



More than **sensors + automation**



Chemical Industry

Innovative solutions for your success



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Dear Reader,

Chemical products surround us in our daily lives. But only manufacturers know just how much the production of these materials depends on reliable processes and accurate measurement technology.

JUMO is a reliable partner with comprehensive expertise who stands by your side, supports you in all your questions, and delivers solutions.

No matter what your requirements for measurement technology are, JUMO will always meet them. Regardless of whether these are for the raw environmental and extreme process conditions of the petro chemistry or for basic, special, and fine chemistry, JUMO has a fitting solution for the specific applications of these industries.

So how do we do it? With many years of experience and a high level of expertise. JUMO has been one of the leading manufacturers of measurement and control technology for over 60 years and, consequently, is an expert partner in the chemical industry.

We place great value on regular new developments, constant improvement of existing products, and on production methods that are consistently becoming more economical. Only this path allows us to achieve the highest degree of innovation for you.

At JUMO we offer you only the best in the chemical industry as well. Specifically that means a large variety of solutions for the most varied applications.

This brochure provides an overview of JUMO's products and systems for the chemical industry. Of course, we are also happy to work together with you to create customized solutions for individual requirements.

PS: Further information about our products can be found at www.industry.jumo.info using the specified type/product group.



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Temperature

Temperature is the most important measurand in the chemical industry. It affects the raw materials and must be precisely controlled as well as monitored to prevent variations in quality and unwanted reactions. The first-class systems from JUMO help with these processes.



Dial thermometers

Accurate temperature measurements that are independent of an energy source are often required in the chemical industry. JUMO offers products that are up to the extreme conditions in the chemical industry.

Temperature sensors

JUMO delivers a wide range of temperature probes for reliable and precise measurement results to meet the different requirements that chemical and process technology can bring.

Regardless of whether you need an RTD temperature probe or thermocouple we take your needs into account and manufacture temperature probes that are precisely tailored to the measuring task.

Materials

For chemical processes that could not be more different, chemically resistant materials must be used. We offer you the material that you need for your process (e.g. CrNi steels, titanium, tantalum, Inconel®, HASTELLOY®, ceramic).

ATEX approval

ATEX plays a major role in the chemical industry. When processing chemicals, explosive blends can often result in the chemical industry. This applies especially to organic chemicals. As a result, a large number of our products are especially approved for potentially explosive areas.

JUMO dial thermometer

With bimetal measuring system
Type 608003



JUMO contact dial thermometer

In stainless steel case
Type 608521



JUMO mineral-insulated thermocouple

According to DIN EN 43710 and DIN EN 60584
Type 901221



JUMO RTD temperature probe

J-head
Type 902030



JUMO Dtrans T100

RTD temperature probe without transmitter with ATEX approval for Pt100/Pt500/Pt1000
Type 902815



JUMO PROCESStemp

RTD temperature probe for process technology
Type 902820



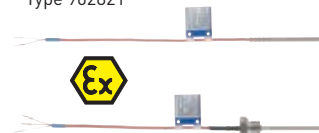
JUMO screw-in RTD temperature probe

With pressure encapsulated terminal head
Type 902820



JUMO screw-in/push-in RTD temperature probe

With connecting cable
Type 902821



JUMO Wtrans transmitter

RTD temperature probe with wireless data transmission, with temperature-resistant electronics deployable up to 125 °C
Type 902930



JUMO Wtrans receiver

For RTD temperature probe with wireless data transmission
Type 902931





Pressure, level, and flow

In addition to temperature the measurands pressure, level, and flow also play a major role in the manufacturing and processing of many chemicals. We have developed a number of high-quality pressure measuring devices to support you in this task.



Measuring devices for pressure, level, and flow

Our pressure measuring devices have withstood the demanding requirements of the chemical industry for years. They are produced according to the pressure equipment directive and can be used in explosion-protected areas.

Whether process pressure, level, or flow: with JUMO, you are ready for everything. Our pressure measuring devices can be adapted to all processes. Various special materials are available for corrosive media. Hot media up to 200 °C is controlled with standard devices. We can also resolve extreme cases with pressure separators or plastic housing.

You can use the JUMO dTRANS p20/p20 DELTA process pressure transmitter series for all pressure measurement tasks in the industry. The external control knob enables you to operate the device without opening it even in explosion-protected areas.

We also offer electromagnetic flowmeters especially for flow measurements in liquids. The devices were developed for industrial applications. They are particularly flexible and available with a large variety of nominal widths, measuring tube linings, materials, and process connections.

JUMO dTRANS p20/p20 DELTA

Process pressure transmitter with display
Types 403022, 403025, 403026



JUMO MAERA F27

Level probe in plastic version for aggressive media
Type 404391



JUMO MIDAS S21 Ex

Pressure transmitter for use in Ex areas
Type 404710



Pressure transmitter and level probes

With ATEX approval – up to 200 °C medium temperature
Type 404753



JUMO DELOS SI/HP

Precision pressure transmitter with switching contact and display
Types 405052, 405054



JUMO PINOS L01

Flow sensor
Type 406040



JUMO flowTRANS MAG S01

Electromagnetic flowmeter for industrial applications
Type 406012



JUMO flowTRANS MAG H01

Electromagnetic flowmeter for hygienic applications
Type 406015





Humidity

Do you produce dry, pulverized products?

Then humidity definitely plays a decisive role in your production plant.

JUMO also offers reliable measuring systems that can help you monitor your process.



Humidity sensors

Humidity measurement plays an important part in powder manufacturing, particularly so with hygroscopic substances. The intrinsically safe hygrothermal transducers from the 907025 series provide the ideal solution for measuring humidity and temperature under extreme process conditions.

These intrinsically safe industrial measuring probes are the first choice for acquiring humidity, temperature, and derived measurands. The measuring probes are extremely robust and are based on the latest sensor technology. The microprocessor-controlled electronics and a large number of options allow the devices to be applied with a high degree of flexibility.

Furthermore, they can be installed completely in areas that are classified as a permanent explosion hazard.

On the other hand, the capacitive hygrothermal transducer is a convincing solution with intelligent interchangeable probes. These can be replaced in seconds and calibrated separately. The robust metal case ensures a long service life, even in harsh operating conditions.

Industrial measuring probe

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



Intrinsically safe industrial measuring probe

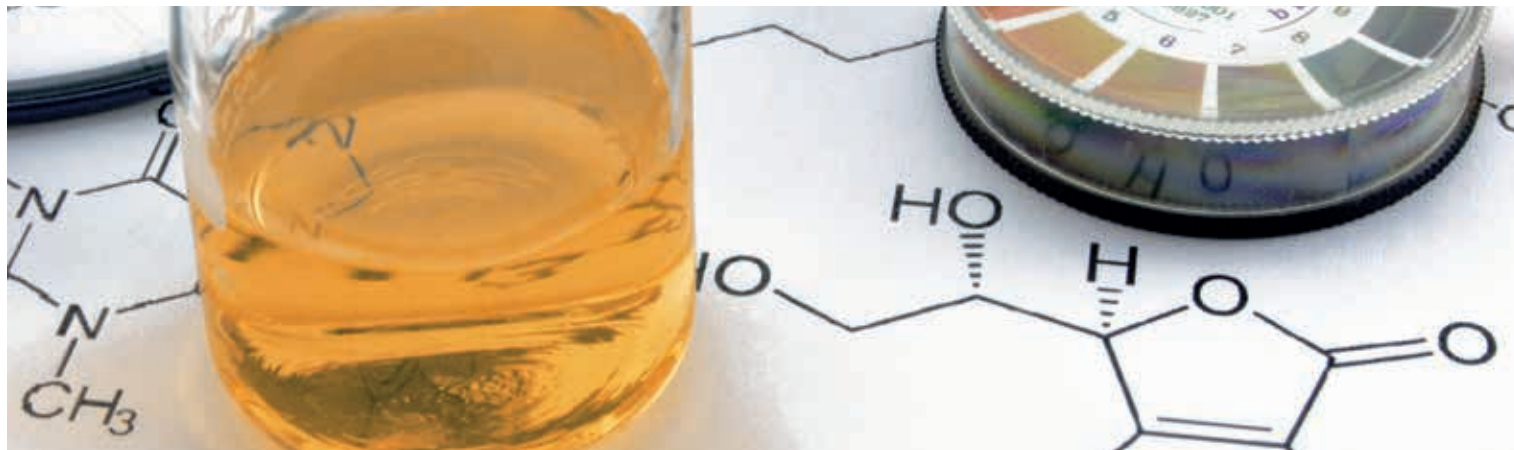
For humidity, temperature, and derived variables
DIN 43710 and DIN EN 60584
Type 907025



Capacitive hygrothermal transducer

With intelligent exchange probes
Type 907027





Liquid analysis

In addition to devices that acquire classic parameters like temperature, pressure, and humidity in the fields of manufacturing, storage, and refinement of chemicals, JUMO also offers measuring devices and sensors for use in liquid chemical media (e.g. for pH value and conductivity measurement).



Sensors and measuring devices for liquid analysis

However varied the chemical processes and requirements of the chemical industry may be, they all have one thing in common – they generate wastewater.

With the JUMO CTI-750 and JUMO AQUIS Ci conductivity transmitters you can safely and reliably determine the wastewater conductivity.

The pH value plays a major role throughout the chemical industry. Whether you use this parameter for water treatment, final product inspection, or wastewater treatment, JUMO's wide range of electrodes measures up to all requirements.

The modularity of the JUMO AQUIS touch series allows easy implementation of multichannel measurements. For example, you can simultaneously measure pH value, temperature, and chlorine concentration or also implement double pH value/double conductivity measurements. Aside from all the classic possibilities of a liquid analysis controller and transmitter you can use the new special functions: flow measurement, data logger/log book functions, safe pH value determination, as well as integrated wash and calibration timers.

JUMO tecLine HD pH/Rd

pH and redox combination electrodes
Types 201021, 201026



JUMO dTRANS pH/CR/AS 02

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



JUMO AQUIS 500 pH/CR/Ci/AS

Transmitter/controller series for pH value, redox voltage, concentration of ammonia, chlorine, chlorine dioxide, ozone, conductive and inductive conductivity, and temperatures
Types 202560, 202565, 202568, 202570



JUMO AQUIS touch S/P

Multichannel measuring devices for liquid analysis
Types 202580, 202581



JUMO dTRANS 02 01/JUMO ecoLine O-DO

Transmitter for dissolved oxygen
Types 202610, 202613, 202569



JUMO ecoLine NTU

Optical sensor for turbidity measurements
Type 202670



JUMO CTI-750

Conductivity transmitter with plastic or stainless steel case
Type 202756



JUMO tecLine CR

Conductive two-electrode conductivity sensor in stainless steel or titanium version
Type 202924





Control

Plant-specific solutions for process monitoring/controlling during the manufacturing of chemicals can only be ensured if, in addition to the sensor design, the control of the measurands is also correct. JUMO systems are perfectly suited for this task.



Single and multichannel controller

High-precision controllers are required whenever multiple physical measurands such as time, temperature, or pressure must be precisely monitored in a process.

The cooling or tempering of processes in a chemical production plant can be quickly and precisely regulated with our electronic microstates. Our iTRON, cTRON, and dTRON compact controller series were developed for more complex projects. The result is that they can reliably solve many control tasks. They have a variety of interfaces to ensure communication with and integration in process control systems.

The JUMO IMAGO 500 process controller and the JUMO mTRON T automation system are suited for demanding control tasks in complex processes.

The multichannel capability of the devices enables the regulation, monitoring, or control of different processes such as flow, pressure, temperature, or level in a plant – with one single device. Accurate adjustment is particularly important with chemical processes to avoid such consequences as overheating. Here, an integrated cascade control enables the highest process controlling quality.

Compact laboratory controller LR 316

In plastic desktop case
Type 700703



JUMO cTRON

Compact controller with timer and ramp function
Type 702070



JUMO exTHERM-DR

Two-state controller with Ex (ia) input according to ATEX
Type 703041



JUMO dTRON

Compact controller with program function
Type 703041



JUMO DICON touch

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



JUMO IMAGO 500

Multichannel process and program controller
Type 703590



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, controlling, and automation system
Type 705060





Recording

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



JUMO mTRON T ...

... enables the construction of a decentralized system for acquiring and archiving a maximum of 54 analog measuring channels and 54 digital channels.

Recording, archiving, and evaluating ...

... are well-known concepts in measurement technology, defined by the recorder device group. JUMO paperless recorders quickly and securely record process data, save/archive it, and make it accessible to the PC for tamper-proof evaluation.

JUMO LOGOSCREEN 600 ...

... was designed as a high-quality replacement for paper recorders and is the basic device in the JUMO paperless recorder series. It features a maximum of 6 universal inputs, a 5.7" TFT color display with touchscreen operation, and the option to monitor limit values. The paperless recorder is also network compatible.

JUMO LOGOSCREEN nt/fd ...

... fulfills demanding recording tasks such as batch reporting, creates mathematical and logical links between process data, and can visualize data online via a web server. The "fd" version fulfills the requirements of FDA 21 CFR Part 11 concerning electronic recording of process data.

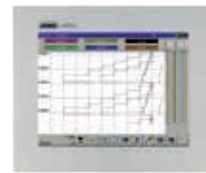
JUMO mTRON T – Central processing unit

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 600

Paperless recorders with innovative operating concept
Type 706520



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 fd type
Types 706581, 706585





Monitoring

Monitoring is especially important in the chemical industry to protect people, plants, and the environment. With JUMO you can operate your plant safely using either electronic or electromechanical products.



Plant monitoring with electronic or electromechanical thermostats

In the chemical industry you are on the safe side with JUMO safety thermostats.

Whether in trace heating, in pipelines, or in the frost-protection field – easy mounting, easy operation, and secure operation allow you to use quality and save costs.

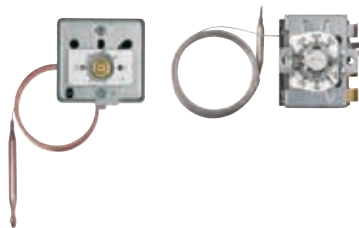
Deviations from required temperature values have a direct influence on the characteristics of the chemical product. This is why temperature monitoring is a critical task in the chemical industry.

Safety-oriented temperature monitoring is especially important in plants in which enormous risks for people and the production plant exist when the set limit values are breached.

To prevent such irreversible damage, JUMO offers you electronic or electro-mechanical thermostats that constantly monitor your plant. The decisive advantage: if the maximum 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 heatTHERM

Panel-mounted thermostat/EM series
Types 602021, 602031



JUMO surface-mounted thermostat

ATH series
Type 603021



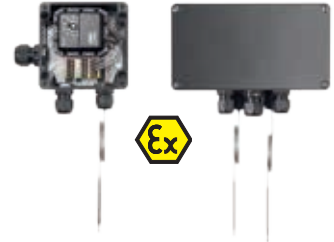
JUMO heatTHERM-AT

Surface-mounted thermostat
Type 603070



JUMO exTHERM-AT

Single and double surface-mounted thermostat
Type 605055



JUMO safetyM STB/STW/Ex

Safety temperature limiter, safety temperature monitor acc. to DIN EN 14597
Types 701150, 701155



JUMO safetyM TB/TW

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





Functional safety – even in Ex areas

Your benefits in a nutshell:

- Safe monitoring and shutoff of systems
- Selectable security features (e.g. limiter or monitor function)
- Suitable for different measurands
- Variable, manufacturer-independent selection of sensor technology and actuators
- Wide range of JUMO sensors available
- Individually adaptable to the process requirement
- Certified measuring chain for combining the JUMO safetyM with special JUMO temperature sensors – in this case the user no longer needs to make a SIL calculation
- Minimal manual configuration due to easy-to-use device software
- Explosion-protected version according to ATEX directive also available

The suitable solution for every risk rating

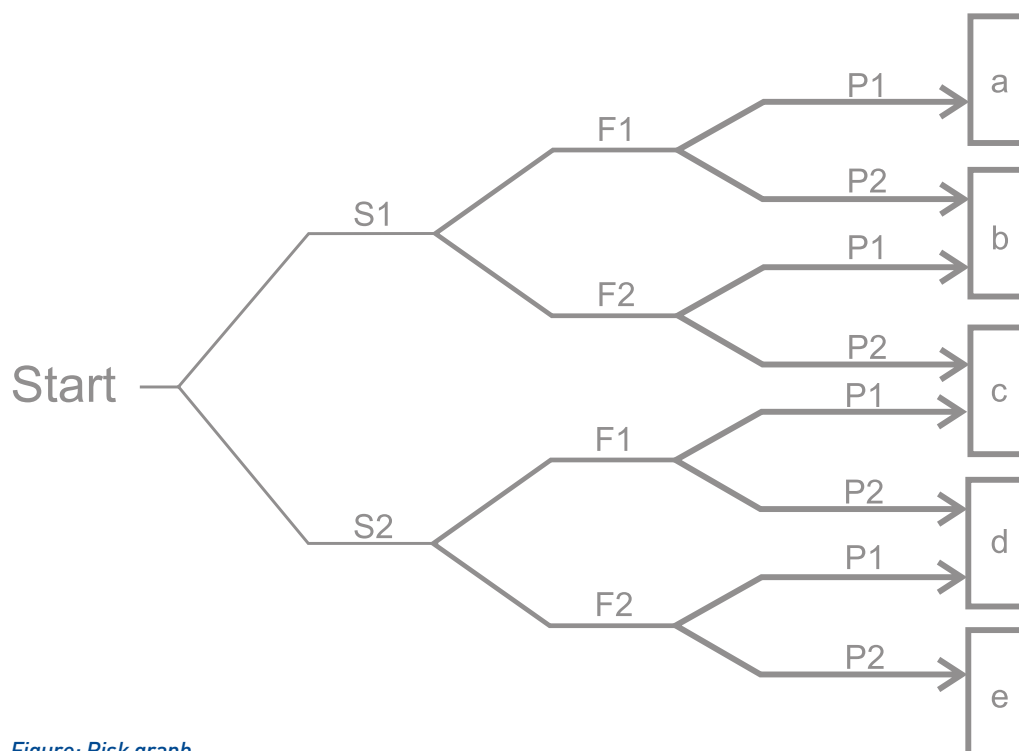
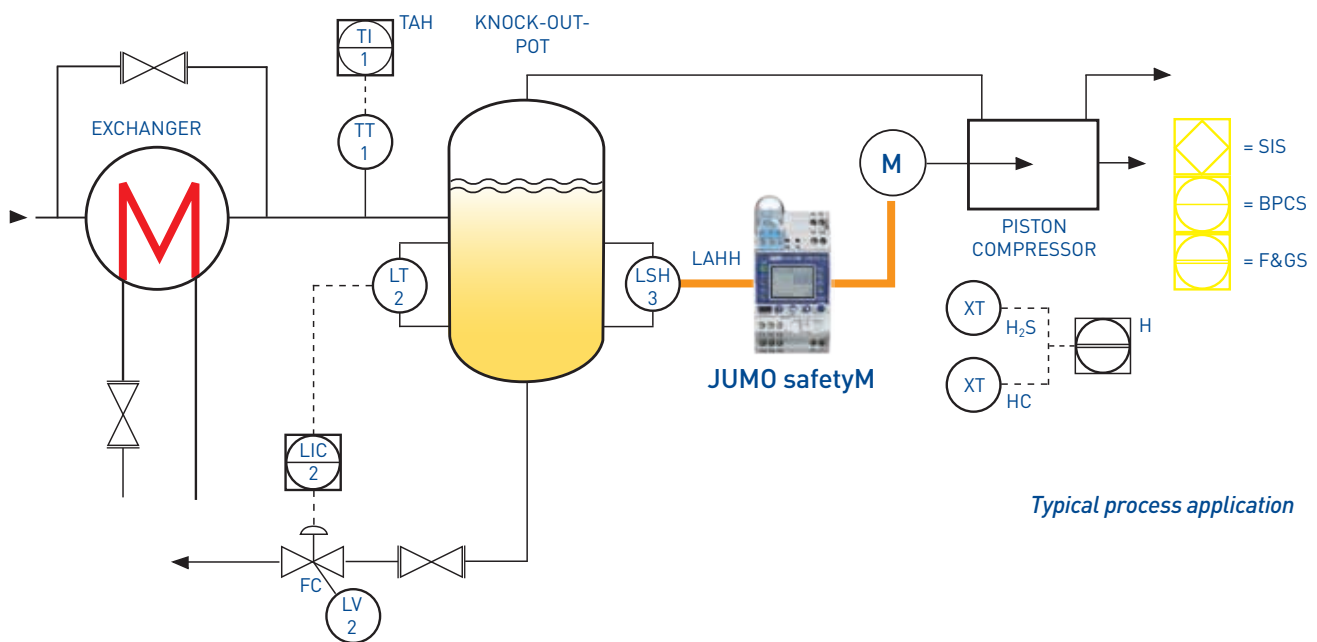


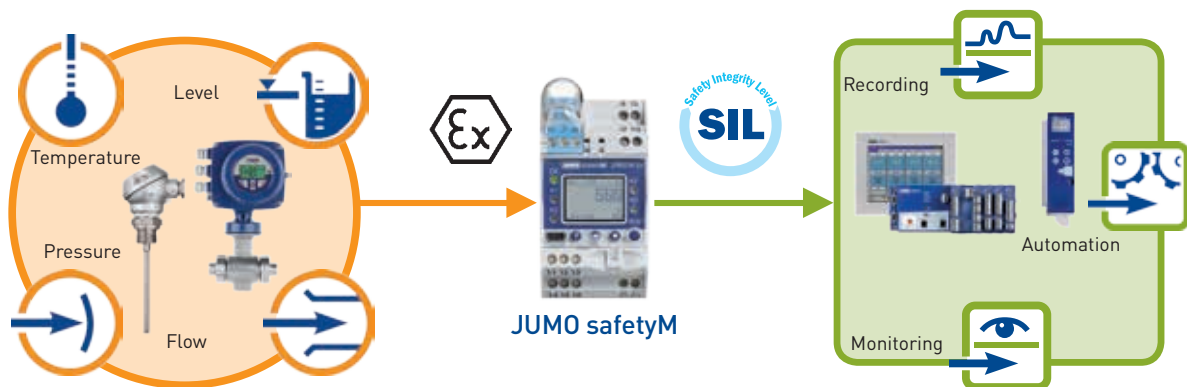
Figure: Risk graph

Safety-related compact solutions

SIL (Safety Integrity Level) is a fundamental part of the process industry. JUMO provides a safety-related compact solution for different measurands based on safety limiters/monitors of the JUMO safetyM series. Furthermore, a certified safety chain especially for the temperature measurand is available in connection with certain JUMO sensors.



Typical process application



Solution with JUMO safetyM



Automation

Reliable systems are needed for smooth processes.

You can also find these at JUMO.

From transmitters to simple indicating devices through to a decentralized automation system, we offer you everything you need to automate and visualize your entire process.



JUMO mTRON T automation system

JUMO mTRON T gives you flexibility when controlling your processing plant. The integrated CODESYS PLC controller enables individual PLC program generation according to IEC 61131-3. The program editors with online debugging, which are integrated in the configuration program, support you during program generation.

JUMO mTRON T

Measuring, controlling, and automation system
Type 705000



JUMO di08/di308

Digital indicator
Types 701531/701550



Digital indicators

Digital indicators enable a precise on-site display of process values and allow you to keep an eye on values that are important for a smooth production process.

Temperature transmitters

Here, you can find the right transmitter for your process. Whether for head or mounting rail installation, the converter transforms the determined temperature into a precise standard signal for further processing. In Ex applications, the Ex-i repeater power supply/input isolating amplifier ensures secure separation of the Ex and non-Ex area.

JUMO dTRANS T01 HART®/Ex

Two-wire circuit transmitter
Types 707013/707016



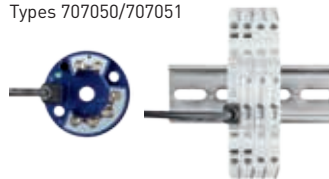
JUMO dTRANS T02 Ex

Four-wire transmitter
Type 707025



JUMO dTRANS T05

Programmable transmitter in two-wire technology
Types 707050/707051



Ex-i repeater power supply/ input isolating amplifier

Type 707530



Thyristor power controllers and solid state relays

An example of a typical application is drying of granulate materials. The precise switching through the solid state relay or thyristor power controller allows you to achieve the highest level of drying. The heat output can be finely dosed which leads to the highest reliability level.

JUMO TYA 432

Thyristor power switch
Types 709010/709020



JUMO TYA 200 series

Thyristor power controller
Types 709061/709062/709063



EtherCAT



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.

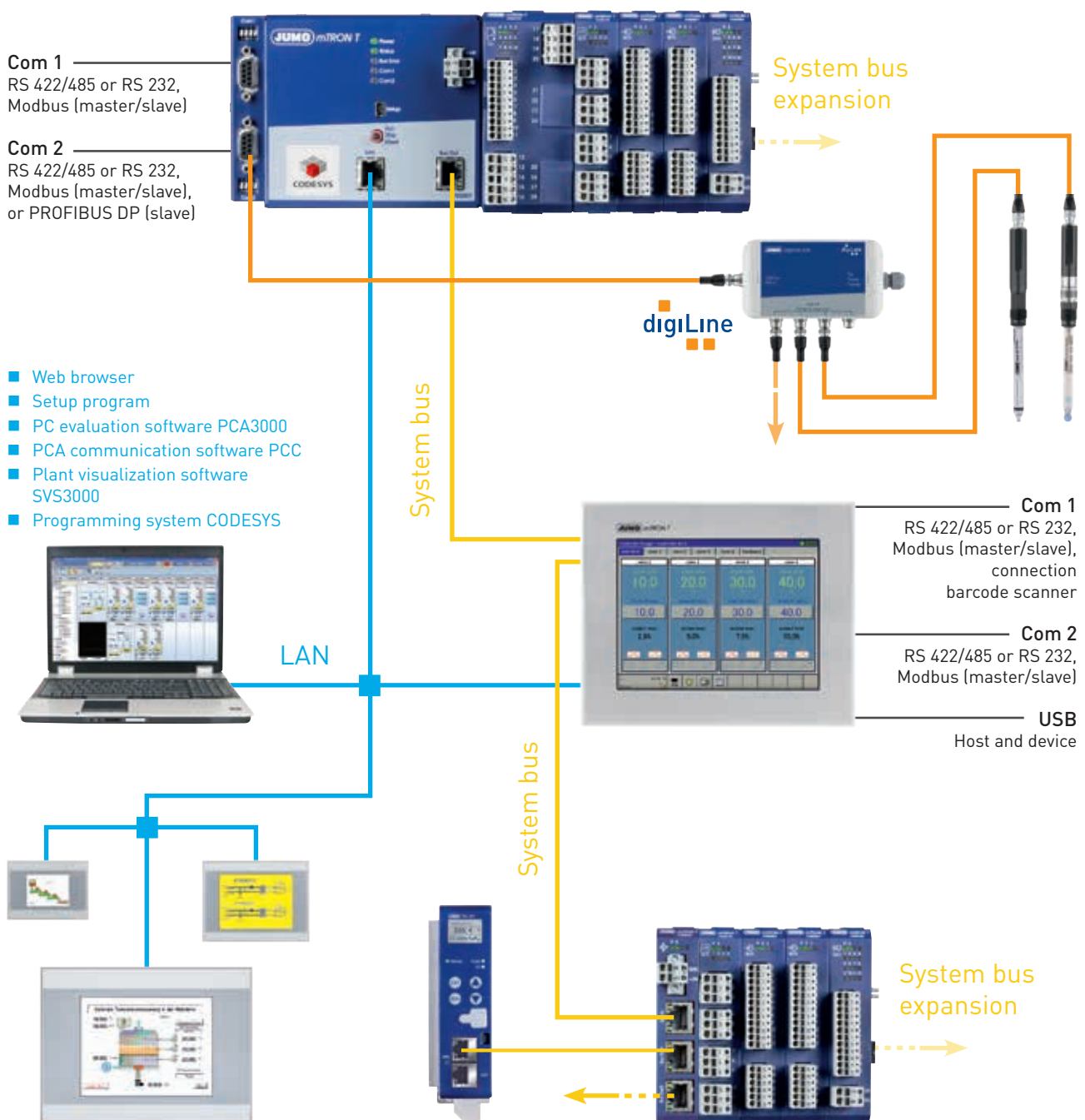
Various components are available as **input/output modules** (e.g. **analog input modules** with galvanically isolated universal analog inputs for thermocouples, RTD temperature probes, and standard signals). As a result the same hardware can be used to precisely record and digitize a highly diverse 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

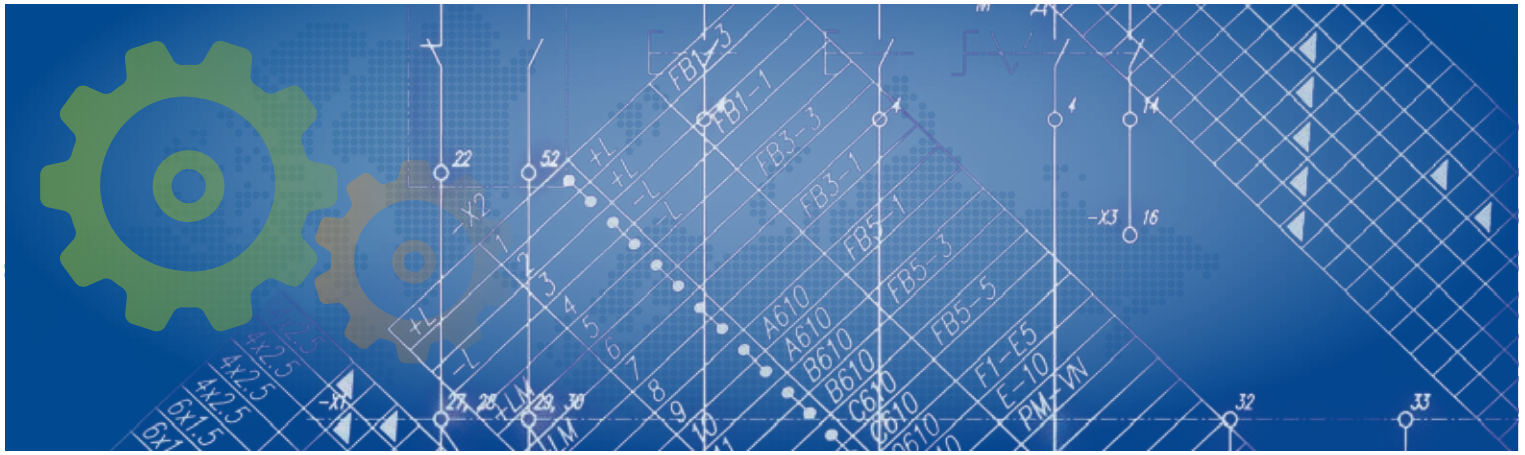
the system allows for simultaneous operation of up to 120 control loops so that it can also be used for sophisticated processes. Through expansion slots the inputs and outputs of each controller module can be individually expanded and adapted. **Power controllers** can also be connected directly via 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. Using standard predefined screen masks, startup times are considerably reduced. 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 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





JUMO Engineering

JUMO Engineering, the new service area from JUMO GmbH & Co. KG, combines expertise and industry-specific experience in one team.

Our engineers and technicians develop customized solutions that are strictly based on your specific requirements. The JUMO Engineering team strongly believes in personalized support and consulting for its customers – from initial contact and the development of a customized solution to its series production.

When carrying out the many different industry applications we always strive for optimum results with maximum customer benefits. Our innovative engineering services allow us to achieve this goal.



Innovative system solutions which specific expertise

We always draw on the feedback from our customers around the world to improve our products. This strategy is reflected in our new developments. We view complex tasks as challenges that allow us to develop tailored solutions for you and at the same time improve our product portfolio. JUMO Engineering with its range of services completes this comprehensive approach.

Our services

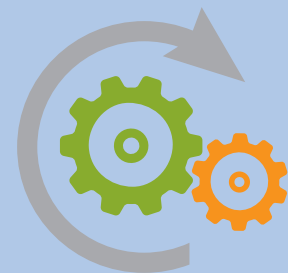
- Feasibility analysis
- Creating a technical concept including product requirements specifications/specification sheet
- Complete project planning and documentation
- Project planning incl. PLC programming, visualization, network technology, etc.
- Continuous project management
- On-site startup
- Training and support

Your advantages

- JUMO, as the central contact partner, develops a technical system solution specifically for you
- You benefit from our extensive expertise with all measurement and automation devices
- Global support through experienced specialists
- Flexible, tailored solutions to suit your individual needs and applications

In a nutshell

- Precise and prompt communication channels.
This saves you time and prevents mistakes!
- Highly developed expertise for maximum flexibility:
You benefit from fully reliable and secure project planning!
- Technology that has proven itself over decades reduces downtimes:
As a result you get excellent plant availability and process reliability!



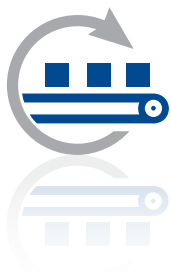


Services & Support

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





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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