



CRM-91H CRM-92H CRM-93H

Multifunction time relays

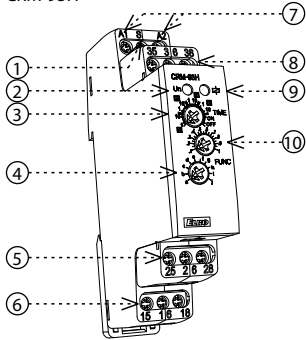


Characteristic

- Multifunction time relays for universal use in automation, control and regulation or in house installations.
- Universal supply voltage AC/DC 12 – 240 V or AC 230 V.
- Comfortable and well-arranged function and time range setting by rotary switches.
- Time scale 0.1 s - 10 d divided into 10 ranges:
(0.1 - 1 s / 1 - 10 s / 0.1 - 1 min / 1 - 10 min / 0.1 - 1 h / 1 - 10 h / 0.1 - 1 d / 1 - 10 d / only ON / only OFF)
- Output contact:
CRM-91H: 1x changeover / SPDT 16 A
CRM-92H: 2x changeover / SPDT 16 A
CRM-93H: 1x changeover / SPDT 16 A, 2x changeover / DPDT 8 A
- Multifunction red LED flashes or shines depending on the operating state.

Description

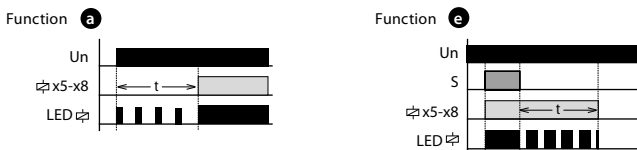
CRM-93H



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 (A1-A2)
8. Output contact 3 (35-36-38)
9. Indication of operating states
10. Fine time setting

Indication of operating states

Signaling examples:



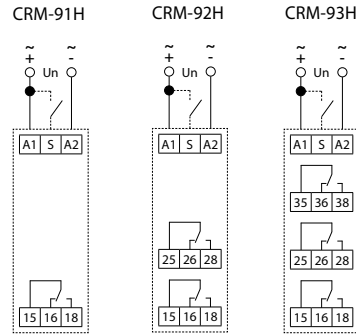
CRM-91H, CRM-92H, CRM-93H (1st contact)

Type of load	$\cos \varphi \geq 0.95$ AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material AgNi, 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, 16 A	250V / 6A	250V / 6A	250V / 6A	24V / 16A	24V / 6A	24V / 4A	24V / 16A	24V / 2A	24V / 2A

CRM-93H (2nd & 3rd contact)

Type of load	$\cos \varphi \geq 0.95$ AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material AgNi, 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, 8 A	x	250V / 3A	250V / 3A	24V / 8A	24V / 3A	24V / 2A	24V / 8A	24V / 2A	x

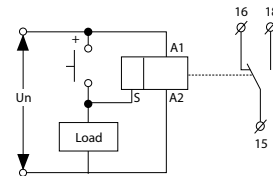
Connection



CRM-93H:
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 AC rms/DC 250 V.

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 setting (long periods of time)

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 re-check accuracy (e.g. using stopwatch).

On time range setting, set potentiometer to originally desired scale 1 – 10 h.

Leave fine time setting as it is.

Technical parameters

		CRM-91H	CRM-92H	CRM-93H
Power supply				
Supply terminals:		A1-A2		
Supply voltage:	UNI	AC/DC 12 – 240 V (AC 50-60 Hz)		
Consumption (max.):		2 VA/1.5 W	2.5 VA/1.5 W	2.5 VA/1.5 W
Supply voltage:	230	AC 230 V (50-60 Hz)		
Consumption (max.):		3 VA/1.4 W	x	4 VA/2 W
Supply voltage tolerance:		-15 %; +10 %		
Supply voltage indication:		green LED		

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			
Contact type 1:	1x changeover/SPDT (AgNi)		
Current rating:	16 A/AC1; PD. B300		
Breaking capacity:	4000 VA/AC1, 384 W/DC1		
Electrical life (AC1):	100.000 ops.		
Contact type 2 (3):	x	1x chang./SPDT (AgNi)	2x chang./DPDT (AgNi)
Current rating:	x	16 A/AC1; PD. B300	8 A/AC1; PD. B300
Breaking capacity:	x	4000 VA/AC1, 384 W/DC1	2000 VA/AC1, 192 W/DC1
Electrical life (AC1):	x	100.000 ops.	50.000 ops.
Switching voltage:	250 V AC/24 V DC		
Power dissipation (max.):	1.2 W	2.4 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 .. +55 °C (–4 .. 131 °F)		
Storage temperature:	–30 .. +70 °C (–22 .. 158 °F)		
Dielectric strength:			
supply – output 1	AC 4 kV		
supply – output 2 (3)	x	AC 4 kV	AC 1 kV
output 1 – output 2	x	AC 4 kV	AC 1 kV
output 2 – output 3	x	x	AC 1 kV
Operating position:	any		
Mounting:	DIN rail EN 60715		
Protection degree:	IP40 front panel/IP20 terminals		
Overvoltage category:	III.		
Pollution degree:	2		
Cross-wire section – solid/ stranded with ferrule (mm²):	max. 1× 2.5, 2× 1.5/ max. 1× 2.5 (AWG 12)		
Dimensions:	90 × 17.6 × 64 mm (3.5" × 0.7" × 2.5")		
Weight:	UNI - 62 g (2.2 oz) 230 - 57 g (2 oz)	UNI - 85 g (3 oz) x	UNI - 85 g (3 oz) 230 - 80 g (2.8 oz)
Standards:	EN 61812-1		

Warning

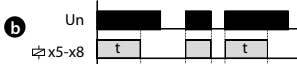
This device is constructed for connection in 1-phase network AC 230 V or AC/DC 12 – 240 V and must be installed according to norms valid in the state of an application. Installation, connection, setting and servicing must be carried out by qualified electrician staff only, which have perfectly understood the instructions and functions of the device. This device contains protection against overvoltage peaks and disturbing impulses in the power supply network. For the correct function of the protection of this device, there must be suitable protections of higher degrees (A,B,C) installed in front of them and according to the standards, interference of switching devices must be securely eliminated (contactors, motors, inductive loads, etc.). Before installation, make sure that the device is de-energized and the main switch is in the "OFF" position. Don't install the device to sources of excessive electromagnetic interference. Ensure correct installation by perfect air circulation so that during continuous operation and a higher ambient temperature, the device does not exceed the maximum allowed operating temperature. For installation and setting use a screwdriver with a width of approx 2 mm. Keep in mind that this is a fully electronic device and approach accordingly with the installation. Non-problematic function of the device is also dependent on the previous method of transportation, storage, and handling. In case of any signs of damage, deformation, malfunction, or missing parts, don't install this device and claim it at the dealer. The product must be treated as electronic waste at the end of its life.

Functions



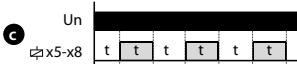
ON DELAY

When the supply voltage "Un" is applied, time delay "t" starts. Output contact(s) "S" closes after the delay is finished. If supply voltage "Un" is disconnected, output contact(s) "S" always opens. Control input "S" is not used in this function.



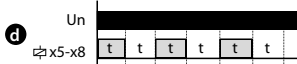
INTERVAL ON

When the supply voltage "Un" is applied, output contact(s) "S" closes immediately and time delay "t" starts. Output contact(s) "S" opens after the delay is finished. If supply voltage "Un" is disconnected, output contact(s) "S" always opens. Control input "S" is not used in this function.



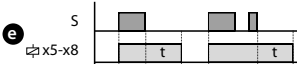
FLASHER - OFF first

When the supply voltage "Un" is applied, time delay "t" starts. Output contact(s) "S" closes after the delay is finished and the delay starts from the beginning. After the delay finishes, output contact(s) "S" opens again. This cycle repeats until supply voltage "Un" is removed. Control input "S" is not used in this function.



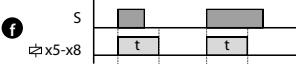
FLASHER - ON first

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.



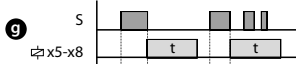
OFF DELAY

Supply voltage "Un" must be applied continuously. When control input "S" is closed, output contact(s) "S" closes. When control input "S" is opened, time delay "t" starts. When the delay is finished, output contact(s) "S" opens. If control input "S" is closed before the delay is finished, the delay stops and the relay keeps contact closed. The delay starts from the beginning when control input "S" opens. When the delay is finished the output contact(s) "S" opens. If supply voltage "Un" is disconnected, output contact(s) "S" always opens.



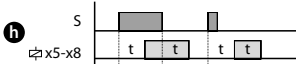
SINGLE SHOT

Supply voltage "Un" must be applied continuously. When control input "S" is closed, output contact(s) "S" closes immediately and time delay "t" starts. Output contact(s) "S" opens after the delay is finished. Length or the closing/opening of control input "S" during the delay doesn't affect function. The function can be used multiple times when time delay "t" finishes by closing control input "S" again.



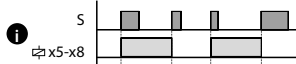
SINGLE SHOT falling edge

Supply voltage "Un" must be applied continuously. Closing of control input "S" doesn't affect the state of contact or starts delay. When control input "S" is opened, output contact(s) "S" closes immediately and time delay "t" starts. Output contact(s) "S" opens after the delay is finished. Length or the closing/opening of control input "S" during the delay doesn't affect function. Function can be used multiple times when time delay "t" finishes by closing control input "S" again.



ON/OFF DELAY

Supply voltage "Un" must be applied continuously. Closing of control input "S" starts time delay "t" but doesn't affect the state of contact. Output contact(s) "S" closes after the delay is finished. When control input "S" is opened, time delay "t" starts again. Output contact(s) "S" opens after the delay is finished. If the control input "S" is closed for a shorter time than the time delay "t" is set, nothing happens and contact(s) will remain opened. If supply voltage "Un" is disconnected, output contact(s) "S" always opens.



MEMORY LATCH

Supply voltage "Un" must be applied continuously. When control input "S" is closed, output contact(s) "S" closes. When control input "S" is opened, nothing happens. If control input "S" is closed again, output contact(s) "S" closes. If supply voltage "Un" is disconnected, output contact(s) "S" always opens.



PULSE GENERATOR

When the supply voltage "Un" is applied, time delay "t" starts. Output contact(s) "S" closes for 0.5 s after the delay is finished then opens. If supply voltage "Un" is disconnected, output contact(s) "S" always opens. Control input "S" is not used in this function.