More than sensors + automation

digiLine

Member of German Water Partnership

JUMO digiLine

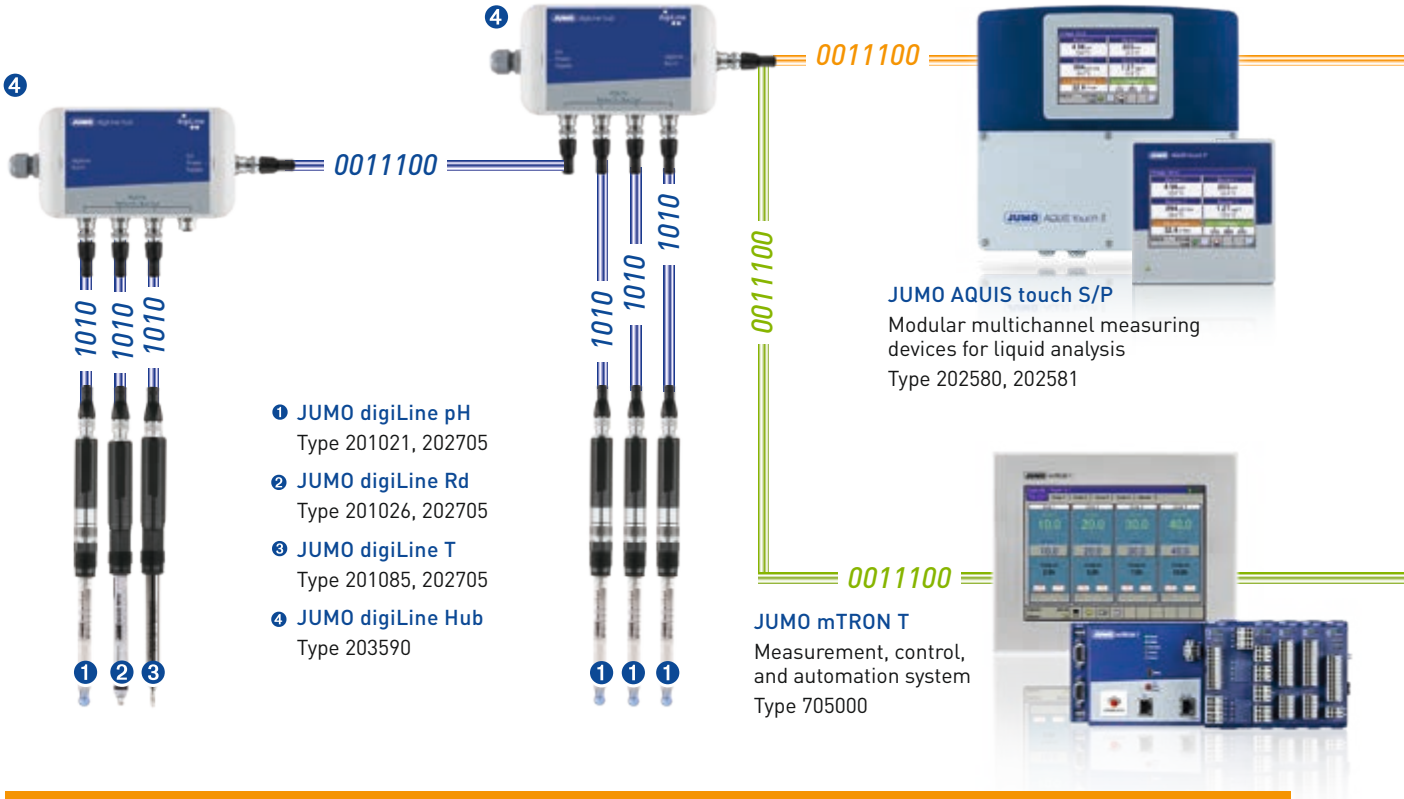
Intelligent, bus-compatible connection system for digital sensors used in liquid analysis

JUMO digiLine opens the door to I

Intelligent, bus-compatible connection system for digital se

JUMO digiLine is a bus-compatible connection system for digital sensors used in liquid analysis which simultaneously offers Plug and Play functionality. The device allows for the simple creation of sensor networks by connecting a wide array of sensors in various bus topologies (linear, star). A single shared signal line is used for communication with the next evaluation unit or controller. This way plants in which several parameters need to be measured at the same time in different places can be wired efficiently and quickly.

System example



❶ **JUMO digiLine pH**
Type 201021, 202705

❷ **JUMO digiLine Rd**
Type 201026, 202705

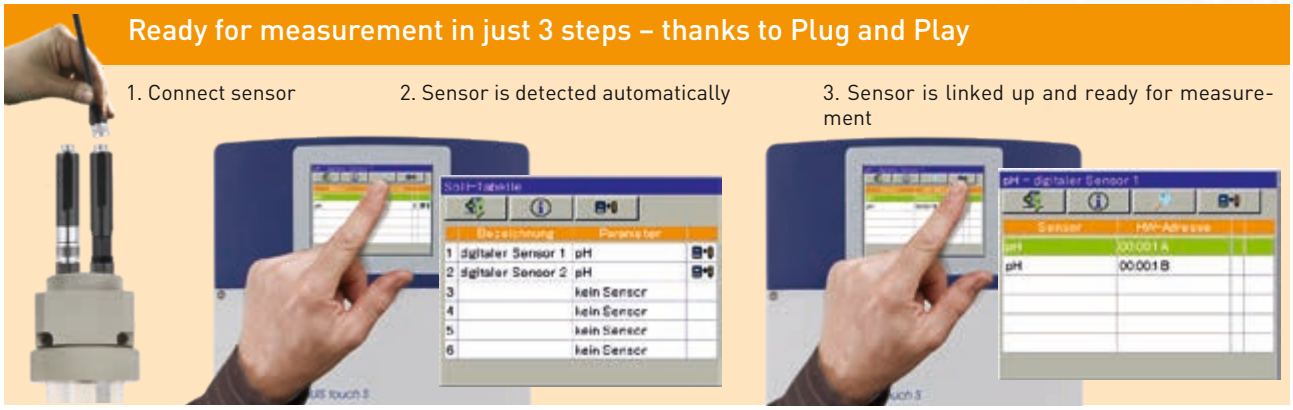
❸ **JUMO digiLine T**
Type 201085, 202705

❹ **JUMO digiLine Hub**
Type 203590

JUMO AQUIS touch S/P
Modular multichannel measuring devices for liquid analysis
Type 202580, 202581

JUMO mTRON T
Measurement, control, and automation system
Type 705000

Ready for measurement in just 3 steps – thanks to Plug and Play



1. Connect sensor

2. Sensor is detected automatically

3. Sensor is linked up and ready for measurement

Connection option 1

The multichannel measuring devices in the JUMO AQUIS touch series were designed especially for liquid analysis. They are ideal as a central platform for the display and further processing of measurement data. Up to 6 JUMO digiLine sensors can be connected to the modular devices and as many as 25 sensors can be connected using corresponding input modules and interfaces. In addition to measured value recording up to 4 independent control loops can be implemented and process values can be recorded in a tamper-proof manner with an integrated paperless recorder.

Connection option 2

In addition, JUMO digiLine sensors can also be connected to the universal measuring, control, and automation system JUMO mTRON T. This way entire automation solutions can be implemented while the scalability also enables individual adaptation to a particular task. An integrated PLC is used to integrate up to 62 JUMO digiLine sensors.

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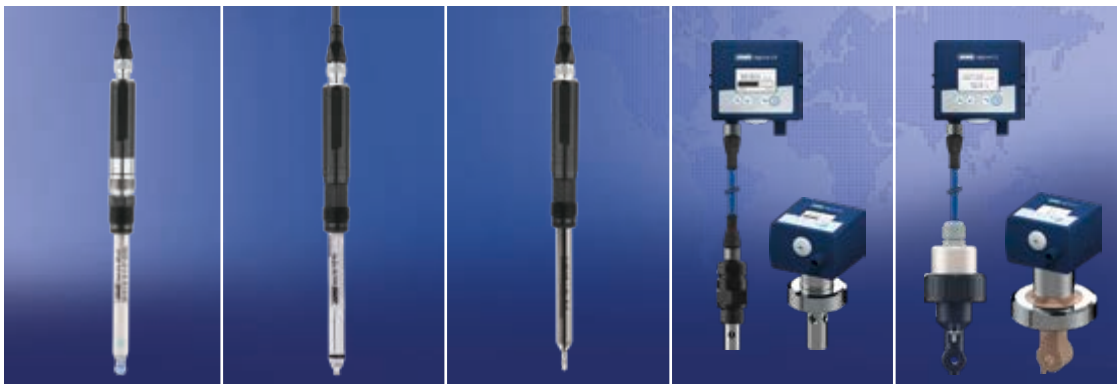
Measure various liquid analysis measurands with just one system

- Measurands: pH value, temperature, redox potential, conductivity, oxygen concentration, turbidity
- Disinfection measurands for industrial applications in the process, food, pharmaceutical, and water industry
- Fail-safe digital data transfer for optimal process monitoring
- Modular system: for individual measuring points as well as for setting up sensor networks
- Plug and Play function for connection to transmitters from the JUMO AQUIS touch series: facilitates the replacement of expended sensors or the brief exchange of sensors for calibration purposes
- The JUMO digiLine electronic components can still be used when the sensor becomes worn
- Simple and reliable calibration of sensors as well as comprehensive measuring point management can both be easily done on a PC with the JUMO DSM (Digital Sensor Management) software tool

JUMO digiLine: smart sensors lea the way towards Industry 4.0

The last step in the development of intelligent sensor systems is to introduce signal digitization as close as possible to the actual analog sensor element rather than digitizing the signals in a measuring device. As a result, signal distortions on the way from the sensor to the downstream measuring device can be further minimized or even prevented altogether. Previously purely analog sensors have become smart sensors that always carry their key specifications with them. Shifting the intelligence from the separate transmitter to the sensor opens up many new possibilities for the plant operator. These include much simpler parameterization, calibration, and startup. The smart sensor has everything on board to automatically provide the peripheral equipment with the option to automatically retrieve measurement signals and further data. The much-talked-about Plug and Play concept, which has already been established in consumer devices, has now arrived in the industrial sector.

JUMO sensors with digiLine electronics



Measurand (measurement method)	pH value	Redox potential	Temperature	Conductivity (conductive)	Conductivity (inductive)
Sensor	JUMO digiLine pH Type 201021; JUMO digiLine electronics, type 202705	JUMO digiLine Rd Type 201026; JUMO digiLine electronics, type 202705	JUMO digiLine T Type 201085; JUMO digiLine electronics, type 202705	JUMO digiLine CR Type 202762, 202763, 202764, 202765, 202766, 202768, 202769	JUMO digiLine Ci Type 202760, 202761

The JUMO digiLine technology offers significant advantages over other digital sensors on the market. The electronics unit can be detached from sensors that are typically considered consumables (e.g. pH or redox electrodes) so that they can be used again with a new analog sensor part. This ability is the better solution from an environmental and economic perspective. A combined version (sensor and electronics permanently connected) and a separated version (cable between sensor and JUMO digiLine electronics) are planned for the conductivity measurand. This has a positive impact on the overall service life of the device in plants with high levels of heat emission or strong vibrations. All JUMO digiLine sensors offer the option of an analog 4 to 20 mA current signal as a measured value output – in addition to the digital interface. The advantages of digital sensor management (option of laboratory calibration, stored sensor data, and sensor load

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Measurand (measure-ment process)	Oxygen (optical)	Turbidity	Free chlorine	Total chlorine	Ozone	Hydrogen peroxide	Peracetic acid	Bromine
Sensor	JUMO ecoLine O-DO Type 202613	JUMO ecoLine NTU Type 202670	JUMO tecLine Cl2 Type 202630	JUMO tecLine TC Type 202631	JUMO tecLine ClO2 and O3 Type 202634	JUMO tecLine H202 Type 202636	JUMO tecLine PAA Type 202636	JUMO tecLine Br Type 202637

data, etc.) remain with this variant. As a result, the 4 to 20 mA output signal allows JUMO digiLine sensors to be integrated in existing non-digital plants and systems. As a separate unit, JUMO digiLine electronics can be combined with common analog sensors from other manufacturers (exception: inductive conductivity), which makes the system even more flexible. Sensors for measuring dissolved oxygen, turbidity, and disinfection measurands can be connected to the JUMO digiLine bus. The data stored in the sensor electronics can be extracted via the bus at any time and made available to a central sensor management system.

JUMO DSM – Digital Sensor Mana

The perfect tool for configuring, parameterizing, calibrating, and documenting

- One common, easy-to-use PC software tool for different sensors and measurands
- Enables reliable calibration under controlled conditions in the laboratory
- Simple evaluation and seamless documentation of sensor and measuring point data over the entire lifecycle of a sensor
- During calibration in the laboratory pH electrodes can be simultaneously cleaned and regenerated
- Suitable for JUMO digiLine sensors in which measured values are recorded via the analog current output

Seamless QA documentation over the entire lifecycle

Configuration, parameterization, and calibration of JUMO digiLine sensors are either performed in the field on the digiLine master device JUMO AQUIS touch or on a PC using the JUMO DSM Sensor Management software. For this purpose the sensor is connected to the PC via USB and supplied with the necessary auxiliary power over the USB interface. All data is stored directly in the bus electronics of the respective electrode and can also be exported via the JUMO digiLine bus at any time. Information about the measuring point is stored in the sensor head along with the electrode-specific details. Calibration can therefore be performed conveniently under optimum conditions in the laboratory through JUMO DSM prior to use. The sensor only needs to be mounted at the measuring point at a later time. If the measuring principle allows, JUMO digiLine sensors are pre-calibrated in the factory for initial use. The load of a pH or redox electrode by thermal and chemical stress can be evaluated through the special parameter sensor stress which is calculated on the basis of the process data. In this process, the extent to which the pH value and temperature are included in the sensor stress can be individually stipulated. Users therefore have the option to incorporate their own plant-specific empirical values in their sensor management.

Reduction of installation and maintenance times

JUMO digiLine sensors stand out due to the following features*:

- Specifications and measuring point information (TAG no., etc.) stored in the sensor enable clear identification and assignment of an electrode
- Configuration, parameterization, and calibration data can be retrieved directly from the sensor even after the transmitter has been replaced
- A calibration logbook provides an overview of the previous calibration history
- A calibration timer automatically issues a reminder on the JUMO digiLine master device for calibrations that are due
- Counters for autoclave, SIP, and CIP cycles enable conclusions to be drawn about the previous stresses on the sensor due to cleaning and disinfection routines
- pH and redox electrodes feature extended condition monitoring – process conditions are assessed here to evaluate sensor load

*The functional range implemented in a JUMO digiLine sensor and the individually stored data depend on the measurand and the sensor type. Details can be found in the data sheet of the respective sensor.

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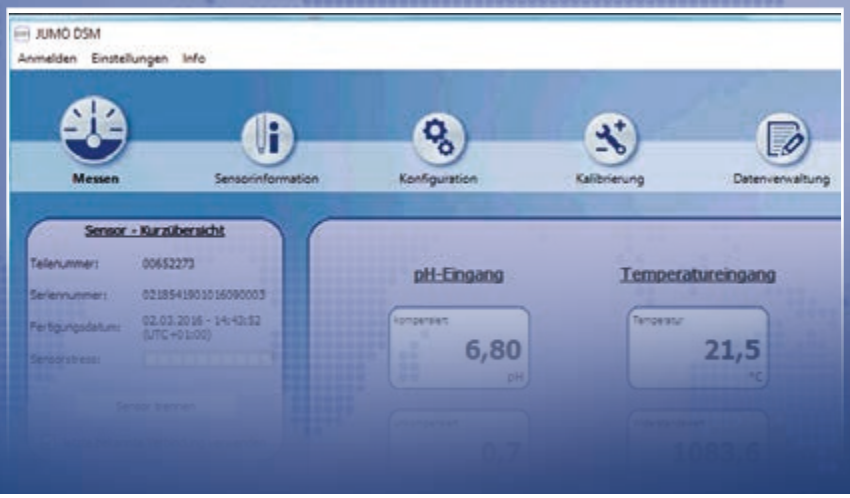

Measuring point management

Maintenance required

Sensor
- Clean
- Regenerate
- Calibrate
- Evaluate
- Document

Reinstall sensor

If necessary, replace sensor;
continue to use smart electronics!

OneTemp pty ltd

measure | control | record

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