Section 20

Relays and Timers


RXM


RSL


RSB


SSP


SSL


SSM


8501X


RE17


RM17, RM35

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RSL 1PV••

RSL 1PR••

RSL 1AB••

RSL ZVA•

RSL ZRA•

RSL Z2

RSL Z3

Harmony™ RSL Interface Relays

Harmony RSL slim interface relays save valuable panel space with a 6 mm width and have a 6 A general purpose load rating. Features include:

- Pre-assembled option: relay and socket are combined into one catalog number.
- Universal AC/DC sockets have built-in protection from transients and reverse polarity voltages (see catalog DIA3ED2090304EN-US for more detailed information).
- Accessories, which include isolators, ID tags, and bus jumper save valuable installation time.
- SPDT (1 C/O) design

Refer to Online EZ Selector.

Table 20.1: Pre-assembled Relay and Socket Combination (sold in lots of 10)

Socket Supply Voltage	Pre-Assembled Catalog Number[1]		Replacement Relays Catalog Number
	Screw Connector	Spring Terminal	
12 Vac/Vdc	RSL1PVJU	RSL1PRJU	RSL1AB4JD
24 Vac/Vdc	RSL1PVBU	RSL1PRBU	RSL1AB4BD
48 Vac/Vdc	RSL1PVEU	RSL1PREU	RSL1AB4ED
110 Vac/Vdc	RSL1PVFU	RSL1PRFU	RSL1AB4ND
230 Vdc	RSL1PVPU	RSL1PRPU	RSL1AB4ND

Table 20.2: Relays (sold in lots of 10)

Relay Coil Voltage[2]	Catalog Number
12 Vdc	RSL1AB4JD
24 Vdc	RSL1AB4BD
48 Vdc	RSL1AB4ED
60 Vdc	RSL1AB4ND

Table 20.3: Sockets (sold in lots of 10)

Control Voltage	Socket Type		For Use with Relays:
	Screw Connector Catalog Number	Spring Terminal Catalog Number	
12 Vac/Vdc	RSLZVA1	RSLZRA1	RSL1AB4JD
24 Vac/Vdc			RSL1AB4BD
48 Vac/Vdc	RSLZVA2	RSLZRA2	RSL1AB4ED
60 Vac/Vdc			RSL1AB4ND
110 Vac/Vdc	RSLZVA3	RSLZRA3	RSL1AB4ND
230 Vac/Vdc	RSLZVA4	RSLZRA4	RSL1AB4ND

Table 20.4: Accessories

Description	Compatibility	Catalog Number
ID tags (2 sheets of 64 tags)	With all RSL and SSL series sockets	RSLZ5
Bus jumper (10 x 20-pole jumpers)		RSLZ2
Butterfly isolator (10 isolators)		RSLZ3

Approvals for RSL Relays

c UL us — File: E173076 CCN: NRNT2, NRNT8 — CSA — File: 240278 Class: 3211 04 — CE — IEC 61810-1 — RoHS Compliant

Approvals for RSLZ Sockets

c UL us — File: E172326 CCN: SWIV2, SWIV8 — CSA — File: 254977 Class: 3211 07 — CE — IEC 61984 — RoHS Compliant

[1] Relays are mounted on sockets equipped with LED and protection circuit.
[2] The RSL sockets will accept an AC or DC input voltage; however, the relay always receives a filtered DC voltage.

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RSB1A160F7

RSB2A080BD

RSZE1S48M

RSB1A120JD Relay
+ RZM031FPD Socket
+ RSZE1S35M Module

RSB1A160BD Relay
+ RSZE1S48M Socket

Harmony™ RSB Interface Relays

Harmony RSB interface relays and sockets provide the optimum combination of robust performance and space saving for the most demanding applications. Relays are rated at 8 A, 12 A, and 16 A (250 Vac / 28 Vdc). Features include:

- Optional protection modules for protection against electrical transients
- Optional plastic hold-down ejector clips
- Socket or printed circuit board installation options

Refer to Online EZ Selector.

Table 20.5: Relays (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)		
	SPDT (1 C/O) -12 A Res.	SPDT (1 C/O) -16 A Res.	DPDT (2 C/O) -8 A Res.
	Catalog Number[3]	Catalog Number[3]	Catalog Number[3]
12 Vdc	RSB1A120JD	RSB1A160JD	RSB2A080JD
24 Vdc	RSB1A120BD	RSB1A160BD	RSB2A080BD
48 Vdc	RSB1A120ED	RSB1A160ED	RSB2A080ED
110 Vdc	RSB1A120FD	RSB1A160FD	RSB2A080FD
24 Vac	RSB1A120B7	RSB1A160B7	RSB2A080B7
48 Vac	RSB1A120E7	RSB1A160E7	RSB2A080E7
120 Vac	RSB1A120F7	RSB1A160F7	RSB2A080F7
220 Vac	RSB1A120M7	RSB1A160M7	RSB2A080M7
230 Vac	RSB1A120P7	RSB1A160P7	RSB2A080P7
240 Vac	RSB1A120U7	RSB1A160U7	RSB2A080U7

Table 20.6: Sockets – 12 A, 300 Vac (sold in lots of 10)

Contact Terminal Arrangement	Connection	For Use with Relays	Catalog Number
Separate[4]	Box lug connector	RSB1A120••	RSZE1S35M
		RSB1A160••[5] RSB2A080••	RSZE1S48M

Table 20.7: Protection Modules (sold in lots of 10)

Description	Compatibility	Voltage	Catalog Number
Diode	RSZ•••••• sockets (RSB series), RGZ•••••• sockets (RXG series)	6–230 Vdc	RZM040W
RC circuit		24–60 Vac	RZM041BN7
		110–240 Vac	RZM041FU7
Diode + green LED		6–24 Vdc	RZM031RB
		24–60 Vdc	RZM031BN
		110–230 Vdc	RZM031FPD
Varistor + green LED		6–24 Vac/Vdc	RZM021RB
		24–60 Vac/Vdc	RZM021BN
		110–230 Vac/Vdc	RZM021FP

Table 20.8: Accessories (sold in lots of 10)

Description	Compatibility	Catalog Number
Plastic hold-down ejector clip	RSZ•••••• sockets (RSB series)	RSZR215
ID tags		RSZL300

Approvals for RSB Relays

c UL us — File: E173076, CCN: NRNT2, NRNT8 | CSA — File: 215736, Class: 3211 07 | CE — IEC 61810-1 | RoHS Compliant

Approvals for RSZ Sockets

c UL us — File: E173076, CCN: NRNT2, NRNT8 | CSA — File: 254977, Class: 3211 07 | CE — IEC 61810-1 | RoHS Compliant

RZM modules are RoHS compliant.

[3] To order a relay complete with socket (sold in lots of 20): add suffix S to the catalog numbers selected above.
Example: RSB 2A080RD + RSZ E1S48M becomes RSB 2A080RDS.
[4] The inputs and outputs are on separate sides.
[5] When using the RSB1A160•• relay with socket RSZ E1S48M, terminals 11 and 21, 14 and 24, 12 and 22 must be linked.

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RGZE1S35M Socket
+ RXG12BD Relay

RXG11••

RXG22••

RXG13••

RXG15••

New!

Harmony™ RXG Interface Relays

The Harmony RXG interface relay range is comprised of 10 A relays with 1 C/O contact and 5 A relays with 2 C/O contacts all in the same optimal foot print. The mating sockets feature separate contact terminals with reliable screw connections that attach either to a convenient 35 mm DIN rail or flexible panel mounting. The entire offer is a complete system solution with protection modules (diode, diode + LED, RC circuit, or varistor + LED), plastic ejector/maintaining clip and ID Tags to identify relays.

- Standard hold-down ejector clip integrated with socket
- Optional protection modules for protection against electrical transients
- Industry standard footprint for seamless compatibility with competitive sockets
- UL Listed combination (Relay + Socket) for expedited system certification

Refer to Online EZ Selector.

Table 20.9: Relays: Standard Cover, without LED, with Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	SPDT (1 C/O) - 10 A	DPDT (2 C/O) - 5 A
	Catalog Number	Catalog Number
6 Vdc	—	RXG21RD
12 Vdc	—	RXG21JD
24 Vdc	RXG11BD	RXG21BD
24 Vac	RXG11B7	RXG21B7
48 Vac	—	RXG21E7
120 Vac	RXG11F7	RXG21F7
230 Vac	RXG11P7	RXG21P7

Table 20.10: Relays: Standard Cover, with LED, with Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	SPDT (1 C/O) - 10 A	DPDT (2 C/O) - 5 A
	Catalog Number	Catalog Number
6 Vdc	RXG12RD	—
12 Vdc	RXG12JD	RXG22JD
24 Vdc	RXG12BD	RXG22BD
48 Vdc	RXG12ED	RXG22ED
110 Vdc	RXG12FD	RXG22FD
24 Vac	RXG12B7	RXG22B7
48 Vac	RXG12E7	RXG22E7
120 Vac	RXG12F7	RXG22F7
220 Vac	—	RXG22M7
230 Vac	RXG12P7	RXG22P7

Table 20.11: Relays: Standard Cover, with LED, without Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	SPDT (1 C/O) - 10 A	DPDT (2 C/O) - 5 A
	Catalog Number	Catalog Number
12 Vdc	RXG13JD	—
24 Vdc	RXG13BD	RXG23BD
24 Vac	RXG13B7	RXG23B7
48 Vac	—	RXG23E7
120 Vac	RXG13F7	RXG23F7
220 Vac	—	RXG23M7
230 Vac	RXG13P7	RXG23P7

Table 20.12: Relays: Clear Cover, without LED, without Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	SPDT (1 C/O) - 10 A	DPDT (2 C/O) - 5 A
	Catalog Number	Catalog Number
24 Vdc	RXG15BD	RXG25BD
24 Vac	—	RXG25B7
230 Vac	RXG15P7	RXG25P7

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RGZE1S48M


RZM031RB


RSZL300

Table 20.13: Sockets (sold in lots of 10)

Contact Terminal Arrangement	Connection	For Use with Relays	Catalog Number
Separate*[6]*	Box lug connector	RXG1•••	RGZE1S35M*[7]*
		RXG2•••	RGZE1S48M*[7]*

Table 20.14: Protection Modules (sold in lots of 10)

Description	Voltage	Compatibility	Catalog Number
Diode	6 to 230 Vdc	RSZ•••••• sockets (RSB series), RGZ•••••• sockets (RXG series)	RZM040W
RC circuit	24 to 60 Vac		RZM041BN7
	110 to 240 Vac		RZM041FU7
Diode + green LED	6 to 24 Vdc		RZM031RB
	24 to 60 Vdc		RZM031BN
	110 to 230 Vdc		RZM031FPD
Varistor + green LED	6 to 24 Vdc/Vac		RZM021RB
	24 to 60 Vdc/Vac		RZM021BN
	110 to 230 Vdc/Vac		RZM021FP

Table 20.15: Accessories (sold in lots of 10)

Description	For Use With	Catalog Number
Plastic ejector clip	RXG series (RSZ•••••• sockets)	RGZR215
Socket ID tags		RSZL300
Relay ID tags	RXG series relays	RGZL520

Approvals for RXG Relays

c UL us LISTED — File: E173076 CCN: NRNT, NRNT7*[8]*

c UL us — File: E173076 CCN: NRNT2, NRNT8

CSA — File: 254977 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

Approvals for RGZ Sockets

c UL us — File: E172326 CCN: SW1V2, SW1V8

CSA — File: 254977 Class: 3211 07

CE — RoHS Compliant

[6] The inputs and outputs are on separate sides.
[7] Please note that RGZE1S35M and RGZE1S48M sockets come standard with the RGZR215 ejector clip
[8] When used with the appropriate RGZ socket.

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RXM4AB2BD + RXZE2S114M + RXZR335 + RXZL520

RXM2AB1B7

RXM2AB2BD

RXM2AB3BD

Harmony™ RXM Plug-In Relays

Harmony RXM miniature plug-in relays and sockets provide a complete system solution in response to the most demanding applications ranging from 3 to 12 A. Some of the features include:

- Test button with removable lock-down door for testing the contacts (depending on model)
- Green LED indication of relay status (depending on model)
- Mechanical indication of relay status (standard)
- Optional protection modules to protect against electrical spikes
- Bus jumpers for connecting multiple terminals reduce installation time

Online EZ Selector

Table 20.16: Relays: without LED, with Test button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)		
	DPDT (2 C/O) -12 A Res.	3PDT (3 C/O) - 10 A Res.	4PDT (4 C/O) - 8 A Res.
	Catalog Number	Catalog Number	Catalog Number
12 Vdc	RXM2AB1JD	RXM3AB1JD	RXM4AB1JD
24 Vdc	RXM2AB1BD	RXM3AB1BD	RXM4AB1BD
48 Vdc	RXM2AB1ED	RXM3AB1ED	RXM4AB1ED
110 Vdc	RXM2AB1FD	RXM3AB1FD	RXM4AB1FD
220 Vdc	—	—	RXM4AB1MD
24 Vac	RXM2AB1B7	RXM3AB1B7	RXM4AB1B7
48 Vac	RXM2AB1E7	RXM3AB1E7	RXM4AB1E7
120 Vac	RXM2AB1F7	RXM3AB1F7	RXM4AB1F7
230 Vac	RXM2AB1P7	RXM3AB1P7	—
240 Vac	—	—	RXM4AB1U7

Table 20.17: Relays: with LED, with Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)		
	DPDT (2 C/O) -12 A Res.	3PDT (3 C/O) - 10 A Res.	4PDT (4 C/O) - 8 A Res.
	Catalog Number	Catalog Number	Catalog Number
12 Vdc	RXM2AB2JD	RXM3AB2JD	RXM4AB2JD
24 Vdc	RXM2AB2BD	RXM3AB2BD	RXM4AB2BD
48 Vdc	RXM2AB2ED	—	RXM4AB2ED
110 Vdc	RXM2AB2FD	RXM3AB2FD	RXM4AB2FD
125 Vdc	—	—	RXM4AB2GD
24 Vac	RXM2AB2B7	RXM3AB2B7	RXM4AB2B7
48 Vac	RXM2AB2E7	RXM3AB2E7	RXM4AB2E7
120 Vac	RXM2AB2F7	RXM3AB2F7	RXM4AB2F7
230 Vac	RXM2AB2P7	RXM3AB2P7	RXM4AB2P7

Table 20.18: Relays: with LED, without Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	DPDT (2 C/O) -12 A Res.	4PDT (4 C/O) - 8 A Res.
	Catalog Number	Catalog Number
24 Vdc	RXM2AB3BD	RXM4AB3BD
24 Vac	—	RXM4AB3B7
120 Vac	—	RXM4AB3F7
230 Vac	—	RXM4AB3P7

Table 20.19: Relays: Low level Contacts, without LED, with Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)
	4PDT (4 C/O) -3 A Res.
	Catalog Number
24 Vdc	RXM4GB1BD
120 Vac	RXM4GB1F7
230 Vac	RXM4GB1P7

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RXM4GB2F7

Table 20.20: Relays: Low Level Contacts, with LED, with Test button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)
	4PDT (4 C/O) -3 A Res.
	Catalog Number
12 Vdc	RXM4GB2JD
24 Vdc	RXM4GB2BD
48 Vdc	RXM4GB2ED
110 Vdc	—
24 Vac	RXM4GB2B7
48 Vac	RXM4GB2E7
120 Vac	RXM4GB2F7
230 Vac	RXM4GB2P7
240 Vac	RXM4GB2U7

- For sockets and accessories, see page 20-8.

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Sockets and Accessories for Harmony™ RXM Relays

Refer to Online EZ Selector.

RXZE2S108M

RXM040W

RXZ400

Table 20.21: Sockets (sold in lots of 10)

Contact Terminal Arrangement	Connection	For Use with Relays	Catalog Number
Mixed[9]	Screw clamp terminals	RXM2•••••[10] RXM4•••••[10]	RXZE2M114[11]
	Box lug connector	RXM2••••• RXM4•••••	RXZE2M114M[11]
Separate[12]	Box lug connector	RXM2•••••	RXZE2S108M[13]
		RXM3•••••	RXZE2S111M[11]
		RXM4•••••	RXZE2S114M
	Spring Terminal	RXM2•••••	—

Table 20.22: Protection Modules (sold in lots of 10)

Description	Voltage	Compatibility	Catalog Number
Diode	6–250 Vdc	RXZ•••••• sockets (RXM series), RPZF1 and RPZF2 sockets (RPM series)	RXM040W
RC circuit	24–60 Vac		RXM041BN7
	110–240 Vac		RXM041FU7
Varistor	6–24 Vac/Vdc		RXM021RB
	24–60 Vac/Vdc		RXM021BN
	110–240 Vac/Vdc		RXM021FP

Table 20.23: Accessories (sold in lots of 10)

Description	Compatibility	Catalog Number
Metal hold-down clip	RXZ sockets (RXM series)	RXZ400
Plastic hold-down ejector clip	RXZ sockets (RXM series)	RXZR335
Bus jumper, 2-pole (Ith: 5 A max.)	RXZE2S sockets (RXM series)	RXZS2
Panel mounting adapter[14]	RXM series relays, RPM1 and RPM2 series relays	RXZE2FA
Relay ID tags (sheet of 108 tags)	RXM series relays, RPM series relays, RUM series relays	RXZL520
Socket ID tags	RXZ sockets (RXM series, except RXZE2M114), RUZS sockets (RUM series)	RXZL420

Approvals for RXM Relays

c UL us LISTED — File: E164862 CCN: NLDX, NLDX7[15]

c UL us — File: E164862 CCN: NLDX2, NLDX8

CSA — File: 230765 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

Approvals for RXZ Sockets

c UL us — File: E172326 CCN: SWIV2, SWIV8

CSA — File: 230765 Class: 3211 07

CE — IEC 61984

RoHS Compliant

[9] The inputs and outputs are mixed on both sides.
[10] When mounting relay RXM2••••• on socket RXZE2M••••, the thermal current must not exceed 10 A.
[11] Thermal current Ith: 10 A
[12] The inputs and outputs are on separate sides.
[13] Thermal current Ith: 12 A
[14] Test button and lock-down door become inaccessible.
[15] When used with the appropriate RXZ socket.

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RPZF4 Socket
+RPM42P7 Relay

RPM13••

RPM23••

RPM33••

RPM43••

Harmony™ RPM Plug-In Relays

Harmony RPM plug-in relays and sockets provide a complete system solution for the most demanding applications up to 15 A. Some of the features include:

- Test button with removable lock-down door for testing the contacts (depending on model)
- Green LED indication of relay status (depending on model)
- Mechanical indication of relay status (standard)
- Optional modules to protect against electrical spikes

Refer to Online EZ Selector.

Table 20.24: Relays: without LED, with Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)			
	SPDT (1 C/O) - 15 A Res.	DPDT (2 C/O) - 15 A Res.	3PDT (3 C/O) - 15 A Res.	4PDT (4 C/O) - 15 A Res.
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
12 Vdc	—	RPM21JD	—	—
24 Vdc	RPM11BD	RPM21BD	—	RPM41BD
24 Vac	RPM11B7	RPM21B7	—	—
120 Vac	RPM11F7	RPM21F7	RPM31F7	RPM41F7
230 Vac	RPM11P7	RPM21P7	—	RPM41P7

Table 20.25: Relays: with LED, with Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)			
	SPDT (1 C/O) - 15 A Res.	DPDT (2 C/O) - 15 A Res.	3PDT (3 C/O) - 15 A Res.	4PDT (4 C/O) - 15 A Res.
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
12 Vdc	RPM12JD	RPM22JD	RPM32JD	RPM42JD
24 Vdc	RPM12BD	RPM22BD	RPM32BD	RPM42BD
48 Vdc	—	RPM22ED	—	RPM42ED
110 Vdc	—	RPM22FD	—	RPM42FD
24 Vac	RPM12B7	RPM22B7	RPM32B7	RPM42B7
48 Vac	—	RPM22E7	—	RPM42E7
120 Vac	RPM12F7	RPM22F7	RPM32F7	RPM42F7
230 Vac	RPM12P7	RPM22P7	RPM32P7	RPM42P7

Table 20.26: Relays: with LED, without Test Button and Lock-Down Door (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	DPDT (2 C/O) - 15 A Res.	4PDT (4 C/O) - 15 A Res.
	Catalog Number	Catalog Number
24 Vdc	RPM23BD	—
125 Vdc	—	—
24 Vac	RPM23B7	—
120 Vac	RPM23F7	—
230 Vac	—	RPM43P7

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Sockets and Accessories for Harmony™ RPM Relays

RPZF2

RXM041BN7

RUW241P7

RUW101MW

RPZ3FA

Table 20.27: Sockets (sold in lots of 10)

Contact Terminal Arrangement	Connection	For Use with Relays	Catalog Number
Mixed[16]	Screw terminals	RPM1•••	RPZF1
		RPM2•••	RPZF2
		RPM3•••	RPZF3
		RPM4•••	RPZF4

Table 20.28: Protection Modules (sold in lots of 10)

Description	Voltage	Compatibility	Catalog Number
Diode	6–250 Vdc	RXZ sockets (RXM series), RPZF1, RPZF2	RXM040W
		RPZF3 RPZF4	RUW240BD
RC circuit	24–60 Vac	RXZ sockets (RXM series), RPZF1, RPZF2	RXM041BN7
	110–240 Vac		RXM041FU7
	110–240 Vac	RPZF3 RPZF4	RUW241P7
Varistor	6–24 Vac/Vdc	RXZ sockets (RXM series), RPZF1, RPZF2	RXM021RB
	24–60 Vac/Vdc		RXM021BN
	110–240 Vac/Vdc		RXM021FP
	24 Vac/Vdc	RPZF3 RPZF4	RUW242B7
	240 Vac/Vdc	RPZF3 RPZF4	RUW242P7

Table 20.29: Timer Module[17] (sold in lots of 1)

Description	Voltage	Compatibility	Catalog Number
On-delay timer, interval timer, repeat cycle timer/starting on-delay, repeat cycle timer/starting off-delay, off-delay timer, one-shot timer, timing on de-energization, on-delay timer	24–240 Vac/Vdc	RPZF3 RPZF4	RUW101MW

Table 20.30: Accessories (sold in lots of 10)

Description	Compatibility	Catalog Number
Metal hold-down clip (for single-pole relays)	RPZF1	RPZR235
DIN rail mounting adapter [18]	RPM1•••	—
	RPM2•••	—
	RPM3•••	—
	RPM4•••	—
Panel mounting adapter[18]	RPM1•••	RPZ1FA
	RPM2•••	RXZE2FA
	RPM3•••	RPZ3FA
	RPM4•••	—
ID tags (sheet of 108 tags)	RXM series relays, RPM series relays, RUM series relays	RXZL520

Approvals for RPM Relays

c UL us LISTED — File: E164862 CCN: NLDX, NLDX7[19]

c TÜV us — File: E164862 CCN: NLDX2, NLDX8

CSA — File: 230765 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

Approvals for RPZ Sockets

c TÜV us — File: E172326 CCN: SWIV2, SWIV8

CSA — File: 230765 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

[16] The inputs and outputs are mixed on both sides.
[17] See timer module description (selection of functions and time delays) in catalog DIA3ED2090304EN-US.
[18] Test button and lock-down door become inaccessible
[19] When used with the appropriate RPZ socket.

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RUZSF3M Socket
+ RUMF32BD Relay

RUMC31F7

RUMF22BD

RUMC23F7

New!

Harmony™ RUM Plug-In Relays

Harmony RUM plug-in relays and sockets provide a complete system solution for the most demanding applications up to 10 A. Some of the features include:

- Test button with lock-down door for testing the contacts (depending on model)
- Green LED indication of relay status (depending on model)
- Mechanical indication of relay status (standard)
- Optional protection modules to protect against electrical spikes
- Bus jumpers for connecting multiple terminals reduce installation time.

Refer to Online EZ Selector.

Table 20.31: Relays: without LED, with Test Button, and Lock-Down Door (sold in lots of 10)

Pins	Coil Voltage	Number and type of contacts - Thermal current (Ith)	
		DPDT (2 C/O) -10 A Res.	3PDT (3 C/O) -10 A Res.
		Catalog Number	Catalog Number
Octal	12 Vdc	RUMC21JD	RUMC31JD
	24 Vdc	RUMC21BD	RUMC31BD
	48 Vdc	—	RUMC31ED
	60 Vdc	—	RUMC31ND
	110 Vdc	—	RUMC31FD
	125 Vdc	—	RUMC31GD
	220 Vdc	—	RUMC31MD
	24 Vac	RUMC21B7	RUMC31B7
	48 Vac	—	RUMC31E7
	120 Vac	RUMC21F7	RUMC31F7
	230 Vac	RUMC21P7	RUMC31P7
Blade	110 Vdc	RUMF21FD	—

Table 20.32: Relays: with LED, Test Button, and Lock-Down Door (sold in lots of 10)

Pins	Coil Voltage	Number and type of contacts - Thermal current (Ith)	
		DPDT (2 C/O) -10 A Res.	3PDT (3 C/O) -10 A Res.
		Catalog Number	Catalog Number
Octal	12 Vdc	RUMC22JD	RUMC32JD
	24 Vdc	RUMC22BD	RUMC32BD
	48 Vdc	—	RUMC32ED
	60 Vdc	—	—
	110 Vdc	—	RUMC32FD
	125 Vdc	—	RUMC32GD
	24 Vac	RUMC22B7	RUMC32B7
	48 Vac	—	RUMC32E7
	120 Vac	RUMC22F7	RUMC32F7
	230 Vac	RUMC22P7	RUMC32P7
Blade	12 Vdc	—	RUMF32JD
	24 Vdc	RUMF22BD	RUMF32BD
	110 Vdc	—	RUMF32FD
	24 Vac	RUMF22B7	RUMF32B7
	120 Vac	RUMF22F7	RUMF32F7
	230 Vac	RUMF22P7	RUMF32P7

Table 20.33: Relays: with LED, without Push Button, and Lock-Down Door (sold in lots of 10)

Pins	Coil Voltage	Number and type of contacts - Thermal current (Ith)	
		DPDT (2 C/O) -10 A Res.	3PDT (3 C/O) -10 A Res.
		Catalog Number	Catalog Number
Octal	120 Vac	RUMC23F7	—
	230 Vac	RUMC23P7	RUMF33P7
Blade	48 Vdc	RUMF23ED	RUMF33ED
	110 Vdc	RUMF23FD	RUMF33FD
	120 Vac	—	RUMF33F7

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Sockets and Accessories for Harmony™ RUM Relays

Refer to Online EZ Selector.

RUZC2M

RUW241P7

RUW101MW

RUZC200

Table 20.34: Sockets (sold in lots of 10)

Contact Terminal Arrangement	Connection	For Use with Relays	Catalog Number
Mixed *[20]*	Box lug connector (screw terminals)	RUMC2•••••	RUZC2M
		RUMC3•••••	RUZC3M
Separate*[21]*		RUMC2•••••	RUZSC2M
		RUMC3•••••	RUZSC3M
		RUMF2•••••	RUZSF3M
		RUMF3•••••	

Table 20.35: Protection Modules (sold in lots of 10)

Description	Compatibility	Voltage	Catalog Number
Diode	RUZ··· sockets (RUM series)	6–250 Vdc	RUW240BD
RC circuit		110–240 Vac	RUW241P7
Varistor		24 Vac/Vdc	RUW242B7
		240 Vac/Vdc	RUW242P7

Table 20.36: Timer Module*[22]* (sold in lots of 1)

Description	Compatibility	Voltage	Catalog Number
On-delay timer, interval timer, repeat cycle timer/starting on-delay, repeat cycle timer/starting off-delay, off-delay timer, one-shot timer, timing on de-energization, on-delay timer.	RUZ··· sockets (RUM series)	24–240 Vac/Vdc	RUW101MW

Table 20.37: Accessories (sold in lots of 10)

Description	Compatibility	Catalog Number
Metal hold-down clip	RUZ sockets (RUM series)	RUZC200
Bus jumper, 2-pole (Ith: 5 A)	RUZS sockets (RUM series)	RUZS2
Relay ID tags (sheet of 108 tags)	RXM series relays, RPM series relays, RUM series relays	RXZL520
Socket ID tags	RXZ sockets (RXM series, except RXZE2M114), RUZS sockets (RUM series),	RUZL420

Approvals for RUM Relays

c UL us LISTED — File: E164862 CCN: NLDX, NLDX7*[23]*

c UL us — File: E164862 CCN: NLDX2, NLDX8

CSA — File: 230765 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

Approvals for RUZ Sockets

c UL us — File: E172326 CCN: SWIV2, SWIV8

CSA — File: 230765 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

[20] The inputs and outputs are mixed on both sides.
[21] The inputs and outputs are on separate sides.
[22] See timer module description (selection of functions and time delays) in catalog **DIA3ED2090304EN-RUM-US**.
[23] When used with the appropriate RUZ socket.

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RPF2AP7


RPF2BBD

Harmony™ RPF Power Relays

Harmony RPF power relays respond to the most demanding applications up to 30 A. Features include:

- UL Listed
- Sealed construction
- Motor load ratings: 1 hp @ 120 Vac / 3 hp @ 240 Vac (N/O contacts only)
- DIN rail and panel mounting capability
- Short circuit rating of 5,000 A rms @ 3 hp, 240 Vac (N/O contacts only)

Refer to Online EZ Selector.

Table 20.38: Relays (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)	
	DPST (2 N/O) - 30 A at 277 Vac, 20 A at 28 Vdc	DPDT (2 C/O) - 30 A at 277 Vac, 20 A at 28 Vdc, 3A (NC)
	Catalog Number	Catalog Number
12 Vdc	RPF2AJD	RPF2BJD
24 Vdc	RPF2ABD	RPF2BBD
24 Vac	RPF2AB7	RPF2BB7
120 Vac	RPF2AF7	RPF2BF7
230 Vac	RPF2AP7	RPF2BP7

Approvals for RPF Relays

c UL us LISTED — File: E43641 CCN: NLDX, NLDX7

CSA — File: 040787 Class: 3211-07

CE — IEC 61810-1

RoHS Compliant

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199 Series Relay

199 Power Relays

199—SPST-NO-DM, 40 A; SPDT, 40 A; DPST-NO, 40 A; DPDT, 40 A

Table 20.39: Standard Part Numbers

Rated Contact Current	Contact Configuration	Coil Voltage	Coil Resistance (Ω)	Special Features	Standard Part Number
40 A*[24]*	SPST-NO-DM	120 Vac	290		199ADX-4
		24 Vdc	290	Blowout Magnet	199DBX-3
					199DX-3
		48 Vdc	1200	Blowout Magnet	199DBX-16
	SPDT	120 Vac	290		199AX-4
		12 Vdc	70		199X-2
		24 Vdc	290		199X-3
	DPST-NO	120 Vac	290		199AX-9
		240 Vac	1200		199AX-10
		12 Vdc	70		199X-7
		24 Vdc	290		199X-8
	DPDT	24 Vac	12		199AX-13
		120 Vac	290	Blowout Magnet	199ABX-14
					199AX-14
		240 Vac	1200		199AX-15
		12 Vdc	70		199X-12
		24 Vdc	290	Blowout Magnet	199BX-13
					199X-13
		110 Vdc	6000	Blowout Magnet	199BX-14
					199X-14

199 Specifications (UL 508)

Part Numbers	199AX, 199X, 199ABX *[25]*, 199BX *[25]*	199ADX, 199DX, 199DYX, 199DBX *[25]*
Contact Characteristics		
Contact Configuration	SPST, SPDT, DPST, DPDT	SPST-DM, SPST-DB
Contact Material	Silver alloy	
Thermal (Carrying) Current	40 A	
Maximum Switching Voltage	600 V(rms)	
Rated Switching Current at Voltage	Resistive: 40 A at 300 Vac 50/60 Hz; 5 A at 480 Vac 50/60 Hz; 5 A at 600 Vac 50/60 Hz; 40 A at 28 Vdc	Resistive: 40 A at 300 Vac 50/60 Hz; 12 A at 480 Vac 50/60 Hz; 10 A at 600 Vac 50/60 Hz; 40 A at 28 Vdc
	Motor: 2 hp at 120–600 Vac 50/60 Hz	
	Tungsten: 15 A at 120 Vac 50/60 Hz	
	Pilot Duty: A600	
Minimum Switching Requirement	1 A at 5 Vac/Vdc	
Coil Characteristics		
Coil Voltage Range*[26]*	6–600 Vac 50/60 Hz; 6–250 Vdc2	
Operating Range (% of Nominal)	85%–110% (AC); 80%–110% (DC)	
Average Consumption (Maximum)	10 VA (AC); 4 W (DC)	
Drop-Out Voltage Threshold	10% (AC/DC)	

Table 20.40: Additional DC Ratings with Blowout Magnet

Load Voltage	Contact Rating
110 Vdc	20 A
220 Vdc	8 A
325 Vdc	4 A
500 Vdc	2 A

Table 20.41: Auxiliary Switch Ratings (Non-Standard Option)

Load Type	Contact Rating
Resistive Load 120/250 Vac (50/60 Hz)	10 A
Motor Load 125/250 Vac (50/60 Hz)	0.25 hp
Tungsten Load 125 Vac (50/60 Hz)	3 A

[24] 50 A versions and additional options available. Call Customer Service for more information (847-441-2540).
[25] For ratings with blowout magnet, refer to Table 20.40 Additional DC Ratings with Blowout Magnet , page 20-14
[26] For available standard coil voltages, refer to Standard Part Numbers, page 20-14

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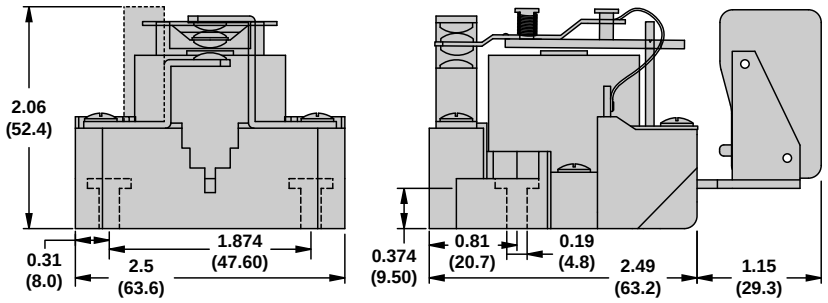
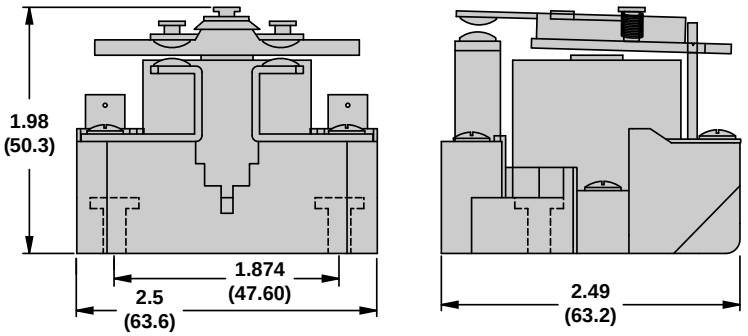
Table 20.42: Contact Ratings and Electrical Endurance (per IEC 609471, 6094741)

Contact Ratings	Load Voltage	Frequency	Load Type	Estimated Electrical Endurance	See Note(s)
AC Load					
40 A	300 V	50/60 Hz	Resistive	50,000 cycles	*[27][28]*
2 hp	120–600 V		Motor	50,000 cycles	*[29][28]*
15 A	120 V		Tungsten	20,000 cycles	*[28][30]*
A600	—	—	Pilot Duty	100,000 cycles	*[28]*
DC Load					
40 A	28 V	DC	Resistive	100,000 cycles	*[28]*
20 A	110 V				
8 A	220 V				
4 A	325 V				
2 A	500 V				

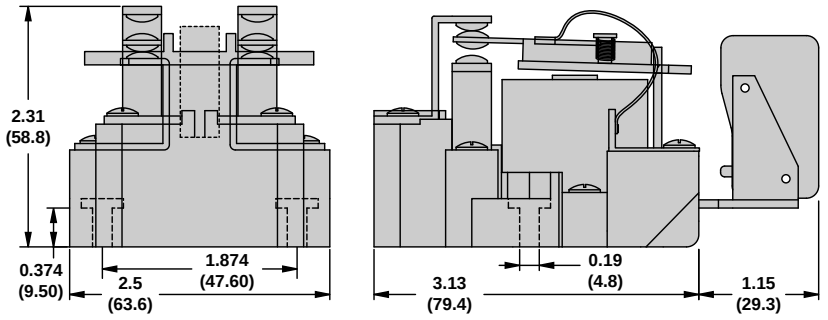
Dimensions, in, (mm)



SPDT—Short Base (shown with optional Auxiliary Switch)



SPST-NO-DM



DPDT—Long Base (shown with optional Auxiliary Switch)

[27] Resistive AC load ratings are based on a power factor of 0.85–1.0.
[28] All ratings are based on applying the rated nominal power to the relay coil so as to provide a “clean” make and break that does not result in any contact chatter or multiple actuation of the contacts.
[29] Motor horsepower ratings are based on a power factor of 0.4–0.5, and an initial inrush current not exceedin
[30] The tungsten rating is based on cold-filament inrush current not exceeding 15 times the rated steady-state lamp current.

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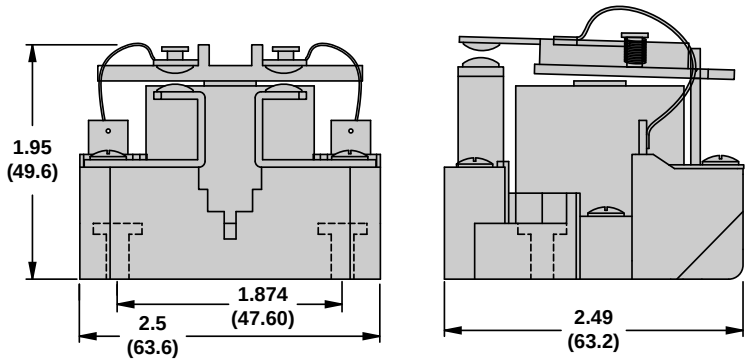
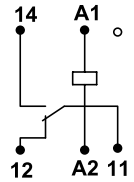
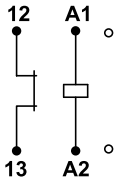


DPST-NO

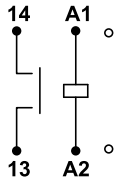
Wiring Diagrams



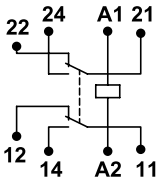
SPDT



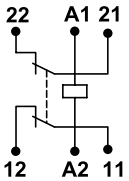
SPST-NC-DB



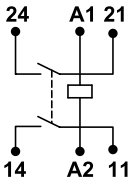
SPST-NO-DM



DPDT



DPST-NC



DPST-NO

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725 Power Relays

725—SPST-NO, 30 A; DPST-NO, 25 A

Plug-In Socket Mount with full-feature cover

Panel/DIN Mount with blade terminals

Panel/DIN Mount with screw terminals

Table 20.43: Standard Coil Voltages

Rated Contact Current	Contact Configuration	Coil Voltage	Coil Resistance (Ω)	Mounting Style	Terminal Style	Standard Part Number
25 A	DPST-NO	24 Vac	275	DIN and panel	Blade terminals	725BXXBC3ML-24A
					Screw terminals	725BXXSC3ML-24A
		120 Vac	5200	DIN and panel	Blade terminals	725BXXBC3ML-120A
					Screw terminals	725BXXSC3ML-120A
				Plug-in (socket)	Blade terminals	725BXXBM4L-120A
		240 Vac	21000	DIN and panel	Blade terminals	725BXXBC3ML-240A
					Screw terminals	725BXXSC3ML-240A
		12 Vdc	75	DIN and panel	Blade terminals	725BXXBC3ML-12D
					Screw terminals	725BXXSC3ML-12D
		24 Vdc	300	DIN and panel	Blade terminals	725BXXBC3ML-24D
					Screw terminals	725BXXSC3ML-24D
				Plug-in (socket)	Blade terminals	725BXXBM4L-24D
30 A	SPST-NO	24 Vac	275	DIN and panel	Blade terminals	725AXXBC3ML-24A
					Screw terminals	725AXXSC3ML-24A
				Plug-in (socket)	Blade terminals	725AXXBM4L-24A
		120 Vac	5200	DIN and panel	Blade terminals	725AXXBC3ML-120A
					Screw terminals	725AXXSC3ML-120A
				Plug-in (socket)	Blade terminals	725AXXBM4L-120A
		240 Vac	21000	DIN and panel	Blade terminals	725AXXBC3ML-240A
					Screw terminals	725AXXSC3ML-240A
		12 Vdc	75	DIN and panel	Blade terminals	725AXXBC3ML-12D
					Screw terminals	725AXXSC3ML12D
		24 Vdc	300	DIN and panel	Blade terminals	725AXXBC3ML-24D

725 Specifications

Part Number	725AXX	725BXX
Contact Characteristics		
Contact Configuration	SPST-NO	DPST-NO
Contact Material	Silver alloy	
Thermal (Carrying) Current	30 A	25 A
Maximum Switching Voltage	300 V	
Current Ratings at Voltage	Resistive: 30 A at 277 Vac 50/60 Hz, 6,000 cycles	Resistive: 25 A at 277 Vac 50/60 Hz; 25 A at 30 Vdc, 6,000 cycles
	Motor: 1.5 hp at 120 Vac 50/60 Hz; 3.0 hp at 277 Vac 50/60 Hz, 6,000 cycles	Motor: 1.0 hp at 120 Vac 50/60 Hz; 2.0 hp at 277 Vac 50/60 Hz, 6,000 cycles
	Tungsten: 1.5 kW at 120 Vac 50/60 Hz, 6,000 cycles	Tungsten: 1.3 kW at 120 Vac 50/60 Hz, 6,000 cycles
Minimum Switching Requirement	100 mA at 5 Vdc (0.5 W)	
Coil Characteristics		
Coil Voltage Range[31] Standard Coil Voltages, page 20-17	6–240 Vac 50/60 Hz (All AC coils are rectified); 6–110 Vdc[31] Standard Coil Voltages, page 20-17	
Operating Range (% of Nominal)	75%–110% (AC/DC)	
Average Consumption	2.5 VA (AC); 1.9 W (DC)	
Insulation System Per UL 508	Class B (130°C)	

[31] For available standard coil voltages, refer to the

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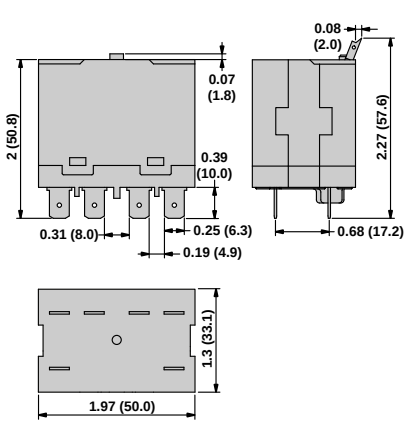
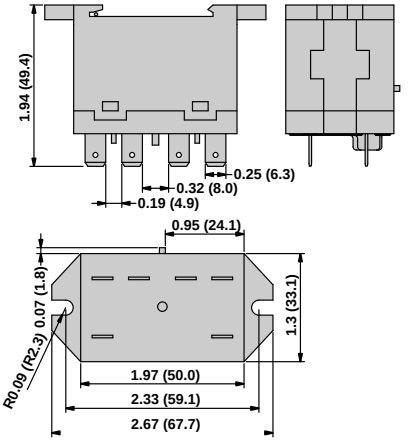
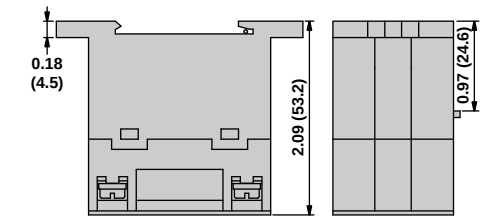
Dimensions, in, (mm)

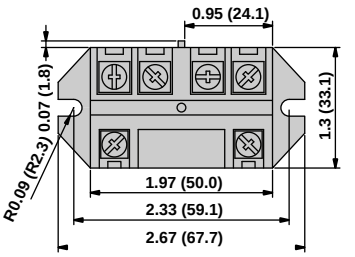


Plug-in Socket Mount (Blade Terminals)



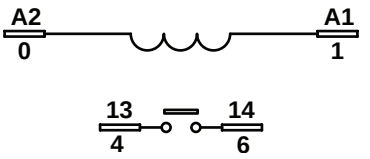
C3 – DIN/Panel Mount (Blade Terminals)



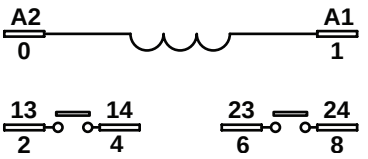


C3 – DIN/Panel Mount (Screw Terminals)

Wiring Diagrams



SPST-NO



DPST-NO

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389F Power Relays

389F—SPST, 30 A; DPDT, 20–25 A; SPDT, 25–30 A; 3PDT, 20 A

Plug-In (Socket) Cover

Side Flange Cover

Table 20.44: Standard Part Numbers

Rated Contact Current	Contact Configuration	Coil Voltage	Coil Resistance (Ω)	Cover Style	Standard Part Number
20 A	3PDT	120 Vac	1700	Plug-in (socket)	389FXCXC-120A
				Side flange	389FXCXC1-120A
				Side flange	389FXCXC1-240A
		12 Vdc	100	Side flange	389FXCXC1-12D
		24 Vdc	400	Plug-in (socket)	389FXCXC-24D
				Side flange	389FXCXC1-24D
25 A	DPDT	24 Vac	72	Plug-in (socket)	389FXBXC-24A
				Side flange	389FXBXC1-24A
		120 Vac	1700	Plug-in (socket)	389FXBXC-120A
				Side flange	389FXBXC1-120A
		240 Vac	7200	Side flange	389FXBXC1-240A
		12 Vdc	100	Plug-in (socket)	389FXBXC-12D
				Side flange	389FXBXC1-12D
		24 Vdc	400	Plug-in (socket)	389FXBXC-24D
				Side flange	389FXBXC1-24D
	SPDT	24 Vac	72	Side flange	389FXAXC1-24A
		12 Vdc	100	Side flange	389FXAXC1-12D
30 A	SPDT-DM-DB	24 Vdc	400	Side flange	389FXHXC1-24D
	SPST-NO-DM	24 Vdc	400	Side flange	389FHXXC1-24D

389F Specifications

Part Number	389FXAX 389FXBX	389FXCX	389FXHX 389FHXX
Contact Characteristics			
Contact Configuration	SPDT; DPDT	3PDT	SPSTNODM; SPDTDMDB
Contact Material	Silver alloy		
Thermal (Carrying) Current	25 A	20 A	30 A
Maximum Switching Voltage	600 V	300 V	600 V
Rated Switching Current at Voltage (Conforming to IEC AC-1 and DC-1)	NO and NC: 25 A at 250 Vac NO and NC: 15 A at 28 Vdc	NO and NC: 20 A at 250 Vac NO and NC: 15 A at 28 Vdc	NO and NC: 30 A at 250 Vac NO and NC: 30 A at 28 Vdc
Current Ratings at Voltage (Conforming to UL)	Resistive: 25 A at 300 Vac 50/60 Hz; 5 A at 600 Vac 50/60 Hz; 13 A at 28 Vdc, 100,000 cycles Motor: 1.5 hp at 200–240 Vac 50/60 Hz; 1 hp at 120–200 and 480–600 Vac*[32]* 50/60 Hz, 6,000 cycles Pilot Duty: B600, 6,000 cycles FLA/LRA: 22/98 A at 120 Vac, 6,000 cycles Ballast: 20 A, 277 Vac 50/60 Hz, 6,000 cycles	Resistive: 20 A at 150 Vac 50/60 Hz, 15 A at 250 Vac, 50/60 Hz 13 A at 28 Vdc, 50,000 cycles Motor: 0.5 hp at 120–240 Vac 50/60 Hz; 6,000 cycles Pilot Duty: B300, 6,000 cycles Ballast: 20 A, 150 Vac 50/60 Hz 6.67 A at 277 Vac 6,000 cycles	Resistive: 30 A at 300 Vac 50/60 Hz 10 A at 600 Vac 50/60 Hz 30 A at 28 Vdc, 100,000 cycles Motor: 1.5 hp at 200–600 Vac 50/60 Hz; 1 hp at 120–200 Vac 50/60 Hz, 6,000 cycles Pilot Duty: A600, 6,000 cycles FLA/LRA: 22/98 A at 120 Vac, 6,000 cycles; 17/60 A at 300 Vac, 6,000 cycles*[32]* Ballast: 25 A, 277 Vac 50/60 Hz, 6,000 cycles
Minimum Switching Requirement	100 mA at 5 Vdc		
Coil Characteristics			
Coil Voltage Range*[33]*Table 20.44 Standard Part Numbers, page 20-19	12–240 Vac 50/60 Hz; 12–24 Vdc*[33]*Table 20.44 Standard Part Numbers, page 20-19		
Operating Range (% of Nominal)	85%–110% (AC); 80%–110% (DC)		
Average Consumption	2 VA (AC); 1.5 W (DC)		
Drop-out Voltage Threshold	10% minimum (AC/DC)		
General Characteristics			
Electrical Life at Rated Load*[34]*	100,000 operations for IEC AC-1, 50,000 operations for IEC DC-1		
Mechanical Life at No Load (Unpowered)	5,000,000 operations		
Operate Time at Nominal Coil Voltage	20 ms (maximum)		
Dielectric Strength	Between coil and contact: 2200 Vac; between poles: 2200 Vac; between contacts: 1600 Vac		
Operating Temperature Range	-30 to +55°C (-22 to +131°F)		
Storage Temperature Range	-30 to +85°C (-22 to +185°F)		
Weight (Average)	84 g (3.0 oz)		
Product Certifications	UL (E164862), CE (per IEC 60947), CSA (File: 044087 Class: 3211-07), RoHS		

[32] Break all lines for 1 hp at 600 Vac, 50/60 Hz.
[33] For available standard coil voltages, refer to the
[34] The NO and NC contacts were tested independently

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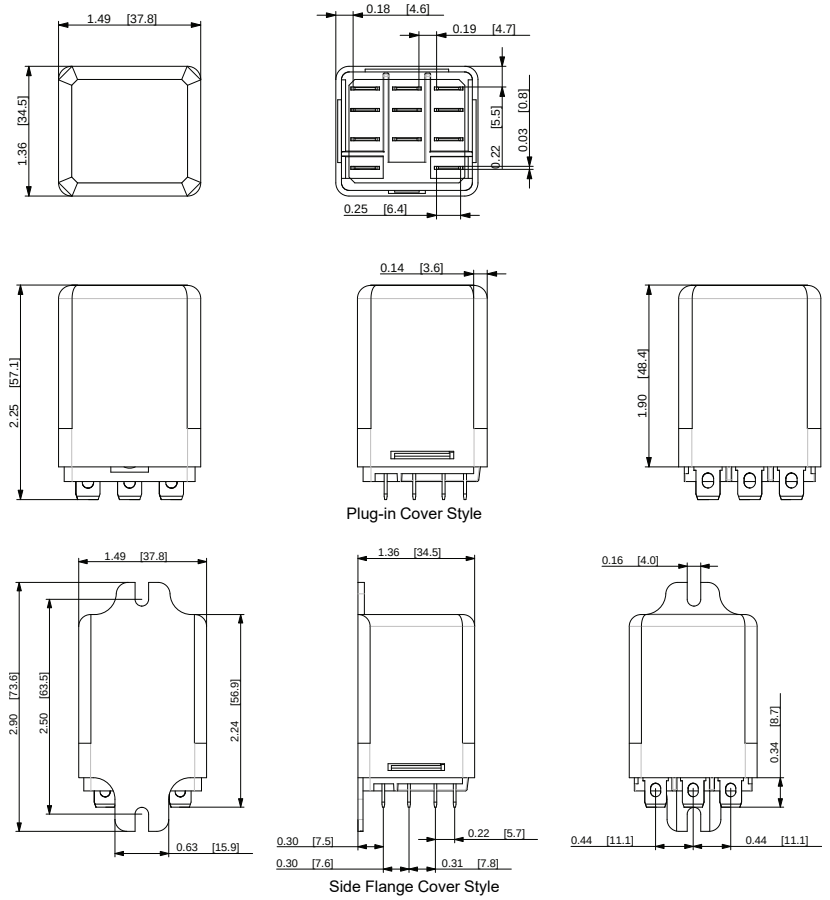
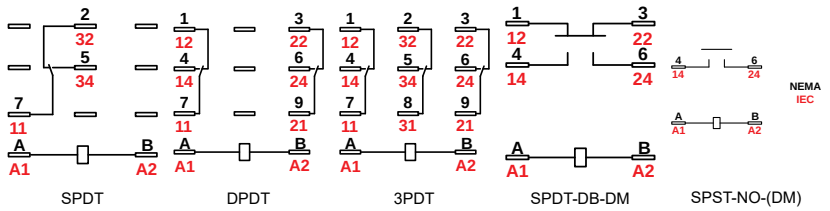
Dimensions, in, (mm)



Wiring Diagrams



20 RELAYS AND TIMERS

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Side Flange Cover

300 Power Relays
300—DPDT, 30 A

Table 20.45: Standard Part Numbers

Rated Contact Current	Contact Configura-tion	Coil Voltage	Coil Resistance (Ω)	Cover Style	Standard Part Number
30 A	DPDT	24 Vac	54	Side flange mount	300XBXC1-24A
		120 Vac	1270	Side flange mount	300XBXC1-120A
		240 Vac	5400	Side flange mount	300XBXC1-240A
		12 Vdc	57	Side flange mount	300XBXC1-12D
		24 Vdc	300	Side flange mount	300XBXC1-24D

300 Specifications

Part Number	300XBXX *[35]*
Contact Characteristics	
Contact Configuration	DPDT
Contact Material	Silver alloy
Thermal (Carrying) Current	30 A
Maximum Switching Voltage	600 V
Current Ratings at Voltage *[35]*	Resistive: 30 A at 300 Vac 50/60 Hz; 30 A at 28 Vdc; 15 A at 600 Vac 50/60 Hz Motor: 1 hp at 120 Vac 50/60 Hz; 6,000 cycles; 2 hp at 208–600 Vac 50/60 Hz *[36]*, 6,000 cycles Pilot Duty: 5.5 A at 120 Vac 50/60 Hz, 6,000 cycles; 1.2 A at 600 Vac 50/60 Hz, 6,000 cycles
Minimum Switching Requirement	500 mA at 5 Vdc
Coil Characteristics	
Coil Voltage Range *[37]*	12–240 Vac 50/60 Hz; 12–24 Vdc
Operating Range (% of Nominal)	85%–110% (AC); 80%–110% (DC)
Average Consumption	3.4 VA (AC at 60 Hz); 2.3 W (DC)
Drop-out Voltage Threshold	15% (AC); 10% (DC)
General Characteristics	
Electrical Life at Rated Load	6,000 operations
Mechanical Life at No Load (Unpowered)	5,000,000 operations
Operate Time at Nominal Coil Voltage	20 ms
Dielectric Strength	Between coil and contact: 4000 Vac; Between poles: 2500 Vac; Between contacts: 2500 Vac
Operating Temperature Range	−40 to +55°C (−40 to +131°F)
Storage Temperature Range	−40 to +85°C (−40 to +185°F)
Weight (Average)	without blowout magnet: 85 g (3.0 oz) with blowout magnet: 95 g (3.4 oz)
Product Certifications	UL (E164862), CSA (File: 044087 Class: 3211-07), RoHS

Table 20.46: Additional DC Ratings with Blowout Magnet

Load Voltage	Contact Reading
150 Vdc	5 A

[35] For additional ratings with blowout magnet, refer to Table 20.46 Additional DC Ratings with Blowout Magnet, page 20-21
[36] Break all lines for 2 hp / 480–600 Vac, 50/60 Hz.
[37] For available standard coil voltages, refer to Table 20.45 Standard Part Numbers, page 20-21

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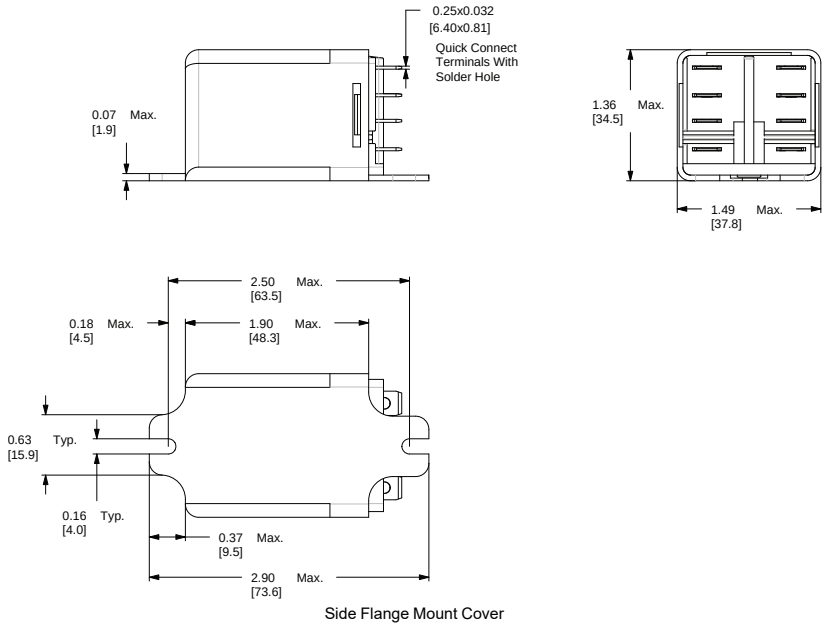
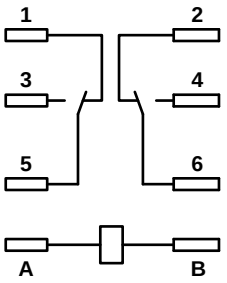
Dimensions, in, (mm)



Side Flange Mount Cover

Wiring Diagrams



DPDT

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8501KPDR12•••


8501KFR13•••


8501KUDR12P14•••


8501NR61


8501NR52


8501NR82


8501NR52 Socket
+8501KPR13P14V2 Relay


8501NR82 Socket
+8501KUDR12P14V Relay

New!

Square D™ Universal Relays

8501K relays are designed for multi-pole switching applications at 240 Vac or lower. These relays have industry standard wiring and pin terminal arrangements which allow for their use as replacements for many competitive relays without wiring or hardware modifications.

- 10 A relays
- DPDT or 3PDT
- Green pilot light option
- Motor load (hp) ratings
- DPDT latching models available
- AC or DC operation
- RoHS Compliant

Table 20.47: Relays: Standard Cover, without LED

Pins	Coil Voltage	Number and Type of Contacts - Thermal current (Ith)	
		DPDT (2 C/O) - 10 A	3PDT (3 C/O) - 10 A
		Catalog Number	Catalog Number
Octal	12 Vdc	8501KPDR12V51	—
	24 Vdc	8501KPDR12V53	8501KPDR13V53
	48 Vdc	8501KPDR12V56	—
	24 Vac	8501KPR12V14	8501KPR13V14
	120 Vac	8501KPR12V20	8501KPR13V20
	240 Vac	8501KPR12V24	—
Blade	24 Vdc	—	8501KUDR13V53
	24 Vac	—	8501KUR13V14
	120 Vac	8501KUR12V20	8501KUR13V20

Table 20.48: Relays: Flange Mount Cover

Pins	Coil Voltage	Number and Type of Contacts - Thermal current (Ith)
		DPDT (2 C/O) - 10 A
		Catalog Number
Blade	24 Vac	8501KFR12V14
	120 Vac	8501KFR12V20

Table 20.49: Relays: Standard Cover, with LED

Pins	Coil Voltage	Number and Type of Contacts - Thermal current (Ith)	
		DPDT (2 C/O) - 10 A	3PDT (3 C/O) - 10 A
		Catalog Number	Catalog Number
Octal	12 Vdc	8501KPDR12P14V51	—
	24 Vdc	8501KPDR12P14V53	8501KPDR13P14V53
	24 Vac	8501KPR12P14V14	8501KPR13P14V14
	120 Vac	8501KPR12P14V20	8501KPR13P14V20
Blade	24 Vdc	8501KUDR12P14V53	—
	120 Vac	—	8501KUR13P14V20

Table 20.50: Sockets

Contact Terminal Arrangement	Connection	For Use with Relays	Sold in Lots of	Catalog Number*[1]*
Mixed	Screw Connector	8501KPR12••• 8501KPDR12•••	1	8501NR51
		8501KPR12••• 8501KPDR12•••	10	8501NR51B
		8501KPR13••• 8501KPDR13•••	1	8501NR61
		8501KPR13••• 8501KPDR13•••	10	8501NR61B
Separate	Screw Connector	8501KPR12••• 8501KPDR12•••	1	8501NR52
		8501KPR12••• 8501KPDR12•••	10	—
		8501KPR13••• 8501KPDR13•••	1	8501NR62
		8501KPR13••• 8501KPDR13•••	10	—
		8501KUR12••• 8501KUDR12•••	1	8501NR82
		8501KUR12••• 8501KUDR12•••	10	8501NR82B
		8501KUR13••• 8501KUDR13•••	1	8501NR82
		8501KUR13••• 8501KUDR13•••	10	8501NR82B

[1] Please note that the B suffix only designates quantities of 10 and is not printed on the socket.

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8501NH7

8501NH82

Table 20.51: Accessories (Sold in Lots of 10)

Description	For Use With	Sold in Lots of	Catalog Number
Metal Restraining Srap	8501NR51 sockets	1	8501NH7
	8501NR52 sockets		
	8501NR62 sockets		
	8501NR82 sockets		
Metal Hold-Down Clip	8501NR52 sockets	10	—
	8501NR62 sockets		
	8501NR82 sockets		8501NH82

Approvals for 8501 KPR, KUR, and KFR Relays

File: E3190 CCN: NLDX, NLDX7*[2]*

File: E3190 CCN: NLDX2, NLDX8

File: 260367 Class: 3211 07

IEC 61810-1

RoHS Com-pliant

Approvals for 8501NR Sockets

File: E66924 CCN: SWIV2, SWIV8

File: 211268 Class: 3211 07

IEC 61810-1

RoHS Compliant

[2] When used with the appropriate 8501NR socket.

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8501RS41P14V20


8501RS42P14V20


8501RS43P14V20


8501RS44P14V20


8501NR41 Socket
+8501RS41P14V20 Relay


8501NR42 Socket
+8501RS42P14V20 Relay


8501NR43 Socket
+8501RS43P14V20 Relay


8501NR34 Socket
+8501RS44P14V20 Relay

Square D™ Plug-in Relays

8501R miniature plug-in relays have a 15 A resistive rating. The compact size of these relays makes them ideal for downsizing equipment and applications where space is at a premium.

- SPDT through 4PDT
- AC or DC operated
- Horsepower rated
- Socket compatible
- Green LED pilot light option
- Silver alloy contacts

Table 20.52: Relays: Standard Cover, without LED

Coil Voltage	Number and Type of Contacts - Thermal current (Ith)			
	SPDT (1 C/O) - 15 A	DPDT (2 C/O) - 15 A	3PDT (3 C/O) - 15 A	4PDT (4 C/O) - 15 A
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
12 Vdc	8501RSD41V51	8501RSD42V51	—	—
24 Vdc	8501RSD41V53	8501RSD42V53	8501RSD43V53	8501RSD44V53
24 Vac	8501RS41V14	8501RS42V14	8501RS43V14	8501RS44V14
120 Vac	8501RS41V20	8501RS42V20	—	8501RS44V20

Table 20.53: Relays: Standard Cover, with LED

Coil Voltage	Number and Type of Contacts - Thermal current (Ith)			
	SPDT (1 C/O) - 15 A	DPDT (2 C/O) - 15 A	3PDT (3 C/O) - 15 A	4PDT (4 C/O) - 15 A
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
24 Vdc	8501RSD41P14V53	8501RSD42P14V53	8501RSD43P14V53	8501RSD44P14V53
24 Vac	—	8501RS42P14V14	—	—
120 Vac	8501RS41P14V20	8501RS42P14V20	8501RS43P14V20	8501RS44P14V20

Table 20.54: Sockets

Contact Terminal Arrangement	Connection	For Use with Relays	Sold in Lots of	Catalog Number[3]
Separate[4]	Screw Connector	8501RS41••• 8501RSD41•••	1	8501NR41
			10	8501NR41B
		8501RS42••• 8501RSD42•••	1	8501NR42
			10	8501NR42B
		8501RS43••• 8501RSD43•••	1	8501NR43
		8501RS44••• 8501RSD44•••	1	8501NR34

Table 20.55: Accessories (Sold in Lots of 10)

Description	For Use With	Sold in Lots of	Catalog Number
Plastic ID Clip	8501NR41 socket	Supplied with socket	—
Metal Hold-Down Clip	8501NR42 socket	10	8501NH42
	8501NR43 socket		
	8501NR34 socket		

Approvals for 8501 RS41, RSD41, RS42, RSD42, RS43, RSD43, RS44, and RSD44

c UL us LISTED — File: E3190 CCN: NLDX, NLDX7[5]

c UL us — File: E3190 CCN: NLDX2, NLDX8

CSA — File: 260367 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

Approvals for 8501NR Sockets

c UL us — File: E66924 CCN: SWIV2, SWIV8

CSA — File: 211268 Class: 3211 07

CE — IEC 61810-1

RoHS Compliant

[3] Please note that the B suffix only desginates quantities of 10 and is not printed on the socket.
[4] The inputs and outputs are on separate sides.
[5] When used with the appropriate 8501NR socket.

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8501NR45 Socket
+8501RS14V20 Relay

8501RS14V14

8501RSD34V51

Square D™ Miniature Control Relays

8501R relays are suited for use as logic elements and power switching output devices. The short stroke motion of the armature provides long mechanical life required for high speed operation of control systems. Different contact compositions allow these relays to be used in a variety of applications. Bifurcated crossbar (gold overlay silver) is suitable for high contact reliability and low level switching requirements. Silver alloy is best suited for inductive loads. Class I Division II sealed relays can be used in specified hazardous locations.

- 4PDT
- Complete socket line
- Horsepower rated
- AC or DC operation
- Green pilot light option

Table 20.56: Relays: Standard Cover, without LED

Coil Voltage	Number and Type of Contacts — Thermal current (Ith)	
	4PDT (4 C/O) — 6 A	4PDT (4 C/O) — 3 A
	Catalog Number	Catalog Number
24 Vdc	8501RSD14V53	—
24 Vac	8501RS14V14	—
120 Vac	8501RS14V20	8501RS24V20

Table 20.57: Relays: Standard Cover, with LED

Coil Voltage	Number and Type of Contacts — Thermal current (Ith)
	4PDT (4 C/O) — 6 A
	Catalog Number
24 Vdc	8501RSD14P14V53
120 Vac	8501RS14P14V20

Table 20.58: Relays: Hermetically Sealed Miniature Control Relays

Coil Voltage	Number and Type of Contacts — Thermal current (Ith)
	4PDT (4 C/O) — 5 A
	Catalog Number
12 Vdc	8501RSD34V51
24 Vdc	8501RSD34V53
110 Vac	8501RS34V20

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8501NR45

Table 20.59: Sockets

Contact Terminal Arrangement	Connection	For Use With Relays	Sold in Lots of	Catalog Number*[6]*
Separate*[7]*	Screw Clamp Terminals	8501RS(D)14••• 8501RS(D)24••• 8501RS(D)34•••	1	8501NR45
		8501RS(D)14••• 8501RS(D)24••• 8501RS(D)34•••	10	8501NR45B
	Spring Clamp Terminals	8501RS(D)14••• 8501RS(D)24••• 8501RS(D)34•••	10	—

Table 20.60: Accessories (Sold in Lots of)

Description	For Use With	Sold in Lots of	Catalog Number
Clip-in ID tags	RXZE2S114S socket	10	RSZL300

Approvals for 8501 RS14, RSD14, RS24, and RSD24 Relays

c UL us LISTED — File: E3190 CCN: NLDX, NLDX7*[8]*
c UL us — File: E3190 CCN: NLDX2, NLDX8
CSA — File: 260367 Class: 3211 07
CE — IEC 61810-1
RoHS Compliant

Approvals for 8501 RS34 and RSD34 Relays

c UL us LISTED — File: E123950 CCN: NLDX, NLDX7*[8]* ANSI/ISA 12.12.01
c UL us — File: E196809 CCN: NQMJ2, NQMJ8
CSA — File: 211268 Class: 3218 06
CE — IEC 61810-1
RoHS Compliant

Approvals for 8501NR Sockets

c UL us — File: E66924 CCN: SWIV2, SWIV8
CSA — File: 211268 Class: 3211 07
CE — IEC 61810-1
RoHS Compliant

[6] Please note that the B suffix only desginates quantities of 10 and is not printed on the socket.
[7] The inputs and outputs are on separate sides.
[8] When used with the appropriate 8501NR socket.

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8501CDO6V51

Square D™ Power Relays

8501C relays are ideally suited for controlling single-phase motors, electric heaters, pumps, conveyors, material handling equipment, and other applications.

- 40 A contact rating
- Motor load (hp) ratings
- Durable open-frame construction
- UL Listed
- CSA certified
- CE approved
- RoHS compliant

Table 20.61: Relays: AC Rated Contacts, 40 A at 277 V (sold in lots of 1)

Coil Voltage	Number and type of contacts - Thermal current (Ith)			
	SPST: 1 NO / 0 NC	DPST: 2 NO / 0 NC	SPDT: 1 NO / 1 NC	DPDT: 2 NO / 2 NC
	Catalog Number	Catalog Number	Catalog Number	Catalog Number
12 Vdc	8501CDO6V51	—	—	8501CDO16V51
24 Vdc	—	—	—	8501CDO16V53
24 Vac	8501CO6V14	—	8501CO15V14	8501CO16V14
120 Vac	8501CO6V20	8501CO7V20	8501CO15V20	8501CO16V20
240 Vac	8501CO6V24	8501CO7V24	—	8501CO16V24
277 Vac	8501CO6V04	—	—	8501CO16V04
480 Vac	8501CO6V29	8501CO7V29	—	8501CO16V29

Table 20.62: Relays: DC Rated Contacts, 20 A at 110 V (sold in lots of 1)

Coil Voltage	Number and type of contacts - Thermal current (Ith)
	SPST: 1 NO / 0 NC
	Catalog Number
110 Vdc	8501CDO21V60

Table 20.63: Relays: DC Rated Contacts, 10 A at 110 V (sold in lots of 1)

Coil Voltage	Number and type of contacts - Thermal current (Ith)
	DPDT: 1 NO / 0 NC
	Catalog Number
24 Vdc	8501CDO22V53
120 Vac	8501CO22V20

Approvals for Square D Power Relays

File: E78351
CCN: NLDX, NLDX7

File: 218139
Class: 3211 04

IEC 60947-4-1

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UL Listed when used with corresponding sockets

750H Hazardous Location Relay

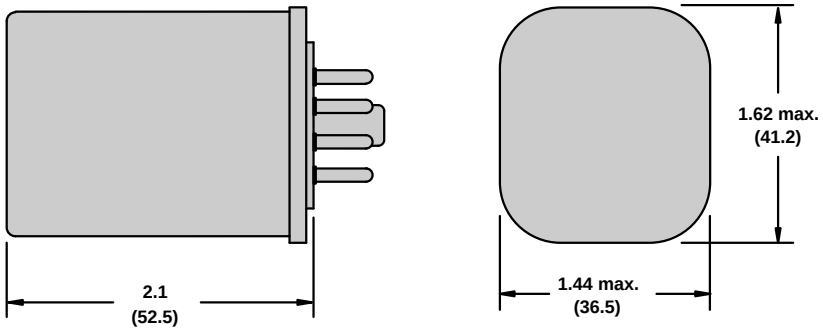
750H Hazardous Location Series
DPDT, PDT 12A

Contact Rating	Contact Configuration	Nominal Voltage	Coil Resistance (Ω)	Standard Part Number
12 A	DPDT	24 Vac, 50/60 Hz	72	750XBXH-24A
		120 Vac, 50/60 Hz	1700	750XBXH-120A
		12 Vdc	120	750XBXH-12D
		24 Vdc	470	750XBXH-24D
		110 Vdc	10000	750XBXH-110D
	3PDT	120 Vac, 50/60 Hz	1700	750XCXH-120A
		240 Vac, 50/60 Hz	7200	750XCXH-240A
		24 Vdc	470	750XCXH24D

750H Specifications

Part Number		750XBXH	750XCXH
Contact Characteristics			
Terminal Style		Octal	
Contact Material		Silver Alloy	
Load Type		Standard	
Contact Configuration		DPDT	3PDT
Carrying Current		12A	
Maximum Switching Voltage		300 V	
Rated Switching Current Conforming to UL and ANSI/ ISA 12.12.01)	Resistive	12 A at 120 Vac, 50/60 Hz, 100,000 cycles 12 A at 240 Vac, 50/60 Hz, 100,000 cycles 12 A at 28 Vdc, 100,000 cycles	
	Motor	1/2 hp at 240 Vac, 50/60 Hz , 100,000 cycles 1/3 hp at 120 Vac, 50/60 Hz , 100,000 cycles	
	Pilot Duty	B300 — 100,000 cycles	
Minimum Switching Requirement		100 mA at 5 Vdc	
Coil Characteristics			
Maximum Operating Voltage		110% (AC/DC)	
Maximum Pickup Voltage		85% (AC); 80% (DC)	
Drop-out Voltage Threshold		15% (AC); 10% (DC)	
Average Consumption		2.75 VA at 60 Hz (AC); 1.2 W (DC)	

Dimensions, in. (mm)



750H

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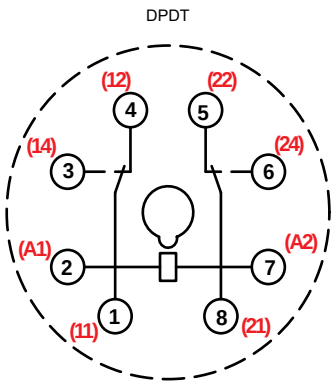
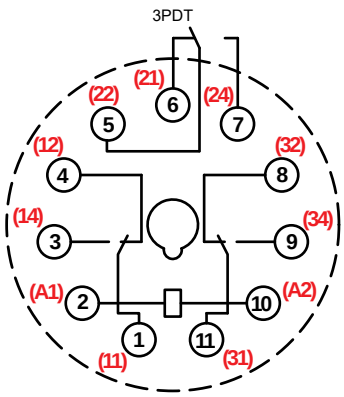
Wiring Diagrams



NEMA
(IEC)



NEMA
(IEC)

Relay Accessories


1


2


3


4


5


6


7


8

Description		Function	For Use with Relays	Pkg. Min.	Standard Part Number
1	Socket	DIN or panel mounting with screw terminals		10	—
2	Socket	DIN or panel mounting with elevator terminals, module	750XBXH	10	70–750E8–1
3	Socket	DIN or panel mounting with screw terminals and clamping plates		10	70–464–1
4	Socket	Panel mounting with screw terminals and clamping plates		10	70–169–1
5	Socket	DIN or panel mounting	750XCXH	10	—
6	Socket	DIN or panel mounting with elevator terminals		10	70–750E11–1
7	Socket	DIN or panel mounting with screw terminals and clamping plates		10	70–465–1
8	Socket	Panel mounting with screw terminals and clamping plates		10	—

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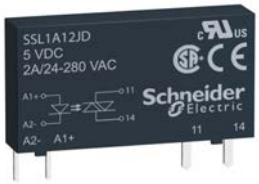

SSL1A12JD

SSLZVA1

RSL Z2

RSL Z3

Harmony™ SSL Relays

Harmony SSL solid state relays offer the advantages of several input and output configurations for both AC and DC switching applications. Their compact size and modular design reduces space and allows easy mounting on the socket. Key features include:

- Available with zero voltage switching for resistive load and random switching for inductive load applications.
- Socket with reverse polarity protection circuit and LED indicator for easy identification of control status.

Refer to Online EZ Selector.

Table 20.64: Relays (sold in lots of 12)

Switching	Input Voltage	Output Voltage	Contact Configuration	Load Current Range	SPDT (1 C/O) Catalog Number
DC switching	3–12 Vdc	1–24 Vdc	SPST N.O. (1 N/O)	3.5 A	SSL1D03JD
		1–48 Vdc	SPST N.O. (1 N/O)	0.1 A	SSL1D101JD
	15–30 Vdc	1–24 Vdc	SPST N.O. (1 N/O)	3.5 A	SSL1D03BD
	16–30 Vdc	1–48 Vdc	SPST N.O. (1 N/O)	0.1 A	SSL1D101BD
Zero voltage switching	3–12 Vdc	24–280 Vac	SPST N.O. (1 N/O)	2 A	SSL1A12JD
	15–30 Vdc	24–280 Vac	SPST N.O. (1 N/O)	2 A	SSL1A12BD
Random switching	3–12 Vdc	24–280 Vac	SPST N.O. (1 N/O)	2 A	SSL1A12JDR
	15–30 Vdc	24–280 Vac	SPST N.O. (1 N/O)	2 A	SSL1A12BDR

Table 20.65: Sockets (sold in lots of 10)

Control Voltage	For Use with Relays	Socket Type	
		Screw Connector Catalog Number	Spring Terminal Catalog Number
5 Vdc	SSL1D03JD SSL1D101JD SSL1A12JD SSL1A12JDR	SSLZVA1	SSLZRA1
24 Vdc	SSL1D03BD SSL1D101BD SSL1A12BD SSL1A12BDR	SSLZVA1	SSLZRA1

Table 20.66: Accessories

Description	Compatibility	Catalog Number
ID tags (2 sheets of 64 tags)	RSL series sockets, SSL series sockets	RSLZ5
Bus jumper (10 x 20-pole jumper)		RSLZ2
Butterfly isolator (10 isolators)		RSLZ3

Approvals for SSL Relays

c UL us — File: E173076 CCN: NRNT2, NRNT8

CSA — File: 257594 Class: 3211 07

CE — IEC 60950–1

RoHS Compliant

Approvals for SSLZ Sockets

c UL us — File: E172326 CCN: SWIV2

CSA — File: 254977 Class: 3211 07

CE — IEC 60950–1

RoHS Compliant

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Harmony™ SSM Relays

Harmony SSM solid state relays are ready-to-use modular relays with SCR/MOSFET outputs for greater switching density. The unique IP20 housing design and integrated heat sink with no exposed metal surface offers compactness and enhances operating conditions of the relay. SSM relays are DIN rail mounted and available with zero voltage switching for resistive load and random switching for inductive load applications. The SSM relay range comprises:

- SSM1: Single channel, single-phase relays with 6 A and 12 A ratings
- SSM2: Dual channel, single-phase relays with 6 A rating

Refer to Online EZ Selector.

SSM1A36BD

SSM1A312BD

Table 20.67: SSM1 Single Channel Solid State Relays (sold in lots of 1)

Switching	Input Voltage	Ouput Voltage	Contact Configura-tion	Load Current Range	Motor Load Rating	Catalog Number
DC switching	4–32 Vdc	1–60 Vdc	SPST N.O. (1 N/O)	6 A	–	SSM1D26BD
			SPST N.O. (1 N/O)	12 A	–	SSM1D212BD
		1–100 Vdc	SPST N.O. (1 N/O)	6 A	–	SSM1D36BD
			SPST N.O. (1 N/O)	12 A	–	SSM1D312BD
Zero voltage switching	4–32 Vdc	24–280 Vac	SPST N.O. (1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A16BD
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A112BD
		48–600 Vac	SPST N.O. (1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A36BD
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A312BD
	18–36 Vac	24–280 Vdc	SPST N.O. (1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A16B7
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A112B7
		48–600 Vac	SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A312B7
	90–140 Vac	24–280 Vac	SPST N.O. 1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A16F7
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A112F7
	200–265 Vac	24–280 Vac	SPST N.O. (1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A16P7
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A112P7
Random switching	4–32 Vdc	24–280 Vac	SPST N.O. (1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A16BDR
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A112BDR
		48–600 Vac	SPST N.O. (1 N/O)	6 A	1/6 hp @ 240 Vac	SSM1A36BDR
			SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A312BDR
	18–36 Vac	24–280 Vac	SPST N.O. (1 N/O)	12 A	1/3 hp @ 240 Vac	SSM1A112B7R

SSM2A16BDR

Table 20.68: SSM2 Dual Channel Solid State Relays (sold in lots of 1)

Switching	Input Voltage	Ouput Voltage	Contact Configura-tion	Load Current Range	Catalog Number *[1]*
Zero voltage switching	4–32 Vdc	24–280 Vac	DPST N.O. (2 N/O)	6	SSM2A16BD
Random switching	4–32 Vdc	24–280 Vac	DPST N.O. (2 N/O)	6	SSM2A16BDR

Approvals for SSM Relays

c UL us — File: E359576 CCN: NMFT2, NMFT8

CSA — File: 257594 Class: 3211 04

CE — IEC 60950-1

RoHS Compliant

[1] 4–pin connector for dual channel output only. Mating connector: MOLEX 050579404 or equivalent.

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Harmony™ SSL, SSM and SSP

Harmony SSL, SSM and SSP relays do not have any moving parts to wear out. Combined with vibration resistance, arc-less switching and the lack of acoustical noise, solid state relays are the ideal product for switching applications that demand reliable execution. For added reliability, the Harmony SSL, SSM and SSP solid state relays use Direct Copper Bonding (DCB) technology to decrease internal temperatures and improve the overall quality of the product. The SSR solid state relay range comprises:

- Relays for DIN rail mounting: SSRD
- Relays for panel mounting: SSRP

Key features include:

- Input voltage range 3–32 Vdc, 90–280 Vac
- Breaking capacities up to 125 A
- Zero voltage turn on, low EMI/RFI
- No moving parts
- Shock and vibration resistant
- No acoustical noise
- Fast response
- Arc-less switching
- Long life (>10^9 operations typical)

Refer to Online EZ Selector.

Table 20.69: Pre-assembled solid state slim relays

1 NO contact Switching	Voltage Range		Load Current Range	Reference	Weight
	Control Input	Load Output			
	V	V	A		kg/lb
Relays mounted on screw sockets (sold in lots of 30)					
DC Switching	4 to 12	1 to 24	3.5	SSL1D03JDPV (SSL1D03JD + SSLZVA1)	0.033/0.073
Zero voltage switching	4 to 12	24 to 250	2	SSL1A12JDPV (SSL1A12JD+SSLZVA1)	0.033/0.073
DC Switching	16 to 30	1 to 24	3.5	SSL1D03BDPV (SSL1D03BD+SSLZVA1)	0.033/0.073
	16 to 30	1 to 48	0.1	SSL1D101BDPV (SSL1D101BD +SSLZVA1)	0.033/0.073
Zero voltage switching	16 to 30	24 to 250	2	SSL1A12BDPV (SSL1A12BD+SSLZVA1)	0.033/0.073
Random switching	16 to 30	24 to 250	2	SSL1A12BDRPV (SSL1A12BDR +SSLZVA1)	0.033/0.073
Relays mounted on spring sockets (sold in lots of 30)					
DC Switching	4 to 12	1 to 24	3.5	SSL1D03JDPR (SSL1D03JD+SSLZRA1)	0.033/0.073
DC Switching	16 to 30	1 to 24	3.5	SSL1D03BDPR (SSL1D03BD +SSLZRA1)	0.033/0.073
Zero voltage switching	16 to 30	24 to 250	2	SSL1A12BDPR (SSL1A12BD +SSLZRA1)	0.033/0.073
Random switching	16 to 30	24 to 250	2	SSL1A12BDRPR (SSL1A12BDR +SSLZRA1)	0.033/0.073

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SSP1D425BD

SSM1A120••

SSM1A445••

SSRHP07

Table 20.70: Relays and sockets for customer assembly

SSL single-phase solid state relays (sold in lots of 12)					
Switching	Voltage Range		Load Current Range	Reference	Weight
	Control Input	Load Output			
	V	V	A		kg/lb
DC Switching	3 to 12	1 to 24	3.5	SSL1D03JD	0.004/0.009
		1 to 48	0.1	SSL1D101JD	0.004/0.009
	15 to 30	1 to 24	3.5	SSL1D03BD	0.004/0.009
	16 to 30	1 to 48	0.1	SSL1D101BD	0.004/0.009
Zero voltage switching	4 to 12	24 to 250	2	SSL1A12JD	0.033/0.073
Random switching	4 to 12	24 to 250	2	SSL1A12BD	0.033/0.073
DC Switching	16 to 30	1 to 48	0.1	SSL1A12JDR	0.033/0.073
Zero voltage switching	16 to 30	24 to 250	2	SSL1A12BDR	0.033/0.073

Sockets equipped with LED and protection circuit (sold in lots of 10)					
Control Voltage (Nominal)	For Use With Relays	Socket Type			
		Screw Connector		Spring Terminals	
V		Unit Reference	Weight kg/lb	Unit Reference	Weight kg/lb
5	SSL1D03JD SSL1D101JD SSL1A12JD SSL1A12JDR	SSLZVA1	0.029/ 0.063	SSLZRA1	0.029/0.063
24	SSL1D03BD SSL1D101BD SSL1A12BD SSL1A12BDR	SSLZVA1	0.029/ 0.063	SSLZRA1	0.029/0.063
60	SSL1D03ND SSL1D101ND SSL1A12ND SSL1A12NDR	SSLZVA2	0.029/ 0.063	—	0.029/0.063
110	SSL1D03ND SSL1D101ND SSL1A12ND SSL1A12NDR	SSLZVA3	0.029/ 0.063	—	0.029/0.063
230	SSL1D03ND SSL1D101ND SSL1A12ND SSL1A12NDR	SSLZVA4	0.029/ 0.063	—	0.029/0.063

Table 20.71: SSM1 single-phase solid state relays (12 and 18 mm)

Description	Compatibility	Reference	Weight kg/lb
Clip-in legends (2 sheets of 64 legends)	SSL sockets	RSLZ5	0.001/0.002
Bus jumper (10 x 20-pole jumper)	SSL sockets	RSLZ2	0.001/0.002
Partition plate (10 partition plates)	SSL sockets	RSLZ3	0.001/0.002

Table 20.72: SSM1 single-phase solid state relays (12 and 18 mm)

Switching	Voltage range		Load current range	Reference	Weight kg/lb
	Control input	Load output			
	V	V			
DC switching	4...32	1...60	6	SSM1D26BD	0.050/0.110
			12	SSM1D212BD	0.090/0.198
		1...100	6	SSM1D36BD	0.050/0.110
			12	SSM1D312BD	0.090/0.198
Zero voltage switching	4...32	24...280	6	SSM1A16BD	0.050/0.110
			12	SSM1A112BD	0.090/0.198
		48...600	6	SSM1A36BD	0.050/0.110
			12	SSM1A312BD	0.090/0.198
	18...36	24...280	6	SSM1A16B7	0.050/0.110
			12	SSM1A112B7	0.090/0.198
		48...600	12	SSM1A312B7	0.090/0.198
	90...140	24...280	6	SSM1A16F7	0.050/0.110
			12	SSM1A112F7	0.090/0.198
	200...265	24...280	6	SSM1A16P7	0.050/0.110
			12	SSM1A112P7	0.090/0.198
Random switching	4…32	24…280	6	SSM1A16BDR	0.050/0.110
			12	SSM1A112BDR	0.090/0.198
		48…600	6	SSM1A36BDR	0.050/0.110
			12	SSM1A312BDR	0.090/0.198
	18…36	24…280	12	SSM1A112B7R	0.090/0.198

Table 20.73: SSM2 single-phase solid state relays, dual channel

Switching	Voltage range		Load current range	Reference	Weight kg/lb
	Control input	Load output			
	V	V			
Zero voltage switching	4...32	24...280	6	SSM2A16BD	0.090/0.198
Random switching	4...32	24...280	6	SSM2A16BDR	0.090/0.198

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Table 20.74: SSM3 three-phase solid state relays

Switching	Voltage range		Load current range	Reference	Weight kg/lb
	Control input	Load output			
	V	V			
Zero voltage switching	4...32	48…600	25	SSM3A325BD	0.740/1.631
	90…140	48…600	25	SSM3A325F7	0.740/1.631
	180...280	48…600	25	SSM3A325P7	0.740/1.631
	4...32	48…600	25	SSM3A325BDR	0.740/1.631

Table 20.75: SSP1 single-phase solid state relays

Switching	Voltage range		Load current range	Reference	Weight kg/lb
	Control input	Load output			
	V	V			
Relays with embedded thermal pad - Easy Series					
DC switching	3.5…32	1…150	12	SSP1D412BDT	0.089/0.196
			25	SSP1D425BDT	0.089/0.196
			40	SSP1D440BDT	0.089/0.196
Zero voltage switching	3…32	24…300	10	SSP1A110BDT	0.089/0.196
			25	SSP1A125BDT	0.089/0.196
			50	SSP1A150BDT	0.089/0.196
			75	SSP1A175BDT	0.089/0.196
	4…32	48…660	50	SSP1A450BDT	0.089/0.196
			75	SSP1A475BDT	0.089/0.196
			90	SSP1A490BDT	0.089/0.196
			125	SSP1A4125BDT	0.089/0.196
	90…280	24…300	10	SSP1A110M7T	0.089/0.196
			25	SSP1A125M7T	0.089/0.196
			50	SSP1A150M7T	0.089/0.196
		48…660	50	SSP1A450M7T	0.089/0.196
			75	SSP1A475M7T	0.089/0.196
			90	SSP1A490M7T	0.089/0.196
			125	SSP1A4125M7T	0.089/0.196
Relays without embedded thermal pad					
DC switching	3.5…32	1…150	12	SSP1D412BD	0.089/0.196
			25	SSP1D425BD	0.089/0.196
			40	SSP1D440BD	0.089/0.196
Zero voltage switching	3…32	24…300	10	SSP1A110BD	0.089/0.196
			20	SSP1A125BD	0.089/0.196
			50	SSP1A150BD	0.089/0.196
			75	SSP1A175BD	0.089/0.196
	4…32	48…660	50	SSP1A450BD	0.089/0.196
			75	SSP1A475BD	0.089/0.196
			90	SSP1A490BD	0.089/0.196
	90…280	24…300	25	SSP1A125M7	0.089/0.196
			50	SSP1A150M7	0.089/0.196
		48…660	50	SSP1A450M7	0.089/0.196
			90	SSP1A490M7	0.089/0.196
Relays with embedded thermal pad and smart diagnostic features					
Zero voltage switching	3...32	24...300	25	SSP1A125BDS	0.097/0.214
	4...32	48...660	75	SSP1A475BDS	0.097/0.214
			125	SSP1A4125BDS	0.097/0.214

Table 20.76: SSP1*E single-phase relays — Easy Series

Switching	Voltage range		Load current range	Reference	Weight kg/lb
	Control input	Load output			
	V	V			
Relays with embedded thermal pad - Easy Series					
Zero voltage switching	4...32	20...300	10	SSP1A110BDE	0.115 /0.254
			25	SSP1A125BDE	
			50	SSP1A150BDE	
			75	SSP1A175BDE	
			90	SSP1A190BDE	
			125	SSP1A110BDE	

SSP1E

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Table 20.77: SSP3 three-phase solid state relays

Switching	Voltage range		Load current range	Reference	Weight kg/lb
	Control input	Load output			
	V	V			
Relays with embedded thermal pad					
Zero voltage switching	4...32	48...530	25	SSP3A225BDT	0.240/0.529
			50	SSP3A250BDT	0.240/0.529
	18…36	48...530	50	SSP3A250B7T	0.240/0.529
	180…280	48...530	25	SSP3A225P7T	0.240/0.529
			50	SSP3A250P7T	0.240/0.529
Random switching	4...32	48...530	25	SSP3A225BDRT	0.240/0.529
			50	SSP3A250BDRT	0.240/0.529
	180…280	48...530	50	SSP3A250P7RT	0.240/0.529
Relays without embedded thermal pad					
Zero voltage switching	4…32	48…530	25	SSP3A225BD	0.240/0.529
			50	SSP3A250BD	0.240/0.529
	18…36	48…530	25	SSP3A225B7	0.240/0.529
			50	SSP3A250B7	0.240/0.529
	90…140	48…530	50	SSP3A250F7	0.240/0.529
	180…280	48…530	50	SSP3A250P7	0.240/0.529
Random switching	4…32	48…530	25	SSP3A225BDR	0.240/0.529
			50	SSP3A250BDR	0.240/0.529
	18…36	48…530	25	SSP3A225B7R	0.240/0.529

Table 20.78: Heat sinks for customer assembly

Mounting	Number and type of relays supported	Surface area	Thermal rsistance	Reference	Weight kg/lb
		cm^2/in^2	oC/W		
Panel mount	Up to 3 SSP1 units 1 SSP3 unit	6,823/1,058	0.2	SSRHP02	2.592/5.714
	Up to 3 SSP1 units 1 SSP3 unit	4,406/683	0.5	SSRHP05	1.440/3.174
	1 SSP1 unit	1,640/254	0.7	SSRHP07	0.526/1.159
	Up to 3 SSP1 units 1 SSP3 unit	1,425/221	1	SSRHP10	0.620/1.367
	1 SSP1 unit	336/52.10	2.5	SSRHP25	0.100/0.220
DIN rail mount	Up to 3 SSP1 units 1 SSP3 unit	1,425/221	1	SSRHD10	0.630/1.389

Table 20.79: Accessories

Description	Type of relays supported	Unit reference	Weight kg/lb
Copper terminal lug for AWG 6 (13.3 mm^2) to AWG 0 (53.5 mm^2) Sold in lots of 10	SSP1	SSRAL1	0.042/0.093

Approvals for SSRP and SSRD Relays

c UL us — File: E258297 CCN: NRNT2, NRNT8

CSA — File: 230765 Class: 3211 07

CE — IEC 60950-1

RoHS Compliant

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SSP3A225P7

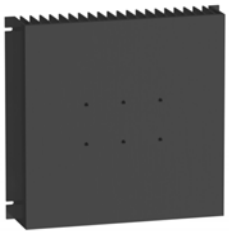
Harmony™ SSP Relays

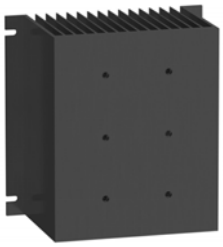
Harmony SSP solid state relays are three-phase panel mounted relays with IP20 housing. The SCR outputs allow them to be used in various power switching applications. These power relays with 25 A and 50 A current rating are EMC compliant. SSP relays are integrated with an R-C snubber circuit and TVS (Transient Voltage Suppression). They are available with zero voltage switching for resistive load and random switching for inductive load applications.

Refer to Online EZ Selector.

Table 20.80: SSP Three-Phase Solid State Relays (sold in lots of 1)

Switching	Input Voltage	Ouput Voltage	Contact Configura-tion	Load Current Range	Motor Load Rating	Catalog Number *[2]*
Zero voltage switching	4–32 Vdc	48–530 Vac	3PST N.O. (3 N/O)	25 A	3/4 hp @ 120 Vac 1 hp @ 240 Vac 3 hp @ 480 Vac 4.4 hp @ 530 Vac	SSP3A225BD
				50 A	1.5 hp @ 120 Vac 3 hp @ 240 Vac 7.5 hp @ 480 Vac 8.8 hp @ 530 Vac	SSP3A250BD
	18–36 Vac	48–530 Vac	3PST N.O. (3 N/O)	25 A	3/4 hp @ 120 Vac 1 hp @ 240 Vac 3 hp @ 480 Vac 4.4 hp @ 530 Vac	SSP3A225B7
				50 A	1.5 hp @ 120 Vac 3 hp @ 240 Vac 7.5 hp @ 480 Vac 8.8 hp @ 530 Vac	SSP3A250B7
	90–140 Vac	48–530 Vac	3PST N.O. (3 N/O)	50 A	1.5 hp @ 120 Vac 3 hp @ 240 Vac 7.5 hp @ 480 Vac 8.8 hp @ 530 Vac	SSP3A250F7
	180–280 Vac	48–530 Vac	3PST N.O. (3 N/O)	50 A	1.5 hp @ 120 Vac 3 hp @ 240 Vac 7.5 hp @ 480 Vac 8.8 hp @ 530 Vac	SSP3A250P7
Random switching	4–32 Vdc	48–530 Vac	3PST N.O. (3 N/O)	25 A	3/4 hp @ 120 Vac 1 hp @ 240 Vac 3 hp @ 480 Vac 4.4 hp @ 530 Vac	SSP3A225BDR
				50 A	1.5 hp @ 120 Vac 3 hp @ 240 Vac 7.5 hp @ 480 Vac 8.8 hp @ 530 Vac	SSP3A250BDR
	18–36 Vac	48–530 Vac	3PST N.O. (3 N/O)	25 A	3/4 hp @ 120 Vac 1 hp @ 240 Vac 3 hp @ 480 Vac 4.4 hp @ 530 Vac	SSP3A225B7R


SSRHP02


SSRHP05

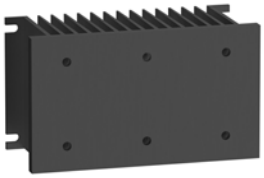

SSRHP10

Table 20.81: Accessories

Description	Compatibility	Thermal Resistance	Catalog Number
Heat sink panel mount (lot of 10)	1 x SSP 1 x SSRP 2 x SSRP 3 x SSRP	0.2 °C/W	SSRHP02
	1 x SSP 1 x SSRP 2 x SSRP 3 x SSRP	0.5 °C/W	SSRHP05
	1 x SSP 1 x SSRP 2 x SSRP	1 °C/W	SSRHP10
	1 x SSRP	2.5 °C/W	SSRHP25
Heat sink DIN rail mount (lot of 1)	1 x SSP 1 x SSRP 2 x SSRP	1 °C/W	SSRHD10

Approvals for SSP Relays

c UL us — File: E359576 CCN: NMFT2, NMFT8

CSA — File: 257594 Class: 3211 04

CE — IEC 60950-1

RoHS Compliant

[2] Add a T to the end of the part number to order the SSP with a thermal pad interface.

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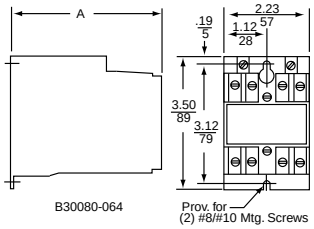
8501XO40V02 AC Control Relay

8501XMO40V02 AC Master Relay

AC Control and Master Relays Dimensions



Dual Dimensions: **INCHES**
Millimeters

8501XO40XTE1V02 AC Timing Relay

Square D™ NEMA Style AC Relays

Class 8501 Type X relays combine a rugged, heavy-duty design with modular construction for greater flexibility. They are ideal for applications where long life, high reliability, and ease of maintenance are important. The Type X family offers a complete line of relays and accessories for most control applications. The 8501X relay consists of a standard 4 pole base to which it is possible to add additional contacts, timer, and latch functionality. Instantaneous and Master contacts are converted from N.O. to N.C. by flipping the contact cartridge within the base. The 8501X relay can either be built from individual part numbers or ordered pre-assembled.

AC Control Relays

- Straight-through wiring
- Plug-in contact cartridges for easy contact conversion and replacement
- Contact conversion without removing terminal screws or wires
- Self-lifting pressure wire connectors
- Replaceable coil

Table 20.82: AC Control Relays (lots of 1)

No. of N.O. 10 A Convertible Instantaneous Contacts*[1]*	Type*[1][2]*
0	XO00
2	XO20
3	XO30
4	XO40
6	XO60
8	XO80
10	XO1000
12	XO1200

AC Master Relays

- 20 ampere contact rating due to use of master contact cartridges.*[3]*
- Provisions for standard cartridges to be used in contact cavities not occupied by master cartridges in 2-8 pole AC relay.

Table 20.83: AC Master Relays

No. of N.O. 20 A Convertible Contacts	Type*[2][4]*
2	XMO20
4	XMO40
6	XMO60

Table 20.84: Dimension A (See Figure at Left) and Weights

No. of Poles	Dim. A		Shipping Weight, lb
	in.	mm	
0–4	3.95	100	2.0
6–8	5.16	131	2.3
10–12	6.36	162	2.7

AC Timing Relays

- Easily convertible On or Off Delay
- Two adjustable timing ranges
- Repeat accuracy well above ±10%
- Convertible 1 N.O. and 1 N.C. timed contacts
- Large knob for easy adjustment of time delay
- Off Delay mode times out even after loss of power

Table 20.85: AC Timing Relays (lots of 1)

Timing Mode	No. of N.O. 10 A Convertible Instantaneous Contacts	Timed Convertible Contacts		Timing Relay	
				0.2–60 s	5–180 s
		N.O.	N.C.	Type *[2]*	Type *[2]*
On Delay	0	1	1	XO00XTE1	XO00XTE2
	2	1	1	XO20XTE1	XO20XTE2
	4	1	1	XO40XTE1	XO40XTE2
Off Delay	0	1	1	XO00XTD1	XO00XTD2
	2	1	1	XO20XTD1	XO20XTD2
	4	1	1	XO40XTD1	XO40XTD2

[1] A maximum of 8 N.C. contacts is allowed on 9–12 pole relays.
[2] Voltage code must be specified to order these products. Refer to Table 20.89 and insert the code as shown in Table 20.90.
[3] Maximum of six 8501 Type XC4 master cartridges may be used on only 7 and 8 pole AC devices.
[4] Attachments not permitted on this relay.

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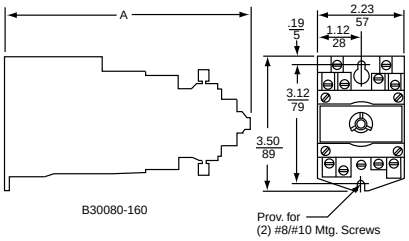
8501XO40XLV02 Latching Relay

AC Latching Relays Dimensions



Dual Dimensions: **INCHES**
Millimeters

AC Latching Relays

- Mechanical latch holds all contacts switched even after removal of power from replaceable latching coil.
- Provides sequence memory in the event of power loss. Ideal for press control, process control, and punch presses.
- Replaceable unlatch coil to switch contacts back to original state.

Table 20.86: AC Latching Relays (lots of 1)

N.O. 10 A Convertible Instantaneous Contacts	Latching Relay
	Type *[5]*
2	XO20XL
3	XO30XL
4	XO40XL
6	XO60XL
8	XO80XL

Table 20.87: Dimension A (See Figure at Left) and Weights

No. of Poles	Dim. A		Shipping Weight, lb
	in.	mm	
2–4	6.54	166	2.8
6–8	7.74	197	3.1

- For replacement coils, see Table 20.104.

Table 20.88: AC Contact Ratings

Type of Cartridge	V	Inductive 35% Power Factor					Resistive 75% Power Factor
		NEMA Rating	Make		Break		Continuous Amperes	Make, Break and Continuous Amperes
			A	VA	A	VA		
Standard or Overlapping	120	A600	60	7200	6	720	10	10
	240		30		3			
	480		15		1.5			
	600		12		1.2			
Master*[6]*	—	A600	Same as standard cartridge above except substitute 20 A for the continuous ampere rating					
Logic Reed	—	—	150 Vac, 150 mA, 8 W Maximum					

- For DC ratings, see Table 20.94.

Table 20.89: Voltage Codes

AC Voltages - Hz	Code
12–60	V11
24–60	V01
24–50	V12
48–60	V18
48–50	V16
120–60/110–50	V02
208–60	V08
240–60/220–50	V03
277–60	V04
480–60/440–50	V06
600–60/550–50	V07

Table 20.90: How to Order

To Order Specify:	Catalog Number		
	Class	Type	Voltage Code
• Class Number • Type Number • Voltage Code	8501	XO40	V02

Approvals for Square D NEMA Style Relays

File: E78403
CCN: NKCR

File: 060905
Class: 3211 03

IEC 60947–1

[5] Voltage code must be specified to order these products. Refer to Table 20.89 and insert the code as shown in Table 20.90.
[6] Maximum of six 8501 Type XC4 master cartridges may be used on only 7 and 8 pole AC devices.

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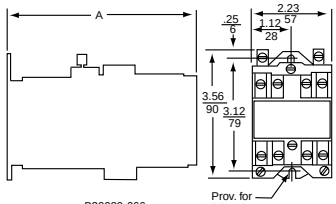
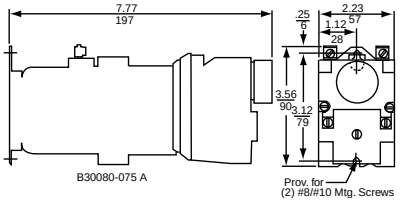
8501XDO40V53 Control Relay

DC Control Relays Dimensions (in./mm)



8501XDO40XTE1V02 Timing Relay

DC Timing Relays Dimensions (in./mm)



Square D™ NEMA Style DC Relays

DC Control Relays

- Replaceable, highly reliable pure DC power plant: no economizing resistors, overlapping contacts or dual-wound coil.
- Uses the same Type XB adder decks and attachments as the AC version.
- Offers all the features of the AC relay.
- Available in up to 8 poles.
- All contact poles are usable since no overlapping contacts are needed.

Table 20.91: DC Control Relays

Normally Open 5 A Convertible Instantaneous Contacts	Control Relay Type*[7]*
0	XDO00
2	XDO20
4	XDO40
6	XDO60
8	XDO80

Table 20.92: Dimension A (See Figure at Left) and Weights

No. of Poles	Dim. A		Shipping Weight lb.
	in.	mm	
0–4	5.17	131	3.1
6–8	6.37	162	3.4
10–12	7.60	193	3.8

DC Timing Relays

- Easily convertible On Delay or Off Delay.
- Two adjustable timing ranges.
- Repeat accuracy well above ±10%.
- Convertible 1 N.O. and 1 N.C. timed contacts.
- Large knob for easy adjustment of time delay.
- Off Delay mode times out even after loss of power.

Table 20.93: DC Timing Relays

Timing Mode	Normally Open 5 A Convertible Instantaneous Contacts	Timed Convertible Contacts		Timing Relay*[7]*	
				0.2–60 s	5–180 s
		N.O.	N.C.	Type	Type
On Delay	0	1	1	XDO00XTE1	XDO00XTE2
	2	1	1	XDO20XTE1	XDO20XTE2
	4	1	1	XDO40XTE1	XDO40XTE2
Off Delay	0	1	1	XDO00XTD1	XDO00XTD2
	2	1	1	XDO20XTD1	XDO20XTD2
	4	1	1	XDO40XTD1	XDO40XTD2

Table 20.94: DC Contact Ratings

Type of Cartridge	DC Ratings					
	Volts	Inductive			Resistive	
		NEMA Rating	Make and Break Amperes 138 VA Max.	Continuous Amperes	Make and Break Amperes	Continuous Amperes
Standard	125 250	P600	1.1 0.55	5 5	4 0.8	5 5
Overlapping	125	P150	1.1	5	4	5
Logic Reed	—	—	30 Vdc, 60 mA	—	—	—

- For AC ratings, see Table 20.88.

NOTE: Do not use any 8501 Type XC4 Master Cartridges on any DC-operated device.

[7] Voltage code must be specified to order these products. Refer to Table 20.98 and insert the appropriate code as shown in Table 20.99.

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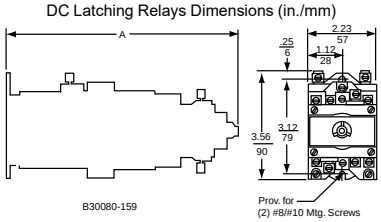
8501XDO80XDLV62 Latching Relay

DC Latching Relays Dimensions (in./mm)



8501XUDO40V53 Utility Relay

DC Latching Relays

- Mechanical latch holds all contacts switched even after removal of power from replaceable latching coil.
- Provides sequence memory in the event of power loss.
- Ideal for sequencing applications such as press control, process control and punch presses.
- Replaceable unlatch coil to switch contacts back to original state.

Table 20.95: DC Latching Relays

Normally Open 5 A Convertible Instantaneous Contacts	Latching Relay *[8]*
	Type
2	XDO20XDL
4	XDO40XDL
6	XDO60XDL
8	XDO80XDL

NOTE: Unlatch coil is rated for intermittent duty and should be connected through a N.O. contact of the relay if the input signal is maintained. Order one more N.O. contact than the application requires to use as a coil clearing contact.

Table 20.96: Dimension A (See Figure at Left) and Weights

No. of Poles	Dim. A		Shipping Weight, lb.
	in.	mm	
2–4	7.76	197	3.9
6–8	8.98	228	4.2

DC Utility Relays

Ideal for utility plant applications where reliable performance and a pure DC power plant is required. In addition to the Type XDO relay features, the Type XUDO provides:

- Up to 12 poles N.O. or N.C.
- Nominal 125 Vdc coil, capable of handling 140 Vdc continuously and picking up at 105 Vdc after having been operated at 140 Vdc continuously. Other voltages with comparable operating characteristics are available.
- Enclosed device capable of operating in 145°F ambient.

Table 20.97: DC Utility Relays

Number of 5 A Convertible Contacts		Open Type*[8]*
N.O.	N.C.	Type
4 0	0 4	XUDO40 XUDO04
8 0	0 8	XUDO80 XUDO08
12 0	0 12	XUDO1200 XUDO0012

Table 20.98: Voltage Codes—8501 XUDO and XDO Relays

DC Voltages for 8501 XUDO Relays ONLY	Code	DC Voltages for 8501 XDO Relays	Code
6	V50	6	V50
12	V51	12	V51
24	V53	24	V53
48	V56	32	V54
125	V63	48	V56
250	V67	72	V58
—	—	90	V59
—	—	115/125	V62
—	—	230/250	V66

Table 20.99: How to Order

To Order Specify:	Catalog Number		
	Class	Type	Voltage Code
• Class Number • Type Number • Voltage Code	8501	XDO40	V53

- For replacement coils, see Table 20.103.
- For UL and CSA approvals, see Square D NEMA Style AC Relays.

[8] Voltage code must be specified to order these products. Refer to Table 20.98 and insert the appropriate code as shown in Table 20.99.

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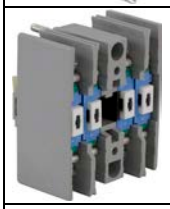
Attachments and Accessories for Square D™ NEMA Style Relays

Table 20.100: Type X™ Relays

	Description	Type
	**Mechanical Latch Attachment**—Mounts on any 2 through 8-pole relay (except XMO master relay). The Type XL and XDL latch attachments are identical in size and mounting provisions. The Type XLAC latch attachment has a continuous-duty-rated coil which is replaceable. **The Type XDLDC latch attachment has an intermittent–rated coil (replaceable) and should be connected through a N.O. contact of the basic relay if the input signal is maintained to the unlatch coil.** AC Latch Attachment DC Latch Attachment	XL *[9]* XDL*[9]*
	**Pneumatic Timer Attachment**—Mounts only on any 0 through 4-pole AC or DC relays (except XMO master relay). It provides 1 N.O. and 1 N.C. convertible timed contacts, which are the same Type XC1 cartridges used on the basic relay. Two timing ranges are available, and conversion from On Delay to Off Delay or vice versa is easy. **Off Delay** 0.2–60 seconds 5–180 seconds **On Delay** 0.2–60 seconds 5–180 seconds	XTD1 XTD2 XTE1 XTE2
	**Timer Lockout Cover**—Fits over the time delay adjustment knob of any Type XT timing attachment. The Lockout Cover is designed to protect the time setting against accidental adjustment. It mounts directly to the timing attachment with two included screws.	XJ1
	**Adder Decks**—Adder decks are used to expand the number of poles on a relay. The basic 4-pole relay can be easily converted to an 8-pole or 12-pole relay by installing one or two adder decks. The Class 8501 Type XB20 comes with 2 convertible contact cartridges and will accept 2 additional convertible contact cartridges. The Class 8501 Type XB40 comes with 4 convertible contact cartridges. The same Type XB adder deck is used for both the middle and upper decks of the AC or DC relay.	
	With 2 N.O. contact cartridges	XB20
	With 4 N.O. contact cartridges	XB40
	**Contact Cartridges**—The Type X relay offers 4 Types of contact cartridges. All are color–coded for visual identification of each Type.	
	Standard Cartridge—The standard cartridge, used for most applications, has a black case.	XC1
	Overlapping Cartridge—Same NEMA Type A600 AC rating as standard cartridge and a NEMA Type P150 DC rating. When it is used in the N.O. mode it will close early and when used in the N.C. mode it will open late. If two or more are used together, the N.O. contacts will close before the N.C. contacts open as the relay picks up. Overlap also occurs during dropout. Overlapping cartridge has a red case.	XC2
	May be ordered factory installed: • Substitute 1 N.O. and 1 N.C. overlapping cartridges for 2 standard cartridges. • Substitute 2 N.O. and 2 N.C. overlapping cartridges for 4 standard cartridges. • Substitute 3 N.O. and 3 N.C. overlapping cartridges for 6 standard cartridges. • Substitute 4 N.O. and 4 N.C. overlapping cartridges for 8 standard cartridges.	**Form** **Y1591** **Y1592** **Y1593** **Y1594**
	Master Cartridge—Features the same contact ratings as the Type XC1 standard cartridge except it has a 20 ampere continuous current rating instead of 10 amperes. It can be used in circuits where a master relay is required. Master cartridge has a blue case. **Maximum of 6 master cartridges may be used on any 7 and 8-pole AC relays. Do not use any master cartridges on 9-12-pole AC or any DC-operated devices. Note: If master cartridges are added to a standard relay, attachments (latch mechanism, timers, etc.) cannot be used.**	XC4
	**Mounting Track**—The mounting track has pre-punched mounting holes to simplify mounting the track on the control panel. The relay mounting screws are factory installed on the track so that the relays can be hung prior to tightening the screws. 9 in. long for 4 relays 18 in. long for 8 relays 27 in. long for 12 relays 36 in. long for 16 relays	XM4 XM8 XM12 XM16
	**Manual Test Tool**—Provides a means of manually switching the contacts of a basic relay or timing relay and holding all contacts in their switched state until the tool is removed. This simplifies the checking of control circuits without power on the coil or contacts.	XA1
	Transient Suppressor—Consists of an R-C circuit designed to suppress coil generated transients to approximately 200 percent of peak voltage. It is particularly useful when switching the Type X relay near solid state equipment. It is designed for use on coils up to 120 Vac.	XS1
	**NEMA 1 Enclosure**—Formed from sheet steel to provide strength and rigidity. Two conduit knockouts are located in both the top and bottom of the enclosure. The enclosure is furnished with self tapping screws for mounting the relay inside the enclosure. Accommodates a single 4 or 8-pole AC or DC relay, 12-pole AC relay, 4-pole AC latching relay, and 4-pole AC timing relay. **NOTE:** The 4-pole DC latching relay, 4-pole DC timing relay, 8-pole AC and DC latching relays and 12-pole utility auxiliary relay will not fit.	Class 9991 Type UE7

[9] See Table 20.101.

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Table 20.101: Mechanical Latch Attachment Voltage Codes

AC Voltage	Code	DC Voltage	Code
24–60	V01	6	V50
24–50	V12	12	V51
120–60/110–50	V02	18	V99
208–60	V08	24	V53
240–60/220–50	V03	48	V56
277–60	V04	72	V58
480–60/440–50	V06	90	V59
600–60/550–50	V07	115/125	V62
		230/250	V66

Table 20.102: How to Order

To Order Specify:	Catalog Number	
	Class	Type
• Class Number • Type Number • Voltage Code for mechanical latch attachment • Form for factory installed overlapping contacts	8501	XTE1

Table 20.103: DC Relay Coil Selection

Equipment To Be Serviced		Coil Prefix, or Class and Type	Hz	Suffix (The complete coil number consists of prefix or the Class and Type, followed by suffix.)												Coil Burden Watts
Class	Type			6 V	12 V	18 V	24 V	32 V	48 V	64 V	72 V	90 V	110 V	115/125 V	220 V	230/250 V	
8501	XD	9998 XD	—	19	28	34	37	40	46	49	52	55	—	58	—	67	18
	XDL	9998 XDL	—	19	28	34B	37B	40B	46B	49B	52B	55B	—	58B	—	67B	50
	XUD	9998 XUD	—	19	28	—	37	—	46	—	—	—	—	58 *[10]*	—	67*[11]*	16

Table 20.104: AC Relay Coil Selection

Equipment To Be Serviced		Coil Prefix or Class and Type	Suffix (The complete coil number consists of prefix or the Class and Type, followed by suffix.)												Coil Volt-Amperes	
Class	Type		—	24 V	110-115 V	120 V	208 V	220 V	240 V	277 V	380 V	440 V	480 V	550 V	600 V	In-rush	Sealed
8501	XO, XMO	9998 X *[12]*	60	23	—	44	51	52	53	55	—	—	62	—	65	148	23
			50	24	44	—	52	53	—	—	—	62	—	65	—	143	25

[10] 125 Vdc only
[11] Not dual rated—250 Vdc only
[12] To order an unlatch coil, add the letter L to the type number and the letter B to the suffix number. Example: for a 120 V 60 Hz unlatch coil, order a Class 9998 Type XL44B.

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RE17LAMW

RE17LMBM

RE17RLMU

Harmony™ RE17, RE22, and RENF (NFC) Timers

The Harmony RE17 and RE22 timer range is comprised of both 8 A relay and 0.7 A solid state outputs. Thanks to its space saving 17.5 mm design, this relay is ideal for applications that require a lot of control in a small foot print. The RE17 series is designed to attach to a 35 mm DIN rail.

- Multi-function, dual function, or single function
- Multi-range (7 selectable ranges)
- Multi-voltage
- Solid state or relay output options

Table 20.105: RE17 Series Timers

Supply Voltage	Timing Ranges	Output Type	Rated Current	Functions	Function Descriptions *[1]*	Catalog Number
24–240 Vac/ Vdc	0.1 s to 100 h	SPST Solid State	0.7 A	A	Power On delay	RE17LAMW
24–240 Vac	0.1 s to 100 h	SPST Solid State	0.7 A	H	Interval	RE17LHBM
				C	Off delay with control signal	RE17LCBM
				L, Li	Asymmetrical flasher	RE17LLBM
				A, At, B, C, H, Ht, D, Di, Ac, Bw	Multi-function	RE17LMBM
24 Vdc, 24–240 Vac	0.1 s to 100 h	SPDT Relay	8 A	B	Interval with control signal	RE17RBMU
				C	Off delay with control signal	RE17RCMU
				A, At	Power on delay	RE17RAMU
				H, Ht	Interval	RE17RHMU
				L, Li	Asymmetrical flasher	RE17RLMU
				A, At, B, C, H, Ht, D, Di, Ac, Bw	Multi-function	RE17RMMU
				Ad, Ah, N, O, P, Pt, T, Tt, W	Multi-function	RE17RMXMU
				A, At, B, C, H, Ht, D, Di	Multi-function	RE17RMEMU
12 Vdc	0.1 s to 100 h	SPDT Relay	8 A	L, Li	Asymmetrical flasher	RE17RLJU
				A, At, B, C, H, Ht, D, Di, Ac, Bw	Multi-function	RE17RMJU
12–240 Vac	0.1 s to 100 h	SPDT Relay	8 A	A, At, B, C, H, Ht, D, Di, Ac, Bw	Multi-function	RE17RMMW
12–240 Vac	0.1 s to 100 h	SPDT Relay	8 A	A, At, B, C, H, Ht, D, Di, Ac, Bw	Multi-function	RE17RMMWS

Approvals for RE17 Timers

c UL us LISTED — File: E173076 CCN: NRNT, NRNT7

File: 248382 Class: 3211–06

CE — IEC 61812–1

RoHS Compliant

[1] For detailed function definitions, see Table 20.113.

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Table 20.106: RE22 Series Timer References

Timing Ranges	Functions	No. of relay outputs	Voltages V	Reference	Weight kg/lb
Single function					
10 selectable timing ranges 1 s, 3 s, 10 s, 30 s, 100 s, 300 s, 30 min, 300 min, 30 h, 300 h	Ac	2	24…240	RE22R2ACMR	0.105/ 0.231
	Qg	2	24…240	RE22R2QGMR	0.105/ 0.231
	Qt	2	24…240	RE22R2QTMR	0.105/ 0.231
7 selectable timing ranges 1 s, 3 s, 10 s, 30 s, 100 s, 300 s, 10 min	K	1	24…240	RE22R1KMR*[2][3]*	0.100/ 0.220
		2	24…240	RE22R2KMR*[2][3]*	0.100/ 0.220
7 selectable timing ranges 0.5 s, 1 s, 3 s, 10 s, 30 s, 100 s, 300 s	Qc	1	24/24...240	RE22R1QCMU	0.080/ 0.176
Single range selection 30 s	Qe	2	24…240	RE22R2QEMR	0.090/ 0.198
		2	380…415	RE22R2QEMT	0.090/ 0.198
Dual function					
10 selectable timing ranges 1 s, 3 s, 10 s, 30 s, 100 s, 300 s, 30 min, 300 min, 30 h, 300 h	A, Aw	1	24…240	RE22R1AMR	0.100/ 0.220
		2	24…240	RE22R2AMR	0.105/ 0.231
	C, Ct	1	24…240	RE22R1CMR	0.100/ 0.220
	C	2	24…240	RE22R2CMR	0.105/ 0.231
	Ac, Act	1	24…240	RE22R1ACMR	0.100/ 0.220
	Ak, Akt	1	24…240	RE22R1AKMR	0.100/ 0.220
	D, Dw	1	24…240	RE22R1DMR	0.100/ 0.220
		2	24…240	RE22R2DMR	0.105/ 0.231
	H, Hw	1	24…240	RE22R1HMR	0.100/ 0.220
		2	24…240	RE22R2HMR	0.105/ 0.231
	Wt, W	2	24…240	RE22R2MWMR	0.105/ 0.231
7 selectable timing ranges 0.5 s, 1 s, 3 s, 10 s, 30 s, 100 s, 300 s	K, He	1	24…240	RE22R1MKMR*[2][3]*	0.100/ 0.220
10 selectable timing ranges 1 s, 3 s, 10 s, 30 s, 100 s, 300 s, 30 min, 300 min, 30 h, 300 h	A, At, Aw	1	24…240	RE22R1MAMR	0.100/ 0.220
	A, At, Aw, Ac, Act, C, Ct, D, Dt, Dw, Di, Dit, Diw, H, Ht, Hw, W, Wt	1	24…240	RE22R1MYMR	0.100/ 0.220
	A, At, Aw, C, Ct, D, Dt, Dw, Di, Dit, Diw, H, Ht, Hw, Qg, Qgt, Qt, Qtt, W, Wt	2	24…240	RE22R2MYMR	0.105/ 0.231
	L, Li, Lt, Lit	1	24…240	RE22R1MLMR	0.100/ 0.220
Multifunction					
7 selectable timing ranges 1 s, 10 s, 1min, 10 min, 1h, 10 h, 100 h	Q	1	24/24…240	RE22R1QMU	0.090/ 0.198
		1	230–380	RE22R1QMQ	0.090/ 0.198
Dual function					
7 selectable timing ranges 1 s, 10 s, 1 min, 10 min, 1 h, 10 h, 100 h	A, At	2	24/24…240	RE22R2AMU	0.090/ 0.198
Multifunction					
7 selectable timing ranges 1 s, 10 s, 1 min, 10 min, 1 h, 10 h, 100 h	A, At, B, C, H, Ht, Di, D, Ac, Bw	2	24/24…240	RE22R2MMU	0.090/ 0.198
			12	RE22R2MJU	0.090/ 0.198
			12…240	RE22R2MMW	0.090/ 0.198
	Ad, Ah, N, O,P, Pt, Tl, Tt, W	2	24/24...240	RE22R2MXMU	0.090/ 0.198

[2] The diagnostic button is not available for the K function related references (RE22R1KMR, RE22R2KMR, and RE22R1MKMR).
[3] 1 or 2 relay outputs: 5 A - 250 V.

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Harmony NFC timing relay with Smartphone mobile app

Table 20.107: NFC Timing Relays with Relay Output

Timing ranges	Functions	No. of Relay Outputs	Voltages V	Reference	Weight kg/lb
Multifunction					
0.05 s to 999 h	A, Ac, Ad, Ah, Ak, At, B, Bw, C, D, Di, Dt, Di, H,Ht, L, Li, Lt, Lit, N, O, P, Pt, Qt, Qtt, Tl, Tt,W	2	24…240	RENF22R2MMW	0.0904/0.1993

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RE48ATM12MW


RE48AMH13MW


RUZC3M


RE48ASOC11AR


RE48AIPCOV

Harmony™ RE48 Panel Mount Timers

The Harmony RE48 panel mount timer range is comprised of 5 A relay outputs. The unit can be mounted either on a panel or on a DIN rail with the optional octal socket. Thanks to the large selector knob, the user can quickly and easily see the current value selected and change it if needed.

- Time unit selector knob
- Multifunction, single function, or dual function
- 1.2 second to 300 hour timing range
- Wide input voltage range
- 5 A relay outputs
- Panel-mounted or plug-in
- LED indication

Table 20.108: RE48 Series Timers

Supply Voltage	Timing Ranges	Pin Configuration	Output Type	Rated Current	Functions	Function Descriptions *[4]*	Catalog Number
24–240 Vac/Vdc	1.2 s to 300 h	8–Pin Octal	DPDT Relay	5 A	A	Power On delay	RE48ATM12MW
					A1, A2, H1, H2	Delay On Energization, Pulse-on Energization	RE48AMH13MW
24–240 Vac/Vdc	1.2 s to 300 h	11–Pin Octal	DPDT Relay	5 A	L, Li	Asymmetrical flasher	RE48ACV12MW
					A, B, C, Di	Multi-function	RE48AML12MW

Table 20.109: Sockets (sold in lots of 10)

Description	Connection	Compatibility	Catalog Number
Mixed 8–Pin DIN Rail Mountable Socket	Box lug connector, DIN rail mount	RE48ATM12MW, RE48AMH13MW	RUZC2M
Mixed 11–Pin DIN Rail Mountable Socket		RE48ACV12MW, RE48AML12MW	RUZC3M

Table 20.110: Accessories (sold in lots of 10)

Description	Compatibility	Catalog Number
Protective cover IP64	RE48 Series Timers	RE48AIPCOV

Approvals for RE48 Timers

c UL us — File: E173076 CCN: NRNT2, NRNT8

CSA — File: 248382 Class: 3211 07

CE — IEC 61812-1

RoHS Compliant

[4] For detailed function definitions, see Table 20.113.

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REXL2TM

REXL4TM

RXZE2M114M

RXZE2S114M

Harmony™ REXL Miniature Plug-In Timers

The Harmony REXL miniature plug-in timer range is comprised of DPDT and 4PDT single On-delay function timers. The unit is designed to be mounted in a socket in a panel. Thanks to the large selector knob, the user can quickly and easily see the current value selected and change it if needed. Features include:

- Miniature and plug-in (21 x 27 mm / 0.827 x 1.062 in.)
- Single function: function A = delay on energization
- Rated current at 5 A
- 7 timing ranges (0.1 s to 100 h)
- Multivoltage
- Excellent immunity to interference
- Power on and relay energized indication by 2 LEDs

Table 20.111: REXL Series Timers

Supply Voltage	Timing Ranges	Pin Configuration	Output Type	Rated Current	Functions	Function Descrip-tions *[5]*	Catalog Number
12 Vdc	0.1 s to 100 h	8-Pin Quick Connect (Blade)	DPDT Relay	5 A	A	Power On delay	REXL2TMJD
24 Vdc	0.1 s to 100 h	8-Pin Quick Connect (Blade)	DPDT Relay	5 A	A	Power On delay	REXL2TMBD
24 Vac	0.1 s to 100 h	8-Pin Quick Connect (Blade)	DPDT Relay	5 A	A	Power On delay	REXL2TMB7
120 Vac	0.1 s to 100 h	8-Pin Quick Connect (Blade)	DPDT Relay	5 A	A	Power On delay	REXL2TMF7
230 Vac	0.1 s to 100 h	8-Pin Quick Connect (Blade)	DPDT Relay	5 A	A	Power On delay	REXL2TMP7
24 Vdc *[6]*	0.1 s to 100 h	14-Pin Quick Connect (Blade)	4PDT Relay	5 A	A	Power On delay	REXL4TMBD
24 Vac *[6]*	0.1 s to 100 h	14-Pin Quick Connect (Blade)	4PDT Relay	5 A	A	Power On delay	REXL4TMB7
120 Vac	0.1 s to 100 h	14-Pin Quick Connect (Blade)	4PDT Relay	5 A	A	Power On delay	REXL4TMF7
230 Vac	0.1 s to 100 h	14-Pin Quick Connect (Blade)	4PDT Relay	5 A	A	Power On delay	REXL4TMP7

Table 20.112: Sockets (sold in lots of 10)

Contact Terminal Arrangement	Connection	For Use with Relays	Catalog Number
Mixed	Box lug connector	REXL2TM••, REXL4TM••	RXZE2M114M
Separate	Box lug connector	REXL2TM••	RXZE2S108M
	Box lug connector	REXL4TM••	RXZE2S114M

Approvals for REXL Timers

c UL us — File: E173076 CCN: NRNT2, NRNT8

CSA — File: 248382 Class: 3211 07

CE — IEC 61812-1

RoHS Compliant

Table 20.113: Timer Function Description

Function	Function Description *[7]*	Timer
A	Power on delay relay	RE17, RE48, REXL
A1, A2	Delay on energization	RE48
Ac	On-delay and off-delay relay with control signal	RE17
Ad	Pulse delayed relay with control signal	RE17
At	Power on delay relay (summation) with control signal	RE17
B	Interval relay with control signal	RE17, RE48
Bw	Double interval relay with control signal	RE17
C	Off-delay relay with control signal	RE17, RE48
D	Symmetrical flasher relay (starting pulse off)	RE17
Di	Symmetrical flasher relay (starting pulse on)	RE17, RE48
H	Interval relay	RE17
H1, H2	Pulse-on energization	RE48
Ht	Interval relay (summation) with control signal	RE17
L	Asymmetrical flasher relay (starting pulse off)	RE17, RE48
Li	Asymmetrical flasher relay (starting pulse on)	RE17, RE48
N	Retriggerable interval relay with control signal on	RE17
O	Retriggerable interval delayed relay with control signal on	RE17
P	Pulse delayed relay with fixed pulse length	RE17
Pt	Pulse delayed relay (summation and fixed pulse length) with control signal off	RE17
T	Bistable relay with control signal on	RE17
Tt	Retriggerable bistable relay with control signal on	RE17
W	Interval relay with control signal off	RE17

[5] For detailed function definitions, see Table 20.113.
[6] For 48 Vdc supply, additional resistor 560 ohms 2 W / 24 Vdc. For 48 Vac, additional resistor 390 ohms 4 W / 24 Vac.
[7] See catalog 9050CT0001 for timing diagrams and detailed descriptions.

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820 Series Time Delay and Sensor Relays

820 Series—SPDT, 15 A; DPDT, 15 A

Input Voltage	Functions Available	Timing Range	Contact Configuration	Rated Current	Standard Part Number
12–240 Vac/Vdc	A,B,C,D,E,F,G,H,I,J	10 ms to 10 days SPDT	SPDT	15 A	821TD10HUNI
			DPDT	15 A (2 pairs of contacts)	822TD10HUNI

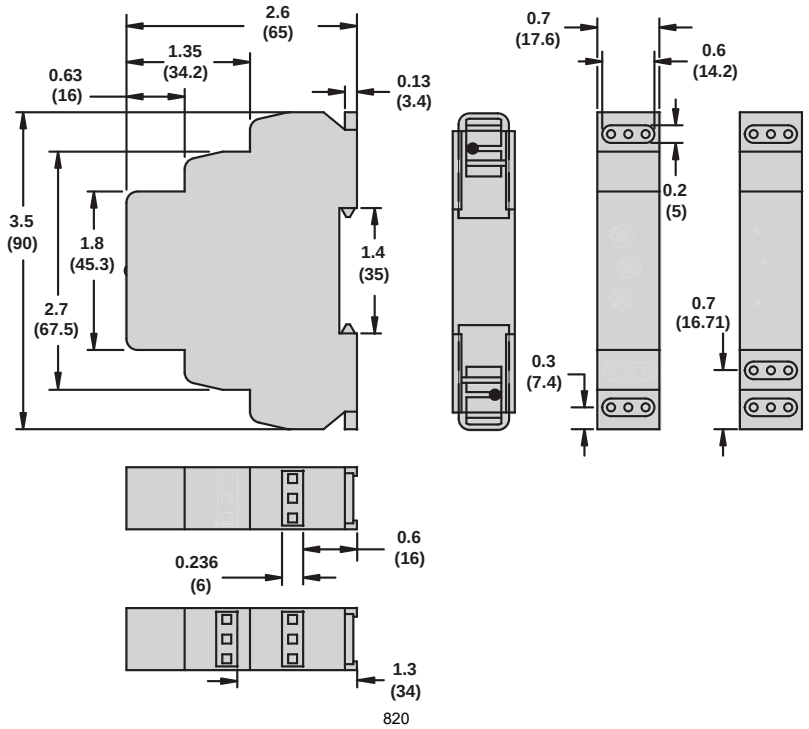
821 Relay

822 Relay

820 Specifications

Part Number	821TD10HUNI	822TD10HUNI
Input Characteristics		
Input Voltage Range	12–240 Vac/Vdc	12–240 Vac/Vdc
Operating Voltage (% of Nominal)	85% of 12 V to 110% of 240 V	85% of 12 V to 110% of 240 V
Maximum Power Consumption	3 VA 1.7W	3 VA 1.7W
Output Characteristics		
Contact Configuration	SPDT	DPDT
Output Current Rating	15 A	15 A
Contact Material	Silver alloy	Silver alloy
Switching Capability	N/A	
Minimum Switching Requirement	15 A @ 240 Vac, 50/60 Hz, 24 Vdc 1/2 hp @ 120 Vac 1 hp @ 240 Vac Pilot duty B300	15 A @ 240 Vac, 50/60 Hz, 24 Vdc 1/2 hp @ 120 Vac 1 hp @ 240 Vac Pilot duty B300
Timing Characteristics		
Functions Available	Multifunction	Multifunction
Time Scales	8	8
Time Ranges	100 ms to 1 s 1 s to 10 s 0.1 min to 1 min 1 min to 10 min 0.1 hr to 1 hr 1 hr to 10 hr 0.1 day to 1 day 1 day to 10 days	100 ms to 1 s 1 s to 10 s 0.1 min to 1 min 1 min to 10 min 0.1 hr to 1 hr 1 hr to 10 hr 0.1 day to 1 day 1 day to 10 days
Tolerance	5% of mechanical setting	5% of mechanical setting
Repeatability at Constant Voltage and Temperature	0.2%	0.2%
Reset Time	150 ms maximum	150 ms maximum
Trigger Pulse Length	50 ms minimum	50 ms minimum

Dimensions, in. (mm)



820

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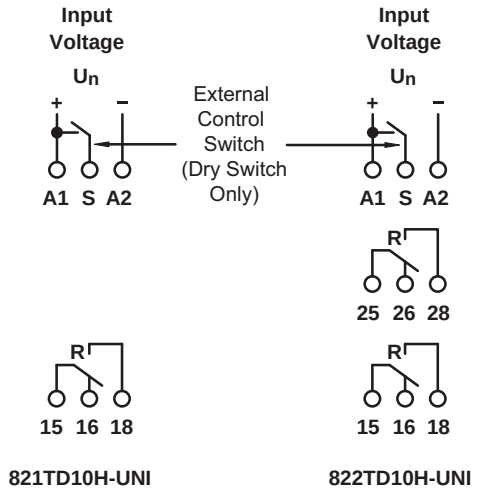
Wiring Diagram



821TD10H-UNI

822TD10H-UNI

15—Common
16—Normally Closed
18—Normally Open

25—Common
26—Normally Closed
28—Normally Open

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9050JCK11V14

Square D™ JCK General Purpose Plug-In Timers

Square D 9050JCK timing relays are designed to provide low-cost timing in a plug-in housing. The Types JCK11 through 59 provide ±1% repeat accuracy. The Types JCK60 and 70 offer ±0.1% repeat accuracy. These timers are directly interchangeable with many other 8 and 11 pin octal base timers.

- Up to ±0.1% repeat accuracy
- Timing from 0.05 seconds to 999 hours
- Available in 7 timing modes
- DPDT contacts (2 N.O. and 2 N.C.)
- 10 A contact rating
- Transient protected
- Hold down spring available
- Variable or fixed time delay
- Horsepower rated
- RoHS compliant

Table 20.114: Variable Time Delay

Knob Adjustable Timing Range	On Dela*[1]*	Off Delay*[2][1]*	Off Delay Power Trigger*[1]*	Interval*[1]*	One Shot *[2][1]*	One Shot Power Trigger*[1]*	Repeat Cycle*[3][1]*
0.1–10 seconds	JCK11	JCK21	JCK21PT	JCK31	JCK41	JCK41PT	JCK51
0.3–30 seconds	JCK12	JCK22	JCK22PT	JCK32	JCK42	JCK42PT	JCK52
0.6–60 seconds	JCK13	JCK23	JCK23PT	JCK33	JCK43	JCK43PT	JCK53
1.2–120 seconds	JCK14	JCK24	JCK24PT	JCK34	JCK44	JCK44PT	JCK54
1.8–180 seconds	JCK15	JCK25	JCK25PT	JCK35	JCK45	JCK45PT	JCK55
0.1–10 minutes	JCK16	JCK26	JCK26PT	JCK36	JCK46	JCK46PT	JCK56
0.3–30 minutes	JCK17	JCK27	JCK27PT	JCK37	JCK47	JCK47PT	JCK57
0.6–60 minutes	JCK18	JCK28	JCK28PT	JCK38	JCK48	JCK48PT	JCK58
1.2–120 minutes	JCK19	JCK29	JCK29PT	JCK39	JCK49	JCK49PT	JCK59

Table 20.115: Fixed Time Delay

Timing Mode	Type*[1][4][5]*	Timing Range (seconds)
On Delay	JCK1F(XXXX)	0.1 to 180
		181 to 3600
Off Delay *[2]*	JCK2F(XXXX)	0.1 to 180
		181 to 3600

Table 20.116: Voltage Codes

Voltage	Code
24 Vac/Vdc	V14
120 Vac/110 Vdc	V20
240–50/60 Vac	V24

Table 20.117: How to Order

To Order Specify:	Catalog Number		
	Class	Type	Voltage Code
• Class Number • Type Number • Voltage Code	9050	JCK11	V20

[1] Voltage code must be specified to order this product. Refer to the standard voltage codes listed in Table 20.116 and insert as shown in Table 20.117.
[2] Initiating contact can be up to 50 feet from the timer.
[3] Two dials are provided for independently adjustable repeat cycle timing ranges.
[4] (XXXX) denotes the timing period in seconds.
[5] Fixed repeat cycle timers can be supplied with the same or different On-Time and Off-Time.

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9050JCK60V14

9050JCK70V14

8501NR61

8501NR52

8501NH7

Type JCK60 and JCK70 Timers

NOTE: Type JCK60 and JCK70 Timers are rated for AC supply voltage only. They are not rated for DC coil.

Type JCK60

This On-Delay timer uses four push button thumbwheels to set the time delay. One switch is used for the range. The remaining three are used for the time setting.

Table 20.118: Selection

Timing Modes	Timing Ranges		Type
On Delay	0.01s 0.1s S 0.1m M 0.1h H	0.05–9.99 seconds 00.1–99.9 seconds 001–999 seconds 00.1–99.9 minutes 001–999 minutes 00.1–99.9 hours 001–999 hours	JCK60*[6]*

Type JCK70

This multifunction multirange time delay relay uses five push button thumbwheel switches. Three switches are used for the time delay, one switch is used for the timing range, and the other switch is used to select the timing mode.

Table 20.119: Selection

Timing Modes	Timing Ranges	Type
On Delay Interval Off Delay One Shot Repeat Cycle-Off*[7]* Repeat Cycle-On On/Off Delay 1 Shot Falling Edge Watchdog Trigger On Delay	Same as JCK60	JCK70*[6]*

Table 20.120: Sockets

Contact Terminal Arrangement	Connection	For Use with Relays	Sold in Lots of	Catalog Number*[8]*
Mixed*[9]*	Screw Connector	JCK11–19 JCK31–39 JCK51–59 JCK60 JCK1 F JCK3 F JCK5 F	1	8501NR51
			10	8501NR51B
		JCK21–29 JCK41–49 JCK70 JCK2F JCK4F	1	8501NR61
			10	8501NR61B
Separate*[10]*	Screw Connector	JCK11–19 JCK31–39 JCK51–59 JCK60 JCK1 F JCK3 F JCK5 F	1	8501NR52
		JCK21–29 JCK41–49 JCK70 JCK2F JCK4F	1	8501NR62

Table 20.121: Accessories (sold in lots of 10)

Description	For Use With	Sold in Lots of	Catalog Number
Metal Restraining Strap	8501NR51 sockets 8501NR52 sockets 8501NR61 sockets 8501NR62 sockets	1	8501NH7

Approvals for 9050JCK Timers

c UL us File: E3190 CCN: NLDX2

c UL us LISTED File: E3190 CCN: NLDX, NLDX7*[11]*

CSA File: 260367 Class: 3211 07

CE IEC 61810-1

RoHS Compliant

[6] Voltage code must be specified to order this product. Refer to the standard voltage codes listed in Table 20.116 and insert as shown in Table 20.117.
[7] The repeat cycle mode uses the same on-time and off-time.
[8] Please note that the B suffix only desginates quantities of 10 and is not printed on the socket.
[9] The inputs and outputs are mixed on both sides.
[10] The inputs and outputs are on separate sides.
[11] When used with the appropriate 8501NR socket.

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RM17JC00MW

RM35JA31MW

RM35JA32MW

1 C/O =

2C/O =

Harmony™ Current Measurement Relays

Harmony Current Measurement Relays are designed to measure under and overcurrent conditions, without external sensors. Current measurement relays enable continuous monitoring of the operation of electrical and mechanical loads such as motors and heaters. They are DIN rail mountable and the control status is indicated by an LED.

RM17JC Current Control Relay

- Monitors AC currents
- Designed to monitor overcurrent
- Equipped with an integrated current transfmormer

RM35JA Current Control Relays

- Selection between overcurrent or undercurrent
- Automatic DC or AC recognition
- Selectable memory function

Table 20.122: Harmony Current Measurement Relays

Supply Voltage	Measurement Range		Output 5 A	Width		Catalog Number
	Range[1]	Terminals		Inches	mm	
24–240 Vac/dc	2–20 A	N/A	1 C/O	0.69	17.50	RM17JC00MW
	2–20 mA	E1-M	2 C/O	1.38	35.00	RM35JA31MW
	10–100 mA	E2-M				
	50–500 mA	E3-M				
	0.15–1.5 A	E1-M				RM35JA32MW
	0.5–5 A	E2-M				
	1.5–15 A	E3-M				

Table 20.123: Output Characteristics and Measurement Circuit Characteristics

Type of Relay		RM17JC00MW	RM35JA31MW	RM35JA32MW
Setting accuracy		Plus or minus 10% of the full scale value		
Repeat accuracy (with constant parameters)		Plus or minus 0.5%		
Hysteresis		15% of the threshold setting, fixed	5 to 50% of the threshold setting, adjustable	
Time delay accuracy (with constant parameters)		N/A	Plus or minus 2%	
Time delay on pick-up		500 ms	300 ms	
Conforming to standards		NF EN 60255-6		
Ambient air temperature around the device	Storage	-40 to 158 degrees F (-40 to +70°C)		
	Opera-tional	-4 to 122 degrees F (-20 to +50°C)		

Approvals for Harmony Current Measurement Relays

c UL us LISTED — File: E173076 CNN: NRNT, NRNT7

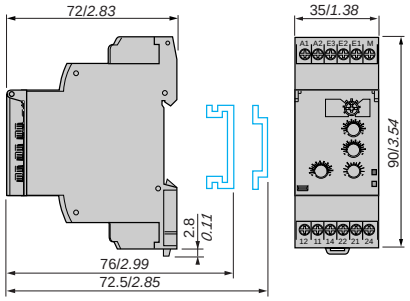
SP® — File: 248382 Class: 3211 07

CE — CE: 73/23/EEC and EMC 89/336/EEC

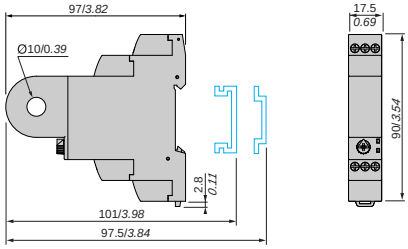
GL, C-Tick, GOST, RoHS

Approximate Dimensions

RM35JA3•MW



RM17JC00MW



Dual Dimensions: **INCHES** Millimeters

RELAYS AND TIMERS

20

[1] Above 15 A, a current transformer can be connected (for RM35JA3•MW). See page 57 of catalog 8430CT0601 for suggested wiring.

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Harmony™ Phase Measurement Relays

Harmony Phase Measurement Relays monitor their own power supply. Relay status is indicated by an LED and they are DIN rail mountable.

RM17TG•0 measurement and control relays are for monitoring of 3-phase supplies for the correct sequencing of phases L1, L2, and L3, as well as the total loss of one or more phases.

RM17TG•0

Table 20.124: 3-Phase Supply Control Relays

Supply Voltage	Detection Threshold	Output 5 A	Width		Catalog Number
			inches	mm	
208–480 Vac	<100 Vac	1 C/O	0.69	17.50	RM17TG00
208–440 Vac		2 C/O			RM17TG20

Table 20.125: Multifunction 3-Phase Supply Control Relays

Supply Voltage	Voltage Range	Output 5 A	Width		Catalog Number
			inch	mm	
208–480 Vac	Selectable voltages: 208, 220, 380, 400, 415, 440, 480	1 C/O	0.69	17.50	RM17TT00 RM17TA00 RM17TU00 RM17TE00

RM17TE00

RM17TA00

Table 20.126: RM17TT, RM17TA, RM17TU, and RM17TE Multifunction Control Relays monitor the following on 3-phase supplies:

Function	RM17TT	RM17TA	RM17TU	RM17TE
Sequence of phases L1, L2 and L3	Yes	Yes	Yes	Yes
Phase failure with regeneration (0.7 x selected voltage range)	Yes	Yes	Yes	Yes
Asymmetry (phase imbalance)	No	Yes	No	Yes
Undervoltage	No	No	Yes	No
Overvoltage and undervoltage	No	No	No	Yes

Table 20.127: 3-Phase Supply and Motor Temperature Control Relays

Supply Voltage	Measurement Range	Output 5 A	Width		Catalog Number
			inch	mm	
220–480 Vac	208–480 Vac	2 N.O.	1.38	35.00	RM35TM50MW RM35TM250MW

Table 20.128: RM35TM Control Relays monitor the following on 3-phase supplies:

Function	RM35TM50MW	RM35TM250MW
Sequence of phases L1, L2 and L3	Yes	Yes
Phase failure	Yes	Yes
Motor temperature via PTC probe	Yes	Yes
Selection (with or without memory)	No	Yes
Test-reset button	No	Yes

RM35TM••MW

RM35TF30

RM35TF30 measurement and control relay is for monitoring of phase sequence, phase failure, asymmetry, undervoltage and overvoltage in window mode.

Table 20.129: Multifunction 3-Phase Supply Control Relays

Supply Voltage	Measurement Range	Output 5 A	Width		Catalog Number
			inch	mm	
220–480 Vac	194–528 Vac	2 C/O	1.38	35.00	RM35TF30

Approvals for Harmony Phase Measurement Relays

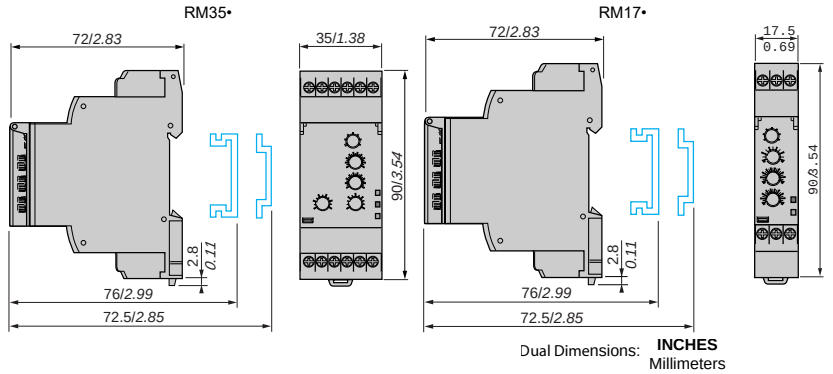
c UL us LISTED — File: E173076 CNN: NRNT, NRNT7

CSA — File: 248382 Class: 3211 07

CE — CE: 73/23/EEC and EMC 89/336/EEC

GL, C-Tick, GOST, RoHS

Approximate Dimensions



1 C/O =

2 C/O =

2 N/O =

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RM17UB310


RM17UAS••

Harmony™ Voltage Measurement Relays

Harmony Voltage Measurement Relays are DIN rail mountable and relay status is indicated by an LED. Single phase and DC voltage measurement and control relays RM17UAS•• and RM17UBE•• monitor:

- Overvoltage
- Undervoltage
- Overvoltage and undervoltage
- Nominal voltages

Table 20.130: Single-phase and DC voltage control relays

Supply Voltage	Ranges Controlled	Output 5 A	Width		Catalog Number
			in.	mm	
12 Vdc	9–15 Vdc	1 C/O	0.69	17.50	RM17UAS14*[2]*
24–48 Vac/Vdc	20–80 Vac/Vdc				RM17UAS16*[2]*
110–240 Vac/Vdc	65–260 Vac/Vdc				RM17UAS15*[2]*
24–48 Vac/Vdc	20–80 Vac/Vdc				RM17UBE16*[3]*
110–240 Vac/Vdc	65–260 Vac/Vdc				RM17UBE15*[3]*

Multifunction voltage control relays RM35UA1•MW monitor both AC and DC voltages.

- Automatic Vdc or Vac recognition
- Selection between overvoltage and undervoltage

Table 20.131: Multifunction voltage control relays

Supply Voltage	Measurement Range		Output 5 A	Width		Catalog Number
	Range*[4]*	Terminals		in.	mm	
24–240 Vac/Vdc	0.05–0.5 V	E1-M	2 C/O	1.38	35.00	RM35UA11MW
	0.3–3 V	E2-M				
	0.5–5 V	E3-M				
	1–10 V	E1-M				RM35UA12MW
	5–50 V	E2-M				
	10–100 V	E3-M				
	15–150 V	E1-M				RM35UA13MW
	30–300 V	E2-M				
	60–600 V	E3-M				


RM35UA1•MW

3-phase voltage control relays monitor:

- Failure of one or more phases
- Voltage between phases
- Absence of neutral
- Voltage between phases and neutral
- Overvoltage and undervoltage

Table 20.132: Three-phase voltage control relays

Rated 3-Phase Supply Voltage Vac	Measurement Range	Output 5 A	Width		Catalog Number
			in.	mm	
220–480 phase-phase	195–528 Vac	1 C/O + 1 C/O 1 per threshold	1.38	35.00	RM35UB330*[5]*
120–277 phase-neutral	183–528 Vac	1 C/O	0.69	17.50	RM17UB310*[5]*
120–277 phase-neutral	114–329 Vac	1 C/O + 1 C/O 1 per threshold	1.38	35.00	RM35UB3N30*[5]*


RM35UB3•••

1 C/O =

2 C/O =

Approvals for Harmony Voltage Measurement Relays

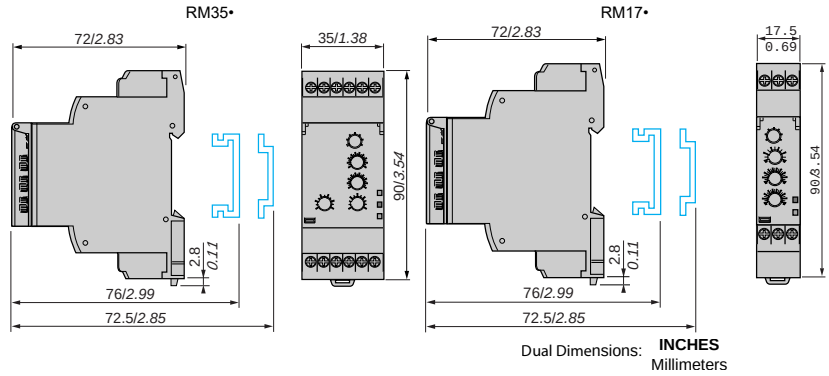
c UL us LISTED — File: E173076 CNN: NRNT, NRNT7

SA® — File: 248382 Class: 3211 07

CE — CE 73/23/EEC and EMC 89/336/EEC

GL, C-Tick, GOST, RoHS

Approximate Dimensions



Dual Dimensions: **INCHES** Millimeters

[2] Provides overvoltage or undervoltage protection.
[3] Provides overvoltage and undervoltage protection in window mode.
[4] Provides overvoltage and undervoltage protection between phases and neutral and absence of neutral.
[5] Provides overvoltage and undervoltage protection between phases.

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RM35LM33MW

RM35LV14MW

RM79696006

Harmony™ Level Control Relays and Pump Control Relays

Harmony level control relays control one or two levels with fill or empty function. The settings are protected by a sealable cover, control status is indicated by an LED, and they are DIN rail mountable. RM35LM is designed to control levels of conductive liquid, and RM35LV is designed to control levels of other materials.

Application examples for RM35LM:

- Detecting pump seal failures
- Spring, town, industrial and sea water
- Metallic salt, acid or base solutions
- Liquid fertilizers
- Non-concentrated alcohol (<40%)

Application examples for RM35LV:

- Liquids in the food-processing industry: milk, beer, coffee, etc.
- Chemically pure water
- Fuels, liquid gasses (inflammable)
- Oil, concentrated alcohol (>40%)
- Ethylene, glycol, paraffin, varnish and paints

Table 20.133: Level Control Relays

Time Delay on Crossing the Threshold	Function	Output Relay	Supply Voltage 50/60 Hz	Measurement Ranges	Catalog Number
0.1–5 seconds, 0 + 10%	Detection by resistive probes	2 C/O, 5 A	24–240 Vac/Vdc	250–5 k	RM35LM33MW
				5 k–100 k	
				50 k–1 M	
	Detection by discrete sensors	1 C/O, 5 A		—	RM35LV14MW

Table 20.134: Electrode Holders

Description	Material	Catalog Number
Electrode for use up to 662°F (350°C)	Stainless steel isolated by ceramic	RM79696006

Pump Control Relay

Harmony pump control relay RM35BA10 can operate on a single-phase or 3-phase supply. It incorporates three functions in a signal unit:

- Over and under current measurement
- Phase presence control
- Single or three phase

It has two operating modes which are designed to control a pump via two external signal inputs (Y1 Y2). These two signals are controlled by volt-free contacts. Control inputs Y1 and Y2 can be connected to:

- Level sensor
- Level relay
- Pressure sensor
- Push button

Table 20.135: Pump Control Relay

Description	Current Range Controlled	Supply Voltage	Output	Catalog Number
Pump Control Relay	1–10 A	208–480 Vac, 3 phase	1 C/O 5 A	RM35BA10
		230, single-phase		

Approvals for Harmony Level Control and Pump Control Relays

c UL us LISTED — File: E173076 CNN: NRNT, NRNT7

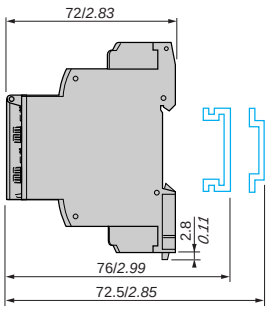
CSA — File: 248382 Class: 3211 07

CE — CE 73/23/EEC and EMC 89/336/EEC

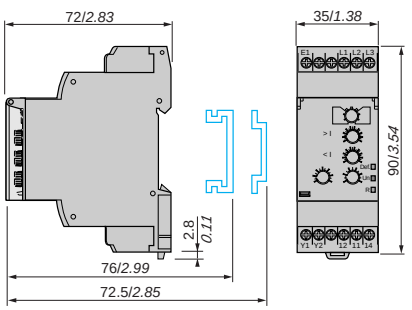
GL, C-Tick, GOST, RoHS

Approximate Dimensions (mm/in.)

RM35LM33MW, RM35LV14MW



RM35BA10



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3/25/2025

RM35S0MW

RM35HZ21FM

RM35AT•0MW

1 C/O =

2 N/O =

Harmony™ Speed, Frequency, Temperature, and NFC Control Relays

Harmony speed control relay RM35SOMW monitors underspeed and overspeed conditions, with or without memory, with inhibition by an external contact. It operates with either N.O. or N.C. sensors. Adjustable time between impulses is 0.05 s to 10 min. Power-on inhibition time is adjustable from 0.6 to 60 s. Inhibition is controlled by an external contact. Settings are protected by a sealable cover, control status is indicated by an LED, and it is DIN rail mountable.

Table 20.136: Speed Control Relay

Function	Time Delay	Measurement Input	Supply	Out-put	Catalog Number
Under-speed	0.05 s to 10 min	3-wire PNP or NPN proximity sensor	24–240 Vac/ Vdc	1 C/O 5A	RM35S0MW
Over-speed		Namur type proximity sensor 0–30 V voltage Volt-free contact			

Harmony frequency control relay RM35HZ monitors its own supply voltage. Settings are protected by a sealable cover, control status is indicated by an LED, and it is DIN rail mountable.

Table 20.137: Frequency Control Relay

Function	Controlled	Supply Voltage	Output	Catalog Number
Over frequency and under frequency (50 or 60 Hz)	40–60 Hz (50 Hz) / 50–70 Hz (60 Hz)	120–277 Vac	1 C/O + 1 C/O 5 A	RM35HZ21FM

Harmony temperature control relays are designed for monitoring the temperature in elevator (lift) rooms, in compliance with directive EN81. For use with PT100 input (customer supplied). Features adjustable control, control status indicated by an LED, and is DIN rail mountable.

Table 20.138: Temperature Control Relays

Function	Supply Voltage	Vac	Output	Catalog Number
Over temperature 93 to 114°F (34 to 46°C)	24–240 Vac/Vdc	—	1 C/O 5 A	RM35ATL0MW

Approvals for Harmony Speed, Frequency, and Temperature Control Relays

c UL us LISTED — File: E173076 CNN: NRNT, NRNT7

SP® — File: 248382 Class: 3211 07

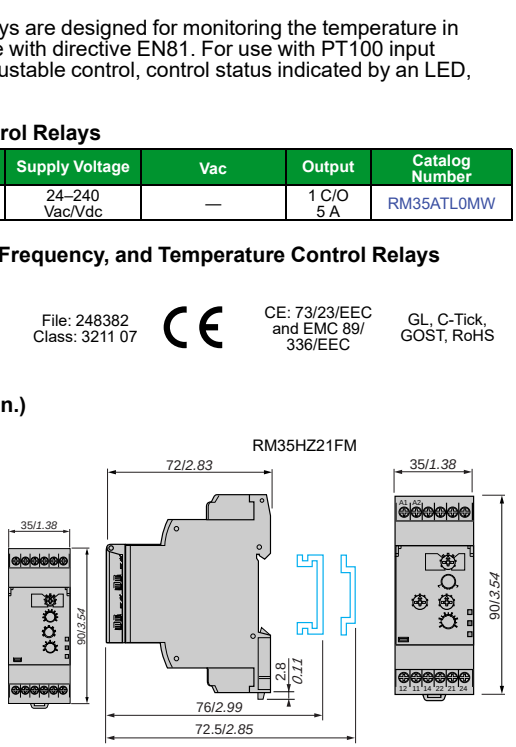
CE — CE: 73/23/EEC and EMC 89/ 336/EEC

GL, C-Tick, GOST, RoHS

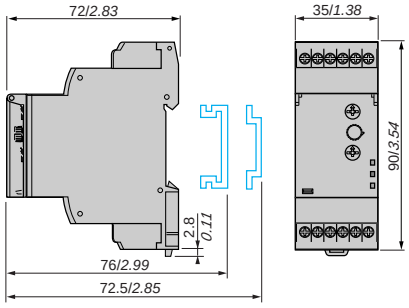
Approximate Dimensions (mm/in.)

RM35S0MW

RM35HZ21FM



RM35AT••MW



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RMNF22

NFC control relay with Smartphone mobile app

Table 20.139: NFC Contol Relays with Relay Output

Function	Measurement Range V	Time Delay	Output	Reference	Weight kg/lb
• Phase sequence • Phase loss • Asymmetry • Undervoltage • Overvoltage • Under-frequency • Over-frequency	208...480 A	Adjustable 0.1 s…60 min (Phase loss and Phase sequence instant trigger)	2 CO 8 A (individually configurable)*[6]*	RMNF22TB30	0.125/0.276

[6] With or without memory mode is selectable for all functions in the app.

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