JUMO

Food technology

Innovative solutions for your success

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Dear Reader,

Food is a permanent 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, whether you want to monitor your process by pressure, temperature, conductivity or pH value, or whether you want to control cleaning or reduce 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 competent partner for the food 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 food technology 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 food technology. 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!

Yours, Christina Hoffmann

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

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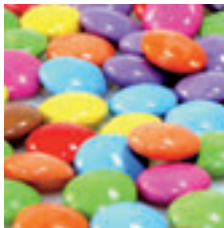
Temperature

Temperature is the most important measurement variable in the food industry. It affects the materials that are used in the industry and must be accurately controlled and monitored to prevent variations in quality. JUMO has top-quality systems to help you in these areas.

Temperature sensors for the food industry

Temperature is measured in many applications in the food industry, especially in the process technology.

Whether your production uses the high or low temperature range, you can rely on the accuracy of our temperature sensors. We also have the right probe for processes that are subject to extreme conditions and wide temperature fluctuations.

We offer sheaths and EHEDG-certified products made of stainless steel 1.4404/1.4435 (316L) for enclosed, hygienically demanding processes, electropolished to a roughness of Ra ≤ 0.8 μm.

JUMO Wtrans is the ideal product if you cannot use a cable, for example in rotating containers or at high heights. The instrument can be used flexibly and accurately transmits measured values via radio transmission. A high-temperature version is now available as a product upgrade, and 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 sealing cone

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 probe with wireless measurement transmission

Type 902931

JUMO Wtrans probe
RTD temperature probe with wireless/measurement 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 instruments.

Pressure measurement technology – powerful and reliable

Hygienic requirements of food technology are associated with measures to suppress the multiplication of microorganisms, for example as incorporated into hygienic design or cleaning and disinfecting technology. Two crucial measurement variables here are process pressure and filling level. JUMO offers a variety of proven and reliable pressure measuring instruments with different front-flush process connections to meet these requirements.

Pressure separators for contaminated, extremely hot, highly-viscous or especially corrosive media and measuring instruments with CIP and SIP capability (up to 200 °C), complete the product range. There can be direct contact between the hot medium and a stainless steel or ceramic membrane.

Some plant builders even have to install several connection systems, to attend to different end customers. JUMO's modular, elastomer-sealed process connection adapter system, designed and certified in compliance with EHEDG guidelines, is also economical and easy to use: JUMO PEKA, page 10/11.

JUMO dTRANS p30
Pressure transmitter
Type 404366

JUMO dTRANS p31
Pressure transmitter
for an 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

Liquid analysis

JUMO not only covers traditional parameters for food production, storage and refinement such as temperature, pressure and humidity, but also provides measuring instruments and sensors for liquid chemical measurements such as pH-value and conductivity.

Liquid analysis

There is a balanced and proven product range available for the most important parameters, such as pH-value, redox and electrolytic conductivity. Hand-held meters used to measure pH-value in meat and cheese help ensure quality control, while online measurement technology is also available for continuous measurement. When packaging, bottles and systems 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 instruments in plastic or stainless steel housing, the product range for CIP/SIP systems now also includes the tecLine Lf-4P conductive 4-pin conductivity probe. Holders and fittings with process connections typically used in food technology are available for these sensors.
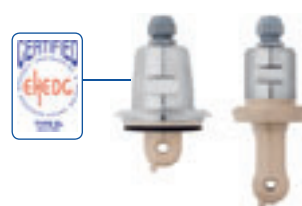
The non-glass JUMO ISFET pH electrode allows you to measure pH-value directly in the process and evaluate it with the JUMO AQUIS 500 pH. The electrode bears the 3A Sanitary Standard symbol, indicating that it can be used in food and pharmaceutical applications where hygiene is a sensitive issue.

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 quick-change fitting, pneumatic
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 multi-channel transmitter/
controller series for liquid analysis
Type 202551/202552/202553

JUMO tecLine LF-4P
Conductive 4-electrode
conductivity measuring device
Type 202930

JUMO AQUIS 500 pH/CR/Ci/AS
Transmitter/controller series for
liquid analysis
Type 202560/202565/202566/202568

JUMO ecoTRANS pH/Lf 03
Microprocessor/transmitter/
switching device for pH/redox
voltage, conductivity and
temperature
Type 202723/202732

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 measurement variable 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 clearance-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 connecting piece with the adapter, which is designed to rotate, protects the O-ring that is located flush with the front from damage resulting from assembly and also facilitates optimum alignment of the measuring instrument. The measuring instrument's thread ensures it can be mounted and removed any number of times, which simplifies mounting, cleaning and maintenance processes.

The system's different process connections make it versatile to use and suitable for every application (weld-in socket, orbital weld-in socket and clamp, aseptic to DIN 11864-1 and VARIVENT®).
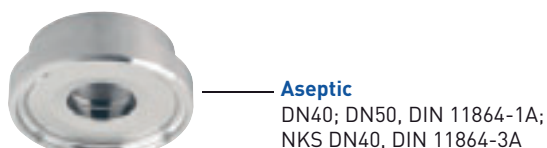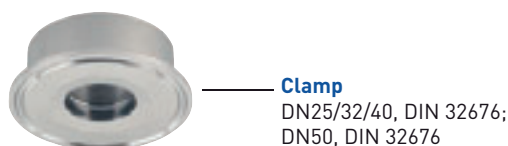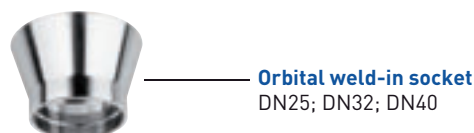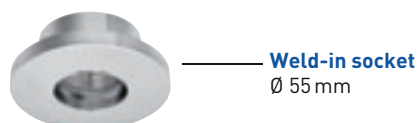
The system can be combined with the following product groups: 902810/902815/902940 (page 5), 402050/404366/405052/403025 (page 7), 202930 (page 9).

JUMO PEKA process connection*

Adapter
Rear seal
Front flush seal (optional)

*Process connection in the data sheet of the relevant measuring instrument: 997.

Process connection adapter

Weld-in socket
Ø 55 mm

Orbital weld-in 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, powdery 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, to provide optimum support for your production monitoring.

Humidity sensors

Measuring humidity plays an important part in powder production, especially 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 instrument series is based on 30 years of experience in industrial humidity measurement. The capacitive humidity sensor measures precisely and reliably and is resistant to normal dirt and many chemicals.

The measuring probes are optionally available with a large graphical display for convenient process monitoring, which can be traced back for 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. Because the calibration data is directly stored in the probe, probes can be exchanged if necessary without any loss of accuracy. Highly-accurate calibration procedures and state-of-the-art microprocessor technology also ensure reliable measurement and high measuring accuracy over the range of applications.

JUMO industrial transducers
for humidity, temperature and derived variables
DIN 43710 and DIN EN 60584

Type 907023

JUMO hygrothermal transducer –
capacitive, with intelligent interchangeable probes

Type 907027

Control

To guarantee optimum solutions in food production requires
not only a suitable sensor design but also control of measurement
variables. JUMO systems are ideal in this respect.

Control

High-precision controllers are required whenever multiple physical variables, 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, and can perform most control tasks. 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, it can regulate, monitor and control different processes such as the flow rate, pressure, temperature or liquid level of a system, covering all processes in a single instrument. Accurate adjustment is particularly important with processes in the food industry to prevent overheating, for example. This can be achieved with an integrated cascade controller in the JUMO IMAGO 500.

**JUMO mTRON T –
Central 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
"Multi-channel process and program controller"
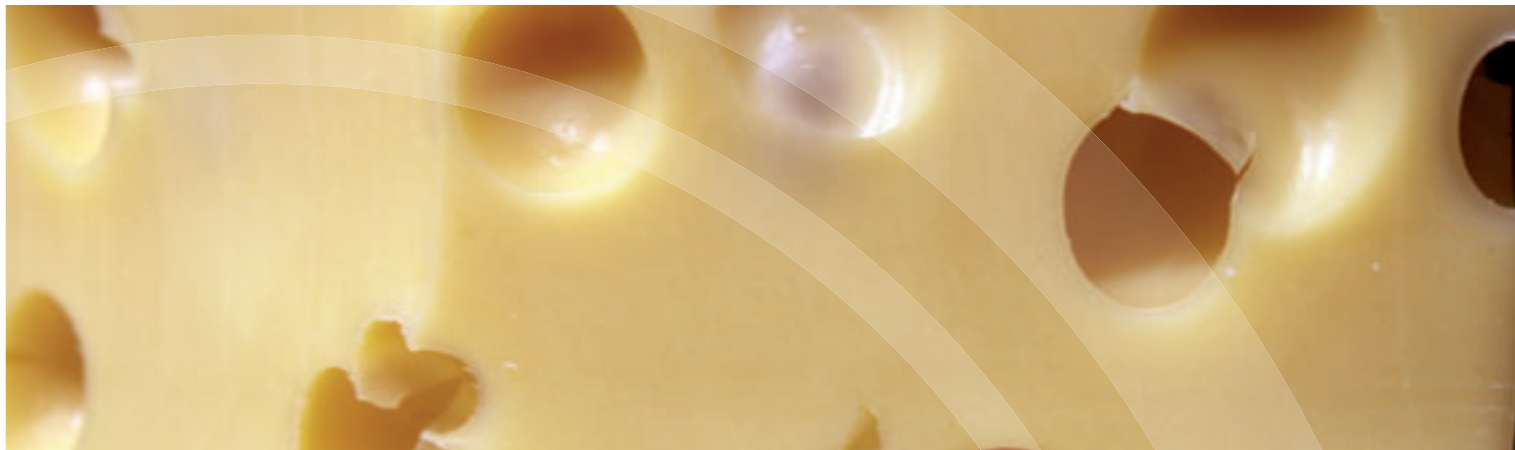Type 703590

JUMO cTRON
Compact controller with timer and ramp function
Type 702070

JUMO dTRON
Compact controller with program function
Type 703041

Recording

Are you familiar with the JUMO LOGOSCREEN series? The instruments of this paperless recorder series are the best way to record, archive and evaluate measurement values that require verification in an easy and tamper-proof way.

Recording, archiving and evaluating

With JUMO LOGOSCREEN, your process data can be reliably recorded and archived in a tamper-proof way. The data is either evaluated directly on the instrument 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 an option for online process data visualization as well as various limit monitoring procedures, a remote alarm in the event of a fault, and the option of simultaneous recording of three totally independent batch processes.

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

JUMO LOGOSCREEN 500 cf
Entry-level paperless recorder with CompactFlash® card as storage medium and lifecycle data management
Type 706510

JUMO LOGOSCREEN es
Paperless recorder for reliable recording of FDA-compliant measurement data
Type 706560

FDA
21CFR Part 11

Monitoring

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

Monitoring systems 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 systems where it is critical for the actual temperature not to exceed or fall below a specific temperature range because the end product would then be detrimentally and irreversibly affected. An example of this type of process is temperature control of chocolate.

To prevent this type of irreversible damage, JUMO can provide electronic or electromechanical thermostats to consistently monitor your system. This has the crucial advantage that should the maximum or minimum system temperature be reached, the DIN EN 14597 compliant thermostats switch in the safe direction.

JUMO safetyM STB/STW
Safety temperature limiters/monitors to DIN EN 14597

Type 701150

JUMO safetyM TB/TW
Temperature limiters/monitors to DIN EN 14597, available panel mounted and DIN rail device

Type 701160/701170

Surface-mounted thermostats
ATH type series

Type 603021

JUMO heatTHERM-AT
Surface-mounted thermostat

Type 603070

JUMO heatTHERM
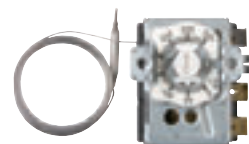EM type series panel-mounted thermostat

Type 602021

JUMO heatTHERM
panel-mounted thermostat

Type 602031

Automation and visualization

Problem-free processes require reliable systems.
JUMO has those for you as well: from transmitters to simple
display instruments and on to our JUMO mTRON T automation system –
JUMO can automate and visualize your entire process.

Transmitters

Transmitters designed for industrial applications record temperatures with a Pt100 resistance thermometer based on 2 or 3-wire connection technology. The output signal 4 to 20 mA is available linear with temperature. 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 immune to interference. Amplification for specific measuring ranges ensures maximum precision, even with small measuring ranges. The transmitter can be adapted to different measuring tasks via digital communication.

Visualization

The JUMO SVS3000 process visualization system provides effective operator control, visualization and documentation. As a special feature it 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 dTRANS T01
Programmable
two-wire transmitter

Type 707010

JUMO dTRANS T02 Ex
Programmable
four-wire transmitter

Type 707020

JUMO Wtrans B
Programmable head transmitter
with radio transmission

Type 707060

JUMO dTRANS T03
Two-/three-wire transmitters

Type 707030

JUMO SVS3000
Process visualization software

Type 700755

JUMO di308
Digital indicator

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 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

Systembus

LAN

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

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

Expansion of
system bus

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