JUMO

More than sensors + automation

Food Technology

Innovative solutions for your success

Dipl.-Ing. Christina Hoffmann
Market Segment Manager
Pharma and Food
Phone: +49 661 6003-9384
Email: christina.hoffmann@jumo.net

Dear Reader,

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

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

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

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

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

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

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

The ultimate result of these solutions is consistently high quality!

Christina Hoffmann

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

Contents

Temperature

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

Temperature sensors for the food industry

Temperature is measured in many applications in the food industry, especially in process technology.
Whether your production uses the high or low temperature range, you can rely on the accuracy of our temperature probes. We have the right probe for processes that are subject to extreme conditions and that have wide temperature fluctuations.

For enclosed, hygienically demanding processes we offer thermowells and EHEDG-certified products made of stainless steel 1.4404/1.4435 (316 L) that are electropolished to a roughness of Ra ⩽ 0.8 µm.

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

JUMO RTD temperature probe B-head
Type 902020

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

JUMO FOODtemp
Insertion RTD temperature probe
Type 902350

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

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

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

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

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

Pressure

In addition to temperature, pressure also plays a major role in many areas of food production. To support you in monitoring and controlling these processes we have developed a variety of high-quality pressure measuring devices.

Pressure measurement technology – powerful and reliable

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

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

Some plant engineers even have to install several connection systems to meet the requirements of different end customers. To facilitate cost effectiveness and simplicity a modular, elastomer-sealed process connection adapter system was designed and certified in compliance with EHEDG guidelines: JUMO PEKA, page 10/11.

JUMO dTRANS p30

Pressure transmitter

Type 404366

JUMO dTRANS p31

Pressure transmitter for elevated medium temperature

Type 402050

JUMO dTRANS p20 DELTA

Differential pressure transmitter with display

Type 403022

JUMO dTRANS p20

Process pressure transmitter with display

Type 403025

JUMO DELOS SI

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

Type 405052

JUMO Wtrans p

Pressure transmitter with wireless data transmission

Type 402060

Liquid analysis

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

Liquid analysis

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

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

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

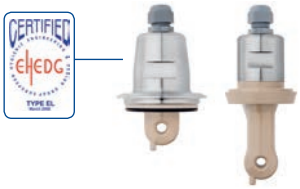
Constructed from FDA-listed materials and with a wide range of process connections manufactured in accordance with EHEDG guidelines, these electrodes are guaranteed to be safe for use in hygienic applications.

JUMO CTI-750

Conductivity transmitter
Stainless steel case
Type 202756

JUMO tecLine Ci

Hygienic inductive conductivity and temperature sensor
Type 202941

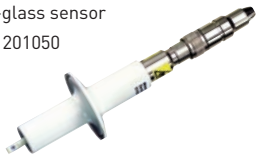


JUMO retractable holder, pneumatical

With hygienic process connection
Type 202823

JUMO ISFET pH-electrode

Non-glass sensor
Type 201050



JUMO tecLine pH

pH combination electrode
Type 201020

JUMO dTRANS pH/CR/AS 02

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

JUMO tecLine CR-4P

Conductive four-electrode conductivity sensor
Type 202930

JUMO AQUIS 500 pH/CR/Ci/AS

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

JUMO AQUIS touch P/S

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

JUMO PEKA

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

Hygienic design combined with maximum flexibility

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

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

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

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

Process connection JUMO PEKA*

Adapter
Rear seal
Front flush seal (optional)

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

Process connection adapter

Welding socket
Ø 55 mm

Orbital welding socket
DN25; DN32; DN40

Clamp
DN25/32/40, DIN 32676;
DN50, DIN 32676

Aseptic
DN40; DN50, DIN 11864-1A;
NKS DN40, DIN 11864-3A

VARIVENT®
DN25/32; DN40-125

Humidity

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

Humidity sensors

Measuring humidity plays an important part for powder production, especially so in the production of hygroscopic substances.
The hygrothermal transducers of the 907023 series are the ideal solution for measuring humidity and temperature under extreme process conditions.

The device series is based on 30 years of experience in industrial humidity measurement. The capacitive humidity sensor measures precisely and reliably. In addition, it is also resistant to normal contamination and many chemicals.
The measuring probes are also available with a large graphical display. On it, the process can be easily monitored and traced back up to one year.

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

JUMO industrial measuring probe
For humidity, temperature, and derived variables
DIN 43710 and DIN EN 60584
Type 907023

JUMO hygrothermal transducer, capacitive
With intelligent exchange probes
Type 907027

Controlling

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

Controlling

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

The JUMO IMAGO F3000 was specifically designed for cooking and smoking systems in the meat processing industry.
The JUMO IMAGO 500 process controller with color screen and 50 time planning programs offers optimum operator control and can be used in processes with diverse recipes for a variety of different foods. With up to eight control channels the single device can regulate, monitor, and control different processes such as flow, pressure, temperature, or level of a plant. Accurate adjustment is particularly important with processes in the food industry to prevent such consequences as overheating. This can be achieved with an integrated cascade controller in the JUMO IMAGO 500.

JUMO mTRON T – Central processing unit

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

Type 705000

JUMO mTRON T – Multifunction panel 840

Measuring, control, and automation system

Type 705060

JUMO IMAGO F3000

Process controllers for boiling, smoking, and air conditioning systems

Type 700101

JUMO IMAGO 500

Multichannel process and program controller

Type 703590

JUMO DICON touch

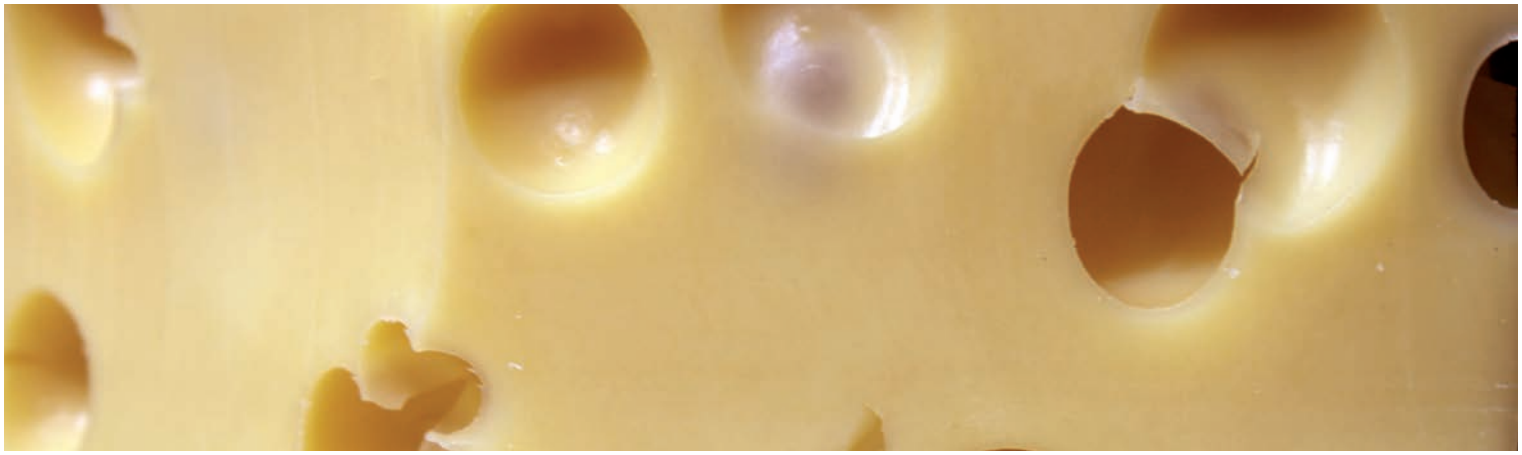
Two-channel process and program controller with paperless recorder and touchscreen

Type 703571

JUMO dTRON

Compact controller with program function

Type 703041



Recording

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

Recording, archiving, and evaluating

With JUMO LOGOSCREEN your process data can be reliably recorded and archived in a tamper-proof manner. The data is either evaluated directly on the device or on a PC using the JUMO PCA3000 evaluation software. Batch reports can be printed on customized forms. But that's still not all: the new generation of paperless recorders – the JUMO LOGOSCREEN nt – offers online visualization of process data as well as various limit monitoring procedures, a remote alarm in the event of a fault, and simultaneous recording of three totally independent batch processes.

The devices meet the requirements and guidelines laid down by the heating committee for measurement, control, and safety equipment for milk heating systems. Measurement data can also be recorded in compliance with the FDA requirements of 21 CFR Part 11.

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

JUMO mTRON T – Central processing unit

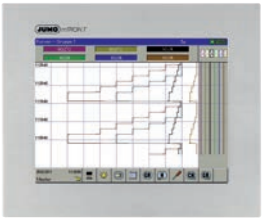
Measuring, control, and automation system with controller module and input/output modules

Type 705000

JUMO mTRON T – Multifunction panel 840

Measuring, control, and automation system

Type 705060



JUMO LOGOSCREEN nt/fd

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

Types 706581, 706585

21CFR Part 11

JUMO LOGOSCREEN 500 cf

Entry-level paperless recorder with CompactFlash® card as storage medium and lifecycle data management

Type 706510

Monitoring

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

Plant monitoring with electronic or electromechanical thermostats

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

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

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

JUMO safetyM STB / STW / Ex

Safety temperature limiters/monitors according to DIN EN 14597

Types 701150, 701155

JUMO safetyM TB/TW

Temperature limiter/monitor according to DIN EN 14597 as insertion and DIN-rail device

Types 701160, 701170

Surface-mounted thermostat

ATH series

Type 603021

JUMO heatTHERM-AT

Surface-mounted thermostat

Type 603070

JUMO heatTHERM

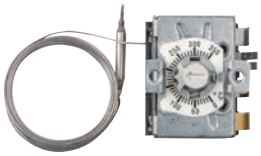
Panel-mounted thermostat, EM series

Type 602021

JUMO heatTHERM

Panel-mounted thermostat

Type 602031



JUMO frostTHERM-AT/-DR

Frost protection thermostat

Type 604100

JUMO frostTHERM-ATE

Electronic frost protection thermostat

Type 604170

Automation and visualization

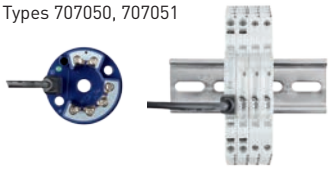
Problem-free processes require reliable systems.
JUMO offers those as well: from transmitters to simple display units to our JUMO mTRON T automation system. This way, JUMO can automate and visualize your entire process.

Transmitters

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

JUMO dTRANS T05

Programmable
two-wire transmitter
Types 707050, 707051



JUMO dTRANS T02 Ex

Programmable
four-wire transmitter
Type 707020

JUMO Wtrans B

Programmable head transmitter
with wireless transmission
Type 707060

JUMO dTRANS T03

Two-wire/three-wire transmitter
Type 707030

Visualizing

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

JUMO SVS3000

Process visualization software
Type 700755

JUMO di308

Digital display unit
Type 701550

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 four-channel analog input module with four electrically isolated universal analog inputs for thermocouples, resistance thermometers, and standard signals. These modules enable precise recording and digitizing of process variables 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 RS422/485 or RS232,
Modbus master/slave
or PROFIBUS-DP slave

Expansion of system bus

LAN

System bus

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

www.jumo.net

PR 00038 EN/00366075/2014-V1