output

Power supply

Power supply unit

15 V DC / 1 A
adaptable for 100 to 240 VAC

Performance characteristic

Response time	< 6 s
Reference temperature	25 °C (77 °F)
Resolution	0.01 NTU in the range 0.00 to 9.99 NTU 0.1 NTU in the range 10.0 to 99.9 NTU 1 NTU in the range 100 to 1000 NTU
Maximum measured error	±2 % of reading or ±0.01 NTU whichever is greater
Repeatability	±1 % of reading or ±0.01 NTU whichever is greater

Installation

Installation notes

- Place the Turbimax CUE23 / CUE24 in its designated location.
- Connect the included power supply to the power plug connector on the back panel.
- If you want to print or record measured values, connect a printer or recorder to the RS-232 port on the back panel.

Environment

Storage temperature	-20 to +60 °C (-4 to +140 °F)

Process

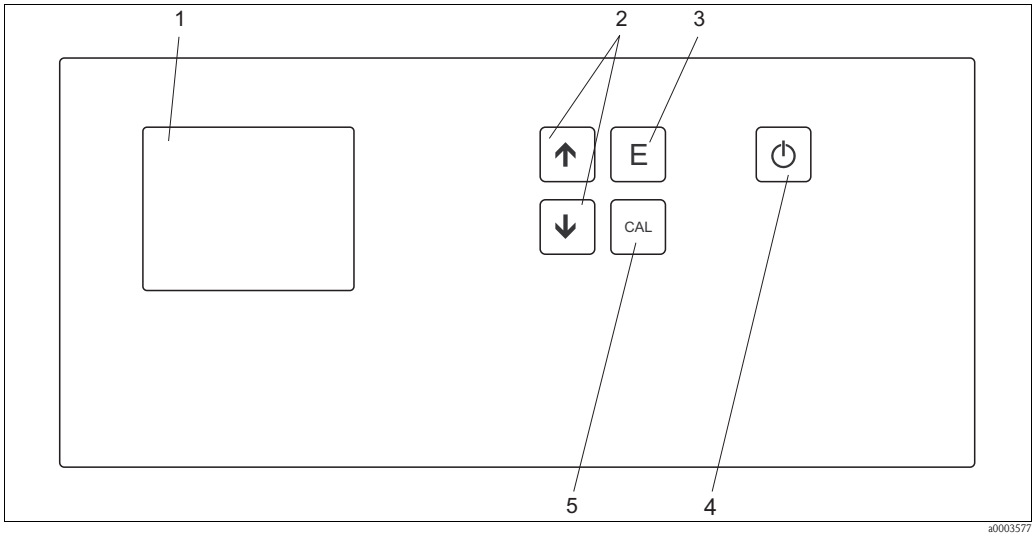
Ambient temperature	10 to 40 °C (50 to 104 °F)
Sample temperature range	0 to 50 °C (32 to 122 °F)

Mechanical construction

Dimensions	H x W x D:	95 x 254 x 273 mm (3.75" x 10" x 10.75")
Weight	1.3 kg (2.9 lbs.)	
Materials	Housing: Sample cuvette:	ABS Borosilicate glass
Light source	Turbimax CUE23: Turbimax CUE24:	Infrared LED, 860 nm Quick connect Tungsten lamp, ~600 nm, 2250 °K

Human interface

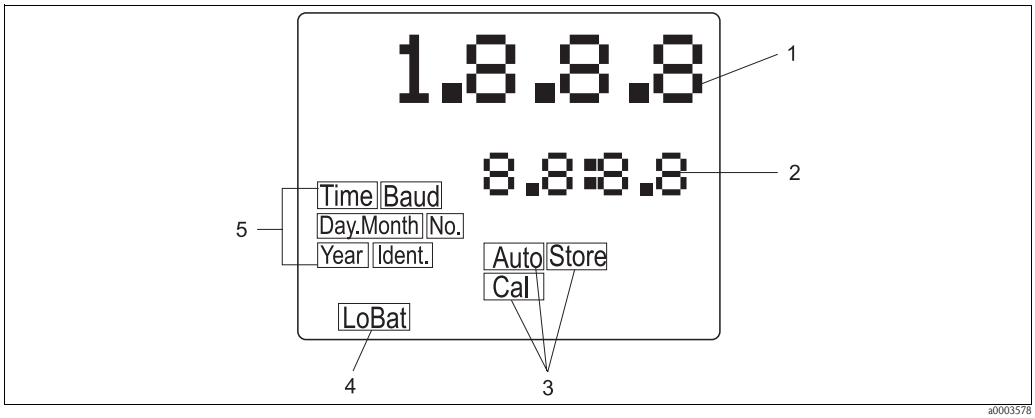
Operating elements



Operating elements

1 Display
2 ↑ ↓ keys used to set numerical values and to scroll through lists; pressing both arrow keys simultaneously, enters the configuration mode
3 E key used to store values on the screen and to output turbidity data to the printer
4 ⏻ key used to turn the Turbimax on or off
5 CAL key used to enter or exit calibration mode

Display



Display

1 Display of turbidity levels and user guidance
2 Display of stored turbidity readings, error messages, user guidance
3 Status indicators
4 Battery status, flashes when batteries need to be replaced
5 Indicators providing guidance in the customer settings and calibration routines

Certificates and approvals

CE symbol

Declaration of conformity
The product meets the legal requirements of the harmonized European standards.
The manufacturer confirms compliance with the standards by affixing the CE symbol.

ETL approval

- Tested and passed ETL (tested to UL3101-1)
- Tested and passed ETLc (tested to CSA C22.2#1010.1-92)

EMC compatibility

Interference emission and interference immunity complies with EN 61326: 1997 / A1: 1998

Ordering information

CUE23 laboratory device, infrared

	Version	
	A	Standard
CUE23-		complete order code

CUE24 laboratory device, white light

	Version	
	A	Standard
CUE24-		complete order code

Scope of delivery

The scope of delivery comprises:
- 1 Turbimax CUE23 / CUE24 turbidimeter
- 1 Calibration kit including
  - 0.02 NTU standard
  - 10.0 NTU standard
  - 1000 NTU standard
  - 2 empty sample cuvettes with black light shields
- 1 Power supply unit
- 1 Operating Instructions BA396C/07/en

Accessories

Calibration standards

Calibration kit CUE21 / CUE23 / CUE24, full range
- 0.02 NTU
- 10.0 NTU
- 1000 NTU

Order no.: 51518580

Cuvettes

- Sample cuvettes CUE23 / CUE24
  incl. caps, 3 pcs.
  Order no.: 51518581

International Headquarters

Endress+Hauser
GmbH+Co. KG
Instruments International
Colmarer Str. 6
79576 Weil am Rhein
Deutschland

Tel. +49 76 21 9 75 02
Fax +49 76 21 9 75 34 5
www.endress.com
info@ii.endress.com

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