THIS UNIT CONTAINS A RECHARGEABLE VALVE-REGULATED LEAD ACID BATTERY. PLEASE RECYCLE OR DISPOSE OF PROPERLY.

Pb

300/600W Mini Inverter

INTERRUPTIBLE EMERGENCY LIGHTING UNIT INVERTER INSTRUCTION MANUAL

IMPORTANT SAFEGUARDS

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

READ THIS MANUAL AND FOLLOW ALL SAFETY INSTRUCTIONS THOROUGHLY BEFORE OPERATING THE INVERTER SYSTEM

SAVE THESE INSTRUCTIONS

BEFORE CONTACTING TECHNICAL SUPPORT PLEASE REFER TO THE TROUBLESHOOTING GUIDE INCLUDED IN THIS MANUAL.

1. DO NOT USE OUTDOORS.
2. All unused wires must be insulated to prevent shorting.
3. Do not mount near gas or electric heaters.
4. Do not let power supply cords touch hot surfaces.
5. Do not use this equipment for other than its intended use.
6. The Mini Inverter should be mounted securely and in locations and at heights where it will not be readily subjected to tampering by unauthorized personnel.
7. The use of accessory equipment and replacement parts not recommended by manufacturer may cause an unsafe condition and void the warranty.
8. The AC voltage rating of this equipment is specified on the product label. Do not connect the Mini Inverter equipment to any other voltage.
9. Replacement fuse is supplied.
10. The Mini Inverter uses sealed valve regulated lead acid batteries. Batteries can be punctured if not handled properly, therefore use caution when servicing batteries. In the event battery acid comes in contact with eyes or skin, flush with fresh water and consult a physician immediately.
11. Install in accordance with the National Electrical Code and local regulations.
12. The Mini Inverter contains potentially hazardous voltages. Installation, maintenance and service work should be performed by qualified and trained personnel.
13. Electricians and end-users need to ensure product system compatibility before final installation.
14. Units to be installed only as per configuration described in this instruction manual.

MODEL NUMBER	AC SPECS		EMERGENCY POWER AVAILABLE FOR LOAD					APPROX. WEIGHT
			30 MIN	1H	1H 30MIN	2H	4H	
300	120 Vac, 60Hz	3.10 Amps	300W	240W	175W	140W	80W	70LBS.
600	120 Vac, 60Hz	6.00 Amps	600W	410W	300W	240W	125W	120LBS.
	347 Vac, 60Hz	2.30 Amps	600W	410W	300W	240W	125W	120LBS.

IMPORTANT: Do not exceed the total rating of the Mini Inverter. Unit is rated at maximum Watt and maximum VA, where Max.W = Max.VA. Total load (W) must be derated when load power factor (PF) is less than 0.9 (for maximum performance).

WARRANTY

All Mini inverter products receive 100% quality inspection before shipment to ensure proper and satisfactory operation.
When operated under normal conditions, Mini inverter products will provide years of dependable service.

Warranty: For the complete warranty information, please refer to the home page of our website (https://tnb.ca.abb.com/en/products/emergency-lighting).

WARNING: DO NOT ENERGIZE THE CIRCUIT UNTIL ALL STEPS HAVE BEEN SUCCESSFULLY COMPLETED.

WARNING: FAILURE TO CONNECT THE BATTERY(S) PROPERLY MAY RESULT IN EQUIPMENT FAILURE OR AN UNSAFE CONDITION AND WILL VOID THE WARRANTY.

WARNING: ALWAYS TURN OFF THE INVERTER MODULE AND THE AC SUPPLY TO THE EQUIPMENT AND DISCONNECT THE BATTERY BEFORE SERVICING. ONLY QUALIFIED SERVICE TECHNICIANS SHOULD SERVICE THIS EQUIPMENT. THE USE OF PARTS SUPPLIED BY OTHER THAN THE MANUFACTURER MAY RESULT IN AN UNSAFE CONDITION OR EQUIPMENT FAILURE AND WILL VOID THE WARRANTY.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK WHEN SERVICING, DISCONNECT BOTH NORMAL AND EMERGENCY SOURCES: TURN OFF THE A.C. BRANCH CIRCUIT AND DISCONNECT THE BATTERY AND TURN OFF THE INVERTER MODULE WITHIN THE MINI-INVERTER.

CAUTION: BEFORE INSTALLING, MAKE CERTAIN THE A.C. POWER IS OFF.
NOTE: THE BATTERY(S) ARE SHIPPED SEPARATELY. PLACE THEM IN A LOCATION AWAY FROM THE WORK AREA TO AVOID DAMAGE UNTIL INSTALLATION STEP 4.

CAUTION: ONLY ONE VOLTAGE IS ALLOWED (120V OR 277V OR 347V). CONNECTION TO MORE THAN ONE VOLTAGE MAY RESULT IN EQUIPMENT FAILURE AND VOID THE WARRANTY.

CAUTION: FOR NORMALLY ON UN-SWITCHED UNITS: THE JUMPER WIRE IS PRESET FOR 120VAC. IF THE UNIT IS TO BE WIRED FOR 277VAC, REMOVE THE JUMPER WIRE FROM THE 120VAC INPUT POWER TERMINALS AND REINSTALL THE JUMPER WIRE INTO THE 277VAC INPUT POWER TERMINALS.

CAUTION: IF CONNECTED TO 277V OR 347V INPUT, USE A 277V OR 347V RATED SWITCH. FAILURE TO USE THE PROPER VOLTAGE SWITCH MAY RESULT IN SWITCH FAILURE, A SHOCK HAZARD, AN UNSAFE CONDITION AND/OR EQUIPMENT FAILURE.

CAUTION: THE MINI INVERTER HAS A SELF-TEST FEATURE AND CAN ENTER IN SELF-TEST MODE (MONTHLY, BIANNUAL OR ANNUAL) AT ANY TIME. WHEN THIS OCCURS, POWER WILL BE AVAILABLE AT THE OUTPUT OF THE MINI INVERTER, EVEN IF THE LATTER WAS CONFIGURED FOR NORMALLY-OFF OPERATION.

IMPORTANT: WHEN MAKING CONNECTIONS TO THE MINI INVERTER, YOU MUST RESPECT THE APPROPRIATE WIRING DIAGRAMS. DO NOT CONNECT THE “INPUT POWER” NEUTRAL TO THE “LOAD” NEUTRAL. FAILURE TO COMPLY WITH THIS DIRECTIVE MAY RESULT IN EQUIPMENT FAILURE AND VOID THE WARRANTY.

IMPORTANT: FOR NORMALLY OFF LOAD: REMOVE THE JUMPER WIRE BEFORE WIRING THE UNIT.

INSTALLATION

STEP 1: MOUNTING THE MINI INVERTER TO THE WALL

a. Remove the front cover of the Mini Inverter by removing the two screws at the top of the cover and retain for later use.
b. Extend the unswitched, properly-rated voltage AC supply and remote fixture wires to the installation area.
c. Orient cabinet to ensure clearance is 3.5 inches on either side of the Mini Inverter and 42 inches on the front. No clearance is required on the bottom of the unit. For units equipped with optional wireless Nexus, a clearance of 6 inches is required on top to allow for the protruding antenna. For units without wireless Nexus, no clearance is required on the top.
d. Use keyhole slots at the rear of the unit and mount the Mini Inverter securely to the wall.

⚠ WARNING: THE MINI INVERTER MUST BE MOUNTED SECURELY USING A 1/4" (MIN) SCREW AND FLAT WASHER FOR EVERY KEYHOLE. THE MOUNTING SURFACE MUST ALSO BE SUFFICIENTLY REINFORCED TO ACCOMODATE THE WEIGHT LISTED (SEE PAGE 1). FAILURE TO SECURE THE UNIT SUFFICIENTLY CAN DAMAGE THE EQUIPMENT AND/OR CAUSE SERIOUS INJURY.

e. Connect the conduit containing the AC supply and remote fixture leads to the Mini Inverter. Route the incoming wires through the knock-outs on the side of the Mini Inverter.
f. Install the batteries, but do not connect the battery leads until other wiring is completed.

STEP 2: CONNECT THE NORMAL AC INPUT (SEE FIGURE 2A, 2B, 2C OR 2D)

a. For 120V supply, connect the AC Line wire to the 120V (UN-SWT) position of the INPUT POWER section of the terminal block. For 277V or 347V supply, connect the AC Line wire to the 277V or 347V (UN-SWT) position of the INPUT POWER section of the terminal block.
b. Connect the NEUTRAL wire to the NEUTRAL position of the INPUT POWER section of the terminal block.
c. Connect the ground wire in accordance with local and national codes.
d. For Nexus wired (option): Refer to the "WIRING FOR NEXUS®" on the page 5.

STEP 3: CONNECT THE REMOTE EMERGENCY FIXTURES (SEE FIGURE 2A, 2B, 2C OR 2D)

a. Connect the remote emergency fixtures to the correct position of the LOAD terminal block, respecting the operating voltage. All remote circuitry is to be wired in accordance with Article 700 of the National Electric Code. **Do not exceed the total rating of the Mini Inverter. Unit is rated at maximum Watt and maximum VA, where Max.W = Max.VA. Total load (W) must be derated when load power factor (PF) is less than 0.9 (for maximum rating).** Special attention shall be taken when load consists of LED lamps with no built-in power factor correction. Example: most of the single LED lamps (Screw-on, GU-10, etc.) have a power factor of less than 0.6. This translates to a derating close to 50%.
b. **NORMALLY-OFF FIXTURES (only come on during power failure)** - Connect the AC Line input wire of the fixtures to the appropriate position of the LOAD terminal block (120V OR 277V OR 347V). Connect the fixture Neutral to the Neutral position of the LOAD terminal block. Refer to Figure 2B.
c. **UN-SWITCHED NORMALLY-ON FIXTURES** - Connect the AC Line input wire of the fixtures to the appropriate position of the LOAD terminal block (120V OR 277V OR 347V). Connect the fixture Neutral to the Neutral position of the LOAD terminal block. Refer to Figure 2C.
d. **SWITCHED NORMALLY-ON LOAD** (fixtures may be turned on and off locally, but will come on during power failure regardless of switch position) - Follow Step 3B above. Connect the Line side of the switch to the (UN-SWT) position of the INPUT POWER terminal block, respecting the operating voltage (120V OR 277V OR 347V). Connect the load side of the switch to the (SWT) position on the INPUT POWER terminal block, respecting the operating voltage (120V OR 277V OR 347V). Refer to Figure 2A.
e. Connect the Fixture Supply Ground to the Mini Inverter Ground.

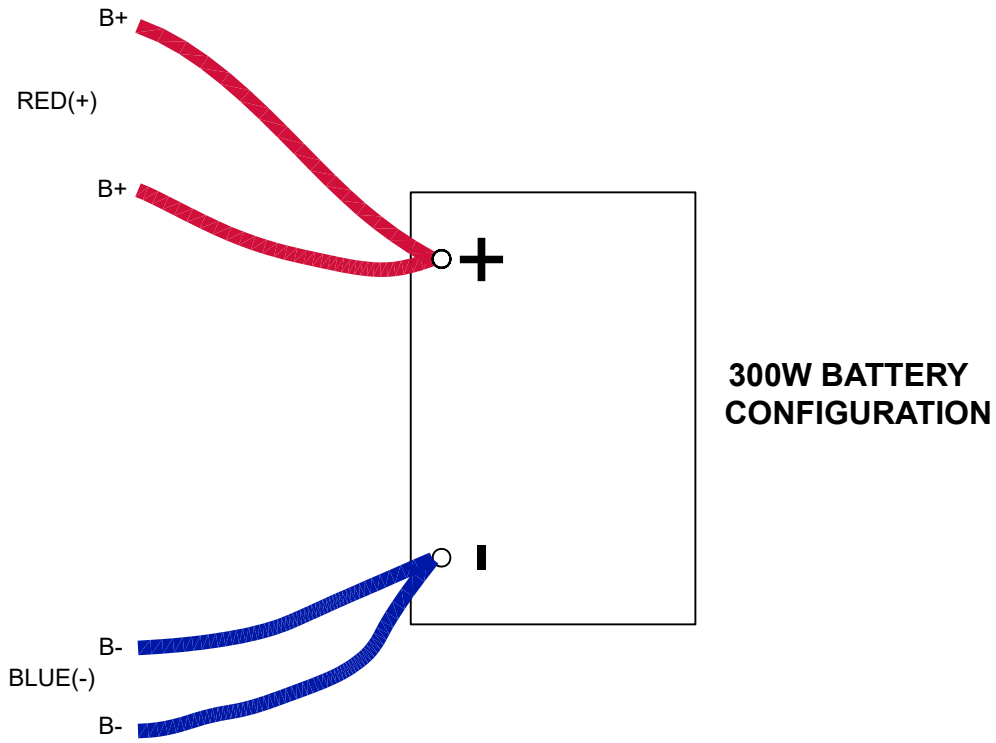
STEP 4: CONNECT THE BATTERY(S)

a. Position the battery(s) in the unit.

b. Refer to figures 1A or 1B. Connect the RED wire to the positive (+) post of the battery. Connect the BLUE wire to the negative (-) post of the battery. Tighten all bolts to a recommended torque of **78 lbf-in ± 4 lbf-in** (Fig.1A or 1B).

Note: A small spark may occur when connecting to the battery wires. This is normal and is caused by large capacitors contained in the mini inverter being charged.

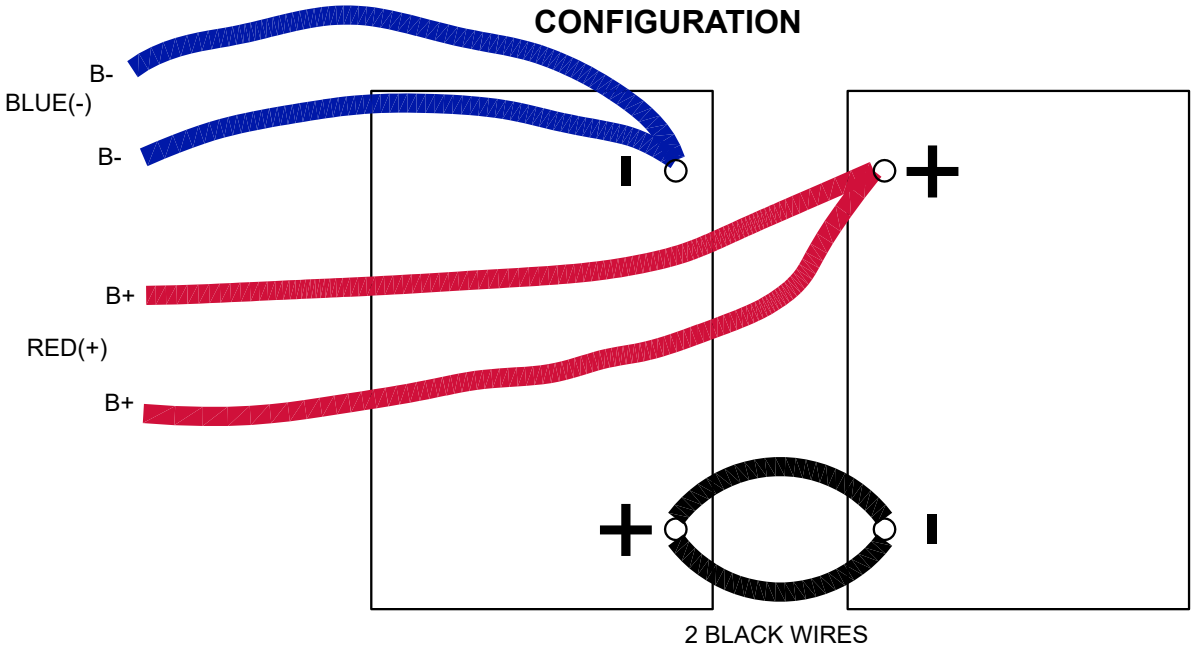
FIGURE 1A



300W BATTERY CONFIGURATION

FIGURE 1B

600W BATTERY CONFIGURATION



2 BLACK WIRES

STEP 5: SWITCH ON THE INVERTER MODULE (SWITCH IS LOCATED ON THE RIGHT SIDE OF THE INVERTER MODULE).

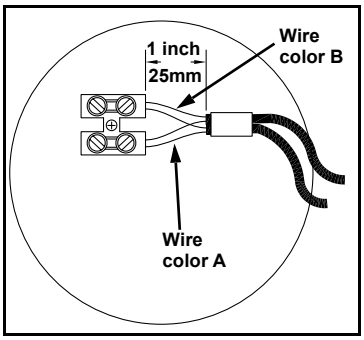
NOTE: THE EMERGENCY LIGHT AND INDICATORS WILL NOT TURN ON AT THIS TIME.

STEP 6: COMPLETE THE INSTALLATION

a. Energize the AC supply. The Status Indicator will illuminate. Refer to the operation information below for more information about the Status Indicator.
b. Normally-ON fixtures shall be ON, Normally-OFF shall be OFF. Switched Emergency Fixtures shall be ON only when the switch is in the ON position.
c. Manually test the unit by pressing the test switch for 1 second and then release it. (Refer to “MANUAL TEST” for more details).
d. If status LED is not green, reset the system. (Refer to “SYSTEM RESET”).
e. Properly re-install the cover of the Mini Inverter using all the original hardware.

WIRING FOR NEXUS® (OPTION)

a. Route the two NEXUS® data cables into unit and strip one inch (25mm) of the cable insulation. NEXUS® data cables are identical; each contain 2 wires of different colors: color A and color B.
b. Connect both color “A” wires to one pole of the terminal block.
Connect both color “B” wires to the other pole of the terminal block.
See Figure on side.
c. Live voltage cabling and unsheathed low voltage data cabling must be a minimum of one inch (25mm) apart.



Wireless:

NO WIRING IS REQUIRED FOR THE NEXUS® WIRELESS VERSION.
See addendums: 750.1531 and 750.1640 for more information and antenna installation.
See Nexus®Pro addendums: 750.1640 and 750.2083 for antenna installation and important information before powering up unit.

MANUAL TEST

Press the test switch for 1 second and release to initiate a 1 minute manual test. The Status Indicator will flash green. All normally-ON lamps (switched or unswitched) will turn ON. All normally-OFF lamps shall also be ON. After 1 minute test, lamps will revert to normal operating mode and unit will revert to recharge mode. Status indicator will be steady ON green if no fault has been detected. If a fault is detected, please refer to the FEATURES AND OPTIONS (pp. 8-9) for diagnostics and auto test features.

Allow the batteries to charge for a minimum of 48 hours after installation or power failure before conducting a 30-minute discharge test. The Life Safety Code and the Authorities Having Jurisdiction require an annual 30-minute discharge test.

SYSTEM RESET

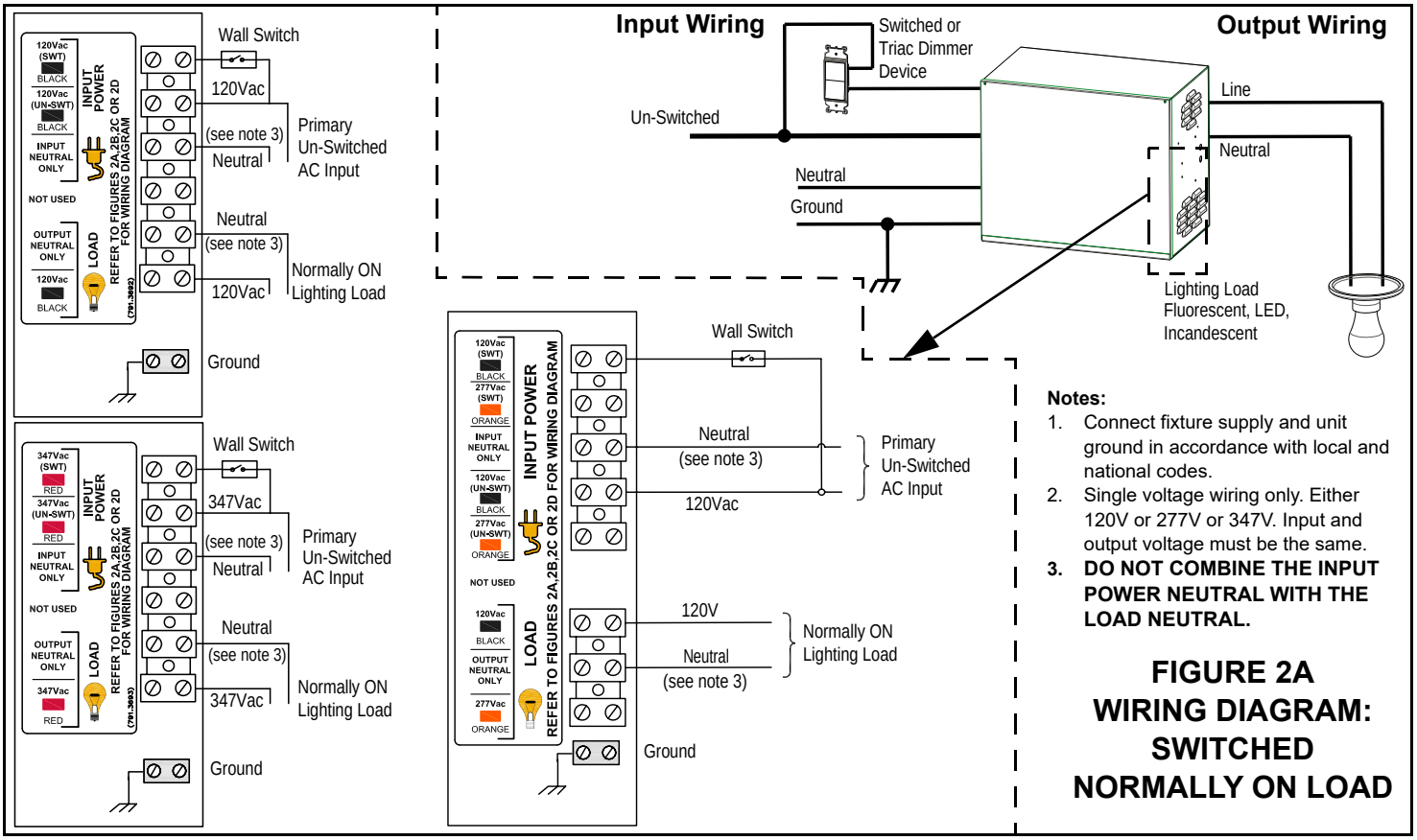
Resetting the system:
Depending on the sequence of installation, some units may require a system reset. To reset the system, press the test switch for 6 seconds.

MAINTENANCE

BATTERY:

The batteries supplied in this equipment are high quality maintenance-free Valve Regulated Lead Acid design.
Ambient temperature of electrical room where batteries are installed should be 25° C (77° F) for maximum battery performance.
Replace batteries when they no longer operate load for 30 minutes.
Replace only with manufacturer supplied parts.
Properly dispose of or recycle the Lead-Acid battery.

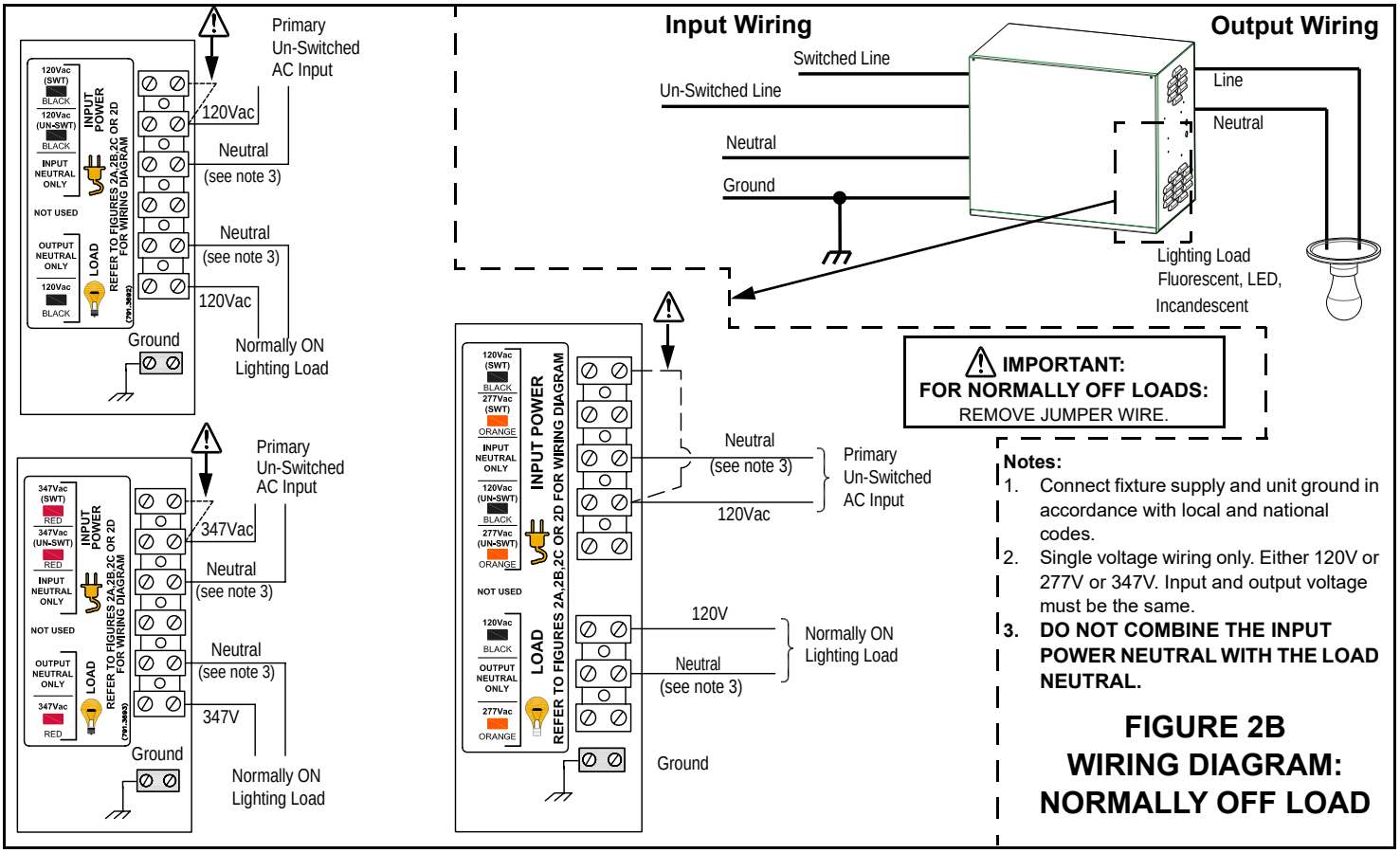
NOTE: THE FOLLOWING WIRING DIAGRAMS HAVE BEEN SIMPLIFIED FOR CLARITY. ACTUAL POSITION OF COMPONENTS WILL VARY



Notes:

1. Connect fixture supply and unit ground in accordance with local and national codes.
2. Single voltage wiring only. Either 120V or 277V or 347V. Input and output voltage must be the same.
3. **DO NOT COMBINE THE INPUT POWER NEUTRAL WITH THE LOAD NEUTRAL.**

FIGURE 2A WIRING DIAGRAM: SWITCHED NORMALLY ON LOAD

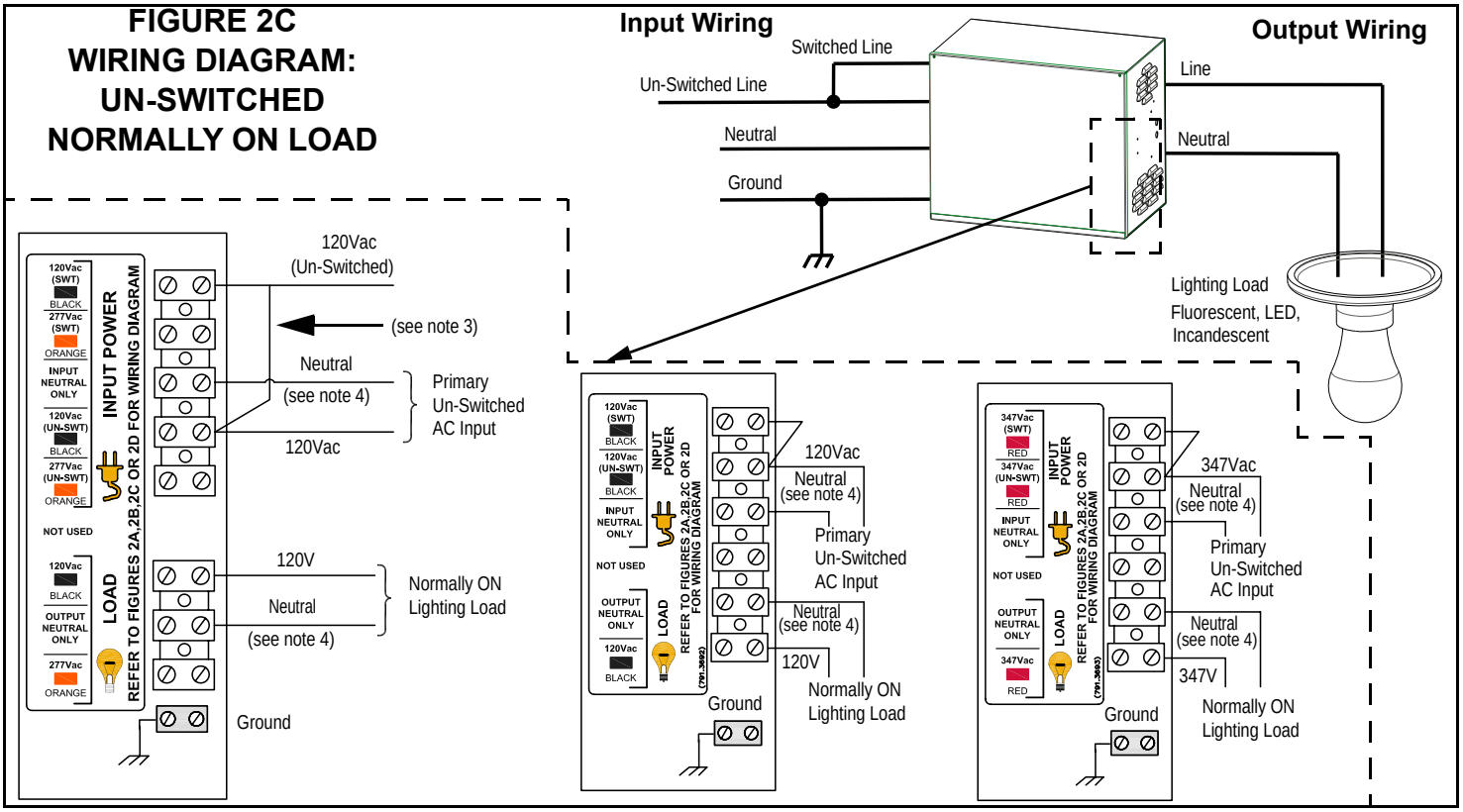


Notes:

1. Connect fixture supply and unit ground in accordance with local and national codes.
2. Single voltage wiring only. Either 120V or 277V or 347V. Input and output voltage must be the same.
3. **DO NOT COMBINE THE INPUT POWER NEUTRAL WITH THE LOAD NEUTRAL.**

FIGURE 2B WIRING DIAGRAM: NORMALLY OFF LOAD

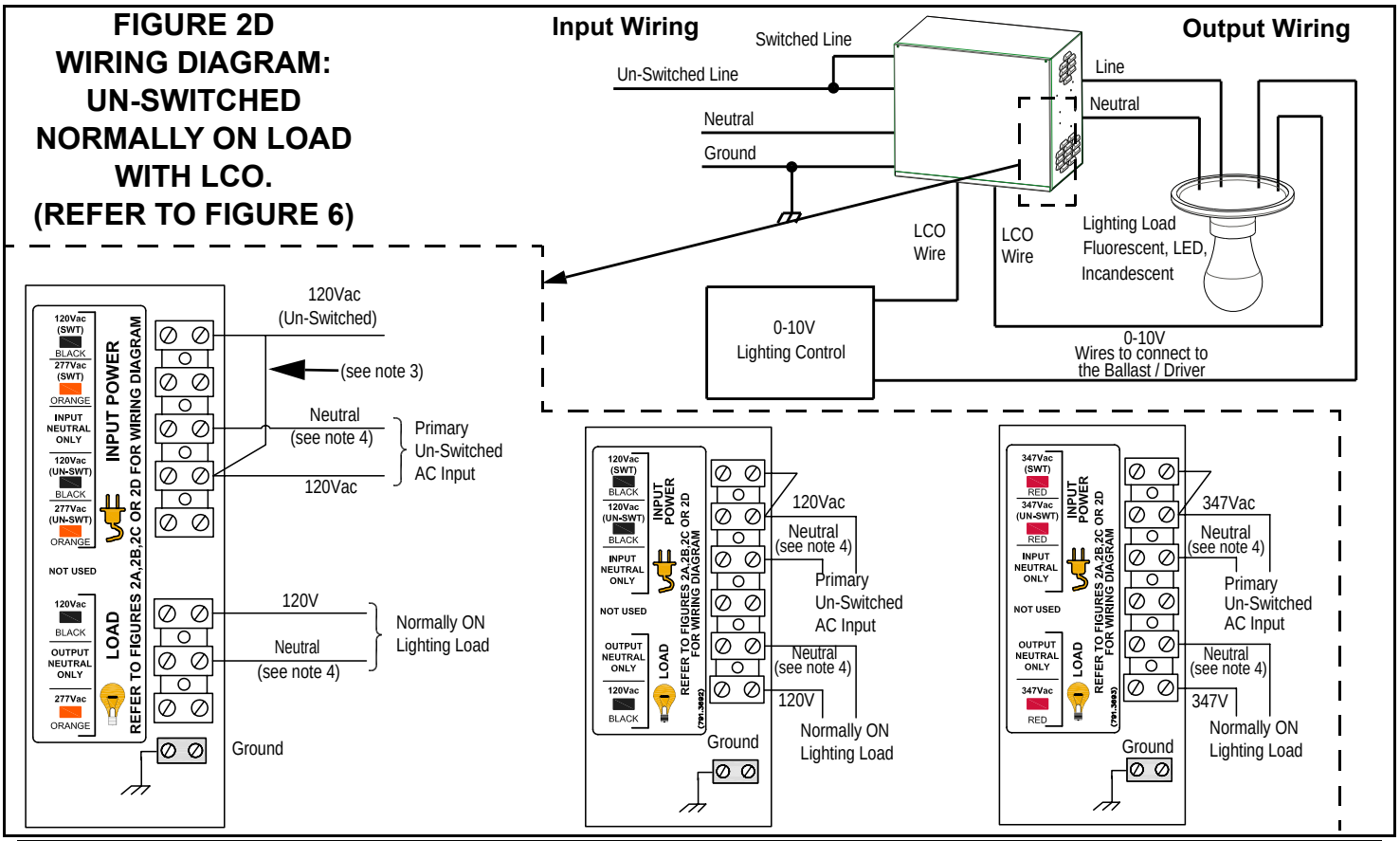
FIGURE 2C WIRING DIAGRAM: UN-SWITCHED NORMALLY ON LOAD



Notes:

1. Connect fixture supply and unit ground in accordance with local and national codes.
2. Single voltage wiring. Either 120V or 277V or 347V. Input and output voltage must be the same.
3. Unit jumper wire is preset for 120Vac. If the unit is to be wired for 277Vac, remove the jumper wire from the 120Vac INPUT POWER terminals and reinstall the jumper wire into the 277Vac INPUT POWER terminals.
4. **DO NOT COMBINE THE INPUT POWER NEUTRAL WITH THE LOAD NEUTRAL.**

FIGURE 2D WIRING DIAGRAM: UN-SWITCHED NORMALLY ON LOAD WITH LCO. (REFER TO FIGURE 6)



FEATURES AND OPTIONS

SYSTEM OPERATION

- The diagnostic/charger is a self-contained, fully automatic microcontroller-based system.
- When installation is complete, only the battery connection is needed. AC power need not be energized. Unit goes directly into lockout mode and waits for AC power to be restored.

1. ALARM SILENCE / MANUAL TEST / SYSTEM INITIALIZATION

- Alarms are silenced by pushing the “TEST” switch less than one half second. Alarm can only be silenced after correcting the fault or by re-initializing the system.
- Press the “TEST” switch for 1 second to initiate a 1-minute manual test.
- System initialization is done by holding “TEST” switch for at least 6 seconds.

2. DIAGNOSTIC AND NEXUS® (OPTION)

If audible alarm is activated, any fault condition will produce an audible warning of an intermittent beep: one second on, one second off.
See figure 3 for fault indicators.

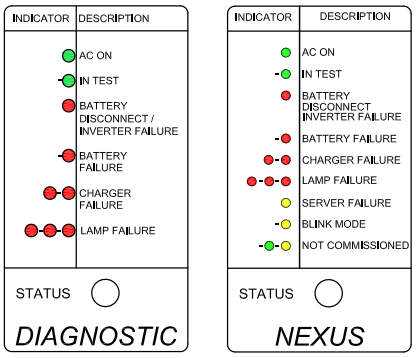


Figure 3

a. BATTERY DISCONNECT / INVERTER FAILURE
Status indicator displays steady red LED if the battery circuit is open or shorted, or if there is an Inverter failure.

b. BATTERY FAILURE
1 red blink and a pause of 5 seconds: incorrect battery (e.g. 12V battery on a 6V system), or battery has failed a timed or forced test (reached LVD level before the end of the test).

c. CHARGER MONITORING
2 red blinks and a pause of 4 seconds: charging current is not within limits corresponding to charger command state.

d. LIGHTING LOAD CAPTURE SEQUENCE
Only initiated by a reset of system. Press “TEST” switch for at least 6 seconds. Reset initializes the main counter. This re-initialization takes place to compensate for system variations when the unit ages. Re-initialization is not allowed if there is a lighting load failure alarm. This is not applicable for units with “No-Auto-Test plus No-Load-Detect” option.

e. SERVER FAILURE
The Nexus server (controller or PC) is no longer communicating with the RF unit’s modem. Confirm Nexus server is operating and check whether other surrounding emergency lighting units are not powered. If surrounding emergency lighting units are powered “off”, the surrounding emergency lighting units will prevent communicate with the modem. Otherwise, reset the modem.

f. BLINK MODE
A “Blink mode” signal was sent from the Nexus server (controller or PC) to the emergency lighting unit. To stop the “Blink mode”, access the Nexus server and execute a stop blink mode operation.

g. NOT COMMISSIONED
The unit is not registered in the Nexus server. Commission the unit. Auto-test will be disabled and the LED will show a steady green for 10 seconds and steady orange for 1 second.

To cancel a fault alarm display, reset unit after issue correction.
*Refer to Nexus® installation addendum for more details.

⚠ IMPORTANT: Reset the system whenever you add or change the lighting load. To reset the system, press the test switch for 6 seconds.

3. AUTOMATIC UNIT TEST (30-DAY TEST)

Every 30 days, while in charging mode, the sequence generator will generate a command to energize the transfer on the emergency lighting circuit for a variable test period depending on the yearly sequence.

	300W(MIN)	600W(MIN)
Monthly test	1	1
6 month test	10	10
12 month test	30	30

- If the battery fails to complete the discharge test, the charger will display a battery failure and the test will abort.
- The 30-day automatic test sequence is reset every time the lighting load is turned on, including the manual test.

4. LIGHTING LOAD TESTING

The test is fully automatic. To maintain accurate data, these 2 conditions must be met prior to acquiring values from an all-good lighting load:

- The battery must be at or near full power. The program will delay data capture for a minimum of 48 hours following any discharge or reset.
- The charger must be in hysteresis mode (charger cycling on/off).

IMPORTANT: A minimum lamp load equivalent to 10% of the rated capacity of the unit must be installed. Example: 30W/VA for a 300W inverter unit.

5. AUDIBLE ALARM (BUZZER)

Can be activated or de-activated in the field. Refer to Figure 4.

To select the audible alarm option:

a. Remove all power sources to the board (AC and battery).
b. Use long-nose pliers to remove the shunt (little black box) from the pins.
c. Replace the shunt according to the option selection.
d. Reconnect AC power and the battery.

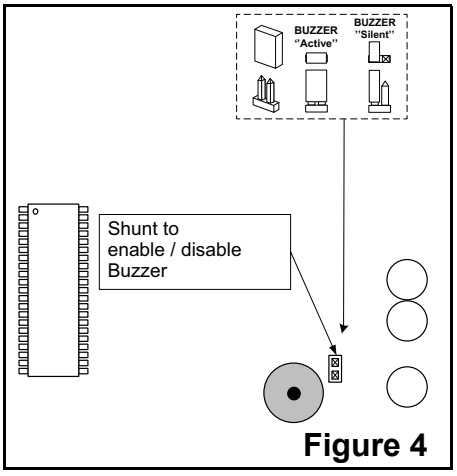


Figure 4

6. SERVICE ALARM (OPTION)

If installed, insert each wire of the Building Alarm Panel into separate terminals of the terminal block marked “SERVICE ALARM”.

Alarm Panel shall provide a 24V signal. The charger board will indicate a fault by closing a contact. Polarity is not specified.

7. LIGHTING CONTROL OVERRIDE (OPTION)

Used with lighting loads equipped with low voltage dimming control. The dimming function will be disabled during a power failure in order for the load to provide a 100% level of lighting.

The circuit consists of a single-pole dry-contact relay that is normally closed in stand-by operation. In emergency mode (power failure) the relay contacts open and disconnect the dimming signal from the lighting load, allowing the load to operate at 100% light level.

IMPORTANT: Only one control signal can be handled by one LCO module. Multi control signals require one LCO per control signal. Consult customer service if there is more than one Lighting Control signal to be overridden.

INSTALLATION:

1. Locate the Lighting Control signal cable pair.
2. Cut, strip and extend one wire only, of the Lighting Control signal cable.
3. Connect to the terminal block marked "LIGHTING CONTROL OVERRIDE" as shown in the wiring diagram below.

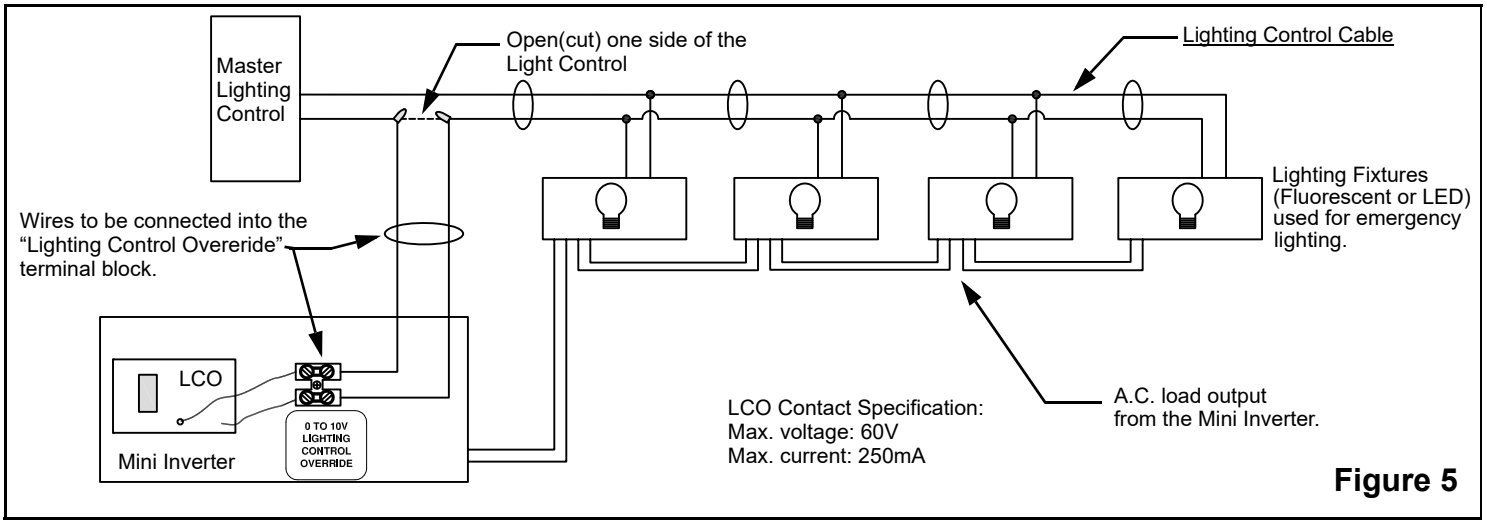


Figure 5

4. The figure below illustrates the wiring of a 0-10V dimmer with integrated power switch.
   - When AC mains is present, the intensity of lighting fixtures is controlled by 0 to 10V control signal.
   - In normal AC mode, fixtures can be turned off completely by turning off the power switch integrated with the dimmer.
   - In emergency mode, LCO relay disconnects the 0-10V control signal and fixtures operate at 100% light output.

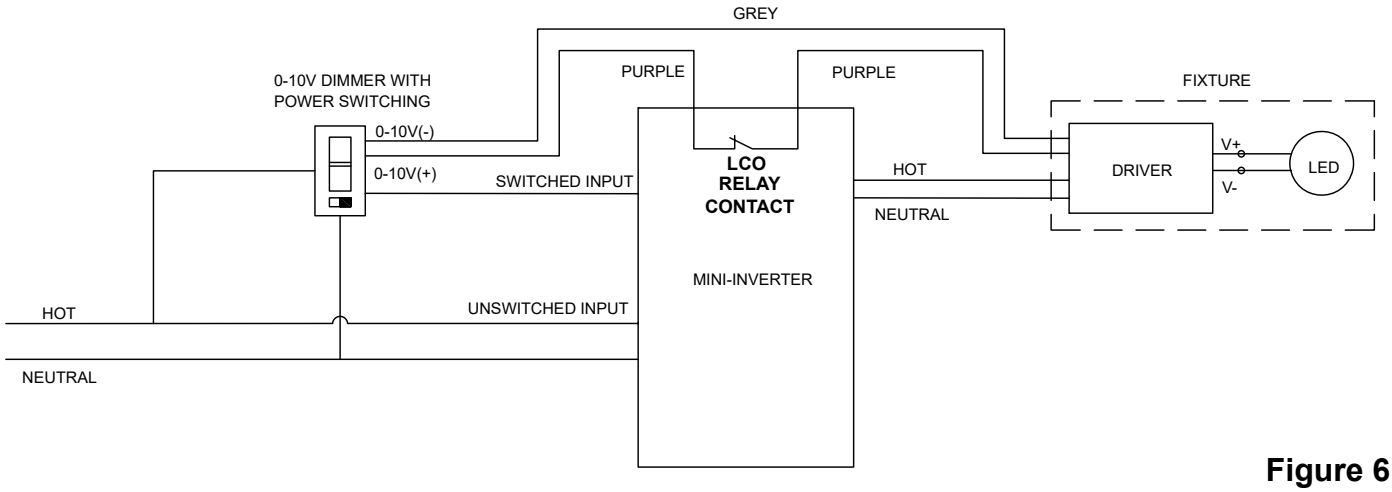


Figure 6

8. UNITS WITH NO AUTO-TEST

This equipment is not self-testing in conformance with the National Fire Code of Canada.

TROUBLESHOOTING GUIDE

STATUS INDICATOR (LED)		TROUBLESHOOTING GUIDE		
DISPLAY	**DETAIL**	**SYMPTOMS**	**PROBLEM**	**CORRECTIVE ACTION**
	LED GREEN ON Steady, not flashing	Lamp load is ON	None, if unit is in Normally ON mode.	Unit is operating correctly.
		Lamp load is OFF	None, if unit is in Normally OFF mode.	Unit is operating correctly.
		Lamp load is OFF, but the unit is in Normally ON mode	Output fuses burned out.	- Verify output is not overloaded. - Verify there is no short circuit in the load. - Replace fuses.
			Inverter module output fuse burnt out.	Check field wiring on mini-inverter. Ensure no voltage is being applied to the output of the mini-inverter. Replace fuse.
		-Lamp load is OFF (if installation is Normally OFF) - Lamp load is ON (if installation is Normally ON)	Power at primary AC input + battery discharged (at LVD) + no reaction with test button.	- Remove primary AC input + disconnect battery + wait minimum 10 seconds. - connect battery + connect primary AC input. => the unit will restart. - if unit did not restart, call technical support at 1-(888) 552-6467.
	LED flashing GREEN/ ORANGE	Lamp load is ON	None, if unit is in Normally ON mode +Nexus option.	Unit is operating correctly. Unit is not commissioned to the Nexus system.
		Lamp load is OFF	None, if unit is in Normally OFF mode +Nexus option.	Unit is operating correctly. Unit is not commissioned to the Nexus system.

TROUBLESHOOTING GUIDE

	LED flashing GREEN/OFF	Lamp load is ON	None, if unit is in test mode or is sampling load.	Unit is operating correctly.
		Lamp load is OFF	Inverter switched OFF.	Check the inverter ON/OFF switch => Turn it on. Switch is located on the right side of the inverter module.
			Output fuses burned out.	- Verify output is not overloaded. - Verify there is no short circuit in the load. - Replace fuses.
			Inverter module output fuse burnt out.	Check field wiring on mini-inverter. Ensure no voltage is being applied to the output of the mini-inverter. Replace fuse.
	LED steady OFF, not flashing	Lamp load is ON	No power at primary AC input + in emergency mode.	Check the circuit breaker panel.
		Lamp load is OFF	No power at primary AC input + emergency mode stop (battery discharged).	Check the circuit breaker panel.
		- Lamp load is OFF (if installation is normally OFF) - Lamp load is ON (if installation is normally ON)	Power at primary AC input + battery discharged (at LVD) + no reaction with test button.	- Remove primary AC input + disconnect battery + wait minimum 10 seconds. - connect battery + connect primary AC input. => the unit will restart. - if unit did not restart, call for technical support at 1-(888) 552-6467.
	LED RED steady ON	Battery Disconnect Error	No battery installed in unit.	Install battery following installation guide.
	LED Flashing RED 1 times every 6 seconds	Battery Failure	Battery fails to complete manual or monthly test.	Replace the batteries.
			Battery fails to complete annual test.	Replace the batteries.
			Battery fail in charge.	Replace the batteries.
	LED Flashing RED 2 times every 6 seconds	Charger Failure	Charger not working.	Reset the unit (see page 5). If the same error is displayed, replace charger board.
	LED Flashing RED 3 times every 6 seconds	Lamp Failure	Lost of 10% or more of initial lamp load.	Replace the bad lamp and reset the unit.
	LED AMBER (ORANGE) steady On	Network server down	Nexus modem is not sending a signal to Nexus server.	See Nexus manual system.
	LED flashing between AMBER/OFF	Wink mode	Unit is in yellow blink mode.	Stop wink mode by sending a message from Nexus server or reset the unit (see page 5).

CONTACT CUSTOMER SERVICE FOR REPLACEMENT PARTS.
SERVICING MUST BE PERFORMED BY QUALIFIED PERSONNEL.
Consult Customer Service for current warranty information.

All information and specifications contained in these instructions are subject to change due to engineer design, errors and omissions.
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