NEXTEK
Power Systems

Emergency Ballast

Installation and User's Manual

EMERGENCY BALLAST MODEL:
NB24-T5T8-01E

Rev. 031114

Please contact Customer Support at 1-800-24VOLTS for further information.

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ABOUT NEXTEK POWER SYSTEMS

Nextek Power Systems AC/DC integration technology represents a breakthrough in on-site electrical management, combining the availability of AC power with the quality and efficiency of a DC supply.

NEXTEK PRODUCT BENEFITS

- Easy conversion of AC lighting fixtures to DC-powered units
- Easy conversion of AC grid power into DC power for commercial building applications
- Highly efficient management of peak loads
- Future-proof lighting and other systems to be developed
- Nextek Power Systems Direct Coupling® Technology, directly connects clean power generated at a building to its electronic loads inside cutting down on overall power consumption, boosts electricity generated and stored on-site, and delivers a robust renewable energy ready network.

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INTRODUCTION

Nextek Ballasts

Nextek's **Emergency Ballasts** are designed for use in direct current (DC) systems. These ballasts provide current to luminaires during power outages, while safely disconnecting primary ballasts from the power system.

Emergency ballasts work by utlizing 3 switches, each of which changes state depending on whether power is on or off. The first switch is connected to the DC input of the emergency ballast. This switch connects the 24VDC input of the 24VDC ballast to the 24VDC bus. When the bus loses power, this switch is opened to remove the 24VDC ballast from power, and shutting it down.

The other two switches are on the outputs to the lamp of the 24VDC ballast and the emergency ballast. When the 24VDC input is present these switches connect the 24VDC ballast's output leads to the lamp. When the 24VDC is removed, the switches open and disconnect the 24VDC ballast from the lamp and connect to the emergency ballast across the lamp so that it can ignite the lamp.

The Nextek emergency ballast is an instant start ballast and ignites the lamp using high frequency moderate voltage across the lamp's arc.

1.0 SAFETY

1.1 SAVE THESE INSTRUCTIONS– This manual contains important safety and operating instructions for the Nextek Emergency Ballast Installation Kit.

The following symbols are used throughout this manual to indicate potentially dangerous conditions or mark important safety instructions:

DANGER:
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING:
Indicates a potentially dangerous condition. Use extreme caution when performing this task.

CAUTION:

Indicates a critical procedure for safe and proper operation of the controller.

NOTE:

Indicates a procedure or function that is important for the safe and proper operation of the controller.

1.2 Before using the Emergency Ballast Installation Kit, read all instructions and cautionary markings.

1.3 Electrical hazards are probably the most common hazards throughout the industry. Virtually all workplaces have electrical installations and use electricity.

1.4 It is very important that all industry employees be familiar with electrical hazards and know how to protect themselves when working on, near, or with electricity. In most cases, industry electrical and electronic equipment is designed for both maximum safety and efficiency. However, potentially hazardous conditions such as inadvertent contact with hazardous voltages may exist while performing servicing and maintenance, handling materials, or cleaning.

1.5 The improper use of electrical extension cords and portable electrical equipment can result in hazardous exposure.

1.6  **WARNING - RISK OF ELECTRICAL SHOCK**

1.6.1 This Emergency Ballast Installation Kit requires knowledge of fluorescent lighting luminaires electrical systems. If not qualified, do not attempt installation. Contact a qualified electrician.

1.6.2 Install this kit only in luminaires that have similar features and dimensions as the photographs and/or drawings shown here.

1.0 SAFETY

1.6.3 To prevent wiring damage or abrasion, do not expose wiring to edges of sheet metal or other sharp objects.

1.6.4 Only those open holes indicated in the photographs and/or drawings may be made or altered as a result of kit installation. Do not leave any other open holes in an enclosure of wiring or electrical components.

1.6.5 Before wiring 24VDC supply to ballasts, remove any old AC wiring, including any ground wires, between the line voltage ballast and the nearest junction box.

1.7  **DANGER – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, CAREFULLY FOLLOW THESE INSTRUCTIONS**

1.7.1 Do not disassemble or attempt to repair the ballasts. There are no user serviceable parts inside Nextek ballasts.

1.7.2 Install external fuses/breakers as required.

1.7.3 Disconnect power to the luminaire before installing the ballasts, removing old ballasts or wiring, or otherwise working with the unit.

1.8 INSTALLATION SAFETY PRECAUTIONS

1.8.1 Mount the ballasts indoors only. Prevent exposure to the elements.

1.8.2 Power connections must remain tight to avoid excessive heating from a loose connection.

1.8.3 Use properly sized conductors and circuit interrupters.

1.8.4 The Nextek Ballast Installation Kit is to be connected to DC circuits only.

2.0 STANDARDS AND REQUIREMENTS

2.1 All DC cable types must meet all local and national codes

2.2 Shut off all DC circuit breakers or fuses before installing any unit into the field.

3.1 **NOTE:** This section contains important information for safety and regulatory requirements.

3.0 REGULATORY INFORMATION

3.2 The Emergency Ballast Installation Kit should be installed by a qualified technician according to the electrical rules of the country in which the product will be installed.

3.3 Nextek ballasts comply with the following EMC standards:

3.3.1 FFC Part 18, Class A

3.3.2 IEC/EN55015, Class A

3.4 A means shall be provided to ensure all the poles are disconnected from the power supply. This disconnection shall be incorporated in the fixed wiring.

3.5 **FCC Requirements:**

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by Nextek Power Systems, Inc. for compliance could void the user's authority to operate the equipment.

Note:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 18 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

4.0 INSTALLATION QUALIFICATIONS

4.1 Installation work and electrical wiring of permanently-connected power units must be performed only by qualified service personnel in accordance with all applicable codes and standards, including fire-rated construction.

5.0 BALLAST FEATURES AND SPECIFICATIONS

5.1 Features

- Low-voltage, 2 wire, 24VDC
- Very high charge efficiency with Auto-Polarity correction
- Sound rated A
- The NB24-T5T8-01E fluorescent emergency ballast works in conjunction with a DC ballast to convert new or existing fluorescent fixtures into emergency lighting. The NB24-T5T8-01E emergency ballast consists of a high-temperature nickel-cadmium battery, charger and circuitry in one compact black case.
- The NB24-T5T8-01E can be used with one 17 W - 54 W (2' - 4') T5, T8 or BIAX fluorescent lamp. The NB24-T5T8-01E is suitable for indoor locations. It is not suitable for air handling heated air outlets or wet or hazardous locations. Please call for specific information about lamp and ballast compatibility.

5.2 Technical Specifications

U.S. Patent Pending

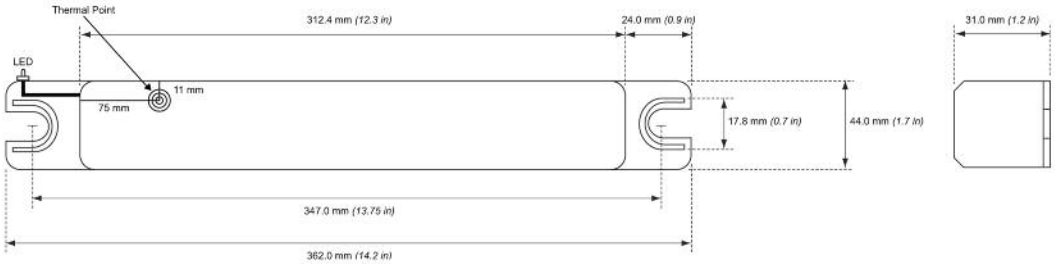
Operating Voltage:	24VDC (nominal)
Operating Current:	140 mA.
Rated Inrush Current:	250mA for 1 sec
Illumination time:	90 min.
Initial Light Output:	Up to 650 Lumens
Test switch:	Single Pole
Charge indicator light:	LED
Battery:	High Temperature Maintenance-Free Nickel-Cadmium. 7 - 10 year life expectancy
Charge Current:	200 - 280mA (max)
Recharge time:	24 hours
Dimensions:	1.7 in W x 1.2 in H x 14.2 in L (44 mm W x 31 mm H x 362 mm L)
Weight:	1.6 lbs (700 g.)

Single Lamp Operation	
Lamp Type	Lumens*
F17T8	600
F25T8	625
F32T8	650
FT40BX	625
F24T5HO	425
F54T5HO	800
F28T5	775
F21T5	475

*In "emergency" lighting mode

All specifications are subject to change without notice. *For wattages other than 32, please contact Nextek Power Systems, Inc. at 1-877-24VOLTS

5.3 Enclosure Diagram



5.4 Kit contents:

Ballast
Installation and User Manual
Installation hardware

6.0 GENERAL REQUIREMENTS

6.1 Recommended Tools

6.1.1 This installation may require the following, depending on the installation of specific ballasts and existing wiring:

#2 and #0 Phillips screwdrivers

Slotted screwdriver

Wire strippers

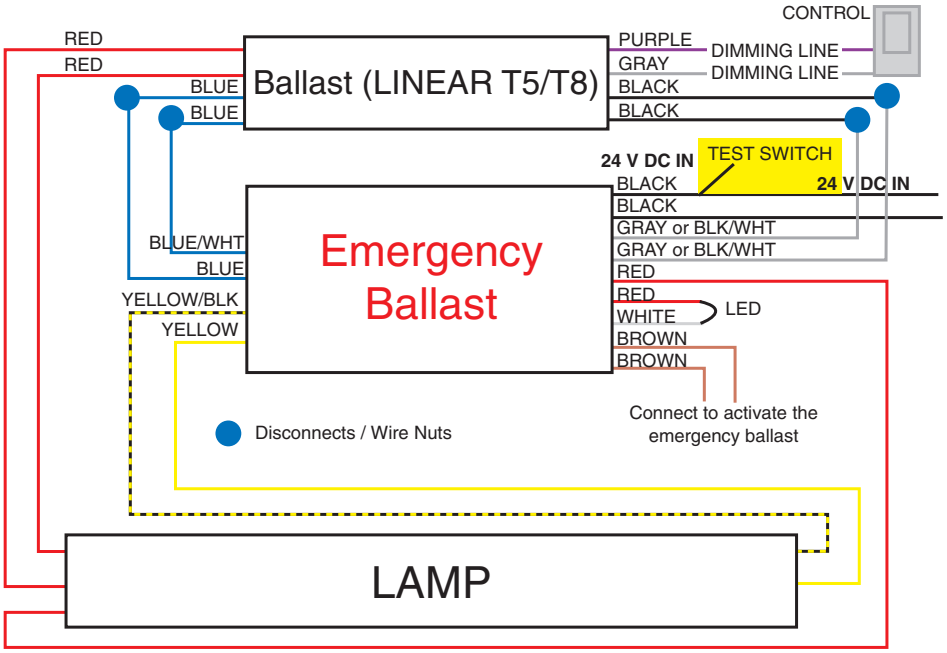
Wire cutters

Pliers

7.0 INSTALLATION PROCEDURE

7.1 EMERGENCY BALLAST INSTALLATION

EMERGENCY BALLAST WIRING DIAGRAM



7.1.1 **NOTE**: If an AC ballast has been previously installed in the location, refer to the Nextek Ballast Retrofit Kit Installation and User Manual for ballast removal procedures. The manual is available for download at http://nextekpower.com/support/installation-manuals.

7.1.2 **WARNING - Shock Hazard**

At the supply panel, disconnect power to the luminaire(s).

WARNING - Risk of fire or electric shock. Luminaire wiring and electrical parts may be damaged when drilling for installation of unit. Check for enclosed wiring and components.

7.1.3 Mount the emergency ballast in the fixture with the ballast it will backup.

7.1.4 Prepare the ballast mounting location: Refer to the luminaire manufacturer's instructions or drawings to identify the mounting locations and any specific electrical location requirements or special instructions.

7.1.4.1 Select a ballast mounting location within the luminaire that leaves sufficient length to route the ballast's wires to the fixture connections.

7.1.5 Slotted mounting holes for the ballasts are located on the flanges that protrude from the bottom of the unit housing.

7.0 INSTALLATION PROCEDURE

7.1.6 For pre-existing mounting studs or holes:

7.1.6.1 Carefully align the ballast slot to one mounting hole or stud and insert a sheet metal screw.

7.1.6.2 Do not tighten the screw completely. Leave a 1/4" (6 mm) gap between the mounting surface and screw head.

7.1.6.3 Carefully align the ballast slot to one mounting hole or stud and insert a sheet metal screw.

7.1.6.4 When the ballast is properly positioned, tighten both (2) screws.

7.1.6.5 Proceed to step 7.1.8.

7.1.7 For a surface with no pre-existing mounting studs or holes:

7.1.7.1 Place a mark on the mounting surface for one of the mounting holes in accordance with the luminaire manufacturer's instructions or drawings.

7.1.7.2 Use a self-tapping sheet metal screw to insert the first screw at the mark.

7.1.7.3 Do not tighten the screw completely. Leave a 1/4" (6 mm) gap between the mounting surface and screw head.

7.1.7.4 Mark the second mounting hole location for the ballast.

7.1.7.5 Carefully align the ballast slot to the second mounting hole and insert a sheet metal screw.

7.1.7.6 When the ballast is properly positioned, tighten both (2) screws.

7.1.8 Ballast Wiring Instructions

7.1.8.1 Disconnect the Blue ballasts leads on the 24VDC ballast from the lamp.

7.1.8.2 Connect the Blue lead on the Emergency ballast to one of the blue leads on the 24VDC ballast using a wire nut (or similar disconnect).

7.1.8.3 Connect the Blue and White lead on the emergency ballast to the other Blue lead on the 24VDC ballast using a wire nut (or similar disconnect).

7.1.8.4 Connect the Red lead of the emergency ballast (non-LED lead), to one of the Red leads of the 24VDC ballast and the lamp using the wire nut that is currently used to connect the lamp and the Red 24VDC ballast lead (this will be a 3 wire connection; 24VDC ballast lead, emergency ballast lead, and lamp lead).

7.0 INSTALLATION PROCEDURE

7.1.8.5 Connect the Yellow lead of the emergency ballast to one of the lamp leads previously disconnected from the two Blue 24VDC ballast leads.

7.1.8.6 Connect the Yellow and Black lead of the emergency ballast to the other lamp lead previously disconnected from the two Blue 24VDC ballast leads.

7.1.8.7 Disconnect the two Black 24VDC ballast leads from the 24VDC input leads.

7.1.8.8 Connect the two Black emergency ballast leads to the 24VDC input leads.

7.1.8.9 Connect the two Black 24VDC ballast leads to the Gray leads of the emergency ballast using wire nuts (or similar disconnects).

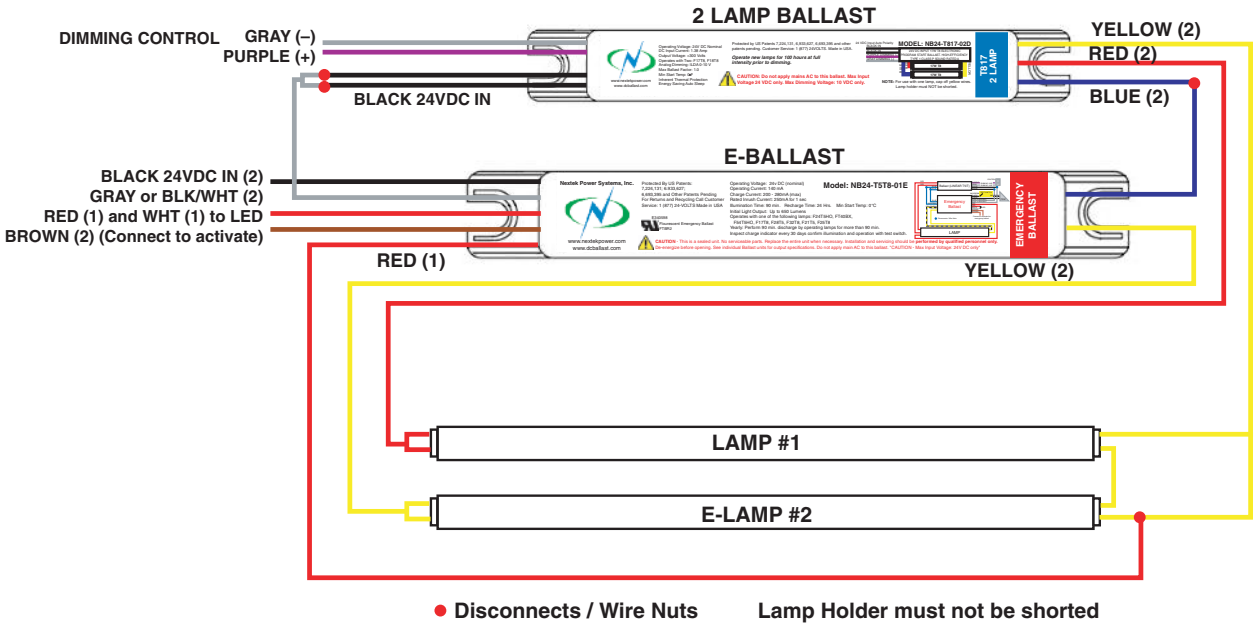
7.1.8.10 After completing the previous steps re-energize the system. Once re-energized short/connect the two brown leads to activate the emergency ballast so that it will provide backup power.

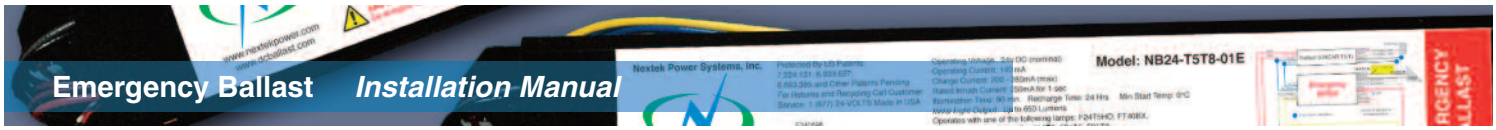
7.1.9 Replace any covers or diffusers removed during the installation.

7.1.10 Plug any unused openings in the luminaire.

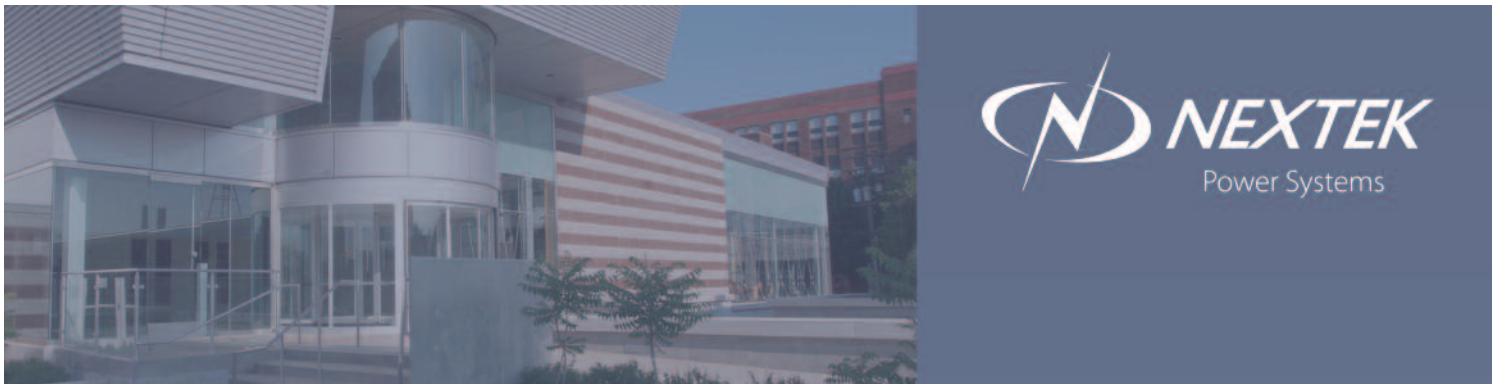
7.2 WIRING A 2-LAMP BALLAST TO AN EMERGENCY BALLAST FIXTURE

7.2.1 Follow the wiring diagram below to ensure correct connections.





8.0 NOTES



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