



More than **sensors + automation**



Food Technology

Innovative solutions for your success



Contact – Sensors

Phone: +49 661 6003-722

Email: sensors@jumo.net

Contact – Automation

Phone: +49 661 6003-727

Email: automation@jumo.net



Dear Reader,

Food is an integral part of our everyday lives. But only manufacturers know just how much the production of food depends on reliable processes and accurate measurement technology.

JUMO is at your side as a reliable partner to help when you have questions and to provide you with quick solutions on such matters. We do so regardless of whether you monitor your process through pressure, temperature, conductivity, or pH value. We're also at your side for controlling the cleaning process or reducing production costs.

So how do we do it? By applying years of experience and professional expertise. JUMO has been a leading manufacturer of measurement and control systems for more than 60 years. This has helped us become an expert partner for the food industry.

We place great value on regular new developments, constant improvement of existing products, and on increasingly economic production methods because only this path allows us to achieve the highest degree of innovation for you.

We at JUMO offer you only the best in the food industry as well – in particular a multitude of solutions for the most varied applications.

Our solutions support you in implementing HACCP concepts or the IFS standard.

This brochure provides an overview of JUMO products and systems for the food industry. Of course, we would also be happy to develop individual solutions that are completely customized to your requirements.

The ultimate result of these solutions is consistently high quality!

For detailed information about our products arranged by type and product group number please visit www.industry.jumo.info.

Contents



Temperature	4
Liquid analysis	6
Pressure	8
Flow	12
JUMO PEKA	14
Humidity	16
Control	18
Recording	20
Monitoring	22
Automation	24



Temperature

Temperature is the most important measurand in the food industry.

It affects the used raw materials and must be precisely controlled as well as monitored to prevent variations in quality. The first-class systems from JUMO help with this task.



Temperature sensors for the food industry

Temperature is measured in many applications in the food industry, especially in process technology.

Whether your production uses the high or low temperature range, you can rely on the accuracy of our temperature probes. We have the right probe for processes that are subject to extreme conditions and that have wide temperature fluctuations.

For enclosed, hygienically demanding processes we offer thermowells and EHEDG-certified products made of stainless steel 1.4404/1.4435 (316 L) that are electropolished to a roughness of $R_a \leq 0.8 \mu m$.

JUMO Wtrans is the ideal product if you cannot use a cable (e.g. in rotating containers, production lines, or at great heights). The device can be used flexibly so that it transmits measured values accurately via wireless transmission. A high temperature version is now available as a product upgrade which can be used up to a temperature of 125 °C.

JUMO RTD temperature probe B-head
Type 902020



JUMO PROCESStemp
RTD temperature probe for process technology with ATEX approval
Type 902820



JUMO FOODtemp
Insertion RTD temperature probe
Type 902350



JUMO Dtrans T100
Screw-in RTD temperature probe with CIP-compliant conical seal
Type 902815



JUMO DELOS T
Electronic temperature switch with display and analog output
Type 902940



JUMO RTD temperature probe
For the food and pharmaceutical industry
Type 902810



JUMO Wtrans receiver
For RTD temperature probe with wireless/data transmission
Type 902931



JUMO Wtrans T
RTD temperature probe with wireless data transmission and temperature-resistant electronics which can be used up to 125 °C
Type 902930





Liquid analysis

For the manufacturing, storage, and processing of food JUMO offers measurement technology for the classical parameters such as temperature, pressure, and humidity. In addition, JUMO also offers measurement technology and sensors for liquid-chemical measurements such as pH value and conductivity measurement.



Liquid analysis

A balanced and proven product range is available for the most important parameters such as pH value, redox, and electrolytic conductivity. Other than handheld measurement devices to ensure quality control (through insertion pH value measurement in meat and cheese) online measurement technology is also available for continuous measurement. When packaging, bottles, and plants are disinfected the process can be monitored for measurements of free chlorine, chlorine dioxide, hydrogen peroxide, peracetic acid, and ozone.

In addition to the tried and tested JUMO CTI-750 inductive conductivity measuring devices in plastic or stainless steel case, the product range for CIP/SIP systems now also includes the tecLine CR-4P conductive four-pin conductivity probe. Holders and fittings with process connections typically used in food technology are available for these sensors.

The non-glass JUMO ISFET pH electrode allows you to measure pH value directly in the process and evaluate it with the JUMO AQUIS 500 pH. The electrode bears the "3A Sanitary Standard" symbol, indicating that it can be used in food and pharmaceutical applications where hygiene is a sensitive issue.

Constructed from FDA-listed materials and with a wide range of process connections manufactured in accordance with EHEDG guidelines, these electrodes are guaranteed to be safe for use in hygienic applications.

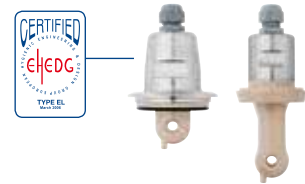
JUMO CTI-750

Conductivity transmitter
stainless steel case
Type 202756



JUMO tecLine Ci

Hygienic inductive conductivity and temperature sensor
Type 202941



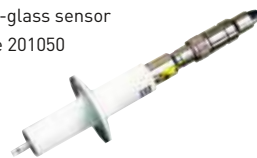
JUMO retractable holder, pneumatical

With hygienic process connection
Type 202823



JUMO ISFET pH electrode

Non-glass sensor
Type 201050



JUMO tecLine HY

Hygienic HeavyDuty electrodes for measuring pH value
Type 201022



JUMO dTRANS pH/CR/AS 02

Compact multichannel transmitter/controller series for liquid analysis
Types 202551, 202552, 202553



JUMO tecLine CR-4P

Conductive four-electrode conductivity sensor
Type 202930



JUMO AQUIS 500 pH/CR/Ci/AS

Transmitter / controller series for liquid analysis
Types 202560, 202565, 202566, 202568



JUMO AQUIS touch P/S

Modular multichannel measuring device with integrated controllers and recording function – with IP67 protection
Types 202580, 202581





JUMO digiLine

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


With JUMO digiLine, JUMO presents a bus-compatible connection system for digital sensors used in liquid analysis which also offers Plug and Play functionality. JUMO digiLine 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.


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 both individual measuring points and 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 digiLine electronics can continue to be used even when the sensor becomes worn
- Simple and reliable calibration of sensors and comprehensive measuring point management can be completed easily on a PC with the JUMO DSM (Digital Sensor Management) software tool

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

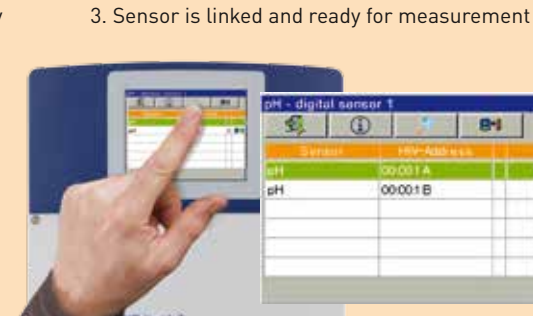


1. Connect sensor



2. Sensor is detected automatically

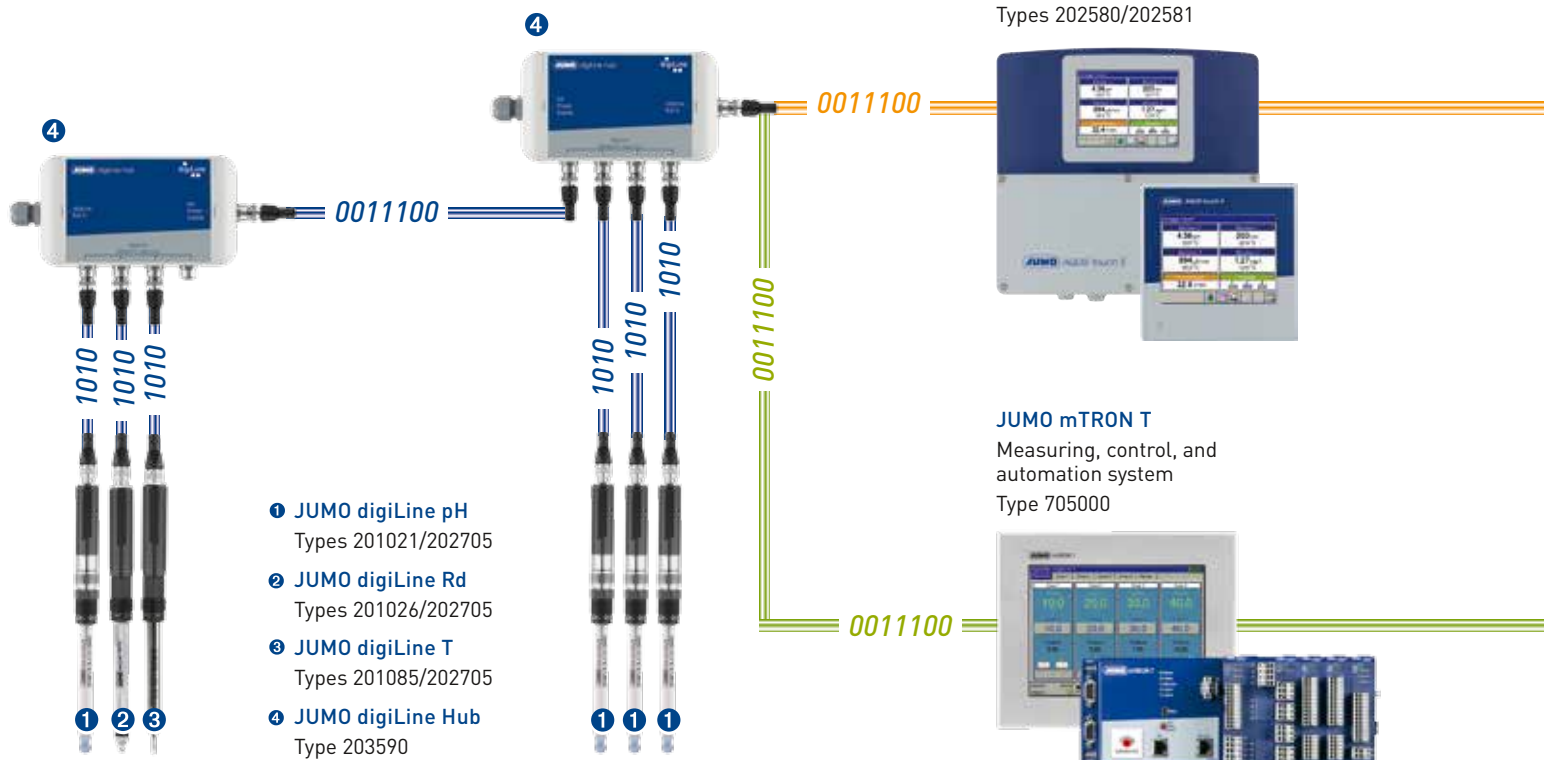
Id	Description	Parameter	Unit
1	digital sensor 1	pH	B-1
2	digital sensor 2	pH	B-1
3		no sensor	
4		no sensor	
5		no sensor	
6		no sensor	



3. Sensor is linked and ready for measurement

Sensor	HW-Address
pH	00001A
pH	00001B

System structure digiLine



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 six 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 four 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

JUMO digiLine sensors can also be connected to the universal measuring, control, and automation system JUMO mTRON T. This means that entire automation solutions can be implemented. Thanks to its scalability, the system also allows individual adaptation to a particular task. An integrated PLC is used to integrate up to 62 digiLine sensors.



Pressure

In addition to temperature, pressure also plays a major role in many areas of food production.

To support you in monitoring and controlling these processes we have developed a variety of high-quality pressure measuring devices.



Pressure measurement technology – powerful and reliable

Hygienic requirements in food technology are associated with measures to suppress the multiplication of micro-organisms (e.g. hygienic design or cleaning and disinfecting technology). Two crucial measurands here are process pressure and level. JUMO offers a variety of proven and reliable pressure measuring devices with different front-flush process connections to meet these requirements.

Other than the pressure separators for contaminated, extremely hot, highly-viscous, or especially corrosive media, CIP and SIP capable measuring devices (up to 200 °C) are also part of the product range. Contact between the hot medium and a stainless steel or ceramic membrane can occur directly.

Some plant engineers even have to install several connection systems to meet the requirements of different end customers. To facilitate cost effectiveness and simplicity a modular, elastomer-sealed process connection adapter system was designed and certified in compliance with EHEDG guidelines: JUMO PEKA, page 14/15.

JUMO dTRANS p30

Pressure transmitters
Type 404366



JUMO dTRANS p31

Pressure transmitter for elevated medium temperature
Type 402050



JUMO dTRANS p20 DELTA

Differential pressure transmitter with display
Type 403022



JUMO dTRANS p20

Process pressure transmitter with display
Type 403025



JUMO DELOS SI

Electronic pressure switch highly precise, programmable, with display, stainless steel case, also available for high medium temperatures
Type 405052



JUMO Wtrans p

Pressure transmitter with wireless data transmission
Type 402060





Flow

One of the most important measurands in liquid food is flow measurement. The magnetic-inductive measurement method is most commonly used in this industry. In addition, JUMO offers differential pressure transmitters that can be used to determine flow velocity for gases among other substances.

As such, we have the right solution for all your applications, regardless of whether you're measuring the flow of gas or liquids.



Precision flow measurement for continuous monitoring and controlling

JUMO helps you to design safe processes in the food industry with precise flowmeters that have long-term stability. Depending on the application, we can provide the right flowmeters for liquids, gases, or vapors. We can also provide ATEX approval or hygienic process connections if required.

The JUMO product range comprises a wide range of devices. Orifice plates and Pitot probes offer the greatest device variety. When these are combined with differential pressure transmitters they also provide the best measuring accuracy.

We also offer electromagnetic flowmeters for flow measurements in liquids in particular. The JUMO flowTRANS MAG H01 was especially developed for hygienic applications. The device is particularly flexible and available with a large variety of nominal widths, measuring tube linings, materials, and hygienic process connections.

JUMO flowTRANS MAG H01

Electromagnetic flowmeter for hygienic applications
Type 406015



JUMO dTRANS p02/p20

Differential pressure transmitters
Types 404382, 403022, 403023



JUMO PINOS L01

Calorimetric flow sensor
Type 406040



MID flow transmitters

Type 406010



Fittings for flow sensors

Type 406090





JUMO PEKA

The JUMO PEKA process connection adapter system is available for hygienic applications. It is suitable for temperature, pressure, and conductivity measuring devices. The hygienic design guarantees you optimum process safety for whatever measurand you may need.



Hygienic design combined with maximum flexibility

The adapter system is available for temperature, pressure, and conductivity measuring devices. Parts of the EHEDG-certified adapter system that come into contact with the product are made of 1.4435 (316 L) stainless steel and fitted with FDA-compliant seals. Because of its cavity-free mounting and hygienic design, the system is easy to clean and specifically geared to the requirements of the food, pharmaceutical, and biotechnology industries.

The rigid connection piece with rotatable adapter protects the flush-mounted O-ring against damages caused during mounting while at the same time allowing the user to set the optimal direction of the measuring device. The measuring device's thread ensures that it can be mounted and removed any number of times. This feature simplifies mounting, cleaning, and maintenance processes.

The system's different process connections (welding socket, orbital welding socket, clamp, aseptic according to DIN 11864-1, and VARIVENT®) make it versatile to use and suitable for every application.

The system can be combined with the following product groups:
902810, 902815, 902940 (page 5),
402050, 404366, 405052, 403025
(page 7), 202930 (page 9).

Process connection JUMO PEKA*



*Process connection in the data sheet of the respective measuring device: 997.

Process connection adapter





Humidity

Do you produce dry, pulverized products?

If you do, relative humidity certainly plays the decisive role in your production process. JUMO also offers you reliable measuring systems for this purpose so that optimum support for your production monitoring is provided.



Humidity sensors

Measuring humidity plays an important part for powder production, especially so in the production of hygroscopic substances.

The hygrothermal transducers of the 907023 series are the ideal solution for measuring humidity and temperature under extreme process conditions.

The device series is based on 30 years of experience in industrial humidity measurement. The capacitive humidity sensor measures precisely and reliably. In addition, it is also resistant to normal contamination and many chemicals.

The measuring probes are also available with a large graphical display. On it, the process can be easily monitored and traced back up to one year.

The greatest advantage of the hygrothermal transducer with intelligent interchangeable probe (type 907027) is the pluggable probe which can be replaced in just seconds. Calibration data stored directly in the probe means that probes can be replaced when necessary without any loss of accuracy. Moreover, precision calibration procedures and the latest microprocessor technology guarantee reliable measurement and excellent measuring accuracy throughout the entire operating range.

JUMO industrial measuring probe

For humidity, temperature, and derived variables
DIN 43710 and DIN EN 60584
Type 907023



JUMO hygrothermal transducer, capacitive

With intelligent exchange probes
Type 907027





Control

Optimal solutions in food manufacturing can only be guaranteed when the sensor design and the control of measurands are suitable. JUMO systems are perfect for this task.



Control

High-precision controllers are required whenever multiple physical measurands such as time, temperature, or pressure must be precisely monitored in a process. Our electronic microstats can be used to regulate cooling and temperature control quickly and precisely. Our compact controller series JUMO iTRON, JUMO cTRON, and JUMO dTRON have been developed for more complex requirements. Most control tasks can be performed with these devices. Fieldbus interfaces provide the connection to process control systems.

The JUMO IMAGO F3000 was specifically designed for cooking and smoking systems in the meat processing industry.

The JUMO IMAGO 500 process controller with color screen and 50 time planning programs offers optimum operator control and can be used in processes with diverse recipes for a variety of different foods. With up to eight control channels the single device can regulate, monitor, and control different processes such as flow, pressure, temperature, or level of a plant. Accurate adjustment is particularly important with processes in the food industry to prevent such consequences as overheating. This can be achieved with an integrated cascade controller in the JUMO IMAGO 500.

JUMO mTRON T – Central processing unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO mTRON T – Multifunction panel 840

Measuring, control, and automation system
Type 705060



JUMO IMAGO F3000

Process controllers for boiling, smoking, and air conditioning systems
Type 700101



JUMO IMAGO 500

Multichannel process and program controller
Type 703590



JUMO DICON touch

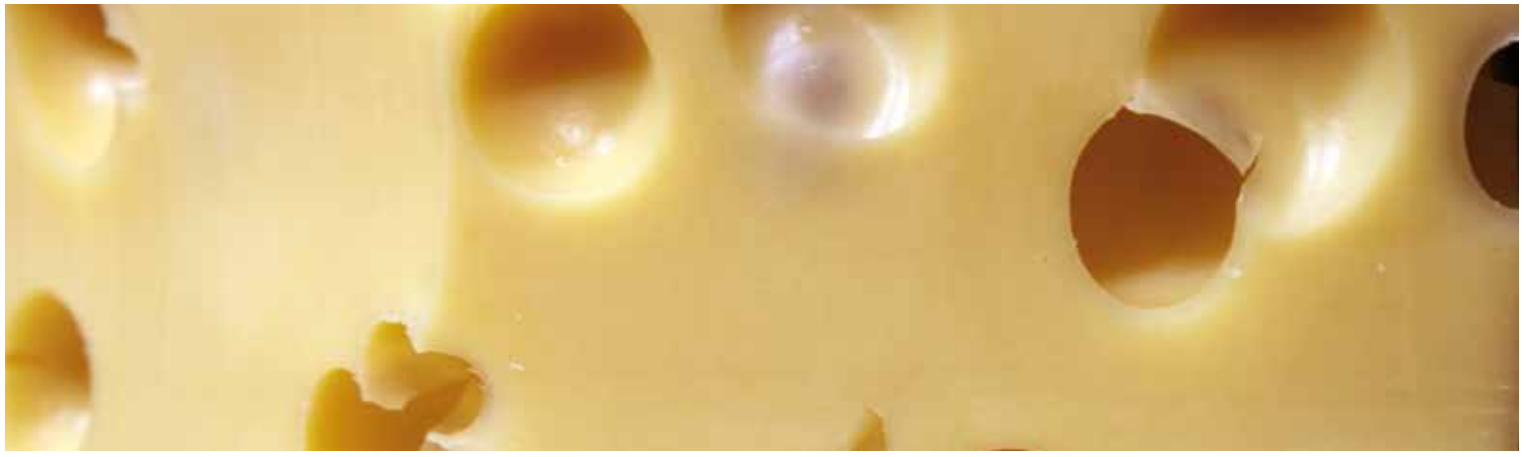
Two-channel process and program controller with paperless recorder and touchscreen
Type 703571



JUMO dTRON

Compact controller with program function
Type 703041





Recording

Are you familiar with the JUMO LOGOSCREEN series? With the devices in this family of paperless recorders you are ideally equipped to collect, archive, and evaluate measured values that must be verified in a tamper-proof manner.



Recording, archiving, and evaluating

With JUMO LOGOSCREEN your process data can be reliably recorded and archived in a tamper-proof manner. The data is either evaluated directly on the device or on a PC using the JUMO PCA3000 evaluation software. Batch reports can be printed on customized forms. But that is not all: the next generation of paperless JUMO LOGOSCREEN nt recorders offers online visualization of process data, different methods of limit value monitoring, different procedures for remote alarm in case of malfunction, and simultaneous recording of three unrelated batch processes

The devices meet the requirements and guidelines laid down by the heating committee for measurement, control, and safety equipment for milk heating systems.

Because measurement data is recorded continuously, JUMO paperless recorders give you the crucial advantage of using evaluated data to explicitly optimize your process, making it possible to increase plant productivity efficiently over the long term.

JUMO mTRON T – Central processing unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO mTRON T – Multifunction panel 840

Measuring, control, and automation system
Type 705060



JUMO LOGOSCREEN nt/fd

Paperless recorder with TFT display, CompactFlash® card, USB interfaces, stainless steel front, and sensor control panel; FDA-compliant data recording with type fd
Types 706581, 706585



JUMO LOGOSCREEN 600

Paperless recorder with touchscreen
Type 706520





Monitoring

Because temperature has a significant effect on the quality of food, JUMO provides reliable solutions for monitoring the temperature in processes.



Plant monitoring with electronic or electromechanical thermostats

Deviations from the required process temperature have a direct effect on the properties of the food that is produced. Temperature monitoring is therefore a crucial factor in the food industry.

It is especially important to monitor this parameter in all plants in which it is critical for the actual temperature not to exceed or fall below a specific temperature range as otherwise the end product would be detrimentally and irreversibly affected. An example of this type of process is temperature control of chocolate.

To prevent such irreversible damage, JUMO offers you electronic or electro-mechanical thermostats that constantly monitor your plant. The decisive advantage: if the maximum or minimum temperature of the plant is reached then the thermostats, which are approved according to DIN EN 14597, switch off to be on the safe side.

JUMO safetyM STB/STW/Ex

Safety temperature limiter/monitor according to DIN EN 14597
Types 701150, 701155



JUMO safetyM TB/TW

Temperature limiter/monitor according to DIN EN 14597 as insertion and DIN-rail device
Types 701160, 701170



Surface-mounted thermostat

ATH series
Type 603021



JUMO heatTHERM-AT

Surface-mounted thermostat
Type 603070



JUMO heatTHERM

Panel-mounted thermostat, EM series
Type 602021



JUMO heatTHERM

Panel-mounted thermostat
Type 602031



JUMO frostTHERM-AT/-DR

Frost protection thermostat
Type 604100



JUMO frostTHERM-ATE

Electronic frost protection thermostat
Type 604170





Automation and visualization

Problem-free processes require reliable systems.

JUMO offers those as well: from transmitters to simple indicating devices to our JUMO mTRON T automation system. This way, JUMO can automate and visualize your entire process.



Transmitters

Transmitters designed for industrial applications record the temperature with a Pt100 RTD temperature probe with two or three wire connection technology. The output signal 4 to 20mA is available as temperature-linear. The continuous analog signal path produces extremely rapid response times for the output when the temperature changes. This results in a low-noise output signal that is immune to interference. Maximum precision is ensured by range-specific amplification – even in small measuring ranges. The transmitter can be adapted to the measuring task via digital communication.

Visualization

The JUMO SVS3000 process visualization system provides effective operator control, visualization, and documentation. As a special feature the device provides batch documentation, which allows batch-oriented storing of processes. A user-friendly operator interface with numerous functions is available for this: application explorer, alarm and event lists, recipe function, etc. Fast, easy software configuration saves expensive application costs.

JUMO dTRANS T05

Programmable two-wire transmitter
Types 707050, 707051



JUMO dTRANS T02 Ex

Programmable four-wire transmitter
Type 707020



JUMO Wtrans B

Programmable head transmitter with wireless transmission
Type 707060



JUMO dTRANS T03

Two-wire/three-wire transmitter
Type 707030



JUMO SVS3000

Process visualization software
Type 700755



JUMO di308

Digital indicator
Type 701550





JUMO mTRON T – Your System

The scalable measuring, control, and automation system

JUMO mTRON T combines a universal measured value recording system with a precise control system offering intuitive operation. It can also be expanded into a complete automation solution. The scalability of the JUMO mTRON T allows it to be individually adapted to a particular task. Tamper-proof data recording is just one of its outstanding features. Control and data recording therefore meet the requirements of the AMS 2750 and CQI-9 specifications.

The heart of the JUMO mTRON T is a **central processing unit** with a process map for up to 30 input/output modules. The CPU has superordinated communication interfaces including web server functionality. For individual control applications, the system has a **PLC (CODESYS V3)**, program generator, and limit value monitoring functions as well as math and logic modules.

Various **input/output modules** are available. Examples are **analog input modules** with galvanically isolated universal analog inputs for thermocouples, RTD temperature probes, and standard signals. As a result the same hardware can be used to precisely record and digitize a highly diverse range of process variables. Every **multichannel controller module** supports up to four PID control loops with a fast cycle time and proven control algorithms. The control loops here operate fully independently which means that they do not require resources from the central processing unit. Overall the system allows for simultaneous operation of up to 120 control loops so that it can also be used for sophisticated processes. Through expansion slots the inputs and outputs of each con-

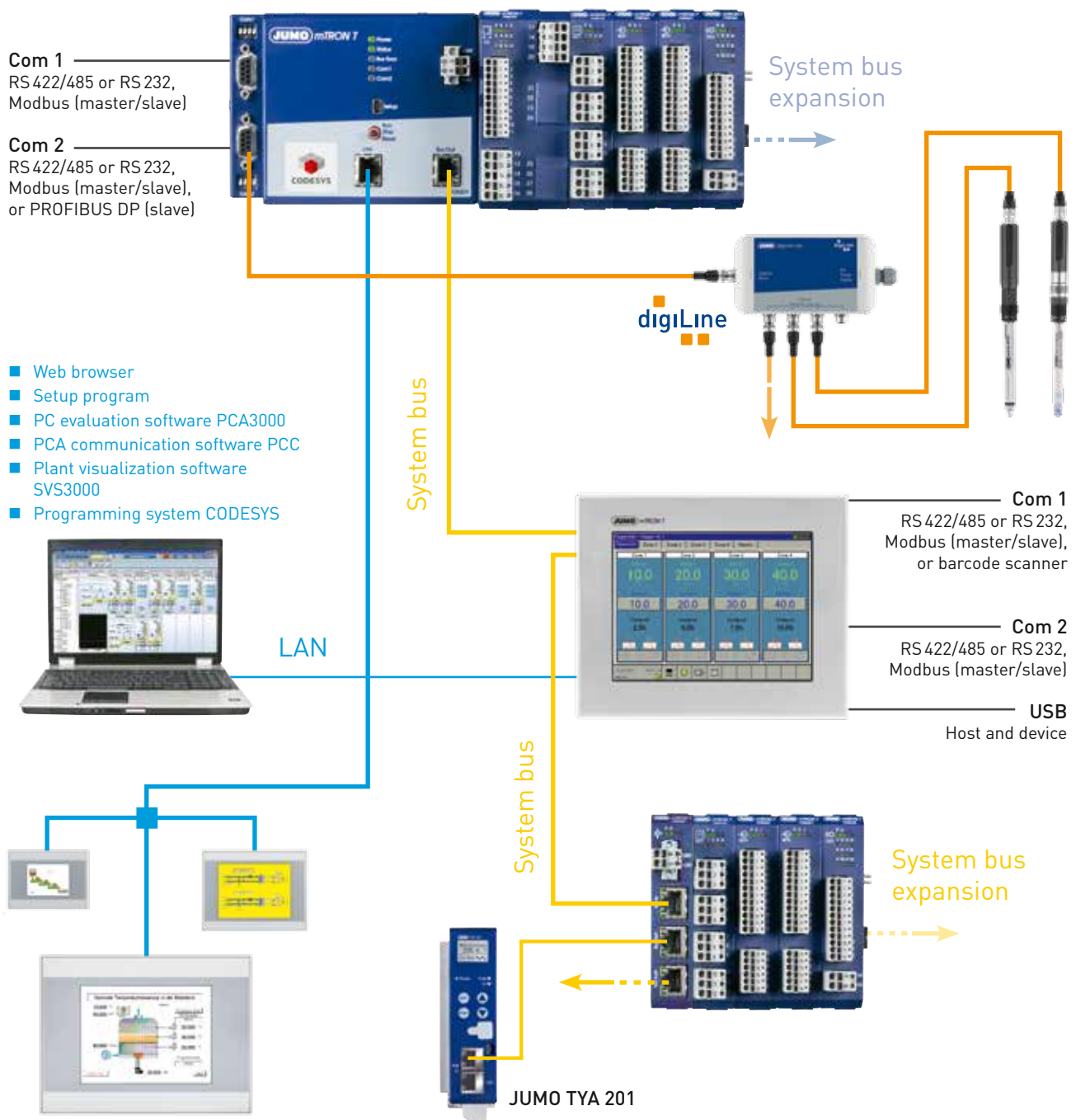
troller module can be individually expanded and adapted. **Power controllers** can also be connected directly via the system bus.

A **multifunction panel** visualizes the measured values and enables convenient operation of the overall system. User-dependent access to parameter data and configuration data can also be set up. The recording functions of a fully-fledged paperless recorder, including additional web server functionality, are also implemented in the multifunction panel. The data recording function is tamper-proof and also provides comprehensive batch reporting. Proven PC programs with standard predefined screen masks are available for extracting and evaluating historical data. If required, the JUMO mTRON T can be made even more flexible with **additional operating panels**.

A setup program is used for **hardware and software configuration** as well as for project planning of the measurement and control tasks. Users can also develop their own highly efficient automation solutions with CODESYS editors according to IEC 61131-3. And last but not least, **JUMO digiLine sensors for liquid analysis** can also be connected directly to the JUMO mTRON T via PLC application.



System structure





www.jumo.net