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Made in Czech Republic

02-153/2022 Rev.: 0



CRM-91H-SL CRM-93H-SL

Multi-function time relay

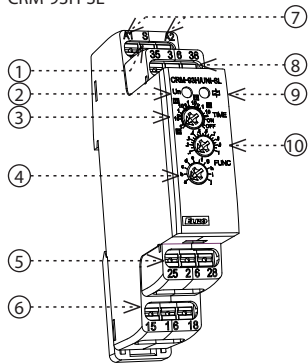


Characteristic

- Multi-function time relay for universal use in automation, control and regulation or in house installations
- Universal supply voltage AC/DC 12 – 240V
- Easy connection with screw-less terminals
- Comfortable and well-arranged function and time-range setting by rotary switches.
- Time scale 0.1 s - 10 days divided into 10 ranges:
 (0.1 s - 1 s / 1 s - 10 s / 0.1 min - 1 min / 1 min - 10 min / 0.1 hrs - 1 h / 1 h - 10 hrs / 0.1 day - 1 day / 1 day - 10 days / only ON / only OFF)
- Output contact:
 CRM-91H-SL: 1x changeover / SPDT 16A
 CRM-93H-SL: 1x changeover / SPDT 16A, 2x changeover / DPDT 8A
- Multifunction red LED flashes or shines depending on the operating states

Description

CRM-93H-SL

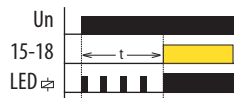


1. Control input (S)
2. Supply voltage indication
3. Time range setting
4. Function setting
5. Output contact 2 (25-26-28)
6. Output contact 1 (15-16-18)
7. Supply voltage terminals
8. Output contact 3 (35-36-38)
9. Indication of operating states
10. Fine time setting

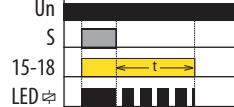
Indication of operating states

Signaling example:

Function **a**



Function **e**



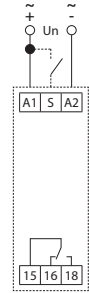
Loadability

| | | | | | | | | | |
|-------------------------------------|--------------------------|-----------|-----------|--------------------|------------------|----------|-----------|-----------|------------|
| Type of load | $\cos \varphi \geq 0.95$ | AC2 | AC3 | AC5a uncompensated | AC5a compensated | HAL 230V | AC6a | AC7b | AC12 |
| contact material AgNi, contact 16 A | 250V / 16A | 250V / 5A | 250V / 3A | 230V / 3A (690VA) | x | 800W | x | 250V / 3A | 250V / 10A |
| Type of load | AC13 | AC14 | AC15 | DC1 | DC3 | DC5 | DC12 | DC13 | DC14 |
| contact material AgNi, contact 16 A | 250V / 6A | 250V / 6A | 250V / 6A | 24V / 16A | 24V / 6A | 24V / 4A | 24V / 16A | 24V / 2A | 24V / 2A |

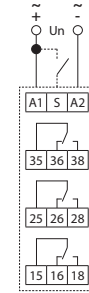
| | | | | | | | | | |
|------------------------------------|--------------------------|-----------|-----------|---------------------|------------------|----------|----------|-----------|-----------|
| Type of load | $\cos \varphi \geq 0.95$ | AC2 | AC3 | AC5a uncompensated | AC5a compensated | HAL 230V | AC6a | AC7b | AC12 |
| contact material AgNi, contact 8 A | 250V / 8A | 250V / 3A | 250V / 2A | 230V / 1.5A (345VA) | x | 300W | x | 250V / 1A | 250V / 1A |
| Type of load | AC13 | AC14 | AC15 | DC1 | DC3 | DC5 | DC12 | DC13 | DC14 |
| contact material AgNi, contact 8 A | x | 250V / 3A | 250V / 3A | 24V / 8A | 24V / 3A | 24V / 2A | 24V / 8A | 24V / 2A | x |

Connection

CRM-91H-SL



CRM-93H-SL

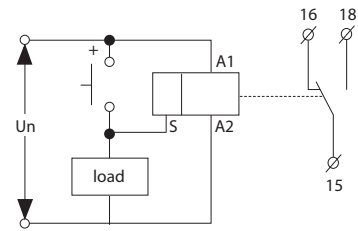


CRM-93H-SL:

The potential difference between the supply terminals (A1-A2), output contact 2 (25-26-28) and output contact 3 (35-36-38) must be a maximum of 250V AC rms/DC.

Possibility to connect load onto controlling input

It is possible to connect the load (e.g.: contactor) between terminals S-A2, without any interruption of correct relay function.



Tip for more accurate time settings (for long time periods)

Example of time setting to 8 hours period:

For time range setting use time scale 1 - 10 s on the potentiometer.

For fine time setting aim for 8 s on potentiometer, then recheck accuracy (using stopwatch, etc).

On time range setting, set potentiometer to originally desired scale 1 - 10 hrs, leave fine time setting as it is.

CRM-91H-SL CRM-93H-SL

| Power supply | |
|-------------------------------------|---|
| Supply terminals: | A1-A2 |
| Supply voltage: | AC/DC 12 – 240 V (AC 50-60 Hz) |
| Consumption (max.): | 2 VA/1.5 W 2.5 VA/1.5 W |
| Supply voltage tolerance: | -15 %; +10 % |
| Time circuit | |
| Number of functions: | 10 |
| Time ranges: | 0.1 s – 10 days |
| Time setting: | rotary switch and potentiometer |
| Time deviation: | 5 % – mechanical setting |
| Repeat accuracy: | 0.2 % – set value stability |
| Temperature coefficient: | 0.01 %/°C, at = 20 °C (0.01 %/°F, at = 68 °F) |
| Output | |
| Output contact 1: | 1× changeover/SPDT (AgNi) |
| Current rating: | 16 A/AC1 |
| Breaking capacity: | 4000 VA/AC1, 384 W/DC1 |
| Electrical life (AC1): | 100.000 ops. |
| Output contact 2 (3): | x 2x chang./DPDT (AgNi) |
| Current rating: | x 8 A/AC1 |
| Breaking capacity: | x 2000 VA/AC1, 192 W/DC1 |
| Electrical life (AC1): | x 50.000 ops. |
| Switching voltage: | 250 V AC/24 V DC |
| Power dissipation (max.): | 1.2 W 2.4 W |
| Mechanical life: | 10.000.000 ops. |
| Control | |
| Control terminals: | A1-S |
| Load between S-A2: | Yes |
| Impulse length: | min. 25 ms / max. unlimited |
| Reset time: | max. 150 ms |
| Other information | |
| Operating temperature: | -20 °C .. +55 °C (-4 °F .. 131 °F) |
| Storage temperature: | -30 °C .. +70 °C (-22 °F .. 158 °F) |
| Dielectric strength: | |
| supply – output 1 | 4 kV AC |
| supply – output 2 (3) | x 1 kV AC |
| output 1 – output 2 | x 1 kV AC |
| output 2 – output 3 | x 1 kV AC |
| Operating position: | any |
| Mounting: | DIN rail EN 60715 |
| Protection degree: | IP40 front panel / IP20 terminals |
| Overvoltage category: | III. |
| Pollution degree: | 2 |
| Connected wire cross-section (mm²): | solid wire max. 1× 2.5, 2× 1.5/ with sleeve max. 1× 2.5 (AWG 12) |
| Dimensions: | 90 × 17.6 × 64 mm (3.5" × 0.7" × 2.5") |
| Weight: | 58 g (1.86 oz) |
| Standards: | EN 61812-1 |



ON DELAY

When the input voltage U is applied, timing delay t begins. Relay contacts R change state after time delay is complete. Contacts R return to their shelf state when input voltage U is removed. Trigger switch is not used in this function.



INTERVAL ON

When input voltage U is applied, relay contacts R change state immediately and timing cycle begins. When time delay is complete, contacts return to shelf state. When input voltage U is removed, contacts will also return to their shelf state. Trigger switch is not used in this function.



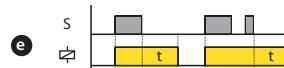
FLASHER - OFF first

When input voltage U is applied, time delay t begins. When time delay t is complete, relay contacts R change state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.



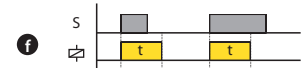
FLASHER - ON first

When input voltage U is applied, relay contacts R change state immediately and time delay t begins. When time delay t is complete, contacts return to their shelf state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.



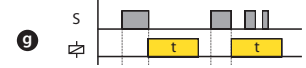
OFF DELAY

Input voltage U must be applied continuously. When trigger switch S is closed, relay contacts R change state. When trigger switch S is opened, delay t begins. When delay t is complete, contacts R return to their shelf state. If trigger switch S is closed before time delay t is complete, then time is reset. When trigger switch S is opened, the delay begins again, and relay contacts R remain in their energized state. If input voltage U is removed, relay contacts R return to their shelf state.



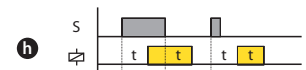
SINGLE SHOT

Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. During time-out, the trigger signal S is ignored. The relay resets by applying the trigger switch S when the relay is not energized.



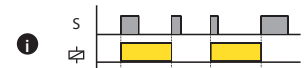
SINGLE SHOT falling edge

Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. At the end of the preset time t, the relay contacts R return to their normal condition unless the trigger switch S is opened and closed prior to time out t (before preset time elapses). Continuous cycling of the trigger switch S at a rate faster than the preset time will cause the relay contacts R to remain closed. If input voltage U is removed, relay contacts R return to their shelf state.



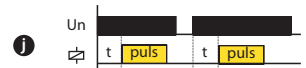
ON/OFF DELAY

Input voltage U must be applied continuously. When trigger switch S is closed, time delay t begins. When time delay t is complete, relay contacts R change state and remain transferred until trigger switch S is opened. If input voltage U is removed, relay contacts R return to their shelf state.



MEMORY LATCH

Input voltage U must be applied continuously. Output changes state with every trigger switch S closure. If input voltage U is removed, relay contacts R return to their shelf state.



PULSE GENERATOR

Upon application of input voltage U, a single output pulse of 0.5 seconds is delivered to relay after time delay t. Power must be removed and reapplied to repeat pulse. Trigger switch is not used in this function.

Warning

The device is constructed for 1-phase main installation AC/DC 12 – 240 V and must be installed in accordance with regulations and standards applicable in the country of use. Installation, connection, setting and servicing should be installed by qualified electrician staff only, who has learnt these instruction and functions of the device. This device contains protection against overvoltage peaks and disturbances in supply. For correct function of the protection of this device there must be suitable protections of higher degree (A,B,C) installed in front of them. According to standards elimination of disturbances must be ensured. Before installation the main switch must be in position "OFF" and the device should be de-energized. Don't install the device to sources of excessive electro-magnetic interference. By correct installation ensure ideal air circulation so in case of permanent operation and higher ambient temperature the maximal operating temperature of the device is not exceeded. For installation and setting use screw-driver cca 2 mm. The device is fully-electronic - installation should be carried out according to this fact. Non-problematic function depends also on the way of transportation, storing and handling. In case of any signs of destruction, deformation, non-function or missing part, don't install and claim at your seller it is possible to dismount the device after its lifetime, recycle, or store in protective dump.