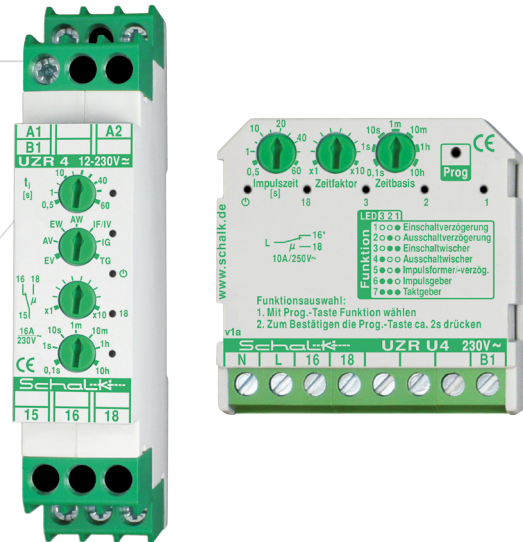# Multifunction time relay

UZR 4 (Rail mount version)
UZR U4 (Flush mount version)

Universal time relay with 8 time functions in a flexible universal voltage variant UZR 4 (12-230V UC) or compact flush mount version UZR U4 (230V AC).

Special features

- 8 selectable time functions
- time adjustable from 0.1s to 100h
- exact time setting through selectable time ranges and continuous adjustment
- Relay contacts:
  UZR 4: potential-free changeover contact (16A)
  UZR U4: changeover contact*) (10A)
- wide input voltage range 12-230V (UZR 4)

General

The following time functions can be implemented with the multifunction relay:

- switch-on delay
- switch-off delay
- fleeting contact ON switch
- fleeting contact OFF switch
- pulse delay
- pulse shaper
- pulse generator
- clock signal generator

Time can be exactly, continuously adjusted from 0.1s to 100h. The UZR 4 has a wide supply voltage range from 12 to 230V UC and a potential-free relay output (changeover contact) making it universally applicable.
The compact flush-mount variant UZR U4 is supplied with 230V AC.
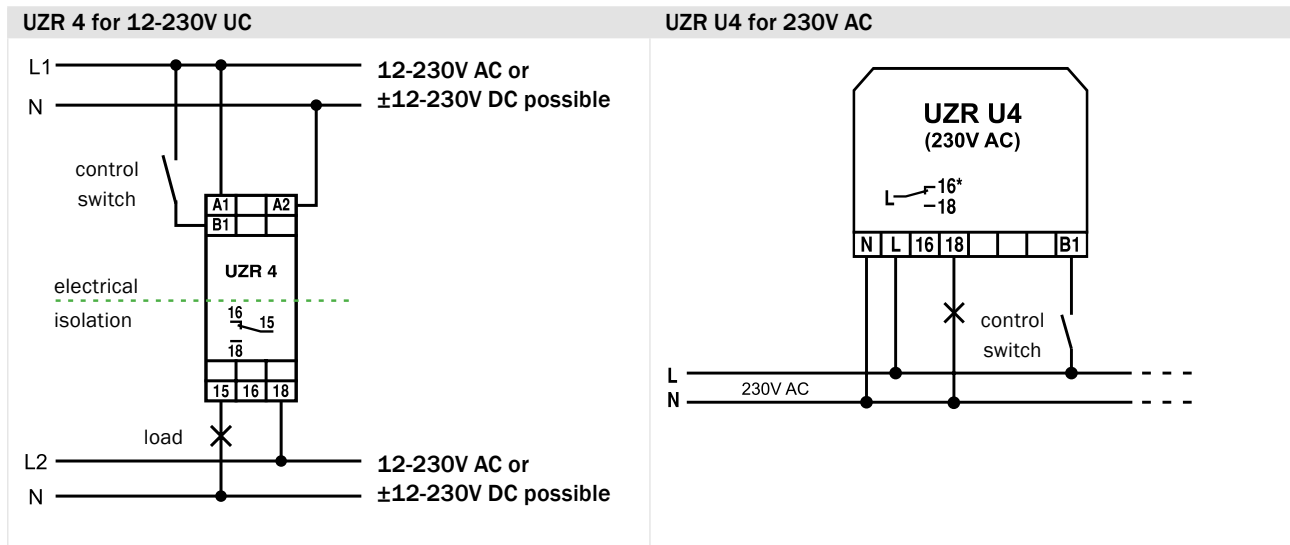
Applications

Home automation, industrial control, solar systems, automotive technology, etc.

Functional description

The multifunction relay is controlled by the power supply in the following modes: EV (switch-on delay), EW (fleeting contact ON switch), IG (pulse generator) and TG (timebase generator). The time starts running when the power supply voltage is applied.
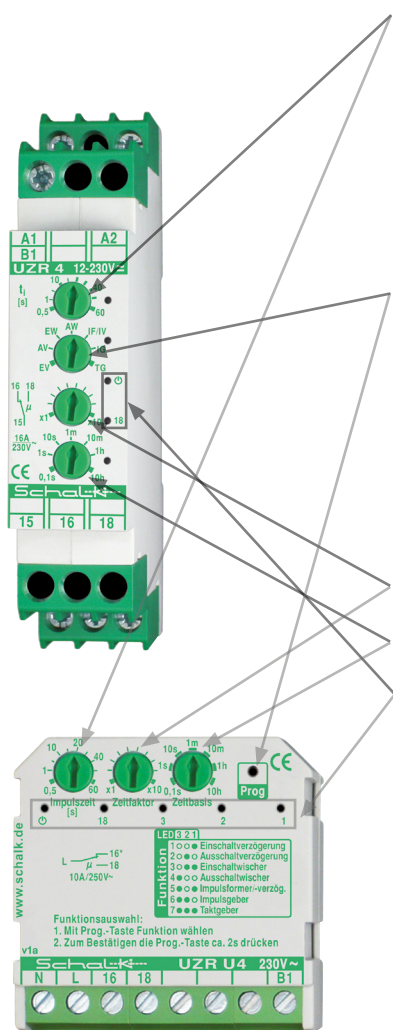In all other modes the time starts running when triggered by control input B1. The details of each operating mode can be seen from the functional diagrams
.

Connection examples

UZR 4 for 12-230V UC

L1 — 12-230V AC or
N — ±12-230V DC possible

control switch

A1 A2
B1
UZR 4

electrical isolation

16 15
18

15 16 18

load

L2 — 12-230V AC or
N — ±12-230V DC possible

UZR U4 for 230V AC

UZR U4
(230V AC)

L — 16*
— 18

N L 16 18   B1

control switch

L
N   230V AC

Setup and installation
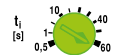
Operator controls and displays:

„Pulse time" setting:
This sets the pulse duration on the one hand and on the other hand sets the pulse/pause ratio (dual functionality):
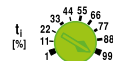In IF/IV, IG modes:
Scaling: Pulse duration (range 0.5 - 60s)

t_i [s]

In TG mode:
Scaling: Pulse/pause ratio (range 1 - 99%):

t_i [%]

„Operating mode" setting:
UZR U4: the mode is selected with the „Prog" button and set with a 2s keypress!

EV	switch-on delay
AV	switch-off delay
EW	fleeting contact ON switch
AW	fleeting contact OFF switch
IF/IV	pulse shaper/pulse delay
IG	pulse generator
TG	clock signal generator

„Time factor" (multiplier) setting

„Timebase" setting

LEDs:
„Power ON":
This indicates the operating state of the UZR 4. This LED is also used to optically indicate when the control settings are in place (operating mode, time factor and timebase). When the setting is moved out of an input range, the LED goes off for a short time (c. 100ms).
UZR U4 : the green LED indicates the operating state and the optical feedback. The red LED indicates when control settings take place.
„18" (relay ON):
This indicates the status of the relay. Flashes while time lapses.
„3", „2", „1" (only UZR U4):
These LEDs indicate the selected operating mode

Legend:
○ LED off   ● LED steady on green (green)
● LED steady on red   ⊕ LED flashes green
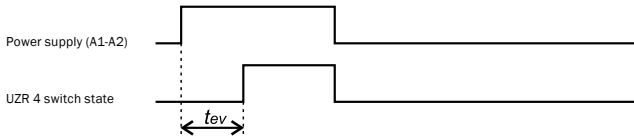⊕ LED flashes red   ⊕ LED flashes alternately red/green

Settings (with description of operating modes/functional diagrams)

EV: switch-on delay

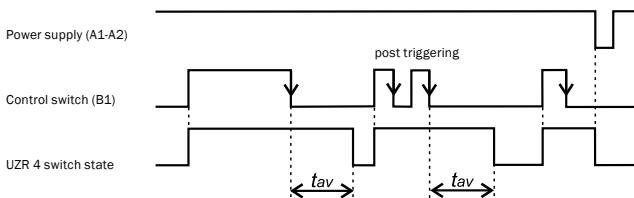After the power supply is applied, the relay rises after the delay t_{ev}.

t_{ev} = „timebase" x „time factor" (= 0.1s...100h)

Power supply (A1-A2)

UZR 4 switch state

t_{ev}

AV: switch-off delay

The delay rises on the positive edge of B1 and starts on the negative edge of delay t_{av}. After the delay expires the relay drops. The time can meanwhile be post-triggered by B1.
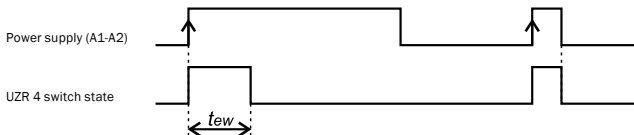
t_{av} = „timebase" x „time factor" (= 0.1s...100h)

Power supply (A1-A2)

post triggering

Control switch (B1)

UZR 4 switch state

t_{av} t_{av}

EW: fleeting contact ON switch

After the power supply is applied, the relay rises for the configured time t_{ew} and drops after this time is over.
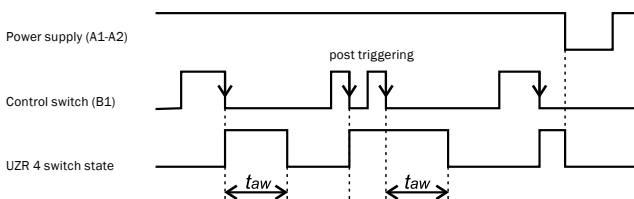
t_{ew} = „timebase" x „time factor" (= 0.1s...100h)

Power supply (A1-A2)

UZR 4 switch state

t_{ew}

AW: fleeting contact OFF switch

The relay rises on the negative edge of B1 and falls after the configured time t_{aw} has elapsed. The time can meanwhile be post triggered by B1.

t_{aw} = „timebase" x „time factor" (= 0.1s...100h)

Power supply (A1-A2)

post triggering

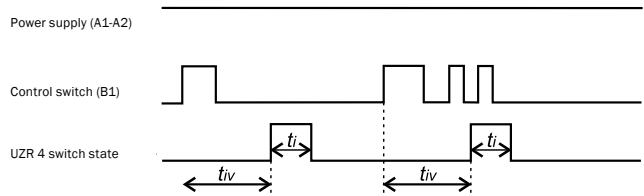Control switch (B1)

UZR 4 switch state

t_{aw} t_{aw}

IF/IV: Pulse shaper/pulse delay

Shapes the pulse on B1, by delaying it for a set time t_{iv} and adjusting its length to the set time value t_i. If no delay is wanted, set t_{iv} to the minimum value (0.1s). No post triggering, as long as t_i and t_{iv} have not yet expired.

t_i = „pulse length" (0.5s...60s)

t_{iv} = „timebase" x „time factor" (= 0.1s...100h)

Power supply (A1-A2)

Control switch (B1)

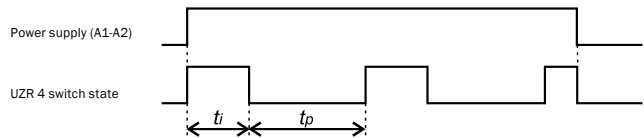UZR 4 switch state

t_i t_i

t_{iv} t_{iv}

IG: pulse generator

A clock signal with a configurable pulse length t_i and a separately configurable pause t_p. (B1 open => Start of pulse, B1 jumpered to A1 => Start of pause)

t_i = „pulse length" (0.5s...60s)

t_p = „timebase" x „time factor" (= 0.1s...100h)

Power supply (A1-A2)

UZR 4 switch state

t_i t_p

TG: clock signal generator

Clock signal generator with configurable pulse/pause ratio p_{ip} and separately configurable interval duration t_{int}.

Example procedure for „Switching on the light for approx. 7 minutes every hour":

First set the interval duration t_{int} (1 hour) then the pulse/pause ratio p_{ip} to 11% (first marker in the scale) (11% x 60min = approx. 7min).
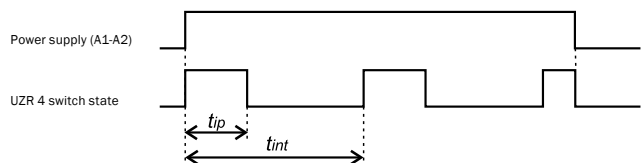
(B1 open => Start of pulse , B1 jumpered to A1 => Start of pause)

p_{ip} = „pulse time" setting with scaling: Pulse/pause ratio (1%...99%)

t_{int} = „timebase" x „time factor" (= 0.1s...100h)

Important:

If the interval duration is configured as less than 1s, the „Power ON"-LED starts flickering and the relay becomes deactivated because this setting is forbidden!

Power supply (A1-A2)

UZR 4 switch state

t_{ip}

t_{int}

Technical data

Power consumption	passive: 0.7W active: 1.2W
Max. load at B1	1 glow lamp / 22nF
Adjustable time range	0.1s to 100h
Switching voltage max.	250V AC
Switch rating	See data sheet "Relay contact load ratings"
Ambient temperature	-10°C to +45°C
RAL colour	Grey 7035 / Green 6029

Technical data UZR 4

Operating voltage	12-230V UC ±10%
Relay output	1 changeover contact, potential-free
Continuous current max.	16A
Connections	Socket terminals with captive screws M3.5
Clamping range	0.5 mm² - 4.0 mm²
Strip length	6.0 mm - 6.5 mm
Screwing torque	0.80 Nm
Befestigung	Schnappbefestigung auf 35mm Hutschiene nach EN 60715
Outside dimension	18 x 88 (45) x 58 mm
Weight	approx. 80g

Technical data UZR U4

Operating voltage	230V AC ±10%
Relay output	1 changeover contact*)
Continuous current max.	10A
Connections	Socket terminals with captive screws M3
Clamping range	0.5 mm² - 2.5 mm²
Strip length	6.5 mm - 7.0 mm
Screwing torque	0.50 Nm
Outside dimensions	43 x 43 x 18.5 mm³
Weight	approx. 43g

> **Info**
> *) The UZR U4 has a simulated changeover contact, which internally consists of two normally open contacts. Thus, in the unpowered state none of the contacts 16 and 18 is switch through!*

Order data

Part no.	EAN	Type	Description
UZR40U	4 046929 801102	UZR 4 (12-230V UC)	Multifunction timing relay, 12-230V UC, 1 CO 16A
UZRU49	4 046929 801119	UZR U4 (230V AC)	Multifunction timing relay (FMD), 230V AC, 1 CO 10A