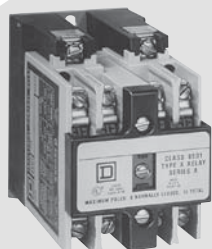


Section 23

Relays and Timers



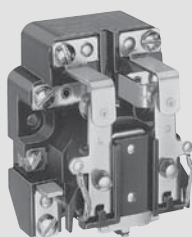
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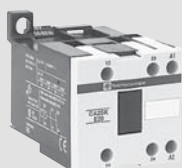
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Industrial Relays

NEMA Style Relays	Class 8501 Type X [®]	23-24
IEC Style Relays	TeSys [®] D-Line	23-18
	TeSys K-Line	23-21
	SK-Line	23-23

General Purpose Relays

<i>New!</i> Zelio [®] Plug-in Relays	RXM, RPM, RUM, RPF, RSB	23-6
Plug-in	Class 8501 Type K	23-13
Miniature Plug-in	Class 8501 Type R	23-14
Sockets	Class 8501 Type N	23-16
Power	Class 8501 Type C	23-17

Timers

IEC Style—17.9 mm	RE11	23-28
IEC Style—22.5 mm	RE7, RE8, and RE9	23-29
Panel Mounting	RE48	23-28
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General Purpose Plug-in	Class 9050 Type JCK	23-32
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Other Products

Phaseo [™] DC Power Supply	ABL7, ABL1	23-2
<i>New!</i> Zelio [®] Analog Interface Modules	RM	23-3
<i>New!</i> Zelio [®] Logic 2 Programmable Relay	SR2, SR3	23-4
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Current Measurement Relays	RM17JC and RM35JA	23-34
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Phaseo switch mode power supplies are totally electronic and their output voltage is regulated. They offer:

- Very compact size
- Very wide input voltage range for the Universal range
- Diagnostics via LED indicators on the front panel
- Remote diagnostics via a relay contact for the Universal range

Table 23.1: ABL8MEM and ABL7RM24025 Regulated Switch Mode Single Phase, Modular

Ideally suited for use with small PLCs (such as Twido™) or relays and starter circuits using low consumption coils.

Single-phase (N-L1) or two-phase (L1-L2) connection

Input Voltage (Vac)	Output Voltage (Vdc)	Nominal Current (I)	Protection Reset	Catalog Number	\$ Price
100–240	5	4	Auto	ABL8MEM05040	85.
	12	2		ABL8MEM12020	88.
	24	0.3		ABL8MEM24003	47.
		0.6		ABL8MEM24006	70.
		1.2		ABL8MEM24012	94.
		2.5		ABL7RM24025	120.



ABL8MEM12020

Table 23.2: ABL8REM/7RP, Regulated Switch Mode Single Phase, Optimum

These slim electronic switch mode power supplies provide a quality of output current that is suitable for the loads necessary for electrical equipment supplied and compatible with both the Twido range and the smallest Modicon M340 configurations, making them ideal partners.

Single-phase (N-L1) or two-phase (L1-L2) connection

Input Voltage (Vac)	Output Voltage (Vdc)	Nominal Current (I)	Protection Reset	Catalog Number	\$ Price
100–240	12	5	Auto	ABL7RP1205	240.
	24	3		ABL8REM24030	130.
		5		ABL8REM24050	200.
	48	2.5		ABL7RP4803	150.



ABL8REM24030

Table 23.3: ABL8RPS/RPM, Regulated Switch Mode Single Phase, Universal

Provided with an input filter (power factor correction) which allows these to be used in commercial environments and larger PLCs.

Input Voltage (Vac)	Output Voltage (Vdc)	Nominal Current (I)	Auto-Protection Reset	Catalog Number	\$ Price
100–120 / 200–500	24	3	Auto/Manual	ABL8RPS24030	180.
		5		ABL8RPS24050	240.
		10		ABL8RPS24100	350.
100–120 / 200–240		20		ABL8RPM24200	477.



ABL8RPS24100

Table 23.4: ABL8WPS, Regulated Switch Mode Three Phase, Universal

These power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the Modicon M340, Premium and Quantum ranges.

Input Voltage (Vac)	Output Voltage (Vdc)	Nominal Current (I)	Auto-Protection Reset	Catalog Number	\$ Price
380–500	24	20	Auto/Manual	ABL8WPS24200	490.
		40		ABL8WPS24400	782.



ABL8WPS24200

Table 23.5: ABL1, Regulated Switch Mode Single Phase, Dedicated

ABL1 regulated switch-mode power supplies are totally electronic and regulated, and provide the following benefits:

- A wide input range from 85 to 264 Vac and 120 to 370 Vdc (not indicated on the product)
- Output currents ranging from 2.5–10 A
- Products with anti-harmonic distortion input filter
- Built-in thermal overload protection
- Overload and short-circuit protection
- Identical mounting accessories for all models

Input Voltage (Vac)	Output Voltage (Vdc)	Nominal Current (I)	Protection Reset	Catalog Number	\$ Price
100–240▲	12	5	Auto	ABL1REM12050	75.
	24	2.5		ABL1REM24025	62.
		4.2		ABL1REM24042	88.
100–120 / 200–240■	24	6.2		ABL1REM24062	95.
		10		ABL1REM24100	135.
100–240▲	12	8.3	Auto	ABL1RPM12083	100.
	24	4.2		ABL1RPM24042	105.
100–120 / 200–240■	24	6.2		ABL1RPM24062	115.
		10		ABL1RPM24100	180.

▲ Compatible input voltage 120–370 Vdc not indicated on the product.
■ Compatible input voltage 180–370 Vdc not indicated on the product.

Approvals for relays:



File E164867
CNN NMTR, NMTR7



File E164867
CNN NMTR2, NMTR8



File 238438
Class 531187,
531107



RoHS
Compliant

For additional information, refer to Catalog #8440CT0601



Zelio Analog Interface Modules

The Zelio Analog range of converters is designed to convert signals emitted by sensors or electrical measurement devices, into standard electrical signals that are compatible with automation platforms and controllers. They also allow the connection distance between a sensor and a measurement device to be increased, for example, between a thermocouple and a programmable controller

Table 23.6: Converters for Type J and K type thermocouples—supply voltage 24 Vdc ± 20%, non-isolated

Type	Temperature Range		Switchable Output Signals	Catalog Number	\$ Price
	°F	°C			
Type J	32–302	0–150	0–10 V, 0–20 mA, 4–20 mA	RMTJ40BD	112.00
	32–572	0–300	0–10 V, 0–20 mA, 4–20 mA	RMTJ60BD	112.00
	32–1112	0–600	0–10 V, 0–20 mA, 4–20 mA	RMTJ80BD	112.00
Type K	32–1112	0–600	0–10 V, 0–20 mA, 4–20 mA	RMTK80BD	112.00
	32–2192	0–1200	0–10 V, 0–20 mA, 4–20 mA	RMTK90BD	112.00

Table 23.7: Converters for Universal Pt100 probes—supply voltage 24 Vdc ± 20%, non-isolated

Type	Temperature Range		Switchable Output Signals	Catalog Number	\$ Price
	°F	°C			
Pt100 2-wire, 3-wire, and 4-wire	- 40–104	- 40–40	0–10 V, 0–20 mA, 4–20 mA	RMPT10BD	112.00
	- 148–212	- 100–100	0–10 V, 0–20 mA, 4–20 mA	RMPT20BD	112.00
	32–212	0–100	0–10 V, 0–20 mA, 4–20 mA	RMPT30BD	112.00
	32–482	0–250	0–10 V, 0–20 mA, 4–20 mA	RMPT50BD	112.00
	32–932	0–500	0–10 V, 0–20 mA, 4–20 mA	RMPT70BD	112.00

Table 23.8: Converters for Optimum Pt100 probes▲—supply voltage 24 Vdc ± 20%, non-isolated

Type	Temperature Range		Switchable Output Signals	Catalog Number	\$ Price
	°F	°C			
Pt100 2-wire, 3-wire, and 4-wire	- 40–104	- 40–40	0–10 V or 4–20 mA	RMPT13BD	89.00
	- 148–212	- 100–100	0–10 V or 4–20 mA	RMPT23BD	89.00
	32–212	0–100	0–10 V or 4–20 mA	RMPT33BD	89.00
	32–482	0–250	0–10 V or 4–20 mA	RMPT53BD	89.00
	32–932	0–500	0–10 V or 4–20 mA	RMPT73BD	89.00

▲ Converters dedicated to Zelio Logic smart relays.

Table 23.9: Universal Voltage/Current Converters

Type	Input signal	Output signal	Catalog Number	\$ Price
Supply voltage 24 Vdc ± 20%, non-isolated	0–10 V or 4–20 mA	0–10 V or 4–20 mA	RMCN22BD	75.00
Supply voltage 24 Vdc ± 20%, isolated	0–10 V, ± 10 V, 0–20 mA, 4–20 mA	Switchable: 0–10 V, ± 10 V, 0–20 mA, 4–20 mA	RMCL55BD	112.00
	0–50 V, 0–300 V, 0–500 V DC or AC, 50/60 Hz	Switchable: 0–10 V, 0–20 mA, 4–20 mA	RMCV60BD	122.00
	0–1.5 A, 0–5 A, 0–15 A DC or AC, 50/60 Hz	0–10 V, 0–20 mA, 4–20 mA	RMCA61BD	122.00

Approvals:



File CCN E164353
NKCR



File Class 089150_S_000
3211 07



Table 23.10: How to Order

To Order Specify:	Catalog Number
• Catalog Number	RMCN22BD



RMTJ40BD



RMTK90BD



RMPT70BD



RMPT13BD



RMCN22BD

Zelio® Logic 2 smart relays meet the demands of applications that require more flexibility than a simple relay, timer, or counter, but are too small or simple for the smallest Nano PLC. The Zelio Logic SR2 range is an exact replacement for the obsolete SR1 range, but with an expanded feature set. Designed to accept control outputs just like a relay, Zelio Logic 2 features dual language capability, using either Function Block Diagramming (FBD) or Ladder Logic Programming (LL), and can be programmed easily by using either the front panel or by using ZelioSoft software.

Table 23.11: Compact Smart Relays with Display, DC Power Supply

							
Supply voltage		12 Vdc		24 Vdc			
Number of inputs/outputs		12	20	10	12	12	20
Number of inputs	Discrete inputs	8	12	6	8	8	12
	Including 0-10 V analog inputs	4	6	—	4	4	6
Number of outputs		4 relay	8 relay	4 relay	4 relay	4 transistor	8 relay
Dimensions, W x D x H (mm)		71.2x59.5x107.6	124.6x59.5x107.6	71.2x59.5x107.6		124.6x59.5x107.6	
Clock		yes	yes	no	yes	yes	no
Catalog Number		SR2B121JD	SR2B201JD	SR2A101BD ♦	SR2B121BD ■	SR2B122BD ■	SR2A201BD ♦
\$ Price		282.00	398.00	232.00	—	—	358.00

- ▲ Programming of smart relay in LADDER language only.
■ Please consult Schneider Electric representative for list prices.

Table 23.12: Compact Smart Relays with Display, AC Power Supply

							
Supply voltage		24 Vac		100–240 Vac			
Number of inputs/outputs		12	20	10	12	20	20
Number of inputs	Discrete inputs	8	12	6	8	12	12
Number of outputs		4 relay	8 relay	4 relay	4 relay	8 relay	8 relay
Dimensions, W x D x H (mm)		71.2x59.5x107.6	124.6x59.5x107.6	71.2 x 59.5 x 107.6		124.6 x 59.5 x 107.6	
Clock		yes	yes	no	yes	no	yes
Catalog Number		SR2B121B	SR2B201B	SR2A101FU ▲	SR2B121FU	SR2A201FU ▲	SR2B201FU
\$ Price		282.00	398.00	258.00	288.00	374.00	408.00

- ♦ Programming of smart relay in LADDER language only.

Table 23.13: Compact Smart Relays without Display and without Buttons, DC and AC Power Supply

							
Supply voltage		24 Vdc		100–240 Vac			
Number of inputs/outputs		12	20	20	10	12	20
Number of inputs	Discrete inputs	6	8	12	6	8	12
	Including 0-10 V analog inputs	—	4	6	—	—	—
Number of outputs		4 relay	4 relay	8 relay	4 relay	4 relay	8 relay
Dimensions, W x D x H (mm)		71.2 x 59.5 x 107.6		124.6x59.5x107.6		71.2 x 59.5 x 107.6	
Clock		no	yes	yes	no	yes	yes
Catalog Number		SR2D101BD ★	SR2E121BD ■	SR2E201BD ■♦	SR2D101FU ★	SR2E121FU	SR2E201FU ♦
\$ Price		214.00	222.00	338.00	218.00	226.00	344.00

- ★ Programming of smart relay in LADDER language only.
▼ To order a smart relay for a **24 Vac supply** (no analog inputs), delete the letter **D** from the end of the catalog number (**SR2E121B** and **SR2E201B**).
△ To order a smart relay without a clock, replace the letter **E** with the letter **D** (Example: **SR2D201BD** and **SR2D201FU**) (these units can only be programmed in LADDER language).

Table 23.14: Modular Smart Relays ▲ with Display, DC and AC Power Supply

							
Supply voltage		12 Vdc	24 Vdc		24Vac		100-240 Vac
Number of inputs/outputs		26	10	26	10	26	10 26
Number of inputs	Discrete inputs	16	6	16	6	16	6 16
	Including 0-10 V analog inputs	6	4	6	—	—	— —
Number of outputs		10 relay	4 relay	10 relay	4 relay	10 relay	4 relay 10 relay
Dimensions, W x D x H (mm)		124.6x59.5x107.6	71.2x59.5x107.6	24.6x59.5x107.6	71.2x59.5x107.6	124.6x59.5x107.6	71.2x59.5x107.6 124.6x59.5x107.6
Clock		yes	yes	yes	yes	yes	yes
Catalog Number		SR3B261JD	SR3B10BD ■	SR3B26BD ■	SR3B101B	SR3B261B	SR3B101FU SR3B261FU
\$ Price		380.00	—	—	282.00	476.00	292.00 486.00

- ▲ The modular base can be fitted with one I/O extension module. The 24 Vdc modular base can be fitted with one communication module and/or one I/O extension module.
■ Replace the ■ by the number 1 to order a smart relay with **relay output** or by 2 for a smart relay with **transistor output** (Example: SR3B101BD).
◆ Please consult local Schneider Electric representative for list prices.

Table 23.15: Extension Modules for Zelio Logic 2 SR3B●●●●●▲

									
		Communication		Discrete Inputs/Outputs				Analog Inputs/Outputs	
Application		MODBUS network		—				—	
Number of inputs/outputs		—		6		10		14	
Number of inputs	Discrete inputs	—		4		6		8	
	Analog (0–10 V, 0–20 mA, PT100)	—		—		—		2	
Number of outputs	Relay	—		2relay		4 relay		6 relay	
	Analog (0-10 V)	—		—		—		2	
Dimensions, W x D x H (mm)		35.5x59.5x107.6		35.5x59.5x107.6		72x59.5x107.6		72x59.5x107.6	
		Cat. No.	\$ Price	Cat. No.	\$ Price	Cat. No.	\$ Price	Cat. No.	\$ Price
Voltage	12 Vdc	—	—	SR3XT61JD	80.00	SR3XT101JD	100.00	SR3XT141JD	140.00
	24 Vdc	SR3MBU01BD	200.00	SR3XT61BD	106.00	SR3XT101BD	126.00	SR3XT141BD	164.00
	24 Vac	—	—	SR3XT61B	106.00	SR3XT101B	126.00	SR3XT141B	164.00
	100-240 Vac	—	—	SR3XT61FU	106.00	SR3XT101FU	126.00	SR3XT141FU	164.00

- ▲ The power supply of the extension modules is provided via the Zelio Logic 2 modular relays.
■ max. 1 PT 100 input

Table 23.16: Zelio Soft Software and Memory for SR2/SR3

Multilingual Programming Software		Connecting Cables				Back-Memory			
PCCD-ROM (Windows 98, NT, 2000, XP, ME) ▲		PC Serial to Relay		PC USB to SR2CBL01		PC USB to Relay		EEPROM (< V3.0 ZelioSoft software and firmware)	
Cat. No.	\$ Price	Cat. No.	\$ Price	Cat. No.	\$ Price	Cat. No.	\$ Price	Cat. No.	\$ Price
SR2SFT01	74.00	SR2CBL01	136.00	SR2CBL06	156.00	SR2USB01	160.00	SR2MEM01	38.00
								SR2MEM02	30.00

- ▲ CD-ROM includes Zelio Soft software, application library, self-training manual, installation instructions and user's manual

Table 23.17: Communication interface for SR2/SR3

Interface, Zelio Logic 2 Alarm Software	Communication Interface ▲	Alarm Management Software
Supply voltage	12-24 Vdc	—
Description	—	PC CD-ROM (Windows 98, NT, 2000, XP)
Dimensions, W x D x H	72x59.5x107.6 mm	—
Catalog Number	SR2COM01	SR2SFT02
\$ Price	230.00	60.00

- ▲ Modems to be supplied by user.

Approvals:



File
CCN

E164866
NRAQ



File
Guide

LR217698
2252 01





RXM Zelio plug-in relays and sockets provide a comprehensive selection of relays responding to the most demanding standards ranging from 3A to 12A. Some of the features include:

- Spring return test button for testing the contacts (standard)
- Green LED indication of relay status (depending on version)

- Mechanical indication of relay status (standard)
- Plug-in protection module to protect against electrical spikes
- Plug-in jumper bars for coil terminals to avoid time-consuming wiring



RXM-AGB2F7

Table 23.18: Miniature relays without LED (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)					
	2 C/O - 12 A Res.		3 C/O - 10 A Res.		4 C/O - 6 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RXM2AB1JD	4.20	RXM3AB1JD	4.50	RXM4AB1JD	4.70
24 Vdc	RXM2AB1BD	4.20	RXM3AB1BD	4.50	RXM4AB1BD	4.70
48 Vdc	RXM2AB1ED	4.20	RXM3AB1ED	4.50	RXM4AB1ED	4.70
110 Vdc	RXM2AB1FD	4.20	RXM3AB1FD	4.50	RXM4AB1FD	4.70
220 Vdc	—	—	—	—	RXM4AB1MD	4.70
24 Vac	RXM2AB1B7	4.20	RXM3AB1B7	4.50	RXM4AB1B7	4.70
48 Vac	RXM2AB1E7	4.20	RXM3AB1E7	4.50	RXM4AB1E7	4.70
120 Vac	RXM2AB1F7	4.20	RXM3AB1F7	4.50	RXM4AB1F7	4.70
230 Vac	RXM2AB1P7	4.20	RXM3AB1P7	4.50	RXM4AB1P7	4.70
240 Vac	—	—	—	—	RXM4AB1U7	4.70

Table 23.19: Miniature relays with LED (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)					
	2 C/O - 12 A Res.		3 C/O - 10 A Res.		4 C/O - 6 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RXM2AB2JD	4.90	RXM3AB2JD	5.20	RXM4AB2JD	5.40
24 Vdc	RXM2AB2BD	4.90	RXM3AB2BD	5.20	RXM4AB2BD	5.40
48 Vdc	RXM2AB2ED	4.90	RXM3AB2ED	5.20	RXM4AB2ED	5.40
110 Vdc	RXM2AB2FD	4.90	RXM3AB2FD	5.20	RXM4AB2FD	5.40
125 Vdc	—	—	—	—	RXM4AB2GD	5.40
24 Vac	RXM2AB2B7	4.90	RXM3AB2B7	5.20	RXM4AB2B7	5.40
48 Vac	RXM2AB2E7	4.90	RXM3AB2E7	5.20	RXM4AB2E7	5.40
120 Vac	RXM2AB2F7	4.90	RXM3AB2F7	5.20	RXM4AB2F7	5.40
230 Vac	RXM2AB2P7	4.90	RXM3AB2P7	5.20	RXM4AB2P7	5.40

Table 23.20: Miniature relays with LED without Push Button (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)					
	2 C/O - 12 A Res.		3 C/O - 10 A Res.		4 C/O - 6 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RXM2AB3JD	4.56	—	—	RXM4AB3JD	5.02
24 Vdc	RXM2AB3BD	4.56	—	—	RXM4AB3BD	5.02
48 Vdc	RXM2AB3ED	4.56	—	—	RXM4AB3ED	5.02
110 Vdc	RXM2AB3FD	4.56	—	—	RXM4AB3FD	5.02
125 Vdc	—	—	—	—	RXM4AB3GD	5.02
24 Vac	RXM2AB3B7	4.56	—	—	RXM4AB3B7	5.02
48 Vac	RXM2AB3E7	4.56	—	—	RXM4AB3E7	5.02
120 Vac	RXM2AB3F7	4.56	—	—	RXM4AB3F7	5.02
230 Vac	RXM2AB3P7	4.56	—	—	RXM4AB3P7	5.02

Table 23.21: Miniature relays with low level contacts, without LED (sold in lots of 10)

Number and type of contacts - Thermal current (Ith)		
4 C/O - 3 A Res.		
Coil Voltage	Catalog Number	\$ Price ea.
12 Vdc	RXM4GB1JD	4.70
24 Vdc	RXM4GB1BD	4.70
48 Vdc	RXM4GB1ED	4.70
110 Vdc	RXM4GB1FD	4.70
24 Vac	RXM4GB1B7	4.70
48 Vac	RXM4GB1E7	4.70
120 Vac	RXM4GB1F7	4.70
230 Vac	RXM4GB1P7	4.70

Table 23.22: Miniature relays with low level contacts, with LED (sold in lots of 10)

Number and type of contacts - Thermal current (Ith)		
4 C/O - 3 A Res.		
Coil Voltage	Catalog Number	\$ Price ea.
12 Vdc	RXM4GB2JD	5.40
24 Vdc	RXM4GB2BD	5.40
48 Vdc	RXM4GB2ED	5.40
110 Vdc	RXM4GB2FD	5.40
24 Vac	RXM4GB2B7	5.40
48 Vac	RXM4GB2E7	5.40
120 Vac	RXM4GB2F7	5.40
230 Vac	RXM4GB2P7	5.40
240 Vac	RXM4GB2U7	5.40

Table 23.23: Miniature relays with low level contacts, with LED without Push Button (sold in lots of 10)

Number and type of contacts - Thermal current (Ith)		
4 C/O - 3 A Res.		
Coil Voltage	Catalog Number	\$ Price ea.
12 Vdc	RXM4GB3JD	5.02
24 Vdc	RXM4GB3BD	5.02
48 Vdc	RXM4GB3ED	5.02
110 Vdc	RXM4GB3FD	5.02
125 Vdc	—	—
24 Vac	RXM4GB3B7	5.02
48 Vac	RXM4GB3E7	5.02
120 Vac	RXM4GB3F7	5.02
230 Vac	RXM4GB3P7	5.02



RXM4GB2F7

Approvals for Relays:File E164862
CCN ▲ NLDX, NLDX7File E164862
CCN NLDX2, NLDX8File 230765
Class 3211 07RoHS
Compliant

▲ When used with the appropriate socket.

For sockets and accessories, see page 23-7



RXZE2M114M with
Relay RXM4AB2P7TQ

Table 23.24: Miniature relays (sold in lots of 100)

Coil Voltage	Number and type of contacts - Thermal current (Ith)			
	2 C/O - 12 A Res.		4 C/O - 6 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
Without LED				
12 Vdc	—	—	RXM4AB1JDTQ	4.70
24 Vdc	RXM2AB1BDTQ	4.20	RXM4AB1BDTQ	4.70
48 Vdc	—	—	RXM4AB1EDTQ	4.70
110 Vdc	—	—	RXM4AB1FDTQ	4.70
220 Vdc	—	—	RXM4AB1MDTQ	5.00
24 Vac	RXM2AB1B7TQ	4.20	RXM4AB1B7TQ	4.70
48 Vac	—	—	RXM4AB1E7TQ	4.70
120 Vac	RXM2AB1F7TQ	4.20	RXM4AB1F7TQ	4.70
230 Vac	RXM2AB1P7TQ	4.20	RXM4AB1P7TQ	4.70
With LED				
24 Vdc	—	—	RXM4AB2BDTQ	5.40
24 Vac	RXM2AB2B7TQ	4.90	RXM4AB2B7TQ	5.40
230 Vac	RXM2AB2P7TQ	4.90	RXM4AB2P7TQ	5.40

Table 23.25: Miniature relays with LED without Push Button (sold in lots of 100)

Coil Voltage	Number and type of contacts - Thermal current (Ith)			
	2 C/O - 12 A Res.		4 C/O - 6 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
24 Vdc	RXM2AB3BDTQ	4.56	RXM4AB3BDTQ	5.02
24 Vac	RXM2AB3B7TQ	4.56	RXM4AB3B7TQ	5.02
230 Vac	RXM2AB3P7TQ	4.56	RXM4AB3P7TQ	5.02

Table 23.26: Sockets (sold in lots of 10)

Contact terminal arrangement	Connection	Relay type	Catalog Number	\$ Price ea.
Mixed	Screw clamp terminals	RXM2*****▲ RXM4*****▲	RXZE2M114■	3.90
	Box lug connector	RXM2***** RXM4*****	RXZE2M114M■	3.90
Separate	Box lug connector	RXM2*****	RXZE2S108M◆	3.90
		RXM3*****	RXZE2S111M■	3.90
		RXM4*****	RXZE2S114M■	3.90

▲ When mounting relay RXM2***** on socket RXZE2M****, the thermal current must not exceed 10 A.

■ Thermal current Ith: 10 A
◆ Thermal current Ith: 12 A



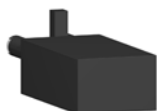
RXZE2S114M with relay
RXM4AB2F7TQ

Table 23.27: Protection modules (sold in lots of 20)

Description	Voltage	For use with	Catalog Number	\$ Price ea.
Diode	6–250 Vdc	All sockets	RXM040W	1.50
RC circuit	24–60 Vac	All sockets	RXM041BN7	1.50
	110–240 Vac	All sockets	RXM041FU7	1.70
Varistor	6–24 Vac/Vdc	All sockets	RXM021RB	1.50
	24–60 Vac/Vdc	All sockets	RXM021BN	1.50
	110–240 Vac/Vdc	All sockets	RXM021FP	1.50

Table 23.28: Accessories (sold in lots of 10)

Description	For use with	Catalog Number	\$ Price ea.
Metal hold-down clip	All sockets	RXZ400	.38
Plastic hold-down clip	All sockets	RXZR335	.38
Bus jumper, 2-pole (Ith: 5 A)	All sockets with separate contacts	RXZS2	.56
Mounting adapter for DIN rail	All relays	RXZE2DA	.56
Mounting adapter for mounting directly to a panel	All relays	RXZE2FA	.38
Clip-in markers	All relays (sheet of 108 markers)	RXZL520	.03
	All sockets except RXZE2M114	RXZL420	.03



RXM041●●7



RXZ400

Approvals for Sockets:



File CCN E172326
SWIV2, SWIV8



File 230765
Class 3211 07



RoHS
Compliant

New! RPM Zelio plug-in relays and sockets provide a comprehensive selection of relays responding to the most demanding standards at 15 A. Some of the features include:

- Spring return test button for testing the contacts (standard)
- Green LED indication of relay status (depending on version)
- Mechanical indication of relay status (standard)
- Plug-in protection module to protect against electrical spikes



RPM22F7

Table 23.29: Power relays without LED (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)							
	1 C/O - 15 A Res.		2 C/O - 15 A Res.		3 C/O - 15 A Res.		4 C/O - 15 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RPM11JD	3.60	RPM21JD	4.70	RPM31JD	6.40	RPM41JD	7.90
24 Vdc	RPM11BD	3.60	RPM21BD	4.70	RPM31BD	6.40	RPM41BD	7.90
48 Vdc	RPM11ED	3.60	RPM21ED	4.70	RPM31ED	6.40	RPM41ED	7.90
110 Vdc	RPM11FD	3.60	RPM21FD	4.70	RPM31FD	6.40	RPM41FD	7.90
24 Vac	RPM11B7	3.60	RPM21B7	4.70	RPM31B7	6.40	RPM41B7	7.90
48 Vac	RPM11E7	3.60	RPM21E7	4.70	RPM31E7	6.40	RPM41E7	7.90
120 Vac	RPM11F7	3.60	RPM21F7	4.70	RPM31F7	6.40	RPM41F7	7.90
230 Vac	RPM11P7	3.60	RPM21P7	4.70	RPM31P7	6.40	RPM41P7	7.90



RPM32F7

Table 23.30: Power relays with LED (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)							
	1 C/O - 15 A Res.		2 C/O - 15 A Res.		3 C/O - 15 A Res.		4 C/O - 15 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RPM12JD	4.20	RPM22JD	5.40	RPM32JD	7.10	RPM42JD	8.60
24 Vdc	RPM12BD	4.20	RPM22BD	5.40	RPM32BD	7.10	RPM42BD	8.60
48 Vdc	RPM12ED	4.20	RPM22ED	5.40	RPM32ED	7.10	RPM42ED	8.60
110 Vdc	RPM12FD	4.20	RPM22FD	5.40	RPM32FD	7.10	RPM42FD	8.60
24 Vac	RPM12B7	4.20	RPM22B7	5.40	RPM32B7	7.10	RPM42B7	8.60
48 Vac	RPM12E7	4.20	RPM22E7	5.40	RPM32E7	7.10	RPM42E7	8.60
120 Vac	RPM12F7	4.20	RPM22F7	5.40	RPM32F7	7.10	RPM42F7	8.60
230 Vac	RPM12P7	4.20	RPM22P7	5.40	RPM32P7	7.10	RPM42P7	8.60

Table 23.31: Power relays with LED without Push Button (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)							
	1 C/O - 15 A Res.		2 C/O - 15 A Res.		3 C/O - 15 A Res.		4 C/O - 15 A Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RPM13JD	3.91	RPM23JD	5.02	RPM33JD	6.60	RPM43JD	8.00
24 Vdc	RPM13BD	3.91	RPM23BD	5.02	RPM33BD	6.60	RPM43BD	8.00
48 Vdc	RPM13ED	3.91	RPM23ED	5.02	RPM33ED	6.60	RPM43ED	8.00
110 Vdc	RPM13FD	3.91	RPM23FD	5.02	RPM33FD	6.60	RPM43FD	8.00
125 Vdc	—	—	—	—	—	—	—	—
24 Vac	RPM13B7	3.91	RPM23B7	5.02	RPM33B7	6.60	RPM43B7	8.00
48 Vac	RPM13E7	3.91	RPM23E7	5.02	RPM33E7	6.60	RPM43E7	8.00
120 Vac	RPM13F7	3.91	RPM23F7	5.02	RPM33F7	6.60	RPM43F7	8.00
230 Vac	RPM13P7	3.91	RPM23P7	5.02	RPM33P7	6.60	RPM43P7	8.00

Approvals for relays:File
CCN ▲ E164862
NLDX, NLDX7File
CCN E164862
NLDX2, NLDX8File 230765
Class 3211 07RoHS
Compliant

▲ When used with the appropriate socket

RPZ F2 +
relay RPM22F7**Table 23.32: Sockets** (sold in lots of 10)

Contact terminal arrangement	Connection	Relay type	Catalog Number	\$ Price ea.
Mixed	Screw clamp terminals	RPM1***	RPZF1	3.40
		RPM2***	RPZF2	4.30
		RPM3***	RPZF3	5.00
		RPM4***	RPZF4	5.80

Approvals for Sockets:File
CCN E172326
SWIV2, SWIV8File 230765
Class 3211 07RoHS
Compliant



RXM041***

Table 23.33: Protection modules

Description	Voltage	For use with	Sold in lots of	Catalog Number	\$ Price ea.
Diode	6–250 Vdc	RPZF1 RPZF2	20	RXM040W	1.50
		RPZF3 RPZF4	10	RUW240BD	1.70
RC circuit	24–60 Vac	RPZF1 RPZF2	20	RXM041BN7	1.50
	110–240 Vac	RPZF1 RPZF2	20	RXM041FU7	1.70
		RPZF3 RPZF4	10	RUW241P7	1.70
Varistor	6–24 Vac/Vdc	RPZF1 RPZF2	20	RXM021RB	1.50
	24–60 Vac/Vdc	RPZF1 RPZF2	20	RXM021BN	1.50
	110–240 Vac/Vdc	RPZF1 RPZF2	20	RXM021FP	1.50
	24 Vac/Vdc	RPZF3 RPZF4	10	RUW242B7	2.10
	240 Vac/Vdc	RPZF3 RPZF4	10	RUW242P7	2.10



RPZ 1DA

Table 23.34: Timer module▲ (sold in lots of 1)

Description	Voltage	Socket Type	Catalog Number	\$ Price
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	37.60

▲ See timer module description (selection of functions and time delays) in catalog **8501CT0601**.

Table 23.35: Accessories (sold in lots of 10)

Description	For use with	Catalog Number	\$ Price ea.
Metal hold-down clip (for single-pole relays)	RPZF1	RPZR235	0.38
Mounting adapters for DIN rail ■	RPM1***	RPZ1DA	0.56
	RPM2***	RXZE2DA	0.56
	RPM3***	RPZ3DA	0.56
	RPM4***	RPZ4DA	0.56
	RPM1***	RPZ1FA	0.38
Mounting adapters for mounting directly to a panel	RPM2***	RXZE2FA	0.38
	RPM3***	RPZ3FA	0.38
	RPM4***	RPZ4FA	0.38
Clip-in markers (sheet of 108 markers)	All relays	RXZL520	0.03

■ Test button becomes inaccessible



RPZ 3FA

New! RUM Zelio plug-in relays and sockets provide a comprehensive selection of relays responding to the most demanding standards at 10 A. Some of the features include:

- Spring return test button for testing the contacts (standard)
- Green LED indication of relay status (depending on version)
- Mechanical indication of relay status (standard)
- Plug-in protection module to protect against electrical spikes
- Plug-in jumper bars for coil terminals to avoid time-consuming wiring

Table 23.36: Relays for standard applications, without LED (sold in lots of 10)

Pins	Coil Voltage	Number and type of contacts - Thermal current (Ith)			
		2 C/O -10 A Res.		3 C/O -10 A Res.	
		Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
Cylindrical	12 Vdc	RUMC2AB1JD	8.00	RUMC3AB1JD	8.90
	24 Vdc	RUMC2AB1BD	8.00	RUMC3AB1BD	8.90
	48 Vdc	RUMC2AB1ED	8.00	RUMC3AB1ED	8.90
	60 Vdc	—	—	RUMC3AB1ND	8.90
	110 Vdc	RUMC2AB1FD	8.00	RUMC3AB1FD	8.90
	125 Vdc	—	—	RUMC3AB1GD	8.90
	220 Vdc	—	—	RUMC3AB1MD	8.90
	24 Vac	RUMC2AB1B7	8.00	RUMC3AB1B7	8.90
	48 Vac	RUMC2AB1E7	8.00	RUMC3AB1E7	8.90
	120 Vac	RUMC2AB1F7	8.00	RUMC3AB1F7	8.90
	230 Vac	RUMC2AB1P7	8.00	RUMC3AB1P7	8.90
Flat	12 Vdc	RUMF2AB1JD	8.00	RUMF3AB1JD	8.90
	24 Vdc	RUMF2AB1BD	8.00	RUMF3AB1BD	8.90
	48 Vdc	RUMF2AB1ED	8.00	RUMF3AB1ED	8.90
	110 Vdc	RUMF2AB1FD	8.00	RUMF3AB1FD	8.90
	24 Vac	RUMF2AB1B7	8.00	RUMF3AB1B7	8.90
	48 Vac	RUMF2AB1E7	8.00	RUMF3AB1E7	8.90
	120 Vac	RUMF2AB1F7	8.00	RUMF3AB1F7	8.90
	230 Vac	RUMF2AB1P7	8.00	RUMF3AB1P7	8.90



RUM ●●AB2B7



RUM ●●AB2F7

Table 23.37: Relays for standard applications, with LED (sold in lots of 10)

Pins	Coil Voltage	Number and type of contacts - Thermal current (Ith)			
		2 C/O -10 A Res.		3 C/O -10 A Res.	
		Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
Cylindrical	12 Vdc	RUMC2AB2JD	8.90	RUMC3AB2JD	9.90
	24 Vdc	RUMC2AB2BD	8.90	RUMC3AB2BD	9.90
	48 Vdc	RUMC2AB2ED	8.90	RUMC3AB2ED	9.90
	60 Vdc	—	—	RUMC3AB2ND	9.90
	110 Vdc	RUMC2AB2FD	8.90	RUMC3AB2FD	9.90
	125 Vdc	—	—	RUMC3AB2GD	9.90
	24 Vac	RUMC2AB2B7	8.90	RUMC3AB2B7	9.90
	48 Vac	RUMC2AB2E7	8.90	RUMC3AB2E7	9.90
	120 Vac	RUMC2AB2F7	8.90	RUMC3AB2F7	9.90
	230 Vac	RUMC2AB2P7	8.90	RUMC3AB2P7	9.90
Flat	12 Vdc	RUMF2AB2JD	8.90	RUMF3AB2JD	9.90
	24 Vdc	RUMF2AB2BD	8.90	RUMF3AB2BD	9.90
	48 Vdc	RUMF2AB2ED	8.90	RUMF3AB2ED	9.90
	110 Vdc	RUMF2AB2FD	8.90	RUMF3AB2FD	9.90
	24 Vac	RUMF2AB2B7	8.90	RUMF3AB2B7	9.90
	48 Vac	RUMF2AB2E7	8.90	RUMF3AB2E7	9.90
	120 Vac	RUMF2AB2F7	8.90	RUMF3AB2F7	9.90
	230 Vac	RUMF2AB2P7	8.90	RUMF3AB2P7	9.90

Table 23.38: Relays for standard applications, with LED without Push Button (sold in lots of 10)

Pins	Coil Voltage	Number and type of contacts - Thermal current (Ith)			
		2 C/O -10 A Res.		4 C/O -10 A Res.	
		Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
Cylindrical	12 Vdc	RUMC2AB3JD	8.28	RUMC3AB3JD	9.21
	24 Vdc	RUMC2AB3BD	8.28	RUMC3AB3BD	9.21
	48 Vdc	RUMC2AB3ED	8.28	RUMC3AB3ED	9.21
	60 Vdc	—	—	RUMC3AB3ND	9.21
	110 Vdc	RUMC2AB3FD	8.28	RUMC3AB3FD	9.21
	125 Vdc	—	—	RUMC3AB3GD	9.21
	24 Vac	RUMC2AB3B7	8.28	RUMC3AB3B7	9.21
	48 Vac	RUMC2AB3E7	8.28	RUMC3AB3E7	9.21
	120 Vac	RUMC2AB3F7	8.28	RUMC3AB3F7	9.21
	230 Vac	RUMC2AB3P7	8.28	RUMC3AB3P7	9.21
Flat	12 Vdc	RUMF2AB3JD	8.28	RUMF3AB3JD	9.21
	24 Vdc	RUMF2AB3BD	8.28	RUMF3AB3BD	9.21
	48 Vdc	RUMF2AB3ED	8.28	RUMF3AB3ED	9.21
	110 Vdc	RUMF2AB3FD	8.28	RUMF3AB3FD	9.21
	125 Vdc	—	—	RUMF3AB3GD	9.21
	24 Vac	RUMF2AB3B7	8.28	RUMF3AB3B7	9.21
	48 Vac	RUMF2AB3E7	8.28	RUMF3AB3E7	9.21
	120 Vac	RUMF2AB3F7	8.28	RUMF3AB3F7	9.21
	230 Vac	RUMF2AB3P7	8.28	RUMF3AB3P7	9.21

Approvals for Relays:



File E164862
CCN ▲ NLDX, NLDX7



File E164862
CCN NLDX2, NLDX8



File 230765
Class 3211 07



RoHS
Compliant

▲ When used with appropriate socket

For sockets and accessories, see page 23-11



Table 23.39: Sockets (sold in lots of 10)

Contact terminal arrangement	Connection	Relay type	Catalog Number	\$ Price ea.
Mixed ▲	Box lug connector	RUMC2()	RUZC2M	2.80
		RUMC3()	RUZC3M	3.30
		RUMC2()	RUZSC2M	3.60
Separate ■		RUMC3()	RUZSC3M	3.90
		RUMF2()	RUZSF3M	4.40
		RUMF3()		

- ▲ The inputs are mixed with the relay coil terminals, with the outputs located on the opposite side of the socket.
■ The inputs and outputs are separated from the relay coil terminals.

Table 23.40: Protection modules (sold in lots of 10)

Description	For use with	Voltage	Catalog Number	\$ Price ea.
Diode	All sockets	6–250 Vdc	RUW240BD	1.70
RC circuit		110–240 Vac	RUW241P7	1.70
Varistor		24 Vac/Vdc	RUW242B7	2.10
		240 Vac/Vdc	RUW242P7	2.10

Table 23.41: Timer module (sold in lots of 1)

Description	For use with	Voltage	Catalog Number	\$ Price
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.	All sockets	24–240 Vac/Vdc	RUW101MW	37.60

- ♦ See timer module description (selection of functions and time delays) in catalog **8501CT0601**.

Table 23.42: Accessories (sold in lots of 10)

Description	For use with	Catalog Number	\$ Price ea.
Metal hold-down clip	All sockets	RUZC200	0.94
Bus jumper, 2-pole (lth: 5 A)	All sockets with separate contacts	RUZS2	0.56
Clip-in markers	All relays (sheet of 108 markers)	RXZL520	0.03
	All sockets with separate contacts	RUZL420	0.03

Approvals for Sockets:



File E172326
CCN SWIV2, SWIV8



File Class 230765
3211 07



RoHS
Compliant



New!

RPF Zelio Plug-in Power Relays

RPF Zelio plug-in power relays respond to the most demanding standards at 30 A. Some of the features include:

- Output contacts—four or six flat pins
- Coil terminals—two flat pins
- Locating slot for mounting on DIN rail
- Two mounting holes for panel mounting

Table 23.43: Power relays (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (lth)			
	2 N/O - 30 A ▲ Res.		2 C/O - 30 A on N.O. / 3 A on N.C. ▲ Res.	
	Catalog Number	\$ Price ea.	Catalog Number	\$ Price ea.
12 Vdc	RPF2AJD	8.20	RPF2BJD	8.60
24 Vdc	RPF2ABD	8.20	RPF2BBD	8.60
110 Vdc	RPF2AFD	8.20	RPF2BFD	8.60
24 Vac	RPF2AB7	8.20	RPF2BB7	8.60
120 Vac	RPF2AF7	8.20	RPF2BF7	8.60
230 Vac	RPF2AP7	8.20	RPF2BP7	8.60

- ▲ 30 A when mounted with 13 mm gap between two relays.
25 A when mounted side by side without a gap.

Approvals for Relays:



File E164862
CCN NLDX2, NLDX8



Pending



RoHS
Compliant



For mounting track, see page 24-16

RSB 1A120JD
+ RZM 031FPD
+ RSZ E1S35MRSB 2A080BD
+ RSZ E1S48MRSB 1A160BD
+ RSZ E1S48M

New! RSB Zelio plug-in relays and sockets provide a comprehensive selection of relays responding to the most demanding standards at 8 A, 12 A, and 16 A. Some of the features include:

- Plug-in protection module available to protect against electrical spikes
- Socket or printed circuit board installation

Table 23.44: Relays for standard applications (sold in lots of 10)

Coil Voltage	Number and type of contacts - Thermal current (Ith)					
	1 C/O -12 A Res.		1 C/O -16 A Res.		2 C/O -8 A Res.	
	Catalog Number▲	\$ Price ea.	Catalog Number▲	\$ Price ea.	Catalog Number▲	\$ Price ea.
6 Vdc	RSB1A120RD	2.80	RSB1A160RD	3.30	RSB2A080RD	3.30
12 Vdc	RSB1A120JD	2.80	RSB1A160JD	3.30	RSB2A080JD	3.30
24 Vdc	RSB1A120BD	2.80	RSB1A160BD	3.30	RSB2A080BD	3.30
48 Vdc	RSB1A120ED	2.80	RSB1A160ED	3.30	RSB2A080ED	3.30
60 Vdc	RSB1A120ND	2.80	RSB1A160ND	3.30	RSB2A080ND	3.30
110 Vdc	RSB1A120FD	2.80	RSB1A160FD	3.30	RSB2A080FD	3.30
24 Vac	RSB1A120B7	2.80	RSB1A160B7	3.30	RSB2A080B7	3.30
48 Vac	RSB1A120E7	2.80	RSB1A160E7	3.30	RSB2A080E7	3.30
120 Vac	RSB1A120F7	2.80	RSB1A160F7	3.30	RSB2A080F7	3.30
220 Vac	RSB1A120M7	2.80	RSB1A160M7	3.30	RSB2A080M7	3.30
230 Vac	RSB1A120P7	2.80	RSB1A160P7	3.30	RSB2A080P7	3.30
240 Vac	RSB1A120U7	2.80	RSB1A160U7	3.30	RSB2A080U7	3.30

▲ 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.

Table 23.45: Sockets – 12 A, 300 Vac (sold in lots of 10)

Contact terminal arrangement	Connection	Relay type	Catalog Number	\$ Price ea.
Separate	Box lug connector	RSB1A120●●	RSZE1S35M	3.80
		RSB1A160●●■	RSZE1S48M	4.20
		RSB2A080●●		

■ When using the relay with socket RSZ E1S48M, terminals must be jumpered.

Table 23.46: Protection modules (sold in lots of 10)

Description	For use with	Voltage	Catalog Number	\$ Price ea.
Diode	All sockets	6–230 Vdc	RZM040W	1.90
RC circuit	All sockets	24–60 Vac	RZM041BN7	3.80
		110–240 Vac	RZM041FU7	3.80
		6–24 Vdc	RZM031RB	3.30
Diode + green LED	All sockets	24–60 Vdc	RZM031BN	3.30
		110–230 Vdc	RZM031FPD	4.70
		6–24 Vac/Vdc	RZM021RB	4.70
Varistor + green LED	All sockets	24–60 Vac/Vdc	RZM021BN	4.70
		110–230 Vac/Vdc	RZM021FP	4.70

Table 23.47: Accessories (sold in lots of 10)

Description	For use with	Catalog Number	\$ Price ea.
Plastic hold-down clip	All sockets	RSZR215	.28
Marker	All sockets	RSZL300	.19

Approvals for RSB relays:File
CCNE173076
NRNT2,
NRNT8File
Class215736
3211 07RoHS
Compliant as of date
code 0401**Approvals for RSB sockets:**File
CCNSWIV2
E172326File
Class212916
3211 07RoHS
Compliant as of date
code 0501

RZM modules are RoHS compliant as of date code 0610.

For mounting track, see page 24-16.

8501K relays are designed for multipole switching applications at 240 volts or lower. These relays have industry standard wiring and pin arrangements which allows for their use as replacements for many similar relays without wiring or hardware modifications.

- 12 A relays
- DPDT or 3PDT
- Manual operator/red pilot light options
- Horsepower rated
- DPDT latching relay
- AC or DC operation
- RoHS Compliant

Table 23.48: Type KF ♦ —Flange Mounted—Spade Terminals

	Input Voltage	Contact Arrangement	Options	Type	\$ Price
	AC 50/60 Hz	DPDT	None Available	KF12★	16.40
		3PDT		KF13★	17.80
	DC	DPDT	None Available	KFD12★	16.40
		3PDT		KFD13★	17.80

♦ Socket is not required with Type KF relays.

Table 23.49: Type KL—Latching Relay—Spade Terminals

	Input Voltage	Contact Arrangement	Options	Type	\$ Price
	AC 50/60 Hz	DPDT	None Available	KL12★	30.00
	DC	DPDT	None Available	KLD12★	30.00

Table 23.50: Voltage Codes and Stocked Relays

Type	AC Voltage 50/60 Hz					Type	DC Voltage					
	6	12	24	120	240		6	12	24	48	110	125
Voltage Codes	V35	V36	V14	V20	V24	Voltage Codes	V50	V51	V53	V56	V60	V63
KP12	S	S	S	S	S	KPD12	S	S	S	S	S	S
KP12P14		S	S	S	S	KPD12P14		S	S		S	S
KP13		S	S	S	S	KPD13		S	S	S	S	S
KP13P14			S	S	S	KPD13P14			S			S
KU12		S	S	S	S	KUD12		S	S			
KU12M1						KUD12M1			S			
KU12P14			S	S		KUD12P14						
KU12M1P14			S	S	S	KUD12M1P14			S			
KU13		S	S	S	S	KUD13		S	S		S	S
KU13M1						KUD13M1			S			
KU13P14			S	S		KUD13P14						
KU13M1P14			S	S	S	KUD13M1P14			S		S	S
KF12			S	S	S	KFD12		S	S			
KF13			S	S		KFD13			S			
KL12			S	S	S	KLD12		S	S			

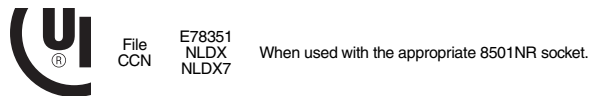
Note: S = Stocked. Factory Order items require a **minimum** order quantity of 25 and have a lead time of 12 weeks.

★ Voltage code must be specified to order this product. Refer to standard voltage codes listed in Table 23.50 and insert as shown in Table 23.54: How to Order.

For 8501 KP, KU, and KF:



For 8501 KP, KU, and KL:



For 8501 KL:



Pilot Light Option—Available on Types KP and KU. Internal pilot lights are available in both AC and DC versions for positive indication of power to the coil. The pilot light is a green LED.

Manual Operator Option—Available on Type KU only. To speed circuit testing, a manual operator can be provided. With this feature the relay can be manually switched to simulate normal operation.

Coil Vac—15.9 VA Inrush—3.2 VA Sealed

Coil Vdc—1.24 Watts

Table 23.51: Type KP—Tubular Terminals

	Input Voltage	Contact Arrangement	Options	Type	\$ Price
	AC 50/60 Hz	DPDT	None	KP12★	26.00
		DPDT	Pilot Light	KP12P14★	30.00
		3PDT	None	KP13★	31.50
		3PDT	Pilot Light	KP13P14★	35.50
	DC	DPDT	None	KPD12★	26.00
		DPDT	Pilot Light	KPD12P14★	30.00
		3PDT	None	KPD13★	31.50
		3PDT	Pilot Light	KPD13P14★	35.50

Table 23.52: Type KU—Spade Terminals

	Input Voltage	Contact Arrangement	Options	Type	\$ Price
	AC 50/60 Hz	DPDT	None	KU12★	15.10
		DPDT	Manual Operator	KU12M1★	17.80
		DPDT	Pilot Light	KU12P14★	19.10
		DPDT	Manual Operator and Pilot Light	KU12M1P14★	20.50
		3PDT	None	KU13★	16.40
		3PDT	Manual Operator	KU13M1★	19.10
		3PDT	Pilot Light	KU13P14★	20.50
		3PDT	Manual Operator and Pilot Light	KU13M1P14★	23.30
	DC	DPDT	None	KUD12★	15.10
		DPDT	Manual Operator	KUD12M1★	17.80
		DPDT	Pilot Light	KUD12P14★	19.10
		DPDT	Manual Operator and Pilot Light	KUD12M1P14★	20.50
		3PDT	None	KUD13★	16.40
		3PDT	Manual Operator	KUD13M1★	19.10
		3PDT	Pilot Light	KUD13P14★	20.50
		3PDT	Manual Operator and Pilot Light	KUD13M1P14★	23.30

Table 23.53: Contact Ratings (Contacts are Silver Tin Oxide)

Type	AC			DC	
	AC Volts	Resistive 75% PF Continuous Amperes	Hp	DC Volts	Resistive Amperes
KP ▲	120	12 ♦	1/3	28	12
	240	12 ■	1/2		
KU ▲	120	12	1/3	28	12
	240	12	1/2		
KF ★	120	12	1/3	28	12
	240	12	1/2		

▲ 8501 KP, KU, KL, and KF relays have a B300 rating.

■ 3 pole devices have a 20 A max. total (sum of currents in all 3 poles), continuous rating.

♦ 3 pole devices have a 30 A max. total (sum of currents in all 3 poles), continuous rating.

★ Socket is not required with Type KF relays.

Table 23.54: How to Order

To Order Specify:	Catalog Number		
• Class Number	Class	Type	Voltage Code
• Type Number			
• Voltage Code (See Stocked Relay Table above)	8501	KP12	V20

For sockets and accessories, see page 23-16.
For track, see page 24-16.



These miniature plug-in relays have a 10 A resistive rating, the same as the Type K plug-in relays, but are much smaller. The compact size of these relays makes them ideal for downsizing equipment.

- SPDT through 4PDT
- AC or DC operated
- Horsepower rated
- Complete line of sockets
- Manual operator/bidirectional green LED pilot light options
- Silver tin oxide contacts

Table 23.55: Contact Ratings
(Contact material is Silver Tin Oxide)

Type	Voltage	Resistive Rating	Voltage	General Use Rating	Horsepower Rating
8501RS41 ▲	120 Vac	15	120 Vac	10	1/2 @ 120 Vac
	240 Vac	10	240 Vac	10	1 @ 240 Vac
8501RSD41▲	28 Vdc	15	28 Vdc	15	—
8501RS42▲	120 Vac	10	120 Vac	10	1/3 @ 120 Vac
	240 Vac	10	240 Vac	10	1/2 @ 240 Vac
8501RSD42▲	30 Vdc	10	28 Vdc	10	—
8501RS43▲	120 Vac	12	150 Vac	10	1/2 @ 120 Vac
	277 Vac	12	250 Vac	6.6	3/4 @ 240 Vac
8501RSD43▲	28 Vdc	12	28 Vdc	10	—
8501RS44▲	120 Vac	12	150 Vac	7.5	1/2 @ 120 Vac
	277 Vac	12	250 Vac	5	3/4 @ 240 Vac
8501RSD44▲	28 Vdc	12	28 Vdc	10	—

▲ Relays have a B300 rating with UL.

Table 23.56: Voltage Codes and Stocked Relays

Type	AC Voltage 50/60 Hz					Type	DC Voltage			
	6	12	24	120	240		6	12	24	110
Voltage Code	V35	V36	V14	V20	V24	Voltage Code	V50	V51	V53	V60
RS41			S	S		RSD41		S	S	
RS41M1			S	S		RSD41M1			S	
RS41P14			S	S		RSD41P14			S	
RS41M1P14			S	S		RSD41M1P14			S	
RS42	S	S	S	S	S	RSD42		S	S	S
RS42M1						RSD42M1				
RS42P14			S	S	S	RSD42P14	S	S	S	S
RS42M1P14				S		RSD42M1P14			S	
RS43			S	S		RSD43			S	
RS43M1						RSD43M1				
RS43P14				S		RSD43P14				
RS43M1P14				S		RSD43M1P14				
RS44			S	S	S	RSD44		S	S	
RS44M1						RSD44M1				
RS44P14				S		RSD44P14			S	
RS44M1P14				S		RSD44M1P14				

Note: S = Stocked. Factory Order items require a minimum order quantity of 25 and have a lead time of 12 weeks.

Table 23.61: Application Data

Class 8501 Type		RS41	RSD41	RS42	RSD42	RS43	RSD43	RS44	RSD44
Operating Data	Pick-Up Time	20 ms Maximum			25 ms Maximum			20 ms Maximum	
	Drop-Out Time	20 ms Maximum							
	Operating Temperature	-40°C to +70°C (-40°F to +158°F)							
Coil	Duty Cycle	Continuous							
	Voltage Range	AC coils +10%, -15% of nominal DC coils +10%, -20% of nominal							
	AC Coils-Inrush	9 VA	—	6.2 VA	—	10.3 VA	—	11.9 VA	—
	AC Coils-Sealed	1.5 VA	—	1.2 VA	—	1.7 VA	—	2.1 VA	—
	DC Coils	—	0.9 watts	—	0.9 watts	—	1.4 watts	—	1.5 watts
	UR	File CCN	E78351 NLDX2, NLDX8						
CSA	File Class	211268 3218 07							
CE marked		yes							
RoHS Compliant		yes							
UL Listed	File CCN	E78351♦ NLDX, NLDX7							

♦ When used with the appropriate 8501NR socket.

For sockets and accessories, see page 23-16.
For track, see page 24-16.

Table 23.57: SPDT with Silver Tin Oxide Contacts

	Input Voltage	Options	Type	\$ Price
	AC 50/60 Hz	None	RS41■	19.70
		Manual Operator	RS41M1■	21.10
		Pilot Light	RS41P14■	24.80
		Manual Operator and Pilot Light	RS41M1P14■	26.20
	DC	None	RSD41■	19.70
		Manual Operator	RSD41M1■	21.10
		Pilot Light	RSD41P14■	24.80
		Manual Operator and Pilot Light	RSD41M1P14■	26.20

Table 23.58: DPDT with Silver Tin Oxide Contacts

	Input Voltage	Options	Type	\$ Price
	AC 50/60 Hz	None	RS42■	23.30
		Manual Operator	RS42M1■	24.70
		Pilot Light	RS42P14■	28.70
		Manual Operator and Pilot Light	RS42M1P14■	30.10
	DC	None	RSD42■	23.30
		Manual Operator	RSD42M1■	24.70
		Pilot Light	RSD42P14■	28.70
		Manual Operator and Pilot Light	RSD42M1P14■	30.10

Table 23.59: 3PDT with Silver Tin Oxide Contacts

	Input Voltage	Options	Type	\$ Price
	AC 50/60 Hz	None	RS43■	26.20
		Manual Operator	RS43M1■	27.60
		Pilot Light	RS43P14■	31.70
		Manual Operator and Pilot Light	RS43M1P14■	33.20
	DC	None	RSD43■	26.20
		Manual Operator	RSD43M1■	27.60
		Pilot Light	RSD43P14■	31.70
		Manual Operator and Pilot Light	RSD43M1P14■	33.20

Table 23.60: 4PDT with Silver Tin Oxide Contacts

	Input Voltage	Options	Type	\$ Price
	AC 50/60 Hz	None	RS44■	29.50
		Manual Operator	RS44M1■	30.80
		Pilot Light	RS44P14■	35.00
		Manual Operator and Pilot Light	RS44M1P14■	36.30
	DC	None	RSD44■	29.50
		Manual Operator	RSD44M1■	30.80
		Pilot Light	RSD44P14■	35.00
		Manual Operator and Pilot Light	RSD44M1P14■	36.30

■ Voltage code must be specified to order this product. Refer to standard voltage codes listed in Table 23.56 and insert as shown in Table 23.62: How to Order.

Table 23.62: How to Order

To Order Specify:	Catalog Number		
• Class Number	Class	Type	Voltage Code
• Type Number			
• Voltage Code (see Table 23.56)	8501	RS42	V20

Miniature Plug-in Relays

Type R

Class 8501 / Refer to Catalog 8501CT0301



8501 RSD14P14V53



8501 RS14M1V14



8501 RSD34V51

8501 R 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. Fine silver (gold flashed) and bifurcated crossbar (gold overlay silver) are suitable for high contact reliability and low level switching requirements. Silver tin oxide is best suited for inductive loads. Hermetically sealed relays can be used in adverse environments.

- 1, 3, or 5 A versions
- 4PDT
- Complete socket line
- Horsepower rated
- AC or DC operation
- Manual operator/pilot light options

Table 23.63: 5 A Version

5 A	Input Voltage	Options	Type	\$ Price
For switching inductive loads	AC 50/60 Hz	None	RS14▲	21.80
		Manual Operator	RS14M1▲	23.30
		Pilot Light	RS14P14▲	27.30
		Manual Operator and Pilot Light	RS14M1P14▲	28.70
Contacts: Silver Tin Oxide	DC	None	RSD14▲	19.10
		Manual Operator	RSD14M1▲	20.50
		Pilot Light	RSD14P14▲	24.50
		Manual Operator and Pilot Light	RSD14M1P14▲	26.00

Table 23.64: 3 A Version

3 A	Input Voltage	Options	Type	\$ Price
For low level switching	AC 50/60 Hz	None	RS4▲	21.80
		Manual Operator	RS4M1▲	23.30
		Pilot Light	RS4P14▲	27.30
		Manual Operator and Pilot Light	RS4M1P14▲	28.70
Contacts: Fine Silver (Gold Flashed)	DC	None	RSD4▲	19.10
		Manual Operator	RSD4M1▲	20.50
		Pilot Light	RSD4P14▲	24.50
		Manual Operator and Pilot Light	RSD4M1P14▲	26.00

Table 23.65: 1 A Version

1 A	Input Voltage	Type	\$ Price
Best for Low Level Switching Bifurcated Silver Gold-Plated Contacts	AC 50/60 Hz	RS24▲	35.50
	DC	RSD24▲	35.50

Table 23.66: 5 A Version, Hermetically Sealed

5 A, Hermetically Sealed	Input Voltage	Type	\$ Price
5 Ampere Resistive ■ Silver Tin Oxide Contacts Suitable for Class I Division 2 Locations	AC 50/60 Hz	RS34▲	35.50
	DC	RSD34▲	35.50

- ▲ Voltage code must be specified to order this product. Refer to standard voltage codes shown in Table 23.68.
■ Do not ground the frame.

Table 23.70: Application Data

Class 8501 Type		RS4	RSD4	RS14	RSD14	RS24	RSD24	RS34	RSD34
Operating Data	Pick-Up Time	20 ms Maximum						13 ms Max.	
	Drop-Out Time	20 ms Maximum						6 ms Max.	
	Operating Temperature Range	-40°C to +70°C (-40°F to +158°F)						-40°C to +70°C (-40°F to +158°F)	
Coil	Duty Cycle	Continuous							
	Voltage Range	AC coils +10%, -15% of nominal and DC coils +10%, -20% of nominal							
	AC Coils—Sealed	1.2 VA	—	1.2 VA	—	1.2 VA	—	1.2 VA	—
	AC Coils—Inrush	6.2 VA	—	6.2 VA	—	6.2 VA	—	6.0 VA	—
	DC Coils	—	0.9 watt	—	0.9 watt	—	0.9 watt	—	0.9 watt
Approvals	UR	File: E197072 CCN: NRNT2						N/A	
	C UR US	File: E197072 CCN: NRNT8 (Approved but not marked)						File: E196809 CCN: NQMJ2, NQMJ8	
	CSA	File: 211268 Class: 3218 07						File: 211268 Class: 3218 06	
	CE marked	Yes							
	RoHS Compliant	Yes							
	UL Listed	File E78351		CCN NLDX, NLDX7★					

★ When used with the appropriate 8501 NR Socket.

For sockets and accessories, see page 23-16.

Pilot Light Option

An internal green **pilot light** is available in both AC and DC versions for positive indication of power to the coil.

Manual Operation Option

To speed circuit testing, a manual operator can be provided. The relay can be manually switched to simulate normal operation.

NOTE: All Type R relays with a manual operator must be used on circuits of the same polarity.

Table 23.67: Contact Ratings (Contact material is Silver Tin Oxide)

Type	Voltage	Continuous Current Rating	Horsepower Rating
RS4 ♦	120/240 Vac	3	1/10
RSD4 ♦	30 Vdc	3	—
RS14 ♦	120/240 Vac	5	1/6
RSD14 ♦	28 Vdc	5	—
RS24	120/240 Vac	1	1/16 (2.8 FLA)
RSD24	30 Vdc	1	—
RS34	120/240 Vac	5	—
RSD34	30 Vdc	5	—

♦ RS4/RSD4, RS14/RSD14 have NEMA C300 pilot duty rating.

Table 23.68: AC Voltage Codes and Stocked Relays

Type	AC Voltage 50/60 Hz					
	6	12	24	48	120	240
Voltage Code	V35	V36	V14	V17	V20	V24
RS4			S		S	
RS4M1					S	
RS4P14					S	
RS4M1P14			S		S	
RS14		S	S		S	
RS14M1					S	
RS14P14					S	
RS14M1P14					S	S
RS24			S		S	
RS34			S		S	

Table 23.69: DC Voltage Codes and Stocked Relays

Type	DC Voltage				
	6	12	24	48	110
Voltage Code	V50	V51	V53	V56	V60
RSD4		S	S		
RSD4M1					
RSD4P14			S		
RSD4M1P14			S		
RSD14		S	S		S
RSD14M1			S		
RSD14P14		S	S		S
RSD14M1P14		S	S		
RSD24		S	S		
RSD34		S	S		

Note: S = Stocked. Factory Order items require a **minimum** order quantity of 25 and have a lead time of 12 weeks.



8501NR51



8501NR61



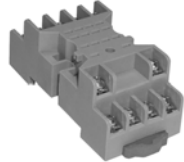
8501NR52



8501NR62



8501NR82



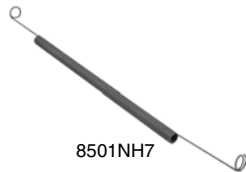
8501NR45



8501NR41



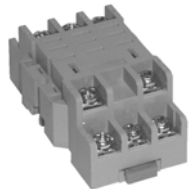
8501NR42



8501NH7



8501NR34



8501NR43

8501NR sockets are designed for use with plug-in Class 8501 Type K and R relays, 8430MPS phase failure relays and 9050JCK timers. The 8501NR45 screw terminal sockets have pressure wire clamps that accept 1 or 2 #16–22 wires. All other sockets have pressure clamps that will accept 1 or 2 #12–22 wires.

The recommended tightening torque for all terminals is 7-8 lb-in.

- All devices stocked in central warehouse
- DIN track mount or direct panel mount
- Tubular sockets available in easy-to-wire single tier or double tier versions

Table 23.71: Snapmount Sockets

For Use With Class:			Description	Socket Rating		Type	\$ Price ea.	Std. Qty.▲
8501 Type	8430 Type	9050 Type		UL	CSA			
KP12 KPD12	MPS (240 volts)	JCK11–19 JCK31–39 JCK51–59 JCK60 JCK1 F JCK3 F JCK5 F	8 Pin Tubular Single Tier Screw Terminal	600 V, 10 A 300 V, 15 A	300 V, 10 A	NR51	8.20	1
				600 V, 5 A		NR51B	6.80	10
			8 Pin Tubular Double Tier Screw Terminal	300 V, 16 A	300 V, 10 A	NR52◆	8.20	1
KP13 KPD13	—	JCK21–29 JCK41–49 JCK70 JCK2F JCK4F	11 Pin Tubular Single Tier Screw Terminal	600 V, 5 A 300 V, 15 A	300 V, 10 A	NR61	12.30	1
				600 V, 5 A		NR61B	11.00	10
			11 Pin Tubular Double Tier Screw Terminal	300 V, 16 A	300 V, 10 A	NR62◆	12.30	1
KL KU	MPS (480 Volts)	—	11 Pin Spade Double Tier Screw Terminal	300 V, 15 A	300 V, 15 A■	NR82	13.70	1
						NR82B	12.30	10
						NR82◆	19.10	1
RS41 RSD41	—	—	5 Pin Spade Double Tier Screw Terminal	300 V, 15 A	300 V, 15 A	NR41◆	17.80	10
						NR41B◆	17.80	10
						NR42	19.10	1
RS42 RSD42	—	—	8 Pin Spade Double Tier Screw Terminal	300 V, 10 A	300 V, 10 A	NR42B	17.80	10
						NR43	17.80	1
						NR43B	17.80	10
RS43 RSD43	—	—	11 Pin Spade Double Tier Screw Terminal	300 V, 10 A	300 V, 10 A	NR34	19.10	1
						NR34B	17.80	10
						NR45	19.10	1
RS44 RSD44	—	—	14 Pin Spade Double Tier Screw Terminal	300 V, 10 A	300 V, 10 A	NR45B	17.80	10
RS4 RSD4 RS14 RSD14 RS24 RSD24 RS34 RSD34	—	—	14 Pin Spade Double Tier Screw Terminal	300 V, 10 A	300 V, 10 A	NR45	19.10	1
						NR45B	17.80	10

▲ Must be ordered in multiples of the quantity listed. Units provided in standard quantity of one are individually packaged; devices with B suffix have a standard quantity of 10 per bulk pack.

■ Rated for use with Class 8430 Type MPS at 480 Volts. Rated 10 A at 300 volts by CSA.

◆ Finger Safe

For DIN 3 mounting track and end clamps, see page 24-16, or refer to:

- NEMA Style terminal block section of catalog 9080CT9601
- IEC Style terminal block section of catalog 9080CT9901

Table 23.72: Socket Accessories

Socket	For Use With	Description	Type	\$ Price ea.	Std. Pack ★
8501NR51	8501KP12, KPD12	Hold Down Clip	NH51	0.68	10
	8430MPSV24	Hold Down Spring	NH7	5.50	1
	9050JCK	Hold Down Spring	NH7	5.50	1
8501NR52	8501KP12, KPD12	Hold Down Clip	NH52	0.68	10
	8430MPSV24	Hold Down Spring	NH7	5.50	1
	9050JCK	Hold Down Spring	NH7	5.50	1
8501NR61	8501KP13, KPD13	Hold Down Clip	NH61	0.68	10
	9050JCK	Hold Down Spring	NH7	5.50	1
	8501KP13, KPD13	Hold Down Clip	NH52	0.68	10
8501NR62	9050JCK	Hold Down Spring	NH7	5.50	1
	8501KU and KL	Hold Down Clip	NH82	0.68	10
	8430MPSV29	Hold Down Spring	NH7	5.50	1
8501NR41	8501RS41, RSD41	Hold Down Clip	Supplied with socket as standard	—	—
8501NR42	8501RS42, RSD42	Hold Down Clip	8501NH42	0.68	10
8501NR43	8501RS43, RSD43	Hold Down Clip	8501NH42	0.68	10
8501NR34	8501RS44, RSD44	Hold Down Clip	8501NH42	0.68	10
8501NR45	8501RS4, RSD4 8501RS14, RSD14 8501RS24, RSD24 8501RS34, RSD34	Hold Down Clip	8501NH45	0.68	10

★ Must be ordered in multiples of the quantity listed.

How to Order

To Order Specify:	Catalog Number
• Class Number	Class Type
• Type Number	8501 NR51B

Approvals:


 File E66924
 CCN SW1V2

 File Class 211268
 3211 07

 RoHS Compliant as of date
 code 0639



8501CDO6V51

Class 8501 Type C relays are ideally suited for controlling small single phase motors and other light loads such as electric heaters, pilot lights or audible signals.

- 30 A contact rating
- Horsepower rated
- Visible contacts
- Low cost
- UL listed
- CSA certified
- CE approved

Table 23.73: Selection Table and Application Data

Selection Table							Application Data						Application Data—Coil Burden	
Contact Arrangement	Number of Fixed Contacts		AC Operated Coil Open Type		DC Operated Coil Open Type		Maximum Contact Voltage	Resistive Ampere Rating 75% Power Factor		Maximum Single Phase Horsepower			Nominal Power (Vac Coil)	Nominal DC Burden (Vdc Coil)
	N.O.	N.C.	Type	\$ Price	Type	\$ Price		300 V	600 V	120 V	230 V	600 V		
AC Rated Contacts														
SPST	1	0	CO6▲	21.80	CDO6▲	21.80	600	30	10	2	2	2	10 VA	2 W
DPST	2	0	CO7▲	34.20	CDO7▲	34.20	600	30	5	1½	1½	1½	10 VA	2 W
SPST	0	1	CO8▲	21.80	CDO8▲	21.80	600	30	10	2	2	2	10 VA	2 W
SPDT	1	1	CO15▲	38.20	CDO15▲	38.20	600	30	5	1½	1½	1½	10 VA	2 W
DPDT	2	2	CO16▲	46.40	CDO16▲	46.40	600	30	5	1½	1½	1½	10 VA	2 W
DC Rated Contacts								110 V	220 V					
SPST	1	0	CO21▲	47.80	CDO21▲	47.80	500	20	8	N.A.			10 VA	2 W
DPDT	2	2	CO22▲	56.00	CDO22▲	56.00	325	10	4				10 VA	2 W

▲ Voltage codes must be specified to order this product. Refer to standard voltage codes listed in Table 23.76 and insert as shown in Table 23.78: How to Order.

Table 23.74: Operating Data

Operating Voltages/Voltage Range	AC – 6 through 480 volts, + 10/-15% of nominal at 25 °C DC – 6 through 110 volts, + 10/-20% of nominal at 25 °C
Coil Inrush (Vac Coil)	15 VA
Coils	Duty: Continuous rated coils. (Non-replaceable)
Operating Temp. Range	AC: -22 °F to +122 °F (-30 °C to +50 °C) DC: -22 °F to +140 °F (-30 °C to +60 °C)

Approvals:

	File CCN	E78351 NLDX		File Class	209683 3211 04	
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Approximate Dimensions

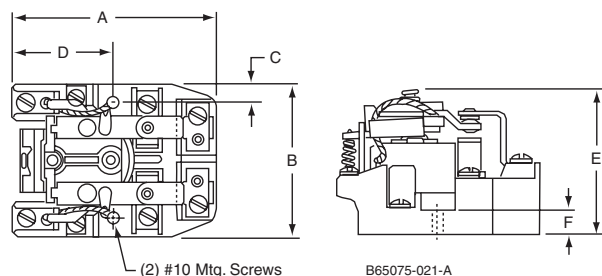


Table 23.75: Dimensions

Catalog Number 8501****	A		B		C		D		E		F	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
CO6, CO7, CO8, CDO6, CDO7, CDO8	2.43	61.7	2.50	63.5	0.31	8.0	0.81	20.6	2.25	57.2	0.37	9.5
CO15, CO21, CDO15, CDO21	2.43	61.7	2.50	63.5	0.31	8.0	0.81	20.6	2.18	55.4	0.37	9.5
CO16, CDO16	3.12	79.2	2.50	63.5	0.31	8.0	1.5	38.1	2.31	58.7	0.37	9.5
CO22, CDO22	3.12	79.2	2.50	63.5	0.31	8.0	1.5	38.1	2.53	64.3	0.37	9.5

Table 23.76: Voltage Codes and Stocked Relays

Class 8501 Type	AC Voltage—50/60 Hz								Class 8501 Type	DC Voltage			
	6	12	24	120	208	240	277	480		6	12	24	110
Voltage Code	V35	V36	V14	V20	V08	V24	V04	V29	Voltage Code	V50	V51	V53	V60
CO6		S	S	S	S	S	S	S	CO6		S	S	
CO7		S	S	S	S	S	S	S	CO7		S	S	
CO8			S	S	S	S	S	S	CO8			S	
CO15		S	S	S	S	S	S	S	CO15			S	
CO16		S	S	S	S	S	S	S	CO16		S	S	S
CO21				S					CO21			S	S
CO22				S					CO22			S	S

Note: S = Stocked. Factory Order items require a minimum order quantity of 25 and have a lead time of 12 weeks.

Enclosure

NEMA 1 sheet steel enclosure



9991UE1

Table 23.77: Class9991

Type	\$ Price
UE1	19.70

Table 23.78: How to Order

To Order Specify:	Catalog Number		
• Class Number	Class	Type	Voltage Code
• Type Number			
• Voltage Code (See Stocked Relay Table above)	8501	CO6	V20



CAD32



CAD503



CAD323

These 600 volt relays are approved for use around the world. TeSys D-Line relays are usually mounted on 35 mm DIN 3 track, but can also be mounted directly to a panel. The fixed contacts in these relays have a NEMA A600 and Q600 ratings, in addition to the standard IEC ratings, making them suitable for use in most any control circuit. Low consumption versions of this relay are available for use with low level DC signals from a computer or a PLC. Adder decks can be added to a basic five pole relay to make it up to an 11 pole relay. The serrated silver-nickel contacts with wiping action provide excellent reliability in 12 or 24 volt control circuits. Special auxiliary contacts are available for switching low power down to 5 volts at 10 mA. Timer and mechanical latch attachments are available.

Table 23.79: Instantaneous Control Relays

Terminal Type	Number of Contacts	Contact Composition		Catalog Number	\$ Price	
		Normally Open	Normally Closed		AC Coil	DC or Low Consumption Coil
Screw Clamp	5	5	0	CAD50▲	62.00	110.00
		3	2	CAD32▲	62.00	110.00
Spring Terminal	5	5	0	CAD503▲	62.00	110.00
		3	2	CAD323▲	62.00	110.00
Ring Tongue	5	5	0	CAD506▲	62.00	110.00
		3	2	CAD326▲	62.00	110.00

▲ Add the proper voltage code from Table 23.82 to the end of catalog number (for example, CAD50B7).

Table 23.80: Instantaneous Auxiliary Contact Blocks (for use in normal operation environments)

Number of Contacts	Maximum Number per Device Clip-on Mounting		Termination Type	Contact Composition		Catalog Number	\$ Price
	Front	Left Side Only		Normally Open	Normally Closed		
2	1	—	Screw Clamp	2	0	LADN20	20.70
				1	1	LADN11	20.70
				0	2	LADN02	20.70
			Spring Terminal	2	0	LADN203	20.70
				1	1	LADN113	20.70
				0	2	LADN023	20.70
4 ■	—	1 Not for DC devices	Screw Clamp	2	0	LAD8N20	20.70
				1	1	LAD8N11	20.70
				0	2	LAD8N02	20.70
			Spring Terminal	4	0	LADN40	41.50
				3	1	LADN31	41.50
				2	2	LADN22	41.50
				1	3	LADN13	41.50
				0	4	LADN04	41.50
	1	—	Spring Terminal	4	0	LADN403	41.50
				3	1	LADN313	41.50
				2	2	LADN223	41.50
				1	3	LADN133	41.50
4 ■	1	—	Screw Clamp	2 ♦	2 ♦	LADC22	41.50
			Spring Terminal	2 ♦	2 ♦	LADC223	41.50

■ Auxiliary contact blocks with four contacts cannot be used on relays with low consumption coils.
♦ Includes 1 N.O. and 1 N.C. overlapping contact.

Table 23.81: Instantaneous Auxiliary Contacts with Dust and Damp Protected Contacts (for use in particularly harsh industrial environments)

Number of Contacts	Maximum Number per Device	Contact Composition						Catalog Number	\$ Price
									
2	1	2	—	—	—	—		LA1DX20	65.00
		—	2	—	—	—		LA1DX02	65.00
		2	—	2	—	—		LA1DY20	77.00
4 ▼	1	2	—	—	2	—		LA1DZ40	82.00
		2	—	—	1	1		LA1DZ31	82.00

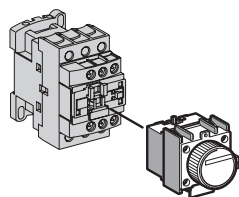
★ Grounding terminal points (2 terminals jumpered together; see diagram on page 8 of Catalog 8501CT0101).
▼ Auxiliary contact blocks with four contacts cannot be used on relays with low consumption coils.

Table 23.82: Coil Voltage Codes ▲

AC 50/60 Hz Coil (for additional voltage code options see page 7 of Catalog 8501CT0101).										
Volts	12	24	48	120	208	240	480	600		
Code	J7	B7	E7	G7	LE7	U7	W7	T7	X7	
DC Coil (coils have built in suppression as standard)										
Volts	12	24	36	48	60	72	110	125	220	440
Code	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD
DC Low Consumption Coil (coils have built in suppression as standard)										
Volts	5	12	24	48	72					
Code	AL	JL	BL	EL	SL					

▲ Add the proper voltage code to the end of catalog number.

For replacement AC coils, see page 18-16. DC coils are not replaceable.



LADT

Table 23.83: Time Delay Auxiliary Contact Blocks

Number and Type of Contacts	Maximum Number per Device	Time Delay Type	Termination Type	Range	Catalog Number	\$ Price
	Front Mounting					
1 N.C. and 1 N.O.	1	On-Delay	Screw Clamp	0.1–3 s ▲	LADT0	131.00
				0.1–30 s	LADT2	131.00
				10–180 s	LADT4	131.00
				1–30 s ■	LADS2	131.00
		Off-Delay	Spring Terminal	0.1–3 s ▲	LADT03	131.00
				0.1–30 s	LADT23	131.00
				10–180 s	LADT43	131.00
				1–30 s ■	LADS23	131.00
(Lockout Cover, See page 7 of Catalog 8501CT0101.)		Off-Delay	Screw Clamp	0.1–3 s ▲	LADR0	131.00
				0.1–30 s	LADR2	131.00
				10–180 s	LADR4	131.00
				0.1–3 s ▲	LADR03	131.00
		Off-Delay	Spring Terminal	0.1–30 s	LADR23	131.00
				10–180 s	LADR43	131.00

▲ With extended scale from 0.1 to 0.6 s.

■ With switching time of 40 ms ± 15 ms between opening of the N.C. contact and closing of the N.O. contact.

Table 23.84: Mechanical Latch Blocks ♦

Unlatching Control	Maximum Number per Device	Catalog Number	\$ Price
	Front mounting		
Manual or electrical	1	LA6DK10 ▼★	73.00
		LAD6K10 ▼	77.00

♦ Power should not be simultaneously applied or maintained to the mechanical latching block and the CAD relay. The duration of the control signal to the mechanical latching block and the CAD relay should be ≤ 100 ms.

★ Repair part for the preceding version (non-TeSys) of this product. Not for use on CAD devices.

▼ Complete the catalog number by adding coil voltage code from Table 23.86. (for example, LA6DK10B)

Table 23.85: Coil Suppressor Modules

These modules clip onto the right hand side of the control relay and the electrical connection is instantly made. Adding an input module is still possible.

RC Circuits (Resistor-Capacitor)

- Effective protection for circuits highly sensitive to “high frequency” interference.
- Voltage limited to 3 Uc maximum and oscillating frequency limited to 400 Hz maximum.
- Slight increase in drop-out time (1.2 to 2 times the normal time).

For Mounting On:	Operational Voltage	Catalog Number	\$ Price
CAD (Vac)	24 to 48 Vac	LAD4RCE	26.20
	110 to 240 Vac	LAD4RCU	26.20

Varistors (Peak Limiting)

- Protection provided by limiting the transient voltage value to 2 Uc maximum.
- Maximum reduction of transient voltage peaks.
- Slight increase in drop-out time (1.1 to 1.5 times the normal time).

CAD (Vac)	24 to 48 Vac	LAD4VE	26.20
	50 to 127 Vac	LAD4VG	26.20
	110 to 250 Vac	LAD4VU	26.20

Bidirectional Peak Limiting Diode

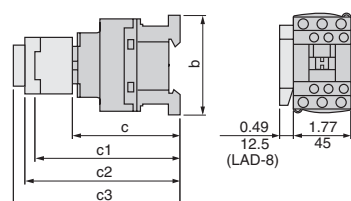
- Protection provided by limiting the transient voltage value to 2 Uc maximum.
- Maximum reduction of transient voltage peaks.

CAD (Vac)	24 Vac	LAD4TB	26.20
	72 Vac	LAD4TS	26.20

Table 23.86: Coil Voltage Codes

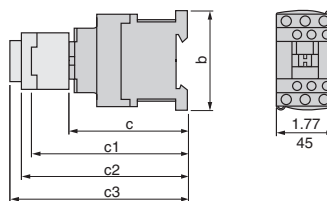
Voltage	24 Vac/Vdc	32/36 Vac/Vdc	42/48 Vac/Vdc	60/72 Vac/Vdc	100 Vac/Vdc	110/127 Vac/Vdc	220/240 Vac/Vdc	256/277 Vac/Vdc	380/415 Vac/Vdc
Voltage Code	B	C	E	EN	K	F	M	U	Q

CAD (Vac Coil)



	in. (mm)	
CAD	32 50	323 503
b	3.03 (77)	3.90 (99)
c Without cover or add-on blocks	3.31 (84)	3.31 (84)
c With cover, without add-on blocks	3.39 (86)	3.39 (86)

CAD (Vdc Coil) or (Low Consumption Vdc Coil)



	in. (mm)	
CAD	32 50	323 503
b	3.03 (77)	3.90 (99)
c Without cover or add-on blocks	3.66 (93)	3.66 (93)
c With cover, without add-on blocks	3.74 (95)	3.74 (95)

Table 23.87: Cabling Accessory

Description			Catalog Number	\$ Price
Mounting Adapter For adapting existing wiring to a new product	Without coil suppression		LAD4BB	23.00
	With coil suppression	24 to 48 Vac	LAD4BBVE	23.00
		50 to 127 Vac	LAD4BBVG	23.00
		110 to 250 Vac	LAD4BBVU	23.00

Table 23.88: Electronic Serial Timer Modules ▲

• Mounted using adaptor LAD4BB, to be ordered separately, see listing above.			
On-delay Type			
Operational Voltage	Time Delay	Catalog Number	\$ Price
24 to 250 Vac	0.1 to 2 s	LA4DT0U	82.00
	1.5 to 30 s	LA4DT2U	82.00
	25 to 500 s	LA4DT4U	82.00

▲ For 24 V operation, the relay must be fitted with a 21 V coil (code Z7).

Table 23.89: Auto-Man-Stop Control Modules

For local override operation tests with two-position "Auto-Man" switch and "O-I" switch		
• Mounted using adaptor LAD4BB, to be ordered separately, see listing above.		
Operational Voltage	Catalog Number	\$ Price
24 to 100 Vac	LA4DMK	35.00

Table 23.90: Accessories (ordered separately)

For Connection				
Description	For Mounting On:	Must be Ordered in Multiples of:	Catalog Number	\$ Price ea.
For Marking				
Sheet of 64 self-adhesive blank labels 8 x 33	CAD, LAD (4 contacts), LA6DK	10	LAD21	5.20
Sheet of 112 self-adhesive blank labels 8 x 12	LAD (2 contacts), LADT	10	LAD22	5.20
For Protection				
Lockout cover	LADT, LADR	1	LA9D901	5.50
Relay cover preventing access to the moving contact carrier	CAD	1	LAD9ET1	5.20

Table 23.91: Application Data

Type		CAD (Vac)	CAD (Vdc)	CAD (Vdc) Low Consumption
Rated Insulation Voltage (Ui)	Conforming to IEC 60947-1-1 Overvoltage category III and degree of pollution 3	690 V	690 V	690 V
	Conforming to UL, CSA	600 V	600 V	600 V
Rated Impulse Withstand Voltage (Uimp)	Conforming to IEC 60947-1-1	6 kV	6 kV	6 kV
Separation of Electrical Circuits	To IEC 536 and VDE 0106	Reinforced insulation up to 400 V		
Conforming to Standards		IEC 60947-1-1, N-F C 63-140, VDE 0660, BS 4794. EN 60947-5-15		
Approvals		UL: File: E164353 CSA: File: LR43364 CE	CCN: NKCR Guide: 3211 03	
Protective Treatment	Conforming to IEC 68	"TH" (Tropical Finish). See page 23 of Catalog 8501CT0101 for details.		
Degree of Protection	Conforming to VDE 0106	Front face protected against direct finger contact IP 2X		Protection against direct finger contact



CA2KN40 ••



CA2KN403 ••



CA4KN405 •••



CA3KN407 ••

Table 23.92: Control Relays

Control Circuit		Type of Termination	Contact Configuration		Catalog Number ▲	\$ Price
Supply	Consumption		N.O.	N.C.		
AC	4.5 VA	Screw clamp	4	0	CA2KN40 ••	35.50
			3	1	CA2KN31 ••	35.50
			2	2	CA2KN22 ••	35.50
		Spring Termination	4	0	CA2KN403 ••	35.50
			3	1	CA2KN313 ••	35.50
			2	2	CA2KN223 ••	35.50
		Faston 1 x 6.35 or 2 x 2.8	4	0	CA2KN407 ••	35.50
			3	1	CA2KN317 ••	35.50
			2	2	CA2KN227 ••	35.50
		Solder pins for printed circuit board	4	0	CA2KN405 ••	35.50
			3	1	CA2KN315 ••	35.50
			2	2	CA2KN225 ••	35.50
DC	3 W	Screw clamp	4	0	CA3KN40 ••	49.20
			3	1	CA3KN31 ••	49.20
			2	2	CA3KN22 ••	49.20
		Spring Termination	4	0	CA3KN403 ••	49.20
			3	1	CA3KN313 ••	49.20
			2	2	CA3KN223 ••	49.20
		Faston 1 x 6.35 or 2 x 2.8	4	0	CA3KN407 ••	49.20
			3	1	CA3KN317 ••	49.20
			2	2	CA3KN227 ••	49.20
		Solder pins for printed circuit board	4	0	CA3KN405 ••	49.20
			3	1	CA3KN315 ••	49.20
			2	2	CA3KN225 ••	49.20

▲ Complete catalog number by adding proper voltage code from Table 23.94 or Table 23.95 (for example, CA2KN40G7).

Table 23.93: Low Consumption Control Relays

Compatible with programmable controller outputs.								
- LED indicator incorporated. - Wide range coil (70 to 130% U_c), suppressor fitted as standard.							- Mounting on 35 mm DIN 3 track or 4 screw direct mounting. - Screws in open "ready-to-tighten" position.	
DC	1.8 W	Screw clamp	4	0	CA4KN40 •••	64.00		
			3	1	CA4KN31 •••	64.00		
			2	2	CA4KN22 •••	64.00		
		Spring Termination	4	0	CA4KN403 •••	64.00		
			3	1	CA4KN313 •••	64.00		
			2	2	CA4KN223 •••	64.00		
		Faston 1 x 6.35 or 2 x 2.8	4	0	CA4KN407 •••	64.00		
			3	1	CA4KN317 •••	64.00		
			2	2	CA4KN227 •••	64.00		
		Solder pins for printed circuit board	4	0	CA4KN405 •••	64.00		
			3	1	CA4KN315 •••	64.00		
			2	2	CA4KN225 •••	64.00		

▲ Complete catalog number by adding proper voltage code from Table 23.96 (for example, CA4KN40BW3).

Table 23.94: Coil Voltage Codes for CA2K Control Relays (0.8–1.15 U_c) (0.85–1.1 U_c)

Vac 50/60 Hz	12	24	36	42	48	110	120	127	208	220/ 230	230	230/ 240	380/ 400	400	400/ 415	440	480	500	660/ 690
Voltage Code	J7	B7	C7	D7	E7	F7	G7	FC7	L7	M7	P7	U7	Q7	V7	N7	R7	T7	S7	Y7

Note: Up to and including 240 V, coil with integral suppression device available: add 2 to the code required. Example: **J72**. (Price Adder 9.50)

Table 23.95: Coil Voltage Codes for CA3K control relays (0.8–1.15 U_c)

Vdc	12	20	24	36	48	60	72	100	110	125	200	220	230	240	250
Voltage Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	LD	MD	MPD	MUD	UD

Note: Coil with integral suppression device available: add 3 to the code required. Example: **JD3**. (Price Adder 9.50)

Table 23.96: Coil Voltage Codes for CA4K, low consumption control relays (wide range coil: 0.7–1.3 U_c)

Vdc	12	24	48	72
Voltage Code	JW3	BW3	EW3	SW3

Approvals:



File 164353
CCN NKCR

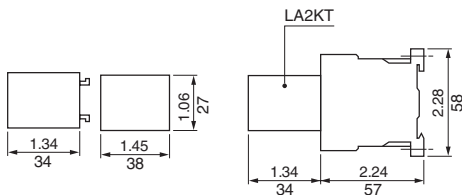


File LR43364
Guide 3211 03



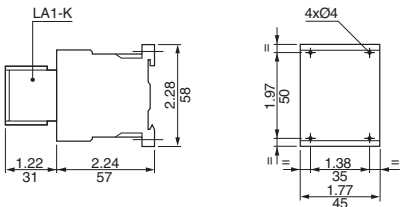


LA2KT electronic time delay contact blocks

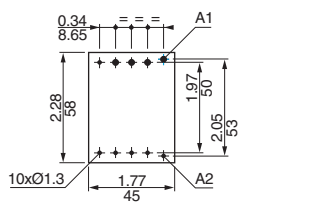


Approximate dimensions
for CA2, CA3, CA4K control relays

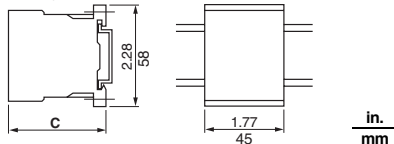
On panel



On printed circuit board



AM1DP200 or AM1DE200 mounting rail—35 mm DIN rail
(see page 22-16 for additional DIN rail)



C		Product
in.	mm	
2.22	59	AM1DP200
2.60	66	AM1DE200

Table 23.97: Instantaneous Auxiliary Contact Blocks ■♦

Clip-on Front Mounting, 1 Block Per Control Relay				
Type of Connection	Contact Configuration		Catalog Number	\$ Price
				
	N.O.	N.C.		
Screw Clamp	2	0	LA1KN20	14.20
	0	2	LA1KN02	14.20
	1	1	LA1KN11	14.20
	4	0	LA1KN40▲	27.30
	3	1	LA1KN31▲	27.30
	2	2	LA1KN22▲	27.30
	1	3	LA1KN13▲	27.30
	0	4	LA1KN04▲	27.30
Spring Termination	2	0	LA1KN203	14.20
	1	1	LA1KN113	14.20
	0	2	LA1KN023	14.20
	4	0	LA1KN403▲	27.30
	3	1	LA1KN313▲	27.30
	2	2	LA1KN223▲	27.30
	1	3	LA1KN133▲	27.30
	0	4	LA1KN043▲	27.30
Faston 1 x 6.35 or 2 x 2.8	2	0	LA1KN207	14.20
	0	2	LA1KN027	31.60
	1	1	LA1KN117	14.20
	4	0	LA1KN407▲	27.30
	3	1	LA1KN317▲	27.30
	2	2	LA1KN227▲	27.30
	1	3	LA1KN137▲	27.30
	0	4	LA1KN047▲	27.30

- ▲ Not to be used on CA4KN relays.
- Clip-on front mounting, 1 block per control relay.
- ♦ Auxiliary contact module not suitable for safety circuits.

Table 23.98: Electronic Time Delay Contact Blocks

Relay output, with common point changeover contact	240 Vac/Vdc, 2 A maximum
Control voltage	0.85–1.1 Uc
Maximum switching capacity	250 VA or 150 W
Operating temperature	–10 to +60°C (+14° F to 140° F)
Reset time	1.5 s during the time delay period, 0.5 s after the time delay.

Table 23.99: Clip-on front mounting, 1 block per control Relay

Voltage (V)	Type	Timing Range, s	Composition C.O.	Catalog No.	\$ Price
AC or DC / 24 to 48	On-delay	1 to 30	1	LA2KT2E	32.80
AC / 110 to 240				LA2KT2U	

Note: For other electronic timers see Type RE7 and 9050 Type JCK, pages 23-29 and 23-32.

Table 23.100: Accessories (supplied separately)

Description	Sold in lots of	Catalog No.	\$ Price ea.
Marker holder□	100	LA9D90	0.06
Clip-on markers□	25	AB1R□	0.67
		AB1G□	
Suppressor modules with incorporated LED indicator	5	LA4KE1B★	9.80
		LA4KE1E★	
		LA4KE1FC★	
		LA4KE1UG★	
		LA4KC1B▼	
		LA4KC1E▼	
		LA4KA1UΔ	
		LA4KA1UΔ	

- ★ Protection by the limitation of the transient voltage to 2 Uc maximum. Maximum reduction of the transient voltage peaks. Slight time delay on drop-out (1.1 to 1.5 times normal).
- ▼ No overvoltage or oscillation frequency. Polarized component. Slight time delay on drop-out (1.1 to 1.5 times normal).
- Δ Protection by limitation of the transient voltage to 3 Uc max. and limitation of the oscillation frequency. Slight time delay on drop-out (1.2 times to twice normal).
- See "Clip-in Marker Strips" in Catalog 8501CT0101 for information on completing the catalog number.

Table 23.101: Environment

Conforming to Standards		IEC 947, NF C 63-140, VDE 0660, BS 5424, CE
Approvals		UL, CSA, DEMKO, NEMKO, SEMKO, FI
Protective treatment	Conforming to IEC 68 (DIN 50016)	"TC" (Climateproof)
Degree of protection	Conforming to VDE 0106	Protection against direct finger contact
Ambient air temperature	Storage	–58 to 176 °F (–50 to 80 °C)
	Operation	–13 to 122 °F (–25 to 50 °C)
Maximum operating altitude	Without derating	6562 ft (2000 m)



CA2SK11G7



LA1SK11

Table 23.102: IEC Style Industrial Control Relays

- Miniature size saves space.
- Mounts on 35 mm DIN 3 track
- Up to 4 poles.

Up to 4 poles:						
Control Circuit Supply	Consumption	Type of Termination	Contact Configuration		Catalog Number	\$ Price
			N.O.	N.C.		
AC	4.2 VA	Screw clamp	1	1	CA2SK11•• ▲	43.70
			2	0	CA2SK20•• ▲	
DC	2.2 W		1	1	CA3SK11•• ▲	51.00
			2	0	CA3SK20•• ▲	

▲ Use the appropriate voltage code to complete the catalog number (for example: CA2SK11G7)

Table 23.103: Contact Adder Decks (for CA2SK20 only)

Type of Termination	Contact Configuration		Catalog Number	\$ Price
	N.O.	N.C.		
Screw clamp	2	0	LA1SK20	16.90
	1	1	LA1SK11	
	0	2	LA1SK02	

Transient Suppressor Module

Dampens the voltage spike that may occur when the relay coil is de-energized. The spike may adversely affect solid state equipment near the relay. The transient suppressor module snaps into a cavity located in the side of the relay. These modules can be used with CA2SK and CA3SK relays.

Table 23.104: Transient Suppressor Module

Control Circuit Voltage	Catalog Number	\$ Price
24–48 Vac 50/60 Hz, 24–48 Vdc	LA4SKEIE	21.80
110–250 Vac 50/60 Hz, 110–250 Vdc	LA4SKEIU	

Table 23.105: Coil Voltage Codes for Control Relays

Voltage	12	24	36	48	72	110	120	220	230	240	380	400	480
50/60 Hz	—	B7 ■	—	E7 ■	—	F7	G7 ■	M7 ■	P7	U7 ■	Q7	V7	T7 ■
DC	JD	BD	CD	ED	SD	—	—	—	—	—	—	—	—

■ Alternating relays CA2SKE available in these voltages only. No other voltages are available.

Alternating Relays, CA2SKE

Refer to Catalog 8501CT9701

These alternating relays are used to alternate the use of 2 motor circuits. When the coil is energized the first time, one contact closes and will open when the coil is de-energized. When the coil is energized again, the other contact will close and will open when the coil is de-energized. The contacts from these alternators are to be used in the control circuit of the starters that are controlling pump or compressor motors.

Approvals: UL File: E164353 CCN: NKCR; CSA File: LR43364 Guide:321103.

Table 23.106: Alternating Relays

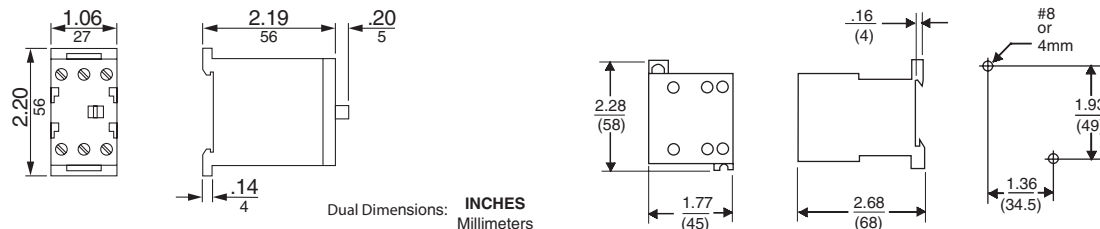
Coil Voltage (Voltage-Hz)	Type	\$ Price
24–50/60	CA2SKE20••▲	120.00

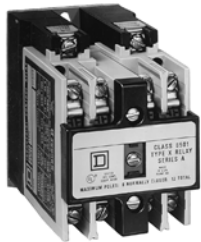
▲ Use the appropriate voltage code to complete the catalog number (for example, CA2SK11G7). Only available with voltages indicated above.

Table 23.107: Contact Ratings for CA2SK, CA3SK, AND CA2SKE20 Relays

AC							DC		
Volts	Inductive 35% PF					Resistive 75% PF	Volts	Continuous Amperes	
	NEMA Rating	Make		Break		Continuous Amperes			Make, Break and Continuous Amperes
		A	VA	A	VA				
120	A600	60	7200	6	720	10	10	24	3
240		30		3				60	2
480		15		1.5				110	0.8
600		12		1.2				240	0.2

Approximate Dimensions for CA2SKE Relay





Type XMO40
Control Relay

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 23.108: AC Control Relays

Normally Open Convertible Instantaneous Contacts	Control Relay ▲	
	Type ♦	\$ Price
0	XO00	77.00
2	XO20	114.00
3	XO30	134.00
4	XO40	152.00
6	XO60	191.00
8	XO80	228.00
10	XO1000	266.00
12	XO1200	305.00

▲ A maximum of 8 N.C. contacts is allowed on 9–12 pole relays.



Type XMO40
Master Relay

AC Master Relays

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

Table 23.109: AC Master Relays

Number of N.O. 20 Ampere Convertible Contacts	Open Type ■	
	Type ♦	\$ Price
2	XMO20	171.00
4	XMO40	266.00
6	XMO60	362.00

■ Attachments not permitted on this relay.

AC 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 23.110: AC Timing Relays

Timing Mode	N.O. Convertible Instantaneous Contacts	Timed Convertible Contacts		Timing Relay		\$ Price
		N.O.	N.C.	0.2–60 s Type ♦	5–180 s Type ♦	
On Delay	0	1	1	XO00XTE1	XO00XTE2	342.00
	2	1	1	XO20XTE1	XO20XTE2	380.00
	4	1	1	XO40XTE1	XO40XTE2	419.00
Off Delay	0	1	1	XO00XTD1	XO00XTD2	342.00
	2	1	1	XO20XTD1	XO20XTD2	380.00
	4	1	1	XO40XTD1	XO40XTD2	419.00

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.
- Continuously rated unlatch coil (no coil clearing contacts required).

Table 23.111: AC Latching Relays

N.O. Convertible Instantaneous Contacts	Latching Relay	
	Type ♦	\$ Price
2	XO20XL	248.00
3	XO30XL	266.00
4	XO40XL	285.00
6	XO60XL	323.00
8	XO80XL	362.00

♦ Voltage Code must be specified to order these products. Refer to Table 23.114 and insert the code as shown in Table 23.117: How to Order.

Approvals:



File E78403
CCN NKCR



File LR60905
Class 321103



Table 23.112: AC Contact Ratings

(for DC ratings, see page 23-25)

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	120 240 480 600	A600	60 30 15 12	7200	6 3 1.5 1.2	720	10	
Master★	—	A600	Same as standard cartridge above except substitute 20 A for the continuous ampere rating					
Logic Reed	—	—	150 Vac, 150 mA, 8 W Maximum					

★ Maximum of six 8501 Type XC4 Master Cartridges may be used on only 7 and 8 pole AC Devices

Table 23.113: Average Operating Time (ms)

Device	Pick-Up	Drop-Out
AC Relay	15	16
AC Latching Relay	15	13

Table 23.114: 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

AC Control Relays and AC Master Relays

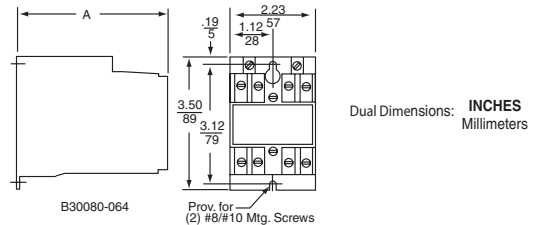


Table 23.115: Dimensions and Weight

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 Latching Relay Dimensions

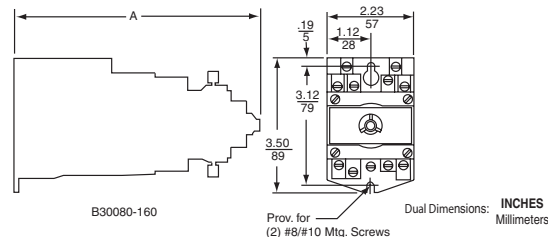


Table 23.116: Dimensions and Weight

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 page 23-26.

Table 23.117: How to Order

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

DC Control Relays



Type XDO40
Control Relay

- Replaceable, highly reliable pure DC power plant: no economizing resistors, overlapping contacts or dual-wound coil.
- Utilizes 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 23.118: DC Control Relays

Normally Open Convertible Instantaneous Contacts	Control Relay	
	Type	\$ Price
0	XDO00 ▼	171.00
2	XDO20 ▼	209.00
4	XDO40 ▼	248.00
6	XDO60 ▼	285.00
8	XDO80 ▼	323.00

DC Control Relay Utility Auxiliary Relay

Table 23.119: Dimensions

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



Type XDO40XTE2
Timing Relay

- Easily convertible On Delay or Off Delay.
- Two adjustable timing ranges.
- Repeat accuracy well above $\pm 10\%$.
- 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 23.120: DC Timing Relays

Timing Mode	Normally Open Convertible Instantaneous Contacts	Timed Convertible Contacts		Timing Relay		\$ Price
				0.2–60 s	5–180 s	
		N.O.	N.C.	Type	Type	
On Delay	0	1	1	XDO00XTE1 ▼	XDO00XTE2 ▼	437.00
	2	1	1	XDO20XTE1 ▼	XDO20XTE2 ▼	476.00
	4	1	1	XDO40XTE1 ▼	XDO40XTE2 ▼	513.00
Off Delay	0	1	1	XDO00XTD1 ▼	XDO00XTD2 ▼	437.00
	2	1	1	XDO20XTD1 ▼	XDO20XTD2 ▼	476.00
	4	1	1	XDO40XTD1 ▼	XDO40XTD2 ▼	513.00

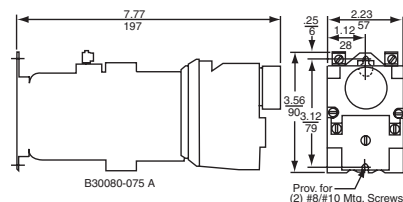


Table 23.121: DC Contact Ratings (for AC ratings, see page 23-24)

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

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

NEMA Style Industrial Control Relays

Type X[®] Relays

Class 8501 / Refer to Catalog 8501CT9601

DC Latching Relays



Type XDO40XDL
Latching Relay

- 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 23.122: DC Latching Relays

Normally Open Convertible Instantaneous Contacts	Latching Relay	
	Type	\$ Price
2	XDO20XDL ▼	384.00
4	XDO40XDL ▼	423.00
6	XDO60XDL ▼	461.00
8	XDO80XDL ▼	498.00

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.

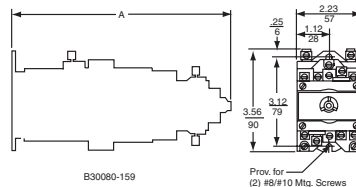


Table 23.123: Dimensions

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



Type XUDO40
Utility Relay

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 23.124: DC Utility Relays

Number of Convertible Contacts		Open Type	
N.O.	N.C.	Type	\$ Price
4 0	0 4	XUDO40 ▼ XUDO04 ▼	309.00
8 0	0 8	XUDO80 ▼ XUDO08 ▼	404.00
12 0	0 12	XUDO1200 ▼ XUDO0012 ▼	498.00

Table 23.125: Average Operating Times (in ms)

Device	Pick-Up	Drop-Out
DC Relay	37	21
DC Latching Relay	37	45

Table 23.126: 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

▼ Voltage code must be specified to order these products. Refer to Table 23.126 and insert the appropriate code as shown in Table 23.127: How to Order.

Table 23.127: How to Order

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

For Replacement coils, see page 23-26
For UL and CSA approvals, see page 23-24

Table 23.128: Type X® Relays

	Description	Type	\$ Price													
	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▲ XDL▲	134.00 176.00													
	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	266.00 266.00 266.00 266.00													
	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	7.10													
	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 With 4 N.O. contact cartridges	XB20 XB40	38.00 77.00													
	Logic Reed Adder Deck —Used for switching low energy circuits. The Logic Reed Adder Deck is supplied with either one or two logic reed cartridges fixed into the center positions of an adder deck. Contact cartridges are neither convertible nor replaceable. Standard cartridges can be inserted in unused cavities of the Logic Reed Adder Deck. One or two Logic Reed Adder Decks may be added to the basic 4-pole relay. See Contact Rating Data on pages 23-5 and 23-6 for electrical ratings.	<table><tr><th>Number of N.O. Logic Reed Contact Cartridges</th><th>Number of N.C. Logic Reed Contact Cartridges</th></tr><tr><td>2</td><td>0</td></tr><tr><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td></tr><tr><td>0</td><td>2</td></tr></table>	Number of N.O. Logic Reed Contact Cartridges	Number of N.C. Logic Reed Contact Cartridges	2	0	1	1	1	0	0	1	0	2	XBR20 XBR11 XBR10 XBR01 XBR02	105.00 105.00 52.00 52.00 105.00
Number of N.O. Logic Reed Contact Cartridges	Number of N.C. Logic Reed Contact Cartridges															
2	0															
1	1															
1	0															
0	1															
0	2															
	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. 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. 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. 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. Logic Reed Cartridge —See logic reed adder deck above.	XC1 XC2 Form Y1591 Y1592 Y1593 Y1594	19.10 19.10 Add 19.10 Add 19.10 Add 19.10 Add 19.10													
	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	15.60 23.60 28.80 33.90													
	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	4.80													
	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	38.00													
	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	66.00													

▲ See Mechanical Latch Attachment Voltage Codes table below:

Table 23.129: 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	115/125 230/250	V62 V66

Table 23.131: Relay Coil Selection and Pricing

Device Type	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	\$ Price
	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			
DC	8501	XD	9998 XD	—	19	28	34	37	40	46	49	52	55	—	58	—	67	18	122.00	
		XDL	9998 XDL	—	19	28	34B	37B	40B	46B	49B	52B	55B	—	58B	—	67B	50	156.00	
		XUD	9998 XUD	—	19	28	—	37	—	46	—	—	—	—	58★	—	67♦	16	122.00	
Device Type	Equipment To Be Serviced		Coil Prefix or Class and Type															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		
AC	8501	XO, XMO	9998 X ■	60	23	—	44	51	52	53	55	—	—	62	—	65	148	23	49.80	
				50	24	44	—	52	53	—	—	—	62	—	65	—	143	25		

■ 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.

♦ Not dual rated—250 Vdc only
★ 125 Vdc only

Table 23.130: How to Order

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



Class 9039 Type XO1 Alternator

Class 9039 alternators are used with two separately enclosed motor starters to alternate the operation of the pump motors of a duplex pump installation. Duplex installations are made to provide a stand-by pump if one set of equipment fails, and to provide additional capacity if the load becomes too great for a single pump. Pump wear is equalized by automatically alternating the first pump to start on each successive operation. Class 8501 Type X machine tool relays are used in Class 9039 Type X alternators to provide maximum reliability and life.

Table 23.132: AC Power Supply: 110–600 Vac, 50–60 Hz

General Purpose Enclosure NEMA 1		Watertight Enclosure NEMA 4		Watertight, Dusttight and Corrosion-Resistant Glass-Polyester Enclosure NEMA 4X		Dusttight Enclosure NEMA 12		For Hazardous Locations Class 1, Group D NEMA 7		Open Type	
Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price	Type	\$ Price
XG1▲	1064.00	XW1▲	2013.00	XW11▲	2013.00	XA1▲	1709.00	XR1▲	3000.00	XO1▲	1007.00

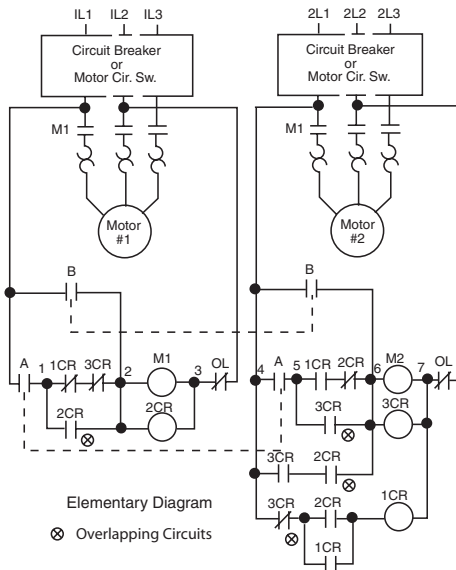
▲ Voltage code must be specified to order this product. Refer to standard voltage codes listed below and insert as shown in How To Order.

Table 23.133: Contact Ratings

Volts	Contact Ratings					
	NEMA Rating	Make		Break		Continuous Amperes
		A	VA	A	VA	
120	A600	60	7200	6	720	10
240		30	7200	3	720	10
480		15	7200	1.5	720	10
600		12	7200	1.2	720	10

Operation

1. The two pilot devices (A and B) must be double pole. Pilot device A is set to close at a lower liquid level than B.
2. The alternator operates first one pump and then the other on each successive closing of pilot device A.
3. After pilot device A closes, if the liquid continues to rise and reaches the level at which pilot device B is set, both pumps will operate.
4. With one pump running, if its disconnect means is opened, an overload relay trips, or the starter is de-energized for any reason, the other pump will automatically be started. If the pump satisfies the demand and is shut off, it will restart when pilot device B closes.



Approximate Dimensions

9039 XO1 (The 9039 XG1 uses the 9991 LG1 enclosure. Other enclosed devices use Class 8502 size 0 & 1 enclosures. Dimensions on pages 16-107 through 16-109).

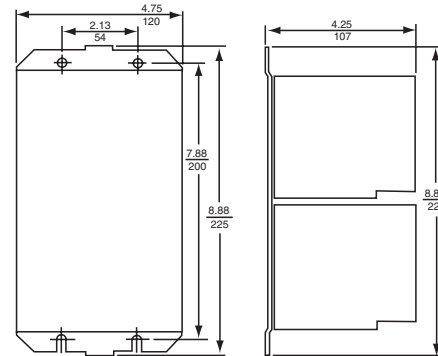


Table 23.134: Voltage Codes

AC Voltages—Hz	Code
24–60	V01
24–50	V12
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
Other Voltages■	V99■

■ Specify voltage and frequency.

Replacement Coils (Use 8501 Type X Relay coils)page 23-26



File E78403
CCN NKCR

Table 23.135: How to Order

To Order Specify:	Catalog Number		
• Class Number	Class	Type	Voltage Code
• Type Number			
• Voltage Code			
	9039	XG1	V02

Table 23.136: RE11 Modular Timers—17.9 mm wide
(Multi-range timers offering 7 selectable ranges)

Functions	Supply Voltages	Rated Current	Catalog Number	\$ Price
Output 1 C/O contact				
On delay	24 Vdc, 24–240 Vac	8A	RE11RAMU	34.00
Interval	24 Vdc, 24–240 Vac	8A	RE11RHMU	34.00
Asymmetrical repeat cycle	24 Vdc, 24–240 Vac	8A	RE11RLMU	42.00
Asymmetrical repeat cycle	12 Vac/Vdc	8A	RE11RLJU	59.00
One shot	24 Vdc, 24–240 Vac	8A	RE11RBMU	41.00
Off delay with control start	24 Vdc, 24–240 Vac	8A	RE11RCMU	41.00
Multi-function ▲	24 Vdc, 24–240 Vac	8A	RE11RMMU	49.00
Multi-function ▲	12–240 Vac/Vdc	8A	RE11RMMW	59.00
Multi-function ▲	12–240 Vac/Vdc	8A	RE11RMMWS	59.00
Multi-function ▲	12 Vac/Vdc	8A	RE11RMJU	59.00
Multi-function ■	24 Vdc, 24–240 Vac	8A	RE11RMEMU	59.00
Multi-function ▲	24 Vdc, 24–240 Vac	8A	RE11RMXMU	59.00
▲ Timing ranges: 0.1–1 s, 1–10 s, 0.1–10 min, 1–10 min, 0.1–1 hr, 1–10 hr, 10–100 hr ■ Timing ranges: 0.1–1 s, 1–10 s, 0.1–10 min, 1–10 min, 0.1–1 hr, 1–10 hr				
Conforming to standards		IEC 61812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC directive (89/336/EEC + IEC 60669-2-3)		
Approvals		cULus	File: E173076 CNN: NRNT	
			File: E173076 CNN: NRNT7	
		CSA	File: 217698 Guide 3211 07	
		CE	GL except RE11 RMX MU and RE11 RME MU	
Ambient air temperature around the device	Storage	°F (°C)	–22 to +140 (–30 to +60)	
	Operation	°F (°C)	–4 to +140 (–20 to +60)	

RE11RLMU



RE11LHBM

Table 23.137: RE11 Modular Timers—17.9 mm wide
(Multi-function, dual function or single function)

Functions	Supply Voltages	Rated Current	Catalog Number	\$ Price
Solid state output				
On delay	24–240 Vac/Vdc	0.7A	RE11LAMW	36.00
Interval	24–240 Vac	0.7A	RE11LHBM	34.00
Off delay with control contact	24–240 Vac	0.7A	RE11LCBM	41.00
Asymmetrical repeat cycle	24–240 Vac	0.7A	RE11LLBM	59.00
Multi-function	24–240 Vac	0.7A	RE11LMBM	49.00
Timing ranges: 0.1–1 s, 1–10 s, 0.1–10 min, 1–10 min, 0.1–1 hr, 1–10 hr, 10–100 hr				
Conforming to standards		IEC 61812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC directive (89/336/EEC + IEC 60669-2-3)		
Approvals		cULus	File: E173076 CNN: NRNT	
			File: E173076 CNN: NRNT7	
		CSA	File: 217698 Guide: 3211 07	
		CE		
Ambient air temperature around the device	Storage	°F (°C)	–22 to 140 (–30 to +60)	
	Operation	°F (°C)	–4 to 140 (–20 to +60)	

Table 23.138: RE48 Panel Mount Timers (For required socket, refer to the catalog section)

Functions	Supply Voltages	Rated Current	Catalog Number	\$ Price
Single function: on delay, two relay outputs	24–240 Vac/Vdc	2 x 5 A	RE48ATM12MW	58.00
Repeat cycle: two relay outputs	24–240 Vac/Vdc	2 x 5 A	RE48ACV12MW	69.00
Multi-function: on delay, one shot, off delay, repeat cycle	24–240 Vac/Vdc	2 x 5 A	RE48AML12MW	68.00
Multi-function: on delay and interval, two relay outputs, of which one selectable and instantaneous	24–240 Vac/Vdc	2 x 5A	RE48AMH13MW	68.00
Conforming to standards		IEC 61812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC directive (89/336/EEC + IEC 60669-2-3)		
Approvals		cURus	File: E173076 CNN: NRNT2	
			File: E173076 CNN: NRNT8	
		CSA	File: 217698 Guide: 3211 07	
		CE, C-Tick, GL		
		RoHS compliant as of date code 0625		
Ambient air temperature around the device	Storage	°F (°C)	–40 to 158 (–40 to +70)	
	Operation	°F (°C)	–4 to 122 (–20 to +50)	



RE48A TM12MW

Table 23.139: REXL Miniature Plug-in Timers (For required socket, refer to the catalog section)

Function	Supply Voltages	4 pole			2 pole		
		Rated Current	Catalog Number	\$ Price	Rated Current	Catalog Number	\$ Price
Single function (On-Delay)	12 Vdc	3A	REXL4TMJD	44.00	5A	REXL2TMJD	42.00
	24 Vdc ♦	3A	REXL4TMBD	44.00	5A	REXL2TMBD	42.00
	24 Vac 50/60 Hz ♦	3A	REXL4TMB7	44.00	5A	REXL2TMB7	42.00
	120 Vac 50/60 Hz	3A	REXL4TMF7	44.00	5A	REXL2TMF7	42.00
	230 Vac 50/60 Hz	3A	REXL4TMP7	44.00	5A	REXL2TMP7	42.00
Timing Ranges		0.1–1 s, 1–10 s, 0.1–1 min, 1–10 min, 0.1–1 hr, 1–10 hr, 10–100 hr					

For 48 Vac supply, additional resistor 390 ohm 4 W / 24 V

♦ For 48 Vac supply, additional resistor 560 ohm 2 W / 24 V

RoHS compliant as of date code 0626



IEC Style Electronic Timers—22.5 mm wide

RE7

Refer to Catalog 9050CT0001

Multi-Function Timers—22.5 mm wide

These timers offer multi range timing from 0.05 to 300 hours, in 10 timing ranges.

Table 23.140: RE7M 6 Function and 8 Function Timers

6 Function Timer				
Function	Supply Voltages	Relay Output	Catalog Number	\$ Price
On-Delay Timer Off-Delay Timer Interval Timer • start on energization • start on opening of remote control contact Repeat Cycle Timer with start during the OFF period. Repeat Cycle Timer with start during the ON period External control possible for: • start of time delay • partial stop of time delay • adjustment of time delay	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O, SPDT 	RE7ML11BU	186.00
8 Function Timer				
Same as 6 Function Timer ▲ plus Timer for star-delta starting • with double On-Delay timing • with changeover contact to star connection	24 Vdc or Vac 110–240 Vac	2 C/O, DPDT 	RE7MY13BU	207.00
	24–240 Vdc or Vac	2 C/O, DPDT 	RE7MY13MW	228.00

▲ Except control of partial stop of time delay for RE7MY13BU.

Table 23.141: RE7T On-Delay Timers

Functions	Supply Voltages	Relay Output	Catalog Number	\$ Price
On-Delay Timer	24 Vdc or Vac 110–240 Vac	1 C/O, SPDT 	RE7TL11BU	114.00
On-Delay Timer External control possible for: • start of time delay • partial stop of time delay • adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O, SPDT 	RE7TM11BU	145.00
On-Delay Timer Remote control possible for: adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	2 C/O ♦, DPDT 	RE7TP13BU	155.00

Table 23.142: SRE7M Symmetrical and Asymmetrical Timers

Functions	Supply Voltages	Relay Output	Catalog Number	\$ Price
Symmetrical Timers: On and Off delay times are equal.				
On-Delay and Off-Delay Timer External control possible for: • partial stop of time delay • adjustment of time delay ■ Start control via external contact only	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O, SPDT 	RE7MA11BU	160.00
On-Delay and Off-Delay Timer Start control via external contact only	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	2 C/O ♦, DPDT 	RE7MA13BU	171.00
Asymmetrical Timers: On and Off delay times are adjusted separately.				
On-Delay and Off-Delay Timer External control possible for: • partial stop of time delay • adjustment of time delay ■ Start control via external contact only	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O, SPDT 	RE7MV11BU	176.00

■ By external potentiometer, to be ordered separately (see page 3 of Catalog 9050CT0001 for specifications). If external potentiometer is used, the internal potentiometer is automatically disconnected.
♦ A switch on the front face of the timer allows the second contact to be used in instantaneous mode.

Table 23.143: Output Circuit Specifications for RE7

Current Limit, Ith	8 A		
Rated Operational Limits at 70°C	24 V	115 V	250 V
Conforming to IEC60947-5-1/1991 and VDE 060	AC-15 N.C. contact	3 A	3 A
	AC-15 N.O. contact	5 A	5 A
	DC-13 N.O. contact	2 A	0.2 A
UL and CSA Current	Resistive Rating	5 A	
NEMA / UL B300	Inductive Rating	3600 VA Make, 360 VA Break, 5 A Carry	

Table 23.144: Output Circuit Specifications for RE8

Maximum Switching Voltage	250 Vac/Vdc		
Current Limit Ith	8 A		
Rated Operational Limits at 150°F (70°C)	24 V	115 V	250 V
Conforming to IEC 60947-5-1/1991 and VDE 0660	AC-15	3 A	3 A
	DC-13	2 A	0.2 A
UL and CSA Current Ratings (Resistive)	5 A		
NEMA / UL B300 Ratings (Inductive)	3600 VA Make, 360 VA Break, 5 A Carry		

RE7, RE8, and RE9 Timers comply to the following:

Conforming to Standards	IEC 61812-1, EN 61812-1			
Product Approvals	 File E164353 CNN NKCR	 File LR 89150 Guide 3211 07		RoHS Compliant as of date code 0626
CE Marking	RE7, RE8, and RE9 Timers conform to European regulations relating to CE Marking			
Ambient Air Temperature	Storage	-40°F to +185°F (-40°C to +85°C)		
	Operation	-4°F to +140°F (-20°C to +60°C)		

Multi-Function Timers—22.5 mm wide



RE7R



RE7P



RE7C

Table 23.145: RE7R Timers Off-Delay Timers

Functions	Supply Voltages	Relay Output	Catalog Number	\$ Price
On De-energization, Adjustable from 0.05 s to 10 min, in 7 Ranges				
Off-Delay Timer (Times without power)	24–240 Vdc or Vac	1 C/O 	RE7RB11MW▲	155.00
Off-Delay Timer Remote control possible for: • adjustment of time delay ■	24–240 Vdc or Vac	2 C/O 	RE7RB13MW▲	176.00
On Opening of External Control Contact, Adjustable from 0.05 s to 300 h, in 10 Ranges				
Off-Delay Timer External control possible for: • partial stop of time delay • adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O 	RE7RA11BU	135.00
On opening of Low Level External Control Contact, Adjustable from 0.05 s to 300 h, in 10 Ranges				
Off-Delay Timer External control possible for: • partial stop of time delay • adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O 	RE7RM11BU	145.00
Off-Delay Timer	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	2 C/O ♦, DPDT 	RE7RL13BU	155.00

▲ If the device has been stored de-energized for more than a month, it must be energized for about 15 seconds to activate it. Subsequently, a time of > 1 s is enough to activate the time delay.

Note: If this time is not complied with, the relay will remain energized indefinitely.

Table 23.146: RE7P Internal Timers

Functions	Supply Voltages	Relay Output	Catalog Number	\$ Price
Start on Energization				
Interval Timer	24 Vdc or Vac 110–240 Vac	1 C/O 	RE7PE11BU	124.00
Interval Timer External control possible for: • adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	2 C/O ♦ 	RE7PP13BU	155.00
Start on Opening of External Control Contact				
Interval Timer External control possible for: • partial stop of time delay • adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O 	RE7PM11BU	124.00
Interval Timer	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	2 C/O ♦ 	RE7PD13BU	155.00

Table 23.147: RE7C Timers Symmetrical and Asymmetrical Relays

Functions	Supply Voltages	Relay Output	Catalog Number	\$ Price
Symmetrical Relays with Start during Off Period				
Repeat Cycle Timer	24 Vdc or Vac 110–240 Vac	1 C/O 	RE7CL11BU	135.00
Repeat Cycle Timer External control possible for: • adjustment of time delay ■	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	2 C/O ♦ 	RE7CP13BU	166.00
Asymmetrical, with Separate Adjustment of On-Delay and Off-Delay				
Repeat Cycle Timer External control possible for: • start period • adjustment of time delays ■ • partial stop	24 Vdc or Vac 42–48 Vdc or Vac 110–240 Vac	1 C/O 	RE7CV11BU	176.00

■ By external potentiometer, to be ordered separately (see page 3 of Catalog 9050CT0001 for specifications). If external potentiometer is used, the internal potentiometer is automatically disconnected.

♦ A switch on the front face of the timer allows the second contact to be used in instantaneous mode.

For conformance to standards, see page 23-29

RoHS Compliant as of date code 0626



RE8TA

Table 23.148: On-Delay (timing starts on energization), TDE

Relay Output	Supply Voltages	Timing Range ▲	Catalog Number	Standard Pack Quantity ■	\$ Price
 SPDT	24 Vdc or Vac 110–240 Vac	0.1–3 s	RE8TA61BUTQ	10	62.00
		0.1–10 s	RE8TA11BUTQ ★	10	62.00
		0.3–30 s	RE8TA31BUTQ ★	10	62.00
		3–300 s	RE8TA21BUTQ ★	10	62.00
		20 s–30 min	RE8TA41BUTQ	10	62.00

Table 23.149: Off-Delay (timing starts on de-energization), TDD

Control Contact					
1 C/O  SPDT	24 Vdc or Vac	0.1–10 s	RE8RA11BTQ ★	10	78.00
		0.3–30 s	RE8RA31BTQ	10	78.00
		3–300 s	RE8RA21BTQ ★	10	78.00
	110–240 Vac	0.1–10 s	RE8RA11FUTQ ★	10	78.00
		0.3–30 s	RE8RA31FUTQ	10	78.00
		3–300 s	RE8RA21FUTQ ★	10	78.00
		20 s–30 min	RE8RA41FUTQ	10	78.00
Self-Powered (Times without power)					
1 C/O  SPDT	24 Vdc or Vac 110–240 Vac	0.05–0.5 s	RE8RB51BUTQ	10	124.00
		0.1–10 s	RE8RB11BUTQ	10	124.00
		0.3–30 s	RE8RB31BUTQ	10	124.00

★ Also available in pack of one; delete TQ from the end of the catalog number. Example: RE8TA11BU.

Table 23.150: Repeat Cycle Timer

Relay Output	Supply Voltages	Timing Range ▲	Catalog Number	Standard Pack Quantity ■	\$ Price
 SPDT	24 Vdc or Vac 110–240 Vac	0.1–10 s	RE8CL11BUTQ	10	83.00

Table 23.151: Interval Timer

On Energization					
1 C/O  SPDT	24 Vdc or Vac 110–240 Vac	0.1–10 s	RE8PE11BUTQ	10	72.00
		0.3–30 s	RE8PE31BUTQ	10	72.00
		3–300 s	RE8PE21BUTQ	10	72.00
By Control Contact					
1 C/O  SPDT	24 Vdc or Vac	0.1–10 s	RE8PD11BTQ	10	83.00
		0.3–30 s	RE8PD31BTQ	10	83.00
		3–300 s	RE8PD21BTQ	10	83.00
	110–240 Vac	0.1–10 s	RE8PD11FUTQ	10	83.00
		0.3–30 s	RE8PD31FUTQ	10	83.00
		3–300 s	RE8PD21FUTQ	10	83.00
On De-Energization					
1 C/O  SPDT	24 Vdc or Vac 110–240 Vac	0.05–1 s	RE8PT01BUTQ	10	88.00

- ▲ For easier adjustment, it is preferable to set the time delay between the maximum value in the range and one tenth of this value. Example: RE8TA11BUTQ timing range 0.1–10 s, recommended use 1–10 s.
■ Orders must specify standard pack quantity or multiples of that quantity.

For technical information, refer to page 23-29.

Table 23.152: On-Delay Timer (Solid State Output)

Power Supply Circuit	Function	Timing Range ♦	Catalog Number	\$ Price
24–240 Vac or Vdc	On-Delay	0.1–10 s	RE9TA11MW	72.00
		0.3–30 s	RE9TA31MW	72.00
		3–300 s	RE9TA21MW	72.00
		40 s–60 min	RE9TA51MW	72.00

Table 23.153: Off-Delay Timer (Solid State Output)

24–240 Vac	Off-Delay	0.1–10 s	RE9RA11MW7	104.00
		0.3–30 s	RE9RA31MW7	104.00
		3–300 s	RE9RA21MW7	104.00
		40 s–60 min	RE9RA51MW7	104.00

- ♦ For easier adjustment, it is preferable to set the time delay between the maximum value in the range and one tenth of this value. Example: RE9TA11MW timing range 0.1–10 s, recommended use 1–10 s.

RoHS Compliant as of date code 0626

For technical information, refer to catalog 9050CT0001.



RE9TA

General Purpose Plug-In Timers

Type JCK



Class 9050 / Refer to Catalog 9050CT9601

www.us.schneider-electric.com
FOR CURRENT INFORMATION



9050JCK46V20

Class 9050 Type JCK timing relays are designed to provide low-cost timing in a plug-in housing. The Types JCK11 thru 59 provide $\pm 1\%$ repeat accuracy. The Types JCK60 and 70 offer $\pm 0.1\%$ repeat accuracy. These timers are directly interchangeable with many other 8 and 11 pin tube base timers.

- Up to $\pm 0.1\%$ repeat accuracy
- Timing from 0.05 seconds to 999 hours
- Available in 5 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



9050JCK32V36
with 8501NH7

Table 23.154: Variable Time Delay

Knob Adjustable Timing Range	On Delay	\$ Price	Off Delay	\$ Price	Off Delay Power Trigger	\$ Price	Interval	\$ Price	One Shot	\$ Price	One Shot Power Trigger	\$ Price	Repeat Cycle	\$ Price
0.1–10 seconds	JCK11 Δ	52.00	JCK21 Δ	65.00	JCK21PT Δ	65.00	JCK31 Δ	52.00	JCK41 Δ	65.00	JCK41PT Δ	65.00	JCK51 Δ	93.00
0.3–30 seconds	JCK12 Δ	52.00	JCK22 Δ	65.00	JCK22PT Δ	65.00	JCK32 Δ	52.00	JCK42 Δ	65.00	JCK42PT Δ	65.00	JCK52 Δ	93.00
0.6–60 seconds	JCK13 Δ	52.00	JCK23 Δ	65.00	JCK23PT Δ	65.00	JCK33 Δ	52.00	JCK43 Δ	65.00	JCK43PT Δ	65.00	JCK53 Δ	93.00
1.2–120 seconds	JCK14 Δ	52.00	JCK24 Δ	65.00	JCK24PT Δ	65.00	JCK34 Δ	52.00	JCK44 Δ	65.00	JCK44PT Δ	65.00	JCK54 Δ	93.00
1.8–180 seconds	JCK15 Δ	52.00	JCK25 Δ	65.00	JCK25PT Δ	65.00	JCK35 Δ	52.00	JCK45 Δ	65.00	JCK45PT Δ	65.00	JCK55 Δ	93.00
0.1–10 minutes	JCK16 Δ	58.00	JCK26 Δ	71.00	JCK26PT Δ	71.00	JCK36 Δ	58.00	JCK46 Δ	71.00	JCK46PT Δ	71.00	JCK56 Δ	98.00
0.3–30 minutes	JCK17 Δ	58.00	JCK27 Δ	71.00	JCK27PT Δ	71.00	JCK37 Δ	58.00	JCK47 Δ	71.00	JCK47PT Δ	71.00	JCK57 Δ	98.00
0.6–60 minutes	JCK18 Δ	58.00	JCK28 Δ	71.00	JCK28PT Δ	71.00	JCK38 Δ	58.00	JCK48 Δ	71.00	JCK48PT Δ	71.00	JCK58 Δ	98.00
1.2–120 minutes	JCK19 Δ	58.00	JCK29 Δ	71.00	JCK29PT Δ	71.00	JCK39 Δ	58.00	JCK49 Δ	71.00	JCK49PT Δ	71.00	JCK59 Δ	98.00

▲ Two dials are provided for independently adjustable repeat cycle timing ranges.

■ Initiating contact can be up to 50 feet from the timer.

Table 23.155: Fixed Time Delay

Timing Mode	Type	Timing Range (seconds)	\$ Price
On Delay	JCK1F(XXXX)♦ Δ	0.1 to 180	52.00
		181 to 3600	58.00
Off Delay ▼	JCK2F(XXXX)♦ Δ	0.1 to 180	65.00
		181 to 3600	71.00
Off Delay with Power Trigger	JCK2F(XXXX)PT♦ Δ	0.1 to 180	65.00
		181 to 3600	71.00
Interval	JCK3F(XXXX)♦ Δ	0.1 to 180	52.00
		181 to 3600	58.00
One Shot ▼	JCK4F(XXXX)♦ Δ	0.1 to 180	65.00
		181 to 3600	71.00
One Shot with Power Trigger	JCK4F(XXXX)PT♦ Δ	0.1 to 180	65.00
		181 to 3600	71.00
Repeat Cycle	JCK5F(XXXX)♦★ Δ	0.1 to 180	93.00
		181 to 3600	98.00

♦ (XXXX) denotes the timing period in seconds.
Example: Class 9050 Type JCK1F60 is an On Delay timer fixed at 60 seconds.

★ Fixed repeat cycle timers can be supplied with the same or different On-Time and Off-Time.

▼ Initiating contact can be up to 50 feet from the timer.

▲ Voltage code must be specified to order this product. Refer to standard voltage codes listed below and insert as shown in How To Order.

Class 8501 Sockets

For sockets, see page 23-16
For DIN rail, see page 24-16

For all 9050JCK timers:

With appropriate 8501NR Socket:



File CCN E78351 NLDX



File Class 214768 3211 07

Without Socket



File CCN E3190 NLDX2



RoHS Compliant as of date code 9050JCK1-5 = 0627 9050JCK6070=0648

Table 23.156: Voltage Codes

Voltage	Code
12 Vac/Vdc	V36
24 Vac/Vdc	V14
48 Vac/Vdc	V17
120 Vac/110 Vdc	V20
240–50/60	V24

Table 23.157: Contact Ratings

AC Volts	AC Amperes				hp	DC Volts	DC Amperes		
	Inductive 35% P.F.			Res. 75% P.F. Make Break and Continuous			Inductive		Res. Make Break and Continuous
	Make	Break	Continuous				Make	Break	
120	30	3	10	10	1/3	28	3	3	10
240	15	1.5	10	10	1/2				

B300, R300, AC15 and DC13

Type JCK60

This On Delay timer uses a 5 position rotary switch to select the timing range. The three pushbutton thumbwheels are used to select the time value.

Table 23.158: Selection and Pricing

Timing Modes	Timing Ranges	Type	\$ Price
On Delay	.01s 0.05–9.99 seconds	JCK60 Δ	101.00
	0.1s 0.1–99.9 seconds		
	S 001–999 seconds		
	0.1m 0.1–99.9 minutes		
	M 001–999 minutes		
	0.1h 0.1–99.9 hours		
	H 001–999 hours		



Type JCK70

Two 5 position rotary switches are used to select the timing mode and timing range. The three pushbutton thumbwheels are used to select the time value.

Table 23.159: Selection and Pricing

Timing Modes	Timing Range	Type	\$ Price
On Delay Off Delay Interval One Shot Repeat Cycle□	Same as JCK60	JCK70 Δ	115.00

□ The repeat cycle mode utilizes the same on-time and off-time.

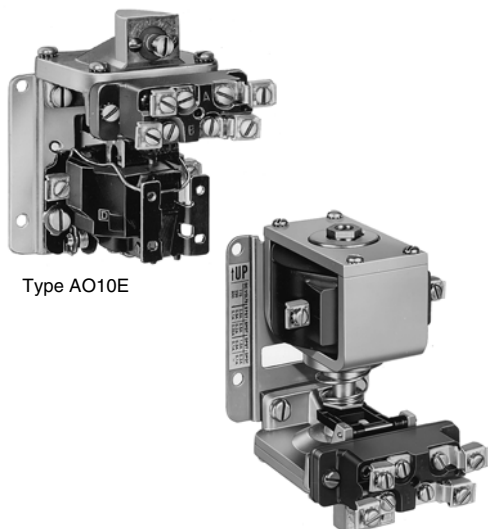


Table 23.160: Class 8501 Hold Down Spring

For use on Class 9050 Type JCK Timers	Class	Type	\$ Price ea.
Hold down spring holds timer in socket during heavy vibration. (See 9050JCK with 8501NH7 photo at the top of this page.)	8501	NH7	5.50

Table 23.161: How to Order

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



Type AO10E

Type HO10E

- One minute timing $\pm 10\%$ repeat accuracy
- SPDT or DPDT instantaneous contacts (Type A only)
- On and Off Delay, convertible
- SPDT or DPDT timed contacts
- Small size
- Low cost

Table 23.162: Selection and Pricing

Mode of Operation	Number of Contacts				AC Operated		DC Operated	
	Time Delay		Instantaneous		Open Type	\$ Price	Open Type	\$ Price
	N.O.	N.C.	N.O.	N.C.				
On Delay Convertible	1	1	0	0	AO10E▲	336.00	HO10E▲	518.00
			1	1	AO11E▲	419.00	—	—
			2	2	AO12E▲	450.00	—	—
	2	2	0	0	AO20E▲	366.00	HO20E▲	569.00
1			1	AO21E▲	450.00	—	—	
2			2	AO22E▲	480.00	—	—	
Off Delay Convertible	1	1	0	0	AO10D▲	336.00	HO10D▲	518.00
			1	1	AO11D▲	419.00	—	—
			2	2	AO12D▲	450.00	—	—
	2	2	0	0	AO20D▲	366.00	HO20D▲	569.00
1			1	AO21D▲	450.00	—	—	
2			2	AO22D▲	480.00	—	—	
On and Off Delay Double Headed	1 per Head	1 per Head	0	0	AO110DE▲	545.00	—	—
	2 per Head	2 per Head	0	0	AO220DE▲	606.00	—	—

▲ Voltage code must be specified to order this product. Refer to standard voltage codes listed below and insert as shown in How To Order.

Table 23.163: Accessories

Class	Type	For Timing Relay	Description	\$ Price
9991	UE6	Type A (single headed) Type H	Separate NEMA 1 Enclosure	66.00
9999	R33■	Type A	SPDT Instantaneous Contact Kits (1 N.O., 1 N.C.)	84.00
9999	R34■	Type A	DPDT Instantaneous Contact Kits (2 N.O., 2 N.C.)	114.00

■ Instantaneous contact kits contain a snap switch, mounting bracket and screws for field installation.

Types A and H



File E78403
CCN NKCR



File LR60905
Class 321103

Table 23.164: Voltage Codes

AC Voltages	Code	DC Voltages	Code
24–60	V01	6	V50
24–50	V12	12	V51
120–60/110–50	V02	24	V53
208–60	V08	48	V56
240–60/220–50	V03	115	V61
277–60	V04	230/250	V66
480–60/440–50	V06		
600–60/550–50	V07		

Timing Modes: On Delay or Off Delay, convertible. On Delay types can be wired for interval-maintained start or repeat cycle (sequencing using two devices).

Timed and Instantaneous Output Contacts: SPDT or DPDT snap switch. Contacts of each pole must be used on same polarity.

Repeat Accuracy:

Under constant temperature (Per NEMA Standard ICS 5-1993). $\pm 10\%$ to 1 minute max.

Timing Range: Type A: 0.1 second to 1 minute. Type H: 0.15 second to 1 minute.

Reset Time: Type A: On Delay 29 ms, Off Delay 27 ms average. Type H: On Delay 50 ms, Off Delay 70 ms average.

Operating Temperature Range: 20°C to 40°C (68°F to 104°F)

Operating Voltages/Voltage Range:

Type A—6 through 600 volts AC, $+10\%$, -15% of nominal

Type H—6 through 250 volts DC, $+10\%$, -20% of nominal

Table 23.165: DC Replacement Coils

Coil Voltage	Coil Part Number	Coil Burden Watts	\$ Price
6 Vdc	4491S1W21	14	152.00
12 Vdc	4491S1W24		
24 Vdc	4491S1W27		
48 Vdc	4491S1W30		
115/125 Vdc	4491S1W34		
230/250 Vdc	4491S1W37		

Table 23.166: AC Replacement Coils

Coil Voltage	Coil Part Number		Coil (Volt-Amperes) ♦			\$ Price
	60 Hz	50 Hz	Inrush 60 Hz	Inrush 50 Hz	Sealed	
24 Vac	2959S49W25A	2959S49W25B	74	68	17	96.00
110/115 Vac	2959S49W31B	2959S49W32A				
120 Vac	2959S49W32A	2959S49W32B				
208 Vac	2959S49W34A	2959S49W34B				
220 Vac	2959S49W34B	2959S49W35A				
240 Vac	2959S49W35A	2959S49W35B				
277 Vac	2959S49W35B	—				
440 Vac	2959S49W37B	2959S49W38A				
480 Vac	2959S49W38A	2959S49W38B				
550 Vac	2959S49W38B	2959S49W39A				

♦ 6 to 24 Vac coils have VA ratings 120% of the values shown

Table 23.167: Contact Ratings

Contacts	Volts	AC Ratings						DC Ratings			
		Inductive 35% Power Factor				Resistive 75% Power Factor		Inductive and Resistive			
		Make		Break		Continuous Amperes	Make, Break and Continuous Amperes	Make and Break Amperes		Continuous Amperes	
		Amperes	VA	Amperes	VA			Single Throw	Double Throw		
SPDT Timed or Instantaneous	120	40	—	15	—	15	15	2.0	0.5	15	15
	240	20	—	10	—	15	15	0.5	0.2	15	15
	480	10	—	6	—	15	15	0.1	0.02	15	15
	600	8	—	5	—	15	15	—	—	—	—
DPDT Timed or Instantaneous	120	30	3600	3	360	10	10	1.0	0.2	10	10
	240	15	3600	1.5	360	10	10	0.3	0.1	10	10
	480	7.5	3600	0.75	360	10	10	0.1	—	10	10
	600	6	3600	0.6	360	10	10	—	—	—	—



RM17JC00MW



RM35JA31MW



RM35JA32MW

Dedicated to measurement of under and overcurrent, without external sensors, current control relays enable continuous monitoring of the operation of electrical and mechanical loads such as motors and resistors. They are DIN rail mountable and control status is indicated by an LED.

RM17JC Current Control Relay

- Monitors a.c. currents
- Designed to monitor overcurrent
- Equipped with an integrated current transformer

RM35JA Current Control Relays

- Selection between overcurrent or undercurrent
- Automatic d.c. or a.c. recognition
- Selectable memory function

Table 23.168:

Supply Voltage	Measurement Range		Output 5Amps	Width		Catalog Number	\$ Price
	Range▲	Terminals		Inches	mm		
24–240 Vac/dc	2–20 A	N/A	1 C/O	0.69	17.50	RM17JC00MW	103.00
	2–20 mA	E1-M	2 C/O	1.38	35.00	RM35JA31MW	117.00
	10–100 mA	E2-M					
	50–500 mA	E3-M				RM35JA32MW	140.00
	0.15–1.5 A	E1-M					
	0.5–5 A	E2-M					
	1.5–15 A	E3-M					

▲ Above 15A, a current transformer can be connected (for RM35JA32MW). See page 57 of the catalog for suggested wiring.

Table 23.169: 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	500ms	300ms	
Conforming to standards	NF EN 60255-6		
Ambient air temperature around the device	Storage	-40 to 158 degrees F (-40 to +70°C)	
	Operational	-4 to 122 degrees F (-20 to +50°C)	

Approvals:



File E173076
CNN NRNT



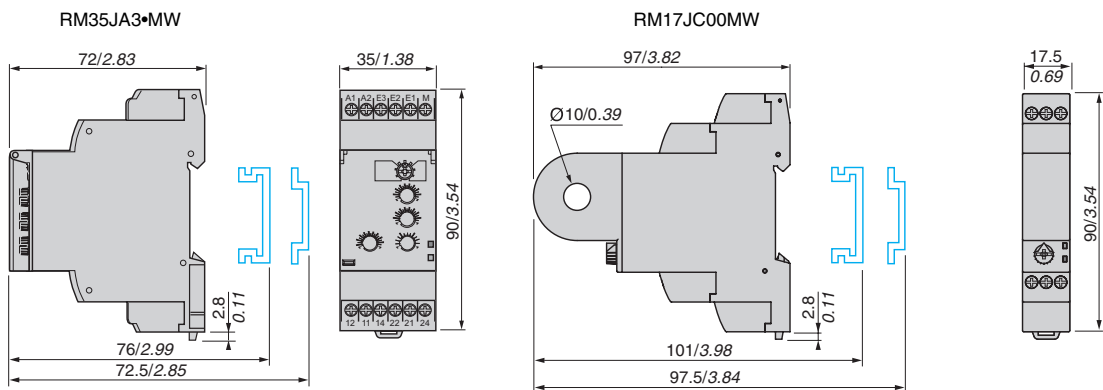
File 217698
Guide 3211-07



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

GL, C-Tick, GOST,
RoHS

Approximate Dimensions



Dual Dimensions: INCHES
Millimeters

Voltage Measurement Relays

RM17UB, RM35UB, RM17UAS, RM17UBE, RM35UA1•MW

Refer to Catalog 8430CT0601

Voltage Measurement Relays are DIN rail mountable and relay status is indicated by an LED.

Single phase and d.c. voltage measurement and control relays RM17UAS•• and RM17UBE•• monitor:

- Overvoltage
- Undervoltage
- Overvoltage and undervoltage (window mode)
- Nominal voltages

Table 23.170: Single-phase and d.c. voltage control relays

Supply Voltage	Ranges Controlled	Output 5Amps	Width		Catalog Number	\$ Price
			inches	mm		
12 Vdc	9–15 Vdc	1 C/O	0.69	17.50	RM17UAS14▲	109.00
24–48 Vac/Vdc	20–80 Vac/Vdc				RM17UAS16▲	109.00
110–240 Vac/Vdc	65–260 Vac/Vdc				RM17UAS15▲	115.00
24–48 Vac/Vdc	20–80 Vac/Vdc				RM17UBE16■	109.00
110–240 Vac/Vdc	65–260 Vac/Vdc				RM17UBE15■	115.00

▲ Provides overvoltage or undervoltage protection.

■ Provides overvoltage and undervoltage protection in window mode.

Multifunction voltage control relays RM35UA1•MW monitor both a.c. and d.c. voltages.

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

Table 23.171: Multifunction voltage control relays

Supply Voltage	Measurement Range		Output 5 Amps	Width		Catalog Number	\$ Price
	Range★	Terminals		inch	mm		
24–240 Vac/Vdc	0.05–0.5 V	E1-M	2 C/O	1.38	35.00	RM35UA11MW	124.00
	0.3–3 V	E2-M					
	0.5–5	E3-M					
	1–10	E1-M				RM35UA12MW	124.00
	5–50	E2-M					
	10–100	E3-M					
	15–150	E1-M				RM35UA13MW	124.00
	30–300	E2-M					
	60–600	E3-M					

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 23.172: Three-phase voltage control relays

Rated 3-Phase Supply Voltage Vac	Measurement Range	Output 5 Amps	Width		Catalog Number	\$ Price
			inch	mm		
220–480 phase-phase	195–528 Vac	1 C/O + 1 C/O 1 per threshold	1.38	35.00	RM35UB330♦	181.00
120–277 phase-neutral	183–528 Vac	1 C/O	0.69	17.50	RM17UB310♦	149.00
120–277 phase-neutral	114–329 Vac	1 C/O + 1 C/O 1 per threshold	1.38	35.00	RM35UB3N30★	201.00

♦ Provides overvoltage and undervoltage protection between phases.

★ Provides overvoltage and undervoltage protection between phases and neutral and absence of neutral.

Approvals:



File
CNN E173076
NRNT



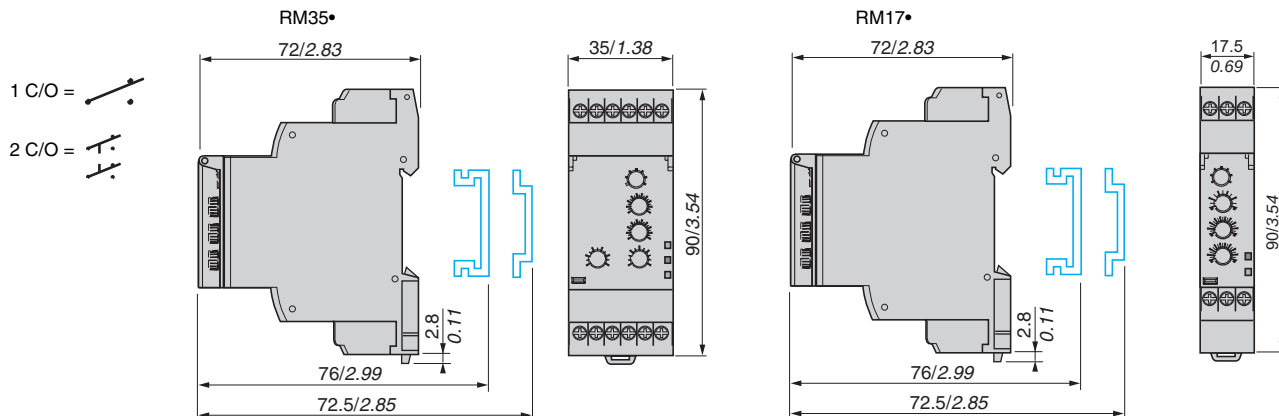
File
Guide 217698
3211-07



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

GL, C-Tick, GOST,
RoHS

Approximate Dimensions



Dual Dimensions: INCHES
Millimeters



RM17TG•0



RM17TA00



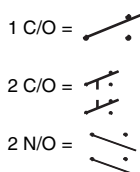
RM17TE00



RM35TM••MW



RM35TF30



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.

Table 23.173: 3-Phase supply control relays

Supply Voltage	Detection Threshold	Output 5 Amps	Width		Catalog Number	\$ Price
			inches	mm		
208–480 Vac	<100 Vac	1 C/O	0.69	17.50	RM17TG00	90.00
208–440 Vac		2 C/O			RM17TG20	99.00

Table 23.174: Multifunction 3-phase supply control relays

Supply Voltage	Voltage Range	Output 5 Amps	Width		Catalog Number	\$ Price
			inch	mm		
208–480 Vac	Selectable voltages: 208, 220, 380, 400, 415, 440, 480	1 C/O	0.69	17.50	RM17TT00	108.00
					RM17TA00	140.00
					RM17TU00	104.00
					RM17TE00	172.00

Table 23.175: 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 23.176: 3-phase supply and motor temperature control relays

Supply Voltage	Measurement Range	Output 5 Amps	Width		Catalog Number	\$ Price
			inch	mm		
24–240 Vac/Vdc	208–480 Vac	2 N.O.	1.38	35.00	RM35TM50MW	175.00
					RM35TM250MW	183.00

Table 23.177: 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

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

Table 23.178: Multifunction 3-phase supply control relays

Supply Voltage	Measurement Range	Output 5 Amps	Width		Catalog Number	\$ Price
			inch	mm		
24–240 Vac/Vdc	194–528 Vac	2 C/O	1.38	35.00	RM35TF30	216.00

Approvals:



File E173076
CNN NRNT

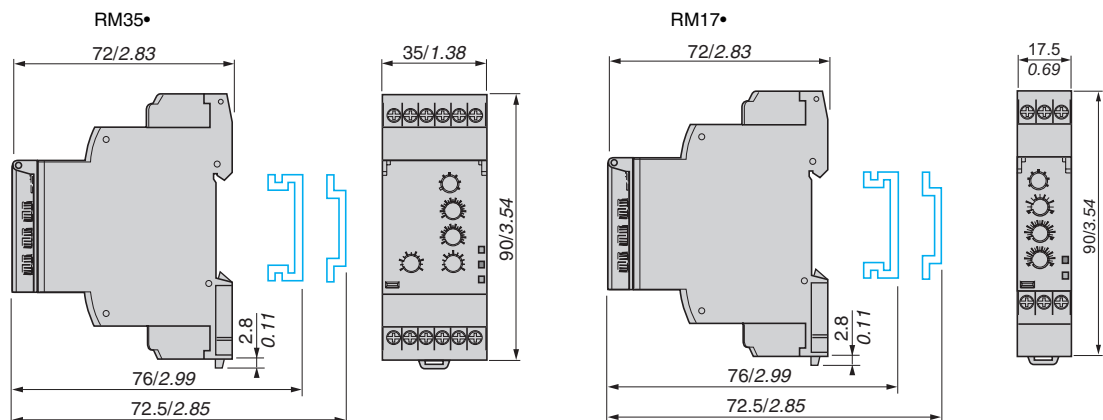


File 217698
Guide 3211-07



CE: 73/23/EEC and
EMC 89/336/EEC GL, C-Tick, GOST,
RoHS

Approximate Dimensions



Dual Dimensions: INCHES
Millimeters

Level Control Relays Pump Control Relays

RM35L...MW, RM35BA10

Refer to Catalog **8430CT0601**

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:

- Spring, town, industrial and sea water
- Metallic salt, acid or base solutions
- Liquid fertilizers
- Non-concentrated alcohol (<40%)
- Liquids in the food-processing industry: milk, beer, coffee, etc.

Application examples for RM35LV:

- Chemically pure water
- Fuels, liquid gasses (inflammable)
- Oil, concentrated alcohol (>40%)
- Ethylene, glycol, paraffin, varnish and paints



RM35LM33MW



RM35LV14MW



RM79696043



LA9RM201



RM79696006



RM35BA10

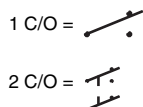


Table 23.179: Level Control Relays

Time Delay on Crossing the Threshold	Function	Output Relay	Supply Voltage 50/60 Hz	Measurement Ranges	Catalog Number	\$ Price
0.1–5 seconds, 0 + 10%	Detection by resistive probes	2 C/O, 5A	24–240 Vac/Vdc	250 Ω–5 k Ω	RM35LM33MW	91.00
				5 k Ω–100 k Ω		
	Detection by discrete sensors	1 C/O, 5A		50 k Ω–1 M Ω	RM35LV14MW	116.00

Table 23.180: Probes

Application	No. of probes	Operating temperature		Maximum pressure kg/cm ²	Catalog Number	\$ Price
		°F	°C			
Recommended for drink vending machines and where installation space is limited (stainless steel)▲	3	176	80	2	RM79696044	62.00
Suitable for boilers, pressure vessels, and under high temperature conditions (1) (304 stainless steel)▲	1	392	25	200	RM79696014	75.00

▲ 3/8" BSP mounting thread with hexagonal head. Use a 24mm spanner for tightening.

Table 23.181: Probes

Description	Catalog Number	\$ Price
Protected probe for mounting by suspension, protective shell PUC (S7) Electrode: stainless steel	RM79696043	45.00
Liquid level control probe, suspended by cable, maximum operating temperature 212°F/100°C■	LA9RM201	65.00

■ 3/8" BSP mounting head.

Table 23.182: Electrode Holders

Description	Material	Catalog Number	\$ Price
Electrode for use up to 662°F (350°C)	Stainless steel isolated by ceramic	RM79696006	49.00

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

- Current control
- Phase presence control
- Current control (in 3-phase mode)

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 23.183: Pump Control Relay

Description	Current Range Controlled	Supply Voltage	Output	Catalog Number	\$ Price
Pump Control Relay	1–10 A	208–480 Vac, 3 phase	1 C/O 5 A	RM35BA10	225.00
		230, single-phase			

Approvals:



File
CNN E173076
NRNT



File
Guide 217698
3211-07

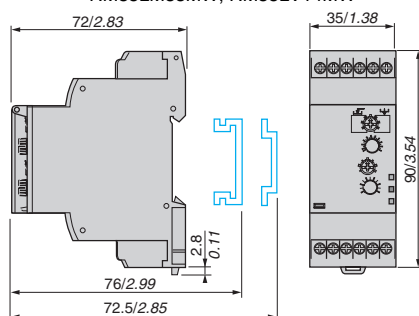


CE: 73/23/EEC and
EMC 89/336/EEC

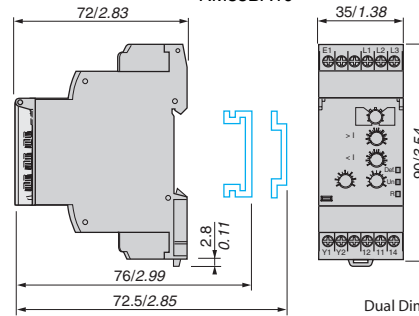
GL, C-Tick, GOST,
RoHS

Approximate Dimensions

RM35LM33MW, RM35LV14MW



RM35BA10



Dual Dimensions: INCHES
Millimeters



RM35S0MW



RM35HZ21FM



RM35AT0MW

Speed control relay RM35SOMW monitors underspeed and overspeed, 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 0.05s to 10m. Power-on inhibition time is adjustable from 0.6 to 60s. 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 23.184: Speed Control Relay

Function	Time Delay	Measurement Input	Supply	Output	Catalog Number	\$ Price
Underspeed	0.05s–10min	3-wire PNP or NPN proximity sensor	24–240 Vac/Vdc	1 C/O 5A	RM35S0MW	172.00
Overspeed		Namur proximity sensor 0–30 V voltage Volt-free contact				

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 23.185: Frequency Control Relay

Function	Controlled	Supply Voltage	Output	Catalog Number	\$ Price
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 5A	RM35HZ21FM	176.00

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

Table 23.186: Temperature Control Relays

Function	Supply Voltage	Vac	Output	Catalog Number	\$ Price
Over temperature 93 to 114°F (34 to 46°C)	24–240 Vac/Vdc	—	1 C/O 5A	RM35ATL0MW	111.00
Under temperature 30 to 51°F (-1 to 11°C)		—	2 N.O. 5A	RM35ATR5MW	119.00
Over temperature 93 to 114°F (34 to 46°C)		208–480 Vac	2 N.O. 5A	RM35ATW5MW	188.00
Under temperature 30 to 51°F (-1 to 11°C)					
Phase sequence					
Phase failure					

Approvals:



File E173076
 CNN NRNT



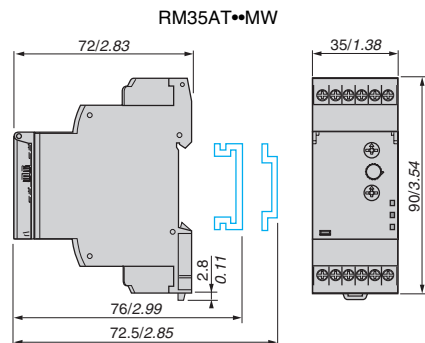
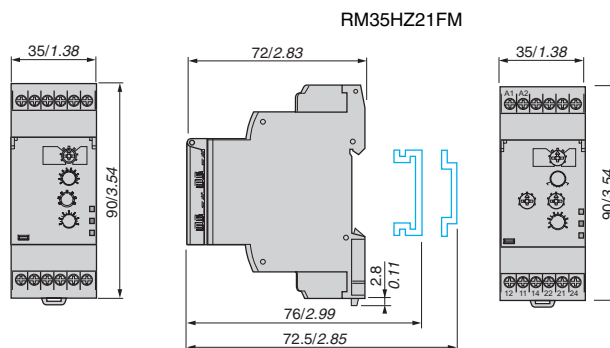
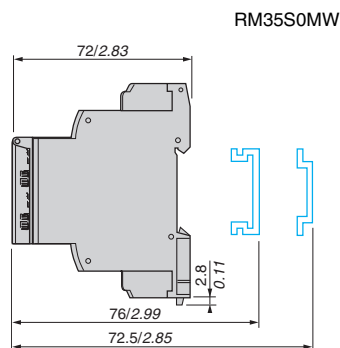
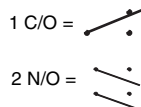
File 217698
 Guide 3211-07



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

GL, C-Tick, GOST,
 RoHS

Approximate Dimensions



Dual Dimensions: **INCHES**
 Millimeters

The Class 8430 phase failure relays offer the reliability and accuracy of solid state circuitry with the isolation of hard output contacts.

Phase Abnormality Definitions

Phase Loss: This condition occurs when one line of a 3 phase system is completely lost.

Phase Unbalance: This condition occurs when the voltage in one line of a 3 phase system drops below the voltage in the remaining two lines.

Phase Reversal: This condition occurs when two of three lines in a 3 phase system are switched. This incorrect connection will cause a motor to rotate in the reverse direction.

Undervoltage: This condition occurs when the voltage in all three lines of a 3 phase system drop simultaneously.

Table 23.187:

Class/Type	Protects Against				Description	Contact Arrangement	Nominal Voltage	Type	\$ Price
	Phase Loss	Phase Unbalance	Phase Reversal	Under Voltage					
 8430 MPS	Yes	Yes	Yes	Yes	Phase Failure and Undervoltage Relay The Type MPS is a socket mounted, voltage sensing phase failure relay. The undervoltage setting is adjustable from 75% to 100% of normal voltage. The relay is UL Listed with the appropriate socket (see socket selection on page 23-16). The 240 V rated, SPDT output contacts change state upon phase failure, undervoltage, phase reversal or phase unbalance of 10% or greater. Response time delay is 3 seconds.	SPDT	240-60	MPSV24	219.00
							480-60	MPSV29	
 8430 MPD	Yes	Yes	Yes	Yes	Phase Failure and Undervoltage Relay The Type MPD offers the same protection as the Type MPS plus the following features: DPDT 600 V rated output contacts, locking potentiometer undervoltage adjustment and an LED indicating "relay energized." Can be mounted directly to a panel or to 8501 XM track (see page 23-26).	DPDT	120-60	MPDV20	488.00
							240-60	MPDV24	
							480-60	MPDV29	
							600-60	MPDV32	

Note: For 8430 MPS Sockets, see page 23-16.

Table 23.188: Operating Data

Power Consumption	Type MPS	5.5 VA
	Type MPD	7 VA
Ambient Temperature		+23°F to 122°F -5°C to 50°C
Devices are auto reset, so 3 wire control should be used to accomplish safe operation of equipment.		

MPS:  File E42240 CCN NLDX provided the proper socket is used.
8430MPSV24 - 8501 NR51 or NR52 socket (see page 23-16).
8430MPSV29 - 8501 NR82 socket (see page 23-16).

MPD:  File E42240 CCN NLDX

 File E42240 CCN NLDX2 without using the sockets listed.  File LR60905 -174

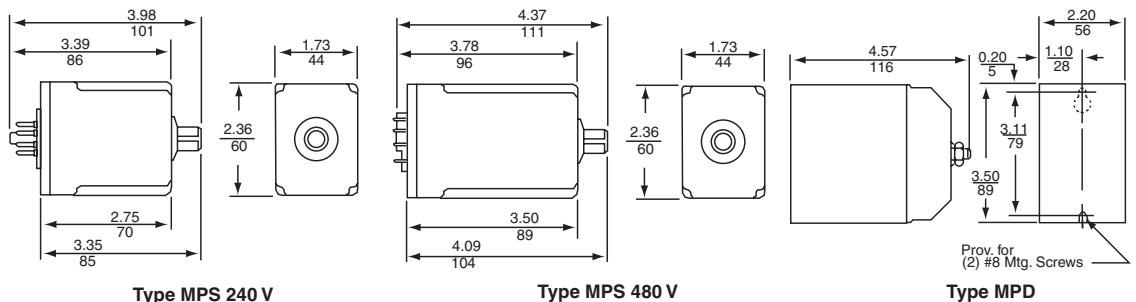
Table 23.189: Contact Ratings

Type	Contacts	Maximum Control Circuit Voltage	AC Ratings			
			Inductive		Resistive	
			Make VA	Break VA	Make & Break Amperes	Thermal Continuous Current
MPS	SPDT	120	1800	180	5	5
		240	1800	180	5	5
MPD	DPDT	120	3400	340	5	5
		240	3600	360	5	5
		480	3600	360	2.5	5
		600	3600	360	2.5	5

Table 23.190: How to Order

To Order Specify:	Catalog Number		
• Class Number	Class	Type	Voltage Code
• Type Number			
• Voltage Code	8430	MPS	V24

For Mounting Track for the 8430 MPS relayspage 23-26





RC87610050

Zelio® Count Counters

This type of counter is typically used on simple machines to keep a running total of the number of cycles the machine has performed or the total amount of time that a machine has been running. This information can be very useful in a preventative maintenance program.

Totalizing Counters

A totalizing counter is used to count electrical pulses or contact closings. The display will show the value and update this value after each pulse. They count up only and can be reset on the front of the device or remotely.

Table 23.191: Totalizing Counters

	Description	Catalog Number	\$ Price
24 x 48 mm Totalizing Counter	8 Digit LCD, 40 Hz input	RC87610050	77.00
	8 Digit LCD, 14 or 100 Hz input	RC87610240	93.00
	8 Digit LCD, 14 Hz input	RC87610250	93.00
	8 Digit LCD, 40 Hz or 7 kHz input	RC87610340	28.20



RC87610340

Hour Counters

An hour counter is used to count the elapsed time and display the value. They count up only and can be reset on the front of the device or remotely.

Table 23.192: Hour Counters

	Description	Catalog Number	\$ Price
24 x 48mm Totalizing Counters	6 Digit LCD, 0–99,999.9 Hours Counted when voltage is applied	RC87610150	77.00
	6 Digit LCD, 0–99,999.9 Hours Counted when a contact is closed	RC87610440	28.20



RC87610050

Accessories

These adaptors are used to mount above counters in holes other than 24x48 mm.

Table 23.193: Mounting Adapters

Description	Dimensions		Catalog Number	\$ Price
	in.	mm		
Adaptors for panel cut-out	0.98x1.96	25x50	RC26546829	3.30
	1.77x1.77	45x45	RC26546830	3.30
	1.96 diameter	50 diameter	RC26546831	6.60

Table 23.194: How to Order

To Order Specify:	Catalog Number
• Catalog Number	RC87610050


 File
CCN NRNT, NRNT7

 File
Class 217698
3211 07


Approximate Dimensions

Table 23.195:

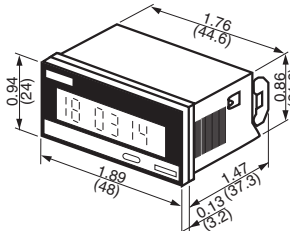
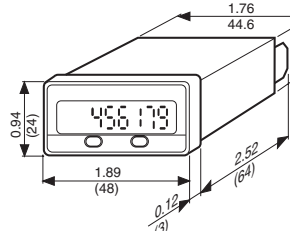
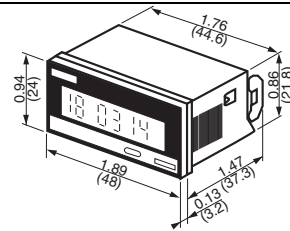
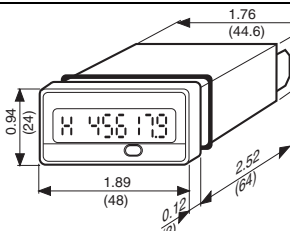
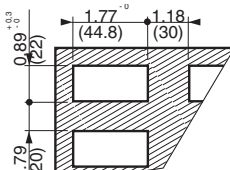
RC87610050	RC87610240 / RC87610250
	
RC87610340 / RC87610440	RC87610150
	

Table 23.196:
RC26546830

Panel cut-out



Solid State Interface Modules

The solid state relay interface modules are for discrete digital input or output control signals exchanged in automated equipment. Features include:

- High operating rate
- 5 separate character places for marking
- Silent operation
- LED indication of the control signal state
- 35 mm DIN 3 or 32 mm DIN 1 track mountable



ABS2EA01EM

Table 23.197: Solid State Interface Input Modules

	Input Module Catalog Number					\$ Price ea
Input Module Catalog No.	ABS2EC01EA	ABS2EC01EB	ABS2EC01EE	ABS2EA02EF	ABS2EA02EM	55.00
Dimensions (WxDxH) ▲	Inches: 0.37 x 2.78 x 2.91mm: 9.5 x 70.5 x 74					
Control Circuit Characteristics						
Rated Voltage US	5 Vdc	24 Vdc	48 Vdc	120/127 60Hz	230/240 60Hz	
Maximum Voltage	6 (TTL)	28.8 Vdc	57.6 Vdc	140 Vac	264 Vac	
Maximum Current at Us	13.6 mA	12 mA	10.5 mA	17 mA	15 mA	
Internal Protection Against Reverse Polarity	Yes	Yes	Yes	N/A	N/A	
Output Circuit Characteristics						
Rated Operational Voltage Ve	5 to 48 Vdc	5 to 48 Vdc	5 to 48 Vdc	5 to 48 Vdc	5 to 48 Vdc	
Min./Max. Voltage	2/60 Vdc	2/60 Vdc	2/60 Vdc	2/60 Vdc	2/60 Vdc	
Min./Max. Switching Current	1/50 mA	1/50 mA	1/50 mA	1/50 mA	1/50 mA	
Rated Insulation Voltage	Conforming to IEC 947-1: 300 V Conforming to IEC 0110: 250 V group C					
Approvals	UL E39281, CSA LR 81630 38, IEC 947-1					

Table 23.198: Solid State Interface Output Modules

	Output Module Catalog No.				\$ Price
	ABS2SC01EB	—	—	—	63.00
	—	ABS2SC02EB	—	—	63.00
	—	—	ABS2SA01MB	—	71.00
	—	—	—	ABS2SA02MB	80.00
Dimensions (W x D x H)▲	Inches: 0.69 x 2.78 x 2.91				

▲ Dimensions mounted on DIN 3 (7.5 mm high) track.

For Mounting Track, see page 24-16.

Table 23.199: How to Order

To Order Specify:	Catalog Number
• Catalog Number	ABS2EC01EA



ABR1E411F



ABR2E112E



ABR1S111F



ABR2S102B

Electromechanical Relay Input Interface Modules

The electromechanical relay modules are for discrete digital input or output control signals exchanged in automated equipment. Features include:

- High contact reliability
- LED indication of the control signal state
- 5 separate character places for marking
- 35 mm DIN 3 or 32 mm DIN 1 track mountable

Table 23.200: Input Modules

Coil Voltage	Options	1 N.O. Contact	1 C.O. Contact	2 N.O. Contacts	\$ Price
		Catalog Number	Catalog Number	Catalog Number	
24 Vac/Vdc	Manual Operator and LED Indication	ABR1E118B▲	ABR1E318B▲	ABR1E418B▲	54.00
48 Vac/Vdc		ABR1E118E▲	ABR1E318E▲	ABR1E418E▲	
110–125 Vdc		ABR1E112F▲	ABR1E312F▲	ABR1E412F▲	
110–127 Vac 50/60 Hz		ABR1E111F▲	ABR1E311F▲	ABR1E411F▲	
230–240 Vac 50/60 Hz		ABR1E111M▲	ABR1E311M▲	ABR1E411M▲	
230–240 Vac 50/60 Hz	Manual Operator	ABR1E101M▲	ABR1E301M▲	—	41.10
24 Vdc	LED Indication	ABR2E112B	—	—	
48 Vdc		ABR2E112E	—	—	
120–127 Vac 60 Hz		ABR2E116F	—	—	
230–240 Vac 50/60 Hz		ABR2E111M	—	—	
24 Vdc		—	ABR2EB312B	—	60.00

▲ RoHS Compliant

Table 23.201: Output Modules

Coil Voltage	Options	1 N.O. Contact	1 C.O. Contact	2 N.O. Contacts	1 N.C. & 1 N.O. Contact	\$ Price
		Catalog Number	Catalog Number	Catalog Number	Catalog Number	
24 Vdc	Manual Operator	ABR1S102B■	ABR1S302B■	ABR1S402B■	ABR1S602B■	41.10
24 Vac/Vdc	Manual Operator and LED Indication	ABR1S118B■	ABR1S318B■	ABR1S418B■	ABR1S618B■	55.00
48 Vac/Vdc		ABR1S118E■	ABR1S318E■	ABR1S418E■	ABR1S618E■	
110–127 Vac 50/60 Hz		ABR1S111F■	ABR1S311F■	ABR1S411F■	ABR1S611F■	
24 Vdc	LED Indication	ABR2S112B	—	—	—	31.70
48 Vdc	—	—	ABR2SB312B	—	—	63.00
24 Vdc	—	ABR2S102B	—	—	—	20.60

■ RoHS Compliant

Table 23.202: Coil Data

Relay		ABR1E					ABR2E				ABR2EB	ABR1S				ABR2S		ABR2SB
Coil Voltage U _e	V	24 Vac/Vdc	48 Vac/Vdc	127 Vdc	127 Vac	240 Vac	24 Vdc	48 Vdc	127 Vac	240 Vac	24 Vdc	24 Vdc	48 Vac/Vdc	127 Vac	24	24	24	
Maximum Voltage	V	30	53	137	140	255	28.8	56	140	264	28.8	30	30	53	140	28.8	28.8	28.8
Pick-up Voltage	V	17	38	97	93	195	16.9	37.3	97	186	16.9	17	17	38	83	16.9	16.9	16.9
Minimum Sealed Current	mA	5.2	5.4	1.5	2.4	2	2	2	2.5	2.5	2	6.6	6.2	5.4	2.4	2	2	2
Maximum Sealed Current	mA	62	36	15	8	7	19.5	11	16	15	29	62	62	36	8	28	17	29

Table 23.203: Contact Ratings

Relay		ABR1E	ABR2E	ABR2EB	ABR1S	ABR2S	ABR2SB
Rated Voltage U _e	Vac	250	115	48	250	230	48
Rated Voltage U _e	Vdc	125	100	48	125	120	48
Thermal Current I _{th}	A	2	1	0.05	5	5	0.05
Break Rating (AC14)	A	1	0.5	1	1	1	—
Break Rating (DC13)	A	1	1	1	1	1.5	—

Table 23.204: Dimensions

Modules	Approximate Dimensions (WxDxH)♦	
	In.	mm
ABR1E, ABR2EB, ABR2SB	0.69 x 2.91 x 2.78	17.5 x 74 x 70.5
ABR2E	0.37 x 2.91 x 2.78	9.5 x 74 x 70.5
ABR2S1	0.47 x 2.91 x 2.78	12 x 74 x 70.5

♦ Dimensions mounted on DIN 3 track (7.5 mm high).

Table 23.205: Approvals

ABR1E, ABR2E	UL E39281, CSA LR81630 30, IEC 947-1, CE
ABR1S, ABR2S	UL E39281, CSA LR81630 38, IEC 947-1, CE

ABR1 relays are RoHS compliant as of date code 0610.

For Mounting Track, see page 24-16



The 8501KA alternating relay is designed to minimize pump and motor wear by equalizing run time between parallel components in a multi-pump system.

The relay is controlled by an external control switch. The switch may be any type of contact closure; for example the contacts of a timing relay or the closure of a float switch. The 8501KA relay also has a toggle switch that allows the operator to lock one side of the duplex system in the "on" position.

- 12 amp Resistive Rating
- SPDT or DPDT
- Toggle switch for load control
- LED Load Indicators
- Horsepower Rated
- AC and DC Control
- UL Listed w/ Square D Socket
- Rohs Compliant

Table 23.206: Type KA — Alternating Relay

	Input Voltage	Contact Arrangement	Options	Type
	AC & DC	SPDT	LED + Toggle	8501KA81***
	AC & DC	DPDT	LED + Toggle + Cross Wired	8501KA82***
	AC & DC	DPDT (N.C.)	LED + Toggle	8501KA112***
	AC & DC	DPDT (N.O.)	LED + Toggle	8501KA112A***

Table 23.207: Relay Availability

Type	AC & DC Voltage			AC Voltage
	12	24	120	240
Voltage Code	V36	V14	V20	V24
8501KA81***	—	S	S	—
8501KA82***	—	S	S	—
8501KA112***	—	S	S	—
8501KA112A***	—	S	S	—

Note: AC Voltage is 50/60 Hz
"S" items have a 2 week lead time and no minimum order requirement. All other part numbers require a minimum order quantity of 100 and have a lead-time of 18 weeks.

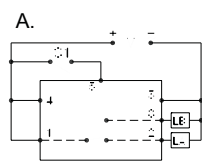
Table 23.208: Contact Ratings

Type	AC				DC	
	AC Volts	Resistive Amperes	HP	Pilot Duty	DC Volts	Resistive Amperes
8501KA81***	120	12	1/3	—	30	12
	240	12	1/2	B300		

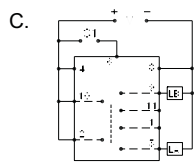
Table 23.209: Alternating Functions

Diagram	Toggle Switch Position	Detail	S1 = Control Switch 1	S2 = Control Switch 2	LA = Load 1	LB = Load 2
A, C & D	Alternate	Closing S1 alternates the loads between LA and LB.				
	Lock 1	LA is ON and LB is OFF. S1 is not used in this mode.				
	Lock 2	LA is OFF and LB is ON. S1 is not used in this mode.				
B	Alternate	Closing S1 alternates the loads between LA and LB. S2 will only control LA.				
	Lock 1	S1 will control LA and S2 will control LB				
	Lock 2	S1 will control LB and S2 will control LA.				
The cross wired option allows extra system load capacity through simultaneous operation of both motors when needed (LA and LB energize simultaneously when both S1 and S2 are closed—relay contacts are not isolated)						
ALL	Input voltage must be applied at all times for proper alternation. Use of a solid state control switch for S1 or S2 may not initiate alternation correctly. S1 or S2 voltage must be from the same supply as the unit's input voltage (see wiring diagrams). Loss of input voltage resets the unit; LA becomes the lead load for the next operation.					

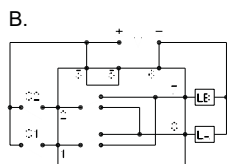
Wiring Diagrams and Dimensions



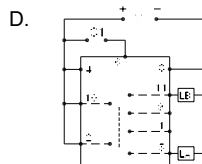
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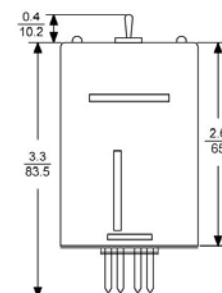
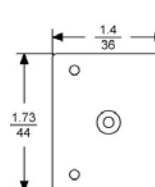
Socket = 8501NR61 or NR62



Socket = 8501NR51 or NR52



Socket = 8501NR61 or NR62



Approvals



File Class E78351 NLDX2



File Class 242675 3211-07



