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JUMO digiLine O-DO S10

Intelligent oxygen sensor for dissolved oxygen with digital interface and analog output

Brief description

General Information

The JUMO digiLine O-DO S10 is an intelligent sensor for measuring dissolved oxygen. The oxygen measurement takes place in accordance with the optical measuring principle of luminescence quenching according to ASTM D888-05. This results in the following benefits for the user:

- No replacement of electrolytes
- No polarization voltage required
- No minimum inflow
- Greater calibration intervals due to low drift behavior
- Reliable measurement with long-term stability

The measured value for dissolved oxygen is automatically compensated to account for the temperature influence. In addition, the measured value can be compensated by the oxygen sensor with regard to the determining factors air pressure and salinity (if necessary using external sensors).

The JUMO digiLine O-DO S10 has 2 interfaces that can be used to transfer the measured value from the sensor to the measuring device/automation device. Communication takes place using a digital interface via RS485 Modbus RTU protocol or as an analog signal via the two-wire current interface (4 to 20 mA).

Configuration, parametrization, and calibration data is stored in the electronic components in the sensor of the JUMO digiLine O-DO S10. Sensor-specific specifications and measuring point information can also be stored and called up. In addition, a log book with the last 10 successful calibrations is available; this provides the user with an overview of the previous calibration history.

Furthermore, the sensor is equipped with the capability for self-diagnostics, in order to determine possible malfunctions. The information is output as a warning or error message.

The sensor is streamlined and has a robust construction. The sensor cap is easy to replace if it becomes worn. The sensor body of the JUMO digiLine O-DO S10 consists of PVC material, which allows it to be used in fresh water and salt water. A fixed cable with a 5-pole M12 connector is mounted on the sensor. The electrical connection to a measuring or automation device is quick and easy to establish.

2 connection options are available for mounting in a fitting – the Rp 1 thread on the sensor shaft or a mounting set G 1 available as accessories.

Typical areas of application

- Drinking water monitoring
- Protection of water bodies
- Fish breeding (fresh and salt water)
- Municipal and industrial sewage treatment plants
- General water and wastewater engineering
- Universities and teaching institutions



Type 202614/...

Special features

- Output of measured value for oxygen in % Sat, % Vol, ppm, hPa pO₂
- Suitable for fresh and salt water
- Immediately ready for use due to factory calibration
- 2 connection options:
 - RS485 Modbus RTU interface
 - Analog output 4 to 20 mA (two-wire current interface)
- 3 operating modes:
 - JUMO digiLine Betrieb operation on a digiLine master (JUMO AQUIS touch S/P)
 - Modbus operation on the JUMO mTRON T and JUMO AQUIS 500 RS
 - Analog operation
- Secure transmission of measured values via the digital interface
- Easy, time-saving bus cabling
- Plug and Play installation on the JUMO AQUIS touch S/P
- Sensor calibration on a PC with storage of the calibration data in the sensor electronics

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Connection

The outlay for installation and maintenance is reduced significantly through easy and quick connection of the sensor.

By connecting the JUMO digiLine O-DO S10 to a digiLine master from the JUMO AQUIS touch series, all of the functions characteristic for JUMO digiLine sensors are available to the user. Installation and maintenance times are significantly reduced due to quick and easy connection of the sensor.

Plug and Play makes connecting and replacing the sensor on the digiLine master much easier. The sensor is then immediately ready for operation. In total, up to 6 sensors can be operated at the same time on the JUMO AQUIS touch; up to 30 sensors can generally be operated on the digiLine bus.

Further connection options via a digital interface are available in combination with the single parameter device AQUIS 500 RS, the JUMO mTRON T automation device, or a control unit from other manufacturers.

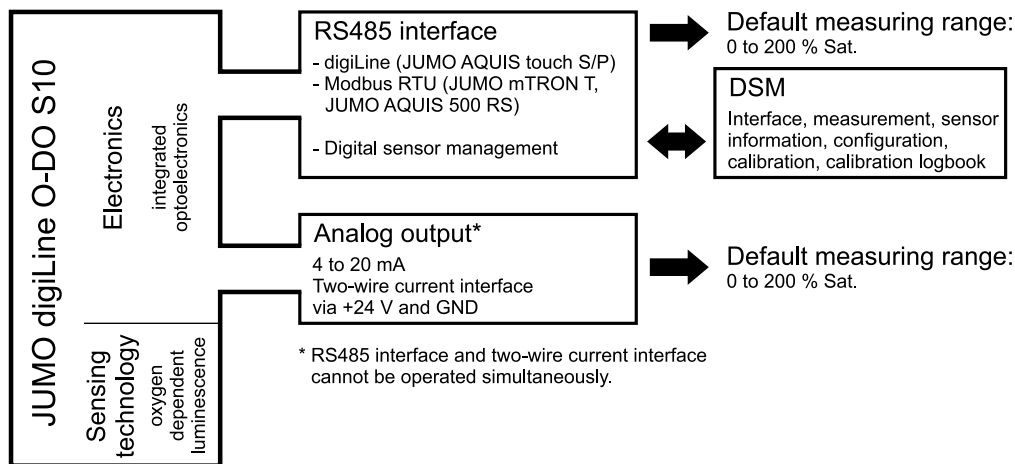
Alternatively, the JUMO digiLine O-DO S10 with the two-wire current interface (4 to 20 mA) can be integrated into pre-existing, non-digital plants and systems.

Configuration and calibration

The JUMO digiLine O-DO S10 can then be configured and calibrated directly in the field when connected to JUMO AQUIS touch S/P. Alternatively, the PC software program JUMO DSM (Digital Sensor Management) can be used to ensure reliable calibration and measuring point management. Note: Connection to the PC is carried out using a special USB converter (part no. 00746250) with a DC coaxial power connector in order to supply voltage to the sensor.

The JUMO digiLine O-DO S10 is pre-calibrated for initial startup and can be used right out of the warehouse.

Block diagram



Description

Digital interface

Bus communication of the JUMO digiLine O-DO S10 takes place via the digital interface when connected to the **JUMO AQUIS touch S/P**. The integrated Plug and Play function makes sensor startup in JUMO digiLine operation significantly easier. Once connected to the JUMO AQUIS touch S/P, the sensor is immediately ready for operation.

As an alternative to JUMO digiLine operation, Modbus operation (Modbus RTU) on the **JUMO mTRON T** with access to the measured data is also possible. In this case, the sensor is configured and calibrated on the PC (USB interface) via the JUMO DSM software.

Furthermore, the sensor can be operated on the **JUMO AQUIS 500 RS** (indicating device/controller for digital sensors with Modbus protocol). Its basic setting assistant allows the sensor to be started up quickly.

Two-wire current interface for standard signal 4 to 20 mA

The JUMO digiLine O-DO S10 has a two-wire current interface for operation as a two-wire transmitter. The interface outputs the temperature-compensated measurement signal as a freely scalable standard signal 4 to 20 mA. Configuration of the interface is carried out via DSM.

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JUMO Digital Sensor Management Software for the PC

The JUMO DSM software (DSM = Digital Sensor Management) can be used to manage, calibrate, and test the JUMO digiLine O-DO S10 on the PC. In addition, it serves as a configuration tool for the two-wire current interface implemented in the sensor. Connection to the USB interface of the PC takes place via the converter which is available as an accessory.

Compensation parameters

The solubility of oxygen in liquid media depends on various physical conditions. In order to acquire the oxygen content, the parameters of temperature, air pressure, and salt content (salinity) must be taken into account as compensation variables.

Temperature-compensated measurement signal

The JUMO digiLine O-DO S10 outputs a temperature-compensated measurement signal. The compensation temperature can be provided via the temperature probe installed in the sensor. Alternatively, the temperature can also be transferred externally from the JUMO digiLine master device. A further option is entering a fixed temperature value while configuring the JUMO digiLine sensor or via Modbus from any device.

Air-pressure-compensated measurement signal

Air pressure compensation is required in order to calculate the oxygen in the units %SAT and %vol. This can be done by entering a fixed pressure value when configuring the JUMO digiLine sensor. Alternatively, the air pressure can also be transferred externally from the JUMO digiLine master device or via Modbus from any device.

Compensation of salinity

To determine the oxygen concentration (unit ppm (mg/l)) in a saline measurement medium, the salinity (salt content) needs to be compensated for. The calculation of the salt content is based on the temperature-compensated electrolytic conductivity (unit mS/cm). Compensation for the salt content can be carried out either by entering a fixed temperature-compensated conductivity value while configuring the JUMO digiLine sensor or externally from the JUMO digiLine master device or via Modbus from any device.

Calibration

Calibration of the JUMO digiLine O-DO S10 can be carried out in the field on the JUMO AQUIS touch S/P, mTRON T, or AQUIS 500 RS or also in the laboratory using the PC software JUMO DSM, for example. The calibration data is saved in the JUMO digiLine sensor. The sensor then only has to be mounted on the equipment.

The JUMO digiLine O-DO S10 is already pre-calibrated ex works and can therefore be used right out of the packaging.

Calibration logbook

A calibration logbook is stored in the sensor electronics; this calibration logbook has a record of the last 10 calibration operations with the date, time, and calibration values. This logbook provides an overview of the calibration history of the sensor. The calibration logbook can be extracted on either the JUMO AQUIS touch S/P or on the PC using the JUMO DSM software. The number of saved calibration logbook entries in the DSM database is unlimited.

Sensor information

Numerous pieces of data such as type information, operating data, information on measuring point identification, etc. are stored in the electronic components of the JUMO digiLine O-DO S10. This information allows clear identification and optimal management of each sensor. This data can be called up on the JUMO AQUIS touch S/P or using the JUMO DSM software.

Functions for self-diagnostics

The JUMO digiLine O-DO S10 is equipped with the capability for self-diagnostics, in order to determine possible malfunctions. The information is output as a warning or error message. The RS485 interface can be used to determine measured values outside of the tolerances or a failure of the oxygen and temperature measurement input, for example, both in JUMO digiLine operation and in Modbus operation. It is also identified and reported if the sensor cap is missing. In addition, it is also indicated if the sensor cap is of insufficient quality, in order to replace it promptly if necessary.

The analog two-wire current interface (4 to 20 mA) can be configured in accordance with NAMUR recommendations, in order to display an abnormal event.

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Technical data

Specifications

Measuring principle	Optical measurement according to the principle of luminescence quenching
Measurands	Dissolved oxygen Temperature
Measuring ranges dissolved oxygen ^a	0.00 to 20.00 ppm (mg/l) 0.00 to 250.00 % sat. 0.00 to 52.00 % vol. 0.00 to 514.00 hPa pO ₂ ^b
Temperature	-5 to +50 °C ^{c,d}
Accuracy (at 25 °C) Basic tolerance plus	1 % SAT (± 0.1 mg/l or 0.2 % vol or 2 hPa pO ₂) ≤ 1 % of measured value from 0 % SAT ≤ 2 % of measured value at 100 % SAT ≤ 3 % of measured value at 200 % SAT
Response time (at 25 °C)	$t_{90} < 60$ s
Pressure range	0 to 5 bar
Ambient temperature	0 to +50 °C
Storage temperature	-10 to +60 °C
Temperature compensation	Via integrated temperature sensor, in the range of -10 to +60 °C
Air pressure compensation	10 to 2000 hPa
Salinity compensation	0.00 to 60.00 mS/cm ^e
Sampling interval	3 s
Protection type	IP68
Luminophore operating life	Up to 3 years (depending on the process conditions)

^a The sensor is not suitable for measuring trace concentrations. The specifications are valid for the following environmental influences: temperature = 25 °C, air pressure = 1013 hPa, and salinity = 0 mS/cm.

^b pO₂ = oxygen partial pressure. The measured values of this measuring range are calculated from the raw data. All other measured values are calculated by the sensor depending on the temperature, pressure, and salinity. The unit pO₂ is primarily suitable for measuring in gases; can only be used for special measurements in the liquid analysis.

^c The oxygen measurement can be calibrated in the temperature range of +5 to 50°C. The temperature sensor built into the sensor may only be used for temperature measurement, but not for controlling a process temperature.

^d The temperature probe built into the sensor is suitable for temperature measurement, but not for controlling a process temperature.

^e Input value is the temperature-compensated electrolytic conductivity, reference temperature = 25 °C.

Interfaces

RS485 interface

Protocol	JUMO digiLine ^a Modbus RTU ^b
Device address	1 to 247
Data formats ^c	8 - 1 - no parity 8 - 2 - no parity 8 - 1 - odd parity 8 - 1 - even parity
Baud rates	9600 baud 19200 baud 38400 baud
Min. response time	Adjustable from 0 to 500 ms

^a The JUMO digiLine protocol assigns the interface parameters automatically during startup (Plug and Play).

^b The Modbus RTU protocol is intended to operate the sensor on a JUMO mTRON T CPU or a transmitter/controller AQUIS 500 RS. For operation on a JUMO mTRON T, the interface parameters must be set prior to initial startup with the JUMO DSM software. The JUMO AQUIS 500 RS recognizes the sensor automatically and sets the appropriate interface parameters.

^c Specification in useful bit - stop bit - parity format.

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**4 to 20 mA two-wire current interface**

Signal range	4 to 20 mA
Voltage supply	DC 18 to 30 V
Maximum load resistance	500 Ω
Accuracy	1 %
Ambient temperature influence	100 ppm/K

Electrical data

Voltage supply ^a during operation of the RS485 interface during operation of the two-wire current interface	SELV or PELV DC 10 to 30 V DC 18 to 30 V
Power consumption during operation of the RS485 interface during operation of the two-wire current interface	Approx. 70 mW without termination, max. 660 mW with termination Max. 660 mW
Electromagnetic compatibility Interference emission Interference immunity	In accordance with DIN EN 61326-1 Class A Industrial requirements ^b
Protection rating	III

^a The voltage supply for the digiLine bus must be rated as SELV or PELV.

^b The sensor is not protected against surge voltages.

Case

Dimensions	Ø 20 mm (shaft) × 310 mm (without connecting cable)
Weight Sensor including 10 m cable Sensor including 30 m cable	770 g 1850 g
Admissible cable length	Max. 50 m
Materials coming into contact with the medium Sensor shaft Sensor cap Connecting cable (sheath) Cable passage	PVC PC PUR PA
Precautionary measures when using the product	The membrane must be protected against mechanical influences (impact, wear), solvents, and aggressive chemicals.
Protection type	IP68

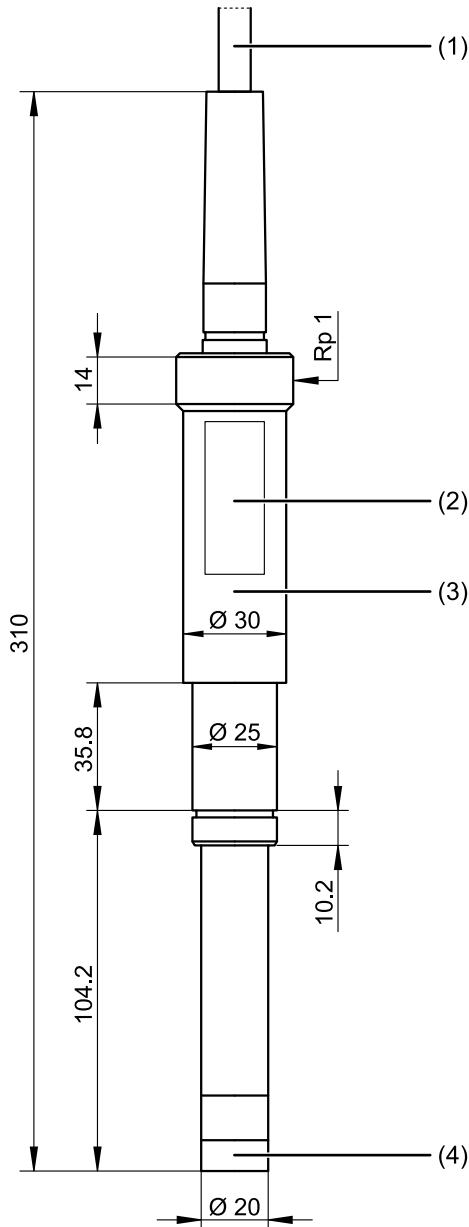
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Dimensions



- (1) Connecting cable (fixed cable with M12 connector)
- (2) Nameplate
- (3) Sensor body with optoelectronics
- (4) Unscrewable sensor cap with luminophore

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Electrical connection

Fixed cable with M12 plug, A-coded

Function	Pin	Figure (socket)
not connected	1	
+24 V voltage supply	2	
GND	3	
RS485 (RxD/TxD-)	4	
RS485 (RxD/TxD+)	5	

The connection to the serial interface of a master device or a transmitter with screw or spring-cage terminals is established with the aid of the JUMO M12 digiLine master connecting cable (⇒chapter "Accessories", Page 19).

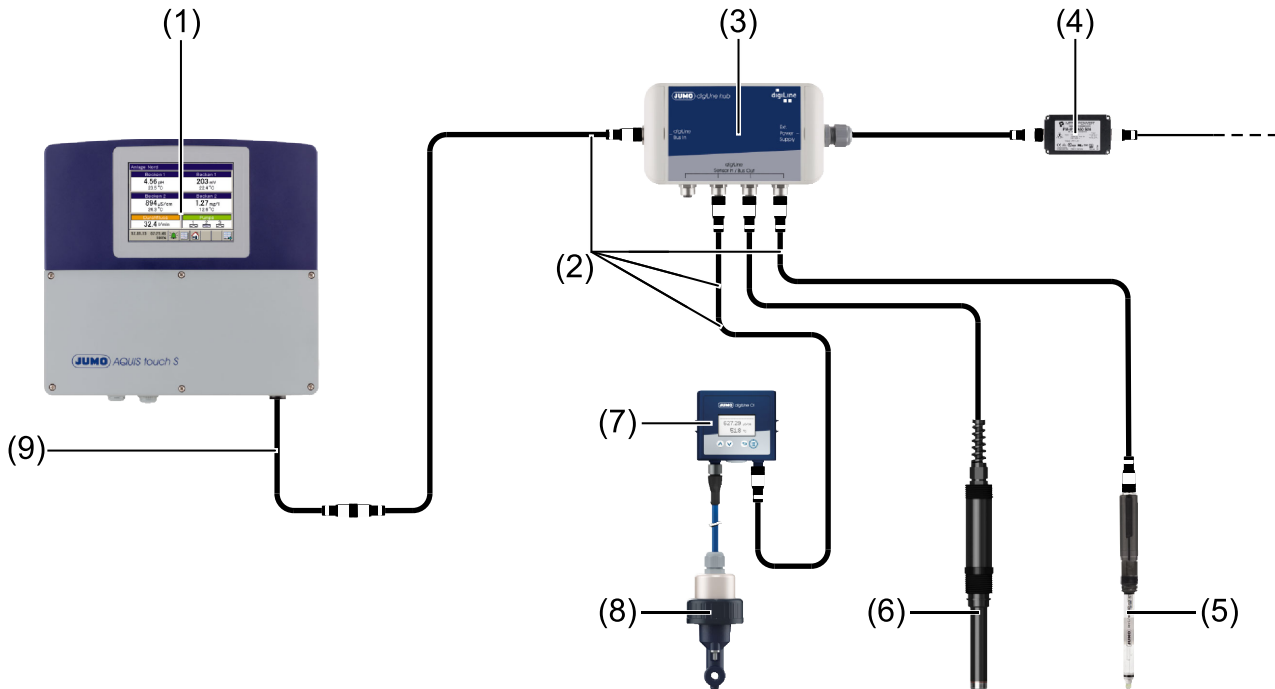
Depending on the device type, the appropriate master connecting cable must be selected (⇒chapter "Connection examples", Page 8).

If the sensor is to output the measured value as an analog signal 4 to 20 mA (two-wire current interface), only the pins 2 (+24 V) and 3 (GND) are required.

Connection examples

Connection example with JUMO AQUIS touch S (JUMO digiLine operation)

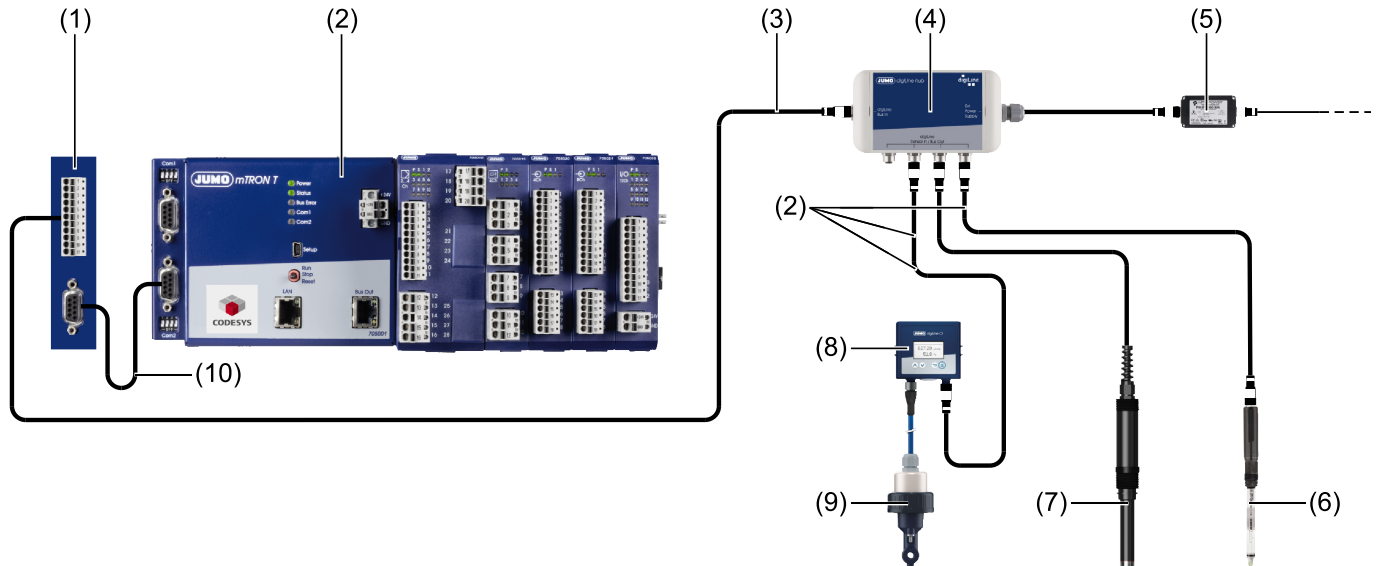
The example shown below shows an installation for monitoring an aquaculture. 3 sensors (for the measurands of conductivity, oxygen content, and pH) are connected to a JUMO AQUIS touch S. The sensors are connected to one another via a JUMO digiLine hub and M12 connecting cables. Appropriate fittings are available from JUMO for mounting the sensors.



- (1) JUMO AQUIS touch S with RS485 bus termination in the device
- (2) JUMO M12 connecting cable, five-pole and A-coded; the required total line length between master and sensors can be achieved by combining several M12 connecting cables. When planning the line lengths, heed the information regarding cable planning in the Annex of the operating manual for the JUMO AQUIS touch S/P.
- (3) JUMO digiLine hub with 4× M12 sockets and 1× M12 plug connector, each 5-pole A-coded; supply DC 24 V with separate power supply unit
- (4) Separate DC 24 V power supply unit for the voltage supply to the JUMO digiLine-bus system
- (5) JUMO pH sensor with 5-pole JUMO digiLine pH
- (6) JUMO digiLine O-DO S10 – optical oxygen sensor for dissolved oxygen
- (7) JUMO digiLine Ci
- (8) Inductive conductivity sensor
- (9) JUMO digiLine master connecting cable (product group 203590) with exposed wire ends at one end for connection to devices with screw or spring-cage terminals; connection is described in the operating manual of the JUMO AQUIS touch S/P.

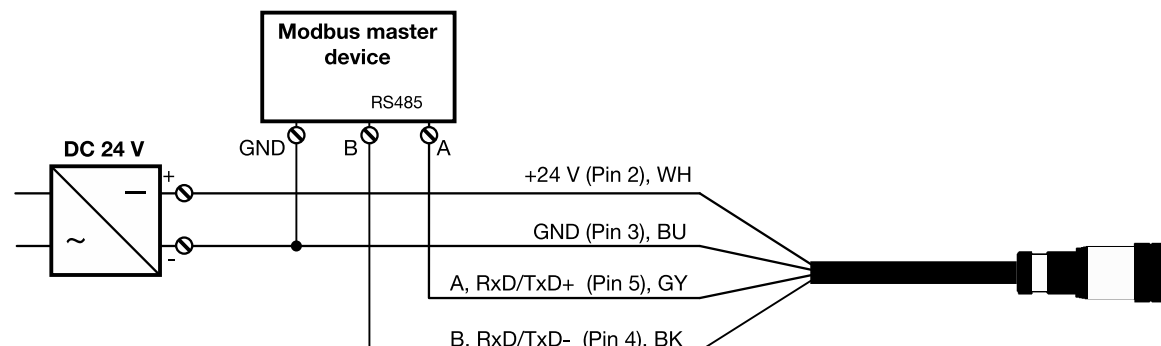
Connection example with JUMO mTRON T (Modbus operation)

The example shown below shows an installation for monitoring an aquaculture. 3 sensors (for the measurands of conductivity, oxygen content, and pH) are connected to a JUMO mTRON T. The sensors are connected to one another via a JUMO digiLine hub and M12 connecting cables. Appropriate fittings are available from JUMO for mounting the sensors.



- (1) Interface module for digiLine master connecting cable, with screw terminals and 9-pole D-sub pin header
- (2) mTRON T central processing unit with RS485 interface as digiLine master (Modbus master)
- (3) JUMO digiLine master connecting cable **for 705001** with exposed wire ends at one end for connection to devices with screw or spring-cage terminals (for connection see interface description for the JUMO digiLine of the JUMO mTRON T)
- (4) JUMO digiLine hub with 4× M12 sockets and 1× M12 plug connector, each 5-pole A-coded; supply DC 24 V with separate power supply unit
- (5) separate DC 24 V power supply unit for the voltage supply to the JUMO digiLine-bus system
- (6) JUMO pH sensor with 5-pole JUMO digiLine pH
- (7) JUMO digiLine O-DO S10 – optical oxygen sensor for dissolved oxygen
- (8) JUMO digiLine Ci in the device version with separate sensor
- (9) inductive conductivity sensor
- (10) D-sub connecting cable (round), 9-pole socket and pin header

Wiring diagram for Modbus mode



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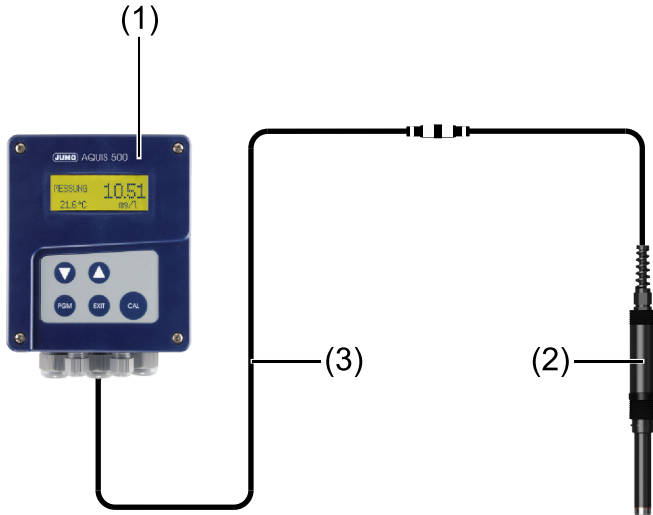
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Connection example with JUMO AQUIS 500 RS

The example shown below shows an installation for monitoring the oxygen content in a sewage treatment plant. The JUMO digiLine O-DO S10 is connected to the single-channel indicating device/controller JUMO AQUIS 500 RS. Appropriate fittings are available from JUMO for mounting the sensor.

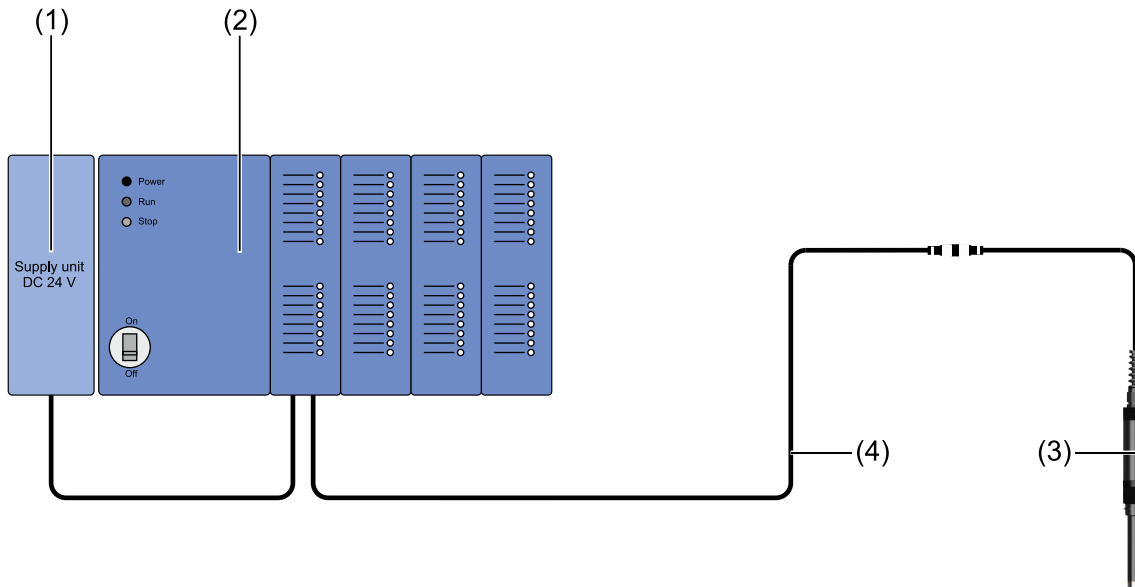


- (1) JUMO AQUIS 500 RS – indicating device and controller for digital sensors
- (2) JUMO digiLine O-DO S10 – optical oxygen sensor for dissolved oxygen
- (3) JUMO digiLine master connecting cable **for 705001** with exposed wire ends at one end for connection to devices with screw or spring-cage terminals (for connection see the operating manual of the JUMO AQUIS 500 RS)



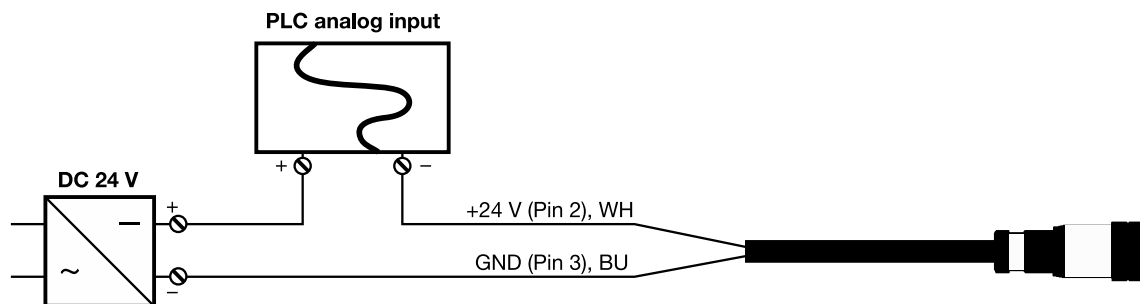
Two-wire current interface operation (standard signal 4 to 20 mA) of the JUMO digiLine O-DO S10

The connection of a sensor JUMO digiLine O-DO S10 to a measuring device/automation device as a two-wire transmitter with a standard signal 4 to 20 mA. The sensor can be connected to a PC using the USB converter that is available as an accessory (part no. 00746250) and configured and calibrated using the JUMO DSM software.



- (1) Stabilized power supply unit with DC 24 V output to supply the automation system, the current loop (standard signal of 4 to 20 mA), and the sensor
- (2) Measuring or automation device with analog input for the standard signal of 4 to 20 mA; the current loop for the standard signal must be supplied with an output voltage of DC 18 to 30 V by a stabilized power supply unit.
- (3) JUMO digiLine O-DO S10 – optical oxygen sensor for dissolved oxygen
- (4) JUMO digiLine master connecting cable for 705001 with exposed wire ends at one end for connection to devices with screw or spring-cage terminals.

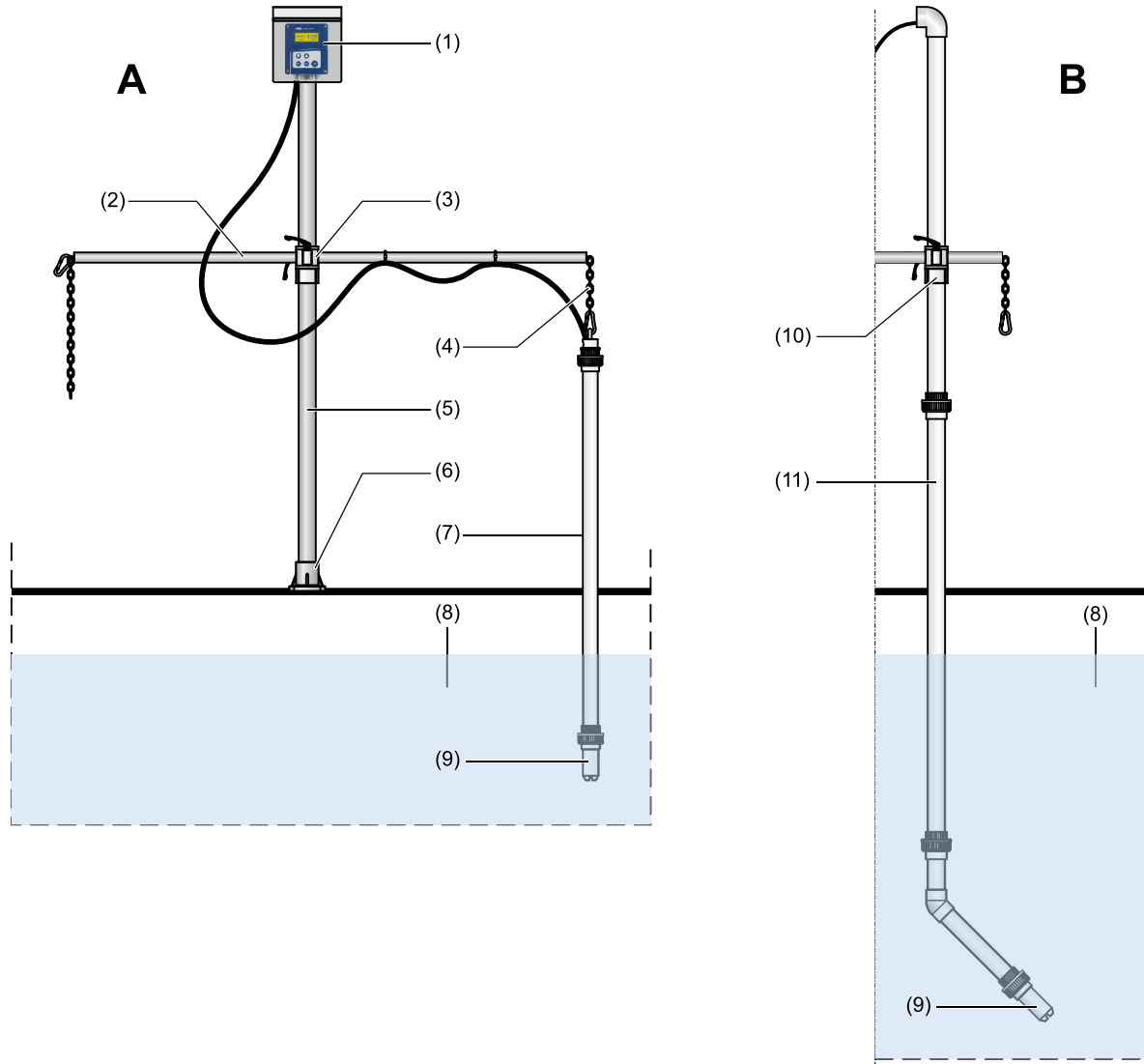
Wiring diagram for two-wire current interface operation



Measuring point set-up

The set-up of a complete measuring system for measuring dissolved oxygen is shown below. The figure shows a support pillar with pedestal base, cantilever arm, and chain. A JUMO AQUIS 500 RS is used as a display unit / controller, which is mounted on the support pillar and protected by a weather protection canopy (see chapter "Accessories", Page 19).

The suspended fitting in image **A** is attached to the cantilever arm by a chain. Alternatively, an immersion fitting can also be attached to the cantilever arm using a cross clamp, see image **B**.



- | | | |
|------|--|---|
| (1) | JUMO AQUIS 500 RS indicating device / controller, type 202569/... | } Support pillar with pedestal base, cantilever arm, and chain; part no. 00398163 |
| (2) | Cantilever arm, adjustable | |
| (3) | Cross clamp with 2 clamping levers | |
| (4) | Chain | |
| (5) | Support pillar | |
| (6) | Pedestal base | |
| (7) | Suspended fitting including sensor holder (9), part no.: 00740927 | |
| (8) | Basin/tank/container | |
| (10) | Cross clamp for support pillar (part no. 00605468), required to attach the immersion fitting | |
| (11) | Angled immersion fitting including sensor holder (9), part no.: 00740928 | |



Fittings

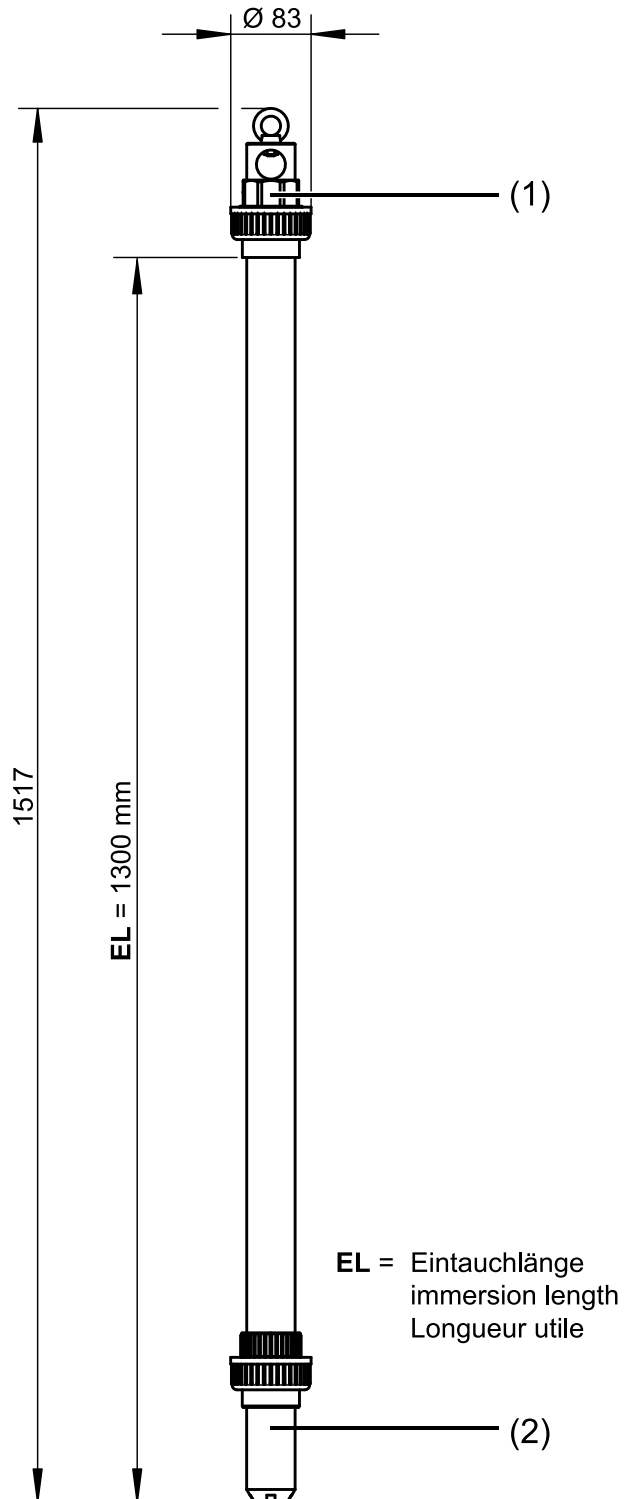
Suspended fitting

The suspended fitting holds the JUMO digiLine O-DO oxygen sensor and is primarily used to take measurements from open basins. It can be positioned a considerable distance from the basin edge with the bracket suspended on a chain, for example. Different immersion depths are possible through the use of different immersion pipe lengths. A cleaning kit (water/air flushing) is available as an accessory for the suspended fitting.

Please note the following when planning your set-up:

- The fitting must be easily accessible to allow the sensor and the fitting itself to be maintained and cleaned regularly.
- Do not allow the fitting (and thus also the sensor) to swing against and hit the basin edge.
- When working with systems involving temperature, ensure that the fitting and sensor meet all requirements.
- The system designer must check that the materials in the fitting and sensor are suitable for the measurement (chemical compatibility, for instance).

Suspended fitting		
Materials	Pipe:	PVC
	Sensor holder:	PVC
Temperature range	0 to 60 °C	
Pressure range	For depressurized applications	
Total length	1517 mm	
Part no.	00740927	



- (1) Fastener with chain holder
 (2) Sensor holder

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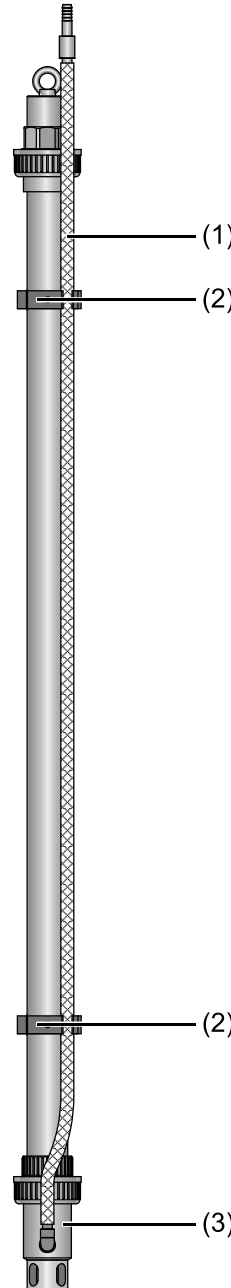


Suspended fitting with cleaning kit

The suspended fitting with cleaning kit enables water/air flushing of the built-in sensor.

The cleaning kit is also available as a **retrofit kit for installation on an existing suspended fitting**.

Suspended fitting with cleaning kit		
Materials	Pipe:	PVC
	Sensor holder:	PVC
	Fabric hose:	PVC
	Pipe clips:	PP
Admissible temperature	0 to 60 °C	
Pressure resistance	For depressurized applications	
Cleaning pressure	max. 3 bar	
Immersion length	1300 mm	
Part no.	Suspended fitting with cleaning kit	00740929
	Cleaning kit (retrofit kit)	00741086



- (1) PVC fabric hose
- (2) Pipe clip
- (3) Sensor holder with spray head

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Immersion fitting

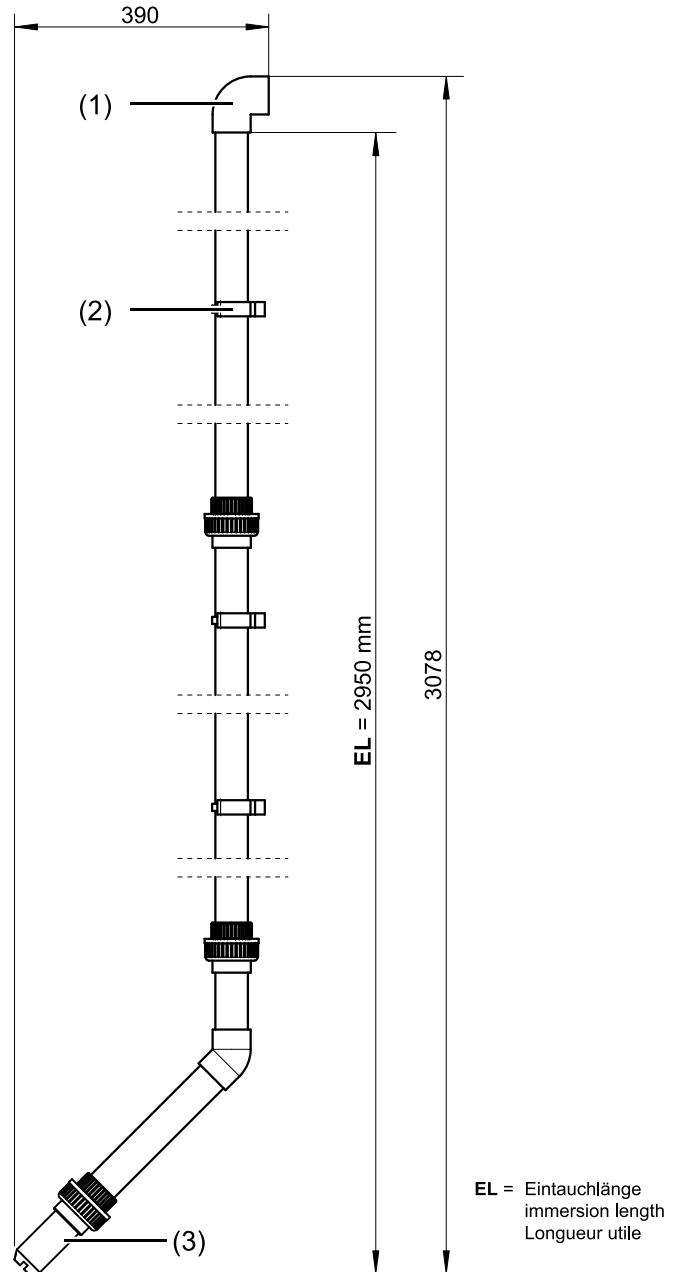
The immersion fitting holds the JUMO digiLine O-DO oxygen sensor. It is angled at the bottom and is primarily used for taking measurements from aeration tanks. It protects the sensor and allows you to take measurements at various immersion depths. The fitting is attached to the support pillar using a cross clamp, see chapter "Measuring point set-up", Page 12.

Alongside the standard version with a total length of 3078 mm, shorter versions are also available upon request and a cleaning kit is available as an accessory (water/air flushing).

Please note the following when planning your set-up:

- The fitting must be easily accessible to allow the sensor and the fitting itself to be maintained and cleaned regularly.
- Do not allow the fitting (and thus also the sensor) to swing against and hit the basin edge.
- When working with systems involving temperature, ensure that the fitting and sensor meet all requirements.
- The system designer must check that the materials in the fitting and sensor are suitable for the measurement (chemical compatibility, for instance).

Immersion fitting		
Materials	Pipe:	PVC
	Sensor holder:	PVC
Temperature range	0 to 60 °C	
Pressure range	For depressurized applications	
Total length	3078 mm	Other lengths upon request
Part no.	00740928	



EL = Eintauchlänge
 immersion length
 Longueur utile

- (1) Angled end piece
- (2) Sensor holder

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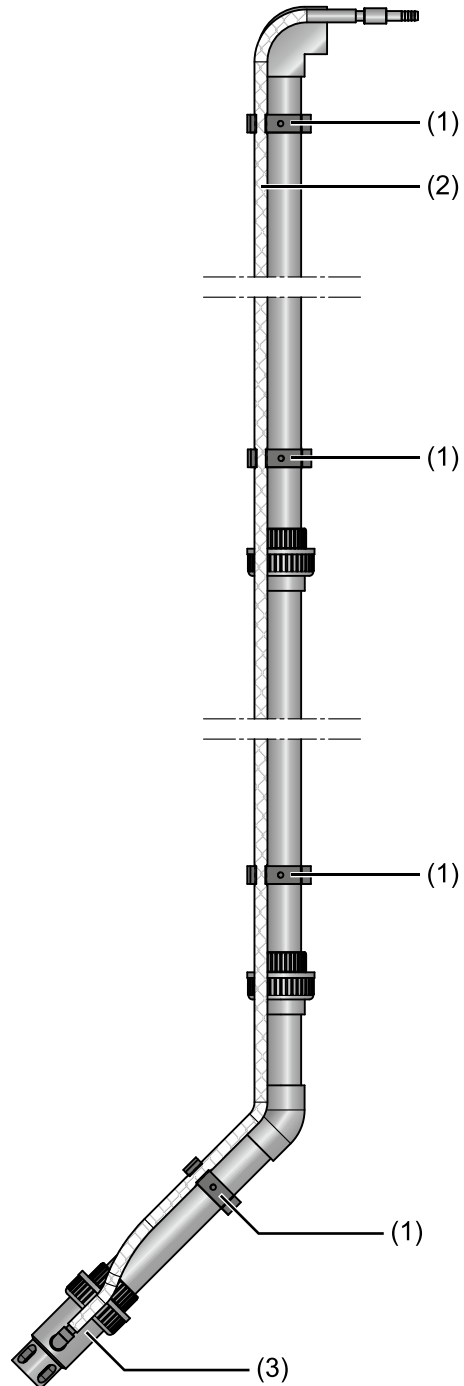


Immersion fitting with cleaning kit

The immersion fitting with cleaning kit enables water/air flushing of the built-in sensor.

The cleaning kit is also available as a **retrofit kit for installation on an existing immersion fitting**.

Immersion fitting with cleaning kit		
Materials	Pipe:	PVC
	Sensor holder:	PVC
	Fabric hose:	PVC
	Pipe clips:	PP
Admissible temperature	0 to 60 °C	
Pressure resistance	For depressurized applications	
Cleaning pressure	max. 3 bar	
Part no.	Immersion fitting 00740931 202614 with cleaning kit, EL = 2950 mm	
	Immersion fitting 00746564 202614 with cleaning kit, EL = 1700 mm	
	Retrofit kit of cleaning kit 00741090 for immersion fitting 202614	



- (1) Pipe clip
- (2) PVC fabric hose
- (3) Sensor holder with spray head

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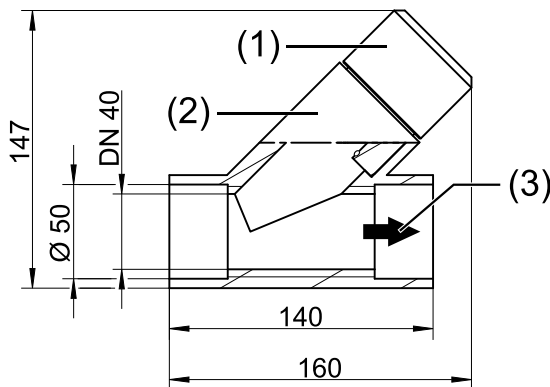


Flow fitting

The flow fitting holds the JUMO digiLine O-DO oxygen sensor and is mounted directly in the supply line for the medium being measured or in the bypass. Its special design type ensures the correct inflow to the sensor, thus preventing incorrect measurements. Please note the following when planning your piping set-up:

- The fitting must be easily accessible to allow the sensor or the fitting itself to be maintained and cleaned regularly
- We recommend bypass measurements. It must be possible to remove the sensor through the use of shut-off valves
- When working with systems involving pressure and/or temperature, ensure that the fitting and sensor meet all relevant requirements
- The system designer must check that the materials in the fitting and sensor are suitable for the measurement (chemical compatibility, for instance)

PVC flow fitting, angled seat	
Material	PVC
Admissible temperature	0 to 60 °C
Pressure resistance	Up to 5 bar
Connection	Bonded sockets
Process connection	T-piece DN 40, 45°
Part no.	00740925



- (1) Sensor holder
- (2) T-piece DN 40, 45°
- (3) Flow direction

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Order details

(1) Basic type	
202614	JUMO digilLine O-DO S10
(2) Basic type extension	
10	Standard design
(3) Measuring range	
37	0 to 20 ppm (mg/l) ^a
(4) Electrical connection	
21	Fixed cable with M12 connector
(5) Length of permanent cable	
10	10 m
30	30 m
(6) Extra codes	
000	None

^a Factory setting = 0 to 200 % Sat. To provide 0 to 20 ppm (mg/l) output, this setting must be changed in the sensor configuration.

Order code	(1)	/	(2)	-	(3)	-	(4)	-	(5)	/	(6)
Order example	202614	/	10	-	37	-	21	-	10	/	000

Scope of delivery

Sensor in the ordered version
Operating manual
Calibration certificate

Manufacturing versions

(Delivery within 10 working days after receipt of order)

Order code	Part no.
202614/10-37-21-10/000	00727210
202614/10-37-21-30/000	00730250

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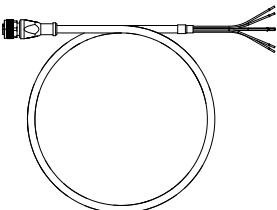
Accessories

((Delivery within 10 working days after receipt of order))

General sensor accessories

Designation	Figure	Part no.
Replacement sensor cap		00727215
Bite protection, EPDM		00746848
Mounting set (union nut with thread G 1 + 2 circlips) Included in the scope of delivery of the fittings (suspended fitting, immersion fitting, flow fitting) for type 202614.		00730253
Pipe-mounted kit digiLine hub		00648759
Mounting adapter set (angle 45 ° Ø 40 DN 32, PVC + reduction nipple on thread Rp1, PVC)		00747563

Connecting cables

Designation	Figure	Part no.
JUMO M12 digiLine master connecting cable for 705001, 5-pole, A-coded, length 10 m		00665547
JUMO M12 digiLine master connecting cable for 705001, 5-pole, A-coded, length 5 m		00665539
JUMO M12 digiLine master connecting cable for 705001, 5-pole, A-coded, length 1.5 m		00665529

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Designation	Figure	Part no.
JUMO M12 digiLine master connecting cable, 5-pole, A-coded, length 10 m (PG 203590)		00638341
JUMO M12 digiLine master connecting cable, 5-pole, A-coded, length 5 m (PG 203590)		00638337
JUMO M12 digiLine master connecting cable, 5-pole, A-coded, length 1,5 m (PG 203590)		00638333
JUMO M12 connecting cable, 5-pole, A-coded, length 15 m		00638324
JUMO M12 connecting cable, 5-pole, A-coded, length 10 m		00638322
JUMO M12 connecting cable, 5-pole, A-coded, length 5 m		00638315
JUMO M12 connecting cable, 5-pole, A-coded, length 1,5 m		00638313
JUMO M12 connecting cable, 5-pole, A-coded, length 0,5 m		00638312
JUMO Y-distributor 5-pole (connector, socket, socket)		00638327
USB converter (Y distributor M12, USB, DC coupling)		00746250

Electronics


Designation	Figure	Part no.
Plug-in power supply unit 24 V / 1 A		00743955
JUMO digiLine hub		00646871

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Designation	Figure	Part no.
JUMO power supply unit for digiLine hub		00661597




Software

Designation	Part no.
Setup program digiline DSM	00655787
Setup program digiline DSM including data management	00663703

Fittings

Designation	Part no.
PVC flow fitting, angled seat	00740925
Suspended fitting, PVC, immersion length 1300 mm	00740927
Suspended fitting with cleaning kit, PVC, immersion length 1300 mm	00740929
Retrofit kit – cleaning kit for suspended fitting	00741086
Immersion fitting, PVC, immersion length 1700 mm	00746563
Immersion fitting, PVC, immersion length 2950 mm	00740928
Immersion fitting with cleaning kit, PVC, immersion length 1700 mm	00746564
Immersion fitting with cleaning kit, PVC, immersion length 2950 mm	00740931
Retrofit kit – cleaning kit for immersion fitting	00741090
Support pillar with pedestal base, cantilever arm, and chain	00398163
Additional cross clamp for support pillar, required to attach the immersion fitting	00605468

Suitable indicating devices/controllers

Designation	Figure	Part no.
Modular multichannel measuring devices for liquid analysis with integrated controller and paperless recorder JUMO AQUIS touch S/P		Refer to data sheets 202580/202581
Scalable measurement, control, and automation system JUMO mTRON T		Refer to data sheets 705000/705001
JUMO AQUIS 500 RS indicating device/controller		See data sheet 202569

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**Accessories for JUMO AQUIS touch S/P**

Designation	Part no.
Pipe-mounted kit for AQUIS touch S	00602401
Protective roof kit for AQUIS touch S	00602404
Setup program AQUIS touch S/P on mini-DVD	00594355

Accessories for JUMO AQUIS 500RS

Designation	Part no.
Pipe-mounted kit for AQUIS 500 RS	00398162
Weather protection canopy for AQUIS 500 RS	00398161
Setup program for JUMO AQUIS 500 on DVD	00483602
PC interface, converter RS232/TTL	00301315
PC interface, converter USB/TTL and adapter (pins/socket)	00456352