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# JUMO eTRON T Digital Thermostat

with LC display for mounting on a 35mm DIN rail

## Brief description

The JUMO eTRON T is a compact digital thermostat in 90mm x 22.5mm format 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 LC display.

The switching status of the relay K1 is indicated by an LED.

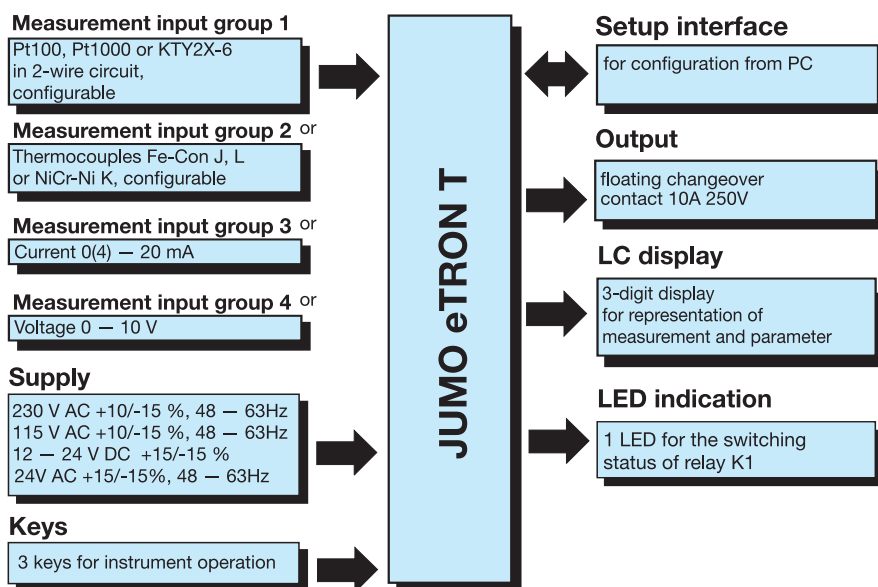
The instrument is operated from 3 keys on the front panel. The electrical connection is made via screw terminals.

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



Type 701050/ ...

## Block structure



## Key features

- Heating or cooling is configurable
- Limit monitoring
- Available for resistance thermometer, thermocouple, standard current or voltage signals, according to choice
- 10A relay (changeover contact)
- Adjustable switching hysteresis
- Simple, space-saving installation
- Time-delayed switch-on after power-on is selectable, e.g. for staggered starting of several equipment units
- 3-digit LC display with special characters for °C and °F
- Parameter level protected by code
- Setup program for configuration and archiving via PC
- Customized linearization via tabular function in the setup program
- UL approval

## Displays and controls

<b>LC display</b>	3-digit segment display with symbols for the temperature unit, 6mm high	
<b>Status indication</b>	LED K1 lights up when the output relay is energized.	
<b>Keys</b>	<p>Ⓟ programming</p> <p>▲ increase setpoint or parameter value (dynamically)</p> <p>▼ decrease setpoint or parameter value (dynamically)</p>	
<b>Setup interface</b>	The instrument is linked to a PC via a PC interface with TTL/RS232 converter and adapter (3-pin).	

## Technical data

Measurement input	Designation	Measuring range	Meas. accuracy <sup>1</sup> / 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 <sup>3</sup>	0.1%/ ≤100ppm/°C <sup>3</sup>	= 0Ω	is recognized
Measuring current for Pt100: 0.2 mA, for Pt1000, KTY2X-6 or resistance: 0.02 mA					
Lead compensation is adjustable via the parameter Lead compensation resistance $\Delta F_r$ 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 <sup>2</sup>	-	is recognized
	Fe-Con L DIN 43 710	-200 to +900 °C	0.4%/ ≤100ppm/°C <sup>2</sup>	-	is recognized
	NiCr-Ni K EN 60 584	-200 to +999 °C	0.4%/ ≤100ppm/°C <sup>2</sup>	-	is recognized
	-10 to 60 mV	customer table <sup>3</sup>	0.1%/ ≤100ppm/°C <sup>3</sup>	-	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 $\Delta_{cL}$ and $\Delta_{cH}$ or customer table	0.1%/ ≤100ppm/°C <sup>3</sup>	-	-
	4 – 20 mA	2.4 to 21.6 mA scalable with $\Delta_{cL}$ and $\Delta_{cH}$	0.1%/ ≤100ppm/°C <sup>3</sup>	is recognized	is recognized
Input resistance $R_{IN} \leq 3\Omega$					
Voltage	0 – 10 V	-1 to 11 V scalable with $\Delta_{cL}$ and $\Delta_{cH}$ 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 switched over to $\Delta_{cL}$ in the instrument. This may reduce the measuring accuracy.					

### Additional data

Sampling time	250 msec
Input filter	1st order digital filter; filter constant $\Delta F$ adjustable from 0.1 – 99.9sec
Measurement offset	adjustable from -99.9 to +99.9 via the parameter $\Delta F.t$
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 +55°C, with side-by-side mounting 0 to +40°C
Storage temperature range	-40 to +70°C
Climatic conditions	≤75% rel. humidity annual mean, 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!

### Relay output

Relay (changeover contact)	150,000 operations at 10A 250V AC resistive load
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### 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	< 4VA

### Housing

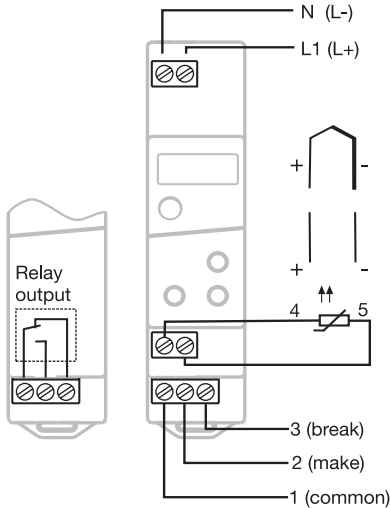
Material	polycarbonate
Mounting	35mm x 7.5mm DIN rail to EN 50 022
Operating position	unrestricted
Weight	approx. 110g
Protection	IP20
Flammability class	UL 94 V0

**Electrical data**

Data backup	EEPROM
Connection	via screw terminals for wire cross-sections up to 2.5 mm <sup>2</sup>
Electromagnetic compatibility interference emission immunity to interference	EN 61 326 Class B to industrial requirements
Electrical safety	to EN 61 010, Part 1, overvoltage category III, pollution degree 2

**Connection diagram**

Type 701050/XX1-31: Measurement input and supply voltage are not isolated from each other!



**Supply**  
 230V AC +10/-15%  
 115V AC +10/-15%  
 12 – 24V DC +15/-15% /  
 24V AC +15/-15%, 48 – 63Hz

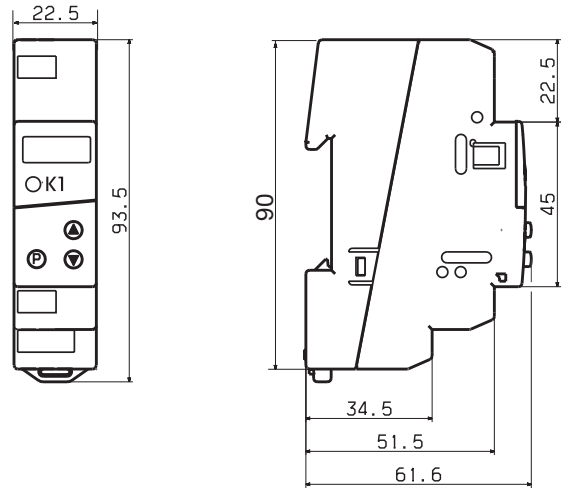
**Measurement input**  
 Thermocouples:  
 Fe-Con J, L and NiCr-Ni K

Standard signals:  
 current 0(4) – 20 mA  
 voltage 0 – 10 V

Resistance thermometers:  
 Pt100/ Pt1000/ KTY2X-6

**Relay output**  
 changeover contact (floating)  
 10A/250V AC

**Dimensions**



**Order details**

- 701050/
- (1) Basic version**  
 JUMO eTRON T
- (2) Basic type extension Version**
- 8** factory-set, configurable within the measurement input group
- 9** configured to customer specifications
- 1** **Measurement input group<sup>1</sup>**  
 Pt100 in 2-wire circuit  
 Pt1000 in 2-wire circuit  
 KTY2X-6
- 2** Fe-Con J  
 Fe-Con L  
 NiCr-Ni K
- 3** 0 – 20 mA  
 4 – 20 mA  
 0 – 10 V
- 4** **Number of relays**  
 1 changeover contact 10A 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

**Order code** [ ] (1) / [ ] (2) - [ ] (3) - [ ] (4)  
**Order example** 701050 / 811 - 02 - 000

[ ] factory-set  
 1.) It is not possible to switch from one meas. input group to another.

**Accessories**

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

**Suitable transducers can be found in these data sheets:**

- 90.2050 Push-in resistance thermometers
- 90.2150 Screw-in resistance thermometers
- 90.1020 and subsequent ones for screw-in thermocouples
- 90.1110 and subsequent ones for push-in thermocouples
- 90.1210 Mineral-insulated thermocouples

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**Einsteck-Widerstandsthermometer mit Anschlussleitung**

**Technische Daten**

Anschein: Leitzugsender (0,8mm) abgedeckt, mit Abdeckkappen, mit Steckkabel oder mehrpolige Steckverbindungskabel  
 (Pt100, Umgebungsparameter: 0...100°C)  
 (Pt1000, Umgebungsparameter: 0...100°C)  
 (KTY2X-6, Umgebungsparameter: -55...200°C)  
 Messfühler: Metallgehäuse, Umgebungsparameter: -55...200°C  
 Anschlussleitung: 4m (3m) abgedeckt, flexible  
 (KTY2X-6, Pt100, Umgebungsparameter: DIN EN 60 755, Pt1000, Umgebungsparameter: DIN EN 60 755, Pt100, Umgebungsparameter: DIN EN 60 755, Pt1000, Umgebungsparameter: DIN EN 60 755)  
 Schutzrohr: Messfühler  
 Anschlusskabel: Schutzrohr  
 Zubehör: Schutzrohr siehe Typenblätter 90 9121 und 90 2248