

## Control equipment

### Multifunction time relay CRM-91H, CRM-93H



#### Advantages

- 1-module, DIN rail mounted
- Universal supply voltage: AC/DC 12V - 240V
- 10 functions:
  - 5 time functions controlled via supply voltage
  - 4 time functions controlled via control input
  - 1 function of memory (latching) relay
- Time scale 0.1 s - 10 days divided into 10 ranges
- User-friendly setting of functions and time via rotary switch
- Output contact:
  - CRM-91H 1x16A changeover
  - CRM-93H 3x8A changeover
- Output indication: multifunction red LED, flashing at certain states

#### Multifunction time relay CRM-91H, CRM-93H

type	$I_n$ [A]	code No.	weight [g]	packaging [pcs]
CRM-91H	16	002470001	68	1/10
CRM-93H	8	002470002	93	1/10

### Time relay CRM-2H



#### Advantages

- 1-module, DIN rail mounted
- Universal supply voltage: AC/DC 12V - 240V
- 2 time functions:
  - cyclor beginning with pulse
  - cyclor beginning with pause
- Time scale 0.1 s - 100 days divided into 10 time ranges
- Rough time setting by rotary switch
- Output contact: 1x 16 A changeover
- Output indication: multifunction red LED

#### Time relay CRM-2H

type	$I_n$ [A]	code No.	weight [g]	packaging [pcs]
CRM-2H	16	002470003	68	1/10

## Delay ON star/delta relay CRM-2T

### Advantages

- 1-module, DIN rail mounting
- Supply voltage: AC/DC 12V - 240 V
- Generates motor starting cycle star-delta
- Time t1 (star)
  - time scale 0.1 s - 100 days is divided into 10 time ranges
  - rough time setting by rotary switch
  - fine time setting by potentiometer (from 0,1 to 1)
- Time t2 (delay) between star /delta:
  - time range 0.1 s - 1 s is set by potentiometer
- Output contact: 2x 16 A (AC1)
- Output indication: multifunction red LED



### Delay ON star/delta relay CRM-2T

type	I <sub>n</sub> [A]	code No.	weight [g]	packaging [pcs]
CRM-2T UNI	3	002470013	95	1/10

## Staircase switch CRM-4

### Advantages

- 1-module, DIN rail mounted
- Supply voltage: AC 230 V
- Protection against control push-button blocking
- Time range: 0,5 - 10 min
- Selector switch:
  - AUTO: normal function acc. to set time
  - OFF: permanent off
  - ON: permanent on
- Time setting via potentiometer
- Output contact: 1 x 16 A changeover (load up to 4000 VA/AC1)



### Staircase switch CRM-4

type	I <sub>n</sub> [A]	code No.	weight [g]	packaging [pcs]
CRM-4	16	002470012	53	1/10

## Programmable staircase switch CRM-42



### Advantages

- 1-module, DIN rail mounted.
- Supply voltage: AC 230 V
- Intelligent staircase switch, the same use as CRM-4, but with increased possibility of control. In mode "PROG" it is possible to select the time of delayed OFF by number of button-pressing sequences. Each pressing multiplies the time set by potentiometer, which that the time is set to 5 min and the button is pressed on 3 times, the output is automatically prolonged to 15 min. The output can also be switched off earlier (reset) by a long pressing of button (longer than 2 sec)
- Output relay contact 16A/AC1 with inrush current up to 80 A enables switching of electrical bulbs and also fluorescent lights.
- Selector switch:
  - ON - Output permanent ON
  - AUTO - timing according to adjusting by potentiometer in range of 30 s - 10 min
  - PROG - timing with time prolongation option by a number of button pressing
- Timing (in mode AUTO and PROG) can be stopped by long pressing of the button (longer than 2 sec)
- Output indication: multifunctional red LED, flashing at certain states
- Possibility to connect up to 100 buttons equipped with glow lamps (up-to 100mA)
- 3-wire or 4-wire connection (it is possible to control input S by potential A1 or A2)
- Warning before switch OFF- output doubleflash 40 and 30 sec before switch OFF

### Programmable staircase switch CRM-42

type	In [A]	code No.	weight [g]	packaging [pcs]
CRM-42	16	002470078	65	1/10

## Digital time switch SHT-1, SHT-1 /2, SHT-3 and SHT-3 /2



### Advantages

- 2-modules, DIN rail mounting
- Daily, weekly program in one device (SHT-1; SHT-1/2)
- Daily, weekly, monthly, yearly program (SHT-3, SHT-3/2)
- Supply voltage AC230 V or AC/DC 12-240 V
- Switching: according to the program (AUTO)/constantly manual/ manually until next program change/random (CUBE)
- Automatic conversion summer/winter time
- Sealable cover of the front panel
- 100 memory places, clear LCD display
- Min. interval 1s
- Pulse/cyclic output
- Output contact: 1x 16A changeover → SHT-1, SHT-3.
- Output contact: 2x 16A changeover → SHT-1/2, SHT-3/2.

### Digital time switch SHT-1 and SHT-1/2

type	I <sub>n</sub> [A]	code No.	weight [g]	packaging [pcs]
SHT-1 UNI	16	002470051	130	1
SHT-1 230V	16	002470050	110	1
SHT-1/2 UNI	16	002470054	130	1
SHT-1/2 230V	16	002470053	110	1
SHT-3 UNI	16	002470056	110	1
SHT-3 230V	16	002470055	130	1
SHT-3/2 UNI	16	002470058	110	1
SHT-3/2 230V	16	002470057	130	1

## Analog electromechanical time switch APC-D1, APC-DR1

### Advantages

- The APC time switch controls any electrical installation by means of daily programs.
- Without (D1) or with (DR1) battery backup.
- Manual switch with permanent ON position.
- Supply voltage : AC 230V
- Sealable cover of frontal panel
- Output contact : 1 x NO 16A
- Simple dial time setting. Minimum switching time is 15 min.
- 1 module, DIN rail mounting.



### Analog electromechanical time switch APC-D1, APC-DR1

type	$I_n$ [A]	code No.	weight [g]	packaging [pcs]
APC-D1	16	002472001	87	1/10
APC-DR1	16	002472002	87	1/10

## Multifunction relay SMR-T, SMR-H, SMR-B

### Advantages

- Multifunction relay designated for installation into a wiring box, under wall-switch into an existig installation (SMR-T doesn't need neutral to function)
- Fast solution for exchanging standard wall-switch for a switch controlled by time or for a memory relay controlled by a button

### SMR-T

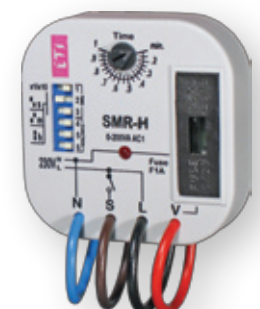
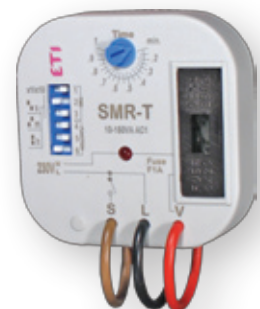
- 3-wire connection, works without neutral wire
- Output: 10-160 VA (resistive load)
- It cannot be used for fluorescent lights and energy saving lights (loads of capacitive type)

### SMR-H

- 4-wire connection
- Output 0-200 VA
- It cannot be used for fluorescent lights and energy saving lights (loads of capacitive type)

### SMR-B

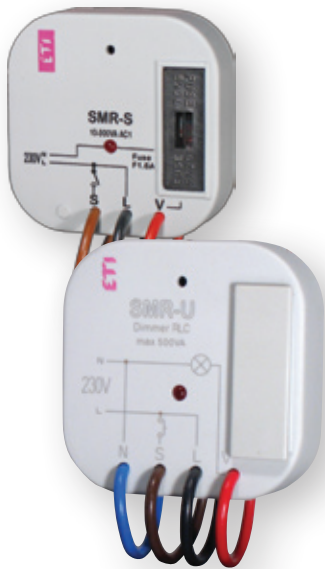
- 4-wire connection
- 10 functions
- Output contact 1x 16A / 4000 VA, 250V AC1
- Enables switching of fluorescent lights and also energy saving lights (see instruction manual technical data)
- Independent galvanically separated input AC/DC 5-250 V (for example for control from a security system)



### Multifunction relay SMR-T, SMR-H, SMR-B

type	code No.	weight [g]	packaging [pcs]
SMR-T	002470004	29	1/14
SMR-H	002470005	31	1/14
SMR-B	002470021	53	1/14

## Dimmer SMR-S, SMR-U



### Advantages

- Button-controlled dimmers designated for flush mounting into a wiring box, into an existing installation (SMR-S doesn't need neutral to function)
- Controlling lamp brightness
- Dimming, control from more places (parallel button connected), possible protection against temperature overrun inside the device – output off.
- By changing wall-switch for a switch with SMR-S/SMR-U installed below effective brightness control can be reached. SMR-S enables dimming of electrical bulbs and wound transformers 12V, halogen lights (inductive load), SMR-U also enables dimming of electronic transformers 12V, halogen lights (capacitive load). It cannot be used for dimming fluorescent lights or energy saving lights.

### SMR-S

- 3-wire connection, functional without neutral
- Max. load: 300 VA (resistive loads)
- Contactless output - 1 x triac
- With exchangeable fuse

### SMR-U

- 4-wire connection
- Max. load: 500 VA
- Contactless output - 2x MOSFET
- Electronic overload and overtemperature protection – output off in case of short-circuit or overvoltage

### Dimmer SMR-S, SMR-U

type	code No.	weight [g]	packaging [pcs]
SMR-S	002470010	32	1/14
SMR-U	002470022	32	1/14

## Memory and latching relays MR-41, MR-42

## Advantages

- 1-module, DIN rail mounted
- Supply voltage:
  - UNI AC/DC 12V - 240V
  - 230 AC 230V
- Keeps state in memory when supply disconnected. When energized again, relay returns to the state before disconnecting.

## MR-41

- Output contact: 1x changeover 16A/ AC1

## MR-42

- Options - 2x parallel contacts or the other relay is latching
- Function selected via external wire link between B1-B2
- Output contact: 2x changeover 16A/ AC1



## Memory &amp; latching relays MR-41, MR-42

type	code No.	weight [g]	packaging [pcs]
MR-41 UNI	002470007	64	1/10
MR-42 UNI	002470008	89	1/10
MR-41 230	002470094	60	1/10
MR-42 230	002470095	85	1/10

## Staircase switch with dimming DIM-2

## Advantages

- 1-module, DIN rail mounted
- Supply voltage AC 230V
- Function of gradual dim-up and dim-down, controlling inputs for push button and switch
- Protection against button dead locking
- Potentiometers adjust:
  - speed (fluency) of switching on
  - maximum intensity of light
  - time of maximum intensity light
  - speed (fluency) of switching off
- Contactless output: 1x triac
- Load AC1 2A / 500W



## Staircase switch with dimming DIM-2

type	code No.	weight [g]	packaging [pcs]
DIM-2	002470009	70	1/10

## Dimmer DIM-14



### Advantages

- 1-module, DIN rail mounting
- Supply voltage: AC 230 V
- Designed for dimming of electrical bulbs and halogen lights with wound or electronic transformer
- For switching and dimming of lights, control inputs for a button
- Short pressing switches ON/OFF, longer pressing (more than 0.5 s) enables gradual light intensity setting when switched off, brightness level is stored in a memory and when switched on again last brightness level is restored
- Output without contacts: 2x MOSFET
- LED output indication (with any level of brightness)
- Possibility of parallel connection of control buttons
- Resistive, inductive or capacitive load, up to 300 W, for a short term up to 500 W
- Simultaneous connection of inductive and capacitive load is not allowed.
- Electronic overvoltage protection
- Protection against temperature overrun inside a device – output off and signalization of overheat by LED flashing

### Dimmer DIM-14

type	In [A]	code No.	weight [g]	packaging [pcs]
DIM-14	2	002470023	58	1

## Twilight switch SOU-1 + sensor



### Advantages

- 1-module, DIN rail mounted
- Supply voltage: AC 230 V
- Switches according to level ambient light intensity
- Adjustable time pause to eliminate short-term illumination peaks
- Adjustable level of light intensity in 2 ranges 100-50000 Lx and 1-100 Lx
- Controlling input for additional control inputs, e.g. time switch
- External sensor, protection degree IP55, suitable for mounting on the wall (supplied by switch)
- Output contact: 1x changeover 16A / AC1
- LED output indication

### Twilight switch SOU-1

type	code No.	weight [g]	packaging [pcs]
SOU-1	002470011	65	1

\* Sensor for twilight switch SOU-1 also available separately (code No. 002470052)

## Twilight switch with digital time switch SOU-2 + sensor

### Advantages

- 2-module, DIN rail mounting
- Supply voltage: AC 230 V
- Adjustable light intensity 1 - 50000 lx
- Serves for control of lights on the basis of ambient light intensity and real time (combination of SOU-1 and time switch clock SHT-1 in one device)
- The advantage of real time consists in the blocking function of the twilight switch in the case of an uneconomical use of lights (night hours, weekends etc.)
- Function of random switching enables simulation of presence when nobody is in the building
- Switching: according to the program (AUTO) / permanently manual / random (CUBE)
- External sensor IP56 is suitable for mounting on the wall/ in panel (cover and sensors are part of delivery)

### Twilight switch with digital time switch SOU-2 + sensor

type	In [A]	code No.	weight [g]	packaging [pcs]
SOU-2 + sensor	16 A	002470020	130	1

\* Sensor for twilight switch SOU-1 also available separately (code No. 002470052)



## Current monitoring relay PRI-51

### Advantages

- To monitor heating of rods in shunts, heating of cables, to indicate current flowing, to monitor consumption of one-phase electrical loads
- 1-phase, 1-module, DIN rail mounting
- Universal supply voltage AC 24 V - 240 V and DC 24 V
- Output contact: 1x changeover 8 A/AC1
- Supply is not galvanically separated from measured current, it must be in the same phase
- Adjustable delay 0,5 - 10 s to eliminate short current peaks
- Fluent adjusting actualing current via potentiometer, choice of 5 ranges: AC 0.1-1 A, AC 0.2-2 A, AC 0.5-5 A, AC 0.8-8 A, AC 1.6-16 A

### Current monitoring relay PRI-51

type	I <sub>n</sub> [A]	code No.	weight [g]	packaging [pcs]
PRI - 51/1	1	002471816	58	1/10
PRI - 51/2	2	002471817	58	1/10
PRI - 51/5	5	002471818	58	1/10
PRI - 51/8	8	002471819	58	1/10
PRI - 51/16	16	002470019	58	1/10



## Voltage monitoring relay HRN-33, HRN-34, HRN-35



### Advantages

- Serves to control/monitor supply voltage for appliances sensitive to supply tolerance, protects devices against under/over voltage
- 1-module, DIN rail mounting, 1-phase monitoring
- Supply from monitored voltage (monitors level of its own supply)
- 3-state indication - LEDs indicating normal state and 2 fault states
- Adjustable time delay for all types is 0 - 10 s (to eliminate short voltage drops or peaks) voltage  $U_{min}$  adjusted as % of  $U_{max}$
- Time delay and voltage adjusted via potentiometer
- **HRN-33**
  - monitors voltage in range AC 48 - 276 V
  - $U_{max}$  and  $U_{min}$  can be monitored independently
- **HRN-34**
  - like HRN-33, but voltage range is DC 6 - 30 V
  - monitoring of battery circuits (12, 24 V)
- **HRN-35**
  - like HRN-33, but independent output relays for each voltage level
  - switching of other loads possible

### Voltage monitoring relay HRN-33, HRN-34, HRN-35

type	$I_n$ [A]	code No.	weight [g]	packaging [pcs]
HRN-33	16	002470015	73	1/10
HRN-34	16	002471400	73	1/10
HRN-35	16	002471401	85	1/10

## Over/undervoltage monitoring relay HRN-54, HRN-54N



### Advantages

- Serves to monitor voltage, phase failure and sequence in switchboards, protection of devices in 3-phase mains
- 1-module, DIN rail mounting
- It is possible to set upper and lower level of monitoring voltage
- Adjustable time delay eliminates short voltage peaks and failures in the mains
- Faulty state is indicated by red LED and by breaking output relay contact
- Output contact: 1 x changeover 8 A / 250 V AC 1
- If the supply voltage falls below 60 %  $U_n$  ( $U_{off}$  lower level) the relay immediately breaks with no delay
- **HRN-54** - supply from all phases which means that the relay is functional also in case when one phase is faulty
- **HRN-54N** - supply L1-N, means that relay monitors also failure of neutral wire

### Over/undervoltage monitoring relay HRN-54, HRN-54N

type	$I_n$ [A]	code No.	weight [g]	packaging [pcs]
HRN-54	8	002471416	69	1/10
HRN-54N	8	002471412	67	1/10

## Level switch HRH-1

**Advantages:**

- Serves for level monitoring in wells, tanks, pools, reservoirs....  
Options:  
- single switch with single-state monitoring  
- single switch with double-state monitoring  
- 2 independent switches with single-state switching
- Selectable by DIP switch:  
- drain in  
- drain away  
- combination
- Adjustable time delay when activated by level change, type selectable by DIP switch.
- Sensitivity adjustable by potentiometer.
- Frequency 50 Hz prevents liquid polarization and increased oxidation of measuring probes.
- Supply AC 230 V, AC/DC 24 V or AC 110V
- Output contact: 2x changeover 16 A / 250 V AC1



Level switch HRH-1			
type	code No.	weight [g]	packaging [pcs]
Relay HRH-1	002471701	250	1

## Level switch HRH-5

**Advantages:**

- Relay is designated for monitoring levels in wells, reservoirs, pools, tanks....
- In one device you can choose the following configurations:  
- one-level switch of conductive liquids ( by connecting H and D)  
- two-level switch of conductive liquids
- One-state device monitors one level, two-state device monitors two levels (switches on one level and switches of on another level).
- Choice of function PUMP UP, PUMP DOWN
- Adjustable time delay on the output (0.5 - 10s)
- Sensitivity adjustable by a potentiometer (5-100kΩ)
- Measuring frequency 10Hz prevents polarization of liquid and raising oxidation of measuring probes
- Galvanically separated supply voltage UNI 24.. 240 VAC/DC
- Output contact 1xchangeover 8A/250V AC1
- 1-module type, mounting onto a DIN rail



Level switch HRH-5			
type	code No.	weight [g]	packaging [pcs]
Relay HRH-5	002471715	72	1/8

## Sensors HRH

Sensors HRH				
type	code No.	Description	weight [g]	packaging [pcs]
Sensor SHR-1-M	002471205	Brass sensor without cable, max. wire profile 2,5mm <sup>2</sup>	9,7	1
Sensor SHR-1-N	002471709	Stainless steel sensor without cable, max. wire profile 2,5mm <sup>2</sup>	9,7	1
Sensor SHR-2	002471203	Stainless steel sensor without cable, max. wire profile 2,5mm <sup>2</sup> - IP68	48,6	1
Sensor SHR-3	002471230	Stainless steel sensor with 3m cable PVSC 2x0,75mm <sup>2</sup> - IP67	239	1
Sensor HRH-10	002471703	Sensor with 10m cable	30	1
Sensor HRH-15	002471704	Sensor with 15m cable	35	1
Sensor HRH-20	002471705	Sensor with 20m cable	40	1
Sensor HRH-30	002471706	Sensor with 30m cable	48	1
Sensor HRH-40	002471707	Sensor with 40m cable	62	1

## Thermostat relay TER-3 (A, B, C)



### Advantages

- 1-module, DIN rail mounting
- Red LED indicates status of output, green LED indicates energization of the device
- Single thermostat for temperature monitoring and regulation in range of -30..+70 °C in six ranges
- Can be used for monitoring temperature e.g. in switchboards, heating systems, cooling systems, liquids, radiators, motors, devices, open spaces etc.
- Function of short-circuit or sensor disconnection monitoring
- Possibility to set function "heating"/"cooling" (setting is done by DIP switch)
- Adjustable hysteresis (sensitivity) , switching by potentiometer in range 0.5 -5 K
- Universal supply AC/DC 24V -240 V, not galvanically separated
- Output contact: 1x NO 16 A /250 V AC1
- It is possible to place the sensor directly on terminal block – for temperature monitoring in a switchboard or in its surroundings
- Choice of external thermo sensors with double insulation in standard lengths 3, 6 and 12 m

### Thermostat relay TER-3 (A, B, C)

type	temp. range or sensor length	code No.	weight [g]	packaging [pcs]
TER-3A	-30...+10 °C	002471801	73	1/10
TER-3B	0...+40 °C	002471813	73	1/10
TER-3C	+30...+70 °C	002471802	73	1/10

\*Note: Order sensor TZ from the table below

## Multifunction digital thermostat TER-9



### Advantages

- Digital thermostat with 6 functions and in-built time switch clock, with daily and weekly program (as SHT-1). Thermo functions can be managed also in real time
- Complex control of heating and water heating in buildings, solar heating etc
- 2 thermostats in one, 2 temperature inputs, 2 outputs with potential free contact
- Functions: two independent thermostats, 1x dependent, differential thermostat, 2-stage thermostat, thermostat with dead zone, heating functions
- Program setting of output function, calibration of sensors according to reference temperature (off set)
- Thermostat is inferior to a program of digital switch clock
- 2-module, DIN rail mounting
- Supply AC 230 V or AC/DC 24 V galvanically separated
- Output contact 1x changeover 8 A / 250 V AC1 for each output
- Memory for the most often used temperatures
- Well-arranged display of set and measured data, illuminated LCD by backlight
- Zero error when value setting
- Function of monitoring short-circuits or sensor disconnection

### Multifunction digital thermostat TER-9

type	In [A]	code No.	weight [g]	packaging [pcs]
TER-9 24V AC/DC	8	002471803	140	1
TER-9 230V AC	8	002471824	140	1

\*Note: Order sensor TZ from the table below

### Thermal sensors TZ

type	length of sensor cable [A]	code No.	weight [g]	packaging [pcs]
sensor TZ-0	0,11 m.	002471809	4,5	1
sensor TZ-3	3m.	002471810	103	1
sensor TZ-6	6m.	002471811	216	1
sensor TZ-12	12 m.	002471812	418	1



## Thermostat for monitoring temperature of motor winding TER-7

**Advantage:**

- Monitors temperature of motor winding of motors with built in PTC sensor
- Fixed levels of switching
- MEMORY function - active by DIP switch
- RESET of faulty state:
  - button on the front panel
  - by external contact ( remote by two wires)
- Function of short-circuit or sensor disconnection monitoring, red LED flashing indicates faulty sensor
- Output contact: 2x changeover 8 A /250 V AC1
- Red LED shines and indicates exceeded temperature
- Multivoltage supply AC/DC 24-240 V (UNI)
- 1-modul, možnost montáže na DIN letev



**Termostat relay TER-7**

type	code No.	weight [g]	packaging [pcs]
TER-7	002471804	65	1/10

## Hour meter HM-1

**Applications**

- Gen-sets
- Compressors
- Pumps
- Medical equipment
- Control panels
- Air conditioning

**Advantages**

- 2-module size
- DIN rail mounting
- Long lifetime
- IP40 protection – front
- Operating voltage 230V AC



**Hour meter HM1**

Type	Supply voltage [U <sub>e</sub> AC]	Code No.	Weight [g]	packaging [pcs]
HM-1	230	002472045	35	1

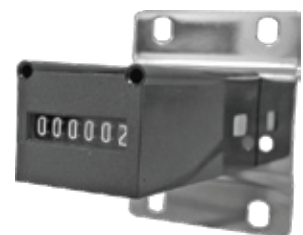
## Pulse counter PC-1

**Applications:**

- General event counter
- Switching operations counter

**Advantages:**

- Base mounting
- Heavy duty version
- 6-digit totalizer
- IP31 protection



**Pulse counter**

Type	Supply voltage [U <sub>e</sub> AC]	Code No.	Weight [g]	packaging [pcs]
PC-1	230	002472046	60	1