# Multifunction time relay ETR-91 and ETR-93

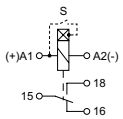
**Technical data**

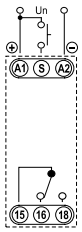
| | | ETR-91 | ETR-93 |
|---|---|---|---|
| **Output circuit** | | | |
| Number and type of contacts | | 1 CO | 3 CO |
| Contact material | | $AgSnO_2$ | |
| Max. switching voltage | | 300 V AC | |
| Rated load | | AC1: 16 A / 250 V AC<br>DC1: 16 A / 24 V DC; 0,3 A / 250 V DC | AC1: 8 A / 250 V AC<br>DC1: 8 A / 24 V DC; 0,2 A / 250 V DC |
| Rated current | | 16 A / 250 V AC | 8 A / 250 V AC |
| Max. breaking capacity | | AC1: 4000 VA | AC1: 2000 VA |
| Min. breaking capacity | | 1 W 10 mA | |
| **Input circuit** | | | |
| Rated voltage | | 12...240 V AC/DC<br>AC: 50/60 Hz, (+)A1, (-)A2 | |
| Rated power consumption | | ≤ 1,5 VA AC<br>AC: 50 Hz ≤ 1,5 W DC | |
| **Insulation (EN 60664-1)** | | | |
| Insulation rated voltage | | 250 V AC | |
| Rated surge voltage | | 4000 V 1,2 / 50 µs | |
| Overvoltage category | | III | |
| Insulation pollution degree | | 2 | |
| Dielectric strength<br>• input - output<br>• contact clearance<br>• pole - pole | | 4000 V AC *<br>1000 V AC ** | 4000 V AC*<br>1000 V AC **<br>2000 V AC ** |
| **General data** | | | |
| Electrical life | | AC1: > 0,5 x $10^5$ | |
| Mechanical life | | > 3 x $10^7$ | |
| Dimensions (L x W x H) | | 90*** x 17,5 x 64,5 mm | |
| Weight | | 65 g | 88g |
| Ambient temperature | • storage | -40...+70 °C | |
| | • operating | -20...+50 °C | |
| Cover protection category | | IP 20 | |
| **Time module data** | | | |
| Functions | | E, Wu, Bp, Bi, R, Ws, Wa, Esa, B, T | |
| Time ranges | | OFF, ON****; 1 s*****; 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% *******,***** | |
| Repeatability | | ± 0,5% ***** | |

* Type of insulation: basic.
** Type of clearance: micro-disconnection.
*** Length with 35 mm rail catches: 98,8 mm.
****OFF - permanent switching off, ON - permanent switching on.
***** 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).
****** Timing adjustment (smooth): (0,1...1) x time range – does not refer to range ON / OFF.
*******Calculated from the final range values, for the setting direction from minimum to maximum.

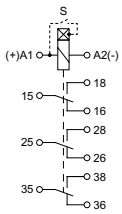
## Connection

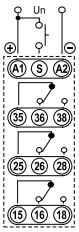
ETR-91



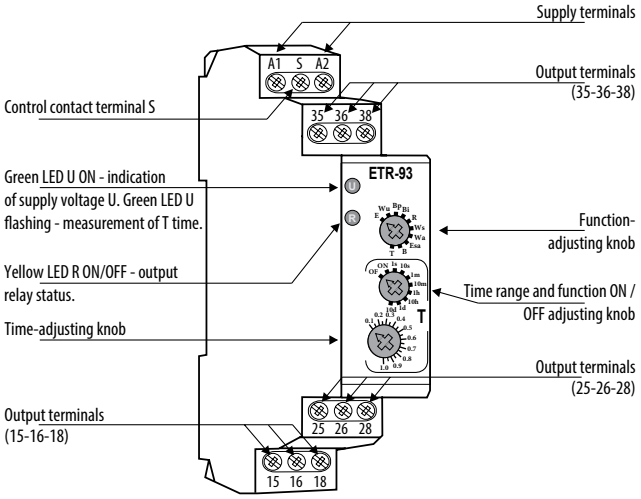




ETR-93



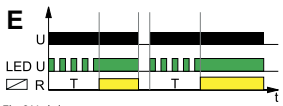




## Description

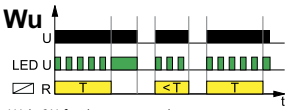



## Function

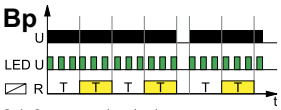
The function changes immediately after it has been selected (without switching power supply off and on again).



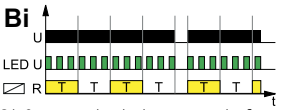

E) ON delay.



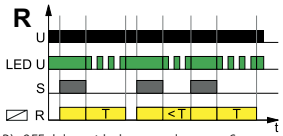

Wu) ON for the set interval



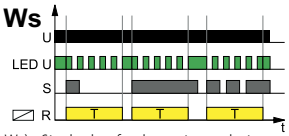

Bp) Symmetrical cyclical operation pause first.



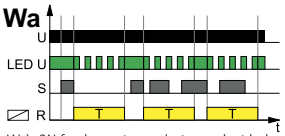

Bi) Symmetrical cyclical operation pulse first.



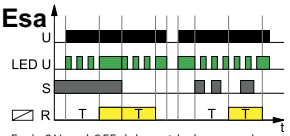

R) OFF delay with the control contact S.



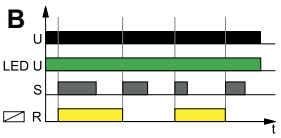

Ws) Single shot for the set interval triggered by closing of the control contact S.



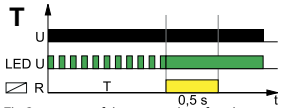

Wa) ON for the set interval triggered with the control contact S.




Esa) ON and OFF delay with the control contact S.




B) Cyclical operation controlled with closing of the control contact S.




T) Generation of the 0,5 s pulse after the interval T.

ON / OFF - Permanent switching on / off.

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

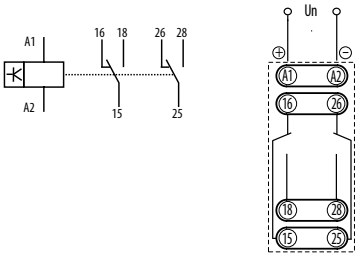
# Multifunction time delay relay ETR-82TO

## Technical data

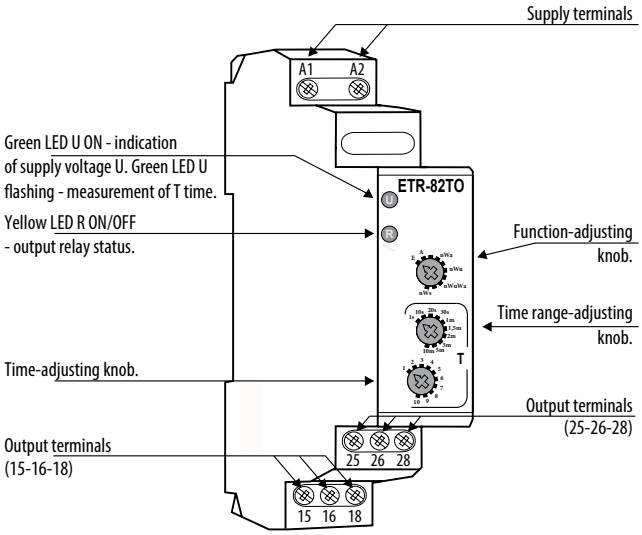
| | | ETR-82TO |
|---|---|---|
| **Output circuit** | | |
| Number and type of contacts | | 2 CO |
| Contact material | | $AgSnO_2$ |
| Max. switching voltage | | 300 V AC |
| Rated load | | AC1: 8 A / 250 V AC<br>DC1: 8 A / 24 V DC; 0,2 A / 250 V DC |
| Rated current | | 8 A / 250 V AC |
| Max. breaking capacity | | AC1: 2000 VA |
| Min. breaking capacity | | 1 W 10 mA |
| **Input circuit** | | |
| Rated voltage | | 12...240 V AC/DC<br>AC: 50/60 Hz, (+)A1, (-)A2 |
| Rated power consumption | | ≤ 1,5 VA AC<br>AC: 50 Hz ≤ 1,5 W DC |
| **Insulation (EN 60664-1)** | | |
| Insulation rated voltage | | 250 V AC |
| Rated surge voltage | | 4000 V 1,2 / 50 µs |
| Overvoltage category | | III |
| Insulation pollution degree | | 2 |
| Dielectric strength<br>• input - output<br>• contact clearance<br>• pole - pole | | <br>4000 V AC *<br>1000 V AC **<br>2000 V AC ** |
| **General data** | | |
| Electrical life | | AC1: > 0,5 x $10^5$ |
| Mechanical life | | > 3 x $10^7$ |
| Dimensions (L x W x H) | | 90*** x 17,5 x 64,5 mm |
| Weight | | 72 g |
| Ambient temperature | • storage<br>• operating | -40...+70 °C<br>-20...+50 °C |
| Cover protection category | | IP 20 |
| **Time module data** | | |
| Functions | | E, A, nWa, nWu, nWuWa, nWs |
| Time ranges | | 1 s****; 10 s; 20 s; 30 s; 1 min.; 1,5 min.; 2 min.; 3 min.; 5 min.; 10 min. |
| Timing adjustment (smooth) | | (0,1...1) x time range***** |
| Setting accuracy | | ± 5% ******,**** |
| Repeatability | | ± 0,5% ***** |

* Type of insulation: basic.
** Type of clearance: micro-disconnection.
*** Length with 35 mm rail catches: 98,8 mm.
**** 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).
***** Timing adjustment (smooth): (0,1...1) x time range.
******Calculated from the final range values, for the setting direction from minimum to maximum.

## Connection

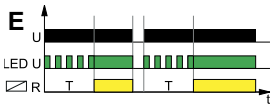



## Description

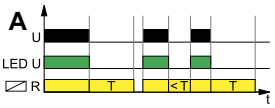



## Function

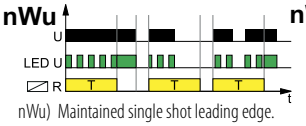
The function changes immediately after it has been selected (without switching power supply off and on again).



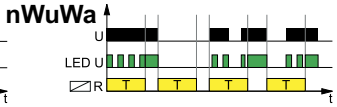

E) ON delay



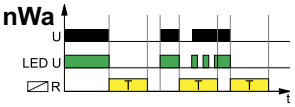

A) OFF delay without supply voltage.



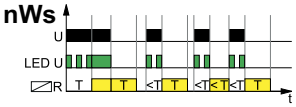

nWu) Maintained single shot leading edge.




nWuWa) Maintained single shot leading and trailing edge.




nWa) Maintained single shot trailing edge.




nWs) Latching ON delay.

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

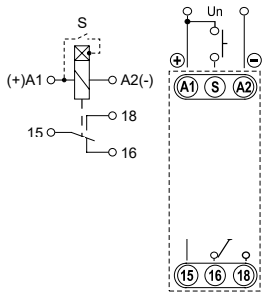
# Single-function asymmetric cycler time relay ETR-2H

## Technical data

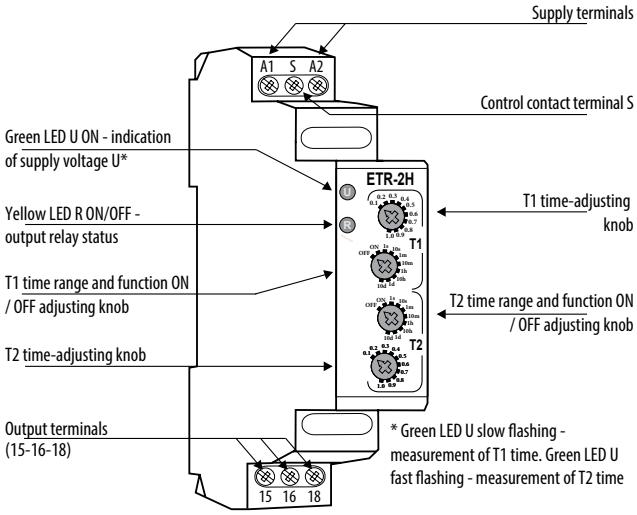
| | | ETR-2H |
|---|---|---|
| **Output circuit** | | |
| Number and type of contacts | | 1 CO |
| Contact material | | $AgSnO_2$ |
| Max. switching voltage | | 300 V AC |
| Rated load | | AC1: 16 A / 250 V AC<br>DC1: 16 A / 24 V DC; 0,3 A / 250 V DC |
| Rated current | | 16 A / 250 V AC |
| Max. breaking capacity | | AC1: 4000 VA |
| Min. breaking capacity | | 1 W 10 mA |
| **Input circuit** | | |
| Rated voltage | | 12...240 V AC/DC<br>AC: 50/60 Hz, (+)A1, (-)A2 |
| Rated power consumption | | ≤ 1,5 VA AC<br>AC: 50 Hz ≤ 1,5 W DC |
| **Insulation (EN 60664-1)** | | |
| Insulation rated voltage | | 250 V AC |
| Rated surge voltage | | 4000 V 1,2 / 50 µs |
| Overvoltage category | | III |
| Insulation pollution degree | | 2 |
| Dielectric strength<br>• input - output<br>• contact clearance | | 4000 V AC *<br>1000 V AC ** |
| **General data** | | |
| Electrical life | | AC1: > 0,5 x $10^5$ |
| Mechanical life | | > 3 x $10^7$ |
| Dimensions (L x W x H) | | 90*** x 17,5 x 64,5 mm |
| Weight | | 65...66 g |
| Ambient temperature | • storage | -40...+70 °C |
| | • operating | -20...+50 °C |
| Cover protection category | | IP 20 |
| **Time module data** | | |
| Functions | | Ii + Ip |
| Time ranges | | OFF, ON****; 1 s*****; 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% *******,***** |
| Repeatability | | ± 0,5% ****** |

* Type of insulation: basic.
** Type of clearance: micro-disconnection.
*** Length with 35 mm rail catches: 98,8 mm.
**** OFF - permanent switching off, ON - permanent switching on.
*****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).
****** Timing adjustment (smooth): (0,1...1) x time range – does not refer to range ON / OFF.
*******Calculated from the final range values, for the setting direction from minimum to maximum.

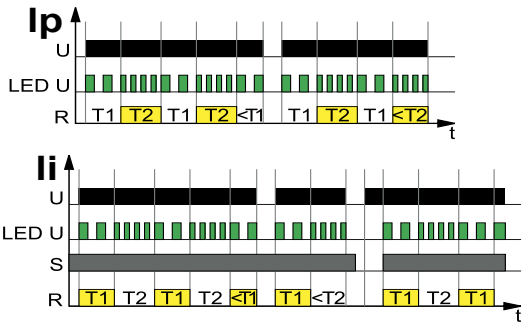
## Connection




## Description




## Function




Ii + Ip) Cyclical operation in two independent intervals T1 and T2. Operation in the function Ii or Ip depending on the position of the control contact S. Application of the supply voltage U when the control contact S is open start the cyclical operation in the Ip function - from the interval T1 (time of switching off the output relay R), following which the output relay R is switched on for the interval T2. The cyclical operation continues until the supply voltage U is interrupted. When the control contact S is closed, application of the supply voltage U starts operation in the Ii function - from switching on the output relay R for the interval T1, and after the interval T1 has lapsed, the output relay switches off for the interval T2. The cyclical operation continues until the supply voltage U is interrupted. In the course of the relay operation, closing of the control contact S at any time will cause reset and the operation in the Ii function will start whereas opening of the control contact S at any time will cause reset and the operation in the Ip function will start.

U - supply voltage; R - output state of the relay;
S - control contact state; T1, T2 - measured time; t - time axis

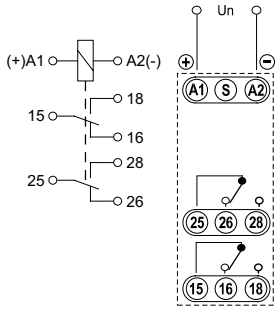
# Single-function Y-D time relay ETR-2T

## Technical data

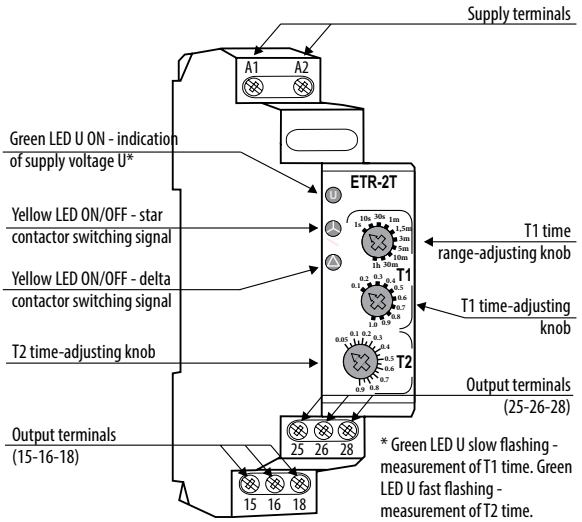
| | | ETR-2T |
|---|---|---|
| **Output circuit** | | |
| Number and type of contacts | | 2 X 1 CO |
| Contact material | | $AgSnO_2$ |
| Max. switching voltage | | 300 V AC |
| Rated load | | AC1: 8 A / 250 V AC<br>DC1: 8 A / 24 V DC; 0,3 A / 250 V DC |
| Rated current | | 8 A / 250 V AC |
| Max. breaking capacity | | AC1: 2000 VA |
| Min. breaking capacity | | 1 W 10 mA |
| **Input circuit** | | |
| Rated voltage | | 12...240 V AC/DC<br>AC: 50/60 Hz, (+)A1, (-)A2 |
| Rated power consumption | | ≤ 1,5 VA AC<br>AC: 50 Hz ≤ 1,5 W DC |
| **Insulation (EN 60664-1)** | | |
| Insulation rated voltage | | 250 V AC |
| Rated surge voltage | | 4000 V 1,2 / 50 µs |
| Overvoltage category | | III |
| Insulation pollution degree | | 2 |
| Dielectric strength<br>• input - output<br>• contact clearance<br>• pole - pole | | 4000 V AC *<br>1000 V AC **<br>2000 V AC * |
| **General data** | | |
| Electrical life | | AC1: > 0,5 x $10^5$ |
| Mechanical life | | > 3 x $10^7$ |
| Dimensions (L x W x H) | | 90*** x 17,5 x 64,5 mm |
| Weight | | 83 g |
| Ambient temperature | • storage<br>• operating | -40...+70 °C<br>-20...+50 °C |
| Cover protection category | | IP 20 |
| **Time module data** | | |
| Functions | | SD |
| Time ranges T1<br>(start-up for the star) | | 1 s****; 10 s; 30 s; 1 min.; 1,5 min.; 3 min.; 5 min.; 10 min.; 30 min.; 1 h |
| Timing adjustment T1 (smooth) | | (0,1...1) x time range***** |
| Transit time T2 (adjustable) | | 0,05...0,9 s****** |
| Setting accuracy | | ± 5% *******,**** |
| Repeatability | | ± 0,5% ***** |

* Type of insulation: basic.
** Type of clearance: micro-disconnection.
*** Length with 35 mm rail catches: 98,8 mm.
**** 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).
***** Timing adjustment (smooth): (0,1...1) x time range.
****** Transit time T2 (adjustable): pause time between switching off the star contactor and switching on the delta contactor – smoothly within the range (linear adjustment of time).
*******Calculated from the final range values, for the setting direction from minimum to maximum.

## Connection

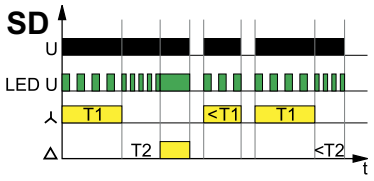



## Description




## Function

The function changes immediately after it has been selected (without switching power supply off and on again).




SD) Star-Delta start-up. When the supply voltage U is applied, the operating star--contact (15- 18) becomes closed, which is signaled with illumination of the yellow LED. Measurement of the set time T1 starts, and the greed LED slow flashes. After the T1 time has lapsed, the star contact is disconnected and the relay begins measuring the T2 time, which is signaled with the green LED fast flashing. After the T2 time has lapsed, the delta contact (25-28) is switched on together with the yellow LED, and the green LED remains illuminated.

U - supply voltage; T1, T2 - measured times; t - time axis

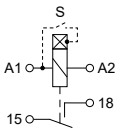
# Multifunction staircase time relay ETR-4

## Technical data

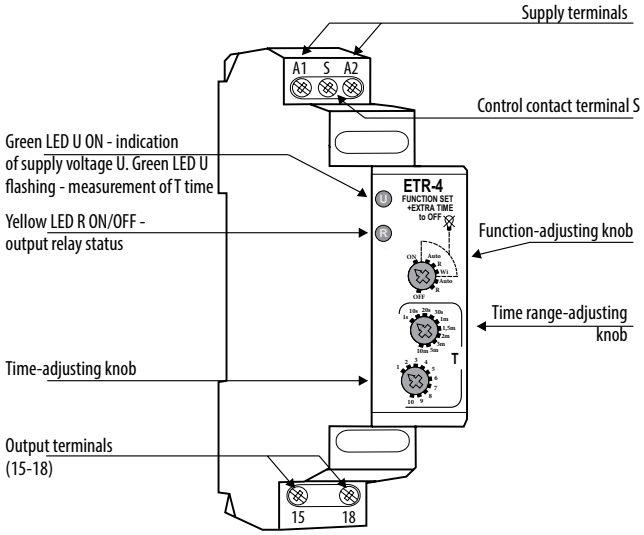
| | | ETR-4 |
|---|---|---|
| **Output circuit** | | |
| Number and type of contacts | | 1 CO |
| Contact material | | $AgSnO_2$ |
| Max. switching voltage | | 300 V AC |
| Rated load | | AC1: 16 A / 250 V AC<br>DC1: 16 A / 24 V DC; 0,3 A / 250 V DC |
| Rated current | | 16 A / 250 V AC |
| Max. breaking capacity | | AC1: 4000 VA |
| Min. breaking capacity | | 1 W 10 mA |
| **Input circuit** | | |
| Rated voltage | | 230 V AC<br>50/60 Hz, A1, A2 |
| Rated power consumption | | ≤ 1,5 VA AC<br>50 Hz |
| Input power consumption | | ≤ 0,7 VA AC<br>50 Hz |
| **Insulation (EN 60664-1)** | | |
| Insulation rated voltage | | 250 V AC |
| Rated surge voltage | | 4000 V 1,2 / 50 µs |
| Overvoltage category | | III |
| Insulation pollution degree | | 2 |
| Dielectric strength<br>• input - output<br>• contact clearance | | 4000 V AC *<br>1000 V AC ** |
| **General data** | | |
| Electrical life | | AC1: > 0,5 x $10^5$ |
| Mechanical life | | > 3 x $10^7$ |
| Dimensions (L x W x H) | | 90*** x 17,5 x 64,5 mm |
| Weight | | 65 g |
| Ambient temperature | • storage | -40...+70 °C |
| | • operating | -20...+50 °C |
| Cover protection category | | IP 20 |
| **Time module data** | | |
| Functions | | ON, OFF, AUTO, R, Wi |
| Time ranges | | 1 s*****; 10 s; 20 s; 30 s; 1 min.; 1,5 min.; 2 min.; 3 min.; 5 min.; 10 min |
| Timing adjustment (step) | | (0,1...1) x time range****** |
| Setting accuracy | | ± 5% *******,***** |
| Repeatability | | ± 0,5% ****** |

* Type of insulation: basic.
** Type of clearance: micro-disconnection.
*** Length with 35 mm rail catches: 98,8 mm.
****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).
***** Timing adjustment (step): (0,1...1) x time range
******Calculated from the final range values, for the setting direction from minimum to maximum.

## Connection

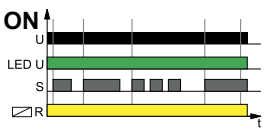



## Description

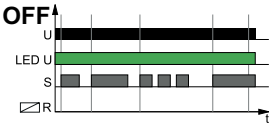



## Function

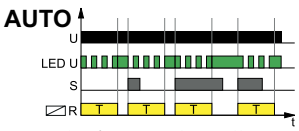
The function changes immediately after it has been selected (without switching power supply off and on again).



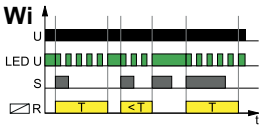

ON) Stable ON.



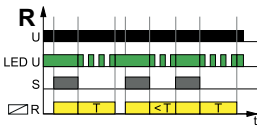

OFF) Stable OFF.



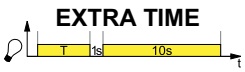

AUTO) ON for a set interval triggered by applying the supply voltage or closing of the control contact S.




Wi) OFF delay with the control contact S.




R) ON for the set interval controlled by closing of the control contact S, with the function of switching off the output relay R prior to the lapse of the interval T.




Extra Time) additional activation mode for functions AUTO, R, Wi.

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