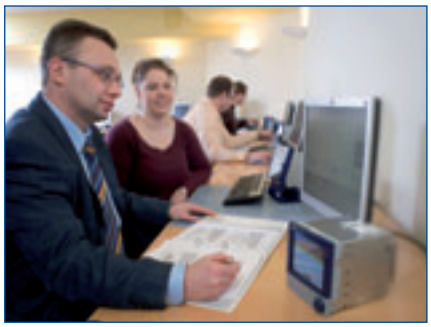
Controllers, Power Units and System Technology

PR 70040 EN

Know-how is needed
Services

**Hands-on training:
Learning the theory ...**



... and putting it to the test.

**Close to the customer:
Repair and service**

Download facilities

On our website www.jumo.net, under "Support", you can find a wealth of topical information on and around JUMO instruments, ready for downloading or ordering such as:

- technical data sheets and operating instructions
- specialist literature and brochures
- the latest software packages
- seminar programs and information about courses

Engineering

JUMO also offers project design for complete systems as a service package. This includes:

- listing the requirements
- drawing up a specification
- configuring the equipment and the visualization software
- professional commissioning and training of the operating personnel

Seminars and training

Know-how is not just needed to create JUMO products, but also for their later application. That's why we offer practical courses and seminars for users in our modern training center, as well as our own publications on aspects of measurement and control engineering:

- Control engineering
- Digital interfaces and bus systems for communication
- Electronic power units

Repair and service

We guarantee prompt service around the globe. Precise fault diagnosis enables us to ensure fast turn-round times for repairs. The telephone support service at our Fulda head office provides information and advice to our customers.

Remote maintenance

In addition to the classical range of services, JUMO also provides remote maintenance concepts.
As a supplement to the decentralized JUMO mTRON automation system and the SVS3000 visualization software, we offer software packages for the latest instrument generation, that will enable plant manufacturers to service the plant at the end user via the worldwide telecommunications network:

- viewing current operational states
- carrying out system adaptations

JUMO eTRON – Digital thermostats and electronic Microstats

economical – cost-effective – simply perfect

Type	eTRON M 701060	eTRON T 701050	eTRON M100 701061
Dimensions	76 mm x 36 mm x 56 mm*	90 mm x 22.5 mm x 60 mm	76 mm x 36 mm x 71.7 mm*
Mounting	in panel	DIN rail	in panel
Connections	screw terminals		
Enclosure protection	front IP 65, back IP 20	IP 20	front IP 65, back IP 20
Measurement inputs	Pt 100, Pt 1000 or KTY2x-6 in 2-wire circuit, configurable, thermocouples Fe-Con J, L, and NiCr-Ni K, configurable, current 0(4) – 20 mA, configurable, voltage 0 – 10 V		two measurement input for Pt 100, Pt 1000, KTY1X-6 or KTY2X-6 in 2-wire circuit, configurable
Display	3-digit backlit LC display with 13 mm digit height and special characters for °C, °F, h, min, s, active defrosting or heating phase	3-digit LC display with special characters for °C, °F	3-digit backlit LC display with 13 mm digit height and special characters for °C, °F, h, min, s, LED below the symbols cooling, defrosting, fan, alarm
Output	1 changeover contact 10 A/250 V or 2 make contacts 5 A/250 V	1 changeover contact 10 A/250 V	1 changeover contact 16 A/250 V or 2 make contacts 8 A/250 V optionally 1 changeover contact 16 A/250 V for alarm output
Alarms	messages in display or via the 2nd relay output: low/high alarm limit temperature, service interval, timer message	messages in display: low/high alarm limit temperature	Alarm generation via relay or buzzer
Supply	230 V AC, +10/–15 %, 48 – 63 Hz 115 V AC, +10/–15 %, 48 – 63 Hz 12 – 24 V DC, 48 – 63 Hz/24 V AC, +10/–15 %, 48 – 63 Hz		12 – 24 V AC/DC, +15/–15 %, 48 – 63 Hz
Features/ extra functions	integrated defrosting function operating hours counter setup program	setup program	Choice of "electrical" or "hot gas" defrosting process, real-time clock, RS 485 interface, operating hours counter, data logger, setup program for configuring the instrument and evaluating the data logger, HACCP monitoring
Approvals	CUL		
Additional information	Data Sheet 70.1060	Data Sheet 70.1050	Data Sheet 70.1061

*depth behind panel

JUMO iTRON series
Controllers of distinction

Type	❶ iTRON 04/ 702044	❷ iTRON 08, horizontal ❸ iTRON 08, vertical 702042/702043	❹ iTRON 32/702040 ❺ iTRON 16/702041	❻ iTRON DR 100/ 702060
Dimensions	96 mm x 96 mm x 68,5 mm*	96 mm x 48 mm x 68,5 mm*	48 mm x 24 mm x 100 mm* 48 mm x 48 mm x 100 mm*	22,5 mm x 109 mm x 124,8 mm
Housing	plastic housing for panel mounting to DIN IEC 61554			DIN rail mounting
Connections	at the back, via pluggable screw terminals			screw terminals
Enclosure protection	front IP 66, back IP 20			IP 20
Controller type	2-state controller with limit comparator, 3-state controller			
Measurement inputs	Pt 100, Pt 1000, KTY11-6 resistance thermometers type L, U, T, K, N, S, R, B, thermocouples, DC current, DC voltage			
Display	7-segment display, 4 digits (green), digit height 10 or 20 mm, display span –1999 to +9999 digit, display in °C or °F			2-line alphanumeric LC display for indicating process value and setpoint display in °C or °F
Output	2 relays 3 A/250 V AC (make contact), 1 relay 3 A/250 V AC (make contact) 1 relay 3 A/250 V AC (make contact) 1 logic output 0/5 V, 1 logic output 0/5 V (as an alternative to logic input)			1 relay 5 A/250 V AC (changeover) and 1 logic output 0/5 V, (optionally 0/12 V); 2 relays 5 A/250 V AC (make contact) and 1 logic output 0/5 V, (optionally 0/12 V)
Alarms	1 limit comparator (max.) with 8 functions			
Logic inputs	1 logic input for floating contacts (on iTRON 16/32: as an alternative to the logic output)			
Feedback	P, PD, PI, PID			
Supply	110 – 240 V AC, +10/–15 %, 48 – 63 Hz, or 20 – 53 V AC/DC, 48 – 63 Hz, or 10 – 18 V DC, 48 – 63 Hz			110 – 240 AC, +10/–15 %, 48 – 63 Hz, 20 – 53 V AC/DC, 48 – 63 Hz
Interface	programming interface for setup			
Features/ extra functions	self-optimization, ramp function, digital input filter with programmable filter time constant, setup program, timer function			
Approvals	UL, cUL, GOST			
Additional information	Data Sheet 70.2040			Data Sheet 70.2060

*depth behind panel

JUMO cTRON – Compact controler
The OEM Line

Type	cTRON 16 702071	cTRON 08 702072	cTRON 04 702074
Dimensions	48 mm x 48 mm x 90,5 mm*	48 mm x 96 mm x 67 mm*	96 mm x 96 mm x 70 mm*
Housing	plastic housing for panel mounting to DIN IEC 61554		
Connections	screw terminals at rear (detachable terminal strips), max. conductor cross-section without ferrule max. conductor cross-section without ferrule (with ferrule)		
	1,3 mm² (1,0 mm²)	2,5 mm² (1,5 mm²)	2,5 mm² (1,5 mm²)
Enclosure protection	front IP65, back IP20		
Controller type	2-state controller, 3-state controller, modulating controller, continuous controller		
Measurement inputs	a configurable analog input for resistance thermometer, thermocouple or standard signals (current, voltage)		
Display	two 4-digit, 7-segment displays (red, green) for process values, timers and parameters, seven LEDs to indicate switch positions (4 x yellow), as well as manual mode, ramp function and timer mode (3 x green)		
Setpointadjustment	membrane keypad ("Up" und "Down" keys), two setpoints, setpoint changeover via binary function		
Output	two 3A/230 V AC relays (make contacts) as standard, as well as		
	a 0/12 V logic output (configurable as an alternative to the first binary input)	a 0/12 V logic output	
	optionally, one analog output (0/4 - 20 mA or 0/2 - 0 V, configurable) or one 3A / 230 V AC relay (NO contact)		
Alarms	2 limit comparators with 8 functions		
Logic inputs	max. two binary inputs		
	binary input 1 as an alternative to the logic output	(binary input 1 and the logic output are available independently of each other)	
Feedback	P, PI, PD, PID; self-optimization		
Supply	110 – 240V AC, +10/-15%, 48 – 63 Hz, or 20 – 53V AC/DC, 48 – 63 Hz		
Interface	optional RS485 (Modbus protocol); setup interface as standard		
Features / extra functions	programmable operator level, ramp function, manual mode, power ON delay, extensive timer functions, programmable function key, service counter, fast, user-friendly configuration with the setup program (accessories)		
Approval	cUL		
Additional information	Data Sheet 70.2050		

*depth behind panel

JUMO dTRON 300 – Microprocessor controller series

...made for global success

PROFI PROCESS FIELD BUS

Type	❶ dTRON 316 703041/...	❷ dTRON 308 vertical ❸ dTRON 308 horizontal 703042/703043	❹ dTRON 304 703044/...	❺ dTRON 304 plast dTRON 308 plast (no illustr.) dTRON 316 plast (no illustr.) 703048/703046/703045
Dimensions	48 mm x 48 mm x 90 mm*	48 mm x 96 mm x 90 mm* vertical or horizontal format	96 mm x 96 mm x 90 mm*	96 mm x 96 mm x 90 mm* (304) 48 mm x 96 mm x 90 mm* (308) 48 mm x 96 mm x 90 mm* (316)
Housing	plastic housing for panel mounting to DIN IEC 61554 with plug-in controller module and gold-plated plug contacts			
Connections	at the back via screw terminals, max. conductor cross-section: 1,5 mm² with ferrule			
Enclosure protection	to EN 60529, front IP 65, back IP 20			
Controller type	2-state/3-state controller, modulating or continuous controller, program generator or program controller is freely configurable			
Measurement inputs	a maximum of two analog inputs can be freely configured, resistance thermometer/transmitter, thermocouples: current/voltage, customized linearization			
Setpoint adjustment	membrane keypad (up and down keys), four internal setpoints, external setpoint input			
Display	multicolored LCD display, 4-digit 7-segment display, red, configurable (factory setting: process value), 4-digit 7-segment display, green, configurable (factory setting: setpoint), switching status indication, active setpoint SP1, SP2, SP3, SP4, two-place 16-segment display, green, for the unit °C/°F and characters for h, min and %			
Output	two relays as standard: 3 A/230 V (make contacts), two logic outputs 0-12 V (18 V)	two relays as standard: 3 A/230 V (changeover contact), two logic outputs 0-12 V (18 V), voltage output for transmitter 17 V at 20 mA		
	additional outputs can be retrofitted through options: – relay (changeover 8 A) – double relay (2x make contact 3 A) – analog output – solid-state relay 1 A			
Alarms	four limit comparators with 8 functions			
Logic inputs	up to four logic inputs via floating contacts	up to 6 logic inputs via floating contacts		
Feedback	P, I, PD, PI, PID, additionally self-optimized step response or oscillation method			
Supply	110 – 240 V AC, +10/–15 %, 48 – 63 Hz 20 – 30 V AC/DC, 48 – 63 Hz	110 – 240 V AC, +10/–15 %, 48 – 63 Hz 20 – 30 V AC/DC, 48 – 63 Hz voltage output for transmitter 17 V/20 mA		
Interface	RS 422/485 Modbus protocol, Modbus-integer or PROFIBUS-DP, setup interface as standard			current interface 0/20 mA
Features/ extra functions	ratio, difference or humidity control, up to three options can be retrofitted, math and logic functions, ramp and program function, a maximum of eight segments, two timers, setup program			hot-channel warm-up ramp, heater current monitoring, Modbus master function, boost function
Approvals	cUL, DIN EN 14597, GOST		cUL, DIN EN 14597, GOST, GL	cUL
Additional information	Data Sheet 70.3041			Data Sheet 70.3046

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JUMO DICON 400/500 and 401/501 – Microprocessor controllers/programmers

The flexible ones

Type	DICON 400 (ver./hor.) 703575	DICON 500 703570	DICON 401 (ver./hor.) 703585	DICON 501 703580
Dimensions	96 mm x 48 mm x 130 mm* vertical or horizontal format	96 mm x 96 mm x 130 mm*	96 mm x 48 mm x 130 mm* vertical or horizontal format	96 mm x 96mm x 130 mm*
Housing	polycarbonate housing with plug-in controller module and gold-plated plug contacts			
Connections	at the back via screw terminals, conductor cross-section up to 2.5 mm^2 and ferrule (10 mm long)			
Enclosure protection	front IP65, back IP20, to EN 60529			
Controller type	freely configurable as 1- or 2-state controller, modulating, continuous or actuating controller		program generator or program controller with controller functions as for DICON 400/500	
Measurement inputs	two analog inputs	four analog inputs	two analog inputs	four analog inputs
	configurable as resistance thermometer, resistance transmitter, thermocouple, standard signals, heater current			
Setpoint adjustment	membrane keypad, external setpoint selection, setpoint profile by program editor, program controller / generator, 4 internal setpoints selectable through logic functions, interface or setup program			
Display	two 4-digit 7-segment displays and one 8-character matrix display for showing different, freely programmable functions with two display configurations			
Output	max. 3 outputs – relay – solid-state relay – logic output 5V/22V – analog output – voltage output for 2-wire transmitter	max. 6 outputs – relay – solid-state relay – logic output 5V/22V – analog output – voltage output for 2-wire transmitter	max. 3 outputs – relay – solid-state relay – logic output 5V/22V – analog output – voltage output for 2-wire transmitter	max. 6 outputs – relay – solid-state relay – logic output 5V/22V – analog output – voltage output for 2-wire transmitter
Extra contacts	connection of one external relay module with 8 relays			
Alarms	8 limit comparators with 8 functions			
Logic inputs	maximum of 8 logic inputs via floating contacts			
Feedback	P, I, PD, PI, PID action, individually adjustable for direct or reverse action 2 parameter sets with self-optimization			
Supply	110 – 240V AC, +10%/–15%, 48 – 63Hz, 20 – 53V AC/DC, 48 – 63Hz			
Interface	RS422/485 electrically isolated, Modbus protocol, PROFIBUS-DP			
Features/ extra functions	– ramp and program function, max. 8 segments – setup-program		– 10 programs with a total of 100 segments – setup software with program editor – real-time clock – 8 control contacts, tolerance band signal – program end signal	
	math and logic module, fuzzy logic, inputs and outputs (50V) electrically isolated			
Approvals	UL, GOST	ABS, BV, DNV, GL LRS, UL GOST	UL, GOST	ABS, BV, DNV, GL, LRS, UL, GOST
Additional information	Data Sheet 70.3570		Data Sheet 70.3580	

*depth behind panel

JUMO IMAGO 500 – Multichannel process and program controller

The all-rounder

Type	IMAGO 500 703590/...
Dimensions	bezel size 144 mm x 130 mm x 170 mm*, mounting dimensions 92 mm x 92 mm
Housing	housing and back panel: metal for panel mounting to DIN IEC 61554 bezel: plastic ULV0
Connections	at the back via pluggable screw terminals, conductor cross-section up to 2.5 mm² and ferrule (10 mm long)
Enclosure protection	front IP65, back IP20 to EN 60529
Controller type	up to 8 universal control channels: 1- or 2-state controller, modulating controller, continuous controller, continuous controller with integral actuator driver
Measurement inputs	a maximum of 8 universal analog inputs, individually pluggable for resistance thermometer, thermocouple, standard signals, resistance transmitter and heater current
Setpoint adjustment	membrane keypad, external setpoint selection, setpoint profile through program editor of the program controller/generator, 4 internal setpoints for each channel, selectable via logic functions, interface or setup program
Display	5" (12.7 cm) color screen, process-specific texts and pictures, bar graph display with 27 colors, resolution 320 x 240 pixels, instrument texts settable in English, German and French as well as in other languages
Outputs	up to 6 slots for the following plug-in modules: 2 relays (make contacts), 1 relay (changeover contact), 2 logic outputs 0/5V, 1 logic output 0/22V, 1 solid-state relay, 1 analog output, 1 supply for a 2-wire transmitter
Extra contacts	up to 2 external relay modules with 8 changeover contacts or 8 logic outputs 0/12V
Alarms	16 limit comparators with time and acknowledgement functions
Logic inputs	6 logic inputs for floating contacts
Feedback	P, I, PD, PI, PID action, individually adjustable for direct or inverse sense of operation 2 parameter sets for each control channel, self-optimization according to oscillation method or step response
Supply	110 – 240V AC, +10/–15%, 48 – 63Hz, 20 – 30V AC/DC, 48 - 63Hz
Interfaces	interface I: – Setup and RS422/485 with Modbus/Jbus protocol interface II: – PROFIBUS-DP – RS422/485 with Modbus/Jbus protocol
Features/extra functions	cascade controller/C-level control, 50 programs with 1000 segments, math and logic functions, alarm list, recording function with evaluation software, Teleservice via external modem, cycle time from 50 msec, self-optimization using the oscillatory and step-response methods, commissioning software start-up
Approvals	UL, GOST
Additional information	Data Sheet 70.3590

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Safety temperature monitor / limiter
The watchdogs

Type	(S)TB/(S)TW 701130/...	TB/TW 701160/...	TB/TW 08 701170/...
Dimensions	54 mm x 70 mm x 110 mm*	22,5 mm x 109 mm x 124,8 mm	48 mm x 96 mm x 67 mm
Connections	screw connections	screw terminals	
Enclosure protection	IP 20 (EN 60529)	IP 20	front IP 65
Function	safety temperature monitor, safety temperature limiter	temperature limiter, temperature monitor	
Measurement inputs	Pt100 resistance thermometer, thermocouples type K, S, B, L	freely configurable for resistance thermometer, thermocouple, current and voltage signals	2 x Pt 100 for differential value calculation, freely configurable for resistance thermometer, thermocouple, current and voltage signals
Setpoint adjustment	analoger Drehknopf mit plombierbarer Schutzkappe	–	Pre-alarm absolute or adjustable as distance to the limit value
Output	Relais mit Umschaltkontakt 2 A / 230 V	relay output (changeover contact) logic output	analog autputs relay output (KV, K1)
Supply	24 V AC, +10/-15 %, 48 – 63 Hz 115 V AC, +10/-15 %, 48 – 63 Hz 230 V AC, +10/-15 %, 48 – 63 Hz	20 – 30 V AC/DC, 48 – 63 Hz 110 – 240 V AC, +10/-15 %, 48 – 63 Hz	110 – 240 V AC, +10/-15 %, 48 – 63 Hz AC, 20 – 30 V AC/DC, 48 – 63 Hz
Features/ extra functions	internal or external reset button, minimum/maximum function, DIN rail mounting, lead-sealable cover	freely configurable through setup program or keys, only one instrument for TB and TW, alphanumerical LC display, 17 linearization options, ungen einstellbar, pre-alarm can be set as absolute or relative to limit value, differential measurement and monitoring	freely configurable as temperature limiter or monitor, choice of 17 linearizations, brilliant display, internal and external reset button, two relay outputs as limit alarm and warning alarm, setup program for configuration and archival via PC with differential measurement and monitoring
Approvals	DIN EN 14597, GL, (S)TB/(S)TW with thermocouples as per IEC 61508, SIL 3, (S)TB/(S)TW or TB/TW with resistance elements as per IEC 61508, SIL 2	UL, DIN EN 14597	UL, DIN EN 14597
Additional information	Data Sheet 70.1130	Data Sheet 70.1160	Data Sheet 70.1170

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JUMO IMAGO F3000 – Processs control for the meat industry

The specialist

Type	IMAGO F3000 700101
Dimensions	307 mm x 165 mm (vertical or horizontal), depth behind panel 107.6 mm
Housing	plastic housing for panel mounting to DIN 61 554
Connections	at the back via pluggable screw terminals, conductor cross-section up to 2.5 mm² and ferrule (10 mm long)
Enclosure protection	front IP 67 / back IP 20 to EN 60 529
Controller type	4 universal controller channels, single-setpoint controller, double-setpoint controller, modulating controller, continuous controller, continuous controller with integral actuator driver
Measurement inputs	8, optionally as Pt100 resistance thermometer, type L, J, K thermocouples, DC voltage, DC current
Setpoint adjustment	membrane keypad, setpoint profile through program generator, interface
Display	5" (12.7 cm) color screen, 27 colors, resolution 320 x 240 pixels and four 4-digit, 12 mm-high 7-segment displays, instrument texts in English, German, French, other languages are available, process-specific text and pictures
Outputs	max. 35 relays max. 4 analog outputs
Alarms	8 limit comparators with timer functions
Feedback	P, I, PD, PI, PID action, individually selectable for direct or reverse action 8 parameter sets with self-optimization
Supply	110 – 240 V AC, +10/-15 %, 48 – 63 Hz 20 – 30 V AC / DC, 48 – 63 Hz
Interfaces	Modbus, PROFIBUS-DP and setup
Features / extra functions	menus are freely editable in basic status and automatic mode, freely assignable function keypad, up to 99 programs with 99 segments each, Plug & Play memory for saving the configuration data and transfer of programs, 16 freely editable logic combinations, four freely editable math functions, recording function with evaluation software,Teleservice via modem
Approvals	UL
Additional information	Data Sheet 70.0101

Thyristor power switches
The tough guys

Type	❶ TYA 432-45/25, 265 ❷ TYA 432-45/50, 530	❸ TYA 432-100/30, 265 ❹ TYA 432-100/30, 660	❺ TYA 432-100/45, 660 ❻ TYA 432-100/3, 20, 660
Dimensions	45 mm x 58.2 mm x 29 mm	❸ 22.5 mm x 81.7 mm x 102.6 mm ❹ 22.5 mm x 81.7 mm x 102.6 mm	❺ 45 mm x 81.7 mm x 102.6 mm ❻ 45 mm x 81.7 mm x 102.6 mm
Load voltage	❶ 24 – 265 V_{rms} ❷ 48 – 530 V_{rms}	❸ 24 – 265 V_{rms} ❹ 48 – 660 V_{rms}	42 – 660 V_{rms}
Load current (max.)	❶ 25 A_{rms} ❷ 50 A_{rmsf}	❸ 30 A_{rms} (T_a = 25 °C) ❹ 30 A_{rms} (T_a = 25 °C)	❺ 45 A_{rms} (T_u = 25 °C) ❻ 20 A_{rms} (T_u = 25 °C)
Load current (min.)	150 mA_{rms}		
Control voltage	3 – 32 V DC	4 – 32 V DC	3 – 32 V DC
Peak off-state voltage	650 V_{pk}	❸ 600 V_{pk} ❹ 1200 V_{pk}	1200 V_{pk}
Operating mode	thyristor zero-crossing switching		
Electrical isolation	by optocouplers between the control and power sections, insulation voltage 4 kV		
Permissible ambient temperature	–20 to +70 °C (taking the the derating curve into account)		
Electrical connection	via screw terminals		
Housing	Noryl GFN1	PBT FR	
Enclosure protection	IP 20		
Weight	60 g	200 g	❺ 360 g ❻ 380 g
Features / extra functions	overvoltage protection through integrated varistor, LED display for control input	with integrated heatsink for mounting on DIN rail or screw fixing, 1-pole, LED display for control input, 3-phase application possible with 3 solid-state relays	❺ with integrated heatsink for mounting on DIN rail or screw fixing, 1-pole, LED display for control input 3-phase version is standard
Approvals	UL/CSA		
Additional information	Data Sheet 70.9010	Data Sheet 70.9020	

Power converter/Thyristor power unit

The tough guys

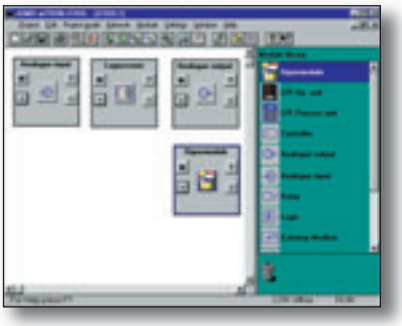
Type	JUMO IPC 709050	TYA-201/TYA-202* 709061, 709062
Dimensions	272 mm x 260 mm x 175 mm (70A) 344 mm x 300 mm x 204,5 mm (100/200A)	157,5 mm x 45 mm x 150 mm (20A) 157,5 mm x 90 mm x 150 mm (20A)
Load voltage	20, 60, 90, 120, 150, 210, 380 V DC others on request	24, 42, 115, 230, 265, 400, 460, 500 V AC –20 % / +15 %
Load current	70 A ≂ DC / 100 A ≂ DC / 200 A DC	20, 23, 50, 75, 100, 150, 200, 250 A
Supply for power section	115, 230, 400 V AC	same as load voltage
Supply for control section	115, 230 V AC	same as load voltage
Operating mode	amplitude control	phase-angle operation for resistive load and transformer loads, with soft start, burst-firing operation for resistive load or transformer load
Circuit variation	single-phase operation	Einphasenbetrieb, Sternschaltung, offene Dreiecksschaltung, Drehstromsparschaltung, freitaktende Sparschaltung
Load type	resistive load	resistive load or transformer load
Control signal	0(4) – 20 mA 0(2) – 10 V 0(1) – 5 V external 5 kΩ potentiometer	0(4) – 20 mA, 0(2) – 10 V 0(1) – 5 V, 0 / 10 V, 0 / 5 V, 0 / 20 mA 5 kΩ potentiometer floating contact
Control accuracy	supply variations from –20 % / +15 % are stabilized with an accuracy of ±0.5 %	subsidiary controls U-, U^2- (standard), I-, I^2-, P-control
Permissible ambient temperature	0 to 45 °C, max. 60 °	0 ... 45 °C bei Luftselbstkühlung
Enclosure protection	IP00 nach EN 60529	alle Gerätetypen IP20 nach EN 60529
Protection Class	Class 1, with isolation of the control circuits for connection to SELV circuits	
Weight	approx. 9 kg: 70 A, approx. 17 kg: 100 A/200 A	–
Ventilation	forced ventilation	natürliche Konvektion, bei Geräten mit 250 A Laststrom zwangsbelüftet mit Kühler
Features/ extra functions	permanently optimized energy management, particularly suitable for molybdenum-disilicide and SIC heating elements, low-voltage heater elements can be operated directly off the mains supply without requiring a reduction transformer, minimum harmonics in the supply network of the plant, light weight, low control reactive power, subordinate control loop comes as standard, partial-load failure, current limiting, load output, European Patent EP1 126 591 B1	brilliant display with plain text, „teach-in" self-learning function for partial load failure detection, dual energy management for uniform electrical power load integrated diagnostic systems, e.g. rotary field detection full communications capability: Modbus RS485/422 or PROFIBUS DP interfaces, setup data transfer possible without control voltage (USB port power supply), all versions IP20
Accessories	supply filter and storage inductor are required	–
Additional information	Data Sheet 70.9050	Data Sheet 70.9061, 70.9062

*Liefereinsatz Ende 2010

Decentralized automation system
JUMO mTRON – The system components

Module

Operating unit

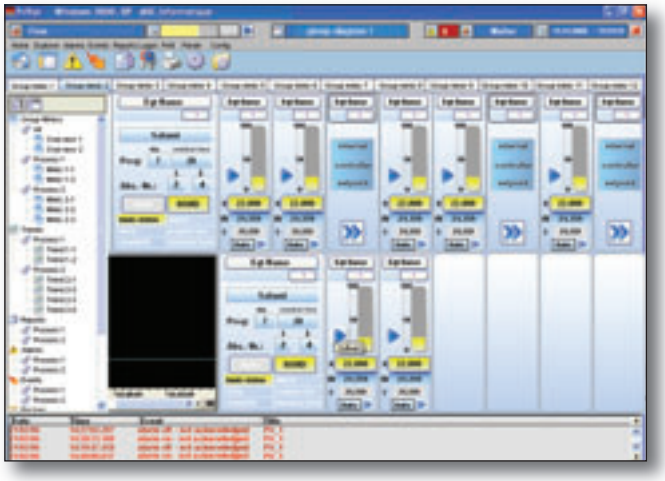


mTRON iTOOL

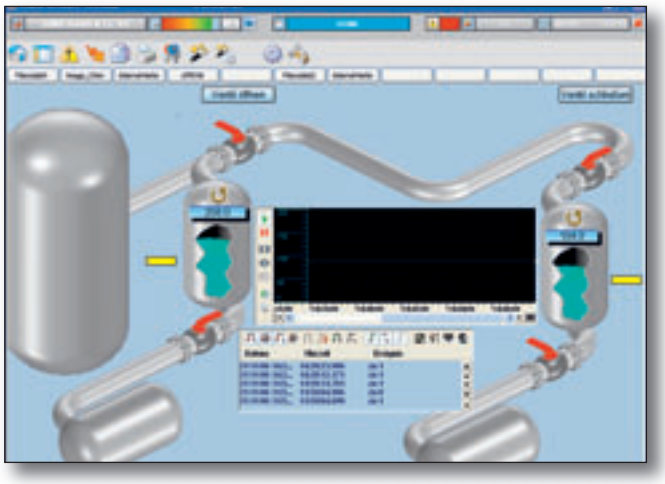
- savings in installation and cabling
- different modules can easily be combined
- no need to familiarize yourself with complex network structures
- simple and transparent project design and commissioning
- PROFIBUS networking via gateway
- operating unit
- analog input module
- controller module
- relay module and analog output module
- communication module
- logic module
- JUMO mTRON iTOOL project design software

Additional information: Brochure 70035 EN

Visualization software
SVS3000 – The control center



Group diagram



Flow diagram

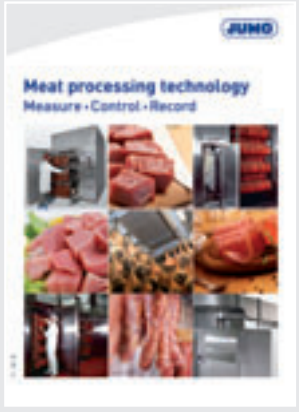
- for networking of JUMO interfaceable process equipment with a PC
- simple and fast creation of applications
- extensive library with predefined graphic elements
- easy-to-navigate thru application explorer
- extensive documentation function with continuous and batch evaluation
- alarm and event list
- permanent and batch recording facility
- password protection
- historical and real-time trend
- network-capable
- connection of bar code scanners
- remote alarm (option)

Additional information: Brochure 70074 EN

http://brochures.jumo.info

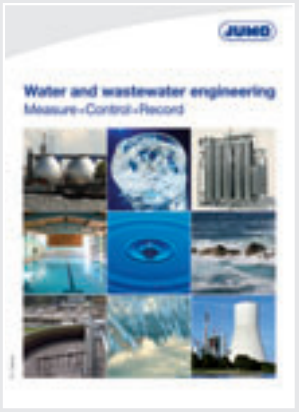
PR 00038 EN

PR 00058 EN

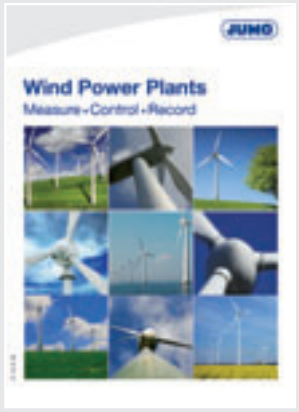


PR 00062 EN

PR 00056 EN



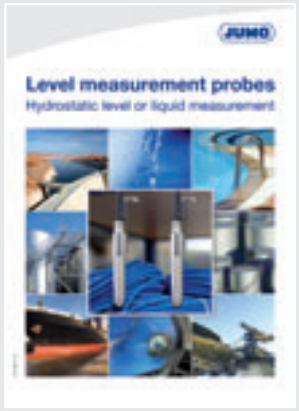
PR 00059 EN



PR 00063 EN

PR 00057 EN

PR 00061 EN



PR 40023 EN

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