



LIGHTING CONTROLS

FUNCTIONAL DEVICES EMERGENCY BYPASS / SHUNT RELAYS

ESR SERIES

Functional Devices, Inc. **RIB**



ESRU1C



DESCRIPTION

These Functional Devices ESR Series UL924 emergency lighting shunt relays, or bypass relays, are designed for applications that require an emergency load, such as exit lighting or any other emergency lighting, to be switched on during a loss of normal power. The economically priced relays are available prepackaged in their own Nema 1 enclosure or in panel versions to be installed inside an existing enclosure. Emergency lighting relays can be ordered with a standard two-position on/auto override switch. The override switch models can be used for testing purposes to verify your emergency load is being switched properly.

APPLICATION

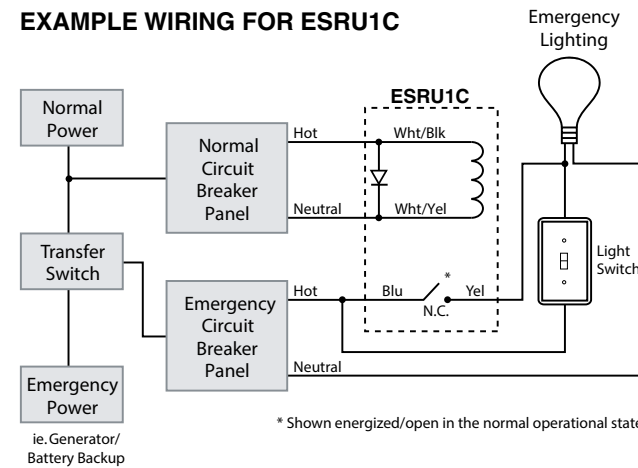
When normal power is present, the ESR relay coil is energized and the emergency panel is fed from normal power. The lighting load can be switched on/off using an individual wall switch. The red LED shows the normal utility power is connected correctly.

When normal power drops out, the ESR coil is deactivated and N/C contact falls closed. The automatic transfer switch changes over to backup (generator) power, and the lighting load is illuminated regardless of the position of the wall switch.

Models that have the optional override test switches are set in the auto position from the factory. This allows emergency power to be switched to the load. To test field wiring connections at the time of installation, the override test switch can be changed to the "closed" position (illuminating emergency lighting), and then placed back to the "auto" position after the test.

APPLICATION EXAMPLE WIRING

EXAMPLE WIRING FOR ESRU1C



* Shown energized/open in the normal operational state

SPECIFICATIONS

Supply Voltage	24 VAC/VDC, 120 VAC, 208-277 VAC, (See ordering Table) 2-17 VA depending on unit, 50/60 Hz
Contact Type	SPST-N.C., SPDT or SPDT (See ordering Table)
Contact Rating	(See ordering Table)
Status Contact	None
Manual Override	Yes on some units (See ordering Table)
Coil Ratings	Electrically held emergency coil, See ordering for mA
Energize	Greater than ≈80% of supply voltage (per order)
Drop-out	Less than ≈30% of supply voltage (per order)
Cycle Endurance	10M cycles
Visual Indication	Relay status LED, on = activated
Short Circuit Current (SCCR)	5,000A
Operating Temperature	-30° to 140°F (-34° to 60°C)
Operating Humidity	5% to 95% RH non-condensing

Wiring Terminations	Pigtails, 16", 18 AWG for coils, 12 AWG for 20A contacts Terminals, 24 to 12 AWG
Mounting Enclosure Rating	Threaded Hub mount for 1/2" knockout NEMA 1, Plenum Rated UL94-5V
Dimensions	
Size A	2.3"H x 3.2"W x 1.8"D (5.8 x 8.1 x 4.6 cm)
Size B	4"H x 4"W x 1.8"D (10.2 x 10.2 x 4.6 cm)
Size J	1.7"H x 2.8"W x 1.5"D (4.3 x 7.1 x 3.8 cm)
Size M	1.6"H x 4"W x 1.8"D (4.1 x 10.2 x 4.6 cm)
Size N	1.7"H x 2.8"W x 1.80"D (4.3 x 7.1 x 4.6 cm)
Size O	1.3"H x 4"W x 1.80"D (3.3 x 10.2 x 4.6 cm)
Weight	(See ordering table)
Approvals	UL Listed, UL924, C-UL, CE
Warranty	5 years

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WIRING

Fig. 1

ESR2402B, U1C, H1C, 2401B, MU1C, MNU1C, 2402B

Fig. 2

ESRH1S-NC, ESR2401SB-NC, ESR2402SB-NC, ESRU1S-NC

Color Coding Of Wires

White/Yellow	Common	Coil
White/Blue	24 VAC/VDC	Coil (Low V.)
White/Black	120 VAC	Coil (High V.)
White/Brown	208-277 VAC	Coil (High V.)
Blue	Normally Closed	Contact
Yellow	Common	Contact
Orange	Normally Open	Contact

Fig. 3

ESR01P, ESR02P, ESR24P

Fig. 4

ESRM2402B

Fig. 5

ESRM2402SB

ORDERING INFORMATION

Model	Coil Voltage	Relay Type	Resistive Load	Contactorr Ballast	Coil Current	Override	Wire Detail	Weight	Size
ESRU1C	10-30 VAC/ VDC; 120 VAC	SPDT	10A @ 120-277 VAC, 28 VDC	480 VA @ 277	24 VAC-46 mA, 24 VDC-18 mA, 120 VAC-28 mA		Fig. 1	0.4 lb (0.2 Kg)	J
ESRH1C	10-30 VAC/ VDC; 208-277 VAC	SPDT	10A @ 120-277 VAC	480 VA @ 277	24 VAC-46 mA, 24 VDC-18 mA, 208-277 VAC-39 mA		Fig. 1	0.4 lb (0.2 Kg)	J
ESR2401B	24 VAC/ VDC; 120 VAC	SPDT	20A @ 277 VAC	10A @ 120/277	24 VAC-83 mA, 24 VDC-35 mA, 120 VAC-47 mA		Fig. 1	0.5 lb (0.22 Kg)	A
ESR2402B	24 VAC/ VDC; 208-277 VAC	SPDT	20A @ 277 VAC	10A @ 120/277	24 VAC-83 mA, 24 VDC-35 mA, 208-277 VAC-69 mA		Fig. 1	0.5 lb (0.22 Kg)	A
ESRMNU1C	10-30 VAC/ VDC; 120 VAC	SPDT	15A @ 150 VAC, 28 VDC	480 VA @ 277	24 VAC-46 mA, 24 VDC-18 mA, 120 VAC-28 mA		Fig. 1	0.2 lb (0.09 Kg)	N
ESRU1S-NC	10-30 VAC/ VDC; 120 VAC	SPST-NC	10A @ 277 VAC	480 VA @ 277	24 VAC-46 mA, 24 VDC-18 mA, 120 VAC-28 mA	Yes	Fig. 2	0.5 lb (0.22 Kg)	A
ESRH1S-NC	10-30 VAC/ VDC; 208-277 VAC	SPST-NC	10A @ 277 VAC	10A @ 120/277	24 VAC-46 mA, 24 VDC-18 mA, 208-277 VAC-39 mA	Yes	Fig. 2	0.5 lb (0.22 Kg)	A
ESR2401SB-NC	24 VAC/ VDC; 120 VAC	SPST-NC	20A @ 277 VAC	10A @ 120/277	24 VAC-83 mA, 24 VDC-35 mA, 120 VAC-47 mA	Yes	Fig. 2	0.5 lb (0.22 Kg)	A
ESR2402SB-NC	24 VAC/ VDC; 208-277 VAC	SPST-NC	20A @ 277 VAC	10A @ 120/277	24 VAC-83 mA, 24 VDC-35 mA, 208-277 VAC-69 mA	Yes	Fig. 2	0.5 lb (0.22 Kg)	A
ESR24P	24 VAC/ VDC	DPDT	20A @300 VAC, 28 VDC	20A @ 277-480	24 VAC-138 mA, 24 VDC-55 mA		Fig. 3	1 lb (0.5 Kg)	B
ESR01P	120 VAC	DPDT	20A @300 VAC, 28 VDC	20A @ 277-480	120 VAC-105 mA		Fig. 3	0.5 lb (0.22 Kg)	B
ESR02P	208-277 VAC	DPDT	20A @300 VAC, 28 VDC	20A @ 277-480	208-277 VAC-105 mA		Fig. 3	1 lb (0.5 Kg)	B
ESRM2402B	24 VAC/ VDC; 208-277 VAC	SPDT	20A @ 277 VAC	10A @ 120/277	24 VAC-83 mA, 24 VDC-35 mA, 208-277 VAC-69 mA		Fig. 4	0.2 lb (0.09 Kg)	M
ESRM2402SB	24 VAC/ VDC; 208-277 VAC	SPST	20A @ 277 VAC	10A @ 120/277	24 VAC-83 mA, 24 VDC-35 mA, 208-277 VAC-69 mA	Yes	Fig. 5	0.2 lb (0.09 Kg)	O