



Functional Devices B1784 Emergency Lighting Automatic Load Control Relay Instruction Manual

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FUNCTIONAL

Functional Devices B1784 Emergency Lighting Automatic Load Control Relay



IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

ALL SERVICING SHOULD BE PERFORMED BY QUALIFIED PERSONNEL

- This product is intended for use with lighting fixtures controlled by an Emergency panel. Any switching between Backup Power and Utility Power must be done upstream of this device.
- All wiring connections and mounting styles must be in accordance with the National Electrical Code (NEC), National Fire Protection Association (NFPA), National Electrical Safety Code, state and local codes, and any other regulations set forth by the local Authority Having Jurisdiction (AHJ).
- Per NFPA 70E, the use of Personal Protective Equipment (PPE) may be required. Check state and local codes.
- The load's operating voltage must be the same as the Emergency Power Input voltage.
- To reduce the risk of electrical shock, fire, and injury to persons:
 - Disconnect all sources of power before servicing,
 - Mount this device in locations and at heights where it will not be readily accessible to tampering by unauthorized personnel,
 - Do not mount near gas or electric heaters,
 - Do not let any wires touch hot surfaces, and
 - Do not use outdoors (NEMA 1 rating only)
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this device for other than intended use.

Specifications

Electrical Specifications (ESRB, ESRN)

Normal Power Supply Voltage Normal Power Current Draw Normal Power Operating Frequency	120-277Vac 24mA max 50/60Hz
Emergency Power Supply Voltage Emergency Power Current Draw Emergency Power Operating Frequency	120-277Vac 118mA max 50/60Hz
Remote Test Input (Class 2, Dry Contact)	ESRTB or other switching method ^{1,2}
Feedback/Dimmer Contact Switching Capability (Dry Contact Output)	130mA @ 250V max
Relay Contact (ESRN) SPST	20A Magnetic Ballast @ 277V 16A Electronic Ballast @ 277V 10A Tungsten @ 120V
Relay Contact (ESRB) SPST	10A Magnetic Ballast @ 277V 10A Electronic Ballast @ 277V 10A Tungsten @ 120V

1. If not using the ESRTB Remote Test Button (sold separately), switching methods should be rated for at least 24Vdc. External voltage should not be supplied to this input. No specific current rating is required.
2. To maintain Class 2, a maximum of 45 total test inputs (ESRB and/or ESRN) can be wired in parallel per ESRTB.

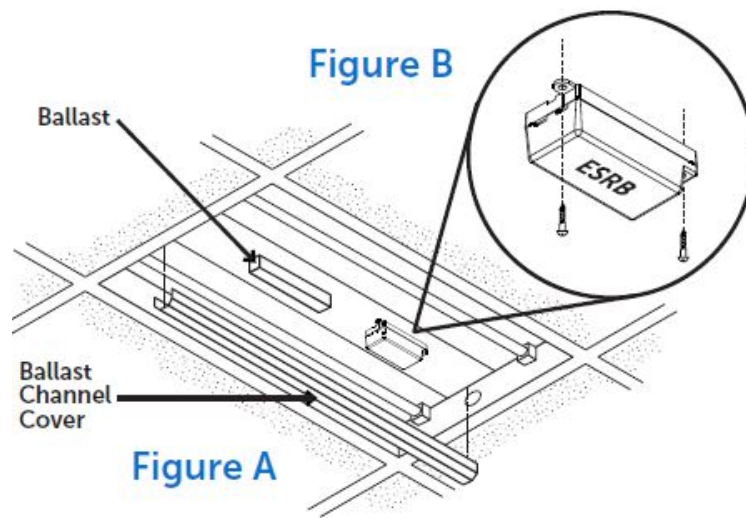
Mechanical Specifications

- Housing:UL accepted for use in Plenum, NEMA 1
- Wire:16" 600V Rated
- Weight:0.675 lbs. (ESRN) 0.40 lbs (ESRB)
- Operating Temperature:-30° to 140° F (-35° to 60° C)
- Humidity Range: 5 to 95% (noncondensing) Rated for dry and damp locations only
- Approvals: UL listed, UL924, C-UL

Installation

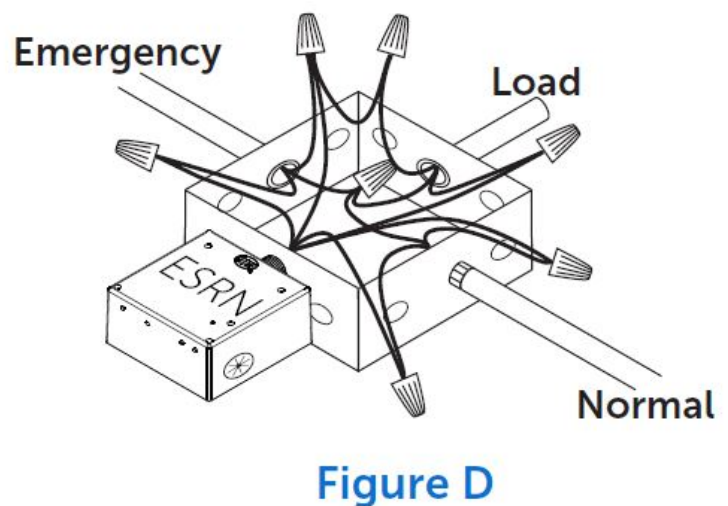
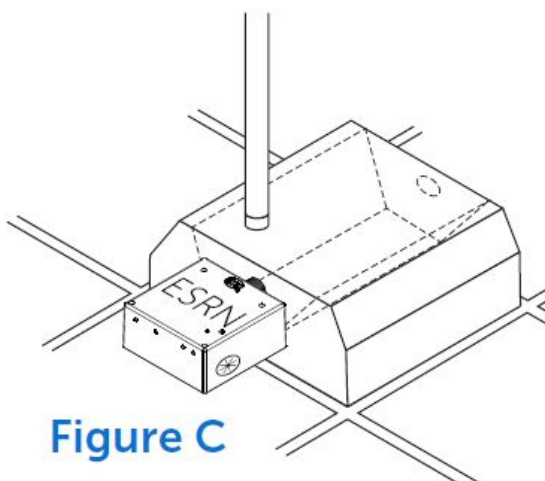
ALL INSTALLATIONS AND WIRING SHOULD BE DONE BY QUALIFIED PERSONNEL

ESRB



1. Remove all sources of power.
2. Remove ballast channel cover.
3. Mount ESRB as shown in Figures A and B.
4. Wire the ESRB using an illustration from the “Typical Applications” section on page 3 or similar setups for different application.
5. Before applying power, review the Important Safeguards at the beginning of this document.
6. Finish installation as required by the NEC, NFPA, state, local, and other codes. Test the ESRB using the “Test Procedure” on page 4.

ESRN



1. Remove all sources of power.
2. Remove wiring compartment cover.
3. Mount ESRN (a couple of mounting options are shown in Figures C and D).
4. Wire the ESRN using an illustration from the “Typical Applications” section on page 3 or similar setups for different application.
5. Install the wiring compartment cover.
6. Apply all sources of power to the fixture.

7. Test the ESRN using the “Test Procedure” on page 4.

Operation

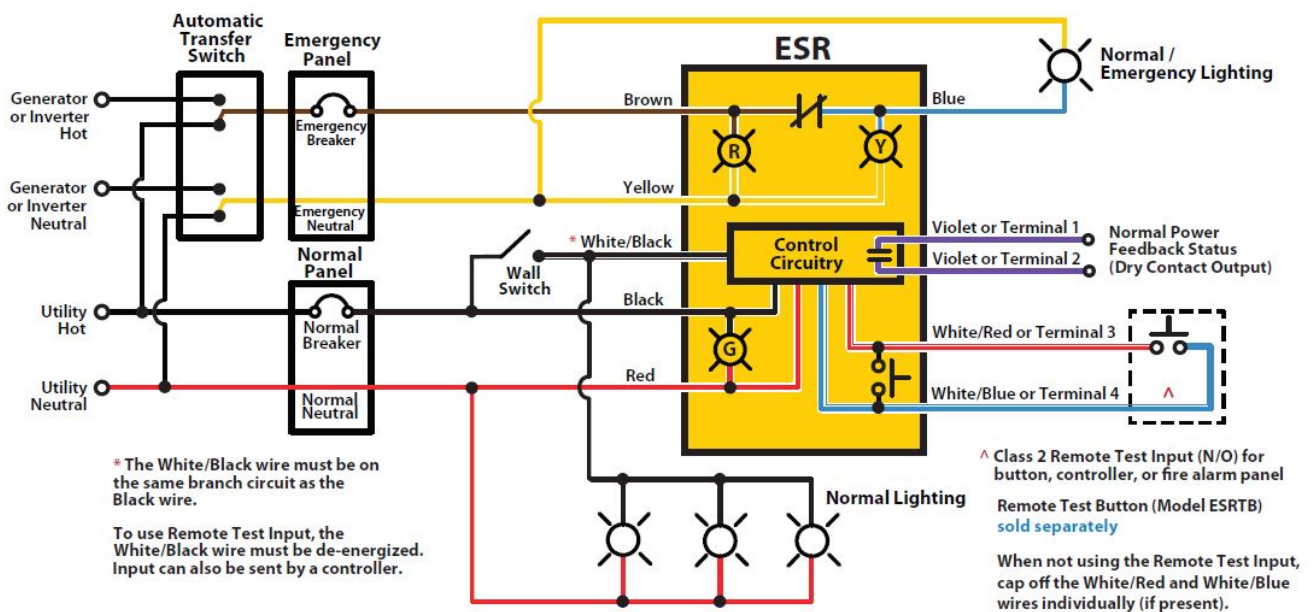
The ESRB and the ESRN will activate an Emergency lighting load automatically upon the loss of Normal Power. If Normal Power is absent, the status of the load cannot be overridden. However, if the Normal Power is present, the Emergency lighting load can be controlled by other means in order to use it as a Normal Lighting load, depending on the wiring setup. When used as Normal Lighting, a two second delay will keep the Load on, even after Wall Switch is turned off, to perform a Self-Test on the unit. When Normal Power is present, a status contact will automatically close. Therefore, when Normal Power is absent, the status contact will open (perfect for 0-10V dimming controls). A red LED indicates the Emergency Power is available. A Green LED indicates that Normal Power is present. A Yellow LED copies the status of the load; if the LED is on, the load is on.

Maintenance

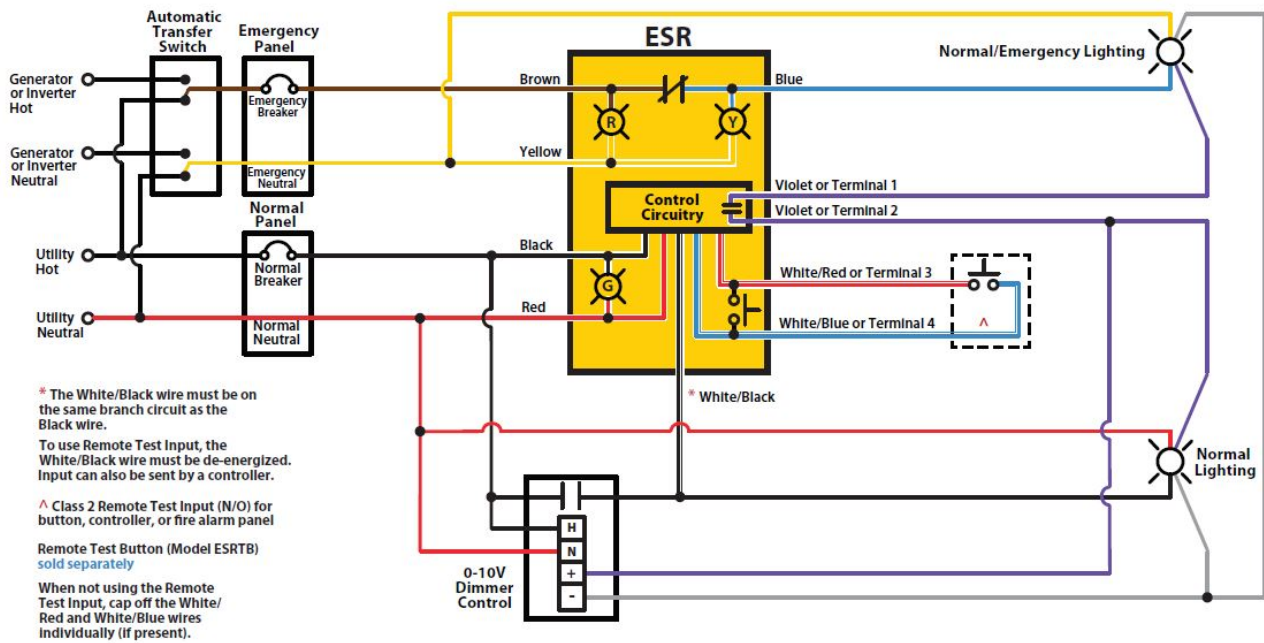
No routine maintenance is required for the ESRB or ESRN. Occasionally, this device should be tested to ensure that it works correctly in accordance with national and local codes.

Typical Applications

Using Emergency Lighting as Normal Lighting



Overriding a 0-10Vdc Dimmer



Wiring Descriptions

Wire Color	Description	Notes
BLACK	Normal Hot	N/A
WHITE/BLACK	Wall Switch Input (Self-Test Input)	Must be from same branch circuit as Black and Red. When switched off, a two second delay keeps the load on to test Emergency Power. Does not test Feedback/ Dimmer Output.
RED	Normal Neutral or other Phase	N/A
BROWN	Emergency Hot	N/A
BLUE	Emergency Hot Switched to load	Switches out the voltage put in on Brown
YELLOW	Emergency Neutral or other Phase	N/A
WHITE/BLUE (ESRB) Terminal Screw 4 (ESRN)	Remote Test Input (Class 2, Dry Contact Input)	When wiring multiple units together, White/Blue or Terminal Screw 4 must be a shared common. Test is performed when Input is CLOSED.
WHITE/RED (ESRB) Terminal Screw 3 (ESRN)		
VIOLETS (ESRB) Terminal Screws 1,2 (ESRN)	Feedback/Dimmer Contact (Dry Contact Output)	OPEN when Normal Power is Absent or Remote Test Input is CLOSED. CLOSED when Normal Power is Present or Remote Test Input is OPEN. Wall Switch Input does not test this output.

Troubleshooting

Condition	Action
Red LED is OFF	<ul style="list-style-type: none"> • Check Emergency Power Input wiring (Brown and Yellow wires) and voltage.
Green LED is OFF	<ul style="list-style-type: none"> • Check Normal Power Input wiring (Black and Red wires) and voltage.
Yellow LED is ON but Load is OFF	<ul style="list-style-type: none"> • Check bulbs and ballast. • Check Load wiring (Blue wire and Load's neutral). • Verify Load's operating voltage is the same as the Emergency Power Input Voltage • Replace unit.
Load is ON but Yellow LED is OFF	<ul style="list-style-type: none"> • Replace unit.
Yellow LED and Load do not turn on when being tested.	<ul style="list-style-type: none"> • Check bulbs and ballast. • Check wiring connections if using a remote test option. • Press local test button on the unit. • Replace unit.
Yellow LED and Load will not turn OFF	<ul style="list-style-type: none"> • Verify status of Normal Power Input. • Open Wall Switch Input. • Verify that no test inputs are stuck closed. (i.e. Remote Test Input is not closed).

Testing and Troubleshooting

Test Procedure: Four options to test the ESRB and ESRN after installation:

Initial Test for Correct Wiring

Apply Emergency Power to the Emergency Power Input and Normal Power to the Normal Power Input. (If using the Wall Switch Input, apply Normal Power to the switch also, but keep the switch OFF/OPEN.)

1. The Red LED (Emergency Power available) should be ON.
2. The Green LED (Normal Power available) should be ON.
3. The Yellow LED (Load Status) should be OFF.
4. The Load should be OFF.
5. The Feedback/Dimmer Contact should be CLOSED.

Local Test Button

1. Turn switched circuit OFF. Emergency light should be OFF.
2. Press and hold "Local Test Button"
3. The emergency light should turn ON.
4. Release "Local Test Button" and emergency light should turn off.


Remote Test Button (Model ESRTB – sold separately)

1. Turn switched circuit OFF. Emergency light should be OFF.
2. Press and hold "Remote Test Button"
3. Emergency light should turn ON.
4. Release "Remote Test Button" and emergency light should turn off.

Wall Switch

1. Turn ON wall switch if not already on.
2. Emergency light should turn ON.
3. Turn wall switch OFF.
4. Emergency light will remain on for two seconds before turning off.

Documents / Resources

	<p>Functional Devices B1784 Emergency Lighting Automatic Load Control Relay [pdf] Instruction Manual</p> <p>B1784, Emergency Lighting Automatic Load Control Relay, B1784 Emergency Lighting Automatic Load Control Relay</p>
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