



JUMO eTRON M Electronic Microstat

76 x 36 mm format

Brief description

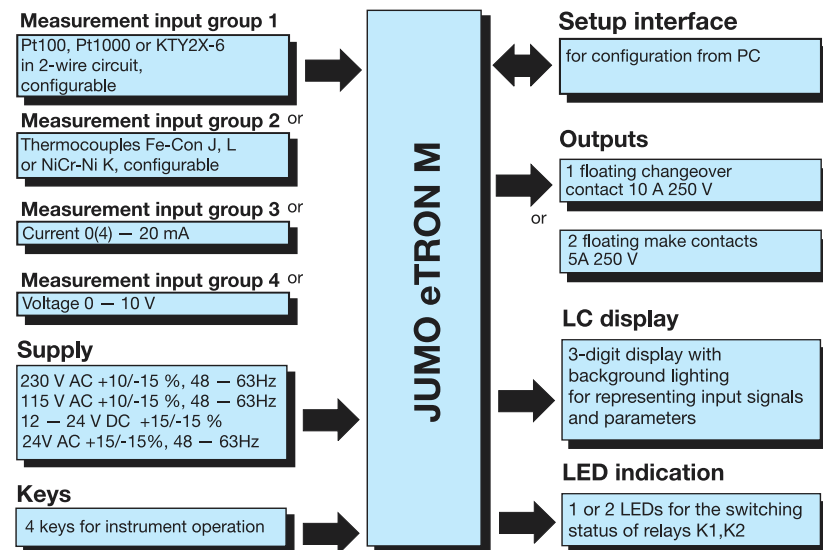
The JUMO eTRON M is a compact, digital electronic thermostat for simple temperature control (heating or cooling). The measurement input permits the connection of resistance thermometers or thermocouples, or standard current or voltage signals. The measured value is shown on a 3-digit backlit display. The switching states of relays K1 and K2 are indicated by two LEDs.

The instrument incorporates a simple defrosting function as well as an operating hours counter, which can, for instance, be used to record the operating time of a cooling compressor.

The instrument can be operated from 4 keys on the front panel. The electrical connection is made via screw terminals on the back of the instrument.

A setup program and a PC interface are available as accessories, for simple configuration and parameterization from a PC.

Block structure



Displays and controls

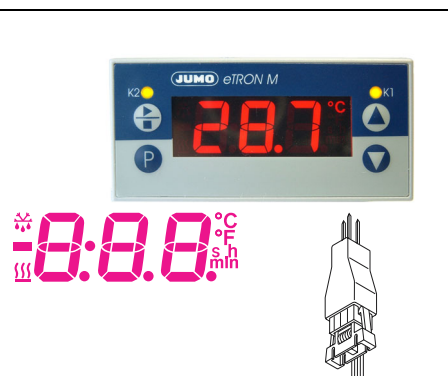
LC display	3-digit segment display, 13 mm high, and symbols for temperature unit, h, min, s, defrosting and heating, with red background lighting
Status indication	LED K1/K2 lights up when relay K1/K2 is energized. LED K1/K2 goes out when relay K1/K2 is de-energized.
Keys	for start-stop programming increase parameter value decrease parameter value
Setup interface	The instrument is linked to the PC via a PC interface with TTL/RS232 converter and adapter (3-pin).



Type 701060/XX2...

Key features

- Integrated defrosting function
- Heating or cooling is configurable
- Limit monitoring
- Available for resistance thermometer, thermocouple, standard current or voltage signals, according to choice
- Choice of a 10A relay or two 5 A relays
- Adjustable switching hysteresis
- Time-delayed switch-on after power-on is selectable, e. g. for staggered starting of several equipment units
- Operating hours counter
- Symbols for operating modes, °C, °F, hours, minutes and seconds in display
- Parameter level protected by code
- Setup program for configuration and archiving via PC
- Customized linearization via tabular function in the setup program
- UL approval



Technical data

Measurement input	Designation	Measuring range	Meas. accuracy ¹ / ambient temperature error	Recognition of ...	
				Probe short-circuit	Probe break
Resistance thermometer	Pt100 EN 60 751	-200 to +600 °C	0.1% / ≤100ppm/°C	is recognized	is recognized
	Pt1000 EN 60 751	-200 to +600 °C	0.1% / ≤100ppm/°C	is recognized	is recognized
	KTY2X-6 (PTC)	-50 to +150 °C	1% / ≤100ppm/°C	is recognized	is recognized
	Resistance 0 – 3000 Ω	customer table ³	0.1% / ≤100ppm/°C ³	= 0Ω	is recognized
Measuring current for Pt100: 0.2 mA, for Pt1000, KTY2X-6 and resistance: 0.02 mA					
Lead compensation is adjustable via the parameter Lead compensation resistance ΔF_r The total resistance (sensor+lead) must not exceed 320Ω for Pt100 and 3200Ω for Pt1000, KTY2X-6 or resistance.					
Thermocouple	Fe-Con J EN 60 584	-200 to +999 °C	0.4% / ≤100ppm/°C ²	-	is recognized
	Fe-Con L DIN 43 710	-200 to +900 °C	0.4% / ≤100ppm/°C ²	-	is recognized
	NiCr-Ni K EN 60 584	-200 to +999 °C	0.4% / ≤100ppm/°C ²	-	is recognized
	-10 to 60 mV	customer table ³	0.1% / ≤100ppm/°C ³	-	is recognized
For the voltage input (-10 to 60 mV), terminal temperature compensation can be used for thermocouples. Internal terminal temperature compensation can be switched off via the setup program (0°C).					
Current	0 – 20 mA	-2 to 22 mA scalable with S_{cL} and S_{cH} or customer table	0.1% / ≤100ppm/°C ³	-	-
	4 – 20 mA	2.4 to 21.6 mA scalable with S_{cL} and S_{cH}	0.1% / ≤100ppm/°C ³	is recognized	is recognized
Input resistance $R_{IN} \leq 3\Omega$					
Voltage	0 – 10 V	-1 to 11 V scalable with S_{cL} and S_{cH} or customer table	0.1% / ≤100ppm/°C	-	-
Input resistance $R_{IN} \geq 100k\Omega$					
1.) The accuracies refer to the measuring range span. 2.) valid from -50°C 3.) A valid customer table must be entered via the setup program and changed over to t_{RB} in the instrument. This may reduce the measuring accuracy.					

Additional data

Sampling time	250 msec
Input filter	1st order digital filter; filter constant ΔF adjustable from 0.1 – 99.9sec
Measurement offset	adjustable from -99.9 to +99.9 via the parameter ΔF_t
Special features	display of temperature unit: °C, °F (Fahrenheit) or switched-off
Customer table	The setup program acquires a maximum of 20 value pairs and uses them for the linear interpolation of 20 new calibration points.

Ambient conditions

Ambient temperature range	0 to +50 °C, with side-by-side mounting: 0 to +40 °C
Storage temperature range	-40 to +70 °C
Climatic conditions	≤ 75% rel. humidity, no condensation
Cleaning and care of front panel	The front panel can be cleaned with all the usual cleaning and rinsing agents. Do not use solvents such as methylated spirit, white spirit, P1 or xylene!

Output

1 relay (changeover contact) for Type 701060/XX1-XX	150,000 operations at 10A 250V AC 50Hz resistive load
2 relays (make contacts) for Type 701060/XX2-XX	100,000 operations at 5A 250V AC, 50Hz resistive load

Supply

Supply voltage	230V AC +10/-15%, 48 – 63Hz or 115V AC +10/-15%, 48 – 63Hz (isolated from measurement input) 12 – 24V DC +15/-15%, 24V AC +15/-15%, 48 – 63Hz (not isolated from measurement input)
Power consumption	<3VA

Housing

Material	polycarbonate
Mounting	in panel cut-out with bezel seal
Operating position	unrestricted
Weight	approx. 160g
Protection	front IP65, rear IP20
Flammability class	UL 94 V0

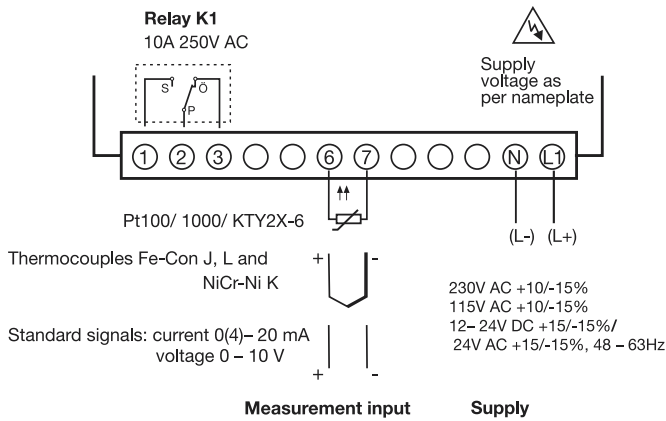
Electrical data

Data backup	EEPROM
Connection	via screw terminals for wire cross-section up to 4 mm ² solid wire and 2.5 mm ² stranded wire
Electromagnetic compatibility interference emission immunity to interference	product family standard: EN 61 326 Class B to industrial requirements
Operating conditions	The instrument is designed as a panel-mounting unit.
Electrical safety	to EN 61 010, Part 1 overvoltage category III, pollution degree 2

Connection diagram

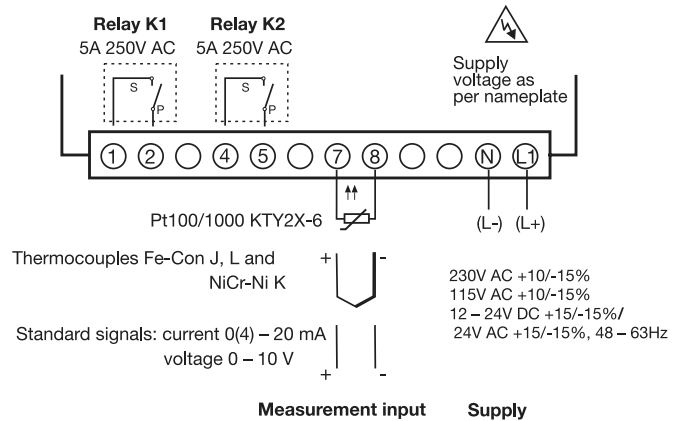
Type 701060/XX1-31: Measurement input and supply voltage are not isolated from each other!

Type 701060/XX1-XX



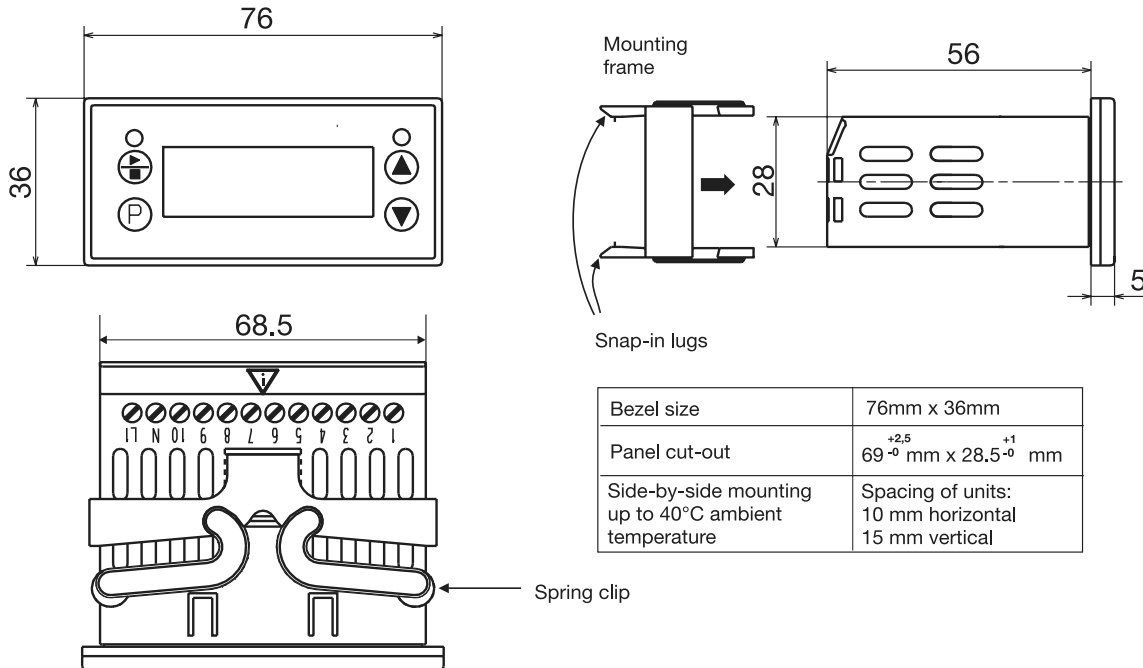
Type 701060/XX2-31: Measurement input and supply voltage are not isolated from each other!

Type 701060/XX2-XX



Dimensions

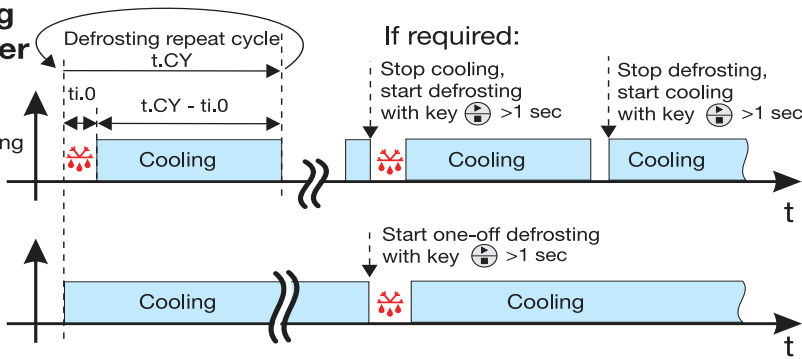
Type 701060/XX2-XX



Timing functions

Cooling controller

Cyclic cooling with defrosting
 $t_{i,0} \geq 1$
 $t_{CY} \geq 1$



Special case:

t_{CY} can only be set to 00.00 if $t_{i,0}$ has previously been set to 00.00. Afterwards, the defrosting duration is again set to the desired value.

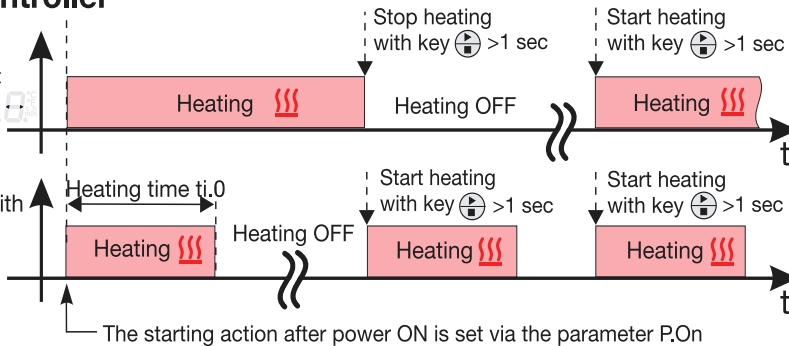
Keep to this sequence !

- * First set $t_{i,0}$ to 00.00
- * Then set t_{CY} to 00.00
- * Now set defrosting duration $t_{i,0}$ again

Heating controller

Heating, no time limit
 $t_{i,0} = 00.00$

Heating, with time limit
 $t_{i,0} \geq 1$



The starting action after power ON is set via the parameter P.On

Order details

701060/

- (1) Basic version
- JUMO eTRON M
- (2) Basic type extension
- Version
- 8 factory-set, configurable within the measurement input group
- 9 configured to customer specification
- Measurement input group¹
- 1 Pt100 in 2-wire circuit
- Pt1000 in 2-wire circuit
- 2 KTY2X-6
- Fe-Con J
- Fe-Con L
- NiCr-Ni K
- 3 0 – 20 mA
- 4 – 20 mA
- 4 0 – 10 V
- Number of relays
- 1 1 changeover contact 10A 250V
- 2 2 make contacts 5A 250V
- (3) Supply
- 02 230V AC +10/-15% 48 – 63Hz
- 05 115V AC +10/-15% 48 – 63Hz
- 31 12 – 24V DC +15/-15% / 24V AC +15/-15%, 48 – 63Hz
- (4) Approvals
- 000 none
- 061 Underwriters Laboratories Inc. (UL)

Order code

Order example

(1) / (2) - (3) - (4)
 701060 / 811 - 02 - 061

factory-set

1.) It is not possible to switch from one meas. input group to another

Suitable transducers can be found in these data sheets:

- 90.2005 Push-in resistance thermometers
- 90.2105 Screw-in resistance thermometers
- 90.1002 and subsequent ones for screw-in thermocouples
- 90.1101 and subsequent ones for push-in thermocouples
- 90.1221 Mineral-insulated thermocouples

Accessories

- Setup program, multilingual
- PC interface with TTL / RS232C converter and adapter (pins)