JUMO Wtrans Series

Wireless measurement of temperature

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The JUMO Wtrans wireless transmission system as a multifunctional application

Your benefits in a nutshell

- Up to 16 transmitters per receiver
- 300 Meters Open Air Range
- Wireless recording of measured values in moveable parts or areas which are hard to reach
- Enables measurements particularly at those locations where cable routing is not possible or where it would be technically problematic
- Suitable for permanent installation or temporary spontaneous measurements
- Complete spatial mobility (open air range up to 300 m)
- Unlimited flexibility, such as for temporary measurements, as no time-intensive mounting or installation is required
- Fail-safe, industry-standard data transmission for high process reliability
- Reduced installation work
- Reduced costs for plant reinstallation, maintenance, and repair
- Durable high-performance battery
- Intuitive setup program for use on PC
- Optional online chart function enables recording of measured values directly on the PC
- Special applications can be implemented with the help of customer-specific linearization
- Easy connection of additional devices for evaluation of data

Application areas

- Mechanical and plant engineering
- Pharmaceutical industry
- Food and beverages industry
- Chemical industry
- Oil and gas industry
- Plastics industry
- Power stations
- Building automation
- Air-conditioning technology

Application examples

- Monitoring of refrigeration plants, heating systems, sanitary engineering, and heating oil / sprinkler-water tanks in building management
- Temperature measurement in rotary furnaces
- Temperature monitoring in warehouses
- Temperature and pressure measurement in conveyor and transportation systems
- Elimination of slip ring transmission systems that are susceptible to wear and failure
- Temporary measurements for plant and process optimization or on startup and maintenance

16 Transmitters

1 Receiver

<----------300mt Range---------->

JUMO Wtrans receiver

The λ/4 antenna that is included in the delivery has an impedance of 50 Ω and can be screwed on directly or mounted externally. The antenna wall holder with a 3 m antenna cable enables an open air range of 300 m.

Receiver – JUMO Wtrans universal receiver for JUMO wireless measuring probes

The JUMO Wtrans receiver can control a maximum of 16 channels. As a result, one receiver can have up to 16 JUMO Wtrans transmitters assigned to it. Offset, alarms, limit values, and other parameters can be configured individually for each separate transmission channel. The receiver can be operated and configured via the keypad mounted to the front in combination with a two-row LCD display or with the easy-to-use and intuitive setup program on a PC. Output for further processing of the measured values is optionally possible via a maximum of four configurable analog outputs or in digital form over an RS-485 interface.

Additionally, with two relays limit value monitoring can be set up or alarm messages can be produced. Special applications can be implemented with a customer-specific linearization. Out of 40 entered value pairs a linear approximation can be performed. Alternatively, a polynomial function of the fourth order can be determined as the specific characteristic line. Additionally, a polynomial function – in as far as it is known – can be implemented through direct input.

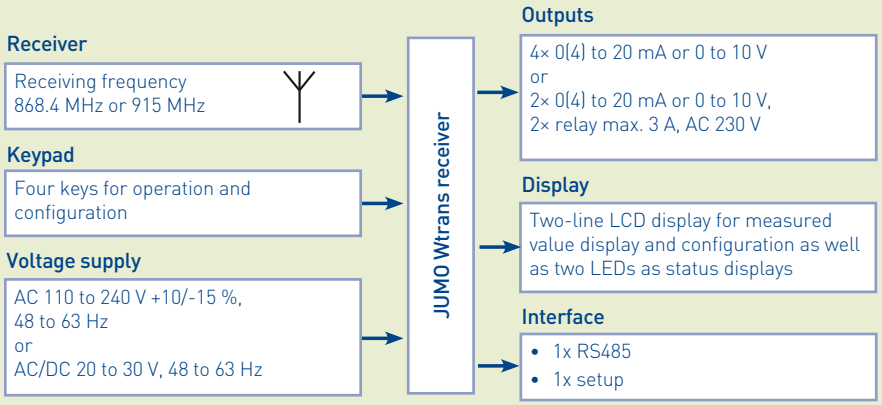
Last but not least, the online chart function that can be unlocked in the setup program allows measured values to be recorded on a PC/laptop without additional external devices. The online chart function allows the graphical display of up to eight analog and up to four binary channels. This feature is especially helpful during the startup phase.

Features

Receiver – JUMO Wtrans in mounting rail case, type 902931

- Compatible with all JUMO Wtrans series devices
- Up to 16 transmitters per receiver (can be freely combined)
- Up to four analog outputs / up to two switching outputs (relay)
- Interface RS485 with Modbus protocol
- Operation directly on device or by using setup program on PC
- Ambient temperature: -20 to +50 °C
- Protection type IP20

Block diagram



Approvals / approval marks

- IC (Industry Canada) for 915 MHz, 902931/10, 230 V
- FCC (Federal Communications Commission) for 915 MHz, 902931/10, 230 V
- cULus (Underwriters Laboratories) 902931/10, 230 V

Transmitter – JUMO Wtrans T

JUMO Wtrans T transmitters are used in conjunction with the Wtrans receiver for mobile or stationary temperature measurement. The measured value is transmitted wirelessly to the receiver of the Wtrans system and displayed on the LCD display.
For use in potentially explosive areas, Wtrans T devices with ATEX approval up to zone 0 are available. Only the receiver must be placed outside of the Ex-area. Wireless data transmission makes elaborate and cost-intensive solutions with supply isolators and protective barriers unnecessary.
The Wtrans T transmitters can be equipped with different process connections so that the user can remain flexible as much as possible. Along with the JUMO PEKA adapter system an EHEDG-certified version for use in such hygienic processes is also available. The used seals meet FDA requirements.

Transmitter – JUMO Wtrans T
RTD temperature probe with wireless data transmission

General information	**Description**	**JUMO Wtrans T01** **RTD temperature probe with electronic modules up to 85 °C**	**JUMO Wtrans T02** **RTD temperature probe with electronic modules up to 125 °C**	**JUMO Wtrans T03 Ex** **RTD temperature probe with ATEX approval and electronic modules up to 85 °C**
	Type / data sheet	902930/10 902930/12 902930/50	902930/20 902930/22 902930/60	902930/15 902930/17 902930/55
	Features	• Measuring ranges: -30 to +260 °C and -200 to +600 °C* • For mobile and stationary temperature measurement • No wiring work thanks to modern wireless technology • Fail-safe transmission with telegram coding		
Technical data	**Radio frequency**	868.4 MHz (Europe); 915 MHz (USA, Australia, Canada, New Zealand, and other countries); 10 frequencies can be configured in the 915 MHz frequency band		
	Transmission interval	Adjustable from 1 to 3600 s (using setup program)	Adjustable from 5 to 600 s (using setup program)	Adjustable: 5 s, 10 s, 20 s, 45 s (using DIP switch)
	Open air range	Up to 300 m when using the antenna wall mounting holder for the receiver and 3 m antenna cable		
	Transmitter detection (transmitter ID)	Five-digit ID, factory set, can be configured according to customer specifications		
	Measuring input	Pt1000 according to DIN EN 60751, in three-wire circuit		
	Process connection	Various pipe connections, threads, and flanges acc. to DIN EN, JUMO PEKA, (VARIVENT®, aseptic, clamp), individual versions acc. to customer requirement		
	Protection type	IP67 according to DIN EN 60529; for basic type 902930/10, 902930/12, 902930/15, 902930/17, 902930/20, and 902930/22; for basic type 902930/50, 902930/55, and 902930/60**		
	Ambient temperature	-30 to +85 °C	-25 to +125 °C	-30 to +85 °C***
	Voltage supply	Lithium battery: 3.6 V (rated capacity 2.2 Ah / 1.7 Ah for JUMO Wtrans T02)		
	Available approvals / approval marks	IC (Industry Canada) for 915 MHz, FCC (Federal Communications Commission) for 915 MHz, cULus (Underwriters Laboratories), ATEX approval for 868.4 MHz****		

* Not for JUMO Wtrans T03 Ex.
** Only with screwed-on machine connector M12×1
*** May be limited further by Ex-area.
**** Not for JUMO Wtrans T03 Ex.

JUMO

Application

Temperature Measurement in Composting Plants

Temperature monitoring with JUMO – the most effective monitoring method

The correct handling of biodegradable waste destined for composting is stipulated in Germany by the German Biowaste Ordinance (*Bioabfallverordnung*). According to this ordinance, the specified temperatures for all batches of a composting system must be documented. The treatment temperature must be measured and documented at regular intervals. Only if documentation is verifiable at any point in time can the manufactured composts be deemed hygienic.

How wireless temperature measurement can save you a lot of time:

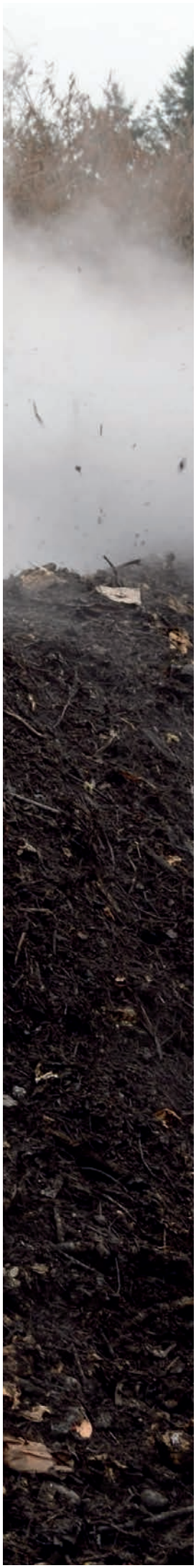
The temperature probes are simply inserted into the heaps. As a result, expensive and time-consuming cabling is not required. The transmitter is located in the probe handle and is protected by a watertight case. Via an online wireless connection the measured values are transmitted to the universal receiver in adjustable intervals. The used radio frequencies are impervious to external interference and ensure reliable data transfer, even over distances of several hundred meters. The receiver manages up to 16 temperature probes and provides measured values for higher-ranking systems (e.g. via an RS485 Modbus interface).

How our automation system can help you with the documentation of measured values:

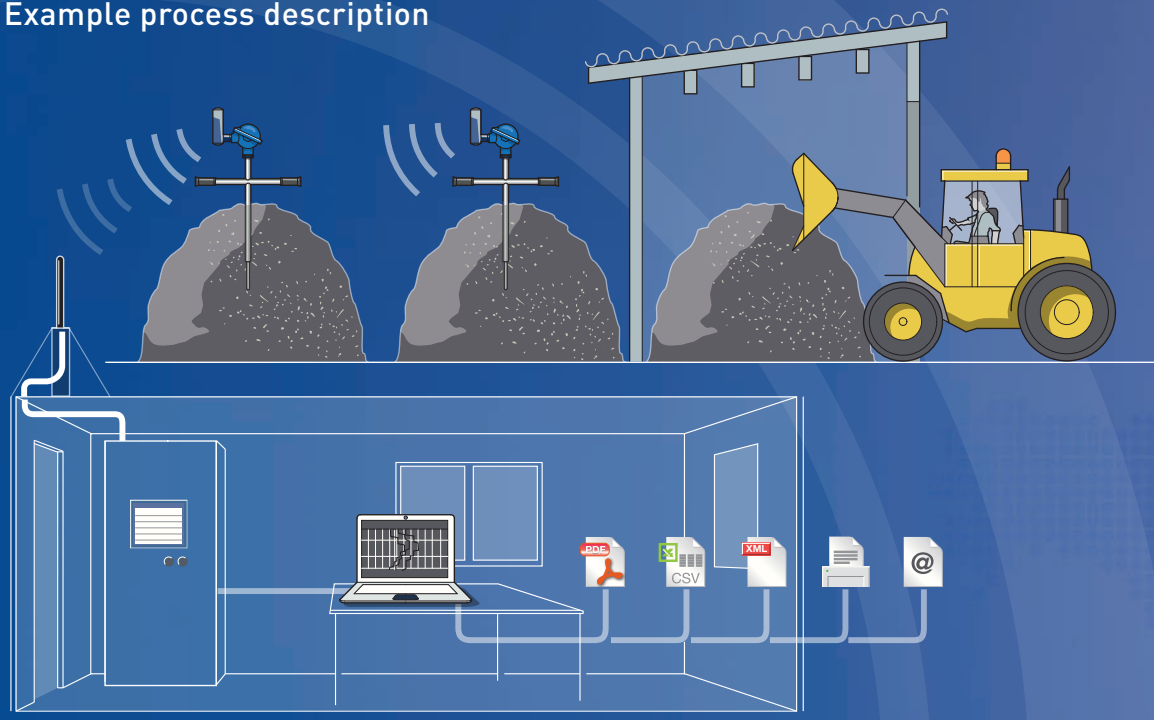
The JUMO mTRON T system records and analyzes all the transmitted data. The measured values are displayed in the multifunction panel. Various display options such as curve presentation, text display, bar chart, and many more are available and can be freely selected. In addition to enabling visualization, the multifunction panel also enables convenient configuration of the system. User-dependent access with password protection guarantees a high degree of operational security and protects against unauthorized access. The integrated web server also allows all measurement data to be displayed on different PCs using an Internet browser. A highlight is the tamper-proof data recording in the system. All measured values are stored in such a way that this data can no longer be changed once it is saved. Upon request, the relevant software package can automatically produce a log of the production batch (e.g. as a PDF-file).

Your benefits in a nutshell:

By using the JUMO temperature measurement system, you are complying with an important requirement for obtaining the RAL quality seal. The entire process of temperature monitoring and documentation in composting plants is now much simpler. The data no longer needs to be laboriously recorded manually. It can now be automatically documented and logged for hygiene verification. In addition, the use of individual data loggers is no longer required. The lack of extensive cabling work makes the system particularly flexible.



Example process description



JUMO temperature probe with wireless transmission

Robust, durable, and functional. By using the JUMO temperature probes designed specifically for composting applications, you are always on the safe side. Equipped with a sturdy handle and a stainless steel lance, these temperature probes can withstand even the most adverse conditions. Various insertion lengths can be provided at any time, depending on the customer's requirements. You have the choice – we have the solution. The powerful wireless transmission ensures reliable transfer of measured values within an adjustable transmission interval. Of course, the temperature probes can also be delivered with a conventional cable and connected to such devices as our JUMO mTRON T system.

JUMO Wtrans receiver (type 902931)

The Wtrans receiver is the powerful receiver for our entire Wtrans series. Up to 16 temperature probes can be managed with this device. All measured values can be extracted easily and reliably using the interface. You will also receive support for maintenance. You can retrieve, for example, the battery status or notification messages at any time. For smaller applications, 4 analog outputs (such as 4 to 20 mA) are available on the device for the output of the measured values. Equipped with relay outputs, the receiver can also display limit values completely independently by such methods as the indicator light.

JUMO mTRON T (type 705000)

The complete solution for composting plants. The modular mTRON T system offers you all the options you may require – from using it purely as a measured value recording system, through to control and data recording tasks, up to complex control for the composting process. What's more, the simple configuration of the system using an easy-to-use setup program, the many interfaces including Ethernet or USB, and not least important the tamper-proof recording of measurement data set standards. An additional software package for visualizing the measured values and for the automatic output of, for example, a PDF-file with all relevant data for the composting phase offers maximum convenience and data security.

Drying

Control and monitoring freeze drying

Freeze-drying is a process that gently freezes products and dries them in a vacuum.

After the product is frozen, the pressure is regulated below the sublimation pressure. Slightly heating the frozen material while maintaining the same pressure causes the water to sublimate. The released water vapor freezes out at the undercooled condenser.

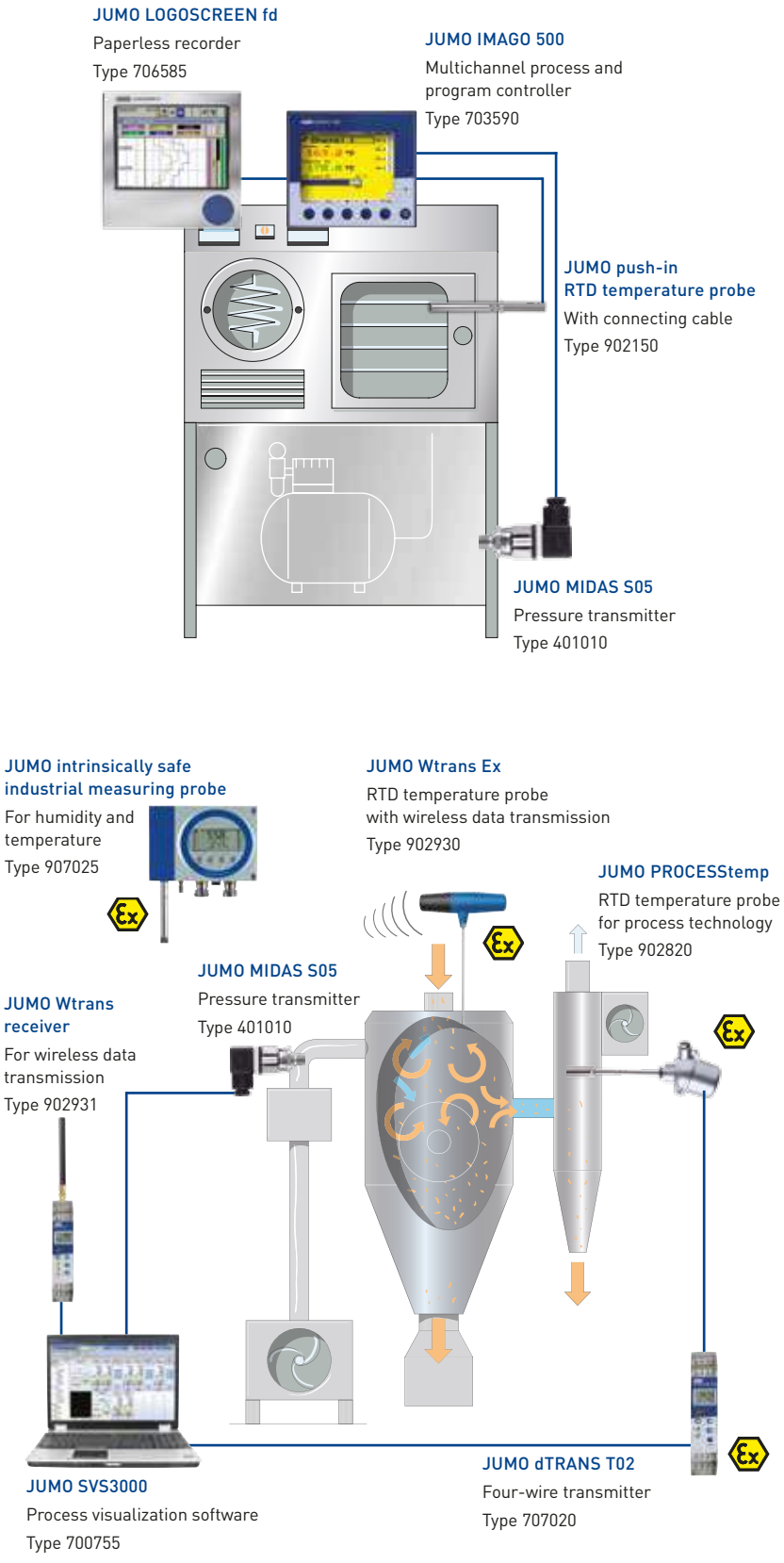
For this process, JUMO offers temperature and pressure sensors that optimally control the freeze drying process in combination with such devices as the JUMO IMAGO 500 process controller. The JUMO LOGOSCREEN fd paperless recorder provides increased reliability for accurately documenting your measured values.

Monitoring temperature and humidity during spray drying or fluidized-bed drying

During this process, the moist surface of the drop of liquid (on the product) draws thermal energy from the drying gas, which is necessary for evaporation. The drying air cools in the process while simultaneously absorbing water vapor.

JUMO offers suitable sensors and recorders for monitoring temperature, pressure, and air humidity to ensure consistently high product quality.

We also offer sensors with the corresponding ATEX approvals to ensure safety in potentially explosive areas.

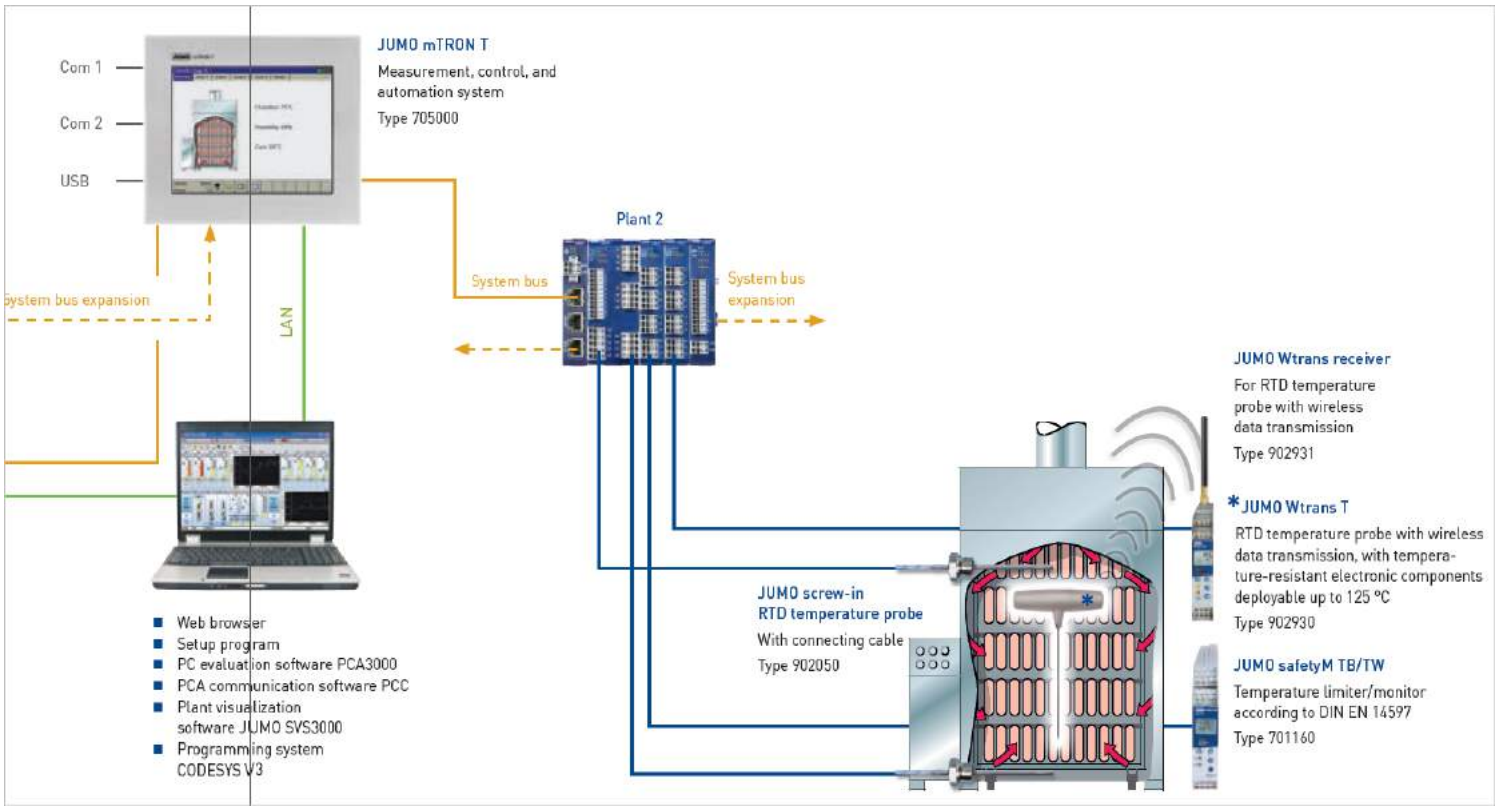


Smoking and hot smoking

Acquiring the core temperature in continuous plants

Ideally, the products are equipped with a JUMO Wtrans radio transmitter to acquire 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. Electronic components that are resistant to high temperatures can be used in temperatures up to 125 °C.



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PR 00091 EN/00638443/2015-05-12/V1