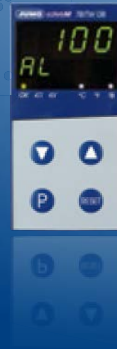




More than **sensors + automation**



Heating and air-conditioning industry

Innovative solutions for your success





Dear Readers,

We all prefer a nice warm room. As manufacturers of heating and air-conditioning systems, you know just how important it is for all the components involved to be reliably controlled and monitored.

JUMO, your reliable partner, is at your side to help when you have questions, and to provide you with quick solutions. It does not matter how you want to control and regulate your system, nor does it matter how you would like to protect your system.

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, and consequently has been a competent partner to the heating and air-conditioning industry.

We place special importance on making regular new developments, on constantly improving existing products, and on continually making production methods more economical. This is the only way that we can achieve the highest level of innovation. Here at JUMO, we also provide only the best for your heating and air-conditioning systems, with a wide range of solutions for a variety of applications.

In an expanding market as diverse as the heating and air-conditioning industry, measurement and control systems must always be state-of-the-art.

This brochure is designed to give you an overview of JUMO's products and systems for heating and air-conditioning technology. Of course we are also happy to work with you to create customized solutions for your individual requirements.

With this in mind I hope that you find many interesting new approaches in this brochure.

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

Contents

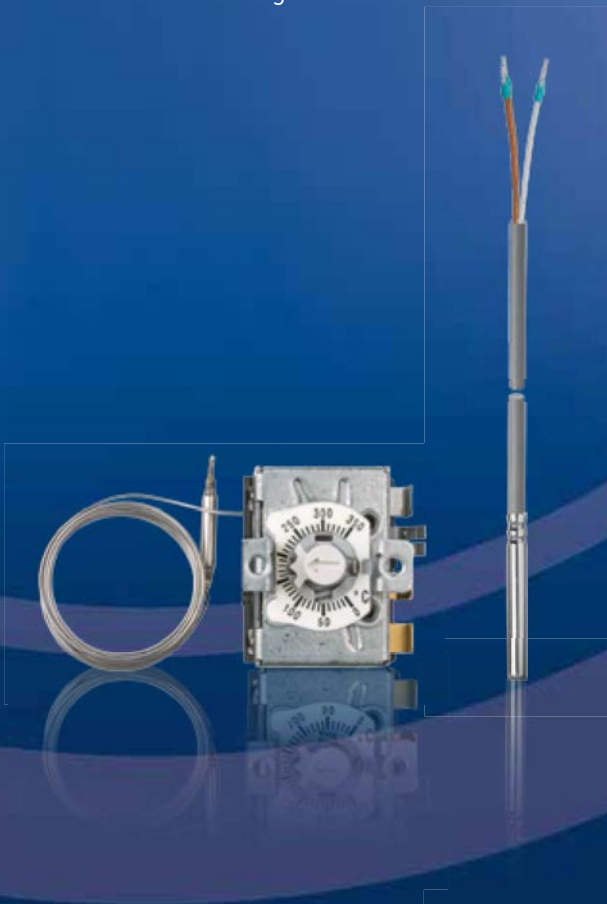


Condensing boilers	4
Operating principle	
Monitoring the process water temperature	
Solid fuel boilers	6
Operating principle	
Monitoring the exhaust gas temperature in bivalent operation	
Pellet heating system	8
Operating principle	
Temperature visualization	
Combined heat and power plant	10
Operating principle	
Monitoring pressure and temperature in the cooling circuit of a combustion engine	
Air conditioner/heat pump	12
Operating principle	
Frost protection of the outdoor unit	
Services & Support	14



Condensing boilers

The classic system for generating heat, the condensing boiler is a highly sophisticated solution. JUMO has years of experience in this area and as a result, can provide all the necessary measurement and control system products to perfectly equip this type of system. JUMO has been a reliable partner to the heating industry for many years. Whether in the context of joint development at the start of a product phase, or when adapting products during their lifecycle, JUMO is always anxious to be involved in developing the best-possible solution for safe condensing boiler control.



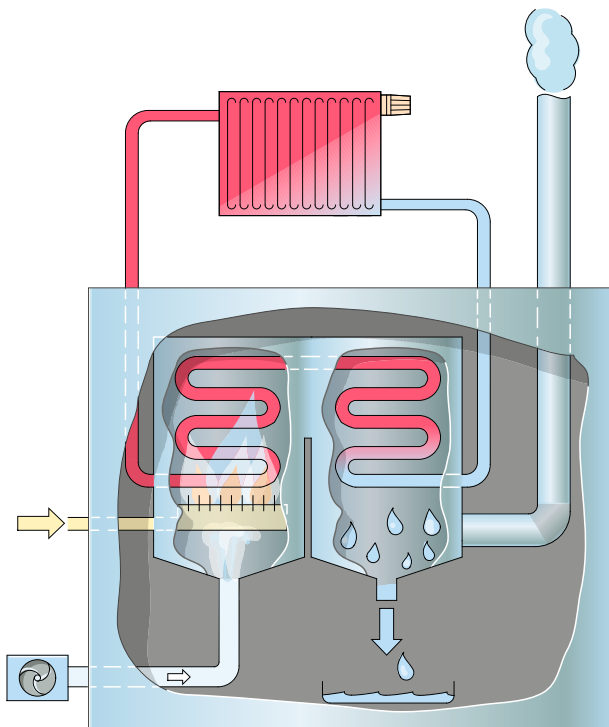
Condensing boilers

Operating principle

Condensing boiler technology is based on burning fossil energy sources, such as oil or gas. The energy source is brought into the combustion chamber of the boiler plant, where it burns and releases heat energy and exhaust gases. The released heat energy is delivered through the water that passes the combustion chamber in pipes. This water has already been pre-heated in a condensation heat exchanger, using the heat energy from the exhaust gases. This makes optimum use of fuel source.

Monitoring the process water temperature

The strict standards of hygiene that have to be met for the storage of the process water require precise regulation of the water temperature in the storage media. The 60°C maximum process water temperature must not be exceeded, nor must the temperature fall below 55°C. RTD temperature probes from JUMO provide safe and reliable solutions for monitoring the temperature of the process water. Of course, these solutions can also be transferred to all areas of temperature measurement in heating installations.



JUMO heatTHERM

Panel-mounted
thermostat
Types 602030/31



JUMO push-in RTD temperature probe

Type 902150



JUMO RTD temperature probe

For DIN EN 14597
Type 902006



JUMO TB/TW

Temperature limiters/monitors
according to DIN EN 14597
as built-in and rail-mounted device
Types 701160/701170



JUMO RTD temperature probe

Type 902020



JUMO STB/STW

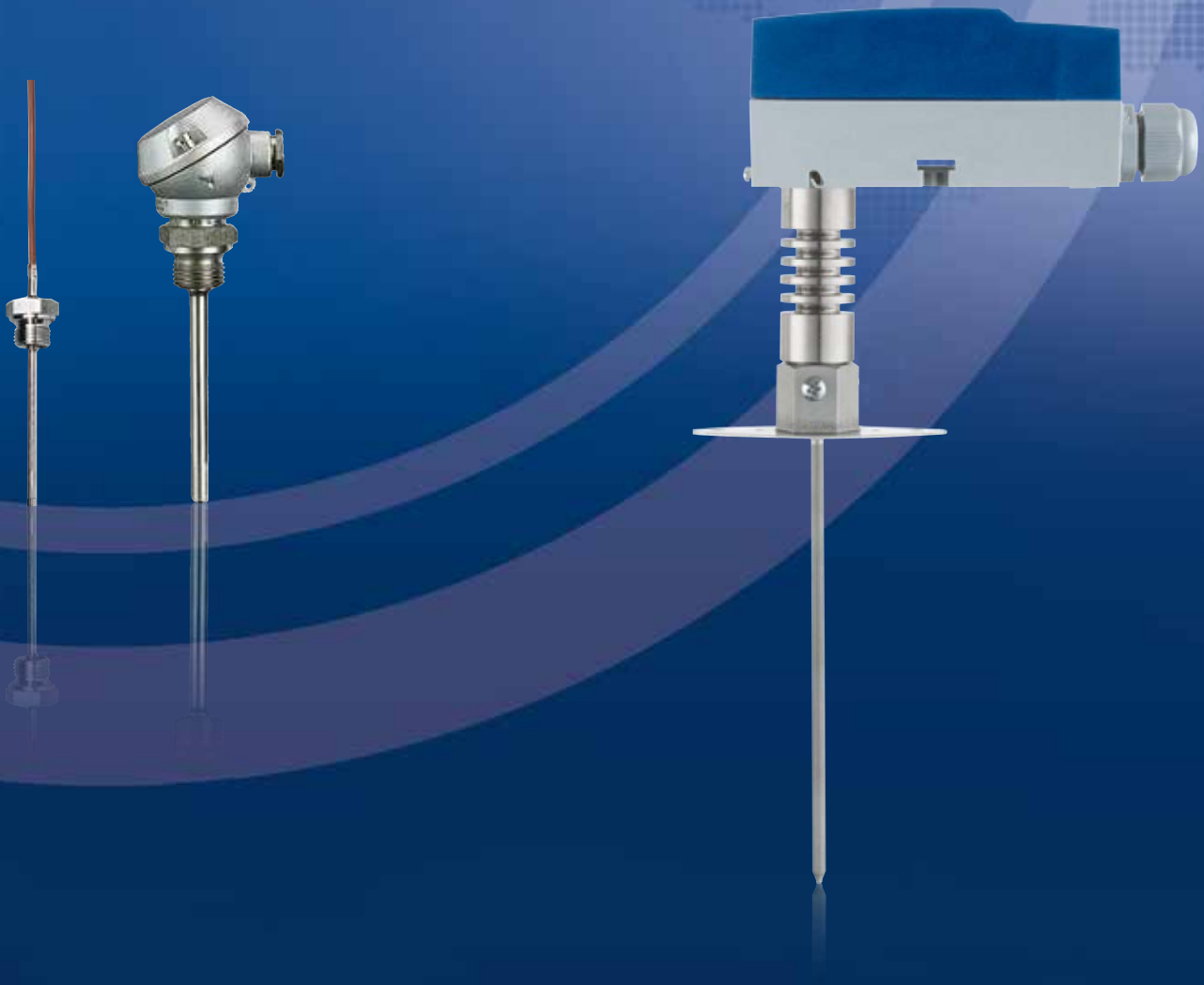
Safety temperature limiter
and monitor
Type 701150





Solid fuel boilers

Heating with solid fuels inevitably involves a higher temperature produced by an open flame. It is particularly important here that all protection systems are reliable and made to last. JUMO provides you with exactly the right solutions: safe – reliable – advanced. With a finger permanently on the pulse of the technology you need to protect your boiler plants.



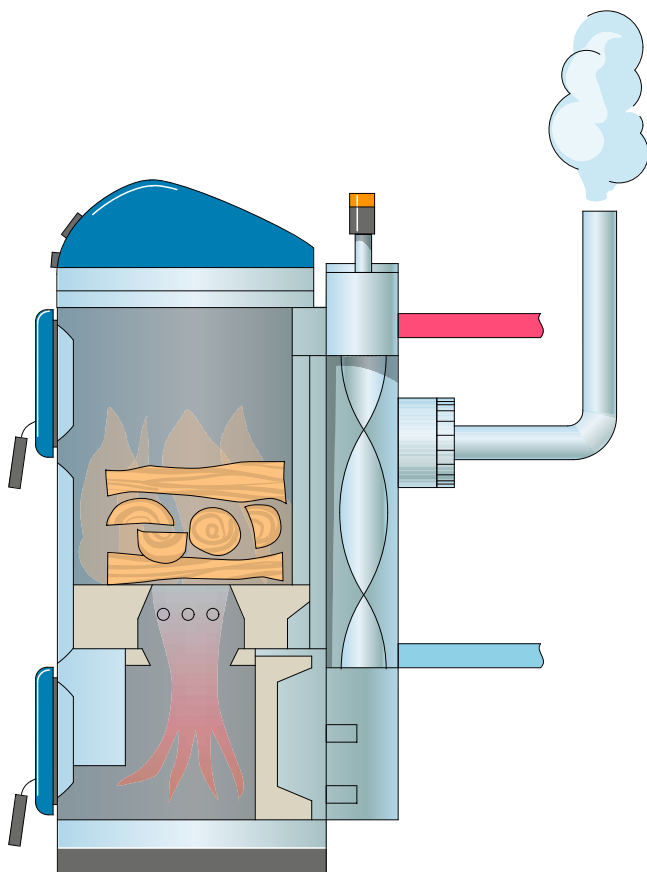
Solid fuel boilers

Operating principle

A solid fuel boiler can be fired with all solid fuels, which of course also includes firewood. The air needed for the combustion process is provided by the natural draft method. The fuel is placed onto a grate and burns up or down, depending on the type of system involved. The heat energy produced in this way is delivered to the heating system water by a heat exchanger.

Monitoring the exhaust gas temperature in bivalent operation

A frequently seen method of operation with solid fuel boilers is bivalent operation with a condensing boiler. An exhaust gas temperature monitor (ATW) must be deployed to ensure that only one of the systems is used to generate energy. The ATW measures the temperature in the exhaust pipe of the solid fuel boiler. When the temperature reaches 80°C, the ATW automatically disables the condensing boiler. The JUMO heatTHERM-AT is the optimum design for new types of boiler.



JUMO heatTHERM

Panel-mounted thermostat
Types 602030/31



JUMO screw-in RTD temperature probe

With connecting cable
Type 902050



JUMO Surface RTD temperature probe

With connecting cable
Type 902550



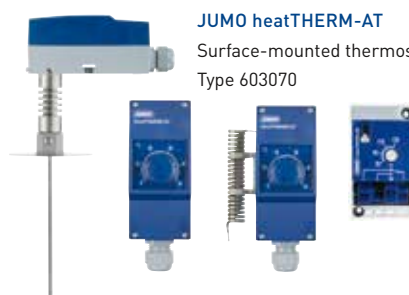
JUMO screw-in thermocouples

With form J terminal head
Type 901030



JUMO heatTHERM-AT

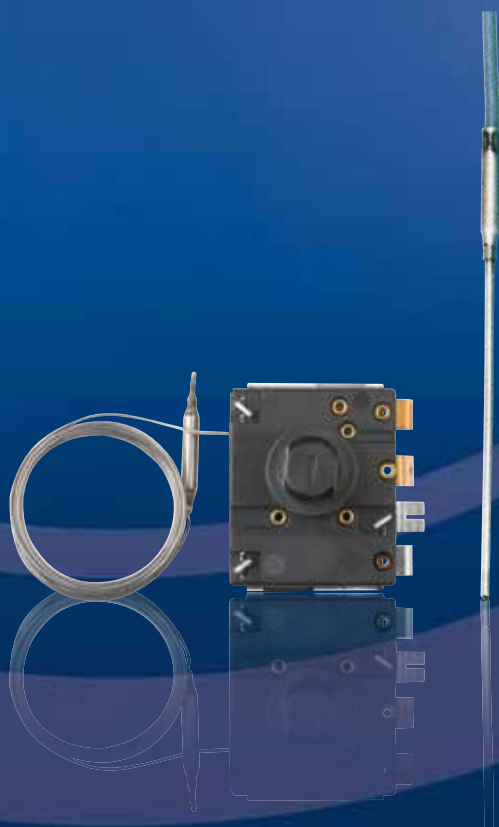
Surface-mounted thermostat
Type 603070





Pellet heating system

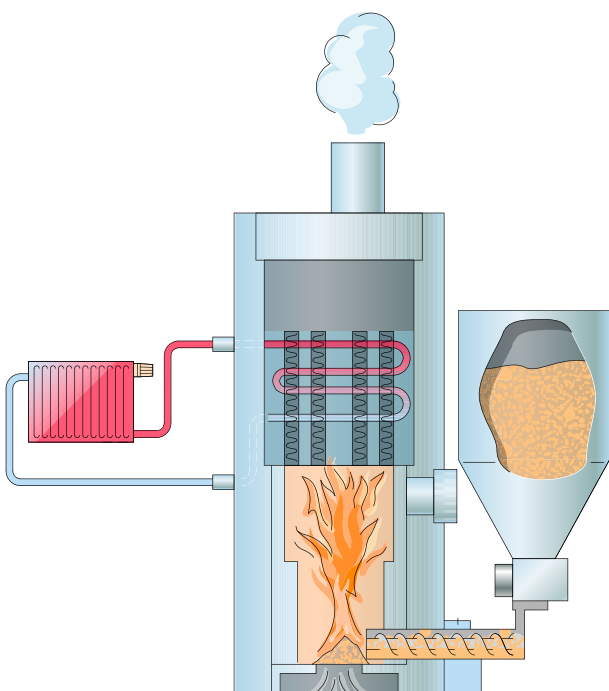
Measurement and control systems are a necessary part of any heating system, and this including pellet heating systems. The choice and size of this heating system is always heavily dependent on customer requirements and on the physical on-site conditions. This means that it is particularly important to have a reliable measurement and control system partner, who can be flexible about customizing the systems solutions that they provide. JUMO is always anxious that you implement the optimum solution for your project.



Pellet heating system

Operating principle

With larger pellet heating systems, the fuel, the wood pellets, are fed to the boiler burner by a screw or suction conveyor. The combustion process is ignited electrically, and burns the continuous supply of pellets. The heat energy produced in this way is delivered to the heating system water. The exhaust gases that are produced rise up and run through a heat exchanger system. There, the heat that they contain is delivered to the heating system water before the now cooled exhaust gases are directed out into the atmosphere via the chimney.



Temperature visualization

The greater the heat output from a pellet heating system, the more important it is to have constant control over the temperatures actually present in the process. The JUMO di308 digital indicator unit allows you to read the current process temperature at any time.

Because you can program the minimum and maximum values, you can also safely control your process. An additional aid when monitoring is the alarm text's change of color from red to green, or vice versa, which visually assists your process control.

JUMO heatTHERM

Panel-mounted thermostat
Type 602030/31



JUMO mineral-insulated thermocouples

With connecting cable
Type 901250



JUMO di308

Digitales Anzeigeinstrument
Type 701550



JUMO screw-in thermocouples

With form J terminal head
Type 901030





Combined heat and power plant

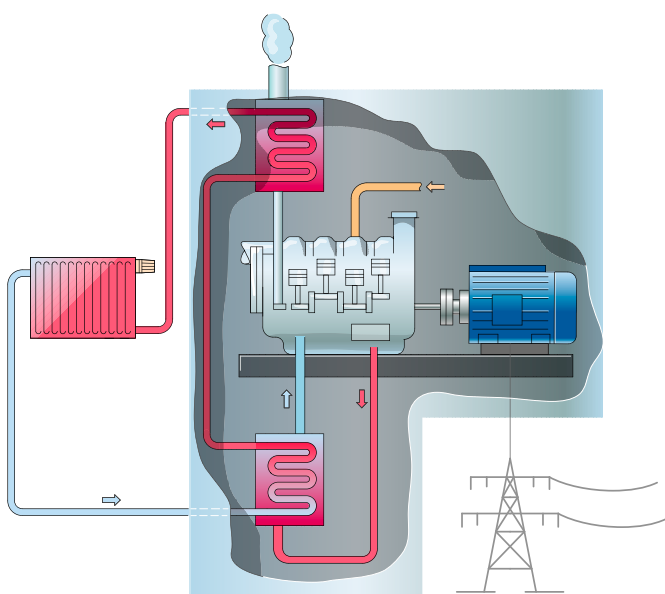
With this innovative heat generation concept, you also produce, quite incidentally, enough power for everyday use. Because a combined heat and power plant is so highly complex, it is particularly important for all the components to be perfectly adapted to one another. By using measurement and control systems from JUMO, you make sure that all the components are always operating in the correct temperature range. You can then relax and enjoy the benefits of cogeneration.



Combined heat and power plant

Operating principle

In the combined heat and power plant (CHP plant), a combustion engine designed for gas or diesel operation drives a generator. This converts the mechanical energy produced by the engine into electrical energy. The combustion engine is protected against overheating by cooling water. During the cooling process the water in the cooling circuit is heated up to approx. 80 to 90°C. To cool it down, it is directed through a heat exchanger, where the excess heat energy is delivered to a heating circuit. The heating water, that has already been pre-heated to approx. 70°C, then passes through a exhaust gas heat exchanger. There it absorbs some of the exhaust gas heat from running the engine, which brings it to its final use temperature of 90 to 100°C.



Monitoring pressure and temperature in the cooling circuit of a combustion engine

The safe and reliable operation of a combustion engine is essentially decided by engine lubrication and cooling. The important parameters here are pressure and temperature. Optimum control of the oil pressure and temperature, for example, prevents bearing damage. In the cooling circuit, on the other hand, a slight overpressure helps to shift the coolant boiling point to 115°C. Here too, the temperature as well as the pressure must be monitored. The thermostat does not need any auxiliary power to monitor the critical temperature values and in an emergency, switch off the CHP plant.

JUMO heatTHERM

Panel-mounted thermostat
Type 602030/31



JUMO Surface-Single Mounted Thermostat

series ATH
Type 603021



JUMO IMAGO 500

Multichannel process and program controller
Type 703590



JUMO LOGOSCREEN 500 cf

Paperless recorder with compact flash card® as storage media and lifecycle data management
Type 706510



JUMO MIDAS C08

Pressure transmitter
Type 401002



JUMO VIBROtemp

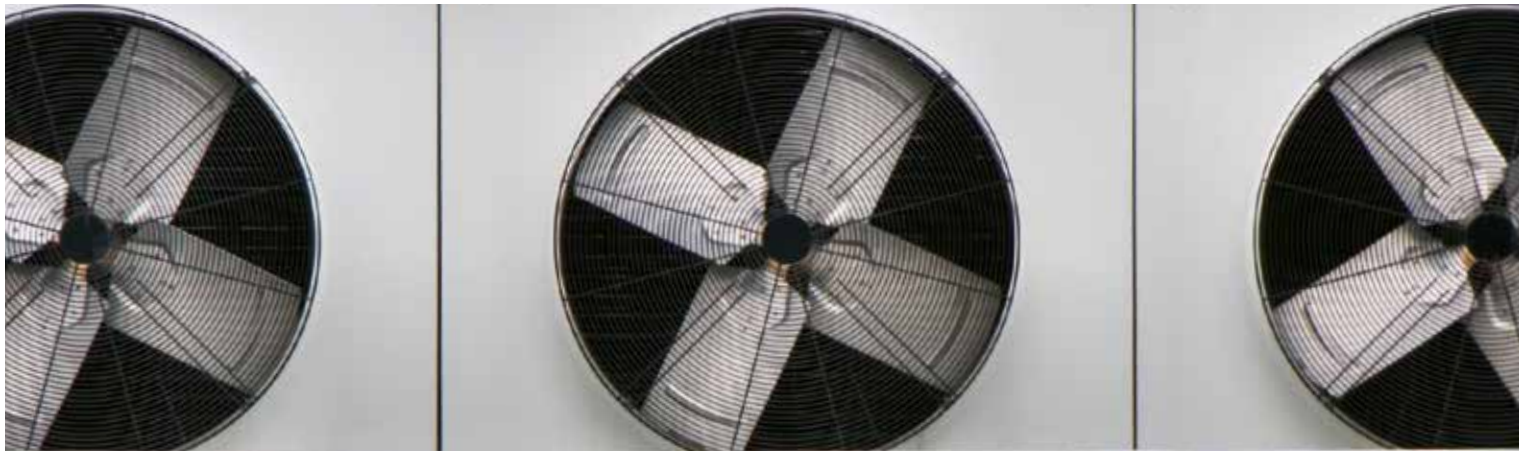
Screw-in RTD temperature probe with plug connector
Type 902040



JUMO mineral-insulated thermocouples

With connecting cable
Type 901250





Air conditioner/heat pump

In an automatic home ventilation system, air conditioners provide optimum air conditions in modern buildings. Because these devices are split into an outdoor and an indoor unit, they make different demands on measurement and control systems. JUMO controllers have no difficulty in meeting the challenge. The JUMO product portfolio for the various areas of measurement and control technology has so many variations, you will always be able to find the solution you require.



Air conditioner

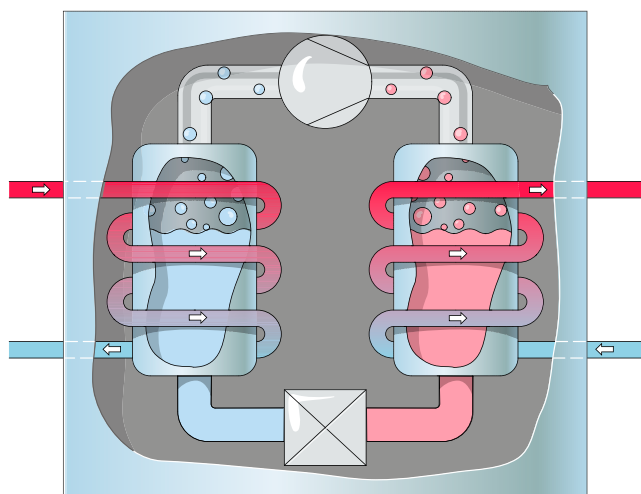
Operating principle

Air conditioners work according to the Carnot principle. They always consist of at least two units, an outdoor unit and an indoor unit. Refrigerant continuously circulates between the two units. In the indoor unit, this is heated by the room heat, and evaporates. If the refrigerant, in the form of vapor, now encounters an ambient temperature lower than its own temperature in the outdoor unit, it gives off heat to the outdoor unit and in so doing, returns to the liquid state. It is then pumped back to the indoor unit, where it can once again take up the heat in the home. The advantage for devices that operate under this principle is that in the in-between sea-

sons (outdoor temperatures between 5 and 15°C), they also act as a heat pump, thus helping to reduce heating costs.

Frost protection of the outdoor unit

Protecting the outdoor unit of an air conditioner against frost damage is a very important task that can be discharged by the JUMO frostTHERM-AT. Because the capillary tubing follows a winding course across the outdoor unit, the thermostat already responds from a 30cm "frost section". If the preset temperature on a section like this is reached, the thermostat connects the required heat unit, or switches off the system. Moisture condensation and frost damage are avoided.



JUMO frostTHERM AT

Surface-mounted thermostat

Type 604100



JUMO push-in RTD temperature probe

Type 902150



JUMO IMAGO 500

Multichannel process and program controller

Type 703590



JUMO LOGOSCREEN 500 cf

Paperless recorder with compact flash card® as storage media and lifecycle data management

Type 706510



JUMO MIDAS S06

Pressure transmitter

Type 401011



JUMO VIBROtemp

Screw-in RTD temperature probe with plug connector

Type 902040



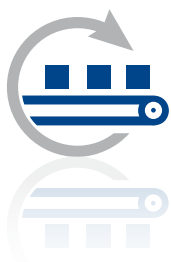


Services & Support

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 valued. 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



Are you looking for a competitive and efficient system or component supplier? Regardless of whether you seek electronic modules or perfectly fitting sensors – either for small batches or mass production – we are happy to be your partner. From development to production we can provide all the stages from a single source. In close cooperation with your business our experienced experts search for the optimum solution for your application and incorporate all engineering tasks. Then JUMO manufactures the product for you. As a result you profit from state-of-the-art manufacturing technologies and our uncompromising quality management systems.

Customer-specific sensor technology

- Development of temperature probes, pressure transmitters, conductivity sensors, or pH and redox electrodes according to your requirements
- A large number of testing facilities
- Incorporation of the qualifications into application
- Material management
- Mechanical testing
- Thermal test



Electronic modules

- Development
- Design
- Test concept
- Material management
- Production
- Logistics and distribution
- After-sales service



Metal technology

- Toolmaking
- Punching and forming technology
- Flexible sheet metal machining
- Production of floats
- Welding, jointing, and assembly technology
- Surface treatment technology
- Quality management for materials





Information & Training



Would you like to increase the process quality in your company or optimize a plant? Then use the offers available on the JUMO website and benefit from the know-how of a globally respected manufacturer. For example, under the menu item "Services and Support" you will find a broad range of seminars. Videos are available under the keyword "E-Learning" about topics specific to measurement and control technology. Under "Literature" you can learn valuable tips for beginners and professionals. And, of course, you can also download the current version of any JUMO software or technical documentation for both newer and older products.

Product Service



We have an efficient distribution network on all continents available to all of our customers so that we can offer professional support for everything concerning our product portfolio. Our team of professional JUMO employees is near you ready to help with consultations, product selection, engineering, or optimum use of our products. Even after our devices are commissioned you can count on us. Our telephone support line is available to give you answers quickly. If a malfunction needs to be repaired on site our Express Repair Service and our 24-hour replacement part service are available to you. That provides peace of mind.

Maintenance & Calibration



Our maintenance service helps you to maintain optimum availability of your devices and plants. This prevents malfunctions and downtime. Together with the responsible parties at your company we develop a future-oriented maintenance concept and are happy to create all required reports, documentation, and protocols. Because we know how important precise measurement and control results are for your processes we naturally also professionally calibrate your JUMO devices – on site at your company or in our accredited DAkkS calibration laboratory for temperature. We record the results for you in a calibration certificate according to EN 10 204.



www.jumo.net