



Smart Room 



# Meat Processing Technology

Innovative solutions for your success





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## Dear Reader,

Food – including sausage and meat – is an integral part of our everyday life. But only manufacturers know how much the production and processing of food depends on processes that run reliably and measurement technology that works accurately.

JUMO, your reliable partner, is always at your side to help when you have questions and to provide quick solutions. We do so regardless of whether you want to monitor your process by temperature, humidity, or pH-value. Of course we also support you in controlling your cleaning and in 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 sixty years. This has helped us become a professional partner for the meat industry.

We place special emphasis on regular new development cycles, continuous improvement in existing products, and constantly making production methods more economical. This is the only way we will achieve the highest level of innovation.

JUMO offers only the best for you in the meat industry as well: a wide range of solutions for the most diverse applications. Our solutions support you in implementing HACCP concepts or IFS standards.

This brochure will give you an overview of JUMO products and systems for meat industry. Of course we would also be happy to develop individual solutions for you, completely customized to your requirements.

The ultimate result of these solutions is consistently good quality!

Best regards,  
Christina Hoffmann

PS: For detailed information about our products arranged by type and product group number, please visit [www.industry.jumo.info](http://www.industry.jumo.info)

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# Measurement and control systems

Optimal solutions for the production of dry, cooked, or boiled sausage can only be guaranteed if the measuring and control technology is precisely attuned to the processes. JUMO systems are the perfectly suited for this task.



## Sensors

### Temperature probes

Temperature is an important factor in meat processing technology. JUMO has a large selection of sensors available for your measuring and monitoring requirements.

Our temperature probes are especially designed for the applications used in meat processing and provide you with optimum safety and reliability.

### Humidity sensors

In addition to temperature, humidity is an especially important consideration in curing, drying, and storing sausage products. JUMO provides hygrometric sensors for this purpose to monitor the storage or ripening process and to ensure consistent quality for your products.

JUMO humidity sensors with hair measuring element are sturdy and washable. They are available with standardized current and voltage outputs and with passive resistance outputs.

### Pressure transmitter

Whether you need vacuum cutting or autoclaving, we have the right pressure transmitter for your process.

JUMO provides a variety of proven and reliable pressure measuring instruments with different front-flush process connections to meet your requirements.

#### JUMO screw-in RTD temperature probe

With connecting cable  
Type 902050



#### JUMO Wtrans receiver

For RTD temperature probes with wireless transmission of the measured values  
Type 902931



#### JUMO FOODtemp

Insertion RTD temperature probe  
Type 902350



#### JUMO Wtrans RTD temperature probe

With wireless measured value, with temperature-resistant electronics, can be used up to 125 °C  
Type 902930



#### JUMO dial thermometers

Bimetal sensing system  
Type 608002



#### JUMO STEAMtemp

Push-in RTD temperature probe in steam-tight version  
Type 902830



#### Hygro/hygrothermal transducers

Hygrometric  
Type 907031



#### JUMO psychrometer

Humidity transducer



#### JUMO DELOS SI

Electronic pressure switch, high-precision, programmable, display, stainless steel case, also suitable for high medium temperatures  
Type 405052



#### JUMO dTRANS p30

Pressure transmitter  
Type 404366





# Measurement and control systems

## Controllers, recorders, and indicators

### Controlling and regulating

In addition to devices for measuring temperature and humidity, many processes also require regulating and control devices. JUMO offers a wide selection of models to meet this need. The JUMO mTRON T is an especially important device in this context. It was developed especially for use in meat processing.

The JUMO product range extends from transmitters to temperature monitors and our multifunctional process controller, providing a complete measurement chain to support all your processes.

#### JUMO portable pH-meter

Microprocessor controlled  
Type 202710



#### JUMO AQUIS 500 pH

Transmitter/controller  
for pH-value  
Type 202560



#### JUMO mTRON T

Measuring, control, and  
automation system  
Type 705000



#### JUMO cTRON

Compact controller with timer  
and ramp function  
Type 702070



#### JUMO di 08

Digital indicator  
Type 701530



#### JUMO di eco

Digital indicator  
Type 701540





### Recording, archiving, and evaluating

With the JUMO LOGOSCREEN range of paperless recorders, measurement values that require verification can be recorded, archived, and evaluated in an easy and tamper-proof way. The new JUMO LOGOSCREEN nt generation in particular features an integrated Web server (online visualization on a PC), a remote alarm option in the event of a malfunction, and batch documentation.

### Visualization with the SVS3000

The visualization software SVS3000 enables you to visualize process data in real-time or as a historical trend on your PC. The diverse protocolling functions with batch-related protocol creation facilitate the evaluation of archived production data. Prefabricated library elements ensure a simplified application creation of the objects to be visualized.

#### JUMO IMAGO F3000

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



#### JUMO LOGOSCREEN nt

Paperless recorder with stainless steel front, TFT display, CompactFlash® card, USB interfaces and Ethernet with integrated Web server  
Type 706581



#### JUMO SVS3000

Plant visualization software with batch-related data report and evaluation in a network  
Type 700755



#### JUMO IMAGO 500

Multichannel process and program controller  
Type 703590



#### JUMO safety M TB/TW

Temperature limiter and monitor to DIN EN 14597 for mounting in panel or on C-rail  
Type 701160



#### JUMO DICON touch

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





# Meat production process

The processes in meat processing and the sausage production can be reduced to a few basic processes. In all these processes, temperature measurement and control are of prime concern. We hope to inspire you with our solutions for this industry in the following pages.

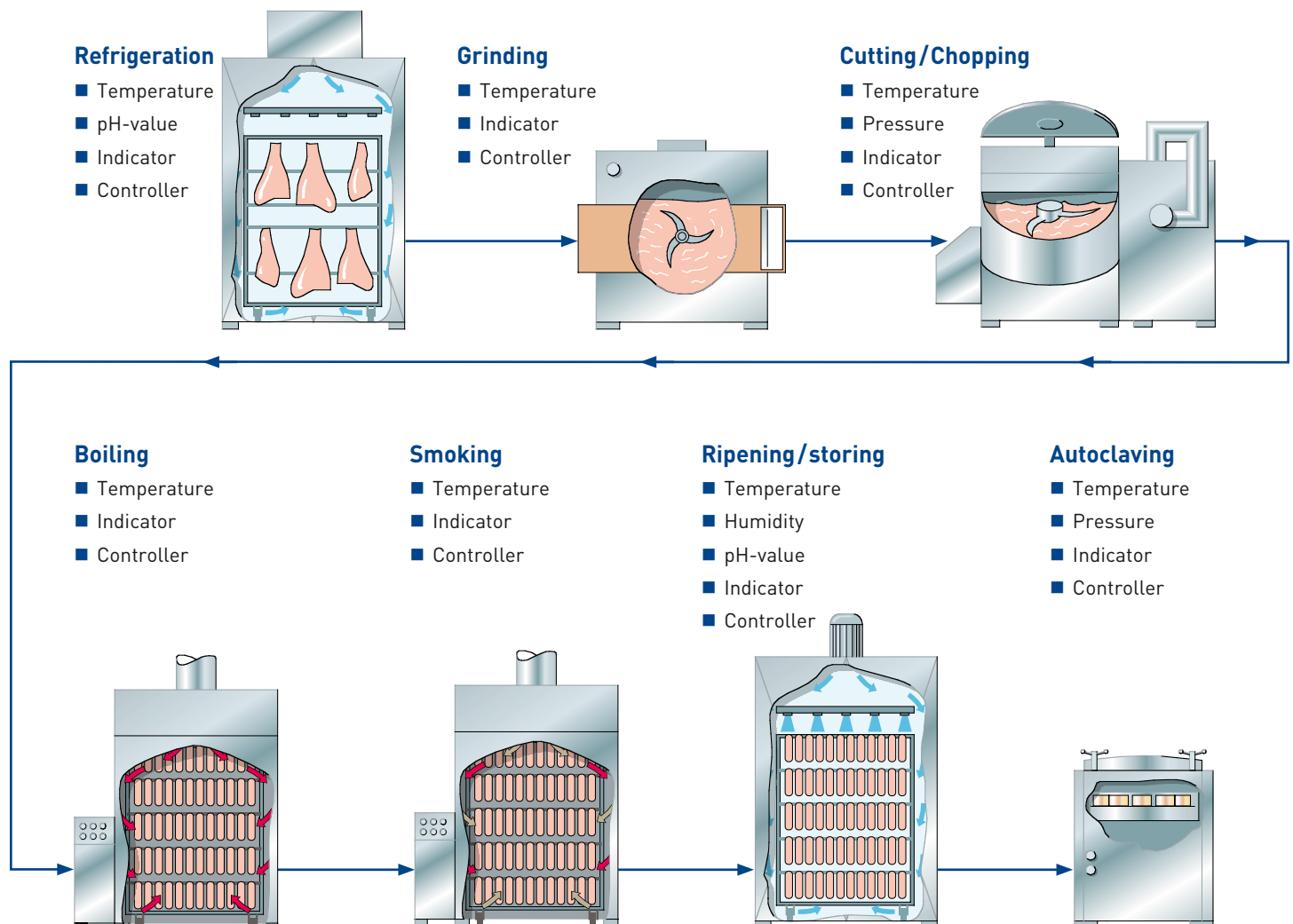




## Meat processing

After slaughtering and carving, the most important consideration is refrigerating the meat until further processing. Depending on specific local requirements, the meat is refrigerated or frozen while being transported to the next processing station. The basic processes of grinding, cutting, smoking, cooking, and ripening are applied differently depending on whether the final product is dry sausage, boiled sausage, or cooked sausage. For example, there is no cooking process in the production of

dry sausage. Products are handled and stored differently depending on the type of sausage and the required shelf life. The correct storage temperature must also be maintained. For example, no refrigeration is required for sausage that has been autoclaved in jars or cans. On the other hand, refrigeration is indispensable when storing boiled sausage. For various types of smoked sausage, the length of the smoking time determines whether or not refrigeration is necessary.

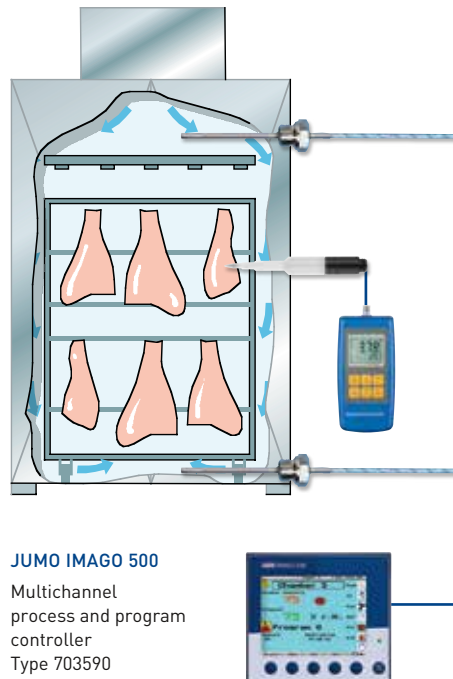




## Refrigeration

### pH-value measurements in fresh meat with the JUMO pH-insertion electrode

The importance of the pH-value for meat is based on the fact that the pH-value has a significant effect on quality factors of the meat. The pH-value can be used to draw conclusions about color, tenderness, taste, water binding capacity, and shelf life. After slaughtering, biochemical decay processes begin in meat that affect the pH-value. Measuring the pH-value provides information about the speed of these processes and about meat quality.



#### JUMO screw-in RTD temperature probe

With connecting cable  
Type 902050

#### JUMO pH-insertion electrode

For measurements in meat, cheese, vegetables, etc.  
Type 201030/60

#### JUMO portable pH-meter

Microprocessor controlled  
Type 202710

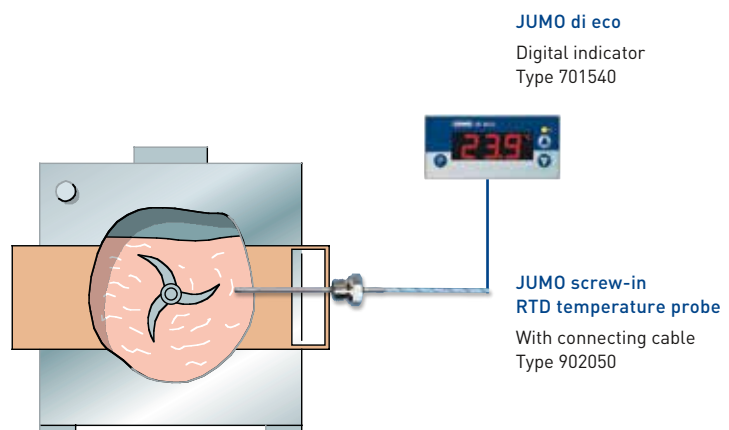
**JUMO IMAGO 500**  
Multichannel  
process and program  
controller  
Type 703590

## Grinding

### Temperature control in the refrigeration grinder during grinding with JUMO di eco

Grinding is one of the basic processes in the meat industry. It is performed with special devices of different sizes ranging from hand-operated grinders to large industrial systems.

It is important not to expose meat to any large fluctuations in temperature, especially not in the range above 7°C. Because of this, the cold chain must be maintained during grinding as well and if necessary additional refrigeration must be used during processing.



#### JUMO di eco

Digital indicator  
Type 701540

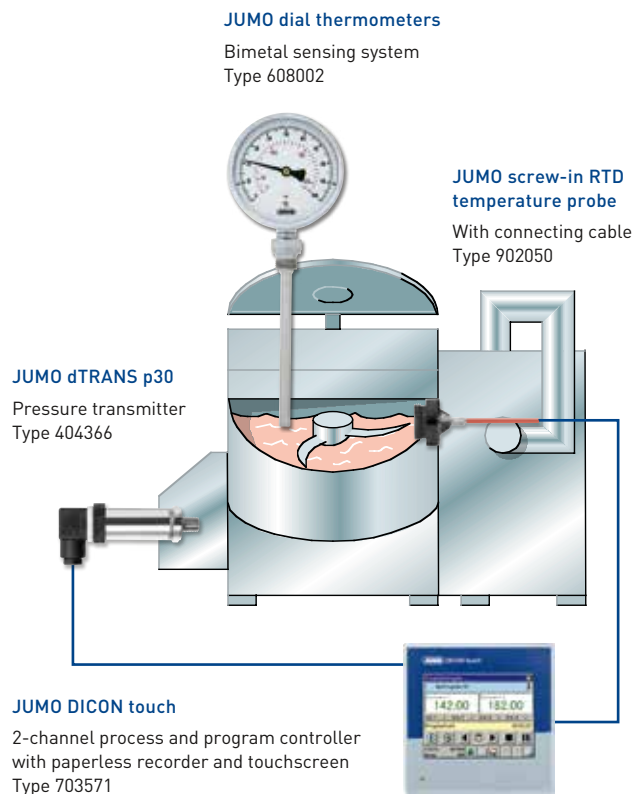
#### JUMO screw-in RTD temperature probe

With connecting cable  
Type 902050

## Cutting/chopping

### Monitoring the temperature and pressure during vacuum cooking-cutters

Vacuum cutters are designed to improve the color of meat and cutting quality. Using a vacuum cooking-cutter system also saves the cost of separately boiling pieces of meat, which, for example, is the case in the production of cooked sausage. The temperature plays an enormous role in these devices, since it is one of the basic factors determining the final quality of the sausage.

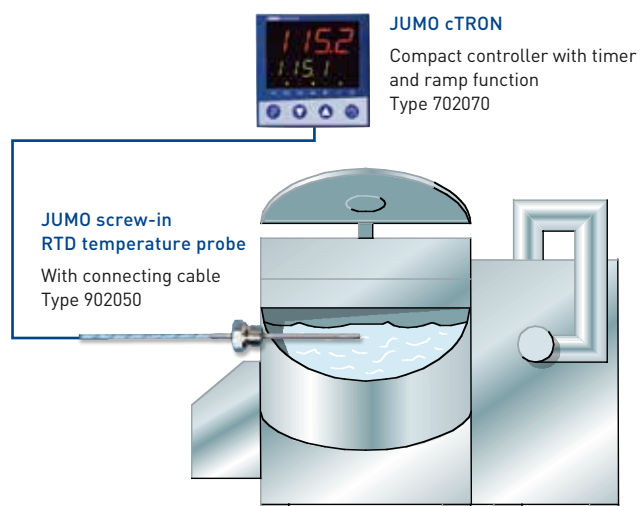


## Cooking

### Temperature control in the kettle

The temperature of the hot water must be controlled while cooking or brewing in kettles.

When using steam-tight insertion probes the user can also record the core temperature of the cooked sausage.



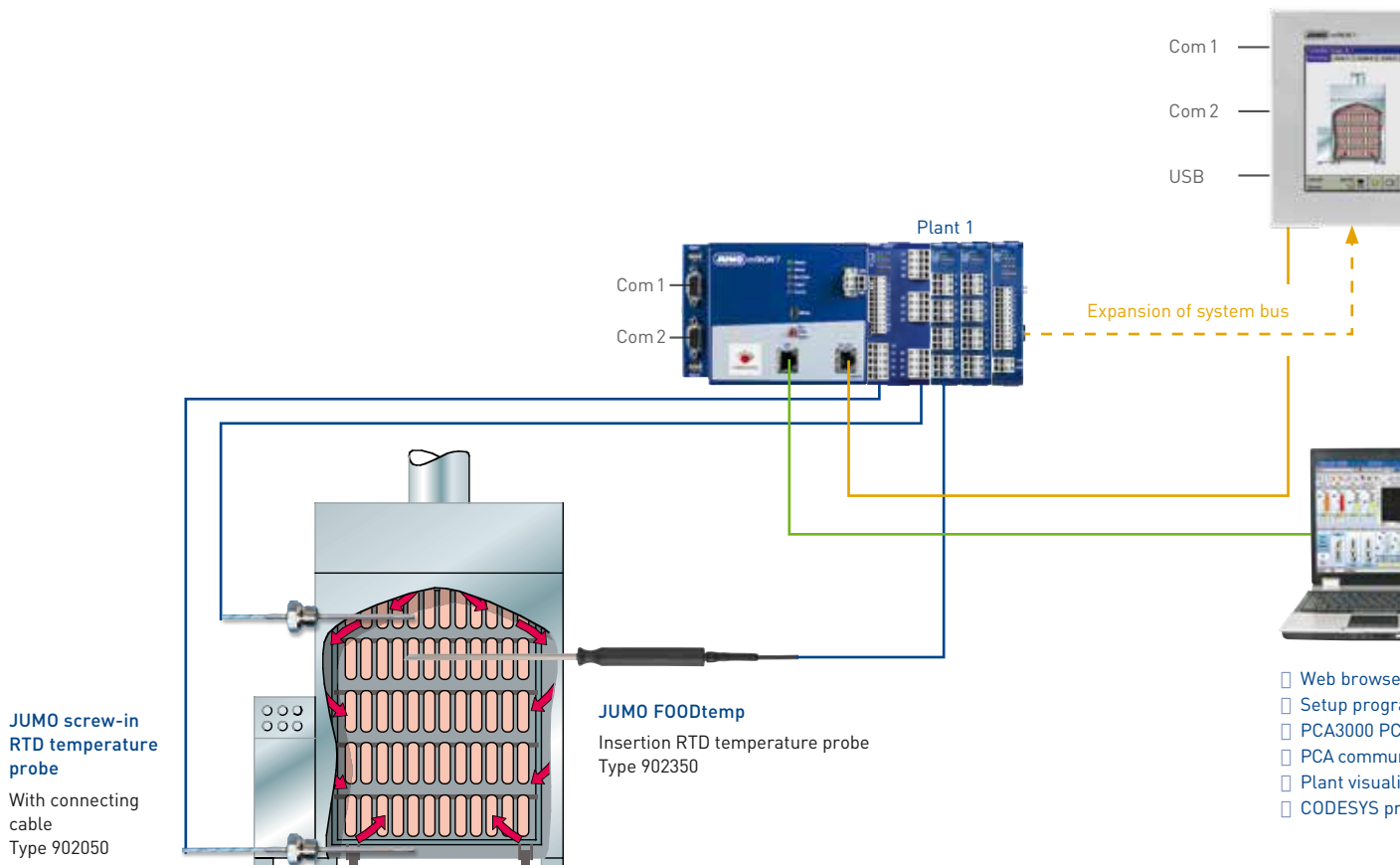


## Boiling/cooking

### Control of cooking and smoking processes with JUMO mTRON T

Two key processes in sausage production are cooking and smoking. Usually cooking and smoking chambers are used for this purpose. In large industrial plants today the two processes are frequently combined in "continuous" or "semi-continuous" systems. JUMO mTRON T with its special industry solution for the meat processing technology is very suited for this task. Using the JUMO mTRON T system, up to nine ripening, cooking, smoking, and air conditioning facilities working individually can now be operated and controlled and the process measured values can be logged for quality assurance. The central unit – the heart of the JUMO mTRON T – contains nine asynchronous program

generators with an available pool of 99 programs. Nine record groups including batch logging are integrated into the multifunction panel (HMI), ensuring allocation of the logged process data. The documentation of the measured process values is free from any kind of data manipulation, which is of great importance to the meat processing industry. With its modular system structure and the integrated PLC, the JUMO mTRON T automation system can be optimally adapted to control applications for ripening, cooking, smoking, and air conditioning facilities.



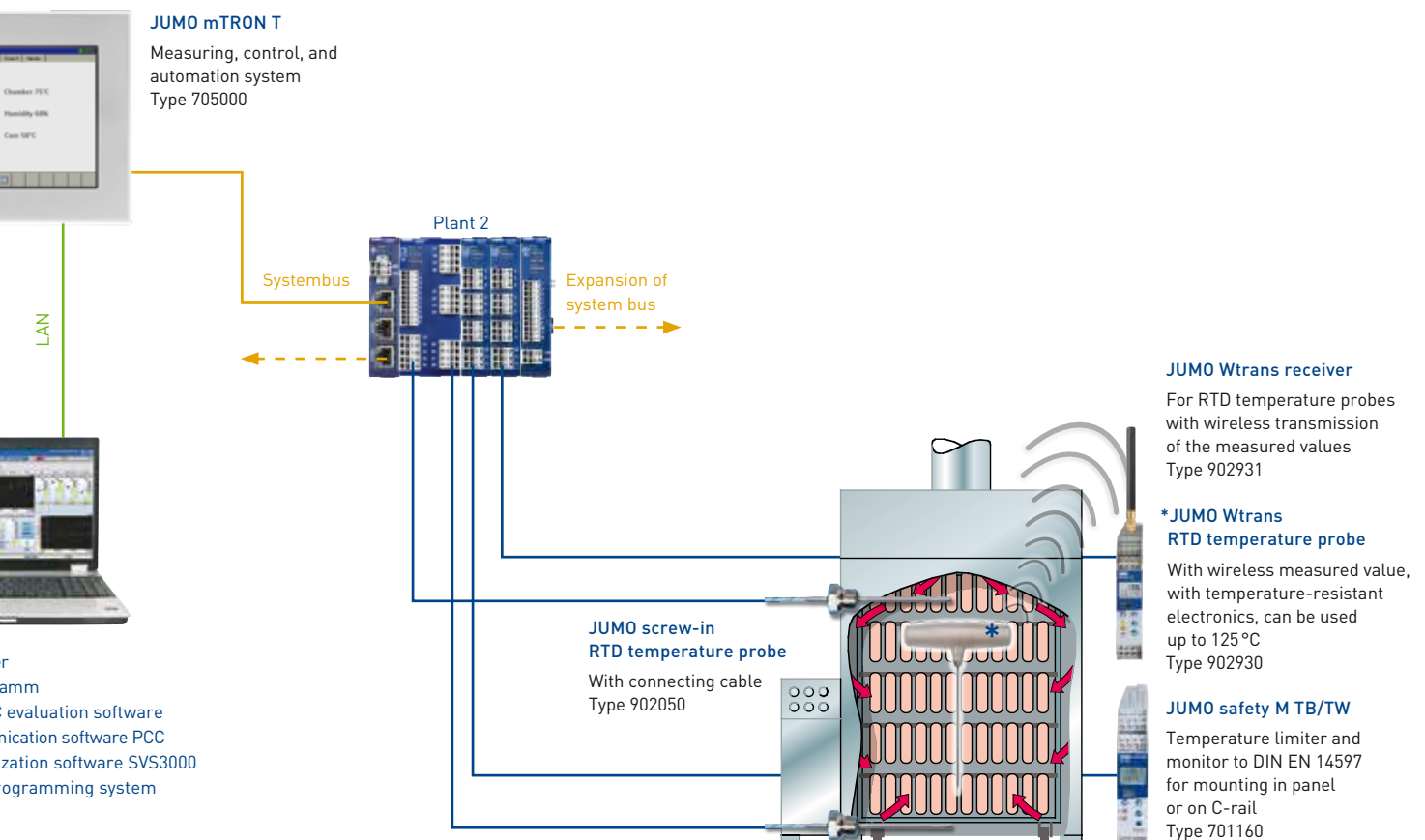


## Smoking

### Recording the core temperature in continuous systems

Ideally, products for recording the core temperature can be fitted with a Wtrans wireless transmitter. In this case the temperature can be recorded continuously by wireless means. This makes it possible to record the temperature precisely and without interruptions in continuous systems, an advantage not only for documentation but also for system control.

Using Wtrans wireless transmitters saves money for new installations, maintenance work, and repairs because the installation requires no cables. When fitted with electronics that provide high-temperature stability, the system can be exposed to temperatures of up to 125°C.







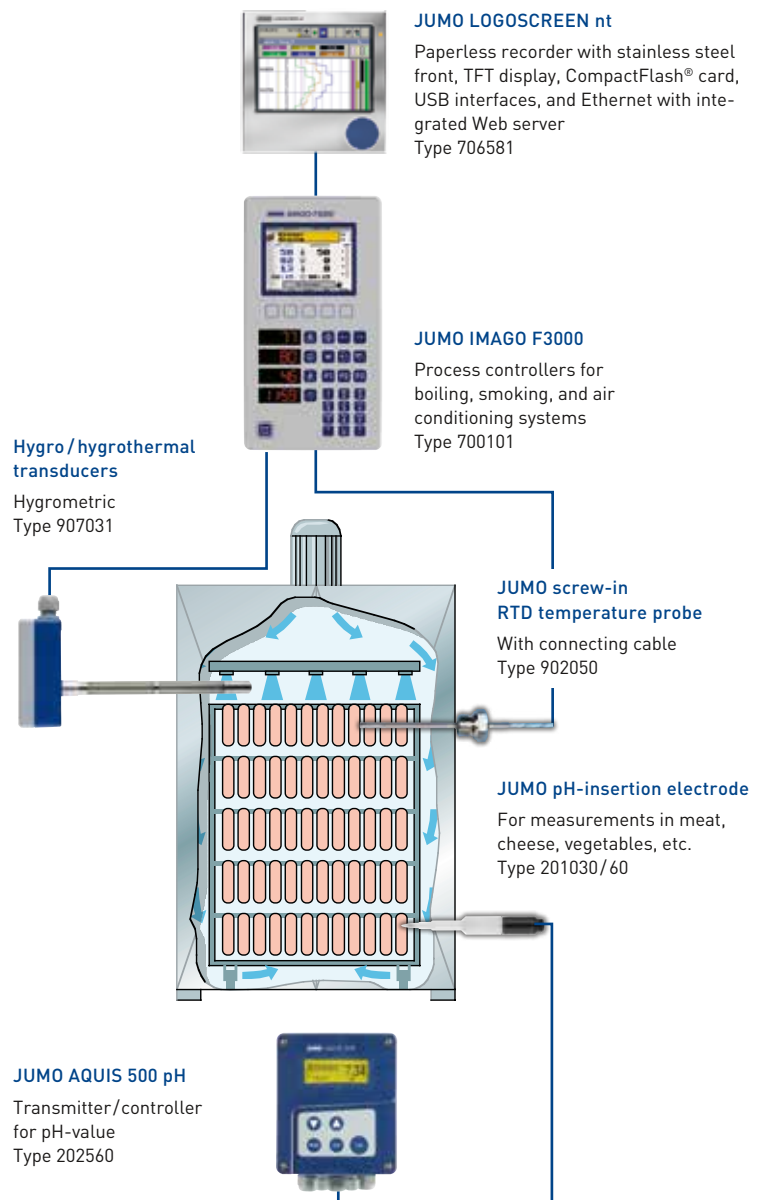
## Ripening/storing

### Controlled curing in dry sausage production

Ripening and drying play the most important role in dry sausage production. Products must be dried to a residual water content that meets the requirements of food regulations. It is important for water to be released at an even rate and not too quickly. Otherwise the high quality of the final product cannot be guaranteed. To prevent drying errors, the relative humidity should be in equilibrium with the *aw* (water activity) value of the dry sausage at the beginning of the drying process. Program controllers IMAGO F3000 and IMAGO 500 are ideal for this application.

### pH-value measurement in meat and sausage products

The pH-value is related to the capacity of meat to bind water. Meat has its lowest capacity to bind water at a pH-value of about 5. There is no uniform optimum value for sausage making. The best value varies from one final product to another. In the production of dry sausage, for example, the meat should have a low water binding capacity to ensure even drying. The pH-value should therefore be about 5.





## Autoclaving

### Monitoring the temperature/time curve when preserving sausage with LOGOSCREEN nt

A process that has long been commonly used to preserve sausage is canning or preserving. This type of sausage is packaged in closed containers (jars/cans). They are preserved in an autoclave to provide extended shelf life.

Depending on the type of preservation involved, a specific temperature/time program must be followed to achieve the required F-values.

Measured values from the autoclave and the core temperature of the sausage are recorded and archived with the LOGOSCREEN nt for documentation.

#### JUMO LOGOSCREEN nt

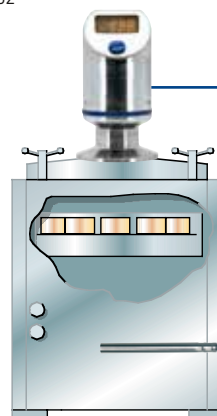
Paperless recorder with stainless steel front, TFT display, CompactFlash® card, USB interfaces, and Ethernet with integrated Web server  
Type 706581

#### JUMO DICON touch

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

#### JUMO DELOS SI

Electronic pressure switch, high-precision, programmable, display, stainless steel case, also suitable for high medium temperatures  
Type 405052



#### JUMO STEAMtemp

Push-in RTD temperature probe in steam-tight version  
Type 902830



# JUMO mTRON T – Your System

The scalable measuring, control, and automation system

## System layout

JUMO mTRON T is modularly designed and uses an Ethernet-based system bus and integrated PLC, even for non-centralized automation tasks. The universal measuring, control, and automation system combines JUMO's extensive process know-how with a simple, application-oriented, and user-friendly configuration concept.

The core element of JUMO mTRON T is the **central Processing Unit** with a process image for up to 30 input/output modules. The CPU has higher-level communication interfaces including Web server. The system has a PLC (CODESYS V3) for individual control applications, program generator and limit value monitoring functions as well as math and logic modules.

The following components are available as **input/output modules**: the **4-channel analog input module** with four electrically isolated universal analog inputs for thermocouples, resistance thermometers, and standard signals. This makes it possible to record and digitize process variables precisely with the same hardware, which simplifies planning, resource management, and stockkeeping. **Multichannel controller modules** support up to four independent PID control loops with a fast cycle time and proven control algorithm, without placing any load on the central unit. The system allows for simultaneous operation of up to 120 control loops and meets the needs of demanding control processes. Optional slots can be used to extend and adapt the inputs and outputs of each controller module individually.

The **multifunction panel** provides visualization of data as well as convenient operation of the controller and program generators. User-dependent access to parameter and configuration data of the overall system is also possible. Recording functions of a high-quality paperless recorder including Web server are implemented as a special feature. Proven PC programs with standard predefined screen templates are available for reading and evaluating historical data.

A setup program is used for **hardware and software configuration** as well as project design for control tasks and recording measurement values. Users can create their own highly-efficient automation solutions with CODESYS editors in accordance with IEC 61131-3. The entire application is recorded in a single project file.



**Com 1**  
RS422/485 or RS232,  
Modbus master/slave

**Com 2**  
RS422/485 or RS232,  
Modbus master/slave  
or PROFIBUS-DP slave



Expansion of  
system bus



LAN

Systembus



**Com 1**  
RS422/485 or RS232,  
Modbus master/slave  
connection  
Barcode scanner

**Com 2**  
RS422/485 or RS232,  
Modbus master/slave

**USB**  
Host and device

- Web browser
- Setup program
- PCA3000 PC evaluation software
- PCA communication software PCC
- Plant visualization software SVS3000
- CODESYS programming system



Expansion of  
system bus



# 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 appreciated. 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

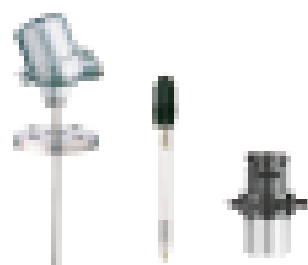


Long-standing experience and a solid reputation as a competent supplier of industry-grade electronic modules is perfectly fitting, because a better small business – across products – we are happy to be your partner. From design, over to production, we can provide all the support from engineering to in-plant operations with your business, providing a complete service for complete solutions for your application and ensuring all engineering units. Thus, JUMO maintains the production plan.

As a result, you profit from state-of-the-art manufacturing technology and our comprehensive quality management system.

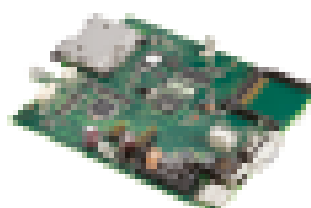
## Process-specific service technology

- Engineering services, design, process, construction, assembly, assembly, cryogenic calibration, testing or repair services
- In-house or external testing facilities
- In-house or external calibration services
- Thermal management
- Electrical testing
- Thermal test



## Construction services

- Design
- Design
- Test setup
- Model management
- Production
- Logistics and distribution
- After-sales service



## Final assembly

- Testing
- Final assembly and testing
- Final assembly and testing
- Production testing
- Testing, joining, assembly, testing
- Final assembly testing
- Final assembly for assembly





More than

just a company



## Information & Training



Merity will do its utmost to ensure the greatest quality in providing corporate training. When you do this, available on the Merity website and based from customer-based e-learning experiences. For example, under the section "Contact and Support", you will find local support centers. There are also available under the "E-Learning" section which specific to customers and internal training. Under "Library", you will find available also for business professionals. And of course, you can also download course material of any Merity online-archival documents for both internal and external.

## Product Service



We have an efficient distribution network in all the countries available in all of our countries. Since we offer professional support from our highly experienced specialists. Whether you need technical assistance, with professional, explaining, or explain range of our products – a non-technical Merity employee is always ready to help. Even after our services are completed, we continue to offer support through the available e-learning resources. If a customer needs to be updated on the new Capex Report Center and e-learning resources, we can also provide you the support of our.

## Maintenance & Calibration



Our maintenance team helps you in various options available only our dealer network. This process involves the maintenance. Regularly scheduled maintenance, our company, we develop our maintenance service center. Since they are a team of experienced, experienced, and professional. Because we have the highest quality maintenance and repair services, we are usually also professionally trained your Merity dealer – make us your company or its authorized Merity calibration laboratory for comparison. We want the dealer for you to a calibration facility according to the ISO.



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