



More than **sensors + automation**



JUMO AQUIS touch series

Modular multichannel measuring devices for liquid analysis
with integrated controller and paperless recorder

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Dear Reader,

In addition to the measurands temperature and pressure, measuring the most important electrochemical parameters is one of JUMO's core competencies. Whether for pH values or redox voltage, electrolytic conductivity or dissolved oxygen – JUMO provides you with a wide range of sensors and devices covering the primary measurands in water analysis.

A number of these parameters, for example, are simultaneously measured and controlled in water and wastewater treatment plants. A separate transmitter and controller are generally used for each measurand. In contrast, JUMO AQUIS touch S/P multichannel measuring devices allow for the simultaneous recording and processing of up to 19 measured values and 4 measurands which can also be controlled independently of each other. This significantly reduces installation costs, offers uniform and straightforward operation, while minimizing plant space requirements for the evaluation electronics at the same time. Measurands frequently affect each other directly. This can be taken into consideration more easily by integrated functions, such as user-configurable math and logic formulae.

An integrated paperless recorder also makes it possible to display and record process data in its chronological sequence. Measured values can also be monitored remotely from an Internet-capable PC via Ethernet/LAN and the integrated web server.

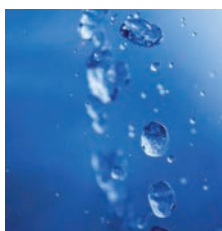
JUMO has paid particular attention to ensuring that all functions are easy to operate. A modern touchscreen makes device operation as intuitive as possible, without restricting the degree of freedom for adapting applications on-site. Plain text output in over 15 national languages also plays a key role here.

We hope this brochure will spark your interest for JUMO AQUIS touch devices.

PS Further information concerning our products can be found at www.jumo.net.



Contents



JUMO AQUIS touch series	4
Operation	6
Mechanical design	8
Basic electrical equipment	10
Analysis modules	12
Interfaces	14
Control	16
Recording/evaluation	18
Timer, math and logic functions	20
Setup program	22
Applications	23

$\mu\text{S}/\text{cm}$

pH

ppm

mg/l

l/min

JUMO AQUIS touch series

The new JUMO AQUIS touch S and P multichannel devices provide a central platform for displaying and further processing a wide variety of measurands in the field of liquid analysis. The devices have a modular design, feature numerous interfaces, and can therefore be adapted entirely according to the individual requirements of each operation. In addition to recording measured values, up to four independent control loops can be implemented. Important process values can also be saved in a tamper-proof manner using an integrated paperless recorder.

Thanks to user-configurable screen masks and a clearly arranged menu navigation, JUMO AQUIS touch S and P are incredibly easy to operate via their touchscreens, despite the wide range of functions.



USP <645>

ASTM

Ph. Eur.

EN 27 888

FDA

00000

Measuring – displaying – controlling – recording: Four operations – one solution

- Measuring, displaying, controlling, recording - all in one single device
- JUMO AQUIS touch S is available in a surface-mounted case or JUMO AQUIS touch P as a built-in panel device (96 × 96 mm)
- Connection for up to 19 sensors
- Simple operation via touchscreen
- User-configurable screen masks
- Customizable process screen for plant visualization
- Up to 9 analog outputs
- Up to 17 switching outputs that can be configured as controller, limit value, or alarm outputs
- Comprehensive math and logic functions
- Integrated timer (calibration and washing timer, etc.)
- State-of-the-art communication interfaces: Ethernet/LAN, PROFIBUS DP, RS422/485, Modbus, USB
- Approvals: cULus (in preparation), more on request



JUMO AQUIS touch P – type 202580
with 3.5 inch graphic display for the panel installation



JUMO AQUIS touch S – type 202581
in the surface-mounted case with 5.5 inch graphic display

Measurands	Display	Control function	Recording function
<ul style="list-style-type: none"> ■ pH value/redox voltage ■ Electrolytic conductivity ■ High-purity water resistance ■ Temperature ■ Disinfection measurands: free chlorine, total chlorine, chlorine dioxide, ozone, hydrogen peroxide, peracetic acid ■ Level/filling level ■ Flow/flow volume 	<ul style="list-style-type: none"> ■ Vibrant TFT color graphic display with touch function JUMO AQUIS touch S: 5.5" JUMO AQUIS touch P: 3.5" ■ Up to 15 national languages can be configured – also national languages with Cyrillic or non-European characters 	<ul style="list-style-type: none"> ■ Up to 4 high-quality control loops can be defined ■ Proven JUMO algorithms for P, PI, PD, and PID control ■ Autotuning procedure for determining the controller parameters 	<ul style="list-style-type: none"> ■ Integrated paperless recorder for up to 8 analog measurands and 6 binary signals ■ Tamper-proof data storage for satisfying official record keeping obligations ■ If necessary, data can be extracted and processed using separate software



Operation

The JUMO AQUIS touch devices are operated using a central TFT color touchscreen, which simultaneously displays all measured values and parameters. Thanks to its resistive function, the touchscreen can even be operated using gloves. An additional protective film eliminates screen glare and provides added protection against environmental influences as well as mechanical damage.

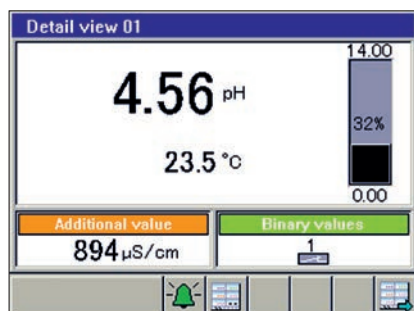
Measured value display and process screen

An operating and status line is displayed on the lower part of the screen. Softkeys are available here to access submenus or other display masks. The date and time are also displayed. Various display and user levels (including calibration and parameterization menus) can be protected using user rights that can be assigned individually. Depending on the user group, code words can be used to set up tiered access to various areas. This increases operational security and prevents misuse or even manipulations.

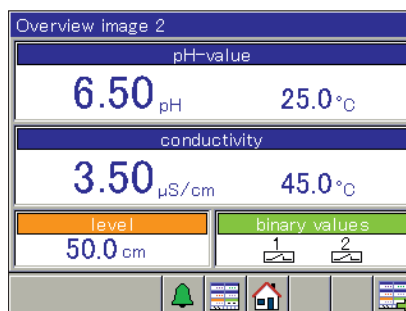
Various viewing masks are available during measurement and controlled operation. Measured values can be displayed as an individual image or in a 2 or 4-channel overview. In measuring mode, the main measured value (for example, the pH value) and an auxiliary value (frequently the temperature) can be displayed for each channel.

The main value is visualized along with a bar graph in the individual image display. Regardless of the number of channels shown in the display with the main value and auxiliary value, another analog additional value or three binary values (for example, switching positions) can also be displayed if necessary. The user can freely program which values are displayed where.

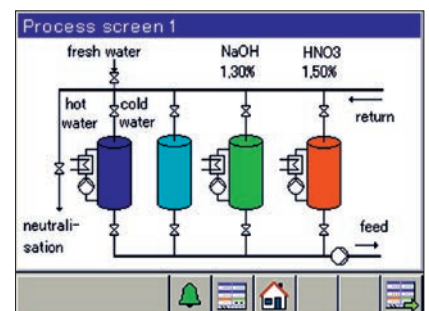
In addition, a process screen can be created using the configuration program on a PC, where measured value and interface displays can also be integrated. A customized process screen created in this manner provides the user with a particularly clear overall impression of the respective plant. Above all, it allows the user to quickly check the plant status.



Individual image display of measured value



2-channel measured value overview



Process screen for plant visualization

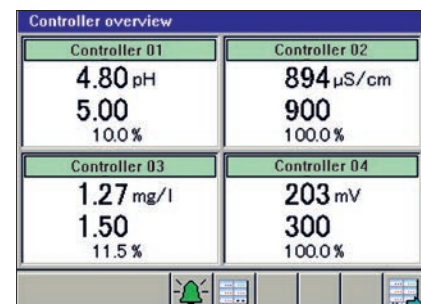
Control display and recording function

In addition to the measured values and customizable process screen, the activated controller can be displayed in single screens or in groups of four. Both the actual value and setpoint value are displayed in each case. If the required user rights are activated, the setpoint can be changed for the individual image display during controlled operation – or it can be switched to manual mode using the manual default output value. For additional information on this, see the "Control" chapter.

The integrated recording function represents the measured value as recorder lines. A maximum of four analog values along with a maximum of three binary traces (for example, switching positions of relays and binary input statuses) are recorded on up to two recorder displays that can be activated. The data is temporarily stored in a ring buffer and can be evaluated separately. The maximum recording period is approximately six months. Afterwards, the oldest data is overwritten. For additional information on this, see the "Recording/evaluation" chapter.



Individual image of a controller



Overview image for 4 active control loops

An overview made easy

All display screens (measured value or controller displays as an individual image or in an overview, paperless recorder diagram) are created in a ring structure. The user can switch from one display screen to the next simply by following the forward selection on the touchscreen. The user can alternatively open the desired screen directly from the "Selection of operator display" menu item. The user can freely define the number of screens in the ring as well as the "root screen" that appears first when the device is switched on.

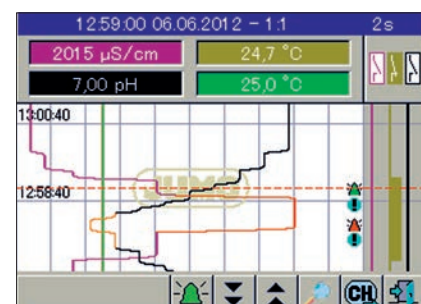
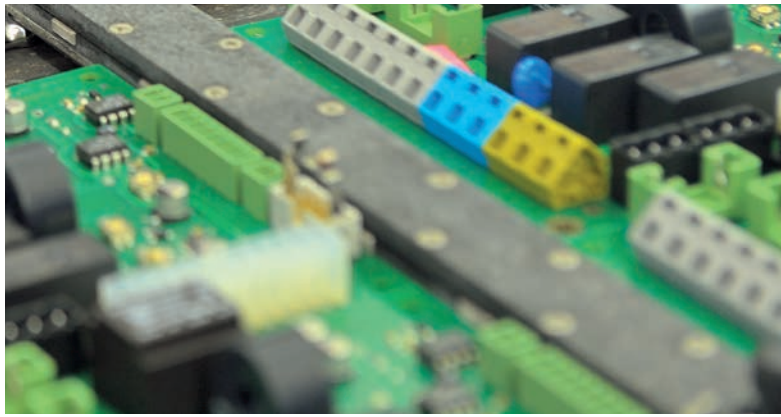


Diagram of the recording function



Mechanical design

If you are looking for a reliable multichannel measurement device that also offers precision controlling and recording functions as well as the utmost flexibility for adapting to the required application, JUMO AQUIS touch devices are the ideal solution for you. The modular setup concept makes it possible to customize the device to meet your individual needs. At the same time, the user can also rely on our comprehensive range of analysis sensors.

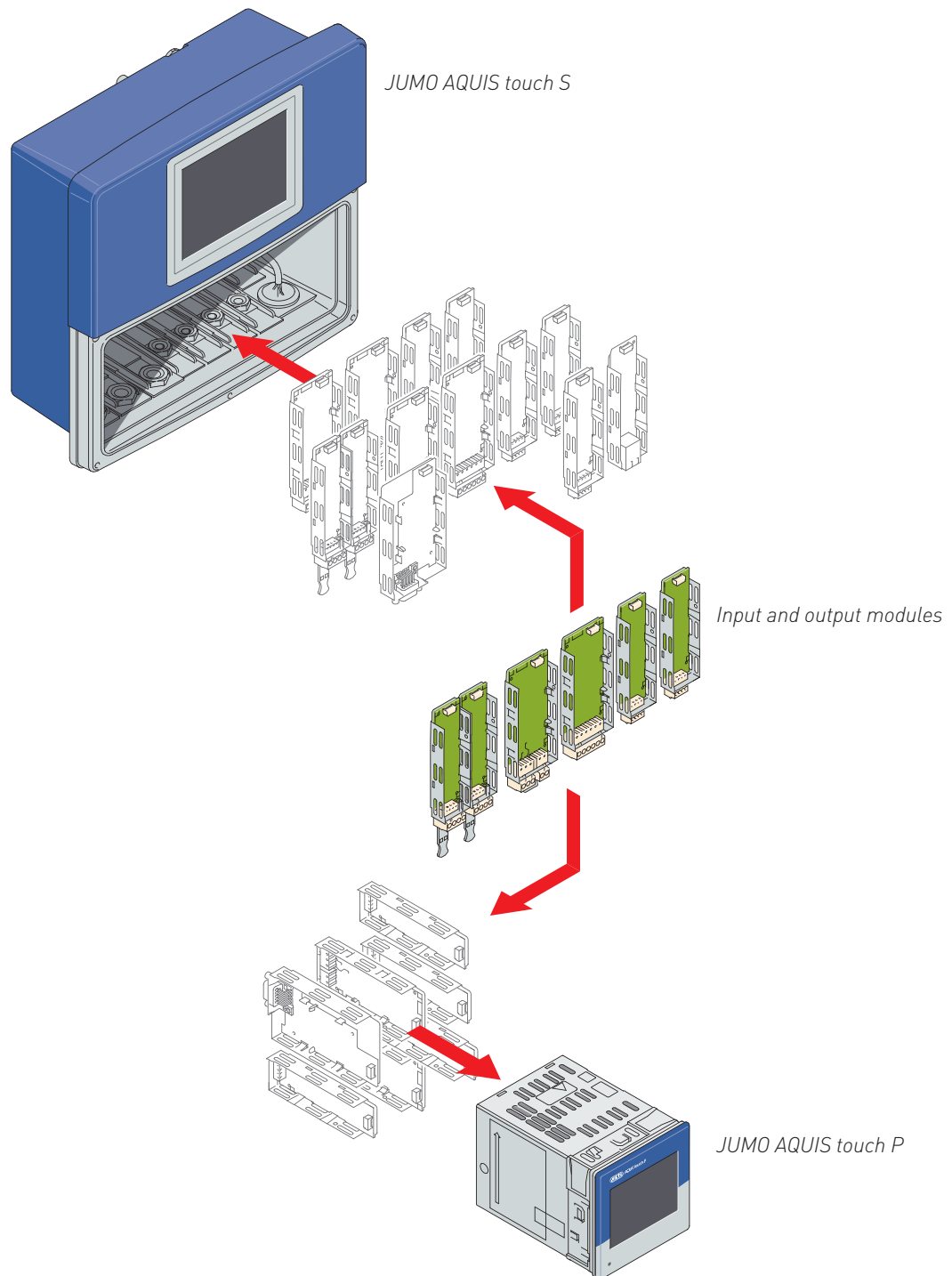
The JUMO AQUIS touch S is housed in an ABS plastic case, which features protection type IP67. Holders for wall, pipe, and railing installation are also available. What's more, a stainless steel weather protection canopy is also offered. A breather valve in the case prevents condensation on the device. The case can also be inserted in the corresponding cut-out of a retaining plate (panel installation or rack assembly). Just like the JUMO AQUIS touch P, the JUMO AQUIS touch S can be mounted as a built-in device if needed or if the scope of JUMO AQUIS touch P functions would not be sufficient for the application.

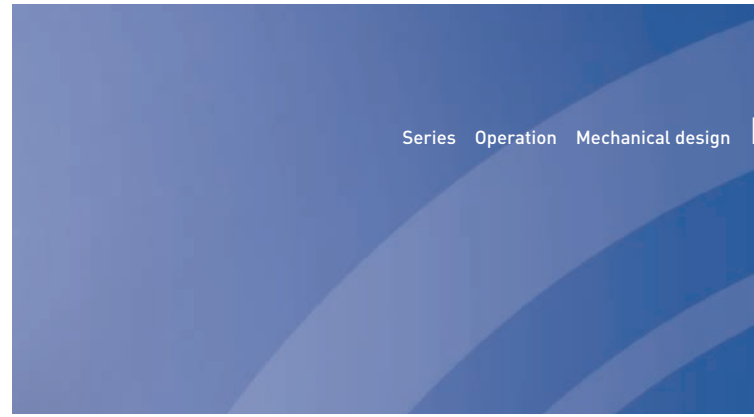
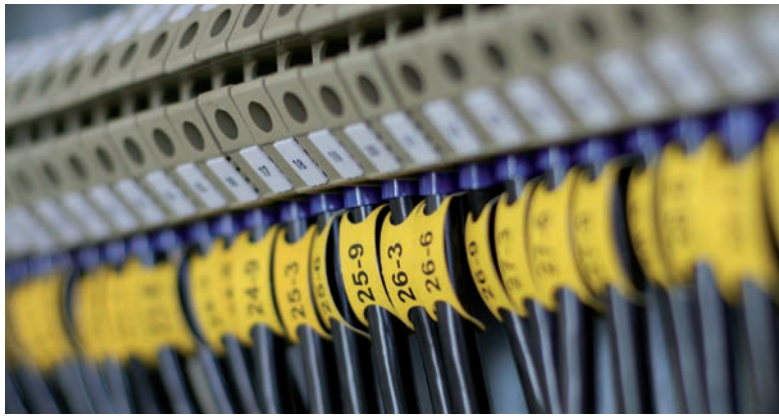
The generously dimensioned connection area is located under a large, removable case lid. It offers ample space so that input and output modules can also be effortlessly added or replaced. Supply, signal, and sensor cables are routed to the terminal strip using cable glands or connected to the JUMO AQUIS touch S with M12 connectors.

There is a sufficient number of cable glands so that the user has virtually unlimited mechanical connection options. Cable glands that are not needed are sealed with dummy plugs. A locking USB host connection makes it possible to retrieve data (saved processes for the recording function) or to load configuration files from the outside with a USB stick without having to open the device.

The JUMO AQUIS touch P is designed for panel installation. The front installation dimension is 96 x 96 mm with a mounting depth of only 131 mm. The front side features protection type IP66, the rear IP20. The mechanical design is built so that the assignment of input and output modules can be easily adjusted.

The two devices offer the same pool of input and output modules. This reduces the number of different modules and thus the storage costs for users of both devices.





Basic electrical equipment

The modules for the basic electrical equipment of AQUIS touch devices are located on a power supply unit and a motherboard which each device features. Optional additional modules can be fitted in the available slots at the factory or by the customer – using the standard basic equipment – for example, replacing standard specified modules with other modules. This is where the modular concept shows all of its strengths: the devices can be individually adapted to a wide range of the respective measuring and controlling tasks.

The devices are provided for two different supply current ranges depending on the ordering code:

AC 110 to 240V +10/-15 %; 48 to 63 Hz or

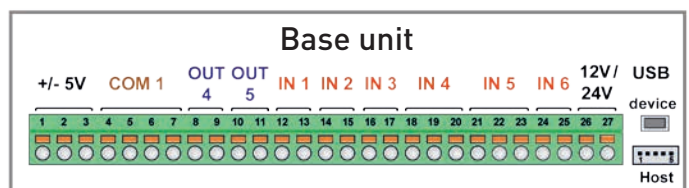
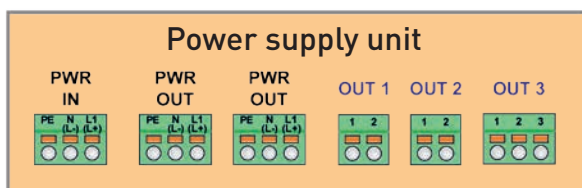
AC/DC 20 to 30V; 48 to 63 Hz

The relays are located on the power supply board. The user can freely configure the relay functions (alarm trigger, limit value monitoring, time or event-controlled switching of external devices, PID control) for any measurand. External consumers can be powered directly from the JUMO AQUIS touch S using the supply input voltage applied to two terminals. This eliminates the need for se-

played, controlled and/or otherwise processed (for example, via math modules, for the feedforward controller).

The user can then freely assign input quantities or controller output quantities to the standard signal analog outputs.

The binary inputs can be used to trigger specific actions or to switch to specific operating modes/states (switching to hold, setting to manual mode, switching measuring range or parameter block, enabling/disabling screen saver, locking/unlocking touchscreen, triggering timer functions) in the device. Flow rate probes (pulse genera-



JUMO AQUIS touch S – power supply and basic unit terminal strip with terminal assignment

parate wiring boxes. External consumers can also be switched on and off directly via the JUMO AQUIS touch S by simply wiring the supply voltage to one of the relays. Input and output modules as well as a digital interface are available as basic equipment on the motherboard, which is fitted in each device as standard alongside the power supply board. Standard signals (current), RTD temperature probes (Pt100, Pt1000 and others) along with resistance transmitters can be connected to the analog input modules. Each input signal can be dis-

tor, such as impeller counter) can also be connected to two of the binary inputs and evaluated. Both probes with a low pulse level (up to 300 Hz), such as water meters, as well as those with frequencies of up to 10 KHz can be used. The software functions integrated into the JUMO AQUIS touch devices allow both flow rate and flow volume measurements.

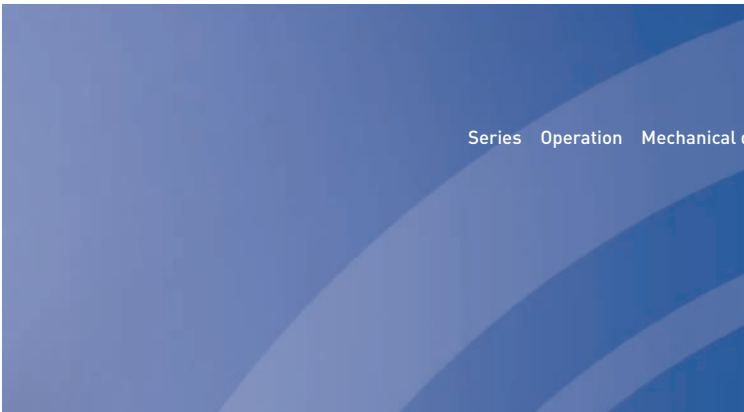
The motherboard also features a voltage output for supplying external sensors – either DC 12V or 24V – for example, for sensors with a 2-wire connection (4 to 20 mA

signal). There is also a $\pm 5\text{V}$ voltage tap available for connecting a pre-amplifier required for the glassless ISFET pH electrodes. If the basic equipment is not sufficient, additional module slots are available. They can be fitted with additional input cards (analog or binary inputs) or output cards (analog outputs or switching outputs as a semi-

conductor switch or relay) to meet your individual needs. The following table provides you with an overview on the basic equipment available on the power supply board and motherboard. The possible maximum expansion option is specified in brackets.

	JUMO AQUIS touch S	JUMO AQUIS touch P
Analog inputs (0/4 to 20mA, 0 to 10V, Pt100, Pt1000, resistance)	3 (+2)	3 (+2)
Binary inputs of which 2 frequency inputs for the flow (volume) measurement	3 (+6)	3 (+6)
Outputs (Analog/relay/semiconductor switch)	5 (+14)	3 (+8)
Interfaces (RS422/485, PROFIBUS DP, Ethernet/LAN)	1 (+2)	1 (+1)
USB host	1	1
USB device	1	1
External analog inputs can be implemented via interface RS422/485	8	8
External binary inputs can be implemented via interface RS422/485	8	8
Voltage supply for sensors/external devices	2 (+1)	0 (+1)

The basic electrical equipment of the JUMO AQUIS touch devices (without analysis inputs) – possible expansion options are specified in brackets



Analysis modules

The JUMO AQUIS touch devices feature separate reserved slots, which house special measuring modules for connecting analog analysis sensors directly. JUMO provides three different analysis modules as starting points, which can be fitted with any combination of options.

The JUMO AQUIS touch P houses up to two modules and the JUMO AQUIS touch S houses a maximum of four. A sensor for measuring the pH value, redox voltage, conductivity, or ammonia concentration can be connected for each analysis module. If the temperature must be compensated for recording a measurand, the user can assign a freely selectable analog input for measuring the temperature to each analysis input and therefore compensate the temperature automatically. A fixed temperature value

can be manually specified for the compensation. The modules are galvanically isolated from each other and also isolated from the other device components. Calibrations and/or adjustments necessary for the electrochemical sensors are saved in an electronic calibration logbook. By evaluating the sensor data saved in the logbook along with the data stamp, conclusions can be drawn concerning the durability and suitability of the sensors used, among other things.

pH/redox/ammonia analysis module

Measurand	Measuring range	Temperature compensation
pH value	-2 to +16	-20 to +150 °C
Redox voltage	-1500 to +1500 mV	Not required
NH ₃ concentration	0 to 20000 ppm	-20 to +50 °C

- For connecting conventional pH and redox sensors and NH₃ sensors
- Also for ISFET sensors according to the JUMO data sheet 201050
- pH sensors can be operated symmetrically and asymmetrically
- Isolated glass and reference electrodes can be connected
- With liquid potential connection



Conductivity analysis module (conductive measurement method)

Measurand	Measuring range	Temperature compensation
Electrolytic conductivity	As of approx. $0.001 \mu\text{S}/\text{cm}$ up to approx. $600 \text{ mS}/\text{cm}^*$	Linear, non-linear (curve), natural waters
Specific electrical resistivity	As of approx. $40 \text{ m}\Omega \times \text{cm}$ up to approx. $1000 \text{ M}\Omega \times \text{cm}^*$	ASTM

*Depending on the sensor used.

- For connecting commonly used conductive conductivity sensors for 2-electrode and 4-electrode systems
- Resistance measurement for high-purity water applications
- Up to $600 \text{ mS}/\text{cm}$ with 4-electrode sensors
- Satisfies USP and European Pharmacopoeia standards



Conductivity analysis module (inductive measurement method)

Measurand	Measuring range	Temperature compensation
Electrolytic conductivity	From $50 \mu\text{S}/\text{cm}$ to $2000 \text{ mS}/\text{cm}$ (Resolution $1 \mu\text{S}/\text{cm}$)	Linear, non-linear (curve) Natural waters

- For connecting all JUMO sensors of data sheets 202941 to 202943 (third-party sensors on request)
- Activation of up to 4 measuring ranges (CIP function)
- Concentration curves: NaOH , HNO_3 , H_2SO_4 , HCl (others on request)





Interfaces

A number of different digital interfaces considerably extend the range of possible uses for JUMO AQUIS touch devices. The COM1 interfaces and the two USB connections are permanently integrated into the motherboard and are therefore always available.

COM1: Conventional RS422/485 with Modbus RTU protocol (slave); allows for connection to control systems, etc.

USB device: Connection to laptop/PC via conventional USB cable for convenient device programming using the PC setup program. Internal recorder data can also be read.

USB host: For connecting USB sticks. Available via internal cable on the outside of case for inserting USB sticks (protected by a screw cap on JUMO AQUIS touch S). Data from the paperless recorder function can be retrieved here. Predefined or modified setup data can be loaded and extracted. If servicing is required, information can be extracted for the JUMO Support team.



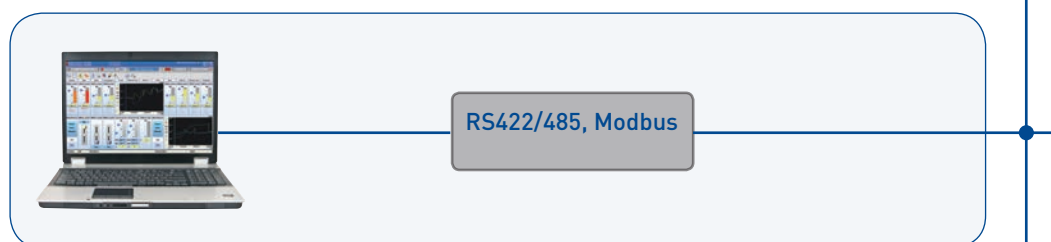
An additional COM2 digital interface is optionally available for plug-in modules. A second RS422/485 interface (Modbus RTU [slave]), a PROFIBUS DP interface or, with the JUMO AQUIS touch P, an Ethernet/LAN interface can also be installed. The JUMO GSD generator is included in the scope of the PROFIBUS interface delivery. This software supports you in creating the GSD file for integrating

the devices into PROFIBUS architecture. With the JUMO AQUIS touch S, in addition to COM2, another optional slot is available for integrating an Ethernet interface card. Integration into an LAN network facilitates access to all device data (recorder data, setup) as well as remote control via the integrated web server.

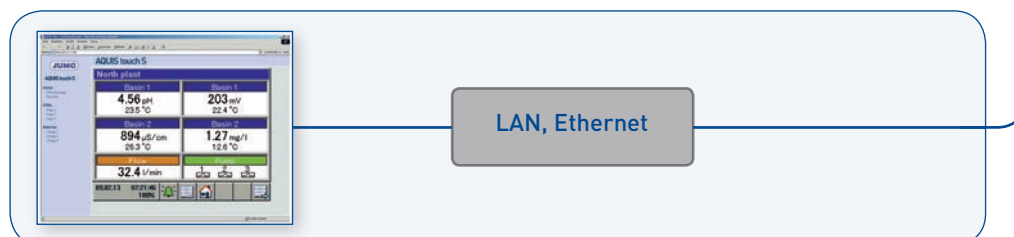
Example of connection to PLC via PROFIBUS:

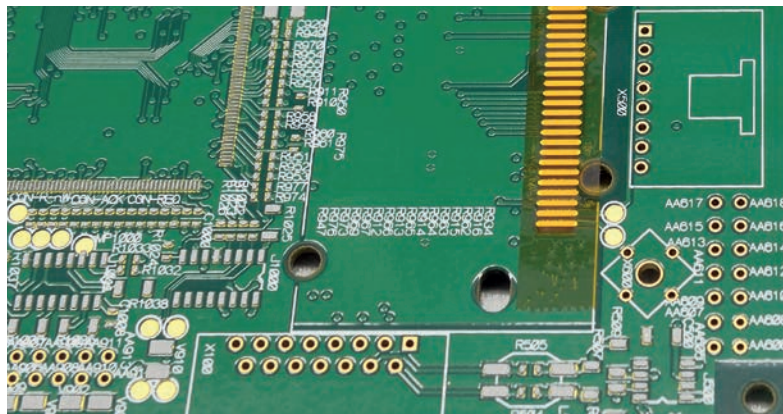


Example of connection to control systems/visualization via RS422/485:



Example of connection via LAN (web server):





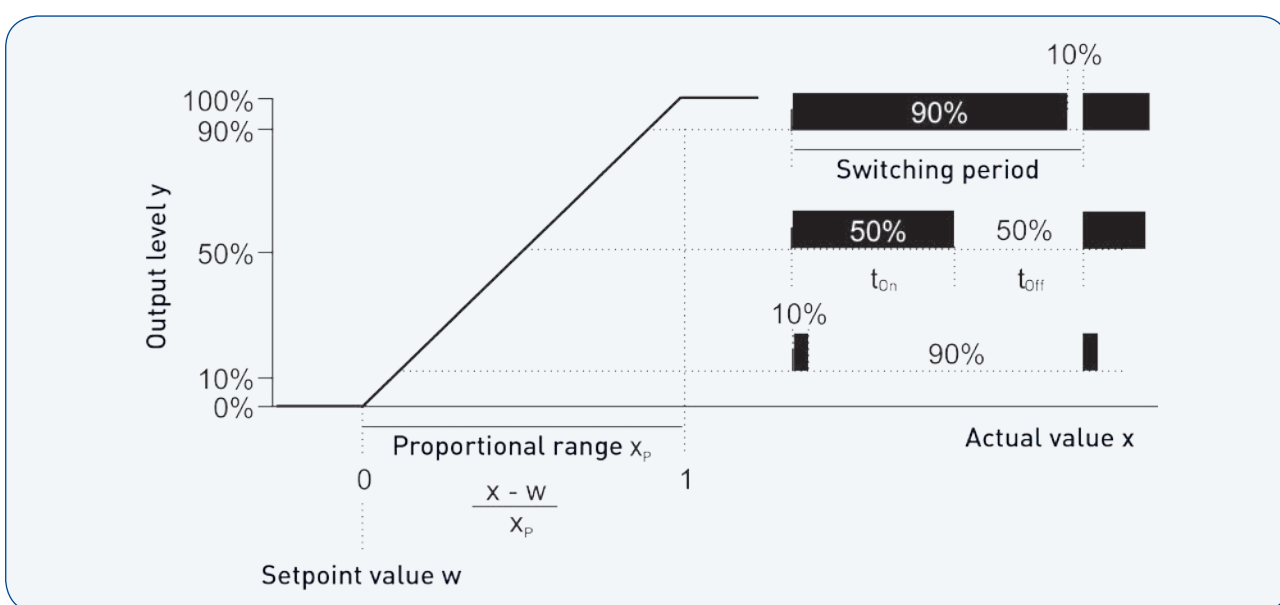
Control

The JUMO AQUIS touch devices are equipped as standard with four controllers that are each independent of the others. The user can freely assign any input quantity to the controller, which can be optionally implemented as a two or three-state controller, modulating controller, or continuous controller. The control structure P, PI, PD and PID can be selected for a continuous controller. An autotuning procedure supports you in determining the controller parameters. The tried-and-tested JUMO algorithms are used even during controlled operation.

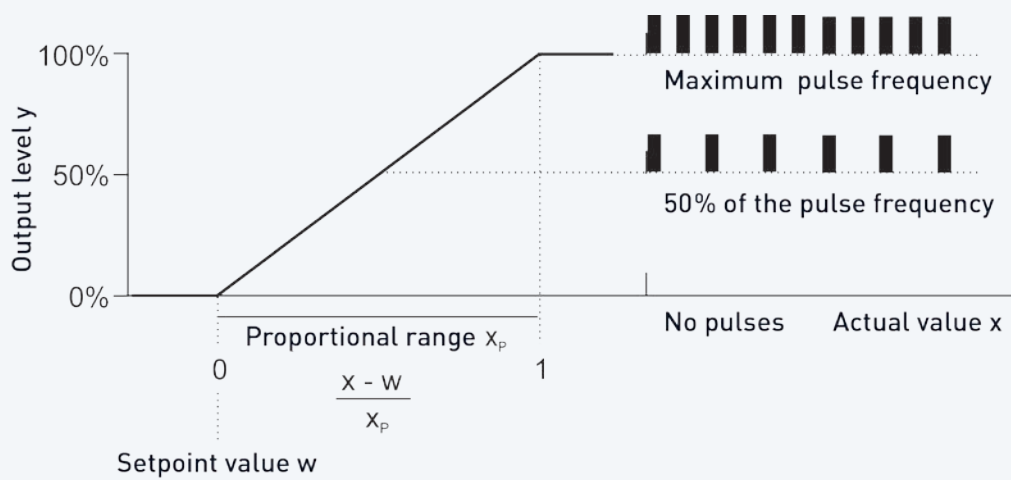
The actuator used in the control loop determines what kind of controller output signal must be provided for controlling it. Analog actuators must be activated by an analog controller output accordingly.

If actuators are activated by mechanical relays or electronic switches, as is often the case in practice, one of the following controller types must frequently be implemented:

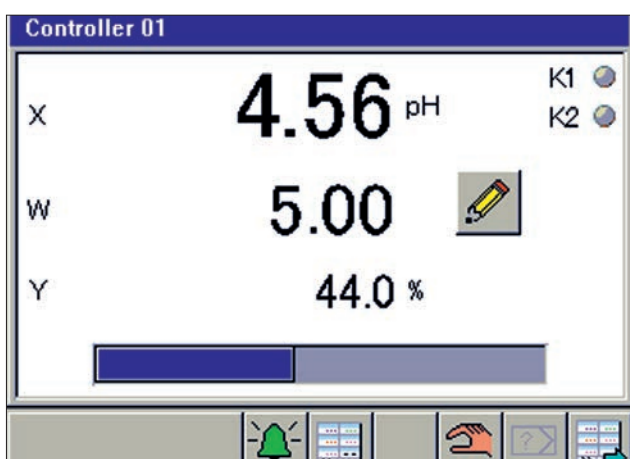
Controller type	Example application
Two-state controller	For controlling valves or motor pumps
Continuous controller as pulse length controller	For controlling valves or motor pumps
Continuous controller as pulse frequency controller	For controlling magnetic dosing pumps
Modulating controller	For controlling motor control valves



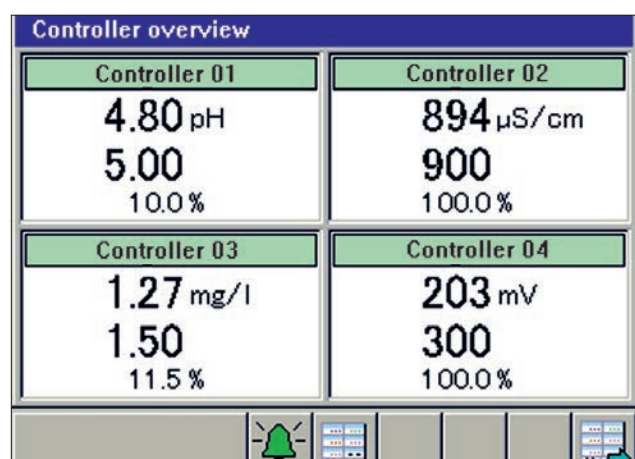
Output signal of a pulse length controller with controller structure P (here: output active for $x > w$)



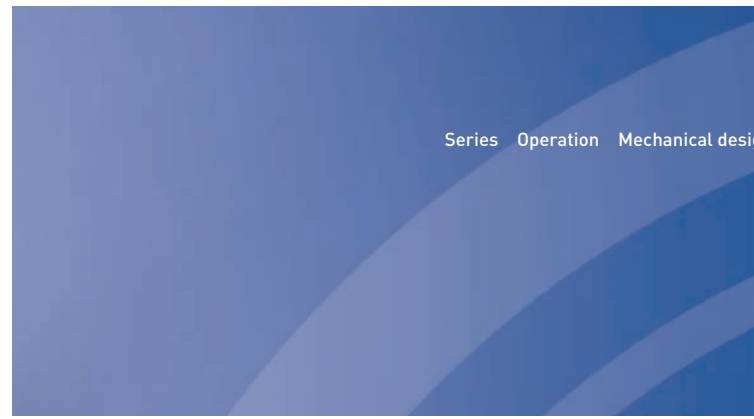
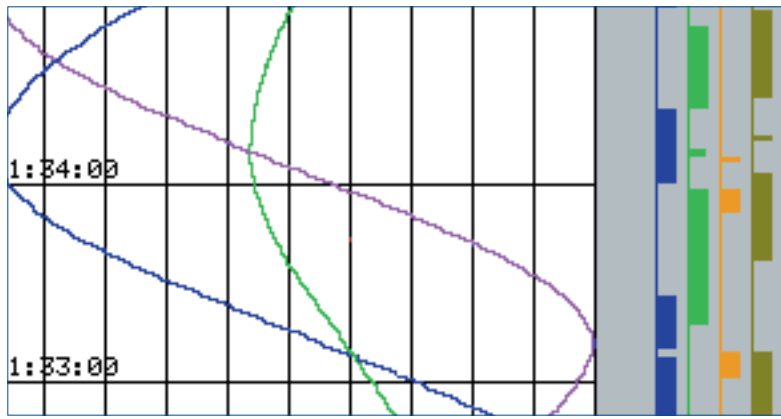
Output signal of a pulse frequency controller with controller structure P (here: output active for $x > w$)



Individual image of a controller

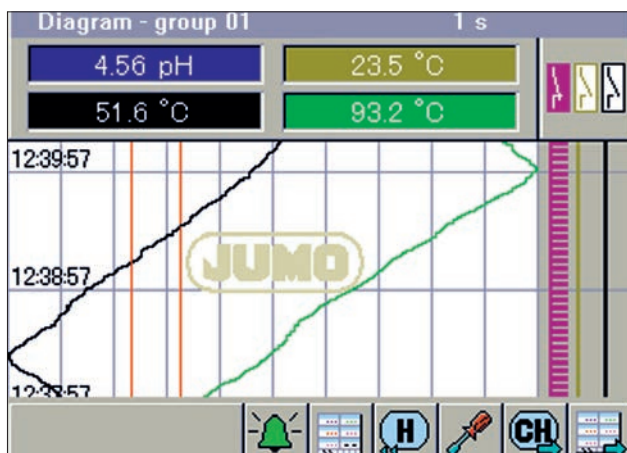



Overview image for 4 active control loops

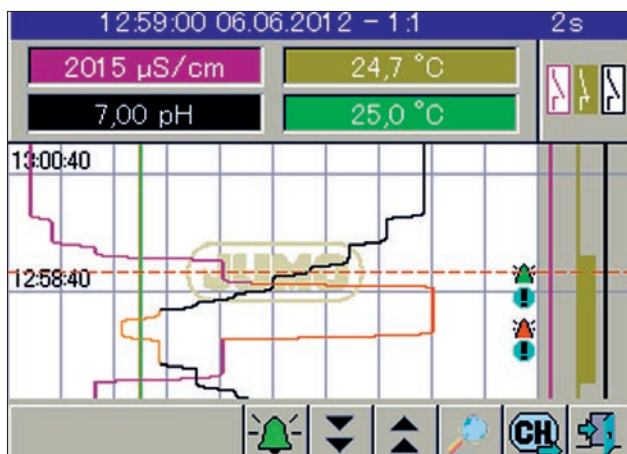


Recording/evaluation

A high-quality recorder function (paperless recorder) can also be optionally activated in JUMO AQUIS touch devices. Two screens/groups, each with up to four analog values as well as up to three binary signals can be recorded. Data from the last six months can be accessed from the internal memory. If data prior to this time period is extracted and saved through an interface or the USB host interface, it can be saved seamlessly and in a tamper-proof manner. This also satisfies official record keeping requirements.



The  button is used to access history data (from past events)



Accessing history data

JUMO PCA3000 PC evaluation software

The professional evaluation software can be used for administration, archiving, visualization, and evaluation of the historical process data (measured data, messages, etc.). Process data can be imported via a USB memory stick or made available for central data processing using the PCC software.

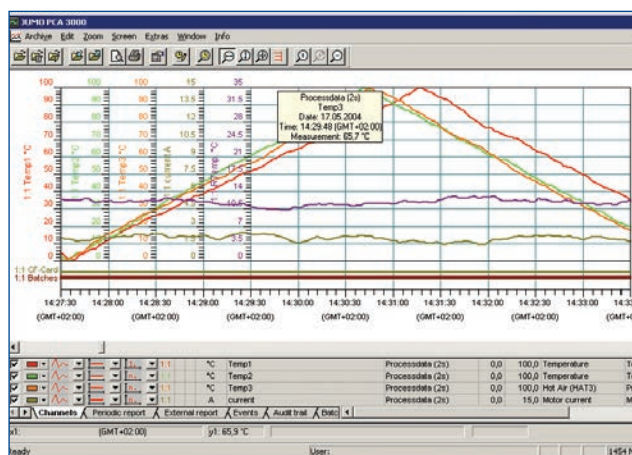


Figure 1

■ Data storage:

Backup and archiving of all process data in an easily understandable data file

■ Data backup:

Archived data can be directly read and visualized from the CD ROM/DVD

■ Data export:

In various formats (CSV, HTML, PDF) with PCA3000 form output

■ Graphical preparation of measured values:

Evaluation of measurement data with min./max. search and zoom function (magnifying glass icon)

JUMO PCA communication software PCC

The communication software is perfectly matched to the PCA3000, which makes it easy to extract data via the interface or modem.

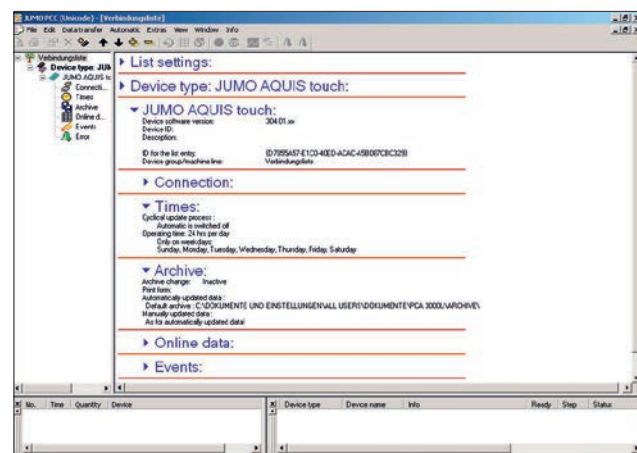


Figure 2

■ Data transport:

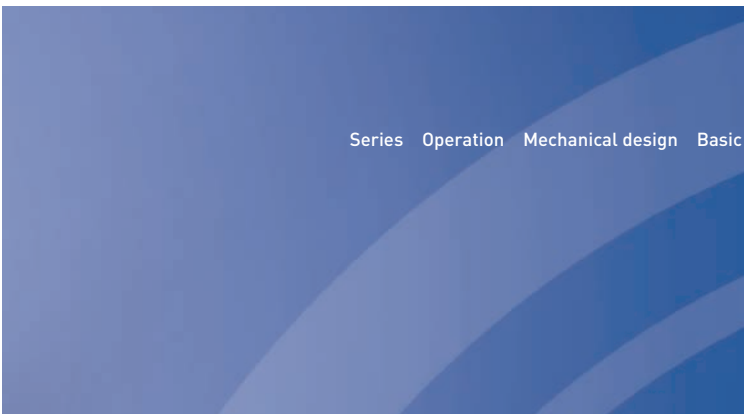
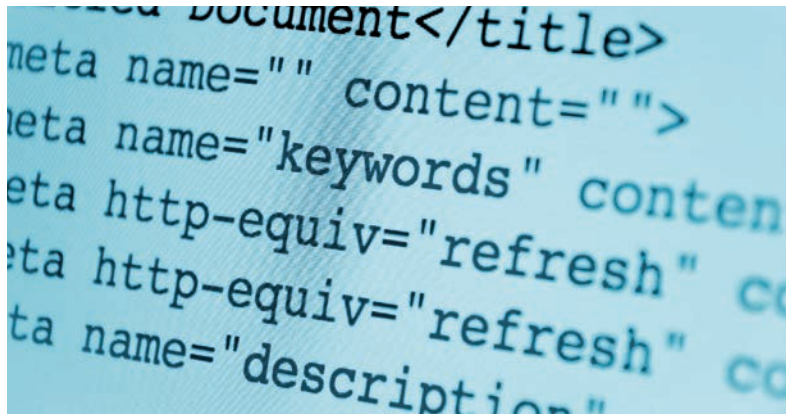
Automated data extraction and saving via interface or modem

■ Data storage:

Backup and archiving of all process data in an easily understandable data file

■ Teleservice function:

Display of current process data, for example, via modem, Ethernet, etc.

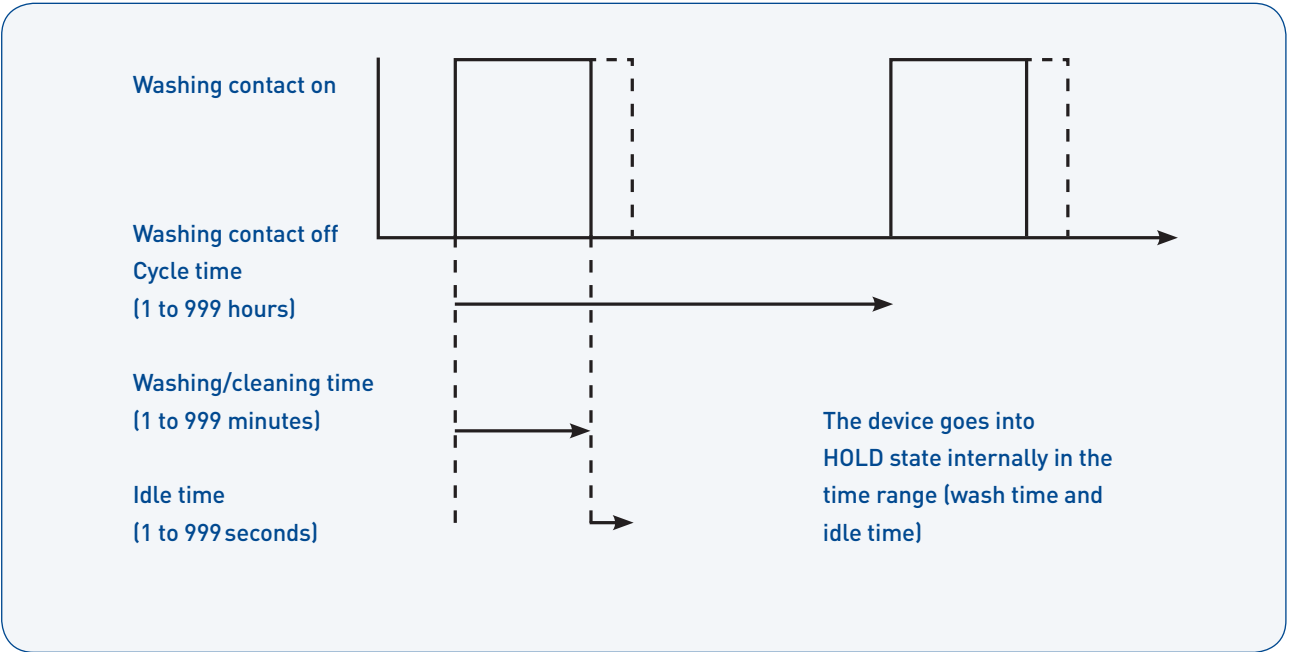


Timer, math and logic functions

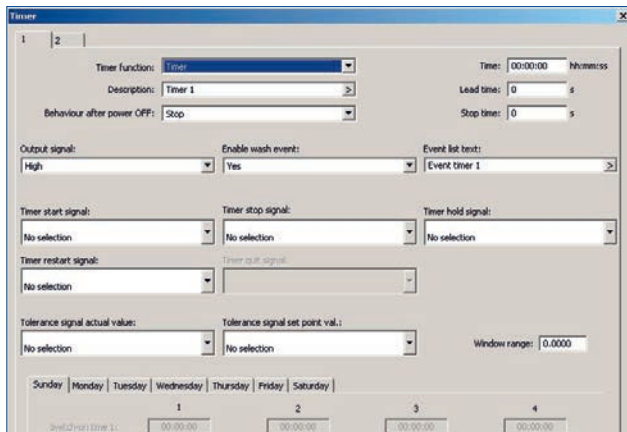
Two standard timer modules are integrated in JUMO AQUIS touch devices. They can be configured as a timer or time switch. When configured as a timer, they operate similar to a time relay. When configured as a time switch, they allow two recurring actions to be performed automatically. In addition, a special wash timer and calibration timer as well as math and logic functions are available.

The time switch function corresponds to that of a weekly timer. Up to four activation and deactivation times can be set for each weekday. Two wash timers are used to automatically clean electrodes in regular cycles. The sequences of the cleaning cycle are repeatedly triggered at a preset interval. Wash timers, for example, can actuate

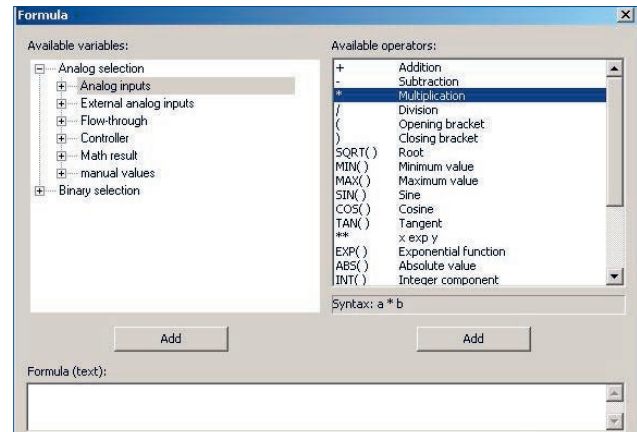
binary outputs to activate a cleaning process in the plant. Using the wash timer function in connection with a corresponding fitting extends the operating life of a number of sensors, while significantly increasing the availability of a measuring point at the same time.



Cleaning cycle that can be programmed using the wash timer



Setup mask for configuring the timer module

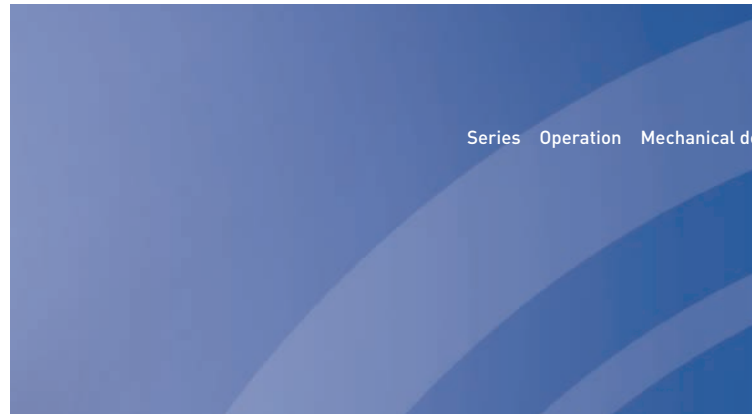


Setup mask for the configuration of math formulas

The calibration timer function regularly reminds the operator to recalibrate the sensors. Corresponding alarms and event list entries can be individually configured. Calibration processes are also documented with a date and time stamp along with the electrode data in a calibration logbook.

The timer is controlled for starting, resetting, and stopping via binary signals. A timer can also be stopped, or its start delayed, by a tolerance band function. The tolerance band represents the deviation of a measured value from a predefined reference. If the configured deviation is exceeded, the respective timer is stopped. The chronological sequence of the timer signal can be influenced using the "Time", "Lead time" and "Ending time" settings so that typical time relay functions, such as response or release delay, can be implemented.

An optional math and logic module is also available. Among other things, it allows the user to link analog channels together as well as analog channels with counters and binary inputs. The user can select a number of operators in the math module. As a result, the user can create formulae with basic arithmetic operations, root functions, power functions, logarithm functions, angle functions, and many other functions. Operators AND, OR, NOT, XOR, and edge detections are available for logic printouts. The calculations, links, and evaluations setup using the math and logic functions considerably expand the scope of the functions offered by JUMO AQUIS touch devices. They allow the user to dispense with external devices, which up until now were essential for implementing the corresponding functions. The math and logic module can be configured using a PC setup program.

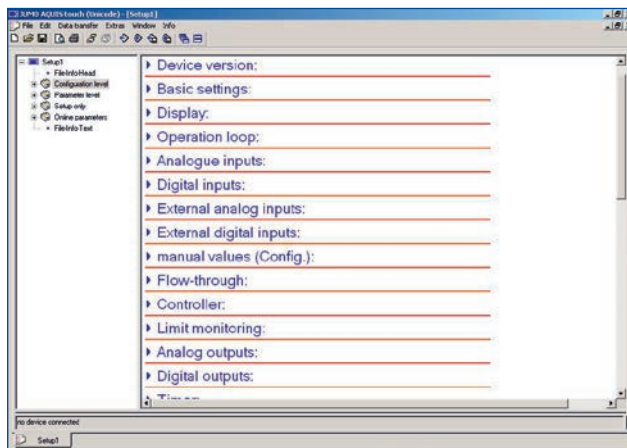


Setup program

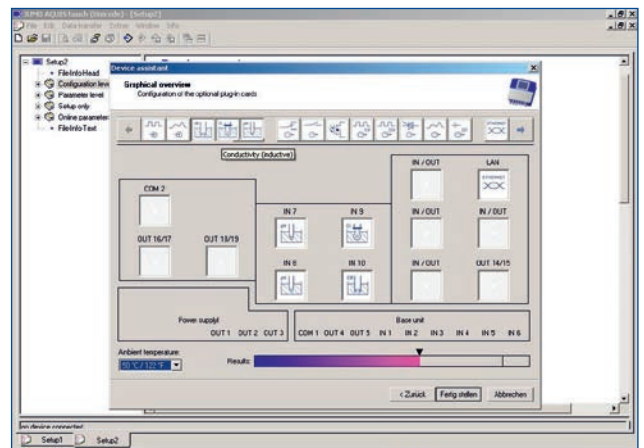
The setup program is used for project design and configuring the entire measuring and control system. Additional functions available as add-on options (such as the paperless recorder or math and logic module) can also be optionally activated here using an individual code.

Features:

- User-friendly configuration, parameterization
- Teleservice function (display of the process data)
- Input of math and/or logic formulae
- Process screen editor
- System documentation
- Connection via standard USB cable



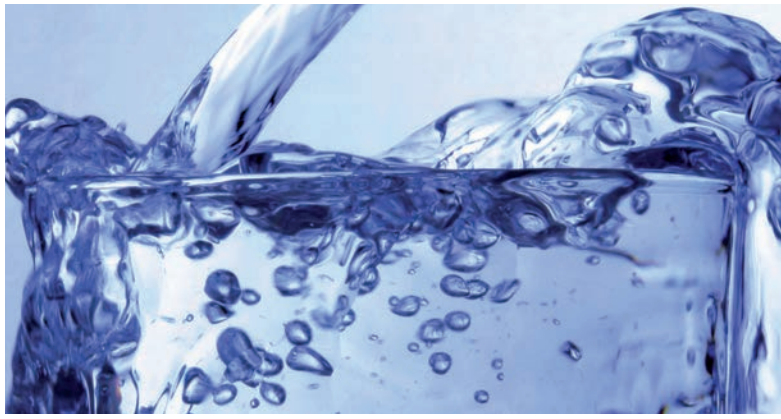
User interface of the setup program



Graphical overview for simple combination of optional hardware components

The most important applications at a glance





Applications

Drinking water monitoring

In addition to the traditional parameters of pH value, conductivity, temperature, chlorine concentration, level, and flow volume, other measurands, such as turbidity, can also be added using the numerous optional inputs on the JUMO AQUIS touch S/P. As a result, it forms the central monitoring unit for all important parameters for controlling drinking water or wells. Digital interfaces, for example, Ethernet/LAN, can be used for remote control via the Internet (integrated web server). Warnings and alarms can also be sent as SMS text messages.

- Measuring pH values, conductivity, disinfection measurand (e.g. free chlorine)
- Limit value monitoring (min./max.)
- Flow volume measurement
- Recording levels (for example, for containers and wells)

Cooling tower control

The JUMO AQUIS touch S/P can be used for controlling/monitoring cooling towers. All the traditional tasks can be performed by a single device:

- Measuring conductivity (conductively or, as is common today, inductively and therefore maintenance-free)
- Plant temperature monitoring
- Limit value monitoring (dilution) including controlling the dilution valve
- Time-controlled addition of biocide
- Temporary inhibition of the dilution valve after adding biocide
- Redosing of cooling water including quantity check

Industrial wastewater

Time and time again wastewater, a byproduct of industrial processes, cannot be drained directly into the sewer system due to its pollution level, pH value, or salt content. This wastewater is generally collected in tanks. When the tank reaches the corresponding level, the wastewater first undergoes chemical-mechanical cleaning and/or pH neutralization. The cleaned water is subjected to a final check before it can be drained. A single JUMO AQUIS touch device can carry out all the following tasks in this scenario:

- Redox voltage measurement for chemical precipitation of toxins including limit value checks
- pH neutralization of wastewater by 2-sided control (three-state controller)
- Final check of pH value and temperature parameters
- Optional flow volume measurement
- Recording data with officially recognized paperless recorder function (tamper-proof data format)

Desalination of brackish water and seawater

A number of sensors are required for monitoring and controlling the individual process steps in a seawater desalination plant (for example, reverse osmosis, pre-treatment and post-treatment). The JUMO AQUIS touch S/P is a sound economical solution for simultaneously evaluating these sensors. It also allows for the setup of compact mobile units to produce drinking water:

- Simultaneous measurement of pH value, redox voltage, conductivity (inductively and conductively), chlorine concentration, pressure, and temperature
- Integrated math module (makes it possible to calculate the efficiency of the reverse osmosis unit)
- Tamper-proof recording of measured values according to official requirements

Dairy, brewery, and beverage technology

Cleaning in Place (CIP) is today's standard cleaning method in the food processing and pharmaceutical industry. CIP is a process during which cleaning and disinfection solutions circulate in the system and production and bottling stations can be cleaned without requiring prior removal. The precise combination of factors, such as chemicals, temperature, mechanical equipment, and time, makes cleaning a reliable and reproducible process. CIP cleaning minimizes the risk of contamination and cross-contamination and therefore ensures product safety at all times. The JUMO AQUIS touch S/P offers all the relevant features:

- Activation of up to 4 measuring ranges
- Activation of up to 4 temperature coefficients
- Connection of up to 4 inductive conductivity sensors
- Direct concentration measurement of the cleaning solution, such as NaOH or HNO₃
- Integrated paperless recorder

Pure and high-purity water (UPW)

The JUMO AQUIS touch devices are particularly well-suited for applications in the pharmaceutical industry. By taking into consideration specific standards, such as USP Water Conductivity <645> for limit value monitoring and ASTM 1125-95 for temperature compensation, the device can be used for all measurements of redox voltage, conductivity, and pH value in high-purity water plants, reverse osmosis plants, and EDI and CIP/SIP plants.

- Limit value monitoring according to USP Water Conductivity <645> is possible
- Limit value monitoring according to European Pharmacopoeia standards is possible
- Activation of temperature compensation according to ASTM 1125-95
- "Pharma CIP" possible by 4-pin conductivity measurement
- Integrated paperless recorder

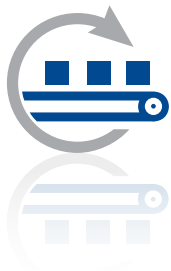


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It is the quality of our products that is responsible for such a high level of customer satisfaction. But our reliable after-sales service and comprehensive support are also valued. Let us introduce you to the key services we provide for our innovative JUMO products. You can count on them – anytime, anywhere.

JUMO Services & Support – so that it all comes together!

Manufacturing Service



Are you looking for a competitive and efficient system or component supplier? Regardless of whether you seek electronic modules or perfectly fitting sensors – either for small batches or mass production – we are happy to be your partner. From development to production we can provide all the stages from a single source. In close cooperation with your business our experienced experts search for the optimum solution for your application and incorporate all engineering tasks. Then JUMO manufactures the product for you. As a result you profit from state-of-the-art manufacturing technologies and our uncompromising quality management systems.

Customer-specific sensor technology

- Development of temperature probes, pressure transmitters, conductivity sensors, or pH and redox electrodes according to your requirements
- A large number of testing facilities
- Incorporation of the qualifications into application
- Material management
- Mechanical testing
- Thermal test



Electronic modules

- Development
- Design
- Test concept
- Material management
- Production
- Logistics and distribution
- After-sales service



Metal technology

- Toolmaking
- Punching and forming technology
- Flexible sheet metal machining
- Production of floats
- Welding, jointing, and assembly technology
- Surface treatment technology
- Quality management for materials



More than **sensors + automation**



Information & Training



Would you like to increase the process quality in your company or optimize a plant? Then use the offers available on the JUMO website and benefit from the know-how of a globally respected manufacturer. For example, under the menu item “Services and Support” you will find a broad range of seminars. Videos are available under the keyword “E-Learning” about topics specific to measurement and control technology. Under “Literature” you can learn valuable tips for beginners and professionals. And, of course, you can also download the current version of any JUMO software or technical documentation for both newer and older products.

Product Service



We have an efficient distribution network on all continents available to all of our customers so that we can offer professional support for everything concerning our product portfolio. Our team of professional JUMO employees is near you ready to help with consultations, product selection, engineering, or optimum use of our products. Even after our devices are commissioned you can count on us. Our telephone support line is available to give you answers quickly. If a malfunction needs to be repaired on site our Express Repair Service and our 24-hour replacement part service are available to you. That provides peace of mind.

Maintenance & Calibration



Our maintenance service helps you to maintain optimum availability of your devices and plants. This prevents malfunctions and downtime. Together with the responsible parties at your company we develop a future-oriented maintenance concept and are happy to create all required reports, documentation, and protocols. Because we know how important precise measurement and control results are for your processes we naturally also professionally calibrate your JUMO devices – on site at your company or in our accredited DAkkS calibration laboratory for temperature. We record the results for you in a calibration certificate according to EN 10 204.



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