http://waterheatertimer.org/How-to-wire-on-delay-timer.html

DELAY ON/OFF TIME RELAY **CRM-82TO**

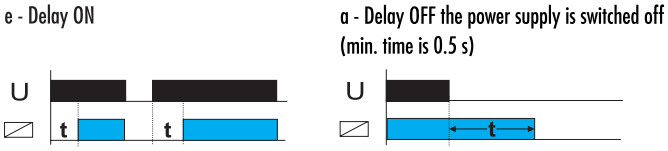
- true off delay timer (without supply voltage)

Features:

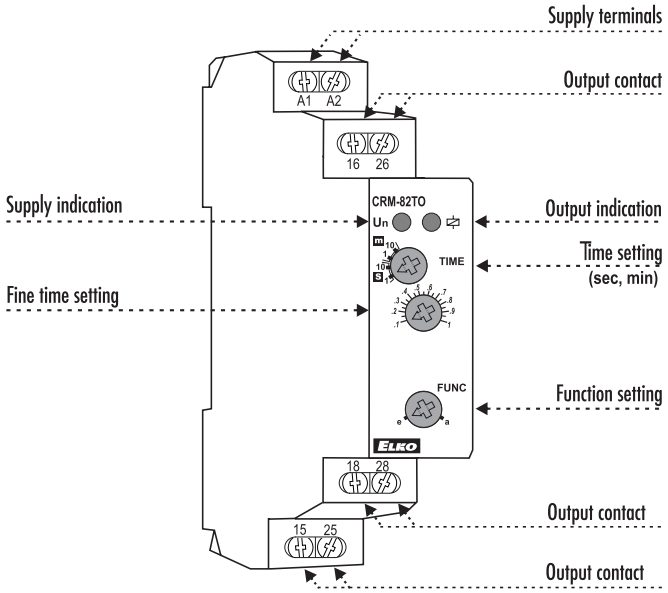
- Universal supply voltage AC/DC 12 - 240V
- 2 time functions adjustable:
  - E - delay ON
  - A - delay OFF after the supply is switched off - after supply failure relay times for time t and switches off
- Time range: 0.1s - 10min
- Output contact: 2x changeover 8A
- Output status indicated by LED
- Clamp terminal
- 1-MODULE, DIN rail mounting

Technical parameters	**CRM-82TO**
Number of functions:	2
Supply terminals:	A1 - A2
Supply voltage:	AC/DC 12-240V (AC50-60Hz)
Consumption:	AC 0.7 - 3VA/DC 0.5 - 1.7W
Supply voltage tolerance:	-15%; +10%
Supply indication:	green LED
Time ranges:	0.1s - 10min
Time setting:	Rotary switch
Time deviation:	5%-mechanical setting
Repeat accuracy:	0.2%-set value stability
Temperature coefficient:	0.1%/°C, at= 20°C
Output	
Changeover contacts:	2, (AgNi)
Rated current:	8A/AC1
Switching capacity:	2000 VA/AC1, 192 W/DC
Inrush current:	10A/<3s
Switching voltage:	250V AC1/24V DC
Minimum breaking capacity DC:	500mW
Output indication:	red LED
Mechanical life:	3 x 10^7
Electrical life (AC1)	0.7 x 10^5
Other information	
Operating temperature:	-20.. +55°C
Storage temperature:	-30.. +70°C
Electrical strength:	4kV (supply - output)
Operating position:	any
Mounting/DIN rail:	DIN rail EN 60715
Protection degree:	IP40
Overvoltage category:	*III*
Pollution degree:	2
Maximum cable size:	max. 2.5mm²/with sleeve 1.5mm²
Dimensions:	90 x 17.6 x 64mm
Weight:	93g
Standards:	EN 61812-1, EN 61010-1

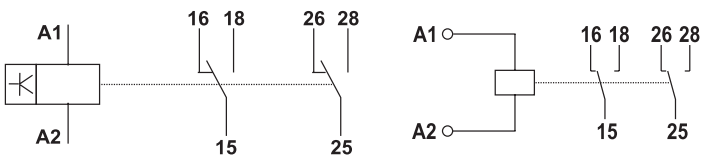
Functions



Description



Connection



UTILIZATION CATEGORIES

Utilization category	Typical application
AC-1	Non-inductive or slightly inductive loads, resistive furnaces. Example: resistive furnaces
AC-2	Slip-ring motors: starting, plugging and reversing. Example: squirel-cage motors,lifts,elevators,compressors,pumps,air-conditioning
AC-3	Squirrel-cage motors: starting, disconnecting while running
AC-4	Squirrel -cage motors: starting, plugging, reversing, jogging. Example: lifts,elevators,compressors,pumps,air-conditioning,motar mixers.
AC-5a	Switching of electric discharge lamps
AC-5b	Switching of incandescent lamps
AC-6a	Switching of power transformers
AC-6b	Switching capacitor banks
AC-7a	Small inductive loads in domestic appliances and similar applications
AC-7b	Motor loads for domestic appliances
AC-15	Control of electromagnetic loads (>72 VA)
AC-20	Connecting and disconnecting under no-load conditions
AC-21	Switching of resistive loads including moderate overloads
AC-22	Switching of mixed resistive and inductive loads, including moderate overloads
AC-23	Switching of motors or other highly inductive loads
DC-1	Non-inductive or slightly inductive loads, resistance furnaces
DC-3	Shunt-wound motors:plugging,reversing,jogging,dymanic braking
DC-5	Series-wound motors: starting,plugging,reversing,jogging,dynamic braking
DC-6	Switching of incandescent lamps
DC-13	Control of electromagnets
DC-20	Connecting and disconnecting under no-load conditions
DC-21	Switching of resistive loads including moderate overloads
DC-23	Switching of highly inductive loads (e.g. series-wound motors)

Note: AC-11 is changed to AC-15 and DC-11 to DC-13 respectively

Basic materials types, which are used for contact production of power relays are:

a) **AgCd** - for resistive loads (because of Cd malignity is this contact on recess.

b) **AgNi** - for resistive loads, good switches and transfers (no oxidisation) low currents/voltages, is not for peak currents and loads with inductive factors.

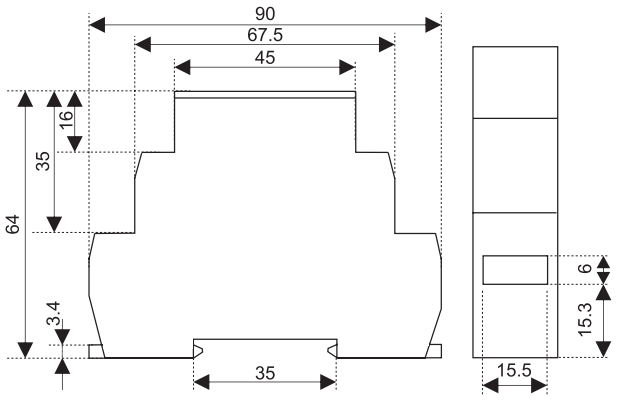
c) **AgSn or AgSnO$_2$** - for switching the loads with inductive part, not good for low currents/voltages, has better immunity for peak currents, good for switching DC, not so good for switching the resistive loads.

d) **Wf (tungsten)** - special contact for switching peak currents with inductive loads.

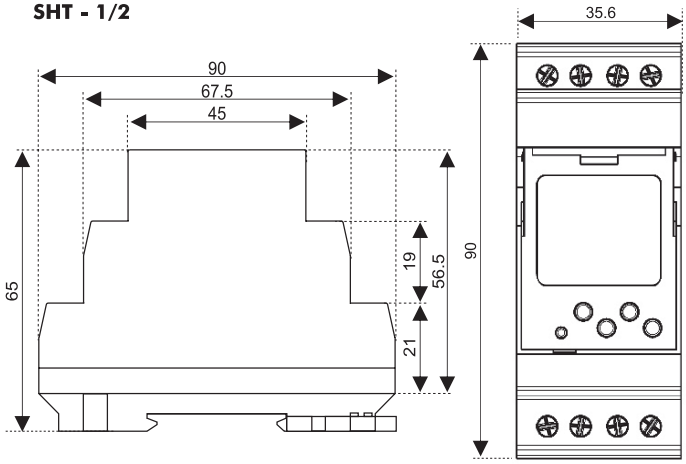
e) **gold alloy (AgNi/Au)** - for the 'better' contact for low currents/voltages, antioxidant.

DIMENSIONS

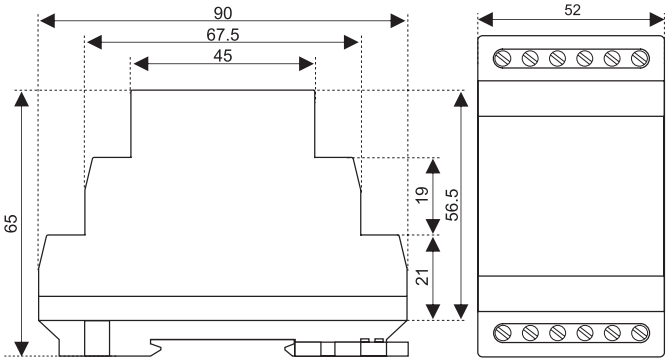
1-MODULE DESIGN



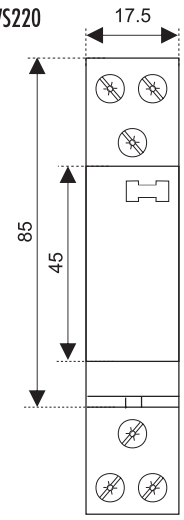
SHT - 1/2



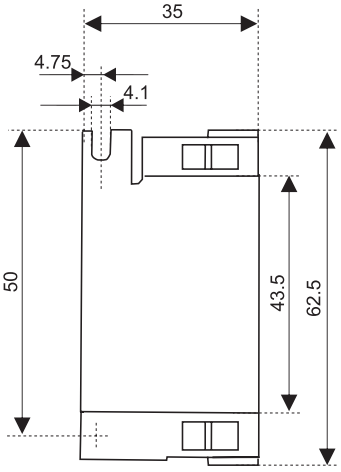
3-MODULE DESIGN



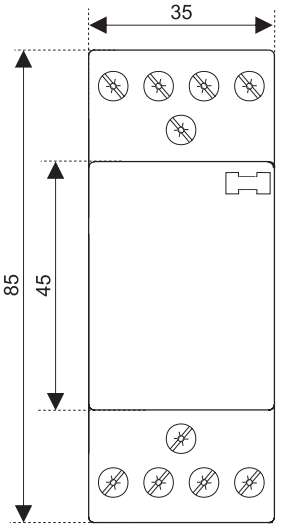
VS120
VS220



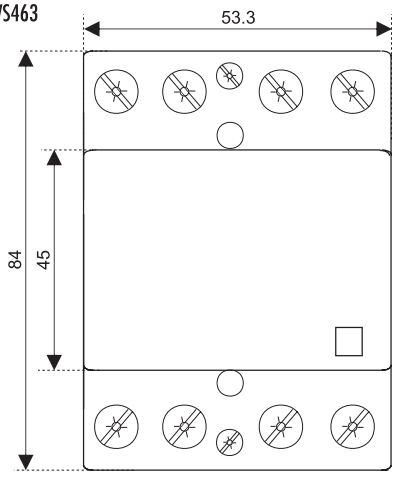
VS420



VS425

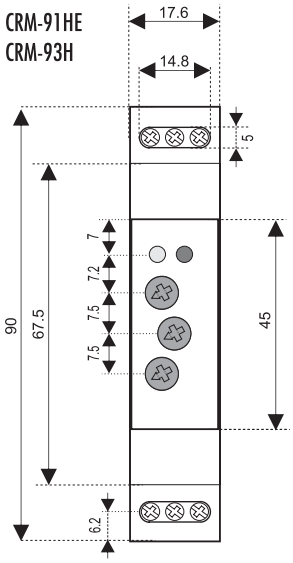


VS440
VS463

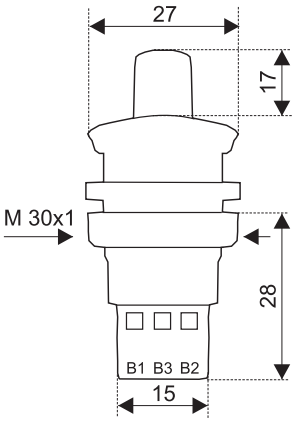


DIMENSIONS

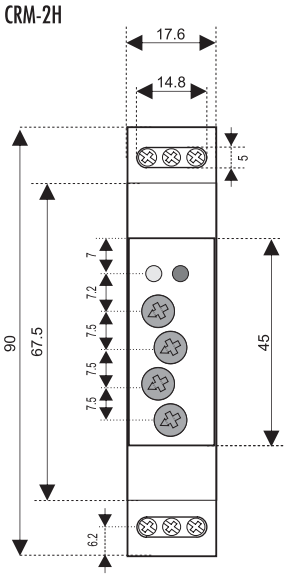
CRM-91HE
CRM-93H



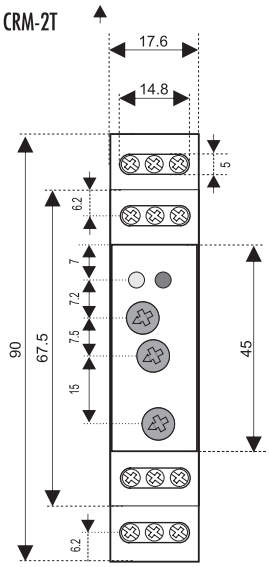
external potentiometer
(for use with CRM-91HE)



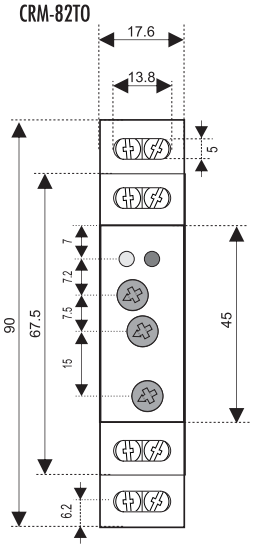
CRM-2H



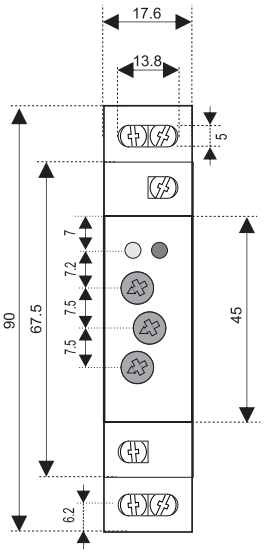
CRM-2T



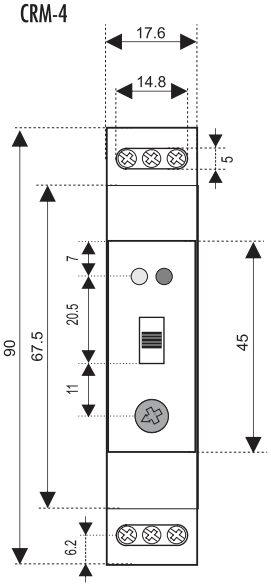
CRM-82TO



HRN-54/54N

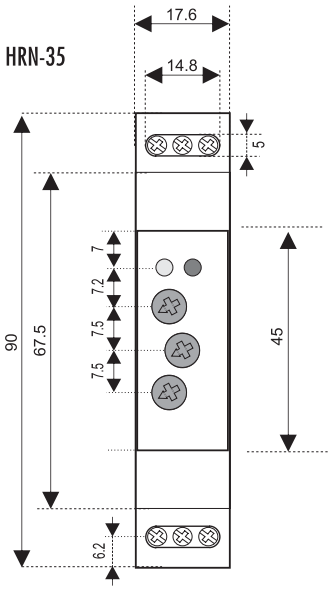


CRM-4

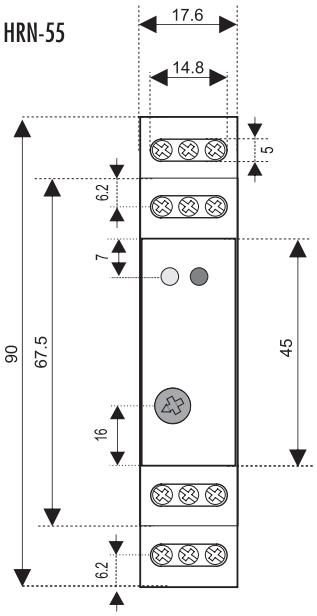


DIMENSIONS

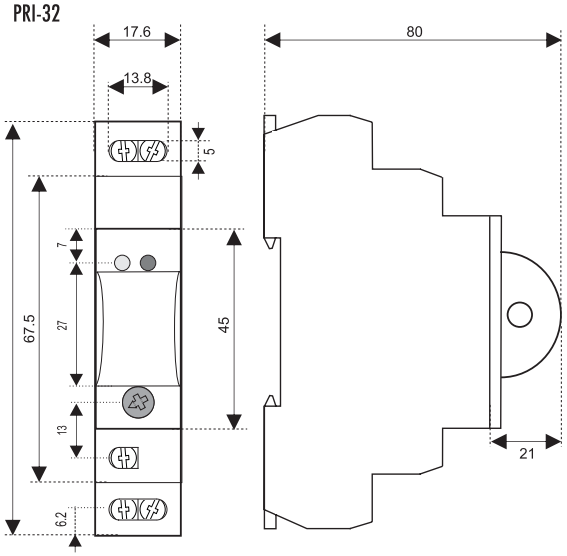
HRN-35



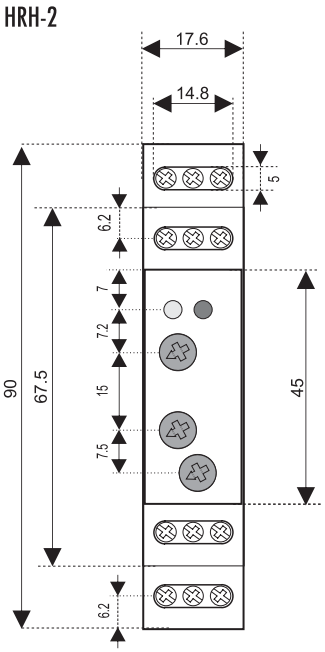
HRN-55



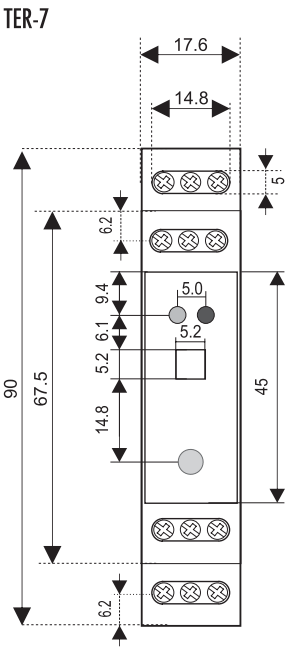
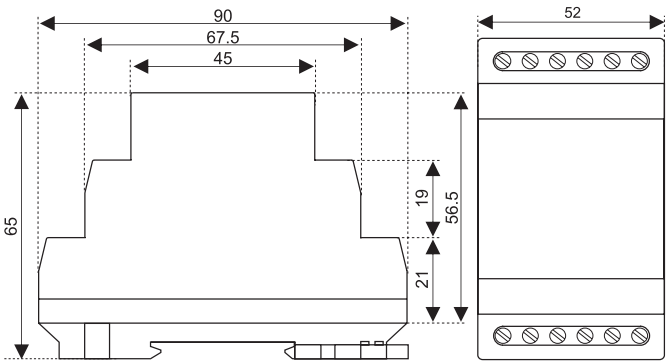
PRI-32



HRH-2



TER-7



PDR-2, PRI-41, HRN-41, HRN-43N