

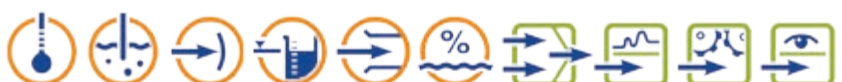


More than **sensors + automation**



# Plastics and Packaging Technology

Innovative solutions for your success



#### Contact – Sensors

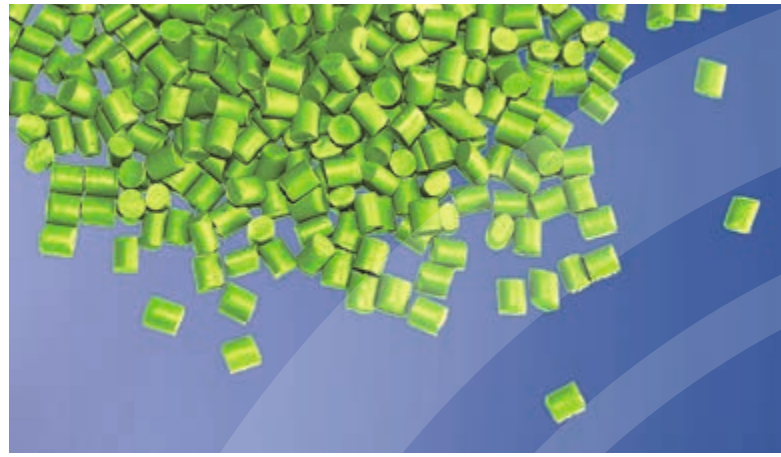
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## Dear Reader,

Plastics and packaging are an integral part of our everyday lives. But only manufacturers know just how much the production of these materials depends on reliable processes and accurate measurement technology.

As your partner, JUMO is always at your side to help when you have questions and to provide solutions. We support you whether you want to use pressure or temperature to monitor product quality, lower production costs, or improve productivity.

So how do we do it? Through experience and expertise: JUMO has already been a leading manufacturer of measurement and control technology for more than 70 years, and consequently, has been a professional partner to the plastics and packaging industry.

New developments, improvements to existing products, and more economical production methods are particularly important to us because only by following this strategy can the highest level of innovation be ensured.

JUMO provides only the best for plastics and packaging technology through a wide range of solutions for a variety of different applications.

This brochure provides an overview of JUMO products for plastics and packaging technology. Of course we would be happy to work out specific, individually customized solutions together with you.

The ultimate result of these solutions is high quality that is consistent!

PS: Further information about our products can be found under the product group number at <http://www.industry.jumo.info>.



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# Temperature

Temperature is the most important measurand in the plastics and packaging industry. It affects the applied materials and must be precisely controlled as well as monitored. JUMO has first-rate systems to help you with these processes.



### The effect of temperature on plastics and packaging

Accurate temperature measurement throughout the entire processing chain plays a decisive role in the manufacturing of technical and highly-technical plastic parts. Thermal process stability is not only extremely important for an injection molding machine or an extruder, but also for the hot runner, the tools, and the mold inserts. The demands on tool cooling have also increased.

Due to the use of new materials, process temperatures are progressively rising at the same time as processing tolerances are falling, which increases the demands on temperature sensors. JUMO is taking this trend into account firstly by using more sensors and secondly by improving their quality characteristics.

Nowadays, tool and hot runner optimizations are geared to meeting the thermal demand of the melt. Such an optimization could correctly define the accuracy requirements or optimum sensor positioning. The optimization could also extend the service life of mineral-insulated thermocouples, probes with bayonet fastener, and melt sensors.

#### Screw-in melt thermocouples and RTD temperature probes

Type 901090, 902090



#### Push-in thermocouples and RTD temperature probes with bayonet fastener

Type 901190, 902190



#### Surface RTD temperature probe with connecting cable

Type 902550



#### Push-in and screw-in RTD temperature probes or thermocouples with connecting cable

Type 902150, 902050, 901150



#### Mineral-insulated RTD temperature probes with connecting cable according to DIN EN 60751

Type 902210, 902250



#### Mineral-insulated thermocouples according to DIN 43710 and DIN EN 60584

Type 901240, 901250



#### JUMO Wtrans B

Head transmitter with wireless data transmission

Type 707060



#### JUMO dTRANS T06

Multifunctional four-wire transmitter in mounting rail case

Type 707071





# Pressure

Just like temperature, pressure also plays a crucial role in the production of plastics and packaging. We have therefore developed a variety of high-quality pressure measuring devices.



## The effect of pressure on the production of plastics and packaging

Pressure control is one of the technical requirements for a reliable operational process (e.g. in injection molding machines). In extruders the right pressure ensures correct shaping and compliance with the optical product details. Accordingly, this measurand directly influences the quality of the products to be manufactured and should be continuously monitored.

JUMO provides a wide variety of pressure measurement systems to safeguard your processes. Different device versions are available depending on the area of application. We also take individual customer wishes into account.

Plastics and packaging are often manufactured at high temperatures. As a result our product range includes pressure transmitters that can be used in such an environment.

### JUMO MIDAS series

Pressure transmitters  
Type 401002, 401010, 401020



### JUMO dTRANS p30

Pressure transmitter  
Type 404366



### JUMO dTRANS p31

Pressure transmitter for high medium temperatures  
Type 402050



### JUMO dTRANS p20

Process pressure transmitter with display  
Type 403025



### JUMO dTRANS p33

Pressure transmitter for use in Ex areas  
Type 404753





# Control

Proper temperature control and the right sensor design are required to ensure thermally optimized solutions in plastics processing. JUMO systems are ideal for this task.



## Precise and efficient

Modern, microprocessor-based temperature controllers and control systems are no longer just used to control a parameter, they also have a wide range of process monitoring tasks to perform. For example, the response time of a temperature control system can appreciably influence the control accuracy of an entire control loop.

The increasingly complex tasks are mainly being performed by intelligent, decentralized control systems with a high level of basic functionality. They are also adaptable to allow such tasks as integration into the bus structure of a production plant.

In addition, the JUMO product portfolio ranges from transmitters to temperature monitors to multifunctional process and program controllers. This portfolio can provide devices for the complete measurement chain to support all your processes.

### 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



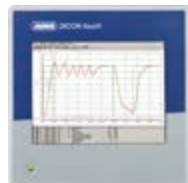
### JUMO IMAGO 500

Multichannel process and program controller  
Type 703590



### JUMO DICON touch

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



### JUMO diraTRON

Compact controllers  
Type 702110, 702111, 702112, 702113, 702114





# Recording

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



## Recording, archiving, and evaluating

JUMO LOGOSCREEN enables you to reliably acquire process data and archive it in a tamper-proof manner. The data is either evaluated directly at the device or on a PC using the JUMO PCA3000 evaluation software. The batch reports can be printed out in customer-specific forms.

But that's not all: the new generation of paperless recorders has an online visualization option for process data, various limit value monitoring procedures, a remote alarm in the event of malfunction, and simultaneous recording of 3 totally independent batch processes.

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

Recording the measurement data is imperative, especially when filling plants in aseptic applications are involved, so that the production process is documented without interruption.

## JUMO mTRON T –

### Central processing unit

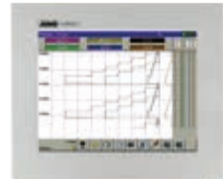
Measuring, control, and automation system with controller module and input/output modules  
Type 705000



## JUMO mTRON T –

### Multifunction panel 840

Measuring, control, and automation system  
Type 705060



## JUMO LOGOSCREEN nt

Paperless recorder with TFT display, CompactFlash® card, and USB interfaces  
Type 706581



## JUMO LOGOSCREEN 600

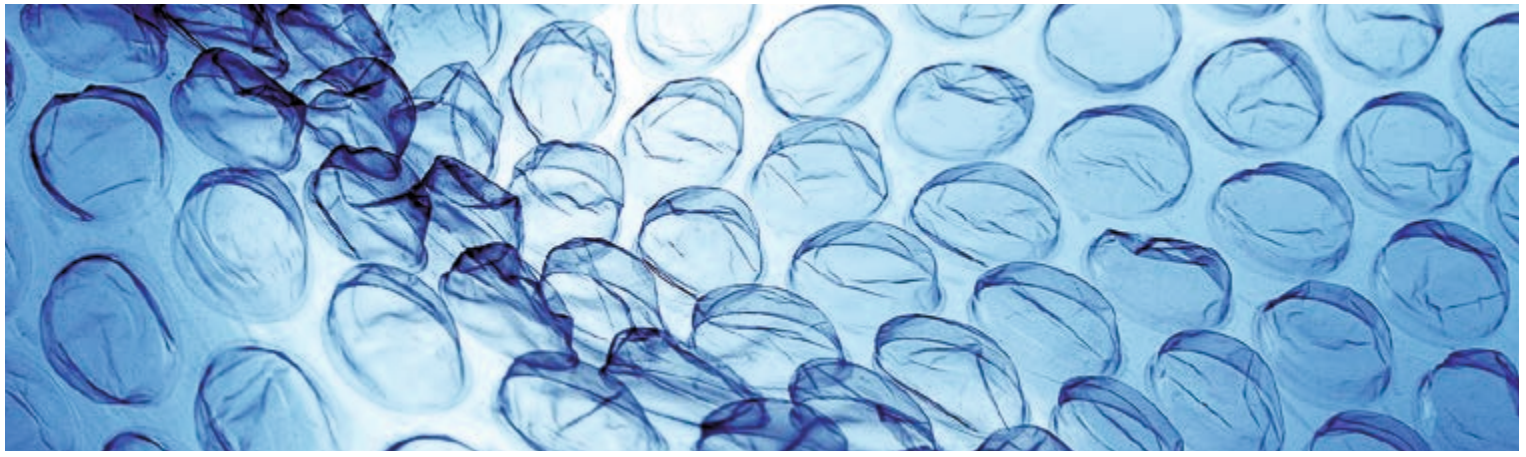
Paperless recorder with touchscreen  
Type 706520



## JUMO LOGOSCREEN 700

Highly-scalable paperless recorder  
Type 706530





# Monitoring

JUMO has developed reliable temperature monitoring technology because temperature has a decisive effect on the quality of the plastic components.



## Plant monitoring with electronic or electromechanical thermostats

Any deviation from the required temperature value directly affects the accuracy of the weight and size of the finished parts. Temperature monitoring is therefore one of the crucial factors in plastics processing. Monitoring the temperature in drying plants and tempering equipment is particularly important.

In granulate drying plants the correct ratio between temperature and humidity has to be monitored to achieve optimum dryness. In tempering equipment the prescribed temperature must be maintained. If the temperature is exceeded the plastic granulate can be irreversibly damaged.

To prevent such irreversible damage, JUMO offers you electronic or electromechanical thermostats that constantly monitor your plant. This has the crucial advantage that if the maximum plant temperature is reached the DIN EN 14597 compliant thermostats shut down to stay within safe parameters.

### JUMO eTRON T100

Electronic thermostat  
Type 701052



### JUMO safetyM TB/TW

Temperature limiter, temperature monitor according to DIN EN 14597 as a DIN rail device  
Type 701160



### JUMO safetyM TB/TW 08

Temperature limiter, temperature monitor according to DIN EN 14597 as a built-in device  
Type 701170



### JUMO safetyM STB/STW/Ex

Safety temperature limiters/monitors according to DIN EN 14597  
Type 701150, 701155



### Surface-mounted thermostat

ATH series  
Type 603021



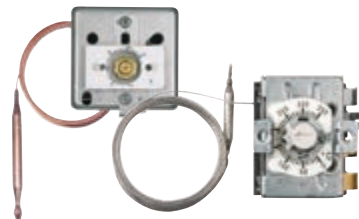
### JUMO heatTHERM-AT

Surface-mounted thermostat  
Type 603070



### JUMO heatTHERM

Panel-mounted thermostat EM series  
Type 602021, 602031



### Bimetal temperature switch

Type 608301





# Automation

To ensure that your automation processes run smoothly you need reliable thyristor power switches for contactless switching of the alternating current loads.



## Power under control with thyristor power controllers

A typical application for thyristor power controllers is switching ohmic-inductive loads with a high switching frequency. The control and power sections are galvanically isolated from one another by optocouplers. The control signal range is compatible with the logic outputs of JUMO controllers. The power section operates as a zero voltage switch. As a result, switching always takes place at zero voltage, irrespective of the time when the control signal changes. This way, interference voltage can be avoided. The input status is displayed by an LED.

### JUMO TYA 432

Thyristor power switches  
Type 709010, 709020



### JUMO TYA 200 series

Single-phase and three-phase thyristor power controllers  
Type 709061, 709062, 709063



### JUMO plant software SVS3000

Type 700755



### JUMO diraVIEW

Digital indicators  
Type 701510, 701511, 701512, 701513, 701514



## Visualization of processes with SVS3000

The JUMO plant visualization software SVS3000 allows effective operation, visualization, and documentation. As a special feature the device provides batch documentation which allows batch-oriented saving of data gained from the processes. An extremely helpful and user-friendly operator interface with a full range of functions is available. Digital indicators allow measured values to be displayed on site in the process.

### JUMO di308

Digital indicator  
Type 701550



### JUMO di08

Digital indicator  
Type 701530





# 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 AMS2750 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.

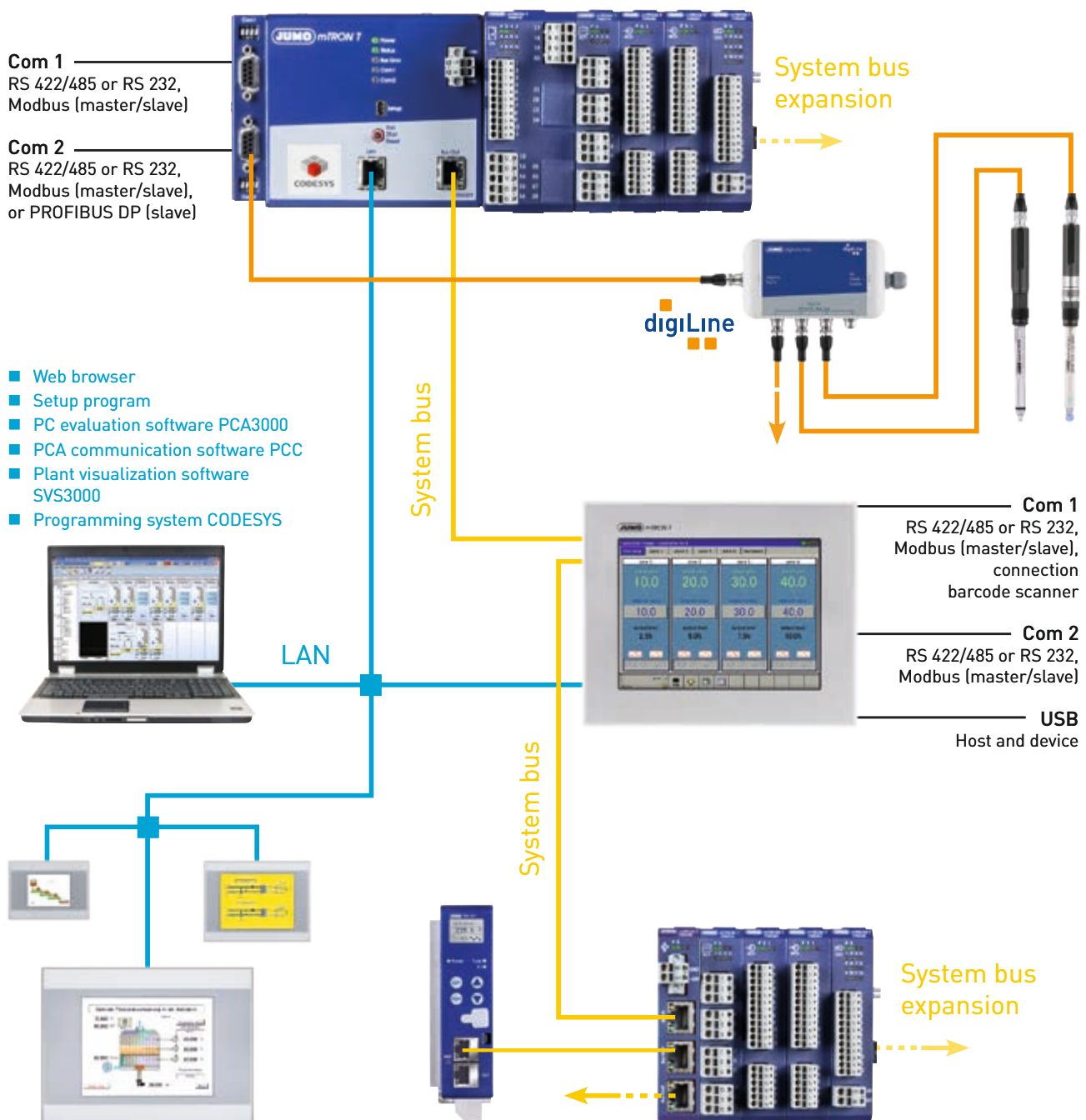
Various components are available as **input/output modules** (e.g. **analog input modules** with galvanically isolated universal analog inputs for thermocouples, RTD temperature probes, and standard signals). As a result the same hardware can be used to precisely record and digitize a highly diverse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



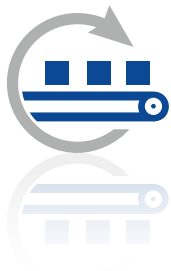


# Services & Support

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.



[www.jumo.net](http://www.jumo.net)

