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JUMO tecLine TC Sensor for total chlorine

Type 202631/42

- Three-electrode principle
- Easy calibration
- Integrated temperature compensation
- Proven measuring system

Brief description

This membrane-covered, amperometric sensor is used to measure the total chlorine concentration in water.

The sensor detects the sum of "free chlorine" (chlorine gas, hypochlorite, etc.) and "bound chlorine" (chloramines, organisch bound chlorine).

This sensor can only be used in media with drinking or swimming pool water quality.

Typical areas of application include swimming pools and monitoring of drinking water.

The sensor is not suitable for detecting the absence of chlorine.

The integrated electronics of the sensor provides a temperature-compensated current signal of 4 to 20 mA. A downstream device (indicator, controller, recorder, PLC, etc.) is used for calibration.

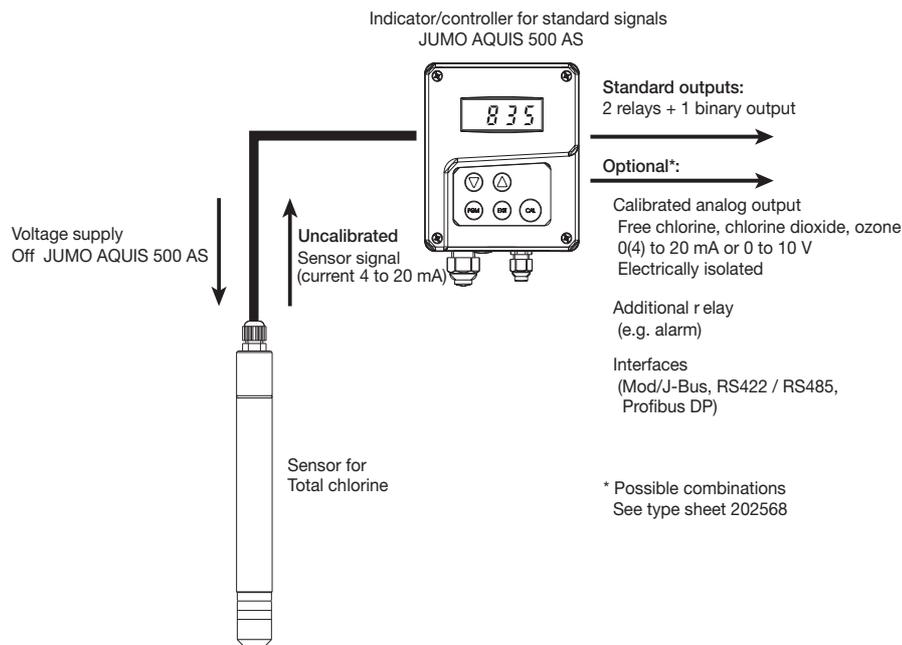
The sensor can be connected directly to a suitable indicator and controller.

Two indicators / controllers, the JUMO dTRANS AS 02 (type sheet 202553) and the JUMO AQUIS 500 AS (type sheet 202568) are especially suitable for combining with this sensor. These devices provide the voltage required for the power supply of the sensor and make for an easy way to calibrate the measuring system.



Type 202631/42 ...

Function



Note

- This measurement is only possible in a suitable flow-through fitting (see accessories).
- For proper operation, the incident flow of the process medium on the sensor must be at least 15 cm / s (0.5 l / min). The minimum inflow can be ensured with JUMO flow monitoring (see accessories), which consists of a flow monitor and the matching fitting.
- A test set is required for calibration to determine the total chlorine content using the DPD method. Suitable photometric or colorimetric test sets can be obtained commercially.
- To ensure fault-free sensor functionality, only one disinfectant should be used.
- For further information about how to set up and use amperometric sensors, refer to our brochure "Information on Amperometric Measurement of Free Chlorine, Chlorine Dioxide and Ozone in Water".

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Technical data

Analyte	Total chlorine
Membrane type	Hydrophilic membrane
Measurement cable connection	2-pin terminal, polyamide Pg7 screw connection; conductor cross section 2× 0.25 mm ² , cable diameter approx. 4 mm
Voltage supply	U _B 12 to 30 V DC (electrical isolation recommended)
Electromagnetic compatibility	According to EN 61326-1 Interference emission: Class B Interference immunity: To industrial requirements
Output signal	4 to 20 mA
Burden	$\leq \frac{U_B - 7.5 \text{ V}}{0.02 \text{ A}}$
Settling time	2 h
Incident flow velocity	approx. 15 cm/s If the sensor is installed in the JUMO flow-through fitting (part no. 00392611), this is equivalent to a flow rate of approx. 30 l/h.
Measuring ranges^a	0 to 0.5 mg/l (ppm) 0 to 2 mg/l (ppm) 0 to 5 mg/l (ppm) 0 to 10 mg/l (ppm) 0 to 20 mg/l (ppm)
Response time t₉₀	About 2 min
Operating temperatures / temperature compensation	+5 to +45 °C
Zero point adjustment	Not required
pH value operating range	4 to 12 pH
pH dependency (loss of slope)	Linear decrease with approx. 5 % per upward pH unit (starting from pH 7)
Disruptive substances/ cross sensitivity	Chlorine dioxide not permitted Ozone is disruptive
Pressure resistance	p _{abs} max. 2 bar p _{rel} max. 1 bar No pressure fluctuations are admissible when operating under pressure. We recommend unpressurized operation (atmospheric pressure).
Material	Shaft, cover, cap: PVC Membrane disk holder: stainless steel
Dimensions	Diameter: 25 mm, length: 220 mm
Weight	about 125 g
Maintenance	Check the measurement signal:regularly, at least once a week Replace the membrane cap:once a year (subject to water quality) Change the electrolyte:every 3 to 6 months
Storage	Sensor: frost-free, dry and without electrolyte, can be stored for an unlimited time at +5 to +45 °C Membrane cap: Used membrane caps cannot be stored! Electrolyte: In the original bottle and protected against sunlight at +5 to +25 °C

^a Due to manufacturing tolerances and type of application, the slope of these sensors can vary between 65 % and 150 % of the nominal manufacturing slope. For the determination of the appropriate measuring range or the appropriate sensor we therefore recommend to multiply the concentration to be measured by the factor 1.5.

Example: concentration to be measured 1.6 ppm × factor 1.5 = 2.4 ppm => recommended sensor with measuring range 5 ppm.

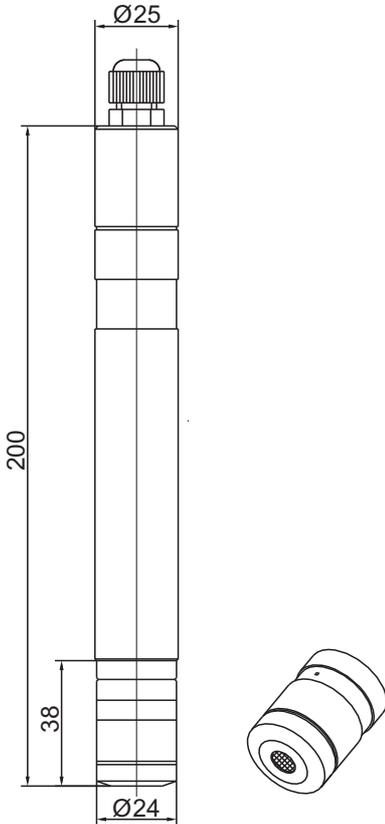
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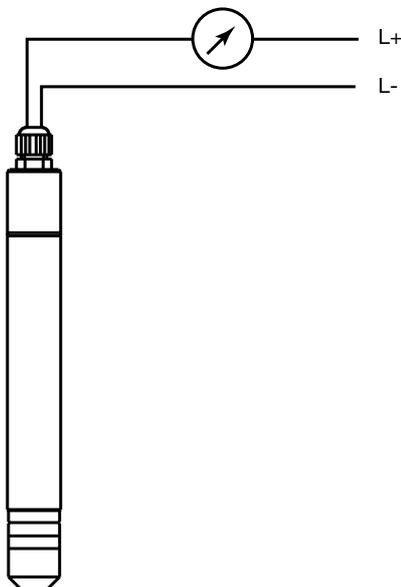
Dimensions



Scope of delivery

Sensor including membrane cap, electrolyte and special abrasive paper for cathode cleaning

Electrical connection



Connection		Screw terminals
Voltage supply DC 12 to 30 V	+ -	1 L+ 2 L-
Output 4 to 20 mA, two wires Impressed current 4 to 20 mA in voltage supply	+ -	1 L+ 2 L-

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Accessories

**Flow-through fitting
 for sensors according to
 type sheets 202630, 202631,
 202634, 202636**

Part no. 00392611

Materials

Case: PVC
 Measuring vessel: PC

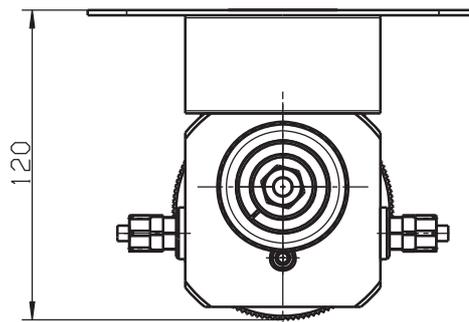
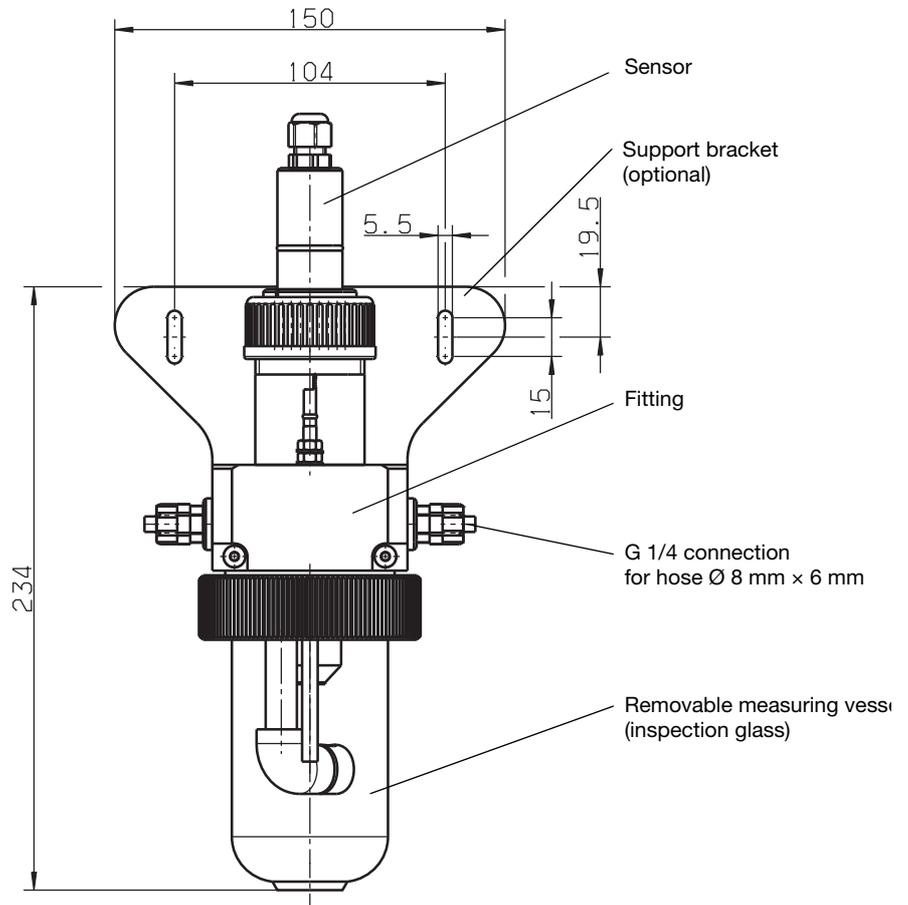
Admissible temperature / pressure
 0 to +50 °C; at 1 bar

Connection

Hose screw connection G 1/4

Mounting

Optional: stainless steel support bracket,
 Mat. no. 1.4571
 Part no. 00455706



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Flow monitoring device

Consisting of:
Flow monitor

Part no.: 00396471
 and

Fitting for flow monitor

Part no.: 00396470

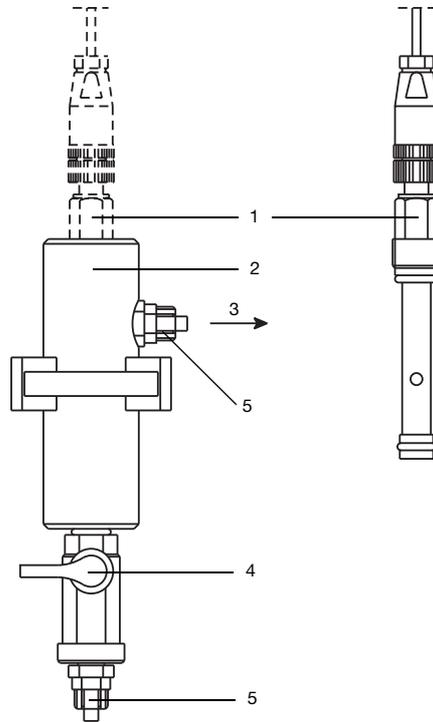
Function

For proper operation, the incident flow of the process medium on the sensor must be at least 15cm / s.

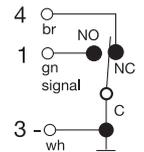
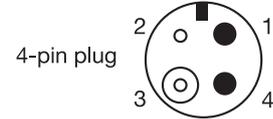
Below this minimum incident flow velocity, the sensor will indicate values that are too low. This could result in dangerous overdosing or underdosing in a connected control system. Above the minimum incident flow velocity, the measurement signal is only slightly affected by the incident flow velocity.

The flow monitoring device can be used to monitor the minimum incident flow velocity of 15cm / s.

The flow monitoring device consists of a flow monitor and the corresponding fitting. The flow monitoring device is installed in series



Electrical connection of the flow monitor



Function

Contact (3 + 4) of the flow monitor is opened at a flow velocity of 15cm / s or greater.

with the flow-through fitting. If the minimum flow speed is not reached or is exceeded, a contact in the terminal head of the flow monitor switches. The contact can be used, for example, to control a binary input of the indicator/controller for JUMO AQUIS 500 AS standard signals. If the incident flow is too low, the JUMO AQUIS 500 AS is placed in "HOLD". This can prevent imprecise dosing.

- 1 Flow monitor, part no.: 00396471
- 2 Fitting for flow monitor, part no.: 00396470
- 3 Flow direction

Options

JUMO AQUIS 500 AS

Indicator/controller for standard signals and temperature
 (for detailed information, see type sheet 202568)



JUMO dTRANS AS 02

Transmitter/controller for standard signals and temperature
 (for detailed information, see type sheet 202553)



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Order example

	(1) Basic type
202631/42	Sensor for total chlorine
	(2) Measuring range
10	0.00 to 0.500 mg/l (ppm)
20	0.00 to 2.00 mg/l (ppm)
25	0.00 to 5.00 mg/l (ppm)
35	0.00 to 10.00 mg/l (ppm)
37	0.00 to 20.00 mg/l (ppm)

o = optional

Order code **(1)** **(2)**
 /
 Order example 202631/42 / 20

Note:

The type code is a order details, not a modular system.

If possible, choose items listed under "stock versions" or "production versions" for your orders.

We will have to technically inspect and approve a free combination of individual key features. In case of doubt, please ask.

Production versi-

ons (delivery 10 working days after receipt of order)

Type	Part no.
Sensor for total chlorine, type 202631/42-10	00584806
Sensor for total chlorine, type 202631/42-20	00584807
Sensor for total chlorine, type 202631/42-25	00584808
Sensor for total chlorine, type 202631/42-35	00584809
Sensor for total chlorine, type 202631/42-37	00584854

Accessories

Designation	Part no.
Flow-through fitting for sensors according to type sheets 202630, 202631, 202634, 202636	00392611
Support bracket for flow-through fitting (PG209791)	00455706
Flow monitor (PG202630)	00396471
Fitting for flow monitor (PG202630)	00396470
Spare parts set for TC sensor (membrane cap/abrasive paper) (PG209791)	00585103
Electrolyte for TC sensor (202631/42) (PG209791)	00585104