

RT 306

Adjustment of level sensors



Learning objectives/experiments

- familiarisation with different level sensors
- familiarisation with different industry-standard components with a 4...20 mA current-loop interface
- connection and practical handling of components with a 4...20 mA 2-wire interface in a current loop

Description

- various measuring principles for level measurement
- industrial 4...20 mA measurement technology

The trainer aims to practise the use and practical handling of industrial components that are connected using a current-loop interface.

Using the example of level measurement, various measuring principles are presented in RT 306. To this end, a glass tank contains two different 4...20 mA sensors that record the level. One of the sensors, a capacitive level sensor, measures the level directly. A piezo-resistive pressure sensor is used to measure the level indirectly.

All of the current-loop connections required for the cabling are led out with lab jacks on the front of the switch cabinet and are labelled. In addition to the analogue 4...20 mA interface, the sensors have a HART interface.

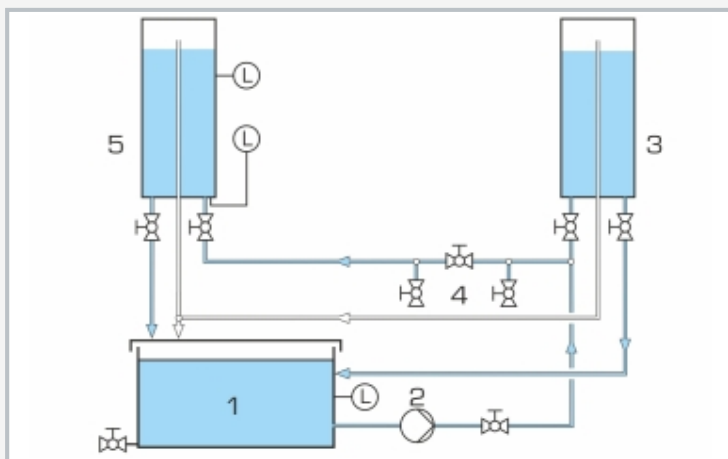
The measurement data is displayed directly on the integrated 2-channel line recorder. The measurement data can be exported via a USB interface and analysed on a PC (not included in the scope of delivery).

RT 306

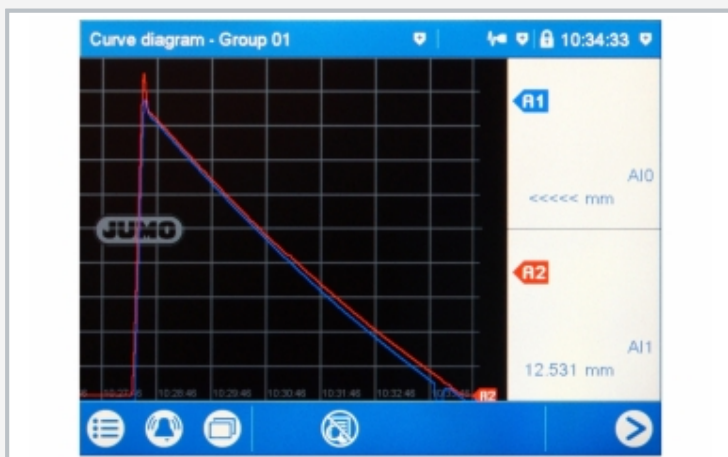
Adjustment of level sensors



1 tank with two different sensors for level measurement, 2 tank with two free connections, 3 capacitive level sensor, 4 pressure sensor for level measurement, 5 storage tank, 6 pump, 7 external connection option, 8 switch cabinet with connection options



1 storage tank, 2 pump, 3 tank with two free connections, 4 external connection option, 5 tank with two different sensors for level measurement



Screenshot of the 2-channel line recorder

Specification

- [1] use and practical handling of industrial components with a 4...20 mA current-loop interface
- [2] various measuring principles for level measurement: level sensor, capacitive, and pressure sensor, piezo-resistive
- [3] each sensor equipped with one analogue 4...20 mA interface and one HART interface
- [4] current-loop connections led out with lab jacks on the front of the switch cabinet
- [5] 2-channel line recorder with touchscreen operation
- [6] USB interface to export the measurement data

Technical data

Pump

- max. head: 20,9m
- max. flow rate: 4,8m³/h
- power consumption: 0,73kW
- speed: 2850min⁻¹

Level sensor (capacitive)

- calibrated: 40mm, 800mm
- length: 1016mm
- operating voltage: 24VDC
- HART output: 4...20mA

Pressure sensor (piezo-resistive)

- calibrated: 0mm WC, 800mm WC
- overload: 10bar
- operating voltage: 24VDC
- HART output: 4...20 mA

Measuring ranges

- pressure: 0...1bar
- level: 40...800mm

230V, 50Hz, 1 phase
 230V, 60Hz, 1 phase, 120V, 60Hz, 1 phase
 UL/CSA optional
 LxWxH: 1280x790x2200mm
 Weight: approx. 211kg

Required for operation

water connection

Scope of delivery

trainer
 set of accessories
 set of instructional material