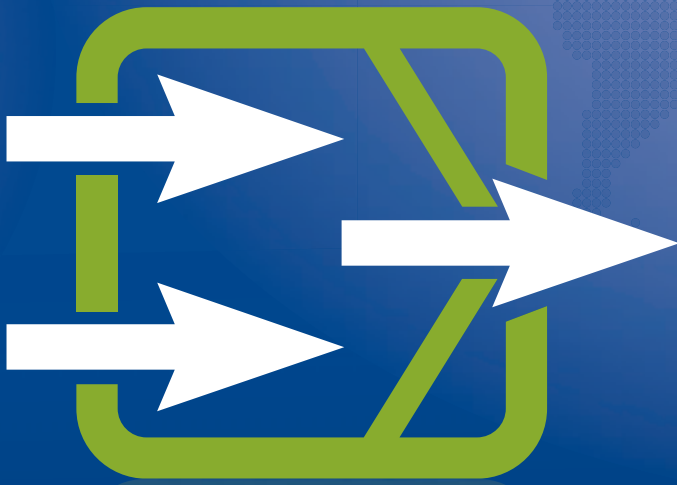




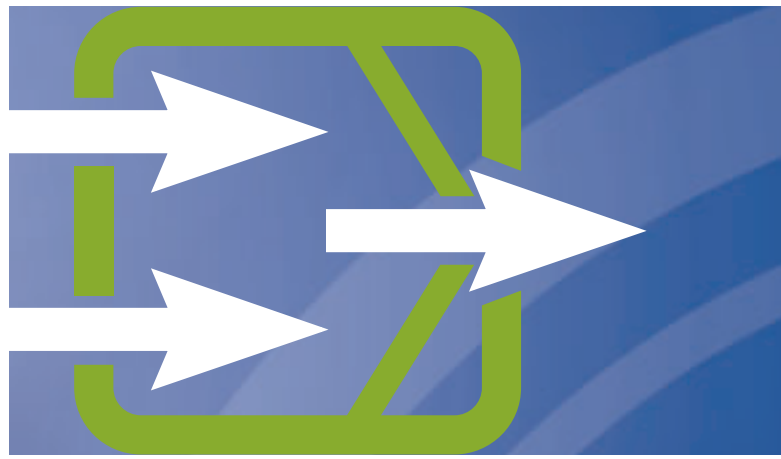
More than **sensors + automation**



Control

Innovative solutions for the toughest requirements





Contact:

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Dear Reader,

Many processes, machines, and plants are extremely difficult to control without the use of sophisticated automation technology. Temperatures, pressures, levels, and flows – to name but a few process variables – these not only need to be monitored, but also precisely controlled. This is because accurate and reliable control technology is a key requirement for consistent product and process quality and is equally fundamental when the focus is on energy-efficient plant operation.

At the heart of every automated system is the controller itself. On the basis of its installed hardware and available software functions, it should be easy to make adjustments to the controller to ensure universal compatibility with all kinds of processes. In this regard, JUMO is able to call on its 50-plus years of experience in both development and production, which are united at our company headquarters in Fulda, Germany. Our dedicated sales organization, which has its finger on the pulse of markets the world over provides us with customer feedback on a daily basis. This feedback flows into the further development of existing products and into new developments, meaning that we live up to our claim of providing the highest level of innovation.

In this brochure, we present you with an overview of JUMO's products and systems from the field of control technology. Alongside the electronic solutions ranging from elec-

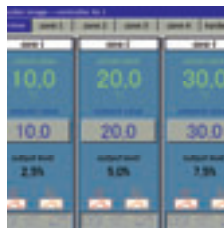
tronic thermostats and compact controllers to multichannel process and program controllers, JUMO also offers a wide range of electromechanical devices for controlling thermal processes. This is because it is still possible to control basic thermal processes easily and with little installation effort through the use of electromechanical thermostats, which do not require any additional auxiliary energy and stand out by being completely impervious to electromagnetic interference. The issue of which is the right controller for the job ultimately depends on the individual requirements of the process to be controlled. Our comprehensive product portfolio enables you to select the best possible solution for your process.

Last but not least, the strong motivation of our employees ensures the continually high quality that is characteristic of our products. The high level of satisfaction of our customers all around the world is testament to the commitment we show every day in our work. We would be delighted to assist you in identifying the solution for your task in the field of control technology and to count you among our many satisfied customers.

Further information about our products can also be found at www.jumo.net.



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Control

However different the production processes in various industries may be, one thing they all have in common is that process variables such as temperature, pressure, humidity, flow, and level often need to be controlled with the highest levels of accuracy. You will be sure to find the right controller for your application in the JUMO product range, which spans from inexpensive electro-mechanical and electronic thermostats through to digital compact controllers and multichannel automation systems. JUMO has been an established name in the field of measurement and control technology for a number of decades, and throughout this time the company has continuously adapted its product portfolio in line with the latest customer requirements with a particular focus on the various issues concerning individual industries. Our devices, which are in use worldwide, are well known for their reliability. This is despite – or quite possibly because of – the fact that they often operate under extreme conditions.

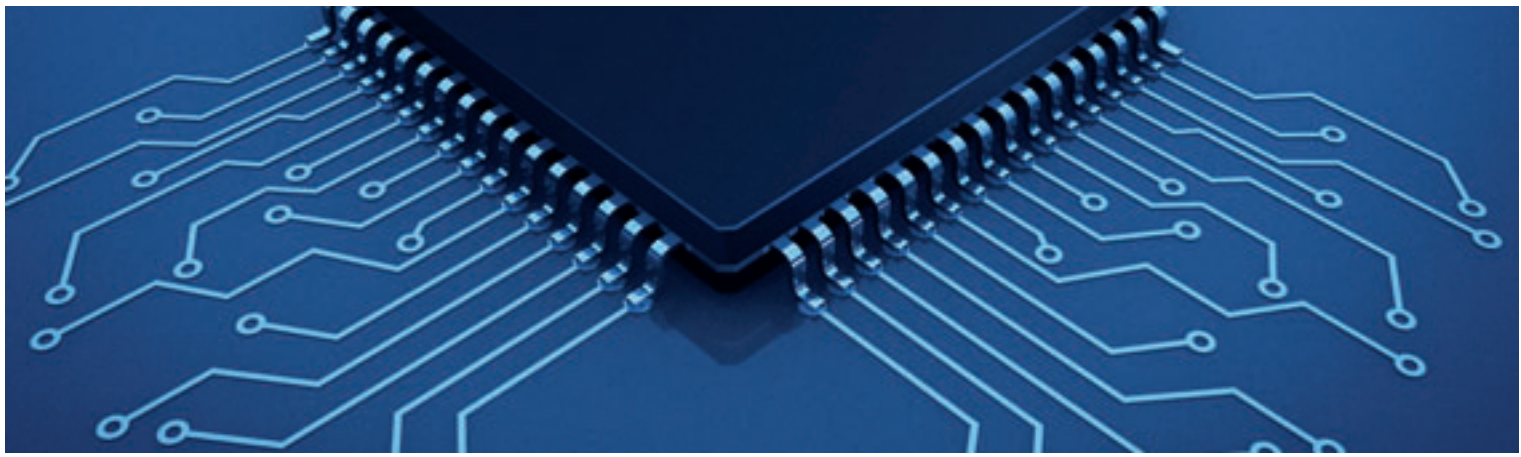


The most important industries

Our wide range of different devices offers the ideal solution for classic plant construction and mechanical engineering as well as for the process industry and the OEM sector.

In addition to standard devices, JUMO's product range comprises individual customer-specific versions for special purposes.





Digital compact controllers

As with all JUMO automation components, our digital compact controllers have been carefully produced by our in-house development department. Our development process draws on the wide-ranging expertise that our engineers have acquired over many decades. This is reflected in the outstanding technical features of the devices, closely tailored to match specific application areas. All compact controllers and process controllers are therefore equipped with the proven JUMO control algorithms, making it possible to control even higher-order control paths. Integrated math and logic functions expand the range of functions of the controllers and enable calculations, links, and evaluations to be performed that could previously only be implemented with the use of external auxiliary devices. High-end devices with a modular structure operate up to eight independent and freely configurable control channels. The latest controller generation with TFT color graphic touch-display enables users to create a customized process screen in which display and input fields can be integrated. A process screen generated in this way provides the user with a clear overall impression of the respective plant which allows the user to quickly check the plant status.

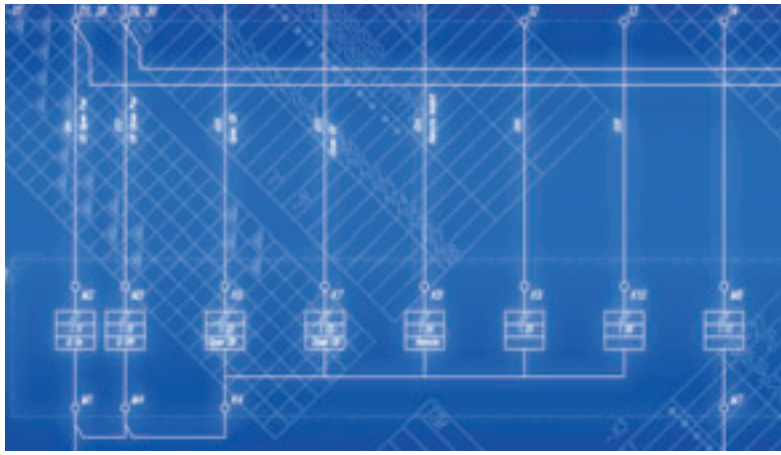


Electronic thermostats – JUMO eTRON series

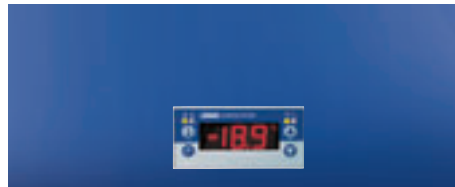


Description	JUMO eTRON T, digital thermostat	JUMO eTRON M, electronic microstat
Type	701050	701060
Format	90 mm × 22.5 mm × 60 mm	76 mm × 36 mm × 56 mm
Mounting	Mounting rail	Panel installation
Connections	Screw terminals	
Protection type	IP20	IP65 (front side), IP20 (rear side)
Measuring inputs	1 analog input for: Pt100, Pt1000, or KTY2x-6 in two-wire circuit (configurable) or Fe-CuNi (J, L) and NiCr-Ni (K) thermocouples (configurable) or current 0(4) to 20 mA (configurable) or voltage 0 to 10 V	
Display	Three-digit LCD display with special characters for °C, °F	Three-digit backlit LCD display with 13 mm digit height and special characters for °C, °F, h, min, s; relay status indications for defrosting or heating phase
Outputs	1 changeover contact 10 A / 250 V	1 changeover contact 10 A / 250 V or 2 normally open contacts 5 A / 250 V
Alarms	Messages in the display: upper/lower alarm limit temperature	Messages in the display or via the second relay output: upper/lower alarm limit temperature, service interval, timer message
Voltage supply	AC 230 V +10/-15 %, 48 to 63 Hz; AC 115 V +10/-15 %, 48 to 63 Hz DC 12 to 24 V +15/-15 %, AC 24 V +15/-15 %, 48 to 63 Hz	
Approvals	cULus	
Special features	Setup program	Integrated defrosting function, operating hours counter, setup program

Technical data



Electronic thermostats – JUMO eTRON series



Technical data	Description	JUMO eTRON M100, electronic cooling controller	JUMO eTRON M100, two-channel microstat
	Type	701061	701066
	Format	76 mm × 36 mm × 71.7 mm	
	Mounting	Panel installation	
	Connections	Screw terminals	
	Protection type	IP65 (front side), IP20 (rear side)	
	Measuring inputs	2 analog inputs for: Pt100, Pt1000, KTY1x-6, or KTY2X-6 in two-wire circuit (configurable)	
	Display	Three-digit backlit LCD display with 13 mm digit height and special characters for °C, °F, h, min, s; relay status indication for cooling, defrost heating, ventilator, and alarm	Three-digit backlit LCD display with 13 mm digit height and special characters for °C, °F, h, min, s; relay status indication for the relays
	Outputs	1 changeover contact 16 A / 250 V and 2 normally open contacts 8 A / 250 V Optional: 1 changeover contact 16 A / 250 V for alarm output	
	Alarms	Alarm via relay or buzzer	
	Voltage supply	AC/DC 12 to 24 V +15/-15 %, 48 to 63 Hz	
	Approvals	cULus	
	Special features	Defrosting function with "electrical" or "hot gas" capability, real-time clock, interface, operating hours counter, data logger, setup program including transmission and visualization of the measured values stored in the data logger, HACCP-compliant monitoring	Interface, operating hours counter, data logger, setup program including transmission and visualization of the measured values stored in the data logger

Compact controllers – JUMO Quantrol series



Description	JUMO Quantrol, LC100	JUMO Quantrol, LC200	JUMO Quantrol, LC300
Type	702031	702032	702034
Format	48 mm × 48 mm × 95 mm	48 mm × 96 mm × 80 mm	96 mm × 96 mm × 80 mm
Mounting	Plastic case for panel installation		
Connections	Screw terminals		
Protection type	IP65 (front side), IP20 (rear side)		
Controller type	Two-state controller, three-state controller, continuous controller		
Controller structure	P, I, PD, PI, PID		
Measuring inputs	1 freely configurable analog input for: RTD temperature probes, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V (as an alternative to binary input)		
Display	2 four-digit, seven-segment displays (red, green) for process values, parameters, and timers; 6 LEDs (5 × yellow for indicating switch positions and 1 × green for ramp function)		
Outputs	1 relay output as standard, can optionally be expanded to up to 3 outputs (relay, logic, or analog output)	1 relay output as standard, can optionally be expanded to up to 5 outputs (relay, logic, or analog output)	
Alarms	2 × limit value monitoring, each with 8 alarm functions		
Binary inputs	1 binary input for potential-free contacts (as an alternative to voltage input)		
Voltage supply	AC 110 to 240 V +10/-15 %, 48 to 63 Hz AC/DC 20 to 30 V, 48 to 63 Hz		
Interfaces/protocols	RS485 (Modbus), setup (USB-powered)		
Approvals	cULus		
Special features	Easy-to-use PC setup program, USB-powered setup interface, autotuning procedure for determining the controller parameters, firing curve		

Technical data



Compact controllers – JUMO iTRON series



Technical data	Description	JUMO iTRON 32 JUMO iTRON 16	JUMO iTRON 08, horizontal / vertical JUMO iTRON 04	JUMO iTRON DR 100
	Type	702040, 702041	702042 / 43, 702044	702060
	Format	48 mm × 24 mm × 100 mm 48 mm × 48 mm × 100 mm	96 mm × 48 mm × 68.5 mm 48 mm × 96 mm × 68.5 mm 96 mm × 96 mm × 68.5 mm	22.5 mm × 109 mm × 124.8 mm
	Mounting	Plastic case for panel installation		Mounting rail
	Connections	Screw terminals (removable terminal strips)		Screw terminals
	Protection type	IP66 (front side), IP20 (rear side)		IP20
	Controller type	Two-state controller, three-state controller		
	Controller structure	P, PD, PI, PID		
	Measuring inputs	1 freely configurable analog input for: RTD temperature probes, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V		
	Display	1 four-digit, seven-segment display (green) for process values, parameters, and timers; 2 LEDs (yellow) for indicating switch positions		1 two-line alphanumeric LCD display for process values, parameters, and timers, 2 LEDs (yellow) for indicating switch positions
Outputs	1 relay AC 3 A / 250 V (normally open contact), 1 logic output 0/5 V (optionally 0/12 V) as an alternative to binary input	2 relays AC 3 A / 250 V (normally open contact), 1 logic output 0/5 V (optionally 0/12 V)	1 relay AC 5 A / 250 V (change-over contact) and 1 logic output 0/5 V (optionally 0/12 V); 2 relays 5 A / AC 250 V (normally open contact) and 1 logic output 0/5 V (optionally 0/12 V)	
Alarms	1 × limit value monitoring, with 8 alarm functions			
Binary inputs	1 binary input for potential-free contacts (for iTRON 16/32 as an alternative to logic output)			
Voltage supply	AC 110 to 240 V, +10/-15 %, 48 to 63 Hz AC/DC 20 to 53 V, 48 to 63 Hz DC 10 to 18 V		AC 110 to 240 V, +10/-15 %, 48 to 63 Hz; AC/DC 20 to 53 V, 48 to 63 Hz	
Interfaces	Setup			
Approvals	cULus, CSA, GOST			
Special features	Easy-to-use PC setup program, autotuning procedure for determining the controller parameters			

Compact controllers – JUMO cTRON series



Description	JUMO cTRON 16	JUMO cTRON 08	JUMO cTRON 04
Type	702071	702072	702074
Format	48 mm × 48 mm × 90.5 mm	48 mm × 96 mm × 67 mm	96 mm × 96 mm × 70 mm
Mounting	Plastic case for panel installation		
Connections	Screw terminals (removable terminal strips)		
Protection type	IP65 (front side), IP20 (rear side)		
Controller type	Two-state controller, three-state controller, modulating controller, continuous controller		
Controller structure	P, PI, PD, PID		
Measuring inputs	1 freely configurable analog input for: RTD temperature probes, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V		
Display	2 four-digit, seven-segment displays (red, green) for process values, parameters, and timers; 7 LEDs for indicating switch positions (4 × yellow) and manual mode, ramp function, timer mode (3 × green)		
Outputs	2 relays AC 3 A / 230 V (normally open contact) as standard		
	1 logic output 0/14 V as an alternative to the first binary input	1 logic output 0/14 V	
	Optionally, 1 analog output (0/4 to 20 mA or 0/2 to 10 V, configurable) or 1 relay AC 3 A / 230 V (normally open contact)		
Alarms	2 × limit value monitoring, each with 8 alarm functions		
Binary inputs	Max. 2 binary inputs for potential-free contacts		
	Binary input 1 as an alternative to logic output	Binary input 1 and logic output are available independently of one another	
Voltage supply	AC 110 to 240 V +10/-15 %, 48 to 63 Hz or AC/DC 20 to 30 V, 48 to 63 Hz		
Interfaces/protocols	RS485 (Modbus), setup		
Approvals	cULus		
Special features	Easy-to-use PC setup program incl. startup software, autotuning procedure for determining the controller parameters, programmable operating level, programmable function key		

Technical data



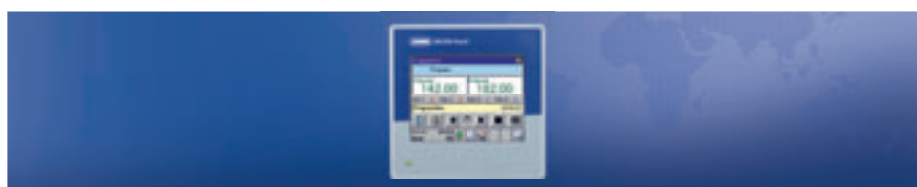
Compact controllers and process controllers – JUMO dTRON series



		JUMO dTRON 316	JUMO dTRON 308, horizontal/vertical	JUMO dTRON 304
Description		JUMO dTRON 316	JUMO dTRON 308, horizontal/vertical	JUMO dTRON 304
Type		703041	703042/703043	703044
Format		48 mm × 48 mm × 90 mm	48 mm × 96 mm × 90 mm 96 mm × 48 mm × 90 mm	96 mm × 96 mm × 90 mm
Mounting		Plastic case for panel installation		
Connections		Screw terminals		
Protection type		IP65 (front side), IP20 (rear side)		
Controller type		Two-state controller, three-state controller, modulating controller, continuous controller		
Controller structure		P, I, PD, PI, PID (2 sets of control parameters)		
Program controller		1 program with max. 8 sections, 4 control tracks		
Measuring inputs		Up to 2 configurable analog inputs for: RTD temperature probes, resistance transmitters, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V, heater current AC 0 to 50 mA, customer-specific linearization possible		
Display		2 four-digit, seven-segment displays (red, green) for process values, parameters, timers Icons for displaying switch positions, ramp mode, manual mode, and active setpoint values 1 two-digit, 16-segment display (green) for displaying various units		
Outputs		2 relays 3 A / 230 V (normally open contact), 2 logic outputs 0/12 V (optionally 0/18 V)	2 relays 3 A / 230 V (changeover contact), 2 logic outputs 0/12 V (optionally 0/18 V), voltage supply for two-wire transmitter	
		Additional outputs can be retrofitted via 3 expansion slots (type 703041: 2 slots): relay (changeover contact 8 A), double relay (2 × normally open contact 3 A), analog output, solid state relay 1 A		
Alarms		4 × limit value monitoring, each with 8 alarm functions		
Binary inputs		Max. 4 binary inputs for potential-free contacts	Max. 6 binary inputs for potential-free contacts	
Voltage supply		AC 110 to 240 V +10/-15 %, 48 to 63 Hz; AC/DC 20 to 30 V, 48 to 63 Hz	AC 110 to 240 V +10/-15 %, 48 to 63 Hz; AC/DC 20 to 30 V, 48 to 63 Hz	
Interfaces/protocols		RS485 (Modbus), PROFIBUS-DP, setup		
Approvals		cULus, DIN EN 14597, GOST		
Special features		Modular structure with plug-in cards that can be selected individually, easy-to-use PC setup program including startup software, min. sampling rate 50 ms, autotuning procedure for determining the controller parameters, programmable operating level, math and logic functions; also available in special version for the plastics industry with heat channel start-up ramp, heater current monitoring, Modbus master function, boost function		

Technical data

Two-channel process and program controller with paperless recorder – JUMO DICON touch



Technical data	Description	JUMO DICON touch
	Type	703571
	Format	96 mm × 96 mm × 131 mm
	Mounting	Metal/plastic case for panel installation
	Connections	Screw terminals
	Protection type	IP66 (front side), IP20 (rear side)
	Number of control channels	2 independent and freely configurable control channels
	Controller type	Two-state controller, three-state controller, modulating controller, continuous controller, continuous controller with integrated position controller
	Controller structure	P, I, PD, PI, PID (4 sets of control parameters per channel)
	Program controller	10 programs each with 50 sections, 8 control tracks
	Measuring inputs	Up to 4 configurable analog inputs for: RTD temperature probes, resistance transmitters, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V, customer-specific linearization possible
	Display	3.5 inch TFT color screen (320 × 420 pixels, 256 colors) with touchscreen operation, plain text display available in English, German, French, and other national languages, process-specific texts and screens individually configured, bar graph display
	Outputs	Max. 12 internal outputs: relays (changeover contacts / normally open contacts), logic output 0/12 V or 0/24 V, semiconductor output 1 A, analog output 0/4 to 20 mA or 0/2 to 10 V; voltage supply can be expanded with 2 external modules, voltage supply for two-wire transmitter via 24 V logic output
	Alarms	16 × limit value monitoring, each with 8 alarm functions as well as time and acknowledgement functions
	Binary inputs	7 binary inputs for potential-free contacts
	Voltage supply	AC/DC 20 to 30 V, 48 to 63 Hz or AC 110 to 240 V +10/-15 %, 48 to 63 Hz
	Interfaces/protocols	2 fieldbus interfaces: 1 × RS485 (Modbus), 1 × Ethernet or PROFIBUS-DP or RS422 / 485 (Modbus) USB host, USB device
Approvals	Available soon: cULus, DIN EN14597, GL, GOST	
Special features	Modular structure with plug-in cards that can be selected individually, intuitive operation via touchscreen, easy-to-use PC setup program incl. startup software, registration function with evaluation software, auto-tuning procedure for determining the controller parameters, programmable operating level, math and logic functions as well as additional binary signal processing, programmable function fields and individually configurable process screen for plant visualization with interactive display and input fields, teleservice and email notification, controller output level and control loop monitoring, integrated web server, Modbus master function, five-digit analog value display, individual assignment of rights to various users (levels and control commands), Ethernet interface, week timer	



Multichannel process and program controller with paperless recorder – JUMO IMAGO 500



Technical data	Description	JUMO IMAGO 500
	Type	703590
	Format	144 mm × 130 mm × 170 mm, installation dimensions 92 mm × 92 mm
	Mounting	Panel installation
	Connections	Screw terminals
	Protection type	IP65 (front side), IP20 (rear side)
	Number of control channels	Up to 8 independent and freely configurable control channels
	Controller type	Two-state controller, three-state controller, modulating controller, continuous controller, continuous controller with integrated position controller
	Controller structure	P, I, PD, PI, PID (2 sets of control parameters per channel)
	Program controller	50 programs each with up to 100 sections, max. total of 1,000 sections, 16 control tracks
	Measuring inputs	Up to 8 configurable analog inputs for: RTD temperature probes, resistance transmitters, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V, heater current, C-level control, customer-specific linearization possible
	Display	5 inch TFT color screen (320 × 420 pixels, 27 colors), plain text display available in English, German, French, and other national languages, process-specific texts and screens individually configured, bar graph display
	Outputs	Max. 6 slots for the following plug-in cards: 2 relays (normally open contacts), 1 relay (changeover contact), 2 logic outputs 0/5 V, 1 logic output 0/22 V, 1 solid state relay, 1 analog output, 1 voltage supply for two-wire transmitter via 22 V logic output
	Additional contacts	Up to 2 external relay modules with 8 changeover contacts or 8 logic outputs 0/12 V
	Alarms	16 × limit value monitoring, each with 8 alarm functions as well as time and acknowledgement functions
	Binary inputs	6 binary inputs for potential-free contacts
Voltage supply	AC 110 to 240 V +10/-15 %, 48 to 63 Hz; AC/DC 20 to 30 V, 48 to 63 Hz	
Interfaces/protocols	2 fieldbus interfaces: 1 × RS422 / 485 (Modbus), 1 × PROFIBUS-DP or RS422 / 485 (Modbus), setup	
Approvals	cULus, GOST	
Special features	Modular structure with plug-in cards that can be selected individually, easy-to-use PC setup program incl. startup software, recording function with evaluation software, min. sampling rate 50 ms, autotuning procedure for determining the controller parameters, programmable operating level, math and logic functions, programmable function keys and individually configured process screen for plant visualization, teleservice, and email notification (via external modem)	

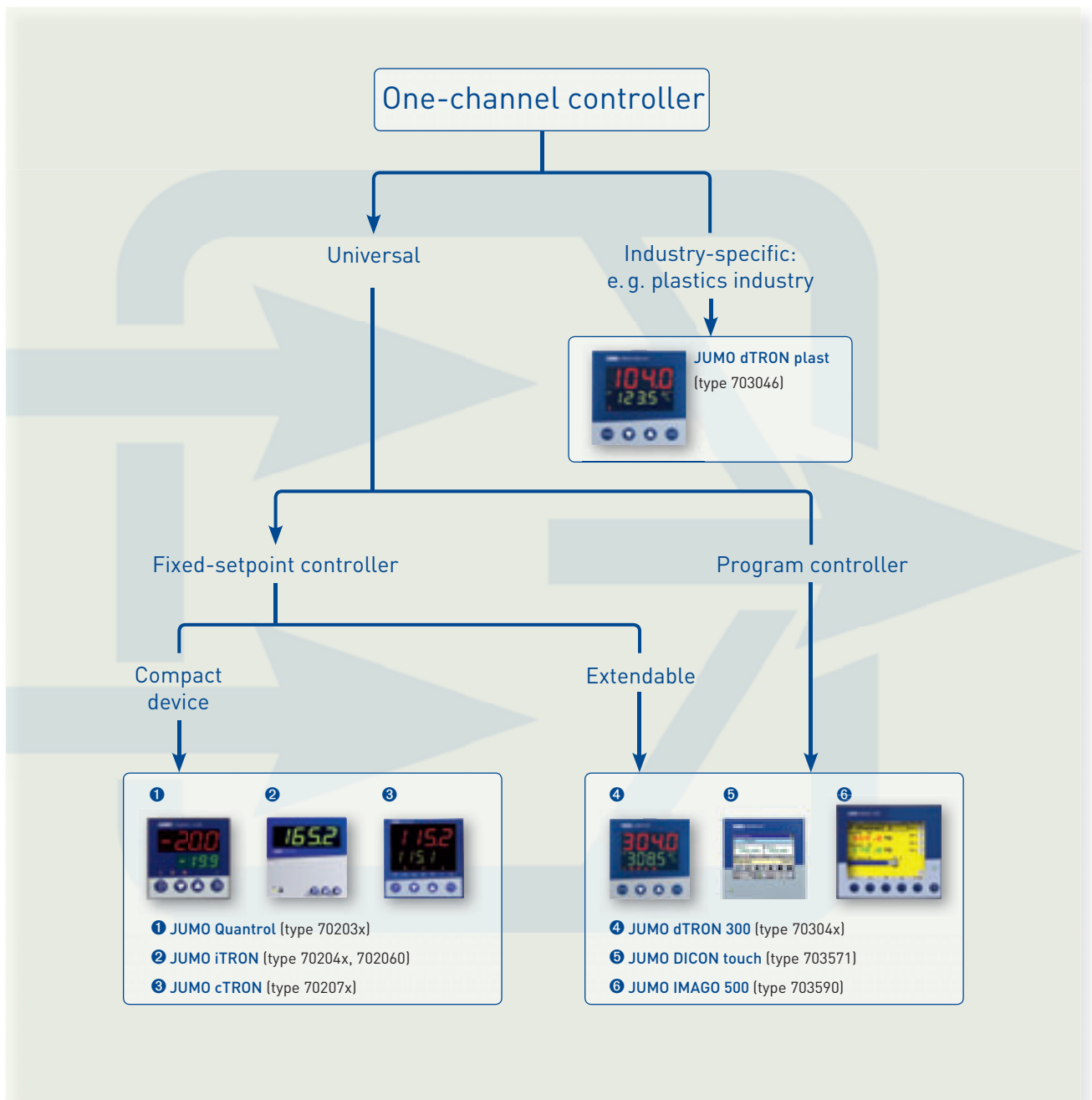
Process control for the meat processing industry – JUMO IMAGO F3000



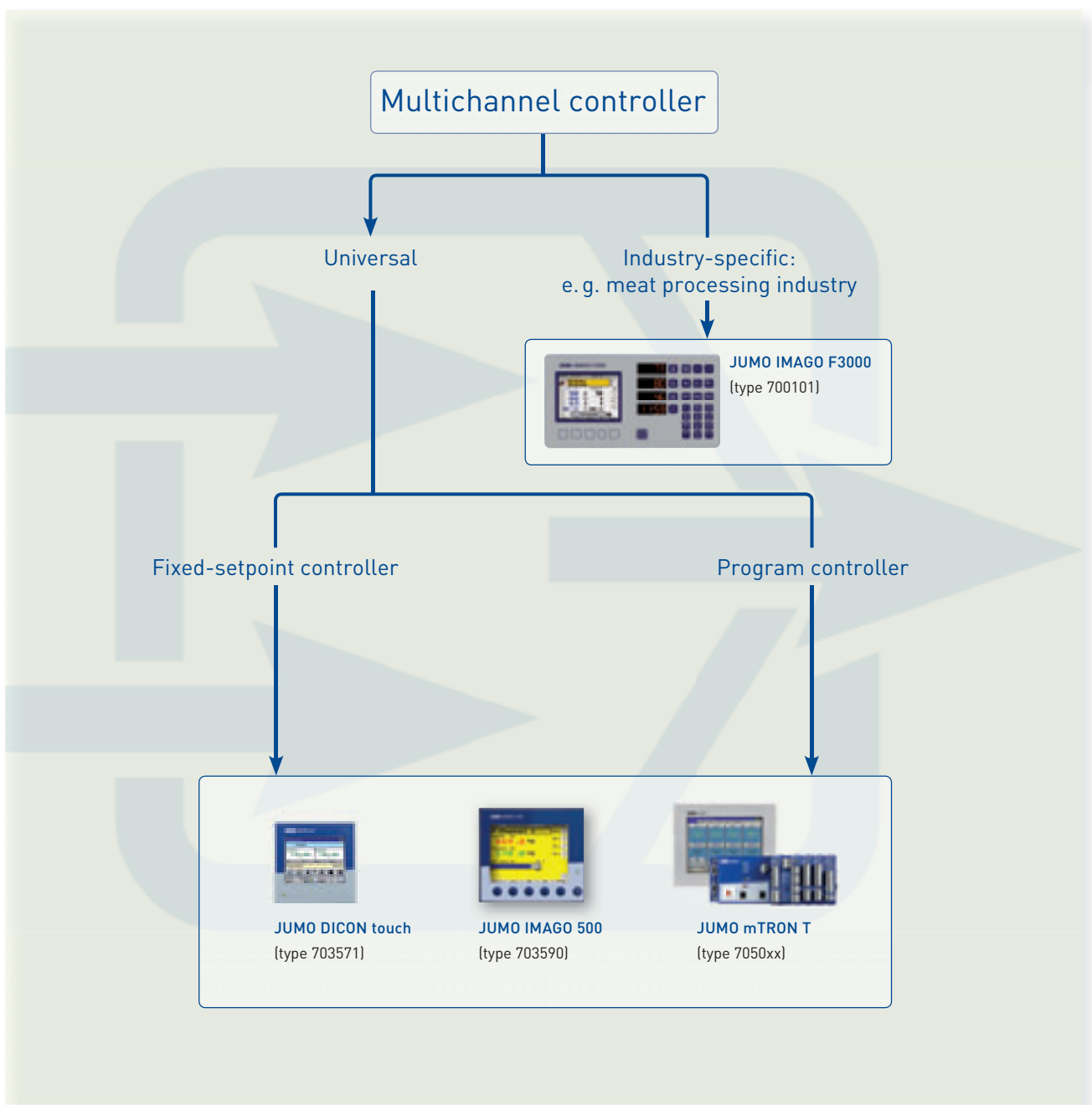
Technical data	Description	JUMO IMAGO F3000
	Type	700101
	Format	307 mm × 165 mm (vertical or horizontal), mounting depth 107.6 mm
	Mounting	Plastic case for panel installation
	Connections	On rear side via screw terminals
	Protection type	IP67 (front side), IP20 (rear side)
	Number of control channels	4 independent and freely configurable control channels
	Controller type	Two-state controller, three-state controller, modulating controller, continuous controller, continuous controller with integrated position controller
	Controller structure	P, I, PD, PI, PID (8 sets of control parameters, freely assignable to the control channels)
	Program controller	Program function (99 programs each with up to 99 sections), along with 99 programmable process steps
	Measuring inputs	Up to 8 configurable analog inputs for: RTD temperature probes, thermocouples, current 0(4) to 20 mA, voltage 0(2) to 10 V
	Display	5 inch TFT color screen (320 × 420 pixels, 27 colors), plain text display available in English, German, French, and other national languages, process-specific texts and screens individually configured, bar graph display, additional four-digit, seven-segment displays (red) for displaying important process values
	Outputs	Max. 35 relays, max. 4 analog outputs
	Alarms	8 × limit value monitoring, each with 8 alarm functions as well as time functions
Voltage supply	AC 110 to 240 V +10/-15 %, 48 to 63 Hz; AC/DC 20 to 30 V, 48 to 63 Hz	
Interfaces/protocols	2 fieldbus interfaces: 1 × RS 422 / 485 (Modbus), PROFIBUS-DP, setup	
Approvals	cULus	
Special features	Industry-specific features: core switching, smoke generator, fan control, input 0 to 1 V for humidity probe, F-value calculation Modular structure with plug-in cards that can be selected individually, easy-to-use PC setup program, recording function with evaluation software, autotuning procedure for determining the controller parameters, programmable operating level, math and logic functions, programmable function keys, and individually configured process screen for plant visualization	



Selection aid – one-channel controller



Selection aid – multichannel controller





General overview



Description	JUMO Quantrol	JUMO iTRON	JUMO cTRON
Type	70203x	70204x, 702060	70207x
Formats	48 mm × 48 mm × 95 mm, 48 mm × 96 mm × 80 mm, 96 mm × 96 mm × 80 mm	48 mm × 24 mm × 100 mm 48 mm × 48 mm × 100 mm 96 mm × 48 mm × 68.5 mm 48 mm × 96 mm × 68.5 mm 96 mm × 96 mm × 68.5 mm	48 mm × 48 mm × 90.5 mm 48 mm × 96 mm × 67 mm 96 mm × 96 mm × 70 mm
Controller type	Two-state controller, three-state controller, continuous controller	Two-state controller, three-state controller	Two-state controller, three-state controller, modulating continuous controller
Number of control channels	1	1	1
Program controller	-	-	-
Ramp function	✓	✓	✓
Autotuning procedure for determining the controller parameters	Oscillation method	Oscillation method	Oscillation method
Number of control parameter sets	1	1	1
C-level control	-	-	-
Cascade control	-	-	-
Controller output level and control loop monitoring	-	-	-
Operation	Panel with 4 keys	3 keys	Panel with 4 keys
Display	LED	LED (type 702060: LCD)	LED
Customizable process screen for plant visualization	-	-	-
Modular structure with plug-in cards that can be selected individually	-	-	-
Analog inputs	1	1	1
Customer-specific linearization	-	-	-
Heater current input	-	-	-
Binary inputs	1	1	2
Switching outputs	Max. 5	Max. 3	Max. 4
Analog outputs	1	-	1
Voltage supply for transmitter	-	-	-
Interfaces/protocols	RS485 (Modbus), setup (USB-powered)	Setup	RS485 (Modbus), setup
Integrated web server	-	-	-
Timers	1	1	1
Week timer	-	-	-
Operating hours counter	-	-	✓
Math and logic functions (incl. ratio, differential, and humidity control)	-	-	-
Registration function with evaluation software	-	-	-
Easy-to-use PC setup program	✓	✓	✓
Startup software	-	-	✓
Protection type	IP65 (front side)	IP66 (front side) (type 702060: IP20)	IP65 (front side)
Approvals	cULus	cULus, CSA, GOST	cULus



	JUMO dTRON	JUMO DICON touch	JUMO IMAGO 500	JUMO IMAGO F3000
	70304x	703571	703590	700101
	48 mm × 48 mm × 90 mm 48 mm × 96 mm × 90 mm 96 mm × 48 mm × 90 mm 96 mm × 96 mm × 90 mm	96 mm × 96 mm × 131 mm	144 mm × 130 mm × 170 mm, installation dimensions 92 mm × 92 mm	307 mm × 165 mm (vertical or horizontal), mounting depth 107.6 mm
Two-state controller, three-state controller, modulating controller, continuous controller	Two-state controller, three-state controller, modulating controller, continuous controller	Two-state controller, three-state controller, modulating controller, continuous controller, continuous controller with integrated position controller	Two-state controller, three-state controller, modulating controller, continuous controller, continuous controller with integrated position controller	Two-state controller, three-state controller, modulating controller, continuous controller, continuous controller with integrated position controller
	1	2	Max. 8	4
	1 program with max. 8 sections, 4 control tracks	10 programs each with 50 sections, 8 control tracks	50 programs each with max. 100 sections, max. total of 1,000 sections, 16 control tracks	Program function (99 programs each with max. 99 sections), along with 99 programmable process steps
	✓	✓	✓	✓
	Oscillation method, step response method	Oscillation method, step response method	Oscillation method, step response method	Oscillation method
	2	4 per channel	2 per channel	8, freely assignable
	-	-	✓	-
	-	✓	✓	-
	-	✓	-	-
	Panel with 4 keys	Touchscreen	Panel with 6 keys	Panel with large keypad
	LCD	TFT 320 × 420 pixels, 256 colors	TFT 320 × 420 pixels, 27 colors	TFT-LED 320 × 420 pixels, 27 colors
	-	✓ (With interactive display and input fields)	✓	✓
	✓	✓	✓	✓
	Max. 2	Max. 4	Max. 8	Max. 8
	10 pairs of values	40 pairs of values or polynomial	20 pairs of values or polynomial	-
	✓	-	✓	-
	Max. 4	7	6	Max. 21
	Max. 9	Max. 12 + 16 external	Max. 12 + 16 external	Max. 35
	Max. 2	Max. 5	Max. 6	Max. 4
	✓ [Except type 703041]	✓	✓	-
	RS485 (Modbus), PROFIBUS-DP, setup	2 fieldbus interfaces: 1 × RS485 (Modbus), 1 × Ethernet or PROFIBUS-DP or RS422/485 (Modbus), USB host, USB device	2 fieldbus interfaces: 1 × RS422 / 485 (Modbus), 1 × PROFIBUS-DP or RS422 / 485 (Modbus), setup	2 fieldbus interfaces: 1 × RS422 / 485 (Modbus), PROFIBUS-DP, setup
	-	✓	-	-
	2	2	4	-
	-	✓	-	-
	-	✓	-	-
	2 freely editable formulae	8 freely editable formulae and additional binary signal processing	16 freely editable formulae	4 freely editable math formulae and 16 freely editable logic formulae
	-	✓	✓	✓
	✓	✓	✓	✓
	✓	✓	✓	-
	IP65 (front side)	IP66 (front side)	IP65 (front side)	IP67 (front side)
	cULus, DIN EN 14597, GOST	In preparation: cULus, DIN EN14597, GL, GOST	cULus, GOST	cULus

Automation system JUMO mTRON T

JUMO mTRON T with its modular design uses an Ethernet-based system bus and an integrated PLC – even for decentralized automation tasks. The measuring, control, and automation system can be used universally and combines JUMO's comprehensive process expertise with a simple, application-oriented, and user-friendly configuration concept.



JUMO mTRON T automation system



Modules	JUMO mTRON T, multichannel controller module	JUMO mTRON T, relay module four-channel	Analog input module four-channel	Analog input module eight-channel	Digital input / output module	
Type	705010	705015	705020	705021	705030	
Technical data	Measuring inputs / outputs	2 digital outputs (normally open contacts) or logic output, 2 universal analog inputs, 2 digital inputs, 3 expansion slots for further inputs and outputs	4 relay outputs (changeover contacts)	4 universal analog inputs, 1 digital input, universal analog inputs for RTD temperature probe, thermocouple, and standard signals	8 analog inputs for RTD temperature probes in two-wire circuit, 1 digital input	12 channels that can be configured individually as DC 24 V digital inputs or DC 24 V digital outputs, max. 500 mA
	Interfaces	A USB device interface (setup), a LAN connection (Ethernet), and 2 system bus connections are available as standard (in CPU and HMI). Up to 2 interfaces can optionally be used for fieldbus applications (in CPU and HMI). Furthermore, USB host interfaces (such as for a USB stick) are available in HMI.				
	Special features	Universal analog inputs for RTD temperature probe, thermocouple and standard signals, all analog inputs are galvanically isolated, up to 4 PID controller channels, including autotuning procedure, math/logic functions	–	HMI with predefined screen templates for display and operation of the multichannel controllers and program generators. Customized visualization can be implemented via process screens. HMI with registration function for max. 9 groups, each with 6 analog and 6 digital inputs. Integrated web server, math function, PLC CODESYS for the customized automation solution.		



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 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



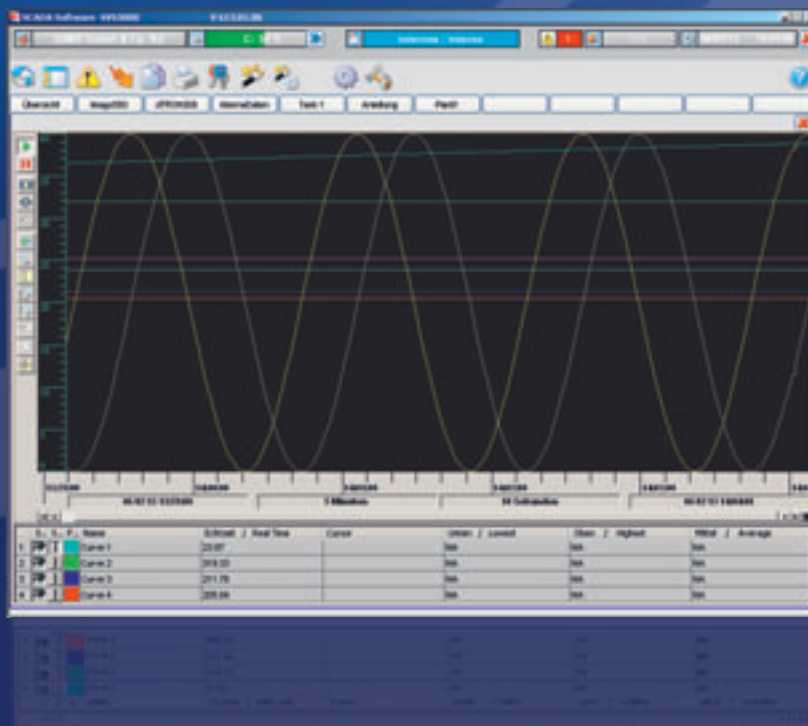


Software

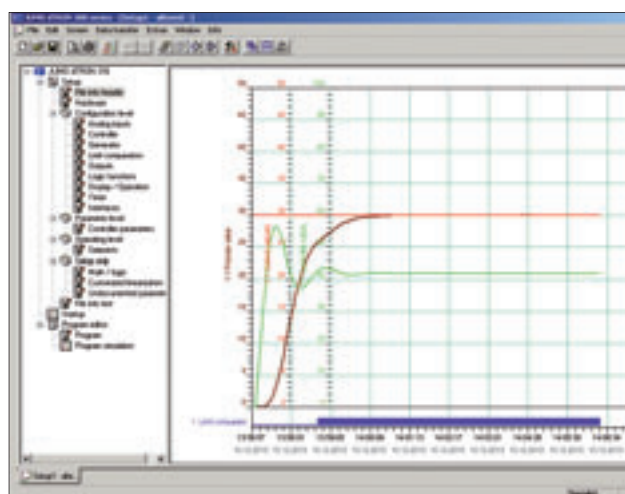
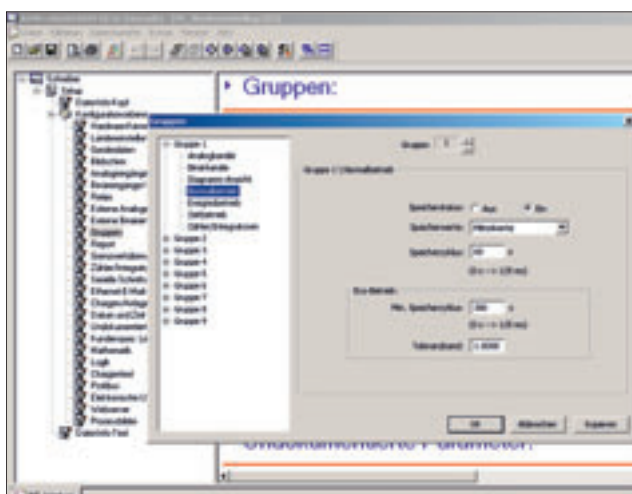
JUMO offers intuitive PC-based setup software for all digital compact controllers, supporting the user during device configuration and parameterization. It also simplifies the optimization of the control of plants or processes so that you can implement good control in terms of energy efficiency. The startup tool contained in the setup software is particularly helpful during startup.

The professional PC evaluation software PCA3000 can be used for administration, archiving, visualization, and evaluation of the historical process data recorded by a paperless recorder integrated into a digital controller or by the JUMO mTRON T automation system. The plant visualization software SVS3000, which is also PC-based, enables online-visualization and reporting of important process values; this can also be performed in a batch-related manner if required. Pre-programmed graphic elements make it easier to create a customized process screen.

In addition, the JUMO mTRON T automation system is equipped with the PLC programming system CODESYS, which is easy to program via the development environment embedded in the setup program.



PC software components



Setup program

You can use the setup program to conveniently carry out project design and configuration of the respective digital compact controller on your PC. Integrated auxiliary functions assist you in adjusting the controller to your process or your application.

- User-friendly configuration and parameterization
- Diagnosis function (process data display)*
- Input of math and/or logic formulae*
- Program editor*
- Process screen editor*
- Easy printout of the configuration for documentation purposes**

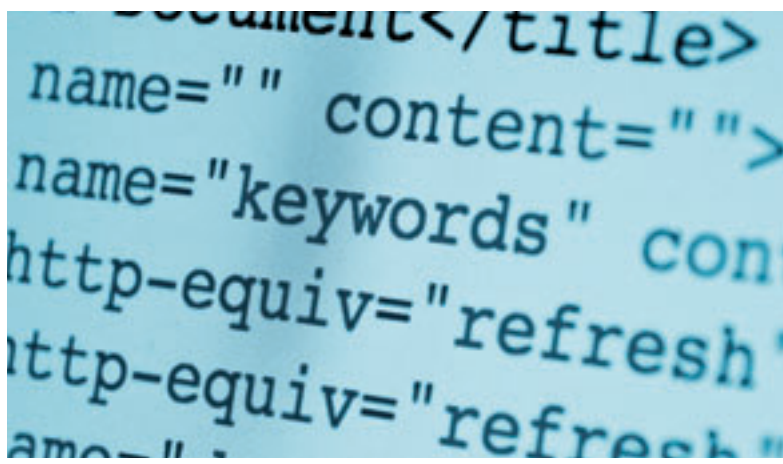
Startup software**

This software tool included in the setup program enables real-time visualization and storage of analog and binary signals during a startup or optimization phase after a tool change for example. A visual display of the key process data in real-time is particularly useful when carrying out demanding processes.

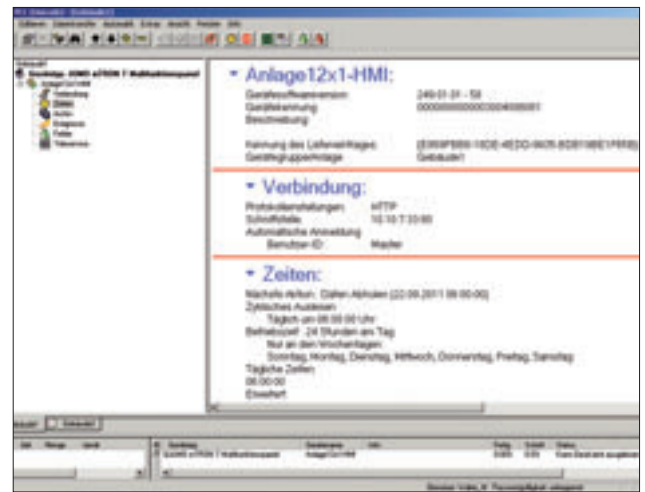
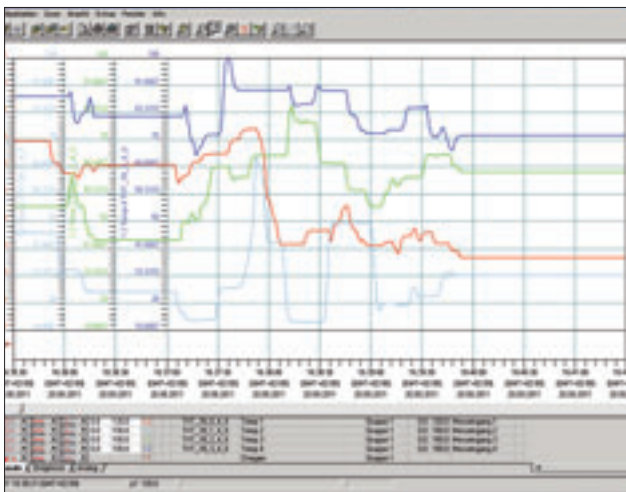
- Visualization, monitoring, and recording of relevant analog and binary signals
- Triggering of a setpoint value change for determining control-related characteristic values on the basis of the plant behavior
- Straightforward comparison of control results for various controller parameters
- Random monitoring of control quality
- No additional devices required to assist with startup

* Included with the JUMO mTRON T automation system and with certain JUMO compact controllers

** Included with certain JUMO compact controllers; in preparation for the JUMO mTRON T automation system



PC software components



Evaluation software PCA3000

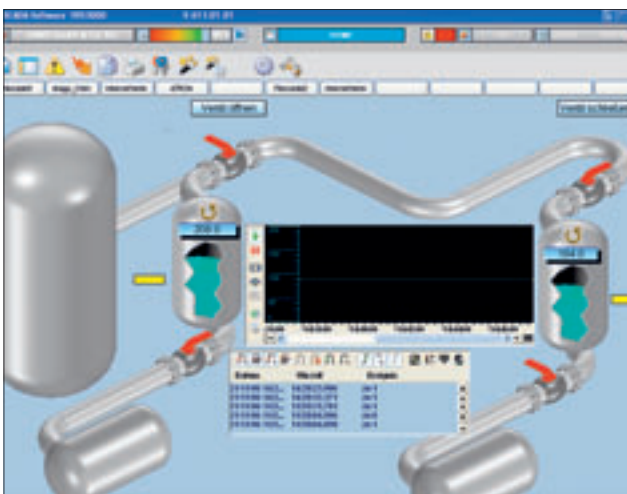
The PC-based professional evaluation software PCA3000 can be used for administration, archiving, visualization, and evaluation of the historical process data (measured data, batch data, messages, etc.). The data can be imported via a USB memory stick or made available for central data processing using the PCC communication software.

- Backup and archiving of all process data in an easily understandable data file
- Archived data can be directly read and visualized from the CD-ROM/DVD
- Graphic presentation of measured values:
Evaluation of measurement data with min./max. search and zoom function (magnifying glass icon)
- Data export with PCA3000 form issued in a wide range of formats (CSV, HTML, PDF)

PCA communication software PCC

The communication software PCC that is ideally geared towards PCA3000 enables convenient data extraction via Ethernet, serial interface (USB, RS485), or modem.

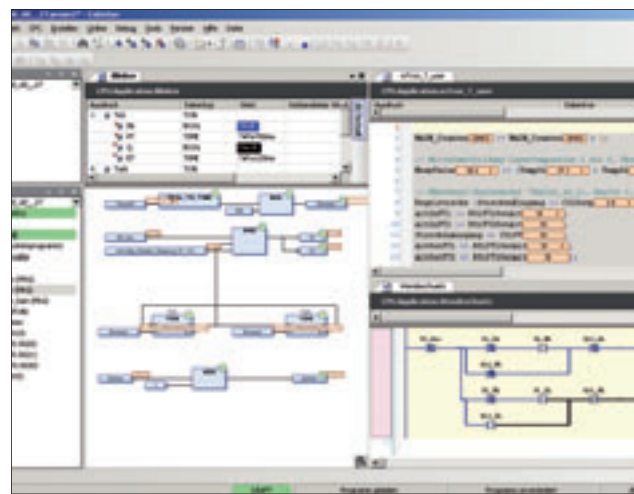
- Time-controlled, automated data extraction via interface or modem
- Backup and archiving of all process data to a hard disk drive or a network server (in the form of an easily understandable data file)
- Diagnosis function (display of current process data via modem or Ethernet for example)
- Can be launched as a Windows service
- Email notification in the event of communication failure



Plant visualization software 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 facilitate the evaluation of archived production data. Thanks to pre-programmed graphic objects, it is easy to visualize plant-specific components and processes in the form of module screens and process screens. You have the option of processing 75, 250, 1,000, or 5,000 process variables.

- Extensive library with graphic elements for customized process screens
- Pre-programmed graphic objects for depicting all JUMO controllers
- Quick and easy creation of customized groups and trend screens
- Plant operation via groups and/or process screens
- Extensive documentation function with continuous and batch-related evaluation
- Search function for date/time, plant criteria, and freely defined batch criteria
- Automatic printout and data export



PLC programming system CODESYS V3

The CODESYS development environment implemented in the JUMO mTRON T is a comprehensive software tool for industrial automation. This widely used PLC programming system according to IEC 61131-3 enables the implement of almost all automation tasks.

All editors defined in the standard are available for the purpose of programming your control applications:

- Editor for structured text (ST)
- Sequential function chart editor (SFC)
- Continuous function chart editor (CFC)
- Function block diagram (FBD)
- Ladder diagram (LD)
- Instruction list editor (IL)

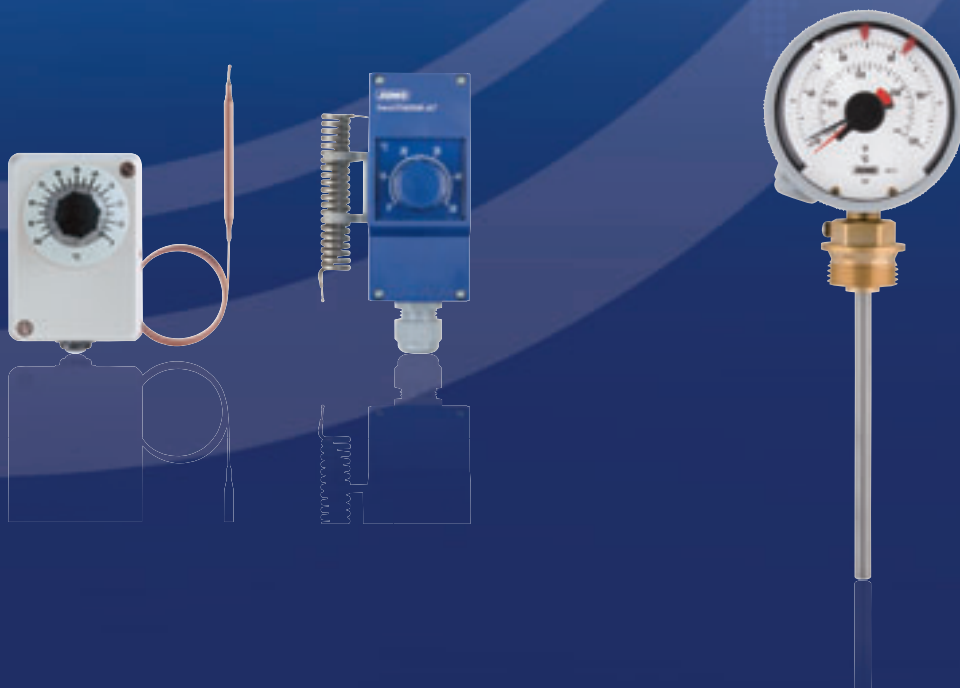




Electromechanical thermostats and contact dial thermometers

Electromechanical thermostats and contact dial thermometers have also been an integral part of the JUMO product range for decades. Throughout this period these devices have proven themselves to be extremely reliable in controlling and regulating basic thermal processes. In many sectors of industry they are used because they do not require any additional auxiliary energy and because they are completely impervious to electromagnetic interference.

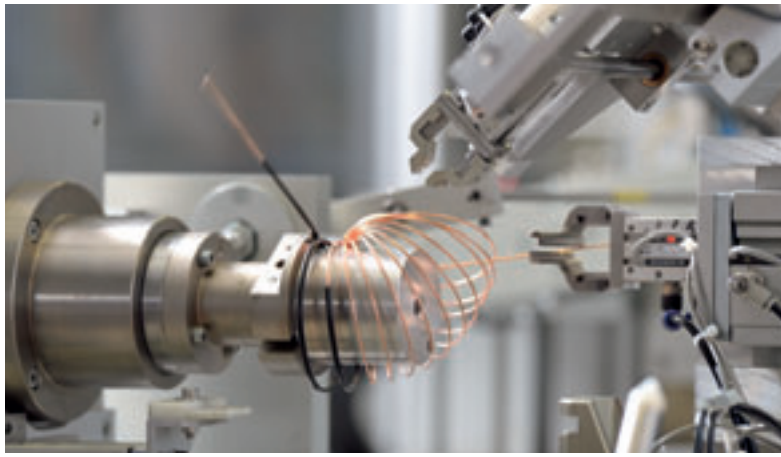
Thanks to the broad product portfolio – in the field of panel-mounted thermostats and surface-mounted thermostats, along with contact dial thermometers – we are able to provide the ideal device for nearly all applications. In the event that standard versions do not optimally meet the requirements, it is possible for customer-specific adaptations to be made. In addition, the comprehensive range of thermostats we stock enables us to quickly serve customers with urgent requirements.



Panel-mounted thermostats



Technical data	Description	Panel-mounted thermostat, series EM	Panel-mounted thermostat JUMO heatTHERM
	Type	602021 / 602025	602030 / 602031
	Features	Lot size according to customer needs, temperature ranges up to 650 °C possible	Economic large-scale production, standard temperature compensation
	Areas of application	Heating industry, air conditioning industry, heating cabinets, plastics industry, oven engineering, general mechanical engineering	
	Versions	Temperature controller (TR) Temperature monitor (TW) Temperature limiter (TB) Safety temperature monitor (STW) Safety temperature limiter (STB)	Temperature controller (TR) Temperature monitor (TW) Safety temperature monitor (STW) Safety temperature limiter (STB)
	Switching element	1, 2, 3, or 4 single-pole snap-action switches	Single-pole snap-action switch
	Switching capacity	16 A, 230 V	16 A, 230 V
	Maximum control range value / limit value	500 °C (type 602021) 650 °C (type 602025)	350 °C
	Approvals	DIN, UL, PED, DVGW (up to 500 °C)	DIN, UL, PED

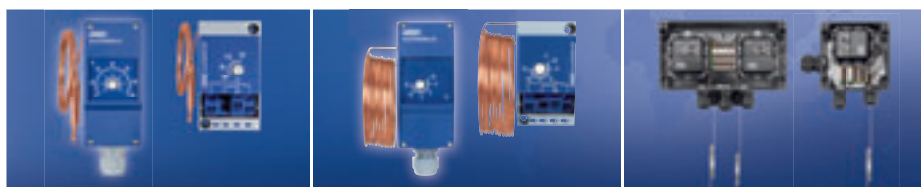


Surface-mounted thermostats

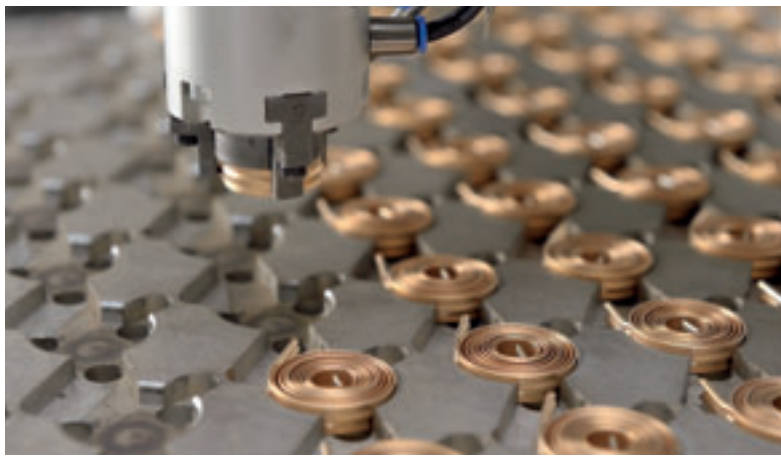


		Surface-mounted thermostat, series ATH	Surface-mounted thermostat, series ATH	Surface-mounted thermostat, series ATH-SE
Technical data	Description	Surface-mounted thermostat, series ATH	Surface-mounted thermostat, series ATH	Surface-mounted thermostat, series ATH-SE
	Type	603021 / 603035	603026 / 603035	603031
	Features	Single thermostat	Double thermostat	Single thermostat
	Areas of application	Heating industry Air conditioning industry General mechanical engineering		Shipbuilding
	Versions	Temperature controller (TR) Temperature monitor (TW) Safety temperature monitor (STW) Safety temperature limiter (STB)		
	Switching element	Single-pole snap-action switch		
	Switching capacity	10 A, 230 V	10 A, 230 V	10 A, 230 V
	Maximum control range value / limit value	500 °C	500 °C	300 °C
	Protection type	IP54 IP65 (603035)	IP54 IP65 (603035)	IP54
	Approvals	DIN, (PED, 603021 / 603026)		Det Norske Veritas, GL, Bureau Veritas, DIN, PED

Surface-mounted thermostats



	Description	Surface-mounted thermostat JUMO heatTHERM-AT / -DR	Frost protection thermostat JUMO frostTHERM-AT / -DR	Explosion-protected sur- face-mounted thermostat JUMO exTHERM-AT
	Type	603070	604100	605055
Technical data	Features	Single and double thermostat Room thermostat Thermostat for mounting rail installation Flue gas temperature monitor	Probe line available in 3 m, 6 m, and 12 m	Single thermostat and double thermostat
	Areas of application	Building automation Heating industry Air conditioning industry Control cabinets (DR) General mechanical engineering	Air conditioning and cooling system engineering Cooling units Machine and plant engineering	Potentially explosive areas in zones 1 and 2 or 21 and 22; use in zone 0 with corresponding thermowell
	Versions	Temperature controller (TR) Temperature monitor (TW) Safety temperature monitor (STW) Safety temperature limiter (STB)	Safety temperature monitor (STW) Safety temperature limiter (STB)	Temperature monitor (TW) Temperature limiter (TB) Safety temperature monitor (STW) Safety temperature limiter (STB)
	Switching element	Single-pole snap-action switch	Single-pole snap-action switch	Pressure-tight encapsulated panel-mounted thermostat
	Switching capacity	16 A, 230 V	16 A, 230 V	16 A, 230 V, 25 A, 230 V (optional)
	Maximum control range value / limit value	350 °C	15 °C	500 °C
	Protection type	IP40, IP54 (optional)	IP40, IP65 (optional)	IP65
	Approvals	DIN, UL, PED	–	ATEX, RTN, GOST, DIN, IEC Ex



Contact dial thermometers



	Description	JUMO Microstat-M	JUMO contact dial thermometer	JUMO contact dial thermometer in bayonet case
	Type	608501	608520 / 608523 / 608540	608425
Technical data	Features	Temperature controller with a microswitch in the installation case made of plastic, with optional steel sheet	Temperature controller with up to 2 microswitches IP67 possible (type 608523)	Temperature controller in panel-mounted case or surface-mounted case, standard ambient temperature compensation
	Areas of application	Compressor engineering Oven engineering	Oil temperature monitoring in industrial transformers Industrial processes	Plant engineering Oven engineering
	Accuracy class acc. to. DIN EN 13190	-	Class 1.5	Class 1
	Case size	60 mm, 80 mm, 100 mm	60 mm, 80 mm, 100 mm made from CrNi (608540 made from polyamide, 80 mm only)	100 mm and 160 mm
	Capillary / rigid thermowell	With capillary	Rigid thermowell or capillary (up to 10 m)	
	Probe outlet	-	Vertical or horizontal	

Application examples



Area of application: heating sleeves for barrels and containers



JUMO heatTHERM-AT
Type 603070

Heating sleeves for barrels and containers

Many industries use liquid or paste material that must be maintained at a specific storage temperature or are particularly easy to process within certain temperature ranges. In such cases, heating sleeves serve the purpose of maintaining the temperature of the media in accordance with their specifications. JUMO heatTHERM-AT 603070 thermostats are used for the purpose of controlling the temperature. They can be used in all kinds of temperature ranges, as they are easy to adjust from the outside.



Area of application: industrial ovens



Panel-mounted thermostat
series EM
Type 602021

JUMO Microstat-M
Type 608501



Temperature monitoring in an oven

The internal temperature of an industrial oven can be monitored using an EM 602021-series temperature controller. The temperature setting is made from outside using a rotary knob and can easily be adapted in line with current baking conditions. A JUMO Microstat-M type 608501 can also be used for control purposes. The added benefit of this is that the current temperature is visible at all times. It is also straightforward to configure the temperature value by means of the rotary knob.

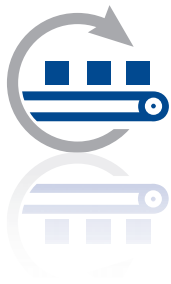


Services & Support

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.



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