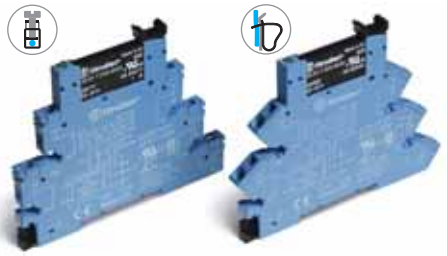
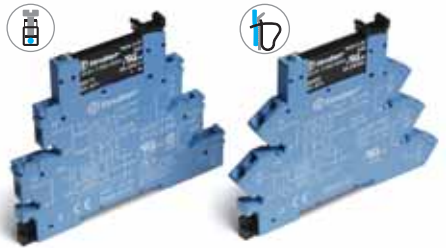
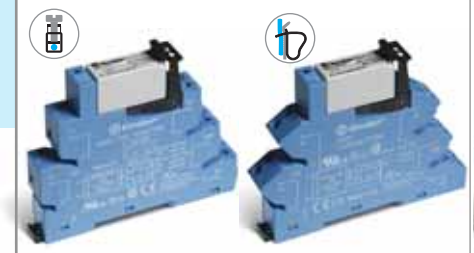
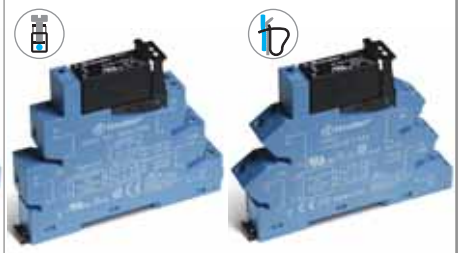
38 Series - Relay interface modules 0.1 - 2 - 3 - 5 - 6 - 8 - 16 A

Common features

- Instant ejection of relay by plastic retaining clip
- Integral coil indication and protection circuit
- 35 mm rail (EN 60715) mounting

	EMR Electromechanical Relays	SSR Solid State Relays
6.2 mm wide • **EMR - DC, AC or AC/DC coil versions** • **SSR - DC or AC/DC input versions** • Screw and Screwless terminal options	**38.51/38.61**  • **1 CO - 6 A 250VAC** **Page 1**	**38.81/38.91**  • Single solid state output: Options **0.1A 48VDC, 2A 24VDC, 2A 240VAC** • Silent, high speed switching • Long electrical life **Page 2**
6.2 mm wide • **Special coil / input leakage current suppression types** • **EMR - AC or AC/DC coil versions** • **SSR - AC or AC/DC input versions** • Screw and Screwless terminal options	**38.51.3... - 38.61.3...**  • **1 CO - 6 A 250VAC** **Page 1**	**38.81.3... - 38.91.3...**  • Single solid state output: Options **0.1A 48VDC, 2A 24VDC, 2A 240VAC** • Silent, high speed switching • Long electrical life **Page 2**
6.2 mm wide • **Timed Interface module** • **4 functions & 4 time scales 0.1s ... 6h** • **EMR - AC/DC (12 or 24V) supply versions** • **SSR - AC/DC (24V) supply** • Screw terminals	**38.21**  • **1 CO - 6 A 250VAC** **Page 3**	**38.21...9024-8240**  • Single solid state output: Options **2A 24VDC, 2A 240VAC** • Silent, high speed switching • Long electrical life **Page 3**
14 mm wide • **2 pole 8 A or 1 pole 16 A** • **EMR - DC or AC/DC coil versions** • **SSR - DC input versions** • Screw and Screwless terminal options	**38.01/38.52/38.11/38.62**  • **1 CO - 16 A 250VAC** • **2 CO - 8 A 250VAC** **Page 4**	**38.31/38.41**  • Single solid state output: Options **5A 24VDC, 3A 240VAC** • Silent, high speed switching • Long electrical life **Page 5**

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Features

1 Pole - 6 A electromechanical relay interface modules, 6.2 mm wide.

Ideal interface for PLC and electronic systems

- Sensitive DC coil or AC/DC coil versions
- Integral coil indication and protection circuit
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

38.51 / 38.51.3
Screw terminal



38.61 / 38.61.3
Screwless terminal



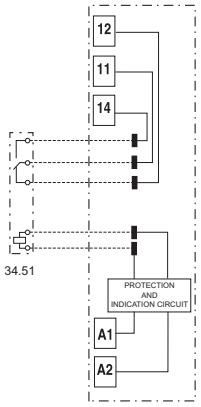
* Special version for max ambient temperature +70°C.

For outline drawing see page 12

38.51/61



- 1 pole electromechanical relay
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting

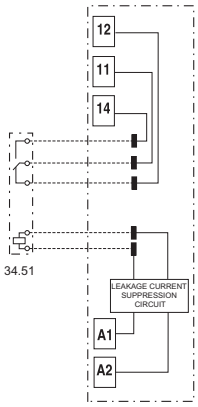


93.01/51

38.51.3 / 38.61.3



- Leakage current suppression
- 1 pole electromechanical relay
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



93.01.3/51.3

Contact specification				
Contact configuration		1 CO (SPDT)	1 CO (SPDT)	
Rated current/Maximum peak current	A	6/10	6/10	
Rated voltage/Maximum switching voltage	V AC	250/400	250/400	
Rated load AC1	VA	1,500	1,500	
Rated load AC15 (230 V AC)	VA	300	300	
Single phase motor rating (230 V AC)	kW	0.185	0.185	
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12	6/0.2/0.12	
Minimum switching load	mW (V/mA)	500 (12/10)	500 (12/10)	
Standard contact material		AgNi	AgNi	
Coil specification				
Nominal voltage (U_N)	V AC/DC	12 - 24 - 48 - 60 - (110...125) - (220...240)	(110...125)	—
	V AC	(230...240)*	—	(230...240)
	V DC	6 - 12 - 24 - 48 - 60 (non polarized)	—	—
Rated power AC/DC	VA (50 Hz)/W	See page 9	1/1	0.5/—
Operating range	AC/DC	(0.8...1.1)U_N	(94...138)V	—
	AC	(184...264)V	—	(184...264)V
	DC	(0.8...1.2)U_N	—	
Holding voltage	AC/DC	0.6 U_N / 0.6 U_N	0.6 U_N / 0.6 U_N	
Must drop-out voltage	AC/DC	0.1 U_N / 0.05 U_N	44 V	72 V
Technical data				
Mechanical life AC/DC	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$	
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$	$60 \cdot 10^3$	
Operate/release time	ms	5/6	5/6	
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)	
Dielectric strength between open contacts	V AC	1,000	1,000	
Ambient temperature range ($U_N \leq$ 60 V/>60V)	°C	–40...+70/–40...+55	—/–40...+55	
Protection category		IP 20	IP 20	
Approvals relay (according to type)		CE SB PG RINA cULus		

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Features

Single output - solid state relay interface modules, 6.2 mm wide.

Ideal interface for PLC and electronic systems

- DC, AC or AC/DC input versions
- Supplied with integral coil indication and protection circuit
- Silent, high switching speed and long electrical life
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

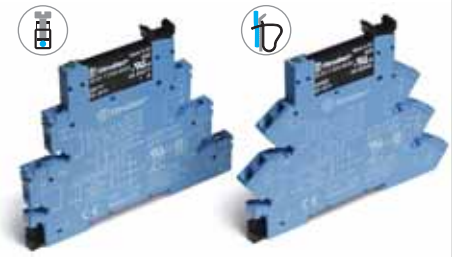
38.81 / 38.81.3
Screw terminal



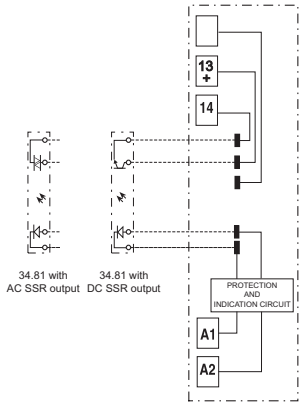
38.91 / 38.91.3
Screwless terminal



38.81/38.91

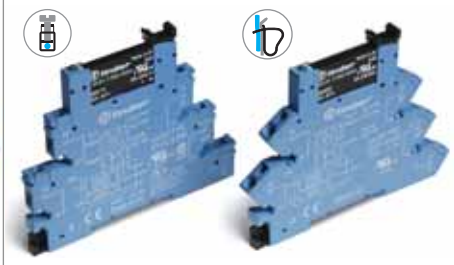


- AC or DC output switching
- SSR relay - DC input voltage
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting

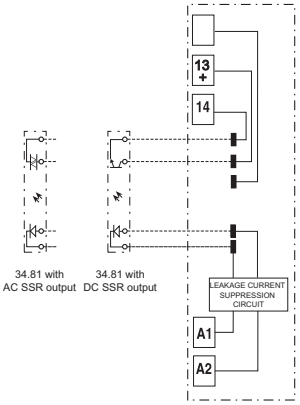


93.01/51

38.81.3/38.91.3



- Leakage current suppression
- AC or DC output
- SSR relay - AC or AC/DC input voltage
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



93.01.3/51.3

For outline drawing see page 12

Output specification							
Contact configuration		1 NO (SPST-NO)			1 NO (SPST-NO)		
Rated current/Maximum peak current (10 ms)	A	2/20	0.1/0.5	2/40	2/20	0.1/0.5	2/40
Rated voltage/Maximum blocking voltage	V	24/33 DC	48/60 DC	240/275 AC	24/33 DC	48/60 DC	240/275 AC
Switching voltage range	V	(1.5...24)DC	(1.5...48)DC	(12...240)AC	(1.5...24)DC	(1.5...48)DC	(12...240)AC
Minimum switching current	mA	1	0.05	22	1	0.05	22
Max. "OFF-state" leakage current	mA	0.001	0.001	1.5	0.001	0.001	1.5
Max. "ON-state" voltage drop	V	0.12	1	1.6	0.12	1	1.6
Input specification							
Nominal voltage (U_N)	V AC	—			230...240		
	V DC	6 - 24 - 60			—		
	V AC/DC	(110...125) - (220...240)			110...125		
Operating range	V DC	See page 10			See page 10		
Control current	mA	See page 10			See page 10		
Release voltage	V DC	See page 10			See page 10		
Technical data							
Operate/release time: ON/OFF (DC input)	ms	0.2/0.6	0.04/0.11	12/12	0.2/0.6	0.04/0.11	12/12
Dielectric strength between input/output	V	2,500			2,500		
Ambient temperature range	°C	–20...+55			–20...+55		
Environmental protection		IP20			IP20		
Approvals relay (according to type)		CE SP PG RINA cULus					

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Features

Slim timed interface module, 6.2 mm wide.
1 pole, 6 A - electromechanical relay
1 output, 2 A DC or AC - solid state relay

- Electromechanical or solid state output
- Multi-functions timer
- AC/DC supply
- 4 time scales from 0.1s to 6h
- Instant ejection of relay using plastic retaining clip
- 6.2 mm wide, 35 mm rail (EN 60715) mounting

38.21
Screw terminal



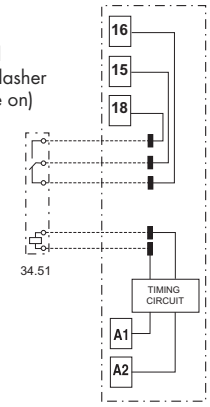
For outline drawing see page 12

38.21



- 1 pole electromechanical output relay
- 12 or 24 V AC/DC supply
- Screw terminal
- 35 mm rail (EN 60715) mounting

AI: On-delay
DI: Interval
GI: Pulse delayed
SW: Symmetrical flasher (starting pulse on)

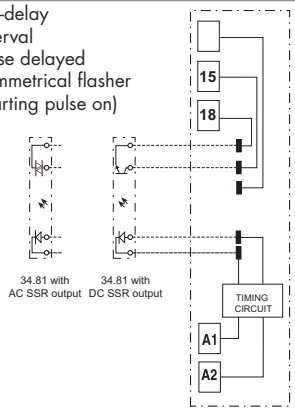


38.21...9024-8240



- DC or AC solid state output relays
- 24V AC/DC supply voltage
- Screw terminal
- 35 mm rail (EN 60715) mounting

AI: On-delay
DI: Interval
GI: Pulse delayed
SW: Symmetrical flasher (starting pulse on)



Contact specification				
Contact configuration		1 CO (SPDT)	–	
Rated current/Maximum peak current	A	6/10	–	
Rated voltage/Maximum switching voltage	V AC	250/400	–	
Rated load AC1	VA	1,500	–	
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12	–	
Minimum switching load	mW (V/mA)	500 (12/10)	–	
Standard contact material		AgNi	–	
Output specification			**DC output (...9024)**	**AC output (...8240)**
Output configuration		–	1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/Maximum peak current	A	–	2/20	2/40
Rated voltage/Maximum blocking voltage	V	–	(24/33)DC	(240/275)AC
Switching voltage range	V	–	(1.5...24)DC	(12...275)AC
Minimum switching current	mA	–	1	22
Max. "OFF-state" leakage current	mA	–	0.001	1.5
Max. "ON-state" voltage drop	V	–	0.12	1.6
Supply specification				
Nominal voltage (U_N)	V AC (50/60Hz)/DC	12 - 24	24	
Rated power	VA/W	0.5	0.5	
Operating range	AC	(0.8...1.1)U_N	(0.8...1.1)U_N	
	DC	(0.8...1.1)U_N	(0.8...1.1)U_N	
Technical data				
Specified time range		(0.1...3)s, (3...60)s, (1...20)min, (0.3...6)h		
Repeatability	%	± 1		
Recovery time	ms	≤ 50		
Setting accuracy-full range	%	5%		
Ambient temperature	°C	–40...+70	–20...+55	
Protection category		IP 20		
Approvals relay (according to type)		CE EAC cULus		

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Features

Electromechanical relay interface modules, 14 mm wide.
38.01 and 38.11 - 1 Pole 16 A
38.52 and 38.62 - 2 Pole 8 A

Ideal interface for PLC and electronic systems

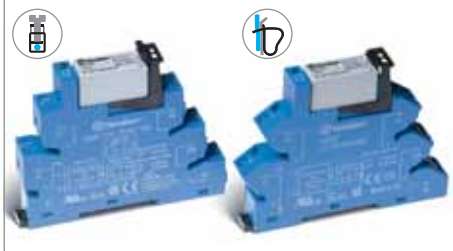
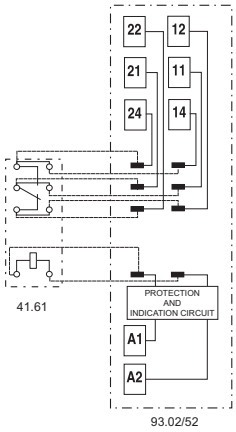
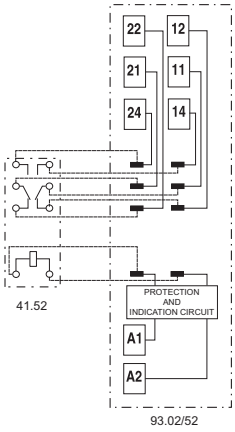
- Sensitive DC coil or AC/DC coil versions
- Integral coil indication and protection circuit
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

38.01/52
Screw terminal



38.11/62
Screwless terminal



	38.01/38.11	38.52/38.62
		
	• Screw terminal and screwless terminal • 1 pole electromechanical relay • 35 mm rail (EN 60715) mounting	• Screw terminal and screwless terminal • 2 pole electromechanical relay • 35 mm rail (EN 60715) mounting
		

* For currents >10 A, contact terminals must be connected in parallel (21 with 11, 24 with 14, 22 with 12).

For outline drawing see page 12

		38.01/38.11	38.52/38.62
Contact specification			
Contact configuration		1 CO (DPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	16*/30	8/15
Rated voltage/Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	4,000	2,000
Rated load AC15 (230 V AC)	VA	750	400
Single phase motor rating (230 V AC)	kW	0.5	0.3
Breaking capacity DC1: 30/110/220 V	A	16/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC/DC	24 - 60 - (110...125) - (220...240)	24 - 60 - (110...125) - (220...240)
	V AC	230...240	230...240
	V DC	12 - 24 - 60	12 - 24 - 60
Rated power AC/DC	VA (50 Hz)/W	See page 9	See page 9
Operating range	AC/DC	0.8...1.1	0.8...1.1
	DC	(0.8...1.2)U_N	(0.8...1.2)U_N
Holding voltage	AC/DC	0.6 / 0.6 U_N	0.6 / 0.6 U_N
Must drop-out voltage	AC/DC	0.1 / 0.05 U_N	0.1 / 0.05 U_N
Technical data			
Mechanical life AC/DC	cycles	$30 \cdot 10^6$	$30 \cdot 10^6$
Electrical life at rated load AC1	cycles	$70 \cdot 10^3$	$80 \cdot 10^3$
Operate/release time	ms	8 / 10	8 / 10
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range ($U_N \leq$ 60 V/>60V)	°C	–40...+70 / –40...+55	–40...+70 / –40...+55
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Features

Single output - solid state relay interface modules, 14 mm wide

Ideal interface for PLC and electronic systems

- DC input versions
- Supplied with integral coil indication and protection circuit
- Silent, high switching speed and long electrical life
- Instant ejection of relay using plastic retaining clip
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

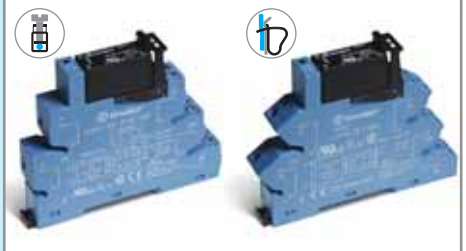
38.31
Screw terminal



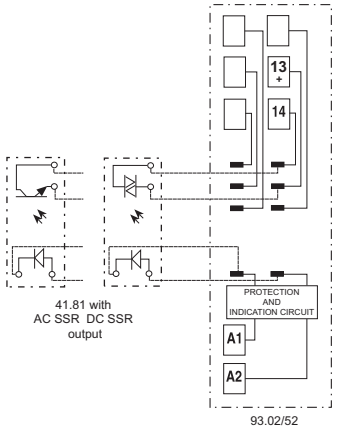
38.41
Screwless terminal



38.31/38.41



- Screw terminal and screwless terminal
- AC or DC output switching
- SSR relay - DC input voltage
- 35 mm rail (EN 60715) mounting



For outline drawing see page 12

Output specification			
Contact configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/Maximum peak current (100 µs)	A	5/40	3/40
Rated voltage/Maximum blocking voltage	V	(24/35)DC	(240/275)AC
Switching voltage range	V	(1.5...35)DC	(12...275)AC
Minimum switching current	mA	1	50
Max. "OFF-state" leakage current	mA	0.01	1
Max. "ON-state" voltage drop	V	0.3	1.1
Input specification			
Nominal voltage (U_N)	V AC/DC	24	
	V DC	12 - 24	
Operating range	V DC	See page 10	
Control current	mA	See page 10	
Release voltage	V DC	See page 10	
Technical data			
Operate/release time: ON/OFF (DC input)	ms	0.05/0.25	12/12
Dielectric strength between input/output	V	2,500	
Ambient temperature range	°C	–20...+55	
Environmental protection		IP20	
Approvals relay (according to type)		CE SP PG RINA cULus	

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Ordering information

Electromechanical relay - 1 or 2 Pole

Example: 38 series screw terminal relay interface module, 1 CO (SPDT), sensitive 12 V DC coil.

3	8	.	5	1	.	7	.	0	1	2	.	A	B	C	D
												0	0	5	0

Series

Type
0 = Electromechanical 16 A relay, with screw terminal
1 = Electromechanical 16 A relay, with screwless terminal
2 = Timer multifunction (AI, DI, GI, SW), with screw terminal
5 = Electromechanical relay, with screw terminal
6 = Electromechanical relay, with screwless terminal

No. of poles
1 = 1 pole, 6 or 16 A
2 = 2 pole, 8 A

Coil version
0 = AC (50/60 Hz)/ DC
3 = Leakage current suppression for (110...125)V AC/DC - (230...240)V AC
7 = Sensitive DC, (6, 12, 24, 48, 60)V only
8 = AC (50/60 Hz)

Coil voltage
See coil specifications

D: Special versions
0 = Standard

C: Options
5 = Standard DC
6 = Standard AC or AC/DC

B: Contact circuit
0 = CO (nPDT)

A: Contact material
0 = AgNi Standard
4 = $AgSnO_2$
5 = AgNi + Au (5 µm)

Selecting features and options: only combinations in the same row are possible.

Type	Coil version	A	B	C	D
38.01/11	7	0 - 4	0	5	0
38.01/11	0 - 8	0 - 4	0	6	0
38.51/61	7	0 - 4 - 5	0	5	0
38.51/61	0 - 3 - 8	0 - 4 - 5	0	6	0
38.52/62	7	0 - 5	0	5	0
38.52/62	0 - 8	0 - 5	0	6	0
38.21	0	0	0	6	0

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Ordering information

Solid state relay - Single output - 6.2 & 14 mm wide

Example: 38 series screw terminal SSR relay interface module, 6.2 mm wide, 2 A output, 24 V DC input.

3 8 . 8 1 . 7 . 0 2 4 . 9 0 2 4

Series

Type
21 = Timer SSR 6.2mm wide, with screw terminal
31 = SSR 14mm wide, with screw terminal
41 = SSR 14mm wide, with screwless terminal
81 = SSR 6.2mm wide, with screw terminal
91 = SSR 6.2mm wide, with screwless terminal

Input version
0 = AC/DC
3 = Leakage current suppression for (110...125)V AC/DC and (230...240)V AC SSR only
7 = DC, (6, 24, 60)V SSR only

Input voltage
See input specifications

Output version
9024 = 2 A - 24 V DC (38.81 & 38.91)
9024 = 5 A - 24 V DC (38.31 & 38.41)
7048 = 0.1 A - 48 V DC (38.81 & 38.91)
8240 = 2 A - 240 V AC (38.81 & 38.91)
8240 = 3 A - 240 V AC (38.31 & 38.41)

Selecting features and options: only combinations in the same row are possible.

Type	Input version	Output version
38.81/91	7	9024 - 7048 - 8240
38.81/91	0 - 3	9024 - 7048 - 8240
38.31/41	0 - 7	9024 - 8240
38.21	0	9024 - 8240

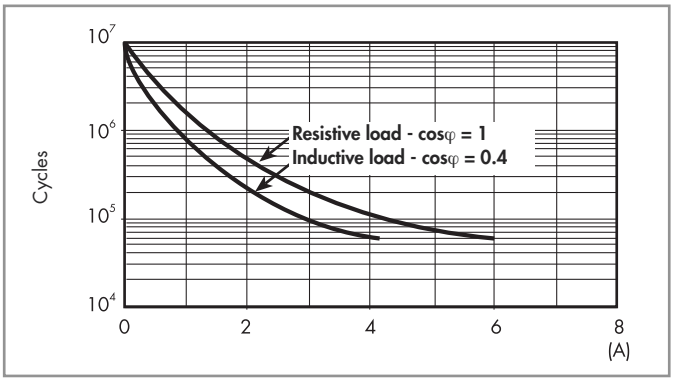
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Technical data - 1 & 2 Pole Electromechanical Relays

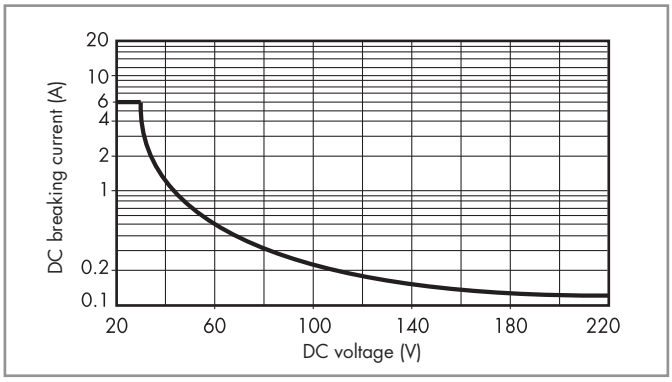
Insulation						
Insulation according to EN 61810-1	insulation rated voltage	V	250		400	
	rated impulse withstand voltage	kV	4		4	
	pollution degree		3		2	
	overvoltage category		III		III	
Insulation between coil and contacts (1.2/50 µs)		kV	6 (8 mm)			
Dielectric strength between open contacts		V AC	1,000			
Conducted disturbance immunity						
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4		level 4 (4 kV)	
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5		level 3 (2 kV)	
Other data			**1 Pole 6 A**		**1 Pole 16 A - 2 Pole 8 A**	
Bounce time: NO/NC		ms	1/6		2/5	
Vibration resistance (10...55)Hz: NO/NC		g	10/5		15/2	
Power lost to the environment	without contact current	W	0.2 (12 V) - 0.9 (240 V)		0.5 (24 V) - 0.9 (240 V)	
	with rated current	W	0.5 (12 V) - 1.5 (240 V)		1.3 (24 V) - 1.7 (240 V)	
Terminals			**38.21 / 38.51**		**38.61**	
Wire strip length		mm	10		10	
⏀ Screw torque		Nm	0.5		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x2.5/2x1.5	1x2.5/2x1.5	1x2.5	1x2.5
		AWG	1x14/2x16	1x14/2x16	1x14	1x14
			38.01 / 38.52		**38.11 / 38.62**	
Wire strip length		mm	10		10	
⏀ Screw torque		Nm	0.5		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x2.5/2x1.5	1x2.5/2x1.5	1x2.5	1x2.5
		AWG	1x14/2x16	1x14/2x16	1x14	1x14

Contact specification - 1 & 2 Pole Electromagnetic Relays

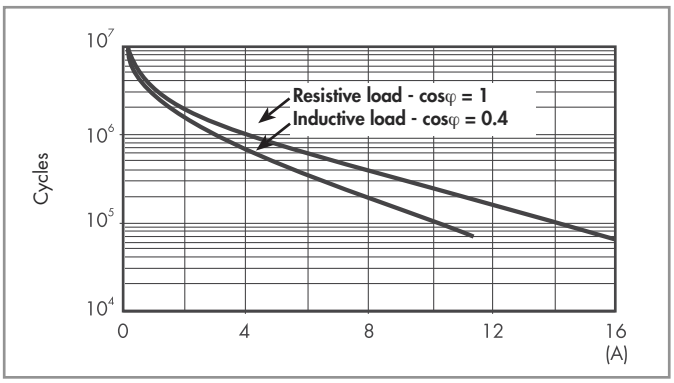
F 38 - Electrical life (AC) v contact current, 1 Pole 6 A



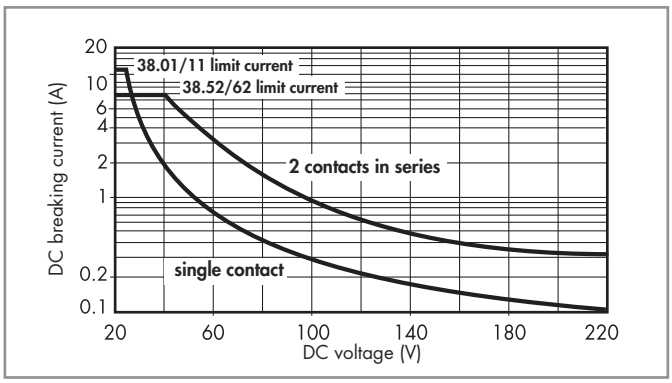
H 38 - Maximum DC1 breaking capacity, 1 Pole 6 A



F 38 - Electrical life (AC) v contact current, 1 Pole 16 A and 2 Pole 8 A



H 38 - Maximum DC1 breaking capacity, 1 Pole 16 A and 2 Pole 8 A



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $60 \cdot 10^3$ (1 Pole) or ≥ $80 \cdot 10^3$ (2 Pole) can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load. Note: the release time for the load will be increased.

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Coil specifications - 1 Pole 6 A Electromechnical Relay

Coil data sensitive DC, 1 Pole

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	W
6	**7**.006	4.8	7.2	35	0.2
12	**7**.012	9.6	14.4	15.2	0.2
24	**7**.024	19.2	28.8	10.4	0.3
48	**7**.048	38.4	57.6	6.3	0.3
60	**7**.060	48	72	7	0.4

Coil data AC/DC, 1 Pole

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	VA/W
12	**0**.012	9.6	13.2	16	0.2/0.2
24	**0**.024	19.2	26.4	12	0.3/0.2
48	**0**.048	38.4	52.8	6.9	0.3/0.3
60	**0**.060	48	66	7	0.5/0.5
110...125	**0**.125	88	138	5(*)	0.6/0.6(*)
220...240	**0**.240	176	264	4(*)	1/0.9(*)

(*) Rated coil consumption and power consumption values relate to U_N = 125 and 240 V.

Coil data AC, 1 Pole (indicated for max ambient temperature +70°C)

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	VA/W
(230...240) AC	**8**.240	184	264	3	0.7/0.3

Coil data, leakage current suppression types, 1 Pole

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	VA/W
(110...125) AC/DC	**3**.125	94	138	8(*)	1/1(*)
(230...240) AC	**3**.240	184	264	7(*)	1.7/0.5(*)

(*) Rated coil consumption and power consumption values relate to U_N = 125 and 240 V.

The 38 Series interface modules (supply version 3) have built-in leakage current suppression to address industry concerns of the contacts not dropping-out when there is residual current in the circuit; at (110...125)V AC and (230...240)V AC.

This problem can occur, for example, when connecting the interface modules to PLC,s with triac outputs or when connecting via relatively long cables.

Coil specifications - 1 Pole 16 A and 2 Pole 8 A Electromechanical Relay

Coil data sensitive DC, 1 Pole 16 A and 2 Pole 8 A

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	W
12	**7**.012	9.6	14.4	41	0.5
24	**7**.024	19.2	28.8	19.5	0.5
60	**7**.060	48	72	8	0.5

Coil data AC/DC, 1 Pole 16 A and 2 Pole 8 A

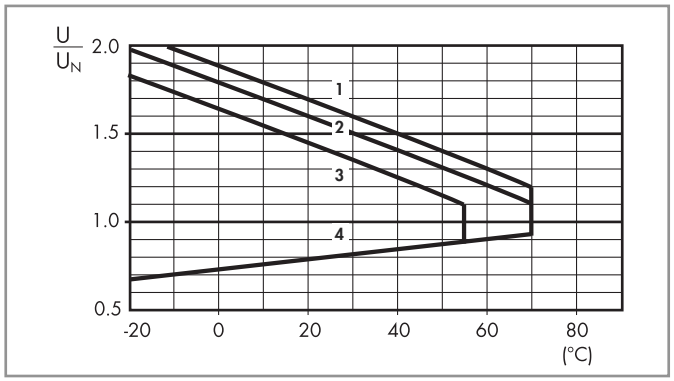
Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	VA/W
24	**0**.024	19.2	26.4	20	0.5/0.5
60	**0**.060	48	66	7.1	0.5/0.5
110...125	**0**.125	88	138	4.6	0.6/0.6
220...240	**0**.240	184	264	3.8	0.9/0.9

Coil data AC, 1 Pole 16 A and 2 Pole 8 A

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V	mA	VA/W
230...240	**8**.230	184	264	5.3	1.2/0.6

Coil specification - 1 & 2 Pole Electromagnetic Relays

R 38 - DC coil operating range v ambient temperature
1 Pole and 2 Pole



1 - Max. permitted coil voltage at nominal load (DC coil).
2 - Max. permitted coil voltage at nominal load (AC/DC coils U ≤ 60 V).
3 - Max. permitted coil voltage at nominal load (AC/DC coils U > 60 V).
4 - Min pick-up voltage with coil at ambient temperature.

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Technical data - Solid State Relays

Other data			38.81/38.91		38.31/38.41	
Power lost to the environment	without output current	W	0.25 (24 V DC)		0.5	
	with rated current	W	0.4		2.2 (DC output) / 3 (AC output)	
Terminals			**38.81**		**38.91**	
Wire strip length		mm	10		10	
⊖ Screw torque		Nm	0.5		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x2.5 / 2x1.5	1x2.5 / 2x1.5	1x2.5	1x2.5
		AWG	1x14 / 2x16	1x14 / 2x16	1x14	1x14
			38.31		**38.41**	
Wire strip length		mm	10		10	
⊖ Screw torque		Nm	0.5		—	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x2.5 / 2x1.5	1x2.5 / 2x1.5	1x2.5	1x2.5
		AWG	1x14 / 2x16	1x14 / 2x16	1x14	1x14

Input specifications - Solid State Relays type 38.81 and 38.91 - 6.2 mm wide

Input data DC

Nominal voltage U_N	Supply code	Operating range U_{min}	Operating range U_{max}	Release voltage U	Rated coil consumption I at U_N	Power consumption P
V		V	V	V	mA	W
6	**7**.006	5	7.2	2.4	7	0.2
24	**7**.024	16.8	30	10	10.5	0.3
60	**7**.060	35.6	72	20	6.5	0.4

Input data - Leakage current suppression types

Nominal voltage U_N	Supply code	Operating range U_{min}	Operating range U_{max}	Release voltage U	Rated coil consumption I at U_N	Power consumption P at U_N
V		V	V		mA	W
110...125 AC/DC	**3**.125	94	138	44	8(*)	1/1(*)
230...240 AC	**3**.240	184	264	72	6.5(*)	1.6/0.6(*)

(*) Rated coil consumption and power consumption values relate to U_N = 125 and 240 V.

Input data AC/DC

Nominal voltage U_N	Supply code	Operating range U_{min}	Operating range U_{max}	Release voltage U	Rated coil consumption I at U_N	Power consumption P
V		V	V	V	mA	VA/W
110...125	**0**.125	88	138	22	5.5*	0.7/0.7
220...240	**0**.240	184	264	44	3.5*	1/0.9

(*) Rated coil consumption and power consumption values relate to U_N = 125 and 240 V.

The 38 Series interface modules (supply version 3) have built-in leakage current suppression to address industry concerns of the contacts not dropping-out when there is residual current in the circuit; at (110...125)V AC and (230...240)V AC.

This problem can occur, for example, when connecting the interface modules to PLC,s with triac outputs or when connecting via relatively long cables.

Input specification - Solid State Relay types 38.31 and 38.41 - 14 mm wide

Input data DC

Nominal voltage U_N	Supply code	Operating range U_{min}	Operating range U_{max}	Release voltage U	Rated coil consumption I at U_N	Power consumption P
V		V	V	V	mA	W
12	**7**.012	9.6	18	5	9	0.2
24	**7**.024	16.8	30	5	12	0.3

Input data AC/DC

Nominal voltage U_N	Supply code	Operating range U_{min}	Operating range U_{max}	Release voltage U	Rated coil consumption I at U_N	Power consumption P
V		V	V	V	mA	W
24	**0**.024	16.8	30	9	16.5	0.3

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Additional technical data - Timed Interface Module

EMC specifications				
Type of test			**Reference standard**	
Electrostatic discharge	contact discharge		EN 61000-4-2	4 kV
	air discharge		EN 61000-4-2	8 kV
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)			EN 61000-4-3	10 V/m
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals			EN 61000-4-4	4 kV
Surges (1.2/50 µs) on Supply terminals	common mode		EN 61000-4-5	4 kV
	differential mode		EN 61000-4-5	4 kV
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals			EN 61000-4-6	10 V
Radiated and conducted emission			EN 55022	class B
Other data			**EMR**	**SSR**
Power lost to the environment	without contact current	W	0.1	0.1
	with rated current	W	0.6	0.5
Terminals			**38.21**	
Wire strip length		mm	10	
Screw torque		Nm	0.5	
Max. wire size			solid cable	stranded cable
		mm^2	1x2.5 / 2x1.5	1x2.5 / 2x1.5
		AWG	1x14 / 2x16	1x14 / 2x16

Times scales



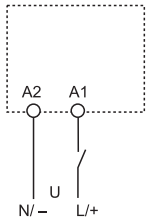
(0.1...3)s (3...60)s (1...20)min (0.3...6)h

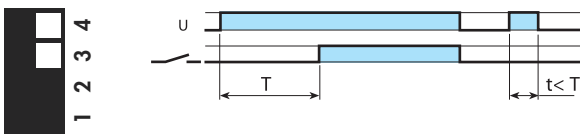
Functions

LED	Supply voltage	NO contact/output
	OFF	Open
	ON	Open (time in progress)
	ON	Closed

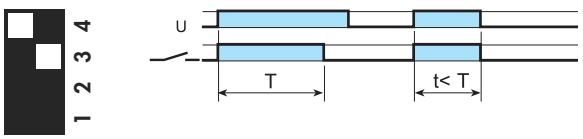
Wiring diagram

U = Supply voltage = Output contact

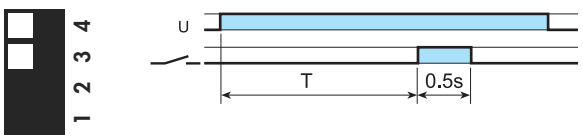




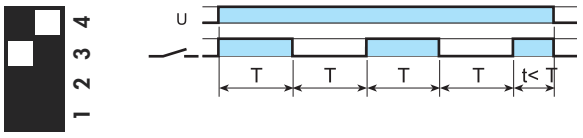
(AI) On-delay.
Apply power to timer.
Output contacts transfer after preset time has elapsed.
Reset occurs when power is removed.



(DI) Interval.
Apply power to timer.
Output contacts transfer immediately.
After the preset time has elapsed, contacts reset.



(GI) Pulse delayed.
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs after a fixed time of 0.5s.



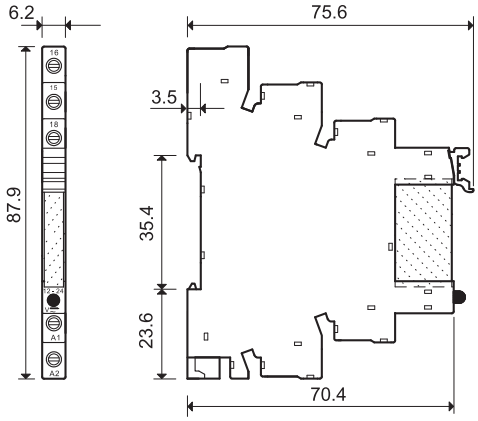
(SW) Symmetrical flasher (starting pulse on).
Apply power to timer.
Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied.
The ratio is 1:1 (time on = time off).

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Outline drawings

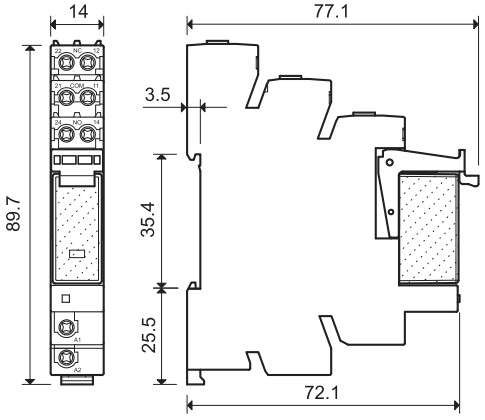
38.21
38.51 / 38.51.3
38.81 / 38.81.3
Screw terminal





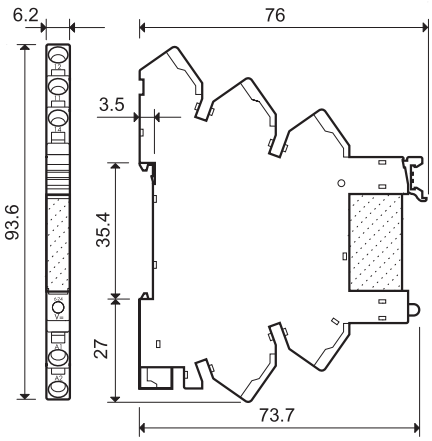
38.01
38.31
38.52
Screw terminal





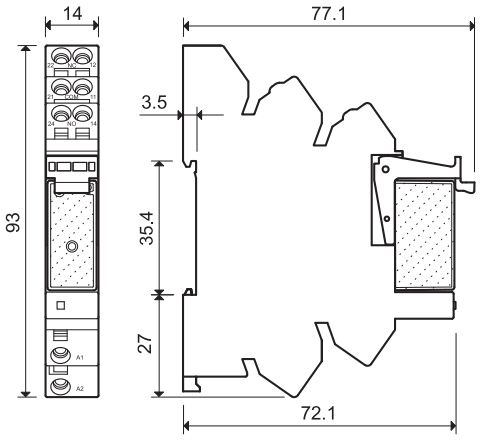
38.61 / 38.61.3
38.91 / 38.91.3
Screwless terminal





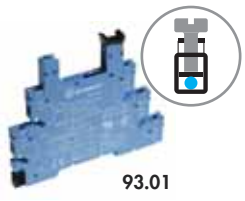
38.11
38.41
38.62
Screwless terminal



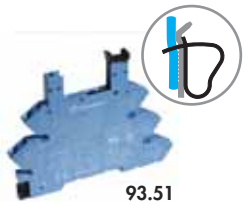


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Electromechanical Relay & Socket Combinations



93.01



93.51



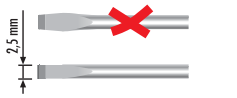
93.02



93.52

Approvals (according to type):

Certain relay/socket combinations







Screw terminal - 1 Pole relay 6 A

Interface Module Code	Coil voltage	Relay	Socket
38.51.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.01.0.024
38.51.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.01.0.024
38.51.0.048.0060	48 V AC/DC	34.51.7.048.0010	93.01.0.060
38.51.0.060.0060	60 V AC/DC	34.51.7.060.0010	93.01.0.060
38.51.0.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.01.0.125
38.51.0.240.0060	(220...240)V AC/DC	34.51.7.060.0010	93.01.0.240
38.51.3.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.01.3.125
38.51.3.240.0060	(230...240)V AC	34.51.7.060.0010	93.01.3.240
38.51.7.006.0050	6 V DC	34.51.7.005.0010	93.01.7.024
38.51.7.012.0050	12 V DC	34.51.7.012.0010	93.01.7.024
38.51.7.024.0050	24 V DC	34.51.7.024.0010	93.01.7.024
38.51.7.048.0050	48 V DC	34.51.7.048.0010	93.01.7.060
38.51.7.060.0050	60 V DC	34.51.7.060.0010	93.01.7.060
38.51.8.240.0060	(230...240)V AC	34.51.7.060.0010	93.01.8.240

Screwless terminal - 1 Pole relay 6 A

Interface Module Code	Coil voltage	Relay	Socket
38.61.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.51.0.024
38.61.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.51.0.024
38.61.0.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.51.0.125
38.61.0.240.0060	(220...240)V AC/DC	34.51.7.060.0010	93.51.0.240
38.61.3.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.51.3.125
38.61.3.240.0060	(230...240)V AC	34.51.7.060.0010	93.51.3.240
38.61.7.012.0050	12 V DC	34.51.7.012.0010	93.51.7.024
38.61.7.024.0050	24 V DC	34.51.7.024.0010	93.51.7.024
38.61.8.240.0060	(230...240)V AC	34.51.7.060.0010	93.51.8.240

Screw terminal - 1 Pole relay 16 A

Interface Module Code	Coil voltage	Relay	Socket
38.01.7.012.0050	12 V DC	41.61.9.012.0010	93.02.7.024
38.01.7.024.0050	24 V DC	41.61.9.024.0010	93.02.7.024
38.01.7.060.0050	60 V DC	41.61.9.060.0010	93.02.7.060
38.01.0.024.0060	24 V AC/DC	41.61.9.024.0010	93.02.0.024
38.01.0.060.0060	60 V AC/DC	41.61.9.060.0010	93.02.0.060
38.01.0.125.0060	125 V AC/DC	41.61.9.110.0010	93.02.0.125
38.01.0.240.0060	240 V AC/DC	41.61.9.110.0010	93.02.0.240
38.01.8.230.0060	230 V AC	41.61.9.110.0010	93.02.8.230

Screwless terminal - 1 Pole relay 16 A

Interface Module Code	Coil voltage	Relay	Socket
38.11.7.012.0050	12 V DC	41.61.9.012.0010	93.52.7.024
38.11.7.024.0050	24 V DC	41.61.9.024.0010	93.52.7.024
38.11.7.060.0050	60 V DC	41.61.9.060.0010	93.52.7.060
38.11.0.024.0060	24 V AC/DC	41.61.9.024.0010	93.52.0.024
38.11.0.060.0060	60 V AC/DC	41.61.9.060.0010	93.52.0.060
38.11.0.125.0060	125 V AC/DC	41.61.9.110.0010	93.52.0.125
38.11.0.240.0060	240 V AC/DC	41.61.9.110.0010	93.52.0.240
38.11.8.230.0060	230 V AC	41.61.9.110.0010	93.52.8.230

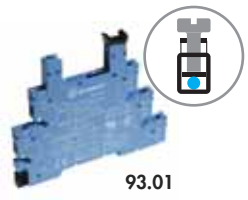
Screw terminal - 2 Pole relay 8 A

Interface Module Code	Coil voltage	Relay	Socket
38.52.0.024.0060	24 V AC/DC	41.52.9.024.0010	93.02.0.024
38.52.0.060.0060	60 V AC/DC	41.52.9.060.0010	93.02.0.060
38.52.0.125.0060	(110...125)V AC/DC	41.52.9.110.0010	93.02.0.125
38.52.0.240.0060	(220...240)V AC/DC	41.52.9.110.0010	93.02.0.240
38.52.7.012.0050	12 V DC	41.52.9.012.0010	93.02.7.024
38.52.7.024.0050	24 V DC	41.52.9.024.0010	93.02.7.024
38.52.7.060.0050	60 V DC	41.52.9.060.0010	93.02.7.060
38.52.8.230.0060	(230...240)V AC	41.52.9.110.0010	93.02.8.230

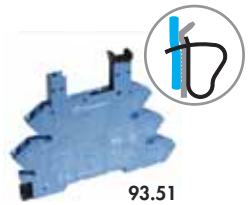
Screwless terminal - 2 Pole relay 8 A

Interface Module Code	Coil voltage	Relay	Socket
38.62.0.024.0060	24 V AC/DC	41.52.9.024.0010	93.52.0.024
38.62.0.060.0060	60 V AC/DC	41.52.9.060.0010	93.52.0.060
38.62.0.125.0060	(110...125)V AC/DC	41.52.9.110.0010	93.52.0.125
38.62.0.240.0060	(220...240)V AC/DC	41.52.9.110.0010	93.52.0.240
38.62.7.012.0050	12 V DC	41.52.9.012.0010	93.52.7.024
38.62.7.024.0050	24 V DC	41.52.9.024.0010	93.52.7.024
38.62.7.060.0050	60 V DC	41.52.9.060.0010	93.52.7.060
38.62.8.230.0060	(230...240)V AC	41.52.9.110.0010	93.52.8.230

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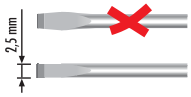
93.01



93.51

Approvals (according to type):

Certain relay/socket combinations







Solid State Relay & Socket Combinations - 6.2 mm wide

Screw terminal			
Interface Module Code	**Input voltage**	**Relay**	**Socket**
38.81.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.01.7.024
38.81.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.01.7.024
38.81.7.060.xxxx	60 V DC	34.81.7.060.xxxx	93.01.7.060
38.81.0.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.01.0.125
38.81.0.240.xxxx	(220...240)V AC/DC	34.81.7.060.xxxx	93.01.0.240
38.81.3.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.01.3.125
38.81.3.240.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.01.3.240
Screwless terminal			
Interface Module Code	**Input voltage**	**Relay**	**Socket**
38.91.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.51.7.024
38.91.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.51.7.024
38.91.7.060.xxxx	60 V DC	34.81.7.060.xxxx	93.51.7.060
38.91.0.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.51.0.125
38.91.0.240.xxxx	(220...240)V AC/DC	34.81.7.060.xxxx	93.51.0.240
38.91.3.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.51.3.125
38.91.3.240.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.51.3.240

Example: .xxxx
.9024
.7048
.8240



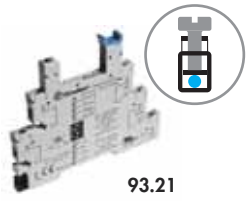
93.52

Approvals (according to type):

Solid State Relay & Socket Combinations - 14 mm wide

Screw terminal			
Interface Module Code	**Input voltage**	**Relay**	**Socket**
38.31.0.024.9024	24 V AC/DC	41.81.7.024.9024	93.02.0.024
38.31.0.024.8240	24 V AC/DC	41.81.7.024.8240	93.02.0.024
38.31.7.012.9024	12 V DC	41.81.7.012.9024	93.02.7.024
38.31.7.012.8240	12 V DC	41.81.7.012.8240	93.02.7.024
38.31.7.024.9024	24 V DC	41.81.7.024.9024	93.02.7.024
38.31.7.024.8240	24 V DC	41.81.7.024.8240	93.02.7.024
Screwless terminal			
Interface Module Code	**Input voltage**	**Relay**	**Socket**
38.41.0.024.9024	24 V AC/DC	41.81.7.024.9024	93.52.0.024
38.41.0.024.8240	24 V AC/DC	41.81.7.024.8240	93.52.0.024
38.41.7.012.9024	12 V DC	41.81.7.012.9024	93.52.7.024
38.41.7.012.8240	12 V DC	41.81.7.012.8240	93.52.7.024
38.41.7.024.9024	24 V DC	41.81.7.024.9024	93.52.7.024
38.41.7.024.8240	24 V DC	41.81.7.024.8240	93.52.7.024

SSR / EMR & Timer Socket Combinations



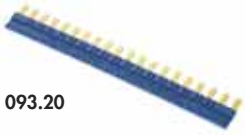
93.21

Approvals (according to type):

Screw terminal			
Interface Module Code	**Input / Coil voltage**	**Relay**	**Socket**
38.21.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.21.0.024
38.21.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.21.0.024
38.21.0.024.9024	24 V AC/DC	34.81.7.024.9024	93.21.0.024
38.21.0.024.8240	24 V AC/DC	34.81.7.024.8240	93.21.0.024

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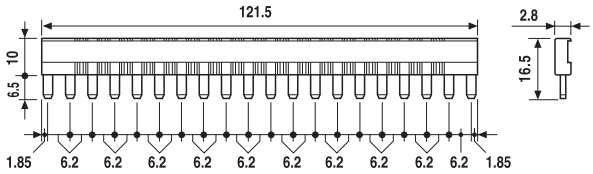
Accessories



093.20

Approvals (according to type):

20-way jumper link for 38.21/51/61/81/91	093.20 (blue)	093.20.0 (black)	093.20.1 (red)
Rated values	36 A - 250 V		

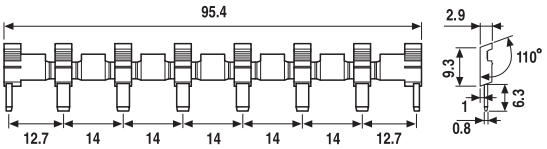




093.08

Approvals (according to type):

8-way jumper link for 38.01/11/31/41/52/62	093.08 (blue)	093.08.0 (black)	093.08.1 (red)
Rated values	10 A - 250 V		





093.01

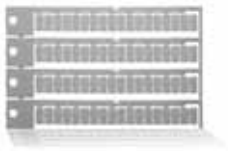
Plastic separator	093.01

Thickness 2 mm, required at the start and the end of a group of interfaces.
Can be used for visual separation group, must be used for:
- protective separation of different voltages of neighbouring PLC interfaces according to VDE 0106-101
- protection of cut jumper links



093.64

Sheet of marker tags for 38.21/51/61/81/91, plastic, 64 tags, 6x10 mm	093.64



060.72

Sheet of marker tags for 38.01/11/31/41/52/62, plastic, 72 tags, 6x12 mm	060.72

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*Master**INTERFACE*** 39 Series - Relay interface modules

Common features
- Space saving 6.2 mm wide
- Connections for 16-way jumper link
- Integral coil indication and protection circuit
- Secure retention and easy ejection by plastic clip
- Dual screw head (blade+cross) terminals
- 35 mm rail mounting (EN 60715)

	EMR **Electromechanical Relays** • **1 CO 6 A 250 V AC** • High switching capability	**SSR** **Solid State Relays** • 1 solid state output (options **0.1 A 48 V DC, 2 A 24 V DC, 2 A 240 V AC**) • Silent, high speed switching, long electrical life
Master**BASIC • For general use in any type of system • **EMR: 6 to 24 V AC/DC and 230 V AC supply** • **SSR: 6 to 24 V DC and 230 V AC supply**	**39.11**  **Page 4**	**39.10**  **Page 5**
Master**PLUS • Accepts the output fuse module, for the easy and space efficient protection of output circuits • **EMR: 6 to 125 V AC/DC, 125 and 220 V DC, 230 V AC supply** • **SSR: 24 - 125 V AC/DC, 6 to 220 V DC and 230 V AC supply** • **Special 125 and 230 V AC leakage current suppression types (39.31.3 EMR and 39.30.3 SSR)**	**39.31 - 39.31.3**  **Page 6**	**39.30 - 39.30.3**  **Page 7**
Master**INPUT • Jumper link option for the quick and easy distribution of supply voltage to proximity switches and similar input devices • **EMR: 6 to 24 V and 125 V AC/DC, 230 V AC supply** • **SSR: 6 - 12 V DC, 24 - 125 V AC/DC, 230 V AC supply**	**39.41**  **Page 8**	**39.40**  **Page 9**
Master**OUTPUT • Jumper link option for the quick and easy distribution of supply voltage to output side and its connection to electromagnetic valves and similar output devices • **EMR:6 to 24 V and 125 V AC/DC, 230 V AC supply** • **SSR: 6 to 24 V DC, 125 V AC/DC, 230 V AC supply**	**39.21**  **Page 10**	**39.20**  **Page 11**
Master**TIMER • Timer adjustment via top mounted rotary knob accessible after assembly • Control signal terminal • DIP-switch for selection of 4 time scales and 8 functions • Output with fuse module option • **EMR and SSR: 12 to 24 V AC/DC supply**	**39.81**  **Page 12**	**39.80**  **Page 13**

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*Master**BASIC***

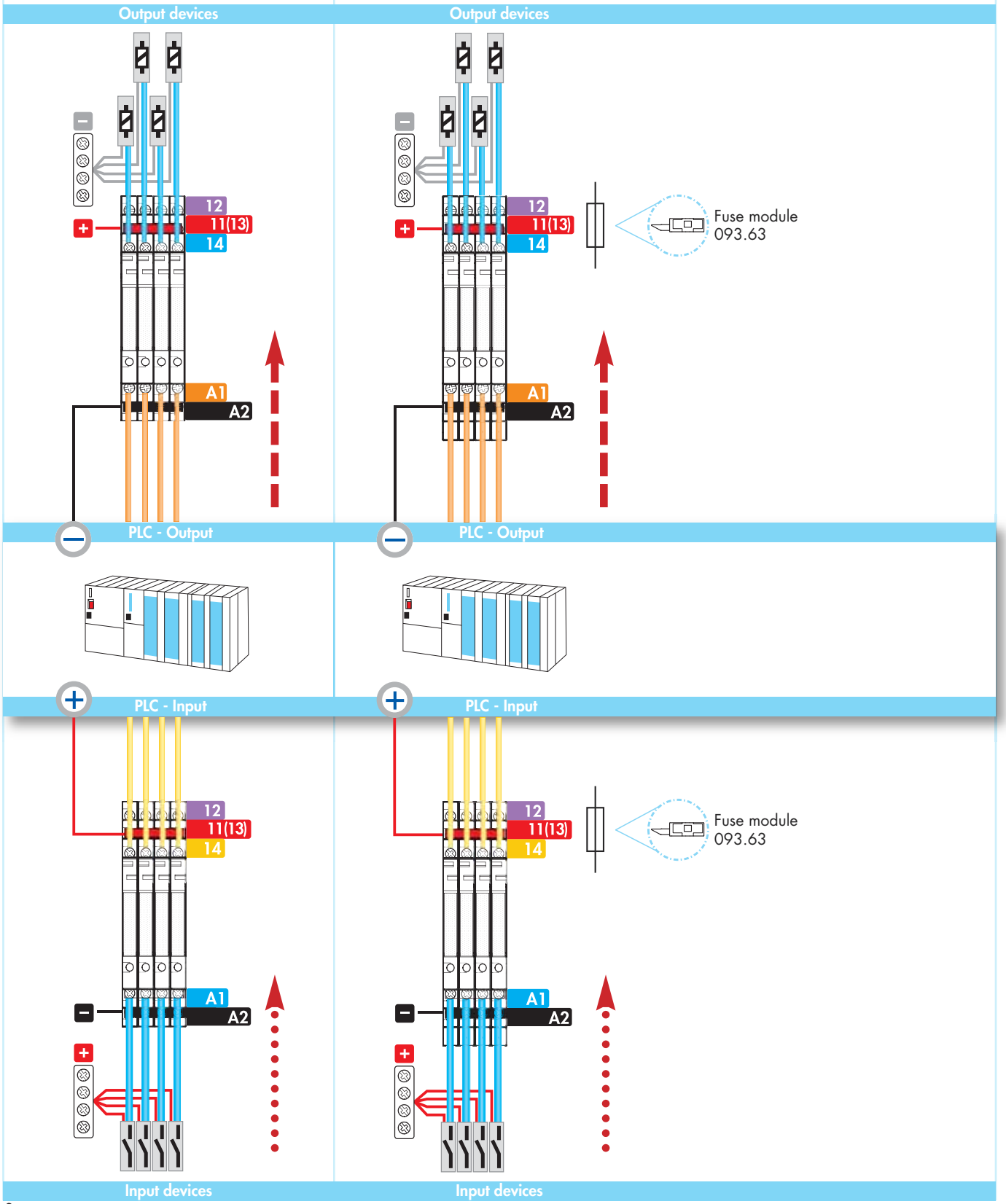
39.11 - 39.10

- For general interface use in any type of system and application.
- Can be used for input interface applications between auxiliary contacts, sensors etc. and controllers, PLCs' or motors. Or for output interface between PLC's controllers and relays, solenoids etc.

*Master**PLUS***

39.31 - 39.30 - 39.31.3 - 39.30.3

- This special version provides extra protection for the output circuit thanks to the replaceable fuse module.
- For general interface use in any type of system and application.
- Can be used for input interface applications between auxiliary contacts, sensors etc. and controllers, PLCs' or motors. Or for output interface between PLC's controllers and relays, solenoids etc.



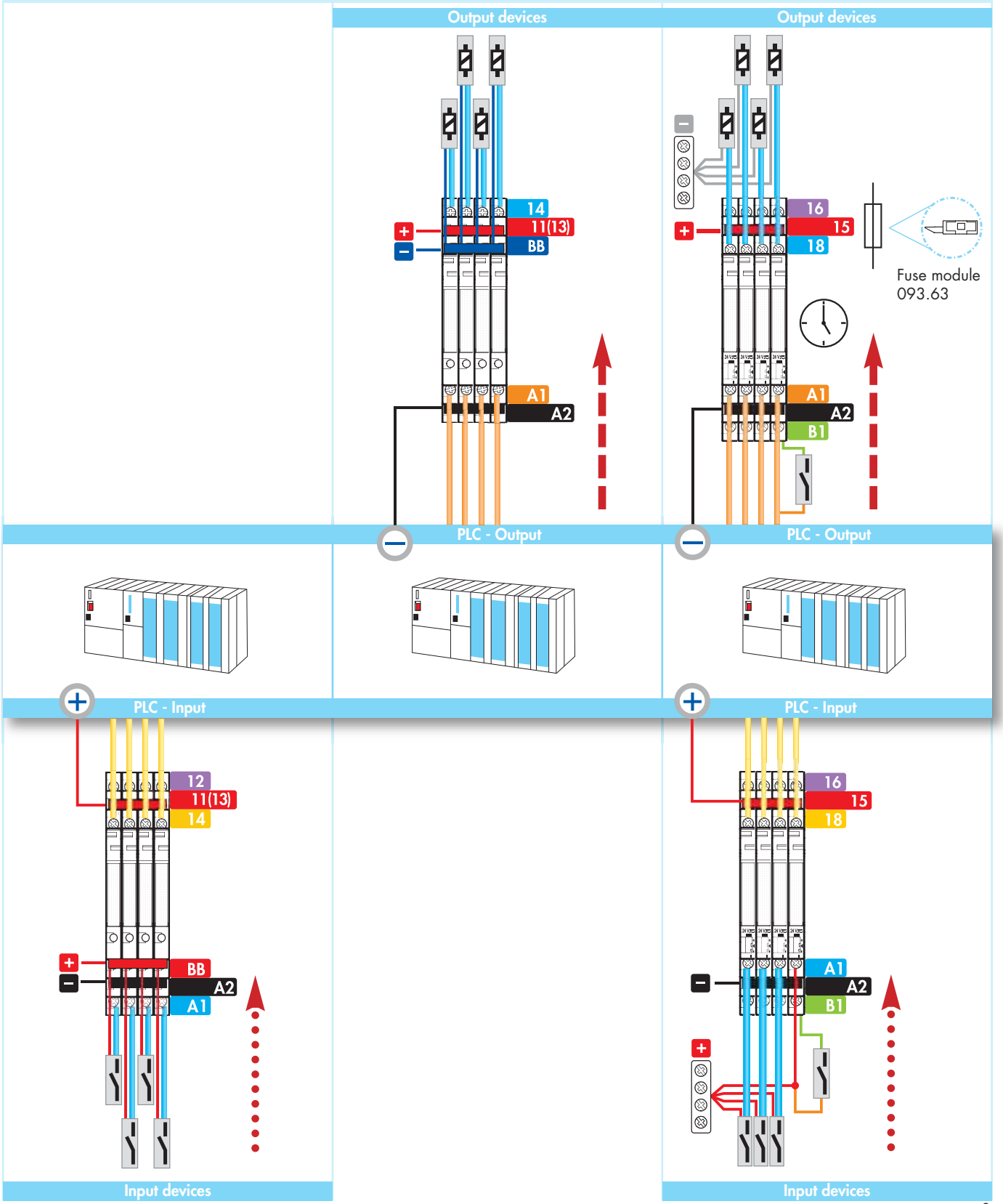
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*Master**INPUT***
39.41 - 39.40
- These models allow the full termination of input device to the interface without the need for additional terminals - saving component cost, time and panel space.
- Quick and easy distribution of supply voltage through the jumper link on the Bus-Bar (BB) connection.
- Ideal for interface applications between the auxiliary contacts, sensors, limit switches and Controllers or PLC's.

*Master**OUTPUT***
39.21 - 39.20
- These models allow the full termination of output device to the interface without the need for additional terminals - saving component cost, time and panel space.
- Quick and easy distribution of supply voltage through the jumper link on the Bus-Bar (BB) connection.
- Ideal for interface applications between the PLC's or Controllers and output devices such as electomagnetic valves or motors etc..

*Master**TIMER***
39.81 - 39.80
- Slim and Multifunction Timed Interface modules.



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*Master**BASIC*** - EMR

Features

1 Pole interface module, 6.2 mm wide, ideal for PLC and electronic systems

- Common connection possible with optional jumper links (terminals A1, A2 and 11)

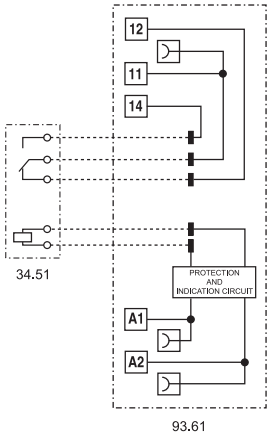
NEW **39.11**



- 6 A electromechanical relay
- 6 to 24 V AC/DC and 230 V AC supply
- 35 mm rail (EN 60715) mounting

39.11
Screw terminal





93.61

For outline drawing see page 20

Contact specification		
Contact configuration		1 CO (SPDT)
Rated current/Maximum peak current	A	6 / 10
Rated voltage/Maximum switching voltage	V AC	250 / 400
Rated load AC1	VA	1,500
Rated load AC15 (230 V AC)	VA	300
Single phase motor rating (230 V AC)	kW	0.185
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12
Minimum switching load	mW (V/mA)	500 (12 / 10)
Standard contact material		AgNi
Supply specification		
Nominal voltage (U_N)	V AC/DC	6 - 12 - 24
	V AC (50/60 Hz)	220...240
Rated power	VA (50 Hz)/W	See page 16
Operating range		$(0.8...1.1)U_N$
Holding voltage		$0.6\ U_N$
Must drop-out voltage		$0.1\ U_N$
Technical data		
Mechanical life AC/DC	cycles	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$
Operate/release time	ms	5/6
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000
Ambient temperature range	°C	–40...+70
Protection category		IP 20
Approvals relay (according to type)		CE

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*Master***BASIC** - SSR

Features

1 Pole interface module, 6.2 mm wide, ideal for PLC and electronic systems

- Common connection possible with optional jumper links (terminals A1, A2 and 13+)

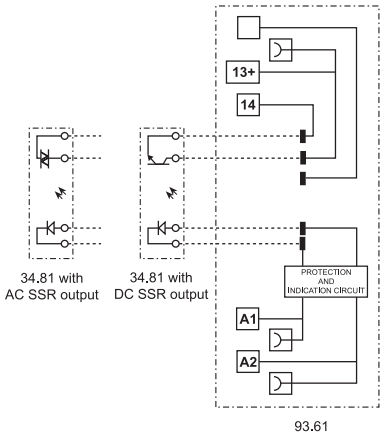
NEW **39.10**



- 0.1 or 2 A solid state relay
- 6 to 24 V DC and 230 V AC supply
- 35 mm rail (EN 60715) mounting

39.10
Screw terminal





93.61

For outline drawing see page 20

Output specification (SSR)		**39.10.x.xxx.9024**	**39.10.x.xxx.7048**	**39.10.x.xxx.8240**
Contact configuration		1 NO (SPST-NO)		
Rated current/Maximum peak current (10 ms)	A	2/20 DC	0.1/0.5 DC	2/40 AC
Rated voltage/Maximum blocking voltage	V	24/33 DC	48/60 DC	240/275 AC
Switching voltage range	V	(1.5…24) DC	(1.5…48) DC	(12…240) AC
Minimum switching current	mA	1	0.05	22
Max. "OFF-state" leakage current	mA	0.001	0.001	1.5
Max. "ON-state" voltage drop	V	0.12	1	1.6
Supply specification				
Nominal voltage (U_N)	V AC (50/60 Hz)	220...240		
	V DC	6 - 12 - 24		
Rated power	VA (50 Hz) / W	See page 17		
Operating range		(0.8...1.1) U_N		
Must drop-out voltage		0.1 U_N		
Technical data				
Operate/release time	ms	0.2/0.6	0.04/0.11	12/12
Dielectric strength between input/output	V AC	2,500		
Ambient temperature range	°C	–20...+55		
Protection category		IP20		
Approvals relay (according to type)		CE		

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*Master**PLUS*** - EMR

Features

1 Pole interface modules, 6.2 mm wide, ideal for PLC and electronic systems

- Accepts output fuse module **093.63** (for 5 x 20 mm fuses) for quick and easy load protection, see page 22
- Common connection possible with optional jumper links (terminals A1, A2 and 11)

NEW 39.31



- 6 A electromechanical relay
- 6 to 125 V AC/DC, 125 and 220 V DC, 230 V AC supply
- 35 mm rail (EN 60715) mounting

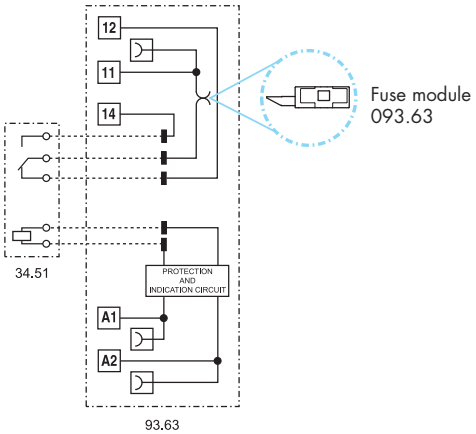
NEW 39.31.3



- 6 A electromechanical relay
- Leakage current suppression version, 125 and 230 V AC supply

39.31 / 39.31.3
Screw terminal





For outline drawing see page 20

Contact specification			
Contact configuration		1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current	A	6 / 10	6 / 10
Rated voltage/Maximum switching voltage	V AC	250 / 400	250 / 400
Rated load AC1	VA	1,500	1,500
Rated load AC15 (230 V AC)	VA	300	300
Single phase motor rating (230 V AC)	kW	0.185	0.185
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12	6/0.2/0.12
Minimum switching load	mW (V/mA)	500 (12 / 10)	500 (12 / 10)
Standard contact material		AgNi	AgNi
Supply specification			
Nominal voltage (U_N)	V AC/DC	6 - 12 - 24 - 60 - 110...125	—
	V AC (50/60 Hz)	220...240	110...125 - 220...240
	V DC	110...125 - 220	—
Rated power	VA (50 Hz)/W	See page 16	See page 16
Operating range		(0.8...1.1) U_N	(0.8...1.1) U_N
Holding voltage		0.6 U_N	0.6 U_N
Must drop-out voltage		0.1 U_N	0.3 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$	$60 \cdot 10^3$
Operate/release time	ms	5 / 6	5 / 6
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70 (+55 for 220 V DC)	–40...+70
Protection category		IP20	IP20
Approvals relay (according to type)		CE	

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*Master**PLUS*** - SSR

Features

1 Pole interface modules, 6.2 mm wide, ideal for PLC and electronic systems

- Accepts output fuse module **093.63** (for 5 x 20 mm fuses) for quick and easy load protection, see page 22
- Common connection possible with optional jumper links (terminals A1, A2 and 13+)

NEW **39.30**



- 0.1 or 2 A solid state relay
- 24 - 125 V AC/DC, 6 to 220 V DC and 230 V AC supply
- 35 mm rail (EN 60715) mounting

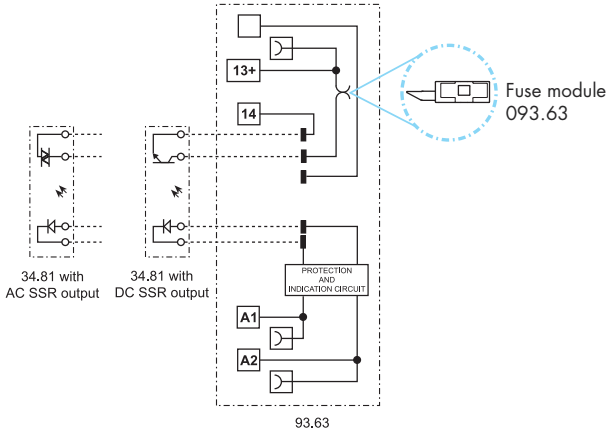
NEW **39.30.3**



- 0.1 or 2 A solid state relay
- Leakage current suppression version, 125 and 230 V AC supply

39.30 / 39.30.3
Screw terminal





For outline drawing see page 20

Output specification (SSR)		**39.30.x.xxx.9024**	**39.30.x.xxx.7048**	**39.30.x.xxx.8240**	**39.30.3.xxx.9024**	**39.30.3.xxx.7048**	**39.30.3.xxx.8240**
Contact configuration		1 NO (SPST-NO)			1 NO (SPST-NO)		
Rated current/Maximum peak current (10 ms)	A	2/20 DC	0.1/0.5 DC	2/40 AC	2/20 DC	0.1/0.5 DC	2/40 AC
Rated voltage/Maximum blocking voltage	V	24/33 DC	48/60 DC	240/275 AC	24/33 DC	48/60 DC	240/275 AC
Switching voltage range	V	(1.5...24) DC	(1.5...48)DC	(12...240) AC	(1.5...24) DC	(1.5...48)DC	(12...240) AC
Minimum switching current	mA	1	0.05	22	1	0.05	22
Max. "OFF-state" leakage current	mA	0.001	0.001	1.5	0.001	0.001	1.5
Max. "ON-state" voltage drop	V	0.12	1	1.6	0.12	1	1.6
Supply specification							
Nominal voltage (U_N)	V AC/DC	24 - 110...125			—		
	V AC (50/60 Hz)	220...240			110...125 - 220...240		
	V DC	6 - 12 - 24 - 60 - 110...125 - 220			—		
Rated power	VA (50 Hz) / W	See page 17			See page 17		
Operating range		(0.8...1.1) U_N			(0.8...1.1) U_N		
Must drop-out voltage		0.1 U_N			0.3 U_N		
Technical data							
Operate/release time	ms	0.2/0.6	0.04/0.11	12/12	0.2/0.6	0.04/0.11	12/12
Dielectric strength between input/output	V AC	2,500			2,500		
Ambient temperature range	°C	–20...+55			–20...+55		
Protection category		IP20			IP20		
Approvals relay (according to type)		CE					

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*Master**INPUT*** - EMR

Features

1 Pole interface module, 6.2 mm wide, ideal for PLC and electronic systems

- Jumper link option for the quick and easy distribution of supply voltage to proximity switches and similar input devices (Bus-bar connection BB)
- Accepts output fuse module **093.63** (for 5 x 20 mm fuses) for quick and easy load protection, see page 22
- Gold plated output contact as standard, for better compatibility with low energy PLC inputs

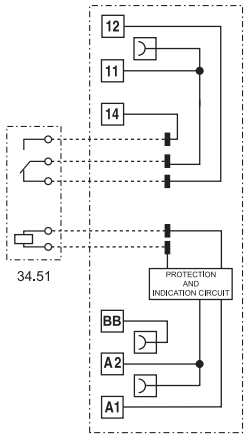
NEW **39.41**



- 6 A electromechanical relay
- 6 - 12 - 24 - 125 V AC/DC and 230 V AC supply
- 35 mm rail (EN 60715) mounting

39.41
Screw terminal





93.64

For outline drawing see page 20

Contact specification		
Contact configuration		1 CO (SPDT)
Rated current/Maximum peak current	A	6 / 10
Rated voltage/Maximum switching voltage	V AC	250 / 400
Rated load AC1	VA	1,500
Rated load AC15 (230 V AC)	VA	300
Single phase motor rating (230 V AC)	kW	0.185
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12
Minimum switching load	mW (V/mA)	50 (5 / 2)
Standard contact material		AgNi + Au
Supply specification		
Nominal voltage (U_N)	V AC/DC	6 - 12 - 24 - 110...125
	V AC (50/60 Hz)	220...240
Rated power	VA (50 Hz)/W	See page 16
Operating range		(0.8...1.1) U_N
Holding voltage		0.6 U_N
Must drop-out voltage		0.1 U_N
Technical data		
Mechanical life AC/DC	cycles	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$
Operate/release time	ms	5 / 6
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000
Ambient temperature range	°C	–40...+70
Protection category		IP20
Approvals relay (according to type)		CE

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*Master**INPUT*** - SSR

Features

1 Pole interface modules, 6.2 mm wide, ideal for PLC and electronic systems

- Jumper link option for the quick and easy distribution of supply voltage to proximity switches and similar input devices (Bus-bar connection BB)
- Accepts output fuse module **093.63** (for 5 x 20 mm fuses) for quick and easy load protection, see page 22

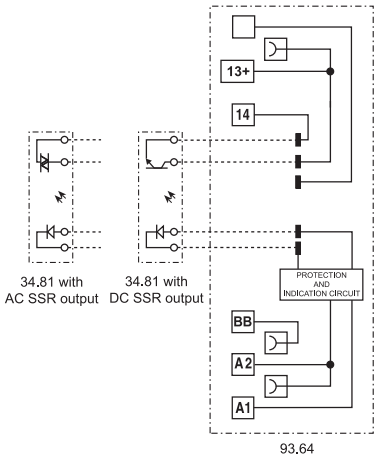
NEW **39.40**



- 0.1 or 2 A solid state relay
- 6 - 12 V DC, 24 - 125 V AC/DC and 230 V AC supply
- 35 mm rail (EN 60715) mounting

39.40
Screw terminal





For outline drawing see page 20

Output specification (SSR)		**39.40.x.xxx.9024**	**39.40.x.xxx.7048**	**39.40.x.xxx.8240**
Contact configuration		1 NO (SPST-NO)		
Rated current/Maximum peak current (10 ms)	A	2/20 DC	0.1/0.5 DC	2/40 AC
Rated voltage/Maximum blocking voltage	V	24/33 DC	48/60 DC	240/275 AC
Switching voltage range	V	(1.5...24) DC	(1.5...48) DC	(12...240) AC
Minimum switching current	mA	1	0.05	22
Max. "OFF-state" leakage current	mA	0.001	0.001	1.5
Max. "ON-state" voltage drop	V	0.12	1	1.6
Supply specification				
Nominal voltage (U_N)	V AC/DC	24 - 110...125		
	V AC (50/60 Hz)	220...240		
	V DC	6 - 12		
Rated power	VA (50 Hz) / W	See page 17		
Operating range		(0.8...1.1) U_N		
Must drop-out voltage		0.1 U_N		
Technical data				
Operate/release time	ms	0.2/0.6	0.04/0.11	12/12
Dielectric strength between input/output	V AC	2,500		
Ambient temperature range	°C	–20...+55		
Protection category		IP20		
Approvals relay (according to type)		CE		

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*Master**OUTPUT*** - EMR

Features

1 Pole interface modules, 6.2 mm wide, ideal for PLC and electronic systems

- Jumper link option for the quick and easy distribution of supply voltage to output side (Bus-bar connection BB) and its connection to electromagnetic valves and similar output devices

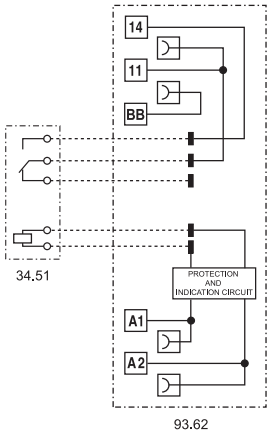
NEW **39.21**



- 6 A electromechanical relay
- 6 - 12 - 24 - 125 V AC/DC and 230 V A supply
- 35 mm rail (EN 60715) mounting

39.21
Screw terminal





For outline drawing see page 20

Contact specification		
Contact configuration		1 NO (SPST-NO)
Rated current/Maximum peak current	A	6 / 10
Rated voltage/Maximum switching voltage	V AC	250 / 400
Rated load AC1	VA	1,500
Rated load AC15 (230 V AC)	VA	300
Single phase motor rating (230 V AC)	kW	0.185
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12
Minimum switching load	mW (V/mA)	500 (12 / 10)
Standard contact material		AgNi
Supply specification		
Nominal voltage (U_N)	V AC/DC	6 - 12 - 24 - 110...125
	V AC (50/60 Hz)	220...240
Rated power	VA (50 Hz)/W	See page 16
Operating range		(0.8...1.1) U_N
Holding voltage		0.6 U_N
Must drop-out voltage		0.1 U_N
Technical data		
Mechanical life AC/DC	cycles	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$
Operate/release time	ms	5 / 6
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000
Ambient temperature range	°C	–40...+70
Protection category		IP20
Approvals relay (according to type)		CE

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*Master***OUTPUT - SSR**

Features

1 Pole interface modules, 6.2 mm wide, ideal for PLC and electronic systems

- Jumper link option for the quick and easy distribution of supply voltage to output side (Bus-bar connection BB) and its connection to electromagnetic valves and similar output devices

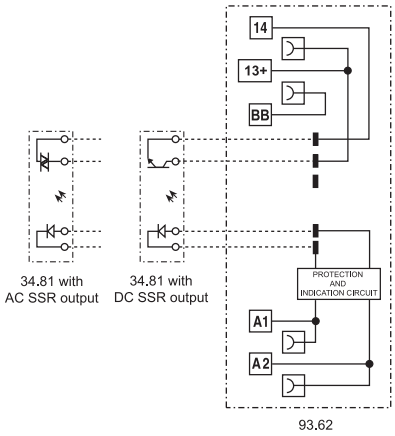
NEW **39.20**



- 0.1 or 2 A solid state relay
- 6 to 24 V DC, 125 V AC/DC and 230 V AC supply
- 35 mm rail (EN 60715) mounting

39.20
Screw terminal





93.62

For outline drawing see page 20

Output specification (SSR)		**39.20.x.xxx.9024**	**39.20.x.xxx.7048**	**39.20.x.xxx.8240**
Contact configuration		1 NO (SPST-NO)		
Rated current/Maximum peak current (10 ms)	A	2/20 DC	0.1/0.5 DC	2/40 AC
Rated voltage/Maximum blocking voltage	V	24/33 DC	48/60 DC	240/275 AC
Switching voltage range	V	(1.5...24) DC	(1.5...48) DC	(12...240) AC
Minimum switching current	mA	1	0.05	22
Max. "OFF-state" leakage current	mA	0.001	0.001	1.5
Max. "ON-state" voltage drop	V	0.12	1	1.6
Supply specification				
Nominal voltage (U_N)	V AC/DC	110...125		
	V AC (50/60 Hz)	220...240		
	V DC	6 - 12 - 24		
Rated power	VA (50 Hz) / W	See page 17		
Operating range		(0.8...1.1) U_N		
Must drop-out voltage		0.1 U_N		
Technical data				
Operate/release time	ms	0.2/0.6	0.04/0.11	12/12
Dielectric strength between input/output	V AC	2,500		
Ambient temperature range	°C	–20...+55		
Protection category		IP20		
Approvals relay (according to type)		CE		

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*Master**TIMER*** - EMR

Features

Slim timed interface module, 6.2 mm wide, ideal for space-saving timing solutions in panels

- Timer adjustment via top mounted rotary knob, accessible after assembly
- Control signal terminal
- DIP-switch for selection of 4 time scales and 8 functions
- Common connection possible with optional jumper links (terminals A1, A2 and 15)

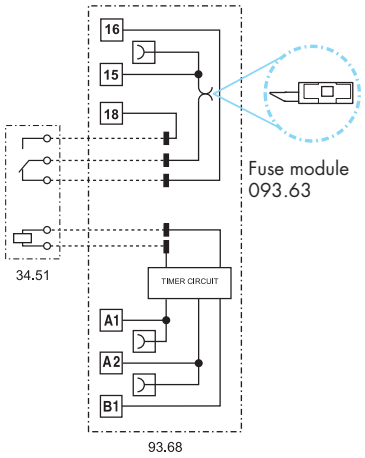
NEW **39.81**



- 6 A electromechanical relay
- 12 - 24 V AC/DC supply
- 35 mm rail (EN 60715) mounting

39.81
Screw terminal





AI: On-delay
DI: Interval
GI: Pulse (0.5 s) delayed
SW: Symmetrical flasher (starting pulse on)
BE: Off-delay with control signal
CE: On- and off-delay with control signal
DE: Interval with control signal on
EE: Interval with control signal off

For outline drawing see page 20

Contact specification		
Contact configuration		1 CO (SPDT)
Rated current/Maximum peak current	A	6 / 10
Rated voltage/Maximum switching voltage	V AC	250 / 400
Rated load AC1	VA	1,500
Rated load AC15 (230 V AC)	VA	300
Single phase motor rating (230 V AC)	kW	0.185
Breaking capacity DC1: 30/110/220 V	A	6/0.2/0.12
Minimum switching load	mW (V/mA)	500 (12 / 10)
Standard contact material		AgNi
Supply specification		
Nominal voltage (U_N)	V AC/DC	12 - 24
Rated power AC/DC	VA (50 Hz)/W	See page 16
Operating range		(0.8...1.1) U_N
Holding voltage		0.6 U_N
Must drop-out voltage		0.1 U_N
Technical data		
Specified time range		(0.1...3)s, (3...60)s, (1...20)min, (0.3...6)h
Repeatability	%	± 1
Recovery time	ms	≤ 50
Minimum control impulse	ms	50
Setting accuracy – full range	%	5
Electrical life at rated load AC1	cycles	$60 \cdot 10^3$
Ambient temperature range	°C	–20...+50
Protection category		IP20
Approvals relay (according to type)		CE

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*Master**TIMER*** - SSR

Features

Slim timed interface module, 6.2 mm wide, ideal for space-saving timing solutions in panels

- Timer adjustment via top mounted rotary knob; accessible after assembly
- Start terminal
- DIP-switch for selection of 4 time scales and 8 functions
- Accepts output fuse module **093.63** (for 5 x 20 mm fuses) for quick and easy load protection, see page 22
- Common connection possible with optional jumper links (terminals A1, A2 and 15+)

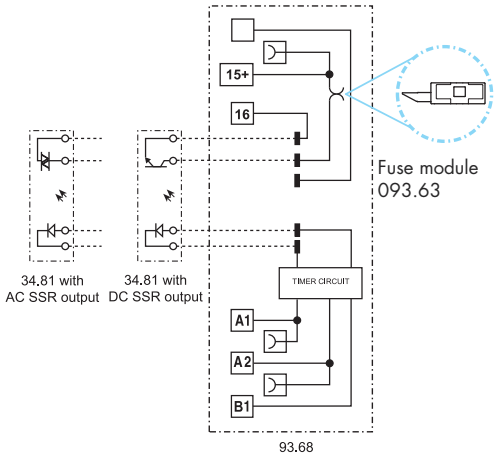
NEW **39.80**



- 0.1 or 2 A solid state relay
- 12 - 24 V AC/DC supply
- 35 mm rail (EN 60715) mounting

39.80
Screw terminal





AI: On-delay
DI: Interval
GI: Pulse (0.5 s) delayed
SW: Symmetrical flasher (starting pulse on)
BE: Off-delay with control signal
CE: On- and off-delay with control signal
DE: Interval with control signal on
EE: Interval with control signal off

For outline drawing see page 20

Output specification (SSR)		**39.80.x.xxx.9024**	**39.80.x.xxx.7048**	**39.80.x.xxx.8240**
Contact configuration		1 NO (SPST-NO)		
Rated current/Maximum peak current (10 ms)	A	2/20 DC	0.1/0.5 DC	2/40 AC
Rated voltage/Maximum blocking voltage	V	24/33 DC	48/60 DC	240/275 AC
Switching voltage range	V	(1.5...24) DC	(1.5...48) DC	(12...240) AC
Minimum switching current	mA	1	0.05	22
Max. "OFF-state" leakage current	mA	0.001	0.001	1.5
Max. "ON-state" voltage drop	V	0.12	1	1.6
Supply specification				
Nominal voltage (U_N)	V AC/DC	12 - 24		
Rated power	VA (50 Hz) / W	See page 17		
Operating range		(0.8...1.1) U_N		
Holding voltage		0.6 U_N		
Must drop-out voltage		0.1 U_N		
Technical data				
Specified time range		(0.1...3)s, (3...60)s, (1...20)min, (0.3...6)h		
Repeatability	%	± 1		
Recovery time	ms	≤ 50		
Minimum control impulse	ms	50		
Setting accuracy – full range	%	5		
Ambient temperature range	°C	–20...+50		
Protection category		IP20		
Approvals relay (according to type)		CE		

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Ordering information

Example: *Master***PLUS** 39 series screw terminal interface module, electromechanical relay output, 1 CO (SPDT), 24 V AC/DC coil.

								A	B	C	D
3	9	.	3	1	.	0	.	0	2	4	.	0	0	6	0

Series

Type
1 = *Master***BASIC**, screw terminal
3 = *Master***PLUS**, screw terminal, fuse-protectable output
4 = *Master***INPUT**, screw terminal
2 = *Master***OUTPUT**, screw terminal
8 = *Master***TIMER** multifunction, screw terminal, fuse-protectable output

No. of poles
1 = 1 CO (only EMR, except 39.21, 1 NO)
0 = 1 NO (only SSR)

Coil version, EMR / Input version, SSR
0 = AC (50/60 Hz)/DC
3 = Leakage current suppression AC (50/60 Hz)
7 = DC sensitive
8 = AC (50/60 Hz)

Coil voltage, EMR / Input voltage, SSR
See page 16

D: Special Version, EMR
0 = Standard

C: Options, EMR
6 = Standard

B: Contact circuit, EMR
0 = CO (except 39.21, 1 NO)

A: Contact material, EMR
0 = AgNi Standard
4 = $AgSnO_2$
5 = AgNi + Au (5 µm)

ABCD: Output version, SSR
7048 = 0.1 A - 48 V DC
8240 = 2 A - 230 V AC
9024 = 2 A - 24 V DC

EMR - Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

Type	Coil version	A	B	C	D
39.11	0.006 - 0.012	**0** - 4 - 5	**0**	**6**	**0**
	0.024 - 8.230				
39.31	0.006 - 0.012	**0** - 4 - 5	**0**	**6**	**0**
	0.024 - 0.060				
	0.125 - **8.230**				
	7.125 - 7.220				
	3.125 - 3.230				
39.41	0.006 - 0.012	**0** - 4 - 5	**0**	**6**	**0**
	0.024 - 0.125				
	8.230				
39.21	0.006 - 0.012	**0** - 4 - 5	**0**	**6**	**0**
	0.024 - 0.125				
	8.230				
39.81	0.012 - **0.024**	**0**	**0**	**6**	**0**

SSR - Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

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Technical data

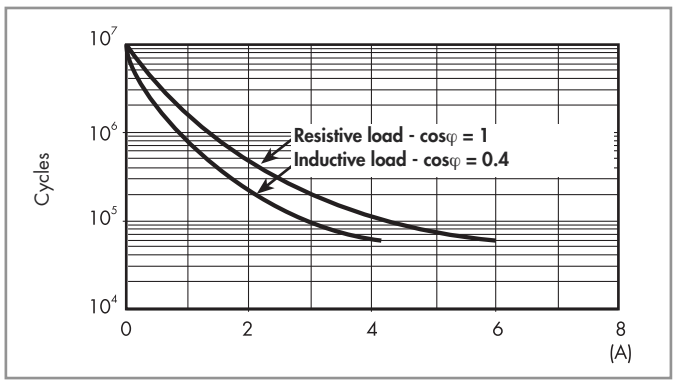
Insulation according to EN 61810-1				
Nominal voltage of supply system		V AC	230/400	
Rated insulation voltage		V AC	250	400
Pollution degree			3	2
Insulation between coil and contact set				
Type of Insulation			Reinforced	
Overvoltage category			III	
Rated impulse voltage		kV (1.2/50) µs	6	
Dielectric strength		V AC	4,000	
Insulation between open contacts (EMR)				
Type of disconnection			Micro-disconnection	
Dielectric strength		V AC / kV (1.2/50) µs	1,000 / 1.5	

Conducted disturbance immunity		**$U_N \leq 60$ V**	**$U_N = 125$ V**	**$U_N = 230$ V**
Fast transients (burst 5/50 ns, 5 kHz) according to EN 61000-4-4 at supply terminals	kV	4	4	4
Voltage pulses (surge 1.2/50 µs) according to EN 61000-4-5 at supply terminals (differential mode)	kV	0.8	2	4

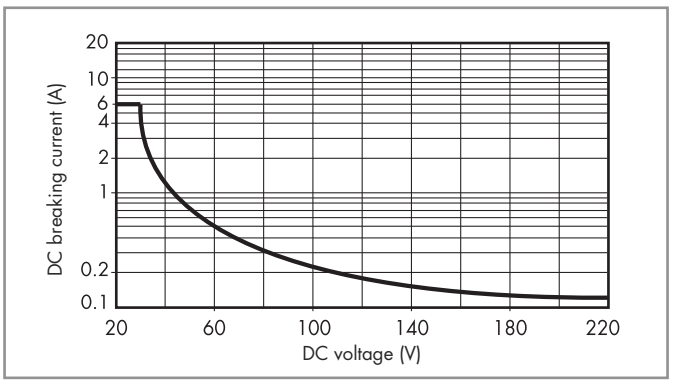
Other data			
Bounce time (EMR) : NO/NC		ms	1/6
Vibration resistance (EMR,10..55 Hz): NO/NC		g	10/15
Power lost to the environment	without contact current	W	0.2 (24 V) – 0.4 (230 V)
	with rated current	W	0.6 (24 V) – 0.9 (230 V)
Terminals			
Wire strip length		mm	10
Screw torque		Nm	0.5
			Solid and stranded cable
Max. wire size		mm^2	1 x 2.5 / 2 x 1.5
		AWG	1 x 14 / 2 x 16
Min. wire size		mm^2	1 x 0.2
		AWG	1 x 24

Contact specification (EMR)

F 39 - Electrical life (AC) v contact current



H 39 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $60 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load. Note: the release time for the load will be increased.

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Coil specifications - Electromechnical Relay

Coil data sensitive DC, type 39.31

Nominal Voltage	Coil code	Operating range		Must drop-out voltage	Rated input current at U_N	Rated power
U_N		U_{min}	U_{max}	U_r	I_N	at U_N
V		V	V	V	mA	W
125 (110...125)	**7**.125	88	138	12.5	4.6	0.6
220	**7**.220	176	242	22	3.0	0.6

Coil data AC/DC, type 39.11/21/31/41

Nominal Voltage	Coil code	Operating range		Must drop-out voltage	Rated input current at U_N	Rated power
U_N		U_{min}	U_{max}	U_r	I_N	at U_N
V		V	V	V	mA	VA/W
6	**0**.006	4.8	6.6	0.6	35	0.2/0.2
12	**0**.012	9.6	13.2	1.5	15	0.2/0.2
24	**0**.024	19.2	26.4	2.4	11	0.25/0.25
60[1]	**0**.060	48	66	6.0	5.7	0.35/0.35
125[2] (110...125)	**0**.125	88	138	12.5	5.6	0.7/0.7

[1] 60 V AC/DC for type 39.31 only
[2] 125 V AC/DC for types 39.21/31/41 only

Coil data AC, type 39.11/21/31/41

Nominal Voltage	Coil code	Operating range		Must drop-out voltage	Rated input current at U_N	Rated power
U_N		U_{min}	U_{max}	U_r	I_N	at U_N
V		V	V	V	mA	VA/W
230 (230...240)	**8**.230	184	264	23	4.3	1/0.4

Coil data leakage current suppression versions, type 39.31.3

Nominal Voltage	Coil code	Operating range		Must drop-out voltage	Rated input current at U_N	Rated power
U_N		U_{min}	U U_{max}	U_r	I_N	at U_N
V		V	V	V	mA	VA/W
125 (110...125)	**3**.125	88	138	44	8.4	1.1/1
230 (230...240)	**3**.230	184	264	72	5.9	1.4/0.5

The 39 Series interface modules (supply version 3) have built-in leakage current suppression to address industry concerns of the contacts not dropping-out when there is residual current in the circuit; at (110...125)V AC and (230...240)V AC. This problem can occur, for example, when connecting the interface modules to PLC,s with triac outputs or when connecting via relatively long cables.

Coil data AC/DC timer, type 39.81

Nominal Voltage	Coil code	Operating range (AC/DC)		Must drop-out voltage	Rated input current at U_N		Rated power at U_N	
U_N		U_{min}	U_{max}	U_r	DC	AC	DC	AC
V		V	V	V	mA	mA	W	VA/W
12	**0**.012	9.6	13.2	1.2	15	23	0.2	0.3/0.2
24	**0**.024	19.2	26.4	2.4	11	19	0.25	0.4/0.3

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Input specifications - Solid State Relay

Input data sensitive DC, type 39.10/20/30/40

Nominal Voltage U_N	Input code	Operating range U_{min}	Operating range U_{max}	Must drop-out voltage U_r	Rated input current at U_N I_N	Rated power at U_N
V		V	V	V	mA	W
6	**7**.006	4.8	6.6	0.6	7.5	0.2
12	**7**.012	9.6	13.2	1.2	20.7	0.25
24 (1)	**7**.024	19.2	26.4	2.4	10.5	0.25
60 (2)	**7**.060	48	66	6.0	6.4	0.4
125 (2) (110...125)	**7**.125	88	138	12.5	4.6	0.6
220 (2)	**7**.220	176	242	22	3.0	0.6

(1) 24 V DC for type 39.10/20/30 only
(2) 60 V DC, 125 V DC and 220 V DC for type 39.30 only

Input data AC/DC, type 39.20/30/40

Nominal Voltage U_N	Input code	Operating range U_{min}	Operating range U_{max}	Must drop-out voltage U_r	Rated input current at U_N I_N	Rated power at U_N
V		V	V	V	mA	VA/W
24 (3)	**0**.024	19.2	26.4	2.4	17.5	0.4/0.3
125 (110...125)	**0**.125	88	138	12.5	5.5	0.7/0.7

(3) 24 V AC/DC for type 39.30/40 only

Input data AC, type 39.10/20/30/40

Nominal Voltage U_N	Input code	Operating range U_{min}	Operating range U_{max}	Must drop-out voltage U_r	Rated input current at U_N I_N	Rated power at U_N
V		V	V	V	mA	VA/W
230 (230...240)	**8**.230	184	264	23	4.2	1/0.4

Input data leakage current suppression versions, type 39.30.3

Nominal Voltage U_N	Input code	Operating range U_{min}	Operating range U U_{max}	Must drop-out voltage U_r	Rated input current at U_N I_N	Rated power at U_N
V		V	V	V	mA	VA/W
125 (110...125)	**3**.125	88	138	44	8.4	1.1/1
230 (230...240)	**3**.230	184	264	72	5.9	1.4/0.5

The 39 Series interface modules (supply version 3) have built-in leakage current suppression to address industry concerns of the contacts not dropping-out when there is residual current in the circuit; at (110...125)V AC and (230...240)V AC. This problem can occur, for example, when connecting the interface modules to PLC,s with triac outputs or when connecting via relatively long cables.

Input data AC/DC timer, type 39.80

Nominal Voltage U_N	Input code	Operating range (AC/DC) U_{min}	Operating range (AC/DC) U_{max}	Must drop-out voltage U_r	Rated input current at U_N DC	Rated input current at U_N AC	Rated power at U_N DC	Rated power at U_N AC
V		V	V	V	mA	mA	W	VA/W
12	**0**.012	9.6	13.2	1.2	15	23	0.2	0.3/0.2
24	**0**.024	19.2	26.4	2.4	11	19	0.25	0.4/0.3

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Timer specifications

EMC specifications			
Type of test		**Reference standard**	
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV
	air discharge	EN 61000-4-2	8 kV
Radio-frequency electromagnetic field	(80 ÷ 1,000 MHz)	EN 61000-4-3	10 V/m
	(1,400 ÷ 2,700 MHz)	EN 61000-4-3	10 V/m
Fast transients (burst) (5-50 ns, 5 and 100 kHz)	on Supply terminals	EN 61000-4-4	4 kV
	on control signal terminals	EN 61000-4-4	4 kV
Surges (1.2/50 µs) on supply and control signal terminals	common mode	EN 61000-4-5	2 kV
	differential mode	EN 61000-4-5	0.8 kV
Radio-frequency common mode (0.15 ÷ 80 MHz)	on Supply terminals	EN 61000-4-6	10 V
	on control signal terminals	EN 61000-4-6	3 V
Radiated and conducted emission		EN 55022	class B

Other data			
Bounce time (EMR) : NO/NC		ms	1/6
Vibration resistance (EMR,10..55 Hz): NO/NC		g	10/15
Power lost to the environment	without contact current	W	0.3
	with rated current	W	0.8

Terminals		
Wire strip length	mm	10
Screw torque	Nm	0.5
		Solid and stranded cable
Max. wire size	mm^2	1 x 2.5 / 2 x 1.5
	AWG	1 x 14 / 2 x 16
Min. wire size	mm^2	1 x 0.2
	AWG	1 x 24

Times scales



(0.1...3)s | (3...60)s | (1...20)min | (0.3...6)h

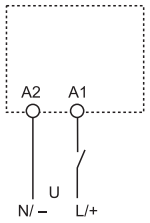
Functions

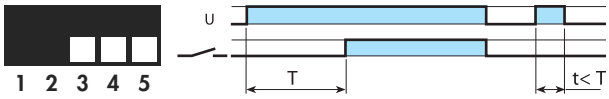
LED	Supply voltage	NO contact/output
	OFF	Open
	ON	Open
	ON	Open (timing to close in progress)
	ON	Closed

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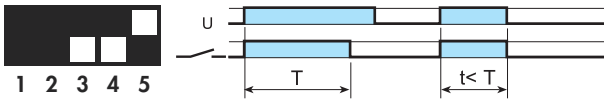
Wiring diagram | **U** = Supply voltage | **S** = Signal switch | = Output contact

Without control signal

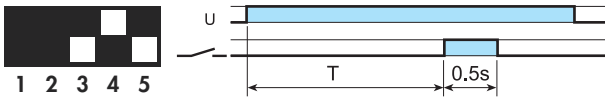




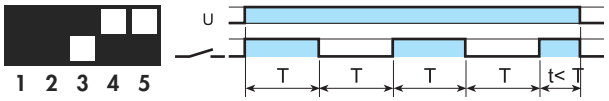
(AI) On-delay
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.



(DI) Interval
Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.

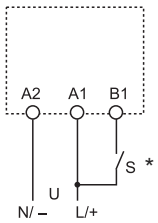


(GI) Pulse (0.5s) delayed
Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs after a fixed time of 0.5s.

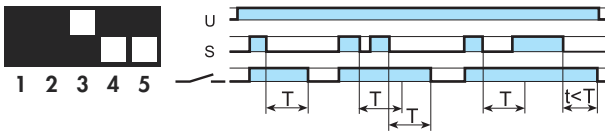


(SW) Symmetrical flasher (starting pulse on)
Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).

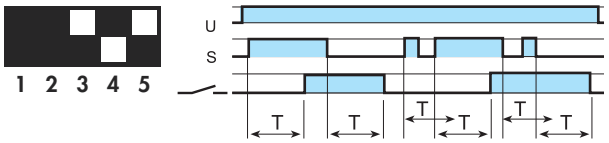
With control signal



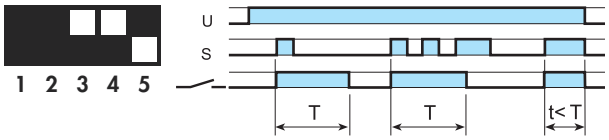
01*With DC supply, positive polarity has to be conneted to B1, terminal (according to EN 60204-1).



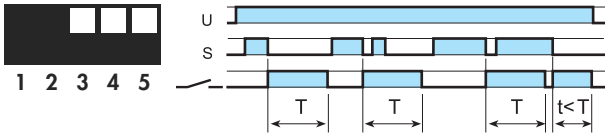
(BE) Off-delay with control signal
Power is permenently applied to the timer. The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.



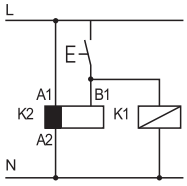
(CE) On- and off-delay with control signal
Power is permenently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which time the output contacts transfer. Opening the Signal switch initiates the same preset delay, after which time the output contacts reset.



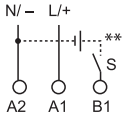
(DE) Interval with control signal on
Power is permenently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.



(EE) Interval with control signal off
Power is permenently applied to the timer. On opening of the Signal Switch (S) the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.



- Possible to control an external load, such as another relay coil or timer, connected to the control signal terminal B1.



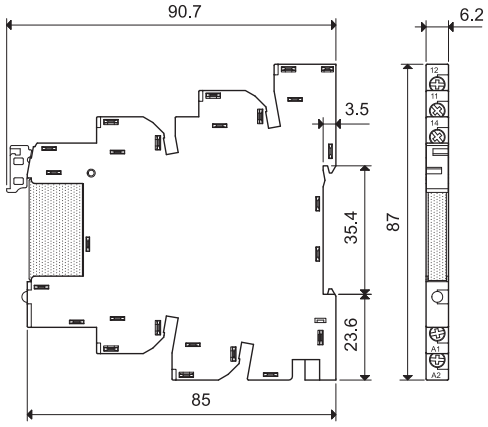
** A voltage other than the supply voltage can be applied to the command Start (B1), example:
A1 - A2 = 24 V AC
B1 - A2 = 12 V DC

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Outline drawings

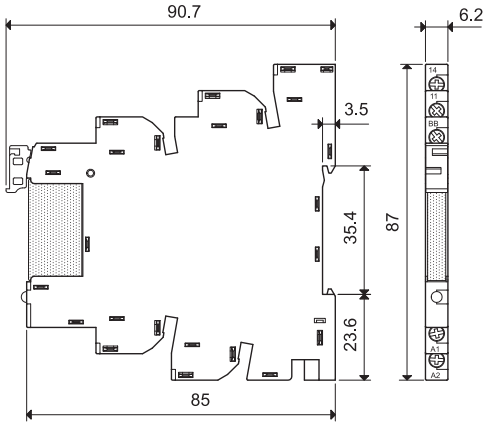
39.10
39.11
Screw terminal





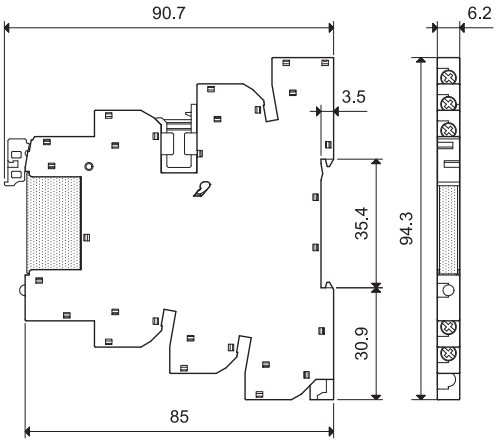
39.20
39.21
Screw terminal





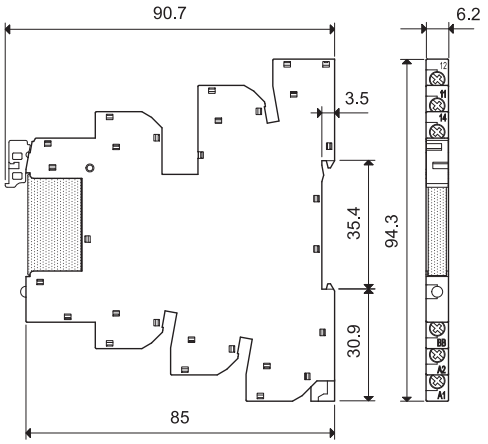
39.30 / 39.30.3
39.31 / 39.31.3
Screw terminal





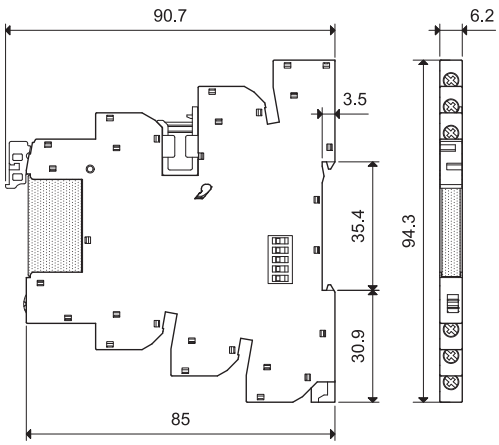
39.40
39.41
Screw terminal





39.80
39.81
Screw terminal





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Electromechanical Relay (1 Pole 6 A) & Socket Combinations

Interface Module Code	Coil voltage	Relay	Socket
*Master**BASIC***			
39.11.0.006.0060	6 V AC/DC	34.51.7.005.0010	93.61.7.024
39.11.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.61.7.024
39.11.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.61.7.024
39.11.8.230.0060	(230...240)V AC	34.51.7.060.0010	93.61.8.230
*Master**PLUS***			
39.31.0.006.0060	6 V AC/DC	34.51.7.005.0010	93.63.7.024
39.31.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.63.7.024
39.31.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.63.7.024
39.31.0.060.0060	60 V AC/DC	34.51.7.060.0010	93.63.7.060
39.31.0.125.0060	(110...125)V AC/DC	34.51.7.060.0010	93.63.0.125
39.31.8.230.0060	(230...240)V AC	34.51.7.060.0010	93.63.8.230
39.31.7.125.0060	(110...125)V DC	34.51.7.060.0010	93.63.7.125
39.31.7.220.0060	220 V DC	34.51.7.060.0010	93.63.7.220
39.31.3.125.0060	(110...125)V AC	34.51.7.060.0010	93.63.3.125
39.31.3.230.0060	(230...240)V AC	34.51.7.060.0010	93.63.3.230
*Master**INPUT***			
39.41.0.006.5060	6 V AC/DC	34.51.7.005.5010	93.64.0.024
39.41.0.012.5060	12 V AC/DC	34.51.7.012.5010	93.64.0.024
39.41.0.024.5060	24 V AC/DC	34.51.7.024.5010	93.64.0.024
39.41.0.125.5060	(110...125) V AC/DC	34.51.7.060.5010	93.64.0.125
39.41.8.230.5060	(230...240)V AC	34.51.7.060.5010	93.64.8.230
*Master**OUTPUT***			
39.21.0.006.0060	6 V AC/DC	34.51.7.005.0010	93.62.7.024
39.21.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.62.7.024
39.21.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.62.7.024
39.21.0.125.0060	(110...125) V AC/DC	34.51.7.060.0010	93.62.0.125
39.21.8.230.0060	(230...240)V AC	34.51.7.060.0010	93.62.8.230
*Master**TIMER***			
39.81.0.012.0060	12 V AC/DC	34.51.7.012.0010	93.68.0.024
39.81.0.024.0060	24 V AC/DC	34.51.7.024.0010	93.68.0.024

Solid State Relay (1 Pole 0.1 or 2 A) & Socket Combinations

Interface Module Code	Input voltage	Relay	Socket
*Master**BASIC***			
39.10.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.61.7.024
39.10.7.012.xxxx	12 V DC	34.81.7.012.xxxx	93.61.7.024
39.10.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.61.7.024
39.10.8.230.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.61.8.230
*Master**PLUS***			
39.30.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.63.7.024
39.30.7.012.xxxx	12 V DC	34.81.7.012.xxxx	93.63.7.024
39.30.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.63.7.024
39.30.7.060.xxxx	60 V DC	34.81.7.060.xxxx	93.63.7.060
39.30.7.125.xxxx	(110...125)V DC	34.81.7.060.xxxx	93.63.7.125
39.30.7.220.xxxx	220 V DC	34.81.7.060.xxxx	93.63.7.220
39.30.0.024.xxxx	24 V AC/DC	34.81.7.024.xxxx	93.63.0.024
39.30.0.125.xxxx	(110...125)V AC/DC	34.81.7.060.xxxx	93.63.0.125
39.30.8.230.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.63.8.230
39.30.3.125.xxxx	(110...125)V AC	34.81.7.060.xxxx	93.63.3.125
39.30.3.230.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.63.3.230
*Master**INPUT***			
39.40.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.64.0.024
39.40.7.012.xxxx	12 V DC	34.81.7.012.xxxx	93.64.0.024
39.40.0.024.xxxx	24 V AC/DC	34.81.7.024.xxxx	93.64.0.024
39.40.0.125.xxxx	(110...125) V AC/DC	34.81.7.060.xxxx	93.64.0.125
39.40.8.230.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.64.8.230
*Master**OUTPUT***			
39.20.7.006.xxxx	6 V DC	34.81.7.005.xxxx	93.62.7.024
39.20.7.012.xxxx	12 V DC	34.81.7.012.xxxx	93.62.7.024
39.20.7.024.xxxx	24 V DC	34.81.7.024.xxxx	93.62.7.024
39.20.0.125.xxxx	(110...125) V AC/DC	34.81.7.060.xxxx	93.62.0.125
39.20.8.230.xxxx	(230...240)V AC	34.81.7.060.xxxx	93.62.8.230
*Master**TIMER***			
39.80.0.012.xxxx	12 V AC/DC	34.81.7.012.xxxx	93.68.0.024
39.80.0.024.xxxx	24 V AC/DC	34.81.7.024.xxxx	93.68.0.024

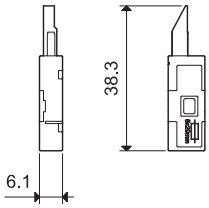
Example: .xxxx
.9024
.7048
.8240

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Accessories



093.63



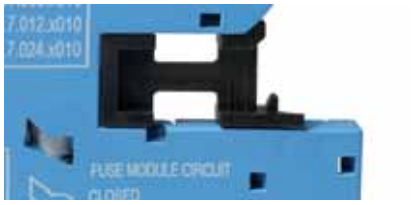
Output fuse module for 39.31/30/81/80 types | 093.63

- For 5 x 20 mm fuses up to 6 A, 250 V
- Easy visibility of the fuse condition through the window
- Quick connection to socket

Multi-state fuse module

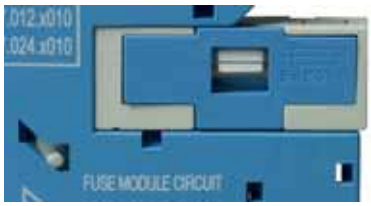
0. As delivered, the socket comes without a fuse module. However, the absent fuse is internally replaced with an electrical link - which allows the interface relay to be used without a fuse module.
In this state, the peg/indicator is visually hidden and the connection is protected by a special cap.





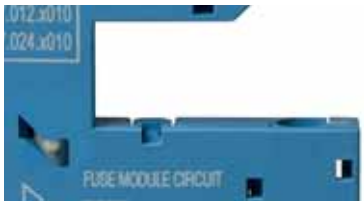
1. With fuse module inserted after removing the cap, the fuse is positioned electrically in series with the common output terminal of the interface module (11 for EMR versions, 13+ for SSR versions, 15 for EMR timer, 15+ for SSR timer).
This state is indicated by the peg/indicator.





2. If the fuse module is extracted (for example; because the fuse element has blown) the output circuit will be locked open, as this will generally be the "safe option".
This state is indicated by the peg/indicator.





3. In order to reinstate the output circuit it is necessary to either re-insert the fuse module (complete with functional fuse), or alternatively, return the peg/indicator to position **0** by gently applying pressure in the direction of the arrow.





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Accessories



093.16

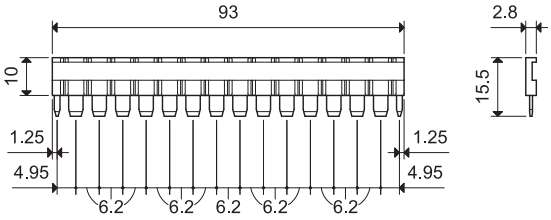


093.16.0



093.16.1

16-way jumper link	093.16 (blue)	093.16.0 (black)	093.16.1 (red)
Rated values	36 A - 250 V		
Possibility of multiple connection, side by side			



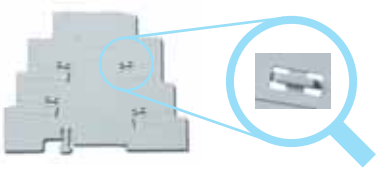


093.60



Dual-purpose plastic separator (1.8 mm or 6.2 mm separation)	093.60

1. By breaking off the protruding ribs (by hand), the separator becomes only 1.8 mm thick; useful for the visual separation of different groups of interfaces, or necessary for the protective separation of different voltages of neighbouring interfaces, or for the protection of cut ends of jumper links.



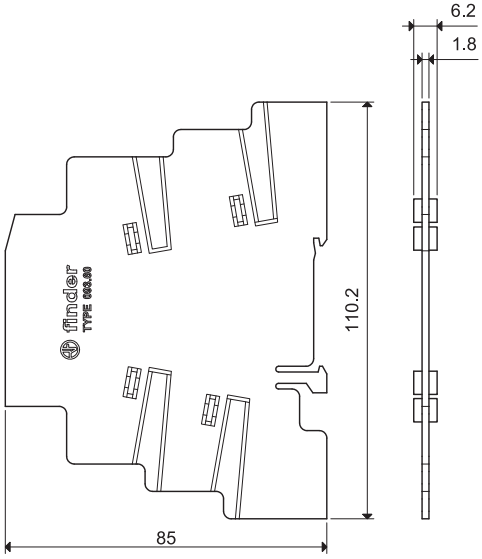


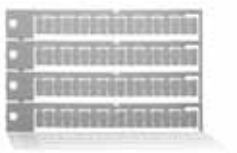


2. Leaving the ribs in place provides 6.2mm separation. Simply cutting (with scissors) the relevant segment(s) permits the interconnection across the separator of 2 different groups of interface relays, using the standard jumper link.









060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm	060.72

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Accessories



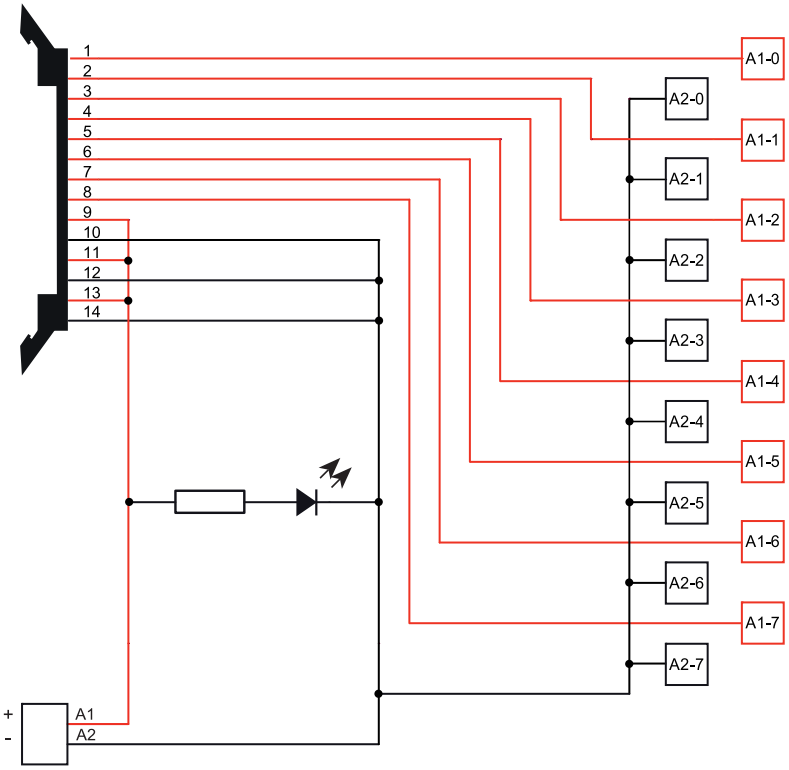
093.68



Connected *MasterADAPTER*

MasterADAPTER for the input of 8 ***MasterINTERFACE*** modules			093.68.14.1
The ***MasterADAPTER*** allows to connect 8 ***MasterINTERFACE*** modules with the power supply by wire and through a 14-pole flat ribbon cable which has to be connected with the output of the PLC.			
Techincal data			
Rated current (per signal path)		A	1
Minimum required supply power		W	3
Nominal voltage (U_N)		V DC	24
Operating range			(0.8...1.1) U_N
Control logic			Plus switching (positive on A1)
Power supply status indication			Green LED
Ambient temperature range		°C	–40...+70
Terminals for 24 V power supply			
Type of connector			14 pole, according to IEC 60603-13
Terminals for 24 V power supply			
Wire strip length		mm	9.5
Screw torque		Nm	0.5
Max. wire size			
	solid wire	mm^2	1 x 4 / 2 x 1.5
		AWG	1 x 12 / 2 x 16
	stranded wire	mm^2	1 x 2.5 / 2 x 1.5
		AWG	1 x 14 / 2 x 16

Wiring diagram



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Features

2 Pole Safety relay interface modules, 15.8 mm wide

48.12 - 2 Pole 8 A (screw terminal)

- DC sensitive coils
- Relay with forcibly guided contacts according to EN 50205 Type B
- 35 mm rail (EN 60715) mounting

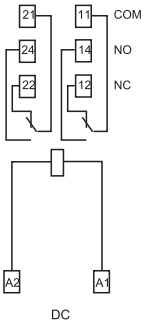
48.12
Screw terminal



48.12



- 2 pole, 8 A
- Safety relay
- Screw terminal
- 35 mm rail (EN 60715) mounting



According to EN 50205 only 1 NO and 1 NC (11-14 and 21-22 or 11-12 and 21-24) shall be used as forcibly guided contacts.

For outline drawing see page 7

Contact specification		
Contact configuration		2 CO (DPDT)
Rated current/Maximum peak current	A	8/15
Rated voltage/Maximum switching voltage	V AC	250/400
Rated load AC1	VA	2,000
Rated load AC15 (230 V AC)	VA	500
Single phase motor rating (230 V AC)	kW	0.37
Breaking capacity DC1: 30/110/220V	A	8/0.65/0.2
Minimum switching load	mW (V/mA)	300 (5/5)
Standard contact material		AgNi
Coil specification		
Nominal voltage (U_N)	V AC (50/60 Hz)	–
	V DC	12 - 24
Rated power AC/sens. DC	VA (50 Hz)/W	–/0.7
Operating range	AC	–
	sens. DC	(0.75...1.2)U_N
Holding voltage	AC/DC	– /0.4 U_N
Must drop-out voltage	AC/DC	– /0.1 U_N
Technical data		
Mechanical life AC/DC	cycles	–/10 · 10^6
Electrical life at rated load AC1	cycles	100 · 10^3
Operate/release time	ms	10/4
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)
Dielectric strength between open contacts	V AC	1,500
Ambient temperature range	°C	–40...+70
Protection category		IP 20
Approvals relay (according to type)		CE EAC cULus

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Features

1 & 2 Pole relay interface modules, 15.8 mm wide

Ideal interface for PLC and electronic systems

48.31 - 1 Pole 10 A (screw terminal)
48.52 - 2 Pole 8 A (screw terminal)
48.72 - 2 Pole 8 A (screwless terminal)

- AC coils or DC sensitive coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and EMC coil suppression module as standard
- Identification label
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

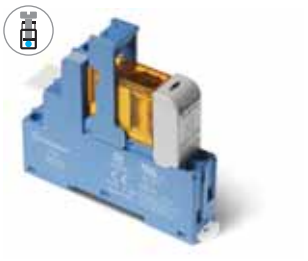
48.31 / 48.52
Screw terminal



48.72
Screwless terminal

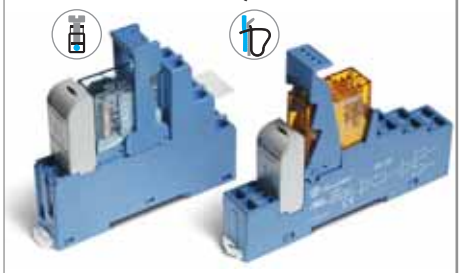


48.31

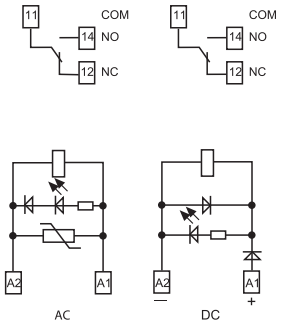


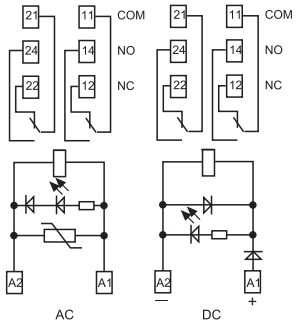
- 1 pole, 10 A
- Screw terminal
- 35 mm rail (EN 60715) mounting

48.52/72



- 2 pole, 8 A
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting





For outline drawing see page 7

Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	10/20	8/15
Rated voltage/Maximum switching voltage	V AC	250/400	250/250
Rated load AC1	VA	2,500	2,000
Rated load AC15 (230 V AC)	VA	500	400
Single phase motor rating (230 V AC)	kW	0.37	0.3
Breaking capacity DC1: 30/110/220V	A	10/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/sens. DC	VA (50 Hz)/W	1.2/0.5	1.2/0.5
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	sens. DC	$(0.73...1.75)U_N$	$(0.73...1.75)U_N$
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6/20 \cdot 10^6$	$10 \cdot 10^6/20 \cdot 10^6$
Electrical life at rated load AC1	cycles	$200 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	7/4 (AC) - 12/12 (DC)	7/4 (AC) - 12/12 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Features

1 & 2 Pole relay interface modules, 15.8 mm wide

Ideal interface for PLC and electronic systems

48.61 - 1 Pole 16 A (screw terminal)
48.81 - 1 Pole 16 A (screwless terminal)
48.62 - 2 Pole 10 A (screw terminal)
48.82 - 2 Pole 10 A (screwless terminal)

- AC coils or DC sensitive coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and EMC coil suppression module as standard
- Identification label
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

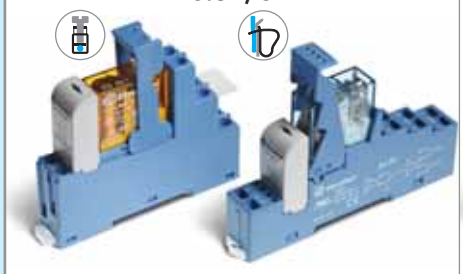
48.61 / 48.62
Screw terminal



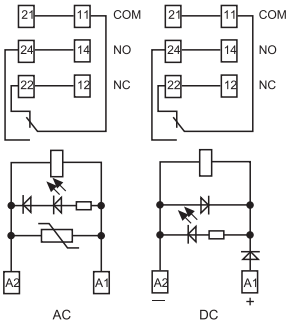
48.81 / 48.82
Screwless terminal



48.61/81

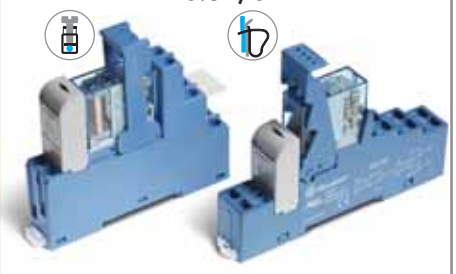


- 1 pole, 16 A
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting

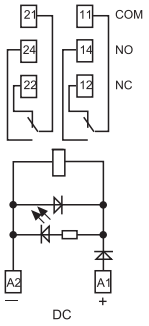


* For currents >10 A, contact terminals must be connected in parallel (21 with 11, 24 with 14, 22 with 12).

48.62/82



- 2 pole, 10 A
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



For outline drawing see page 7

Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	16*/30	10/20
Rated voltage/Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	4,000	2,500
Rated load AC15 (230 V AC)	VA	750	500
Single phase motor rating (230 V AC)	kW	0.55	0.37
Breaking capacity DC1: 30/110/220V	A	16/0.3/0.12	10/0.3/0.12
Minimum switching load	mW (V/mA)	500 (10/5)	300 (5/5)
Standard contact material		AgCdO	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	–
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/sens. DC	VA (50 Hz)/W	1.2/0.5	–/0.5
Operating range	AC	$(0.8...1.1)U_N$	–
	sens. DC	$(0.8...1.5)U_N$	$(0.8...1.5)U_N$
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	–/0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	–/0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6/20 \cdot 10^6$	$-/20 \cdot 10^6$
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	7/4 (AC) - 12/12 (DC)	12/12 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Ordering information

Example: 48 series, 35 mm rail (EN 60715) mount, screw terminal relay interface module, 2 CO (DPDT) 8 A contacts, 24 V sensitive DC coil, green LED + diode, 99.02 coil indication.

								A	B	C	D	
4	8	.	5	2	.	7	.	0	0	5	0	

Series

Type
Screw terminal
- 1 = 35 mm rail (EN 60715) mount, safety relay
- 3 = 35 mm rail (EN 60715) mount
- 5 = 35 mm rail (EN 60715) mount
- 6 = 35 mm rail (EN 60715) mount

Screwless terminal
- 7 = 35 mm rail (EN 60715) mount
- 8 = 35 mm rail (EN 60715) mount

No. of poles
- 1 = 1 pole for 48.31, 10 A; 48.61,48.81, 16 A
- 2 = 2 pole for 48.12, 48.52, 48.72, 8 A; 48.62, 48.82, 10 A (48.62, 48.82 DC only)

Coil version
- 7 = Sensitive DC
- 8 = AC (50/60 Hz)
- 9 = DC

Coil voltage
See coil specifications

A: Contact material
- 0 = Standard AgNi for 48.31/52/62/72/82 AgCdO, Standard for 48.61/81
- 1= AgNi, for 48.12
- 4 = $AgSnO_2$, for 48.61/62/81/82 only
- 5 = AgNi + Au (5 µm), for 48.31/52/72 only

B: Contact circuit
- 0 = CO (nPDT)

D: Special versions
- 0 = Standard
- 2 = Standard (for 48.12 only)

C: Options
- 0 = Standard (for 48.12 only)
- 5 = Standard for DC: green LED + diode (polarity +A1)
- 6 = Standard for AC: green LED + Varistor

Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

Type	Coil version	A	B	C	D
48.12	DC	**1**	**0**	**0**	**2**
48.31/52/72	AC	**0** - 5	0	**6**	0
48.31/52/72	Sensitive DC	**0** - 5	0	**5**	0
48.61/81	AC	**0** - 4	0	**6**	0
48.61/81	Sensitive DC	**0** - 4	0	**5**	0
48.62/82	Sensitive DC	**0** - 4	0	**5**	0

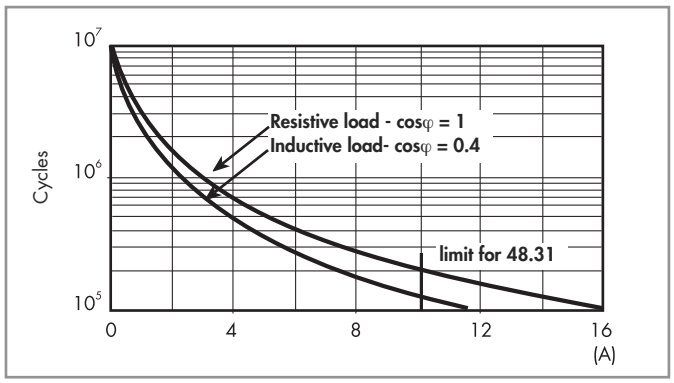
Technical data

Insulation			**48.12/31/61/62**	**48.52/72**	**48.12/31/61/62/81/82**	
Insulation according to EN 61810-1	insulation rated voltage	V	250	250	400	
	rated impulse withstand voltage	kV	4	4	4	
	pollution degree		3	2	2	
	overvoltage category		III	III	III	
Insulation between coil and contacts (1.2/50 µs)		kV	6 (8 mm)			
Dielectric strength between open contacts		V AC	1,000; 1,500 (48.12)			
Dielectric strength between adjacent contacts		V AC	2,000 (48.52); 2,500 (48.12/62)			
Conducted disturbance immunity						
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4		level 4 (4 kV)	
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5		level 3 (2 kV)	
Other data						
Bounce time: NO/NC		ms	2/5; 2/10 (48.12)			
Vibration resistance (5...55)Hz: NO/NC		g	10/4 (for 1 pole)		15/3; 20/6 (48.12) for 2 pole	
Power lost to the environment	without contact current	W	0.7			
	with rated current	W	1.2 (48.12/31)	1.3 (48.52/72)	1.2 (48.61/62/81/82)	
Wire strip length		mm	8			
Screw torque		Nm	0.5			
Max. wire size			**Screw terminal**		**Screwless terminal**	
			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x6 / 2x2.5	1x4 / 2x2.5	2x(0.2...1.5)	2x(0.2...1.5)
		AWG	1x10 / 2x14	1x12 / 2x14	2x(24...18)	2x(24...18)

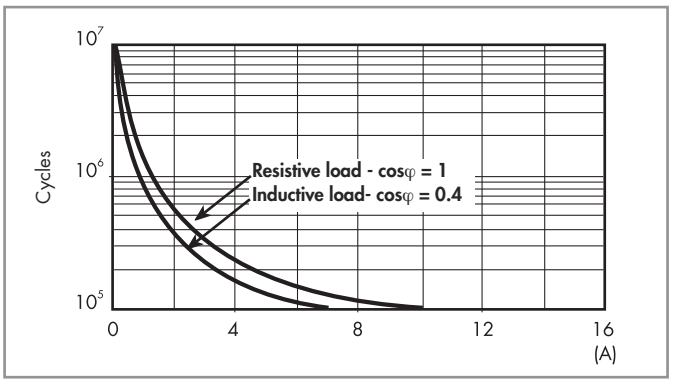
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Contact specification

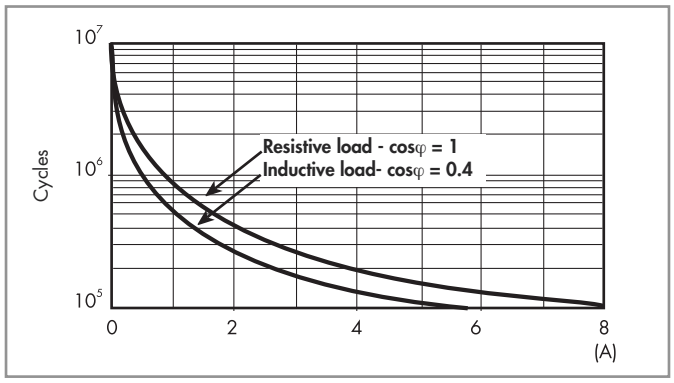
F 48 - Electrical life (AC) v contact current
Types 48.31/61/81



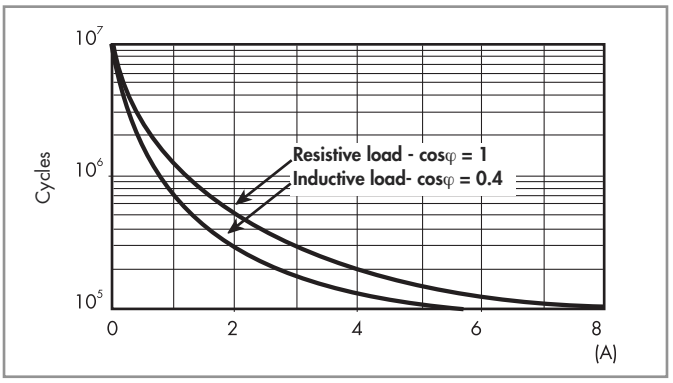
F 48 - Electrical life (AC) v contact current
Types 48.62/82



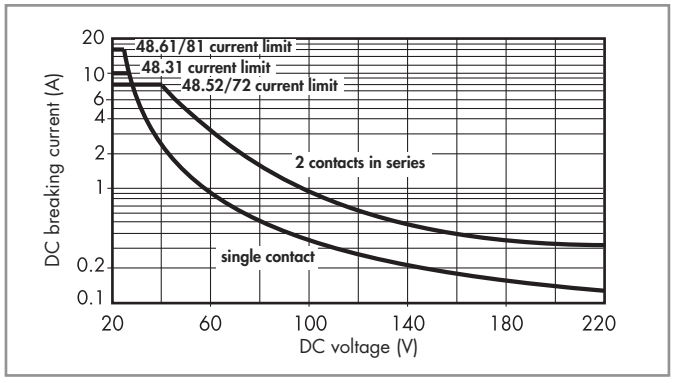
F 48 - Electrical life (AC) v contact current
Types 48.52/72



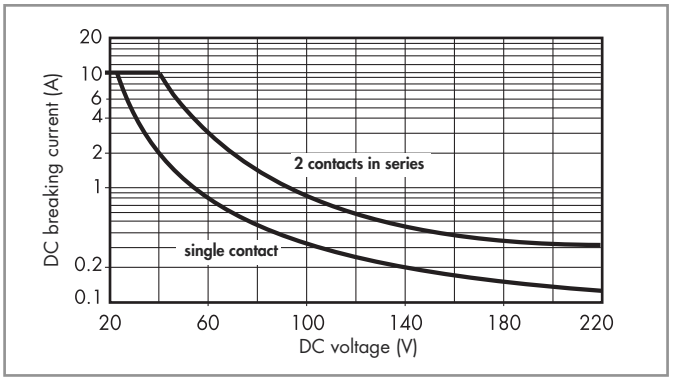
F 48 - Electrical life (AC) v contact current
Type 48.12



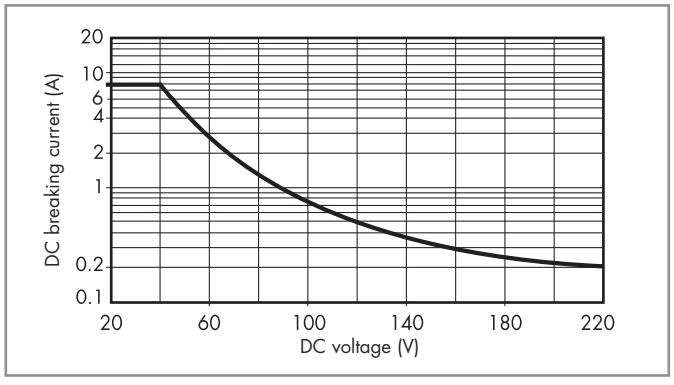
H 48 - Maximum DC1 breaking capacity
Types 48.31/52/61/72/81



H 48 - Maximum DC1 breaking capacity
Types 48.62/82



H 48 - Maximum DC1 breaking capacity
Type 48.12



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time for the load will be increased.

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Coil specifications

DC coil data (0.5 W sensitive)

Nominal voltage U_N	Coil code	Operating range U_{min}*	Operating range U_{max}**	Rated coil consumption I at U_N
V		V	V	mA
12	**7**.012	8.8	21	41
24	**7**.024	17.5	42	22.2
125	**7**.125	91	219	4

*U_{min} = 0.8 U_N for 48.61, 48.62, 48.81 and 48.82
**U_{max} = 1.5 U_N for 48.61, 48.62, 48.81 and 48.82

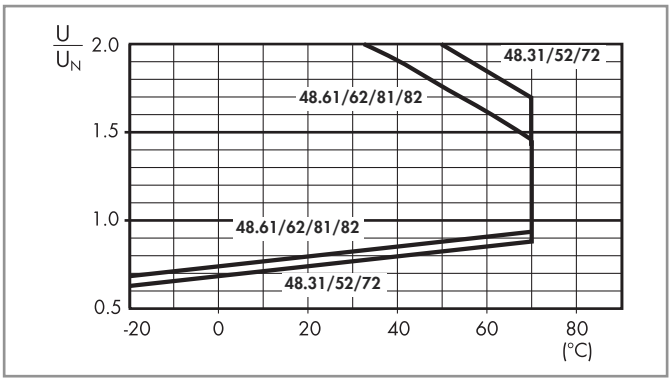
AC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N (50Hz)
V		V	V	mA
12	**8**.012	9.6	13.2	90.5
24	**8**.024	19.2	26.4	46
110	**8**.110	88	121	10.1
120	**8**.120	96	132	11.8
230	**8**.230	184	253	7.0

DC coil data, 2 pole relay - Type 48.12

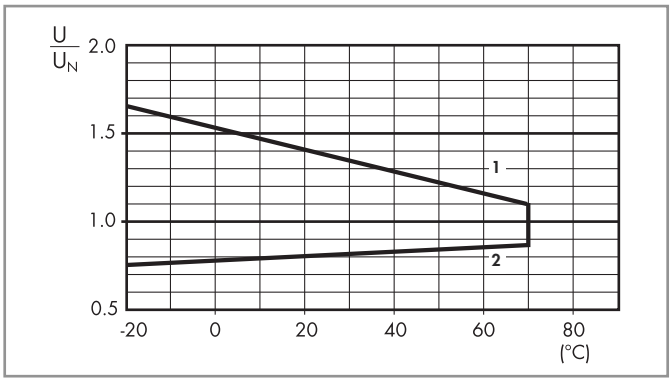
Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
12	**9**.012	9	14.4	205	58.5
24	**9**.024	18	28.8	820	29.3

R 48 - DC coil operating range v ambient temperature



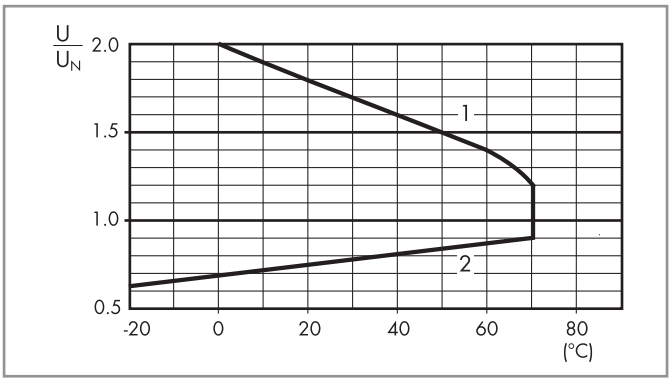
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

R 48 - AC coil operating range v ambient temperature



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

R 48 - DC coil operating range v ambient temperature
Type 48.12



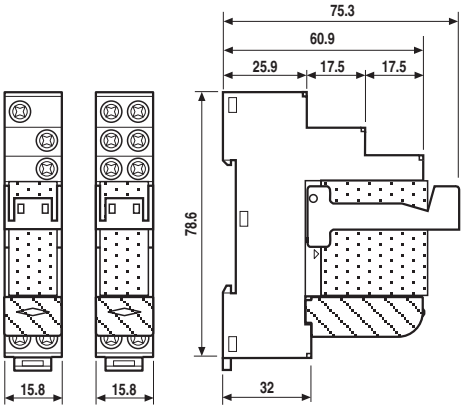
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

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Combinations

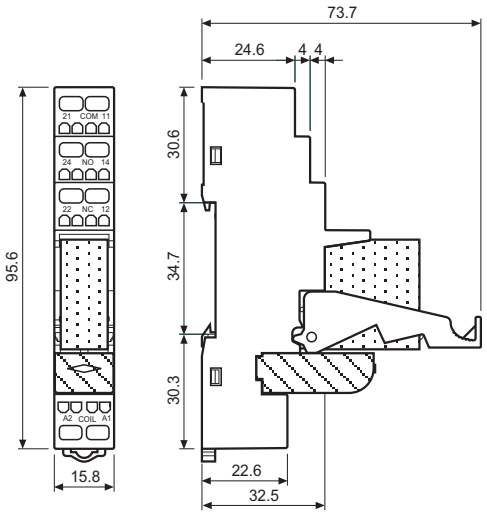
Code	Type of socket	Type of relay	Module	Retaining clip
48.12	95.05.0	50.12	–	095.71
48.31	95.03	40.31	99.02	095.01
48.52	95.05	40.52	99.02	095.01
48.61	95.05	40.61	99.02	095.01
48.62	95.05	44.62	99.02	095.01
48.72	95.55	40.52	99.02	095.91.3
48.81	95.55	40.61	99.02	095.91.3
48.82	95.55	44.62	99.02	095.91.3

Outline drawing



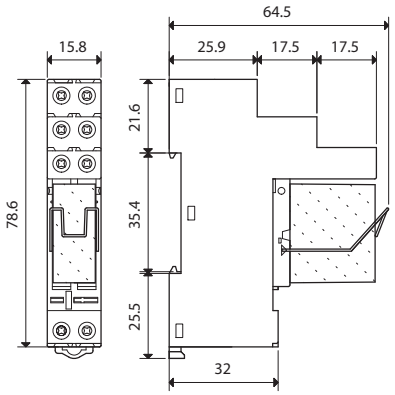
48.31 48.52 / 48.61 / 48.62
Screw terminal





48.72 / 48.81 / 48.82
Screwless terminal



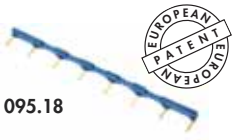


48.12
Screw terminal



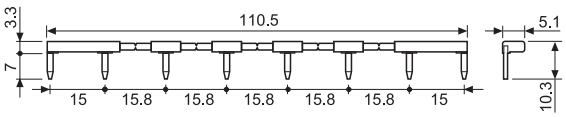
Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
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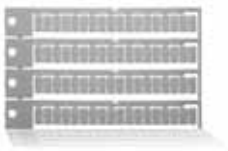
Accessories



095.18

8-way jumper link for screw terminal version	095.18 (blue)	095.18.0 (black)
Rated values	10 A - 250 V	





060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm	060.72

Packaging codes

How to code and identify retaining clip and packaging options for sockets.

Example:

4	8	.	5	2	.	7	.	0	2	4	.	0	0	5	0	S	P	A

- **A** Standard packaging
- **B** Blister packaging
- **SP** Plastic retaining clip

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Features

1 & 2 Pole relay interface modules

5 µm Gold plate contacts for low level switching capability

49.31-50x0 - 1 Pole 10 A (screw terminal)
49.52-50x0 - 2 Pole 8 A (screw terminal)
49.72-50x0 - 2 Pole 8 A (screwless terminal)

- 15.5 mm wide
- Ideal interface for PLC and electronic systems
- AC coils & DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module
- Identification labels
- 35 mm rail (EN 60715) mounting

49.31-50x0 / 49.52
Screw terminal



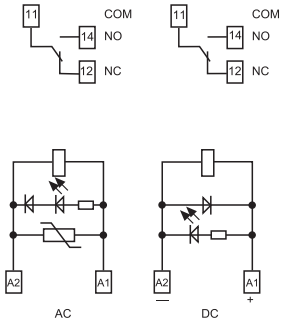
49.72-50x0
Screwless terminal



49.31-50x0

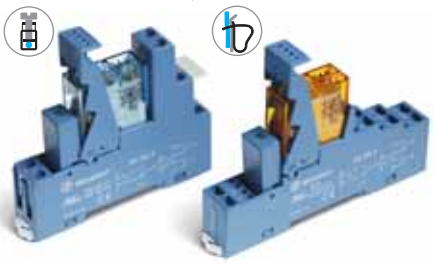


- 1 pole, 10 A
- AgNi + Au (5 µm) contact material
- Screw terminal
- 35 mm rail (EN 60715) mounting

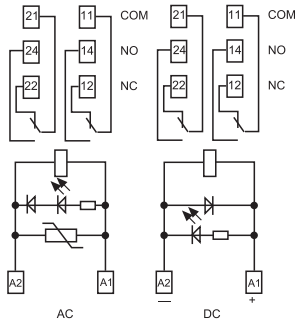


8.xxx0060
7.xxx.0050
9.xxx.0050

49.52/72-50x0



- 2 pole, 8 A
- AgNi + Au (5 µm) contact material
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



8.xxx0060
7.xxx.0050
9.xxx.0050

* By external parallel connection of the contacts the values within [1 (0.1/1)] can be acheived.

For outline drawing see page 8

Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	10/20	8/15
Rated voltage/Maximum switching voltage	V AC	250/400	250/250
Rated load AC1	VA	2,500	2,000
Rated load AC15 (230 V AC)	VA	500	400
Single phase motor rating (230 V AC)	kW	0.37	0.3
Breaking capacity DC1: 30/110/220V	A	10/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	50 (5/2)	50 (5/2) - [1 (0.1/1)]*
Standard contact material		AgNi + Au (5 µm)	AgNi + Au (5 µm)
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC/sens.DC	VA (50 Hz)/W/W	1.2/0.65/0.5	1.2/0.65/0.5
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC/sensitiv DC	$(0.73...1.5)U_N/(0.73...1.7)U_N$	$(0.73...1.5)U_N/(0.73...1.7)U_N$
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6/20 \cdot 10^6$	$10 \cdot 10^6/20 \cdot 10^6$
Electrical life at rated load AC1	cycles	$150 \cdot 10^3$	$150 \cdot 10^3$
Operate/release time	ms	7/4 (AC) - 12/12 (DC)	7/4 (AC) - 12/12 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Features

1 & 2 Pole relay interface modules

AgNi contacts for medium duty switching

49.31-00x0 - 1 Pole 10 A (screw terminal)
49.52-00x0 - 2 Pole 8 A (screw terminal)
49.72-00x0 - 2 Pole 8 A (screwless terminal)

- 15.5 mm wide
- Ideal interface for PLC and electronic systems
- AC coils & DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module
- Identification labels
- 35 mm rail (EN 60715) mounting

49.31-00x0 / 49.52
Screw terminal



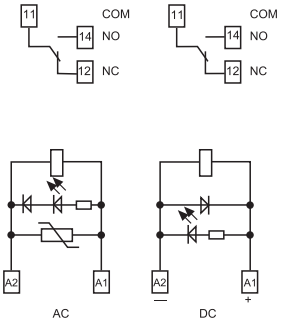
49.72-00x0
Screwless terminal



49.31-00x0



- 1 pole, 10 A
- AgNi contact material
- Screw terminal
- 35 mm rail (EN 60715) mounting

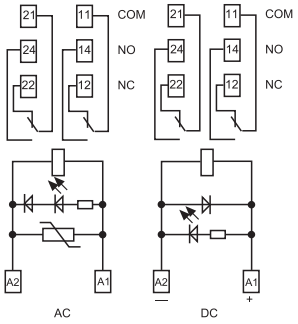


8.xxx0060 | 7.xxx.0050 9.xxx.0050

49.52/72-00x0



- 2 pole, 8 A
- AgNi contact material
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



8.xxx0060 | 7.xxx.0050 9.xxx.0050

For outline drawing see page 8

Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	10/20	8/15
Rated voltage/Maximum switching voltage	V AC	250/400	250/250
Rated load AC1	VA	2,500	2,000
Rated load AC15 (230 V AC)	VA	500	400
Single phase motor rating (230 V AC)	kW	0.37	0,3
Breaking capacity DC1: 30/110/220V	A	10/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC/sens.DC	VA (50 Hz)/W/W	1.2/0.65/0.5	1.2/0.65/0.5
Operating range	AC	(0.8...1.1)U_N	(0.8...1.1)U_N
	DC/sensitiv DC	(0.73...1.5)U_N/(0.73...1.7)U_N	(0.73...1.5)U_N/(0.73...1.7)U_N
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6$/$20 \cdot 10^6$	$10 \cdot 10^6$/$20 \cdot 10^6$
Electrical life at rated load AC1	cycles	$200 \cdot 10^3$	$150 \cdot 10^3$
Operate/release time	ms	7/4 (AC) - 12/12 (DC)	7/4 (AC) - 12/12 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Features

1 & 2 Pole relay interface modules

AgCdO contacts for heavy duty switching

49.31-20x0 - 1 Pole 10 A (screw terminal)
49.52-20x0 - 2 Pole 8 A (screw terminal)
49.72-20x0 - 2 Pole 8 A (screwless terminal)

- 15.5 mm wide
- Ideal interface for PLC and electronic systems
- AC coils & DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module
- Identification labels
- 35 mm rail (EN 60715) mounting

49.31-20x0 / 49.52
Screw terminal



49.72-20x0
Screwless terminal

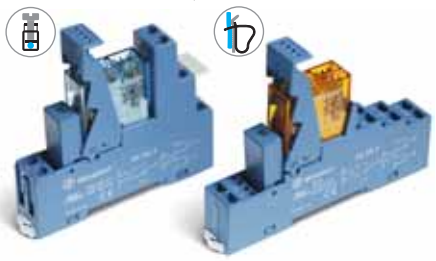


49.31-20x0

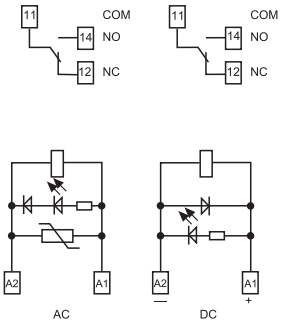


- 1 pole, 10 A
- AgCdO contact material
- Screw terminal
- 35 mm rail (EN 60715) mounting

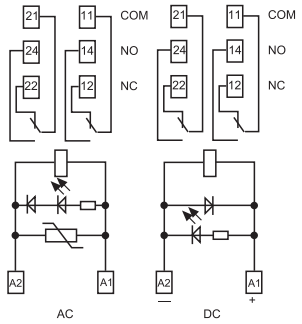
49.52/72-20x0



- 2 pole, 8 A
- AgCdO contact material
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



8.xxx0060
7.xxx.0050
9.xxx.0050



8.xxx0060
7.xxx.0050
9.xxx.0050

For outline drawing see page 8

Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	10/20	8/15
Rated voltage/Maximum switching voltage	V AC	250/400	250/250
Rated load AC1	VA	2,500	2,000
Rated load AC15 (230 V AC)	VA	500	400
Single phase motor rating (230 V AC)	kW	0.37	0.3
Breaking capacity DC1: 30/110/220V	A	10/0.3/0.12	8/0.3/0.12
Minimum switching load	mW (V/mA)	500 (10/5)	500 (10/5)
Standard contact material		AgCdO	AgCdO
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC/sens.DC	VA (50 Hz)/W/W	1.2/0.65/0.5	1.2/0.65/0.5
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC/sensitiv DC	$(0.73...1.5)U_N/(0.73...1.75)U_N$	$(0.73...1.5)U_N/(0.73...1.75)U_N$
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6/20 \cdot 10^6$	$10 \cdot 10^6/20 \cdot 10^6$
Electrical life at rated load AC1	cycles	$200 \cdot 10^3$	$150 \cdot 10^3$
Operate/release time	ms	7/4 (AC) - 12/12 (DC)	7/4 (AC) - 12/12 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Features

1 Pole relay interface module

AgCdO contacts for heavy duty switching

49.61-20x0 - 1 Pole 16 A (screw terminal)
49.81-20x0 - 1 Pole 16 A (screwless terminal)

$AgSnO_2$ contacts for heavy duty, high current inrush switching

49.61-40x0 - 1 Pole 16 A (screw terminal)
49.81-40x0 - 1 Pole 16 A (screwless terminal)

- 15.5 mm wide
- Ideal interface for PLC and electronic systems
- AC coils & DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module
- Identification labels
- 35 mm rail (EN 60715) mounting

49.61
Screw terminal

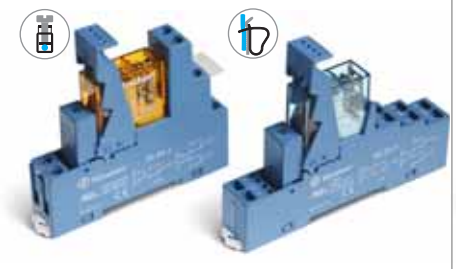


49.81-20x0/40x0
Screwless terminal

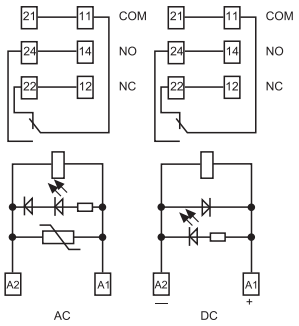


For outline drawing see page 8

49.61/81-20x0



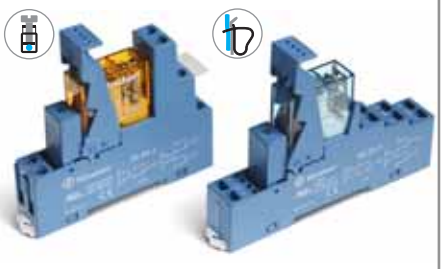
- 1 pole, 16 A*
- AgCdO contact material
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



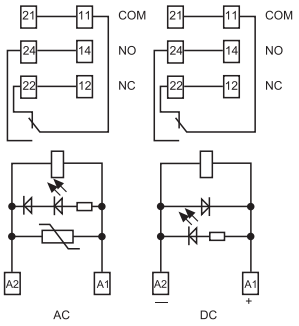
8.xxx0060 7.xxx.0050 9.xxx.0050

* For currents >10 A, contact terminals must be connected in parallel (21 with 11, 24 with 14, 22 with 12).

49.61/81-40x0



- 1 pole, 16 A*
- $AgSnO_2$ contact material
- Screw terminal and screwless terminal
- 35 mm rail (EN 60715) mounting



8.xxx0060 7.xxx.0050 9.xxx.0050

* For currents >10 A, contact terminals must be connected in parallel (21 with 11, 24 with 14, 22 with 12).

Contact specification			
Contact configuration		1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current	A	16*/30	16*/100 (5 ms)
Rated voltage/Maximum switching voltage	V AC	250/400	250/400
Rated load AC1	VA	4,000	4,000
Rated load AC15 (230 V AC)	VA	750	750
Single phase motor rating (230 V AC)	kW	0.55	0.55
Breaking capacity DC1: 30/110/220V	A	16/0.3/0.12	16/0.3/0.12
Minimum switching load	mW (V/mA)	500 (5/5)	1,000 (10/10)
Standard contact material		AgCdO	$AgSnO_2$
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC/sens.DC	VA (50 Hz)/W/W	1.2/0.65/0.5	1.2/0.65/0.5
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC/sensitiv DC	$(0.73...1.5)U_N/(0.8...1.5)U_N$	$(0.73...1.5)U_N/(0.8...1.5)U_N$
Holding voltage	AC/DC	$0.8\ U_N\ /0.4\ U_N$	$0.8\ U_N\ /0.4\ U_N$
Must drop-out voltage	AC/DC	$0.2\ U_N\ /0.1\ U_N$	$0.2\ U_N\ /0.1\ U_N$
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6/20 \cdot 10^6$	$10 \cdot 10^6/20 \cdot 10^6$
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	7/4 (AC) - 12/12 (DC)	7/4 (AC) - 12/12 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70
Protection category		IP 20	IP 20
Approvals relay (according to type)			

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Ordering information

Example: 49 series, 35 mm rail (EN 60715) mount screw terminal relay interface module, 2 CO (DPDT) 8 A contacts, 24 V sensitive DC coil, green LED + diode (polarity +A1), 99.80 coil indication.

4 9	.	5	2	.	7	.	0 2 4	.	A: 0	B: 0	C: 5	D: 0

Series

Type
3, 5, 6 = 35 mm rail (EN 60715) mount, screw terminal
7, 8 = 35 mm rail (EN 60715) mount, screwless terminal

No. of poles
1 = 1 pole for 49.31, 10 A
49.61, 49.81, 16 A
2 = 2 pole for 49.52, 49.72, 8 A

Coil version
7 = Sensitive DC (500 mW)
8 = AC (50/60 Hz)
9 = DC (650 mW)

Coil voltage
See coil specifications

A: Contact material
0 = Standard AgNi for 49.31/52/72, AgCdO for 49.61/81
2 = AgCdO for 49.31/52/72
4 = $AgSnO_2$ for 49.61/81 only
5 = AgNi + Au (5 µm) not for 49.61/81

B: Contact circuit
0 = CO (nPDT)

D: Special versions
0 = Standard

C: Options
5 = Standard for DC: green LED + diode (polarity +A1)
6 = Standard for AC: green LED + Varistor

Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

Type	Coil version	A	B	C	D
49.31/52/72	AC	**0** - 2 - 5	0	**6**	0
49.31/52/72	DC - sens. DC	**0** - 2 - 5	0	**5**	0
49.61/81	AC	**0** - 4	0	**6**	0
49.61/81	DC - sens. DC	**0** - 4	0	**5**	0

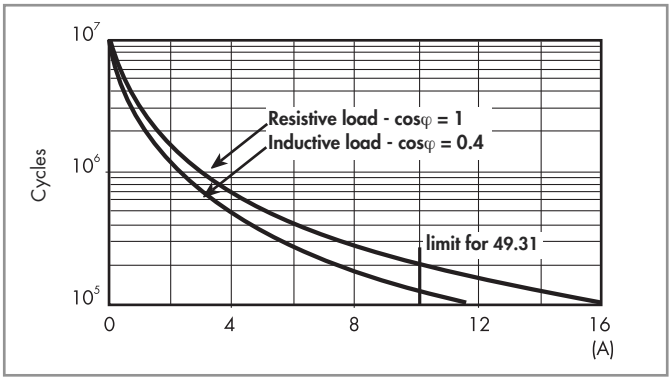
Technical data

Insulation			**49.31/61**	**49.52/72**	**49.31/61/81**	
Insulation according to EN 61810-1	insulation rated voltage	V	250	250	400	
	rated impulse withstand voltage	kV	4	4	4	
	pollution degree		3	2	2	
	overvoltage category		III	III	III	
Insulation between coil and contacts (1.2/50 µs)		kV	6 (8 mm)			
Dielectric strength between open contacts		V AC	1,000			
Dielectric strength between adjacent contacts		V AC	2,000 (49.52/72)			
Conducted disturbance immunity						
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4		level 4 (4 kV)	
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5		level 3 (2 kV)	
Other data						
Bounce time: NO/NC		ms	2/5			
Vibration resistance (5...55)Hz: NO/NC		g	10/4 (for 1 pole)		15/3 (for 2 pole)	
Power lost to the environment	without contact current	W	0.7			
	with rated current	W	1.2 (49.31/61/81)		1.3 (49.52/72)	
Wire strip length		mm	8			
Screw torque		Nm	0.5			
Max. wire size			**Screw terminal**		**Screwless terminal**	
			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x6 / 2x2.5	1x4 / 2x2.5	2x(0.2...1.5)	2x(0.2...1.5)
		AWG	1x10 / 2x14	1x12 / 2x14	2x(24...18)	2x(24...18)

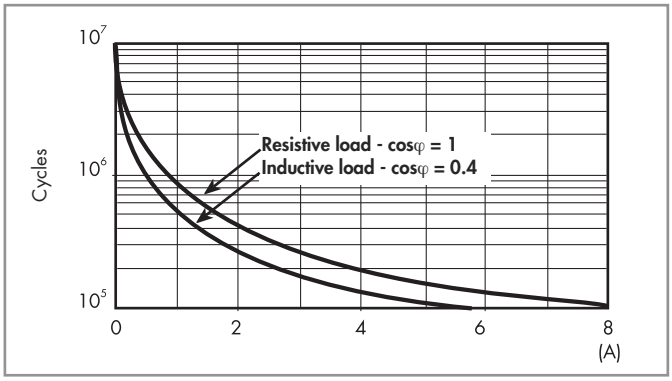
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Contact specification

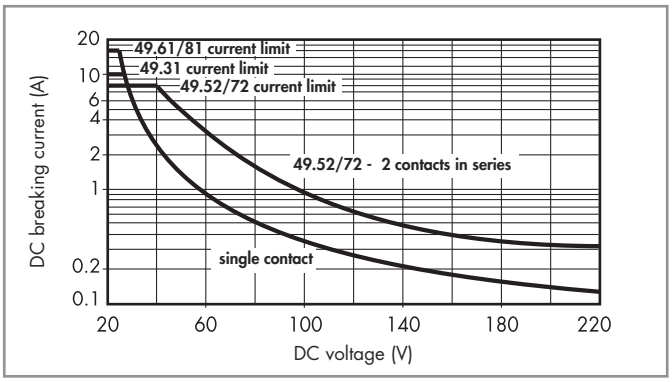
F 49 - Electrical life (AC) v contact current
Types 49.31/61/81



F 49 - Electrical life (AC) v contact current
Types 49.52/72



H 49 - Maximum DC1 breaking capacity
Types 49.31/52/61/72/81



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time for the load will be increased.

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Coil specifications

DC coil data (0.5 W sensitive)

Nominal voltage U_N	Coil code	Operating range U_{min}*	Operating range U_{max}**	Rated coil consumption I at U_N
V		V	V	mA
12	**7**.012	8.8	21	41
24	**7**.024	17.5	42	22.2
125	**7**.125	91.2	219	4

*U_{min} = 0.8 U_N for 49.61 and 49.81
**U_{max} = 1.5 U_N for 49.61 and 49.81

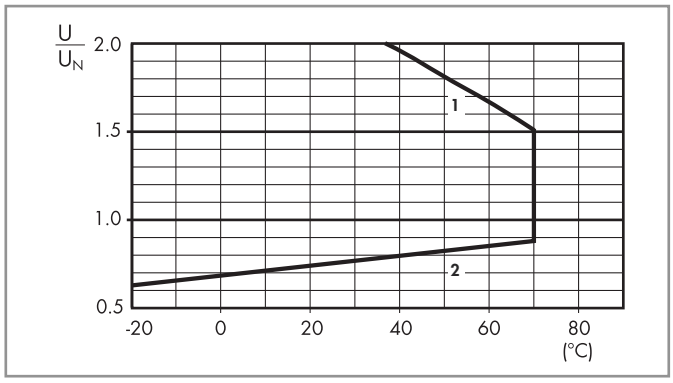
AC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N (50Hz)
V		V	V	mA
12	**8**.012	9.6	13.2	90.5
24	**8**.024	19.2	26.4	46
110	**8**.110	88	121	10.1
120	**8**.120	96	132	11.8
230	**8**.230	184	253	7.0

DC coil data (0.65 W)

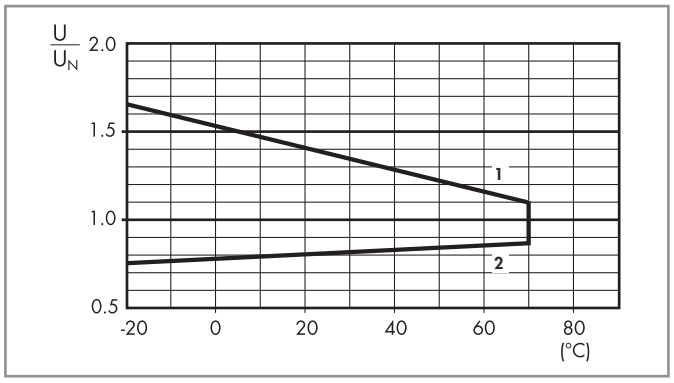
Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Rated coil consumption I at U_N
V		V	V	mA
12	**9**.012	8.8	18	56
24	**9**.024	17.5	36	29
125	**9**.125	91.2	188	6

R 49 - DC coil operating range v ambient temperature
Standard (650 mW)



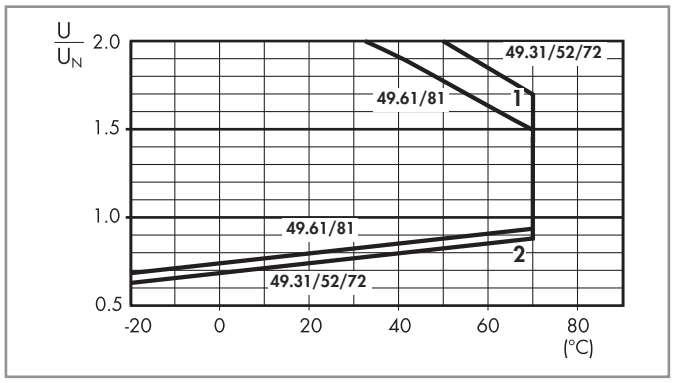
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

R 49 - AC coil operating range v ambient temperature



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

R 49 - DC coil operating range v ambient temperature
Sensitive coil (500 mW)



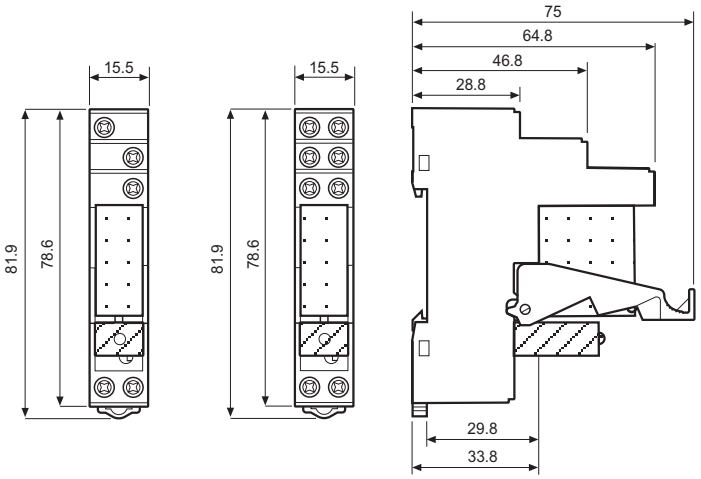
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

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Combinations

Code	Type of socket	Type of relay	Module	Retaining clip
49.31	95.93.3	40.31	99.80	095.91.3
49.52	95.95.3	40.52	99.80	095.91.3
49.61	95.95.3	40.61	99.80	095.91.3
49.72	95.55.3	40.52	99.80	095.91.3
49.81	95.55.3	40.61	99.80	095.91.3

Outline drawing

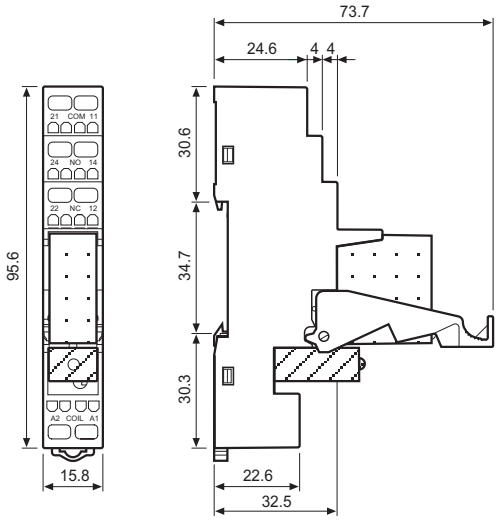


49.31

49.52
49.61

49.31-50x0 / 49.31-00x0 /
49.31-20x0 / 49.52 / 49.61
Screw terminal





49.72
49.81

49.72-50x0 / 49.72-00x0 / 49.72-20x0
49.81-20x0 / 49.81-40x0
Screwless terminal

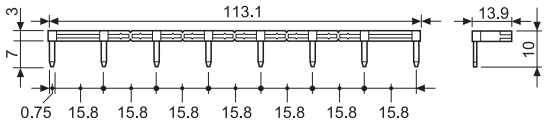


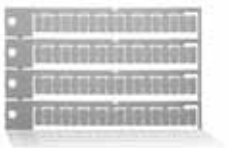
Accessories



095.08

8-way jumper link for screw terminal versions	095.08 (blue)	095.08.0 (black)
Rated values	10 A - 250 V	





060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm	060.72

Packaging codes

How to code and identify retaining clip and packaging options for sockets.

Example:

4	9	.	5	2	.	7	.	0	2	4	.	0	0	5	0	S	P	A

A Standard packaging
B Blister packaging

SP Plastic retaining clip

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Features

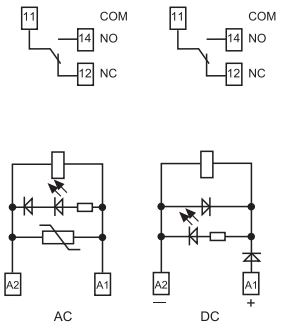
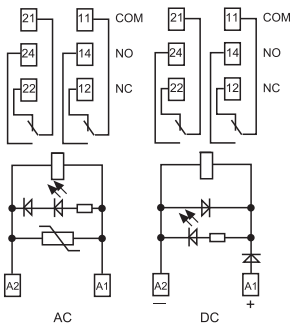
1 & 2 pole relay interface modules, screw terminal socket, 15.8 mm wide.

Ideal interface for PLC and electronic systems
4C.01 - 1 Pole 16 A
4C.02 - 2 Pole 8 A

- AC coils or DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module as standard
- Identification label
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

4C.01 / 4C.02
Screw terminal



4C.01	4C.02
	
• 1 pole, 16 A • Screw terminal connection • 35 mm rail (EN 60715) mounting	• 2 pole, 8 A • Screw terminal connection • 35 mm rail (EN 60715) mounting
	

For outline drawing of 4C.01/02 see page 5

		4C.01	4C.02
Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	16/25	8/15
Rated voltage/Maximum switching voltage	V AC	250/440	250/440
Rated load AC1	VA	4000	2000
Rated load AC15 (230 V AC)	VA	750	350
Single phase motor rating (230 V AC)	kW	0.55	0.37
Breaking capacity DC1: 30/110/220V	A	16/0.5/0.15	6/0.5/0.15
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC	VA (50 Hz)/W	1.2/0.5	1.2/0.5
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC	$(0.73...1.1)U_N$	$(0.73...1.1)U_N$
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	15/5 (AC) - 15/12 (DC)	10/3 (AC) - 10/10 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1000	1000
Ambient temperature range	°C	≤ 12A: –40...+70/>12A: –40...+50	–40...+70
Protection category		IP 20	IP 20
Approvals - relay (according to type)			

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Features

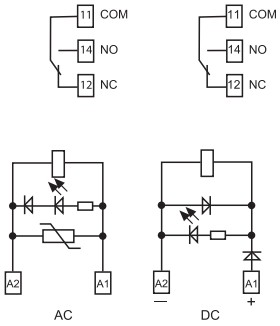
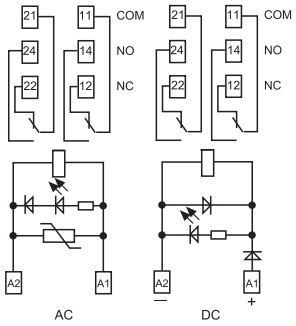
1 & 2 pole relay interface modules, screwless terminal socket, 15.8 mm wide.

Ideal interface for PLC and electronic systems
4C.51 - 1 Pole 10 A
4C.52 - 2 Pole 8 A

- AC coils or DC coils
- Instant ejection of relay using plastic retaining clip
- Supply status indication and coil suppression module as standard
- Identification label
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

4C.51 / 4C.52
Screwless terminal



4C.51	4C.52
	
• 1 pole, 10 A • Screwless terminal connections • 35 mm rail (EN 60715) mounting	• 2 pole, 8 A • Screwless terminal connections • 35 mm rail (EN 60715) mounting
	

For outline drawing of 4C.51/52 see page 5

		4C.51	4C.52
Contact specification			
Contact configuration		1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	10/20	8/15
Rated voltage/Maximum switching voltage	V AC	250/440	250/440
Rated load AC1	VA	2500	2000
Rated load AC15 (230 V AC)	VA	750	350
Single phase motor rating (230 V AC)	kW	0.55	0.37
Breaking capacity DC1: 30/110/220V	A	10/0.5/0.15	6/0.5/0.15
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi
Coil specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 110 - 120 - 230	12 - 24 - 110 - 120 - 230
	V DC	12 - 24 - 125	12 - 24 - 125
Rated power AC/DC	VA (50 Hz)/W	1.2/0.5	1.2/0.5
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC	$(0.73...1.1)U_N$	$(0.73...1.1)U_N$
Holding voltage	AC/DC	0.8 U_N /0.4 U_N	0.8 U_N /0.4 U_N
Must drop-out voltage	AC/DC	0.2 U_N /0.1 U_N	0.2 U_N /0.1 U_N
Technical data			
Mechanical life AC/DC	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$
Electrical life at rated load AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Operate/release time	ms	15/5 (AC) - 15/12 (DC)	10/3 (AC) - 10/10 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	6 (8 mm)	6 (8 mm)
Dielectric strength between open contacts	V AC	1000	1000
Ambient temperature range	°C	–25...+70	–25...+70
Protection category		IP 20	IP 20
Approvals - relay (according to type)			

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Ordering information

Example: 4C series, 35 mm rail (EN 60715) mount screw terminal relay interface module, 1 CO (SPDT) 16 A contacts, 24 V DC coil, green LED + diode.

4	C	.	0	1	.	9	.	0	2	4	.	A: 0	B: 0	C: 5	D: 0

Series

Type
0 = 35 mm rail (EN 60715) mount screw terminal socket
5 = 35 mm rail (EN 60715) mount screwless terminal socket

No. of poles
1 = 1 pole
2 = 2 pole

Coil version
8 = AC (50/60 Hz)
9 = DC

Coil voltage
See coil specifications

A: Contact material
0 = AgNi
4 = $AgSnO_2$
5 = AgNi + Au (5 µm)

B: Contact circuit
0 = CO (nPDT)

D: Special version
0 = Standard

C: Options
5 = Standard for DC: green LED + diode (polarity +A1)
6 = Standard for AC: green LED + Varistor

Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

Type	Coil version	A	B	C	D
4C.02	AC	**0** - 5	**0**	**6**	**0**
4C.52	DC	**0** - 5	**0**	**5**	**0**
4C.01	AC	**0** - 4 - 5	**0**	**6**	**0**
4C.51	DC	**0** - 4 - 5	**0**	**5**	**0**

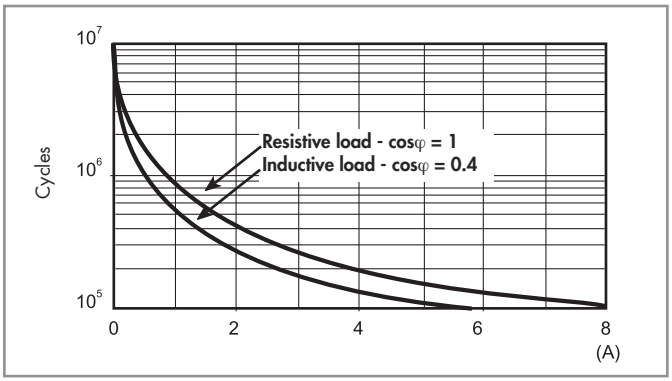
Technical data

Insulation						
Insulation according to EN 61810-1	insulation rated voltage	V	250		440	
	rated impulse withstand voltage	kV	4		4	
	pollution degree		3		2	
	overvoltage category		III		III	
Insulation between coil and contacts (1.2/50 µs)		kV	6 (8 mm)			
Dielectric strength between open contacts		V AC	1000			
Dielectric strength between adjacent contacts		V AC	2000			
Conducted disturbance immunity						
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4		level 4 (4 kV)	
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5		level 3 (2 kV)	
Other data						
Bounce time: NO/NC		ms	2/6 (4C.01/51)		1/4 (4C.02/52)	
Vibration resistance (10...150)Hz: NO/NC		g	20/12			
Power lost to the environment	without contact current	W	0.6			
	with rated current	W	1.6 (4C.01/51)		2 (4C.02/52)	
Terminals			**4C.01/4C.02**		**4C.51/4C.52**	
Wire strip length		mm	8		8	
Screw torque		Nm	0.8		–	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x6/2x2.5	1x4/2x2.5	2x(0.2...1.5)	2x(0.2...1.5)
		AWG	1x10/2x14	1x12/2x14	2x(24...18)	2x(24...18)

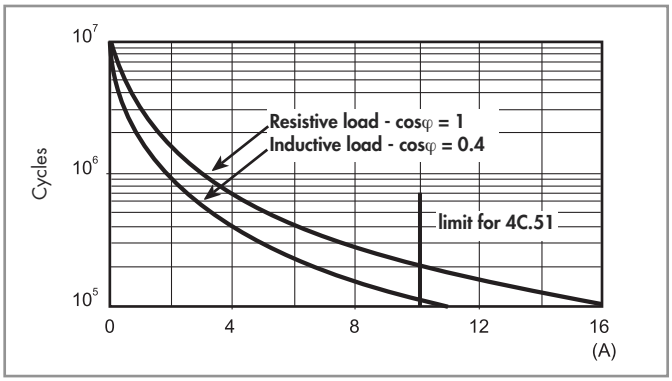
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Contact specification

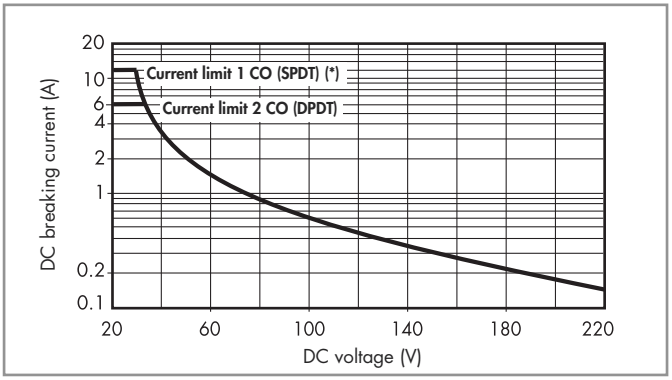
F 4C - Electrical life (AC) v contact current
Types 4C.02/52



F 4C - Electrical life (AC) v contact current
Types 4C.01/51



H 4C - Maximum DC1 breaking capacity



(*) Type 4C.01= 12 A, Type 4C.51= 10 A

- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ $100 \cdot 10^3$ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load. Note: the release time for the load will be increased.

Coil specifications

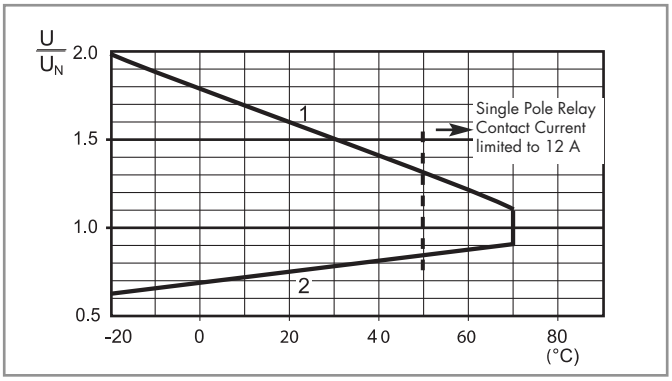
DC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
12	**9**.012	8.8	13.2	300	40
24	**9**.024	17.5	26.4	1,200	20
125	**9**.125	91.2	138	32,000	3.9

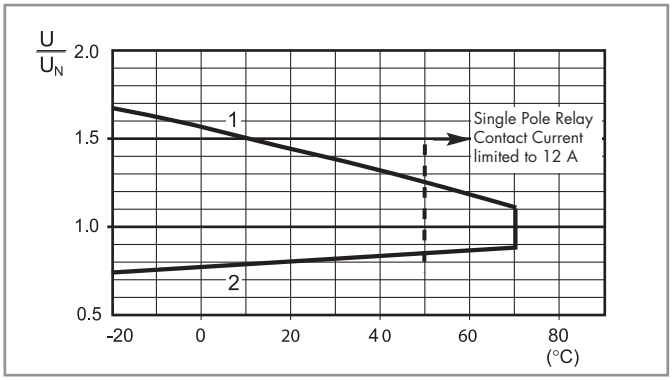
AC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil consumption I at U_N
V		V	V	Ω	mA
12	**8**.012	9.6	13.2	80	90
24	**8**.024	19.2	26.4	320	45
110	**8**.110	88	121	6,900	9.4
120	**8**.120	96	132	9,000	8.4
230	**8**.230	184	253	28,000	5

R 4C - DC coil operating range v ambient temperature



R 4C - AC coil operating range v ambient temperature



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

------ Temperature limit for the single pole version under full 16 A contact current.

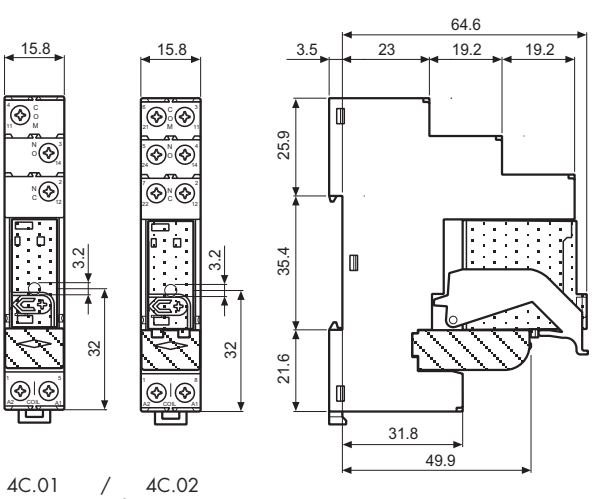
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Combinations

Certain relay/socket combinations

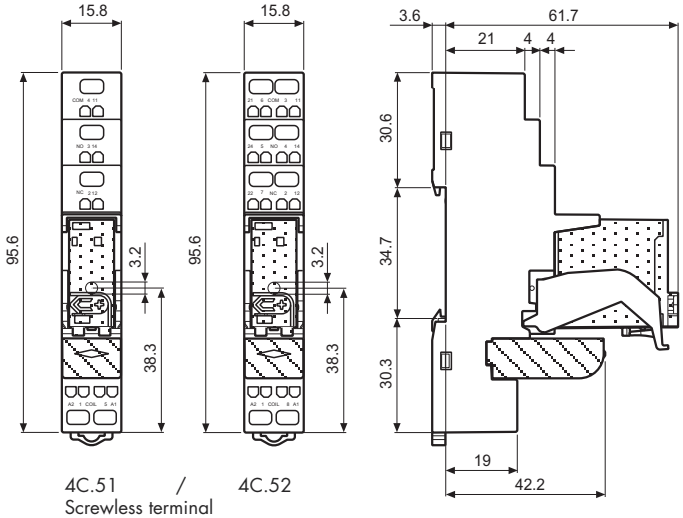
Code	Type of socket	Type of relay	Module	Retaining clip
4C.01	97.01	46.61	99.02	097.01
4C.02	97.02	46.52	99.02	097.01
4C.51	97.51	46.61	99.02	097.01
4C.52	97.52	46.52	99.02	097.01

Outline drawing



4C.01 / 4C.02
Screw terminal





4C.51 / 4C.52
Screwless terminal

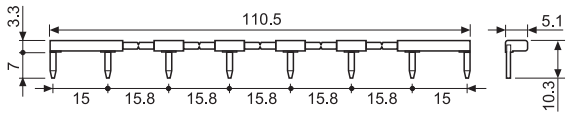


Accessories



095.18

8-way jumper link for 4C.01 and 4C.02	095.18 (blue)
Rated values	10 A - 250 V





060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm	060.72

Packaging code

How to code and identify retaining clip and packaging options for relay interface module.

Example:

4	C	.	0	1	.	9	.	0	2	4	.	0	0	5	0	S	P	A

A Standard packaging
B Blister packaging

SP Plastic retaining clip

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Features

2, 3 & 4 Pole relay interface modules, 27 mm wide.

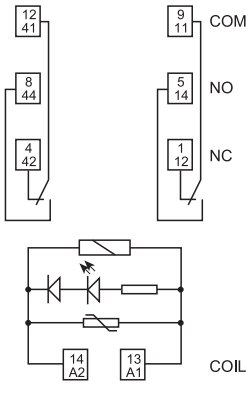
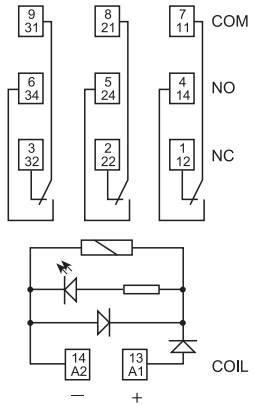
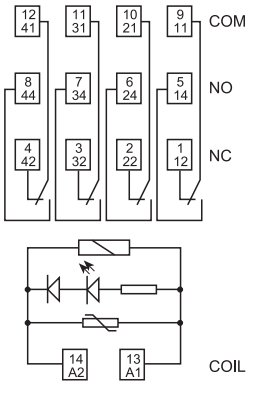
Ideal interface for PLC and electronic systems

58.32 - 2 Pole 10 A (screw terminals)
58.33 - 3 Pole 10 A (screw terminals)
58.34 - 4 Pole 7 A (screw terminals)

- AC coils and DC coils
- Supply status indication and coil suppression module as standard
- Identification label
- Cadmium Free contacts
- UL Listing (certain relay/socket combinations)
- 35 mm rail (EN 60715) mounting

58.32 / 58.33 / 58.34
Screw terminals



58.32	58.33	58.34
		
• 2 pole, 10 A • Screw terminals • 35 mm rail (EN 60715) mounting	• 3 pole, 10 A • Screw terminals • 35 mm rail (EN 60715) mounting	• 4 pole, 7 A • Screw terminals • 35 mm rail (EN 60715) mounting
		
For outline drawing see page 4	Example: AC	Example: DC	Example: AC

Contact specification				
Contact configuration		2 CO (DPDT)	3 CO (3PDT)	4 CO (4PDT)
Rated current/Maximum peak current	A	10/20	10/20	7/15
Rated voltage/Maximum switching voltage	V AC	250/400	250/400	250/250
Rated load AC1	VA	2,500	2,500	1,750
Rated load AC15 (230 V AC)	VA	500	500	350
Single phase motor rating (230 V AC)	kW	0.37	0.37	0.125
Breaking capacity DC1: 30/110/220V	A	10/0.25/0.12	10/0.25/0.12	7/0.25/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	300 (5/5)	300 (5/5)
Standard contact material		AgNi	AgNi	AgNi
Coil specification				
Nominal voltage (U_N)	V AC (50/60 Hz)	12 - 24 - 48 - 110 - 120 - 230	12 - 24 - 48 - 110 - 120 - 230	12 - 24 - 48 - 110 - 120 - 230
	V DC	12 - 24 - 48 - 125	12 - 24 - 48 - 125	12 - 24 - 48 - 125
Rated power AC/DC	VA (50 Hz)/W	1.5/1	1.5/1	1.5/1
Operating range	AC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
Holding voltage	AC/DC	0.8 U_N/0.5 U_N	0.8 U_N/0.5 U_N	0.8 U_N/0.5 U_N
Must drop-out voltage	AC/DC	0.2 U_N/0.1 U_N	0.2 U_N/0.1 U_N	0.2 U_N/0.1 U_N
Technical data				
Mechanical life AC/DC	cycles	$20 \cdot 10^6/50 \cdot 10^6$	$20 \cdot 10^6/50 \cdot 10^6$	$20 \cdot 10^6/50 \cdot 10^6$
Electrical life at rated load AC1	cycles	$200 \cdot 10^3$	$200 \cdot 10^3$	$150 \cdot 10^3$
Operate/release time	ms	10/5 (AC) - 10/15 (DC)	10/5 (AC) - 10/15 (DC)	11/3 (AC) - 11/15 (DC)
Insulation between coil and contacts (1.2/50 µs)	kV	3.6	3.6	3.6
Dielectric strength between open contacts	V AC	1,000	1,000	1,000
Ambient temperature range	°C	–40...+70	–40...+70	–40...+70
Protection category		IP 20	IP 20	IP 20
Approvals relay (according to type)				

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Ordering information

Example: 58 series 35 mm rail (EN 60715) mounting, screw terminals interface module, 4 CO (4PDT), 24 V DC coil, green LED + diode.

								A	B	C	D		
5	8	.	3	4	.	9	.	0	2	4	.	0	0	5	0

Series

Type
3 = Screw terminals
35 mm rail (EN 60715) mount

No. of poles
2 = 2 pole, 10 A
3 = 3 pole, 10 A
4 = 4 pole, 7 A

Coil version
8 = AC (50/60 Hz)
9 = DC

Coil voltage
See coil specifications

A: Contact material
0 = AgNi Standard
2 = AgCdO
5 = AgNi + Au (5 µm)

B: Contact circuit
0 = CO (nPDT)

D: Special versions
0 = Standard

C: Options
5 = Standard DC: green LED + diode (polarity +A1)
6 = Standard AC: green LED + Varistor

Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

Type	Coil version	A	B	C	D
58.32/33/34	AC	**0** - 2 - 5	0	**6**	0
58.32/33/34	DC	**0** - 2 - 5	0	**5**	0

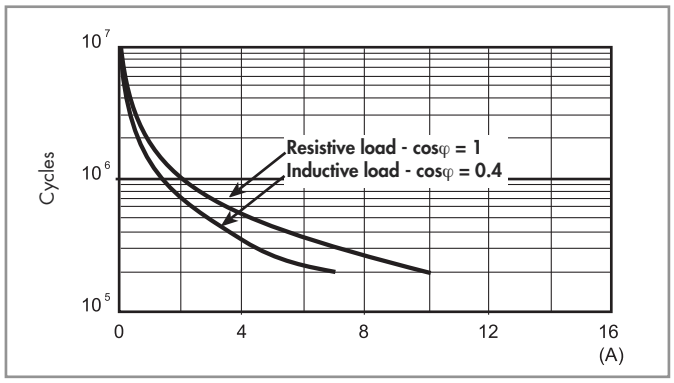
Technical data

Insulation				
Insulation according to EN 61810-1	insulation rated voltage	V	400 (2-3 pole)	250 (4 pole)
	rated impulse withstand voltage	kV	3.6 (2-3 pole)	2.5 (4 pole)
	pollution degree		2	2
	overvoltage category		III	II
Insulation between coil and contacts (1.2/50 µs)		kV	3.6	
Dielectric strength between open contacts		V AC	1,000	
Dielectric strength between adjacent contacts		V AC	2,000 (58.32,58.33)	1,550 (58.34)
Conducted disturbance immunity				
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4	level 4 (4 kV)
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5	level 4 (4 kV)
Other data				
Bounce time: NO/NC		ms	1/3	
Vibration resistance (10...55)Hz: NO/NC		g	6/6	
Power lost to the environment	without contact current	W	1	
	with rated current	W	3 (58.32, 58.34)	4 (58.33)
Wire strip length		mm	8	
Screw torque		Nm	0.5	
Max. wire size			solid cable	stranded cable
		mm^2	1x6 / 2x2.5	1x4 / 2x2.5
		AWG	1x10 / 2x14	1x12 / 2x14

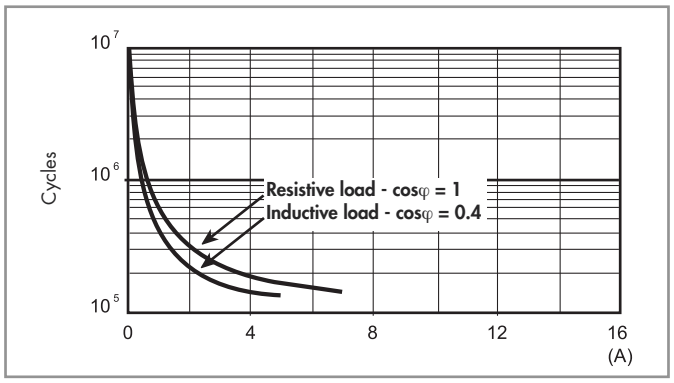
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Contact specification

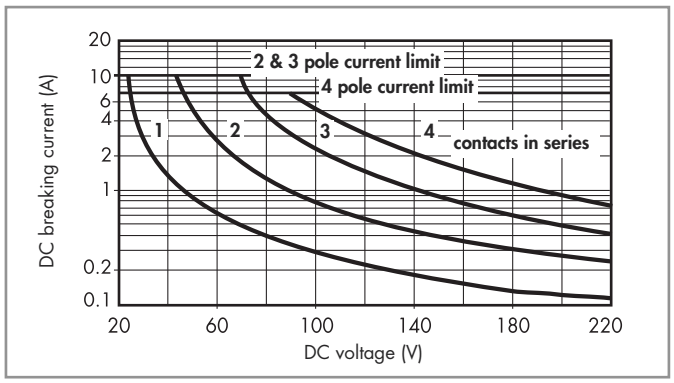
F 58 - Electrical life (AC) v contact current
2 & 3 pole relays



F 58 - Electrical life (AC) v contact current
4 pole relay



H 58 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ 100·10³ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time for the load will be increased.

Coil specifications

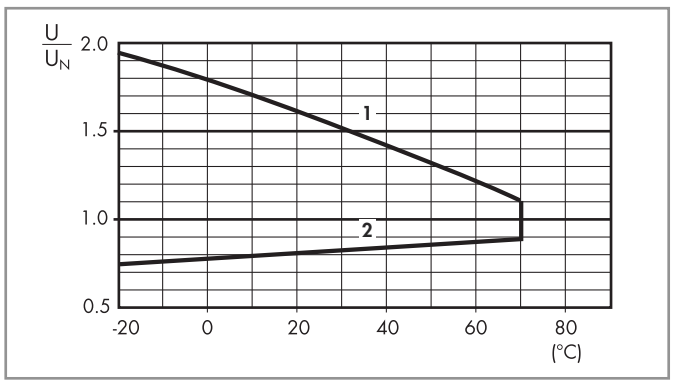
DC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil absorption I at U_N
V		V	V	Ω	mA
12	**9**.012	9.6	13.2	140	86
24	**9**.024	19.2	26.4	600	40
48	**9**.048	38.4	52.8	2,400	20
125	**9**.125	100	138	17,300	7.2

AC coil data

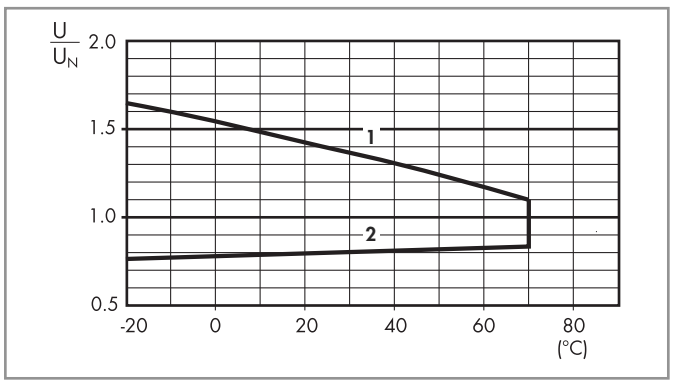
Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil absorption I at U_N (50Hz)
V		V	V	Ω	mA
12	**8**.012	9.6	13.2	50	97
24	**8**.024	19.2	26.4	190	53
48	**8**.048	38.4	52.8	770	25
110	**8**.110	88	121	4,000	12.5
120	**8**.120	96	132	4,700	12
230	**8**.230	184	253	17,000	6

R 58 - DC coil operating range v ambient temperature



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

R 58 - AC coil operating range v ambient temperature



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

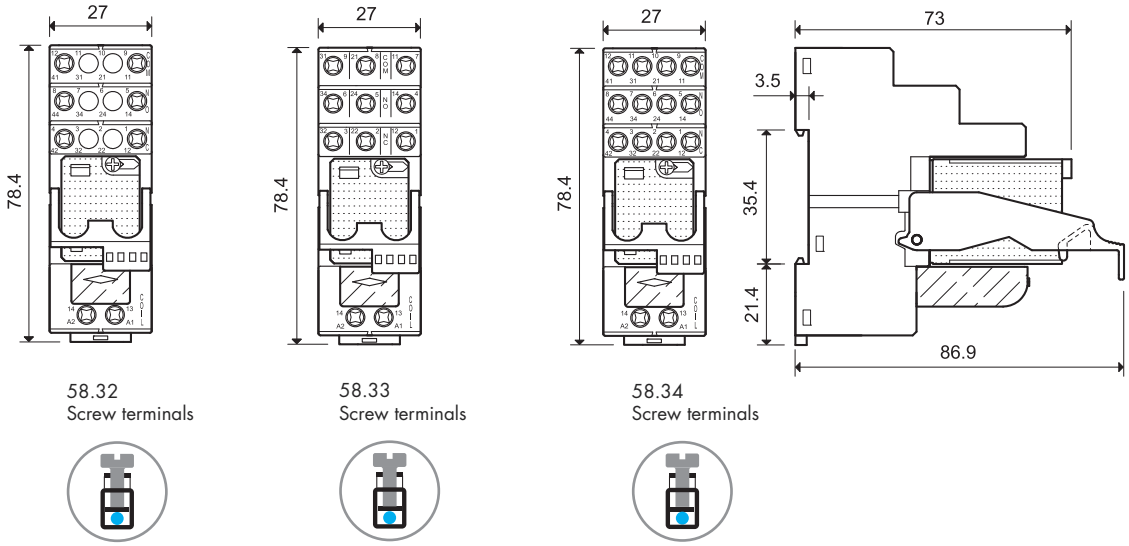
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Combinations

cULus Certain relay/socket combinations

Code	Type of socket	Type of relay	Module	Retaining clip
58.32	94.02	55.32	99.02	094.91.3
58.33	94.03	55.33	99.02	094.91.3
58.34	94.04	55.34	99.02	094.91.3

Outline drawing

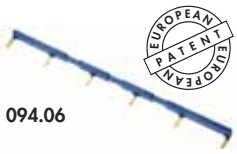


58.32
Screw terminals

58.33
Screw terminals

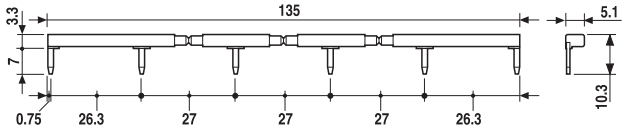
58.34
Screw terminals

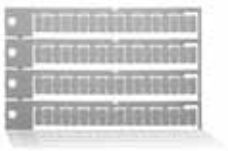
Accessories



094.06

6-way jumper link	094.06 (blue)	094.06.0 (black)
Rated values	10 A - 250 V	





060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm	060.72

Packaging codes

How to code and identify retaining clip and packaging options for sockets.

Example:

5	8	.	3	4	.	9	.	0	2	4	.	0	0	5	0	S	P	A

A Standard packaging
B Blister packaging

SP Plastic retaining clip

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Features

2 & 4 Pole relay interface modules, 27 mm wide.

Ideal interface for PLC and electronic systems

59.32 - 2 Pole 10 A (screw terminals)
59.34 - 4 Pole 7 A (screw terminals)
59.54 - 4 Pole 7 A (screwless terminals)

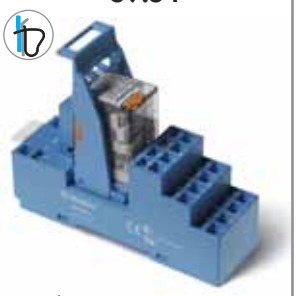
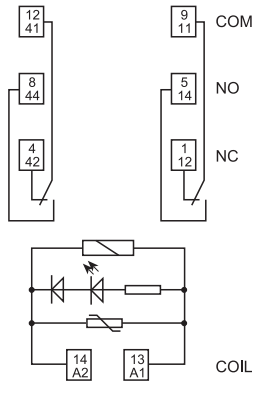
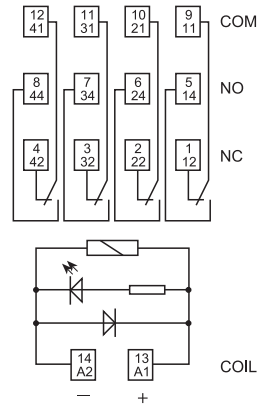
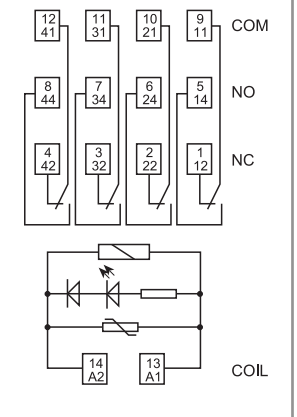
- AC coils and DC coils
- Supply status indication and coil suppression module as standard
- Identification labels
- Cadmium Free contact material options
- 35 mm rail (EN 60715) mount

59.32 / 59.34
Screw terminals



59.54
Screwless terminals



59.32	59.34	59.54
		
• 2 pole, 10 A • Screw terminals • 35 mm rail (EN 60715) mount	• 4 pole, 7 A • Screw terminals • 35 mm rail (EN 60715) mount	• 4 pole, 7 A • Screwless terminals • 35 mm rail (EN 60715) mount
		
For outline drawing see page 4	Example: AC	Example: DC	Example: AC

Contact specification				
Contact configuration			2 CO (DPDT)	4 CO (4PDT)	4 CO (4PDT)
Rated current/Maximum peak current		A	10/20	7/10	7/10
Rated voltage/Maximum switching voltage		V AC	250/400	250/250	250/250
Rated load AC1		VA	2,500	1,750	1,750
Rated load AC15 (230 V AC)		VA	500	350	350
Single phase motor rating (230 V AC)		kW	0.37	0.125	0.125
Breaking capacity DC1: 30/110/220V		A	10/0.25/0.12	7/0.25/0.12	7/0.25/0.12
Minimum switching load		mW (V/mA)	300 (5/5)	300 (5/5)	300 (5/5)
Standard contact material			AgNi	AgNi	AgNi
Coil specification				
Nominal voltage (U_N)	V AC (50/60 Hz)		12 - 24 - 230	12 - 24 - 230	12 - 24 - 230
	V DC		12 - 24	12 - 24	12 - 24
Rated power AC/DC	VA (50 Hz)/W		1.5/1	1.5/1	1.5/1
Operating range	AC		$(0.8...1.1)U_N$	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
	DC		$(0.8...1.1)U_N$	$(0.8...1.1)U_N$	$(0.8...1.1)U_N$
Holding voltage	AC/DC		0.8 U_N/0.5 U_N	0.8 U_N/0.5 U_N	0.8 U_N/0.5 U_N
Must drop-out voltage	AC/DC		0.2 U_N/0.1 U_N	0.2 U_N/0.1 U_N	0.2 U_N/0.1 U_N
Technical data				
Mechanical life AC/DC		cycles	$20 \cdot 10^6/50 \cdot 10^6$	$20 \cdot 10^6/50 \cdot 10^6$	$20 \cdot 10^6/50 \cdot 10^6$
Electrical life at rated load AC1		cycles	$200 \cdot 10^3$	$150 \cdot 10^3$	$150 \cdot 10^3$
Operate/release time		ms	10/5 (AC) - 9/15 (DC)	10/5 (AC) - 9/15 (DC)	11/3 (AC) - 11/15 (DC)
Insulation between coil and contacts (1.2/50 µs)		kV	3.6	3.6	3.6
Dielectric strength between open contacts		V AC	1,000	1,000	1,000
Ambient temperature range		°C	–40...+70	–40...+70	–40...+70
Protection category			IP 20	IP 20	IP 20
Approvals relay (according to type)			CE SP D FI PG Y NF Lloyd's Register N RINA S cULus VDE		

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Ordering information

Example: 59 series 35 mm rail (EN 60715) mounting, screw terminal, interface module, 4 CO (4PDT), 24 V DC coil, green LED + diode.

								A	B	C	D		
5	9	.	3	4	.	9	.	0	2	4	.	0	0	5	0

Series

Type
3 = Screw terminals, 35 mm rail (EN 60715) mount
5 = Screwless terminals, 35 mm rail (EN 60715) mount

No. of poles
2 = 2 pole, 10 A
4 = 4 pole, 7 A

Coil version
8 = AC (50/60 Hz)
9 = DC

Coil voltage
See coil specifications

A: Contact material
0 = AgNi Standard
2 = AgCdO
5 = AgNi + Au (5 µm)

B: Contact circuit
0 = CO (nPDT)

D: Special versions
0 = Standard

C: Options
5 = Standard DC: green LED + diode (polarity +A1)
6 = Standard AC: green LED + Varistor

Selecting features and options: only combinations in the same row are possible.
Preferred selections for best availability are shown in **bold.**

Type	Coil version	A	B	C	D
59.32/33/34/54	AC	**0** - 2 - 5	0	**6**	0
59.32/33/34/54	DC	**0** - 2 - 5	0	**5**	0

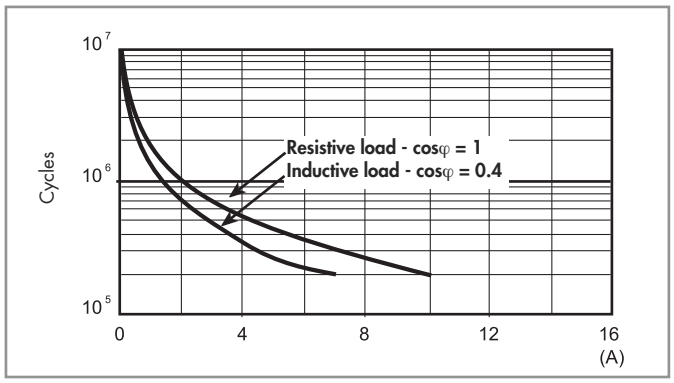
Technical data

Insulation						
Insulation according to EN 61810-1	insulation rated voltage	V	400 (2 pole)		250 (4 pole)	
	rated impulse withstand voltage	kV	3.6 (2 pole)		2.5 (4 pole)	
	pollution degree		2		2	
	overvoltage category		III		II	
Insulation between coil and contacts (1.2/50 µs)		kV	3.6			
Dielectric strength between open contacts		V AC	1,000			
Dielectric strength between adjacent contacts		V AC	2,000 (59.32)		1,550 (59.34/54)	
Conducted disturbance immunity						
Burst (5...50)ns, 5 kHz, on A1 - A2			EN 61000-4-4		level 4 (4 kV)	
Surge (1.2/50 µs) on A1 - A2 (differential mode)			EN 61000-4-5		level 4 (4 kV)	
Other data						
Bounce time: NO/NC		ms	1/3			
Vibration resistance (10...55)Hz: NO/NC		g	6/6			
Power lost to the environment	without contact current	W	1			
	with rated current	W	3			
			59.32/34 (screw terminals)		**59.54 (screwless terminals)**	
Wire strip length		mm	8		8	
Screw torque		Nm	0.5		–	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm^2	1x6 / 2x2.5	1x4 / 2x2.5	1x2.5	1x1.5
		AWG	1x10 / 2x14	1x12 / 2x14	1x14	1x16

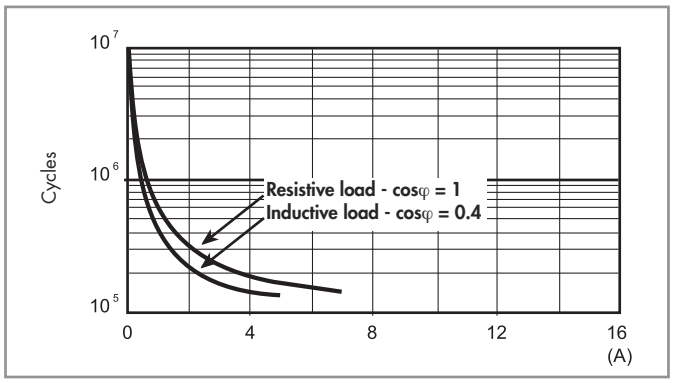
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Contact specification

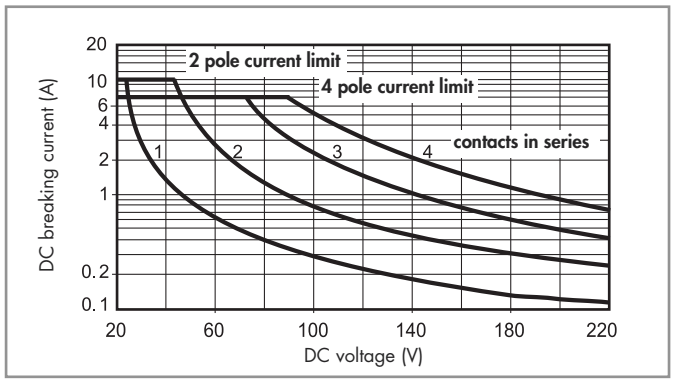
F 59 - Electrical life (AC) v contact current
2 pole relay



F 59 - Electrical life (AC) v contact current
4 pole relay



H 59 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ 100·10³ can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.
  Note: the release time for the load will be increased.

Coil specifications

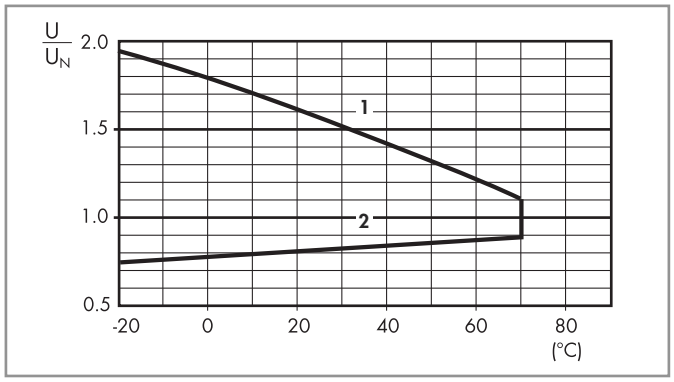
DC coil data

Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil absorption I at U_N
V		V	V	Ω	mA
12	**9**.012	9.6	13.2	140	86
24	**9**.024	19.2	26.4	600	40

AC coil data

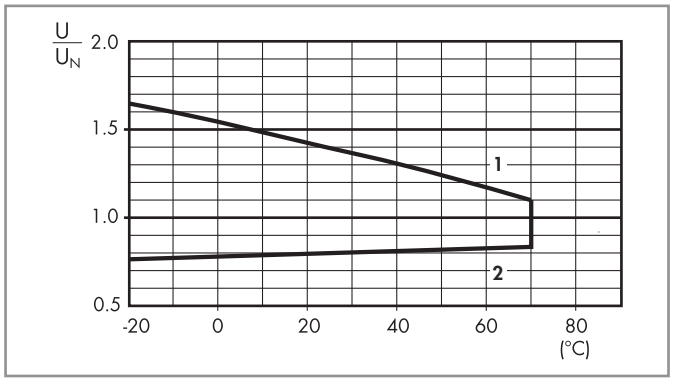
Nominal voltage U_N	Coil code	Operating range U_{min}	Operating range U_{max}	Resistance R	Rated coil absorption I at U_N (50Hz)
V		V	V	Ω	mA
12	**8**.012	9.6	13.2	50	97
24	**8**.024	19.2	26.4	190	53
230	**8**.230	184	253	17,000	6

R 59 - DC coil operating range v ambient temperature



1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

R 59 - AC coil operating range v ambient temperature



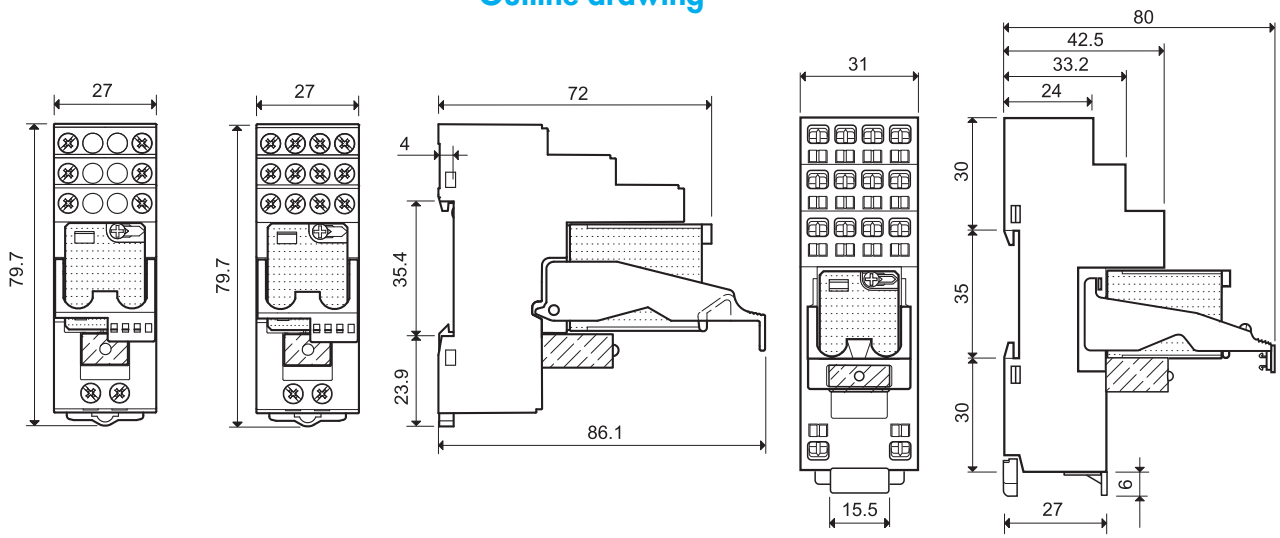
1 - Max. permitted coil voltage.
2 - Min. pick-up voltage with coil at ambient temperature.

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Combinations

Code	Type of socket	Type of relay	Module	Retaining clip
59.32	94.94.3	55.32	99.80	094.91.3
59.34	94.94.3	55.34	99.80	094.91.3
59.54	94.54.1	55.34	99.80	094.92

Outline drawing



59.32
Screw terminals



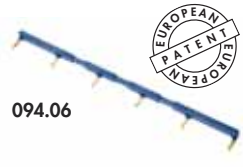
59.34
Screw terminals



59.54
Screwless terminals

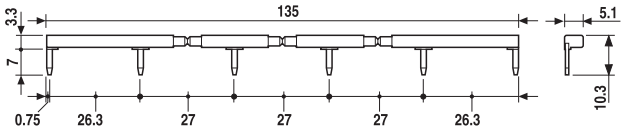


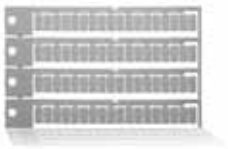
Accessories



094.06

6-way jumper link for 59.32 and 59.34	094.06 (blue)	094.06.0 (black)
Rated values	10 A - 250 V	





060.72

Sheet of marker tags for retaining and release clip 094.91.3 plastic, 72 tags, 6x12 mm	060.72



020.24

Sheet of marker tags for retaining and release clip 094.91 plastic, 24 tags, 9x17 mm	020.24

Packaging codes

How to code and identify retaining clip and packaging options for sockets.

Example:

5	9	.	3	4	.	9	.	0	2	4	.	0	0	5	0	S	P	A

A Standard packaging
B Blister packaging

SP Plastic retaining clip

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99 Series - Coil indication and EMC suppression modules

99.01



Sockets	Relays
90.20	60.12
90.21	60.13
94.72	55.32
94.73	55.33
94.74	55.32, 55.34
94.82	55.32
95.63	40.31/41.31
95.65	40.51/52/61
	41.52/61
	44.52/62
96.72	56.32
96.74	56.34

99.02



Sockets	Relays
90.02	60.12
90.03	60.13
92.03	62.32, 62.33
94.02	55.32
94.03	55.33
94.04	55.32, 55.34
95.03	40.31
95.05	40.51/52/61
	44.52, 44.62
95.55	40.51/52/61
	44.52, 44.62
96.02	56.32
96.04	56.34
97.01/97.51	46.61
97.02/97.52	46.52

99.80

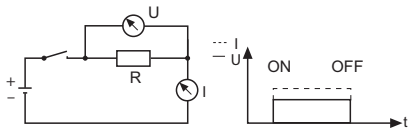


Sockets	Relays
94.54.1	55.32, 55.34
94.82.3	55.32
94.84.3	55.32, 55.34
84.84.2	55.32, 55.34
94.92.3	55.32
94.94.3	55.32, 55.34
95.55.3	40.51/52/61
	44.52, 44.62
95.83.3	40.31
95.85.3	40.51/52/61
	44.52/62
95.93.3	40.31
95.95.3	40.51/52/61
	44.52, 44.62

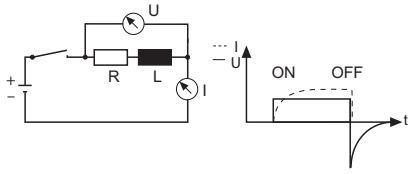
FUNCTION / OPERATING RANGE	CODE	CODE	CODE
Green LED + diode module (standard polarity)			
6 - 24 V DC 28 - 60 V DC 110 - 220 V DC	99.01.9.024.99 99.01.9.060.99 99.01.9.220.99	99.02.9.024.99 99.02.9.060.99 99.02.9.220.99	99.80.9.024.99 99.80.9.060.99 99.80.9.220.99
Green LED + diode module (non-standard polarity)			
6 - 24 V DC 28 - 60 V DC 110 - 220 V DC	99.01.9.024.79 99.01.9.060.79 99.01.9.220.79	99.02.9.024.79 99.02.9.060.79 99.02.9.220.79	99.80.9.024.79 99.80.9.060.79 99.80.9.220.79
Green LED + Varistor module			
6 - 24 V AC/DC 28 - 60 V AC/DC 110 - 240 V AC/DC	99.01.0.024.98 99.01.0.060.98 99.01.0.230.98	99.02.0.024.98 99.02.0.060.98 99.02.0.230.98	99.80.0.024.98 99.80.0.060.98 99.80.0.230.98
Green LED module			
6 - 24 V AC/DC 28 - 60 V AC/DC 110 - 240 V AC/DC	99.01.0.024.59 99.01.0.060.59 99.01.0.230.59	99.02.0.024.59 99.02.0.060.59 99.02.0.230.59	99.80.0.024.59 99.80.0.060.59 99.80.0.230.59
Diode module (standard polarity)			
6 - 220 V DC	99.01.3.000.00	99.02.3.000.00	99.80.3.000.00
Diode module (non-standard polarity)			
6 - 220 V DC	99.01.2.000.00	99.02.2.000.00	99.80.2.000.00
RC module			
6 - 24 V AC/DC 28 - 60 V AC/DC 110 - 240 V AC/DC	99.01.0.024.09 99.01.0.060.09 99.01.0.230.09	99.02.0.024.09 99.02.0.060.09 99.02.0.230.09	99.80.0.024.09 99.80.0.060.09 99.80.0.230.09
Residual current bypass module			
110 - 240 V AC	99.01.8.230.07	99.02.8.230.07	99.80.8.230.07

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Voltage-current characteristic when switching a resistive load (fig. 1).



Voltage-current characteristic when switching a relay coil (fig. 2).



Switching Relay Coils.

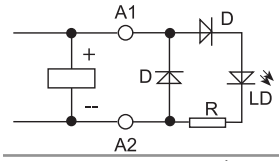
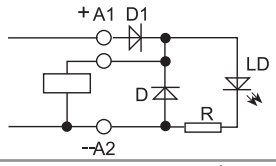
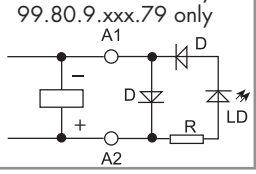
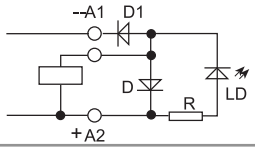
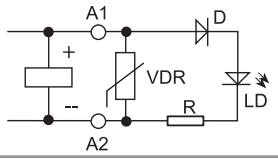
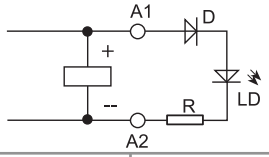
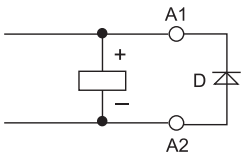
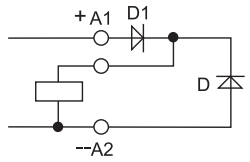
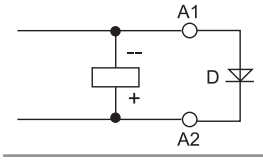
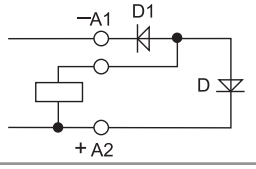
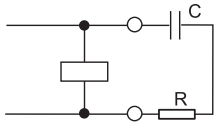
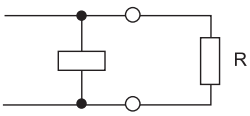
When switching a resistive load, the current follows the phase of the voltage directly (Fig 1).

When switching relay coils the current and voltage waveforms are different due to the inductive nature of the coil (Fig 2). A brief explanation of this mechanism is as follows.

On energisating the coil, the build up of the magnetic field gives rise to counter electromotive forces which in turn delay the rise in coil current. On de-energisation, the sudden interruption of the coil current causes a sudden collapse of the magnetic field, which in turn induces a high voltage of reverse polarity across the coil. This reverse polarity voltage peak can reach a value typically 15 times higher than the supply voltage, and as a consequence can disturb or destroy electronic devices.

To counteract this potentially damaging effect, relays coils can be suppressed with a Diode, a Varistor (voltage dependent resistor) or a RC (resistor/capacitor) module – dependent on the operating voltage. (See below for descriptions of the various Modules available.)

Whilst the above description is based on the working of a DC coil, the reverse polarity voltage peak on de-energisation applies similarly to AC coils. However, when energising AC coils there will also be a coil inrush current of 1.3 to 1.7 times the nominal coil current – dependent on coil size. If coils are fed via a transformer (and particularly if several are energised at the same time) then this may need to taken into account when calculating the VA rating of the transformer.

Diagrams		Functions
99.01.9.xxx.99 only 99.80.9.xxx.99 only 	99.02.9.xxx.99 only 	**Green LED + diode module (standard polarity)** Recovery diode modules + LED are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A1). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module. The LED indicator lights up when the coil is energized.
99.01.9.xxx.79 only 99.80.9.xxx.79 only 	99.02.9.xxx.79 only 	**Green LED + diode module (non-standard polarity)** Recovery diode modules + LED are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A2). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module. The LED indicator lights up when the coil is energized.
		**Green LED + Varistor module** LED modules + Varistor are used for both AC and DC coils. The reverse voltage peaks of the relay coil are limited by the Varistor to approximately 2.5 times the nominal voltage of the supply. When using DC coils it is essential that positive is connected to terminal A1. The relay release time increases insignificantly.
		**Green LED module** LED modules are used for AC and DC. The LED indicator lights up when the coil is energized. When using DC it is essential that positive is connected to terminal A1.
99.01.3.000.00 only 99.80.3.000.00 only 	99.02.3.000.00 only 	**Diode module (standard polarity)** Recovery diode modules are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A1). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module.
99.01.2.000.00 only 99.80.2.000.00 only 	99.02.2.000.00 only 	**Diode module (non-standard polarity)** Recovery diode modules are used for DC only. The reverse voltage peaks of the coil are short circuited by the recovery diode (positive to terminal A2). The release time increases by an approximate factor of 3. If an increase of the release time is undesirable use a Varistor or RC module.
		**RC module** RC circuit modules are used for AC and DC coils. The reverse voltage peaks of the coil are limited by the RC module to approximately 2.5 times the nominal voltage of the supply. The relay release time increases insignificantly.
		**Residual current bypass module** Bypass modules are advisable if 110 or 230v AC relays show any tendency to fail to release. Failure to release can be caused by residual currents from AC proximity switches or inductive coupling caused through long parallel lying AC control lines.

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