

## **EVE - ETIREL**

### Modular and control devices

Build-in switch SV 128

Build-in devices EVESYS **131** 

Control equipment ETIREL 135

Electromechanical Relays ETIREL 199

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## EVE Build-in Switch SV

#### **Build-in switch SV**

Rated current 16 - 125 A

Utilization category AC-23B, AC-22B

#### Application

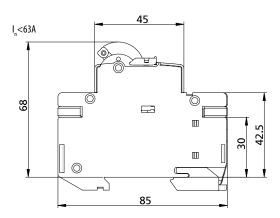
Build-in switch SV is used as a main switch in distribution boxes in houses or as a switch for individual electric circuits. With a build-in switch we can completely replace the cam switch. Build-in switch SV can be sealed either in ON or OFF position.

#### Advantages

Build-in switch SV has a more robust and simple construction and therefore a more reliable operation. It also shows the status of the contacts. With an additional label the circuit in which the switch is built in can be marked. Switches with  $I_n \le 63A$  have a double switching OFF.

#### **Technical data**

rechnicai data				
Туре	16A-40A			
Electrical				
Number of poles	1p, 2p, 3p, 4p			
Rated operational voltage Ue	230/400V AC (1p), 400V AC (2p, 3p 4p)			
Rated current In	16, 25, 40A			
Rated Insulation voltage Ui	1000V			
Rated impulse withstand voltage Uimp	4 kV			
Utilization category	AC-23B			
Rated frequency	50/60Hz			
Rated short-time withstand current lcw	800A			
Rated short-circuit making capacity Icm	500A			
Rated conditional short-circuit current	2000A (with 50A fuse)			
Rated making capacity	400A			
Rated breaking capacity	320A			
Switch Type	Build-in switch			
Standard	IEC/EN 60947-3			
Mechanical				
Device height	68mm (DIN rail acc to EN60715)			
Device width	18mm/p			
Degree of protection	IP20			
Terminal capacity	1-25mm²			
Terminal screw	M5 (Pozidrive PZ2)			
Terminal torque	max. 3Nm			
Operating temperature	-25°C +55°C			
Storage- and transport temperature	-40°C +70°C			
Contact position indicator	mechanical red/green			
Supply possibility	Top or bottom			



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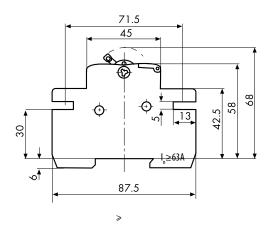
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#### Technical data

Technical data					
Туре	63-125A				
Electrical					
Number of poles	1p, 2p, 3p, 4p				
	1p: 230/400V AC, 24V DC				
Rated operational voltage Ue	2p: 400V AC, 48V DC				
	3p, 4p: 400V AC				
Rated current In	63, 80, 100, 125A				
Rated Insulation voltage Ui	AC: 1000V; DC:1500V				
Rated impulse withstand voltage Uimp	4 kV				
Utilization category	AC-22B; DC-22B				
Rated frequency	50/60Hz AC, DC				
Rated short-time withstand current lcw	1500A / 1s				
Rated short-circuit making capacity Icm (peak)	2200A				
Rated conditional short-circuit current	4,0kA (with 100A fuse) / 2,5kA (with 125A fuse)				
Rated making capacity	400A				
Rated breaking capacity	320A				
Switch Type	Build-in switch-disconnector				
Standard	IEC/EN 60947-3				
Mechanical					
Device height	68mm (DIN rail acc to EN60715)				
Device width	18mm/pole				
Degree of protection	IP20				
Terminal capacity	1-50mm²				
Terminal screw	M6 (Pozidrive PZ2)				
Terminal torque	max. 3Nm				
Operating temperature	-25°C +55°C				
Storage- and transport temperature	-40°C +70°C				
Contact position indicator					
Contact position indicator	mechanical red/green				





#### **EVE / Build-in Switch SV**

1-pole

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Туре	I <sub>n</sub> [A]	Code No.	U <sub>n</sub> [V]	utilization category	g	
SV 116	16	002423121	230/400	AC-23B	87	12/108
SV 125	25	002423122	230/400	AC-23B	89	12/108
SV 140	40	002423123	230/400	AC-23B	92	12/108
SV 163	63	002423114	230/400	AC-22B	90	12/108
SV 180	80	002423115	230/400	AC-22B	90	12/108
SV 1100	100	002423116	230/400	AC-22B	90	12/108
SV 1125	125	002423117	230/400	AC-22B	90	12/108



2-pole

z-poie						
Туре	I <u>,</u> [A]	Code No.	U <sub>n</sub> [V]	utilization category	(O)	
SV 216	16	002423221	400	AC-23B	173	6/54
37 210		002723221	700	AC 230		U/ JT
SV 225	25	002423222	400	AC-23B	178	6/54
SV 240	40	002423223	400	AC-23B	184	6/54
SV 263	63	002423214	400	AC-22B	180	6/54
SV 280	80	002423215	400	AC-22B	180	6/54
SV 2100	100	002423216	400	AC-22B	180	6/54
SV 2125	125	002423217	400	AC-22B	180	6/54



3-pole

3 Poic						
Туре	I <sub>n</sub> [A]	Code No.	U <sub>n</sub> [V]	utilization category	g	
SV 316	16	002423321	400	AC-23B	265	4/36
SV 325	25	002423322	400	AC-23B	270	4/36
SV 340	40	002423323	400	AC-23B	280	4/36
SV 363	63	002423314	400	AC-22B	270	4/36
SV 380	80	002423315	400	AC-22B	270	4/36
SV 3100	100	002423316	400	AC-22B	270	4/36
SV 3125	125	002423317	400	AC-22B	270	4/36



4-pole

Туре	I <sub>n</sub> [A]	Code No.	U <sub>n</sub> utilization [V] category		g	
SV 416	16	002423421	400	AC-23B	363	3/27
SV 425	25	002423422	400	AC-23B	365	3/27
SV 440	40	002423423	400	AC-23B	380	3/27
SV 463	63	002423414	400	AC-22B	360	3/27
SV 480	80	002423415	400	AC-22B	360	3/27
SV 4100	100	002423416	400	AC-22B	360	3/27
SV 4125	125	002423417	400	AC-22B	360	3/27



## EVE Build-in Devices EVESYS

#### **Build-in devices EVESYS**

Rated current **25-40 A** 

Utilization category **AC-22A** 

Modular changeover switches SSQ I-0-II (network - generator) enable simple and trouble-free switching of power supply sources in case of emergency (e.g. mains voltage failure). They are designed for installation in switchgear equipped with TH35 rails adapted for mounting modular devices. Switches can be sealed for the selected positions: I or II.

#### Advantages:

- the family of SSQ changeover switches expands the EVE modular system range,
- I all changeover switches are made in modular form module width 18 mm,
- I the distance between the changeover switch contacts in the open state is larger than 3 mm per one pair of
- contacts, (two pair of contacts in the current path of changeover switch)
- I the changeover switches are equipped with terminals enabling connection of conductors of cross-section:
  - 16 mm² for a "wire" type wire
  - 10 mm² for a "stranded wire" type cable.

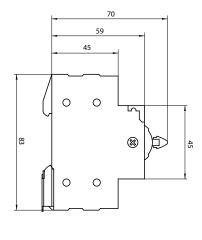
Three-position modular changeover switch I-0-II up to 40 A

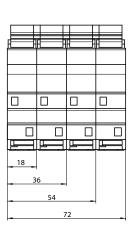
Туре	I <sub>n</sub> [A]	Code No.	U <sub>n</sub> [V]	number of poles	utilization category	(O)	
SSQ 125	25	002421414	230	1	AC-22A	88	1/12
SSQ 225	25	002421424	400	2	AC-22A	176	1/6
SSQ 325	25	002421434	400	3	AC-22A	264	1/4
SSQ 425	25	002421444	400	4	AC-22A	352	1/3
SSQ 140	40	002421415	230	1	AC-22A	88	1/12
SSQ 240	40	002421425	400	2	AC-22A	176	1/6
SSQ 340	40	002421435	400	3	AC-22A	264	1/4
SSQ 440	40	002421445	400	4	AC-22A	352	1/3



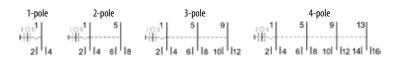
#### **Technical data**

Rated voltage U <sub>n</sub>	230/400V AC				
Rated current I	25A, 40A				
Rated frequency f <sub>n</sub>	50/60 Hz				
Terminals	1,5 - 16 mm², max 1,21 Nm				
Electrical insulation	>3mm contact space				
Rated short-circuit making capacity	1,8 kA				
Pollution degree	3 (for Switch)				
Degree of protection	IP20				
Rated Short-time Withstand Current Icw	0,8 kA, 1 s				
Rated impulse withstand voltage Uimp	6 kV				
Rated insulation voltage Ui	440 V				
Utilization category	AC-22B				
Mechanical endurance	> 8.500 op.c.				
Electrical endurance	> 1.700 op.c.				
Width of the switch	18mm				
Standards	PN-IEC 60947-3				
Mounting position	any				





#### **EVE / Build-in Devices EVESYS**



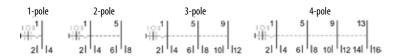
Three-position modular changeover switch I-0-II up to 125 A

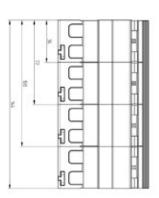
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Туре	I <sub>n</sub> [A]	Code No.	U <sub>n</sub> [V]	number of poles	utilization category	g	
SSQ 163	63	002421416	230	1	AC-22B	150	1/51
SSQ 263	63	002421426	400	2	AC-22B	303	1/27
SSQ 363	63	002421436	400	3	AC-22B	456	1/18
SSQ 463	63	002421446	400	4	AC-22B	609	1/14
SSQ 180	80	002421417	230	1	AC-22B	153	1/51
SSQ 280	80	002421427	400	2	AC-22B	306	1/27
SSQ 380	80	002421437	400	3	AC-22B	459	1/18
SSQ 480	80	002421447	400	4	AC-22B	612	1/14
SSQ 1100	100	002421418	230	1	AC-22B	156	1/51
SSQ 2100	100	002421428	400	2	AC-22B	312	1/27
SSQ 3100	100	002421438	400	3	AC-22B	468	1/18
SSQ 4100	100	002421448	400	4	AC-22B	624	1/14
SSQ 1125	125	002421419	230	1	AC-22B	161	1/51
SSQ 2125	125	002421429	400	2	AC-22B	322	1/27
SSQ 3125	125	002421439	400	3	AC-22B	483	1/18
SSQ 4125	125	002421449	400	4	AC-22B	644	1/14

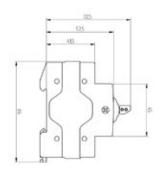


#### **Technical data**

230/400V AC				
63 A, 80 A, 100 A, 125 A				
50/60 Hz				
2,5 - 50 mm², max 3,5 Nm, PZ2				
4 kA				
3 (for Switch)				
IP20				
0,8 kA, 1 s				
6 kV				
440 V				
AC-22B				
> 8.500 op.c.				
> 1.700 op.c.				
32 mm				
PN-IEC 60947-3				
any				







#### **EVE / Build-in Devices EVESYS**

#### **Modular indicators SON H**

Modulai	modular malcutors sort m							
Туре	Color	Code No.	g					
SON H-1R	1x red	002471550	40	1/400				
SON H-1G	1x green	002471551	40	1/400				
SON H-3R	3x red	002471552	48	1/400				
SON H-3K	1x red, 1x yellow, 1x green	002471553	48	1/400				
SON H-3G	3x green	002471556	48	1/400				
SON H-1Y	1x yellow	002471554	40	1/400				
SON H-1B	1x blue	002471555	40	1/400				
SON H-2GR	1x green, 1x red	002471559	45	1/400				

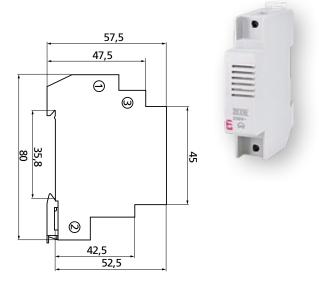


#### **Technical data**

	SON H-1R	SON H-1G	SON H-1Y	SON H-1B	SON H-3R	SON H-3K	SON H-3G	SON H-2GR	
Rated voltage U		24	10V AC			3x240V AC		2x240V AC	
Voltage tolerance		,			-25%+10	0%			
Rated frequency f <sub>n</sub>		50/60Hz							
Power consumption		0,267	V (240V AC)		1,04W (240V AC) 0,69V			0,69W (240V AC)	
Diode colour	1 red	1 green	1 yellow	1 blue	3 red	1 red, 1 yellow, 1 green	3 green	1 green, 1 red	
Protection class		Casing: IP40, terminals IP20							
Humidity					95% (without cond	lansation)			
Material				Se	lf-extinguished mat	erial UL94-V0			
Cross section		,			1-4 mm <sup>2</sup>				
Torque					0,6 Nm				
Montage					TH35				
Width		1 Modul							
Standards				I	EC EN 61000-3-2; IEC	EN 61000-4			

#### Bell/Buzzer

Туре	Code No.	U <sub>n</sub> [V]	g	
Bell ZE 220	002412001	230	70	12/108
Bell ZE 8	002412002	8	70	12/108
Buzzer BE 220	002413001	230	54	12/108
Buzzer BE 8	002413002	8	54	12/108

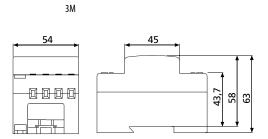


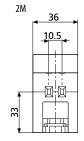
#### **EVE / Build-in Devices EVESYS**

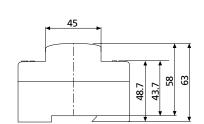
#### **Bell transformer**

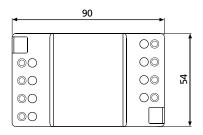
Туре	I <sub>n</sub>	Code No.	P <sub>n</sub>	U <sub>1n</sub>	U <sub>2n</sub>	<u></u> @	83
	[A]		[VA]	[V]	[V]	<u>g</u> \	
Zt 8/8	1	002411005	8	230	4, 6, 8	620	1/36
Zt 8/12	0,63	002411006	8	230	6, 8, 12	600	1/36
Zt 8/8 - 2M	1	002411010	8	230	8	314	1/54
Zt 8/12 - 2M	0,63	002411011	8	230	12	312	1/54



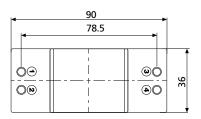








Bell transformer type 3M

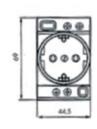


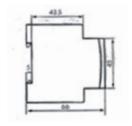
Bell transformer type 2M

#### **DIN** socket

D III DOGINGE						
Туре	Code No.	I <sub>n</sub> [A]	U <sub>n</sub> [V]	pole numbers	g	
T-2P+Z schuko	002414020	10A DC, 16A AC	250V AC	2+PE	77	15







#### Power relays VS116K, VS316K

Application: Control signals in low-power circuits, combined with buttons, switches, for automation systems

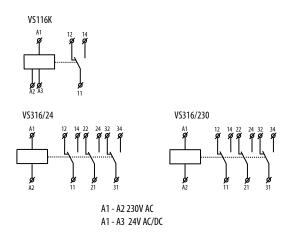
#### Advantages:

- Voltage range AC230 or AC / DC 24V,
- 1 module, DIN rail mounting
- Changeover contact 1x16A or 3x16A,
- Output status LED indication

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	VS116K	VS316/24	VS316/230			
Supply terminals		A1 - A2				
Voltago rango	230 V AC/50-	24 V AC/DC/	230 V AC/			
Voltage range	60 Hz	50-60 Hz	50-60 Hz			
Burden	AC max. 7.5	1.6 VA/ 1.2 W	2.5 VA			
	VA/ 1W		2.5			
Supply terminals	A1-A3		(			
Voltage range	24 V AC/DC	)	(			
	(50-60 Hz)					
Burden	1 VA AC/ 1W DC	150(100(	(			
Supply voltage tolerance		-15%; +10%				
Output						
Number of contacts	1 x changeover/ SPDT (AgSnO2)	3 x changeover/	' 3PDT (AgSnO <sub>2</sub> )			
Current rating	16 A/ AC1	16A/	AC1			
Breaking capacity	4000VA/ AC1, 384W/ DC	4000VA/ AC1, 384W/ DC				
Inrush current	30 A/ <3s 30 A/ <3s					
Switching voltage	250 V AC1/ 24 V DC					
Min. breaking capacity DC	500 mW					
Output indication	hi	high intensity of LED				
Mechanical life	3x107	1x1	107			
Electrical life (AC1)	0.7x105	1x1	105			
Time between switching	min. 2s	20 ms	50 ms			
Other information						
Operating temperature	-20 °C	+55 °C (-4 °F <sup>*</sup>	131 °F)			
Storage temperature	-30 °C	. +70 °C (-22 °F	158 °F)			
Electrical strength	4	kV (supply-output	)			
Operating position	any					
Mounting/DIN rail	DIN rail EN 60715					
Protection degree	IP 40 from front panel					
Overvoltage category	III.					
Pollution degree		2				
Max. cable size (mm²)		max.1x 2.5 / 2x1.5				
D	max. 1x2.5 (AWG 12)					
Dimensions		x 64 mm (3.5" x 0.				
Weight	54 g (1.9 oz.) 90 g (3.17 oz.) 92 g (3.25 oz.)					
Standards	EN 61810-1, EN 61010-1					

#### Symbol



#### Notes

Max. time of changeover of contact is 10ms. VS316/24 and VS316/230 enable switching of different phases or 3 phase voltage.

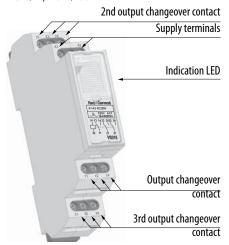
#### Description

VS116K



terminal A3 only for VS116K

#### VS316/24, VS316/230



#### Power relays VS116K, VS316K

Туре	Code No.	Voltage U <sub>n</sub>	Number of contacts	g	
VS116K	002471211	AC230V / AC/DC 24V	1P	58	1/10
VS316/230 V	002471220	AC230V	3P	84	1/10
VS316/24 V	002471225	AC/DC 24V	3P	84	1/10



#### Multifunction time relay with supply voltage disconnection CRM-72TO

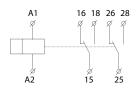
- ✓ It can be used for delayed switching off of a backup power supply and systems in case of power failure (e.g. emergency lighting, emergency ventilation, electrically and automatically operated doors – lifts, escalators).
- Comfortable and well-arranged time delay (t) setting by rotary switch.
- Adjustable time delay from 0.1 s to 10 m is split into four ranges: (0.1 s − 1 s / 1 s − 10 s / 0.1 m − 1 m / 1 m − 10 m)
- Power supply outages must be in the order of tens to hundreds of milliseconds.
- Multifunction red LED flashes or shines depending on the operating states.



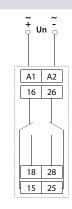
#### Technical data

	CRM-72T0
Supply terminals	A1 - A2
Supply voltage	12 - 240 V AC/DC(AC 50 - 60 Hz)
Consumption	1,9 VA / 0,9 W
Supply voltage tolerance	-15 %; +10 %
Time circuit	
Number of features	0.1 s - 10 min
Time delay	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	
Number of contacts	2× changeover (AgNi)
Current rating	8 A / AC1
Breaking capacity	2000 VA / AC1, 192 W / DC
Inrush current	10 A / <3 s
Switching voltage	250 V AC / 24 V DC
Power dissipation (max.)	1,2 W
Mechanical life	3x107
Electrical life (AC1)	0.7x105
Other information	
Operating temperature	-20 °C +55 °C (-4 °F 131 °F)
Storage temperature	-30 °C +70 °C (-22 °F 158 °F)
Dielectric strength	3,5 kV
Mounting/DIN rail	DIN rail EN 60715
Protection degree	IP 40 from front panel / IP 20 terminals
Operating position	any
Overvoltage category	III.
Pollution degree	2
May cable size(mm²)	solid wire max. 1x2,5, 2x1,5 (AWG 14)
Max. cable size(mm²)	stranded with ferrule max. 1x2,5 ( AWG 14 )
Dimensions	90 x 17,6 x 64 mm
Weight	69g
Standards	EN 61812-1

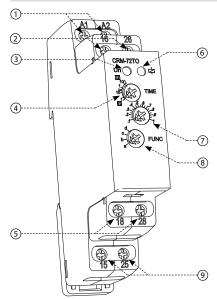
#### Symbol



#### Connection



#### Description



- 1. Supply voltage terminals (A1-A2)
- 2. Output contact (16-26)
  3. Supply voltage indication
  4. Time delay (t) setting

- 5. Output contact (18-28)
  6. Indication of operating states

- 7. Fine time setting
  8. Function setting
  9. Output contact (15-25)

#### Multifunction time relay with supply voltage disconnection CRM-72TO

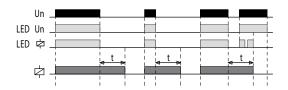
Туре	Code No.	g	
CRM-72TO UNI	002470096	82	1/10



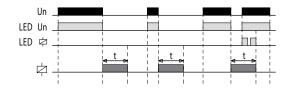


#### **Function**

#### **1** TRUE OFF DELAY



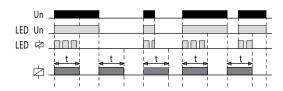
#### **6** TRUE SINGLE SHOT



#### C TRUE INTERVAL ON



#### d TRUE INTERVAL ON/OFF

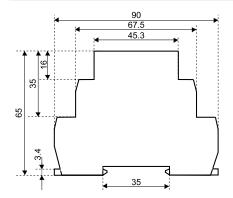


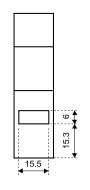
#### Multifunction time relay CRM-91H, CRM-93H

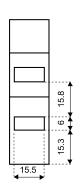
#### Advantages

- 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
- 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

#### 1-module design





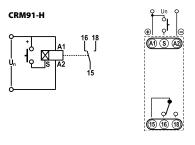


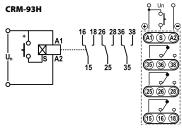


#### **Technical data**

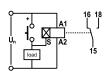
	CRM-91H	CRM-93H	
Number of functions		10	
Supply	A1-A2		
Supply voltage	12-240 V AC/DC(50-60 Hz AC)		
Consumption	AC 0,7-3 VA /	DC 0,5 - 1,7 W	
Supply indication	gree	n LED	
Time ranges	0.1 s-	10 days	
Time settings	rotary	switch	
Time deviation	5%-mecha	nical setting	
Repeat accuracy	0,2%-set v	alue stability	
Temperature coefficient	0,01% /	°C at 20 °C	
Output			
Changeover contacts	1	3	
Rated current	16 A / AC1	8 A / AC1	
Breaking capacity	4000 VA / AC1,	2000 VA / AC1,	
	384 W /DC	192 W / DC	
Inrush current (duty factor 10%)	30 A / <3 s	10 A / <3 s	
Switching voltage	250 V AC1 / 24 V DC		
Min. breaking capacity DC	500 mW		
Output indication	multifunction red LED		
Mechanical life	3x10 <sup>7</sup>		
Electrical life	0,7x10⁵		
Controlling			
Controlling voltage	12-240	V AC/DC	
Consumption of output	0,025-0,2 VA A	.C/ 0,1-0,7 W DC	
Load between S-A2	,	/	
Glow-tubes	-	/	
Control. terminals	A	1-S	
Impulse length	min. 25 ms/ r	nax. unlimited	
Reset time	max.	150 ms	
Operating temperature	-20	+55 ℃	
Storing temperature	-30	+70 ℃	
Electrical strength	4	kV	
Operating position	a	ny	
Mounting	DIN rail EN 60715		
Protection degree	IP 40 from frontal panel		
Overvoltage category	III.		
Pollution degree	2		
Max. cable size	2.5 mm <sup>2</sup>		
Dimensions	90 x 17,6	5 x 64 mm	
Standards	EN 61812-1	, EN 61010-1	

#### Connection

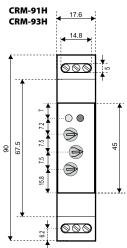




Load with control input possible. Load between S-A2 possible to connect in parallel way, without disturbing of proper operation of the relay.



#### **Dimensions**

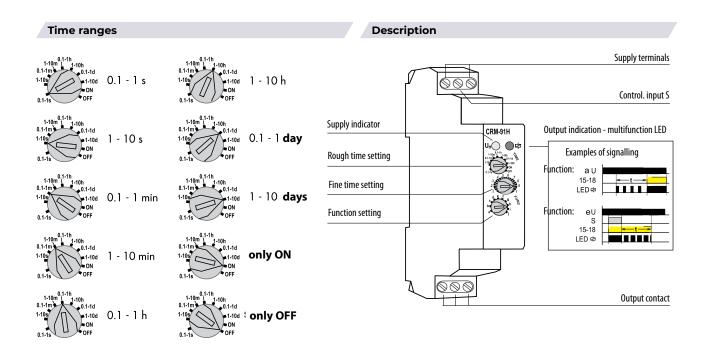


Multifunction time relay CRM-91H, CRM-93H

	··· •···· • · • · • · • · • · • · • · •	>, ~.		
Туре	I <sub>n</sub> [A]	Code No.	g	
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:
  - **✓** cycler beginning with pulse
  - **■** cycler beginning with pause

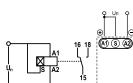
- Time scale 0.1s 100 days divided into 10 time ranges
- Rough time setting by rotary switch
- Output contact: 1x 16 A changeover
- Output indication: multifunction red LED

#### **Technical data**

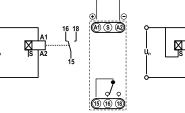
Supply voltage Consumption Supply indication  Green LED Time ranges Time setting Time setting Time deviation Repeat accuracy Temperature coefficient Output Changeover contacts Rated current Breaking capacity Inrush current (duty factor 10%) Switching voltage Min. breaking capacity DC Output indication Mechanical life Reset time Operating temperature  Operating temperature  Page 12-240 V AC/DC (50-60 Hz AC)  Green LED  O.1 s-100 days  rotary switch and potentiometer  5% mechanical setting 0,2% set value stability 0,01% / °C -> 20 °C  Output  10A / AC1  4000 VA / AC1, 384 W /DC  Sou mW  Multifunction red LED  3x 107  Electrical life 0,7x 105  Reset time  Max. 150 ms  Operating temperature  -20+55 °C  Storage temperature  -30+70 °C  Electrical strength Operating position  Mounting/DIN rail DIN rail EN 60715	Number of functions	2
Consumption  Supply indication  Green LED  O.1 s-100 days  Time setting  Time setting  Repeat accuracy  Temperature coefficient  O.01% / °C -> 20 °C  Output  Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Min. breaking capacity DC  Output indication  Mechanical life  Reset time  Operating temperature  Operating temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dimensions  O,2% set value stability  10,01% / °C -> 20 °C  0.11% / °C -> 20 °C  110,01% / °C -> 20 °C  111  Operating temperature  111  Operating position  IP 40 from frontal panel  Overvoltage category  Pollution degree  2  4 kX (supply-output)  Operating position  IP 40 from frontal panel  Overvoltage category  Pollution degree  2  Max. cable size  2,5 mm²  90x17,6x64 mm²	Supply	A1-A2
Supply indication  Time ranges  Time setting  Repeat accuracy  Temperature coefficient  Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Min. breaking capacity DC  Output indication  Mechanical life  Beset time  Operating temperature  Operating temperature  Changeover contacts  1  Rated current  16A / AC1  4000 VA / AC1, 384 W /DC  500 mW  multifunction red LED  Mechanical life  0,7x10°  Reset time  Operating temperature  Ctorage temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Ax. Cable size  Dimensions  O,2% set value stability  10,01% / °C -> 20 °C  0.2% set value stability  10,01% / °C -> 20 °C  0,01% / °C -> 20 °C  10,01% / °C -> 20 °C  10,	Supply voltage	12-240 V AC/DC (50-60 Hz AC)
Time ranges  Time ranges  Time setting  Time setting  Time setting  Repeat accuracy  Temperature coefficient  O,01% / °C -> 20 °C  Output  Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Min. breaking capacity DC  Output indication  Mechanical life  Seset time  Operating temperature	Consumption	
Time setting Time setting Time deviation Repeat accuracy Repeat accuracy Toutput Changeover contacts Rated current Breaking capacity Inrush current (duty factor 10%) Switching voltage Min. breaking capacity DC Output indication Mechanical life Electrical life Reset time Operating temperature Storage temperature  Changeover contacts  1 Rated Current 16A / AC1  87 AC1 88 AC1 80 A	Supply indication	green LED
Time deviation  S mechanical setting  0,2% set value stability  Temperature coefficient  0,01% / °C -> 20 °C  Output  Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Min. breaking capacity DC  Output indication  Mechanical life  Electrical life  0,7x10 <sup>5</sup> Reset time  Operating temperature  Storage temperature  Storage temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Max. cable size  Dimensions  O,2% set value stability  16,2% set value stability  16,2% cerv 20 °C  10,01% / °C -> 20 °C	Time ranges	0.1 s-100 days
Repeat accuracy  Temperature coefficient  0,01% / °C -> 20 °C  Output  Changeover contacts  1  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Mechanical life  Electrical life  0,7x10³  Reset time  Operating temperature  Storage temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dimensions  Output  0,01% / °C -> 20 °C  0,01% / °C -> 20 °C  00,01% / °C -> 20 °C  Community  16A / AC1  A000 VA / AC1, 384 W /DC  30 A / <3 s  250 V AC1, 24 V DC  500 mW  multifunction red LED  Multifunction red LED  3x10²  Electrical life  0,7x10³  Reset time  max. 150 ms  -20+55 °C  4 kV (supply-output)  Operating position  any  DIN rail EN 60715  IP 40 from frontal panel  Overvoltage category  III  Pollution degree  2  4x. cable size  2,5 mm²  90x17,6x64 mm²	Time setting	rotary switch and potentiometer
Temperature coefficient  Output  Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Mechanical life  Electrical life  Operating temperature  Storage temperature  Cotage temperature  Cotage temperature  Departing position  Mounting/DIN rail  Protection degree  Max. cable size  Dimensions  1  A000 VA / AC1, 384 W /DC  4000 VA / AC1, 384 W /DC  30 A / <3 s  250 V AC1 / 24 V DC  500 mW  multifunction red LED  500 mW  multifunction red LED  500 mW  multifunction red LED  4 kV (supply-output)  Din rail EN 607 15  IP 40 from frontal panel  2  4 kX, cable size  2,5 mm²  90x17,6x64 mm²	Time deviation	5% mechanical setting
Output  Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Min. breaking capacity DC  Output indication  Mechanical life  Electrical life  O,7x10³  Reset time  Operating temperature  Councy temperature  To Storage temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dimensions  16A / AC1  A000 VA / AC1, 384 W /DC  30 A / <3 s  250 V AC1 / 24 V DC  500 mW  multifunction red LED  3x10²  Foo max. 150 ms  0,7x10³  max. 150 ms  -20+55 °C  4 kV (supply-output)  Din rail EN 60715  IP 40 from frontal panel  2  4,5 mm²  90x17,6x64 mm²	Repeat accuracy	0,2% set value stability
Changeover contacts  Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Moutput indication  Mechanical life  Electrical life  Operating temperature  Storage temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Dimensions  16A / AC1  4000 VA / AC1, 384 W /DC  30 A / <3 s  250 V AC1 / 24 V DC  500 mW  multifunction red LED  500 mW  multifunction red LED  3x107  Electrical life  0,7x105  Reset time  max. 150 ms  0perating temperature  -20+55 °C  Storage temperature  4 kV (supply-output)  Operating position  BIN rail EN 60715  IP 40 from frontal panel  Overvoltage category  III  Pollution degree  2  Max. cable size  2,5 mm²  90x17,6x64 mm²	Temperature coefficient	0,01% / °C -> 20 °C
Rated current  Breaking capacity  Inrush current (duty factor 10%)  Switching voltage  Z50 V AC1 / 24 V DC  Min. breaking capacity DC  Output indication  Mechanical life  Reset time  Operating temperature  Storage temperature  Totage temperature  Storage temperature  Diperating position  Mounting/DIN rail  Protection degree  Max. cable size  Dimensions  Din rail 4000 VA / AC1, 384 W / DC  A000 VA / AC1 V DC  A000	Output	
Breaking capacity  Breaking capacity  A000 VA / AC1, 384 W /DC  Inrush current (duty factor 10%)  30 A / <3 s  Switching voltage  250 V AC1 / 24 V DC  Min. breaking capacity DC  Output indication  Mechanical life  3x10 <sup>7</sup> Electrical life  0,7x10 <sup>5</sup> Reset time  Operating temperature  -20+55 °C  Storage temperature  -30+70 °C  Electrical strength  4 kV (supply-output)  Operating position  Any  Mounting/DIN rail  Protection degree  IP 40 from frontal panel  Overvoltage category  Pollution degree  2  Max. cable size  2,5 mm²  90x17,6x64 mm²	Changeover contacts	1
Inrush current (duty factor 10%)  Switching voltage  250 V AC1 / 24 V DC  Min. breaking capacity DC  Output indication  Mechanical life  Electrical life  0,7x10 <sup>5</sup> Reset time  Operating temperature  20+55 °C  Storage temperature  -30+70 °C  Electrical strength  4 kV (supply-output)  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dimensions  250 V AC1 / 24 V DC  500 mW  multifunction red LED  max. 150 ms  -20+55 °C  4 kV (supply-output)  DIN rail EN 60715  IP 40 from frontal panel  2  2,5 mm²  90x17,6x64 mm²	Rated current	16A / AC1
Switching voltage  Min. breaking capacity DC  Soo mW  Output indication  Mechanical life  Electrical life  O,7x10 <sup>5</sup> Reset time  Operating temperature  Storage temperature  Electrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dim rail cond with a	Breaking capacity	4000 VA / AC1, 384 W /DC
Min. breaking capacity DC  Output indication  Mechanical life  Bectrical life  Reset time  Operating temperature  Clectrical strength  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dimensions  DIN rail capacity  Ston mw  Multifunction red LED  multifunction red LED  multifunction red LED  3x107  End LED  3x107  Electrical strength  AkV (supploeutput)  DIN rail EN 60715  IP 40 from frontal panel  2  2  3,5 mm²  90x17,6x64 mm²	Inrush current (duty factor 10%)	30 A / <3 s
Output indication     multifunction red LED       Mechanical life     3x10²       Electrical life     0,7x10³       Reset time     max. 150 ms       Operating temperature     -20+55 °C       Storage temperature     -30+70 °C       Electrical strength     4 kV (supply-output)       Operating position     any       Mounting/DIN rail     DIN rail EN 60715       Protection degree     IP 40 from frontal panel       Overvoltage category     III       Pollution degree     2       Max. cable size     2,5 mm²       Dimensions     90x17,6x64 mm²	Switching voltage	250 V AC1 / 24 V DC
Mechanical life 3x10 <sup>7</sup> Electrical life 0,7x10 <sup>3</sup> Reset time max. 150 ms  Operating temperature -20+55 °C  Storage temperature -30+70 °C  Electrical strength 4 kV (supply-output)  Operating position any  Mounting/DIN rail DIN rail EN 60715  Protection degree IP 40 from frontal panel  Overvoltage category III  Pollution degree 2  Max. cable size 2,5 mm²  90x17,6x64 mm²	Min. breaking capacity DC	500 mW
Electrical life 0,7x10 <sup>5</sup> Reset time max. 150 ms  Operating temperature -20+55 °C  Storage temperature -30+70 °C  Electrical strength 4 kV (supply-output)  Operating position any  Mounting/DIN rail DIN rail EN 60715  Protection degree IP 40 from frontal panel  Overvoltage category III  Pollution degree 2  Max. cable size 2,5 mm²  90x17,6x64 mm²	Output indication	multifunction red LED
Reset time max. 150 ms 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 IP 40 from frontal panel Overvoltage category III Pollution degree 2 Max. cable size 2,5 mm² 90x17,6x64 mm²	Mechanical life	3x10 <sup>7</sup>
Operating temperature  -20+55 °C  Storage temperature  -30+70 °C  Electrical strength  4 kV (supply-output)  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  111  Pollution degree  2  Max. cable size  2,5 mm²  90x17,6x64 mm²	Electrical life	0,7x10⁵
Storage temperature  Storage temperature  -30+70 °C  4 kV (supply-output)  Operating position  Mounting/DIN rail  Protection degree  Overvoltage category  Pollution degree  Max. cable size  Dimensions  -30+70 °C  4 kV (supply-output)  DIN rail EN 60715  IP 40 from frontal panel  2  2  3,5 mm²  90x17,6x64 mm²	Reset time	max. 150 ms
Electrical strength 4 kV (supply-output) Operating position any Mounting/DIN rail DIN rail EN 60715 Protection degree IP 40 from frontal panel Overvoltage category III Pollution degree 2 Max. cable size 2,5 mm² 90x17,6x64 mm²	Operating temperature	-20+55 °C
Operating position         any           Mounting/DIN rail         DIN rail EN 60715           Protection degree         IP 40 from frontal panel           Overvoltage category         III           Pollution degree         2           Max. cable size         2,5 mm²           Dimensions         90x17,6x64 mm²	Storage temperature	-30+70 °C
Mounting/DIN rail Protection degree IP 40 from frontal panel Overvoltage category III Pollution degree 2 Max. cable size 2,5 mm² 90x17,6x64 mm²	Electrical strength	4 kV (supply-output)
Protection degree IP 40 from frontal panel Overvoltage category III Pollution degree 2 Max. cable size 2,5 mm² Dimensions 90x17,6x64 mm²	Operating position	any
Overvoltage category         III           Pollution degree         2           Max. cable size         2,5 mm²           Dimensions         90x17,6x64 mm²	Mounting/DIN rail	DIN rail EN 60715
Pollution degree         2           Max. cable size         2,5 mm²           Dimensions         90x17,6x64 mm²	Protection degree	IP 40 from frontal panel
Max. cable size         2,5 mm²           Dimensions         90x17,6x64 mm²	Overvoltage category	III
Dimensions 90x17,6x64 mm <sup>2</sup>	Pollution degree	2
	Max. cable size	2,5 mm <sup>2</sup>
Standards EN 61812-1, EN 61010-1	Dimensions	90x17,6x64 mm <sup>2</sup>
	Standards	EN 61812-1, EN 61010-1

#### Connection

Cycler beginning with pulse



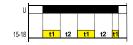
Cycler beginning with pause

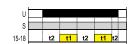


#### **Functions**

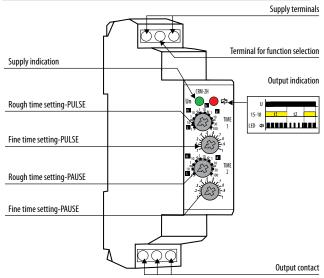
Cycler beginning with pulse







#### Description

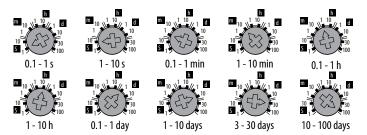


Time relay CRM-2H

Туре	Ι <sub>n</sub> [Δ]	Code No.	g	
CRM-2H	16	002470003	68	1/10



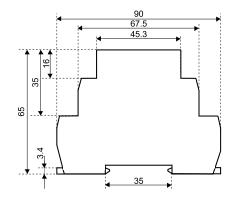
#### Time ranges

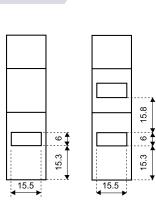


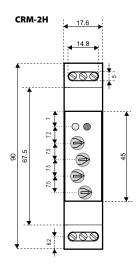


#### **Dimensions**

#### 1-module design







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

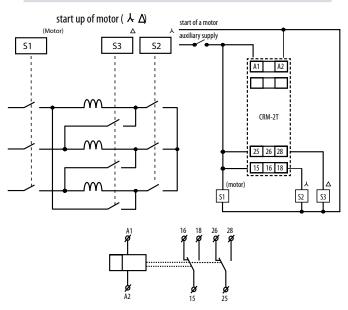
#### Advantages

- 1-module, DIN rail mounting
- Supply voltage: AC/DC 12V 240 V
- Generates motor starting cycle star-delta
- **✓** Time t1 (star)
- rough time setting by rotary switch
- **I** fine time setting by potentiometer (from 0,1 to1)
- - # time range 0.1 s 1 s is set by potentiometer
- Output contact: 2x 16 A (AC1)
- Output indication: multifunction red LED

#### Technical data

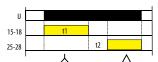
Technical data	
	CRM-2T
Number of functions	1
Supply	A1-A2
Universal supply	AC/DC 12-240 V (AC 50-60 Hz)
Consumption	AC 0,7-3VA/DC 0,5-1,7 W
Supply voltage tolerance	-15% - +10%
Supply indication	green LED
Time ranges	t1: 0.1 s - 100 days t2: 0,1s - 1s
Time setting	rotary switch and potentiometer
Time deviation	5%-mechanical setting
Repeat accuracy	0,2%-set value stability
Temperature coefficient	0,01% / °C at 20 °C
Output	
Number of contacts	2 x changeover (AgNi)
Rated current	16 A / AC1
Breaking capacity	4000 VA / AC1, 384 W / DC
Inrush current (duty factor 10%)	30A/<3s
Switching voltage	max. 250 V AC1 / 24 V DC
Min. breaking capacity DC	500 mW
Output indication	multifunction red LED
Mechanical life	3x10 <sup>7</sup>
Electrical life	0.7x10 <sup>s</sup>
Reset time	max. 150 ms.
Controlling	
Operating temperature	-20+55 °C
Storage temperature	-30+70 °C
Electrical strength	4 kV
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel
Overvoltage category	III
Pollution degree	2
Max. cable size	2.5 mm <sup>2</sup>
Dimensions	90 x 17,6 x 64 mm
Standards	EN 61812-1, EN 61010-1

#### Connection



#### **Functions**

Delay ON star/delta

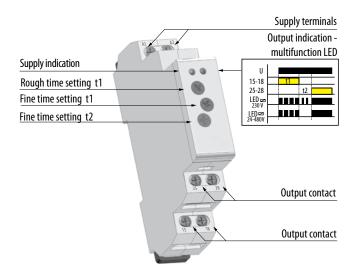


Delay ON star/delta relay CRM-2T

Delay Cit se	ui, acita i ciay	C		
Туре	I.	Code No.	$\left(\begin{array}{c} \bigcirc \\ \mathbf{g} \end{array}\right)$	
	[A]		[3]	
CRM-2T UNI	16	002470013	95	1/10

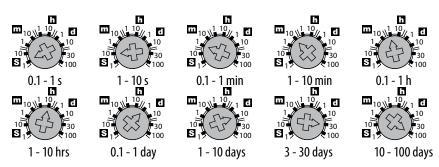


#### Description





#### Time ranges



#### Staircase switch CRM-4

#### Advantages

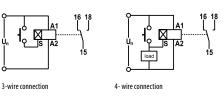
- **■** 1-module, DIN rail mounted
- Supply voltage: AC 230 V
- Protection against control push-button blocking
- Selector switch:
  - AUTO: normal function acc. to set time

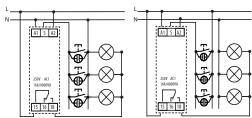
- **■** OFF: permanent off
- **I** ON: permanent on
- Time setting via potentiometer
- ✓ Output contact: 1x 16 A changeover ( load up to 4000 VA/AC1)

#### **Technical data**

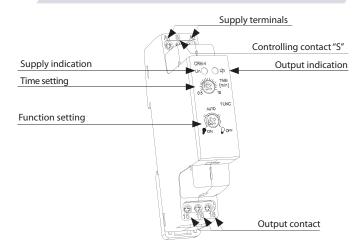
rechnical data		
Function	delay OFF	
Supply	A1-A2	
Supply voltage	230 V AC/50-60 Hz	
Consumption	max. 12 VA AC/1.8 W	
Supply voltage tolerance	- 15%; + 10%	
Supply indication	green LED	
Time ranges	0,5 - 10 min	
Time setting	potentiometer	
Time deviation	10% mechanical setting	
Repeat accuracy	5% set value stability	
Temperature coefficient	0,05% / °C -> 20 °C	
Output		
Changeover contacts	1	
Rated current	16 A / AC1	
Breaking capacity	4000 VA / AC1, 384 W /DC	
Inrush current (duty factor 10%)	30 A / <3 s	
Switching voltage	250 V AC1 / 24 V DC	
Min. breaking capacity DC	500 mW	
Output indication	red LED	
Mechanical life	3x10 <sup>7</sup>	
Electrical life	0,7x10 <sup>s</sup>	
Controlling		
Control. voltage	230 V AC	
Consumption of input	0,53 VA AC	
Load between S-A2	<b>✓</b>	
Glow-tubes	yes, max. 20 pcs. (at 1 mA)	
Control. terminals	A1-S	
Impulse length	min. 25 ms/max. unlimited	
Reset time	max. 150ms	
Operating temperature	-20+55 °C	
Storage temperature	-30+70 °C	
Electrical strength	4 kV (supply - output)	
Operating position	any	
Mounting	DIN rail EN 60715	
Protection degree	IP 40 from frontal panel	
Overvoltage category	III	
Pollution degree	2	
Max. cable size	2,5 mm <sup>2</sup>	
Dimensions	90x17, 6x64 mm	
Standards	EN 60669-2-3, EN 61010-1	

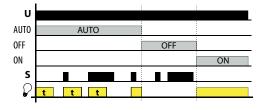
#### Connection





#### Description





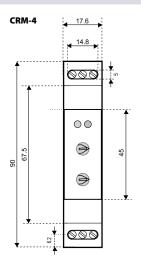
#### Staircase switch CRM-4

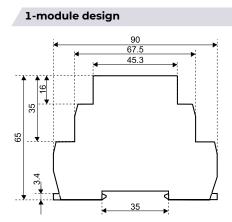
Туре	I <u>,</u> [A]	Code No.	g	
CRM-4	16	002470012	53	1/10

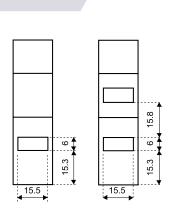




#### **Dimensions**







#### Programmable staircase switch CRM-47

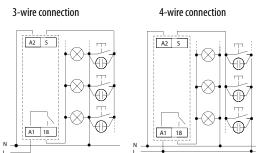
- Staircase switch enables delayed switching off of lighting on stairs, corridors, entrances, common areas or for delayed running of fans in the toilet or bathroom.
- The programmable staircase switch off ers similar application possibil-ities as the CRM-4, while it is possible to extend the delay for functions a, b repeatedly by briefly pressing the control button (buttons). Each short press multiplies the time set by the potentiometer, i.e. setting the potentiometer to 2 minutes with three presses extends the delay up to 6 minutes. The maximum value of such an extended delay will always be 30 minutes, regardless of the number of presses.
- Long press (>2 s) can switch off the output prematurely and end the ongoing delay.
- Control input with the possibility of loading up to 100 mA load (glow lamp, LED in the button, etc.).
- Function (selectable by potentiometer on the front panel)
  - a STAIRCASE SWITCH, programmable with signalization
  - b STAIRCASE SWITCH, programmable without signalization
  - c MEMORY LATCH (press to switch on, press to switch off)
  - d MEMORY LATCH with delay:
    - ✓ ON (permanently closed) e.g. during cleaning, moving
    - ✓ OFF (permanently open) e.g. when replacing luminaires.
- ${\rlap/}{I}$  ZERO CROSS feature: closes the output contact when the voltage crosses zero.
- Adjustable time delay (t) 0.5 10 m.
- Handles surge currents up to 80 A.
- 3-wire or 4-wire connection (input S can be controlled by A1 potential)

#### Technical data

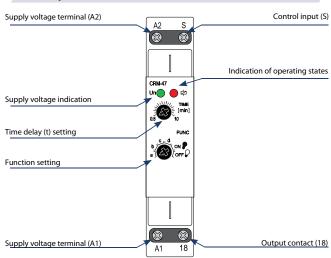
Technical data	
	CRM-47
Power supply	
Supply terminals	A1-A2
Supply voltage	230 V AC / 50-60Hz
Consumption	max. 3VA AC / 1.6 W
Time circuit	
Number of functions	6
Time delay (t)	0.5 - 10 min (prog. 30 min
Time setting	rotary potentiometer
Time deviation	5%-mechanical adjustment
Repeat accuracy	0,2%-set value stability
Temperature coefficient	0.01 % / °C, at = 20 °C
Output	
Number of contacts	1× closing (AgSnO2); closes potential "A1"
Rated current	16 A / AC1
Breaking capacity	4000 VA / AC1, 384W / DC
Inrush current	30A / < 3s.
Switching voltage	max. 250 V AC / 24 V DC
Power dissipation	max. 1,2 W
Mechanical life	10 <sup>7</sup>
Electrical life (AC1)*	10 <sup>5</sup>
Control	_
Control Voltage	230 V AC
Power the control input max.	4.5 VA / 0.3 W
Glow lamp connection	<b>√</b>
Max. current of connected glow lamps	100 mA
Control terminals	A1-S / A2-S
Impulse length	min 40ms. / max.unlimited
Reset time	max. 320 ms.
Other data	
Operating temperature	-20+55 °C
Storage temperature	-30+70 °C
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel / IP20 terminals
Overvoltage category	III.
Pollution degree	2
Max. cable size	
- Solid wire max.	1x2,5 mm <sup>2</sup> /2x1,5 mm <sup>2</sup>
- stranded with ferrule max.	1x2,5 mm <sup>2</sup>
Dimensions	90 x 17,6 x 64 mm
Standards	EN 61812-1
	E11 3 10 12 1

<sup>\*</sup> For higher loads and frequent switching, it is recommended to strengthen the relay contact with a contactor

#### Connection



#### Description





**Programmable staircase switch CRM-47** 

Programmable staircase switch Chin-47				
Туре	I <sub>n</sub>	Code No.	g	
CRM-47 230	16	002470304	70	1/10



#### **Functions**

When switching between functions, the red LED flashes.

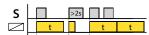




#### STAIRCASE SWITCH, programmable with signalization

The device timed the set time, 30 and 40s before the end of the time by double flashing of the luminaire announces the impending switch-off. You can increase the time interval by briefly pressing the button repeatedly. Suitable for resistive loads (e.g. bulbs).



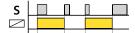


#### STAIRCASE SWITCH, programmable without signalization

The device will timed the set time without flashing at the end of the interval. You can increase the time interval by briefly pressing the button repeatedly.

The function is suitable for loads that can with stand frequent switching on and off (eg energy saving lamps, LED bulbs).









#### MEMORY LATCH (press to switch on, press to switch off)

By pressing the button the output relay closes and by pressing again the relay opens.

This function is primarily intended for locations where long-term lighting (without timing) is desirable and the unit is controlled from multiple locations (e.g. in office buildings).

#### MEMORY LATCH with delay

Pressing the button switches the output on/off. If the output is not turned off during the set time "t", it turns off automatically after the timer. This function is suitable for places where lighting is often forgotten (e.g. toilets, corridors, cellars).

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

#### Advantages

- **■** 2-modules, DIN rail mounting
- Daily, weekly, monthly, yearly program in one device (SHT-1; SHT-1/2)
- 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
- $I\!\!I$  Output contact: 1x 16A changeover ightarrow SHT-1
- **■** Output contact: 2x 16A changeover  $\rightarrow$  SHT 1/2



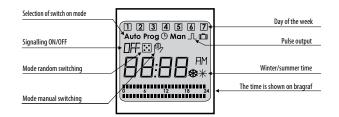
Digital time switch SHT-1 and SHT-1/2

2.g.ta. t 2 t a 2 ; =				
Туре	I <sub>n</sub> [A]	Code No.	g	
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

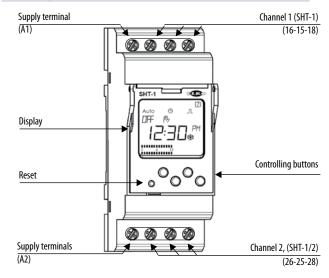
#### Technical data

Technical data			
Supply terminals		A1-A2	
Supply voltage	LIMI	12 - 240 V AC/DC (50 AC - 60 Hz)	
Consumption	UNI	0,5 - 2 VA AC/ 0,4 - 2 W DC	
Supply voltage	220	230 V AC/50 - 60 Hz	
Consumption	230	max. 14 VA AC / 2 W	
Supply voltage tolerance		-15%; +10%	
Back-up supply		✓	
Summer/winter time		automatic	
Output			
Number of contacts		$1x CO \rightarrow SHT-1,$ $2X CO \rightarrow SHT-1/2$	
Rated current		16 A / AC1	
Breaking capacity		4000 VA /AC1, 384 W / DC	
Inrush current (duty factor 10%)		30 A / < 3 s	
Switching voltage		250 V AC1 /24 V DC	
Min. breaking capacity DC		500 mW	
Mechanical life	>3x10 <sup>7</sup>		
Electrical life (AC1)	>0,7x10 <sup>5</sup>		
Time circuit			
Power back-up		3 years	
Accuracy	max. +/-1s/dat at 23°C		
Minimum interval		1 s	
Data stored for		min. 10 years	
Program circuit			
Program SHT-1, SHT-1/2		daily, weekly	
Data readout		LCD display	
Other information			
Operating temperature		-20+55℃	
Storage temperature		-30+70°C	
Electrical strength		4 kV (supply-output)	
Operating position		any	
Mounting		DIN rail EN 60715	
Protection degree		IP 20	
Overvoltage category		III	
Pollution degree		2	
Max. cable size		max. 2x1,5 mm <sup>2</sup> , 2x2,5 mm <sup>2</sup>	
IVIAA. CADIC SIZC			
Dimensions		90x35, 6x64mm	

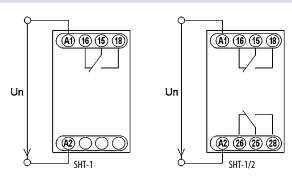
#### Controlling elements



#### Description

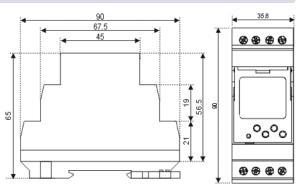


#### Connection





#### **Dimensions**



#### Digital time switch SHT-13/2 UNI

#### **DESCRIPTION**

All-in-One digital time relay, with various programs (daily, weekly, yearly and astronomical, mixed, random). Simple setting after the first start-up, built-in Web Server for setup via Wi-Fi connection. ASTROnomic program with manual entry of geogr. coordinates or selecting one of the preset cities. 2 independant programmable outputs with permanent NO or NC, pulse or cycle mode.

#### **ADVANTAGES**

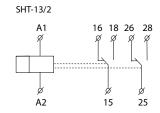
- supply voltage range AC/DC 24 240 V, (AC 50-60 Hz)
- possible time synchronization through NTP server
- 2 independant output channels (CO 2x16A)
- **■** summer/winter time AUTO or OFF
- **■** sealable transparent front panel cover

- **✓** PIN code protection against unauthorized changes
- Output: 2x changeover, 16 A
- $\blacksquare$  Housing: 2 MODULE size (2 TE), dimensions: 90 × 35 × 64 mm

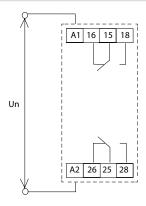
#### **Technical data**

c la il	A1 A2
Supply terminals	A1-A2
Supply voltage	24 - 240 V AC/DC (50 AC - 60 Hz)
Consumption	Wi-Fi "OFF" 0,5 W / 2 VA; "ON" 1 W / 3 VA
Supply voltage tolerance	-15%; +10%
Output	
Number of contacts	2× changeover (AgSn02)
Rated current	16 A/AC1; 1 HP 240 Vac, 1/2 HP 120 Vac; PD. B300
Breaking capacity	4000 VA /AC1, 384 W / DC
Inrush current (duty factor 10%)	30 A / < 3 s
Switching voltage	250 V AC1 /24 V DC
Power dissipation (max.)	2.4 W
Mechanical life	3x10 <sup>7</sup>
Electrical life (AC1)	10⁵
Time circuit	
Accuracy	max. ±0.5 s/day at 23°C
Minimum interval	1s
Data stored for	min. 10 years
Set time backup	up to 120 days (CR 2032 - 3V)
Program circuit	
Number of memory locations	200
Program type	daily, weekly, yearly, astro
Displayed data	LCD display with white backlight
Settings via website	by Wi-Fi (2.4 GHz)
Other information	
Operating temperature	-20+55°C
Storage temperature	-30+70°C
Dielectric strength:	
supply – output	AC 4 kV
output 1 – output 2	AC 4 kV
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP40 front panel / IP20 terminals
Overvoltage category	
Pollution degree	2
Cross-wire section — solid/	max. $1 \times 2.5$ , $2 \times 1.5$ /
stranded with ferrule (mm²)	max. 1× 2.5 (AWG 14)
Dimensions	90 × 35 × 64 mm
Standards	EN 61812-1

#### **Symbol**



#### Connection

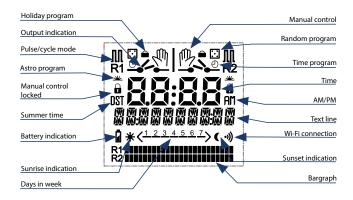


Digital time switch SHT-13/2 UNI

2.9		-, · · ·		
Туре	I <sub>n</sub> [A]	Code No.	g	
SHT-13/2 UNI	2x16	002470305	135	1

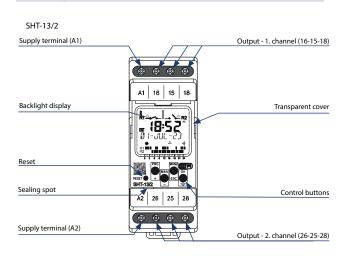


#### **Controlling elements**





#### Description





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

#### Advantages

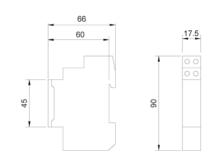
- The APC time switch controls any electrical installation by means of daily programs.
- Without (D1) or with (DR1) battery backup.
- Manual switch with permanent ON position.
- Supply voltage : AC 230V
- Sealable cover of frontal panel
- **■** Output contact:1x NO 16A
- Simple dial time setting. Minimum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



#### **Technical data**

	APC-DR1	APC-D1
Supply voltage	230V AC	230V AC
Power reserve	yes (100 hrs)	no
Dial/minimum switching time	15 min	15 min
Operating accuracy	+/- 1s/day at 22°C	+/- 1s/day at 22°C
Program	Daily	Daily
Output contact	1 x NO	1 x NO
Switching capability	16A 125/250V AC1	16A 125/250V AC1
Power consumption	0,5W	0,5W
Operating temperature	-25+55°C	-10+45°C
Mounting	DIN rail EN 60715	DIN rail EN 60715
Protection category	IP20	IP20
Overvoltage category		<u>II</u>
Dimensions	90 x 17,5 x 66	90 x 17,5 x 66
Standards	EN 60730-2-7	EN 60730-2-7

#### **Dimensions**



#### **Programming**



#### Connection



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

Туре	In [A]	Code No.	g	
APC-D1	16	002472001	87	1/10
APC-DR1	16	002472002	87	1/10



#### Analog electromechanical time switch ATS-1DR 230

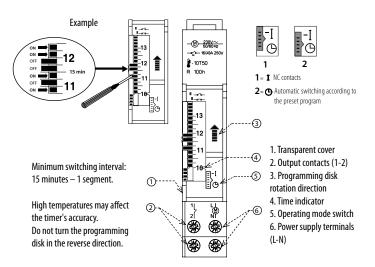
#### Description

- The mechanical time switch is a simple and inexpensive alternative to digital time switches for controlling heating, ventilation, cooling, lighting systems or pumps depending on real time.
- Daily program.
- Selection of operating modes using the switch on the panel:
  - switches automatically according to the set program
- Power reserve after power off for up to 100 hours after fully charged.
- Sealable transparent front panel cover.
- Supply voltage: AC 230V (50/60 Hz)
- Power consumption (max): 1W (1,5 VA)
- **✓** Program: daily
- Minimum operating switching time: 15 min
- Power reserve: max. 100 hrs
- Number of contacts 1x NO (AgNi) 16A AC1
- Mounting: DIN rail EN 60715

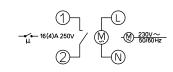
#### Technical data

Technical data		
Supply terminals	L, N	
Supply voltage	AC 230 V (50/60 Hz)	
Power consumption (max.)	1W (1.5 VA)	
Supply voltage tolerance	-10%, +10%	
Output		
Number of contacts	1x NO (AgNi)	
Rated current	16 A / AC1	
Breaking capacity	3500VA/AC1	
Switching voltage	250V AC	
Mechanical life	>1x10 <sup>6</sup>	
Electrical life (AC1)	>5x10 <sup>4</sup>	
Time circuit		
Program	daily	
Number of switching segments	max. +/-1s/daY at 23°C	
Minimum interval	1 s	
Operating accuracy	+/- 1s / day	
Power reserve	max. 100 hours	
Other information		
Operating temperature	-10+50°C	
Storage temperature	-10+50°C	
Electrical strength	4 kV (supply-output)	
Operating position	any	
Mounting	DIN rail EN 60715	
Protection degree	IP20	
Overvoltage category	III	
Pollution degree	2	
Max. cable size	max. 1x 4 mm², max. 2x 1,5 mm² / with sleeve max. 1x 4 mm², max. 2x 1,5 mm²	
Dimensions	90 x 17,5 x 64 mm	
Standards	EN 61812-1, EN 60669-1, EN 63044-1	

#### Description



#### Connection



Number of contacts: 1× NO (AgNi)
Rated current: 16 A/AC1
Switching capacity: 4000 VA/AC1
Switching voltage: 250 V AC
Mechanical endurance: 100,000 operations
Electrical endurance (AC1): 30,000 operations

#### Analog mechanical time switch ATS-1DR 230

Туре	In [A]	Code No.	g	
ATS-1DR 230	1xN0, 16A AC1	002470297	73	1





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

#### Advantages

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

- 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)

- # 4-wire connection
- Output 0-200 VA
- saving lights (loads of capacitive type)

#### SMR-B

- **■** 4-wire connection
- **■** 10 functions
- Output contact 1x16A / 4000 VA, 250V AC1
- Enables switching of fluorescent lights and also energy saving lights (see instruction manual technical data)
- V (for example for control from a security system)







	SMR-T	SMR-H	SMR-B		
Number of functions	9	9 9			
Connection	3-wires, without neutral	4-wires, with neutral	4-wires, with neutral		
Supply voltage		230 V AC / 50-60 Hz			
Consumption (no operation/make)	0,8/3 VA	0,8/3 VA	3 VA		
Supply voltage tolerance		- 15%; + 10%			
Time ranges	0,1 s-10 days	0,1 s-10 days	X		
Time setting via	via rotary switch and potentiometer	via rotary switch and potentiometer	х		
Time deviation	10% mechanical setting	10% mechanical setting	Х		
Repeat accuracy	2% set value stability	2% set value stability	Х		
Temperature coefficient	0,1%, °C at 20 °C	0,1%, °C at 20 °C	Х		
Output	1x1	1x triac			
Resistive load	10-160 VA	0-200 VA	16A 125/250 V AC1		
Inductive load	10-100 VA	0-100 VA	8A 250 V AC (cos fi > 0,4		
Controlling					
Voltage		230 V AC			
Current		3 mA			
Impulse length		min. 50 ms/ max. unlimited			
Operating temperature		0+50 °C			
Operating position		any			
Mounting		free at connecting wires			
Protection degree		IP 30 from front panel			
Overvoltage category		III			
Pollution degree	2				
Fuse	F1 A / 250 V	F1 A / 250 V	F1,6 A / 250 V		
Outlets		3 x solid wires 0,75 mm² length 90 mi	m		
Glow-laps in button (pcs)		max. 10			
Dimensions		48,5 x 48,5 x 13 mm			
Standards		EN 61010-1			

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

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Туре	Code No.	g		
SMR-T	002470004	29	1/14	
SMR-H	002470005	31	1/14	
SMR-B	002470021	53	1/14	



#### **Function**

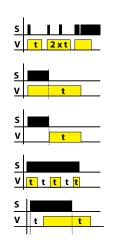
Function a - delay off on entrering edge output times when it is switched. Each following pressing (max. 5x) increases time Long pressing switches output off

Function b - delay off on downward edge output times after button is switched off, switches immediately

Function c - delay off on downward edge after switching off output switches on and times.

Function d - cycler - flasher impulser output cycles in regular interval, cycler starts with an impulse

Function e - puls shift delay on after the switch is switched on and delay on after it is switched off



Function f - delay on

delay on after switch is switched on until it is switched off

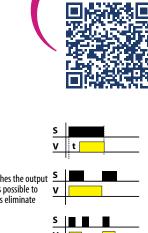
Function g - pulse relay

switches on by a press, another pressing switches the output off . The length of pressing doesn't matter, it is possible to set reaction delay by a potentiometer and thus eliminate rebound of a button

Function h - impulse relay with delay one press switches on, another one switches the output off in case it is done before the end of timing

Function i - delay on after switched off output cycles in regular intervals, cycler starts with a gap

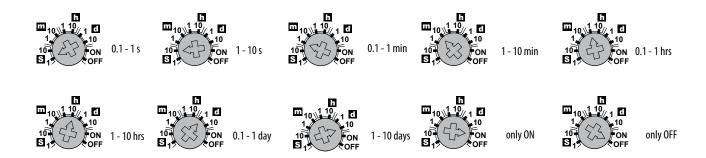
<u>Function j \*- cycler starting with gap</u> delay on after switching on until it is de-energized or a switch is pressed again.



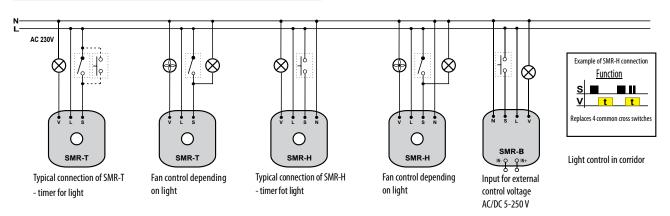




#### **Time ranges**



#### Connection SMR-B, SMR-H, SMR-T



<sup>\*</sup>function j is valid only for SMR-B

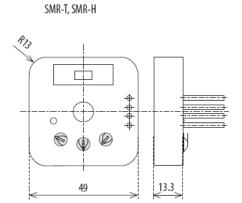
#### Description

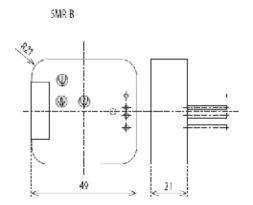


# SMR-B Galvanically separated control input 5-250 V AC/DC Rough time setting Output indication Output neutral

Phase

#### Dimension





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

#### Advantages

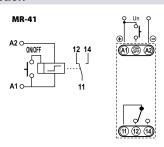
- **■** 1-module, DIN rail mounted
- Supply voltage:
  - **/** UNI AC/DC 12V 240V
  - **■** 230 AC 230V
- Keeps state in memory when supply disconnected. When energized again, relay returns to the state before disconnecting.

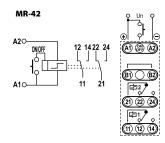
#### MR-41

- Output contact: 1x changeover 16A/AC1
   MR-42
- Options 2x paralel contacts or the other relay is latching
- **✓** Function selected via external wire link between B1-B2
- Output contact: 2x changeover 16A/AC1

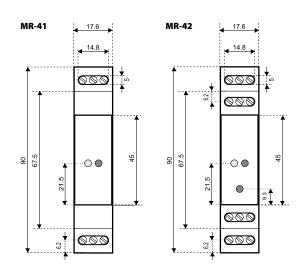
	MR-41	MR-42		
Number of functions	1	2		
Supply	A1-A2			
Supply voltage UNI	12-240 V AC/DC (50-60 Hz AC)			
Consumption UNI	AC 0,17-3 VA / DC 0,5 - 1,2 W	AC 0,17-12 VA / DC 0,11 - 1,9 W		
Supply voltage 230	230 V AC /	′ 50-60 Hz		
Consumption 230	AC max. 12 VA / DC 1,2 W	AC max. 12 VA / DC 1,9 W		
Supply indication	greer	n LED		
Output				
Supply voltage tolerance	- 15%;	+ 10%		
Number of contacts	1xC0	2xC0		
Rated current	16 A / AC1	2x16 A / AC1		
Breaking capacity	4000 VA / AC1, 384 W /DC	4000 VA / AC1, 2x384 W / DC		
Inrush current	30 A / <3 s	30 A / <3 s		
Switching voltage	250 V AC1 / 24 V DC	250 V AC1 / 24 V DC		
Min. breaking capacity DC	500 mW	500 mW		
Output indication	red LED	red LED		
Mechanical life	3x10 <sup>7</sup>			
Electrical life	0,7x10 <sup>5</sup>			
Controlling				
Voltage	12-240	V AC/DC		
Consumption of input	AC 0,025-0,2 VA / DC0,1-0,7 W (UNI) , AC 0,53 VA (AC 230V)			
Load between A2 ON/OFF	•	/		
Glow-lamps	no (UNI) , yes -max. 4	pcs at 1mA (AC 230V)		
Control terminals	A1 0N	N/OFF		
Capacitance of cable control:				
-without connected glow lamps	12 nF (UNI),	12nF (230V)		
-with connected glow lamps	9nF (UNI), glow lamps cannot connected/NO	9nF (UNI), glow lamps cannot connected/NO		
	9nF (230V), max. 4pcs (1pc-1mA)	9nF (230V), max. 4pcs (1pc-1mA		
Impulse length	min. 25 ms/ m	nax. unlimited		
Operating temperature	-20	+55°C		
Storage temperature	-30	+70°C		
Electrical strength	4 kV (suppl	y - output)		
Operating position	ar	пу		
Mounting	DIN rail E	N 60715		
Protection degree	IP 40 from fi	rontal panel		
Overvoltage category		II		
Pollution degree		2		
Max. cable size	2,5 r	mm²		
Dimensions	90x17, 6	x64 mm		
Standards	EN 60669-2-2, EN 61010-1			

#### Connection





#### **Dimensions**



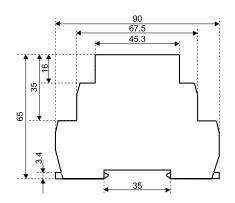
Memory & latching relays MR-41, MR-42

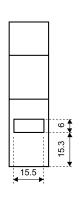
	<u> </u>		
Туре	Code No.	g	
MR-41 UNI	002470007	64	1/10
MR-42 UNI	002470008	89	1/10
MR-41 230	002470094	60	1/10
MR-42 230	002470095	85	1/10

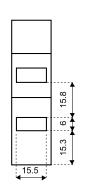
In applications with long control cables and/or leading other connections in parallel MR-41/42 can be exposed to EM disturbances and unstable operation (random switching). We advice using RBS bistable switch instead.



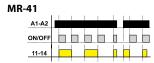
#### 1-module design

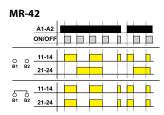






#### **Function**





#### Dimmers - compatibility with various types of light bulbs

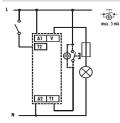
		R MAL 230 V		c  #	ESL		LED
Product	automatically detects type of load	Standard and halogen light bulbs	Low voltage light bulbs (12- 24V), wounded transformer	Low voltage light bulbs (12- 24V), electronic transformer	Dimmable Energy Saving Lamps (ESL)	CATEGORY 1: "LOW COST" LED LAMPS - MULTILED SYSTEMS WITH INTEGRATED LINEAR POWER SUPPLY	CATEGORY 2: 1-3 DIMMABLE POWER LED LAMPS WITH INTEGRATED SWITCHING POWER SUPPLY
DIM-2	×	✓	✓	×	×	*	×
DIM-15	×	*	*	×	<b>√</b>	<b>─</b>	<b>√</b>
SMR-M	×	*	*	×	<b>√</b>	<b>✓</b>	<b>√</b>
SMR-S	×	<b>√</b>	<b>√</b>	×	×	*	<u>*</u>

#### Staircase switch with dimming DIM-2

#### Technical data

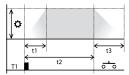
Technical data	
Supply	A1-A2
Supply voltage	230 V AC (50 Hz)
Consumption	max. 5 VA
Supply voltage tolerance	- 15%; + 10%
Supply indication	green LED
Time setting via	potentiometer
Time deviation	10% mechanical setting
Repeat accuracy	5% set value stability
Temperature coefficient	0,01% / °C / 20 °C
Controlling T1	
Terminals	T1-A1
Voltage	230 V AC
Power on control input	max. 1,5 VA
Impulse length	min. 100 ms / max. unlimited
Glow-lamps	yes, max. 5 pcs (at 1 mA)
Controlling T2	
Terminals	T2-A1
Voltage	230 V AC
Power control input	max. 0,1 VA
Impulse length	min. 100 ms / max. unlimited
Glow-lamps	no
Output	contactless - triac
Rated current	2 A
Resistive load	10-500 VA
Inductive load	10-250 VA
Operating temperature	-20+55 °C
Storage temperature	-30+70 °C
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from front panel
Overvoltage category	III
Pollution degree	2
Max. cable size	2,5 mm <sup>2</sup>
Dimensions	90x17,6x64 mm
Standards	EN 60669-2-1, EN 61010-1

#### Connection

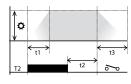


#### Function

Controlled via input T1 (button)



Controlled via input T2 (switch)



Cycle dim-up time is activated by pressing the button; By repressing the button (during the cycle) it is possible to prolong the time of the cycle.

#### Legend:

- Output / Brightness: 10-100%
- t1 Dim-up time: 1-40 s t2 Time delay: 0s-20min
- t3 Dim-down time: 1-40s
- T1/T2 Controlling contact

The cycle is started by activating the switch and breaks on max. adjusted brightness level. After the switch is turned off the switch cycle is complete.



#### Advantages

- **I** 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
- Contactless output: 1x triac
- Load AC1 2A / 500W

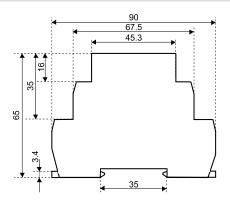
- Potentiometers adjust:
  - **I** speed (fluency) of switching on
  - **I** maximum intensity of light
  - **I** time of maximum intensity light
  - **■** speed (fluency) of switching off

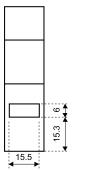
Staircase switch with dimming DIM-2

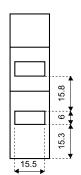
Туре	Code No.	g	
DIM-2	002470009	70	1/10



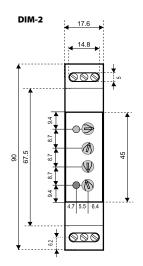
#### 1-module design



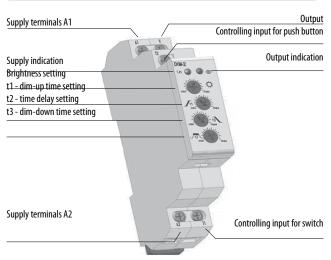




#### **Dimensions**



#### Description







#### Dimmers for LED bulbs and dimmable fluorescent lamps DIM-15 and SMR-M

#### Technical data

	DIM-15	SMR-M	
Supply voltage	230V AC / 50-60 Hz		
Supply voltage tolerance	-15%; +10%		
Apparent power	max.	1.5VA	
Loss power	max.	0.7W	
Supply indication	greei	n LED	
Controlling			
Control wire	A1 - T	L-S	
Control voltage	230	V AC	
Control input power	AC 0.3	-0.6 VA	
Control impulse length	min. 80 ms	/ unlimited	
Glow tubes connection	•	/	
Max. amount of glow lamps connected to controlling input	230V - max. 15pcs (measured with glow lamp 0.68mA/230VAC)	230V - max. 10pcs (measured with glow lamp 0.68mA/230VAC)	
Output			
Contactless	2 x M	OSFET	
Load*	300W (at cos fi=1)	160W (at cos fi=1)	
Output status indication	red LED	Х	
Other data			
Operating temperature	-20	+35°C	
Storing temperature	-20	+60°C	
Operating position	ai	пу	
Mounting	DIN rail EN 60715	free at connection wires	
Protection degree	IP40 from front panel / IP10 terminals	IP30 in standard conditions	
Overvoltage category	I	II	
Pollution level		2	
Terminal wires (mm²)	max. 2x2.5; with sleeve 1x1.5	Х	
Dimensions	90 x 17.6 x 64 mm	49 x 49 x 21 mm	
Weight	57 g	38 g	
Standards	EN 60669-2-	1, EN 61010-1	





#### Connection

## DIM-15 SMR-M T2.5 A recomended fuse T1.6 A recomended fuse

#### Light source type setting

dimmable saving fluorescent lamps



LED bulbs



<sup>\*</sup> Due to a large number of light source types, the maximum load depends on the internal construction of dimmable LEDs and ESL bulbs and their power factor  $\cos\phi$ . The power factor of dimmable LEDs and ESL bulbs ranges from  $\cos\phi=0.95$  to 0.4. An approximate value of maximum load may be obtained by multiplying the load capacity of the dimmer by the power factor of the connected light source.

#### Advantages

- Designated for dimming of:
  - a) LED bulbs and LED light sources
  - b) dimmable saving fluorescent lamps
- Enables gradual setting of luminance by push-button (non-detent) or parallel buttons
- Returns to last state upon re-energization
- Type of light source (LED or saving fluorescent lamp) is set by switch-over on the front panel of device
- Minimal luminance, set by potentiometer on the front panel, eliminates flashing of some types of saving fluorescent lamps

#### **DIM-15**

- Supply voltage 230V AC
- Output status is indicated by red LED:
  - **✓** shines when output is active
  - flashes while heating overload, at the same time output is disconnected.
- **■** 1-MODULE version, DIN rail mounting, saddle terminalh)

#### SMR - M

- Button-controlled dimmer intended to be installed in an installation box (e.g. KU-68) into the existing electrical wiring
- Protection against excessive temperature inside the device switches off the output

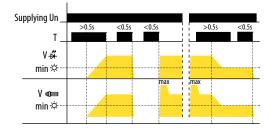




#### Dimmer DIM-15, SMR-M

Туре	Code No.	g	
DIM-15	002470290	57	1/10
SMR-M	002470291	38	1/14

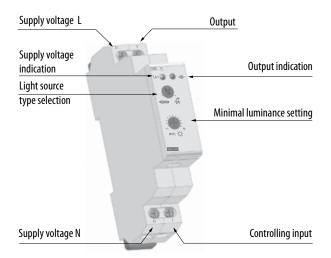
#### **Functions and controlling**

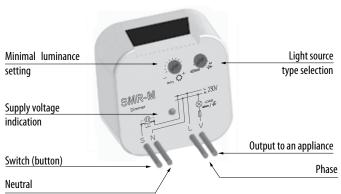


#### Controlling::

- short button press (<0.5s) turns the light off or on
- long press (>0.5s) enables slight regulation of light intensity
- setting of minimal luminance is possible only during decreasing of luminance by long button press

#### **Devices description**





#### Minimal luminance setting:

LED bulb:

- if the light is turned off, short press (<0.5s) switches the light onto last set luminance level

Saving fluorescent lamp:

- if the light is turned off, short press increases the luminance onto maximal level (saving fluorescent lamps fires up) and then luminance decreases onto set level
- setting of minimal luminance by saving fluorescent lamps serves for harmonizing of lowest light intensity prior its unprompted switching off

#### **Additional information**

- it is possible to dim only LED bulbs equipped with capacitator supplying
- it is not possible to dim saving fluorescent lamps without marking: dimmable
- an incorrect setting of light source has effect only on dimming range, it means neither dimmer or load get demaged
- maximal load is counting with usage of LC filter

#### **Dimmer SMR-S**

#### 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 -1x triac
- With exchangeable fuse

#### **Technical data**

	SMR-S
Connection	4-wire without neutral
Supply voltage	AC 230 V / 50-60 Hz
Consumption (no operation/make)	max. 3VA
Supply voltage tolerance	- 15%; + 10%
Output	
Resistive load	10-300 VA
Capacitive load	х
Inductive load	10 -150VA
Controlling	
Control Voltage	AC 230 V
Current	3 mA
Impulse length	min. 50 ms/ max. unlimited
Operating temperature	0+50 °C
Operating position	any
Mounting	free of connecting wires
Protection degree	IP30 from front panel
Overvoltage category	III
Pollution degree	2
Fuse	F 1.6A/ 250V
Output	solid 0,75 mm², length 90 mm
Glow-lamps in control button	max. 10 pcs.
Dimensions	49x49x13 mm
Standards	EN 60669-2-1, EN 61010-1



<u>Warning:</u> it cannot be used for fluorescent lights and energy saving lights! SMR-U: It is not allowed to connect together loads of inductive and capacitive type at the same time



E SMR-S

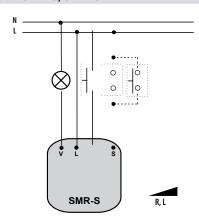
<sup>\*</sup> When load is above 300 VA it is necessary to ensure sufficient cooling; see instruction manual technical data

#### **Dimmer SMR-S**

Туре	Code No.	g			
SMR-S	002470010	32	1/14		

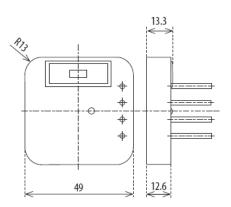
#### **Dimensions**

#### Connection SMR-S, SMR-U

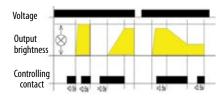


Typical connection of SMR-S - dimmer of lights

Warning: it cannot be used for fluorescent lights and energy saving lights! SMR-U: It is not allowed to connect together loads of inductive and capacitive type at the same time

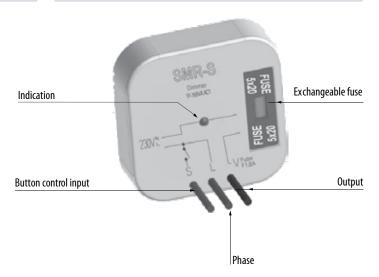


#### **Functions**



KA short press (<0.5s) turns a light on, another short press turns it off . A longer press (>0.5s) causes a gradual regulation of light intensity min-max-min round until the button is released. After releasing a set intensity is kept in memory, further short presses turn the light on/off keeping the set intensity. The intensity can be changed by further long press. After de-energising the relay remembers the set value.

#### **Description SMR-S**





# Twilight switch in IP65 ETS-16b

#### Application

Used for remote control of external lighting. time delay prevents accidental activation of the short-term changes in the intensity lighting. Designed to be mounted on a flat surface (eg a wall, disc)

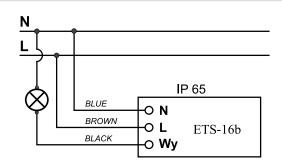
#### Advantages:

- **I** robust and simple design,
- adjustable-sensitivity threshold,
- **I** IP 65

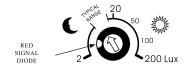
#### **Technical data**

	ETS-16b
Voltage	230 V AC
Time delay	cca 20 s
Light level	2-50 Lx
The number and types of contacts	1 NO - NO
Rated current contact	16A/AC1
Installation	on a flat surface
Standards	EN 61812-1, EN 50081, EN 61000
Power supply range	180 - 240 V AC 50Hz
Max load current (AC-1)	16 A
Switch ON treshold	10 lux
Switch off treshold	20 lux
Time delay of switch ON or OFF	cca 20 s
Adjustment range	cca 2 - 200 lux
Working temperature	- 40 °C +50 °C
Protection class	IP65

#### Connection



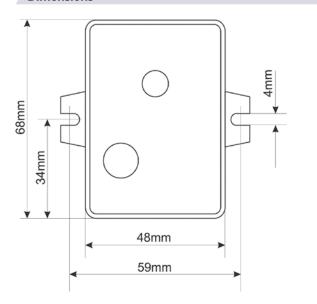
#### Setting

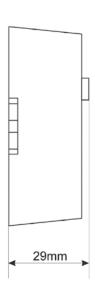


#### Twilight switch in IP65 TS-16b

Туре	Code No.	g	
ETS-16b	002471102	160	1/10

#### **Dimensions**







### Twilight switch SOU-1 + sensor

#### Advantages

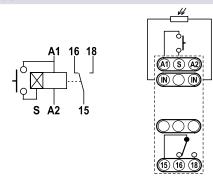
- **I** 1-module, DIN rail mounted
- Supply voltage: AC 230 V
- Switches according to level ambient light intensity
- Adjustable time pause to eliminate short-term illumination peaks
- ${\rlap/}{I}$  Adjustable level of light intensity in 2 ranges 100-50000 Lx and 1-100 Lx
- **✓** Controlling input for 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



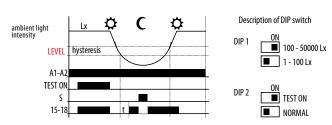
#### **Technical data**

recillical data	
Supply	A1-A2
Supply voltage AC 230	230 V AC ( 50-60 Hz)
Consumption AC 230	max. 12 VA AC / 1,8 W
Supply voltage tolerance	- 15%; + 10%
Supply indication	green LED
Time dwell	0-2 min
Time dwell setting	potentiometer
Measuring range 1)	1-100 Lx
Measuring range 2)	100-50000 Lx
Output	
Number of contacts	1xCO
Rated current	16/AC1
Breaking capacity	4000 VA/AC1, 384 W/DC
Inrush current (duty factor 10%)	30 A/<3 s
Switching voltage	250 V AC1/24 V DC
Min. breaking capacity DC	500 mW
Output indication	red LED
Mechanical life	3x10 <sup>7</sup>
Electrical life	0,7x10 <sup>5</sup>
Controlling	
Voltage	230 V AC
Consumption of input	0,8-530 mVA
Load between S-A2	yes
Glow-lamps	yes, max. 4 pcs (at 1 ms)
Terminals	A1-S
Impulse length	min. 25 ms/ max. unlimited
Reset time	150 ms
Operating temperature	-20+55 °C
Storage temperature	-30+70 °C
Electrical strength	4 kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP 40 from frontal panel
Connection cable length for sensor	max. 50 m (standard wire)
Overvoltage category	III
Pollution degree	2
Max. cable size	2,5 mm <sup>2</sup>
Dimensions	90x17, 6x64 mm
Standards	EN 60255-6, EN 61010-1

#### Connection



#### **Function**



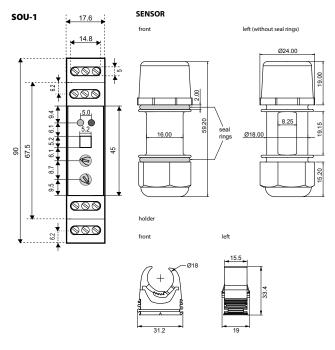


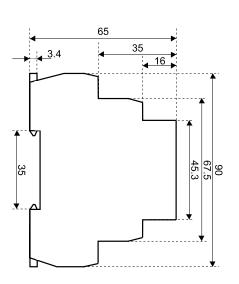
**Twilight switch SOU-1** 

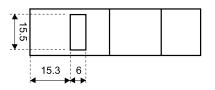
Туре	Code No.	g	
SOU-1	002470011	65	1

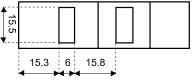
<sup>\*</sup> Sensor for twilight switch SOU-1 also available separately (code No. 002470052) Sensor tolerance  $\pm 33\%$ 

# Dimensions 1-module design

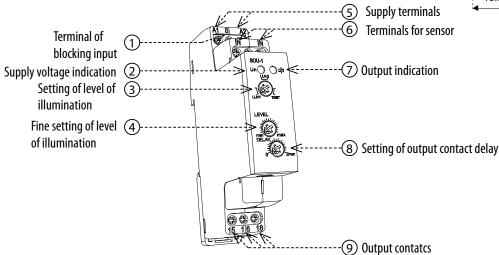








#### Description



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

#### Advantages

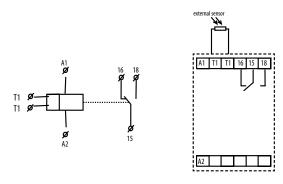
- 2-module, DIN rail mounting
- Supply voltage: AC 230 V
- Adjustable light intensity 1-50000 lx
- Serves for control of lights on the basis of ambient light intensity and real time (combination of SOU-1 and time switch clock SHT-1 in one device)
- The advantage of real time consists in the blocking 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 IP65 is suitable for mounting on the wall/ in panel (cover and sensors are part of delivery)



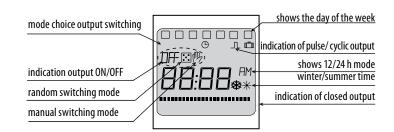
#### **Technical data**

	SOU-2	
Supply	A1-A2	
Supply voltage	230 V AC (50-60Hz)	
Consumption	max. 3,5 VA	
Supply voltage tolerance	-15%;+10%	
Back-up supply	✓	
Summer/winter time	automatic	
Output	_	
Number of contacts	1 changeover (AgNi)	
Rated current	8 A / AC1	
Breaking capacity	2500 VA / AC1, 240W / DC	
Switching voltage	max. 250 V AC1 / 24 V DC	
Min. breaking capacity DC	500 mW	
Mechanical life	1x10 <sup>7</sup>	
Electrical life	1x10 <sup>5</sup>	
Time circuit		
Back-up supply	3 years	
Accuracy	max. +/- 1s. day (23°C)	
Minimal interval	1 min	
Data stored for	min. 10 years	
Program circuit		
Illumination range	1-50000 Lx	
Program place number	100	
Program	daily, weekly	
Data readout	LCD display	
Controlling		
Operating temperature	-20+55 °C	
Storage temperature	-30+70 °C	
Electrical strength	4kV (supply - output)	
Operating position	any	
Mounting	DIN rail EN 60715	
Protection degree	IP 20 from front panel	
Overvoltage category	III	
Pollution degree	2	
Max. cable size	2.5 mm <sup>2</sup>	
Dimensions	90 x 35,6 x 64 mm	
Standards	EN 61812-1, EN 60669-1, EN 60669-2-1	

#### Connection



#### **Controlling elements**







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

Туре	I <sub>n</sub> [A]	Code No.	g	
SOU-2 + senzor	16	002470020	130	1

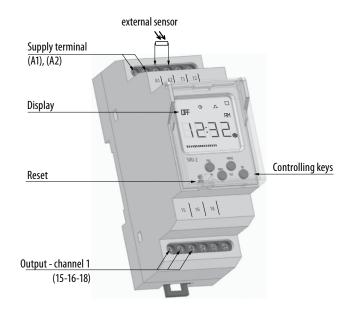
<sup>\*</sup> Sensor for twilight switch SOU-2 also available separately (code No. 002470302) Sensor tolerance  $\pm 33\%$ 

# Dimensions SOU-2 SENSOR front left (without seal rings) Reft (without seal rings) Reft (without seal rings) Reft (without seal rings)





#### Description



#### **Time switch ASTROCLOCK-2**

#### Description

The ASTROCLOCK-2 is a time switch designed to control luminous loads in function of dawn and dusk times. It includes a program that automatically adjusts the dawn lighting-up and dusk switching-off times, without sensors and any need for maintenance. The geographic position location is set up by entering geographic coordinates of location where operating or with selecting nearest city from built in list. This product successfully replaces twilight switches with dusk(light) sensor (photo cell).

Its small size of only two modules makes it ideal for installation on distribution boards with little available space. The unit includes 40 memory spaces in two independent circuits that can be programmed in an astronomic or with fixed time operation or combination. Advantages

- Supply voltage: 230V 50/60 Hz.
- Two independent programmable output contacts 2x16A (AC1).
- # 40 daily and weekly programs with astronomical or fixed-time manoeuvres.
- Daily astronomical adjustment with offset possibility(±delay).
- Option of automatic switching between summer and winter time.
- Backup power supply: Repaceable CR2032 battery(included).

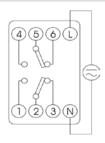
- High-contrast backlit display.
- Menu languages: ENG, SLO, HR/SRB/BiH, POL, RUS.
- ✓ Countries with biggest cities directly supported: Poland, Slovenia, Estonia, Lithuania, Latvia, Russia, Ukraine, Bosnia and Herzegovina, Croatia, Macedonia, Serbia.
- Other cities supported through entering geographic coordinates (zone latitude and longitude).



#### **Technical data**

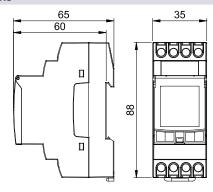
Technical data	
Rated voltage As indicated in the device	230V~/50-60Hz
Tolerance	± 10%
No. of output contacts	2
Rated current/switching voltage	2x 16A / 250 V~
Maximum recommended loads (N.A)	See Electrical scheme and parameters
Consumption	16 VA (1,3 W)
Display	back-lit liquid crystal display
Accuracy	± 1 s / day at 23 °C
Temperature effect on accuracy	± 0.15 s / °C / 24 h
Power reserve	4 years (without connection to mains), 48 h (without battery and without connection to mains)
Software class and structure	Class A
Memory spaces	40
Types of manoeuvres	SUNRISE, SUNSET, FIXED TIME: ON/ OFF, REDUC.
Astronomical adjustment	Daily
Operating temperature	-10 °C +45 °C
Transport and storage temperature	-20 °C +60 °C
Pollution degree	2
Protection level	IP 20 (EN60529)
Overvoltage category	Class II under correct mounting conditions
Transient impulse voltage	2.5 kV
Keyboard access cover	Sealable
Connection	With screw terminal for section conductors of 4mm <sup>2</sup> maximum section
Battery	CR2032 - 3 V - 220 mAh
Size	2 DIN modules (35 mm)
Standards	EN 60730-1:2011, EN 60730-2- 7:2010 + AC:2011

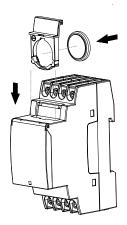
#### Electrical scheme and parameters



Incandescent	Fluorescent	Low v	oltage halogen (12 V AC)	Hal	ogen (230 V AC)
9					<del>(())</del>
3000 W	1200 VA		2000 VA		3000 W
Low consumption lamps	Downlights		LED		
	#		©		
600 VA	400 VA		90 VA		

#### **Dimensions**





#### **Time switch ASTROCLOCK-2**

Туре	l <sub>,</sub> [A]	Code No.	g	
ASTROCLOCK-2	16	002472051	166	1/120





#### Digital time switch ETICLOCK-R1

#### Description

ETICLOCK-R1 is a digital time switch designed to control an electrical installation. Different types of operations: ON and OFF at a set time, shortterm operations or pulses (1 to 59 seconds) and repetitive cycles (1 to 59 seconds or 1 minute to 23 hours and 59 minutes) applied to one channel (C1). It includes a series of additional functions such as: automatic DST changes, 4 holiday periods, adjustable screen brightness. Menus can be displayed in several languages (ENG, SLO, HR/SRB/BiH, POL, RUS). One voltage free changeover output (channel) allows programming of up 40 operations (programs).

#### Advantages:

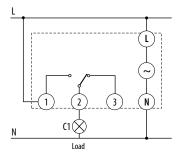
- Rated voltage and frequency: As indicated Power reserve: on the device (230 V AC 50-60Hz)
- Voltage free programmable changeover output contact: 1x16 (10) A / 250 V AC
- be disabled
- On-screen operating schedule
- Display screen: Back-lit LCD, Menu languages: English, Slovenian, HR/SRB/ BiH, Polish, Russian.
- Memory spaces: 40 programs (operations)

- **1** 10 years (with 4 years replaceable) CR2032 battery and no network connection)
- network connection)
  - Types of operations: ON/OFF, PULSE (1) to 59 sec.) and CYCLES (1 to 59 sec. or 1 min to 23h and 59 min)
  - Size: 2 DIN modules (35 mm)

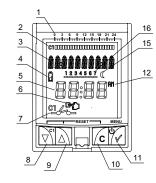
#### **Technical data**

	ETICLOCK-R1
Rated voltage and frequency As indicated on the device	(230 V~ 50-60Hz)
Breaking capacity	μ 1x16 (10) A / 250 V AC
Own consumption	16 VA (1.3 W) max.
Contact	AgSnO2 switched
Display screen	LCD
Running accuracy	± 1 s / day at 23 ℃
Accuracy variation with temperature	± 0.15 s / °C / 24 h
Davies 2000000	4 years (with battery and no network connection)
Power reserve	48 h (no battery and no network connection)
Memory spaces	40
No. of channels	1
Types of operations	ON/OFF, PULSE (1 59 sec.) & CYCLES (1 59 sec. / 1 min 23h, 59 min)
Operating temperature	-10 °C +45 °C
Transport and storage temperature	-20 °C +60 °C
Pollution degree	2
Protection level	IP 20 (EN60529)
Protection class	II under correct mounting conditions
Transient impulse voltage	2.5 kV
Temperature for the ball test	+ 80 °C (21.2.5)
Keyboard access cover	Sealable
Connection	With screw terminal for wire cross section of up to 4mm <sup>2</sup>
Battery	CR2032 - 3 V - 220 mAh
Size	2x DIN mod. (35 mm)
Standards	EN 60730-1:2011, EN 60730-2- 7:2010 + AC:2011

#### Connection



#### **Controlling elements**



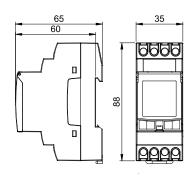
- 1. Time scale
- 2. Schedules 3. Text line
- 4. Low-battery symbol
- 5. Hour / Date
- 6. C1 manual operation (blinking)/
- C1 permanent manual (fixed) 7. C1 relay status symbol
- 8. Scroll down / C1 manual operation
- 10. Cancel option / Go back
- 11. Accept option / Enter the menu / Switch on the device without power 12. 12 H / 24 H
- 13. Days of the week

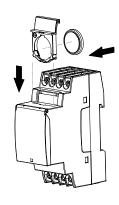
Digital time switch ETICLOCK-R1

Туре	I <sub>n</sub> [A]	Code No.	g	
ETICLOCK-R1	16	002472053	136	1/10



#### Dimensions







#### **Maximum recommended loads**

Load	Designation	Max. load
Incandescent		3000 W
Fluorescent		1200 VA
Low voltage halogen (12 V)		2000 VA
Halogen (230 V)	<del>((,,,,)</del>	3000 W
Low consumption lamps		600 VA
Downlights		400 VA
LED	LED	90 VA

### **Current monitoring relay PRI-51**

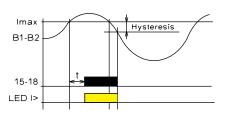
#### Advantages

- To monitor heating of rods in shunts, heating of cables, to indicate current flowing, to monitor consumption of one-phase electrical loads
- **I** 1-phase, 1-module, DIN rail mounting
- $\blacksquare$  Universal supply voltage AC 24 V 240 V and DC 24 V
- Output contact: 1x changeover 8 A/AC1
- Supply is galvanically separated from measured current
- Adjustable delay 0,5 10 s to eliminate short current peaks
- ₱ Fluent adjusting actuating 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, AC 0.1 10 A

#### **Technical data**

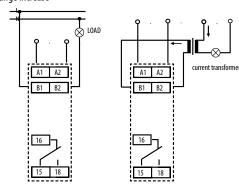
Tecinical data	PRI-51					
Supply circuit						
Supply		A1-A2				
Universal supply		24	1-240V AC	/ 24 V DC (	50-60 Hz AC)	
Consumption				max. 1,5 VA		
Supply voltage tolerance				5% - +109		
Measuring circuit						
Load			bet	ween B1 -	B2	
Current ranges	PRI51/1	PRI51/2	PRI51/5	PRI51/8	PRI51/16	PRI-51/0.1-10
	AC 0.1-1 A	AC 0.2-2 A	AC 0.5-5 A	AC 0.8-8 A	AC 1.6- 16A	AC 0.1 - 10A
Inrush overload <1ms				100 A		
Max. permanent current	1A	2A	5A	8A	16A	10A
Time setting			po	tentiomete	er	
Time ranges				0.5 s-10 s		
Setting accuracy - mechanical		5%				
Time deviation				< 1 %		
Limit values tolerance				5%		
Temperature coefficient			<	< 0.1 % / °C		
Hysteresis				5%		
Output						
Number of contacts			1 x ch	angeover (	AgNi)	
Rated current				8 A / AC1		
Breaking capacity			2500 VA	A / AC1, 240	W / DC	
Output indication			gre	een / red LE	:D	
Controlling						
Operating temperature			=	20+55 °C	-	
Storage temperature			=	30+70°0	-	
Electrical strength			4 kV (	(supply-out	tput)	
Operating position		any				
Mounting		DIN rail EN 60715				
Protection degree		IP 40 from front panel				
Overvoltage category		III.				
Pollution degree				2		
Max. cable size				2,5 mm <sup>2</sup>		
Dimensions			90 x	: 17,6 x 64 r	nm	
Standards			EN 602	55-6, EN 61	1010-1	
			EN 00255 0/ EN 01010 1			

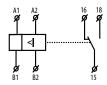
#### **Functions**



#### Connection

<u>Example connection:</u> PRI-51 with current transformer for current range increase



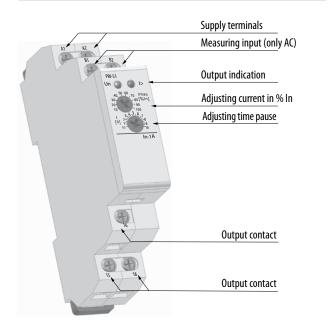


**Current monitoring relay PRI-51** 

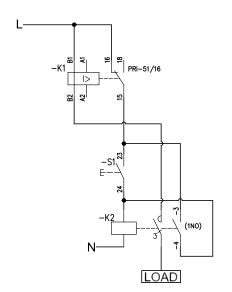
Current monitoring relay PKI-5 I					
Type	I <sub>n</sub> [A]	Code No.	g		
PRI - 51/1	1	002471816	58	1/10	
PRI - 51/2	2	002471817	58	1/10	
PRI - 51/5	5	002471818	58	1/10	
PRI - 51/8	8	002471819	58	1/10	
PRI - 51/16	16	002470019	58	1/10	
PRI-51/0.1-10	0,1 - 10	002470298	87	1/10	

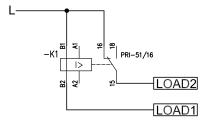


#### Description









LOAD1 -> Critical load - always available (Iset<ILOAD1) LOAD2 -> Optional load - only when LOAD1 not operating

In case of overload, all the loads will shutdown.

#### Voltage monitoring relay HRN-31, HRN-32, HRN-36

#### Advantages

- It is used to monitor the value of alternating or direct voltage in 1-phase circuits.
- Supply voltage from monitored voltage.
- Monitors voltage exceeding the upper voltage level (Umax) and falling below the lower voltage level (Umin) according to the selected function.
- Smooth adjustment of both voltage levels the lower level Umin is set in % of the upper level Umax
- Adjustable time delay (to eliminate short-term voltage drops and spikes).
- Option to select functions with fault state memory (Latch).
- The fault state memory can be reseted by the control input (R).
- Measures true root mean square value of the voltage TRUE RMS.
- Type HRN-32/2 has an independent output contact for each voltage level

#### **Technical data**

Technical data		HRN-31, HRN-32, HRN-36				
Туре	HRN-31	HRN-32/2	HRN-36			
Supply/monitored terminals	A1-A2	A1-A2	A1-A2			
Supply/monitored voltage	AC/DC 48 – 276 V (AC 50-60 Hz)	AC/DC 48 – 276 V (AC 50-60 Hz)	DC 6 – 30 V			
Consumption (max.)	2.5 VA/0.55 W	2.7 VA/0.65 W	0.35 W			
Upper level Umax	160-276 V AC	160-276 V AC	12-30 V DC			
Bottom level Umin	30-95% U <sub>max</sub>	30-95% U <sub>max</sub>	50-95% U <sub>max</sub>			
Max. permanent voltage	AC 276 V	AC 276 V	DC 36 V			
Peak overload (1 s)	AC 290 V	AC 290 V	DC 48 V			
Fime delay (d)		300 ms				
Time delay (t)		adjustable, 0.5 – 10 s				
Setting accuracy (mechanical)		5 % — mechanical setting				
Repeat accuracy		< 1 %				
Temperature coefficient		< 0,1% / °C				
Hysteresis		5 % (functions 01, U1, W)				
(fault to OK)		Umax — Umin (functions 02, U2, U3)				
Output						
Number of contacts	1 x changeover (AgNi) 1× changeover for each level		1 x changeover (AgNi)			
Rated current	16 A/AC1; 1 HP 240 Vac, 1/2 HP 120 Vac; PD. B300					
Breaking capacity	4000 VA/AC1, 384 W/DC1					
Switching voltage		max. 250 V AC1 / 24V DC				
Power dissipation (max.)	1.2 W					
Mechanical life		107				
Electrical life		10 <sup>5</sup>				
Controlling	<u> </u>					
Operating temperature		-20+55 °C				
Storage temperature		-30+70 °C				
Dielectric strength		AC 4 kV (supply – output)				
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 14)				
Dimensions		90 × 17.6 × 64 mm				
Standards		EN 60255-1, EN 60255-26, EN 60255-27				



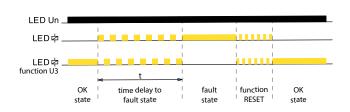
RESE

Voltage monitoring relay HRN-31, HRN-32, HRN-36

Туре	I <sub>n</sub>	Voltage range	Code No.	g	
HRN-31	16	AC/DC 48 – 276 V	002471450	82	1/10
HRN-36	16	DC 6 – 30 V	002471451	95	1/10
HRN-32/2	16	AC/DC 48 – 276 V	002471452	103	1/10

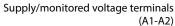


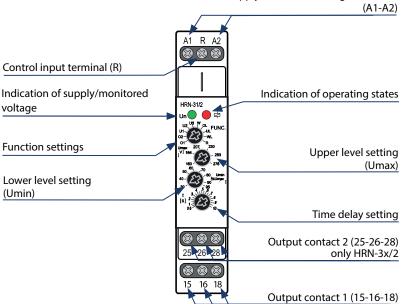
#### **Functions**



#### Connection

#### Description

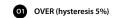


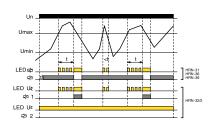


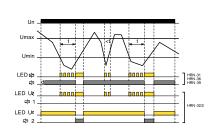




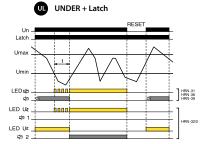
#### **Function description**



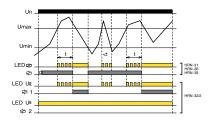


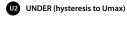


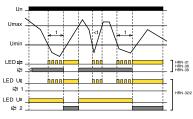
UNDER (hysteresis 5%)



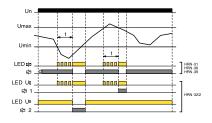
#### OVER (hysteresis to Umin)



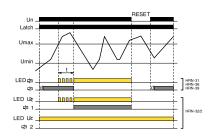




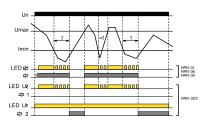
W WINDOW (hysteresis 5%)



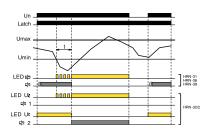








WL WINDOW + Latch



#### OVER:

If the value of the monitored voltage is lower than the set upper level "Umax", the output contact is closed. If the "Umax" is exceeded, the output contact will opens after the set delay (fault state).

If the voltage falls below the fixed hysteresis (O1 function) or the set lower level "Umin" (O2 function), the output contact will closes again.

If the OL function (OVER + Latch) is selected, when the upper voltage level "Umax" is exceeded, the output contact remains open even when the voltage returns from the fault state.

#### UND

If the value of the monitored voltage is higher than the set lower level "Umin", the output contact is closed. When the voltage drops below the "Umin", output contact opens after the set delay (fault state).

If the voltage exceeds the fixed hysteresis (function U1) or the set upper level "Umax" (function U2, U3), the output contact closes again.

If the UL function (UNDER + Latch) is selected, when the voltage drops below the lower level "Umin", the output contact remains open even when returning from the fault state. Fault memory reset can be done as in the previous case.

#### WINDOW:

If the value of the monitored voltage is lower than upper level "Umax" and at the same time higher than lower level "Umin", the output contact in closed. If the "Umax" is exceeded or drops below the "Umin", output contact opens after the set delay (fault state).

To return from the fault state, a fixed hysteresis is applied.

If the WL function (WINDOW + Latch) is selected, the fault state is again stored in memory and output contact stays open, even when returning from the fault state. Fault memory reset can be done as in the previous cases.

#### Fault memory reset can be done in two ways:

- Short-term interruption of supply voltage
- Using the control input (R)
- By setting the function switch to position R (RESET) or any function without memory fault

The RESET state lasts for 3 s after switching the function switch from the R position to a function with a memory fault (UL, OL, WL).

When moving to any other function from the R position, this delay does not apply.

## 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: 1x changeover 8 A /250 V AC1
- If the supply voltage falls below 60 % U<sub>n</sub> (U<sub>off</sub> 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

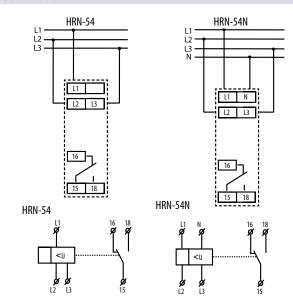
   HRN-54N supply L1-N, means that relay monitors

   HRN-54N supply L1-N, means that

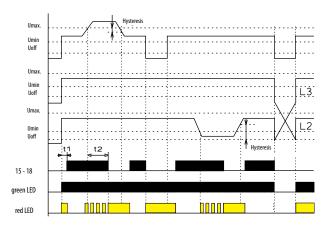
#### **Technical data**

	HRN-54	HRN-54N
Supply and measuring	L1,L2,L3	L1,L2,L3,N
Supply	L1,L2,L3	L1,N
Supply/measured voltage	3 x 400 V	3 x 400 V/ 230 V
Level U <sub>min</sub>	75 -	95% U
Level U <sub>max</sub>	105 -	125% U
Consumption	ma	x. 2 VA
Hysteresis		5 %
Max. permanent overload	3 x 460V AC	3 x 265V AC
Peak overvoltage <1ms.	3 x 500V AC	3 x 288V AC
Time delayT1	max.	500 ms.
Time delayT2	0.1	- 10 s.
Output		
Number of contacts	1 x chang	eover (AgNi)
Rated current	8 A	/ AC1
Breaking capacity	2500 VA / A	.C1, 240W / DC
Inrush current	1	10 A
Switching voltage	max. 250 V	AC1 / 24 V DC
Min. breaking capacity DC	50	0mW
Output indication	re	d LED
Mechanical life	1	x10 <sup>7</sup>
Electrical life	1	x10 <sup>5</sup>
Reset time	max.	150 ms.
Controlling		
Operating temperature	-20	.+55 ℃
Storage temperature	-30	.+70 ℃
Electrical strength		1 kV
Operating position		any
Mounting	DIN rail	EN 60715
Protection degree	IP 40 fron	n front panel
Overvoltage category		III
Pollution degree		2
Max. cable size	2.5	i mm²
Dimensions	90 x 17,	6 x 64 mm
Standards	_	6, EN 61010-1

#### Connection



#### **Functions**



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

Туре	I <sub>n</sub> [A]	Code No.	g	
HRN-54	8	002471416	69	1/10
HRN-54N	8	002471412	67	1/10

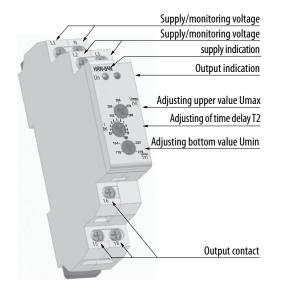




#### **Function description**

Relay in 3-phase main monitors size of phase voltage. It is possible to set two independent voltage levels and thus it is possible to set two independent voltage levels and monitor e.g. undervoltage and overvoltage independent. In normal state when voltage is within set levels, output relay is closed and red LED is off. In case voltage exceeds or falls below the set levels, output relay breaks and red LED shines (LED indicates faulty state — flashes when timing). In case of In case supply voltage falls below 60 % Un (U $_{\rm off}$  lower level) relay immediately breaks without delay and faulty state is indicated by red LED. In case timing is in progress and faulty state is indicated, timing is immediately stopped.

#### Description



#### Frequency and voltage monitoring relay HRN-100

#### Description:

Multifunction voltage and frequency monitoring relay with LCD display for protection of devices connected to 3 phase network.

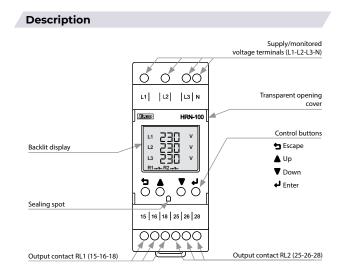
#### Advantages:

- 3-wire or 4-wire connection (with or without neutral).
- Monitoring of upper and lower voltage & frequency in 3-phase circuits, phase sequence, failure and asymmetry incl. neutral fail (only in 4-wire connection).
- The device is supplied from monitored voltage.
- Both output contacts can be set individually.
- Measures real effective value of AC voltage (True RMS).
- Optional response delay of the output contact to the measured fault state or transition from the fault state to the OK state incl. delayed response of output contacts after connecting the power supply.
- Possibility of automatic or manual transition from fault state (memory).
- Optional closing or opening of the output contact when measuring a fault state (Fail Safe / Non Fail Safe).
- Password protection against unauthorized changes to settings.
- Digital backlit display with the possibility of monitoring the current state of the network, incl. possible failures.
- The last five fault states are stored in a history that can be viewed retrospectively.
- Sealable transparent cover for display and controls.



#### **Technical data**

	HRN-100
Supply	2
Supply and measuring terminals	L1, L2, L3, (N)
C	U <sub>LN</sub> = 3 ~ 90 - 288 V, (AC 45-65 Hz)
Supply and monitored voltage	$U_{LL} = 3 \sim 155 - 500 \text{ V, (AC 45-65 Hz)}$
Power consumption (max.)	5 VA
Measuring circuit	
Selection of the measured circuit	Phase voltage - 3 phase, 4 wire Line voltage - 3 phase, 3 wire
Adjustable upper (OV) and	Phase voltage: 90 - 288 VAC
lower (UV) voltage levels	Line voltage: 155 - 500 VAC
Upper (HC) / lower (LC) limit voltage	Phase voltage: 310 VAC / 85 VAC Line voltage: 535 VAC / 150 VA
Adjustable upper (OF) and lower (UF) frequency level	45 - 65 Hz
Adjustable asymmetry	5 - 99 VAC / 2 - 50%
Adjustable voltage and	3 - 20 VAC (OV,UV, HC, LC)
frequency hysteresis level	0.5 - 2 Hz (OF, UF)
Adjustable hysteresis asymmetry	3 - 99 VAC / 2 - 15%
Accuracy of measured voltage	+/- 5V
Accuracy of measured frequency	+/- 0,3 Hz
Adjustable delay after supply	1.5 sec 0 - 999 s
connection P <sub>on</sub>	(HW initialization 250 ms)
Adjustable delay T <sub>on</sub>	0,5 - 999 s
Adjustable delay T <sub>off</sub>	0,1 - 999 s
Fixed delay	<100 ms (phase sequence, failure) <200 ms (HC, LC), <500 ms (neutral fail
Output	
Number of contacts	2x CO (AgSnO <sub>2</sub> )
Rated current	5A/AC1
Switching power	1200VA/AC1, 150W/DC1
Switched voltage	240V AC/30V DC
Max. output power dissipation	5W
Mechanical life (AC1)	1x10 <sup>7</sup>
Electrical life	1x10 <sup>5</sup>
Other data	
Operating temperature	-10 +60 °C
Storage temperature	-20 +70 °C
Electrical strength	4kV (supply - output)
Operating position	any
Mounting	DIN rail EN 60715
Protection degree	IP20 terminals/IP40 from front panel
Overvoltage category	
Pollution degree:	2
Cable size	max. 1x 2,5 mm², max. 2x 1,5 mm²/ with sleeve max. 1x 2,5 mm²
Dimensions:	90 x 36 x 66,5 mm
Standards:	EN 60255-1:2010, EN 60255-26 + AC:2013, EN 60255-27:2014, EN 50581:2012 + Z1:2019



# Fault status window and function menu in settings Delay in seconds Indication of Ongoing delay Delay in seconds Asymmetry in percent Line or Phase voltage L1 - L2 - L3 - L4 - V Frequency in hertz Voltage in volts



**Controlling elements** 

Status of output contacts RL1 and RL2

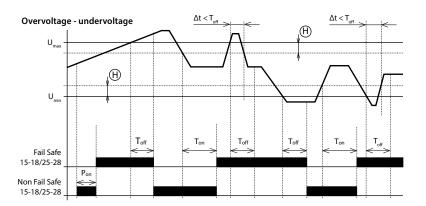


Current state of voltage or other configurable parameter

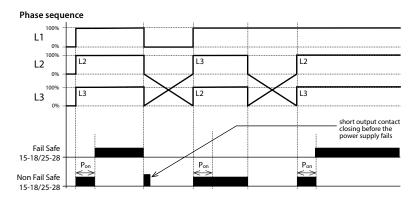
#### Frequency and voltage monitoring relay HRN-100

Туре	I <sub>n</sub> [A]	Code No.	g	
HRN-100	2 x 5 A (AC1)	002470303	132	1



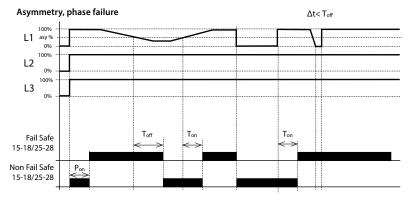


- Graph legend:  $P_{oo}$  Power ON delay (delay after power supply connection)  $P_{oo}$  = 0 999 s (min. 250 ms hardware initialization)
- Ton ON Delay (delay to OK state)  $T_{--} = 0.5 - 999 s$
- $T_{off}$  OFF delay (delay to fault state)  $T_{off}$  = 0,1 999 s
- T...- Adjustable for OV, UV, OF, UF & asymmetry faults
- Phase sequence, failure <100ms Neutral fail <500ms
- $\begin{array}{l} \Delta t \text{ Duration of the fault state} \\ \widehat{\boldsymbol{H}} \text{ Hysteresis} \end{array}$
- After the supply/monitored voltage is connected, the delay  $P_{on}$  starts timing during the timing the output contact is in a fault state in the FAIL SAFE mode it is open. After the delay, if the monitored voltage is in the range  $U_{min} ... U_{max}$ , the output contact closes.
- If the monitored voltage exceeds the set value  $U_{max}$ , the time delay to the fault state  $(T_{off})$  starts. After the delay, the output contact opens.
- If the monitored voltage falls below the U\_\_\_\_\_value reduced by the set hysteresis, the time delay start to OK state (T\_\_\_). After the delay, the output contact closes.
- If the duration of the fault state ( $\Delta t$ ) is shorter than the set value  $T_{off}$ , the status of the output contact does not change.
- If the monitored voltage falls below the value  $U_{min}$ , the time delay to the fault state  $(T_{off})$  starts. After the delay, the output contact opens.
- If the monitored voltage exceeds the value  $U_{min}$  increased by the set hysteresis, the time delay start to the OK state  $(T_{on})$ . After the delay, the output contact closes.
- If the duration of the fault state ( $\Delta t$ ) is shorter than the set value ( $T_{off}$ ), the status of the output contact does not change.



 $\begin{aligned} & \underline{Graph\ legend:}\\ & P_{on} - Power\ ON\ delay\ (delay\ after\ power\ supply\ connection)\\ & P_{on} = 0 - 999\ s\ (min.\ 250\ ms\ hardware\ initialization) \end{aligned}$ 

- After the supply/monitored voltage is connected, the delay P<sub>on</sub> starts timing during the timing the output contact is in a fault state in FAIL SAFE mode it is open. After the delay, if the phase sequence is correct, the output contact closes.
- If the phase sequence is incorrect after the P<sub>on</sub> delay, the output contact remains open (fault state).



#### Graph legend:

- Pon Power ON delay (delay after power supply connection)
- Pon = 0 999 s (min. 250 ms hardware initialization)
- $T_{on}$  ON Delay (delay to OK state)  $T_{on}$  = 0,5 999 s
- T<sub>off</sub> OFF delay (delay to fault state)
- $T_{...} = 0.1 999 s$
- T<sub>off</sub> Adjustable for OV, UV, OF, UF & asymmetry faults
- T<sub>off</sub> Phase sequence, failure <100ms; Neutral fail <500ms
- Δt Duration of the fault state
- After the supply/monitored voltage is connected, the delay P<sub>on</sub> starts timing during the timing the output contact is in a fault state in the FAIL SAFE mode it is open. After the delay, if the phase asymmetry is lower than the set value (absolute or percentage), the output contact closes.
- $\cdot \text{ If the phase asymmetry exceeds the set value, the time delay to the fault state } (T_{onf}) \text{ begins. After the delay, the output contact opens. } \\$
- If the phase asymmetry falls below the set value, the time delay starts to OK state (T<sub>op</sub>). After the delay, the output contact closes.
- If the duration of the fault state ( $\Delta t$ ) is shorter than the set value  $T_{off}$ , the status of the output contact does not change.
- $\bullet \ \ \text{If a phase failure occurs, the time delay to the fault state} \ (T_{\text{off}}) \ \text{begins. After the delay, the output contact opens.} \\$
- If the phase failure resumes, the time delay starts to OK state (T<sub>op</sub>). After the delay, the output contact closes.
- If the duration of the fault state ( $\Delta t$ ) is shorter than the set value  $T_{off}$ , the status of the output contact does not change.



#### Level switch HRH-5

#### Advantages:

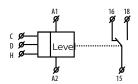
- Relay is designated for monitoring levels in wells, reservoirs, pools, tanks....
- In one device you can choose the following configurations:
- one-level switch of conductive liquids (by connecting H and D)
- two-level switch of conductive liquids
- One-state device monitors one level, twostate device 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 potentio-meter (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

#### Technical data

Technical data	Technical data				
	HRH-5				
Functions:	2				
Supply terminals:	A1 - A2				
Supply voltage:	24 240 V AC/ DC				
Input:	max. 2 VA				
Tolerance of supply voltage:	-15 %; +10 %				
Measuring circuit					
Sensitivity (input resistance):	adjustable in range 5 kΩ -100 kΩ				
Voltage in electrodes:	max. 3.5 V AC				
Current in probes:	<0.1 mA AC				
Time response:	max. 400 ms				
Max. capacity of probe cable:	max. 400 ms				
Time delay (t):	800 nF (sensitivity 5kΩ), 100 nF (sensitivity 100 kΩ)				
Time delay after switching on (t1):	adjustable, 0.5 -10 sec				
Accuracy	1.5 sec				
Accuracy in setting (mechanical):	±5%				
Output					
Number of contacts:	1x changeover (AgNi)				
Rated current:	8 A / AC1				
Switched output:	2500 VA , 240 W				
Switched voltage:	250 V AC1 / 24 V DC				
Min. switched output DC:	500 mW				
Mechanical life (AC1):	1x10 <sup>7</sup>				
Electrical life:	1x10 <sup>5</sup>				
Other data					
Operational temperature:	-20 +55 °C				
Storing temperature:	-30 +70 °C				
Electrical strength:	3.75 kV (supply - sensors)				
Operational position:	any				
Mounting:	DIN rail EN 60715				
Protection degree:	IP 40 from font panel				
Overvoltage category:	III				
Pollution degree:	2				
Profile of connecting wires (mm²)	max.1x 4, max.2x2.5/ with sleeve max. 1x2.5, 2x1.5				
Dimensions:	90 x 17.6 x 64 mm				
Weight:	72 g				
Applicable standards:	EN 60255-6, EN 61010-1				

#### Symbol





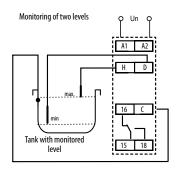


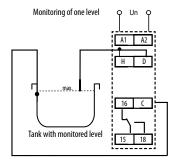


#### **Level switch HRH-5**

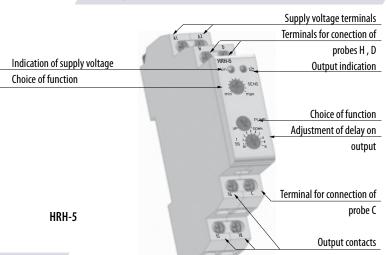
Туре	Code No.	g	
HRH-5	002471715	72	1/8

#### Connection

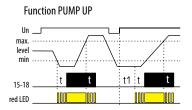


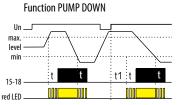


#### Description



#### **Functions**





Relay is designated for monitoring of levels of conductive liquids with possibility of functions: PUMP UP or PUMP DOWN. To prevent polarization and liquid electrolysis of liquid, and undesirable oxidation of measuring probes, alternating current is used. For measuring use three measuring probes: H- upper level, D- lower level, C - common probe. In case you use a tank made of a conductive material, you can use it as probe C. In case you require monitoring of one level only, it is necessary to connect inputs H and D and connect them to one probe - in this case sensitivity is lowered by half (2.5... 50k $\Omega$ ). Probe C can be connected with a protective wire of supply system (PE). To prevent undesirable switching out output contacts by various influences (sediment on probes, humidity...) it is possible to set sensitivity of the device according to conductivity of monitored liquid (corresponding to "resistance" of liquid) range 5 up to 100...k $\Omega$ . To reduce influences of undesirable switching of output contacts by liquid gorgle in tanks, it is possible to set delay of output reaction 0,5 - 10s.

#### Level switch HRH-8

Relay is designed to control the level of conductive liquids in wells, tanks, pools, tankers, reservoirs... (replacement for HRH-1)

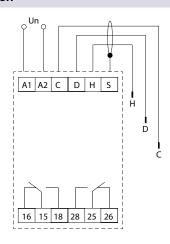
- Galvanically isolated supply and guard circuits
- Within one device, the following configurations can be selected:
  - 2x one-level monitoring (in separate tanks)

  - Pumping from one tank to another
- DIP switch selection on the front panel (8 functions)
- Adjustable probe sensitivity (for each probe separately)
- Adjustable relay switching delay (for each probe separately)
- 10Hz watch frequency prevents polarization of the liquid and increases resistance
  to interference by network frequency
- 2x output relay (with changeover contact 16A / 250V AC1)
- 3-MODULE design, mounting DIN rail mounting

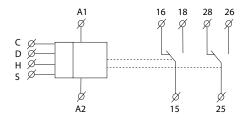
#### **Technical data**

		HRH-8			
Function		8			
Supply terminals		A1-A2			
Voltage range		AC 230 V, AC 110 V, AC 400 V, AC/DC 24 V (AC 50 - 60 Hz)			
Max load		2,5 W / 5 VA (AC 230 V, AC 110V, AC 400 V), 1,4 W / 2 VA (AC/DC 24 V)			
Supply voltage tole	erance	-15 %; +10 %			
Measuring circuit					
Hysteresis (input -	opening)	5 kΩ - 100 kΩ			
Voltage on electro	de	max. AC 3,5 V			
Current in probes		AC < 1 mA			
Time reaction		max. 400 ms			
Max. cable capacit	у	800 nF (sensitivity 5kΩ), 100 nF (sensitivity 100 kΩ)			
Time delay t		0,5 -10 s			
Accuracy					
Setting accuracy (mech.):		±5%			
Output					
Number of contacts		2x changeover / SPDT (AgNi / Silver Alloy)			
Current rating		16 A / AC1			
Breaking capacity		4000 VA / AC1, 384 W / DC			
Inrush current		30 A / < 3 s			
Switching voltage		250 V AC1 / 24 V DC			
Output indication		red LED			
Mechanical life		3x10 <sup>7</sup>			
Electrical life (AC1)		0,7x10 <sup>5</sup>			
Other information					
Operating tempera	ature	-20 +55 °C			
Storage temperatu	ire	-30 +70 °C			
Electrical strength		4 kV (supply - output)			
Operating position	l	any			
Mounting		DIN rail EN 60715			
Protection degree		IP40 from front panel / IP20 terminals			
Overvoltage category					
Pollution degree		2			
Max. cable size	solid wire	max. 1x 2,5 / 2x1,5			
(mm²)	with cavern	1x 1,5 (AWG 12)			
Dimensions		90 x 52 x 65 mm			
Standards		EN 60255-6, EN 61010-1			

#### Connection



#### **Symbol**



#### Measuring probes

There can be any measuring probe (any conductive contact, it is recommended to use brass or stainless steel).

The probe wire does not need to be shielded, but it is recommended. When using a shielded wire, the shielding is connected to terminal S.



#### **Level switch HRH-8**

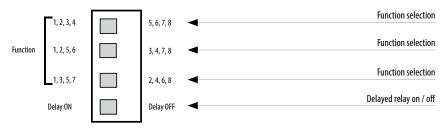
Туре	Code No.	g	
HRH-8 230 V AC	002470293	276	1
HRH-8 24V AC/DC	002470294	176	1

#### Description Terminal for connection of conductor Terminals for connecting probe common for both probes Supply voltage terminals Terminals for connecting shield Supply voltage indication Sensitivity Sensor H Adjustment Relay switching Setting the H probe delay indication 1 / delay H Probe failure Setting the D probe delay Relay switching indication 2 / delay D Sensitivity Sensor D 16 | 15 | 18 | 28 | 25 | 26 Adjustment Relay 2 - Pump Control 2 Relay 1 - Pump control 1 (Function 1, 2, 3, 4) / Alarm (Function 5, 6, 7, 8)





#### **Description and importance of DIP switches**



#### **Function description**

The relay is designed to monitor the level of conductive liquids with a choice of 8 functions:

- 1) 2 separate tanks (each with 1 probe) both PUMP UP (fi lling)
- 2) 2 separate tanks (each with 1 probe) both PUMP DOWN (emptying)
- 3) 2 separate tanks (each with 1 probe) H PUMP DOWN probe, D PUMP UP probe
- 4) 2 separate tanks (each with 1 probe) H PUMP UP probe, probe D PUMP DOWN
- both probes in one tank PUMP UP maintain level between probes H and D (as HRH-5), relay 1 switches on the pump, relay 2 alarm (level is not between probes H and D)
- 6) Both probes in one tank PUMP DOWN maintaining the level between probes H and D (as HRH-5), relay 1 switches on the pump, relay 2 alarm (the level is not between probes H and D)
- 7) Pumping from the well to the tank probe D in the well, probe H in the tank. The pump only runs if the probe D is flooded (enough water in the well) and the tank is not full (probe H). The alarm reports a lack of water in the well (probe D is not flooded).
- 8) Pumping from the reservoir to the tank probe D in the reservoir, probe H in the tank. The pump only runs if the probe D is flooded (full reservoir) and the tank is not full (probe H). The alarm reports the status of full tank and reservoir (both probes are flooded).

LED indication: T he red LED lights up - the corresponding relay is switched on

The yellow LED indicates probe failure - Functions 5, 6 probe H is flooded and probe D is not. At the same time both red LEDs flash.

To prevent polarization and electrolysis of the liquid and undesirable oxidation of the monitoring probes, an AC current of 10 Hz is used for monitoring. The low frequency has a positive effect on suppression of interference by 50 (60) Hz. Three probes are used to monitor the level:

- H upper level,
- D lower level and
- C common probe.

In the case of the use of a conductive material tank, it is possible to use the tank itself as a C probe. Probe C can also be connected to the protective conductor of the power supply system (PE).

To prevent undesired switching by various influences (soiling of dips, moisture ...), the sensitivity of the device can be set according to the conductivity of the liquid being monitored (corresponding to the "resistance" of the liquid) in the range of 5 to 100 k $\Omega$ . To limit the effect of undesired switching of output contacts by raising the liquid level in the tank, it is possible to set the output response delay 0,5 - 10 s.



Red LED flashes - delay timing

#### **Functions**

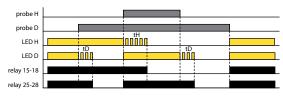
#### PUMP UP, ON DELAY (Function 1,3,4)



#### PUMP UP, OFF DELAY (Function 1,3,4)



#### PUMP UP, OFF DELAY (Function 5)



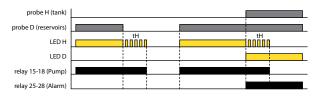
PUMP DOWN, OFF DELAY (Function 6)



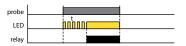
WELL - TANK, OFF DELAY (Function 7)



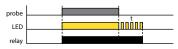
RESERVOIRS - TANK, OFF DELAY (Function 8)



#### PUMP DOWN, ON DELAY (Function 2,3,4)



#### PUMP DOWN, OFF DELAY (Function 2,3,4)



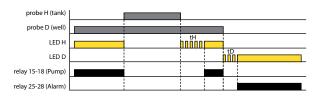
#### PUMP UP, ON DELAY (Function 5)



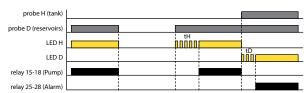
PUMP DOWN, ON DELAY (Function 6)



WELL - TANK, ON DELAY (Function 7)



#### RESERVOIRS - TANK, ON DELAY (Function 8)



#### **Sensors HRH**

#### **Sensors HRH**

Туре	Code No.	Description	(O) (g)	
Sensor SHR-1-M	002471205	Brass sensor without cable, max. wire profile 2,5mm², op. temp.(-25 to+60°C)	9,7	1
Sensor SHR-1-N	002471709	Stainless steel sensor without cable, max. wire profile 2,5mm <sup>2</sup> , op. temp.(-25 to+60°C)	9,7	1
Sensor SHR-2	002471203	Stainless steel sensor without cable, max. wire profile 2,5mm <sup>2</sup> - IP68, op. temp.(+1+80°C)	48,6	1
Sensor SHR-3	002471230	Stainless steel sensor with 3m cable PVSC 2x0,5mm <sup>2</sup> - IP67, op. temp. (< 95°C)	239	1
Sensor HRH-10	002471703	Sensor with 10m cable		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		

**Technical data - Measuring probes HRH** 

	HRH-5-measuring probes
Cables	10m, 15m, 20m, 30m, 40m
Max. cable size	1,5 mm²
Insulation voltage Ui	750 V
Fluids	Conductible, unaggressive *

<sup>\*</sup> Special probes for aggressive fluids



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

#### Advantages

- **I** 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
- ${\it I}$  Choice of external thermo sensors with double insulation in standard lengths 3, 6 and 12 m



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

Туре	temp. range orsensor length	Code No.	g	
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

<sup>\*</sup>Note: Order sensor TZ from the table below

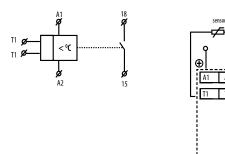




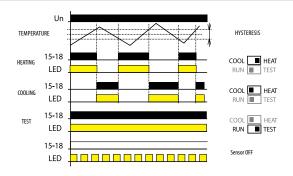


Technical data						
	TER-3 (A, B, C)					
Function	single level					
Supply	A1-A2					
Universal supply	AC/DC 24-240 galvanically unseparated					
Consumption	2 VA					
Supply voltage tolerance	-15% - +10%					
Measuring circuit						
Measuring terminals	T1 - T1					
Tomporaturo rango	TER-3A TER-3B TER-3C					
Temperature range	-30+10 °C 0+40 °C -30+70 °					
Hysteresis	adjustable in range 0.55K					
Sensor	external, termistor NTC					
Sensor fault indication	flashing red LED					
Setting accuracy - mechanical						
Switching difference	0,5℃					
Temperature coefficient	< 0.1 % / °C					
Output						
Number of contacts	1 x changeover (AgNi)					
Rated current	16 A / AC1, 10A/24 V DC					
Breaking capacity	4000 VA / AC1, 300W / DC					
Switching voltage	250V AC1/ 24V DC					
Min. breaking capacity DC	500 mW					
Output indication	red LED					
Mechanical life	3x10 <sup>7</sup>					
Electrical life	0,7x10⁵					
Controlling						
Operating temperature	-20+55 °C					
Storage temperature	-30+70 °C					
Electrical strength	4 kV					
Operating position	any					
Mounting	DIN rail EN 60715					
Protection degree	IP 40 from front panel					
Overvoltage category	III.					
Pollution degree	2					
Max. cable size	2.5 mm <sup>2</sup>					
Dimensions	90 x 17,6 x 64 mm					
	EN 60730-2-9, EN 61010-1					

#### Connection



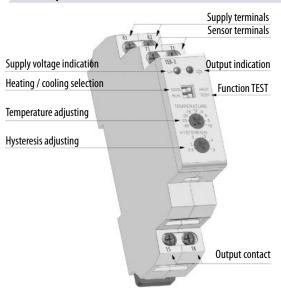
#### **Functions**



TER-3 It is a single but practical thermostat with a separated sensor for monitoring temperature. The device is placed in a switchboard and an external sensor senses temperature of required space, object or liquid. Supply is not galvanically separated from the sensor. The sensor is double insulated. Maximal length of a delivered sensor is 12m. device has in-built

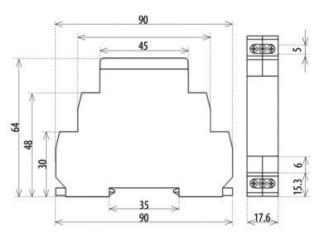
indication of sensor damage, which means that in case of short-circuit or disconnection red LED flashes. Thanks to adjustable hysteresis , it is advantageous to regulate width of the range and thus define sensitivity of load switching. Sensed temperature is decreased by set hysteresis. When installing it is necessary to keep in mind that hysteresis is increased by temperature gradient between sensor's jacket and thermistor.

#### Description



#### **Dimensions**

#### 1-module devices



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

#### Advantage:

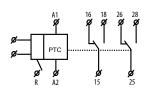
- Monitors temperature of motor winding of motors with built in PTC sensor
- Fixed levels of switching
- MEMORY function active by DIP switch
- RESET of faulty state:
  - button on the front panel
  - by external contact (remote by two wires)
- Function of short-circuit or sensor disconnection monitoring, 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-module, DIN rail assembly possible

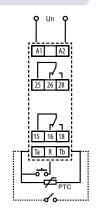


#### **Technical data**

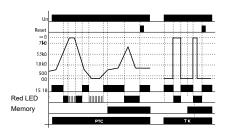
	TER-7				
Function	monitoring temperature of motor winding				
Supply terminals	A1-A2				
Supply voltage	24 - 240 V AC/ DC				
Consumption	max. 2 VA				
Supply voltage tolerance	-15 %; +10 %				
Measuring circuit					
Measuring terminals	Ta-Tb				
Cold sensor resistance	50 Ω - 1.5 kΩ				
Upper level	3.3 kΩ				
Bottom level:					
Sensor:	PTC temperature of motor winding				
Sensor failure indication	blinking red LED				
Accuracy	< 5%				
Accuracy in repetition	±5%				
Temperature dependance	< 0.1 % / °C				
Output					
Number of contacts	2x changeover (AgNi)				
Rated current	8 A / AC1				
Breaking capacity	2000 VA / AC1, 192 W / DC				
Inrush current	10 A / < 3 s				
Switching voltage	250 V AC1 / 24 V DC				
Min. breaking capacity DC	500mW				
Mechanical life	3x10 <sup>7</sup>				
Electrical life	0.7x10 <sup>5</sup>				
Other information					
Operating temperature	- 20 +55 °C				
Storage temperature	- 30 +70 °C				
Electrical strength	4 kV (supply - output)				
Operating position	any				
Mounting	DIN rail EN 60715				
Protection degree	IP 40				
Overvoltage category	III.				
Pollution degree	2				
Mary and Lander ( 2)	solid wire max.1x 2.5 or 2x1.5				
Max. cable size (mm²)	with sleeve max. 1x2.5				
Dimensions	90 x17.6 x 64 mm,				
Weight	83 g				
Standard	EN 60730-2-9, EN 61010-1				

#### Symbol and connection





#### **Function**



The device controls temperature of motor winding with PTC thermistor which is mostly placed in motor winding or very close to it. Resistance of PTC thermistor run to max 1.5 k $\Omega$  in cold stage. By temperature increase the resistance goes strongly up and by overrun the limit of 3.3 k $\Omega$  the contact of output relay switch off – mostly contactor controlling a motor. By temperature decrease and thereby decrease of thermistor resistance under 1.8 k $\Omega$  the output contact of relay again switches on. The relay has function "Control of sensor fault". This controls interruption or disconnection of sensor. When switch is in position "TK" monitoring of faulty sensor is not functional – it is possible to connect bimetal sensor with only 2 states: ON or OFF. The device can work with bi-metal sensor in this position. Other safety unit is function "Memory". By temperature overrun (and output switches off) the output is hold in faulty stage until service hit. This bring the relay to normal stage (with RESET button) on front panel or by external contact ( remote).

**Termostat relay TER-7** 

		Code No.	
Туре	Code No.	_ r \	
TER-7	002471804	65	1/10

#### Note:

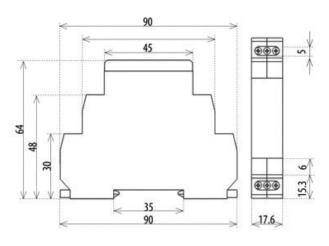
Sensors could be in series in abide with conditions in technical specification - switching limit.

Warning!:

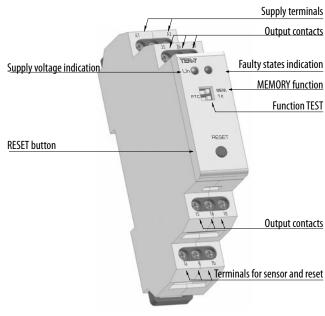
In case of supply from the main, neutral wire must be connected to terminal A2.  $\label{eq:local_problem}$ 

#### **Dimensions**

#### 1-module devices



#### Description



#### **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
- Program setting of output function, calibration of sensors according to reference temperature (off set)

- **■** 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

#### **Multifunction digital thermostat TER-9**

Туре	I <sub>n</sub> [A]	Code No.	g	
TER-9 24V AC/DC	8	002471803	140	1
TER-9 230V AC	8	002471824	140	1

<sup>\*</sup>Note: Order sensor T7 from the table below

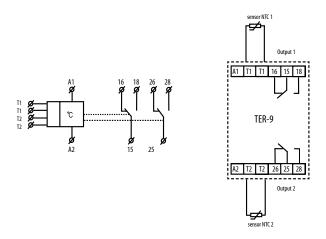




#### **Technical data**

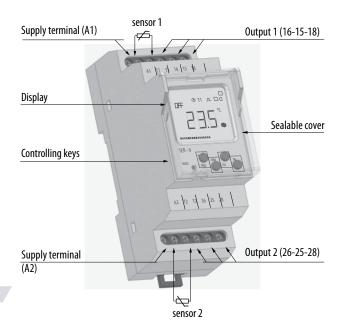
	TER-9				
Number of functions	6				
Supply	A1-A2				
Supply voltage	AC 230V or AC/DC 24V, galvanically				
эирріу чопаде	separated				
Consumption	max. 3,5 VA				
Supply voltage tolerance	-15% - +10%				
Measuring circuit					
Measuring terminals	T1 - T1, T2-T2				
Temperature range	-40+110 °C				
Hysteresis (sensitivity):)	adjustable in range 0.55K				
Difference temperature	adjustable 1 20 °C				
Sensor	termistor NTC 12Ω at 25°C				
Sensor fault indication	sign "Err"				
Measuring accuracy	5 %				
Repeat accuracy	<0,5 %				
Temperature coefficient	< 0.1 % / °C				
Output					
Number of contacts	1 x changeover for each output (AgNi)				
Rated current	8 A / AC1				
Breaking capacity	2500 VA / AC1, 240W / DC				
Switching voltage	250V AC1/ 24V DC				
Min. breaking capacity DC	500 mW				
Output indication	ON / OFF				
Mechanical life	1x10 <sup>7</sup>				
Electrical life	1x10 <sup>5</sup>				
Controlling					
Operating temperature	-20+55 °C				
Storage temperature	-30+70 °C				
Electrical strength	4 kV (supply - contact)				
Operating position	any				
Mounting	DIN rail EN 60715				
Protection degree	IP 40 from front panel				
Overvoltage category	III.				
Pollution degree	2				
Max. cable size	2.5 mm <sup>2</sup>				
Dimensions	90 x 35,6 x 64 mm				
Standards	EN 60730-2-9, EN 61010-1, EN 61812-1				

#### Connection



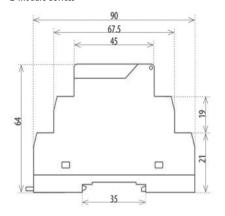
Note: It is possible to operate the device with one sensor. In such case it is necessary to connect resistor  $10k\Omega$ . This resistor is a part of delivery.

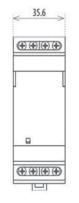
#### Description



#### **Dimensions**

#### 2-module devices

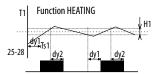


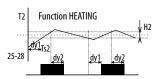






#### 2 independent single-stage thermostat

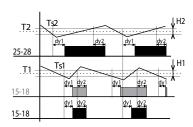




- <u>Legend:</u> Ts1 real (measured) temperature 1
- Ts2 real (measured) temperature 2 T1 - adjusted temperature T1
- T2 adjusted temperature T2
- H1 adjusted hysteresis for T1
- H2 adjusted hysteresis for T2
- dy1 set switching delay of the output dy2 set delay on output breaking
- 15-18 output contact (for T1)
- 25-28 output contact (for T2)

Output contact switched until adjusted temperature is reached. Hysteresis eliminates frequent switching. Heating/cooling function adjusted in the menu. \\

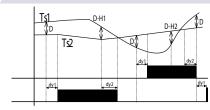
#### Dependent functions of 2 thermostats



- Ts1 real (measured) temperature 1 Ts2 - real (measured) temperature 2
- T1 adjusted temperature T1
- T2 adjusted temperature T2
- H1 adjusted hysteresis for T1 H2 adjusted hysteresis for T2
- dy1- set switching delay of the output
- dy2 set delay on output breaking 25-28 output contact (for T2)
- 15-18 output contact (intersection T1 and T2)

Output 15-18 is closed, if temperature of both thermostats is bellow an adjusted level. When any thermostat reaches adjusted level, the contact 15-18 open. Serial inner connection of thermostats (logic function AND).

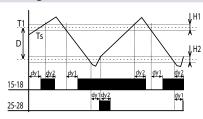
#### **Differential thermostat**



- Ts1 real (measured) temperature T1 Ts2 - real (measured) temperature T2
- D adjusted difference
- dy1- set switching delay of the output
- dy2 set delay on output breaking
- 15-18 output contact (for T1)
- 25-28 output contact (for T2)

Switching of output corresponds with input, which has lower temperature when difference is exceeded differential thermostat is used for keeping two identical temperature e.g. in heating systems (boiler and reservoir), solar systems (collector reservoir, exchanger), water heating (water heater, water distribution) etc.

#### 2-stage thermostat

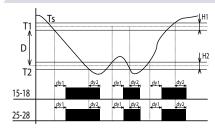


- Ts real (measured) temperature
- T1 adjusted temperatu D - adjusted diff erence
- H1 adjusted hysteresis for T1
- H2 adjusted hysteresis for T2
- dy1- set switching delay of the output
- dy2 set delay on output breaking 15-18 output contact
- 25-28 output contact

Typical example of use for two-stage thermostat is e.g in boiler-room, where there are two boilers from which one is main and the other one is auxiliary. The main boiler is managed according to set temperature and auxiliary boiler is switched in case temperature falls under set difference.

Thus it helps to the main boiler in case outside temperature dramatically falls. In the range of difference (D) output 15-18 functions as normal thermostat to input 1 (type 1). In case temperature falls under set difference, output 2 switches.

#### Thermostat with "WINDOW"

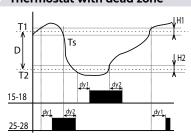


- Ts real (measured) temperature
- T1 adjusted temperature MAX T2 adjusted temperature MIN (T2=T1-D)
- H1 adjusted hysteresis for T1
- H2 adjusted hysteresis for T2 dy1- set switching delay of the output
- dv2 set delay on output breaking
- 15-18 output contact
- 25-28 output contact

Output is closed (heating) only if temperature is within adjusted range. If temperature is out of range, the contact opens. T2 is set as T1-D.

The function is used for protection of gutters against freezing.

#### Thermostat with dead zone



- Ts real (measured) temperature
- T1 adjusted temperature T1
  T2- adjusted temperature T2 (T2=T1-D)
- H1 adjusted hysteresis for T1
- H2 adjusted hysteresis for T2
- dy1- set switching delay of the output
- dy2 set delay on output breaking 15-18 output contact (heating)
- 25-28 output contact (cooling)

In case of thermostat with a "dead zone", it is possible to set temperature T1 and a difference (respectively a width of dead zone D). In case the temperature with set hysteresis H1 is lower than T1, the output contact switches heating ON and when T1 is reached it opens. In case the temperature falls under T2, contact switches cools down and opens when T2 is reached. This function can be used for example for automatic air warming and cooling in ventilation so the sit is always within the range T1 and T2.

# **Product loadability**

Valid for following products: CRM-4, SHT-1, MR-41, MR-42, SOU-1, SHT-1/2, SHT-3/2, CRM-42, SMR-B

#### Load

relay contact 16 A	*◊*-	-	∓ <b>ः</b>	Ŧ <del>Ŀ</del> Ţ	40=	AC1	AC3	AC15	DC1 (24/110/220 V)
AgSNO,	2000 W	1000 W	1000 W	750 W	500 W	4000 VA	0,9 kW	750 VA	16A/0,5A/0,35A

Valid for following products: CRM-93H, SOU-2, HRN-54, HRN-54N, PRI-51, TER-9

#### Load

relay contact 8 A	❖	-	<b>∓</b> ₽ <b>□</b> □	ŦŢ.	40=	AC1	AC3	AC15	DC1 (24/110/220 V)
AgNi	500 W	Х	Х	Х	Х	2000 VA		375 VA	8A/0,4A/0,25A

Valid for following products: CRM-91H, CRM-2H, CRM-2T, HRN-33, HRN-34, HRN-35, TER-3

#### Load

relay contact 16 A	❖	=	<b>∓</b> ₽ <b>□</b> □	ŦĽŢ.	40=	AC1	AC3	AC15	DC1 (24/110/220 V)
AgNi	1000 W	Х	Х	Х	X	4000 VA	0,9 kW	750 VA	16A/0,5A/0,35A

### Thermal sensor TZ

Temperature sensors are made of thermistor NTC embedded in a metal sleeve by thermo-conductive sealer (TZ) Sensor TZ:

■ suitable mainly for use in extreme temperatures

**Technical parameters TZ** 

Range:	-40+125°C		
Scanning element:	NTC 12K 2%		
In air/in water:	(t65) 62s/8s		
In air/in water:	(t95) 216s/23s		
Cable material:	silicone		
Terminal material:	nickel-couted copper		
Protection degree:	IP 67		
Protection class:	II (double insulation)		

Resistive values in dependance on temperature

Temperature (°C)	Sensor NTC (kΩ)
20	14,7
30	9,8
40	6,6
50	4,6
60	3,2
70	2,3

TZ: Thermal sensors for range -40...+125°

TZ-0 - Thermo sensor can be connected directly to terminal block (length of the sensor 110mm)

TZ-3 - Temperature sensor 3m, double isolation silicone

 $TZ\hbox{-} 6-Temperature sensor 6m, double isolation silicone$ 

TZ-12 - Temperature sensor 12m, double isolation silicone

#### Thermal sensors TZ

Туре	lenght of sensor cable	Code No.	P				
	[A]		[ g ]				
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			



#### **Hour meter HM-1**

#### **Aplications**

- **■** Gen-sets
- **■** Compressors
- Pumps
- Medical equipment
- **✓** Control panels
- Air conditioning

#### Advantages

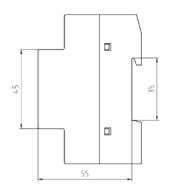
- **✓** 2-module size
- **■** DIN rail mounting
- **✓** Long lifetime
- Operating voltage 230V AC

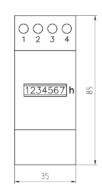


#### **Technical data**

Mechanical data	description		
Display	5 integers, 2 decimals		
Digit height	4mm		
Counting range	99999,99		
Reading accuracy	1/100 h (36sec)		
Weight	32g		
Electrical data			
Operating voltage	230V+/- 10%, 50Hz		
Current consumption	max. 8mA		
Accuracy	+/- 0,02%		
IP protection	IP40		
Ambient conditions			
Operating temperature	-25°C + 70°C		
Storage temperature	-40°C + 70°C		
Relative humidity	max. 80% / +25°C		
Approvals	CE Mark RoHS compliant		

#### Dimensions





#### Hour meter HM1

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

#### **Electronic fuse monitor EFM**

- Recognize fuse failure in three-phase or mono-phase system
- Can be used for all sizes and types of fuses
- Signals operation even if loads are switched off
- Automatic reset after replacing the fuse
- Working properly even if:
- Asymmetrical mains
- **✓** Independence of phase sequence
- Mains with harmonic waves
- Motors providing feedback

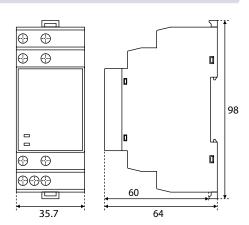
- Internal resistance > 2000 Ω/v
- Output relay 1 pole changeover contact
   Output relay 1 pole changeover changeover contact
   Output relay 1 pole changeover chan
- Size 2 modules 35mm DIN rail mounting EN50.022
- Self-extinguished material UL94 v0
- Typical application: fuses monitoring on 3-ph motor mains
- EU directives CE marking:
- **■** 2014/30/UE EMC
- **■** 2014/35/UE LVD



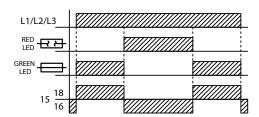
#### **Technical data**

		EFM230	EFM400		
Input					
Supply voltage AC ±10%	٧~	230	400		
Nominal Frequency	Hz	50-60 (rang	e:47-63)		
Power consumption (max. AC) VA		3,6	1,5		
Output relay					
Rating	-	8A-250V AC	/24V DC		
Max switching power	VA	200	0		
Max switching voltage	V~	400	1		
Min switching load	-	10mA 12	2V dc		
Contact life		30x10 <sup>3</sup> ops / 1	00x10 <sup>3</sup> ops		
Changeover contacts	-	AgNi0.15			
Status indication					
Fuse OK	-		Green LED - Relay ON		
Fuse FAIL	-	Red LED - Relay OFF			
General					
Internal resistance paths	Ω/V	>200	00		
Permissible feedback (Ue)		max.	90		
Response/Release Time:	_				
- After Breaking Fuse	ms	<30	)		
- After Restoring Fuse	ms	<50	0		
Working temperature	<u></u> ℃	-20+	-50		
Storage temperature	<u>°C</u>	-30⊣	-70		
Electrical Insulation	kV	4			
Overvoltage Category	-	III			
Protection degree	IP	20			
Pollution degree		2			
Climatic category		IEC 60068-1 (20/050/60), DIN 40040 (class D)			
Altitude up to	m	200	2000		
Dimensions	mm	98x35,7	98x35,7x64		

#### **Dimensions**



#### Function

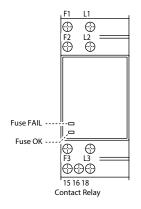


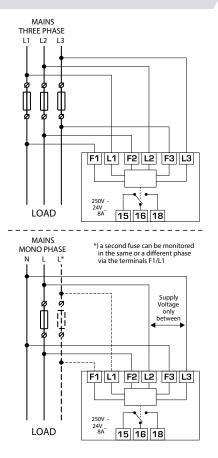
#### **Electronic fuse monitor EFM**

Туре	I <u>,</u> [A]	U <sub>n</sub> [V AC]	Code No.	Description	g	
EFM230	8	230	002472213	Fuse Monitor 3X230 volts - 1 RelayCO 250VAC 8A	175	1
EFM400	8	400	002472214	Fuse Monitor 3X400 volts - 1 RelayCO 250VAC 8A	175	1

#### Connection

#### Description





# ETIREL Electromechanical Relays

#### **Electromechanical power relays RERM3**

#### Application

Electromechanical relays RERM are designed for switching, control and signaling of auxiliary and power circuits

#### **Features**

- 3 changeover contacts;
- Control voltages AC 24V, AC 230V;
- Test button without blocking
- Base for relay RERB3-S (DIN rail mounting TH-35);
- Accessories: (metal bracket-holder RER-CLIP-SP);

#### Electromagnetic Plugin Relays with Mechanical Indication Test Button

Туре	Code	Uc rated coil voltage [V]	Indication	No. Of contacts	g	
RERM3-230AC	002473060	230 V AC	-	3 x CO	80	1/100
RERM3-230ACL	002473061	230 V AC	LED	In=16A	80	1/100
RERM3-024AC	002473062	24 V AC	-	AC1,	80	1/100
RERM3-024ACL	002473063	24 V AC	LED	250V AC)	80	1/100



RERM3-230AC

■ Screw terminals (max torque 0.7 Nm);

Plug-in Sockets (Base)

Туре	Code	For use with	g	
RERB3-S	002473064	RERM3	70	1/250



RERB3-S

#### Accessories

Туре	Code	For use with	g	
RER-CLIP-SP	002473065	RERB3-S	-	1/1000



RER-CLIP-SP

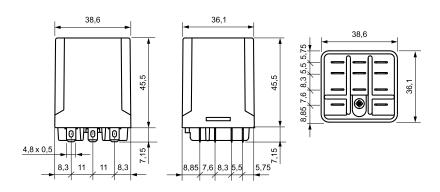
Table 1: Technical data

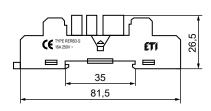
	RERI	M3
Contact Data		
Number and type of contacts	30	0
Contact material	1pA	Ni
Rated / max. switching voltage AC	440	V
Min. switching voltage	5\	1
	16 A / 25	50 V AC
Rated load (capacity)	10 A / 40	
Min. switching current	5 m	A
Max. inrush current	40	A
Rated current	16.	A
Max. breaking capacity AC1	4000	VA
Min. breaking capacity	0.3	W
Contact resistance	≤ 100	mΩ
Max. operating frequency (cycles/hour)		
• at rated load AC1	1 20	00
• no load	12.0	
Coil data	12 0	
Rated voltage	AC: 24V	240V
Must release voltage	AC: ≥ 0,	
Operating range of supply voltage	see nex	
Rated power consumption	2,8 VA (50Hz) /	
<u> </u>	2,6 VA (3UHZ) /	2,3 VA (00HZ)
Insulation according to EN 60664-1	4001	1.00
Insulation rated voltage	400 V	
Rated surge voltage		,2 / 50 μs
Overvoltage category		
Insulation pollution degree	2	
Dielectric strength between coil and contacts (basic insulation)	2500 V AC	
Dielectric strength - contact		
clearance	4500	4.46
- micro disconnection - full disconnection with contact gap	1500° 2500°	
≥3mm	2300	VAC
Dielectric strength pole-pole (basic		
insulation)	2500	V AC
Contact - coil distance		
- Clearance	≥ 5 mm 2C0, 2N0	≥ 4 mm 3C0, 3N0
- Creepage	≥ 8 mm 2C0, 2N0	≥ 5 mm 3C0, 3N0
General data	,	
Operating / release time (typical values)	20 ms /	15 ms
Electrical life	25 1157	
- Resistive AC1	>10 <sup>5</sup> 16 A, 250 V A	C / 10 A, 400 V AC
- COS Ø	See nex	
Mechanical life (cycles)		•
Dimensions	>10 <sup>7</sup> 36,1 x 38,6 x 45,5 mm	
Ambient temperature	JU, 1 X JU,U	, 19 <sub>1</sub> 3 mm
·	40	0500
- storage	- 40+	
- operating	- 40+	
Cover protection category	IPO	
Environmental protection	RT	
Shock resistance (NO/NC)	10	-
Vibration resistance	5g 10	
Solder bath temperature	max. 2	70°C
Soldering time	max.	. 5s

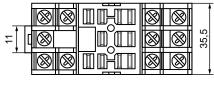
**Table 2: Coil data** 

Coil code	Rated voltage		Acceptable	Coil operating range V AC	
Con code	V AC at 20 °C	at 20 °C Ω	CΩ resistance	min. (at 20 °C)	max. (at 55 °C)
024AC	24	75	± 15%	19,2	26,4
230AC	230	7080	± 15%	184,0	253,0

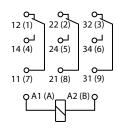
### **Dimensions**

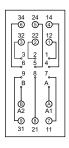






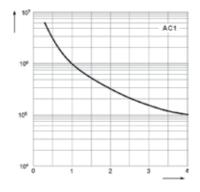
### Connection diagram (pin side view)

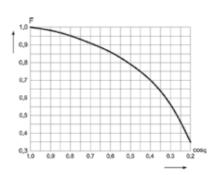




# Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

### **Electrical life reduction factor at AC inductive load**





### **Industrial Plugin Electromagnetic Relays**

#### Description

Relays of general application - the new relays are distinguished by a modern design, high reliability and functionality. Modern technology ensures high quality and effectiveness

- ERM2 (2 pole CO »change over contact«) and ERM4 (4 pole CO »change over contact«)
- AC and DC coils (12, 24V), 230V AC only
- Two types of plug-in sockets (M type and T type)
- Accessories ( connection terminals, retainer/retractor clips, description plates, RC modules...)
- Colour: grey

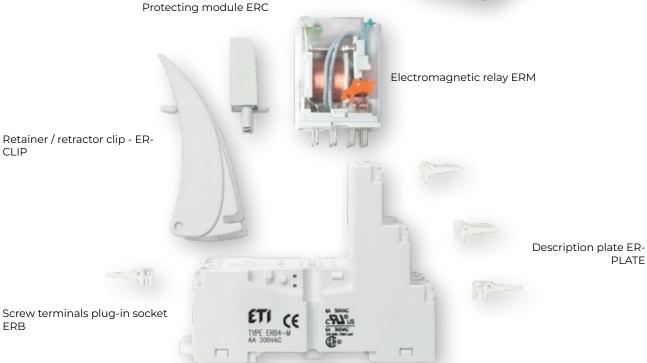
#### **Features**

- Mechanical indicator with lockable test button as a standard version
- Optional: Light indication (with built in smd LED)
- Mounting on panel or 35 mm rail in accordance with EN60715
- **✓** Improved electromagnet efficiency
- Strong insulation between contacts (applied polyamide PA66)
- Cadmium free contacts
- Miniature dimensions
- Recognitions, certifications, directives: RoHS, CE



### Robust design





\*All parts must be ordered separately

**Table 1: Technical data** 

	ERM2	ERM4		
Number and type of contacts	2 CO	4 CO		
Contact material		AgNi		
Rated / max. switching voltage AC	250 V / 440 V	250 V / 250 V		
Min. switching voltage	10 V	10 V AgNi, 10 V AgNi/Au 0,2 μm, 5 V AgNi/Au 5 μm		
Rated load (capacity) AC1 AC15 AC3 DC1 DC13	12 A / 250 V AC 3 A / 120 V 1,5 A / 240 V 370 W (single-phase motor) 12 A / 24 V DC (see Fig. 3) 0,22 A / 120 V 0,1 A / 250 V	6 A / 250 V AC  1,5 A / 120 V 0,75 A / 240 V (C300)  125 W (single-phase motor)  6 A / 24 V DC (see Fig. 3)  0,22 A / 120 V 0,1 A / 250 V (R300)		
Min. switching current	!	5 mA		
Max. inrush current	24 A	12 A		
Rated current	12 A	6 A		
Max. breaking capacity AC1	3 000 VA	1 500 VA		
Min. breaking capacity	0,3 W	0,3 W AgNi, 0,3 W AgNi/Au 0,2 μm, 0,1 W AgNi/ Au 5 μm		
Contact resistance	≤`	100 mΩ		
Max. operating frequency (cycles/hour)  • at rated load AC1  • no load		1 200 8 000		
Coil data				
Rated voltage 50/60 Hz AC DC	See	table 2		
Must release voltage	AC: ≥ 0,2 Un DC: ≥ 0,1 Un			
Operating range of supply voltage	see Table 2			
Rated power consumption AC DC	1,6 VA 0,9 W			
Insulation according to EN 60664-1				
nsulation rated voltage	25	50 V AC		
Rated surge voltage	4 000 V 1,2 / 50 μs	2 500 V 1,2 / 50 μs		
Overvoltage category	III			
nsulation pollution degree	3	2		
Dielectric strength  • between coil and contacts • contact clearance • pole - pole	1 500 V AC type of cle	pe of insulation: basic earance: micro-disconnection pe of insulation: basic		
Contact - coil distance				
• clearance	≥ 2,5 mm ≥ 4 mm	≥ 1,6 mm ≥ 3,2 mm		
• creepage General data	< 4 HIIII	≥ 3,2 IIIIII		
Operating / release time (typical values)	AC: 10 ms / 8 ms	DC: 13 ms / 3 ms		
Electrical life	AC. IVIIIS / 8 IIIS	עכ. וכווו כ / פווו כו		
• resistive AC1	> 10 <sup>s</sup> 12 A, 250 V AC	> 10 <sup>5</sup> 6 A, 250 V AC		
• cosΦ	see Fig. 2	see Fig. 2		
Mechanical life (cycles)	•	2 x 107		
Dimensions (L x W x H)	27,5 x 21,2 x 35,6 mm			
Weight		35 g		
Ambient temperature				
• storage		+85 °C		
operating	AC: -40+55 °C	DC: -40+70 °C		
Cover protection category	IP 40	EN 60529		
Environmental protection	RTI	EN 116000-3		
Shock resistance (NO/NC)	10	g / 5 g		
Vibration resistance	5 q 1	0150 Hz		



Electromagnetic Plugin Relays with Mechanical Indication and Lockable Test Button

Туре	Code	Uc rated coil voltage	No. Of contacts	ര	83
		[V]		g	W
ERM4-012DCL	002473021	12 V DC	4 x CO (6A, AC1)	33	10/100
ERM2-024DC	002473000	24 V DC	2 x CO (12A, AC1)	33	10/100
ERM2-024DCL	002473001	24 V DC	2 x CO (12A, AC1)	33	10/100
ERM2-024AC	002473002	24 V AC	2 x CO (12A, AC1)	33	10/100
ERM2-024ACL	002473003	24 V AC	2 x CO (12A, AC1)	33	10/100
ERM2-230AC	002473004	230 V AC	2 x CO (12A, AC1)	33	10/100
ERM2-230ACL	002473005	230 V AC	2 x CO (12A, AC1)	33	10/100
ERM4-024DC	002473006	24 V DC	4x CO (6A, AC1)	33	10/100
ERM4-024DCL	002473007	24 V DC	4x CO (6A, AC1)	33	10/100
ERM4-024AC	002473008	24 V AC	4x CO (6A, AC1)	33	10/100
ERM4-024ACL	002473009	24 V AC	4x CO (6A, AC1)	33	10/100
ERM4-230AC	002473010	230 V AC	4x CO (6A, AC1)	33	10/100
ERM4-230ACL	002473011	230 V AC	4x CO (6A, AC1)	33	10/100



\*L - built in LED light indicator (red)

Other coil (control) voltages available upon special request:

V DC: 5, 6, 48, 60, 80, 110, 220

V AC: 6, 12, 42, 48, 60, 80, 110, 115, 120, 127, 220, 240

### Ordering designation ERMX-YYYYYZ

X – Number of contacts:

YYYYY – Coil code: 024AC: 24 V AC 50/60 Hz 4: 4 CO (4 changeover) 2: 2 CO (2 changeover) 230AC: 230 V AC 50/60 Hz 024DC: 24 V DC

012DC: 12 V DC

Z – Additional features:

L – Light indicator (smd LED

- red)

#### Example:

ERM4-024DCL Electromagnetic relay for plugin sockets with mechanical indication and lockable test button, four changeover contacts, coil voltage 24 V DC with light indicator.

Meaning of color codes:



Plug-in Sockets (Base)

rug m sockets (buse)						
Туре	Code	For use with	g			
ERB2-T	002473012	ERM2	60	10/100		
ERB2-M	002473013	ERM2	71	10/80		
ERB4-T	002473014	ERM4	60	10/100		
ERB4-M	002473015	ERM4	71	10/80		

T - T type

M - M type





ERB2-M, ERB4-M



### **Accessories**

Туре	Code	For use with	g	
ER-CLIP	002473016	ERB-T & ERB-M	4,5	10/300
ER-PLATE	002473017	ERB-T & ERB-M	0,5	50/500
ER-TERMINAL	002473018	ERB-T & ERB-M	1,3	2/20
ERC-024AC	002473019	ERB-T & ERB-M U <sub>c</sub> ≤ 24V AC	2,6	20/100
ERC-230AC	002473020	ERB-T & ERB-M $U_c \le 230V \text{ AC}$	2,6	20/100
ERC-024ACDCL	002473040	ERB-T & ERB-M U <sub>c</sub> = 6 24 V AC/DC	2,9	20/100
ERC-060ACDCL	002473041	ERB-T & ERB-M U <sub>c</sub> =24 60 V AC/DC	2,9	20/100
ERC-230ACDCL	002473042	ERB-T & ERB-M U <sub>c</sub> =110 230 V AC/DC	2,9	20/100





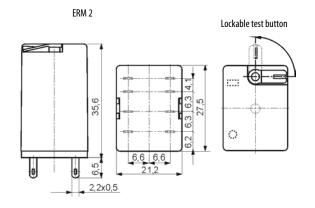
Table 2: Coil data

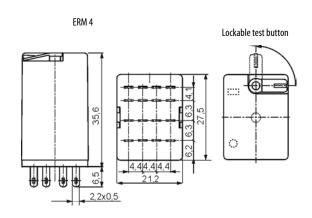
DC voltage version					
Coil code	Rated voltage	Coil resistance	Acceptable	•	ig range V DC
	V DC	at 20 °C Ω	resistance	min. (at 20 °C)	max. (at 20 °C)
012DC	12	160	± 10%	9,6	21,6
024DC	24	640	± 10%	19,2	43,2
048DC	48	2600	± 10%	38,4	86,4
110DC	110	13600	± 10%	88	198
220DC	220	54000	± 10%	176	250

### AC voltage version

Cail cada	Rated voltage	Coil resistance	Acceptable	Coil operatir	ng range V AC
Coil code V AC	at 20 °C Ω resistance	min. (at 20 °C)	max. (at 20 °C)		
024AC	24	158	± 10%	19,2	25,3
230AC	230	16100	± 10%	184,0	253

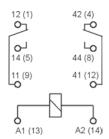
### **Dimensions**



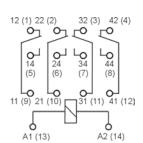


### Connection diagram (pin side view)

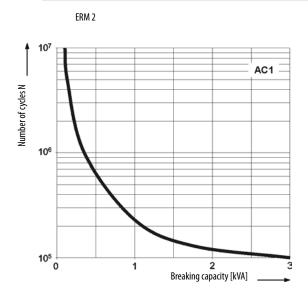
ERM 2

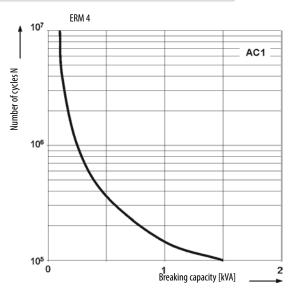


ERM 4



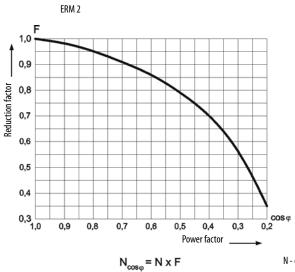
#### Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1

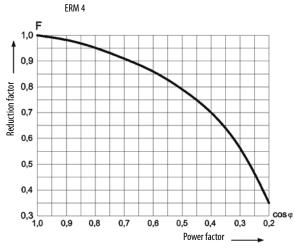




### **Electrical life reduction factor at AC inductive load**

Fig. 2



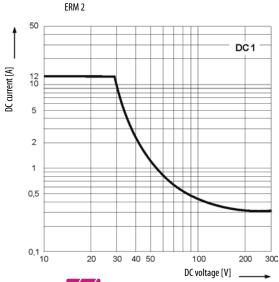


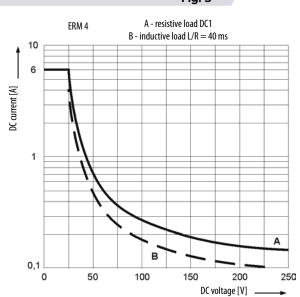
N - electrical life at AC1

 $N_{\cos\phi} = N \times F$ 

### Max. DC resistive load breaking capacity

Fig. 3





#### 

AgNi - for resistive or inductive loads,

### Mounting

#### ERM 2

Relays ERM2 are designed for mounting in plug-in sockets, standard version includes mechanical indicator with lockable front test button.

Relays ERM2 are designed for:

- screw terminals plug-in
- **■** sockets ERB2-T\*
- sockets ERB2-M\* with clip ER-CLIP
- 35 mm rail mount acc. to EN 60715 or
- **■** panel mounting

protecting modules type ERC are available as accessories /sockets (see below)

 ${}^{*}\text{Plug-in sockets ERB2-T and ERB2-M may be linked with interconnection strip type ER-TERMINAL}$ 

### ERM 4

Relays ERM4 are designed for mounting in plug-in sockets, standard version includes mechanical indicator with lockable front test button.

Relays ERM4 are designed for:

- **■** screw terminals plug-in
- **■** sockets ERB4-T\*
- sockets ERB4-M\* with clip ER-CLIP
- 35 mm rail mount acc. to EN 60715 or
- **■** panel mounting

protecting modules type ERC are available as accessories /sockets (see below)

\*Plug-in sockets ERB4-T and ERB4-M may be linked with interconnection strip type ER-TERMINAL

### **Plugin Sockets And Accessories**

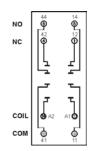
### ERB2-T and ERB4-T Plugin sockets (base) type T

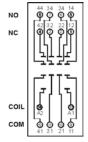
- **■** Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- **■** 35 mm rail mount acc. to EN 60715
- or on panel mounting
- **■** 76,3 x 27 x 42,5(80) mm\*

\*In the bracket the height of socket with retainer / retractor clip is shown.

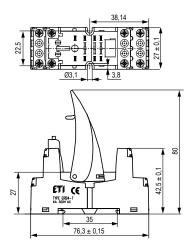
Two poles	Four poles
12A, 300 V AC	6A, 300 V A
For ERM2	For ERM4

### Connection diagram





### Dimensions



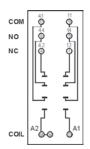
### ERB2-M and ERB4-M Plugin sockets (base) type M

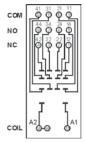
- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- **■** 35 mm rail mount acc. to EN 60715
- or on panel mounting
- **■** 75 x 27 x 61(82) mm\*

\*In the bracket the height of socket with retainer / retractor clip is shown.

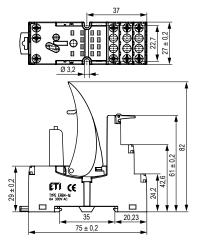
Two poles 12A, 300 V AC For ERM2 Four poles 6A, 300 V AC For ERM4

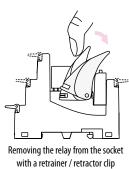
### **Connection diagram**





#### **Dimensions**





### Protection RC modules type ERC\_AC

It protects against EMC disturbance and limits overvoltage.

6/24 V AC 110/240 V AC ERC-024AC ERC-230AC

### Protection RC modules type ERC\_ACDCL

It limits overvoltage on AC and DC coils. Coil energizing indication.

6...24 V ACDC ERC-024ACDCL
24...60 V AC DC ERC-060ACDCL
110...230 V ACDC ERC-230ACDCL



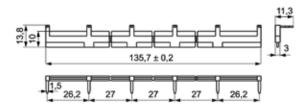
Modules are parallely connected with relay coil

### Interconnection strip ER-CLIP

designed for the co-operation with plug-in sockets ERB of miniature industrial relays, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to EN 60715.

- bridges common input signals (coil terminals A1 or A2)
- maximum permissible current is 10 A / 250 V AC,
- possibility of connection of 6 sockets or relays

### Dimensions



### **Miniature Electromagnetic Relays**

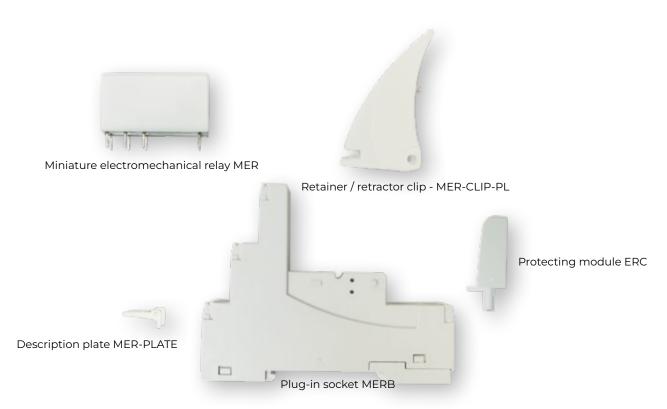
### Description

Electromechanical relay with 2x CO contacts in miniature housing. Can be used in PCB or with plug-in sockets.

- MER2 (2 pole CO »change over contact«, 2x8A AC1)
- ${\it I\!\! I}$  Wide range of control voltages ( AC coils: 24V and 230V, DC coils: 5V, 12V, 24V)
- Two types of plugin sockets (M type and T type)
- Accessories (retainer/retractor clips, RC modules...)
- **✓** Color: Grey

#### **Features**

- Cadmium free contacts; height 15,7 mm
- **■** 5000V / 10 mm reinforced insulation
- **■** For PCB and plug-in sockets
- AC and DC coils
- Compliance with standard EN 60335-1
- **■** RoHS



\*All parts must be ordered separetely

**Table 1: Technical data** 

	MER2
Number and type of contacts	2 (0
Contact material	AgNi
Rated / max. switching voltage AC	250 V / 440 V
Min. switching voltage	5 V AgNi
Rated load (capacity)	
AC1	8 A / 250 V AC
AC15	3 A / 120 V 1,5 A / 240 V (B300)
AC3	550 W (single-phase motor)
DC1	8 A / 24 V DC (see Fig. 3)
DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current	5 mA Agni
Rated current	8 A
Max. breaking capacity AC1	2000 VA
Min. breaking capacity	0,3 W AgNi
Contact resistance	$\leq 100 \text{ m}\Omega$
Max. operating frequency (cycles/hour)	
• at rated load AC1	600
• no load	72 000
Coil data	
Rated voltage 50/60 Hz AC	12 240 V
DC	3 110 V
Must release voltage	$AC: \ge 0.15  \text{U}_{\text{n}} \qquad DC: \ge 0.1  \text{U}_{\text{n}}$
Operating range of supply voltage	See Tables 1, 2 and Fig. 4, 5
Rated power consumption AC	0,75 VA
DC	0,4 0,48 W
Insulation according to EN 60664-1	
Insulation rated voltage	400 V AC
Rated surge voltage	4000 V 1,2 / 50 μs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
between coil and contacts	5000 V AC type of insulation: reinforced
• pole - pole	2500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm
General data	7 /2
Operating / release time (typical values)	7 ms / 3 ms
Electrical life • resistive AC1	> 10 <sup>5</sup> 8 A, 250 V AC
• cos0	> 10 <sup>3</sup> 8 A, 250 V AC see Fig. 2
• DC L/R = 40 ms	> 10 <sup>5</sup> 0,15 A, 220 V DC
Mechanical life (cycles)	> 3x10 <sup>7</sup>
Dimensions (L x W x H)	29 x 12,7 x 15,7 m
Weight	14 g
Ambient temperature	179
• storage	-40 +85 °C
• operating	AC: -40 +70 °C DC: -40 +85 °C
Cover protection category	IP40 / IP67
Environmental protection	RTII / RTIII
Shock resistance (NC)	20 g
Vibration resistance (NC)	
	5 g 10 150 Hz
Solder bath temperature/ soldering time	max. 270 °C / max. 5 s

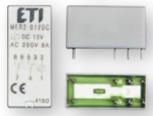
Miniature electromagnetic relays

······································						
Туре	Code	Uc rated coil voltage [V]	No. Of contacts	g		
MER2-005DC	002473030	5 V DC				
MER2-012DC	002473031	12 V DC				
MER2-024DC	002473032	24 V DC	2xCO (8A, AC1)	13	20/1000	
MER2-024AC	002473033	24 V AC	_			
MER2-230AC	002473034	230 V AC				

By parallel connection of relay main circuit (joining 2 CO contacts), the nominal current of output is increased to 16Å. Other coil (control) voltages available upon special request:

V DC: 3, 6, 9, 18, 36, 48, 60, 110 V AC: 12, 48, 60, 110, 115, 120, 220, 240





### Ordering designation

MER2-YYYYY

X – Number of contacts: 024AC: 24 V AC 50/60 Hz 2: 2 CO (2 changeover) 230AC: 230 V AC 50/60 Hz

005DC: 5 V DC 012DC: 12 V DC 024DC: 24 V DC

YYYYY - Coil code:

Example: MER2-024DC

Miniature electromagnetic relay, two changeover contacts, coil voltage 24 V

DC.

Plug-in Sockets (Base)

· ···· · · · · · · · · · · · · · · · ·				
Туре	Code	For use with	g	
MERB-T	002473035	MER2	44	10/100
MERB-M	002473036		44	10/80

T - T type

M - M type





### **Accessories**

Туре	Code	For use with	(O) (g)	
MER-CLIP-SP	002473037		0.2	25/400
MER-CLIP-PL	002473038	MERB-T & MERB-M	0,3	23/400
MER-PLATE	002473039		0,34	10/700
ERC-024AC	002473019	MER2-024AC	2,6	10/200
ERC-230AC	002473020	MER2-230AC	2,0	10/200
ERC-024ACDCL	002473040	MERB-T & MERB-M U <sub>c</sub> = 6 24 V AC/DC	2,9	20/100
ERC-060ACDCL	002473041	MERB-T & MERB-M U = 24 60 V AC/DC	2,9	20/100
ERC-230ACDCL	002473042	MERB-T & MERB-M U <sub>c</sub> =110 230 V AC/DC	2,9	20/100
MER-TERMINAL	002473048	MERB-T, MERB-M	6	20/200



MER-CLIP-SP Mechanical lock of relay in socket, two types

Standard plastic MS and spring wire type





ERC-(024...230)ACDCL

MOV protection module with indication AC and DC.
\*More data about ERC module can be found on page 208.



ERC protection module RC filter

\*More data about ERC module can be found on page 208.



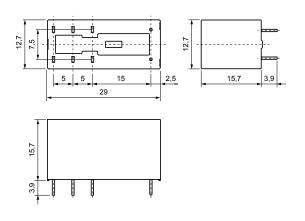


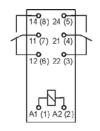
Table 2: Coil data

		DC vol	tage version		
Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operatii min. (at 20°C)	ng range V DC max. (at 20 °C)
005DC	5	60	± 10%	3,5	12,7
012DC	12	360	± 10%	8,4	30,6
024D024DC	24 24	1440640	± 10 <del>%</del> 10%	16,819,2	61,226,4
		AC 50/60 H	z voltage version		
024 <b>A</b> 024AC	24 24	400 158	± 10 <del>%</del> 10%	19,219,2	28,826,4
230AX30AC	230 230	38 50106100	± 10 <del>%</del> 10%	184,084,0	276, <b>Q</b> 53,0

### **Dimensions**

### Connection diagram (pin side view)





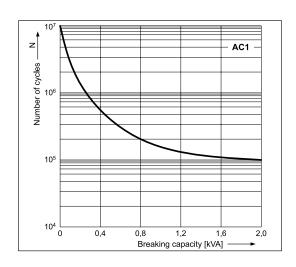
Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
	Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

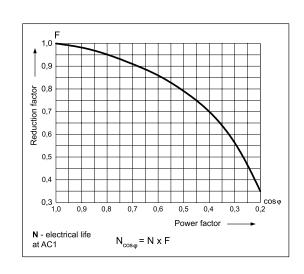
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour

Fia. 1

Electrical life reduction factor at AC inductive load

Fig. 2



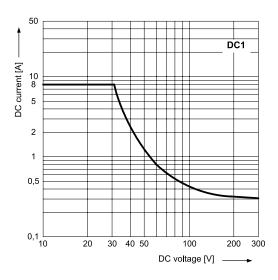


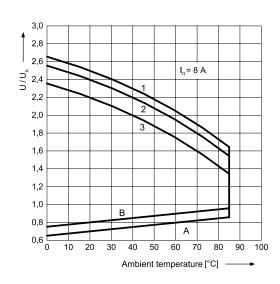
### Max. DC resistive load breaking capacity

### Fig. 3

### Coil operating range = DC

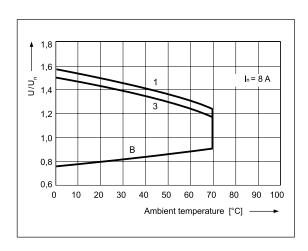
Fig. 4





### Coil operating range = AC 50 Hz

Fig. 5



### Description of Fig. 4 and 5

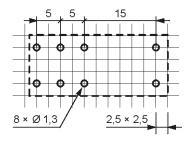
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**B** - relations between make voltage and ambient temperature after initial coil heating up with 1,1  $U_n$ , at continues load of  $I_n$  on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**1, 2, 3** - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

- 1 no load
- 2 50% of rated load

Pinout (soldier side view)



Mounting

Relays MER2 are designed for: direct PCB mounting screw terminals plug-in sockets MERB-T and MERB-M

### **Plugin Sockets And Accessories**

### MERB-T Plugin sockets (base) type T

- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- **■** 35 mm rail mount acc. to EN 60715
- or on panel mounting
- **■** 75,3 x 15,5 x 61(67) mm\*

\*In the bracket the height of socket with retainer / retractor clip is shown.

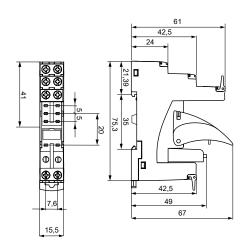
### MERB-M Plugin sockets (base) type M

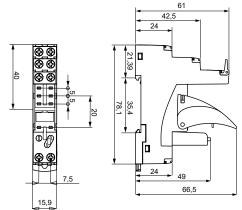
- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- **■** 35 mm rail mount acc. to EN 60715
- or on panel mounting
- **■** 78,1 x 15,9 x 61(66,5) mm\*

\*In the bracket the height of socket with retainer / retractor clip is shown.

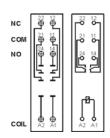
### Two poles, 5mm pinout 12A, 300 V AC Dimensions

### Two poles, 5mm pinout 12A, 300 V AC Dimensions

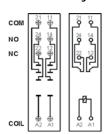


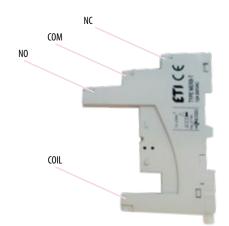


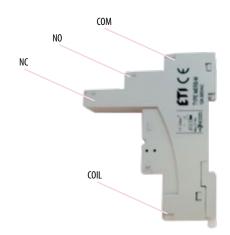
### **Connection diagram**



### **Connection diagram**







# SLIM RELAYS SSR & SER, Electromagnetic and solid

**Table 1: Technical data** 

	SER1; Contact data	SSR1; Output circuit - Triac	
Number and type of contacts	100	1 NO	
Contact material	AgSnO2	-	
Rated / max. switching voltage AC	400 V AC / 250 V DC	400 V AC / 440 V AC	
Min. switching voltage	10 V AC / DC	20 V AC	
Rated load (capacity) AC1	6 A / 250 V AC	1,2 A / 400 V AC	
DC1	6 A / 24 V DC; 0,15 A / 250 V DC		
Min. switching current	100 mA	10 mA	
Max. inrush current / Max. non-repeat surge current	10 A (t=20 ms)	30 A (t=20 ms)	
Rated current	6 A	162AA	
Max. breaking capacity AC1	1 500 VA	1 500 VA	
Min. breaking capacity	1 W	-	
Contact resistance	≤100 mΩ 100 mA, 24 V	-	
Max. operating frequency (cycles/hour)			
• at rated load AC1	360	-	
• no load	72 000		
<sup>2</sup> t for fusing	<u>-</u>	5,1 A <sup>2</sup> s (t=1-10 ms)	
dl/dt		50 A/μs	
dV/dt	-	40 V/μs	
nput circuit			
Rated voltage AC: 50/60 Hz AC/DC	24 V;	230 V	
Must release voltage / Turn-off voltage	AC: ≥ 0,2 Un	DC: ≥ 0,1 Un	
Must operate voltage	AC & DC: ≤ 0,8 Un	-	
Rated power consumption AC/DC AC/DC	0,3 1,6 VA / 0,3 1,6 W	0,3 VA / 0,3 W 24 V AC/DC 1,6 VA / 1,6 W 230 V AC/DC	
Insulation according to PN-EN 60664-1			
Insulation rated voltage	400 V AC	600 V AC	
Rated surge voltage	4 000 V 1,2 / 50 μs	-	
Overvoltage category	III		
Insulation pollution degree	3	2	
Dielectric strength	·	<del>-</del>	
• input - output	4 000 V AC 50/60 Hz, 1 min. (type of insulation: reinforced)	4 000 V AC 50/60 Hz, 1 min. (type of insulation: reinforce	
• input - output	6 000 V 1,2 / 50 μs	<del>-</del>	
• mass - input, output	2 500 V AC 50/60 Hz, 1 min.	-	
• contact clearance	1 000 V AC 50/60 Hz, 1 min. (type of clearance: micro-disconnection)	<del>-</del>	
Input - output distance			
• clearance • creepage	≥ 6 mm ≥ 8 mm	-	
General data	2.0 111111		
Operating / release time (typical values)			
Electrical life	-		
• resistive AC1 (cos $\varphi = 0.4$ )	> 0,6 x 105 6 A, 250 V AC; > 2 x 105 2 A, 250 V AC	_	
• resistive DC1	105 6 A, 30 V DC		
Mechanical life (cycles)	> 2 x 107	-	
Dimensions (L x W x H)	93,8 x 6,2	x 80 mm	
Weight	40		
Ambient temperature		•	
• storage	-40+70 ℃ -40+70 ℃		
• operating	-40+55 °C (-40+60 °C 24 V DC)	-40+55 °C	
Protection category	IP 20 PN-	EN 60529	
Environmental protection	RTI PN-EN		
· · · · · · · · · · · · · · · · · · ·	10 g		
Shock resistance	5 q 10500 Hz		

### Advantages:

- ✓ Width 6,2 mm;
- **■** 35 mm rail mount acc. to PN-EN 60715;
- May be linked with interconnection strip type
- **■** SR-TERMINAL;
- Equipped in LED green;

### Mounting

Relays are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Connections: max. cross section of the cables:  $1\times2,5$  mm2 /  $2\times1,5$  mm2 ( $1\times14$  /  $2\times16$  AWG), length of the cable deinsulation: 8 mm, max. tightening moment for the terminal: 0,3 Nm. Relays may be linked with interconnection strip type SR-TERMINAL bridges common input or output signals, maximum permissible current is  $36\,\text{A}/250\,\text{V}$  AC.

Electromagnetic relays

Licetionii	Licentification agricultural					
Туре	Code	Uc rated coil voltage [V]	No. Of contacts	I <sub>n</sub> [A]	g	
SER1-024ACDC	002473052	24 V AC/DC	– 1xC0	AC1: 6 A / 250 V	40	10/100
SER1-230ACDC	002473053	230 V AC/DC	- IXCO	DC1: 6A/24V; 0,15A/250 V	40	10/100



Solid state relay (triac output)

John State Felay (triat output)						
Туре	Code	Uc rated coil voltage [V]	No. Of contacts	I <sub>n</sub> [A]	g	
SSR1-024ACDC	002473050	24 V AC/DC	1xN0	AC1: 1,2 A/400 V	40	10/100
SSR1-230ACDC	002473051	230 V AC/DC	IXNU	ACT: 1,2 A/400 V	40	10/100



### Accessories

71000011					
Туре	Code	Colour	Description	g	
SR-TERMINAL	002473054	black	max 36A (250VAC) or Max permissible current	12,3	10/100





common input or output signals



**Input data SER1** 

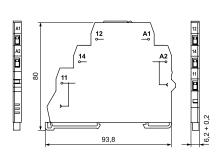
Interface relay	Rated input voltage, Un	Power of input	•	age range, V
code		circuit	min. (20 °C)	max. (55 °C)
SER1-024ACDC	24 V AC/DC	0,5 VA / 0,5 W	19,2	26,4
SER1-230ACDC	230 V AC/DC	0,8 VA / 0,8 W	184,0	253,0

**Input data SSR1** 

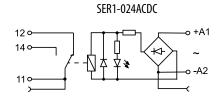
Interface relay code	Rated input voltage Un	Power of input circuit	
SSR1-024ACDC	24 V AC/DC	0,3 VA / 0,3 W	
SSR1-230ACDC	230 V AC/DC	1,6 VA / 1,6 W	

### **Dimensions**

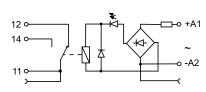
SER1-024ACDC / SER1-230ACDC

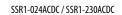


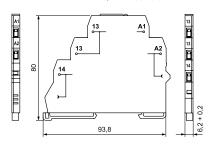
### **Connection diagram**



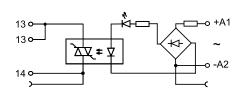
SER1-230ACDC







SSR1-024ACDC SSR1-230ACDC



SR-TERMINAL

