

# **MODEL LTN-3R**

## **UNINTERRUPTIBLE POWER SYSTEM**

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### **OWNERS MANUAL**



**MODEL LTN-3R**  
**OUTDOOR RATED**  
*550W, 1KW, and 1.3KW*  
*120V INPUT, 120V OUTPUT, SINGLE PHASE, 60Hz*

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IMPORTANT - SAVE THESE INSTRUCTIONS - PLEASE READ THIS MANUAL  
BEFORE USING EQUIPMENT



## Caution

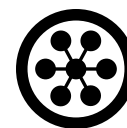
The following symbol indicates that caution should be taken when performing the process required in this manual. Damage to the unit or personal harm could happen if proper precautions are not taken.



## Shock Hazard

The following symbol indicates that there is a risk of electrical shock if proper precautions are not followed. Only qualified personnel should perform the actions required in this manual.

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## ABOUT THIS MANUAL

When viewing electronically, click on the subject to jump to that page.  
Clicking the header on the front page will launch the Controlled Power web site.  
Clicking anywhere else on the front page will also jump to the Table of Contents.  
Clicking any blue text will take you to that section of our website.

Click on the  at the top of each page to return to the Table of Contents.

# FEATURES AND BENEFITS



Controlled Power Company engineers and manufactures the industry's highest quality uninterruptible power systems, capitalizing on 4 decades of expertise. We have an enviable reputation for quality, which is reflected in the design, workmanship, and performance of our products.

## Features & Benefits

- No break, regulated, continuous sinewave output.
- Integral constant voltage transformer isolates and regulates output voltage.
- Local status and alarm panel, with optional remote status panel.
- Internal battery options providing extended runtimes from 30 minutes to 9.5 hours at full load, model dependent.
- Front-access design.
- Generator compatible.
- Remote communications via alarm signals or RS232.
- Optional remote monitoring via Ethernet TCP/IP.

## Status & Alarm Panel

Bright, 3-Digit LED Provides System Parameters:

- Input voltage
- Percent of battery capacity
- Output voltage
- Percent of battery charged
- Percent of load

LED Indicators Provide System Status:

- System ON (Green)
- System ON BATTERY (Yellow)
- LOW BATTERY Warning (Red)
- ALARM (Red)

## Powder-Coated Finish

- Cabinets are constructed of 14 gauge steel with a standard, environmentally-friendly, powder-coat paint finish for superior durability. At 1 - 2 mils thick, powder-coating is virtually impenetrable ... corrosion proof, salt-spray resistant, and won't crack / peel / blister ...ideal for both indoor and outdoor conditions.
- The Model LTN-3R (NEMA 3R) cabinet is constructed of powder-coated galvanized steel. This cabinet is also available in optional Grade 304 or Grade 316 stainless steel, which offers superior corrosion-resistance. Consult factory for details.

## Product Specifications

- Input Operating Voltage Range: +10%, -40% typical, load-dependent, without battery usage
- Input Frequency: 60 Hz,  $\pm 2.5$  Hz
- Output Sinewave Voltage: Maximum 3% harmonic distortion, any single harmonic
- Voltage Regulation:  $\pm 3\%$  typical
- Isolation: Galvanic
- Operating Temperature:  $-35^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$
- Total System MTBF: 100,000 hours
- Noise Attenuation:
  - Common Mode: 120 dB
  - Transverse Mode: 70 dB
- Efficiency: 89% typical

## Agency Approvals / Standards:

- UL / C-UL 1778 Listed Uninterruptible Power Supply Equipment. Model LTN-3R is UL Listed as raintight, suitable for outdoor use.
- C-UL Listed to CSA Standard C22.2 No. 107.1-01
- NFPA 70 National Electric Code
- ANSI / IEEE C62.41 Category B3 Surge Capability
- FCC Class A Limits, 47 C.F.R. Part 15, Subparts A, B Indoor / Outdoor Security Systems



## **SAFETY PRECAUTIONS**

**IMPORTANT SAFEGUARDS, READ AND FOLLOW ALL SAFETY INSTRUCTIONS.  
SAVE THESE INSTRUCTIONS.**



**\*\*\*\*\* CAUTION \*\*\*\*\***



**A BATTERY CAN PRESENT A RISK OF ELECTRICAL SHOCK AND HIGH SHORT CIRCUIT CURRENT.  
THE FOLLOWING PRECAUTIONS SHOULD BE OBSERVED WHEN WORKING ON BATTERIES:**

- REMOVE WATCHES, RINGS, OR OTHER METAL OBJECTS.
  - USE TOOLS WITH INSULATED HANDLES.
  - WEAR RUBBER GLOVES AND BOOTS.
- DO NOT LAY TOOLS OR METAL PARTS ON TOP OF BATTERIES.
- DISCONNECT CHARGING SOURCE PRIOR TO CONNECTING OR DISCONNECTING BATTERY TERMINALS.



**\*\*\*\*\* CAUTION \*\*\*\*\***



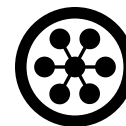
**USE CAUTION WHEN HANDLING OR SERVICING BATTERIES. BATTERY ACID CAN CAUSE BURNS  
TO SKIN AND EYES. IF ACID IS SPILLED ON SKIN OR IN THE EYES, FLUSH WITH FRESH WATER AND  
CONTACT A PHYSICIAN IMMEDIATELY.**

**BATTERIES ARE VERY HEAVY. USE CAUTION WHEN LIFTING AND MOVING THEM. INSTALLATION  
SHOULD ONLY BE PERFORMED BY AUTHORIZED PERSONNEL.**

**DIAGRAMS FOR WIRING BATTERIES ARE SHOWN ON THE FOLLOWING PAGES. BE SURE TO WIRE  
BATTERIES PROPERLY. IMPROPER WIRING CAN CAUSE DAMAGE TO THE BATTERIES. WIRING  
SHOULD ONLY BE PERFORMED BY AUTHORIZED PERSONNEL.**

- FOLLOW ALL STANDARD AND LOCAL ELECTRICAL CODES.
- BE SURE INPUT POWER TO UPS IS PROPERLY GROUNDED.
- DO NOT ALLOW WATER OR FOREIGN OBJECTS TO GET INSIDE UPS.
- DO NOT PLACE OBJECTS OR LIQUIDS ON TOP OF THE UPS.
- DO NOT LOCATE UPS NEAR RUNNING WATER OR WHERE THERE IS EXCESSIVE HUMIDITY.
- DO NOT MOUNT NEAR GAS OR ELECTRIC HEATERS.
- EQUIPMENT SHOULD BE MOUNTED IN LOCATIONS AND AT HEIGHTS WHERE IT WILL NOT READILY  
BE SUBJECTED TO TAMPERING BY UNAUTHORIZED PERSONNEL.
- THE USE OF ACCESSORY EQUIPMENT NOT RECOMMENDED BY THE MANUFACTURER MAY CAUSE  
AN UNSAFE CONDITION.
- DO NOT USE THIS EQUIPMENT FOR OTHER THAN INTENDED USE.
- SERVICING OF BATTERIES SHOULD BE PERFORMED OR SUPERVISED BY PERSONNEL  
KNOWLEDGEABLE ABOUT BATTERIES AND THE REQUIRED PRECAUTIONS.
- KEEP UNAUTHORIZED PERSONNEL AWAY FROM BATTERIES.
- DO NOT SHORT BATTERY TERMINALS.
- DO NOT DISPOSE OF BATTERY OR BATTERIES IN A FIRE. THE BATTERY MAY EXPLODE.
- ONLY REPLACE BATTERIES WITH IDENTICAL SPECIFICATION OF ORIGINAL BATTERIES SUPPLIED  
WITH THE SYSTEM.
- DO NOT OPEN OR MUTILATE THE BATTERY OR BATTERIES. RELEASED ELECTROLYTE IS HARMFUL  
TO THE SKIN AND EYES. IT MAY BE TOXIC.
- READ AND FOLLOW ALL SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS.

# RECEIVING THE UPS



## \*\*\* WARNING \*\*\*



**INSPECTION, PLACEMENT, INSTALLATION, SETUP  
AND START-UP SHOULD BE PERFORMED  
BY QUALIFIED PERSONNEL ONLY**



## INSPECTION

Upon receipt of your UPS, visually inspect the unit for shipping damage. If shipping damage has occurred, the purchaser should promptly notify the carrier and file a claim with the carrier. The factory should be notified if the damages may impair the operation of the unit. Reference the front cover of this manual for factory contact information.

Note: Open the front door of the enclosure and inspect inside the unit for shipping damage.

## IMPORTANT NOTICE

This shipment has been carefully inspected, checked and properly packaged at our company.

When it was delivered to the carrier it was in good condition and technically it became your property at that time. Thus, any damage, whether obvious or hidden, must be reported to the transportation company within FIVE days of receipt of the shipment at your premises to avoid forfeiting claims for damages.

### FOR ALL SHIPMENTS DAMAGED IN TRANSIT

Leave the items, packing material and carton "AS IS". Notify your carrier's local office and ask for immediate inspection of the carton and contents.

After inspection has been made by the carrier, and you have received acknowledgment in writing as to the damage, notify our Customer Service Department to make any required repair arrangements.

It is your responsibility to follow the above instructions or the carrier will not honor any claims for damage. Also, if there are any shortages or questions regarding this shipment, please notify us within FIVE days.

Please note that we cannot be responsible for any service work or back-charges unless authorized by us in writing, before the work is performed.

## STORAGE



**WHILE IN STORAGE BATTERIES MUST BE CHARGED  
FOR 24 HOURS EVERY 6 MONTHS. WHILE IN STORAGE DISCONNECT  
THE BATTERY CONNECTOR FROM THE INVERTER MODULE.**



For extended storage, the batteries must be charged for 24 hours every 6 months. Failure to do so will result in weak or bad batteries which WILL NOT be covered under the warranty. Charging is accomplished by turning the Inverter on and allowing it to run. See "Set Up and Start Up Procedures" for turning the inverter on. **While storing, disconnect the battery connector from the inverter module.** Make sure proper ventilation is available any time the inverter is on.



## RECEIVING THE UPS CONTINUED

### REMOVING THE UPS FROM THE PALLET

#### \*\*\* CAUTION \*\*\*

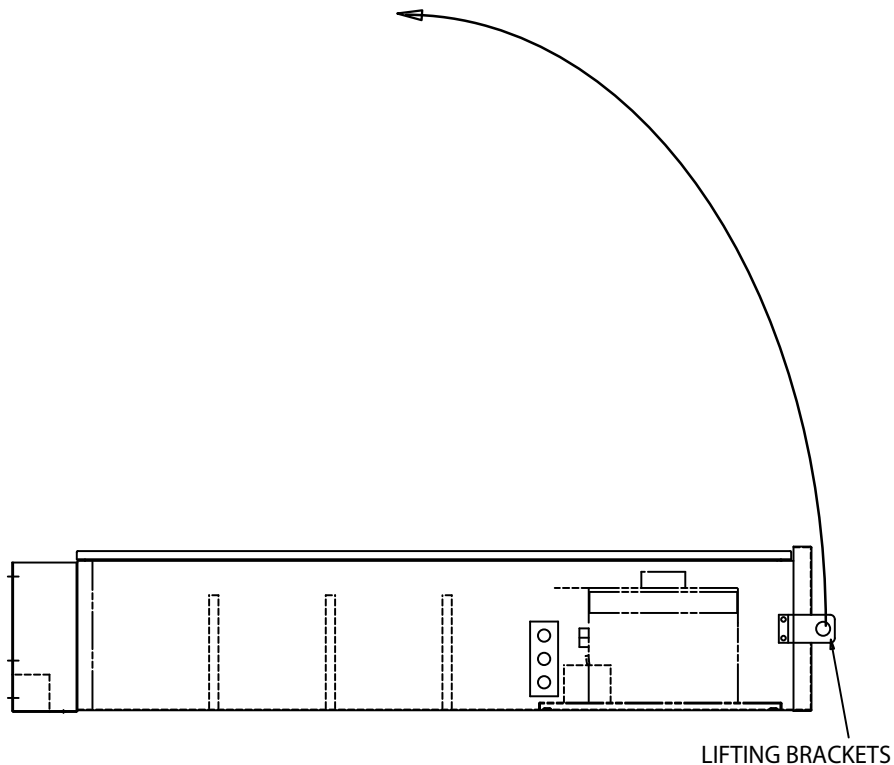


**CABINETS AND BATTERIES ARE EXTREMELY HEAVY  
USE PROPER EQUIPMENT WHEN REMOVING  
THE CABINETS FROM THE SKID**



**TOOLS REQUIRED:** 1/2" Socket, Forklift, lifting strap, dolly, utility knife and band cutters.

1. Using a utility knife, cut plastic wrapping and banding, remove and discard.
2. To remove the UPS from the pallet, first remove any bolts or screws that are securing the UPS cabinet to the pallet.
3. Using a forklift and a lifting strap or heavy chain with hooks connected to the lifting brackets, lift the enclosure upward off of the skid.
4. Set the UPS cabinet down until you are ready for installation.



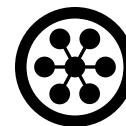
#### \*\*\* CAUTION \*\*\*



**THIS UNIT IS INTENDED TO BE MOUNTED TO THE WALL BUT CAN  
BE MOUNTED TO THE FLOOR. SUPPORT THE UNIT AT ALL TIMES UNTIL IT  
IS SECURED TO THE WALL OR THE FLOOR. THE UNIT WILL FALL OVER  
IF NOT SUPPORTED WHILE STANDING ALONE ON THE FLOOR.**



# PRELIMINARY INSTALLATION



## TOOLS REQUIRED AND INSTALLATION CHECKLIST

\_\_\_\_\_ Flat Head Screw Driver

\_\_\_\_\_ The AC circuit breaker and amperage information below defines the proper AC breaker size for the UPS system. The input current is the sum of the inverter current, charger current and optional system heater currents. The unit comes standard with terminals for hard wire installation.

\_\_\_\_\_ UPS systems require a ground wire. The ground wire should be the same size as the input feed wires. The ground that feeds the UPS should be of good integrity and dedicated to the UPS. The run should be as short as possible. Conduit cannot be used for the grounding of the circuit.

\_\_\_\_\_ When wiring batteries be sure to use insulated tools for safety.

### Reference: NEC ARTICLE 250

## SYSTEM INFORMATION

| VA RATING | WATTS | INPUT VAC<br>60HZ | OUTPUT<br>VAC 60 HZ | BATTERY RUNTIMES (FULL / HALF LOAD) |                          |                            | BTU'S /<br>HOUR |
|-----------|-------|-------------------|---------------------|-------------------------------------|--------------------------|----------------------------|-----------------|
|           |       |                   |                     | CABINET                             | MINIMUM                  | MAXIMUM                    |                 |
| 550       | 550   | 120               | 120                 | SHORT<br>TALL                       | 25m / 55m<br>5h / 9h     | 4.5h / 8h<br>9.5h / 15h    | 281<br>281      |
| 1000      | 1000  | 120               | 120                 | SHORT<br>TALL                       | 11m / 30m<br>2.5h / 5.5h | 2.5h / 4.75h<br>5.5h / 10h | 512<br>512      |
| 1300      | 1300  | 120               | 120                 | SHORT<br>TALL                       | 9m / 23m<br>2h / 4h      | 1.75h / 3.5h<br>4.5h / 8h  | 665<br>665      |

## SYSTEM AC INPUT AND OUTPUT CURRENTS

| VA<br>RATING | INPUT BREAKER | INPUT CURRENT | OUTPUT BREAKER | OUTPUT CURRENT |
|--------------|---------------|---------------|----------------|----------------|
| 550          | 15A           | 9.8A          | 15A            | 4.58A          |
| 1000         | 25A           | 18.8A         | 20A            | 8.33A          |
| 1300         | 30A           | 20.8A         | 20A            | 10.8A          |

## CABINET DIMENSIONS

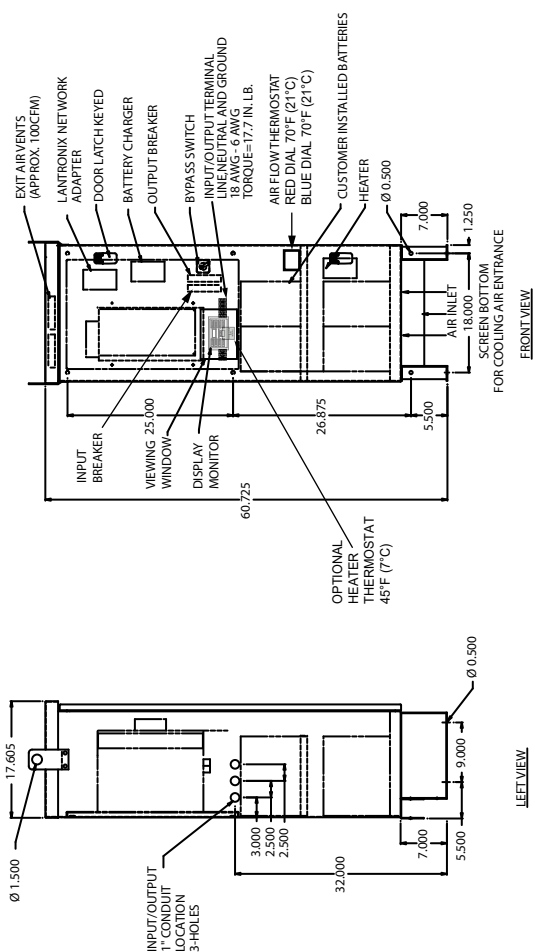
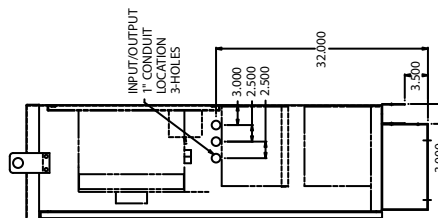
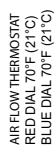
| VA<br>RATING | DIMENSIONS |        |        |       |
|--------------|------------|--------|--------|-------|
|              | CABINET    | HEIGHT | WIDTH  | DEPTH |
| 550          | SHORT      | 60.75" | 21.25" | 17.6" |
|              | TALL       | 85.73" | 21.25" | 17.6" |
| 1000         | SHORT      | 60.75" | 21.25" | 17.6" |
|              | TALL       | 85.73" | 21.25" | 17.6" |
| 1300         | SHORT      | 60.75" | 21.25" | 17.6" |
|              | TALL       | 85.73" | 21.25" | 17.6" |



**NOTE: Because a tool (key) is required for cabinet access to input/output breakers, external AC disconnects are to be provided by end user.**



3. CUSTOMER TO DETERMINE INPUT/OUTPUT CONDUIT LOCATIONS, SIDES HAVE INSULATION WHICH MUST BE TRIMMED TO ATTACH CONDUIT FITTINGS.
2. NEMA 3R CONSTRUCTION WITH ENCLOSURE POWDER COAT PAINTED HIGH GLOSS WHITE, GALVANIZED STEEL AND STAINLESS STEEL VERSIONS AVAILABLE.
3. UNIT SHOWN WITH THE FOLLOWING OPTIONAL EQUIPMENT;
  1. LANTRONIX NETWORK ADAPTER, BATTERY HEATER, AND VIEWING WINDOW.
  4. UNIT USES STRINGS OF TWO BATTERIES (24VDC BUS), MINIMUM 1 STRING, MAXIMUM 25 STRINGS
  5. OPTIONAL LANTRONIX NETWORK ADAPTER CAPABLE OF ETHERNET/TCP/IP.



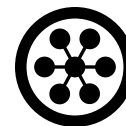
REPLACED ME THERMISTOR WITH LAMTHERM 06,  
10/30/15 DC

**CONTROLLED POWER COMPANY**  
1955 STEPHENSON HWY., TROY, MI 48063

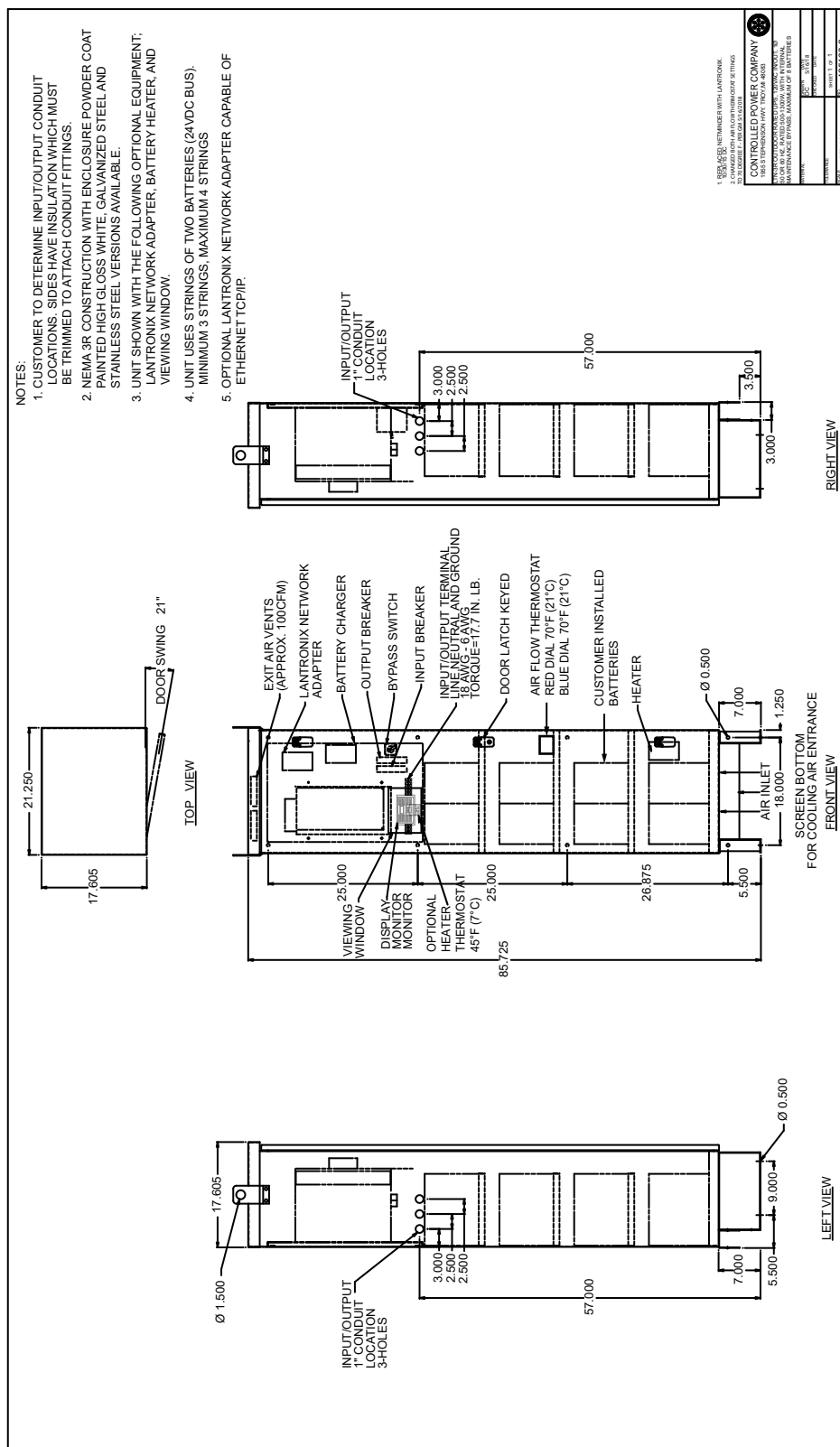
17A-3R OUTDOOR RAISED UPS, 1.25MW IN/OUT, 10  
0 OR 60 HZ, RATED 500-1 300VA WITH INTERNAL,  
MAIN TENANCE BYPASS, MAXIMUM OF 48 BATTERIES

|          |         |
|----------|---------|
| PREPARED | DATE    |
| DC       | 5/16/18 |
| CHECKED  | DATE    |

|            |             |
|------------|-------------|
| UNIT PRICE | 14021 OF 1  |
| QTY        | 425164      |
| PRICE      | .1875=1.000 |



## CABINET DIMENSIONS AND ACCESSES - TALL CABINET





# BATTERY INSTALLATION

## BATTERY BRACKET INSTALLATION

NOTE: The cabinet should be bolted to the floor and/or wall prior to battery installation and input/output wiring.



**\*\*\* WARNING \*\*\***

**CAUTION - RISK OF ELECTRICAL SHOCK.**

**THE UPS RECEIVES POWER FROM MORE THAN ONE SOURCE. BE SURE ALL UTILITY CIRCUIT BREAKERS ARE IN THE OFF POSITION AND THE BATTERY CONNECTOR IS UNPLUGGED BEFORE SERVICING.**





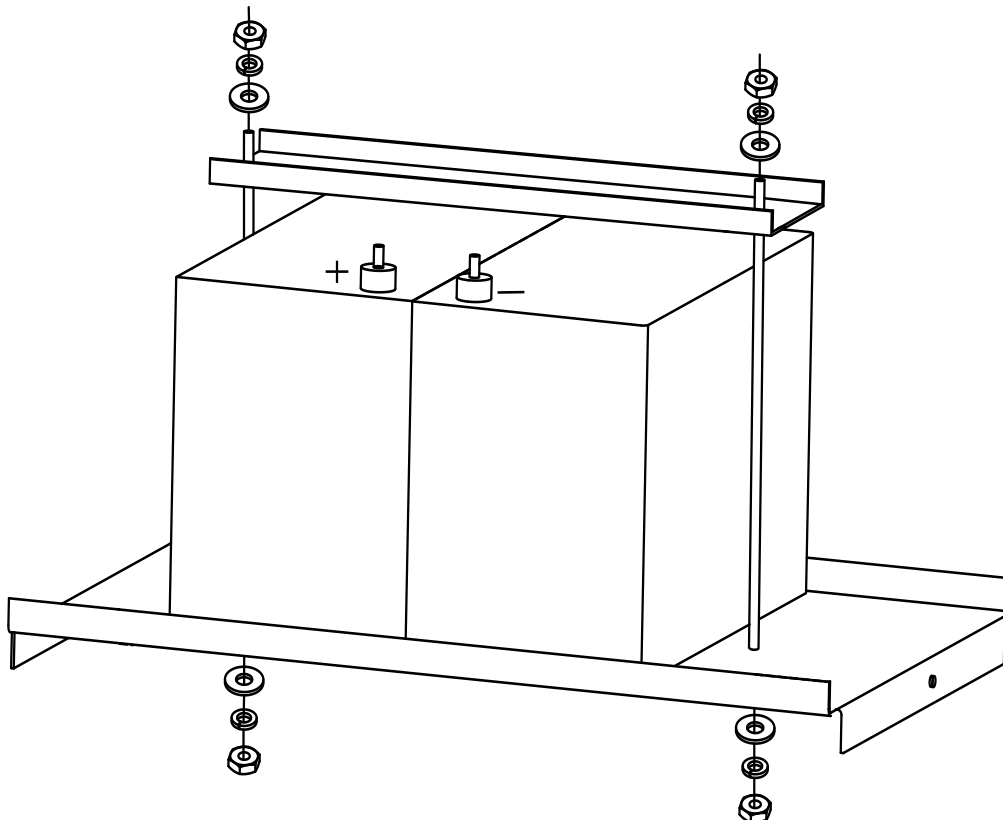
**\*\*\* CAUTION \*\*\***

**DO NOT OVERTIGHTEN THE BATTERY BRACKETS OR TERMINALS. EXCESSIVE FORCE MAY CAUSE THE BATTERIES TO CRACK.**

**BATTERY BRACKETS - MAX. 10 INCH POUNDS.**  
**BATTERY TERMINALS - MAX. 70 INCH POUNDS.**  
**BATTERY TERMINAL RE-TORQUE - MAX. 65 INCH POUNDS.**



The battery brackets should be installed as shown below. All hardware, battery cables, battery brackets, insulators and nylon nuts are supplied with the system.



1/4" x 20 x 12"  
THREADED ROD

1/4" x 20  
FLAT  
LOCK  
NUT

# BATTERY INSTALLATION CONTINUED



## BATTERY TERMINAL HARDWARE

NOTE: The cabinet should be bolted to the floor and/or wall prior to battery installation and input/output wiring.



### \*\*\* WARNING \*\*\*

**CAUTION - RISK OF ELECTRICAL SHOCK.**



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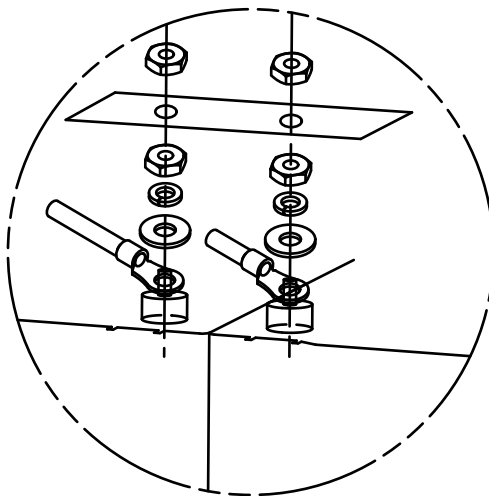


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BATTERY TERMINALS - MAX. 70 INCH POUNDS.  
BATTERY TERMINAL RE-TORQUE - MAX. 65 INCH POUNDS.**



1/4" x 20  
FLAT  
LOCK  
NUTS

**TERMINAL HARDWARE**



## BATTERY INSTALLATION CONTINUED

### BATTERY WIRING - (2) TWO BATTERY SYSTEMS

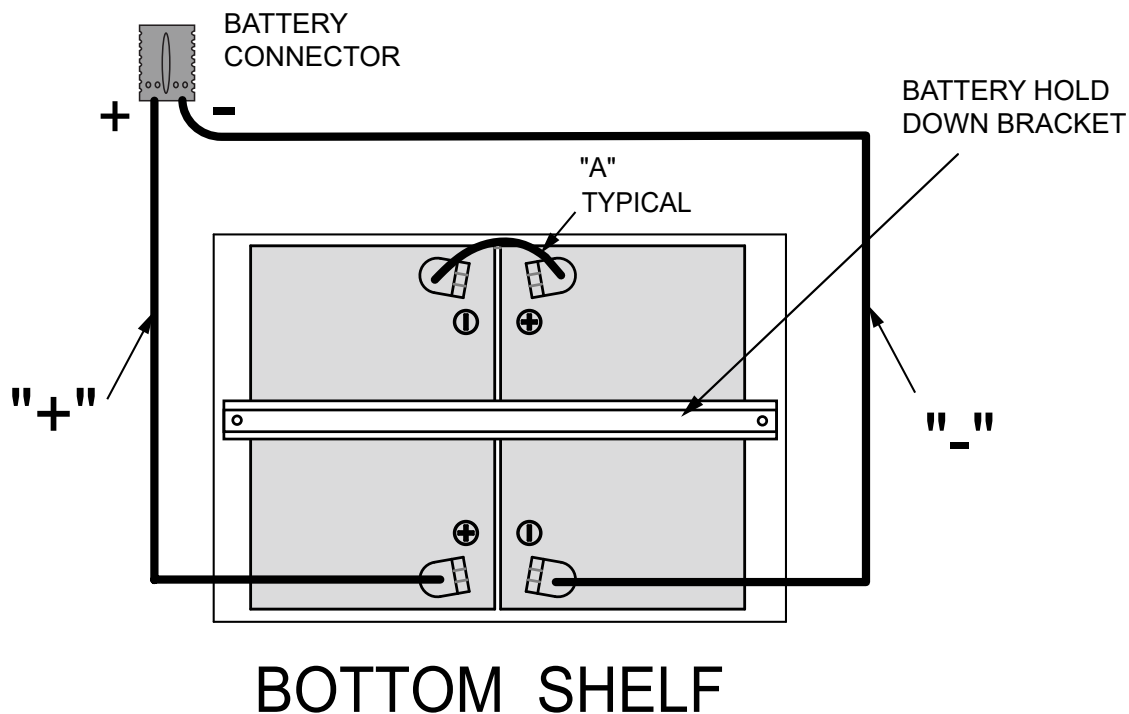
#### BATTERY ORIENTATION MUST BE AS SHOWN



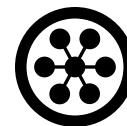
Batteries of a specific manufacturer and model are required to maintain the system's UL listing. Use of batteries not recognized in the product's UL report will void its listing. Please contact the factory for battery replacement.



**NOTE - NOT ALL BATTERY MANUFACTURERS  
WILL HAVE THE (+) AND (-) POSTS AS SHOWN.  
USE EXTREME CAUTION WHEN WIRING.**



# BATTERY INSTALLATION CONTINUED



## BATTERY WIRING - (4) FOUR BATTERY SYSTEMS

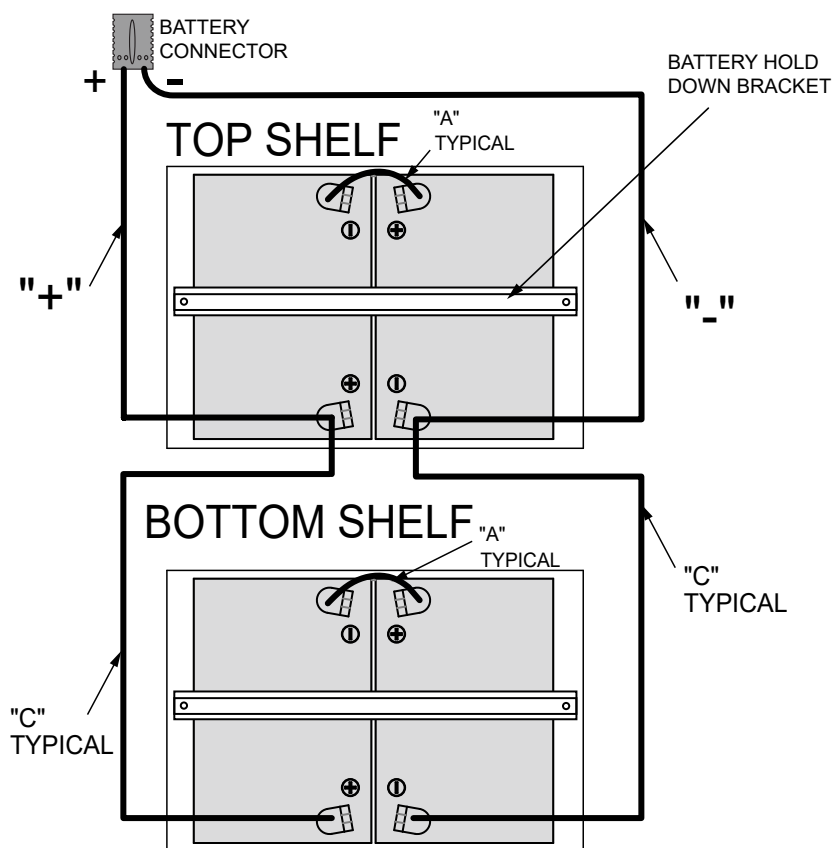
**BATTERY ORIENTATION MUST BE AS SHOWN**



Batteries of a specific manufacturer and model are required to maintain the system's UL listing. Use of batteries not recognized in the product's UL report will void its listing. Please contact the factory for battery replacement.



**NOTE - NOT ALL BATTERY MANUFACTURERS WILL HAVE THE (+) AND (-) POSTS AS SHOWN. USE EXTREME CAUTION WHEN WIRING.**





## BATTERY INSTALLATION CONTINUED

### BATTERY WIRING - (6) SIX BATTERY SYSTEMS

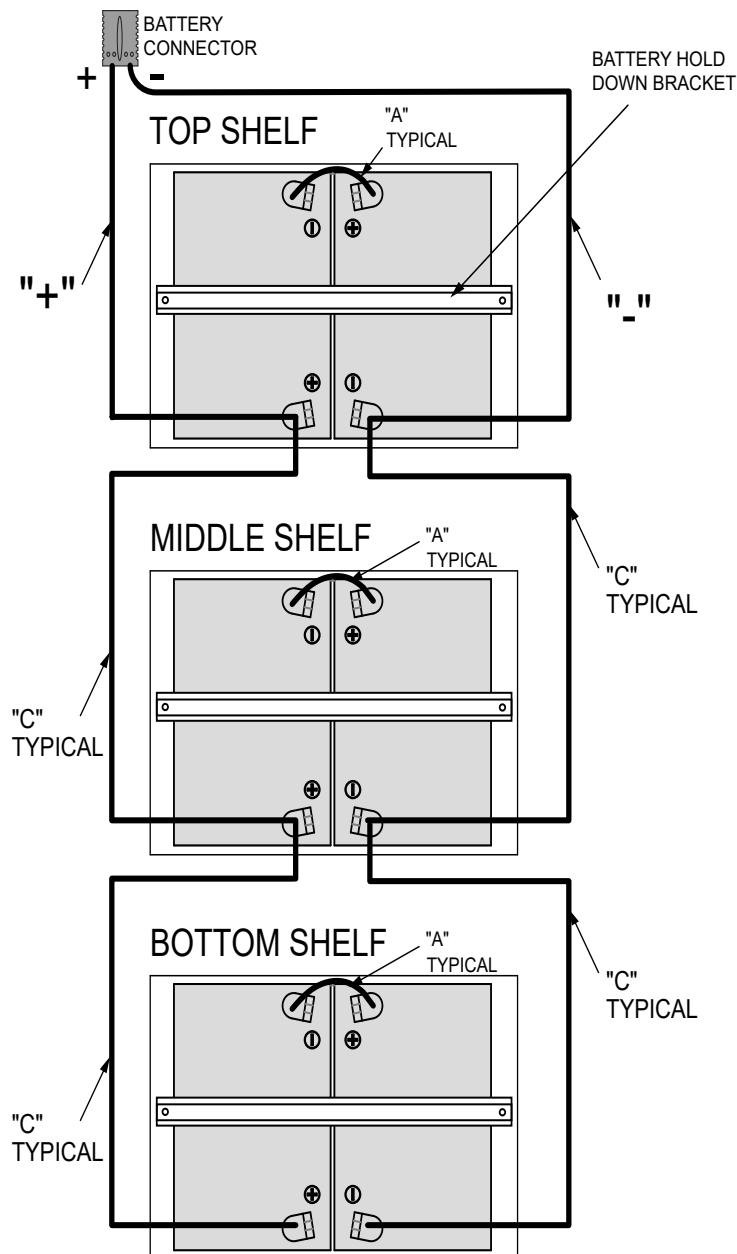
BATTERY ORIENTATION MUST BE AS SHOWN



Batteries of a specific manufacturer and model are required to maintain the system's UL listing. Use of batteries not recognized in the product's UL report will void its listing. Please contact the factory for battery replacement.



**NOTE - NOT ALL BATTERY MANUFACTURERS WILL HAVE THE (+) AND (-) POSTS AS SHOWN. USE EXTREME CAUTION WHEN WIRING.**



# BATTERY INSTALLATION CONTINUED



## BATTERY WIRING - (8) EIGHT BATTERY SYSTEMS

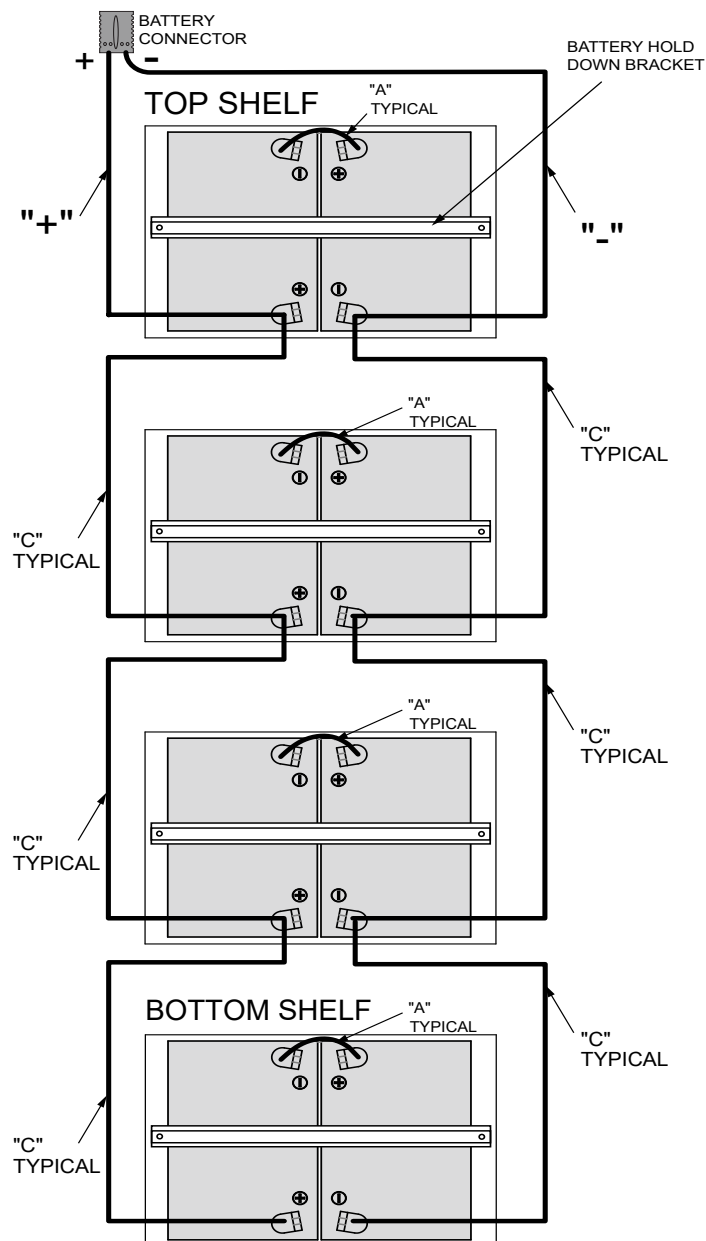
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Batteries of a specific manufacturer and model are required to maintain the system's UL listing. Use of batteries not recognized in the product's UL report will void its listing. Please contact the factory for battery replacement.



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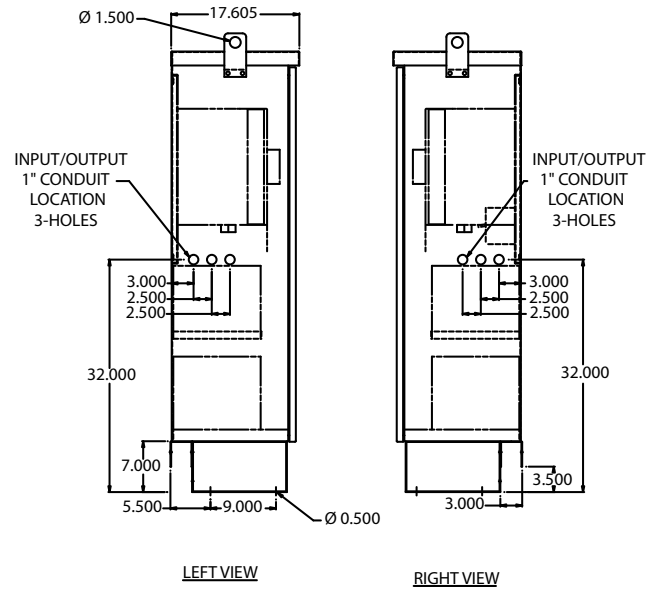




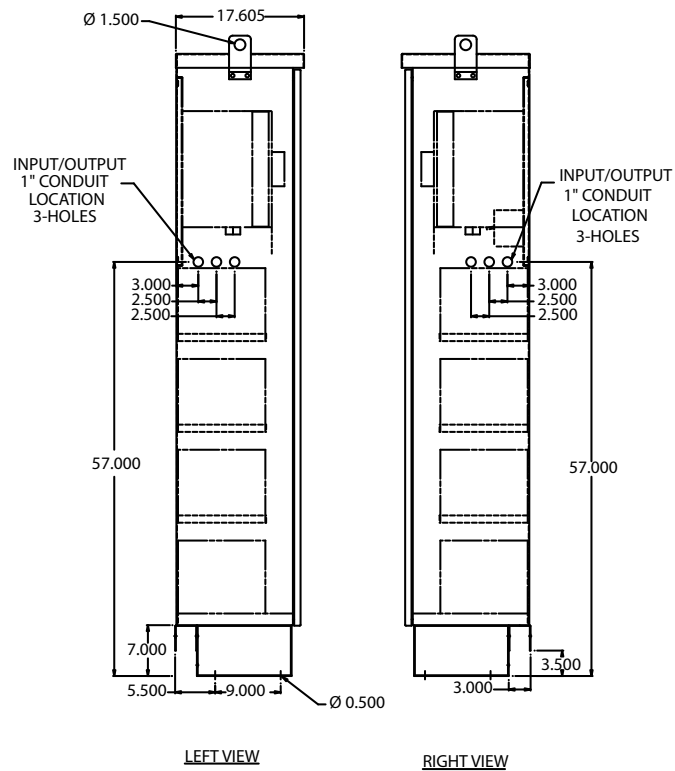
## INSTALLATION CONTINUED

### INPUT / OUTPUT CONDUIT ENTRY POINTS

#### SHORT CABINET



#### TALL CABINET

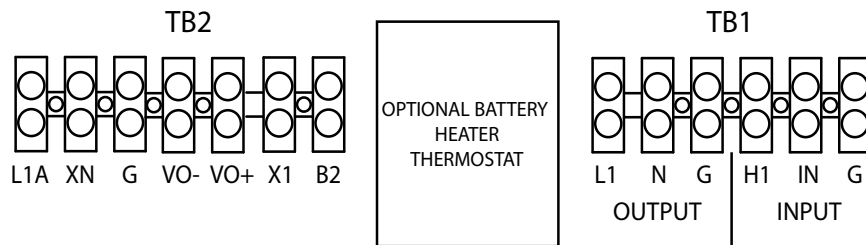
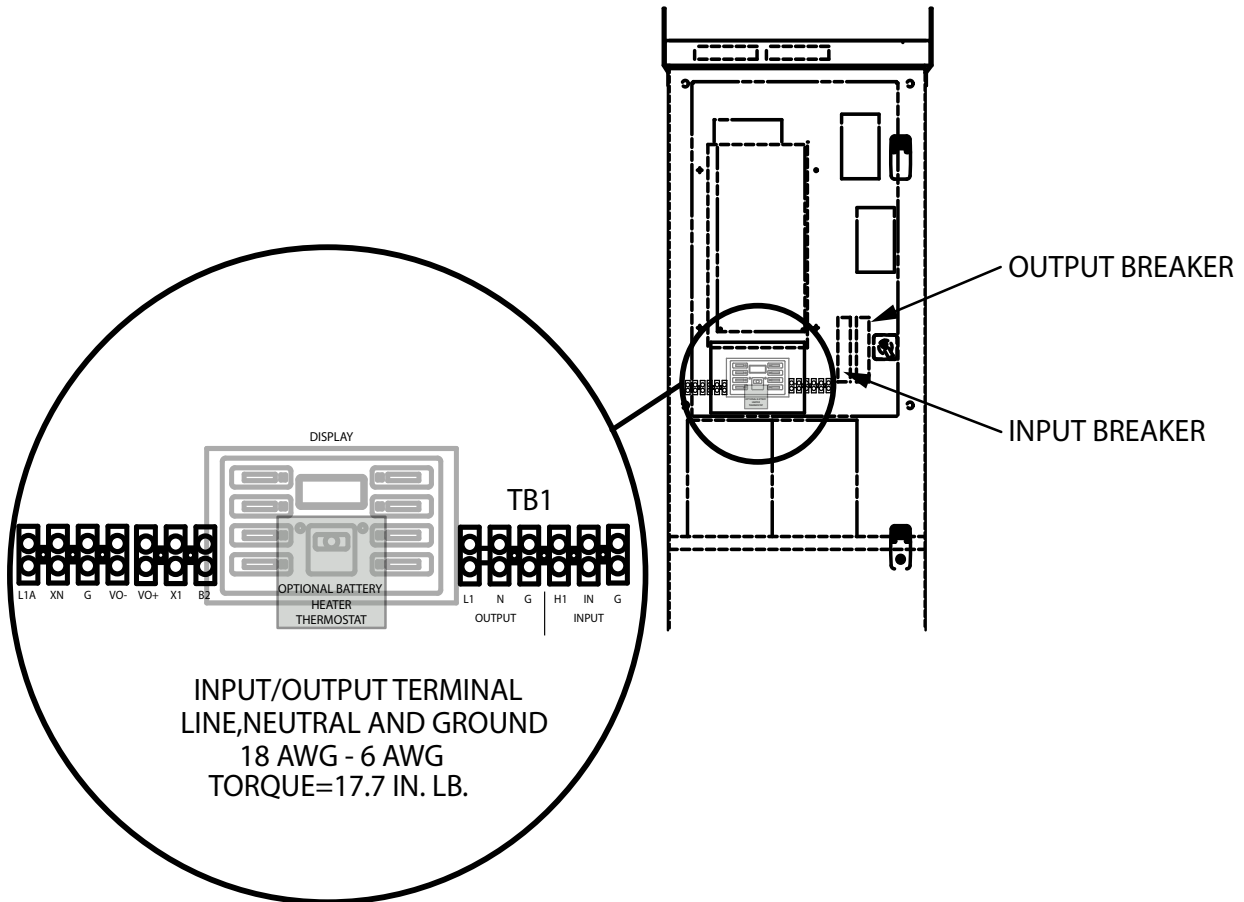




## INPUT / OUTPUT WIRING

### UPS WIRING

Input and output wiring is performed at the TB1 - Input/Output terminal strip. It is recommended that all wiring is performed according to NEC standards and local codes.



INPUT/OUTPUT TERMINAL  
LINE, NEUTRAL AND GROUND  
18 AWG - 6 AWG  
TORQUE=17.7 IN. LB.



# SET UP PROCEDURES

## SETUP PROCEDURES



**DO NOT ATTEMPT TO OPERATE THE  
UNIT UNTIL THE FOLLOWING STEPS HAVE  
BEEN COMPLETED**



### DIP SWITCH SET UP

SW1 - This is a selector switch with the following functions:

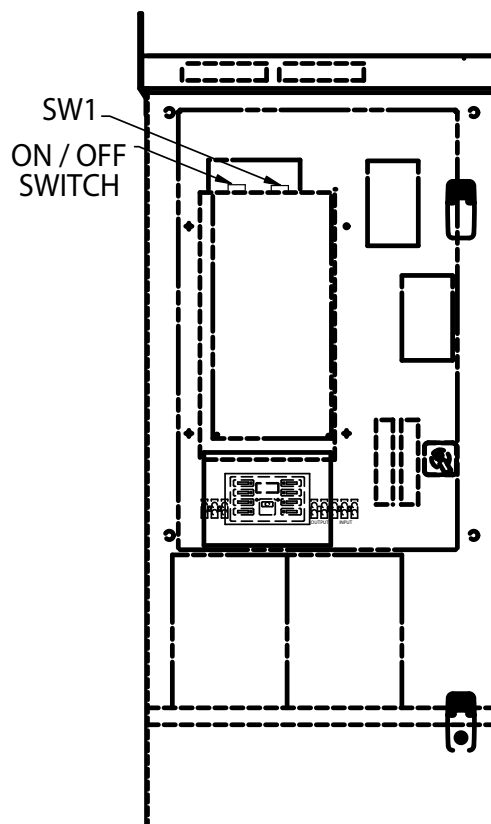
Position #1 - ON = Slew rate fast - this selection typically used when UPS must track rapidly changing input frequency. i.e. engine generators. **NOTE: DO NOT CHANGE THIS SWITCH WITH UPS ON. ONLY ONE SWITCH MAY BE ON AT A TIME FOR POSITION 1 AND 2.**

Position #2 - ON = Slew rate normal. Turn position 1 on and 2 off if UPS switches to batteries often, under normal operating conditions. **NOTE: DO NOT CHANGE THIS SWITCH WITH UPS ON. ONLY ONE SWITCH MAY BE ON AT A TIME FOR POSITION 1 AND 2.**

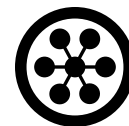
Position #3 - ON = Audible alarm on, OFF = Alarm silence.

Position #4 - During extended power outages the UPS will automatically turn off to prevent total battery depletion. Upon return of utility power you have the option for the UPS to turn on automatically or manually by resetting the on/off switch.

ON = Auto Restart    OFF = Manual Restart



# START UP PROCEDURES



## START UP PROCEDURES



**DO NOT ATTEMPT TO OPERATE THE  
UNIT UNTIL THE FOLLOWING STEPS HAVE  
BEEN COMPLETED**



1. Verify the input voltage source matches the UPS nominal input voltage rating and the UPS output voltage matches the loads nominal input voltage requirement.
2. Turn off / disconnect all loads attached to the UPS.
3. Plug the battery connector into the bottom of the control module. NOTE: Batteries require charging for 6 to 8 hours (sometimes longer). Backup time is reduced until batteries are fully charged.
4. Turn on the source breaker feeding the UPS followed by the UPS AC input breaker, located inside the system enclosure. **Then turn the ON/OFF switch located inside the cabinet, at the top of the control module to the “on” position (See previous page for ON/OFF switch location).** There will be a few seconds delay as the unit comes on. The digital display and “System On” LED will illuminate. Scroll to the “Output Volts” function and make sure the output voltage is correct.
5. Verify the output voltage on the UPS matches the load requirement. Do not connect your equipment if output voltage is out of specification, contact factory.
6. Simulate a power loss by turning off the AC INPUT BREAKER ONLY, located inside the UPS.

An “Audible Alarm” will sound and the following LED’s will illuminate.

- System On

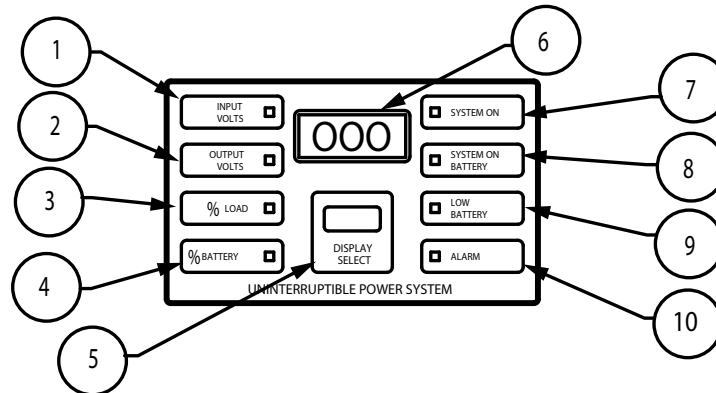
- System on Battery

- Alarm

7. While on inverter, verify the output voltage of the UPS matches the load requirement while on batteries. Do not apply power to the load if the output voltage is out of specification, contact factory.
8. Turn on the AC Input breaker and the UPS will return to utility power.
9. With the UPS running and System On LED illuminated, turn on the output circuit breakers and loads.
10. Some loads start hard and may cause the UPS to display a temporary overload. This is normal and in no way will damage the UPS.
11. If the overload persists and is in excess of 125%, the UPS will shut off within ten minutes. If the unit is overloaded, some of the loads will have to be removed or the UPS must be expanded.

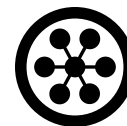


## DISPLAY OPERATION



### DISPLAY PANEL

1. Input Volts - LED ON indicates unit is monitoring the input voltage via the digital display. This function is activated by pushing the display select button.
2. Output Volts - LED ON indicates unit is monitoring the output voltage via the digital display. This function is activated by pushing the display select button.
3. Percent Load - LED ON indicates unit is monitoring the output load capacity relative to maximum watts via the digital display. This function is activated by pushing the display select button.
4. Percent Battery - LED ON indicates unit is monitoring the percentage of battery charge via the digital display. When operating on battery power the digital display monitors percentage of battery time remaining.
5. Display Select - This push-button selects 1 of 4 monitor functions mentioned above and displays the results on the digital display.
6. Digital Display - Three digit display monitoring the four previous functions. This display monitors one function at a time and is selected by the "Display Select" push-button.
7. System On - LED ON indicates the on/off switch is on and AC power is available at the input. LED will remain on when unit is on battery power.
8. System On Battery - LED ON indicates the UPS is on battery power accompanied by an audible alarm. The UPS may switch to battery power even when it appears there are no power outages. The reason is that the UPS detects input sags and surges and does not necessarily require a total power loss to switch to battery power. The UPS will remain on battery power for a few seconds after normal AC power is restored.
9. Low Battery - LED ON indicates batteries are low and a total UPS shutdown is imminent unless AC power returns. This alarm setpoint is factory set at 20% battery time remaining.
10. Alarm - LED ON is accompanied by an audible alarm for a number of alarm functions (see "Communications"). Alarm will clear automatically once the alarm condition is resolved.



## BYPASS SWITCH OPERATION

The purpose of the bypass switch is to connect the loads to utility power in case of a UPS failure. The bypass switch is a manual push to turn, make before break, mechanical switch, and functions as a maintenance bypass. Once the UPS is in bypass, the control module can be removed and sent to the factory for repairs. See “Preventive Maintenance - Removing the Control Module”.



### SWITCHING THE UPS TO BYPASS MODE.

Turn the bypass switch clockwise to the “Bypass” position. The bypass switch can be turned while power is on in normal mode. **DO NOT SWITCH IF THE UPS IS ON BATTERY - IT WILL DROP THE LOAD(S) AND POSSIBLY DAMAGE THE UPS AND OR LOADS.** The bypass switch should only be used in the event of a failure or to perform service or maintenance.

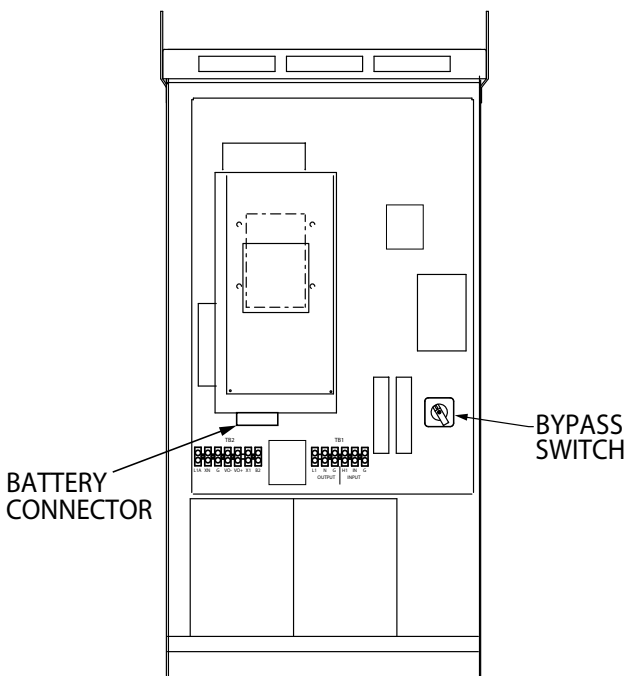
### SWITCHING BACK TO NORMAL MODE.

Turn the bypass switch counter clockwise to the “Normal” position.



After switching to bypass mode, it is recommended that the DC battery connector be disconnected from the control module. This will prevent battery discharge and possible battery damage if left in bypass mode for extended periods of time.

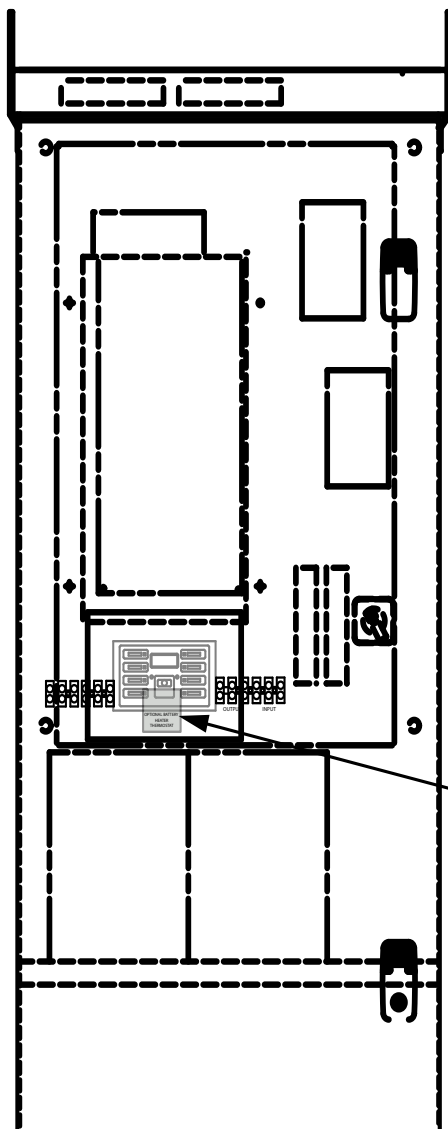
Be sure to reconnect the DC battery connector before returning to normal mode operation.





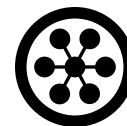
### THERMOSTAT OPERATION

Battery discharge capacity is dependant on ambient temperature. While 77°F is design level for maximum normal discharge levels, the optional heater thermostat should be set at 45°F (7°C) to minimize power usage on the system. The optional heater also keeps the UPS and other internal components warm. The optional heater is located in the bottom of the enclosure while the thermostat is located under the control module next to the input / output terminals. The other thermostat, which is located on one of the battery shelves is used to turn on or off the fan motors to recirculate warm air into the enclosure, is factory preset at 70°F (21°C) (red dial) , and the blue dial is factory preset at 70°F (21°C). Both thermostats are factory preset at specific levels and should not be changed.



AIR FLOW  
THERMOSTAT  
RED DIAL 70°F (21°C)  
BLUE DIAL 70°F (21°C)  
LOCATED ON BATTERY  
SHELF  
(SHORT CABINET - 1ST SHELF  
TALL CABINET - 2ND SHELF)

OPTIONAL  
HEATER  
THERMOSTAT  
45°F (7°C)



## REMOTE COMMUNICATIONS

Available on the LTN-3R UPS is an optional network communication device for reporting system status and diagnostics remotely via an Ethernet network. The device is self-contained within the UPS and is built to high temperature and quality standards which are required for outdoor-rated equipment. The network communication device transmits over TCP/IP all critical electrical parameters and system set points through an RS232 serial tunnel. The raw data can then be analyzed by a remote computer on the network by utilizing terminal emulation software, or custom software written to communicate with the RS232 protocol of the UPS.

**ETHERNET TCP/IP COMMUNICATIONS (OPTIONAL):** Internal module providing system parameters, status, and set points that may be accessed via a remote network computer utilizing terminal emulation software, or custom software written to communicate with the RS232 protocol of the UPS.

Specifications for the device:

### Serial Interface

- Mode: RS232
- Baud rate: 300 bps to 921.6 Kbps
- Characters: 7 or 8 data bits
- Stop Bits: 1 or 2
- Parity: odd, even, none
- Flow Control: CTS/RTS, XON/XOFF

### Ethernet Interface

- Interface: 10Base-T/100Base-T
- Speed: 10/100/Auto Mbps
- Connector: RJ45
- Protocols: ARP, UDP, TCP, ICMP, Telnet, TFTP, AutoIP, DHCP, HTTP,

SNMP TCP, UDP, and Telnet, TFTP, RFC2217 (Note: TCP and HTTP protocols only provide information used to configure the communication device)

### LED Indicators

- Power, Link, Activity, RX Activity, TX Activity

**See the accompanying communications manual for setup instructions.**



# OPTIONAL REMOTE ANNUNCIATOR INSTALLATION



Please read this entire instruction set before installing!  
Turn off all power before installing or servicing!



## REMOTE ANNUNCIATOR

Controlled Power Company's Remote Annunciator is capable of displaying status conditions of an Uninterruptible Power Supply and alarming under critical conditions. The following installation instructions include operation, wiring, and mounting your Remote Annunciator. NOTE: This item cannot be used in conjunction with Optional Remote Communications devices. To do so would require an external port expander device.

## OPERATION

During normal operation of the UPS, the Remote Annunciator will illuminate the green UPS On LED. During an alarm condition (unit over temperature, utility fail, etc.) the red General Alarm LED will illuminate along with other applicable LED's indicating the nature of the alarm and the audible alarm will sound. The On Bypass LED is inactive for LTN-3R Systems. The audible alarm can be silenced by pressing the Alarm Silence button on the front of the unit. If another alarm condition occurs (i.e. low battery), the alarm will resound. The audible alarm can be altogether defeated by changing jumper J1 on the circuit board. See the back side of the Remote Annunciator for J1 jumper setting.

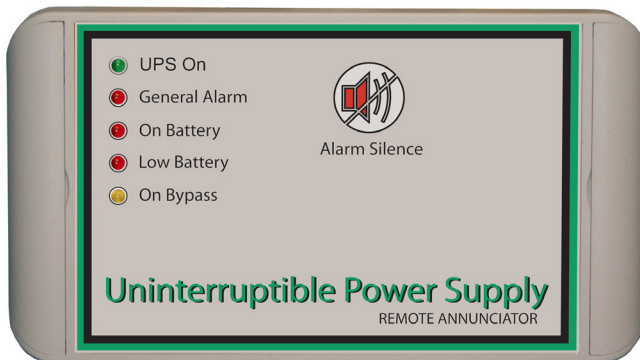


Figure 1: Remote Annunciator

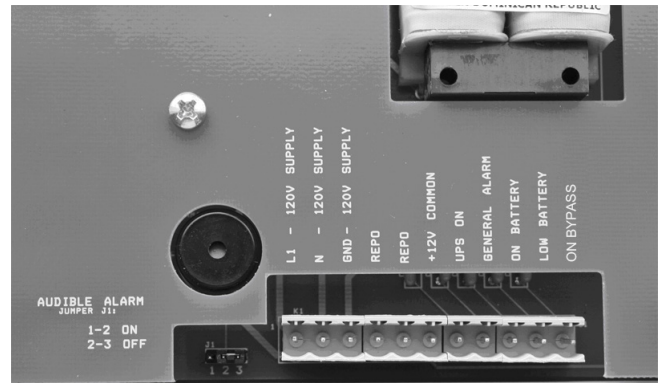
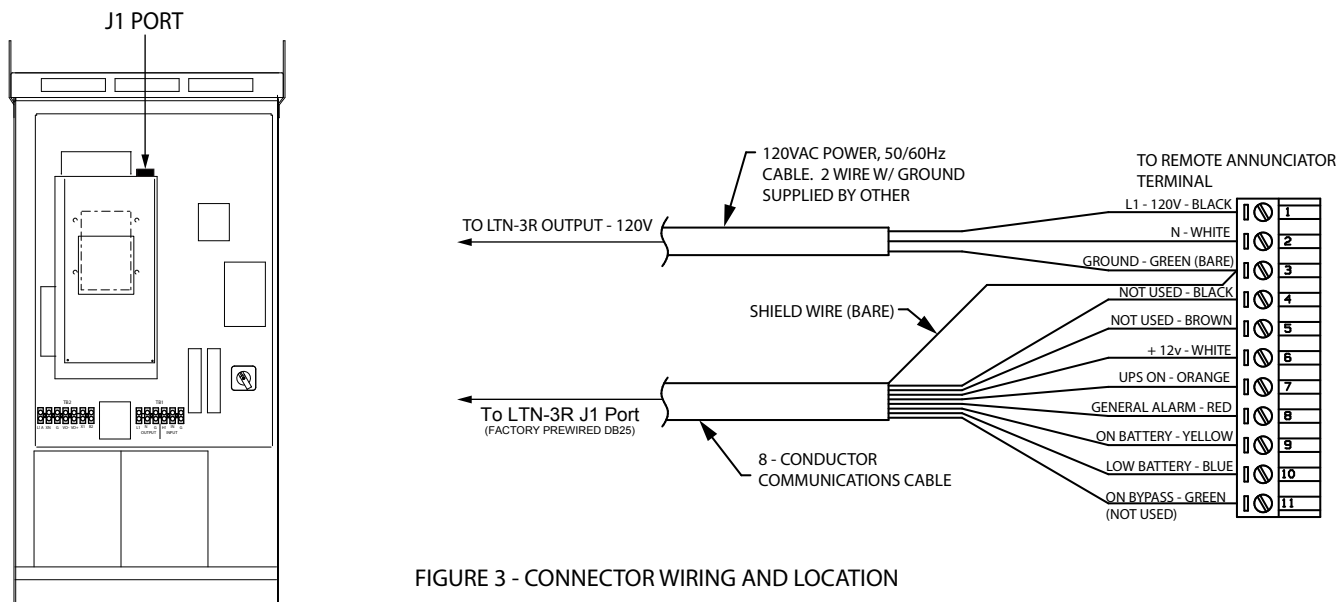
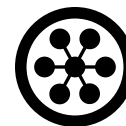


Figure 2: Rear of Remote Annunciator showing J1 and terminal header

## WIRING

The wiring of the Remote Annunciator consists of two feeds. One being the communication cable supplied with the unit, and the other is 120Vac 50/60Hz from the output of the UPS it is monitoring. The power supply can be taken directly from an output breaker on the unit, a receptacle or panel that is fed by the UPS or a nearby circuit fed by the UPS. From the UPS, run the communication cable to the location of the Remote Annunciator. The cable may be run through conduit, walls or cable tray/raceway, but care must be taken not to pinch, cut or kink the cable. After the cable is run, trim excess cable or coil in a safe location. Both feeds, after entering the box, must be wired to the supplied connector as shown in Fig 3. Use standard 1/2" box connector clamps to anchor the wire to the box (not supplied).

# OPTIONAL REMOTE ANNUNCIATOR INSTALLATION



## NOTES:

1. All wires to connector must be stranded, maximum 12 AWG.
2. If using solid conductor for AC power, splice in length (minimum 4") of stranded wire to connector.
3. Strip outer sheathing and foil back minimum 2".
4. Strip all wires 0.25".
5. 120V supply must come from UPS output. Power must be present in event of utility failure.
6. Connector on other end of communication cable to be factory wired.

After all cable routing and connector wiring is complete, plug Remote Annunciator connector into the terminal header.

## MOUNTING

The Remote Annunciator is designed to be wall mounted with wiring inputs through the rear or top/bottom (using conduit). Flipping out the side doors, remove the four screws fastening the cover to the box. The cover is attached to the box with two plastic retaining straps. Using the four holes in the back of the box and proper anchors (not supplied), mount the unit to drywall, masonry, paneling or any other type of wall. Holes are provided for rear cable entry. If top or bottom entry is desired, holes must be drilled in recommended location for (maximum 1/2") conduit (Fig. 4).

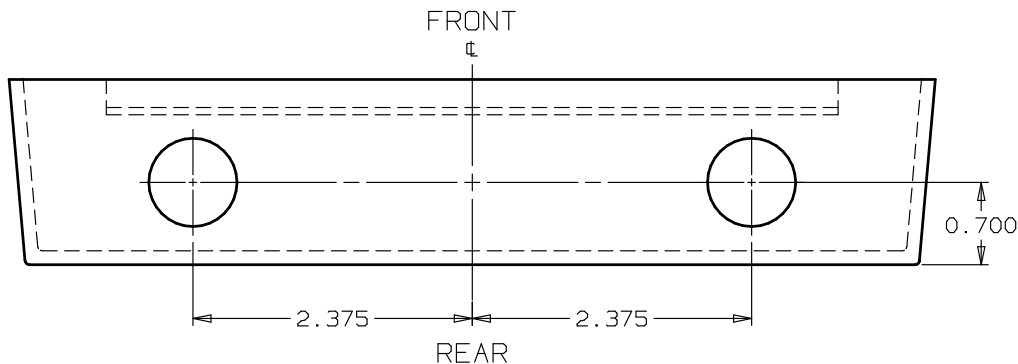


Figure 4: Drilling locations for top/bottom conduit entrance.



# COMMUNICATIONS DESCRIPTION

## GENERAL

Three methods can be used to communicate with the UPS:

- Direct connect to a terminal.
- Direct connect to a PC that is operating as a terminal emulator or a communication software that will emulate a terminal.
- Modem operation.

Once the communication link is established, system set points, system parameters, system status and memory modification is attainable.

Any system status change will automatically cause the UPS to send an alert warning signal. The signal sent is “?”. User software can be written to identify this signal and initiate automatic unattended action.

## J1 PORT - DB25 PIN FUNCTION

| Pin # | Name                                 | Description                                              |
|-------|--------------------------------------|----------------------------------------------------------|
| 1     | UPS On (Battery Operation)           | Closes on battery operation                              |
| 2     | Receive Data                         | RS/232                                                   |
| 3     | Transmit Data                        | RS/232                                                   |
| 6     | (+) 10 VDC Supply                    | Limited to 1 mA                                          |
| 7     | Signal Ground                        | Communication signal ground                              |
| 8     | UPS On (Ready)                       | Closes when UPS is ready                                 |
| 11    | Low Battery Alarm (Shutdown Pending) | Closes when low battery                                  |
| 14    | General Alarm                        | Closes on alarm condition                                |
| 20    | (+) 10 VDC Supply                    | RS/232                                                   |
| 21    | (-) 10 VDC Supply                    | Limited to 1 mA                                          |
| 23    | Remote Emergency Power Off           | Positive DC input w / reference to ground shuts unit off |
| 25    | Signal Ground                        | Communication signal ground                              |

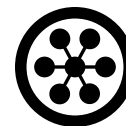
Pins 8, 1, 11 and 14 are open collector transistor, 40V Max. requiring a pull up resistor, 300mA Max. The contacts are referenced to pins 7 or 25 which is chassis ground.

Pin 23 requires a high input limited to 20 VDC with reference to pin 7 and 25 (ground) or the +10 VDC signal at pin 6 may be utilized with an external contact.

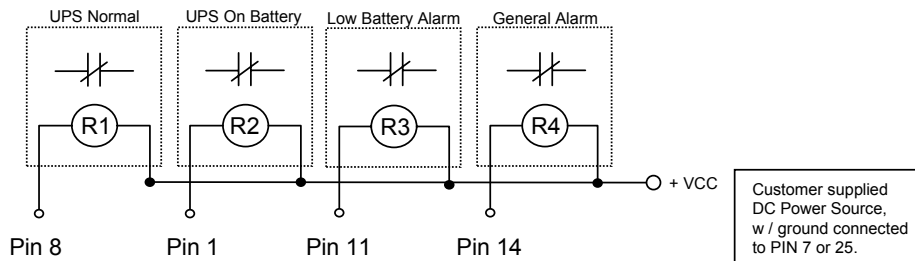
## RS232 TECHNICAL SPECIFICATION SUMMARY

|            |                                          |
|------------|------------------------------------------|
| Connector  | 25 Pin, Type D, Female                   |
| Format     | ASCII 8 bit, One Start Bit, One Stop Bit |
| Parity     | None                                     |
| Duplex     | Full                                     |
| Delimiters | Carriage Return per Block                |

Baud Rate – 1200 BPS. Standard SNMP operation is 9600 BPS. Default is 1200 BPS.

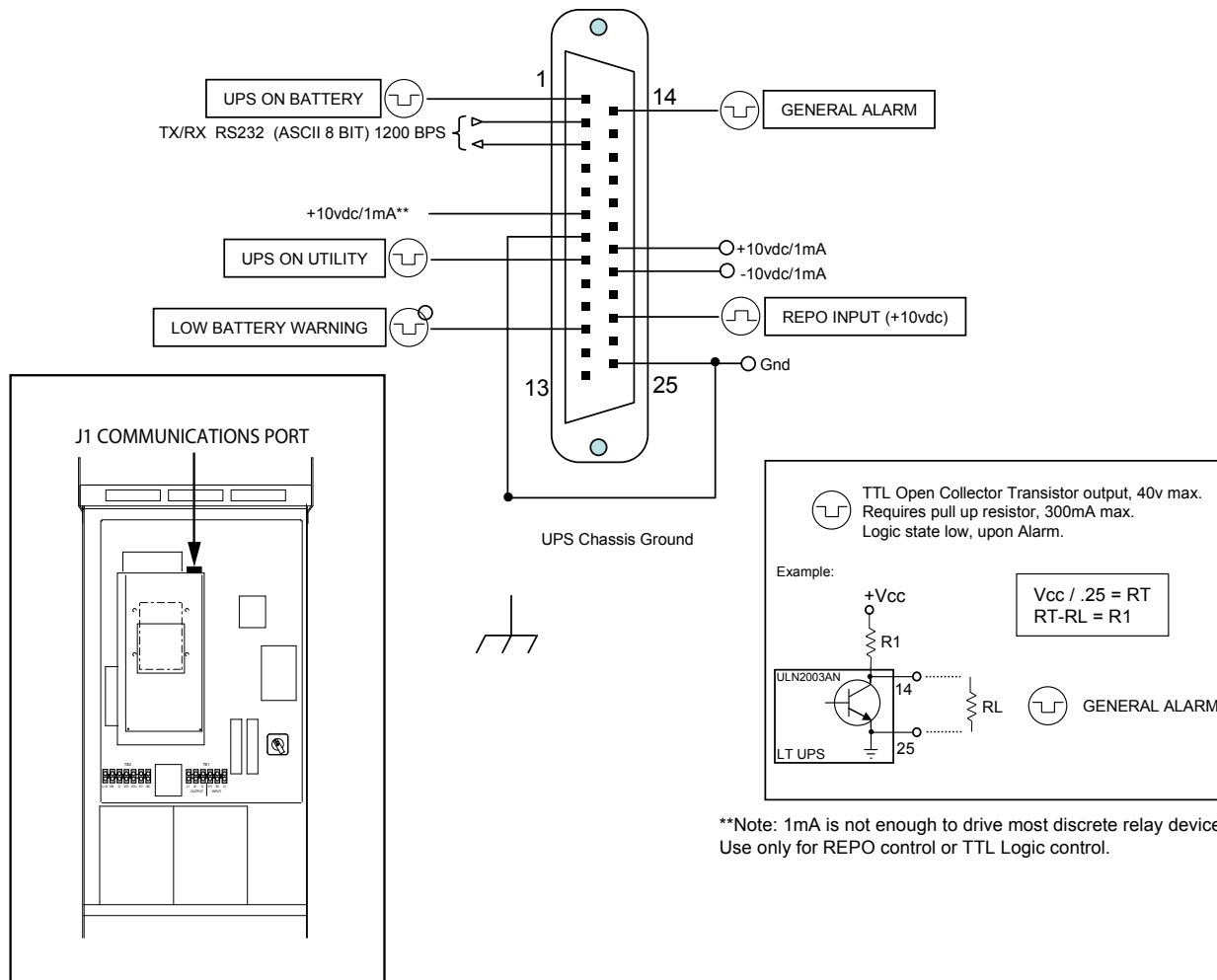


Customer Supplied Slave Relays for alternate voltage/current and isolation requirements  
(Recommended to insure proper interface without operational interference)



R1-R4 contact and coil specifications to match customer alarm interface and DC Power Source requirements.

## LTN-3R UPS J1 Port / DB25





## COMMUNICATING WITH THE UPS

There are alarm and operation set points that will alter the behavior of the UPS. It is not recommended that these be modified without a complete understanding of the function. Consult Customer Support at 1-800-521-4792 prior to modifying set points.

### MINIMUM SYSTEM REQUIREMENTS:

1. Computer/Laptop with Windows 3.1 or later.
2. "Hyperterminal" (Windows 3.1, Windows XP) or "PuTTY" for Windows Vista and Windows 7 or later. (download at <http://www.putty.org/>).
3. USB Port and a DB25 to USB Null Modem Conversion Cable - for use with all Windows operating systems and "Hyperterminal" or "PuTTY" emulation programs.

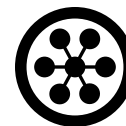
### PROCEDURE

1. Connect the DB25 to USB Null Modem Conversion cable from J1 on the rear of the UPS to the USB port on a computer.
2. Make sure the UPS is ON and running.
3. Start Windows on the computer, access "All Programs" then "Accessories" then "Communications" then "Hyper Terminal" for Windows 3.1 or Windows XP. Or launch "PuTTY" for Windows Vista and Windows 7 or later.
4. In the Hyperterminal "Connection Description" window, enter any name then choose any icon - Click OK. For "PuTTY" users, Connection type = Serial, Serial Line = Com Port of computer being used, Speed = 1200. "PuTTY" users can name and save the session for later use. "PuTTY" users skip to step 7.
5. In the Hyperterminal "Connect To" window, choose "Connect Using" and select the comport you are using, Click OK.
6. In the Hyperterminal "COM Port Settings" window, set the following parameters: 1200 Baud, 8 data bits, 0 parity, 1 stop bit, flow control = xon/xoff, then click OK.
7. To enter into the "Memory Modification Group" type a lower case "m" and hit "ENTER".
8. The response will be: PASSWORD=
9. Enter a lower case "sps-92". then hit "ENTER"
10. Upon entering the correct password, one line item will be displayed at a time, i.e.,

Min AC Start = 204

Min AC Start = If the value is to remain unchanged press ENTER and the next parameter will appear or else type the new value. After entering the new value press "ENTER" to scroll to the next parameter. To end the process type a lower case "e".

11. After making the desired changes, send a lower case "p" and the System Parameters will appear on the screen. Verify the changes that you have made. If further changes are required, go back to step 7.
12. At this point you are already out of the "Memory Modification Group" (after entering the lower case "e" in step 10).
13. Disconnect the communications cable.



## SYSTEM PARAMETERS

The following lists parameters the UPS monitors and also system status of the UPS while operating.

To access System Parameters and Status send the lower case “s” to the UPS from the terminal.

You must hit the “s” key each time to update system status.

| Description              | Sample Display           | Description                                                                  |
|--------------------------|--------------------------|------------------------------------------------------------------------------|
| AC Volts In              | Input Line Voltage = 240 | The voltage the UPS is receiving                                             |
| AC Volts Out             | Output Voltage = 240     | The voltage the UPS is delivering to the load                                |
| Battery Volts            | Batter Voltage % = 98    | Percentage of full charge of the battery                                     |
| AC Amps Out              | Output Current = 2.4     | Amperage the load draws from the UPS                                         |
| % of Full Load           | Load % = 90              | The percentage of total capacity that the load is using                      |
| Watts Out                | KW = .54                 | The total real power the UPS is delivering to the load                       |
| Volt Amps Out            | KVA = .77                | The total apparent power the UPS is delivering to the load                   |
| Power Factor             | Power Factor = 0.70      | The power factor of the load (KW/KVA)                                        |
| Incomming Line Frequency | Frequency = 60.0         | Displays the input frequency when on line, output frequency when on inverter |
| Crest Factor             | Crest Factor             | Peak Current / RMS Current                                                   |
| Outages                  | Outage                   | The number of outages recorded from the last clear function                  |
| Overloads                | Overload                 | The number of overloads from the last clear function                         |

## SYSTEM STATUS

| Description          | Sample Display       | Description                                                             |
|----------------------|----------------------|-------------------------------------------------------------------------|
| Synchronization      | Synchronization      | When the UPS is in sync with the line frequency                         |
| UPS On               | UPS On               | When the UPS is producing an output voltage                             |
| Low Battery Warning  | Low Battery Warning  | When the battery level reaches the preset value of alarm condition      |
| On Battery           | On Inverter          | When the UPS is supplying output power from the batteries               |
| Overload Alarm       | Overload Alarm       | When the UPS is supplying more power than its rated capacity            |
| Low Output           | Low Output           | When the output voltage goes lower than the preset alarm condition      |
| High Output          | High Output          | When the output voltage exceeds the preset alarm condition              |
| Check Battery        | Check Battery        | When the battery discharge is greater then normal                       |
| Frequency Fault      | Frequency Fault      | When the fault exceeds the preset range of alarm conditions             |
| Overtemp Warning     | Overtemp Warning     | When the UPS temperature reaches a critical level. Immediate shut-down. |
| Shorted SCR Shutdown | Shorted SCR Shutdown | When the power electronic switch is shorted                             |
| Low Battery Shutdown | Low Battery Shutdown | When the batteries are depleted the UPS shuts off                       |
| Output Shutdown      | Output Shutdown      | If selected, the UPS will shutdown when the output exceeds set points   |
| Output Warning       | Output Warning       | If selected, UPS will alarm when output exceeds set points              |

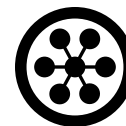


## COMMUNICATIONS CONTINUED

### SYSTEM SET POINTS

To access System Set Points send the lower case “p” to the UPS from the terminal. Note: This allows monitoring of system set points only.

| Description                                                     | Sample Display                                                      | Password  | Explanation                                                                                            |
|-----------------------------------------------------------------|---------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------|
| Minimum AC Start Voltage                                        | 204                                                                 | Required  | Minimum AC voltage required before the UPS will start.                                                 |
| Maximum AC Start Voltage                                        | Max AC Start = 264(+15% Max)                                        | Required  | If the input voltage exceeds this value, the UPS will not start                                        |
| Low Output Alarm Setpoints                                      | Low Output = 210                                                    | Required  | Alarm or shutdown if the output voltage dips to this set value.                                        |
| High Output Alarm Setpoints                                     | High Output = 264                                                   | Required  | Alarm or shutdown if the output voltage reaches this set value.                                        |
| Low Battery Warning Set Point                                   | Low Battery (%) -<br>Min = 010<br>Max = 070                         | No Access | Percent of battery capacity alarm set value.                                                           |
| High Battery Warning Set Point                                  | High Battery (%) = 105                                              | No Access | Manufacturer set point for diagnostics and charger control.                                            |
| Low Frequency Alarm Set Point                                   | Low Frequency = 059<br>Max = 057                                    | Required  | Alarm or shutdown if the output frequency dips to this set value.                                      |
| High Frequency Alarm Set Point                                  | High Frequency = 061<br>Max = 063                                   | Required  | Alarm or shutdown if the output frequency reaches this set value.                                      |
| Over Temperature Set Point                                      | Over Temperature = 160                                              | No Access | Manufacturer set point.                                                                                |
| Nominal Input Voltage                                           | Input Nominal = 240                                                 | Required  | Nominal input voltage. Switch set points are calculated from this value.                               |
| Nominal Output Voltage                                          | Output Nominal = 240                                                | Required  | Nominal output voltage. Value from which other calculations are derived.                               |
| Maximum KVA Rating                                              | Output VA = 850                                                     | Required  | Maximum KVA rating of the UPS.                                                                         |
| Low Line Switch Point. NOTE:<br>Fuzzy Logic is entered as shown | Sag Switch Point (%) = 065<br>Fuzzy Logic = 000<br>Fuzzy Plus = 001 | Required  | Percent below nominal AC input when the UPS will switch to battery operation.                          |
| High Line Switch Point                                          | Surge Switch Point (%) = 110<br>(%) = 115 Max                       | Required  | Percent above nominal AC input when the UPS will switch to battery operation.                          |
| Low Line Sample Accumulation Buffer                             | Sensitivity (1-2) = 1                                               | Required  | Averaging factor for low line voltage. 1 = least averaging (greater sensitivity).                      |
| Frequency Accumulation Buffer                                   | Frequency Delay (2-9) = 8                                           | Required  | Number of AC cycles required to be out of set frequency range prior to switching to inverter mode.     |
| Power Grid Stability Check                                      | Transfer Delay (Sec) = 20                                           | No Access | Amount of time in seconds the UPS will wait before accepting the AC input.                             |
| System ID Number                                                | System ID = Units 8 Digit Serial #                                  | Required  | System identification serial number.                                                                   |
| System Shutdown Enable                                          | Output Shutdown Enable (1/0) = 0                                    | Required  | If enable set = 1, the UPS will shut-down when alarm set points are exceeded. 0 = audible alarm only.  |
| Hot Start or AC Start                                           | Hot Start = 1<br>AC Start = 0                                       | Required  | Hot Start - Unit turns on with no AC input power.<br>AC Start - AC power required for unit to turn on. |



## SYSTEM SET POINTS - FACTORY PRESET LEVELS

| Description                                                  | Value entered w/ nominal input voltage = 120V |
|--------------------------------------------------------------|-----------------------------------------------|
| Minimum AC Start Voltage                                     | 102                                           |
| Maximum AC Start Voltage                                     | 132                                           |
| Nominal Input Voltage                                        | 120                                           |
| Nominal Output Voltage                                       | Refer to unit Spec tag                        |
| Low Output Alarm Setpoints                                   | 108                                           |
| High Output Alarm Setpoints                                  | 132                                           |
| Low Line Switch Point. NOTE: Fuzzy Logic is entered as shown | Fuzzy Logic = 000.                            |
| High Line Switch Point                                       | % = 115                                       |
| Low Output Frequency Alarm Set Point                         | 57                                            |
| High Output Frequency Alarm Set Point                        | 63                                            |
| Low Line Sample Accumulation Set Point                       | Available (1-2) = 1                           |
| Frequency Accumulation Buffer                                | Available (2-9) = 9                           |
| System Shutdown Enable                                       | Audible Only = 0                              |
| Maximum KVA Rating                                           | Enter actual KVA Rating - See units spec tag  |
| Hot Start or AC Start                                        | AC Start = 0                                  |



# PREVENTIVE MAINTENANCE



**DANGER - HIGH VOLTAGE**



## GENERAL MAINTENANCE

The best preventive maintenance is to operate the UPS in a clean environment with proper ventilation and no restrictions on air intakes and cooling fan outputs.

Battery connections should be tightened annually by qualified electrical personnel. Batteries should be replaced every 5 years or as indicated by battery testing.

The UPS should be checked every three months (quarterly) on battery operation for half of the battery time purchased and annually for the full time of the battery time purchased. Take precautions to have the loads in a mode that could tolerate a shut down. See *“Preventive Maintenance - Battery Testing”* for instructions.

## COMPLETE MAINTENANCE CHECK

### PREPARATION

A shutdown period must be scheduled to perform maintenance. The loads should be available to test the UPS with a loss of power simulation.

### EQUIPMENT REQUIRED

Wire brush or other cleaning device (for battery connections), insulated tools (for battery connections) and safety glasses.

### SYSTEM OPERATION

1. With power on, check display functions of unit for proper operation.
2. Turn Input Source and Input AC breaker off.

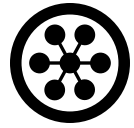
### VISUAL INSPECTION

1. Open Door.
2. Remove/disconnect any load(s) from the units output.
3. Check for burnt, frayed, broken or loose connections. Look closely in the following areas: Input, output connections, circuit breakers and battery connections.
4. Tighten any loose connections, replace any physically burned or broken components. Use extreme care when replacing components to assure correct installation.

### GENERATOR TEST

1. If generator is backing the UPS, check to be sure the UPS operates properly with the generator.
  - A. Check generator operation with no load. The UPS should switch to battery operation mode when generator turns on. After a minute or so the inverter should switch back to normal mode and run off the generator.
  - B. Check generator with customers loads. Follow the same steps stated above.

# PREVENTIVE MAINTENANCE CONTINUED



## BATTERY MAINTENANCE



**SERVICING OF BATTERIES SHOULD BE PERFORMED OR SUPERVISED BY PERSONNEL KNOWLEDGEABLE ABOUT BATTERIES AND THE REQUIRED PRECAUTIONS. KEEP UNAUTHORIZED PERSONNEL AWAY FROM BATTERIES.**



### **\*\*\*\*\* CAUTION \*\*\*\*\***

**A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:**



- 1) Remove watches, rings, or other metal objects.**
- 2) Use tools with insulated handles.**
- 3) Wear rubber gloves and boots.**
- 4) Do not lay tools or metal parts on top of batteries.**
- 5) Disconnect charging source prior to connecting or disconnecting battery terminals.**
- 6) Wear safety glasses.**

1. Visually inspect all battery connections,. If there is any sign of corrosion - disconnect that battery and clean with wire brush. Tighten all other battery connections. Make sure batteries are not swollen or cracked. If they are, contact factory.
2. If batteries must be replaced, contact factory or see "*Installation - Battery Installation and Wiring*" instructions.

## BATTERY TESTING

**BATTERY TESTING SHOULD BE PERFORMED PERIODICALLY TO ENSURE EFFICIENT OPERATION.**

### **PREPARATION**

Proper precautions must be taken when performing battery testing. The load(s) should be available to test on inverter, in a loss of power simulation. Be sure also to take precautions to have the loads in a mode that could tolerate a shut down. If the battery test fails the system may shutdown and all of the critical loads connected to it will lose power.

It is recommended that batteries are inspected for corroded and loose connections before performing the battery test. Battery connections should be tightened annually by qualified electrical personnel. Standard batteries should be replaced every 5 years or as indicated by monthly battery testing.

### **Annual Battery Test at Full Load**

1. Open the front door and select "% Battery" on the display, be sure that it is 100%. If it is not 100%, allow batteries to charge until the "% Battery" reads 100%.
2. Then, turn the AC input breaker off only, the unit should run on inverter. Allow batteries to discharge for the battery time purchased at full load. If the batteries do not provide the full time of backup at full load, they may need to be replaced. Contact the factory for service.



## ***PREVENTIVE MAINTENANCE CONTINUED***

### **BATTERY TESTING CONTINUED**

#### **Quarterly Battery Test at Full Load**

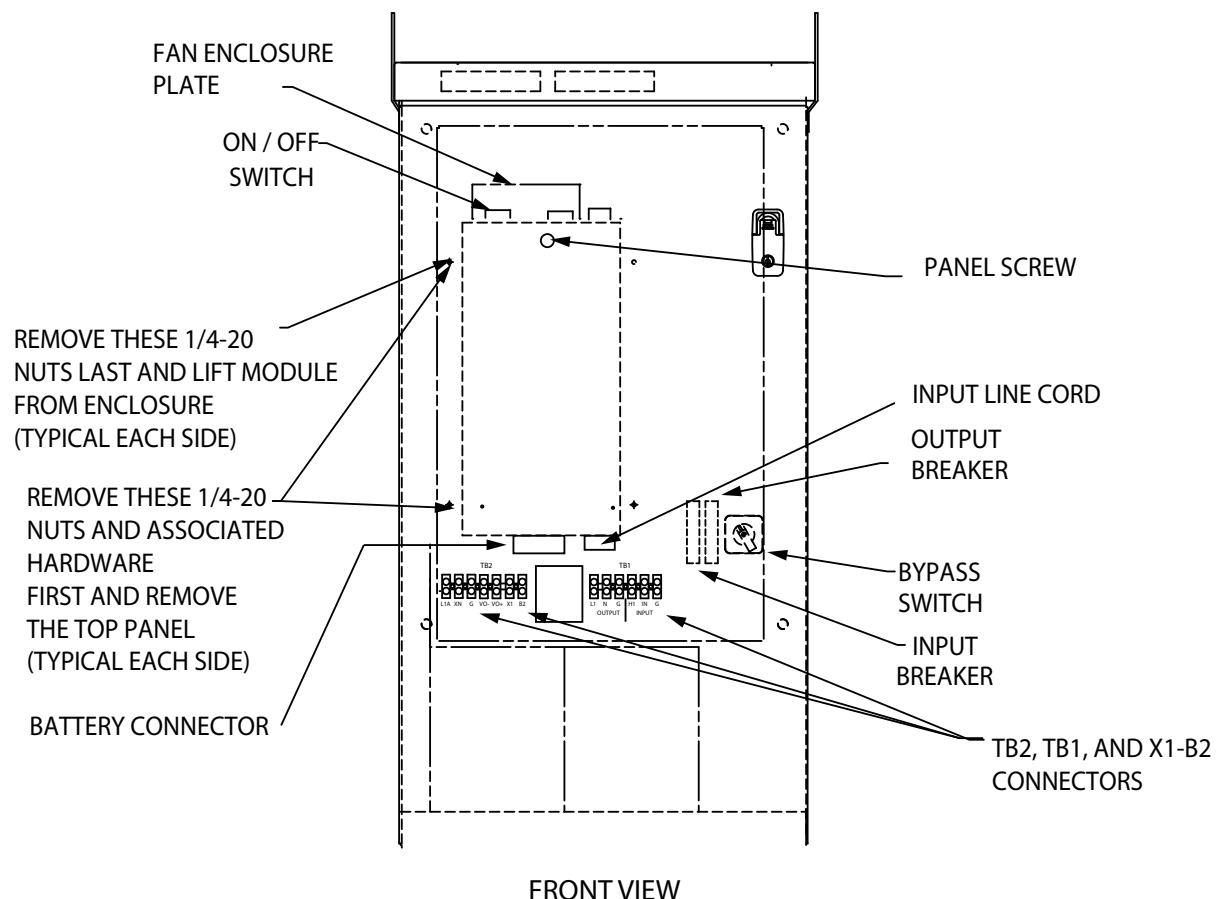
1. Open the front door and select “% Battery” on the display, be sure that it is 100%. If it is not 100%, allow batteries to charge until it reads 100%.
2. Set a timer for half of the battery time purchased.
3. Turn off the AC input breaker, and start the timer.
4. After the time has elapsed, record the “% Battery” from the display. If the battery percentage is approximately 40% or less then there may be a defective battery in the system. Contact the factory for service. If the battery percentage is greater than 50%, this would indicate that the batteries are operating properly.



## REMOVING THE CONTROL MODULE

Refer to the drawing below.

1. Switch the UPS into bypass mode. **DO NOT SWITCH INTO BYPASS IF THE UPS IS ON BATTERY.**
2. Turn the ON/OFF switch on the top of the Control Module to the “OFF” position.
3. Turn the AC input circuit breaker to the “OFF” position.
4. Disconnect the control module’s input line cord, battery connector and communications cable.
5. Disconnect the fan motors via the quick disconnect on the left of the control module.
6. Disconnect all wires at the TOP of the TB2 terminal and the X1-B2 terminals.
7. Remove the small plate above the control module that encloses the fan motor then remove the bottom four nuts and associated hardware securing the Control Module top panel to the Control Module. Remove the small screw on the front at the top center of the control module. Remove the top panel.
8. Carefully remove the remaining top two nuts from the control module and carefully lift the module from the studs holding it up. Be sure all connections are disconnected prior to lifting the control module from the cabinet.  
**CAUTION - The control module is extremely heavy (80 Pounds) - take necessary precautions when lifting the control module from the enclosure.**





**This Warranty applies only to the original purchaser who must properly register the product within thirty (30) days of receipt.**

<https://controlledpwr.com/customer-support/warranty-registration/>

Controlled Power Company warrants that our products and their components will remain free from defects in material and workmanship for the duration of the respective warranty period\* from the date of shipment and agrees to replace, F.O.B. its factory, any parts which fault through defect in material or workmanship during such period. Non payment for the product to either the reseller, rep, distributor or the factory direct will result in revocation of warranty, technical support and service contracts. **Warranty begins from date of shipment unless a factory Start-Up Plus is purchased, then the warranty begins from date of Start Up or 90 days from ship date; whichever comes first.**

If a Start-Up Plus is purchased with the unit(s) or within 30 days from original ship date, the 1st year warranty is upgraded to include onsite labor and expenses during normal business hours (Monday - Friday, 8AM - 4PM). Start-Up Plus includes all travel and living expenses. Start-Up Plus description: Testing all emergency circuitry - Calibration - Inspection - Exercising all circuit breakers - Cooling fan check - Input and output parameter check - Air intake / exhaust check - Complete battery inspection and testing (where applicable) - Re-torque all high current terminals - Battery certification report (where applicable) - Input/Output verification - Written report. User training to be done at time of start up (no return visits). Product installation is required to be complete before start up can be scheduled.

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Products:

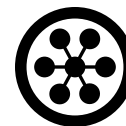
- UPS Systems (LTN-3R) / 1 Years parts only\*, Batteries are warranted with a 1 year full replacement warranty and an optional 4 year (48 month) pro-rate, when enrolled in a customer support plan.

\* From original shipment date / Excludes on site labor and expenses unless otherwise noted.

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1. This Warranty shall be effective only if and so long as the system is installed and operated in the manner specified in the manual which accompanied the product, and is operated within the ratings on the nameplate of the system.
  2. This Warranty shall be effective provided the purchaser pays the cost of transporting the faulty component(s) to and from Controlled Power Company's factory at the purchaser's own expense, unless the item covered under service contract with Controlled Power Company. There is no cost for installation of the replacement component(s) when done at the factory. Otherwise installation of the replacement component(s) are the responsibility of the purchaser, unless the item is covered under service contract with Controlled Power Company. If after inspection the faulty component has been caused by misuse or abnormal conditions in the judgment of Controlled Power Company, the purchaser will be charged for repairs based on parts and labor required. This Warranty does not cover fuses, light bulbs, and other normally expendable items. Controlled Power Company service personnel are not included in this warranty unless covered by a Controlled Power Company service contract.
  3. This Warranty shall be void if any alteration is made to the system, or any of its components are altered by anyone other than an authorized Controlled Power Company service person, without the written permission of Controlled Power Company.
  4. This Warranty is in lieu of all other warranties, expressed or implied. Controlled Power Company neither assumes, nor authorizes any person to assume for it, any liability other than that specifically set forth in this Warranty. Except for its obligations, Controlled Power Company assumes no liability or responsibility for personal injury, loss of life, consequential or other damages resulting from defects in, or failure of, the system or any of its components.

<https://controlledpwr.com/customer-support/warranty-registration/>

# CUSTOMER SUPPORT



## Contact Controlled Power Company.

Controlled Power Company offers total Customer Support that assures your critical equipment is maintained properly for trouble free operations.

### WHAT A CUSTOMER SUPPORT PLAN OFFERS:

**Hotline:** 24 hour toll free 1-800-521-4792.

**Response Time:** Immediate 24 hour phone support. If problem is not solved Controlled Power will make every effort to have your system running within 48 hours.

**Batteries:** Battery changes, installation, freight, travel and disposal are covered under a 48 month pro-rate schedule when enrolled in a customer support plan, beginning from the original date of shipment or battery installation date. Batteries are not covered if they were not supplied by Controlled Power Company.

**Preventative Maintenance:** Scheduled preventative maintenance includes the following:

- Inspection
- Exercising all circuit breakers
- Input and output parameter check
- Complete battery inspection and testing
- Re-tighten all high current terminals and connectors
- Testing all emergency circuitry
- Calibration
- Clean internal and external
- Written report

**Start-up (optional):** Includes installation inspection (wired properly, location, environment), Unit inspection (internal and external), Unit power up, Operation verification including options. One visit, includes all travel expenses.

| PLAN     | ON SITE COVERAGE | PARTS COVERED | FIELD REPAIR LABOR COVERED | FACTORY REPAIR LABOR COVERED | FREIGHT COVERED | TRAVEL EXPENSES COVERED |
|----------|------------------|---------------|----------------------------|------------------------------|-----------------|-------------------------|
| SILVER   | NONE             | YES           | NO                         | YES                          | NO              | NO                      |
| GOLD     | M-F 8AM-4PM      | YES           | YES                        | YES                          | YES             | YES                     |
| PLATINUM | 24-7             | YES           | YES                        | YES                          | YES             | YES                     |

### TRAINING AND PARTS

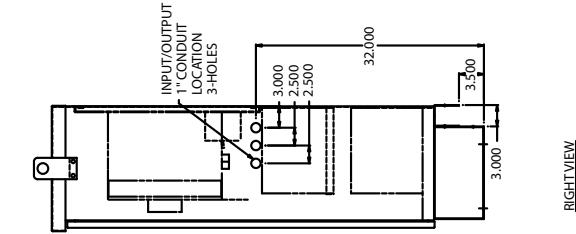
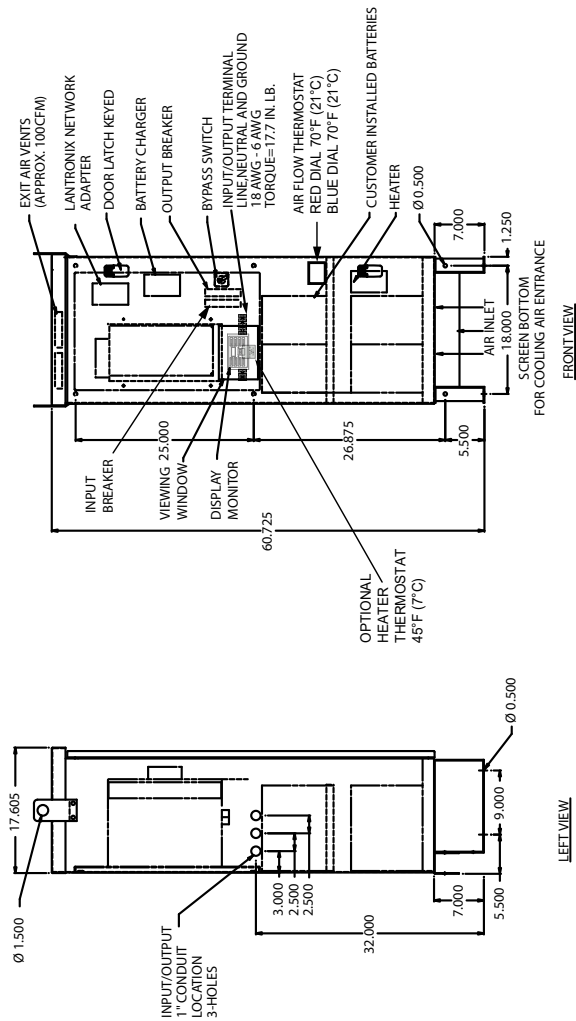
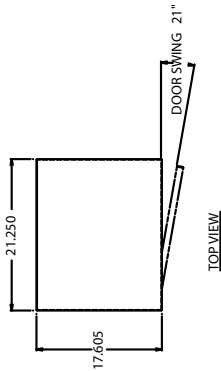
For Customers who maintain their own equipment, Controlled Power offers hands on training at our facility and part kits. For more information, contact Controlled Power Customer Support Department at 1-800-521-4792.

Individual components are available upon request, please contact the factory for specific part numbers and prices. When contacting the Parts Department, please have the unit's full model number and serial or system number. Call 1-800-521-4792.



# CABINET OUTLINE - SHORT

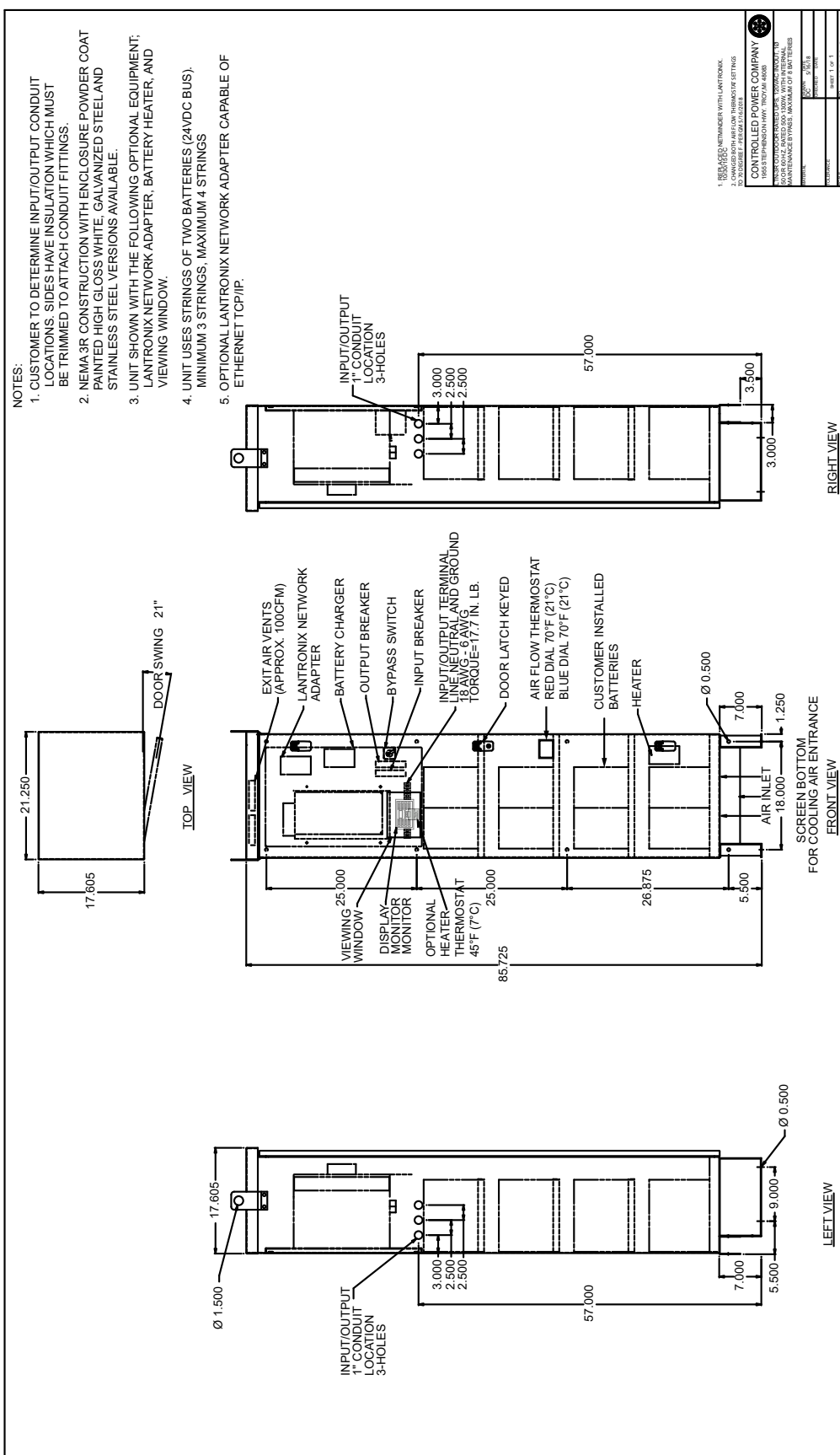
- NOTES:
1. CUSTOMER TO DETERMINE INPUT/OUTPUT CONDUIT LOCATIONS. SIDES HAVE INSULATION WHICH MUST BE TRIMMED TO ATTACH CONDUIT FITTINGS.
  2. NEMA 3R CONSTRUCTION WITH ENCLOSURE POWDER COAT PAINTED HIGH GLOSS WHITE, GALVANIZED STEEL AND STAINLESS STEEL VERSIONS AVAILABLE.
  3. UNIT SHOWN WITH THE FOLLOWING OPTIONAL EQUIPMENT; LANTRONIX NETWORK ADAPTER, BATTERY HEATER, AND VIEWING WINDOW.
  4. UNIT USES STRINGS OF TWO BATTERIES (24VDC BUS), MINIMUM 1 STRING, MAXIMUM 2 STRINGS
  5. OPTIONAL LANTRONIX NETWORK ADAPTER CAPABLE OF ETHERNET TCP/IP.



AIR FLOW THERMOSTAT  
RED DIAL 70°F (21°C)  
BLUE DIAL 70°F (21°C)

|                                                   |  |
|---------------------------------------------------|--|
| 1. 100% QUALITY GUARANTEED WITH 48 MONTH WARRANTY |  |
| 2. 24 HOUR TECHNICAL SUPPORT                      |  |
| 3. 24 HOUR DELIVERY                               |  |
| 4. 24 HOUR SERVICE                                |  |
| 5. 24 HOUR SUPPORT                                |  |
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| 100. 24 HOUR SUPPORT                              |  |

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## ***CUSTOMER NOTES***