



LOCK-OUT RELAYS

By definition the Lock-Out Relay plays a pivotal role in the most crucial utility applications. In an emergency, Lock-Out Relay performance can spell the difference between a routine outage and the destruction of expensive equipment. Protect your system and safeguard your personnel with the industry standard for safety and reliability. There's NEVER A DOUBT with the Electroswitch family of Lock-Out Relays.

Note: The Series 24 LOR Class 1E utility products comply with the following Nuclear Standards: ANSI/IEEE C37.90, ANSI/IEEE C37.90.01, ANSI/IEEE C37.98, ANSI/IEEE C37.105, ANSI/IEEE 323, ANSI/IEEE 344, ANSI/ASME NQA -1.

The Series 24 Lock-Out Relays

HIGH QUALITY

- Designed and manufactured to the highest standards in the industry
- Qualified to UL, CSA

VERSATILITY

- 9 Different trip coils to choose from
- Up to 20 N/O and 20 N/C contacts in one standard LOR.
- Available with electric reset capability
- Available with built-in coil monitoring and fault signal detection/indication

HIGH SPEED

- Transition times of less than 8mSec (less than 1/2 cycle) are standard

SAFETY

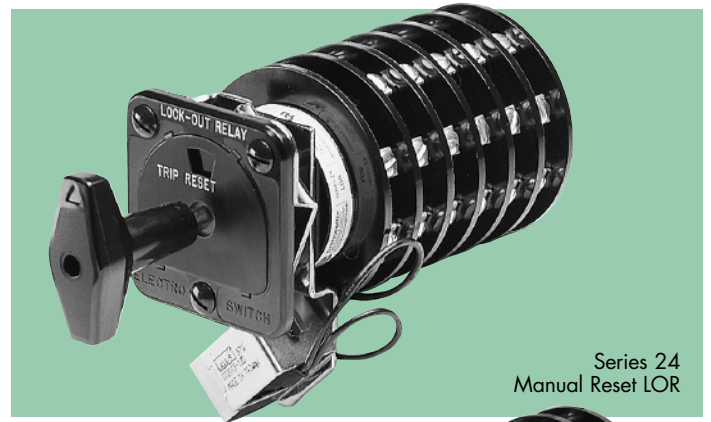
- Series 24 - 1E Nuclear Qualified, UL, CSA

AVAILABILITY

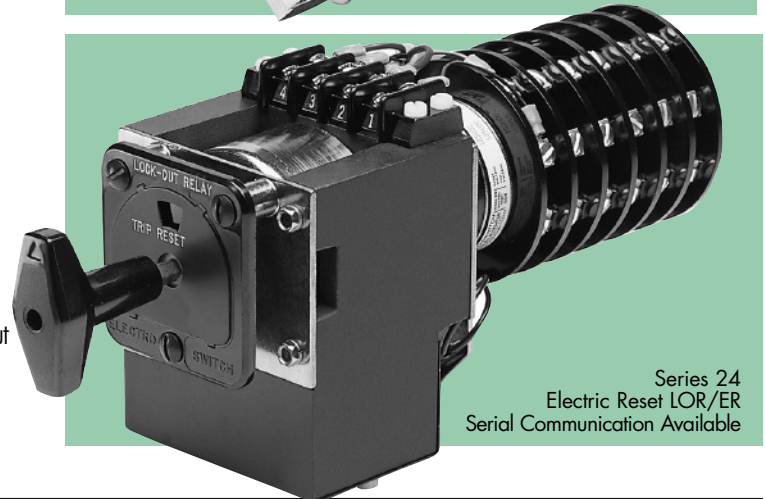
- Virtually all Series 24 Manual Reset LORs are available from stock for immediate delivery
- The most popular Electric Reset LOR/ERs are also in stock

SERVICE

- The Electroswitch team of Customer Service and Applications Professionals stand behind every Electroswitch product. Let us put over 50 years of know-how to work for you!



Series 24
Manual Reset LOR

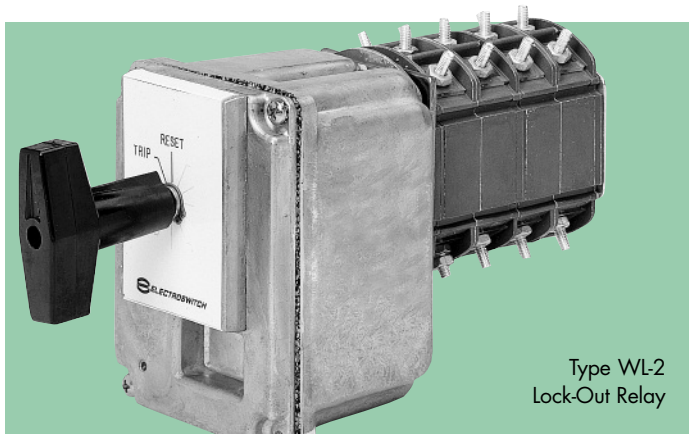


Series 24
Electric Reset LOR/ER
Serial Communication Available

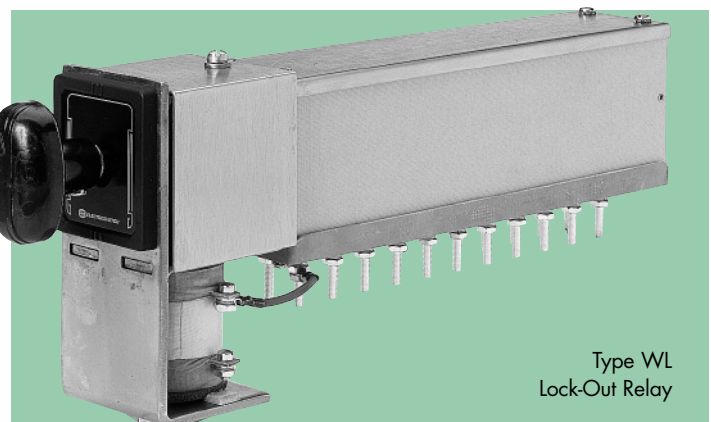
Type WL-2 and WL Lock-Out Relays

Since 1988 Electroswitch has been the source for the Type WL-2 and WL Lock-Out Relays. These rugged, dependable devices, designed and originally manufactured by Westinghouse, have stood the test of time in utility and industrial applications worldwide. Now they are

available for either new applications or replacement, backed by the industry leading Electroswitch commitment to Quality and Service.



Type WL-2
Lock-Out Relay



Type WL
Lock-Out Relay



SERIES 24 LOR

With Lighted Target Nameplate

Lighted Target Nameplates Save Panel Space and Reduce Costs

The Electroswitch Series 24 Lock-Out Relay, the Utility Industry Standard for Quality and Reliability, is now available with:

- Integral Coil Monitoring with LED Display and SCADA Feedback.
- LED Indication of Existing Fault Signal.

The Lock-Out Relay fills one of the most critical needs in the utility industry protection scheme. A fast, reliable Lock-Out Relay can mean the difference between a routine fault clearance and a disastrous loss of service, maintenance time and expensive equipment damage.

To assure that this crucial device is functioning and ready to operate, many utilities install pilot lamps on the panel to monitor the integrity of the LOR coil. This can involve expensive inter-wiring and use precious panel space. Because of this, Electroswitch has integrated these monitoring functions and more on a new electronic nameplate for the LOR.

Features

- Cost-effective Elimination of Additional Wiring and Lamps Needed to Perform this Function. Just Attach the Pre-wired Leads per the Enclosed Instructions.
- Save Valuable Panel Space. The Entire Package Fits in the Same Space as a Standard Mechanical LOR Nameplate.
- Both LOCAL (LED) and REMOTE (SCADA Signal) Indication is Provided; Reliable Protection for Unmanned Stations.
- Green LED indicates LOR Coil is Intact and Ready to Operate.
- Red LED Warns Against Resetting into an Existing Fault Signal and Possibly Damaging LOR Coils.
- Bright LEDs Visible Through 135°, > 11 Year Life (Typical).
- LEDs are Field Replaceable From the Front of Panel.
- LEDs are Available in Different Colors (Red, Amber, Green, Blue, and White).
- DC Unit Covers IEEE 24VDC and 48V/125V Ranges (38 to 140VDC).
- The Monitoring Package can be Implemented with Little or no Operator Training.
- A Retrofit Kit is Available to Provide this Enhanced Protection Package to Series 24 Lock-Out Relays Already in the Field.
- This Product is Designed and Manufactured by Electroswitch to Work Flawlessly with the Ultra-reliable, High Speed Series 24 Lock-Out Relay.
- Optional Push-to-Test.



For Theory of Operation
See www.Electroswitch.com

Benefits

- Provides Local and Remote (SCADA) Annunciation of an LOR Trip Coil Failure.
- Provides Clear Warning Against Closing into a Fault.
- Saves Panel Space.
- Reduces Purchase and Installation Cost.
- Easy to Use... No Special Operator Training.

How it Works

When the LOR is in the RESET position, one high visibility LED on the nameplate glows a continuous GREEN, giving local indication that coil continuity is intact and the Lock-Out Relay is ready to respond to a trip signal. Should the coil fail, the LED extinguishes and a built-in solid state contact closes, sending a warning signal to SCADA.

In the TRIP position, the red LED functions as a Trip Signal Monitor. As long as the Trip Signal is present on the LOR coil, the LED glows a continuous RED as a warning against resetting into a fault and possibly damaging the LOR coil. Other LED colors available (Amber, Blue and White).

The new design also retains the proven mechanical orange/black flag to indicate a trip. Contact your local Electroswitch Representative or call us directly for more details on how we can put the Electroswitch tradition of value and innovation to work for you.

Ordering Information

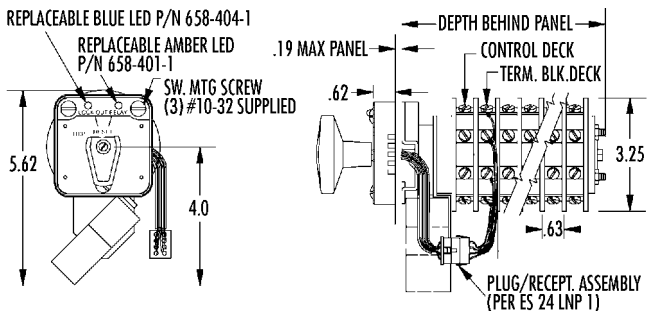
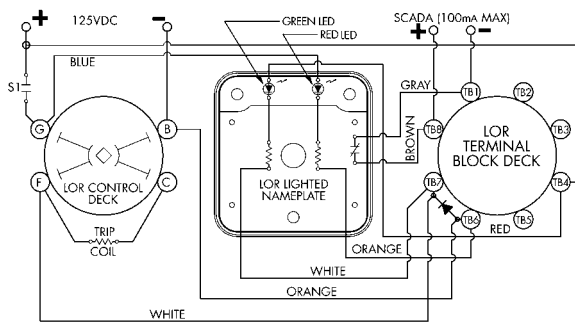
Part Numbers for the Series 24 LORs with Lighted Target Nameplate are fairly simple. Find the part number of the product you wish to order in the Electroswitch catalog, then simply add a two letter code after the second digit in its part number. The first letter of the two letter code will always be "P" indicating a Lighted Target Nameplate. The second letter of the code will change depending on the other options as follows.

A = One LED, 48/125VDC **B** = Two LEDs, 48/125VDC **K** = Two LEDs, 24VDC
Please Specify LED Colors. **Color Options** - Red, Green, Amber, Blue and White.

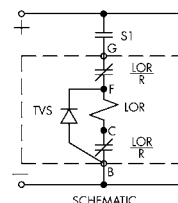
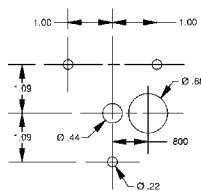
Example:

A Series 24 Manual Reset Lock-Out Relay with one deck and Trip Coil 'D' is part number **7801D**. The same Lock-Out Relay with a Lighted Target Nameplate, Two LEDs, and 48/125VDC LED voltage would become part number **78PB01D**.

Consult factory for 24VDC, 250VDC, and retrofit kits.



PANEL DRILLING DIMENSIONS



Depth Behind Panel

Decks	Depth
1	4.28
2	5.03
3	5.40
4	6.15
5	6.90
6	8.15
7	8.78
8	9.15
10	10.28

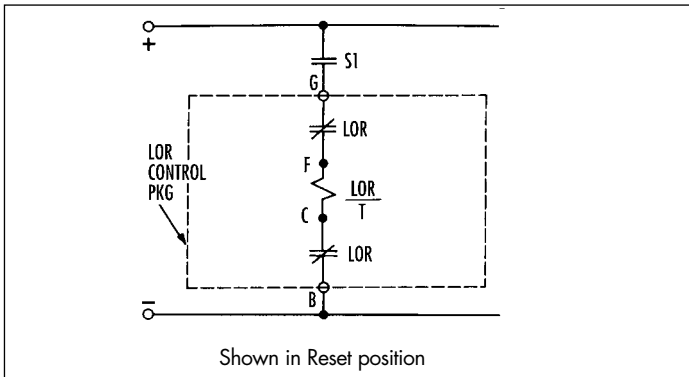


SERIES 24 LOCK-OUT RELAYS

OPTIONS

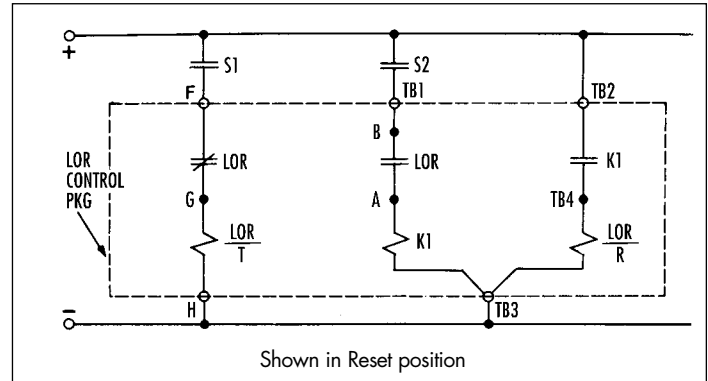
Manual Reset LOR

Closing S1 energizes the linear solenoid $\frac{LOR}{T}$ which releases the trigger mechanism and causes the LOR to snap to the Trip position. The control deck blades rotate to interrupt current flow to the coil.



Electric Reset LOR

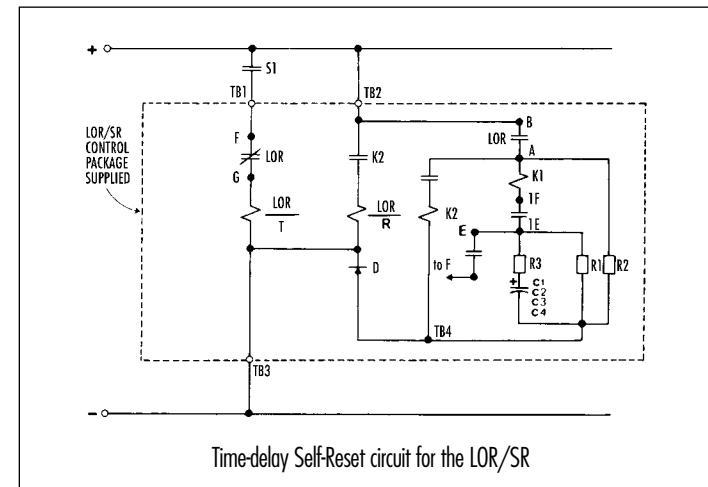
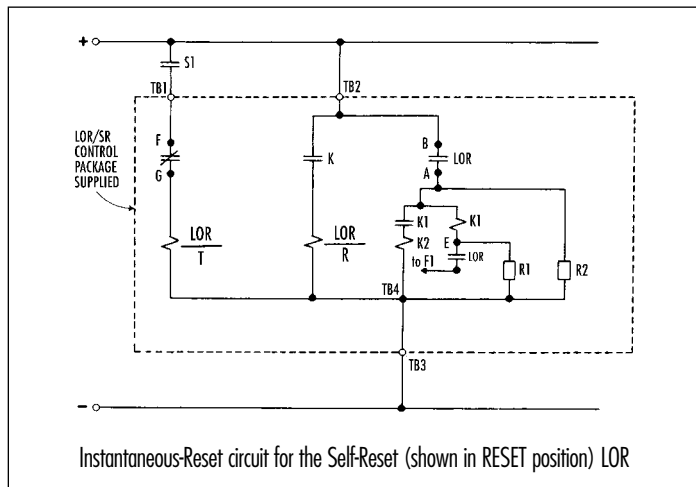
The Electric Reset LOR is tripped by the same method as the Manual Reset LOR. In the Trip position, closing S2 operates relay K1 which closes relay contact K1. The current then flows through solenoid $\frac{LOR}{R}$ which rotates the LOR/ER back into the reset position, while at the same time terminals A-B open to interrupt the K1 relay. Transition time is 80mSec.



Self Reset LOR

The Self Reset LOR is a special Electric Reset LOR which can be both TRIPPED and RESET from a single command contact. In both diagrams below, closing S1 will cause the LOR/SR to snap to the TRIP position. The unit will remain in TRIP as long as S1 remains closed. When S1 is opened, K1 is picked up and the LOR/SR returns to the reset position. The Instant Reset

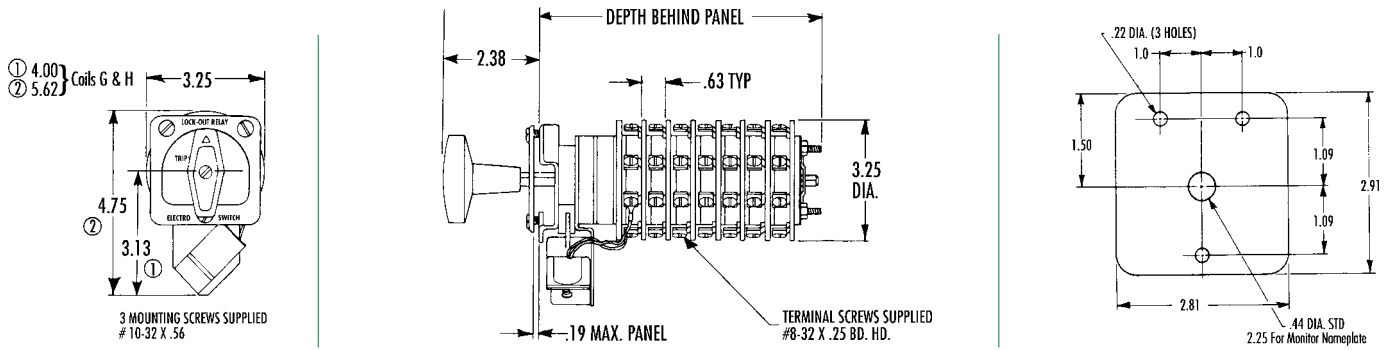
LOR/SR will reset itself within 80mS of the opening of S1. The Time Delay LOR/SR has factory preset circuitry which causes a time delay of .3 to .6 seconds from the time S1 opens until the LOR/SR contacts reclose.



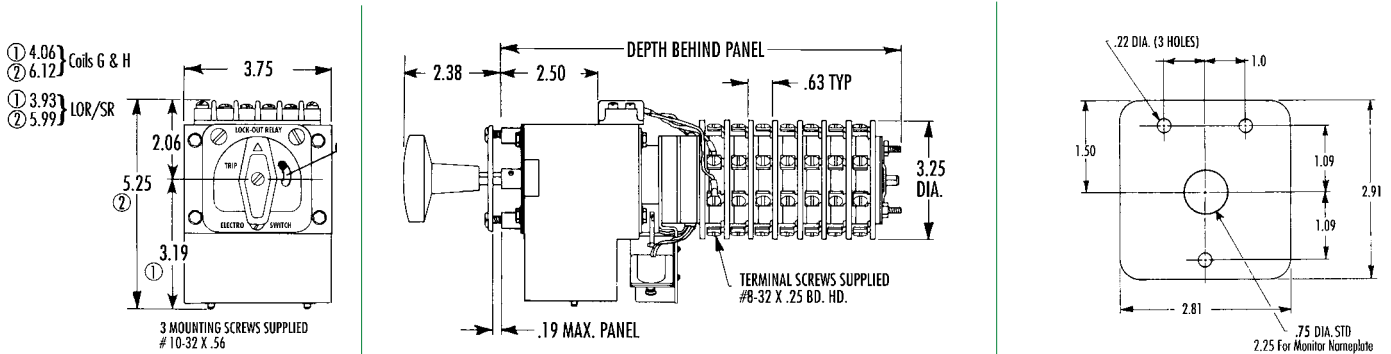


SERIES 24 LOCK-OUT RELAYS

SERIES 24 MANUAL RESET LOR



SERIES 24 LOR/ER, LOR/SR ELECTRIC RESET & SELF-RESET



DEPTH BEHIND PANEL

NO. OF DECKS	MAN. RESET LOR	HI SPEED TRIP LOR/ER	LOR/ER AND INSTANT LOR/SR TIME DELAY	RESET LOR/SR
1	3.63	—	—	—
2	4.38	—	—	—
3	4.75	8.00	8.00	8.63
4	5.50	—	—	—
5	6.25	9.75	9.75	10.38
6	7.50	—	—	—
7	8.13	—	—	11.63
8	8.50	11.63	11.63	—
10	9.63	12.90	—	—

COIL BURDEN DATA

COIL	COIL CIRCUIT VOLTS	TRIP COIL		RESET COIL	
		COIL CIRCUIT DC OHMS @ 25°C	BURDEN (AMPS) AT RATED VOLTAGE	COIL CIRCUIT DC OHMS @ 25°C	BURDEN (AMPS) AT RATED VOLTAGE
A	24VDC	3.3	7.3	.7	33.8
B	24VDC	7.7	3.1	—	—
C	48VDC	13.0	3.7	3.0	15.9
D	125VDC	27.0	4.6	12.4	10.1
E	125VDC	50.0	2.5	—	—
F	250VDC	104.0	2.4	80.6	3.1
G	125VDC	27.0	4.6	—	—
H	250VDC	104.0	2.4	—	—
K	125VDC	27.0	4.6	—	—

TRIP COIL VOLTAGE DATA

Coil	Nominal Voltage	Threshold Voltage	Operating Range
A	24VDC	6VDC	10 - 40VDC
B	24VDC	9VDC	18 - 50VDC
C	48VDC	12VDC	24 - 70VDC
D	125VDC 120VAC	16VDC 20VAC	30 - 140VDC 30 - 140VAC
E	125VDC	23VDC	45 - 140VDC
F	250VDC 240VAC	33VDC 40VAC	70 - 280VDC 60 - 280VAC
G	125VDC	70VDC	90 - 140VDC
H	250VDC	140VDC	180 - 280VDC
K	125VDC	16VDC	100-150VDC

RESET COIL VOLTAGE DATA

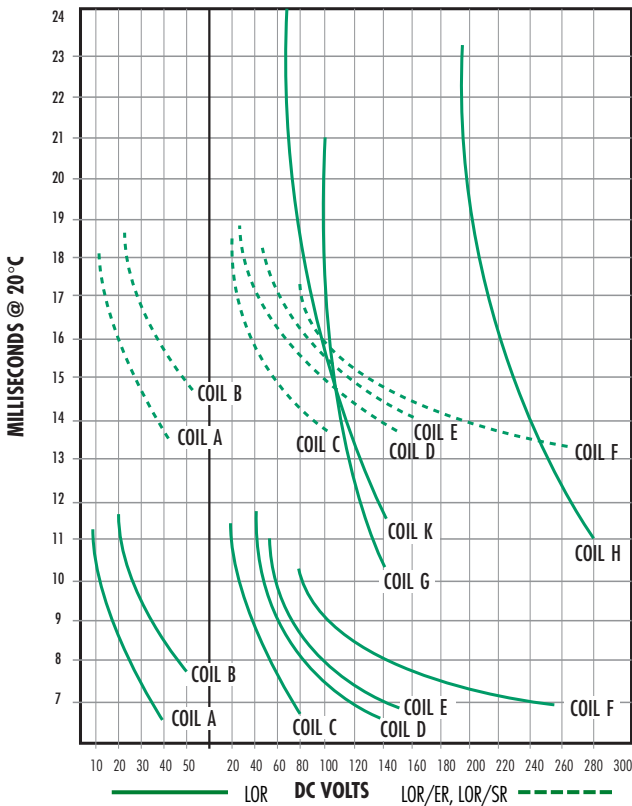
Coil	Nominal Voltage	Normal Voltage Operating Range
A	24VDC	19.2 to 28VDC
C	48VDC	38.4 to 57.6VDC
D	125VDC	100 to 150VDC
F	250VDC	200 to 275VDC



SERIES 24 LOCK-OUT RELAYS

LOR RESPONSE TIMES*

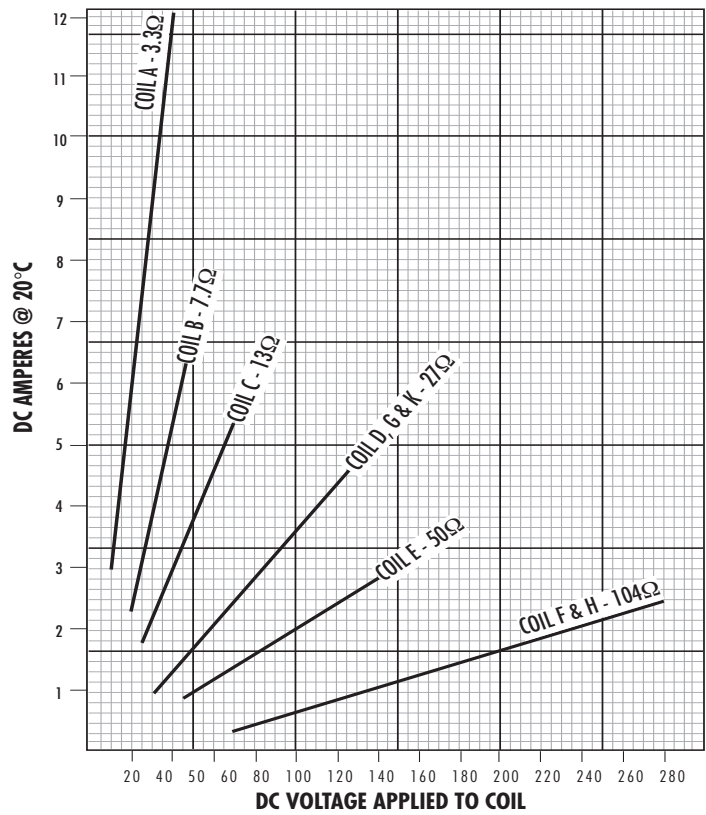
Time to Close Normally Open Contacts



*For AC Applications refer to Trip Coil Voltage Data on page 47

LOR CURRENT

Voltage Characteristics Of The Trip Coils



ORDERING INFORMATION

Selecting a Series 24 Lock-Out Relay:

1. Select type of LOR (Manual Reset, Electric Reset or Self Reset).
2. Fill out appropriate ordering matrix.
3. When selecting Trip and Reset Coils use information from tables below.
4. Contact factory for custom features and nonstandard configurations.

Manual Reset LOR

78	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Model	No. of Decks	Trip Coil	
78 = LOR	03 = 3 08 = 8	(See Page 47)	
	05 = 5 10 = 10	A = Coil A	D = Coil D G = Coil G
		B = Coil B	E = Coil E H = Coil H
		C = Coil C	F = Coil F K = Coil K

Electric Reset LOR/ER

78	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Model				Reset Coil
78 = LOR				A = 24VDC D = 125VDC
Configuration				C = 48VDC F = 250VDC
2 = Std. Trip LOR/ER				
3 = Hi-Spd. Trip LOR/ER				
	No. of Decks			Trip Coil
	3 = 3			(See Page 47)
	5 = 5			A = Coil A F = Coil F
	8 = 8			B = Coil B G = Coil G
	(10 Consult Factory)			C = Coil C H = Coil H
				D = Coil D K = Coil K
				E = Coil E

Self Reset LOR/SR

78	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D
Model				Reset Coil
78 = LOR				D = 125VDC
Configuration				Trip Coil
4 = Std. Trip, Instant Reset, LOR/SR				D, E, F, G Available for Std. Trip LOR/SR
5 = Std. Trip, Time Delay Reset, LOR/SR				D, E, F Available for Hi-Spd. Trip LOR/SR
6 = Hi-Spd. Trip, Instant Reset, LOR/SR				
7 = Hi-Spd. Trip, Time Delay Reset, LOR/SR				
				No. of Decks
				3 = 3
				5 = 5
				7 = 7 (time delay units only)
				8 = 8 (instant reset units only)



TYPE WL-2 LOCK-OUT RELAYS

The Type WL-2 Lock-Out Relay was designed and manufactured by Westinghouse to provide dependable tripping in a variety of protection schemes. Since acquiring the line in 1988, Electroswitch has supplied hundreds of these rugged, reliable relays for both new applications as well as replacement units for the enormous installed base of WL-2s all over the world.

Features

- Low Current Magnetic Trip Mechanism
- Both Handle Trip and Non-Handle Trip Versions Available
- The Electroswitch Tradition of Quality, Value and Customer Service

How to Order

Contact the factory with the part number for the WL-2 Lock-Out Relay you are replacing or provide us with the following information:

- Number of N/O (Type A) and N/C (Type B) contacts required
- The required control voltage
- Whether the unit is to be Non-Handle Trip (standard) or Handle Trip (optional)

We will promptly respond with an approval drawing of the appropriate WL-2 Lock-Out Relay as well as any further technical information you may require.

Contact Ratings

Voltage	SINGLE CONTACT								TWO CONTACTS IN SERIES							
	INDUCTIVE AMPERES							RESISTIVE AMPS	INDUCTIVE AMPERES							RESISTIVE AMPS
	4.5mH	12mH	31mH	63mH	130mH	243mH	4.5mH		12mH	31mH	63mH	130mH	243mH			
125VDC	4.65	3.67	2.85	2.1	1.53	0.9	-	7.55	27.0	14.75	7.7	4.85	2.92	1.9	-	7.8
250VDC	1.6	1.6	1.0	1.0	0.98	0.78	-	1.6	6.4	5.0	3.85	3.1	2.4	1.6	-	6.7
500VDC	-	-	-	-	-	-	-	-	1.5	1.7	1.5	1.35	1.15	0.98	-	1.7
120VAC	-	-	-	-	-	-	7.53	7.95	-	-	-	-	-	-	68.0	-
240VAC	-	-	-	-	-	-	1.16	1.95	-	-	-	-	-	-	9.1	9.0
480VAC	-	-	-	-	-	-	.54	0.9	-	-	-	-	-	-	1.5	1.55

TYPE WL-2 LOCK-OUT RELAY

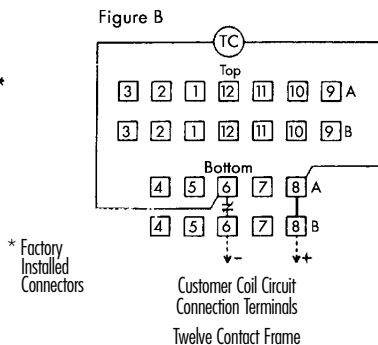
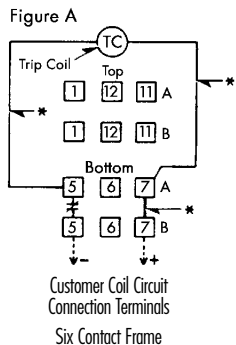
NOMINAL OPERATING VOLTAGE	AVERAGE COIL CURRENT	INDUCTANCE (H)	RESISTANCE (Ω)	IMPEDANCE (Ω)	MINIMUM PICK UP	OPERATING TIME AVERAGE	
						CYCLES	mSEC
24VDC	3.6A	.0029	6.6		19VDC	1.06	17.7
48VDC	7.3A	.0029	6.6		19VDC	.96	16.0
125VDC	1.2A	.030	104		90VDC	1.05	17.5
250VDC	2.4A	.030	104		90VDC	1.01	16.8
120VAC	1.4A	.030		85	90VAC	1.58	26.3
120VAC RECTIFIED	1.4A	.030		85	90VAC	1.08	18.0
240VAC	3.0A	.030		80	90VAC	1.54	25.7
240VAC RECTIFIED	3.0A	.030		80	90VAC	1.05	17.5
480VAC	6.0A	.030		80	90VAC	1.50	25.0



Switch Style Numbers					Handle Trip 24-48V Dc	120V-240V 60Hz with Rectifier	120V-240V 60Hz 125-250V Dc	480V 600Y	Non-Handle Trip 24-48V Dc	120-240V 60Hz with Rectifier	120V-240V 60Hz 125-250V Dc	480V 600Y
Fig.	No. of Stages	Contacts Available NO	No. of Paired* NC Contacts		Six (6) Contact Frame WL-2 Switches							
1	1	2	2	1	796A201G01	796A201G03	796A201G05	796A201G07	796A201G02	796A201G04	796A201G06	796A201G08
2	2	4	6	3	796A205G01	796A205G03	796A205G05	796A205G07	796A205G02	796A205G04	796A205G06	796A205G08
3	2	6	4	3	796A204G01	796A204G03	796A204G05	796A204G07	796A204G02	796A204G04	796A204G06	796A204G08
4	3	6	10	5	796A210G01	796A210G03	796A210G05	796A210G07	796A210G02	796A210G04	796A210G06	796A210G08
5	3	8	8	5	796A208G01	796A208G03	796A208G05	796A208G07	796A208G02	796A208G04	796A208G06	796A208G08
6	3	10	6	5	796A209G01	796A209G03	796A209G05	796A209G07	796A209G02	796A209G04	796A209G06	796A209G08
7	4	8	14	7	796A212G01	796A212G03	796A212G05	796A212G07	796A212G02	796A212G04	796A212G06	796A212G08
8	4	10	12	7	796A202G01	796A202G03	796A202G05	796A202G07	796A202G02	796A202G04	796A202G06	796A202G08
9	4	12	10	7	796A213G01	796A213G03	796A213G05	796A213G07	796A213G02	796A213G04	796A213G06	796A213G08
10	4	14	8	7	796A211G01	796A211G03	796A211G05	796A211G07	796A211G02	796A211G04	796A211G06	796A211G08
11	5	10	18	9	796A215G01	796A215G03	796A215G05	796A215G07	796A215G02	796A215G04	796A215G06	796A215G08
12	5	12	16	9	796A225G01	796A225G03	796A225G05	796A225G07	796A225G02	796A225G04	796A225G06	796A225G08
13	5	14	14	9	796A200G01	796A200G03	796A200G05	796A200G07	796A200G02	796A200G04	796A200G06	796A200G08
14	5	16	12	9	796A224G01	796A224G03	796A224G05	796A224G07	796A224G02	796A224G04	796A224G06	796A224G08
15	5	18	10	9	796A214G01	796A214G03	796A214G05	796A214G07	796A214G02	796A214G04	796A214G06	796A214G08
16	6	12	22	11	796A217G01	796A217G03	796A217G05	796A217G07	796A217G02	796A217G04	796A217G06	796A217G08
17	6	14	20	11	796A228G01	796A228G03	796A228G05	796A228G07	796A228G02	796A228G04	796A228G06	796A228G08
18	6	16	18	11	796A227G01	796A227G03	796A227G05	796A227G07	796A227G02	796A227G04	796A227G06	796A227G08
19	6	18	16	11	796A218G01	796A218G03	796A218G05	796A218G07	796A218G02	796A218G04	796A218G06	796A218G08
20	6	20	14	11	796A226G01	796A226G03	796A226G05	796A226G07	796A226G02	796A226G04	796A226G06	796A226G08
21	6	22	12	11	796A216G01	796A216G03	796A216G05	796A216G07	796A216G02	796A216G04	796A216G06	796A216G08
22	7	14	26	13	796A220G01	796A220G03	796A220G05	796A220G07	796A220G02	796A220G04	796A220G06	796A220G08
23	7	16	24	13	796A243G01	796A243G03	796A243G05	796A243G07	796A243G02	796A243G04	796A243G06	796A243G08
24	7	18	22	13	796A242G01	796A242G03	796A242G05	796A242G07	796A242G02	796A242G04	796A242G06	796A242G08
25	7	20	20	13	796A241G01	796A241G03	796A241G05	796A241G07	796A241G02	796A241G04	796A241G06	796A241G08
26	7	22	18	13	796A230G01	796A230G03	796A230G05	796A230G07	796A230G02	796A230G04	796A230G06	796A230G08
27	7	24	16	13	796A229G01	796A229G03	796A229G05	796A229G07	796A229G02	796A229G04	796A229G06	796A229G08
28	7	26	14	13	796A219G01	796A219G03	796A219G05	796A219G07	796A219G02	796A219G04	796A219G06	796A219G08
29	8	16	30	15	796A222G01	796A222G03	796A222G05	796A222G07	796A222G02	796A222G04	796A222G06	796A222G08
30	8	18	28	15	796A248G01	796A248G03	796A248G05	796A248G07	796A248G02	796A248G04	796A248G06	796A248G08
31	8	20	26	15	796A247G01	796A247G03	796A247G05	796A247G07	796A247G02	796A247G04	796A247G06	796A247G08
32	8	22	24	15	796A246G01	796A246G03	796A246G05	796A246G07	796A246G02	796A246G04	796A246G06	796A246G08
33	8	24	22	15	796A223G01	796A223G03	796A223G05	796A223G07	796A223G02	796A223G04	796A223G06	796A223G08
34	8	26	20	15	796A245G01	796A245G03	796A245G05	796A245G07	796A245G02	796A245G04	796A245G06	796A245G08
35	8	28	18	15	796A244G01	796A244G03	796A244G05	796A244G07	796A244G02	796A244G04	796A244G06	796A244G08
36	8	30	16	15	796A221G01	796A221G03	796A221G05	796A221G07	796A221G02	796A221G04	796A221G06	796A221G08
Wiring Diagram — Figures					A	A	A	C	A	A	C	
					Twelve (12) Contact Frame WL-2 Switches							
37	1	5	4	4	796A231G01	796A231G03	796A231G05	796A231G07	796A231G02	796A231G04	796A231G06	796A231G08
33	2	11	10	10	796A232G01	796A232G03	796A232G05	796A232G07	796A232G02	796A232G04	796A232G06	796A232G08
39	3	17	16	16	796A233G01	796A233G03	796A233G05	796A233G07	796A233G02	796A233G04	796A233G06	796A233G08
40	4	23	22	22	796A234G01	796A234G03	796A234G05	796A234G07	796A234G02	796A234G04	796A234G06	796A234G08
41	5	29	28	28	796A235G01	796A235G03	796A235G05	796A235G07	796A235G02	796A235G04	796A235G06	796A235G08
42	6	35	34	34	796A236G01	796A236G03	796A236G05	796A236G07	796A236G02	796A236G04	796A236G06	796A236G08
Wiring Diagram — Figures					B	B	B	D	B	B	B	D

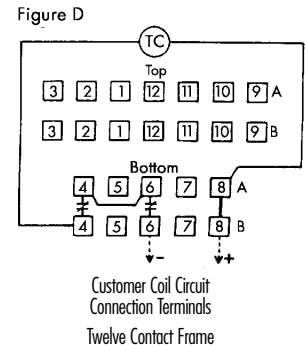
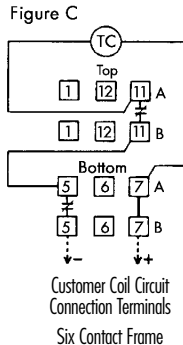
* A pair of contacts are those having adjacent stationary terminals served by the same moving contact. When the interrupted current of a normal closed contact exceeds the rating listed for single contacts, the adjacent "make" contacts should not be used. This column indicates the number of these pairs per switch.

Wiring Diagrams — 24 thru 250 Volts



* Factory Installed Connectors

480 Volts — Two Coil Cutoff Contacts Wired in Circuit





TYPE WL LOCK-OUT RELAY

The Type WL Lock-Out Relay product line was also acquired from Westinghouse in 1988. Countless Type Ws are still providing reliable protection in older facilities decades after they were first installed. Electroswitch is pleased to announce that we can provide replacement

units for most of the Ws still in service. Please contact us with the WL part number of the switch you are replacing and we will be happy to respond with an approval drawing or a suggested replacement if your WL cannot be duplicated.

TABLE I: WL SWITCH STYLES (less coils)

No. of Stages	Style Numbers Without Coils				Rotor Contacts										
	Modern Handle		Heavy-Duty Handle		A = Contact Open in Reset. Closed in Trip Position. N.O. B = Contact Closed in Reset. Open in Trip Position. N.C.										
	Non-Trip by Handle	Trip by Handle	Non-Trip by Handle	Trip by Handle	Coil	1-2 ①	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20
2	422D949G01	422D950G01	422D949G08	422D950G08	B	A	A								
3	422D949G02	422D950G02	422D949G09	422D950G09	B	A	A	A							
4	422D949G03	422D950G03	422D949G10	422D950G10	B	A	A	A	A						
5	422D949G04	422D950G04	422D949G11	422D950G11	B	A	A	A	A	A					
6	422D949G05	422D950G05	422D949G12	422D950G12	B	A	A	A	A	A	A				
8	422D949G06	422D950G06	422D949G13	422D950G13	B	A	A	A	A	A	A	A			
10	422D949G07	422D950G07	422D949G14	422D950G14	B	A	A	A	A	A	A	A	A		A
2	422D949G15	422D950G15	422D949G41	422D950G41	B	B	A								
3	422D949G16	422D950G16	422D949G42	422D950G42	B	B	A	A							
4	422D949G17	422D950G17	422D949G43	422D950G43	B	B	A	A	A						
5	422D949G18	422D950G18	422D949G44	422D950G44	B	B	A	A	A	A					
6	422D949G19	422D950G19	422D949G45	422D950G45	B	B	A	A	A	A	A				
8	422D949G20	422D950G20	422D949G46	422D950G46	B	B	A	A	A	A	A	A			
10	422D949G21	422D950G21	422D949G47	422D950G47	B	B	A	A	A	A	A	A	A		A
3	422D949G22	422D950G22	422D949G48	422D950G48	B	B	B	A							
4	422D949G23	422D950G23	422D949G49	422D950G49	B	B	B	A	A						
5	422D949G24	422D950G24	422D949G50	422D950G50	B	B	B	A	A	A					
6	422D949G25	422D950G25	422D949G51	422D950G51	B	B	B	A	A	A	A				
8	422D949G26	422D950G26	422D949G52	422D950G52	B	B	B	A	A	A	A	A			
10	422D949G27	422D950G27	422D949G53	422D950G53	B	B	B	A	A	A	A	A	A		A
4	422D949G28	422D950G28	422D949G54	422D950G54	B	B	B	B	A						
5	422D949G29	422D950G29	422D949G55	422D950G55	B	B	B	B	A	A					
6	422D949G30	422D950G30	422D949G56	422D950G56	B	B	B	B	A	A	A				
8	422D949G31	422D950G31	422D949G57	422D950G57	B	B	B	B	A	A	A	A			
10	422D949G32	422D950G32	422D949G58	422D950G58	B	B	B	B	A	A	A	A	A		A
5	422D949G33	422D950G33	422D949G59	422D950G59	B	B	B	B	B	A					
6	422D949G34	422D950G34	422D949G60	422D950G60	B	B	B	B	B	A	A				
8	422D949G35	422D950G35	422D949G61	422D950G61	B	B	B	B	B	A	A	A			
10	422D949G36	422D950G36	422D949G62	422D950G62	B	B	B	B	B	A	A	A	A		A
6	422D949G37	422D950G37	422D949G63	422D950G63	B	B	B	B	B	B	A				
8	422D949G38	422D950G38	422D949G64	422D950G64	B	B	B	B	B	B	A	A			
10	422D949G39	422D950G39	422D949G65	422D950G65	B	B	B	B	B	B	A	A	A		A

① On 250 volts dc control circuits this contact must be connected in series with coil contact.

TABLE II: COIL OPERATING CHARACTERISTICS

Direct Current				Alternating Current - 60 Cycles							
Coil Code	Coil Style Number	Ohms Resistance	Minimum Trip DC Volts	Control Voltage-DC				Ohms impedance (not tripped)	Minimum Trip AC Volts	Control Voltage-AC	
				24	48	125	250			110	220
				Time in Milliseconds							
A	701B500G01	.73	8.7	*16				6.2	50	*16	
B	701B501G01	2.68	17.1		16			21.0	95	19	16
C	701B502G01	4.05	21.4		*17			30.0	115		16
D	701B503G01	6.2	27.0		19	13		43.0	135		*17
E	701B504G01	8.6	31.0			14		52.0	155		18
F	701B505G01	12.2	33.0			14		97.0	200		
G	701B506G01	18.5	44.0			16		140.0	243		
H	701B507G01	28.0	54.0			*17	14	208.0	297		
I	701B508G01	45.5	70.0			19	15				
J	701B509G01	59.0	84.0				*16				
K	701B510G01	104.0	111.0				17				

Coil part numbers must be specified at the time of order. Those marked with an asterisk (*) are considered to be standard for the operating voltage indicated. These coils should not be used for 5 ampere series trip operation from secondary of current transformers, as the burden is too great. Time is in milliseconds. Time may vary slightly for AC tripping, depending on point of AC cycles at which the coil is energized.