

# MT-TBP-...

## time relays



- **Single-function time relays, time function Bp** (Symmetrical cyclical operation pause first), **8 time ranges**
- Cadmium - free contacts • AC/DC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to PN-EN 60715
- Applications: in low-voltage systems
- Compliance with standard PN-EN 61812-1
- Recognitions, certifications, directives: **CE EAC**

### Output circuit - contact data

Number and type of contacts		1 CO	
Contact material		AgSnO <sub>2</sub>	
Max. switching voltage		400 V AC / 300 V DC	
Rated load	AC1	10 A / 250 V AC	
	DC1	10 A / 24 V DC; 0,3 A / 250 V DC	
Rated current		10 A / 250 V AC	
Max. breaking capacity	AC1	16 A / 250 V AC	
Min. breaking capacity		1 W 10 V, 10 mA	
Contact resistance		≤ 100 mΩ	
Max. operating frequency			
• at rated load	AC1	600 cycles/hour	
<b>Input circuit</b>			
Rated voltage	AC: 50/60 Hz AC/DC	12...240 V	terminals (+)A1 – (-)A2
Operating range of supply voltage		0,9...1,1 U <sub>n</sub>	
Rated power consumption	AC	≤ 4,5 VA AC: 50 Hz	
	DC	≤ 1,5 W	
Range of supply frequency	AC	48...63 Hz	
<b>Insulation according to PN-EN 60664-1</b>			
Insulation rated voltage		250 V AC	
Rated surge voltage		2 500 V 1,2 / 50 μs	
Overvoltage category		II	
Insulation pollution degree		1	
Flammability class		V-0 UL94	
Dielectric strength	• input - output	2 500 V AC	type of insulation: basic
	• contact clearance	1 000 V AC	type of clearance: micro-disconnection
<b>General data</b>			
Electrical life	• resistive AC1	> 0,5 x 10 <sup>5</sup>	10 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 <sup>7</sup>	
Dimensions (L x W x H)		90 ① x 17,5 x 63,5 mm	
Weight		64 g	
Ambient temperature	• storage	-40...+70 °C	
	• operating	-20...+45 °C	
Cover protection category		IP 20	PN-EN 60529
Relative humidity		up to 85%	
Shock resistance		15 g	
Vibration resistance		0,35 mm DA 10...55 Hz	
<b>Time module data</b>			
Functions		Bp	
		permanent switching ON and OFF	
Time ranges		1 s ②; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d	
Timing adjustment		smooth - (0,1...1) x time range	
Setting accuracy		± 5% ③ ②	
Repeatability		± 0,5% ②	
Values affecting the timing adjustment	• temperature	± 0,05% / °C	
	• humidity	± 0,05% / %HR	
Recovery time		≤ 50 ms	
LED indicator		green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status	

① Length with 35 mm rail taps: 98,8 mm. ② For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ③ Calculated from the final range values, for the setting direction from minimum to maximum.

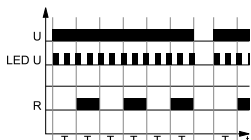
19.04.2016

### Time functions

Permanent switching **ON and OFF**.

The functions ON and OFF are selected with TIME potentiometer. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the FUNC potentiometer is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

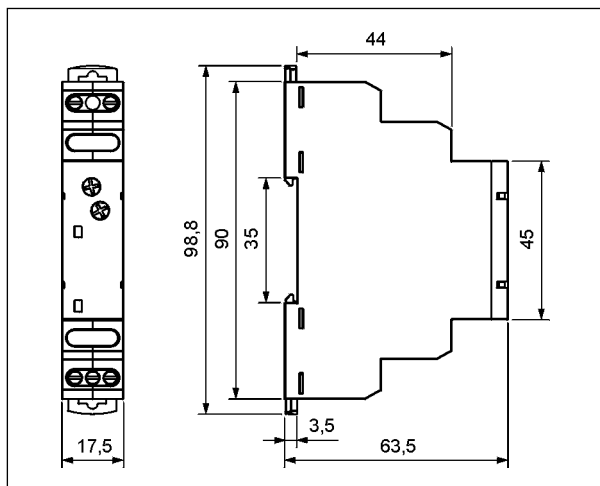
**Bp** - Symmetrical cyclical operation pause first.



Applying the supply voltage U starts the cyclical operation from the T interval - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

U - supply voltage; R - output state of the relay; T - measured time; t - time axis

### Dimensions



### Additional functions

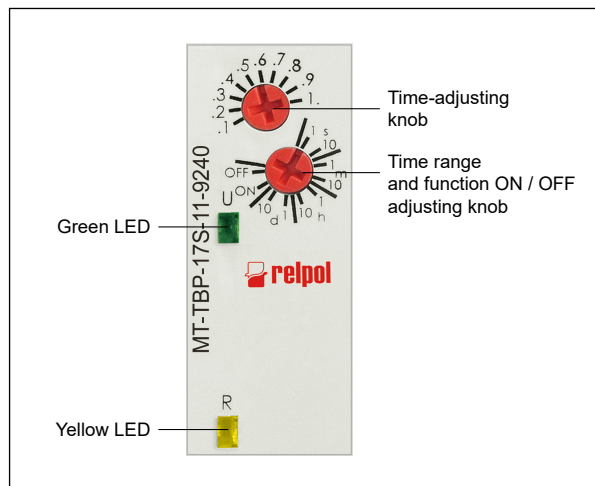
**Supply diode:** it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 80% of the time, and off for 20% of the time.

**Adjustment of the set values:** the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

**Release:** the relay is released with the supply voltage.

**Supply:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...250 V. A programmed control of the supply voltage has been applied so the processor shall not start operation if the voltage is lower than approximately 10 V. The supply voltage is permanently monitored in course of the operation of the relay. When the voltage drops below 9 V for more than 50 ms, the relay shall be reset. Owing to this, the regeneration time is programmed to 50 ms, and it does not depend on the tolerance of the elements.

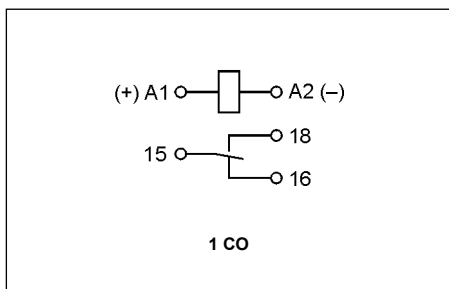
### Front panel description



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### Connection diagram



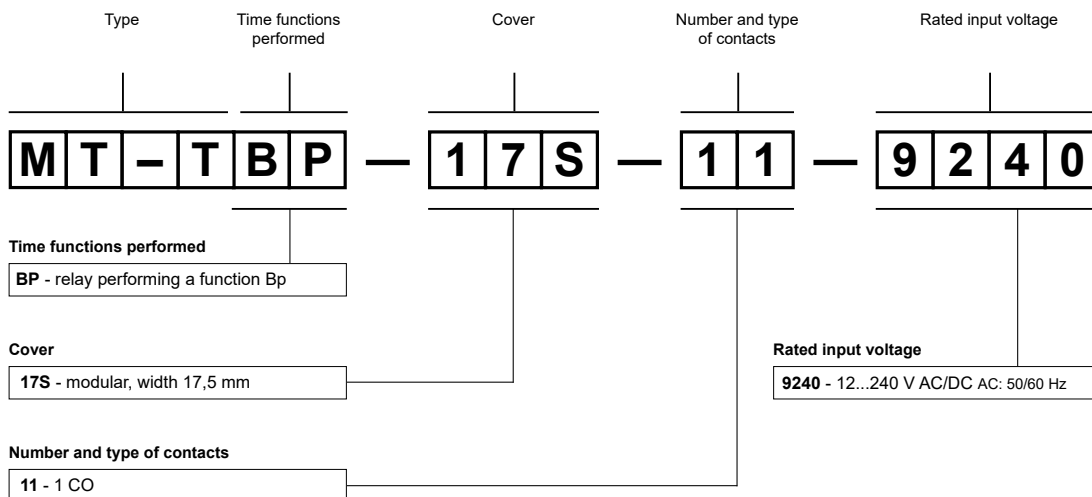
### Mounting

Relays **MT-TBP-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm<sup>2</sup> / 2 x 1,5 mm<sup>2</sup> (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,6 Nm.



**Two taps:**  
easy assembly on 35 mm rail,  
firm tapping (top and bottom).

### Ordering codes



Example of ordering code:

**MT-TBP-17S-11-9240**

time relay **MT-TBP-...**, single-function (relay perform function Bp), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO<sub>2</sub>, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

### PRECAUTIONS:

1. Ensure that the parameters of the product described in its specification provide a safety margin for the appropriate operation of the device or system and never use the product in circumstances which exceed the parameters of the product. 2. Never touch any live parts of the device. 3. Ensure that the product has been connected correctly. An incorrect connection may cause malfunction, excessive heating or risk of fire. 4. In case of any risk of any serious material loss or death or injuries of humans or animals, the devices or systems shall be designed so to equip them with double safety system to guarantee their reliable operation.