Plug-in power relays

Order code	Manufacturer code	Description
60-1610	6012.9012.0040	12V DC DPDT OCTAL BASE RELAY (RC)
60-1615	6012.9024.0040	24V DPDT OCTAL BASE RELAY (RC)
60-1620	6012.8230.0040	230V AC DPDT OCTAL BASE RELAY (RC)
60-1640	6013.9012.0040	12V DC 3PDT 11-PIN POWER RELAY (RC)
60-1645	6013.9024.0040	24V DC 3PDT 11-PIN POWER RELAY (RC)
60-1650	6013.8230.0040	230V AC 3PDT 11-PIN PWR RELAY (RC)

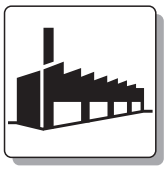
Sales: 01206 751166
Sales@rapidelec.co.uk
Technical: 01206 835555
Tech@rapidelec.co.uk
Fax: 01206 751188
www.rapidonline.com

60 SERIES
INDUSTRIAL RELAYS 10 A

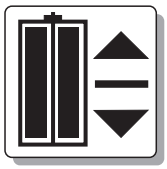
- a range of industrial relays with 2 or 3 CO contacts
- PCB mount, 8 - 11 pin plug-in (FASTON) or solder versions available
- AC or DC coils
- dual-function test button with mechanical flag indicator
- module facilities: low consumption LED and surge suppression diode available
- rear DIN rail mount and bifurcated contact options
- sockets and accessories: see 90 and 99 series and 86.60 timer modules
- approvals (according to type): BBJ, BEAB, DEMKO, FIMKO, GOST, IMQ, NEMKO, RINA, SEMKO, SEV, cUL, VDE

WOOD-PROCESSING MACHINES

INDUSTRIAL APPLIANCES

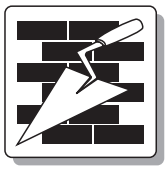


LIFTING

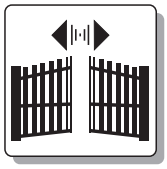


TOOLING MACHINES

CERAMICS INDUSTRY MACHINES



DOOR, GATE OPENERS



MEDICAL EQUIPMENT

PLASTIC MOLDING MACHINES

SHIP ON BOARD APPLIANCES

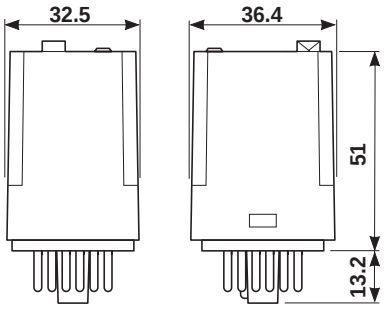
60.12

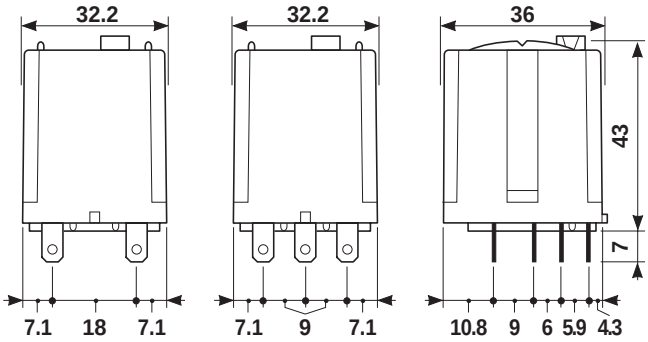
PLUG-IN 8/11 PIN RELAY 10 A

TYPE 60.12 2 CO (DPDT) standard version available with test button and mechanical indicator
TYPE 60.13 3 CO (3PDT) standard version available with test button and mechanical indicator
TYPE 60.12 - 0200 2 CO (DPDT) bifurcated contacts
TYPE 60.13 - 0200 3 CO (3PDT) bifurcated contacts
- single piece connection from contact to pin
- LED and diode available
- standard contact material: Ag Ni
- options: see coding table page 58 and 60
- ordering information: see page 58 and 60

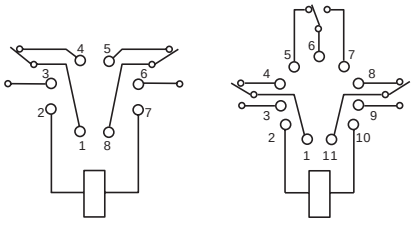
MINIATURE INDUSTRIAL RELAY 10 A

TYPE 60.32 2 CO (DPDT)
TYPE 60.33 3 CO (3PDT)
- tin plated copper connections: FASTON 187 (4.8 x 0.5 mm) suitable for socket mounting
- test button available
- standard contact material: Ag Ni
- options: see coding table page 58 and 60
- ordering information: see page 58 and 60



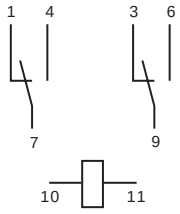


60.32 60.33

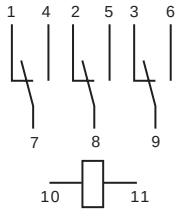


60.12

60.13



60.32



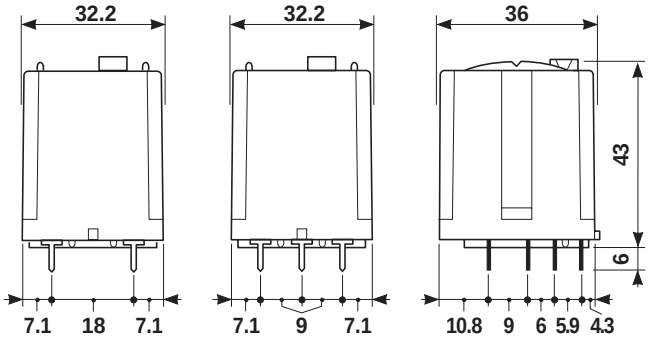
60.33

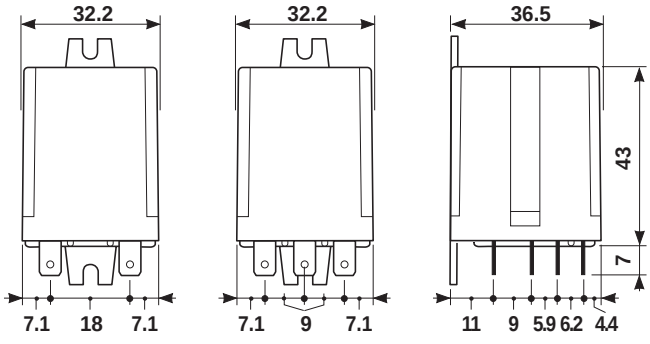
P.C.B. RELAY 10 A

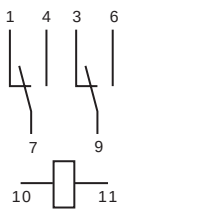
TYPE 60.42 2 CO (DPDT)
TYPE 60.43 3 CO (3PDT)
- tin plated copper pins (1.2 x 0.5 mm)
- test button available
- standard contact material: Ag Ni
- options: see coding table page 58 and 60
- ordering information: see page 58 and 60

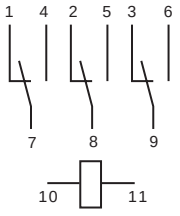
MINIATURE INDUSTRIAL RELAY 10 A

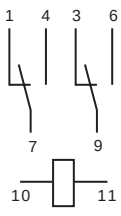
TYPE 60.62 2 CO (DPDT)
TYPE 60.63 3 CO (3PDT)
- cover with flanges for Ø 3 ÷ 3.5 mm screw mount
- tin plated copper connections: FASTON 187 (4.8 x 0.8 mm)
- standard contact material: Ag Ni
- options: see coding table page 58 and 60
- ordering information: see page 58 and 60

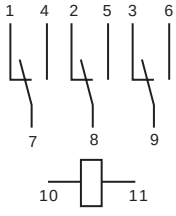


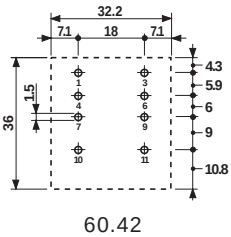


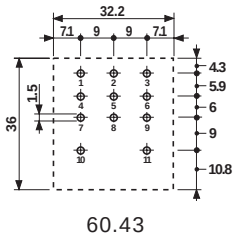


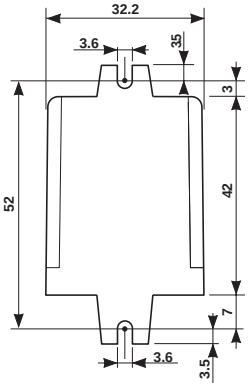












GOST RINA

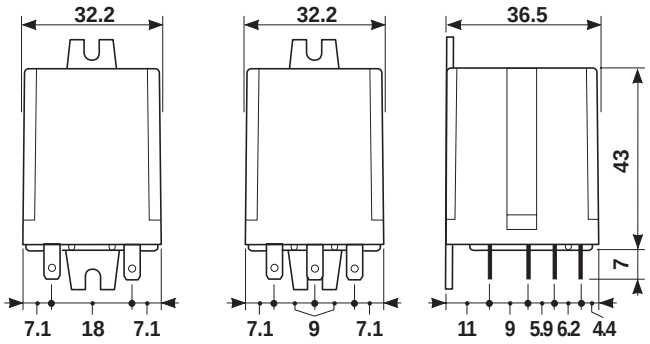
FASTON 110 FLANGES RELAY 10 A

TYPE 60.72 2 CO (DPDT)
TYPE 60.73 3 CO (3PDT)

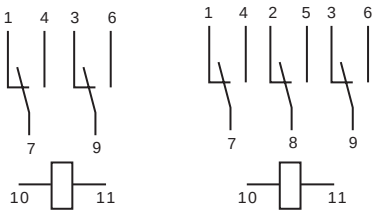
- cover with flanges for Ø 3 ÷ 3.5 mm screw mount
- tin plated copper connections: FASTON 110 (2.8 x 0.8 mm)
- standard contact material: Ag Ni
- options: see coding table page 58 and 60
- ordering information: see page 58 and 60

TECHNICAL DATA

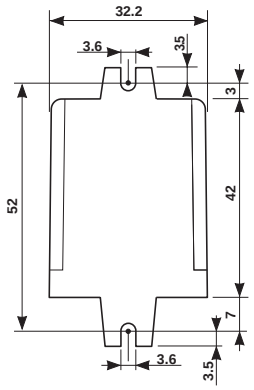
DIELECTRIC STRENGTH tested at: leakage current ≤ 10 mA for 1 min at 50 Hz	between coil and contacts	2000 V
	between open contacts	1000 V
	between adjacent contacts	2000 V
	between frame and live parts	2000 V
SURGE TEST (1.2/50µs) voltage between coil and contacts		2500 V
INSULATION RESISTANCE		≥ 20 · 10^3 MΩ
INSULATION GROUP		C 250
MAX SWITCHING FREQUENCY: - without load - at rated load		36000 cycles/h 1800 cycles/h
AMBIENT TEMPERATURE		– 40 to + 70 °C
MECHANICAL LIFE		AC: 20 · 10^6 cycles DC: 50 · 10^6 cycles
PROTECTION CATEGORY OF ENCLOSURES		IP 40
OPERATE AND RELEASE TIME: pick-up time (from 0 to Un) drop-out time (from Un to 0)		 ≤ 20 ms (including contact bounce) ≤ 20 ms (including contact bounce)
TYPE OF DUTY		continuous
PICK-UP CLASS		C (according to IEC 255)
DIELECTRIC TEST		2
TYPE OF RELAY		all - or - nothing



60.72 60.73



60.72 60.73



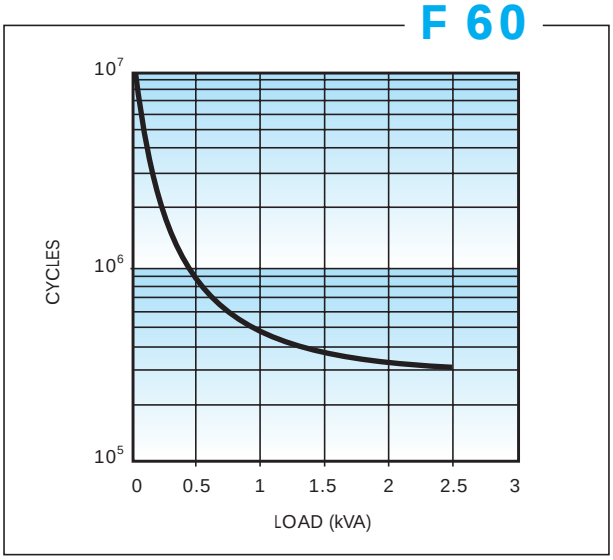
CONTACT SPECIFICATION

NOMINAL RATE IN AC1	2500 VA
RATED CURRENT	10 A
MAXIMUM PEAK CURRENT	20 A
RATED VOLTAGE	250 V AC
MAXIMUM SWITCHING VOLTAGE	400 V AC
BREAKING CAPACITY IN DC1	see diagram H 60
SINGLE PHASE HP MOTOR RATING	0.37 kW, 0.6 HP
CONTACT RESISTANCE: - initial	≤ 50 mΩ
STANDARD CONTACT MATERIAL	Ag Ni

BIFURCATED CONTACTS (OPTION 0200)

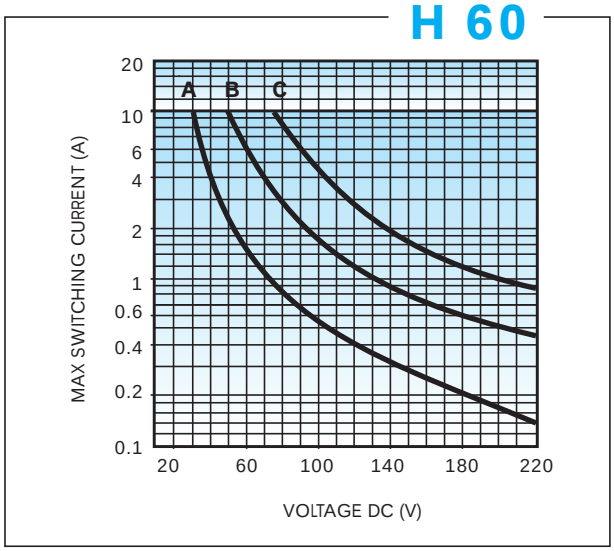
NOMINAL RATE IN AC1	1500 VA
RATED CURRENT	6 A
RATED VOLTAGE	250 V

F 60



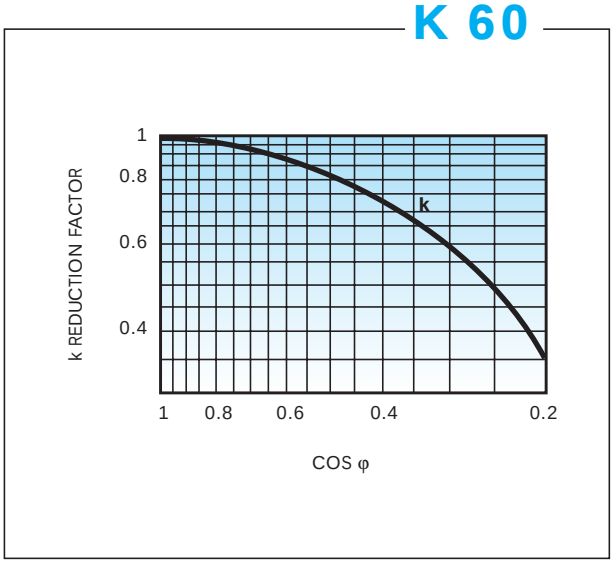
Contact life vs AC1 load at 1800 cycles/h.

H 60



Breaking capacity for DC1 load at 1800 cycles/h.
A = load applied to 1 contact
B = load applied to 2 contacts in series
C = load applied to 3 contacts in series

K 60



Load reduction factor vs cos φ.

COIL SPECIFICATION

VERSIONS:
AC - alternating current 50/60 Hz
DC - direct current
AM - current sensing
DI - DC coil with a diode in parallel

	AC	DC
RATED POWER	2.2 VA	1.3 W
OPERATING RANGE	(0.8 ÷ 1.1) U_N	(0.8 ÷ 1.1) U_N
HOLDING VOLTAGE	≤ 0.8 U_N	≤ 0.5 U_N
MUST DROP-OUT VOLTAGE	≥ 0.2 U_N	≥ 0.1 U_N
NOMINAL MAGNETOMOTIVE FORCE	180 A	250 A
THERMAL INSULATION CLASS OF WIRE	F (+155°C)	F (+155°C)
THERMAL RESISTANCE	43°C/W	43°C/W

CONDUCTED DISTURBANCE IMMUNITY	BURST (acc. to EN 61000-4-4) SURGE (acc. to EN 61000-4-5)	level 4 (4kV) level 4 (4kV)

AC VERSION DATA (R values relate to +20°C. Tolerance of R and I values: ±10%.)

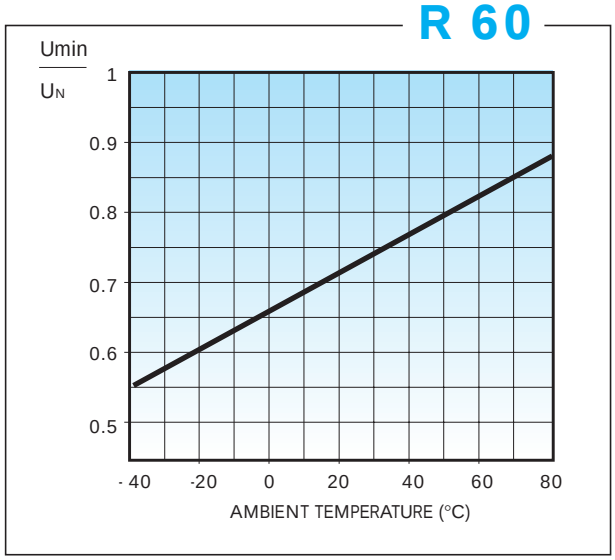
rated voltage U_N (V)	U min (V)	U max (V)	resistance R (Ω)	nominal absorption I at U_N 50 Hz (mA)	inductance with closed armature (H)
6	4.8	6.6	4.6	367	0.05
12	9.6	13.2	19	183	0.2
24	19.2	26.4	80	91.7	0.8
48	38.4	52.8	320	45.8	3.2
60	48	66	500	36.7	4.9
110	88	121	1800	20	16.5
125	100	137.5	2000	17.6	21.7
230	184	253	7250	9.6	72
240	192	264	8500	9.2	78

DC VERSION DATA (R values relate to +20°C. Tolerance of R and I values: ±10%.)

rated voltage U_N (V)	U min (V)	U max (V)	resistance R (Ω)	nominal absorption I at U_N (mA)
6	4.8	6.6	28	214
12	9.6	13.2	110	109
24	19.2	26.4	445	53.9
48	38.4	52.8	1770	27.1
60	48	66	2760	21.7
110	88	121	9420	11.7
125	100	137	12000	10.4

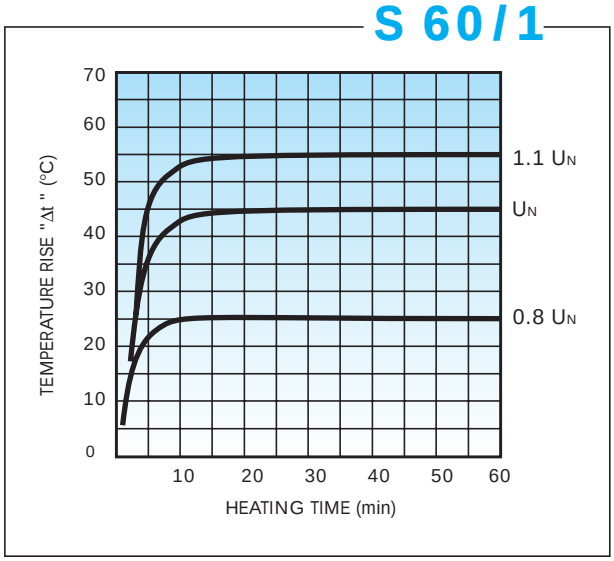
COIL SPECIFICATION

R 60



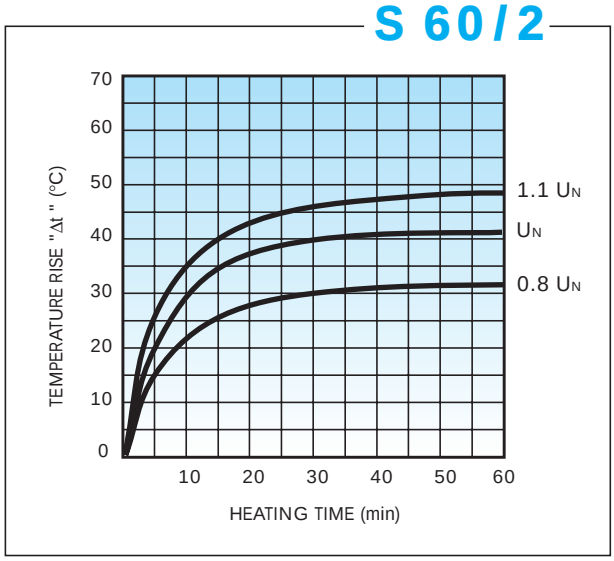
DC coil min pick-up voltage vs ambient temperature.
Umin = pick-up voltage
U_N = rated voltage

S 60/1



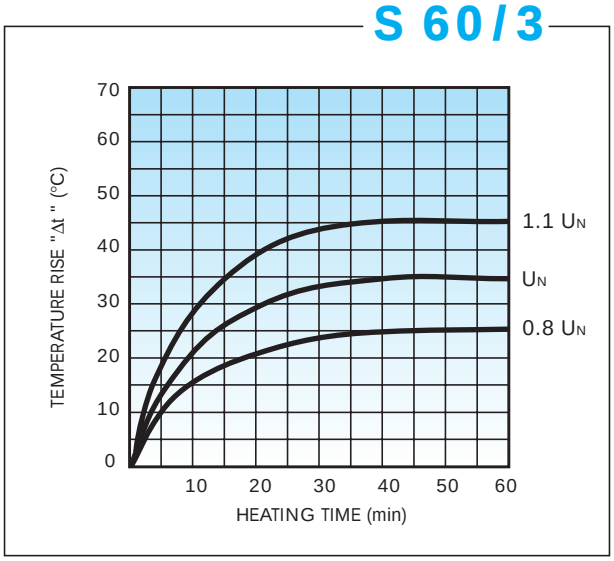
Temperature rise "Δt " vs applied voltage. DC coils.

S 60/2



Temperature rise "Δt " vs applied voltage. AC 50 Hz coils.

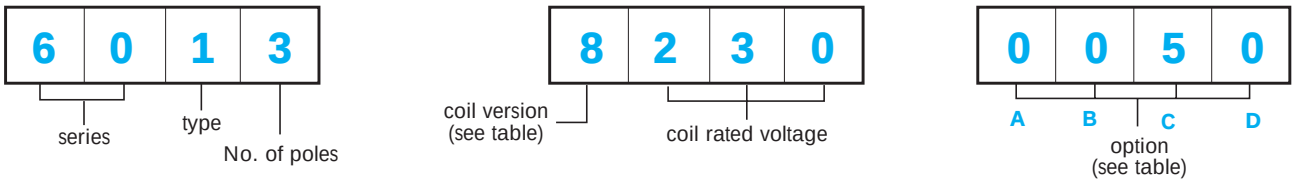
S 60/3



Temperature rise "Δt " vs applied voltage. AC 60 Hz coils.

ORDERING INFORMATION

Example: a 60 series 11 pin plug-in relay with 4 CO (4PDT) contacts, coil rated at 230 V AC with a test button and LED has the following code:



For standard relays with no options, use the first 8 digits only.

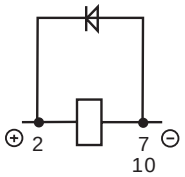
COIL VERSIONS

Code		Coil types
9	DC	Direct current
8	AC	Alternating current at 50/60 Hz
4	AM	Current sensing
3	DI	Direct current with a diode in parallel to coil

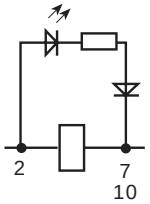
OPTIONS (* available for DC coil only / ** on types 60.12 - 60.13 only)

A	Contact material	B	Contact circuit	C	Additional features	D	Special applications
0	standard	0	standard	0	standard	0	standard
2	Ag CdO	2	bifurcated contacts	1	test button	7	top DIN rail mount
5	Ag Ni + Au (5µ)			2	mechanical indicator	8	rear DIN rail mount
				3	LED, AC only		
				4	test button + mechanical indicator		
				5	test button + LED, AC only		
				*6	LED + diode (positive to pin 2) DC only		
				*7	test button + LED + diode (positive to pin 2) DC only		
				*8	LED + diode (positive to pin 7 or 10) DC only		
				*9	test button + LED + diode (positive to pin 7 or 10) DC only		
				**0054	test button + LED, AC only + mechanical indicator		
				**0074	test button+LED+diode (positive to pin 2) DC only+mechanical indicator		
				**0094	test button+LED+diode (positive to pin 7 or 10) DC only+mechanical indicator		

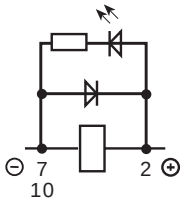
Relay type	Options available			
	A	B	C	D
60.12 - 60.13	2 - 5	2	0-2-3-4-5-6-7-8-9-0054-0074-0094	—
60.32 - 60.33	2 - 5	—	1	—
60.42 - 60.43	2 - 5	—	1	—
60.62 - 60.63	2 - 5	—	—	7 - 8
60.72 - 60.73	2 - 5	—	—	7 - 8



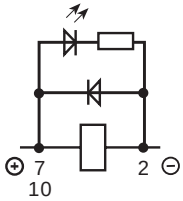
Coil version = 3



Option= 0030



Option= 0060 - 0070



Option= 0080 - 0090

OPTIONS

REAR DIN RAIL MOUNT (0008)

TEST BUTTON + MECHANICAL INDICATOR (0040)

LED (AC - 0030)

CURRENT SENSING COILS

AC CURRENT SENSING RELAYS.
(R values relate to +20°C ambient temperature.
Tolerance of R and I values: ±10%.)

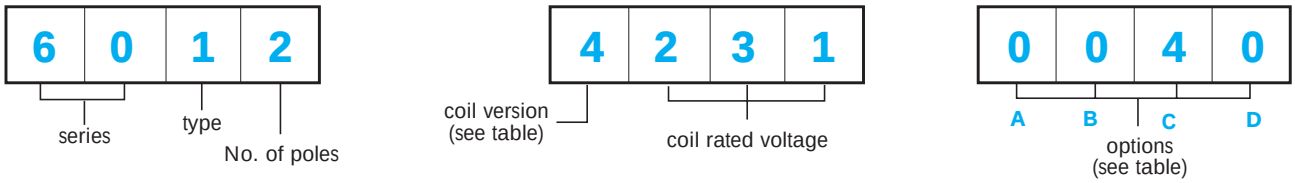
coil code 4	I min (A)	I_N (A)	I max (A)	R (Ω)
4501	4.25	5	6	0.01
4451	3.8	4.5	5.4	0.02
4401	3.4	4	4.8	0.02
4361	3	3.6	4.3	0.02
4321	2.7	3.2	3.8	0.03
4281	2.4	2.8	3.4	0.04
4251	2.1	2.5	3	0.05
4231	1.9	2.3	2.8	0.06
4201	1.7	2	2.4	0.08
4181	1.5	1.8	2.2	0.10
4161	1.4	1.6	1.9	0.12
4141	1.2	1.4	1.7	0.16
4121	1	1.2	1.4	0.22
4101	0.85	1	1.2	0.32
4091	0.8	0.9	1.1	0.40
4081	0.7	0.8	1	0.50
4071	0.6	0.7	0.9	0.65
4061	0.5	0.6	0.7	0.89
4051	0.42	0.5	0.6	1.28
4041	0.34	0.4	0.5	2
4031	0.25	0.3	0.4	3.57
4021	0.17	0.2	0.25	8
4011	0.085	0.1	0.15	32.1

DC CURRENT SENSING RELAYS.
(R values relate to +20°C ambient temperature.
Tolerance of R and I values: ±10%.)

coil code 4	I min (A)	I_N (A)	I max (A)	R (Ω)
4502	4.25	5	6	0.02
4452	3.8	4.5	5.4	0.030
4402	3.4	4	4.8	0.038
4362	3	3.6	4.3	0.047
4322	2.7	3.2	3.8	0.059
4282	2.4	2.8	3.4	0.077
4252	2.1	2.5	3	0.10
4222	1.9	2.2	2.6	0.13
4202	1.7	2	2.4	0.15
4182	1.5	1.8	2.2	0.19
4162	1.4	1.6	1.9	0.24
4142	1.2	1.4	1.7	0.31
4122	1	1.2	1.4	0.42
4102	0.85	1	1.2	0.61
4092	0.8	0.9	1.1	0.75
4082	0.7	0.8	1	0.95
4072	0.6	0.7	0.9	1.24
4062	0.5	0.6	0.7	1.7
4052	0.42	0.5	0.6	2.40
4042	0.34	0.4	0.5	3.80
4032	0.25	0.3	0.4	6.7
4022	0.17	0.2	0.25	15.2
4012	0.085	0.1	0.15	61

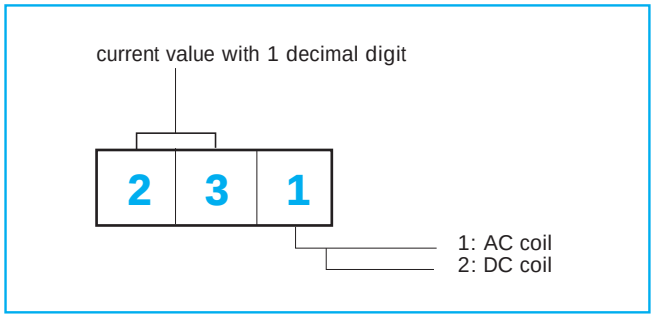
ORDERING INFORMATION

Example: a 60 series current sensing 8 pin plug-in relay with 2 CO (DPDT) contacts and AC coil rated at 2.3 A, test button and mechanical flag indicator has the following code:



For standard relays with no options, use the first 8 digits only.

COIL RATED CURRENT



OPTIONS FOR CURRENT SENSING RELAY

A	Contact material	B	Contact circuit	C	Additional features	D	Special applications
0	standard	0	standard	0	standard	0	standard
				1	test button	7	top DIN rail mount
				2	mechanical flag indicator	8	rear DIN rail mount
				4	test button + mechanical flag indicator		