

Features

1 & 2 Pole relay range

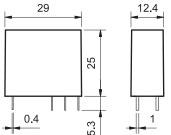
40.31 - 1 Pole 10 A (3.5 mm pin pitch) 40.51 - 1 Pole 10 A (5 mm pin pitch) 40.52 - 2 Pole 8 A (5 mm pin pitch)

PCB mount

direct or via PCB socket

35 mm rail mount

- via screw and screwless sockets
- DC coils (standard or sensitive) & AC coils
- Cadmium Free contact material
- 8 mm, 6 kV (1.2/50 µs) isolation, coil-contacts
- UL Listing (certain relay/socket combinations)
- Flux proof: RT II standard, (RT III option)
- 95 series sockets
- Coil EMC suppression
- Timer accessories 86 series



FOR UL HORSEPOWER AND PILOT DUTY RATINGS





- 3.5 mm contact pin pitch
- 1 Pole 10 A
- PCB or 95 series sockets

40.51



- 5 mm contact pin pitch
- 1 Pole 10 A
- PCB or 95 series sockets



40.52



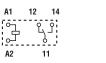
- 5 mm contact pin pitch
- 2 Pole 8 A
- PCB or 95 series sockets

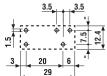
12 11 14

22 21 24

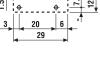
29	1	12.4
	25	
0.4	5.3	

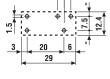
SEE "General technical information" page V



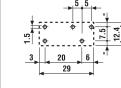


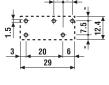












Copper side view

1.2/0.65/0.5

 $(0.8...1.1)U_N$ (0.73...1.5)U_N/(0.73...1.75)U_N

 $0.8 U_{N} / 0.4 U_{N}$

 $0.2 U_{N} / 0.1 U_{N}$

10 · 106/20 · 106

200 · 10³

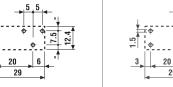
7/3 - (12/4 sensitive)

6 (8 mm)

1,000

-40...+85

RT II**



Copper side view

Contact specification			
Contact configuration	1 CO (SPDT)	1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current A	10/20	10/20	8/15
Rated voltage/Maximum switching voltage V AC	250/400	250/400	250/400
Rated load AC1 VA	2,500	2,500	2,000
Rated load AC15 (230 V AC) VA	500	500	400
Single phase motor rating (230 V AC) kW	0.37	0.37	0.3
Breaking capacity DC1: 30/110/220 V A	10/0.3/0.12	10/0.3/0.12	8/0.3/0.12
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)	6 - 12	: - 24 - 48 - 60 - 110 - 120 - 230	- 240

con specification	
Nominal voltage (U _N)	V AC

(50/60 H

Hz)	6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240
DC	5 - 6 - 7 - 9 - 12 - 14 - 18 - 21 - 24 - 28 - 36 - 48 - 60 - 90 - 110 - 125

(D)

Rated power AC/DC/sens. DC	VA (50 Hz)/W/W	1.2/0.65/0.5	Γ
Operating range	AC	(0.81.1)U _N	Ī
	DC/sens. DC	(0.731.5)U _N /(0.731.75)U _N	
Holding voltage	AC/DC	0.8 U _N /0.4 U _N	
Must drop-out voltage	AC/DC	0.2 U _N /0.1 U _N	
Technical data			
Mechanical life AC/DC	cycles	10 · 10°/20 · 10°	
Electrical life at rated load A	C1 cycles	200 · 10³	
Operate/release time	ms	7/3 - (12/4 sensitive)	
Insulation between coil and conto	acts (1.2/50 µs) kV	6 (8 mm)	
Dielectric strength between op	1,000	Ī	
Ambient temperature range	°C	-40+85	Ī
Environmental protection		RT II**	

Approvals (according to type)

1

























1.2/0.65/0.5

(0.8...1.1)U_N

 $(0.73...1.5)U_N/(0.73...1.75)U_N$

 $0.8 U_{N} / 0.4 U_{N}$

 $0.2 U_{N} / 0.1 U_{N}$

10 · 106/20 · 106

100 · 10³

7/3 - (12/4 sensitive)

6 (8 mm)

1,000

-40...+85



^{**} See general technical information "Guidelines for automatic flow solder processes" page II .



Features

- 1 Pole 16 A (5 mm pin pitch) 40.61 40.xx.6 - Bistable versions of the 40.31, 40.51, 40.52 & 40.61 relays

PCB mount

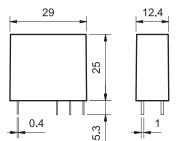
- direct or via PCB socket

35 mm rail mount

- via screw and screwless sockets
- DC coils & AC coils
- Cadmium Free option available
- 8 mm, 6 kV (1.2/50 µs) isolation, coil-contacts 5 mm contact pin pitch
- UL Listing (certain 40.61 relay/socket combinations) 1 Pole 16 A
- Flux proof: RT II standard, (RT III option)
- 95 series sockets
- Coil EMC suppression

Contact specification Contact configuration

• Timer accessories 86 series



FOR UL HORSEPOWER AND PILOT DUTY RATINGS SEE "General technical information" page V

40.61



- PCB or 95 series sockets

40.xx.6



- Bistable (single coil) versions of 40.31/51/52/61
- PCB or 95 series sockets

Bistable version (1 coil) types:

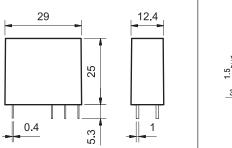
40.31.6...

40.51.6... 40.52.6...

40.61.6...

For wiring diagrams see

page 8



Copper side view

oppor side view	
1 CO (SPDT)	

Rated current/Maximum peak current 16/30* Rated voltage/Maximum switching voltage V AC 250/400 See relays Rated load AC1 VA 4,000 40.31 Rated load AC15 (230 V AC) 750 40.51 VA Single phase motor rating (230 V AC) kW 0.55 40.52 Breaking capacity DC1: 30/110/220 V 16/0.3/0.12 40.61 Minimum switching load mW (V/mA) 500 (10/5) AgCdO

Standard contact material Coil specification Nominal voltage (UN) V AC (50/60 Hz) 6-12-24-48-60-110-120-230-240 5 - 6 - 12 - 24 - 48 - 110 V DC ***See table 5 - 6 - 12 - 24 - 48 - 110 Rated power AC/DC/sens. DC VA (50 Hz)/W/W 1.2/0.65/0.5 1.0/1.0/- $(0.8...1.1)U_N$ $(0.8...1.1)U_N$ Operating range DC/sens. DC $(0.73...1.5)U_N/(0.8...1.5)U_N$ $(0.8...1.1)U_N/-$ AC/DC $0.8 U_{N} / 0.4 U_{N}$ Holding voltage AC/DC Must drop-out voltage $0.2 U_{N} / 0.1 U_{N}$ Technical data 10 · 106/20 · 106 Mechanical life AC/DC See relays cycles Electrical life at rated load AC1 cycles 100 · 10³ 40.31

*** Nominal voltage (U_N) : 5 - 6 - 7 - 9 - 12 - 14 - 18 - 21 -24 - 28 - 36 - 48 - 60 - 90 -110 - 125 V DC







40.51

40.52

40.61

Min. impulse duration

≥ 20 ms

RINA

(N)

(D)

1

7/3 - (12/4 sensitive)

6 (8 mm)

1,000

-40...+85

RT II**

(FI)

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Operate/release time

Ambient temperature range Environmental protection

Approvals (according to type)

Insulation between coil and contacts (1.2/50 μ s) kV

Dielectric strength between open contacts V AC

^{*} With the AgSnO₂ material the maximum peak current is 120 A - 5 ms on normally open contact.



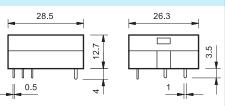
40 Series - Miniature PCB/Plug-in relays 8 - 10 - 16 A

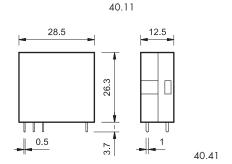
Features

1 Pole relay range 40.11 - 1 Pole 10 A (Flat pack) 40.11-2016 - 1 Pole 16 A (Flat pack) 40.41 - 1 Pole 10 A (Vertical)

PCB mount

- direct or via PCB socket (40.41 version)
- DC coils
- Cadmium Free option available
- 8 mm, 6 kV (1.2/50 µs) isolation, coil-contacts
- 40.41 NO version available





FOR UL HORSEPOWER AND PILOT DUTY RATINGS SEE "General technical information" page V

40.11



• 1 Pole 10 A

- Flat packPCB mount

40.11-2016

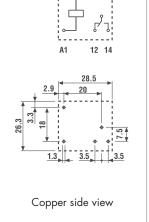


- 1 Pole 16 A
- Flat packPCB mount

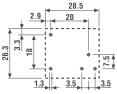
40.41



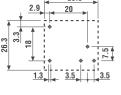
- 1 Pole 10 A
- Vertical
- PCB or 95 series socket

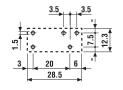






Copper side view





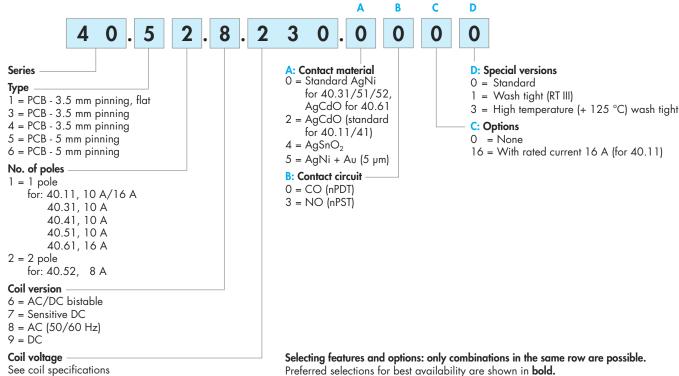
Copper	side	view
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OLL Ceneral lectifical filloff	idiloli page v			
Contact specification				
Contact configuration		1 CO (SPDT)	1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum per	ak current A	10/20	16/30	10/20
Rated voltage/Maximum swit	tching voltage V AC	250/400	250/400	250/400
Rated load AC1	VA	2,500	4,000	2,500
Rated load AC15 (230 V A	C) VA	500	750	500
Single phase motor rating (2	230 V AC) kW	0.37	0.55	0.37
Breaking capacity DC1: 30,	/110/220 V A	10/0.3/0.12	16/0.3/0.12	10/0.3/0.12
Minimum switching load	mW (V/mA)	300 (5/5)	500 (10/5)	300 (5/5)
Standard contact material		AgCdO	AgCdO	AgCdO
Coil specification				
Nominal voltage (U _N)	V AC (50/60 Hz)	_	_	_
	V DC	6 - 12 - 24 - 48 - 60	6 - 12 - 24 - 48	6 - 12 - 24 - 48 - 60
Rated power AC/DC/sens. DC	VA (50 Hz)/W/W	-/-/0.5	-/-/0.5	-/-/0.5
Operating range	AC	_	_	_
	DC/sens. DC	-/(0.731.75)U _N	-/(0.731.5)U _N	-/(0.731.75)U _N
Holding voltage	AC/DC	-/0.4 U _N	-/0.4 U _N	-/0.4 U _N
Must drop-out voltage	AC/DC	-/0.1 U _N	-/0.1 U _N	-/0.1 U _N
Technical data				
Mechanical life AC/DC	cycles	−/20 · 10°	−/20 · 10 ⁶	−/20 · 10 ⁶
Electrical life at rated load A	AC1 cycles	200 · 10³	50 · 10³	200 · 10³
Operate/release time	ms	12/4	12/4	12/4
Insulation between coil and contacts (1.2/50 µs) kV		6 (8 mm)	6 (8 mm)	6 (8 mm)
Dielectric strength between o	open contacts V AC	1,000	1,000	1,000
Ambient temperature range	°C	-40+70	-40+70	-40+70
Environmental protection		RT I	RT I	RT I
Approvals (according to typ	e)		C CN US	



Ordering information

Example: 40 series PCB relay, 2 CO (DPDT), 230 V AC coil.



Preferred selections for best availability are shown in **bold**.

Type Coil version A B C D

Туре	Coil version	A	В	С	D
40.11	sensitive DC	2 - 4	0	0	0
40.11	sensitive DC	2 - 4	0	16	/
40.41	sensitive DC	0 - 2	0 - 3	0	0
40.31/51	AC-sens. DC	0 - 2 - 5	0 - 3	0	0 - 1
40.31/51	DC	0 - 2 - 5	0 - 3	0	0 - 1 - 3
40.52	AC-sens. DC	0 - 2 - 5	0 - 3	0	0 - 1
40.52	DC	0 - 2 - 5	0 - 3	0	0 - 1 - 3
40.61	AC-sens. DC	0 - 4	0 - 3	0	0 - 1
40.61	DC	0 - 4	0 - 3	0	0 - 1 - 3
40.31/51/	bistable	0	0	0	0
52/61					



40 Series - Miniature PCB/Plug-in relays 8 - 10 - 16 A

Technical data

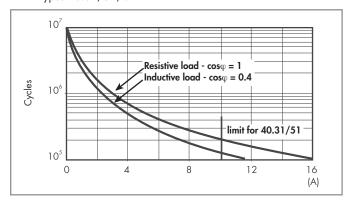
Insulation according to EN 61810-1						
			1 pole		2 pole	
Nominal voltage of supply system	V AC	230/400)	230/400		
Rated insulation voltage	V AC	250	400	250	400	
Pollution degree		3	2	3	2	
Insulation between coil and contact	set		·		·	
Type of insulation		Reinforce	d (8 mm)	Reinforced (8	mm)	
Overvoltage category		III		III		
Rated impulse voltage	kV (1.2/50 μs)	6		6		
Dielectric strength	V AC	4,000		4,000		
Insulation between adjacent contac	ts					
Type of insulation		_		Basic	Basic	
Overvoltage category		_		II	II	
Rated impulse voltage	kV (1.2/50 μs)	_		2.5		
Dielectric strength	V AC	_		2,000	2,000	
Insulation between open contacts						
Type of disconnection		Micro-disconnection Micro-disconnection		nection		
Dielectric strength	V AC/kV (1.2/50 μs)	1,000/1.5				
Conducted disturbance immunity				,		
Burst (550)ns, 5 kHz, on A1 - A2	2	EN 61000-4-4 level 4 (4 kV)				
Surge (1.2/50 µs) on A1 - A2 (diff	erential mode)	EN 61000-4-5 level 3 (2 kV)				
Other data						
Bounce time: NO/NC ms			2/5			
Vibration resistance (555)Hz: NO/NC			10/4 (1 changeover) 15/3 (2 changeover)		ngeover)	
Shock resistance g			13			
Power lost to the environment	without contact current W	0.6				
	with rated current W	1.2 (40.1	1/31/41/51)	2 (40.61/52	/40.11-2016)	
Recommended distance between re	elays mounted on PCB mm	≥ 5				



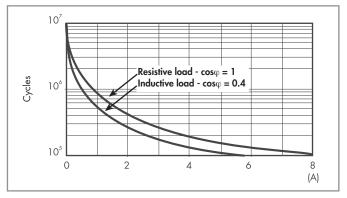


Contact specification

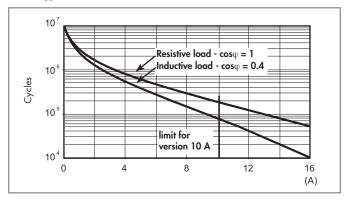
F 40 - Electrical life (AC) v contact current Types 40.31/51/61



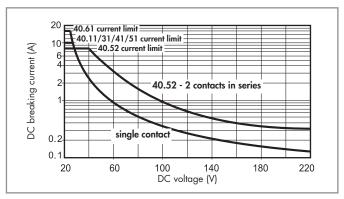
F 40 - Electrical life (AC) v contact current Type 40.52



F 40 - Electrical life (AC) v contact current Types 40.11/41



H 40 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of ≥ 100·10° 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 - 0.65 W standard (types 40.31/51/52/61)

Nominal	Coil	Operatir	ng range	Resistance	Rated coil
voltage	code				consumption
U _N		U_{min}	U_{max}	R	I at U _N
V		V	V	Ω	mA
5	9 .005	3.65	7.5	38	130
6	9 .006	4.4	9	55	109
7	9 .007	5.1	10.5	75	94
9	9 .009	6.6	13.5	125	72
12	9 .012	8.8	18	220	55
14	9 .014	10.2	21	300	47
18	9 .018	13.1	27	500	36
21	9 .021	15.3	31.5	700	30
24	9 .024	17.5	36	900	27
28	9 .028	20.5	42	1,200	23
36	9 .036	26.3	54	2,000	18
48	9 .048	35	72	3,500	14
60	9 .060	43.8	90	5,500	11
90	9 .090	65.7	135	12,500	7.2
110	9 .110	80.3	165	18,000	6.2
125	9 .125	91.2	188	23,500	5.3

DC coil data - 0.5 W sensitive (types 40.31/51/52/61)

Nominal	Coil	Operatin	g range	Resistance	Rated coil
voltage	code				consumption
U_N		U _{min} *	U _{max} **	R	I at U _N
V		V	V	Ω	mA
5	7 .005	3.7	8.8	50	100
6	7 .006	4.4	10.5	75	80
7	7 .007	5.1	12.2	100	70
9	7 .009	6.6	15.8	160	56
12	7 .012	8.8	21	300	40
14	7 .014	10.2	24.5	400	35
18	7 .018	13.2	31.5	650	27.7
21	7 .021	15.4	36.9	900	23.4
24	7 .024	17.5	42	1,200	20
28	7 .028	20.5	49	1,600	17.5
36	7 .036	26.3	63	2,600	13.8
48	7 .048	35	84	4,800	10
60	7 .060	43.8	105	7,200	8.4
90	7 .090	65.7	157	16,200	5.6
110	7 .110	80.3	192	23,500	4.7
125	7 .125	91.2	219	32,000	3.9

 $^{^*}U_{min} = 0.8 \ U_{N} \text{ for } 40.61$

DC coil data - 0.5 W sensitive (types 40.11/41)

Nominal	Coil	Operatir	ng range	Resistance	Rated coil
voltage	code				consumption
U _N		U _{min}	U _{max*}	R	I at U _N
V		V	V	Ω	mA
6	7 .006	4.4	10.5	75	80
12	7 .012	8.8	21	300	40
24	7 .024	17.5	42	1,200	20
48	7 .048	35	84	4,600	10.4
60	7 .060	43.8	105	7,200	8.3

 $^{^*}U_{max} = 1.5 U_N \text{ for } 40.11-2016$

AC coil data (types 40.31/51/52/61)

	171		<u>'</u>		
Nominal	Coil	Operatir	ng range	Resistance	Rated coil
voltage	code				consumption
U _N		U _{min}	U _{max}	R	I at U _N (50Hz)
V		V	V	Ω	mA
6	8 .006	4.8	6.6	21	168
12	8 .012	9.6	13.2	80	90
24	8 .024	19.2	26.4	320	45
48	8 .048	38.4	52.8	1,350	21
60	8 .060	48	66	2,100	16.8
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
240	8 .240	192	264	31,500	4.1

AC/DC coil data - bistable (types 40.31/51/52/61)

Nominal	Coil	Operating range		Resistance	Rated coil	DC: Release
voltage	code				consumption	resistance**
U_N		U _{min}	U_{max}	R	I at U _N	R _{DC}
V		V	V	Ω	mA	Ω
5	6 .005	4	5.5	23	215	37
6	6 .006	4.8	6.6	33	165	62
12	6 .012	9.6	13.2	130	83	220
24	6 .024	19.2	26.4	520	40	910
48	6 .048	38.4	52.8	2,100	21	3,600
110	6 .110	88	121	11,000	10	16,500

^{**} R_{DC} = Resistance in DC, R_{AC} = 1.3 x R_{DC} 1W

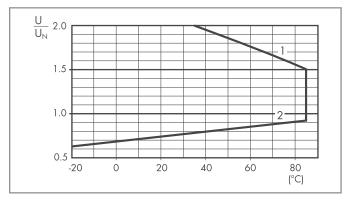
 $^{**}U_{max} = 1.5 U_{N} \text{ for } 40.61$



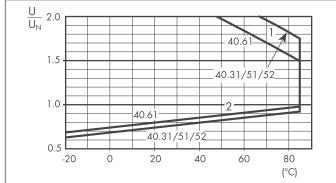
finder

Coil specifications

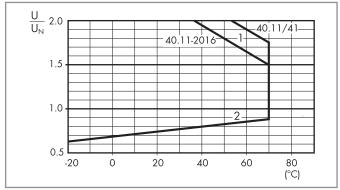
R 40 - DC coil operating range v ambient temperature Standard coil



R 40 - DC coil operating range v ambient temperature Sensitive coil, types 40.31/51/52/61

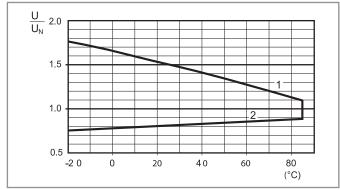


R 40 - DC coil operating range v ambient temperature Sensitive coil, types 40.11/41



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

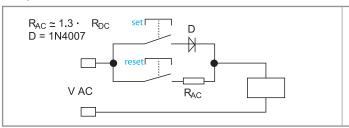
R 40 - AC coil operating range v ambient temperature



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

Wiring diagram for 40 series bistable coil version

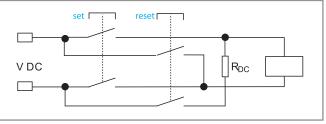
AC Operation



On momentary closure of the SET switch the relay is magnetised through the diode and the relay contacts transfer to the set position and remain in this position.

On momentary closure of the RESET switch the relay is demagnetised through limiting resistor (R_{AC}) and the contacts return to the reset position.

DC Operation



On momentary closure of the SET switch the relay is magnetised and the relay contacts transfer to the set position and remain in this position. On momentary closure of the RESET switch the relay is demagnetised through limiting resistor (R_{DC}) and the contacts return to the reset position.

Notes: The minimum SET or RESET impulse time is 20 ms. The maximum time can be continuous. In practice, always ensure that the SET and RESET contacts cannot be operated simultaneously.