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JUMO Process Control, Inc.
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JUMO tecLine ClO₂, JUMO tecLine O₃

Sensor for chlorine dioxide and ozone

Type 202634/45, type 202634/46, type 202634/50, type 202634/51

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

Brief description

These membrane-covered, amperometric sensors are used to measure the concentration of chlorine dioxide and ozone in aqueous solutions (for example in drinking and swimming water, industrial, process and cooling water).

The sensor for chlorine dioxide can be used to measure chlorine dioxide from chlorite/chlorine and chlorite/hydrochloric acid plants. The sensor for ozone can be used for example to measure electrolytically generated ozone.

The sensors are not suitable for detecting the absence of chlorine dioxide and ozone.

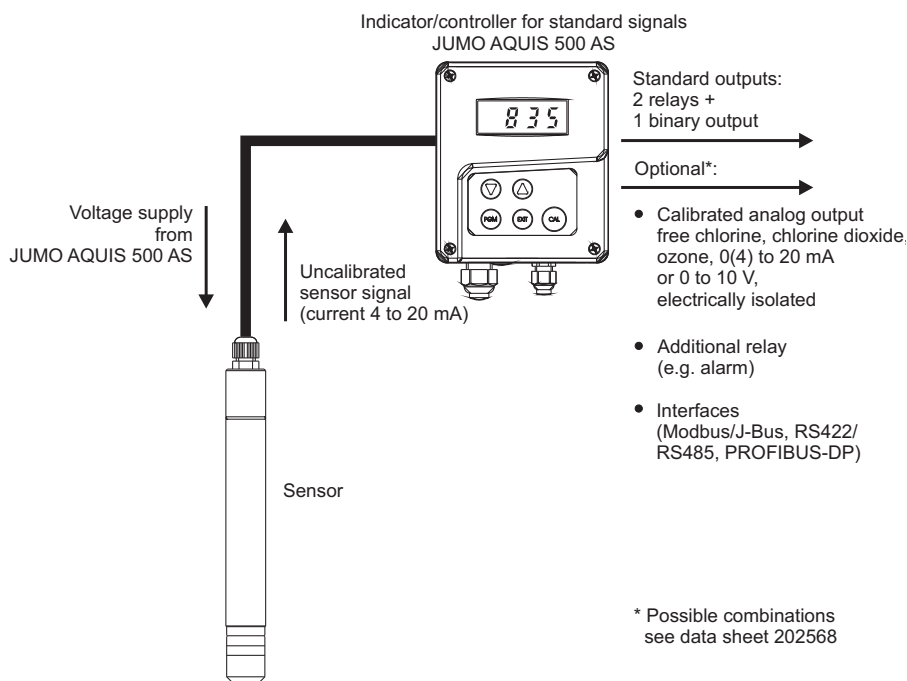
The integrated electronics of the sensors provides a temperature-compensated current signal of 4 to 20mA. A downstream device (indicator, controller, recorder, PLC, etc.) is used for calibration.

The sensors 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 these sensors. They provide the voltage required for the power supply of the sensor and make for an easy way to calibrate the measuring system.



Type 202634/45...

Function



Note

All types

- 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 content of chlorine dioxide or ozone 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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**Types 202634/45 and 202634/50**

- The measurement water for sensors with a hydrophobic membrane must not contain any surfactants (ingredients of cleaning agents, detergents and disinfectants).

Types 202634/46 and 202634/51

- Sensors with a membrane impervious to chemicals and surfactants can also be used in dirty water that is not similar in quality to drinking or swimming pool water.

Technical data

Analyte	Chlorine dioxide (ClO ₂)		Ozone (O ₃)	
	Hydrophobic PTFE membrane	Membrane impervious to chemicals and surfactants	Hydrophobic PTFE membrane	Membrane impervious to chemicals and surfactants
Membrane type	Type 202634/45	Type 202634/46	Type 202634/50	Type 202634/51
Measuring 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	DC 12 to 30 V (electrical isolation recommended)			
Electromagnetic compatibility	According to EN 61326-1			
Interference emission	Class B			
Interference immunity	To industrial requirements			
Output signal	4 to 20mA			
Burden	$\leq \frac{U_B - 7,5 V}{0,02 A}$			
Settling time	1 h	1 h	2 h	1 h
Incident flow velocity	approx. 15 cm/s If the sensor is installed in a JUMO flow-through fitting (part no. 00392611), this is equivalent to a flow rate of about 30l/h.			
Measuring ranges (other ranges on request)	0 to 2.0 mg/l (ppm) 0 to 5 mg/l (ppm) 0 to 10mg/l (ppm)	0 to 2.0 mg/l (ppm)	0 to 0.5 mg/l (ppm) 0 to 2.0 mg/l (ppm) 0 to 5 mg/l (ppm) 0 to 10 mg/l (ppm)	0 to 2.0 mg/l (ppm)
Resolution	0.001 mg/l, for measurement range 0 to 0.5 mg/l; 0.01 mg/l, for measurement range 0 to 2.0 mg/l			
Response time t ₉₀	Approx. 15 s	Approx. 1.5 min	Approx. 15 s	Approx. 50 s
Operating temperatures/temperature compensation	5 to 45 °C	5 to 50 °C	5 to 45 °C	5 to 50 °C
Zero point adjustment	Not required			
pH value operating range	1 to 11 pH		2 to 11 pH	
pH dependency (loss of slope)	No pH dependency			
Disruptive substances/cross sensitivities	Chlorine is disruptive Ozone is disruptive	Chlorine is not disruptive Ozone is disruptive	Chlorine is disruptive Chlorine dioxide 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	PVC	PVC	PVC	PVC
Shaft, cover, cap	-	Stainless steel	-	Stainless steel
Membrane disk holder	-	-	-	-
Dimensions	Diameter: 25 mm, length: 220 mm			
Weight	Approx. 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			

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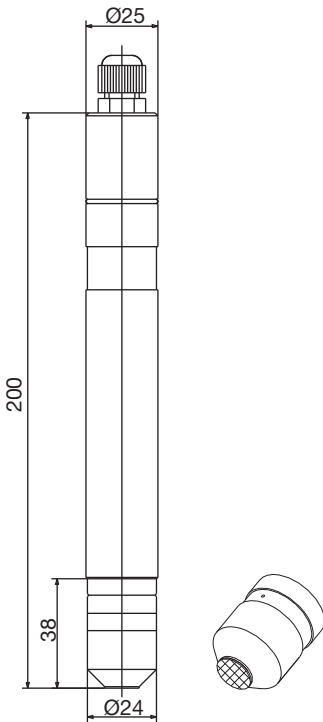
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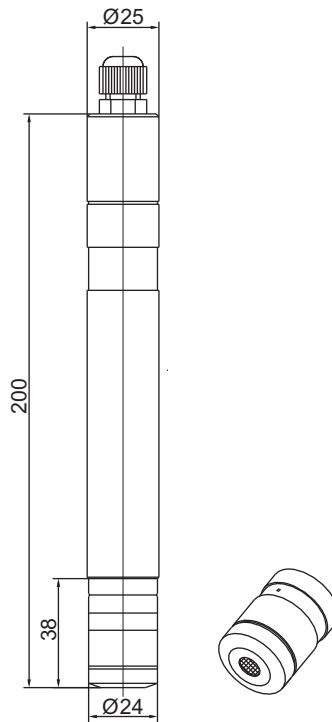


Dimensions

Type 202634/45,
type 202634/50



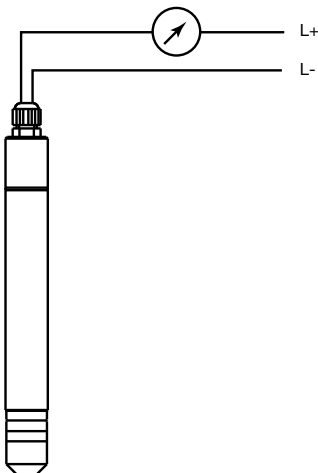
Type 202630/46,
type 202630/51







Scope of delivery

Two-wire 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 20mA in voltage supply	+  - 	1 L+ 2 L-

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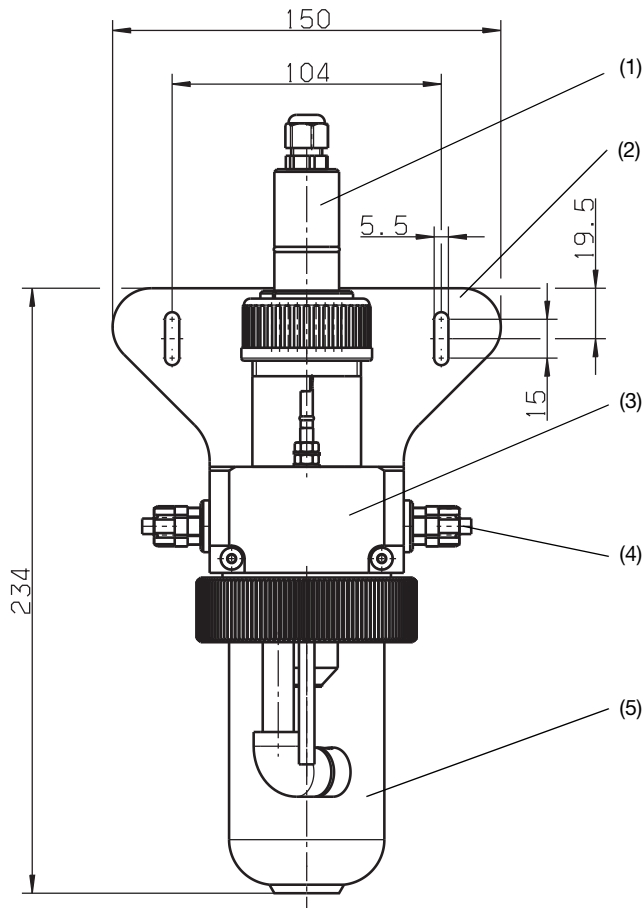
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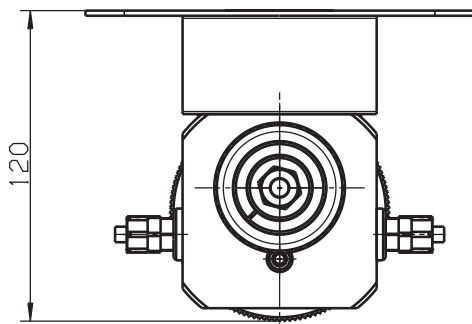
Accessories

Flow-through fitting for sensors according to data sheet 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. 004557066



- (1) Sensor
- (2) Support bracket (optional)
- (3) Fitting
- (4) G 1/4 connection for hose \varnothing 8 mm \times 6 mm
- (5) Removable measuring vess (inspection glass)

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Flow monitoring device

Consists of:

	Part no.
Flow monitor	00396471
Fitting for flow monitor	00396470

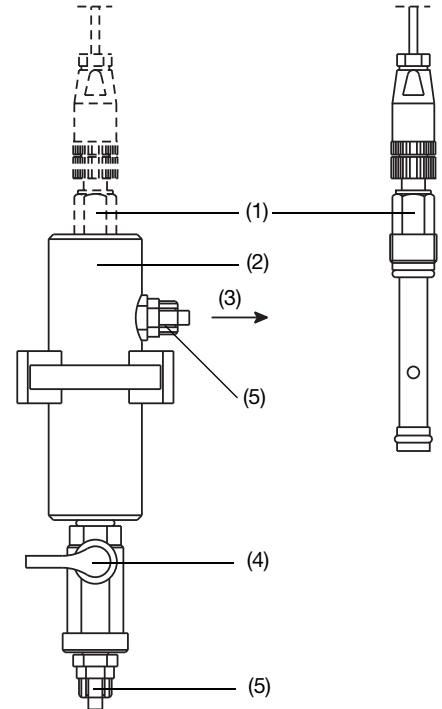
Function

For proper operation, the incident flow of the process medium on the sensors 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.

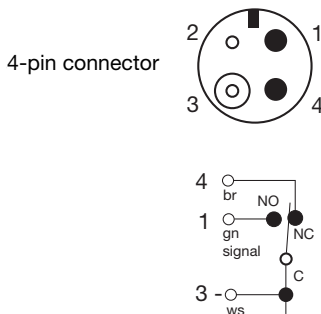
The flow monitoring device can be used to monitor the minimum incident flow velocity of 15 cm/s.

The flow monitoring device consists of a flow monitor and the corresponding fitting. The flow monitoring device is installed in series 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
- (2) Fitting for flow monitor
- (3) Flow direction
- (4) Shut-off valve
- (5) G 1/4 connection
(for hose diameter 8 mm x 6 mm)

Electrical connection for flow monitor



Function

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

Options

JUMO AQUIS 500 AS

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



JUMO dTRANS AS 02

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



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Oder details

(1) Basic type			
		202634/45	Sensor for chlorine dioxide
		202634/46	Sensor for chlorine dioxide, impervious to chemicals and surfactants
		202634/50	Sensor for ozone
		202634/51	Sensor for ozone, impervious to chemicals and surfactants
(2) Measuring range			
X	X	10	0 to 0,5 mg/l
X	X	20	0 to 2 mg/l
	X	25	0 to 5 mg/l
X	X	35	0 to 10 mg/l

Order code -
 Order example 202634/46 - 20

Note:
 The type code is an order detail, not a modular system. If possible, choose items listed under "stock 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.

Stock version

(delivery 3 working days after receipt of order)

Type	Part no.
202634/50-20 (Sensor for ozone)	00392202

Accessories

Article	Part no.
Support bracket for flow-through fitting	00455706
Flow monitor	00396471
Fitting for flow monitor	00396470
Special electrolyte for 202634/45 and 202634/46	00392332
Special electrolyte for 202634/50	00392333
Special electrolyte for 202634/51	00441311
Spare parts set for 202634/45 and 202634/50 (1x membrane cap, fine abrasive paper)	00392331
Spare parts set for 202634/46 (1x membrane cap, fine abrasive paper)	00409344
Spare parts set for 202634/51 (1x membrane cap, fine abrasive paper)	00441309
Matching indicator/controller: JUMO AQUIS 500 AS, type 202568/20-888-888-310-310-23/000 (for other versions see data sheet and price sheet 202568)	00528718
Matching transmitter/controller: JUMO dTRANS AS 02, type 202553/01-8-01-4-0-00-23/000 (for other versions see data sheet and price sheet 202553)	00550842