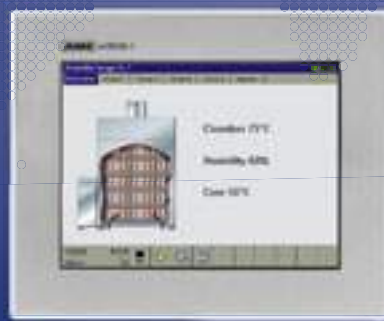




More than **sensors + automation**



# Meat Processing Industry

Innovative solutions for your success





## Dear Reader,

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

Here, JUMO is at your side as a reliable partner to help when you have questions and to provide you with quick solutions. We do so regardless of whether you monitor your process through temperature, humidity, 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 technology for more than 60 years. This has helped us become an expert partner for the meat processing 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 meat processing industry – 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 meat processing industry. Of course, we will also work with you to develop individual solutions that are completely customized to your requirements.

The ultimate result of these solutions is consistently high quality!

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 technology

Optimal solutions in the production of dry, cooked, and boiled sausages can only be provided if the used measurement and control technology is tailored to the involved processes. JUMO systems are perfect for this task.





## Sensors

### Temperature sensors

Temperature is a key aspect to consider in the meat processing industry. JUMO offers a wide range of sensors to measure and monitor temperature. Our temperature sensors are tailored to the processes used in meat processing and provide the best possible process reliability.

### Humidity sensors

In addition to temperature, humidity is another key element to consider when maturing, drying, and storing sausage products. JUMO offers hygrometric sensors to monitor the storage and maturing process as well as to ensure consistent product quality. JUMO humidity transducers equipped with a hair measuring element are sturdy, washable, and available with standardized current and voltage outputs as well as passive resistance outputs.

### Pressure transmitters

We can offer you the perfect pressure transmitter for your process, regardless of whether that involves vacuum cutting or autoclaving. JUMO offers a variety of proven and reliable pressure measuring devices with different front-flush process connections to meet your requirements.

#### JUMO screw-in RTD temperature probe

With connecting cable  
Type 902050



#### JUMO FOODtemp

Insertion RTD temperature probe  
Type 902350



#### JUMO Wtrans receiver

For RTD temperature probe with wireless data transmission  
Type 902931



#### JUMO Wtrans T

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



#### JUMO dial thermometer

Industry version  
Type 608002



#### JUMO STEAMtemp

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



#### JUMO hygro transducer and hygro-thermal transducer

Hygrometric  
Type 907031



#### JUMO psychrometer

Humidity measuring device  
Type 903562



#### JUMO DELOS SI

Precision pressure transmitter with switching contacts and display  
Type 405052



#### JUMO dTRANS p30

Pressure transmitter  
Type 404366



# Measurement and control technology

## Controllers/recorders and indicating devices

### Control

Other than temperature and humidity measurement devices, many processes also require control devices. JUMO offers a wide selection of models in this field as well. A particular highlight is the JUMO mTRON T measurement, control, and automation system, which was developed specifically for the processes in the meat processing industry.

JUMO's product range spans from transmitters to temperature monitors and even multi-functional process controllers, thereby covering the entire measuring chain for your processes.

#### JUMO portable pH measuring device

Microprocessor-controlled  
Type 202710



#### JUMO AQUIS 500 pH

Transmitter/controller  
for pH value  
Type 202560



#### JUMO mTRON T

Measurement, 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 paperless recorder range, measured values that require verification can be recorded, archived, and evaluated in an easy and tamper-proof manner. The new generation JUMO LOGOSCREEN nt features an integrated web server (online-visualization on the PC) and remote alarm in the event of a malfunction. In addition, this generation has batch documentation.

### Visualizing data with SVS3000

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

#### JUMO IMAGO F3000

Process controller for cooking, smoking, and air-conditioning systems  
Type 700101



#### JUMO LOGOSCREEN nt

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



#### JUMO SVS3000

Process visualization software with batch-related data reporting and evaluation in the network  
Type 700755



#### JUMO IMAGO 500

Multichannel process and program controller  
Type 703590



#### JUMO safety M TB/TW

Temperature limiter and monitor according to DIN EN 14597, mounted on DIN-rail  
Type 701160



#### JUMO DICON touch

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





# Steps in meat processing

The processes in meat processing and sausage production can essentially be reduced to a small number of basic processes. Recording and controlling temperature is crucial to all the processes. We hope that you'll be inspired by our solutions for this industry which we will explain on the following pages.





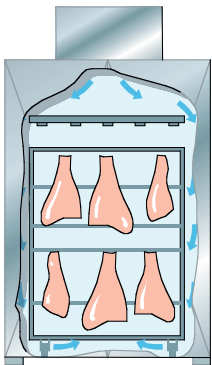
## Meat processing

After slaughtering and cutting up the animal, the next crucial step is to cool the meat until it is processed further. Depending on the local circumstances, the meat is transported to the next processing station in either cooled or frozen form. There, the processes of mincing, cutting, smoking, simmering, and maturing (depending on whether dry sausage, boiled sausage, or cooked sausage is being produced) play differing roles. For example, a cooking stage when producing dry sausage does not exist.

The product is handled and stored depending on the type of sausage and required shelf life. In this context, it is important to ensure the correct storage temperature. For example, sausages that have been autoclaved in jars or tins do not require any cooling. In contrast, cooling is crucial when storing boiled sausage. When it comes to smoked sausage, the smoking duration and the sausage type determine whether or not cooling is required.

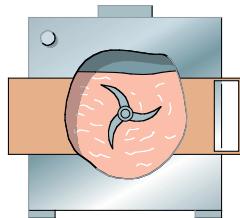
### Cooling

- Editor
- Temperature
- pH value
- Indicator
- Controller



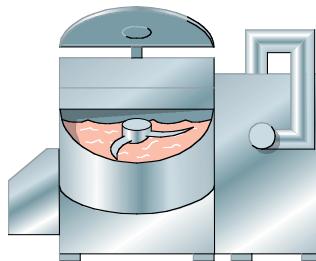
### Mincing

- Temperature
- Indicator
- Controller



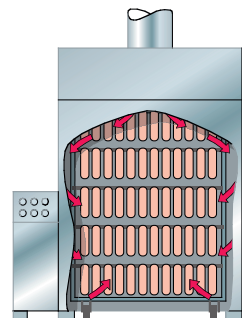
### Cutting

- Temperature
- Pressure
- Indicator
- Controller



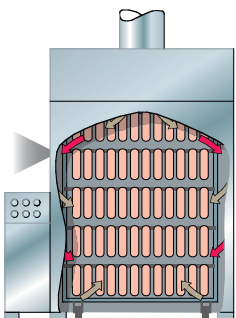
### Boiling/simmering/cooking

- Temperature
- Indicator
- Controller



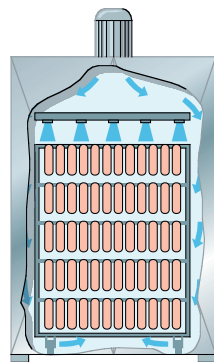
### Smoking

- Temperature
- Indicator
- Controller



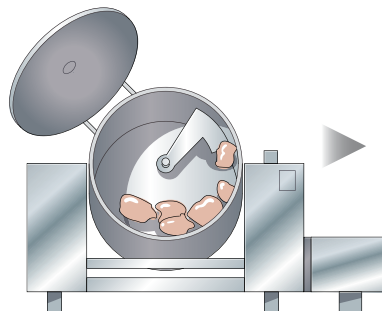
### Maturing/storing

- Temperature
- Humidity
- pH value
- Indicator
- Controller



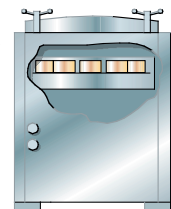
### Tumbler

- Temperature
- Pressure
- Controller



### Autoclaving

- Temperature
- Pressure
- Indicator
- Controller

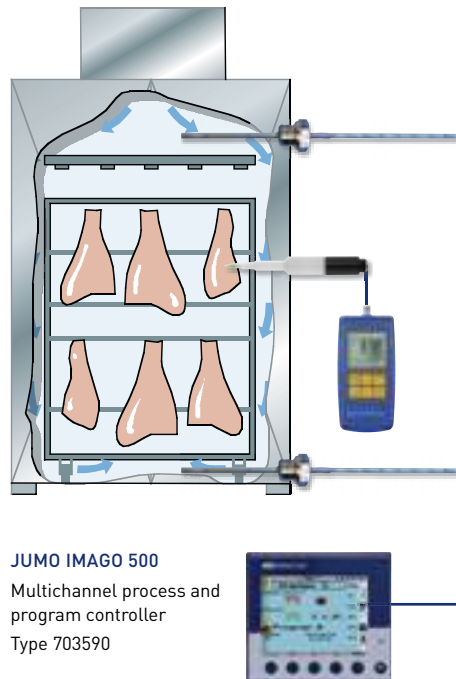




## Cooling

### Measuring the pH value of fresh meat using the JUMO pH insertion electrode

The pH value of meat is considered to be so important because it has a major effect on the meat's quality factors. The pH value allows conclusions to be drawn on the color, softness, taste, water binding capacity, and shelf life. This is because, once the animal has been slaughtered, biochemical processes start to break down the meat and will influence the pH value. Measuring this value allows you to obtain information about the speed of these processes and the quality of the meat.



**JUMO screw-in  
RTD temperature probe**  
With connecting cable  
Type 902050

**JUMO pH insertion electrode**  
For taking measurements in solid  
substances  
Type 201030/62

**JUMO portable pH measuring  
device**  
Microprocessor-controlled  
Type 202710

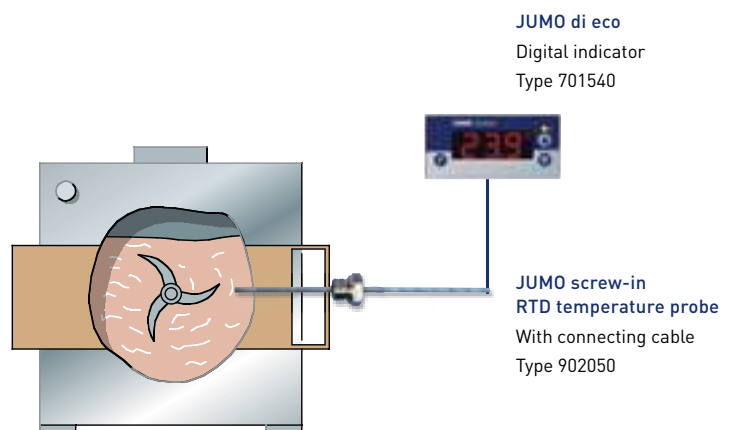
**JUMO IMAGO 500**  
Multichannel process and  
program controller  
Type 703590

## Mincing

### Monitoring the temperature in the cooled mincer using the JUMO di eco while mincing the meat

Mincing is a fundamental process in the meat processing industry. It is carried out using special devices of different sizes, ranging from manually operated mincers to large industrial versions.

It is important that meat is not exposed to major temperature fluctuations, particularly not in the range above 7 °C. This is why the cooling chain needs to be ensured when mincing and additional cooling must be provided if required.



**JUMO di eco**  
Digital indicator  
Type 701540

**JUMO screw-in  
RTD temperature probe**  
With connecting cable  
Type 902050



## Cutting

### Monitoring the temperature and pressure in vacuum cooking cutters

Vacuum cutters are ideal for ensuring meat has a better color and for cutting the meat more effectively. The use of a vacuum cooking cutter also means that the separate simmering of the meat is unnecessary, as is the case when producing cooked sausage. Temperature plays a key role in these devices since it is instrumental in determining the ultimate quality of the sausage.

#### JUMO dial thermometer

With bimetal measuring system

Type 608002

#### JUMO screw-in RTD temperature probe

With connecting cable

Type 902050

#### JUMO dTRANS p30

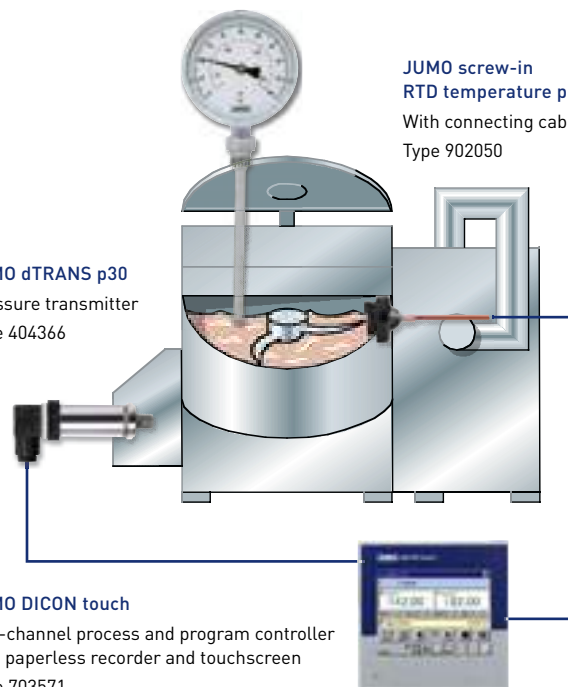
Pressure transmitter

Type 404366

#### JUMO DICON touch

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

Type 703571



## Cooking

### Monitoring the temperature in cooking boilers

The temperature of the water needs to be monitored when cooking or boiling sausages in cooking boilers. The core temperature of the boiled product can also be recorded here using steam-tight insertion probes.

#### JUMO cTRON

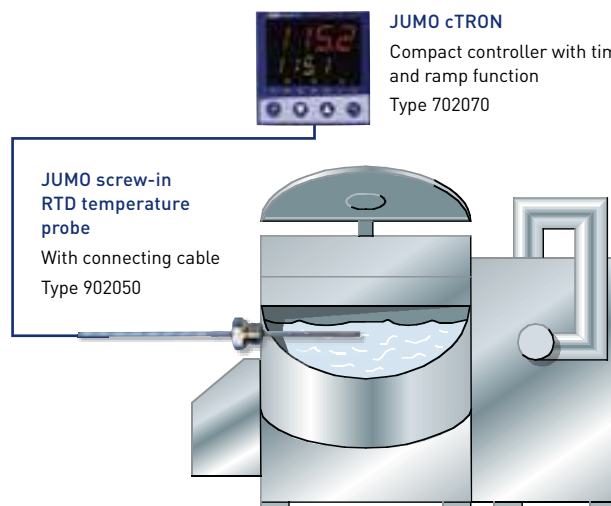
Compact controller with timer and ramp function

Type 702070

#### JUMO screw-in RTD temperature probe

With connecting cable

Type 902050



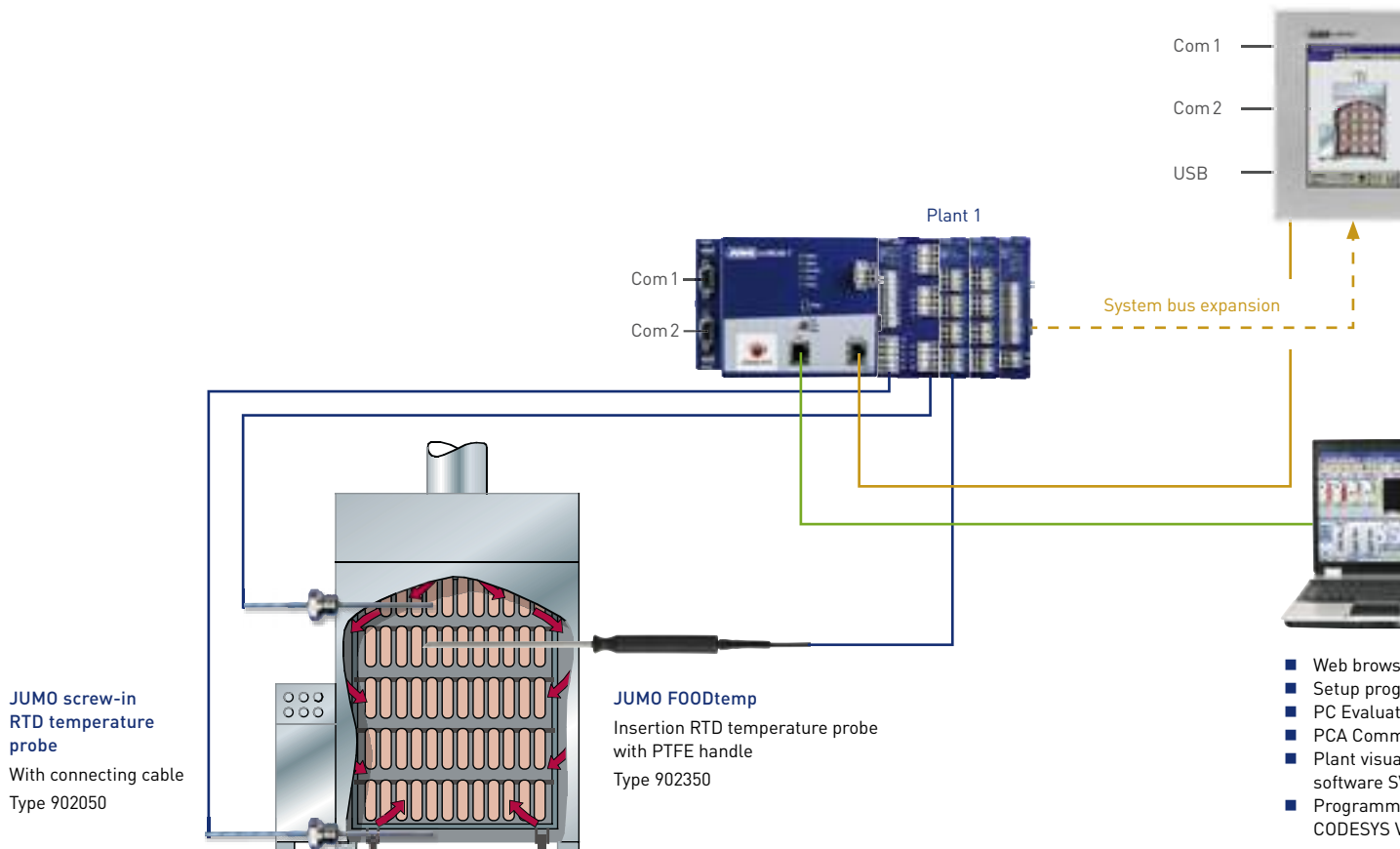


## Boiling/simmering

### Controlling cooking and smoking processes using the JUMO mTRON T

Cooking and smoking are two essential processes in sausage production. In most cases, chambers designed for either cooking or smoking are used. In large industrial plants, however, these two processes are now often also combined in what are known as continuous or semi-continuous plants. Here, the JUMO mTRON T with its special solution for the meat processing industry is the ideal candidate. With the JUMO mTRON T system, up to nine individual maturing, cooking, smoking, and air-conditioning systems can be operated and controlled while the measured values for the processes are documented for quality assurance. The central processing unit – the heart of the JUMO mTRON T –

provides nine asynchronous program generators with a pool of 90 programs. Furthermore, the multifunction panel (HMI) integrates nine recording groups, including batch reporting, to ensure the assignment of the recorded process data. The measured values from the processes are documented in a tamper-proof manner, which is very important in 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 maturing, cooking, smoking, and air-conditioning facilities.



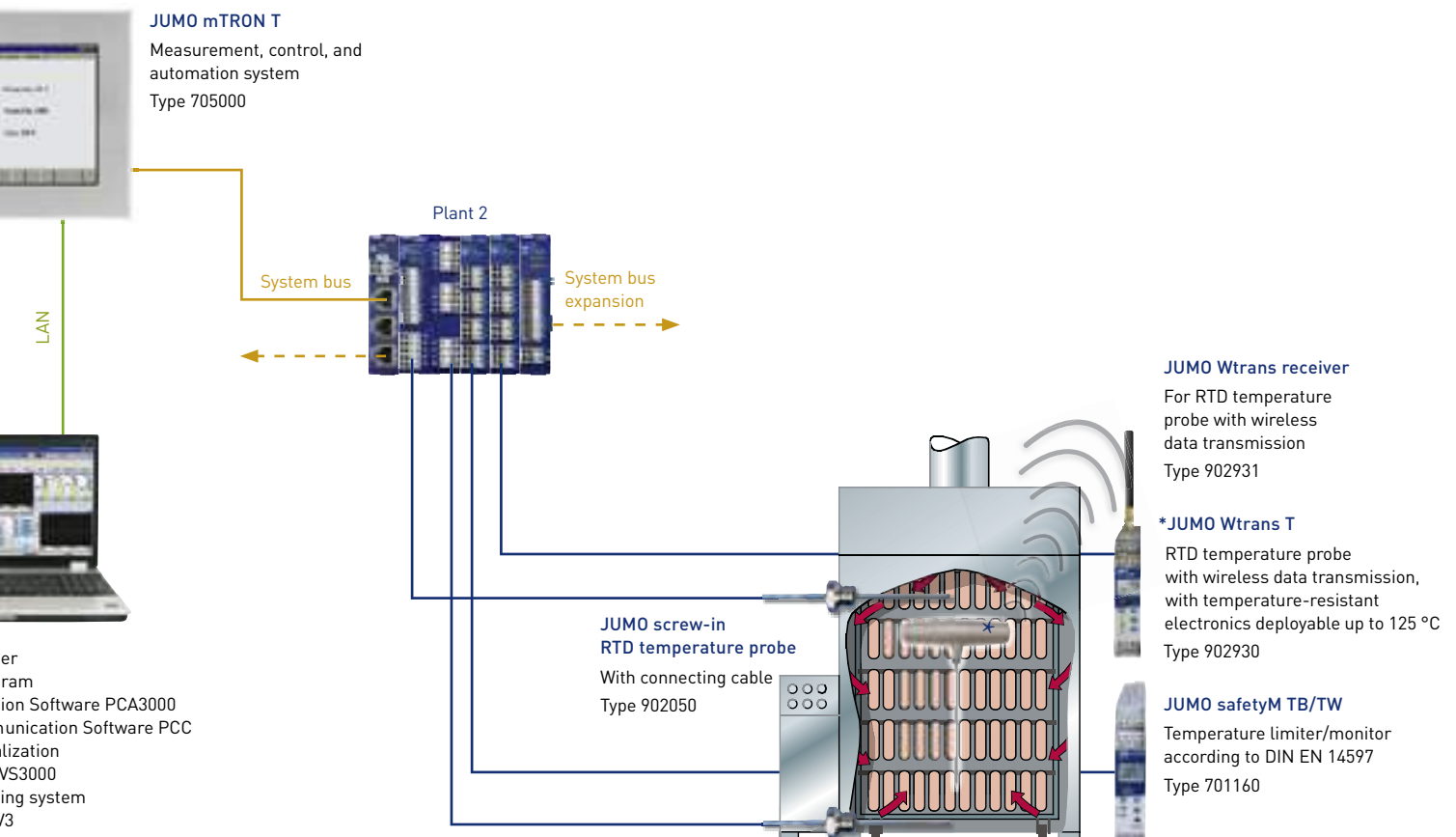


## Smoking/hot smoking

### Measuring the core temperature in continuous plants

Ideally, the products are equipped with a JUMO Wtrans radio transmitter to measure the core temperature. This device allows the temperature to be measured wirelessly on an ongoing basis. As such, continuous plants can precisely determine the temperature without interruption, which is highly beneficial for documentation and plant control.

Thanks to its wireless installation, the use of a JUMO Wtrans radio transmitter reduces the costs for new installations, maintenance work, and repairs. Electronics that are resistant to high temperatures can be used in temperatures up to 125 °C.







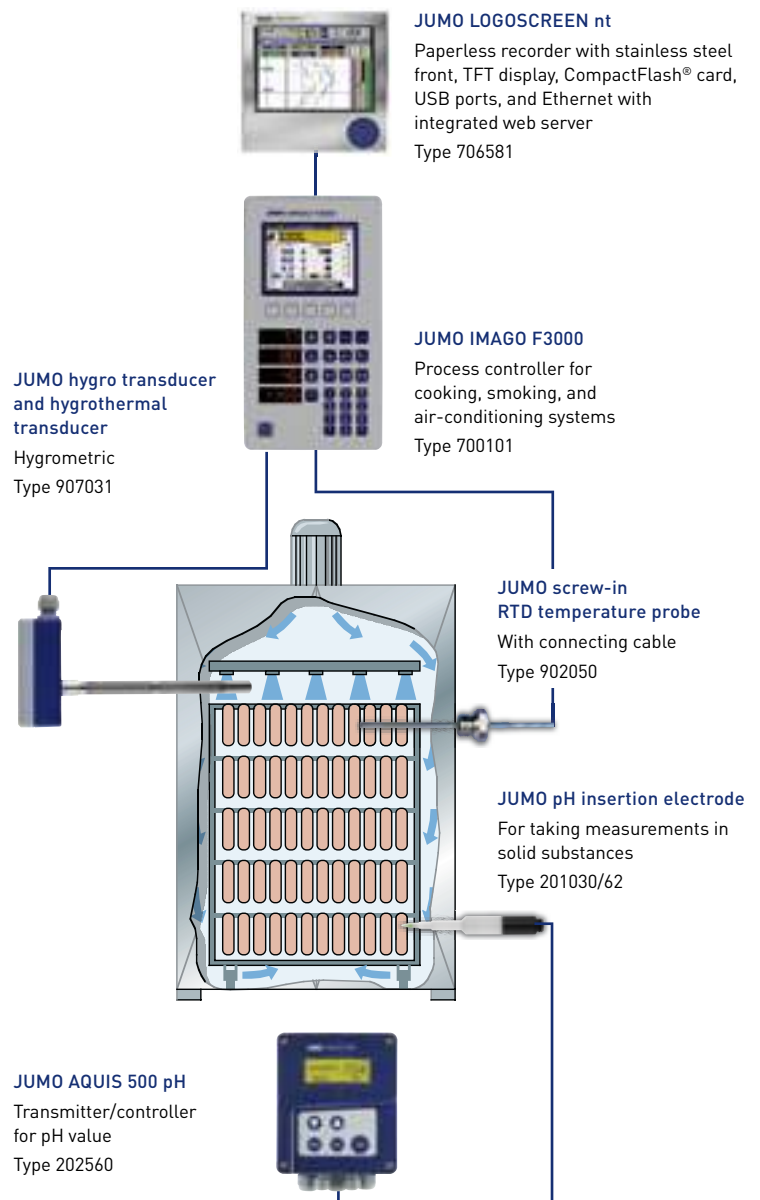
## Maturing/storing/drying

### Monitoring the maturing process when producing dry sausages

When producing dry sausages, the maturing/drying phase plays the most important role of all. The products must be dried until they have a residual water content that complies with food regulations. Here, it is important that the water is released evenly and not too quickly, otherwise a high-quality end product cannot be guaranteed. To prevent drying errors, the relative humidity must be in balance with the aw value of the dry sausage when drying starts. In addition, the relative humidity must only be lowered slowly to allow the water to escape from the inside to the outside of the sausage. The IMAGO F3000 and IMAGO 500 program controllers are ideally suited to this task.

### Measuring the pH value in meat and sausages

The pH value of meat is linked to its water binding capacity. Meat has the lowest water binding capacity when the pH value is around 5. A standardized optimum value for producing sausages does not exist as it differs from end product to end product. When producing dry sausages, for example, the meat must have a low water binding capacity so that the meat can dry evenly.





## Tumbler

### Measuring temperature and pressure in tumblers

Tumbling is a process that mixes and moves the meat. This process generally needs to be performed below a certain threshold temperature. In the meat processing industry – particularly so for producing cooked ham – the correct temperature is essential to guarantee that the end product has the best possible quality. When it comes to measuring the temperature and pressure in the tumbler, our two wireless solutions JUMO Wtrans T for measuring temperature and JUMO Wtrans p for measuring pressure are the perfect choice. The devices can be mounted anywhere on the tumbler because no cumbersome cable interfere.

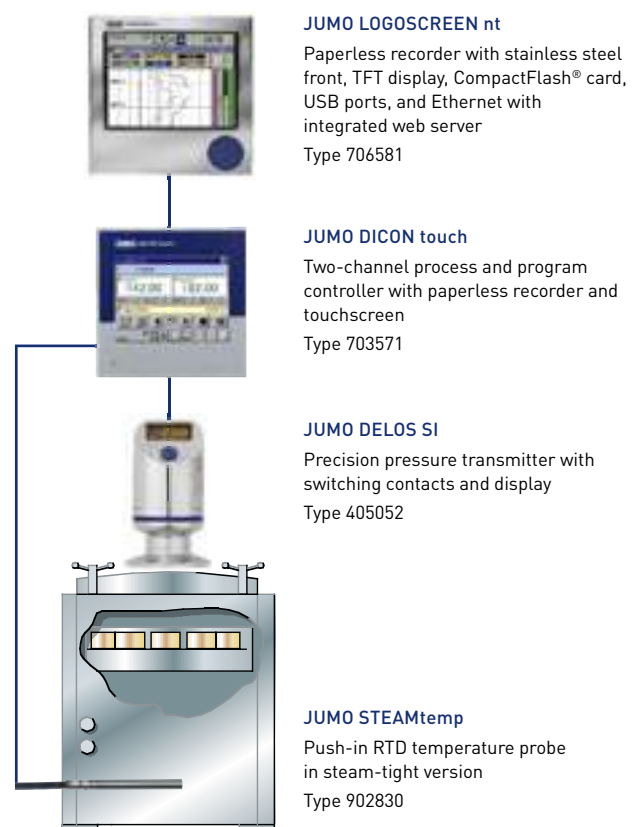


## Autoclaving

### Monitoring the temperature – time curve using JUMO LOGOSCREEN nt when preserving sausages

A long-established method of preserving sausages is to boil them in a container. Sausages processed in this way are filled into sealed vessels (jars or tins). They are then placed in an autoclave to preserve the product.

Ideally, even several autoclaves can be controlled using the JUMO mTRON T system. This solution for the meat processing industry allows you to control different autoclaves in parallel or independently of one another.





# JUMO mTRON T – process engineering

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.

The system was expanded to include process engineering functions for the meat processing industry. These enable plant engineers to automate functions that are required for meat processing – such as reddening, drying, and smoking – for each specific plant. This approach means that complex functions and processes can be provided for users in a clear and understandable manner.





## Ultra-modern and absolutely precise

Process engineering steps are considered to be any technical process in which raw or source material is converted into an end product using chemical-physical or biological processes.

For the meat processing industry, the firmware functions for the JUMO mTRON T automation system were expanded. Along with the process engineering application configured in the JUMO mTRON T setup, solutions that are tailored to customers' specific requirements can be created.

Users are provided with predefined process engineering steps known as process steps. They can be used to select different basic functions and, together with the programs, create a process engineering workflow for producing a range of products. A process step defines the setpoint values, minimum and maximum program section time, and process contacts available in each case.

Plant engineers can use the process steps in the system to ensure that end users cannot tamper with the components of their plants.

The JUMO mTRON T multifunction panel can be used to control plants. As a result, a program can be started and stopped as well as created and modified. Temporary changes can also be made using the multifunction panel.

The management of batches and the associated data has also been taken into account in the overall application.

The option to connect additional operating panels in the application has been provided from the very outset, thereby allowing the relevant hygiene requirements to be met for each specific plant.

## Your benefits:

- You have maximum flexibility for your plant as the functions and design can easily be amended
- You have outstanding process reliability thanks to tamper-proof data recording and individual operating rights
- Special customer requests can be implemented thanks to the modular hardware and PLC functions

Definition of setpoint values				
Temporal definition		For the multiple operation of plants a restriction is possible		
	Min. section time	Max. section time	Enabled setpoints	Assigned generators
	00:10:00	00:20:00	1,2,3,4	1,2,3,4,5,6,7,8,9
	00:20:00	00:30:00	1,2,3,4	1,2,3,4,5,6,7,8,9
	00:10:00	00:20:00	1,2,3,4	1,2,3,4,5,6,7,8,9
	00:00:00	99:59:59		
	00:00:00	99:59:59		
	00:00:00	00:00:00		
	00:00:00	00:00:00		

Process step editor



Process engineering





## Innovative system solutions from the experts

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 regard to all measurement and automation devices
- A global network of support from 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:  
This provides you with high plant availability and process reliability!





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