CONTROLLED POWER COMPANY

TROY, MICHIGAN

eLITE Series

MODEL ELE

OWNERS MANUAL

5.3KW - 18KW

EMERGENCY LIGHTING INVERTER

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

110332-Rev 28
1/6/2023

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.

Caution

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.

Shock Hazard

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.

TABLE OF CONTENTS

GENERAL DESCRIPTION 4
RECEIVING THE UNIT 6
- INSPECTION 6
- STORAGE 6
- REMOVING THE INVERTER FROM THE PALLET 7

SAFETY PRECAUTIONS 8
PRELIMINARY INSTALLATION 9
- INSTALLATION CONSIDERATIONS 9
- CHOICE OF LOCATION 9
- CABINET DIMENSIONS, ACCESSES AND CLEARANCES 10
- SECURING THE INVERTER AND BATTERY CABINETS 12
- AC INPUT BREAKER MATRIX 15
- AC OUTPUT CURRENT MATRIX 16

BATTERY REQUIRMENTS 17
INSTALLATION 18
- BATTERY INSTALLATION AND WIRING 18
- INPUT AND OUTPUT CONDUIT ENTRY LOCATIONS 19
- INPUT AND OUTPUT WIRING 20
- OPTIONAL ZONESAVER 2 INSTALLATION 21
- OPTIONAL REMOTE ANNUNCIATOR INSTALLATION 24

COMMUNICATIONS DESCRIPTION 27
COMMUNICATIONS 28
SET UP PROCEDURES 29
START UP PROCEDURE 31
OPERATION 32
BYPASS SWITCH OPERATION 47
PREVENTIVE MAINTENANCE 48
PERFORMANCE CHECKLIST 52
GENERAL TROUBLESHOOTING GUIDE 53
WARRANTY 54
CUSTOMER SUPPORT 55
APPENDIX A 56
- CABINET OUTLINE 57
- COMPONENT LOCATION DIAGRAM 61
- CONTROL BOARD LAYOUT 63
- INTERFACE BOARD LAYOUT 64
- OPTIONS INTERCONNECTION DIAGRAM 65
- COMMUNICATIONS INTERFACE LOCATION 66
- NOTES 67

GENERAL DESCRIPTION

The Model ELE is a single phase, continuous duty, line interactive, single conversion Emergency Lighting Inverter designed to supply reliable, clean and regulated power for critical loads. An efficient ferro-resonant transformer, microprocessor controlled solid state pulse width modulation inverter and long lasting battery pack provide immunity to all line disturbances and power interruptions with no break in AC output power. When using the inverter, you are assured your lighting service will not be interrupted.

Features & Benefits

The “ELE” can be used with all lighting, building security, life safety, and data control center applications.

- Uninterrupted, regulated, continuous sinewave output for use with “normally on” lighting fixtures and exit lamps.
- Standby output for use with “normally off” emergency lighting fixtures.
- Integral constant voltage transformer isolates and regulates output voltage.
- Integral status and alarm panel.
- Overload and short-circuit proof.
- Standard AC and DC input protection.
- Standard internal and optional external bypass switches.
- Advanced digital monitoring system.
- Automatic, NFPA-compliant self-testing and data logging.
- Remote communications via alarm signals, RS232, or optional fax modem.
- Integral 90-minute batteries.
- Alternate runtime capability.
- Three-stage temperature-compensated battery charger.
- Front-access design.
- Optional remote status panel and automatic phone dialer.
- Generator-compatible.

Standards

- ANSI / IEEE C62.41 Category B3
- NFPA 101
- NFPA 111 Stored Electrical Energy Emergency and Standby Power Systems. Meets SEPSS / ECE / Level 1 and Level 2 criteria for types O, U, A, B, and 10; and Classes up to and including Class 1.5
- NFPA 70 National Electric Code
- FCC Article 15, J, Class A

Specifications

- Input Operating Voltage Range: +10%, -15% without battery usage
- Input Frequency: 60 Hz, +/- 2.5 Hz
- Output Sinewave Voltage: Maximum 3% harmonic distortion,any single harmonic
- Input current total harmonic distortion caused by electronic ballasts and non-linear loads: Less than 10%
- Power Factor: Self-correcting to >0.95
- Line Voltage Regulation: +/- 3%
- Load Regulation: Typically better than +/- 3%
- Isolation: Galvanic
- Standard Unit Operating Temperature: 0 deg C to +40 deg C
- Total System MTBF: 100,000 hours
- Common Mode Noise Rejection: 120 dB
- Transverse Mode Noise Rejection: 70 dB
- NEMA 1 enclosure

Batteries

- Sealed, maintenance-free, lead-calcium batteries.
- Long life, 1 year full, 14-year pro-rated warranty.
- Optional 20-year maintenance-free batteries and 20-year high-temperature NiCad batteries available — consult factory.

Output Distribution

- Output Circuit Breaker Pole Spaces Available:
  Without Trip Indicator Alarm / Light: 20
  With Trip Indicator Alarm / Light: 10

Safety

- UL 924 Emergency Lighting Equipment
- UL 924 Auxiliary Power Supplies
- UL / C-UL 1778 Uninterruptible Power Supplies
- NFPA 101, NFPA 111, NEC, and local codes

Advanced Digital Monitoring

The user-friendly Intellistat TS™ monitor provides quick, full access to all of the monitor features, and also allows all programming to be done directly from the touchscreen. An easy to read LCD indicates all the electrical parameters, as well as the functional status of the inverter. A virtual keypad allows the entry of date / time values, system setpoints and password information into the monitor, without the need for an external computer and cable.

The Intellistat TS™ - Intelligent status monitoring an emergency lighting inverter's operational status is critical for maintaining the building's operational efficiency, as well as for monitoring the power feeding the lighting systems. With this in mind, Controlled Power Company designed the model ***"ELE"*** with state of the art monitoring features to provide complete system diagnostics and testing with access to all electrical system parameters.

Features

- LCD display of all electrical parameters.
- NFPA compliant automatic battery testing and logging.
- User programmable automatic system testing.
- System alarm annunciation.
- Audible alarm with alarm silence.
- Alarm status display.
- Email / Cell phone status notification.
- Optional fax / email / voice / web page reporting of test results.
- Date and time display.
- Auto logging of test results / events
- Multi layer password protection.
- Remote monitoring capabilities.
- Programmable local interfaces.
- Logs up to 50 events.
- Non volatile clock and memory.
- Programmable alarm set points.

Inverter Status and Alarm Indicators

- High / Low Input Voltage
- High / Low Output Voltage
- High Output Volt-Amperes
- High / Low Output Frequency
- High / Low Battery Voltage
- High Battery Charge Current
- System Normal
- General Alarm
- System on Battery
- Low Battery Warning
- Low Battery Shutdown
- Battery Test in Process
- Auto Battery Test Failed / Passed
- Off Bus Status
- Output Circuit Breaker Open
- Charger Fail / DC Open Circuit
- System in Static or Manual Bypass
- REPO Activated

Measured Parameters

- Input Voltage
- Output Voltage
- Output Current
- Output Volt-Amperes
- Output Watts
- Output Power Factor
- Output Percent Load
- Output Frequency
- Battery Voltage
- Battery Charger Current
- Battery Capacity Remaining
- Battery Temperature

Automatic System Tests

The Intellistat TS™ Monitor automatically performs a user defined (date and time) 5 minute system test every 30 or 90 days; as well as a user defined (date and time) annual 30, 60 or 90 minute system test. For all of these tests, the Intellistat TS™ Monitor logs the test results with the date and time, as well as a "pass" or "fail" indication. Manual System tests are also available.

RECEIVING THE UNIT

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

INSPECTION

Upon receipt of your lighting inverter, visually inspect the unit(s) 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 front cover or accompanying paper work for factory contact information. **Do not remove the debris shield from the top of the unit until ready for start up.**

Note: Open the front door of the enclosure(s) 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 LEAVE DC CIRCUIT BREAKER IN THE OFF (OPEN) POSITION.

If it is necessary to store the unit, be sure to place it in a clean dry area. **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 installing the batteries, turning the unit on and allowing the inverter to run. See *“Installation - Battery Installation and Wiring”* for details on installing batteries and the *“Setup Procedure”* and *“Start-up Procedure”* for turning the inverter on. **While storing, leave the DC Circuit Breaker in the OFF (Open) position.** Make sure proper ventilation is available any time the inverter is on.

REMOVING THE INVERTER FROM THE PALLET

***** CAUTION *****

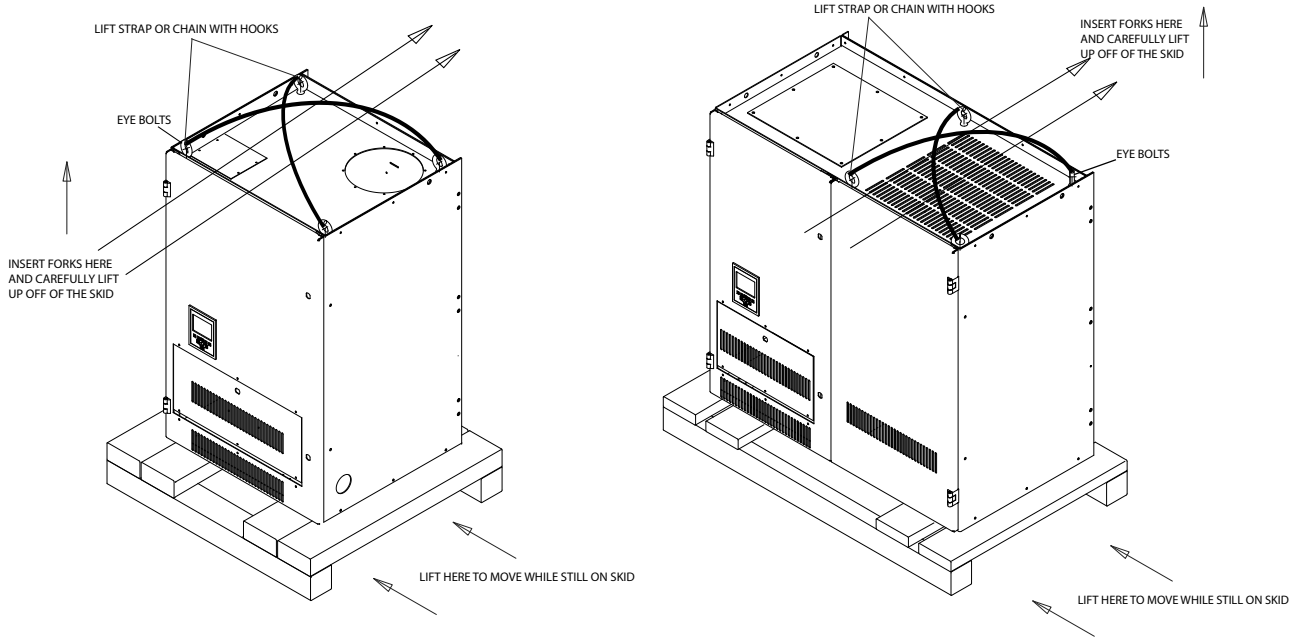
CABINETS AND BATTERIES ARE EXTREMELY HEAVY
USE PROPER EQUIPMENT WHEN REMOVING
THE CABINETS FROM THE SKID

******* SHOCK HAZARD *******
DO NOT SHORT BATTERY TERMINALS

TOOLS REQUIRED: 1/2" Socket, Forklift, dolly, lifting strap or heavy chain with hooks.

Removing the lighting inverter from the skid.

1. Remove the plastic wrapping and banding and discard.
2. Remove batteries from pallet with the use of a dolly or other lifting device be sure to place them in a safe location.
3. Using a forklift and a chain, place the forks over the lighting inverter from the front or back side.
4. Secure the lifting strap or heavy chain to the eye bolts on the top of the cabinet and the forks on the forklift. See Illustration below.
5. Carefully lift the lighting inverter from the skid.
6. Set the lighting inverter cabinet down until you are ready for installation.
7. Use this same method when moving or stacking the inverter and battery cabinets into there final position. Remove eye bolts after final placement. **Do not remove the debris shield from the top of the unit until ready for start up.**



See *"Appendix - A Cabinet Placement Configurations"* for proper cabinet placement.
Also see *Preliminary Installation - Cabinet Dimensions, Accesses and Clearances"* and *"Installation - Battery Installation and Wiring"*

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 LOCATED ON THE BATTERY CABINET DOOR. 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 INVERTER IS PROPERLY GROUNDED.**
- **DO NOT ALLOW WATER OR FOREIGN OBJECTS TO GET INSIDE INVERTER.**
- **DO NOT PLACE OBJECTS OR LIQUIDS ON TOP OF THE INVERTER.**
- **DO NOT LOCATE INVERTER NEAR RUNNING WATER OR WHERE THERE IS EXCESSIVE HUMIDITY.**
- **DO NOT USE OUTDOORS.**
- **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 OF 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.**

INSTALLATION CONSIDERATIONS

This unit is intended for installation in a temperature controlled, indoor area free of conductive contaminants.

Prior to installing the Lighting Inverter, be sure to take into consideration the site you have selected. Lighting inverters produce heat and therefore require ventilation as well as accessibility. Consider these factors:

- Ventilation
- Size of the Inverter
- Weight Load
- Audible Noise Requirements
- Remote Emergency Power Off (Repo)
- Monitors
- Options
- Clean Environment
- Input Source Voltage
- Receiving Facilities
- Distribution of Power
- Room Temperature
- Clearances
- Accessibility
- Excessively Long Power Runs
- Proper Ground Techniques

CHOICE OF LOCATION

The unit has been completely inspected and extensively tested under various load conditions prior to shipment. Care to install it at a proper location will assure long trouble-free operation.

The unit is air cooled with the air intake at the bottom and exhausts at the top, front or at the sides. Therefore, it should be installed in a clean, dry place with enough clearance to allow a free flow of air. Allow enough space for maintenance on all four sides of the unit.

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 24 HOURS

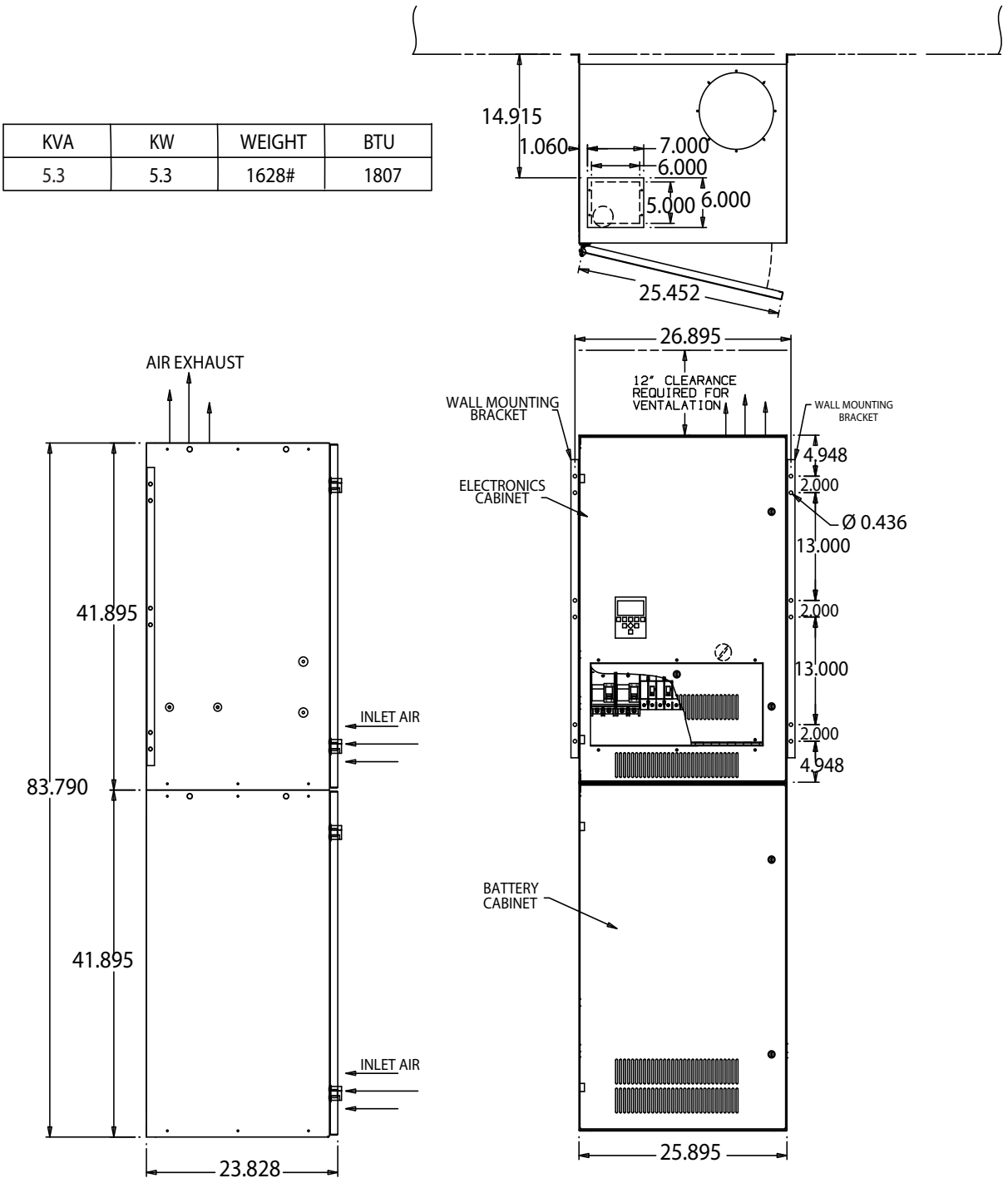
The Interim Life Safety (ILS) AC inverter systems must be located and installed conforming to CAN/CSA-C282-05 Emergency Electrical Power Supply for Buildings and CSA standard C22.1.

CABINET DIMENSIONS, ACCESSES AND CLEARANCES
SMALL INVERTER CABINET WITH SMALL BATTERY

LIGHTING INVERTER PLACEMENT

Refer to the drawing below for installation clearances and ventilation requirements. The lighting inverter should be placed in a dry, well ventilated or temperature controlled area. Be sure not to block any fan or air inlet areas of the lighting inverter. Doing so will cause damage to the unit. There should be at least 48" of clearance at the front of the unit for serviceability and at least 12" at the top of the inverter cabinet for air flow.

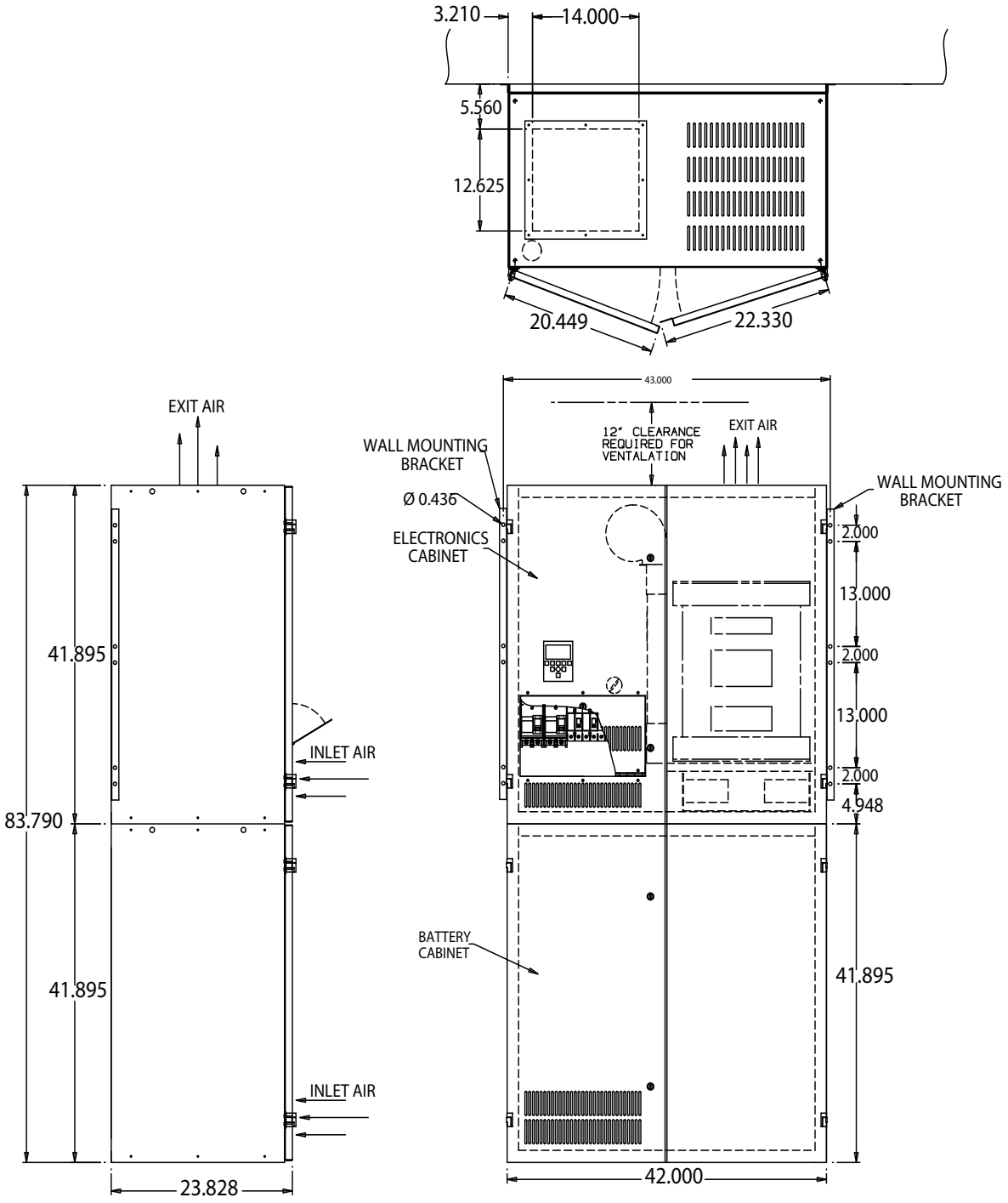
KVA	KW	WEIGHT	BTU
5.3	5.3	1628#	1807



CABINET DIMENSIONS, ACCESSES AND CLEARANCES
LARGE INVERTER CABINET WITH LARGE BATTERY

LIGHTING INVERTER PLACEMENT

Refer to the drawing below for installation clearances and ventilation requirements. The lighting inverter should be placed in a dry, well ventilated or temperature controlled area. Be sure not to block any fan or air inlet areas of the lighting inverter. Doing so will cause damage to the unit. There should be at least 48” of clearance at the front of the unit for serviceability and at least 12” at the top of the inverter cabinet for air flow.



SECURING THE INVERTER AND BATTERY CABINETS

*****CAUTION*****

**CABINETS AND BATTERIES ARE EXTREMELY HEAVY
USE PROPER EQUIPMENT WHEN MOVING.**

CHECK TO ASSURE THAT THE FLOOR IN THE INSTALLATION AREA IS CAPABLE OF SAFELY BEARING THE LOAD.

Do not remove the debris shield from the top of the unit until ready for start up.

Refer to *"Preliminary Installation - Cabinet Placement Configurations"*.

Based on the desired cabinet configuration, remove the appropriate knockouts in the inverter and battery cabinets.

Follow the general sequence below to install the inverter and battery cabinets.

1. Locate all mounting hardware battery cables and chase/close nipples in the accessory box located inside the battery cabinet.

2. Arrange the lower cabinet(s) in their permanent location. If more than one cabinet is to be located on the lower level (Configurations B,C,D,E,F OR G), fasten them together using the supplied 5/16"-18 x 1 1/2" bolts. Locate the two mounting holes at the sides of the battery cabinet towards the front and use two bolts per side to secure together. Install the supplied chase nipple and plastic bushing in the knockouts to connect the lower cabinets together.

3. Secure the supplied wall mounting brackets to the inverter cabinet, or to the outermost sides of the upper cabinets. Use three supplied 5/16"-18 x 1" bolts per wall bracket that are on the inverter cabinet.

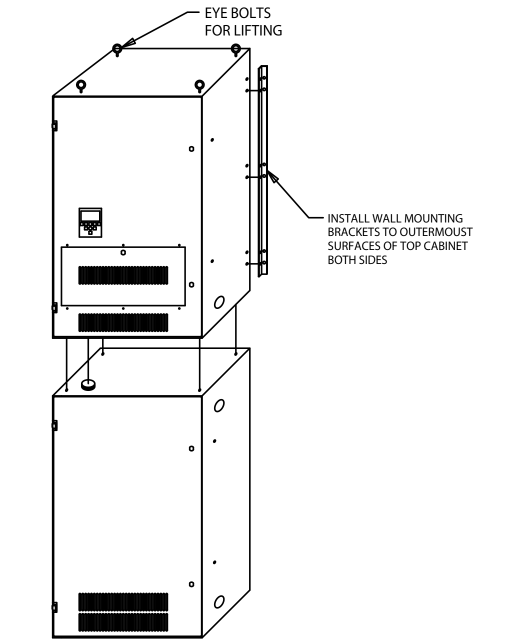
   Note: Only two wall mount brackets are supplied with the system, normally intended to secure the upper cabinets to the wall. Consult the factory if additional brackets are needed to secure the lower cabinets to the wall.

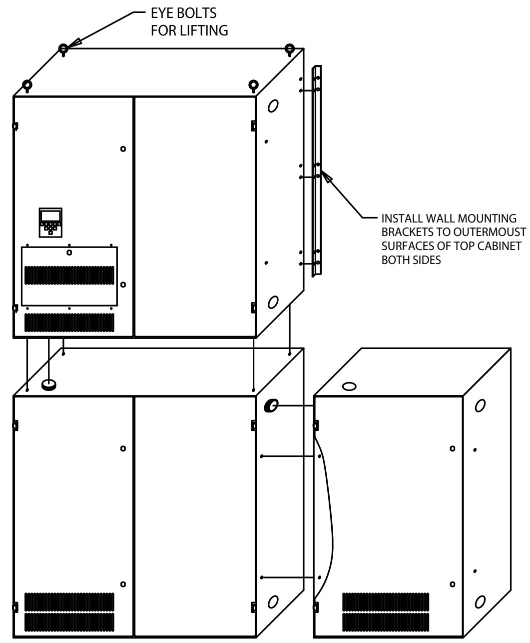
4. Place the upper cabinets in position and secure them together using the supplied 5/16"-18 x 2 1/2" bolts. Locate the two mounting holes at the sides of the battery cabinet towards the front and use two bolts per side to secure together.

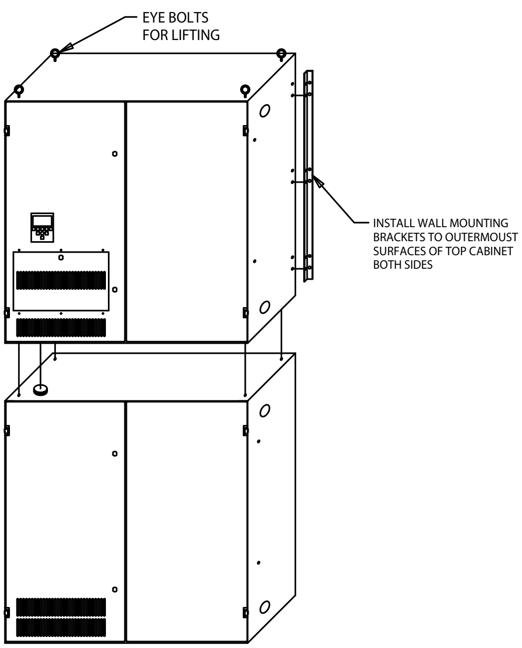
5. Secure the upper cabinets to the lower cabinets using the supplied 5/16"-18 x 2 1/2" bolts. Install from the floor of the upper cabinets into the top of the lower cabinets. Install the supplied close nipple and plastic bushing in the knockouts to connect the upper cabinets to the lower cabinets. Note that the capacitor bank located underneath the main transformer will have to be loosened and moved aside to gain access to the holes in the back of the inverter cabinet.

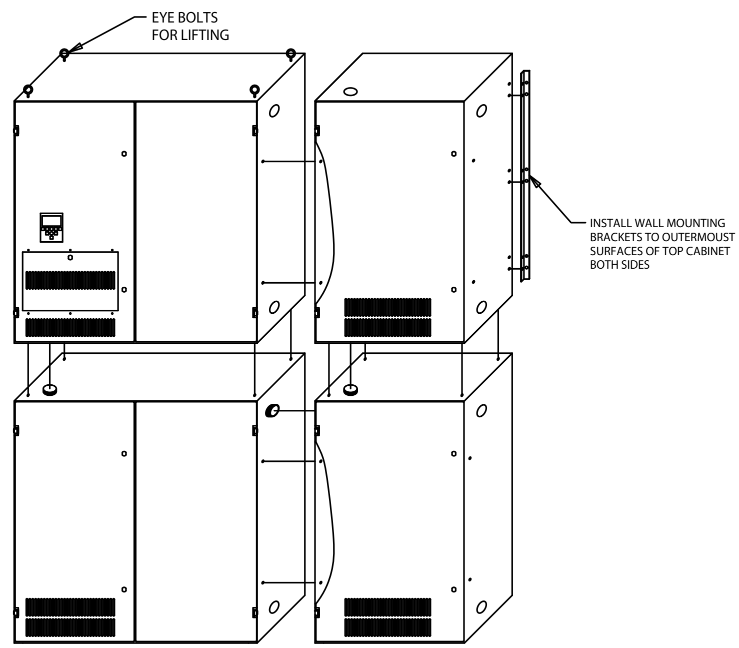
6. Secure the wall mounting brackets to the wall using an acceptable wall anchoring technique.

SECURING THE INVERTER AND BATTERY CABINETS



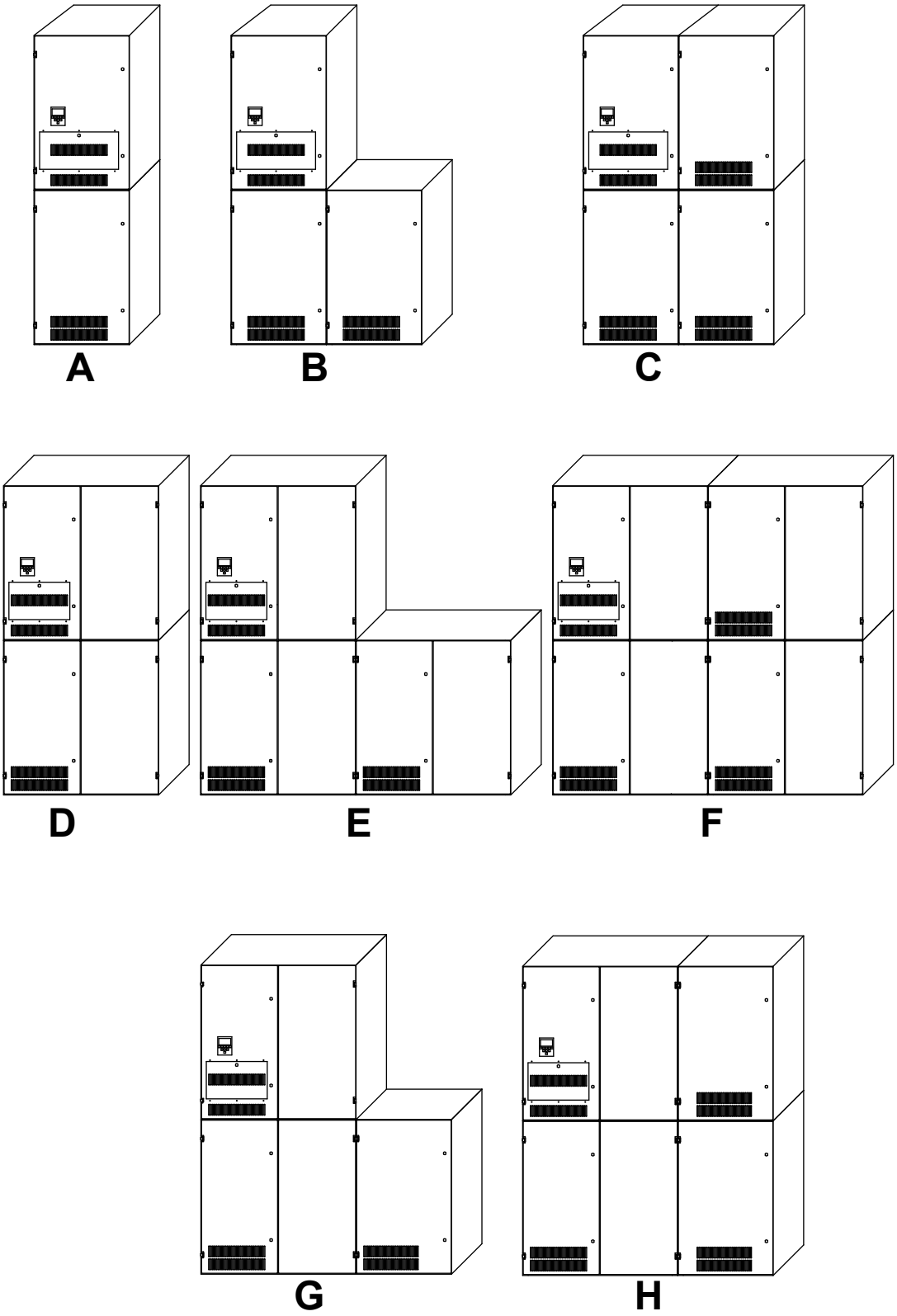






NOTE: REMOVE EYE BOLTS FROM INVERTER CABINET AND MOUNT TO BATTERY CABINET FOR LIFTING.

SECURING THE INVERTER AND BATTERY CABINETS
CABINET PLACEMENT CONFIGURATIONS



AC INPUT BREAKER MATRIX

KW	INPUT VOLTAGE	INPUT CIRCUIT BREAKER	KW	INPUT VOLTAGE	INPUT CIRCUIT BREAKER
5.3	120	80A	14.5	277	90A
5.3	208	50A	14.5	347	70A
5.3	240	50A	16	208	125A
5.3	277	40A	16	240	125A
5.3	347	30A	16	277	90A
7.5	120	100A	16	347	80A
7.5	208	60A	18	208	125A
7.5	240	60A	18	240	125A
7.5	277	50A	18	277	110A
7.5	347	40A	18	347	90A

Sizes based on 75° Celsius insulation type THHN wire, per N.E.C. Article 310, Table 310, Table 310-16, “Not more than three single insulated conductors rated 0 through 2000 volts, in a raceway in free air” (30° C ambient).

AC OUTPUT CURRENT MATRIX

KW	OUTPUT VOLTAGE	MAX OUTPUT CURRENT	KW	OUTPUT VOLTAGE	MAX OUTPUT CURRENT
5.3	240V / 120V	22.1A / 44.2A	12.5	240V / 120V	52.1A / 104.2A
5.3	277V / 120V	19.1A / 44.2A	12.5	277V / 120V	45.1A / 104.2A
5.3	347V / 120V	15.3A / 44.2A	12.5	347V / 120V	36.0A / 104.2A
7.5	240V / 120V	31.3A / 62.5A	14.5	240V / 120V	60.4A / 120.8A
7.5	277V / 120V	29.1A / 62.5A	14.5	277V / 120V	52.3A / 120.8A
7.5	347V / 120V	21.6A / 62.5A	14.5	347V / 120V	41.8A / 120.8A
8.5	240V / 120V	35.4A / 70.8A	16	240V / 120V	66.7A / 133.3A
8.5	277V / 120V	30.7A / 70.8A	16	277V / 120V	57.8A / 133.3A
8.5	347V / 120V	24.5A / 70.8A	16	347V / 120V	46.1A / 133.3A
10	240V / 120V	41.7A / 83.3A	18	240V / 120V	75.0A / 150.0A
10	277V / 120V	36.1A / 83.3A	18	277V / 120V	65.0A / 150.0A
10	347V / 120V	28.8A / 83.3A	18	347V / 120V	51.9A /150.0A

BATTERY REQUIRMENTS

Batteries of a specific manufacturer and model are required to maintain the system's UL 924 listing. Use of batteries not recognized in the product's UL report will void its listing.

BATTERIES FOR ELE'S RATED FOR 90 MINUTES (US ONLY)		
MANUFACTURER	**BATTERY MODEL NUMBER**	**FOR USE WITH MODELS RATED (QTY)**
Power Battery DEKA DEKA GNB CSB LEOCH	PRC/TC-1290 24HR3000 HR3000 S12V285/F HRL12280 XP12-300FR	5.3kW(16), 7.5kW(24), 10kW(30), 14.5kW(40), 18kW(50)
Power Battery DEKA. DEKA Northstar Battery CSB LEOCH	PRC-12100 27HR3500 HR3500 NS12-400 HRL12330 XP12=350FR	8.5kW(24), 12.5kW(30), 16kW(40)

BATTERIES FOR ELE'S RATED FOR 30 MINUTES (CANADA ONLY)		
MANUFACTURER	**BATTERY MODEL NUMBER**	**FOR USE WITH MODELS RATED (QTY)**
DEKA DEKA	31HR4000 HR4000	16kW (20), 18kW(20)

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 24 HOURS

BATTERY INSTALLATION AND WIRING

REFER TO THE BATTERY WIRING DIAGRAM ON THE INNER DOOR OF THE INVERTER OR BATTERY CABINET

BATTERY INSTALLATION

Batteries must be installed with the proper orientation. Note the orienation shown on the battery wiring diagrams attached to the inner door of the inverter or battery cabinet. Battery hold down brackets are not standard equipment. If the battery bracket option was purchased, there will be a bracket installation diagram included with the brackets supplied. See ***"Installation and Safety Precautions"***.

TEMPERATURE COMPENSATED CHARGING SYSTEM

The unit is equipped with an ambient compensated charging system the automatically adjusts the charging voltage dependent and the ambient temperature detected by probe located next to the battery. For units where the battery is in the inverter cabinet, the probe is already mounted. If not, the probe should be mounted on the top most battery shelve on top of a battery. Tie-wrap the probe to a battery cable. For units with a separate battery cabinet, the probe needs to be positioned as shown on the battery wiring drawings on the inner door of the inverter or battery cabinet as part of the battery installation. The probe is coiled up in the inverter cabinet ready be fished through to the battery cabinet. The probe should be mounted on the top most battery shelve on top of a battery. -wrap the probe to a battery cable.

BATTERY WIRING 5.3KW - 18KW

Batteries are wired as shown in the diagram on the inner door of the inverter or battery cabinet. Included with the lighting inverter is a kit for the wiring. Follow the steps and the corresponding diagram on the inner door of the inverter or battery cabinet, noting the different lengths and labels of wire.

1. Place batteries in the lower section of the lighting inverter or into the external battery cabinet as shown in the wiring diagram. Battery orientation is important. Install only as shown.
2. Locate the proper sections of wire that correspond to the wiring diagram.
3. Wire the batteries as shown, taking note of the polarity.
4. Once the batteries are wired, use a volt meter to measure the positive and negative leads, verify the polarity. The voltmeter should read approximately the total DC bus voltage. This varies depending on the unit size and battery back up time. See the battery installation diagram for the units specific bus voltage. If it is different then the diagram, recheck the wiring and test again.
5. **DO NOT PLUG IN DC CONNECTOR UNTIL READY TO APPLY AC POWER.** Insert the DC male connector into the DC female connector on the lighting inverter.

REFER TO THE BATTERY WIRING DIAGRAM ON THE INNER DOOR OF THE INVERTER OR BATTERY CABINET

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 24 HOURS

Batteries of a specific manufacturer and model are required to maintain the system's UL 924 listing. Use of batteries not recognized in the product's UL report will void its listing.

INPUT AND OUTPUT CONDUIT ENTRY LOCATIONS

*****CAUTION*****

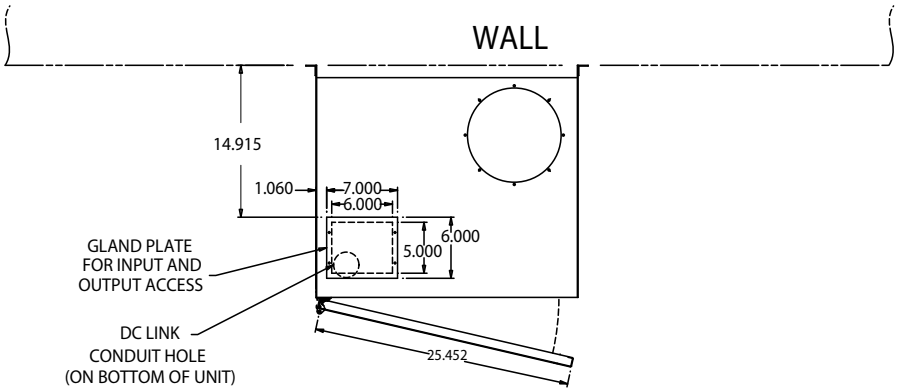
RISK OF ELECTRICAL SHOCK

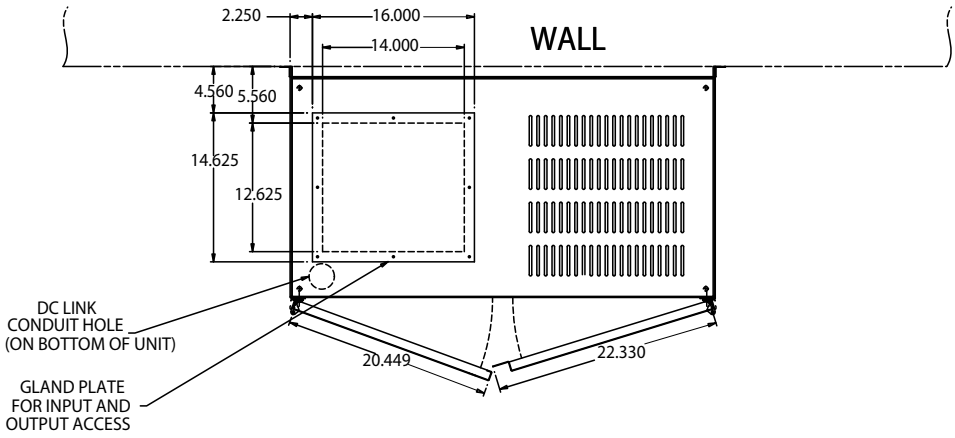
THE LIGHTING INVERTER RECEIVES POWER FROM MORE THAN ONE SOURCE. BE SURE ALL UTILITY CIRCUIT BREAKERS ARE IN THE "OFF" POSITION AND THE DC CIRCUIT BREAKER IS IN THE "OFF" POSITION BEFORE SERVICING.

Lighting Inverter Wiring With Distribution

Input wiring is performed at the input EMI terminals. Output wiring is performed at the output terminal strip and terminated at the distribution breakers on the front panel. It is recommended that all wiring is performed according to NEC standards and local codes.

Do not remove the debris shield from the top of the unit until ready for start up.





INPUT AND OUTPUT WIRING

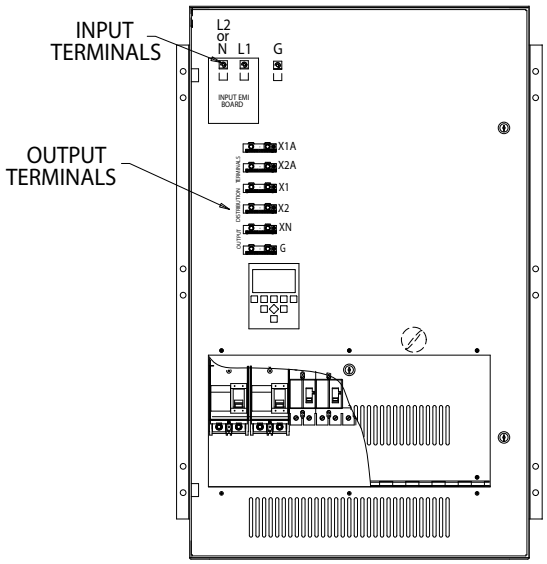
*****CAUTION*****

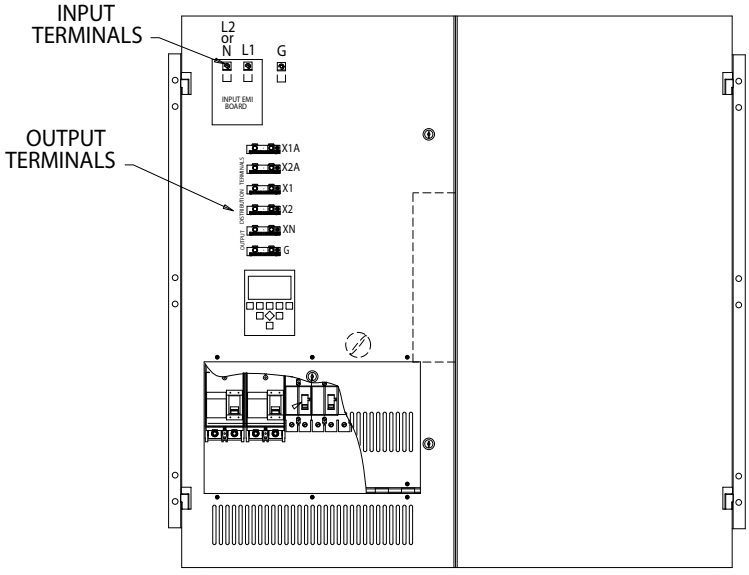
RISK OF ELECTRICAL SHOCK

THE LIGHTING INVERTER RECEIVES POWER FROM MORE THAN ONE SOURCE. BE SURE ALL UTILITY CIRCUIT BREAKERS ARE IN THE "OFF" POSITION AND THE DC CIRCUIT BREAKER IS IN THE "OFF" POSITION BEFORE SERVICING.

Lighting Inverter Wiring With Distribution

Input wiring is performed at the input EMI terminals. Output wiring is performed at the output terminal strip and terminated at the distribution breakers on the front panel. It is recommended that all wiring is performed according to NEC standards and local codes.



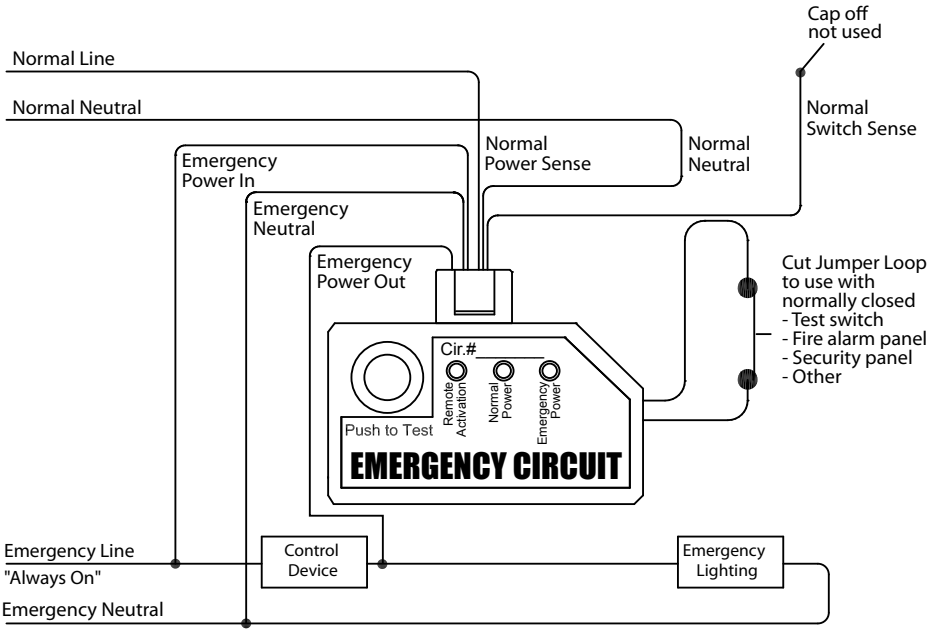


Specifications
Voltages 277VAC 50/60Hz
Max Load Requirements
LED Lighting.....18A @277VAC
Ballast..... 20A @277VAC
Incandescent.....10A @120VAC

OPTIONAL ZONESAVER-2, "LOCAL CONTROL OVERRIDE" INSTALLATION

The ZoneSaver-2 emergency lighting control unit is a UL 924 listed load control relay wired to shunt around a local control device (e.g. dimmer control, wall switch, occupancy sensor) powered from the inverter's normally on output, in order to provide emergency power to designated emergency lights upon the failure or loss of commercial AC power.

The ZoneSaver-2 is a single circuit, single pole 120 VAC or 277 VAC, control unit that allows independent control of lighting fixtures during normal power conditions. However in the event of a power failure, or if remotely activated by a signal from a fire alarm panel, security panel, or test switch, the ZoneSaver-2 will automatically override the local control of selected fixtures and ensure their full illumination for safe egress.



When utility voltage is available at the Normal Power Sense input, the "Normal Power" light is illuminated indicating a normal condition. Local control is allowed. Note that when emergency power is available at the Emergency Power input, the "Emergency Power" light is illuminated.

When utility voltage is lost, the normal power light turns off. The control device is then bypassed, and emergency power is diverted to the selected emergency fixtures. Once power returns to the Normal Power Sense input, the local control device is inserted back into the circuit and the ZoneSaver-2 indicates a normal operating condition.

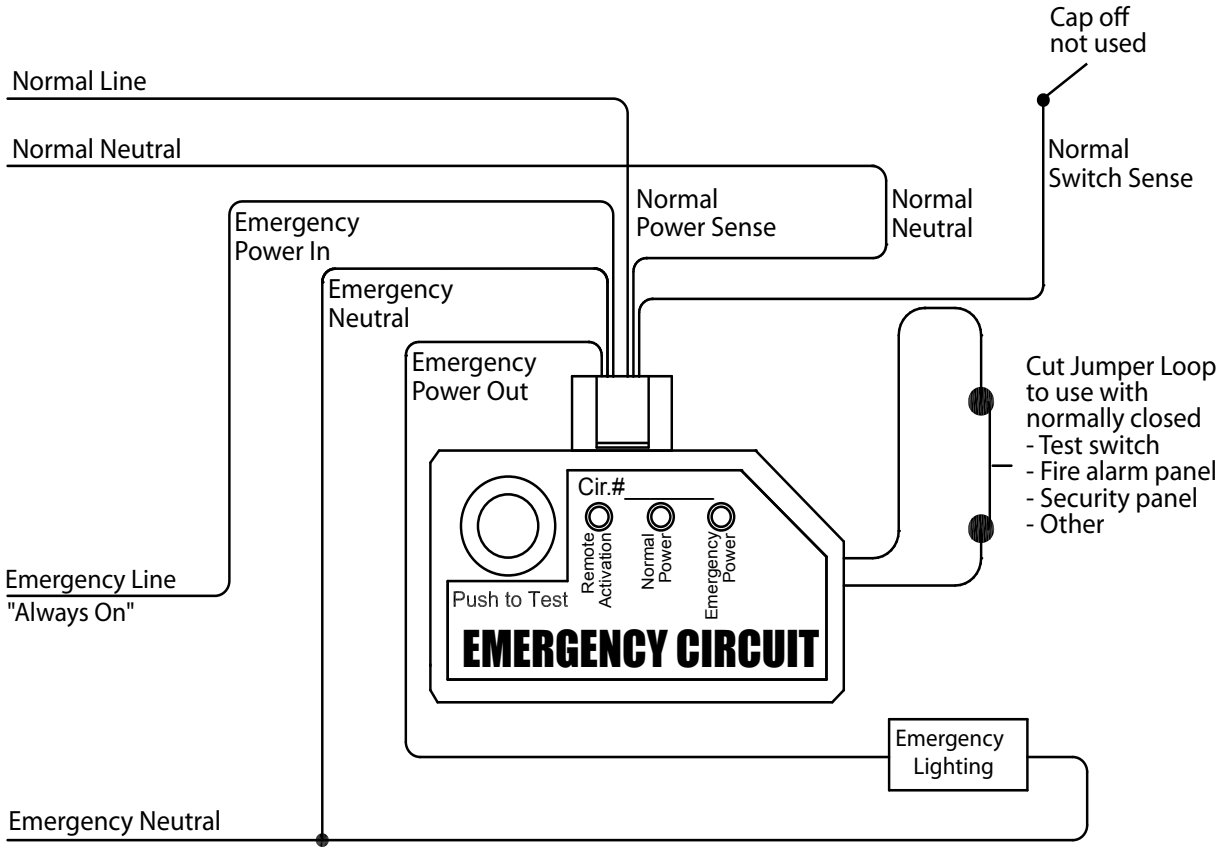
The "Remote Activation" light is illuminated under a normal condition, and turns off when the ZoneSaver-2 is activated by a signal from a fire alarm panel, a security panel, or the emergency power supply when performing an automatic "periodic" system test per NFPA 101. When activated, the local control device is then bypassed, and emergency power is diverted to the selected emergency fixtures. An integral push-to-test button is also provided to manually test the emergency circuits per NFPA 101.

Refer to the manual that accompanied this device for function, use and installation instructions.

OPTIONAL ZONESAVER-2, “ZONE SENSING” INSTALLATION

The ZoneSaver-2 emergency lighting control unit is a UL 924 listed load control relay, wired for zone sensing and independent control of normally off (standby) emergency lighting fixtures. The ZoneSaver-2 senses the voltage at an individual zone lighting panel. When a loss of normal power is detected, emergency power is made available to illuminate emergency fixtures within that specific zone.

The ZoneSaver-2 is a single circuit, single pole 120 VAC or 277 VAC, control unit that energizes normally off emergency lighting fixtures if a loss of power is detected at the normal lighting panel in that zone, or if remotely activated by a signal from a fire alarm panel, security panel, or test switch.



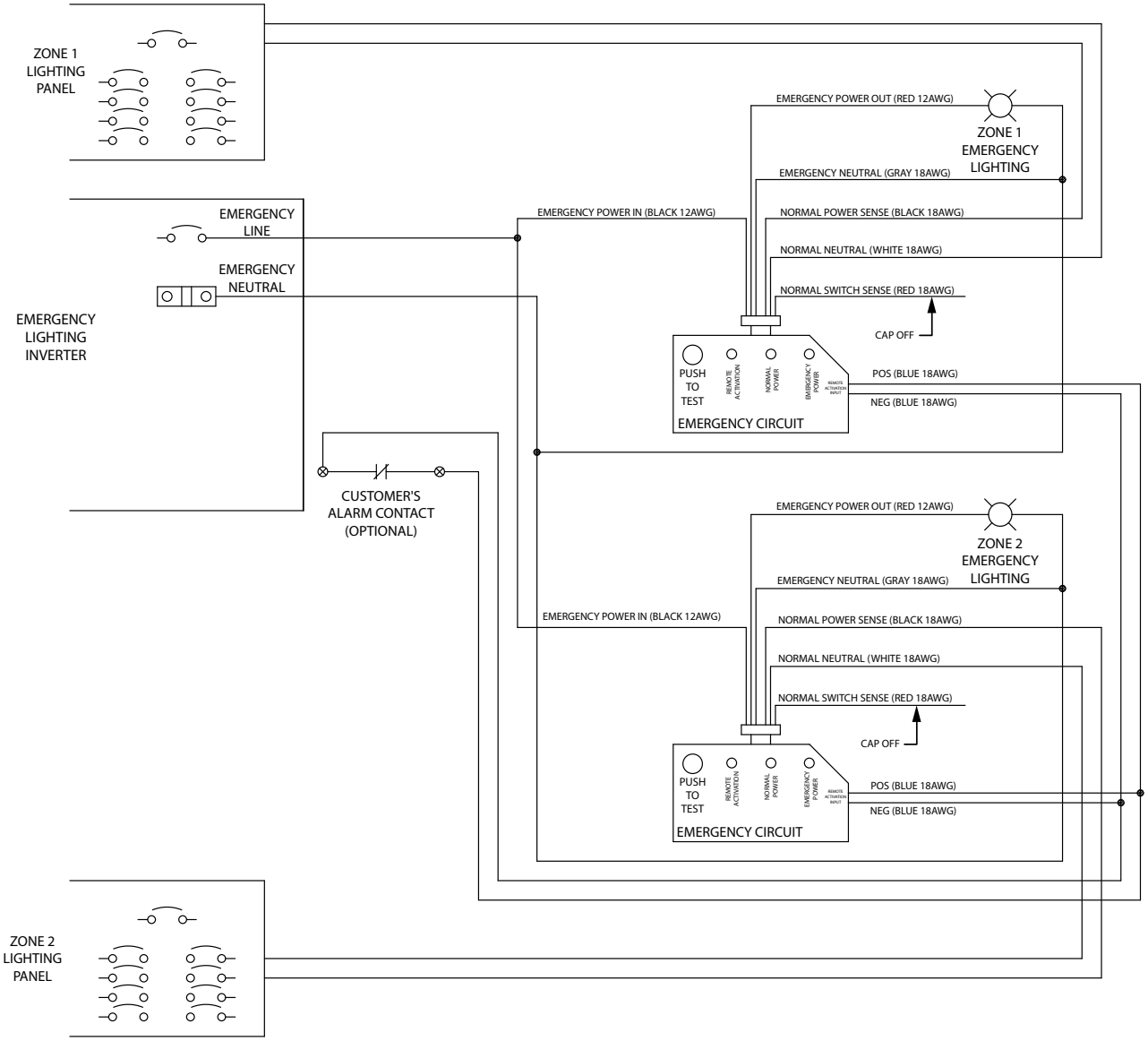
When utility voltage is available at the Normal Power Sense input, the “Normal Power” light is illuminated indicating a normal condition, and the normally off (standby) emergency lights remain off. Note that when emergency power is available at the Emergency Power input, the “Emergency Power” light is illuminated.

When utility voltage is lost, the normal power light turns off and the normally off (standby) emergency lights are energized. Once power returns to the Normal Power Sense input, the emergency lights are shut off and the ZoneSaver-2 indicates a normal operating condition.

The “Remote Activation” light is illuminated under a normal condition, and turns off when the ZoneSaver-2 is activated by a signal from a fire alarm panel, a security panel, or the emergency power supply when performing an automatic “periodic” system test per NFPA 101. When activated, emergency power energizes the normally off (standby) emergency lights. An integral push-to-test button is also provided to manually test the emergency circuits per NFPA 101.

Refer to the manual that accompanied this device for function, use and installation instructions.

MULTIPLE ZONESAVER-2 UNITS CONNECTED TO ONE EMERGENCY LIGHTING INVERTER - WIRING DIAGRAM



NOTES:

1. UP TO 5 ZONESAVER - 2 REMOTE ACTIVATION INPUTS MAYBE BE WIRED IN PARALLEL TO THE SAME ALARM CONTACT(S). MAXIMUM WIRE RUN 500' WITH #18 AWG.

2. ONLY ONE SET OF WIRES CAN BE LANDED ON THE EMERGENCY LIGHTING INVERTER'S, K5 - NORMALLY CLOSED, OFF BUS ACTIVE TERMINAL.

Refer to *"Appendix A - Interface Board Layout"* and *"Options Interconnection Diagram"* for proper connection to the ELE.

Refer to the manual that accompanied this device for function, use and installation 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 Emergency Lighting Inverter and alarming under critical conditions. The following installation instructions include operation, wiring, and mounting your Remote Annunciator.

OPERATION

During normal operation of the Inverter, the Remote Annunciator will illuminate the green Inverter 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 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

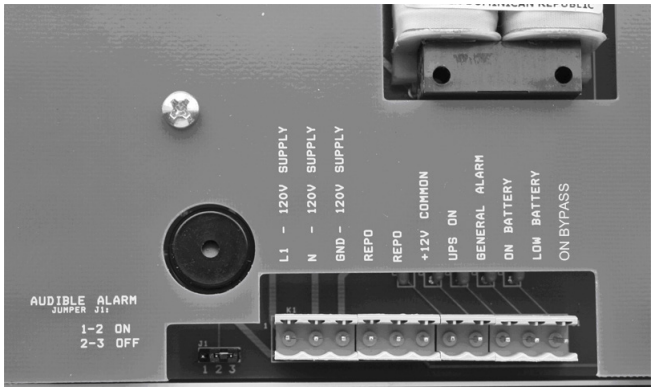


Figure 2: Rear of Remote Annunciator showing J1 and terminal header

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 Inverter 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 Inverter or a nearby emergency lighting circuit fed by the Inverter. From the Inverter, 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

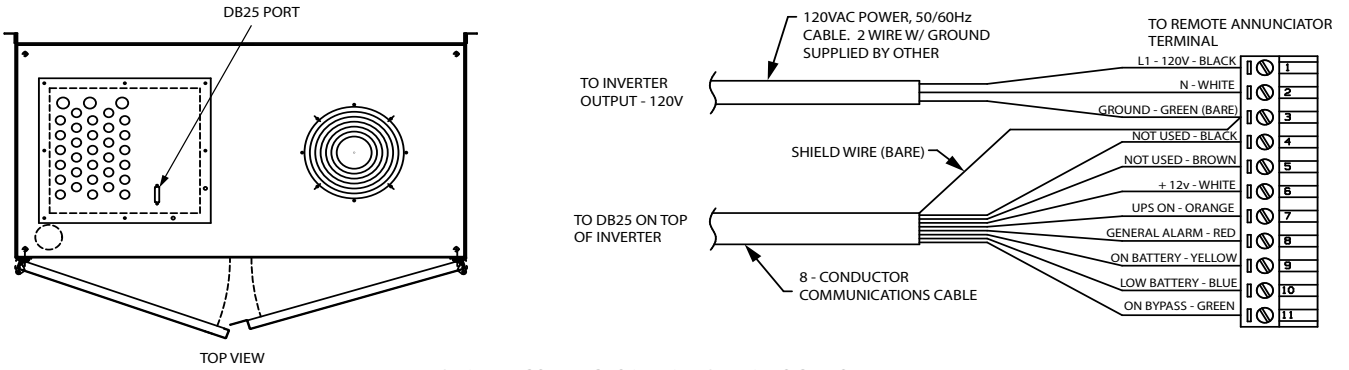


FIGURE 3 - CONNECTOR WIRING AND LOCATION

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/Inverter 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).

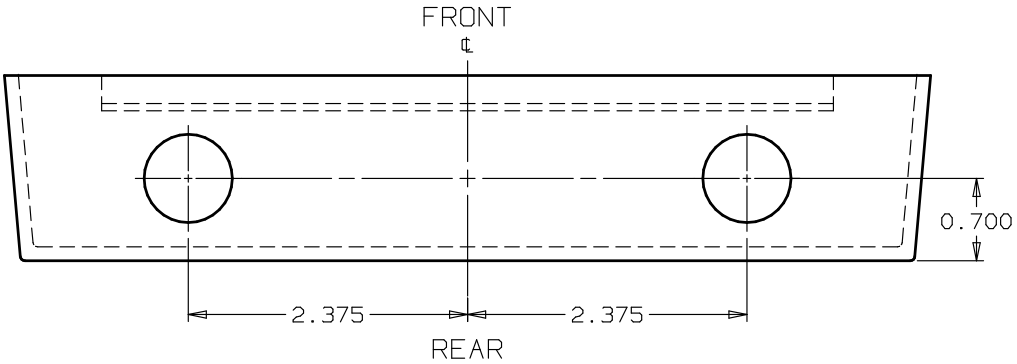


Figure 4: Drilling locations for top/bottom conduit entrance.

OPTIONAL MULTIFUNCTION COMMUNICATIONS MODEM

Meeting NFPA standards for system testing is critical in today's business infrastructure. To assist in meeting these standards, Controlled Power Company is offering the Multifunction Communications Modem (MCM). The MCM can send a fax, an e-mail, dial a phone number and play a prerecorded message, or report system test results to a web page.

On lighting inverters with system test pass/fail contacts, the MCM records system test results and automatically sends a written test report which satisfies NFPA guidelines for stored energy emergency lighting system testing. The MCM is provided standard with 2 dry contact inputs for battery test pass/fail results, plus 6 additional input channels to optionally monitor environmental conditions or safety-related alarms. Consult factory for interface options.

The MCM is available for Controlled Power Company Lighting Inverter models provided with the Intellistat or Intellistat TS (touchscreen) monitor.

The MCM product dimensions are 14"W x 1.75"H x 7"D, and weighs 3.5 lbs. The enclosure is designed for the following mounting configurations:
Features:

- 1U rack-mount
- Table-mount
- Wall-mount (using optional flanges)

Power Source 9VDC plug in a wall adapter (120VAC)

Battery Backup: In the event of a power failure, an internal battery keeps the MCM operating for approximately 3.5 hours when fully charged and undedr normal operating conditions.

Multifuntion Communications Modem (MCM)

NOTE: The power supply for these options MUST be taken from the output of the Inverter. A 120V receptacle (5-20R) whose supply is taken from the output of the inverter must be installed near the location of the Automatic Message Dialer. A standard phone receptacle and phone cord is also required to complete the circuit.

Refer to the manual that accompanied these devices for features, function, use and installation Instructions.

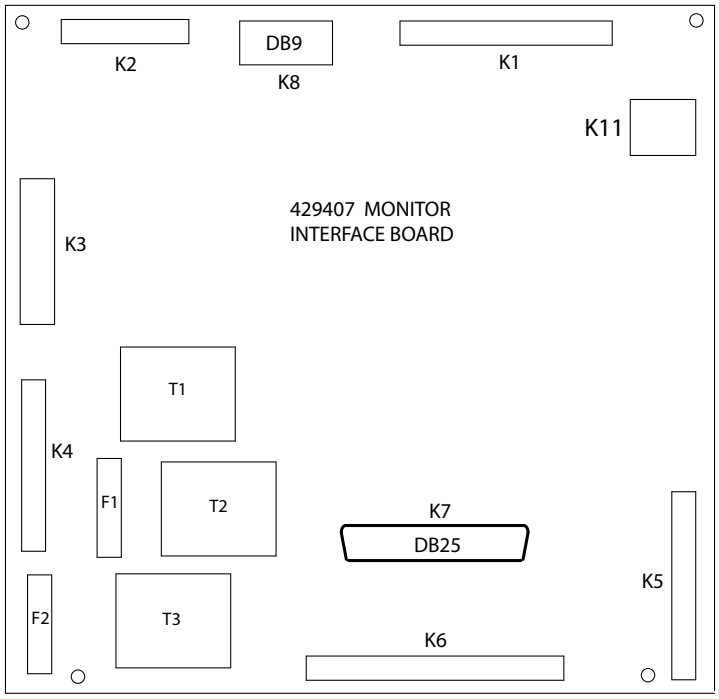
K8 - DB9 COMMUNICATION PORT

DB9 (K8) PIN OUT - Rated 40VDC @ 0.3 Amps, 20VDC @ 1.0 Amps.

Pin 1	No connection	Pin 6	No connection
Pin 2	TXD	Pin 7	No connection
Pin 3	RXD	Pin 8	No connection
Pin 4	No connection	Pin 9	No connection
Pin 5	GROUND		

K6 - ALARM TERMINAL OUTPUTS MOLEX TERMINALS - Dry contacts rated: 125VAC @ 0.5 Amps.		K7 - ALARM TERMINAL OUTPUTS DB25 - Rated 40VDC @ 0.3 Amps, 20VDC @ 1.0 Amps.	
Pins 5-6	UPS ON	Pins 3-8	UPS ON
Pins 1-2	GENERAL ALARM	Pins 5-9	GENERAL ALARM
Pins 9-10	LOW BATTERY WARNING	Pins 2-6	LOW BATTERY WARNING
Pins 11-12	BYPASS ON	Pins 12-13	BYPASS ON
Pins 7-8	MANUAL RESTART REQUIRED	Pins 19-20	MANUAL RESTART REQUIRED
Pins 3-4	UTILITY FAIL	Pins 1-4	UTILITY FAIL

K5 - ALARM TERMINALS MOLEX TERMINALS - Dry contacts rated: 125VAC @ 0.5 Amps.			
Pin 1	INPUT NEUTRAL (2C)	Pins 7-8	INVERTER TEST FAIL
Pin 2	NO CONNECTION	Pins 9-10	INVERTER TEST PASS
Pin 3	INPUT NEUTRAL (2B)	Pins 11-12	OUTPUT BREAKER OPEN
Pins 4-5	NORMALLY CLOSED CONTACT - OFF BUS ACTIVE	Pins 13-14	REMOTE OFF BUS ACTIVE
Pins 5-6	NORMALLY OPEN CONTACT - OFF BUS ACTIVE	Pins 15-16	MANUAL BATTERY TEST



See *"Appendix A - Component Location Diagrams"* for Interface board location

INTELLISTAT TS™ MONITOR COMMUNICATIONS

Communicating with the ELE through the USB-B Port (K11) on the interface board will allow the user to obtain information remotely. Using the USB-B in this manner will only provide information from the Alarm Logs, Battery Test Events and Time Screens on the Intellistat TS™ Monitor. Additional information can be obtained remotely with the use of optional devices such as the MCM Device, Auto Dialer or Intellistat TS Network Communications options. See *"Appendix A - Options Interconnection Diagram"* and *"Interface Board Layout".*

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 USB-A to USB-B Cable - for use with all Windows operating systems and "Hyperterminal" or "PuTTY" emulation programs.

PROCEDURE

1. Connect the USB-A to USB-B cable from K11 on the Interface Board to the USB port on a computer. See *"Appendix A - "Interface Board Layout".*

2. Make sure the Inverter in 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 = 115200. "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: 115200 Baud, 8 data bits, 0 parity, 1 stop bit, flow control = xon/xoff, Echo=On, then click OK.

7. Once communication has been established with the Inverter, system Alarm Logs, Battery Test Events and Time data can be obtained by sending a series of characters to the Inverter. Below is a list of the character commands. **Note: Not case sensitive.**

   LL = Alarm Logs
   BB = Battery Test Events Log
   TT = Inverter Time and Date

   Note: Entering BB or LL will list 25 events at a time. Re-entering BB or LL again will list the next 25 events.

*****CAUTION*****

BE SURE THAT NO POWER IS APPLIED TO THE INVERTER WHILE WIRING TO THE INTERFACE BOARD.

DO NOT ATTEMPT TO OPERATE THE UNIT UNTIL ALL SET UP PROCEDURES HAVE BEEN COMPLETED. NOTE - THESE SETTINGS ARE FACTORY PRESET AND DO NOT REQUIRE MODIFICATION.

DIP SWITCH LOCATION - The dip switches are located on the Main Control Board # 417622 / 419318, which is located behind the front door, then behind the inner door above the bypass switch. It is the largest circuit board on that inner panel. See next page for Control Board layout and dip switch locations. Refer to *"Appendix A - Component Location Diagram"*. **NOTE - Control Board # 419318 is used in systems with a 277V or 347V input voltage only.**

SW1-INPUT VOLTAGE SETTING (Only one switch should be on.)

SW1 ON BOARD #417622 (120/208/220/240V INPUTS ONLY)					SW1 ON BOARD #419318 (277V OR 347V INPUTS ONLY)				
SWITCH POSITION	1	2	3	4	SWITCH POSITION	1	2	3	4
120	ON	OFF	OFF	OFF	-----	OFF	OFF	OFF	OFF
208	OFF	ON	OFF	OFF	-----	OFF	OFF	OFF	OFF
220	OFF	OFF	ON	OFF	277	OFF	OFF	ON	OFF
240	OFF	OFF	OFF	ON	347	OFF	OFF	OFF	ON

SW2 - INVERTER SLEW RATE - The slew rate is how fast the inverter will correct phasing synchronization to the incoming line. The standard setting should be used unless the incoming lines are very unstable or the inverter will be connected to a generator.

SW2				
SWITCH POSITION	1	2	3	4
STANDARD	ON	OFF	OFF	OFF
FAST	OFF	ON	OFF	OFF
GENERATOR	OFF	OFF	ON	OFF

SW4 - OPERATING OPTIONS

Switch Position #1 - Factory Test Switch: This switch is for factory testing only and must remain in the "Off" position.

Switch Position #2 - Battery Cutoff Voltage: Battery manufacturers specify the desired cutoff voltage for maximum life performance.

ON = 1.75 VPC Cutoff OFF = 1.67 VPC Cutoff

Controlled Power Company recommends 1.75 VPC. This assures longer battery life.

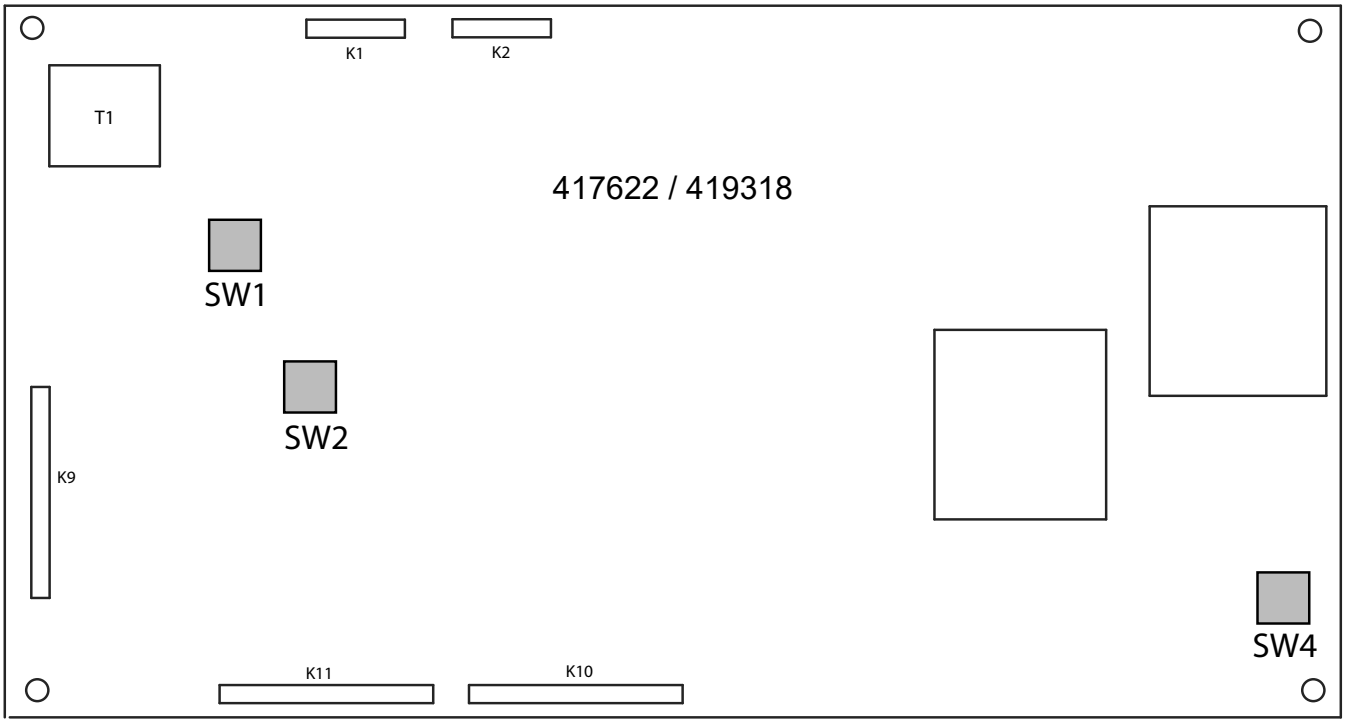
SW4 - OPERATING OPTIONS CONTINUED

Switch Position #3 - Manual Re-Start: During extended power outages, the inverter automatically turns off to prevent total battery depletion. Upon return of utility power, you have the option for the inverter to turn on automatically or manually.

ON = Manual Re-Start OFF = Auto Re-Start

Switch position #4 - This switch remains on at all times.

DIP SWITCH LOCATION DIAGRAM



REMOTE COMMAND TERMINALS - Only available with the Off Bus option. Located near the output terminals (See *"Appendix - A, Component Location Diagram").* Normally closed contacts, the user can force the off bus ON by opening the contacts via a normally closed push button or other external device, therfore turning on any loads connected to the off bus without a loss of building power.

DO NOT ATTEMPT TO OPERATE THE UNIT UNTIL ALL SET UP PROCEDURES HAVE BEEN COMPLETED

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 24 HOURS

NORMAL MODE START UP

Before proceeding with the start up procedure find the battery thermal sensor located inside the inverter cabinet near the input terminals. Feed the thermal sensor through to the battery cabinet and feed it through the tie wrap inside the battery cabinet and loosely tighten the tie wrap to hold it in place.

1. Remove the debris shield from the top of the unit and discard.
2. Turn off all AC input, DC circuit breaker and output circuit breakers.
3. Verify the bypass switch is in the “Normal” position.
4. Check the battery connections for proper voltage and polarity.
5. Verify for correct voltage at the input terminals (L1, L2, N). This should match the information on the specification tag on the unit.
6. Turn on the DC breaker.
7. Turn on the AC input breaker.
8. Check for correct output voltage at the output terminal (X1, X2, X1A, X2A, XN).

OUTPUT			
120/240	X1-XN = 120	X2-XN = 120	X1-X2 = 240
120/277	X1-XN = 120	X2-XN = 277	----
120/347	X1-XN = 120	X2-XN = 347	----

OFF BUS OUTPUT			
120/240	X1A-XN = 120	X2A-XN = 120	X1A-X2A = 240
120/277	X1A-XN = 120	X2A-XN = 277	----
120/347	X1A-XN = 120	X2A-XN = 347	----

Note 1: Output voltage information is located on the specification tag.

Note 2: If the “Off Bus” option is included, a power outage must be simulated first for voltage to be present at the off bus terminal. Toggle the AC input breaker off and check for voltage at the off bus terminals.

9. Turn AC output load breakers on one at a time and verify that the amount of load does not exceed the system rating as indicated by the percentage load shown on the front display.

INTELLISTAT TS™ MONITOR DESCRIPTION

Advanced Digital Monitoring

The user-friendly Intellistat TS™ monitor provides quick, full access to all of the monitor features, and also allows all programming to be done directly from the keypad. An easy to read LCD indicates all the electrical parameters, as well as the functional status of the inverter. A virtual keypad allows the entry of date / time values, system setpoints and password information into the monitor, without the need for an external computer and cable.

The Intellistat TS™ - Intelligent status monitoring an emergency lighting inverter's operational status is critical for maintaining the building's operational efficiency, as well as for monitoring the power feeding the lighting systems. With this in mind, Controlled Power Company designed the model ***"ELE"*** with state of the art monitoring features to provide complete system diagnostics and testing with access to all electrical system parameters.

Features

- LCD display of all electrical parameters.
- NFPA compliant automatic battery testing and logging.
- User programmable automatic system testing.
- System alarm annunciation.
- Audible alarm with alarm silence.
- Alarm status display.
- Email / Cell phone status notification.
- Optional fax / email / voice / web page reporting of test results.
- Date and time display.
- Auto logging of test results / events
- Multi layer password protection.
- Remote monitoring capabilities.
- Programmable local interfaces.
- Logs up to 25 events.
- Non volatile clock and memory.
- Programmable alarm set points.

Inverter Status and Alarm Indicators

- High / Low Input Voltage
- High / Low Output Voltage
- High Output Volt-Amperes
- High / Low Output Frequency
- High / Low Battery Voltage
- High Battery Charge Current
- System Normal
- General Alarm
- System on Battery
- Low Battery Warning
- Low Battery Shutdown
- Battery Test in Process
- Auto Battery Test Failed / Passed
- Off Bus Status
- Output Circuit Breaker Open
- Charger Fail / DC Open Circuit
- System in Manual Bypass
- REPO Activated

Measured Parameters

- Input Voltage
- Output Voltage
- Output Current
- Output Volt-Amperes
- Output Watts
- Output Power Factor
- Output Percent Load
- Output Frequency
- Battery Voltage
- Battery Charger Current
- Battery Capacity Remaining
- Battery Temperature

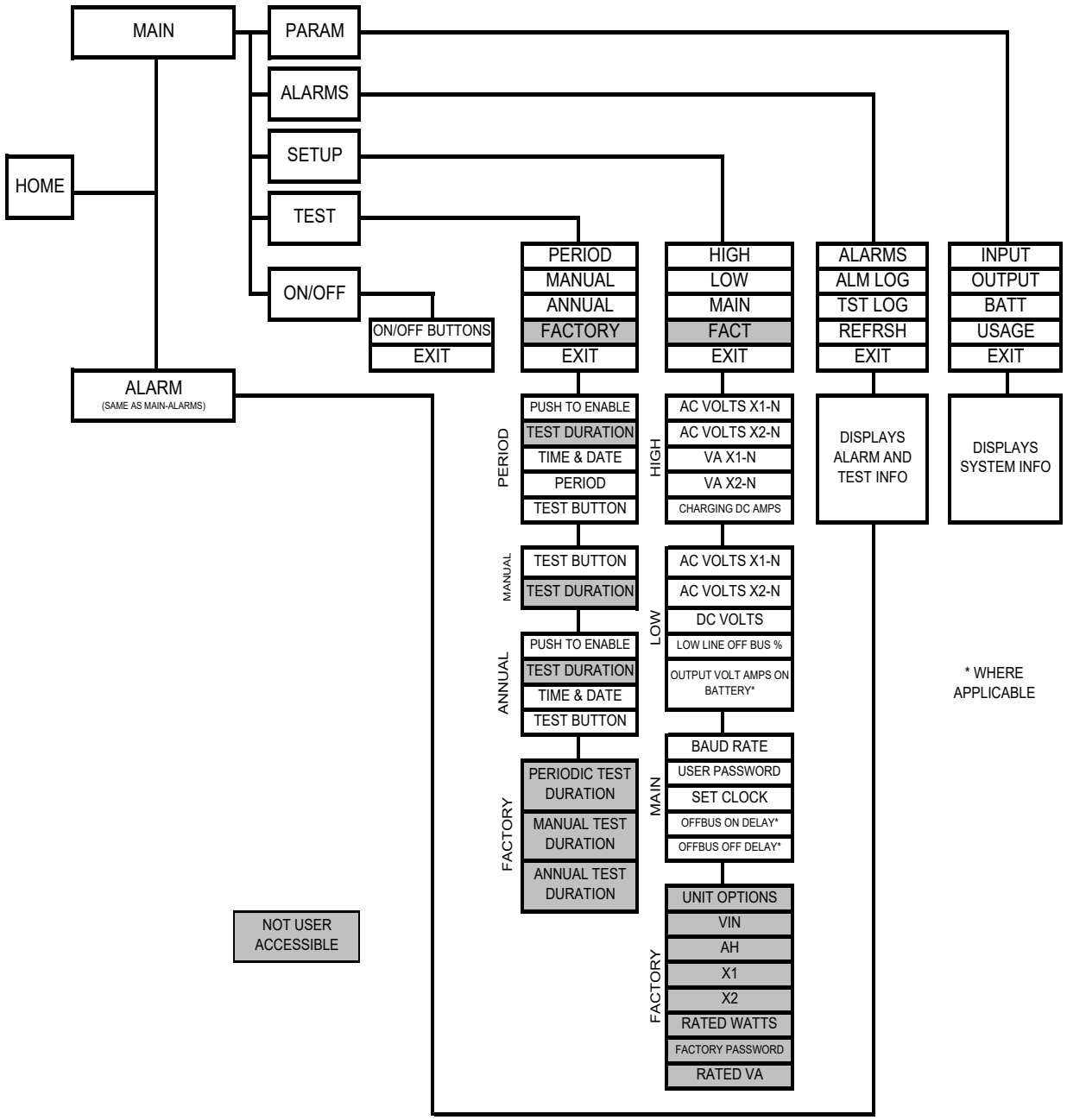
Automatic System Tests

The Intellistat TS™ Monitor automatically performs a user defined (date and time) 5 minute system test every 30 or 90 days; as well as a user defined (date and time) annual 30, 60 or 90 minute system test. For all of these tests, the Intellistat TS™ Monitor logs the test results with the date and time, as well as a "pass" or "fail" indication. Manual System tests are also available.

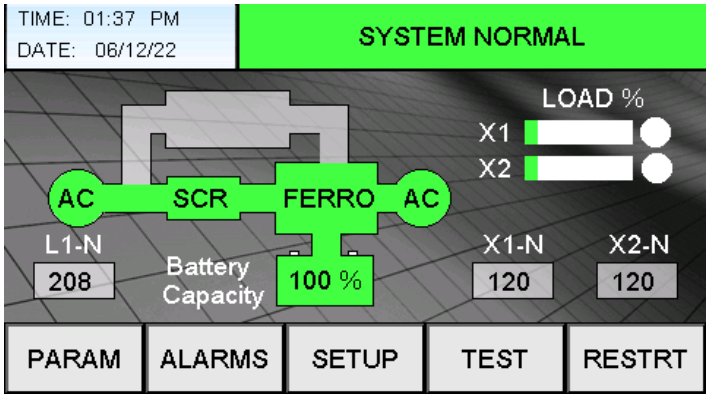
INTELLISTAT TS MONITOR OPERATION
MONITOR TREE

***** CAUTION *****

IT IS RECOMMENDED THAT ALL PAREMETERS BE LEFT AT FACTORY PRESET LEVELS. IF MODIFICATION OF SYSTEM PARAMETERS AND ALARM LEVELS IS REQUIRED PLEASE CONTACT THE FACTORY PRIOR TO MODIFICATION. IMPROPERLY SETTING ALARM LEVELS MAY RESULT IN NUISANCE ALARMS.



INTELLISTAT TS MONITOR OPERATION
PARAMETER DEFINITIONS



PARAMETERS			
MENU	**SUB MENU**	**MEANS**	**TERM**
PARAMETERS	**INPUT**	INPUT VOLTAGE FROM L1 TO L2	AC VOLTS L1-L2
	OUTPUT	OUTPUT VOLTAGE X1 TO N	AC VOLTS X1-N
		OUTPUT CURRENT X1 TO N	AC AMPS X1-N
		OUTPUT WATTS X1 TO N	WATTS X1-N
		OUTPUT VA X1 TO N	VA X1-N
		OUTPUT POWER FACTOR X1-N	PF X1-N
		OUTPUT LOAD % X1 TO N	LOAD % X1-N
		OUTPUT VOLTAGE X2 TO N	AC VOLTS X2-N
		OUTPUT CURRENT X2 TO N	AC AMPS X2-N
		OUTPUT WATTS X2 TO N	WATTS X2-N
		OUTPUT VA X2 TO N	VA X2-N
		OUTPUT POWER FACTOR X2-N	PF X2-N
		OUTPUT LOAD % X2 TO N	LOAD % X2-N
		TOTAL POWER FACTOR	P.F.
		TOTAL LOAD PERCENTAGE	TOTAL LOAD %
		TOTAL VA	TOTAL VA
		TOTAL WATTS	TOTAL WATTS
		OUTPUT FREQUENCY	FREQ
	DC	BATTERY VOLTAGE	DC VOLTS BATT
		BATTERY CURRENT	DC AMPS BATT
		PERCENTAGE BATTERY REMAINING	% BATTERY
		TIME ON BATTERY	M ON BATTERY
	USAGE	ACCUMULATED HOURS THE SYSTEM HAS BEEN TURNED ON	SYSTEM ON HOURS
		ACCUMULATED MINUTES THE SYSTEM HAS BEEN ON BATTERY	ON BATTERY MINUTES
ALARMS	**ALARMS**	CURRENT ALARMS LISTING	-----
	ALM LOG	ALARM LOG LISTING	-----
	TST LOG	TEST LOG LISTING	-----
	REFRESH	REFRESH DATA	-----

INTELLISTAT TS MONITOR OPERATION
PARAMETER DEFINITIONS

PARAMETERS			
MENU	**SUB MENU**	**MEANS**	**TERM**
SETUP	**HIGH**	HIGH INPUT VOLTAGE L1 TO N ALARM LEVEL	ViL1-N
		HIGH OUTPUT VOLTAGE X1 TO N ALARM LEVEL	VoX1-N
		HIGH OUTPUT VOLTAGE X2 TO N ALARM LEVEL	VoX2-N
		HIGH VA X1 TO N ALARM LEVEL	VAoX1-N
		HIGH VA X2 TO N ALARM LEVEL	VAoX2-N
		HIGH WATTS X1 TO N ALARM LEVEL	WoX1-N
		HIGH WATTS X2 TO N ALARM LEVEL	WoX2-N
		HIGH OUTPUT FREQUENCY ALARM LEVEL	FREQ O
		HIGH BATTERY VOLTAGE ALARM LEVEL	VBATT
		HIGH BATTERY TEMPERATURE ALARM LEVEL	TBATT
		HIGH CHARGER CURRENT ALARM LEVEL	ICHG
	LOW	LOW OUTPUT VOLTAGE X1 TO N ALARM LEVEL	VoX1-N
		LOW OUTPUT VOLTAGE X2 TO N ALARM LEVEL	VoX2-N
		LOW BATTERY VOLTAGE ALARM LEVEL	VBATT
		LOW OUTPUT FREQUENCY ALARM LEVEL	FREQ O
		LOW INPUT VOLTAGE L1 TO N ALARM LEVEL	ViL1-N
		OUTPUT VA ON BATTERY TEST ALARM LEVEL	VA ON B
	MAIN	UNIT IDENTIFIER	UNIT IDENTIFIER
		USER PASSWORD	USER PASSWORD
		SET SYSTEM CLOCK (TIME AND DATE)	SET CLOCK
		ON DELAY FOR OFF BUS	OFF BUS ON DELAY
		OFF DELAY FOR OFF BUS	OFF BUS OFF DELAY
	FACT NOT USER ACCESSIBLE	RESET ODOMETER ON PARAMETER USAGE MENU	RESET ODOM
		PREVENTIVE MAINTENANCE ALARM FOR BATTERIES ON MINUTES ALARM	BATT M
		PREVENTIVE MAINTENANCE ALARM FOR HOURS OF UNIT RUNNING	PREV M
		TOTAL RATED WATTS OF THE UNIT	RATED WATTS
		TOTAL RATED VA OF THE UNIT	RATED VA
		SERIAL NUMBER OF THE UNIT	SERIAL #
TEST	**PERIOD**	THE TEST IS ENABLED OR DISABLED	ENABLED (DISABLED)
		DURATION OF TEST	AUTOMATIC TEST DURATION
		START TIME AND DATE OF NEXT TEST	TIME & DATE
		TIME BETWEEN TESTS	PERIOD
	MANUAL	BUTTON TO START TEST	TEST
		DURATION OF TEST	MANUAL TEST DURATION
	ANNUAL	THE TEST IS ENABLED OR DISABLED	ENABLED (DISABLED)
		DURATION OF TEST	ANNUAL TEST DURATION
		START TIME AND DATE OF NEXT TEST	TIME & DATE
	FACTORY NOT USER ACCESSIBLE	SET DURATION OF PERIODIC TEST	PERIODIC TEST DURATION
		SET DURATION OF MANUAL TEST	MANUAL TEST DURATION
		SET DURATION OF ANNUAL TEST	ANNUAL TEST DURATION
RSTRT		MANUAL RESTART UNIT AFTER FAULT CONDITION	-----

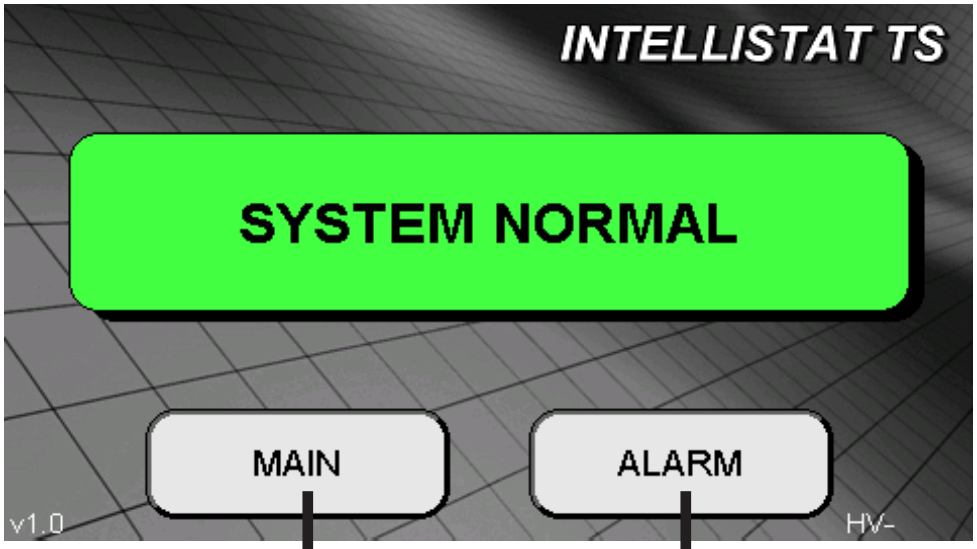
INTELLISTAT TS MONITOR OPERATION

This section will give you a basic understanding of the Intellistat TS™ Monitor, its menu items and functions. All parameters are preset at the factory.

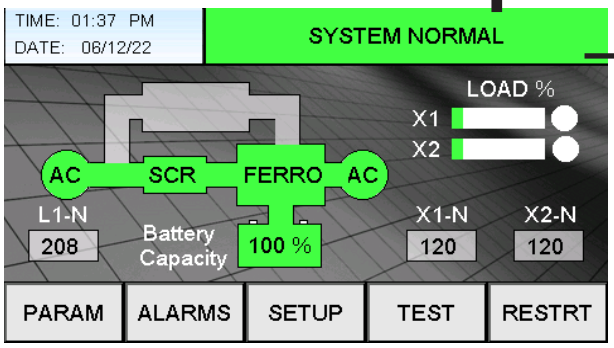
GENERAL

The system is pre-programmed at the factory specific to your unit. There should be no need to change any system parameters. Contact the factory should this become necessary.

HOME SCREEN

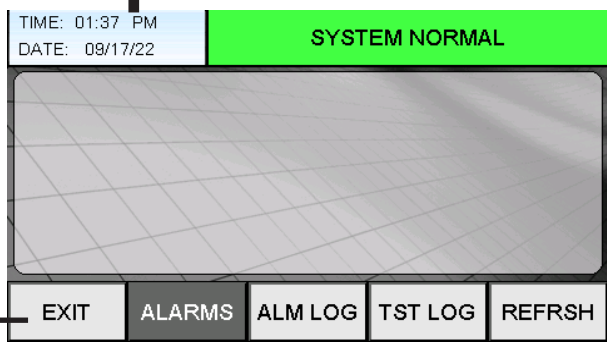


MAIN SCREEN



Touch the “SYSTEM NORMAL” box to return to the HOME screen. Only active from the MAIN screen.

ALARM SCREEN

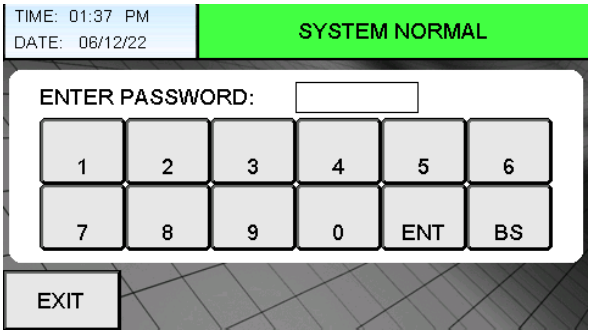


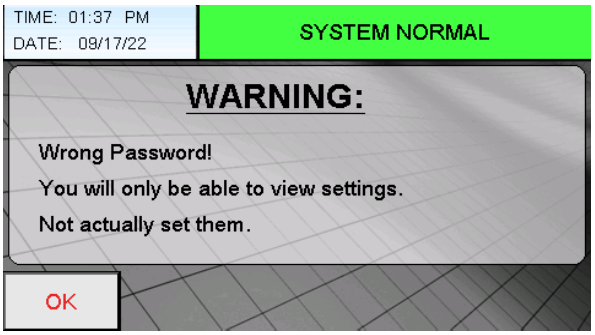
Touch the “EXIT” button to return to the HOME screen. On other screens touching “EXIT” will return to the previous screen. Touching “REFRSH” will update any alarm or test data.

INTELLISTAT TS MONITOR OPERATION
COMMON SCREENS

PASSWORD SCREENS

Passwords are required to access certain screens. A typical password screen is shown below. Enter the desired number using the key pad. The number selected will appear next to the “Enter Password” area. When the numbers desired are fully entered, select “ENT” to execute the entry and move to the next screen. BS = Back Space. “Exit” will return to the previous screen. Entering an incorrect password will still allow you to view settings but not change them. You must return to the Main Screen and start over should this happen. Default customer password = 05151. Contact the factory if you change this password and should lose it.

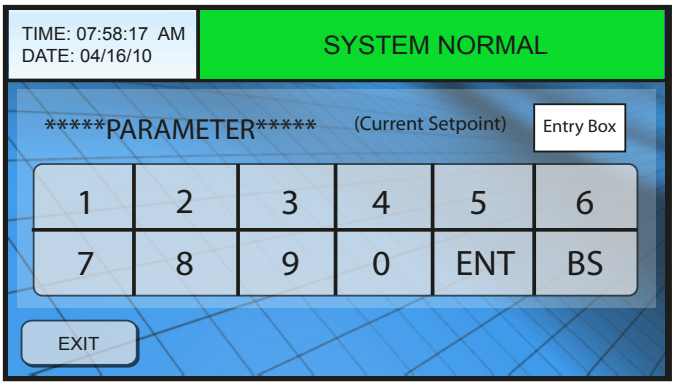




Default customer password = 05151

DATA ENTRY SCREENS

There are many keypad type screens in the following menus. The number selected will appear in the “Entry Box”. Note the “Current Setpoint” to the left of the entry box and the current parameter being modified. Enter the desired number using the key pad. When the numbers desired are fully entered, select “ENT” to execute the entry and move to the next screen. BS = Back Space. “Exit” will return to the previous screen.



INTELLISTAT TS MONITOR OPERATION

MAIN SCREEN

Typical “System Normal” Main Screen showing the percentage load for each output and the battery charge level. The Low Battery and output overload indicators will change to red if the levels reach the programmed low set points (factory set) and the “System Normal” area will change to an alarm message which will be recorded in the alarm log.

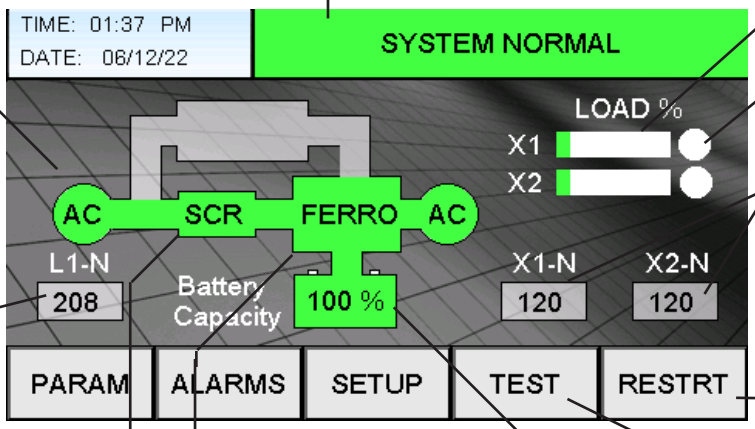
Shows status of Line Input Voltage and Current Reading.

(AC) Indicates Line Input in Normal Operating Condition.

(LO) Indicates a low line condition caused the inverter to switch to.battery.

(HI) indicates a high line condition caused the inverter to go to battery.

Banner shows current time, date and status of unit. This banner is on all screens. See alarm messages and definitions for more information.



Shows output voltage and load percentage. Indicator next to load percentage will turn red for overload conditions.

Press for Manual Restart of faulted unit. Make sure fault condition is removed

SCR Indicator shows status of Line SCR. Green indicates unit is on line power while.

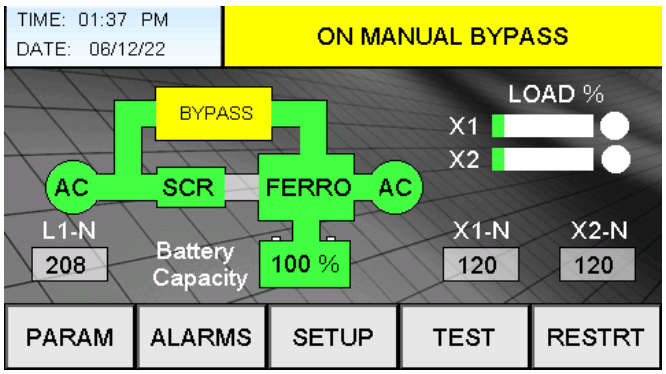
Ferro Indicator represent Ferro Resonant Output Transformer.

The Battery Status indicator will be green under normal conditions, but will change to red when the system is on battery. The percentage shows battery capacity.

Navigation buttons for other screens.

MAIN SCREEN - ON MANUAL BYPASS

Typical ON MANUAL BYPASS screen. There is no alarm indication or logging with this type of event.



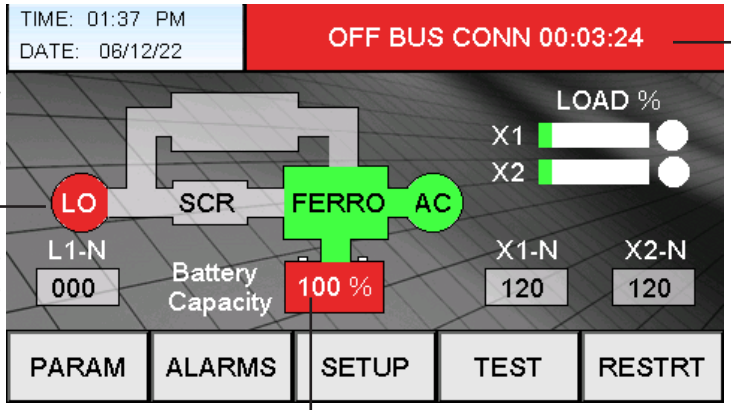
The screen will return to the SYSTEM NORMAL screen when the bypass condition is cleared by the user.

INTELLISTAT TS MONITOR OPERATION ON INVERTER SCREENS

MAIN SCREEN - OFF BUS CONNECT

(LO) Indicates a low line condition caused the inverter to switch to battery.

(HI) indicates a high line condition caused the inverter to go to battery.

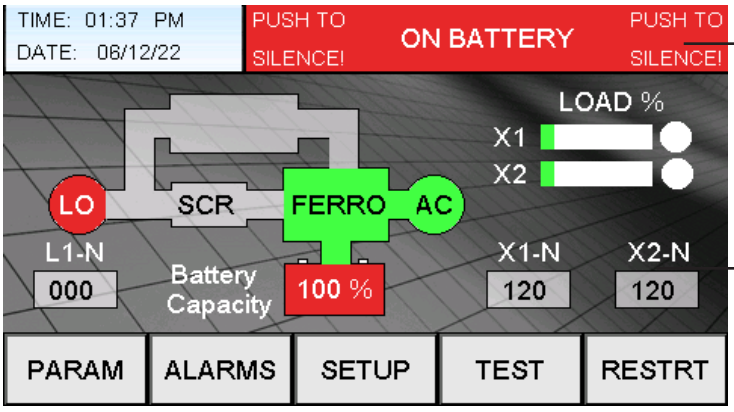


The Battery Status indicator will be green under normal conditions, but will change to red when the system is on battery.

There will be no audible alarm or alarm indication until the optional Offbus On Delay times out. **Factory settings: Offbus On Delay = 0 Sec. Offbus Off Delay = 15 Min. Low Line Off Bus = 80%.** These settings can be modified through the setup menu. See *"Monitor Tree"* for setting location. These settings are only enabled with the timed off bus option. If no Off Bus is present the system will alarm and switch to battery and alarm immediately.

MAIN SCREEN - ON INVERTER

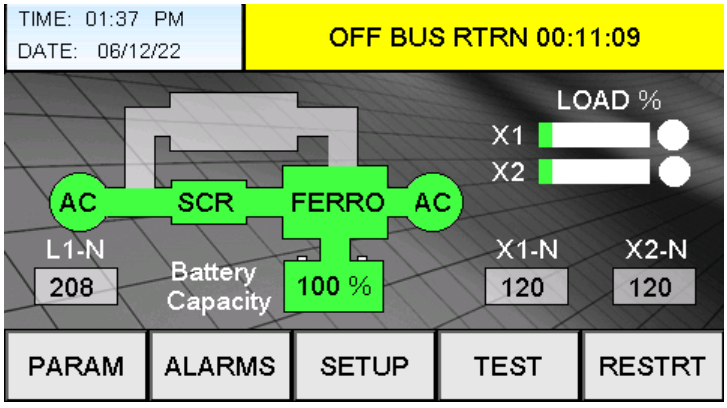
The system will return to utility power when the proper conditions are present. If no Off Buss is present the system will return to utility power immediately upon acceptable conditions being present.



Displays elapsed time on battery. All inverter events are time stamped and stored in the alarm log.

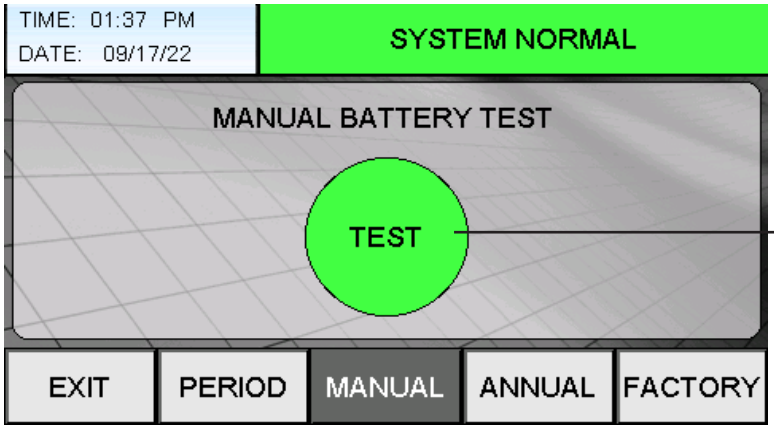
Battery charge indicator will decrease while on battery.

MAIN SCREEN - OFF BUS RETURN



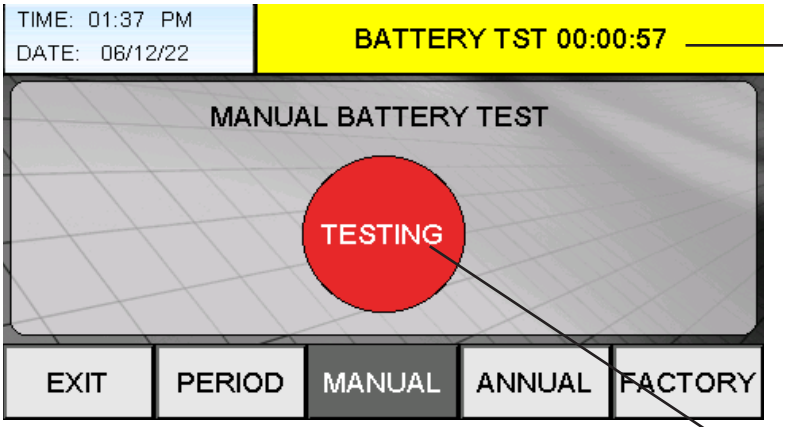
INTELLISTAT TS MONITOR OPERATION
MANUAL BATTERY TESTING

Default customer password = 05151

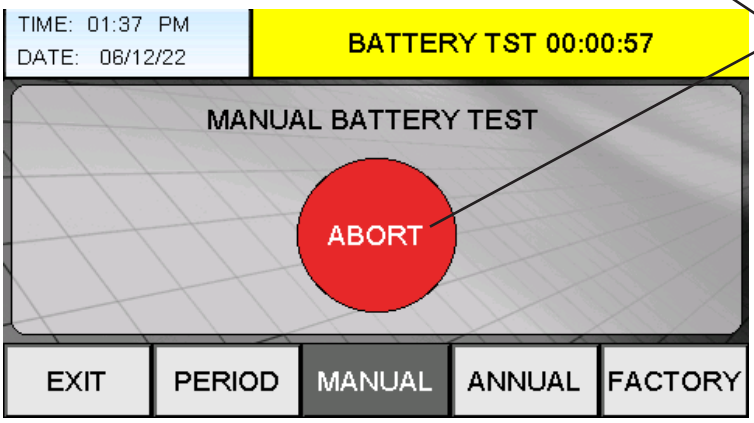


Press the "TEST" button to invoke a battery test * (Duration is dependant on battery option purchased). The duration is preset at the factory and is not user accessible. Contact the factory should the duration time need to be modified.

*** NOTE:** See *"Battery Test Durations"* at the end of the maintenance section. Contact the factory should the duration time need to be modified.



The timer will count down until the test is complete and then terminate the test automatically. Test results can be found in the "TST LOG" Menu.



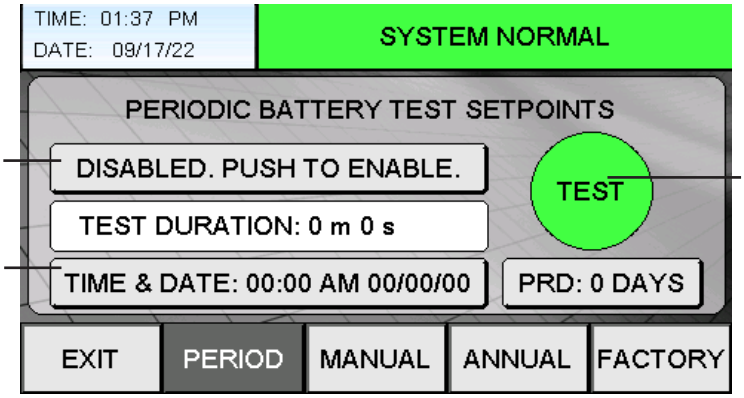
Test results can be found in the "TST LOG" Menu. If the "TST LOG" register is full the system will delete the oldest entry to make room for the new entry automatically. Aborting the test will result in a "Manual Test : Incomplete" entry in the TST LOG.

While testing the button will change from "TESTING" to "ABORT". Press the "ABORT" button should you want to terminate the test immediately. The button will then change to "ABORTING" then again back to the original green "TEST" button.

INTELLISTAT TS MONITOR OPERATION
AUTOMATIC PERIODIC BATTERY TESTING

Default customer password = 05151

Push to enable the test. Factory preset enabled. The test will auto run at the time and date programmed for the programmed duration. The test period is factory preset for 30 days. Factory preset to the 15th of the following month from date of shipment at 10PM. Time, Date and period are user accessible.

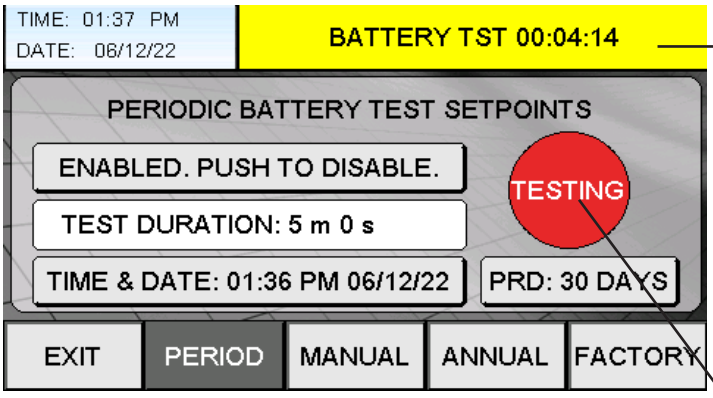


Press the "TEST" button to invoke a battery test * (Duration is dependant on battery option purchased). The duration is preset at the factory and is not user accessible. Contact the factory should the duration time need to be modified.

*** NOTE:** See *"Battery Test Durations"* at the end of the maintenance section. Contact the factory should the duration time need to be modified.

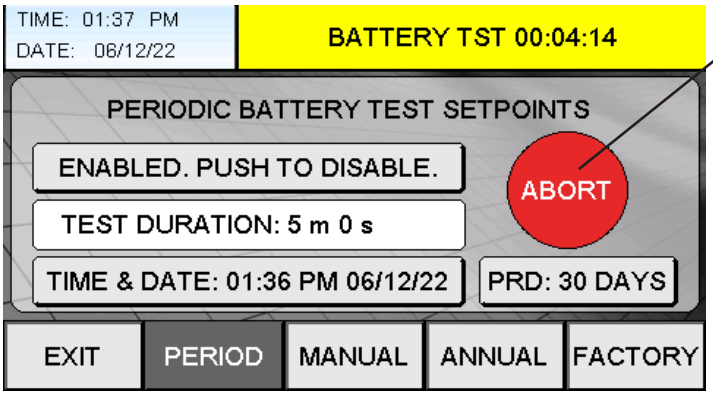
Pushing the test button will invoke the test regardless if the enable/disabled button is enabled or not.

NOTE : Invoking a test by pressing the "TEST" button will automatically change the date and time of the Periodic Test to the date and time that the test button is pushed. The auto test will commence exactly 30 days later on the same date and time the test button was initially pushed (if enabled).



The timer will count down until the test is complete and then terminate the test automatically. Test results can be found in the "TST LOG" Menu.

Test results can be found in the "TST LOG" Menu. If the "TST LOG" register is full the system will delete the oldest entry to make room for the new entry automatically. Aborting the test will result in a "Periodic Test : Incomplete" entry in the TST LOG.

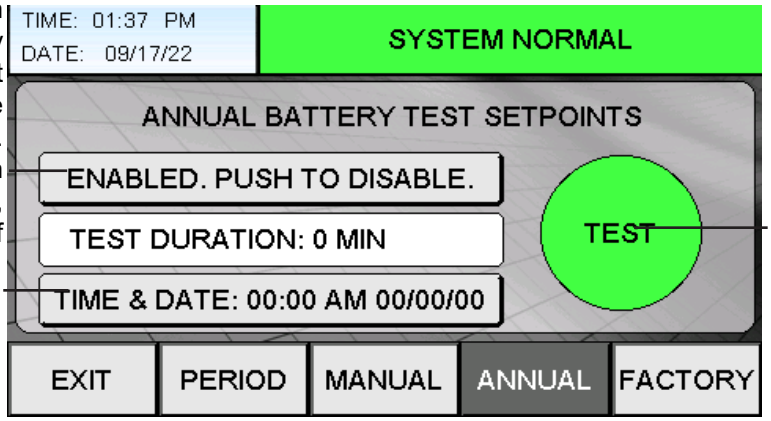


While testing the button will change from "TESTING" to "ABORT". Press the "ABORT" button should you want to terminate the test immediately. The button will then change to "ABORTING" then again back to the original green "TEST" button.

INTELLISTAT TS MONITOR OPERATION
AUTOMATIC ANNUAL BATTERY TESTING

Default customer password = 05151

Push to enable the test on a yearly basis. Factory preset disabled. The test will auto run at the time and date programmed. Factory preset to the 15th of the following month, one year from date of shipment at 10PM.
Time and Date are user accessible.

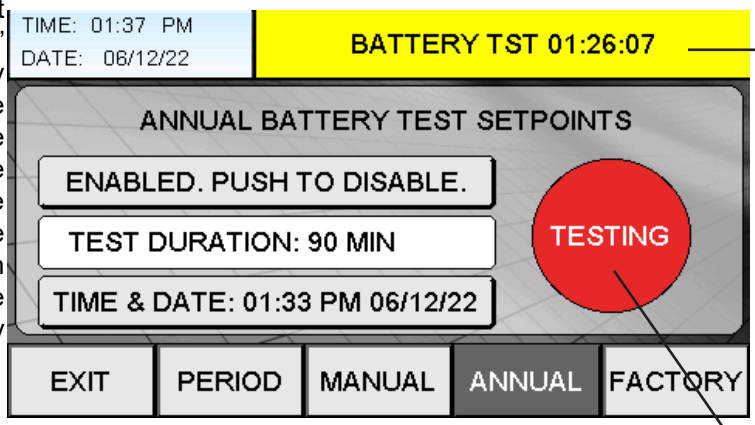


Press the "TEST" button to invoke a battery test * (Duration is dependant on battery option purchased). The duration is preset at the factory and is not user accessible. Contact the factory should the duration time need to be modified.

*** NOTE:** See *"Battery Test Durations"* at the end of the maintenance section. Contact the factory should the duration time need to be modified.

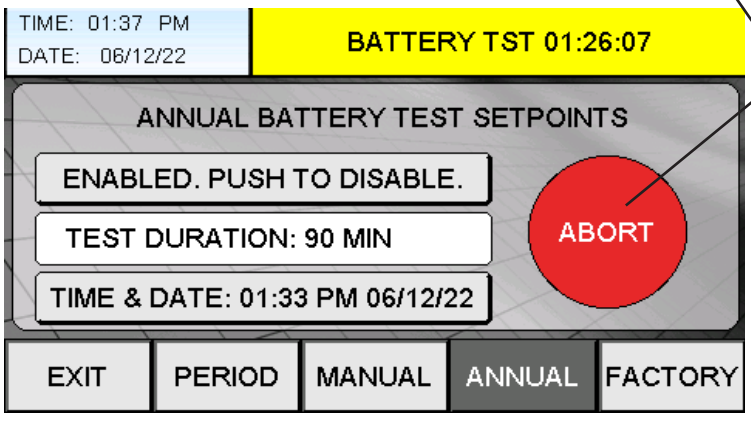
Pushing the test button will invoke the test regardless if the enable/disabled button is enabled or not.

NOTE : Invoking a test by pressing the "TEST" button will automatically change the date and time of the Annual Test to the date and time that the test button is pushed. The auto test will commence exactly one year later on the same date and time the test button was initially pushed (if enabled).



The timer will count down until the test is complete and then terminate the test automatically. Test results can be found in the "TST LOG" Menu.

Test results can be found in the "TST LOG" Menu. If the "TST LOG" register is full the system will delete the oldest entry to make room for the new entry automatically. Aborting the test will result in a "Annual Test : Incomplete" entry in the TST LOG.



While testing the button will change from "TESTING" to "ABORT". Press the "ABORT" button should you want to terminate the test immediately. The button will then change to "ABORTING" then again back to the original green "TEST" button.

EGRESS LIGHTING INTEGRITY TEST
(OUTPUT VOLT AMPS ON BATTERY - FACTORY DEFAULT = 0)

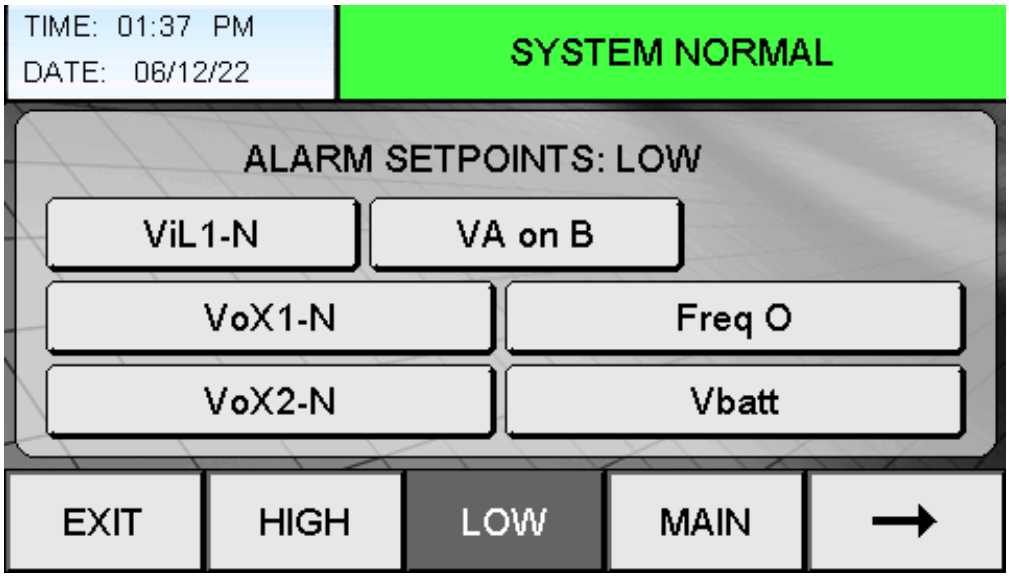
Default customer password = 05151

To satisfy NFPA-mandated periodic and annual requirements, the Intellistat TS automatically initiates the testing of all life safety circuits, regardless of egress lighting design (“always on” or “normally off”). This automatic test checks the inverter system and batteries, as well as the individual circuits leading to the emergency fixtures. The Intellistat compares power consumption during the test period with user-defined load capacity, and analyzes the data. If service is required, the Intellistat will provide a “low output VA” alarm.

This sets the level for the Egress Lighting Integrity Test. If while performing a battery test, the total egress lighting load level drops below this level (VA value entered), a Low Output VA alarm will be given. In order to properly set the Low Output VA alarm level, the user should verify that all emergency egress lights are ON during the battery test. The Low Output VA alarm level should then be set at a minimum of 200 VA less than the total egress lighting load. If the total load goes below this set value during a battery test, it indicates that some emergency light fixtures have been removed or are no longer working, and the source of this issue should be investigated.

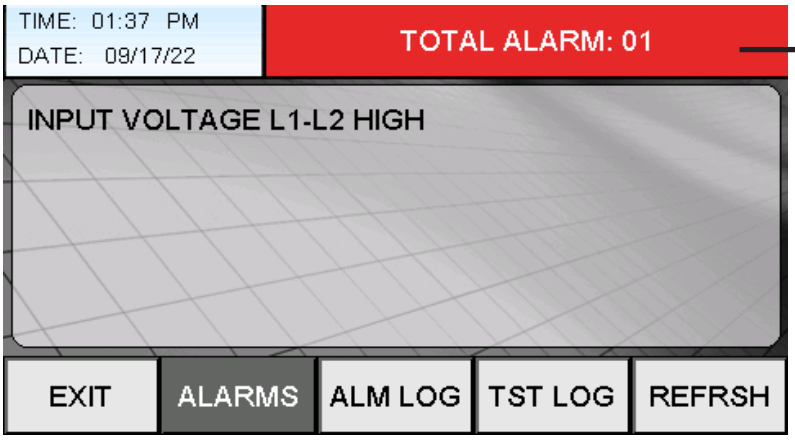
If there is not a consistent emergency egress lighting load level (VA) when on battery (during periodic testing or an actual power outage), then this test cannot be used properly. In this case the setting should be left at the factory default level of 0 VA.

SCREEN PATH : MAIN / SETUP / LOW / OUTPUT VA ON B



INTELLISTAT TS MONITOR OPERATION
ALARMS, ALARM LOGS AND TEST LOGS

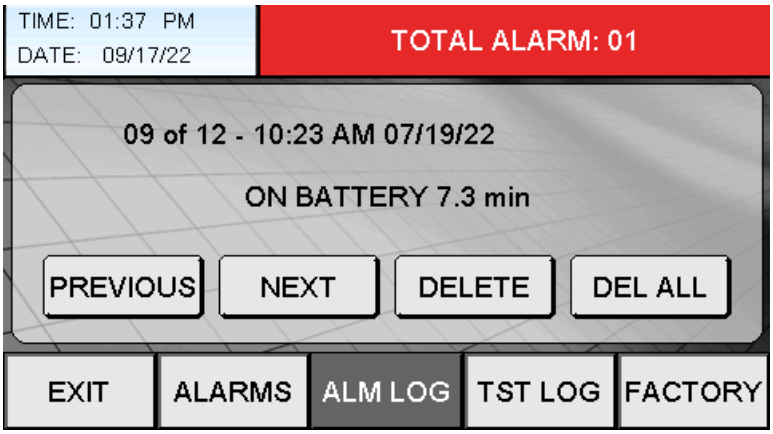
TYPICAL ALARM SCREEN



PUSH TO SILENCE

ALARMS CLEAR AUTOMATICALLY AFTER EVENT IS CORRECTED AND ARE RECORDED IN ALARM LOG

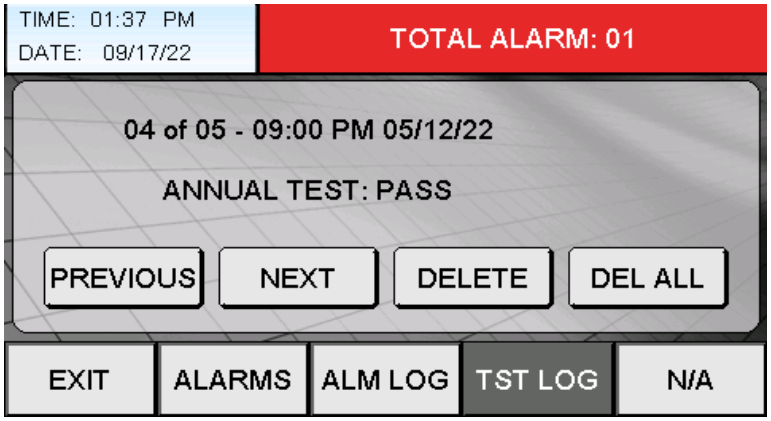
TYPICAL ALARM LOG SCREEN



STORES UP TO 50 EVENTS.

If the ALM LOG register is full the system will delete the oldest entry to make room for the new entry automatically.

TYPICAL TEST LOG SCREEN



STORES UP TO 50 EVENTS.

If the TST LOG register is full the system will delete the oldest entry to make room for the new entry automatically.

INTELLISTAT TS MONITOR OPERATION
ALARM MESSAGES AND DEFINITIONS

LOG / CURRENT / RS232	ALARM	BANNER
AC OUTPUT VOLTS X1-N HIGH = 121.3	THE OUTPUT VOLTAGE ON LINE 1 IS ABOVE THE OUTPUT VOLTAGE HIGH SETPOINT.	TOTAL ALARM: 01
AC OUTPUT VOLTS X2-N HIGH = 121.3	THE OUTPUT VOLTAGE ON LINE 2 IS ABOVE THE OUTPUT VOLTAGE HIGH SETPOINT.	TOTAL ALARM: 01
DC CHARGER FAIL	THE BATTERY CHARGER HAS FAILED.	TOTAL ALARM: 01
OUTPUT WATTS X1-N HIGH = 13.2	THE OUTPUT CURRENT ON LINE 1 IS ABOVE THE OUTPUT CURRENT HIGH SETPOINT.	TOTAL ALARM: 01
OUTPUT WATTS X2-N HIGH = 13.2	THE OUTPUT CURRENT ON LINE 2 IS ABOVE THE OUTPUT CURRENT HIGH SETPOINT.	TOTAL ALARM: 01
OUTPUT VA X1-N HIGH = 1200.2	THE OUTPUT VA ON LINE 1 IS ABOVE THE OUTPUT VA HIGH SETPOINT.	TOTAL ALARM: 01
OUTPUT VA X2-N HIGH = 1200.2	THE OUTPUT VA ON LINE 2 IS ABOVE THE OUTPUT VA HIGH SETPOINT.	TOTAL ALARM: 01
OUTPUT FREQUENCY HIGH = 66.2	THE OUTPUT FREQUENCY IS ABOVE SETPOINT	TOTAL ALARM: 01
BATTERY TEMPERATURE HIGH	BATTERY TEMPERATURE HIGHER THAN SETPOINT	TOTAL ALARM: 01
BATTERY DC VOLTS HIGH = 155.2	THE BATTERY VOLTAGE IS ABOVE 150 VDC.	TOTAL ALARM: 01
BATTERY DC AMPS HIGH = 32.2	THE BATTERY CHARGING CURRENT IS ABOVE THE CHARGING CURRENT HIGH SETPOINT.	TOTAL ALARM: 01
HIGH TOTAL OUTPUT VA = 2400.4	THE TOTAL VA IS ABOVE THE UNIT RATING.	TOTAL ALARM: 01
AC OUTPUT VOLTS X1-N LOW = 99.2	THE OUTPUT VOLTAGE ON LINE 1 IS BELOW THE OUTPUT VOLTAGE LOW SETPOINT.	TOTAL ALARM: 01
AC OUTPUT VOLTS X2-N LOW = 99.2	THE OUTPUT VOLTAGE ON LINE 2 IS BELOW THE OUTPUT VOLTAGE LOW SETPOINT.	TOTAL ALARM: 01
OUTPUT FREQUENCY LOW = 54.3	THE OUTPUT FREQUENCY IS BELOW OUTPUT FREQUNCY SETPOINT	TOTAL ALARM: 01
BATTERY DC VOLTS LOW = 113.2	THE BATTERY VOLTAGE IS BELOW THE BATTERY VOLTAGE LOW SETPOINT.	TOTAL ALARM: 01
AC INPUT VOLTS L1-N HIGH = 134.2	THE INPUT VOLTAGE IS 9% ABOVE THE RATED INPUT VOLTAGE.	TOTAL ALARM: 01
AC INPUT VOLTS L1-N LOW = 99.2	THE INPUT VOLTAGE IS 12% BELOW THE RATED INPUT VOLTAGE.	TOTAL ALARM: 01
OUTPUT CIRCUIT BREAKER OPEN	OUTPUT CIRCUIT BREAKER HAS TRIPPED	TOTAL ALARM: 01
ON MANUAL BYPASS	SYSTEM IS ON MANUAL BYPASS.	ON MANUAL BYPASS
REMOTE OFFBUS ACTIVE	THE OFFBUS HAS BEEN REMOTELY ACTIVATED	OFF BUS ACTIVE
LOW LINE OFFBUS ACTIVE	OFFBUS IS ACTIVATED FROM A LOWLINE CONDITION.	LOW LINE OFFBUS ACTIVE
ON BATTERY 1.3 MIN	SYSTEM IS ON BATTERY	ON BATTERY 1.3 MIN
LOW OUTPUT VA ON BATTERY TEST = 100.2	VA IS TOO LOW DURING A BATTERY TEST	TOTAL ALARM: 01
LPO: EMERGENCY POWER OFF	SYSTEM SHUTDOWN DUE TO USER REPO	TOTAL ALARM: 01
LPO: XFRMR/HEATSINK OVERTEMP	SYSTEM SHUTDOWN DUE TO AN OVER TEMPERATURE	TOTAL ALARM: 01

INTELLISTAT TS MONITOR OPERATION
ALARM MESSAGES AND DEFINITIONS

LOG / CURRENT / RS232	ALARM	BANNER
TRANSFORMER OVERTEMP WARNING	THERE IS AN OVER TEMPERATURE WARNING	TOTAL ALARM: 01
TOTAL OUTPUT WATTS HIGH	TOTAL OUTPUT WATTS HIGHER THAN SYSTEM SPECIFICATION	TOTAL ALARM: 01
TOTAL OUPUT VA HIGH	TOTAL OUTPUT VA HIGHER THAN SYSTEM SPECIFICATION	TOTAL ALARM: 01
BATTERY DC VOLTS LOW WARNING	BATTERY IS CLOSE TO CUT OFF.	TOTAL ALARM: 01
LAST POWER OFF: NORMAL	UNIT WAS SHUT OFF BY USER.	-
-	UNIT IS STARTING UP.	STARTING UP
-	ON BATTERY TEST.	BATTERY TST 00:11:35
-	OFFBUS CONNECTING.	OFFBUS CONN 00:11:35
-	OFFBUS IS RETURNING.	OFFBUS RTRN 00:11:35
-	THE SYSTEM IS ON MANUAL BYPASS AND BATTERY.	ON MANL BYP & BTTRY
-	THE SYSTEM IS NORMAL, NO ALARMS OR CONDITIONS.	SYSTEM NORMAL

STANDARD BYPASS OPERATION

The purpose of the bypass switch is to connect the loads to utility power in case of inverter failure. The bypass is a manual turn mechanical switch. NOTE - This is not a maintenance bypass switch.

******* CAUTION *******

DO NOT SWITCH IF THE INVERTER IS ON BATTERY.

******* CAUTION *******

NOT A MAINTENANCE BYPASS.
INTERNAL HIGH VOLTAGES PRESENT WHEN IN BYPASS.

Switching the Inverter to bypass mode.

1. Turn the bypass switch clockwise to the “Bypass” position.

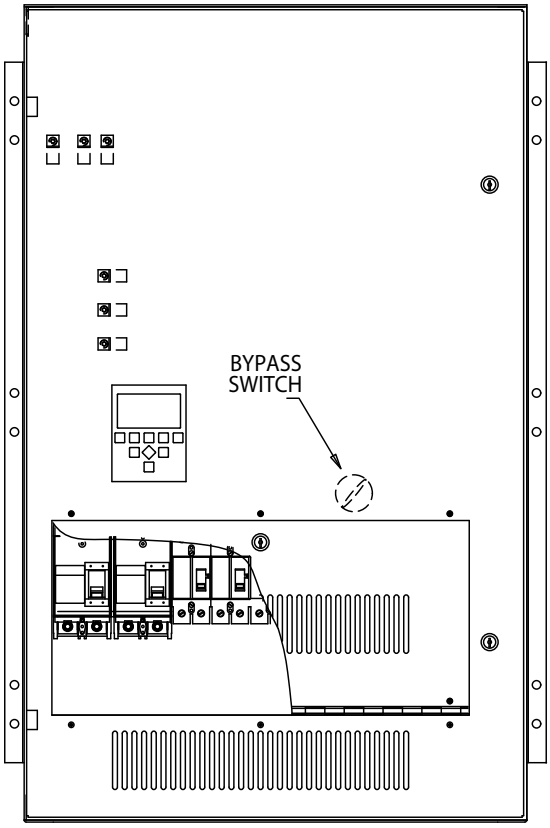
Switching back to normal mode.

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

After switching to bypass mode, it is recommended that the DC Circuit Breaker be turned “OFF” (open). This will prevent battery discharge and possible battery damage if left in bypass mode for extended periods of time.

Be sure toturn the DC Circuit Breaker back “ON” (closed) before returning to normal mode operation.

Typical bypass location for all inverter sizes.



*****CAUTION*****

RISK OF ELECTRICAL SHOCK

THE LIGHTING INVERTER RECEIVES POWER FROM MORE THAN ONE SOURCE. BE SURE ALL UTILITY CIRCUIT BREAKERS ARE IN THE "OFF" POSITION AND THE DC CIRCUIT BREAKER IS IN THE "OFF" POSITION BEFORE SERVICING.

GENERAL MAINTENANCE

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

Battery connections should be tightened annually by qualified electrical personnel. Batteries should be replaced every 5 years.

The inverter should be checked monthly on battery operation. The Intellistat TS™ monitor can be programmed to perform this function automatically. See *"Operation - Intellistat TS™ Monitor Operation"*. Take precautions to have the load in a mode that could tolerate a shut down. To simulate a utility power loss, simply select the Instant Battery test menu on the Intellistat TS™ Monitor, this will force the inverter into battery mode for the programmed duration. Observe the display monitor. Select the Alarm/Log - Bat Test Events menu on the monitor to see the results of the test.

COMPLETE MAINTENANCE CHECK

PREPARATION

A shutdown period must be scheduled to perform maintenance unless the system is equipped with a "Maintenance Bypass " switch. A load should be available to test the inverter with a loss of power simulation.

EQUIPMENT

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

SYSTEM OPERATION

1. With power on, check the display functions for proper operation.

2. Turn AC and DC breakers off.

INSPECTION

1. Open the front door on the inverter cabinet. Make sure input and DC circuit breakers have been turned off.

2. Turn off any loads on the inverters output.

VISUAL INSPECTION

1. Check for loose connections, burnt, frayed or broken wires. Look closely in the following areas:

   Input, output connections, circuit breaker, transformer connections, capacitor connections, fan connections, by-pass switch and electronic connections, inverter components and power semi-conductors connections. See *"Appendix A - Component Location Diagram"*.

2. Correct any loose connections etc.…. Replace any physically burned or broken components. Use extreme care when replacing components to assure correct installation.

   NOTE: Check off all items on the Performance Checklist

BATTERY TEST

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

1. Visually inspect all battery connections. If there is any sign of corrosion, disconnect that battery and clean with a wire brush. Tighten all other battery connections. Make sure the batteries are not swollen or cracked. If they are, contact the factory.

2. Check **all** circuit board connections are securely plugged in.

3. Turn AC and DC breakers on. Let the unit run for a minute.

4. Verify the battery voltage on the Intellistat TS™ Monitor by selecting Param Disp - Battery/Temp. Note the battery voltage, and charger current. You can verify the actual battery voltage by measuring the DC voltage across the DC Circuit Breaker.

   Once the unit is up and running, turn off the DC Breaker which will take the batteries out of the circuit, and the unit will be running on the internal charger. If the unit does not continue to run with the DC breaker off, then there is a problem with the charger. Contact the factory. Check float voltage by placing a DC voltmeter across the positive (K1 - pin 1 labeled V1) and negative wires (K1 - Pin 3 labeled V3) on the 404563 (Switch Mode Power Supply). See *"Appendix A - Component Location Diagram"* for board location. If not, allow batteries to charge and re-check float voltage. If float voltage is incorrect , adjust potentiometer P3 on control board #417622 / 419318 (see *"Float Voltage Matrix"* below). See *"Appendix A - Component Location Diagram"* for board location.

FLOAT VOLTAGE MATRIX		
DC VOLTAGE (CHARGER OFF)	NUMBER OF BATTERIES	BATTERY FLOAT VOLTAGE (CHARGER ON)
48V	4	54.5
96V	8	109
120V	10	136

GENERATOR TEST

1. If generator is backing the inverter, check to be sure the inverter operates properly with the generator.

   A. Check generator operation with no load. Unit should switch to inverter when generator turns on. After a minute or so, the inverter should switch back to normal mode and run off the generator. Record inverter output voltage on Performance Checklist.

   B. Check generator with loads. Follow the same steps stated above and record readings on Performance Checklist.

NOTE: Check all items on the Performance Checklist.

BATTERY TESTING

Both the automatic and the manual battery tests are factory preset at 5 minutes. However the automatic test is disabled when shipped from the factory - See *"Operation - Intellistat TS™ Monitor Operation - Main Setup Screen - Auto Test Start Date"* and *"Annual Test Start Date"*. Refer to *"Operation"* for instructions on re-programming the battery test parameters.

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

It is recommended that batteries are periodically inspected for corroded and loose connections. Battery connections should be tightened annually by qualified electrical personnel. Batteries should be checked as indicated by monthly battery testing.

AUTOMATIC BATTERY TEST (UL924 Listed 90 minute models)

GENERAL - The inverter is preset at the factory for automatic monthly testing. However this test is disabled when shipped from the factory - See *"Operation - Intellistat TS™ Monitor Operation - Main Setup Screen - Auto Test Start Date"* and *"Annual Test Start Date"*. Each test is 5 minutes in duration and takes place on the programmed calendar date. During this time, the battery discharge rate is evaluated to determine the health of the battery string. Since the inverter is operating from battery power during the 5 minute test, a general alarm condition will be indicated in the Alarm Log.

If the health of the battery string is suspect, a general alarm will exist on the Intellistat TS™ monitor and the general alarm will continue to exist after the battery test is complete. By scrolling to the "Current Alarms" screen on the Intellistat TS™ Monitor a "Low Battery Voltage" indication will be displayed. There will also be an "Inverter Test Fail" listed under the "Bat Test Events" screen. A contact closure signal is also provided as a result of the general alarm status. The general alarm signal may be used for external / remote communications. See *"Communications"* for details.

BATTERY TESTING CONTINUED

MANUAL BATTERY TEST (UL924 Listed 90 minute models)

GENERAL - The inverter is preset at the factory for 5 minute manual testing. During this time, the battery discharge rate is evaluated to determine the health of the battery string. Since the inverter is operating from battery power during the 5 minute test, a general alarm condition will be indicated in the Alarm Log.

1. On the Intellistat TS™ Monitor, select “Batt Test” from the Main Menu. Select “Bat Inst Test”. This will force the inverter into battery mode for the programmed duration. Since the inverter is operating from battery power during the manual battery test, a general alarm condition will be indicated in the Current Alarms and Bat Test Events logs.

2. The unit will stay in battery mode for five minutes (factory preset), or the duration programmed by the user then return to normal mode.

3. If the health of the battery string is suspect, a general alarm will exist on the Intellistat TS™ monitor and the general alarm will continue to exist after the battery test is complete. By scrolling to the “Current Alarms” screen on the Intellistat TS™ Monitor a “Low Battery Voltage” indication will be displayed. There will also be an “Inverter Test Fail” listed under the “Battery Test Events” screen. A contact closure signal is also provided as a result of the general alarm status. The general alarm signal may be used for external / remote communications. See *“Communications”* for details.

Contact Controlled Power Company.

INVERTER PERFORMANCE CHECKLIST

1. Comments or problems with Inverter_____

2. Display Functions_____Cabinet Cooling Fans_____
   Transformer Cooling Fans_____Inverter Cooling Fans_____

3. Electrically wired properly i.e..Bypass switch, breakers, ground_____

3. Verify input and output voltage. Compare with spec. tag_____

5. Test any emergency shutoff devices REPO_____

6. Check tightness of electrical connections.-Bypass Switch_____Input Connections_____
   Output Connections_____Heat Sink Assembly_____Fan Motor_____
   Circuit Board Connections_____Resonant Capacitors_____Battery Connections_____
   Main Battery Connector_____

7. Inverter environment clean and dust free. Yes_____No_____
   If no, explain condition_____

8. Battery charger voltage level._____VDC. Battery charger current shunt level_____Milli VDC

9. NO LOAD ON LINE

   Input Voltage_____VAC
   Output Voltage X1-XN_____VAC
   Output Voltage X2-XN _____VAC
   Output Voltage X1-X2 _____VAC

   AVAILABLE LOAD ON LINE
   Input Voltage_____VAC
   Output Voltage X1-XN_____VAC
   Output Voltage X2-XN _____VAC
   Output Voltage X1-X2 _____VAC
   Input Current_____Amps
   Output Current_____Amps

10. INVERTER NO LOAD TEST

    Output Voltage X1-XN_____VAC
    Output Voltage X2-XN _____VAC
    Output Voltage X1-X2 _____VAC
    Output Frequency_____HZ

    INVERTER FULL LOAD TEST
    Output Voltage X1-XN_____VAC
    Output Voltage X2-XN _____VAC
    Output Voltage X1-X2 _____VAC
    Output Frequency_____HZ
    Output Current_____Amps

11. BATTERY VOLTAGE (Record actual voltage of each battery while on battery power with loads connected).

    Battery Type_____Amp Hour Rating_____

No Load	With Load	No Load	With Load	No Load	With Load

12. GENERATOR CHECK A. No load on GEN-Output=_____VAC. B. Invert on GEN-Output=
    _____VAC. Does inverter return to normal when on generator_Yes_____No._____
    Generator Frequency_____Hz.

13. Run time annual certification_____90 Min. @ Full Load _____Time @ Actual Load

GENERAL TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
NO OUTPUT WHEN UTILITY POWER FAILS	DEFECTIVE CONTROL CIRCUITS.	CONTACT FACTORY.
	DEFECTIVE BATTERY.	CHECK WIRING AND TEST BATTERIES.
	UNIT IN BYPASS MODE.	CHECK “BY PASS” SWITCH.
	DC BREAKER TRIPPED.	RESET DC BREAKER.
	BATTERIES WEAK.	ALLOW BATTERIES TO CHARGE 24 HOURS AND TEST INVERTER.
INVERTER SHUTS OFF OR OVER-TEMPS	AIR INTAKE BLOCKED.	CLEAN INTAKES.
	EXHAUST FANS BLOCKED	CHECK FOR PROPER CLEARANCE, CLEAN EXAUST.
	DEFECTIVE FANS	REPLACE DEFECTIVE FANS.
	ROOM TEMPERATURE TO HOT.	CHECK OPERATING SPECIFICATIONS.
	UNIT OVERLOADED.	VERIFY OUTPUT RATINGS.
NO OUTPUT AT START UP	OUTPUT BREAKER OPEN OR OUTPUT FUSE OPEN.	CHECK BREAKER OPERATION AND TEST OR REPLACE FUSE.
	WRONG INPUT VOLTAGE.	VERIFY INPUT VOLTAGE AND SELECTOR SWITCH SW2.
	DEFECTIVE FANS.	VERIFY SOURCE FEEDING THE INVERTER.
	DEFECTIVE BATTERY.	TEST BATTERIES.
	SHORTED OUTPUT.	DISCONNECT OUTPUTS AND RESTART UNIT.
	DEFECTIVE INVERTER COMPONENTS.	CONTACT FACTORY.
	DEFECTIVE CONTROL CIRCUITS.	CONTACT FACTORY.
	AC OR DC BREAKER OFF.	TURN ON BOTH AC AND DC BREAKERS.
	BATTERY CABLE NOT CONNECTED.	CONNECT BATTERY CONNECTOR
INVERTER WILL NOT RETURN TO UTILITY POWER	INPUT VOLTAGE OR FREQUENCY OUT OF SPEC.	VERIFY INPUT SPECS., SELECT ALTERNATE SLEW RAT.
	DEFECTIVE CONTROL CIRCUITS.	CONTACT FACTORY.
	INADEQUATE SOURCE.	VERIFY SOURCE FEEDING INVERTER IS ADEQUATE.
	AC BREAKER TRIPPED.	RESET AC BREAKER.
SHORT BATTERY BACK-UP TIME	BATTERY DISCONNECTED.	CHECK BATTERY CONNECTIONS.
	BATTERY NOT CHARGING.	CHECK BATTERY FLOAT VOLTAGE.
	OPEN CHARGER FUSE.	CHECK FUSE F1 ON CHARGER BOARD.
	DEFECTIVE BATTERY.	TEST BATTERIES.
	BATTERY NOT CHARGED.	ALLOW BATTERIES TO CHARGE FOR 24 HOURS.
	UNIT OVERLOADED.	CHECK % LOAD DISPLAY AND REDUCE LOAD.
INVERTER ALARMS OCCASIONALLY	NORMAL.	INVERTER IS PROTECTING EQUIPMENT FROM MOMEN-TART SAGES AND/OR SURGES.
	INTERMITTENT ALARM.	MONITOR TYPE AND FREQUENCY OF ALARM, TAKE AC-TION ON PARTICULAR ALARM.
UNIT OPERATES BUT DROPS LOADS	COMMUNICATIONS ERROR.	CHECK INTERFACE CABLES FOR CONTINUITY / TEST COMMUNICATIONS SIGNALS.
	OUTPUT BREAKER TRIPPED OR FUSE OPEN.	RESET OUTPUT BREAKER AND TEST OUTPUT FUSE.
	UNIT OVERLOADED.	CHECK % LOAD DISPLAY AND REDUCE LOAD.

Contact Controlled Power Company.

WARRANTY

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.

Products:

- Emergency Lighting Inverters (ELE) / 2 Years parts only*, Batteries 1 Year full, 14 year pro-rated.

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

---

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/

Contact Controlled Power Company.

CONTROLLED POWER COMPANY NATIONWIDE CUSTOMER SUPPORT

Controlled Power Company offers total customer support that assures your critical equipment is maintained properly for trouble free operation.

WHAT A CUSTOMER SUPPORT PLAN OFFERS:

HOT LINE: 24 hour toll free 1-800-521-4792.

REMEDIAL MAINTENANCE : Covers all on-site repairs, parts, freight, labor and travel expenses.

RESPONSE: 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: Batteries are covered under a 15 year pro-rate schedule, beginning from the shipment date. The battery pro-rate does not cover labor, freight, battery disposal, travel or living expenses.

PREVENTIVE MAINTENANCE: Optional preventive maintenance includes the following:

Annual battery run down certification for 90 minutes per NFPA 101 Life Safety Code, Section 5- 9.3 and NFPA 70 (N.E.C. 70) National Electric Code.

- Testing all emergency circuitry
- Inspection
- Exercising all circuit breakers
- Input and output parameter check
- Complete battery inspection and testing
- Re-torque all high current terminals
- Calibration
- Clean internal and external
- Cooling fan check
- Air intake / exhaust check
- Written report
- **Battery certification report**

START UP: 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 training 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. See "*Appendix A - Component Location Diagrams*" for component location and description. When contacting the Parts Department, please have the unit's full model number and serial or system number. Call 1-800-521-4792.

APPENDIX A

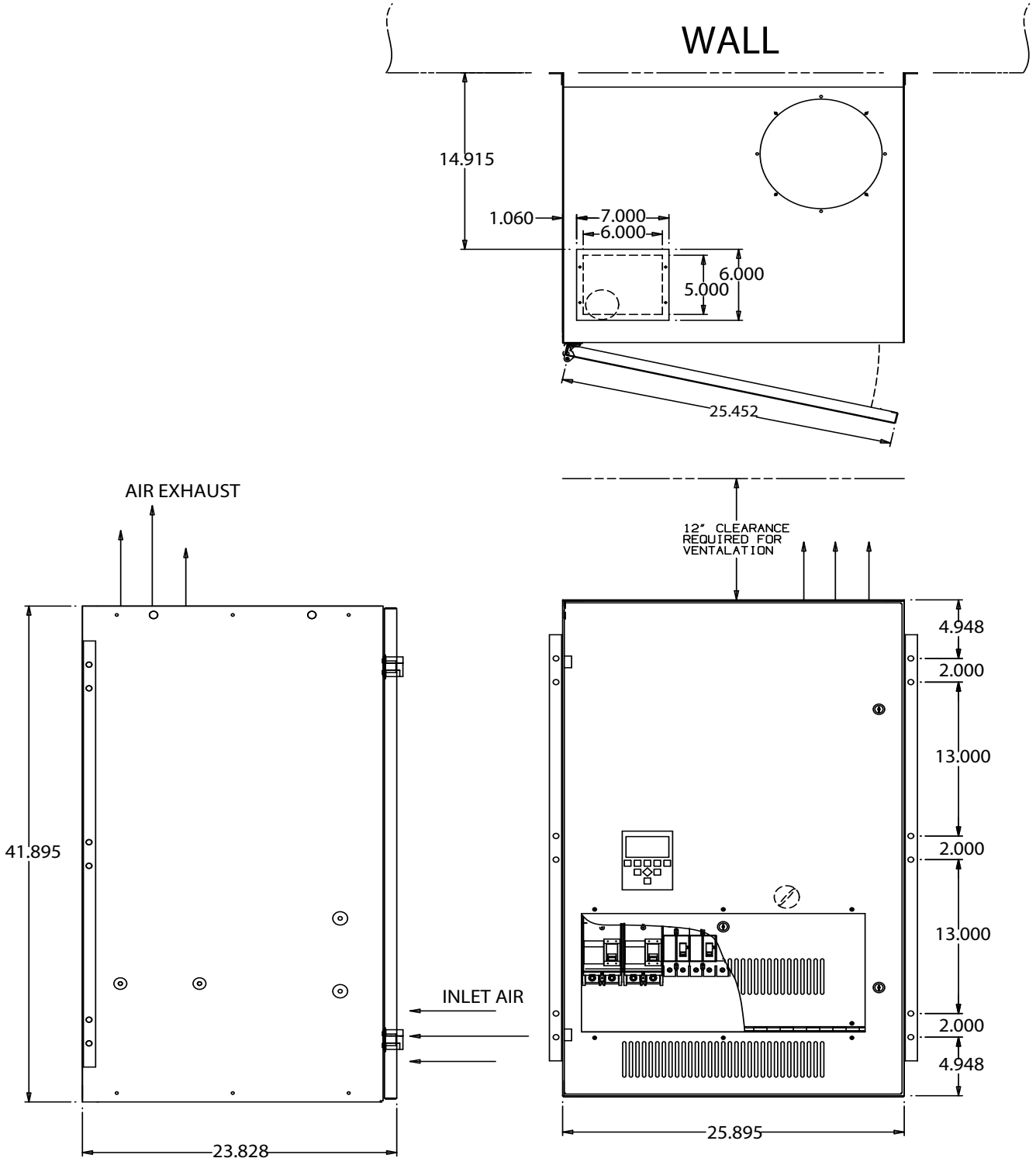
RELATIVE DRAWINGS

&

SCHEMATICS

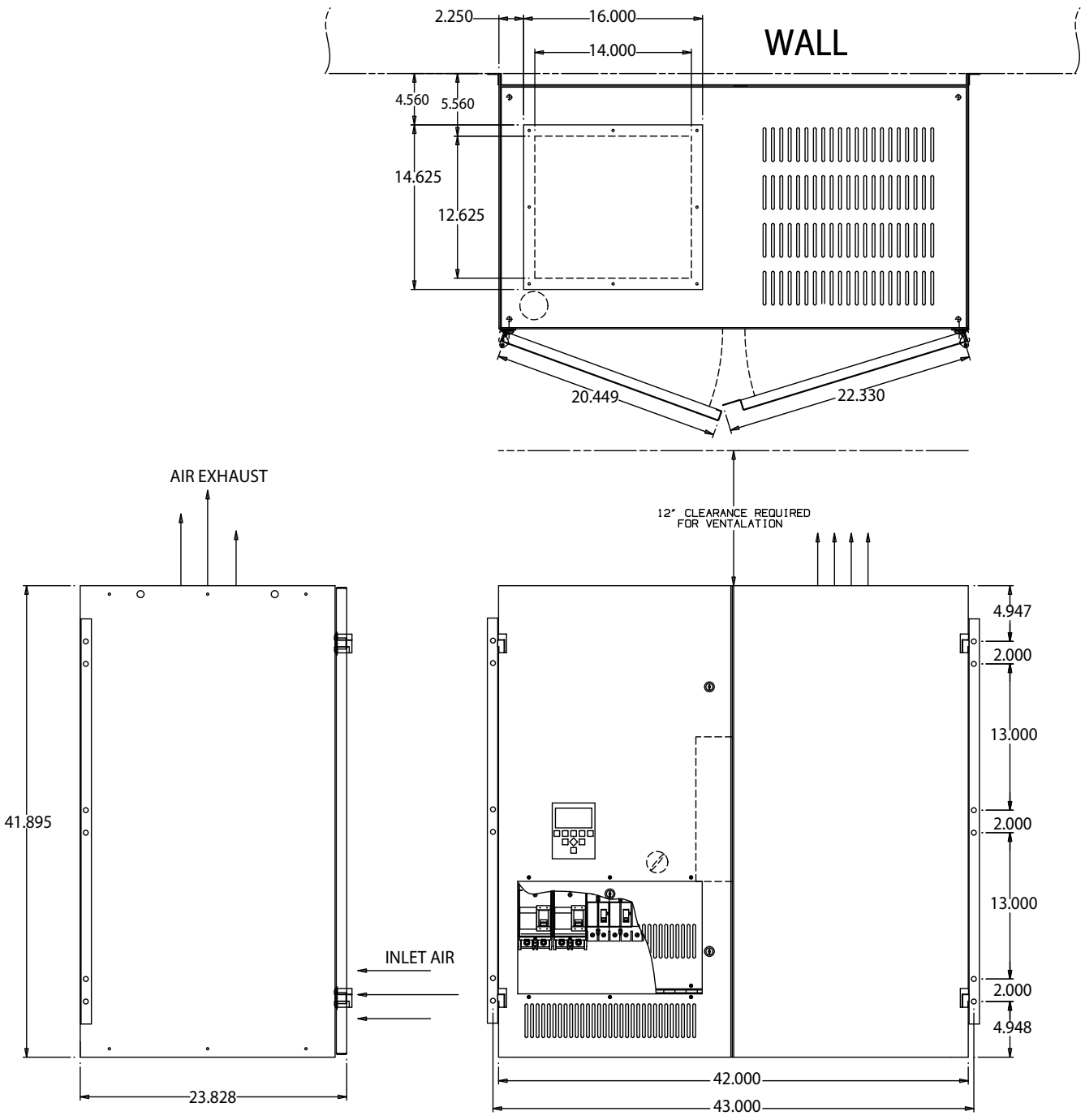
240V /

INVERTER CABINET OUTLINE 5.3KW



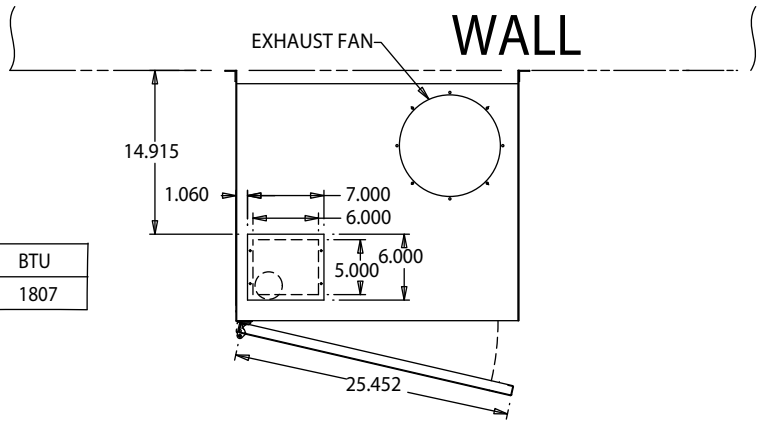
/ 120V

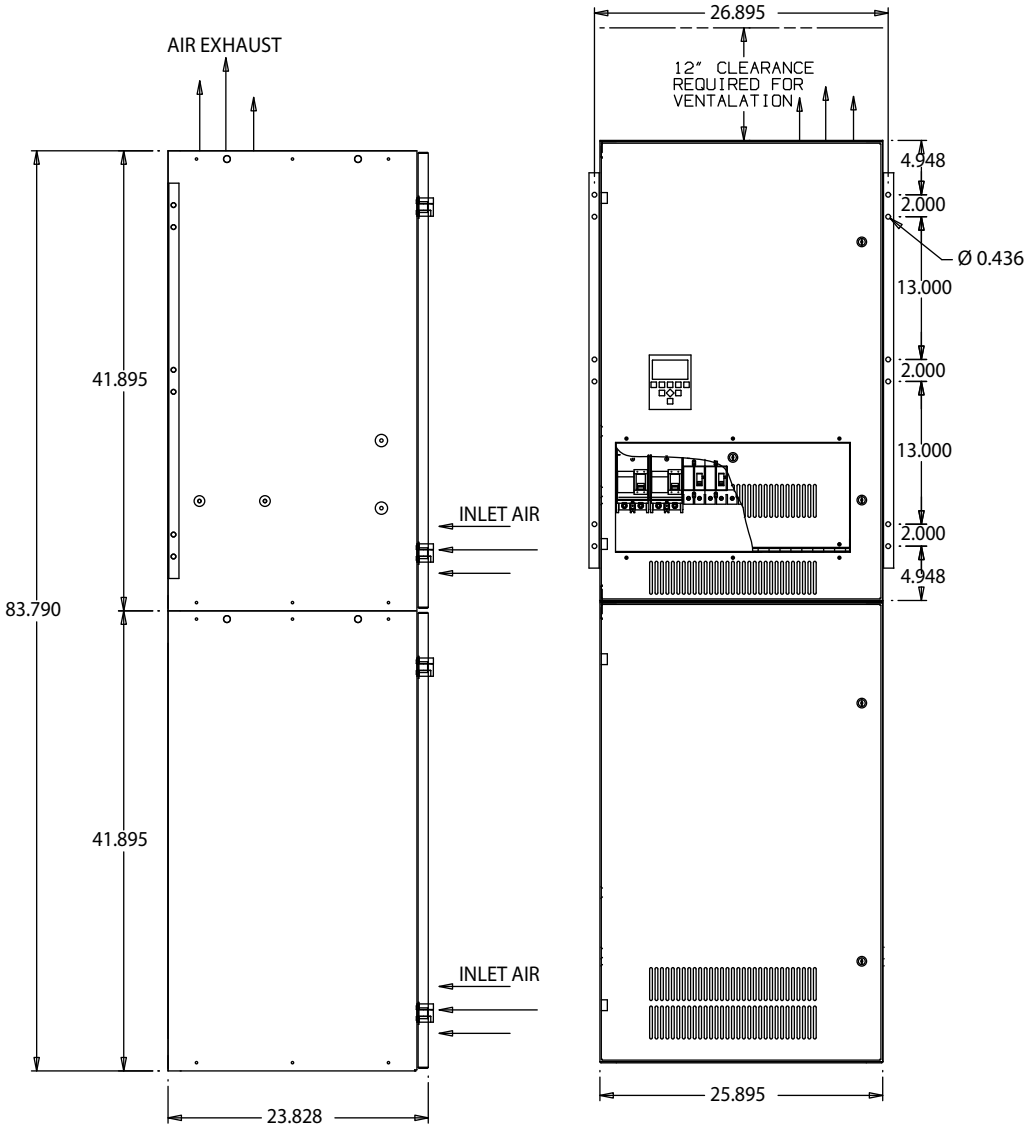
INVERTER CABINET OUTLINE 7.5KW - 18KW



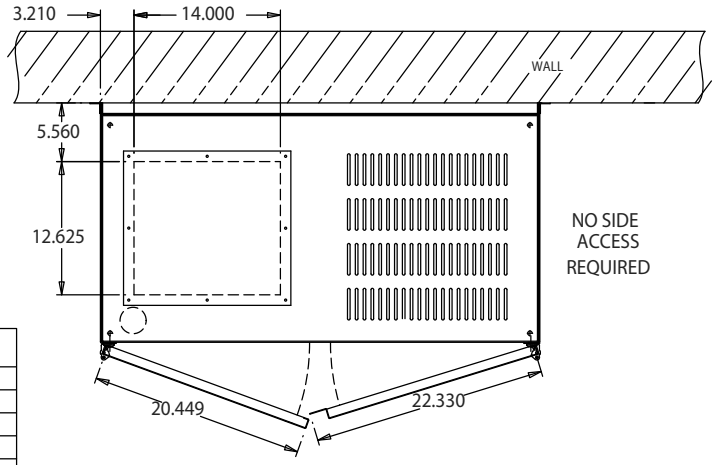
SMALL INVERTER WITH SMALL BATTERY CABINET OUTLINE

KVA	KW	WEIGHT	BTU
5.3	5.3	1628#	1807

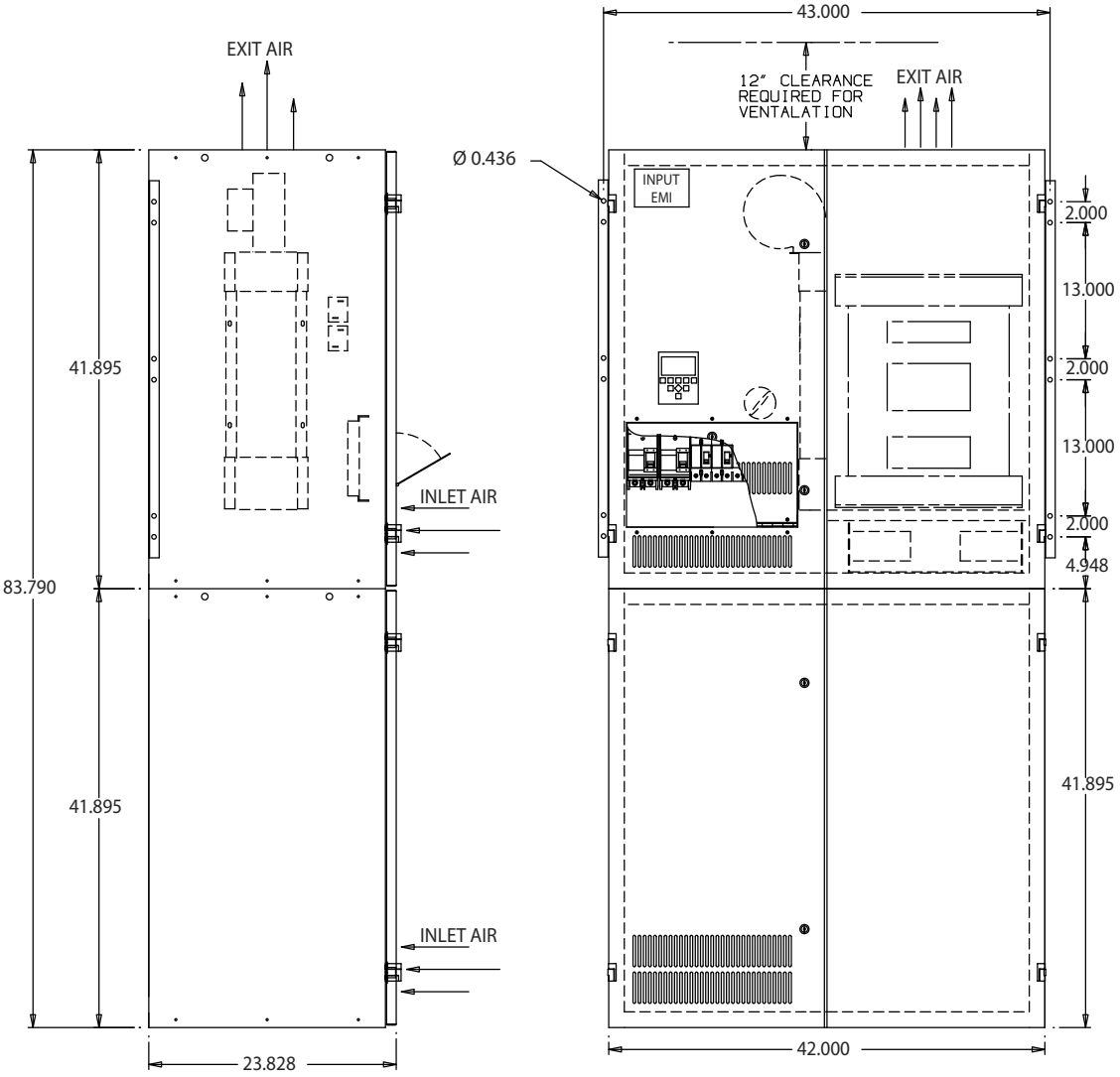




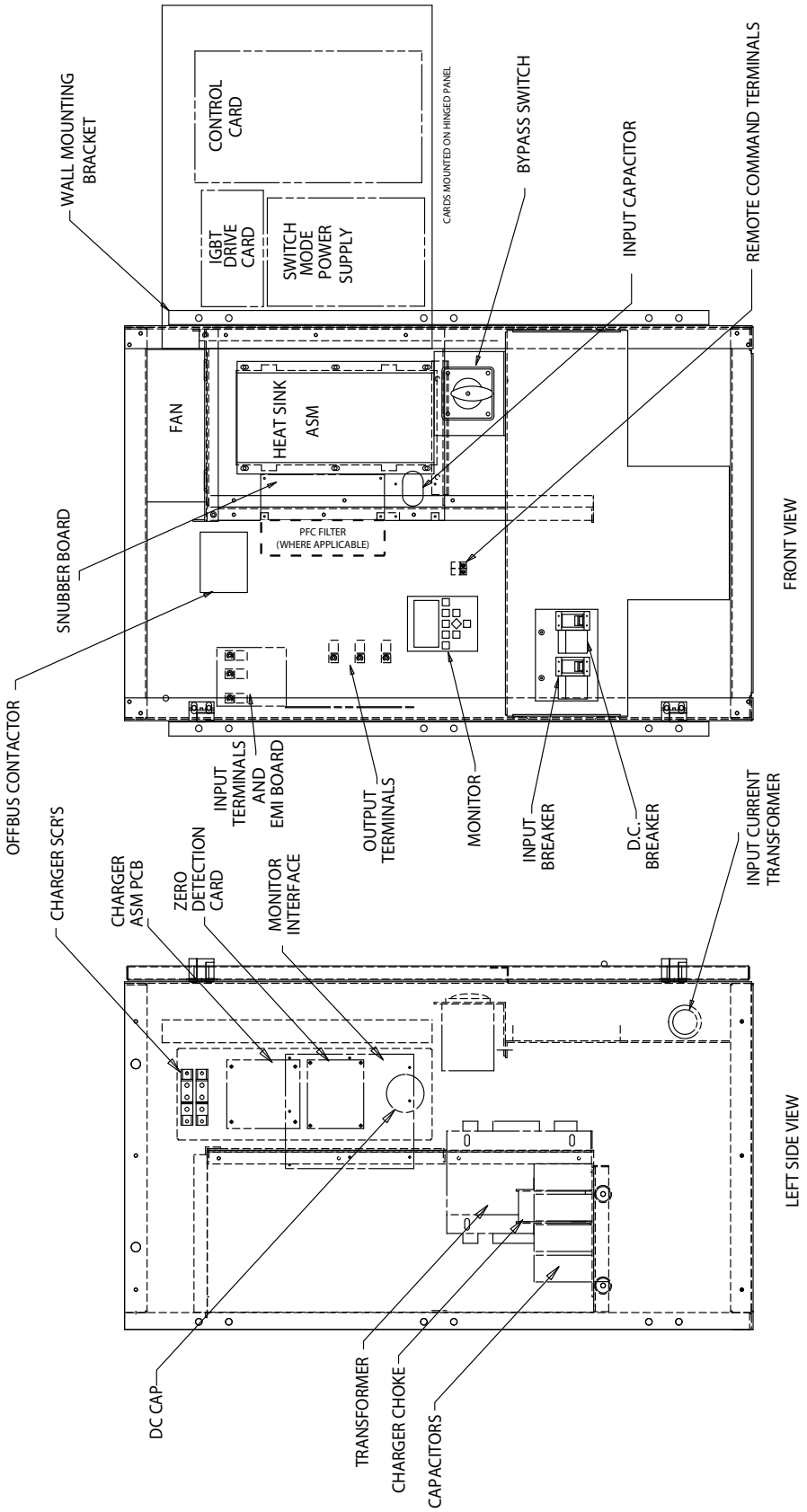
LARGE INVERTER WITH LARGE BATTERY CABINET OUTLINE



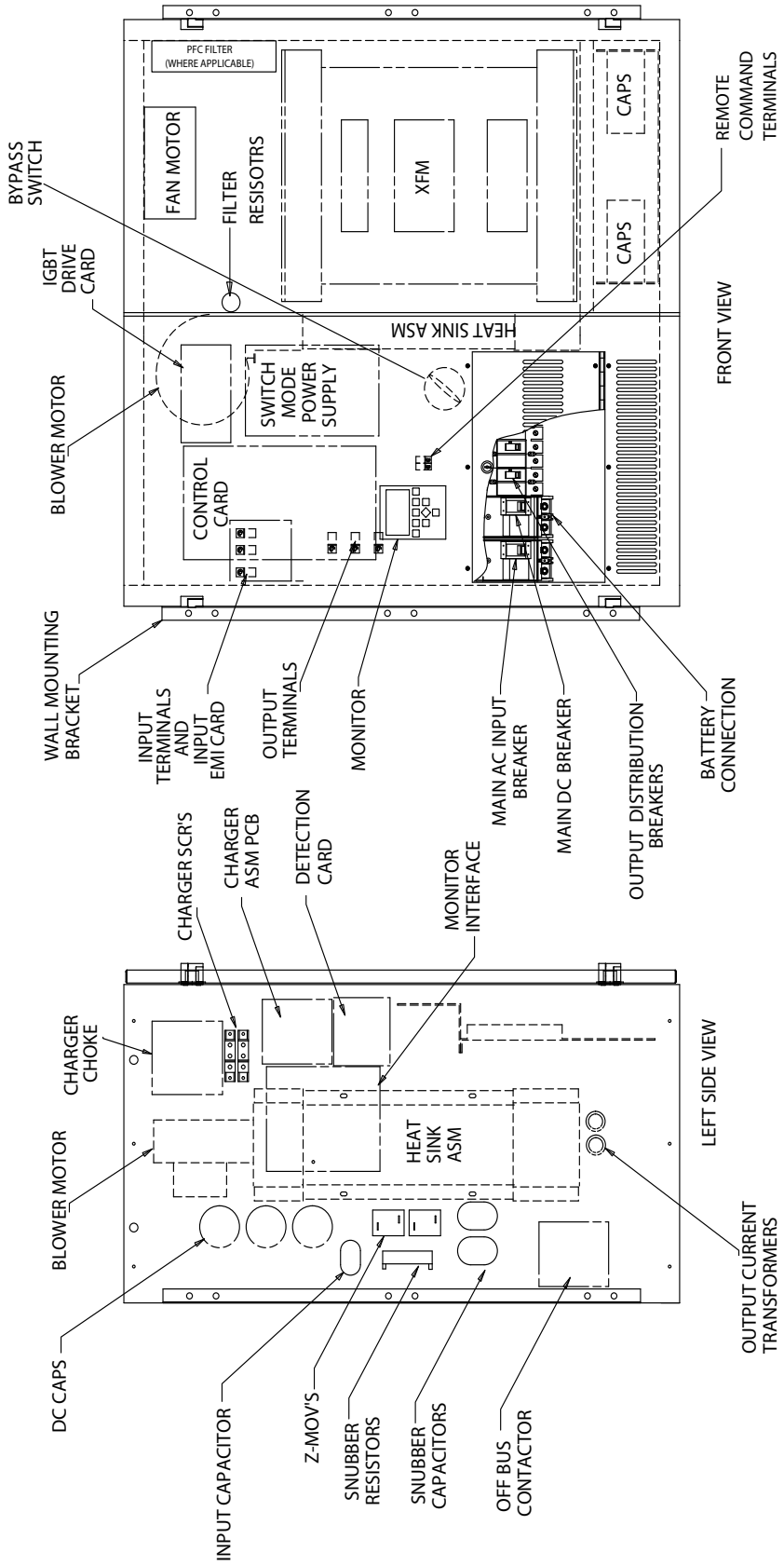
KVA	KW	INVERTER WEIGHT	30 MIN BATTERY WEIGHT	60 MIN BATTERY WEIGHT	120 MIN BATTERY WEIGHT	BTU
7.5	7.5	690#	822#	1488#	2063#	2558
8.5	8.5	690#	992#	1488#	2063#	2889
10	10	792#	1156#	1771#	N/A	3410
12.5	12.5	792#	1078#	1974#	N/A	4263
14.5	14.5	792#	1550#	2156#	N/A	4945
16	16	930#	1550#	N/A	N/A	5456
18	18	930#	1974#	N/A	N/A	6138

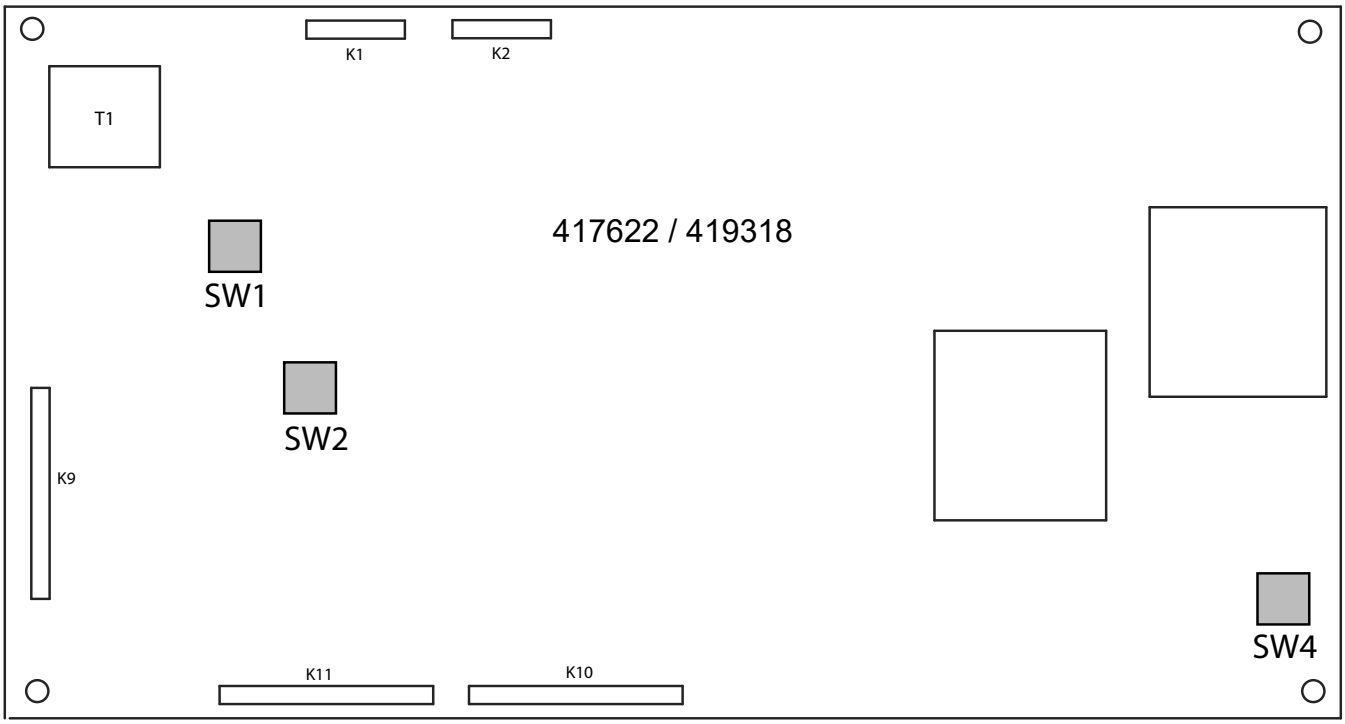


COMPONENT LOCATION DIAGRAM 5.3KW

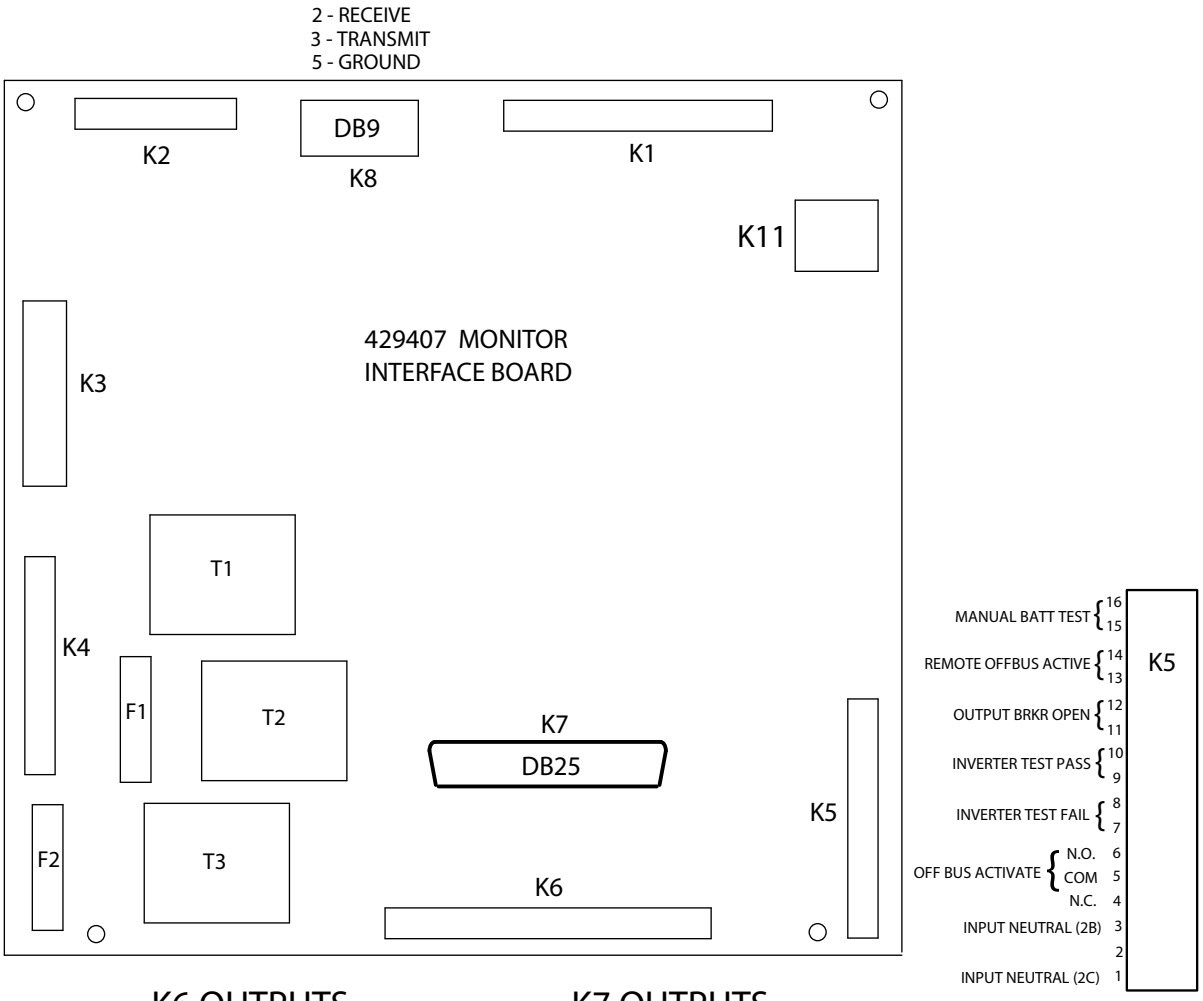


COMPONENT LOCATION DIAGRAM 7.5KW - 18KW




K1
K2
T1
417622 / 419318
SW1
SW2
K9
SW4
K11
K10

INTERFACE BOARD LAYOUT



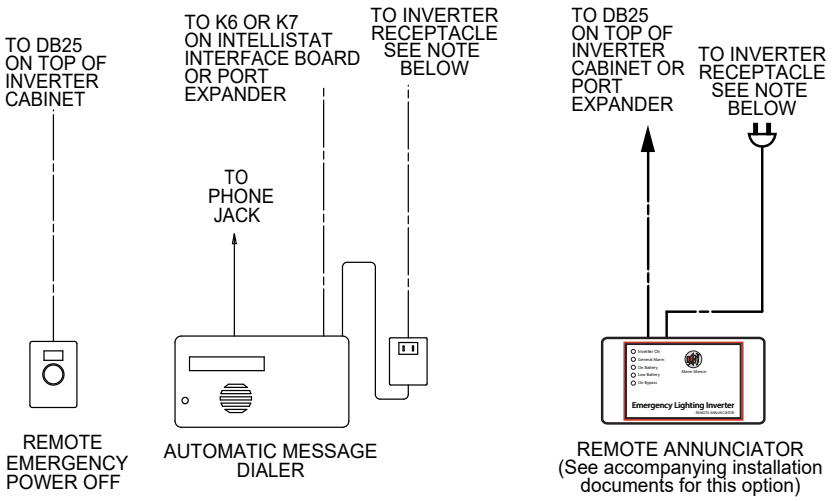
K6 OUTPUTS
(120VAC RATED CONTACTS)

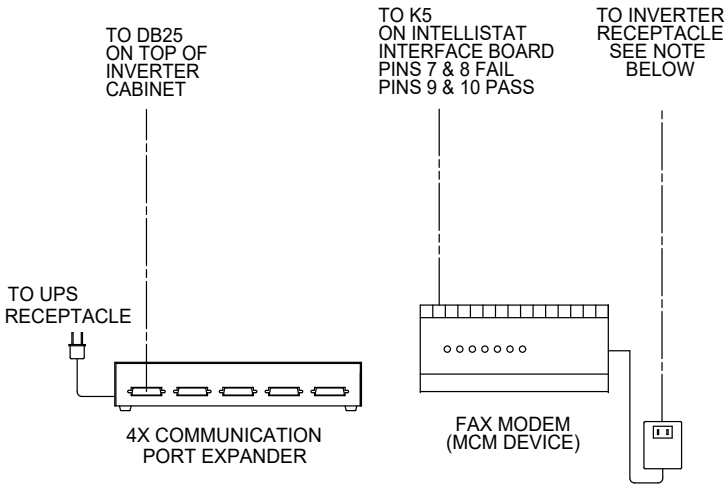
5 AND 6 - UPS ON
1 AND 2 - GENERAL ALARM
9 AND 10 - LO BATT WARN
11 AND 12 - BYPASS ON
7 AND 8 - MANUAL RESTART REQUIRED
3 AND 4 - UTILITY FAIL

K7 OUTPUTS
(40VAC MAXIMUM RATED CONTACTS)

3 AND 8 - UPS ON
5 AND 9 - GENERAL ALARM
2 AND 6 - LO BATT WARN
12 AND 13 - BYPASS ON
19 AND 20 - MANUAL RESTART REQUIRED
1 AND 4 - UTILITY FAIL

OPTIONS INTERCONNECTION DIAGRAM





NOTE: THE POWER SUPPLY FOR DEVICES, EXCLUDING THE REMOTE EMERGENCY POWER OFF, MUST BE TAKEN FROM THE OUTPUT OF THE INVERTER. A 120V RECEPTACLE (5-20R) WHOSE SUPPLY IS TAKEN FROM THE OUTPUT OF THE INVERTER MUST BE INSTALLED NEAR THE LOCATION OF THE DEVICE.

COMMUNICATIONS INTERFACE LOCATION