TRYSTAR

FastLITE MODEL FST

OWNERS MANUAL

525W - 2.2KW HIGH EFFICIENCY, FAST - TRANSFER EMERGENCY LIGHTING INVERTER

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

IMPORTANT SAFEGUARDS WHEN USING ELECTRICAL EQUIPMENT, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED INCLUDING THE FOLLOWING:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains detailed instructions for the installation, start-up and operation of the Emergency Lighting Inverter. Read the manual carefully before installation. For information on using the Inverter, the manual should be kept close at hand and consulted before carrying out any operation on the system.

This device has been designed and manufactured in accordance with the standards for the product, for normal use and for all uses that may reasonably be expected. It may under no circumstances be used for any purposes other than those envisaged, or in any other ways than those described in this manual. Any interventions should be carried out in accordance with the criteria and the time-frames described in this manual.

CAUTION

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

SHOCK HAZARD

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

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 Trystar 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.

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INTRODUCTION

Trystar engineers and manufactures the industry's highest quality centralized emergency lighting inverters, capitalizing on over 45 years of expertise. We have an enviable reputation for quality, which is reflected in the design, workmanship, and performance of our products.

Our FastLITE Model FST is a high efficiency, fast-transfer emergency lighting inverter providing a 2 millisecond or less transfer time to and from battery. It is offered in wall-mount and floor-mount models. The Model FST is designed for LED fixtures / drivers, as well as all other emergency lighting loads. All models are provided with a "normally on" output and a "normally off / switched" output.

As an owner or specifying engineer... why choose the Model FST over competing brands? It's a fair question. We believe that the answer is found in (5) key objectives which needed to be met when we designed this product.

- **LED Inrush Compatible** – LED fixtures are frequently designated for emergency egress lighting. With this in mind, we've designed the Model FST with a peak overload capability of 1500% to accommodate the inrush current from LED fixtures / drivers while the inverter is fed from the AC power source, or even while in battery mode!
- **Full Compliance with NFPA 101** – The Model FST meets the NFPA 101 definition of a computer-based, selftesting / self-diagnostic emergency lighting system with data-logging. Both periodic and annual tests are performed automatically, and the results are logged with a date and time stamp. Both alarm and test logs provide a history of events, and the ability to generate an NFPA-compliant report.
- **Weekly Self-Diagnostic** – In addition to the periodic and annual testing per NFPA 101, the Model FST performs a weekly inverter self-diagnostic without needing to transfer to battery mode. If this test were to fail, the unit would alarm, general alarm contacts would switch state, and the fault would be logged with a date and time stamp.
- **Surge Protection for LED Lighting / Drivers** – The electronics found in LED drivers are susceptible to premature failure when exposed to voltage surges. This is why the Model FST is available with a 40kA "Surge Protection Device" (SPD). If the SPD were to fail, both visual and audible alarms would result.
- **High Efficiency** – With greater energy savings in mind, we designed the Model FST with an operating efficiency of up to 98.8% This was accomplished without compromising the critical features, diagnostics, and monitoring options associated with the Trystar brand.

STANDARD FEATURES

- Input circuit breaker.
- One (1) output circuit breaker (120V, 277V) or monitored, fused switch (347V).
- Battery circuit breaker.
- 90 minute battery runtime.
- Low battery voltage disconnect.
- “Basic” monitor.
- Form C “General Alarm” relay contacts to indicate one or more of the following conditions: on battery, low battery, check battery, over temperature warning, charger failure, unit fault, output overload, and SPD fail alarm.Form C “Battery Test Active” relay contacts.
- USB communications port, allowing battery test and alarm logs to be viewed and electronically saved as an NFPA-compliant report.
- “Normally On” output and a “Normally Off / Switched” output.
- Weekly self-diagnostic (In addition to periodic and annual testing per NFPA 101, the Model FST performs a weekly inverter diagnostic.)

OPTIONAL FEATURES

- 30, 60, and 120 minute battery runtimes.
- “Intellistat TS” monitor.
- “Intellistat TS” network communications.
- “Output Surge Protection Device” (SPD) — 40kA peak surge current rating, UL 1449 4th Edition. If the SPD were to fail, both visual and audible alarms would result. (SPD added when 2 or more output CB’s are selected.)
- Output distribution CBs — Up to 6 unmonitored or 4 monitored breakers on 120 VAC or 277 VAC units. (Available breaker ratings include 10A, 15A, 20A, and 30A). Breakers may be wired to the “Normally On” output and/or “Normally Off / Switched” output in any combination.
- Output monitored, fused switches –– Up to 3 monitored switches on 347V units. (Available fuse ratings include6A and 10A.) Switches may be wired to the “Normally On” output and/or “Normally Off / Switched” output in any combination.

STANDARD ELECTRICAL CONFIGURATIONS

“Normally On” Output — Provides power to loads during utility present, utility failures, and test modes.

“Normally Off / Switched” Output — “Normally Off” output is typically dedicated for standby emergency lighting which operates only during utility failure and test modes. However, this output can also be energized by using an external on/off control device (such as a wall switch or occupancy sensor), to apply the nominal AC input voltage source to a control circuit. This allows the “Normally Off” output to be switched on/off when utility power is available. During utility failure and test modes (inverter on

Note: A remote input "command on contact" (normally closed dry contact that opens) may also be used to automatically energize the "Normally Off" output. (Applications include fire alarm, voltage phase loss monitor, and other controls.)

battery), this on/off control is overridden, and the "Normally Off" output is energized.

Note: A remote input "command on contact" (normally closed dry contact that opens) may also be used to automatically energize the "Normally Off" output. (Applications include fire alarm, voltage phase loss monitor, and other controls.)

MONITORING

The FST's "Basic Monitor" or "Intellistat TS Monitor" may be selected on all models. The comparison chart below highlights the features of each monitor.

Features	Basic Monitor	Intellistat TS Monitor
Display Panel Type	LED	LCD color touchscreen (TS)
System Status	LED indications	TS banner message & one-line functional diagram
Battery Status		
Alarm Conditions	LED indications	TS banner message
Alarm Log	USB access to alarm log	Viewed on TS display, as well as USB access
Electrical Parameters	USB access to parameters	Viewed on TS display, as well as USB access
User-Programmable (UP) Setpoints	Setup via USB access	Setup via TS display, or via USB
NFPA 101-Compliant Testing Per 7.9.3.1.3	Yes	Yes
Automatic Self-Testing (UP)	Setup via USB access	Setup via TS display, or via USB
Manual Push-To-Test	Display panel pushbutton	TS display pushbutton [1]
Battery Test Log	USB access to test log	Viewed on TS display, as well as USB access
Weekly Self-Diagnostic	Yes	Yes
Egress Lighting Integrity Test	No	Yes
Remote Monitoring via Network Communications [3]	No	Yes

Note: Access to User-Programmable (UP) settings are password-protected. Logged alarms and battery tests (periodic & annual) are date and time stamped. Logged battery tests include a "pass" or "fail" indication.

[1] Password-protected

Note: Access to User-Programmable (UP) settings are password-protected. Logged alarms and battery tests (periodic & annual) are date and time stamped. Logged battery tests include a "pass" or "fail" indication.

GENERAL SPECIFICATIONS

Power	
Ratings (kVA/kW)	.525, .750, 1.1, 1.44, 1.5, 1.7, 2, 2.2 at 1.0 (unity) power factor
Topology	Fast-transfer, high efficiency
Electrical Input	
Nominal Voltage	120V, 277V or 347V, 1 Phase, 60Hz Consult factory for 50Hz models
Voltage Range	Programmable ±10% or +10%,-15% (without battery usage)
Operating Frequency	60 Hz ± 5% from nominal
System AIC Rating	5k AIC standard; 65k AIC optional
Electrical Output	
Nominal Voltage	120V, 277V or 347V, 1 Phase, 60Hz Consult factory for 50Hz models
Voltage Regulation	±5% from nominal during full battery discharge, no load to full rated load
Transfer Time	≤ 2 msec to and from battery, under any loading conditions
Frequency	60 Hz ± 0.5% while in battery operation mode
Overload	Up to: 110% for 2 minutes, 125% for 30 seconds, 150% for 10 seconds, 400% for 4 cycles while in battery operation mode
LED Inrush Rating	Peak overload capability of 1500% when fed from AC power or on battery, to accommodate inrush current from LED fixtures / drivers
Voltage Distortion	≤ 3% THD, while on battery with a linear load
Efficiency	Up to 98.8%
Battery	
Type	Valve-regulated, sealed lead acid, maintenance-free
Testing	NFPA 101 compliant automatic self-testing, as well as a manual push-to-test feature
Runtimes	90 minutes and optional runtimes available
Nominal Voltage	96 VDC or 108 VDC, dependent on output wattage rating and runtime
Charger	3-stage, 3.5 amps, temperature compensated
Recharge Time	12 hour recharge (runtimes up to 90 minutes), UL 924 and CSA compliant

Certifications	
Safety	UL 924 Listed - Emergency Lighting Equipment C-UL Listed to CSA C22.2 No. 141-15 - Emergency Lighting Equipment UL 924 Listed - Auxiliary Lighting and Power Equipment NFPA 101, 111, NEC, IBC, and local codes
EMI Compliance	FCC Class A limits, 47 C.F.R. Part 15, Subparts A, B
Quality	ISO 9001:2015

General	
Diagnostics	Periodic and annual self-test, including weekly diagnostic
Electrical Configurations	“Normally On” output and “Normally Off / Switched” output
Output Surge Protection	Optional Surge Protection Device (SPD) provided to increase life and reliability of LED fixtures / drivers.
Output Distribution	One (1) output circuit breaker or monitored, fused switch provided as standard.
Dimensions/ Weights	See Back Cover for dimension and weights of wall- and floor- mounted models

Communications	
Basic Monitor	LED display panel to indicate system status and battery condition.
Intellistat TS Monitor	Monitor with high resolution, color touchscreen display for monitoring system status and parameters, and to access programmable inverter and battery testing.
Network / Web Interface	Intellistat TS is available with optional remote monitoring and reporting via BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP or MODBUS RS485. Includes notification of alarms via SNMP, e-mail, or user’s building management system.
Communication Port	Serial communications via USB provide access to system setup, electrical parameters, battery test log (up to 25 events) and alarm log (up to 250 events). Interface application software is provided so logs can be electronically saved as a report document to comply with NFPA 101 7.9.3.1.3.
Relay Interface	Form C “General Alarm” contacts and “Battery Test Active” contacts. All relay contacts provided via hardwired terminal strip. Contacts rated for 1A at 30 VDC or 120 VAC.

Environmental	
Operating Temperature	20°C to 30°C for UL 924 and C-UL Listed models - Emergency Lighting Equipment Optimum battery performance and life at 25°C
Storage Temperature	Inverter at -20°C to 50°C Battery storage at 25°C for 6 months before charging is required. For each 9°C rise, reduce storage time by half
Relative Humidity	0 to 95% non-condensing
Audible Noise	45 dB typical
Elevation	6600 feet (2000 meters) without derating

SAFETY PRECAUTIONS

NOT INTENDED FOR LIFE SUPPORT APPLICATIONS
This unit is intended for installation in a temperature controlled, indoor area free of conductive contaminants.

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.

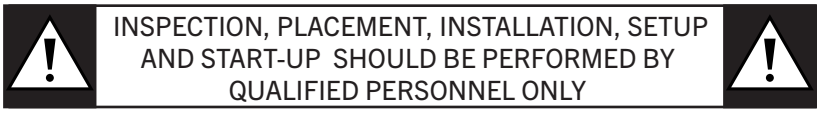
⚠ CAUTION ⚠

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 UPS IS PROPERLY GROUNDED.
- DO NOT ALLOW WATER OR FOREIGN OBJECTS TO GET INSIDE UPS.
- DO NOT PLACE OBJECTS OR LIQUIDS ON TOP OF THE UPS.
- DO NOT LOCATE UPS NEAR RUNNING WATER OR WHERE THERE IS EXCESSIVE HUMIDITY.
- DO NOT 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.

RECEIVING THE INVERTER

RECEIVING YOUR INVERTER



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.

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

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

IMPORTANT NOTICE

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

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

FOR ALL SHIPMENTS DAMAGED IN TRANSIT

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

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

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

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

STORAGE

WHILE IN STORAGE BATTERIES MUST BE CHARGED FOR 24 HOURS EVERY 6 MONTHS. WHILE IN STORAGE TURN OFF THE DC BREAKER.

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 inverter on and allowing it to run. See **"Battery Installation and Wiring"; Page 23** for details on installing batteries and the **"Start-up Procedure"; Page 38** for turning the inverter on. **WHILE STORING TURN OFF THE DC BREAKER.** Make sure proper ventilation is available any time the inverter is on.

REMOVING THE LIGHTING 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:
Philips Head Screwdriver (to remove lower panel), 1/2” Socket Wrench (for lag bolts), Forklift, dolly.

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. Remove the (4) four Philips head screws on bottom front battery panel and remove the panel.
4. **THE UNIT IS TOP HEAVY, USE EXTREME CAUTION**. Have someone hold the unit in place and remove the four 1/2” lag bolts on the INSIDE bottom of the cabinet that secure the unit to the skid.
5. **SLIGHTLY** tip the unit so that a forklift can get under the unit. While there is still another person holding the unit, place the forks securely under the lighting inverter from the front.
6. Carefully lift the lighting inverter from the skid.
7. Set the cabinets down until ready for installation.
8. Re-Install the bottom battery door panel until ready for installation.

REMOVE THE (4) FOUR 1/2” LAG BOLTS ON THE INSIDE BOTTOM OF THE CABINET THAT SECURE THE UNIT TO THE SKID.

PRELIMINARY INSTALLATION

TOOLS REQUIRED AND INSTALLATION CHECKLIST

- For field wiring size, based on amperage and breaker sizes in tabl below. Units are rated for operation up to 40 deg. C. Amb. Refer only to the matrix below for the service panel AC breaker size. The unit comes standard with terminals for hard wire installation.
- Lighting Inverters require a ground wire. The grounded supply conductor (Neutral) wire should be the same size as the input feed wires. The ground wire should be installed in accordance to NEC code.The ground that feeds the Lighting Inverter should be of good integrity and dedicated to the Lighting Inverter. The run should be as short as possible. Conduit cannot be used for the grounding of the circuit.
- When wiring batteries be sure to use insulated tools for safety.

Reference: NEC ARTICLE 250

INPUT OUTPUT BREAKER / FUSE RATINGS

OUTPUT RATING	525VA / W			750VA / W			1100VA / W		
NOMINAL VAC	120V	277V	347V	120V	277V	347V	120V	277V	347V
INPUT CB RATING (AMPS)	15	10	15	15	10	15	20	10	15
STANDARD (QTY 1) OUTPUT CB / FUSE RATING (AMPS)	15	10	6	15	10	6	15	10	6
RATED OUTPUT (AMPS)	4.38	1.9	1.5	6.25	2.71	2.16	9.17	3.97	3.17
Note: Input circuit breaker (CB) sized for full rated load, low line input voltage, and maximum recharge current simultaneously.									

OUTPUT RATING	1400VA / W			1500VA / W			1700VA / W		
NOMINAL VAC	120V	277V	347V	120V	277V	347V	120V	277V	347V
INPUT CB RATING (AMPS)	30	15	15	30	15	15	30	15	15
STANDARD (QTY 1) OUTPUT CB / FUSE RATING (AMPS)	15	15	6	20	15	6	20	15	10
RATED OUTPUT (AMPS)	12.0	5.2	4.15	12.5	5.42	4.32	15.0	6.5	5.19
Note: Input circuit breaker (CB) sized for full rated load, low line input voltage, and maximum recharge current simultaneously.									

OUTPUT RATING	2000VA / W			2200VA / W		
NOMINAL VAC	120V	277V	347V	120V	277V	347V
INPUT CB RATING (AMPS)	35	15	15	35	15	15
STANDARD (QTY 1) OUTPUT CB / FUSE RATING (AMPS)	30	15	10	30	15	10
RATED OUTPUT (AMPS)	16.67	7.22	5.76	18.33	7.94	6.34
Note: Input circuit breaker (CB) sized for full rated load, low line input voltage, and maximum recharge current simultaneously.						

SYSTEM WEIGHTS AND BTU'S

FLOOR MOUNT - SYSTEM WEIGHTS								
INVERTER WEIGHTS SHOWN FOR 120V MODEL, FOR 277V & 347V MODELS ADD 18 POUNDS*								
	525VA / W	750VA / W	1100VA / W	1440VA / W	1500VA / W	1700VA / W	2000VA / W	2200VA / W
	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*
INVERTER	148	148	148	148	148	148	148	148
BATTERY WEIGHT PER RUN TIME 30/60/90/120 MINUTES								
BATTERIES	NA/NA/NA/144	NA/NA/NA/144	62/120/157/207	120/157/207/304	120/157/207/304	120/183/237/304	135/207/342/342	135/207/342/482
TOTAL	NA/NA/NA/292	NA/NA/NA/292	210/268/305/355	268/305/355/452	268/305/355/452	268/331/385/452	283/355/490/490	NA/NA/NA/144

FLOOR MOUNT - SYSTEM HEAT OUTPUT (BTU/HR). ON-LINE, (ON BATTERY)								
SYSTEM VIOLTAGE	525VA / W	750VA / W	1100VA / W	1440VA / W	1500VA / W	1700VA / W	2000VA / W	2200VA / W
120V	61 (316)	65 (416)	68 (560)	78 (670)	78 (700)	85 (790)	89 (970)	92 (1000)
277V & 347V	85 (341)	92 (451)	92 (610)	92 (730)	92 (760)	92 (870)	92 (1070)	96 (1100)

WALL MOUNT - SYSTEM WEIGHTS						
INVERTER WEIGHTS SHOWN FOR 120V MODEL, FOR 277V & 347V MODELS ADD 18 POUNDS*						
FOR MODELS WITH PEDESTAL ADD 20 POUNDS*						
	525VA / W	750VA / W	1100VA / W	1440VA / W	1500VA / W	1700VA / W
	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*	WEIGHT (LBS)*
INVERTER	96	96	96	96	96	96
BATTERY WEIGHT PER RUN TIME 30/60/90 MINUTES						
BATTERIES	44/62/120	44/120/120	62/120/NA	120/NA/NA	120/NA/NA	120/NA/NA
TOTAL	140/158/216	140/216/216	158/216/NA	216/NA/NA	216/NA/NA	216/NA/NA

WALL MOUNT - SYSTEM HEAT OUTPUT (BTU/HR). ON-LINE, (ON BATTERY)						
SYSTEM VIOLTAGE	**525VA / W**	**750VA / W**	**1100VA / W**	**1440VA / W**	**1500VA / W**	**1700VA / W**
120V	61 (316)	65 (416)	68 (611)	78 (799)	78 (833)	85 (944)
277V & 347V	85 (341)	92 (451)	92 (662)	92 (867)	92 (903)	92 (1023)

INPUT OUTPUT TERMINATION - ALL MODELS		
SYSTEM VIOLTAGE	**WIRE GUAGE (AWG)**	**TORQUE**
120V	14 - 4	31 LBF.IN
277V	14 - 4	31 LBF.IN
347V	14 - 3/0	44.25 LBF.IN (14 - 4 AWG) 79.66 LBF.IN (3 - 3/0 AWG)

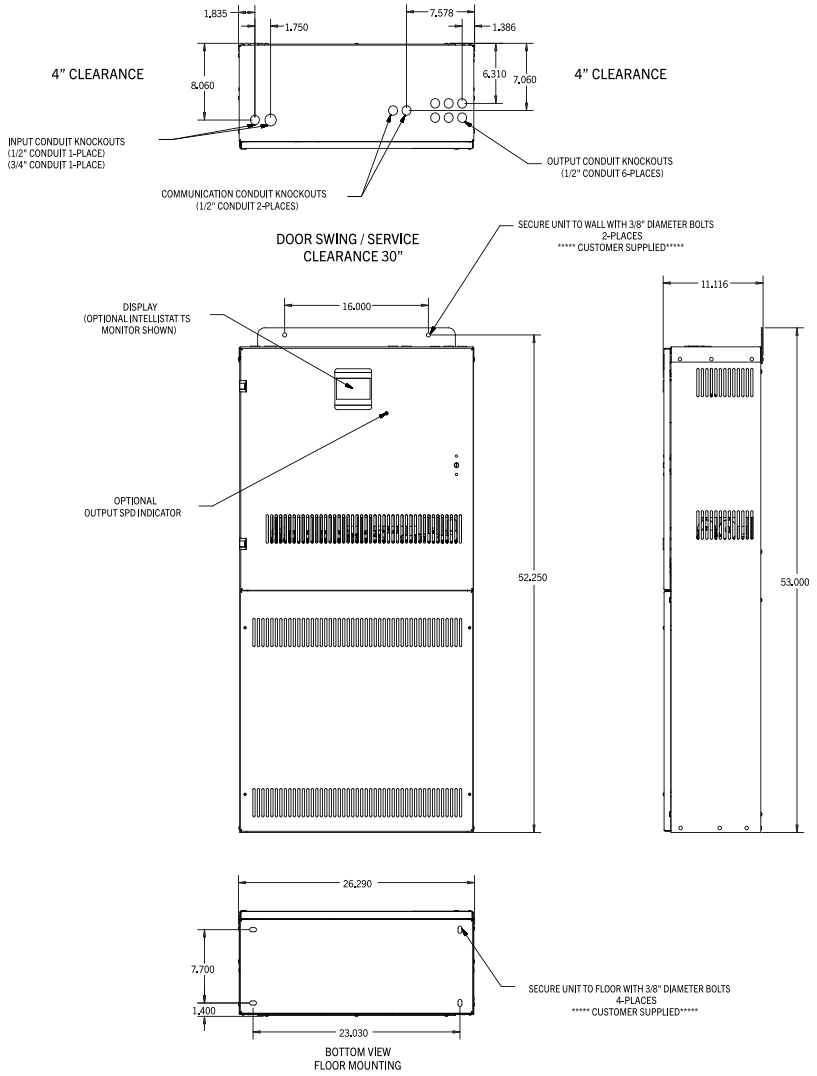
The ILS AC inverter systems must be located and installed conforming to CAN/CSA-C282-05 Emergency Electrical Power Supply for Buildings and CSA standard C22.1.

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 12 HOURS

FLOORMOUNT CABINET DIMENSIONS, ACCESSES AND CLEARANCES 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. Allow a minimum of 4” of clearance at the sides for air flow. For servicing space, 30” wide in front of unit (NEC 2017, 110.26). Secure the cabinet(s) to the floor and/or wall prior to battery installation. Secure the unit to the floor and/or wall using the mounting holes as shown below. Refer to local codes for proper hardware size.

Refer to NEC 2017, 110.26, and table (A)(1).



WALLMOUNT CABINET DIMENSIONS, ACCESSES AND CLEARANCES

LIGHTING INVERTER PLACEMENT

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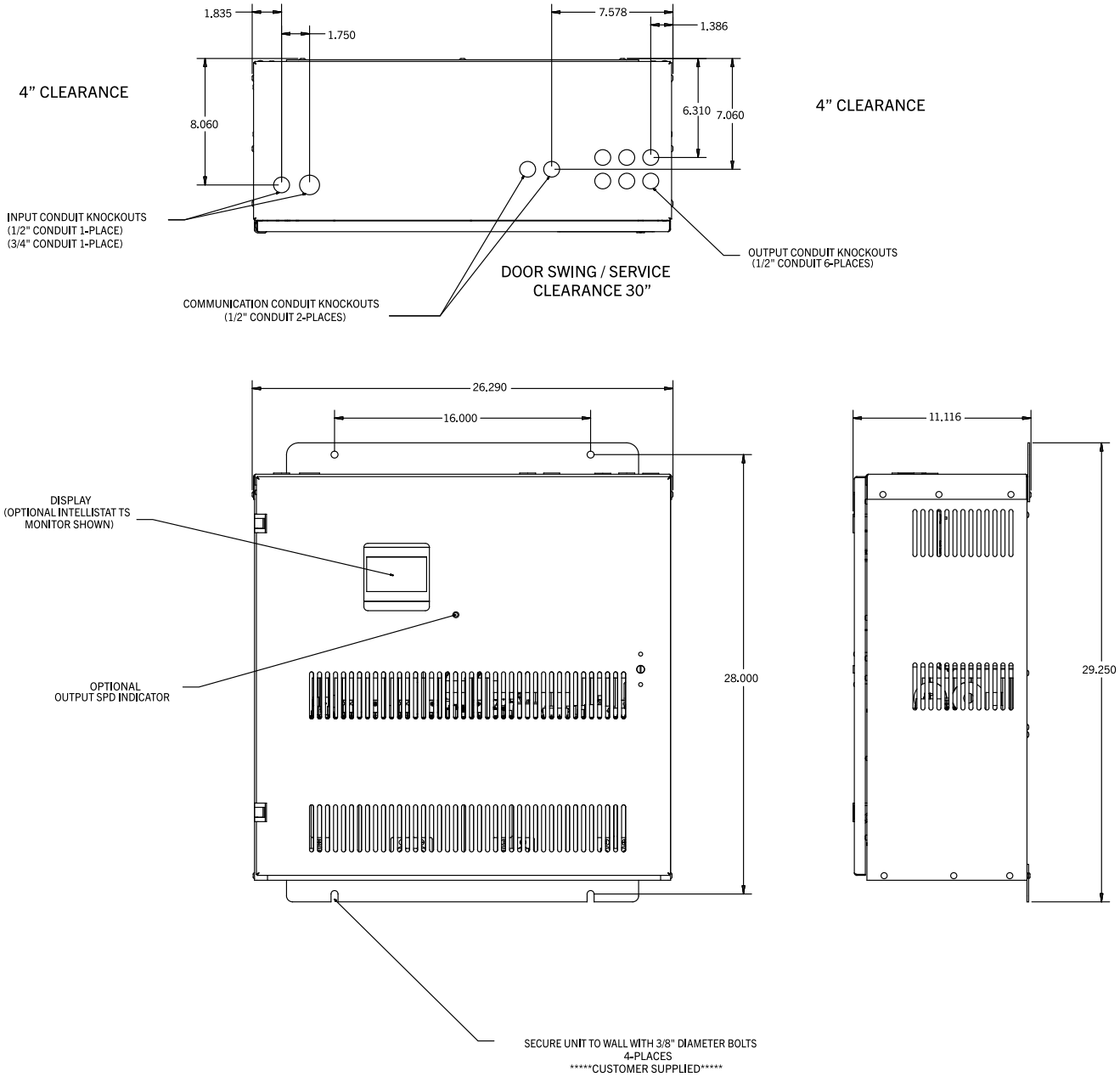

WALLMOUNT W/ PEDESTAL CABINET DIMENSIONS, ACCESSES AND CLEARANCES

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. Allow a minimum of 4” of clearance at the sides for air flow. For servicing space, 30” wide in front of unit (NEC 2017, 110.26). Secure the cabinet(s) to the floor and/or wall prior to battery installation. Secure the unit to the floor and/or wall using the mounting holes as shown below. Refer to local codes for proper hardware size.

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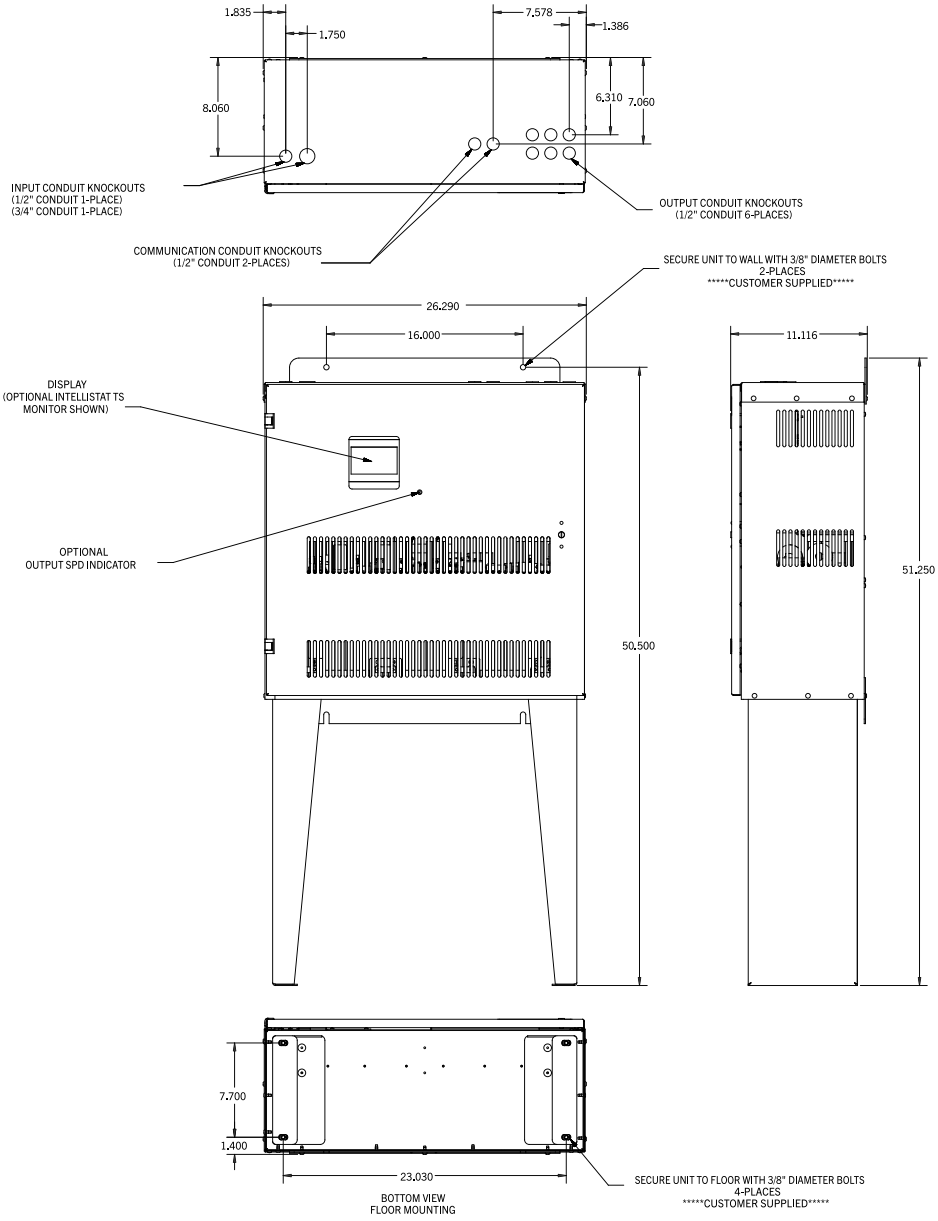
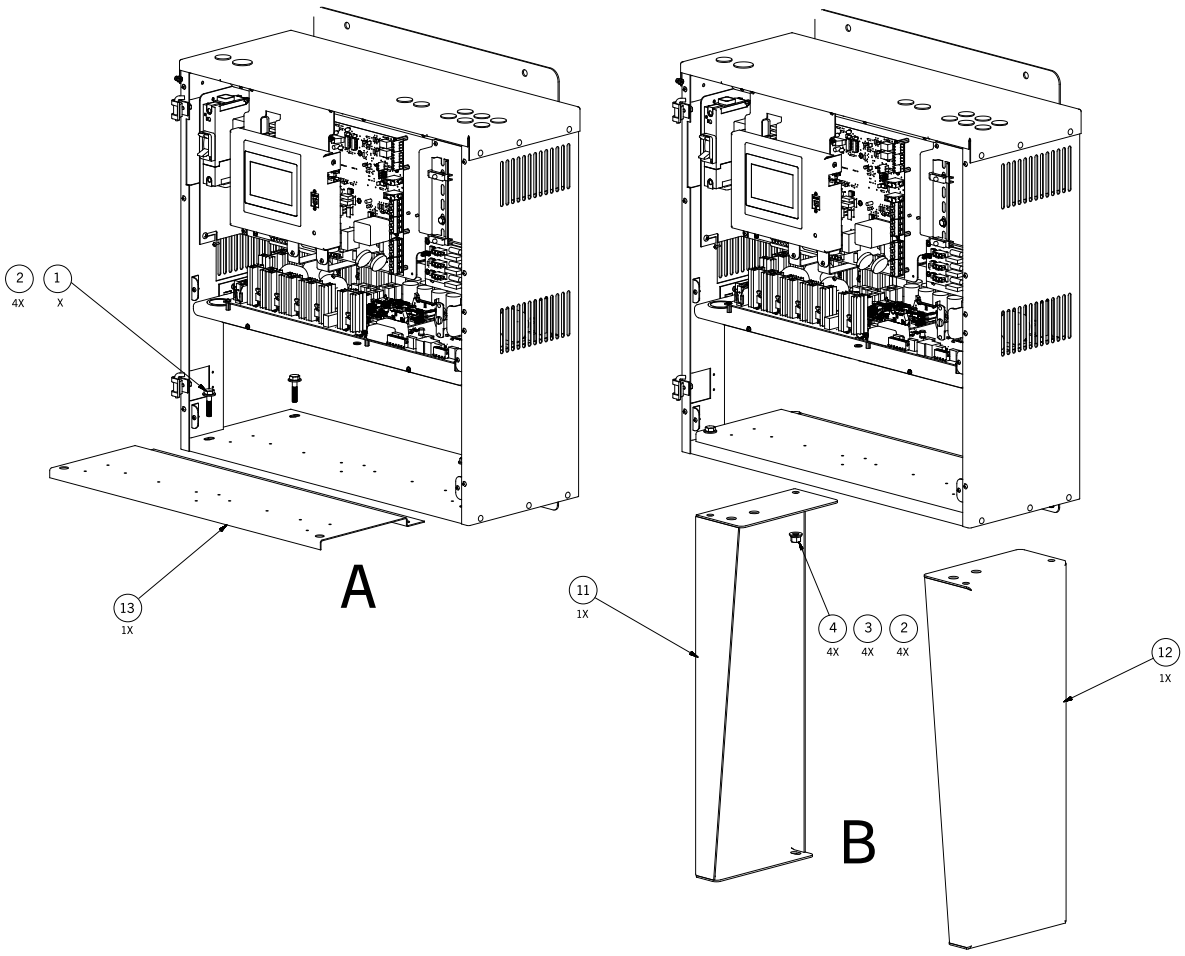


INSTALLATION

PEDESTAL ASSEMBLY



ITEM NO.	PART NUMBER	DESCRIPTION	304846/Leg Option/QTY.
1	020166	3/8-16 x 1-1/2" HHCS	4
2	020261	3/8 flat washer	8
3	020262	3/8 lock washer	4
4	020263	3/8-16 hex nut	4
11	428792	FST WALLMOUNT LEFT LEG	1
12	428793	FST WALLMOUNT RIGHT LEG	1
13	428794	FST WALLMOUNT BATTERY RISER	1

A. Using the hardware supplied, install the inner shelf into the inverter cabinet as shown above.

B. Install the legs as shown above.

BATTERY INSTALLATION AND WIRING OVERVIEW

The DC voltage for a nine (9) battery system is 108V. For an eight (8) battery system the DC voltage is 96V. Batteries are wired in series as shown on the corresponding diagram located inside the inverter cabinet door. Included with the lighting inverter is a kit for the wiring. Follow the steps and the corresponding diagram located inside the inverter cabinet door, noting the different lengths and labelling of wire.

1. Place batteries in the battery cabinet as shown in the Battery Wiring diagram inside the Inverter door. Battery orientation is important. Place batteries exactly as shown on the battery wiring diagram.
2. Locate the proper sections of wire that correspond to the diagrams. The main positive and negative battery cables will already be installed into the bottom of the DC breaker typical for both wallmount and floormount units.
3. Wire the batteries as shown in the diagrams, taking note of the polarity. Once the batteries are wired, use a volt meter to measure the most positive and most negative leads, verify the polarity. The voltmeter should read approximately +108VDC (9 battery system), or +96VDC (8 battery system). The minimum DC bus voltage to turn the unit on is +94.5VDC (9 battery system) or +84VDC (8 battery system). If it is different recheck the wiring and test again. Terminate the most positive (+) and most negative (-) ends at the corresponding (+) positive and (-) negative battery termination posts provided as shown below.

BATTERY BRACKETS ARE PRE-INSTALLED. REMOVE PRIOR TO BATTERY INSTALLTION AND THEN RE-INSTALL. BATTERY ORIENTATION IS IMPORTANT. NOT ALL BATTERY ORIENTATION IS AS SHOWN. PLEASE FOLLOW THE BATTERY WIRING DIAGRAM LOCATED INSIDE THE INVERTER CABINET DOOR FOR PROPER BATTERY ORIENTATION AND WIRING.

DO NOT MOVE THE BATTERY TEMPERATURE THERMAL FROM ITS ORIGINAL LOCATION.

The main positive and negative battery cables will already be installed into the bottom of the DC breaker (typical for both wall-mount and floormount units).

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

SEE "INSTALLATION AND SAFETY PRECAUTIONS"

BATTERY REQUIREMENTS

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 FST'S RATED FOR 120 MINUTES			
MANUFACTURER	A/H	BATTERY MODEL NUMBER	FOR USE WITH MODELS RATED (QTY)
LEOCH	26	XP12-100	525W (8)
LEOCH	26	XP12-100	750W (8)
LEOCH	35	XP12-150	1100W (9)
LEOCH	50	XP12-210	1500W (8)
LEOCH	50	XP12-210	1700W (8)
LEOCH	50	XP12-210	2000W (9)
LEOCH	50	XP12-300	2200W (9)

BATTERIES FOR FST'S RATED FOR 90 MINUTES			
MANUFACTURER	A/H	BATTERY MODEL NUMBER	FOR USE WITH MODELS RATED (QTY)
CSB	22	HR1290W	525W (8)
Zeus	18	PC18-12M	
CSB	22	HR1290W	750W (8)
LEOCH	26	XP12-100FR	1100W (9)
LEOCH	35	XP12-150FR	1440W (9); 1500W (9)
CSB	35	HRL12150WFR	1700W (9)
CSB	50	HRL12200WFR	2000W (9); 2200W (9)
LEOCH	50	XP12-210FR	

BATTERIES FOR FST'S RATED FOR 60 MINUTES			
MANUFACTURER	A/H	BATTERY MODEL NUMBER	FOR USE WITH MODELS RATED (QTY)
CSB	12	GP12120F2	525W (8)
Zeus	12	PC12-12F2	
CSB	22	HR1290WFR	750W (8)
Zeus	18	PC18-12M	
CSB	22	HR1290WFR	1100W (8)
LEOCH	26	XP12-100FR	1100W (9)
LEOCH	35	XP12-150FR	1440W (9); 1500W (9)
CSB	35	HRL12150WFR	1700W (9)
CSB	35	HRL12150WGFR	2000W (9); 2200W (9)
LEOCH	35	XP12-150FR	

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 12 HOURS

Batteries of a specific manufacturer and model are required to maintain the system's UL924 listing. Use of batteries not recognized in the product's UL report will void its listing.

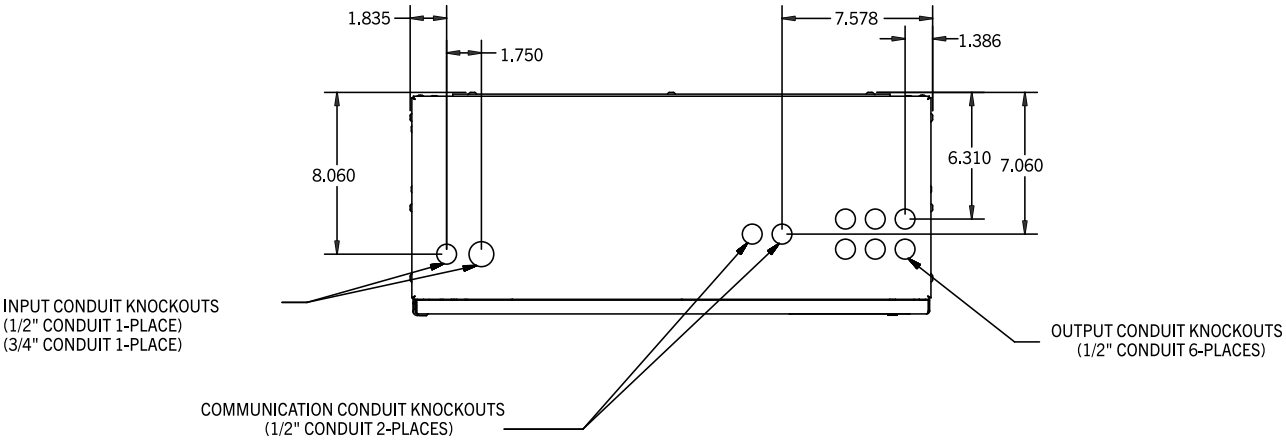
BATTERIES FOR FST'S RATED FOR 30 MINUTES			
MANUFACTURER	**A/H**	**BATTERY MODEL NUMBER**	**FOR USE WITH MODELS RATED (QTY)**
CSB	7.2	GPL1272F2FR	525W (8)
	6.5	UPS124607F2	
CSB	6.5	UPS124607F2	750W (8)
	8	UPS125807F2	
CSB	12	GP12120F2	1100W (9)
Zeus	12	PC12-12F2	1100W (8)
CSB	22	HR1290WFR	1440W (8); 1500W (8)
Zeus	18	PC18-12M	1440W (9); 1500W (9)
CSB	22	HR1290WFR	1700W (8)
CSB	22	HR1290WFR	2000W (9); 2200W (9)
LEOCH	26	XP12-100FR	

MINIMUM CHARGE TIME FOR FULL BATTERY CAPACITY = 12 HOURS

INPUT AND OUTPUT CONDUIT ENTRY POINTS

WARNING

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 OFF BEFORE SERVICING.



TYPICAL FOR BOTH FLOORMOUNT AND WALLMOUNT UNITS

INPUT AND OUTPUT WIRING

WARNING

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 OFF BEFORE SERVICING.

Lighting Inverter Wiring With Distribution

Input wiring is performed at the input circuit breaker. Output wiring is performed at the output distribution breakers inside the front door panel. It is recommended that all wiring is performed according to NEC standards and local codes.

TYPICAL FOR BOTH FLOORMOUNT AND WALLMOUNT UNITS

INPUT / OUTPUT TERMINATION		
SYSTEM VOLTAGE	WIRE GAUGE (AWG)	TORQUE
120	14 - 4	31 lbf.in
277	14 - 4	31 lbf.in
347	14 - 3/0	44.25 lbf.in (14 - 4 AWG) 79.66 lbf.in (3-3/0 AWG)

Output Distribution Circuit Breakers

A total of (6) circuit breakers or (4) monitored circuit breakers are available (120V or 277V), and can be factory-wired to the “Normally On” bus and / or “Normally Off” bus, in any combination specified.

A total of (3) circuit breakers or (3) monitored circuit breakers are available (347V), and can be factory-wired to the “Normally On” bus and / or “Normally Off” bus, in any combination specified.

Specifications

Voltages .....120VAC or 277VAC, 50/60Hz

Max Load Requirements

LED Lighting.....18A @277VAC

Ballast..... 20A @277VAC

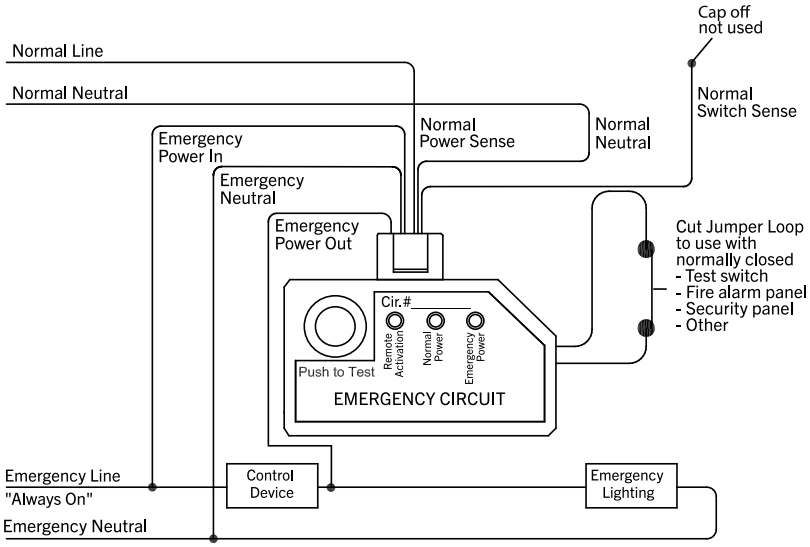
Incandescent.....10A @120VAC

ZONESAVER-2, “LOCAL CONTROL OVERRIDE” INSTALLATION

CONTROL DEVICE OVERRIDE

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.

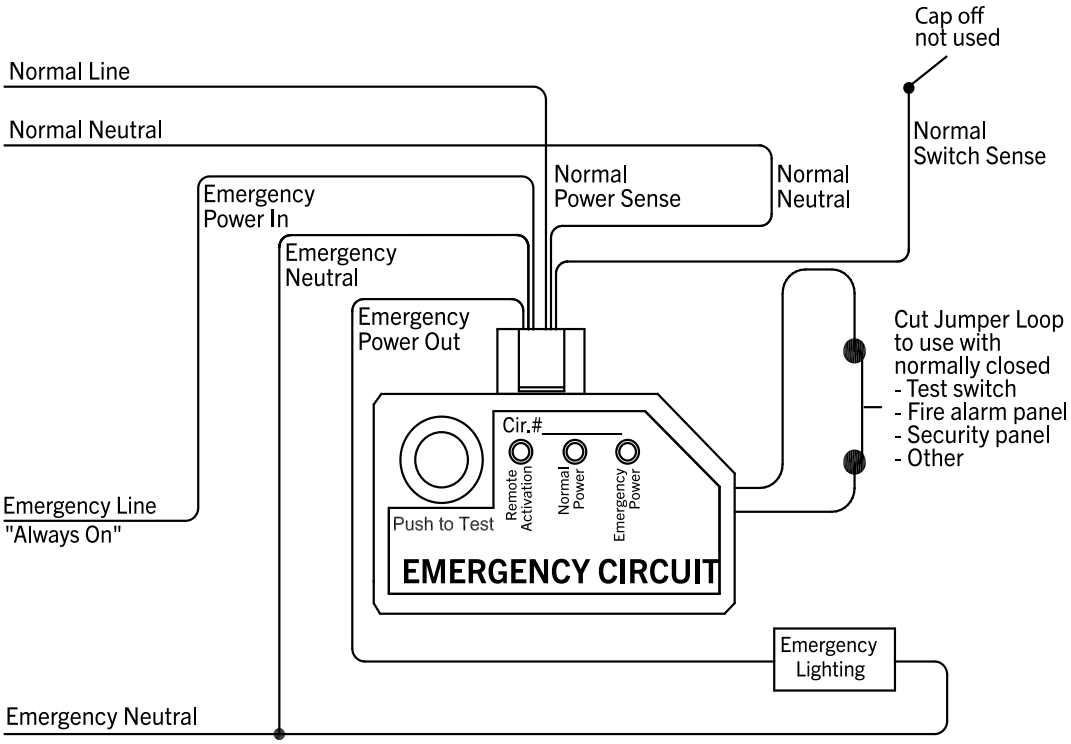
Refer to the manual that accompanied this device for function, use and installation instructions.

ZONESAVER-2, “ZONE SENSING” INSTALLATION

ZONE SENSING AND CONTROL OF NORMALLY OFF EMERGENCY LIGHTING

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.

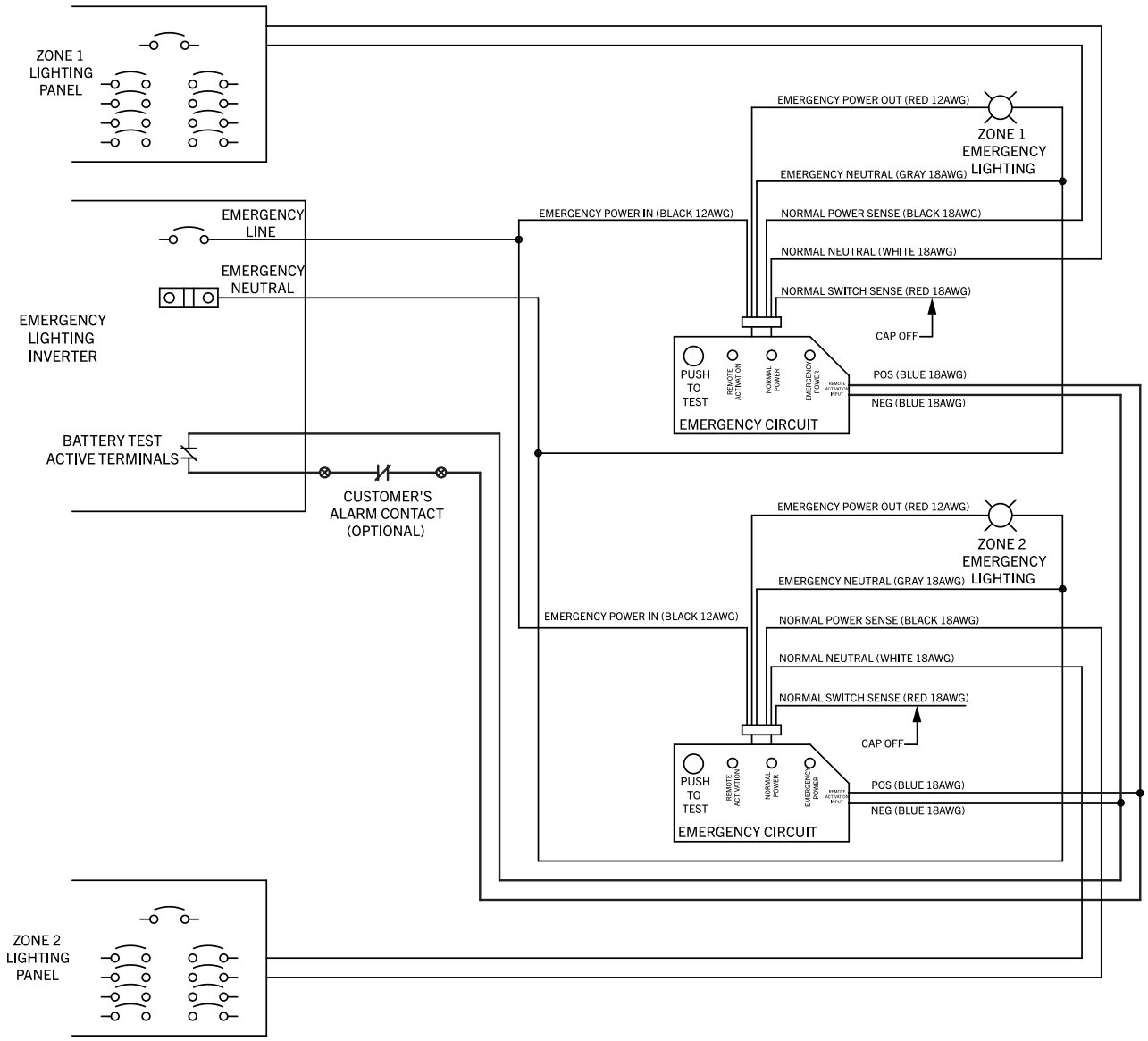
When utility voltage is lost, the normal power light turns off and the normally off (standby) emergency lights are energized. Once power returns to the Normal Power Sense input, the emergency lights are shut off and the ZoneSaver-2 indicates a normal operating condition.

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, K3 - NORMALLY CLOSED BATTERY TEST ACTIVE CONTACTS (SEE - “COMMUNICATIONS PANEL”).

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

INTELLISTAT NETWORK COMMUNICATIONS

OPTIONAL NETWORK COMMUNICATIONS

The “Intellistat TS” monitor is available with optional “built-in” network communications, which integrate the inverter into a BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485 network with a specific IP address for Ethernet-connected systems. This “built-in” network communications capability also provides remote monitoring of the inverter’s status, battery test pass/fail results, alarm conditions, and electrical measurements via a web browser, without the need for any external software. Remote notification of alarm and status “Events” are available via SNMP, e-mail, and text messaging; or via the user’s building management system. “Alarms” and battery “Test Logs” each store up to 250 events that are time- and date-stamped, and may be downloaded in a text file.

FastLITE Model FST with optional Intellistat TS monitor

Available Alarms and Status Indications

- General Alarm
- Return to System Normal
- On Battery Power
- Return to AC Power
- Output VA High
- Load Normal
- Output Circuit Breaker Open
- Input Voltage Out Of Range
- Output Voltage Out Of Range
- Low Battery Warning
- Over-temperature
- System Shutdown
- Contact Service
- System Testing
- Battery Test Failed
- Battery Test Passed
- Lighting Integrity Test Failed
- Lighting Integrity Test Passed
- Battery Critical (10% or less of capacity remaining)

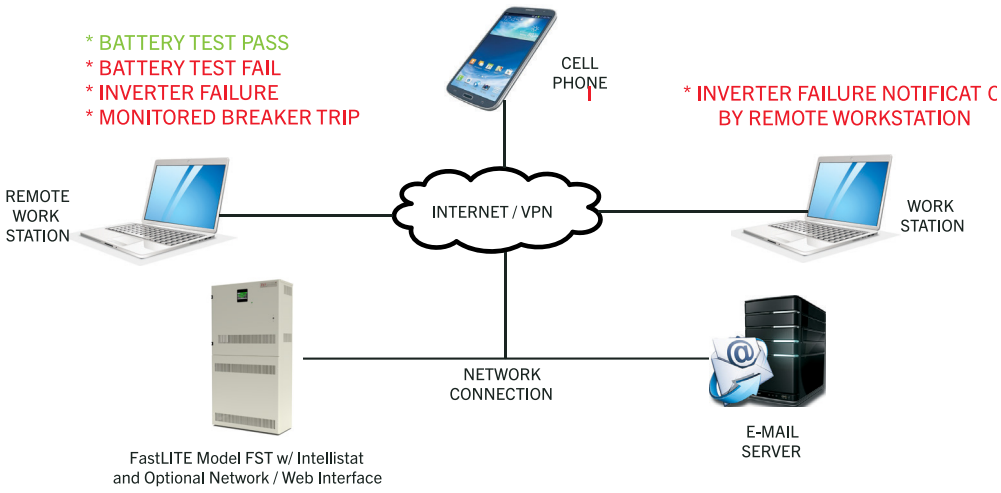
Device Functions

- Manual Battery Test (Web Interface Only)

- Battery Test Cancel (Web Interface Only)

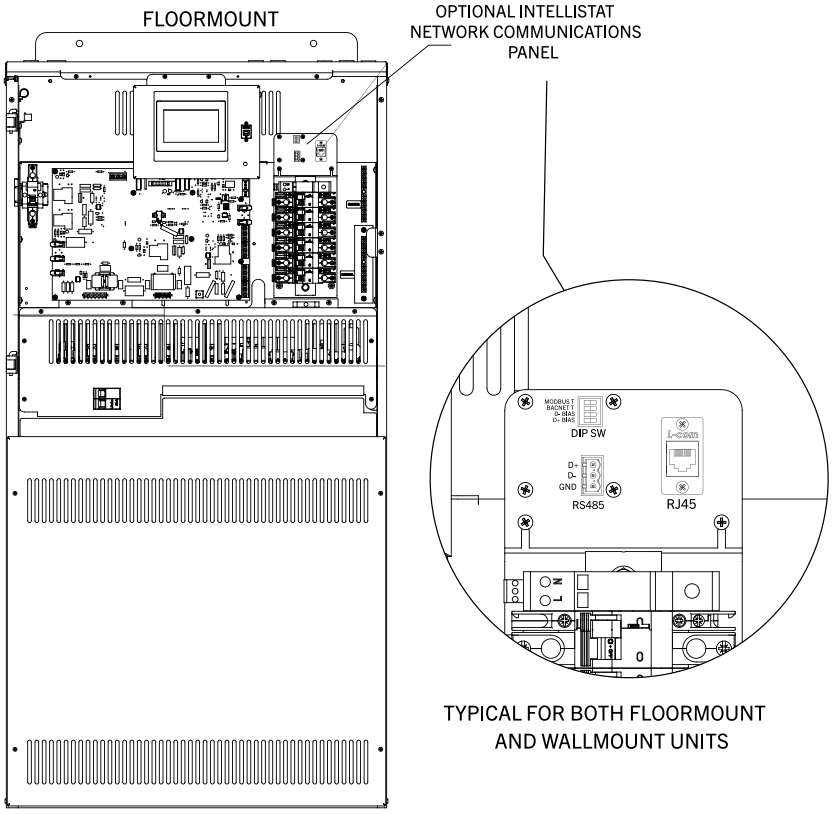
Electrical Parameters Displayed

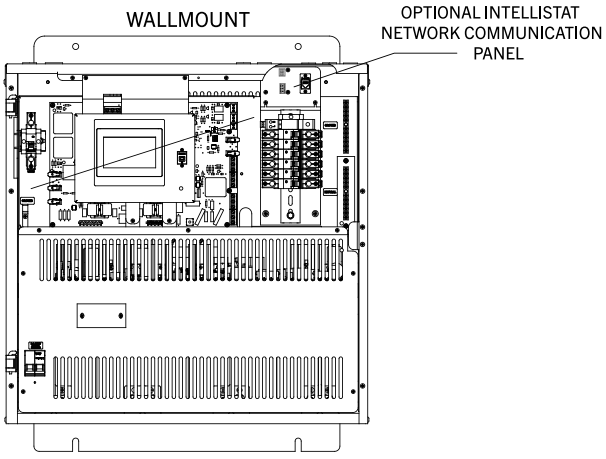
- Input Voltage
- Output Watts
- % Load
- Battery Voltage
- Battery Capacity
- Output Voltage
- Output VA
- Frequency
- Battery Current



See the accompanying communications manuals for setup instructions.

INTELLISTAT NETWORK COMMUNICATION PORT LOCATIONS





CUSTOMER RELAY CONTACTS

CAUTION

BE SURE THAT NO POWER IS APPLIED TO THE INVERTER WHILE WIRING INTERNAL CONFIGURATION.

GENERAL ALARM CONTACTS

Form C “General Alarm” relay contacts are provided for remote monitoring. Contact ratings are 120 VAC @ .5amps. General alarm contacts will switch states given any of the following alarm conditions: on battery, low battery, check battery, over temperature warning, charger failure, unit fault, output overload, SPD failure, and weekly self-diagnostic failure.

BATTERY TEST ACTIVE CONTACTS

Form C “Battery Test Active” contacts are provided that switch state during automatic or manual battery testing. The normally closed contact may be used to signal one or more UL924 listed shunt relays to bypass local control devices during periodic and annual NFPA-mandated tests, in order to provide emergency power to designated emergency lighting fixtures.

NORMALLY OFF / SWITCHED OUTPUT (SWITCHED INPUT)

“Normally Off / Switched” Output — “Normally Off” output is typically dedicated for standby emergency lighting which operates only during utility failure and test modes. However, this output can also be energized by using an external on/off control device (such as a wall switch or occupancy sensor), to apply the nominal AC input voltage source to a control circuit. This allows the “Normally Off” output to be switched on/off when utility power is available. During utility failure and test modes (inverter on battery), this on/off control is overridden, and the “Normally Off” output is energized. Customer supplied line level signal.

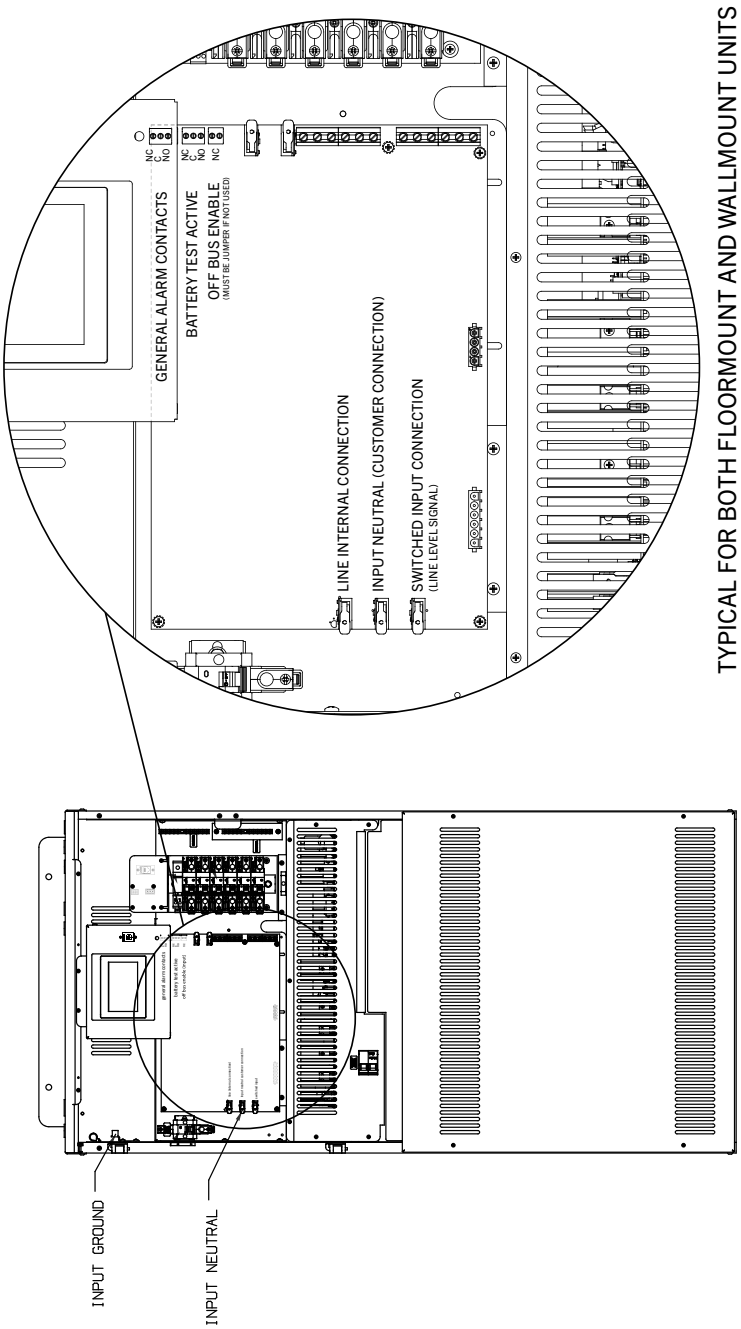
Note: A remote input “command on contact” (normally closed dry contact that opens) may also be used to automatically energize the “Normally Off” output. (Applications include fire alarm, voltage phase loss monitor, and other controls.)

Note: A remote input “command on contact” (normally closed dry contact that opens) may also be used to automatically en¬ergize the “Normally Off” output. (Applications include fire alarm, voltage phase loss monitor, and other controls.)

REMOTE COMMAND ON CONTACTS (OFF BUS ENABLE)

A remote input “command on contact” (Off bus enable) (normally closed dry contact that opens) may also be used to automatically energize the “Normally Off” output. (Applications include fire alarm, voltage phase loss monitor, and other controls.) These normally closed contacts must be jumpered when not being used.

CONTACT LOCATIONS



TYPICAL FOR BOTH FLOORMOUNT AND WALLMOUNT UNITS

START UP PROCEDURE

NORMAL MODE START UP

THIS PRODUCT IS SHIPPED WITH THE PERIODIC AUTOMATIC BATTERY TEST ENABLED FOR EVERY 30 DAYS STARTING WITH THE 15th DAY OF THE FOLLOWING MONTH FROM THE ACTUAL SHIP DATE AT 10 P.M.NOTE THAT THE UNIT WILL GO INTO THE AUTOMATIC BATTERY TEST UPON INITIAL START UP IF THE START UP DATE IS AFTER THE 15TH OF THE MONTH, ONE MONTH AFTER THE ORIGINAL SHIP DATE. SEE "BATTERY TEST DURATIONS" AT THE END OF THE MAINTENANCE SECTION. THE NEXT AUTOMATIC BATTERY TEST WILL BE EXACTLY 30 DAYS (DATE AND TIME) AFTER THE FIRST PERIODIC AUTOMATIC BATTERY TEST. REFER TO THE FOLLOWING SECTIONS IN THIS MANUAL FOR FURTHER INFORMATION: *"OPERATION", "MAINTENANCE PROCEDURES - BATTERY TESTING" AND "COMMUNICATIONS".*

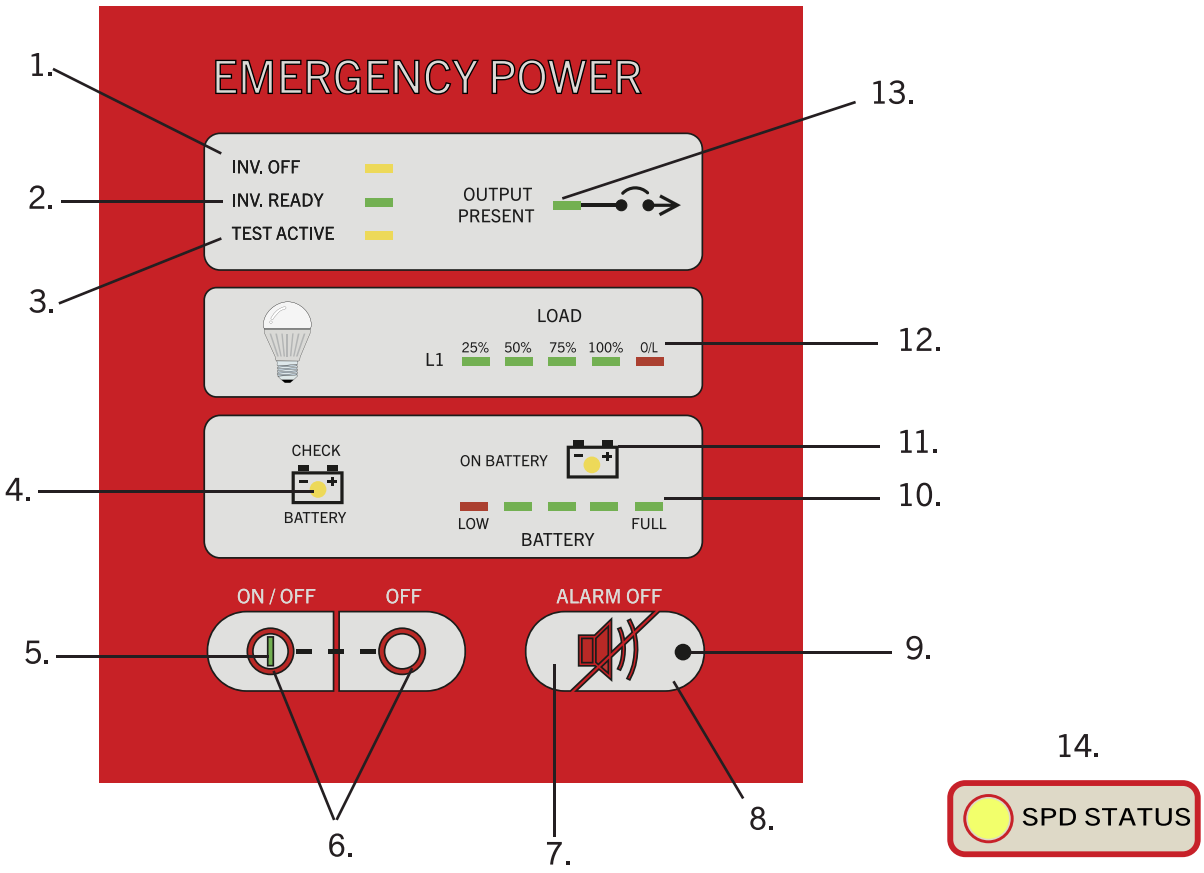
THIS PRODUCT IS SHIPPED WITH THE ANNUAL AUTOMATIC BATTERY TEST DISABLED. HOWEVER, THE TEST IS PRESET TO RUN TWELVE (12) MONTHS FROM THE DATE OF SHIPMENT, STARTING WITH THE 15th DAY OF THE MONTH, ONE YEAR FROM THE ACTUAL SHIP DATE AT 10 P.M. IF ENABLED, THE TEST WILL LAST FOR MAXIMUM OF 90 MINUTES DEPENDING ON THE BATTERY OPTION PURCHASED AND THEN AUTOMATICALLY TERMINATE. THE NEXT ANNUAL AUTOMATIC BATTERY TEST WILL BE ONE YEAR (DATE AND TIME) AFTER THE FIRST AUTOMATIC BATTERY TEST IF ENABLED. REFER TO THE FOLLOWING SECTIONS IN THIS MANUAL FOR FURTHER INFORMATION: "OPERATION", *"MAINTENANCE PROCEDURES - BATTERY TESTING" AND "COMMUNICATIONS".*

1. Before removing internal panels of the FST, turn off the breaker feeding the system, the AC input breaker, the DC Circuit breaker, and output circuit breakers.
2. Remove the panel covering the AC input and AC output breakers, and the panel covering the DC breaker.
3. Verify that there are not any shorts on the input and output cables.
4. Check the DC battery breaker for proper voltage and polarity (battery side of breaker). The minimum battery voltage to turn the unit on is 98 VDC for 9 battery systems and 87 VDC for 8 battery systems. Ensure that the positive of the batteries is going to the positive battery connection of the power board. Also, be sure that the negative of the batteries is going to the negative battery connection of the power board.
5. Verify that the unit is properly grounded.
6. Turn on the breaker feeding the system, Verify for correct voltage at the line side of the input breaker. This should match the information on the specification tag on the unit.
7. Next, turn on the DC Circuit breaker then the AC input breaker.
8. Check for correct output voltage at the normally on output terminal.

Note 1: Output voltage information is located on the specification tag.
Note 2: To verify the voltage of the normally off output terminal see step #10

9. BASIC MONITOR - Press the “On” button located on the front display. The blinking “INV. OFF” light will stop blinking and stay off, and the “INV. READY” light will illuminate. The “BATTERY” lights will now be operating. See **“Operation - Basic Monitor Operation”; Page 40.** INTELLISTAT TSTM MONITOR - Press the “On/Off” button located on the Intellistat TSTM monitor. After an approximate 10 second delay, the unit will power up. See **“Operation - Intellistat TSTM Monitor Operation”; Page 42.**
10. Turn “OFF” the input breaker and verify the system on battery power. At this time the normally off output terminal voltage can be checked.
11. Turn “ON” the input breaker and verify the system returns to normal power. When the unit returns to normal mode, the “remote offbus activate terminals” can be used instead of being on battery power to check the offbus voltage. BEFORE TURNING LOADS ON.
12. Turn the unit off by pushing the “On/Off” and “Off” buttons simultaneously for the standard monitor; **Page 40** or for the Intellistat monitor shut the system down by pressing the On/Off button from the Main Screen; **Page 42.** Turn the DC breaker OFF.
13. Leave the input and output breakers ON.
14. Turn each load breaker “ON” one at a time verifying output current and voltage with meters. Verify that the amount of load does not exceed the system rating as indicated by the specification tag.
15. Turn the unit off by pushing the “On/Off” and “Off” buttons simultaneously for the standard monitor; **Page 40** or for the Intellistat monitor shut the system down by pressing the On/Off button from the Main Screen; **Page 42.** Turn the DC breaker OFF.
16. Turn the DC breaker OFF.
17. Turn off the breaker feeding the system, the AC input breaker, the DC Circuit breaker and the output circuit breakers.
18. Attach the panels removed from step 2.
19. Turn on the breaker feeding the system, the AC input breaker, the DC breaker, and the output circuit breakers.
20. Turn the Unit back on using the method from step 9.

OPERATION - BASIC MONITOR



1. Flashes Yellow when the System has not been turned on and there is no backup available
2. Once the ON pushbutton is pressed, green LED is illuminated to indicate battery backup is available..
3. Yellow LED illuminates when automatic (or manual) monthly (or annual) test is being performed.
4. LED indicates the detection of weak batteries, Check Battery Condition.
5. Pushing and holding this button for two seconds will turn the system “ON”.
6. Pushing and holding both buttons will turn the system “OFF”.
7. Push to silence the alarm. Alarm conditions Include an audible alarm with alarm silence for unit on battery, low battery, check battery, over temperature warning, charger failure, unit fault, output overload, weekly self-diagnostic failure, and SPD failure.
8. Pushing and holding this button for 3 seconds will generate a system battery test - See **“Maintenance Procedures - Manual Battery Test”;**

Page 73 for test durations.

9. LED indicates that the system alarm is “ON”.
10. This scale indicates the charge / discharge level of the batteries.
11. Yellow LED indicates that the Inverter is on battery power.
12. These LED’s indicate the load level on the output.
13. Green LED indicates that there is voltage present at the oputput terminals.
14. SPD Status - Optional output SPD includes status indication from a separate LED mounted on the unit enclosure. The LED will illuminate green when the SPD is operational and turn red if the SPD has failed.

Note: When performing a power outage test or the inverter has been on battery for a few minutes and returns to normal power, the battery indicator lights may only display one indicator light, this is normal. Wait approximately 15 minutes and the battery indicator lights should return to full.

*__NOTE__: When performing a power outage test or the inverter has been on battery for a few minutes and returns to normal power, the battery indicator lights may only display one indicator light, this is normal. Wait approximately 15 minutes and the battery indicator lights should return to full.

AUDIBLE ALARM CONDITIONS

The following are conditions that will cause an audible alarm. Some audible alarms have a corresponding LED Indication on the display.

Condition	Display Notification	Possible Cause	Action
System on Battery	Yellow On Battery LED	Input voltage or frequency is out of the required specifications.	Test the AC input power source to the Lighting Inverter, repair if required.
		Automatic battery testing is taking place	Verify that the “Check Battery” indicator in not illuminated during or after the test. If it is, verify battery condition and replace battery if required.
Low Battery	Red Low LED	Lighting Inverter has been in Inverter Mode for an extended period of time.	This is normal as the batteries run down in Inverter Mode and indicates that the battery capacity has reached the user defined point for this alarm to occur
		Weak batteries	Check batteries.
			Check charging circuit - contact factory.
Check Battery	Yellow Check Battery LED	Weak or bad batteries	Check batteries - replace as required see “Check Battery” indication on display.
Output Overloady	Red O/L Light	System is overloaded	Reduce the load on the unit to within the ratings of the unit.
SPD Failure	RED LED on Door	System AC input was too high	The load was protected from the high incoming line, SPD module must be replaced
Alarm is active, but is none of the above	Red Alarm Light	Connect to the usb port and check the alarm log for a reason for alarm	Check the troubleshooting section of this manual with for the given alarm log for a possible solution
System was On and has Shutdown with no Alarm	-	Connect to the usb port and check the alarm log for a reason for shutdown	Check the troubleshooting section of this manual with for the given alarm log for a possible solution

OPERATION - INTELLISTAT TS MONITOR

Intellistat TS™ Monitor

The user-friendly Intellistat TS™ monitor provides full-access to all of the inverter’s features, allows all programming to be done directly from the touchscreen display, and provides complete system diagnostics and testing. The touchscreen display allows the entry of the date / time values, system set points, and password information into the monitor, without the need for an external computer and cable.

Features include:

- LCD display of all electrical parameters.
- User-programmable automatic system testing.
- Audible alarm with alarm silence.

- Programmable alarm set-points.
- Multi-layer password protection.
- Logs up to 25 battery test events.
- NFPA-compliant automatic battery testing / logging.
- System alarm annunciation.
- Alarm status display.
- Date and time display.
- Non-volatile clock and memory.
- Logs up to 50 alarm events.

Monitored Parameters

The Intellistat TS monitors the following parameters: voltage, frequency, current, VA, watts, power factor, percent load, battery voltage, battery charger current, and minutes on battery.

Egress Lighting Integrity Test

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 / switched”). The Intellistat TS then compares power consumption during the test period with user-defined load capacity, analyzes the data, and advises if service is required.

Network Communications

Optional network communications allow for remote monitoring and reporting via BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485.

FastLITE Model FST with optional Intellistat TS monitor

Available Alarms and Status Indications

- General Alarm
- Return to System Normal
- On Battery Power
- Return to AC Power
- Output VA High
- Load Normal
- Output Circuit Breaker Open
- Input Voltage Out Of Range
- Output Voltage Out Of Range
- Low Battery Warning
- Over-temperature
- System Shutdown
- Contact Service

- System Testing
- Battery Test Failed
- Battery Test Passed
- Lighting Integrity Test Failed
- Lighting Integrity Test Passed
- Battery Critical (10% or less of capacity remaining)

Device Functions

- Manual Battery Test (Web Interface Only)
- Battery Test Cancel (Web Interface Only)

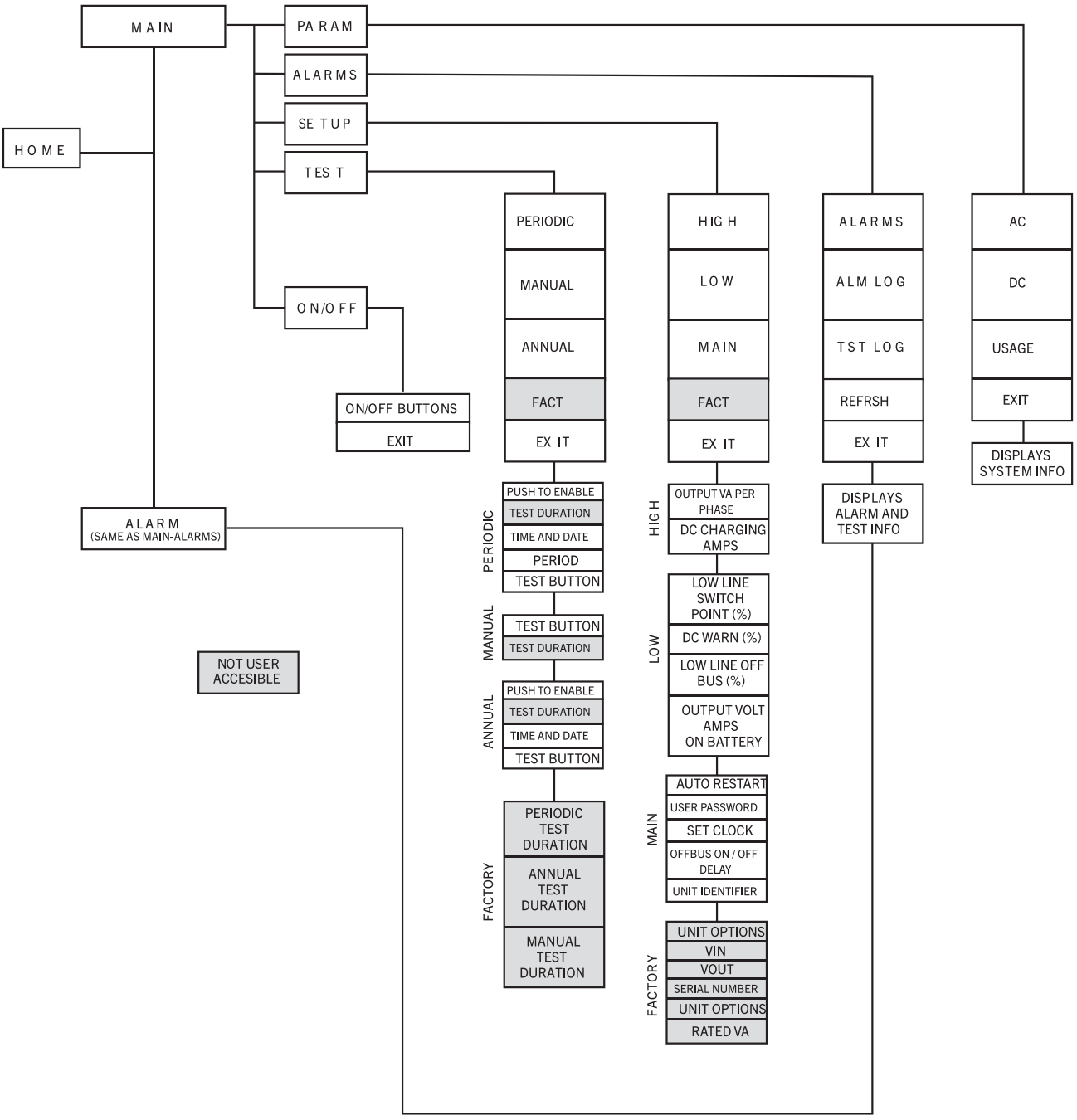
Electrical Parameters Displayed

- Input Voltage
- Output Watts
- % Load
- Battery Voltage
- Battery Capacity
- Output Voltage
- Output VA
- Frequency
- Battery Current

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.

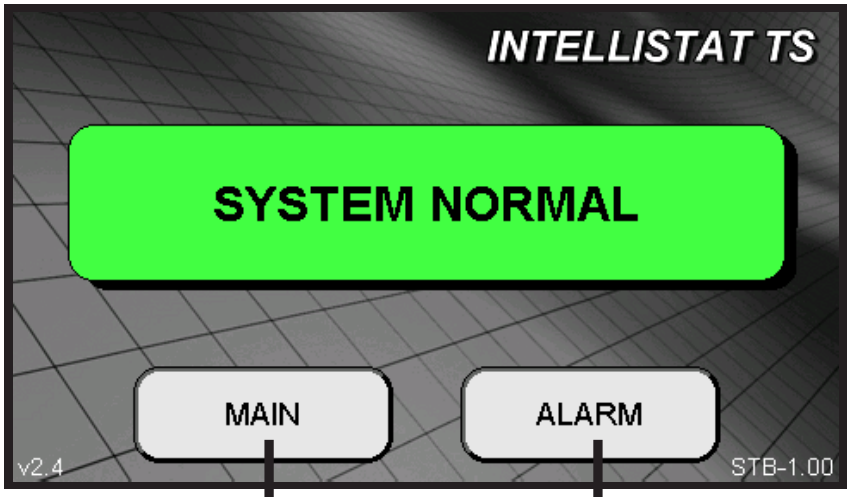


This section will give you a basic understanding of the Intellistat TSTMMonitor, its menu items and functions. All parameters are preset at the factory.

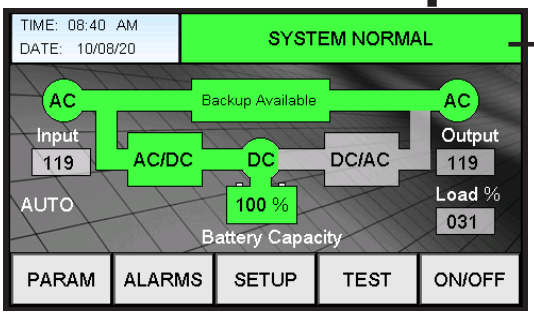
GENERAL

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

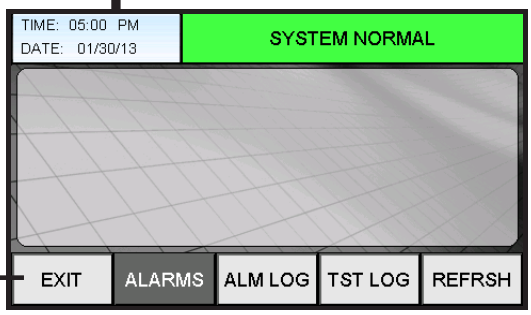


MAIN SCREEN



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

ALARM SCREEN

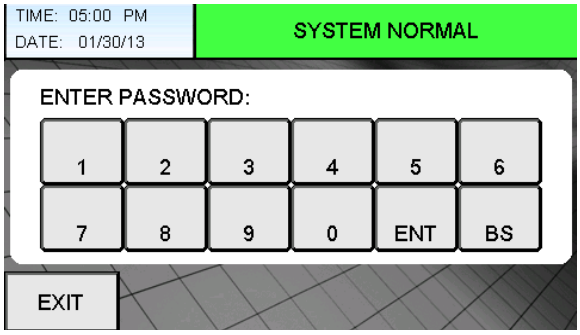


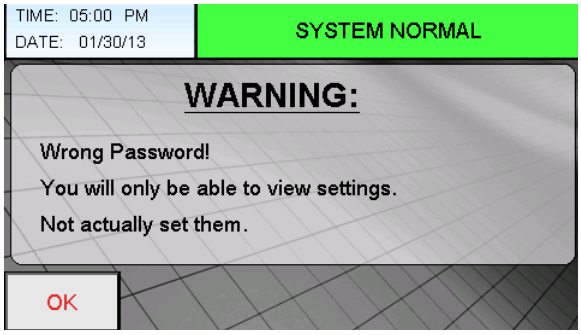
Touch the “EXIT” button to return to the HOME screen. On other screens touching “EXIT” will return to the previous screen. Touching “REFRSH” will update any alarm or test data.

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.

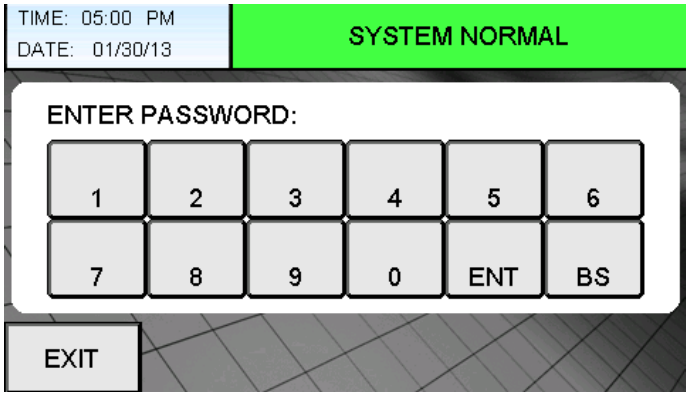




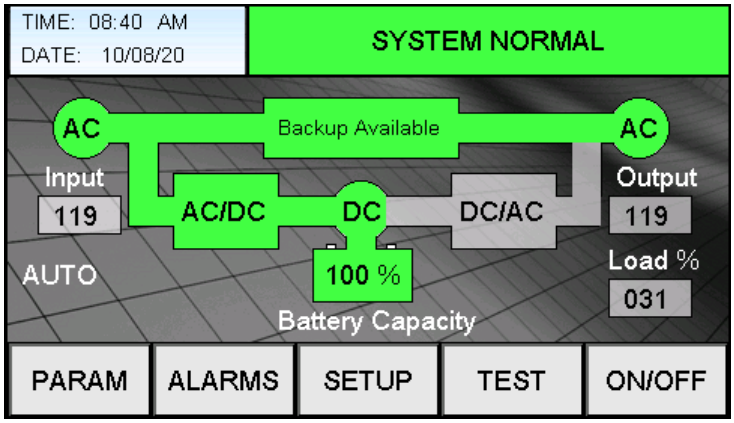
Default customer password = 05151

DATA ENTRY SCREENS

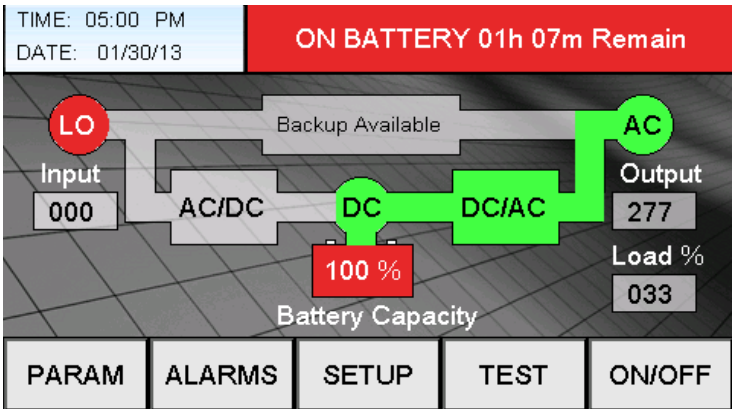
There are many keypad type screens in the following menus. The number selected will appear in the “Entry Box”. Note the “Current Setpoint” to the left of the entry box and the current parameter being modified. Enter the desired number using the key pad. When the numbers desired are fully entered, select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



MAIN SCREEN



Typical “System Normal” Main Screen showing the percentage load for the output and the battery capacity level. The input and battery capacity indicators will change to red when the system is running on battery and the “System Normal” area will change to an alarm message which will be recorded in the alarm log.

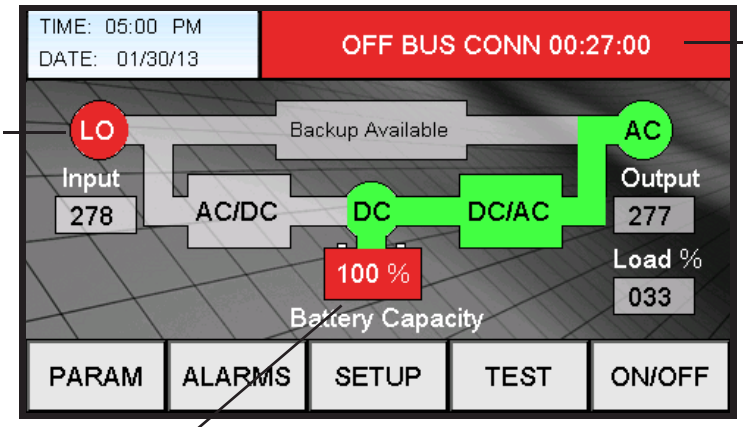


The Battery Status indicator will be green under normal conditions, but will change to yellow when the system is performing a battery test. The battery status indicator will change to red under the following conditions:
1) On battery from an out of range AC input.

MAIN SCREEN - OFF BUS CONNECT

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

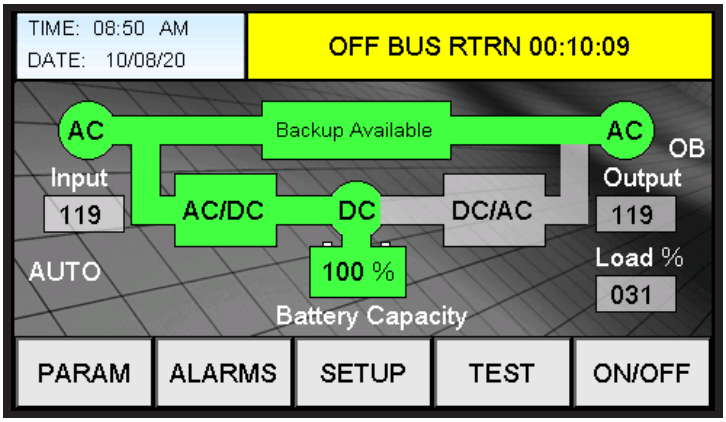
(HI) indicates a high line condition caused the inverter to go to battery.



The Battery Status indicator will be green under normal conditions, but will change to yellow when the system is performing a battery test. The battery status indicator will change to red under the following conditions:
1) On battery from an out of range AC input.

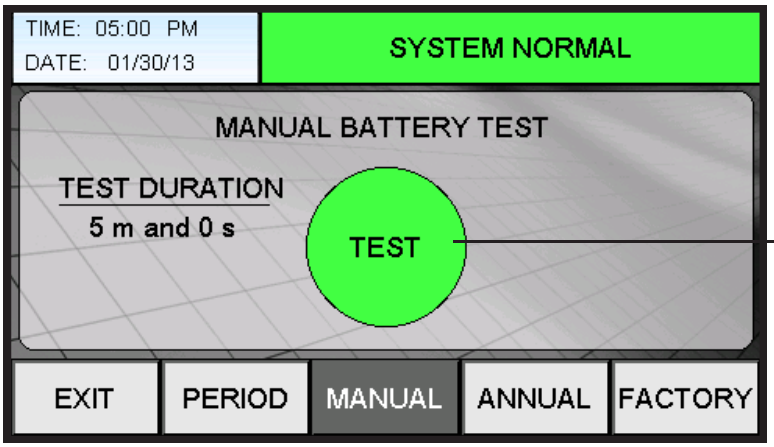
Factory settings: Offbus On Delay = 0 Sec. Offbus Off Delay = 15 Min. Low Line Off Bus = 80%. These settings can be modified through the setup menu. See **"Monitor Tree"; Page 45** for setting location.

MAIN SCREEN - OFF BUS RETURN



MANUAL BATTERY TESTING

Default customer password = 05151

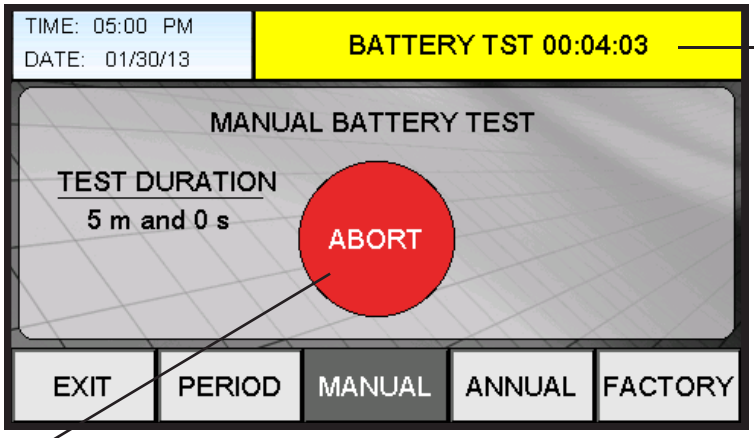


Press the "TEST" button to invoke a battery test * (Duration is dependant on battery option purchased). The duration is preset at the factory and is not user accessible. Contact the factory should the duration time need to be modified.

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

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

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.



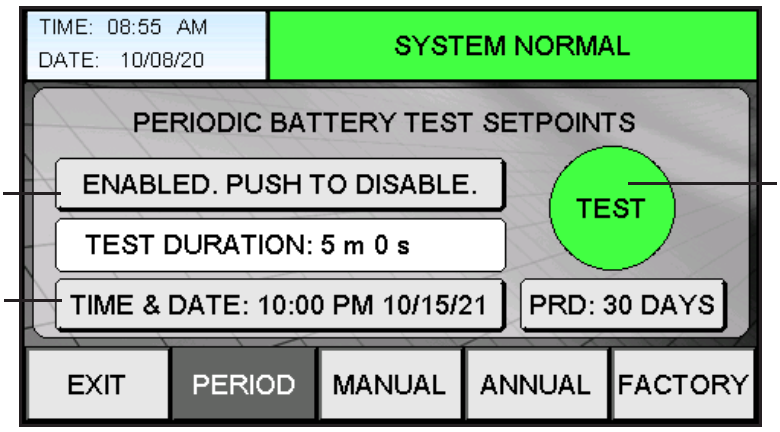
The timer will count down until the test is complete and then terminate the test automatically. Test results can be found in the "TST LOG" Menu.

While testing the button will change from "TEST" 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.

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. Tap to edit.



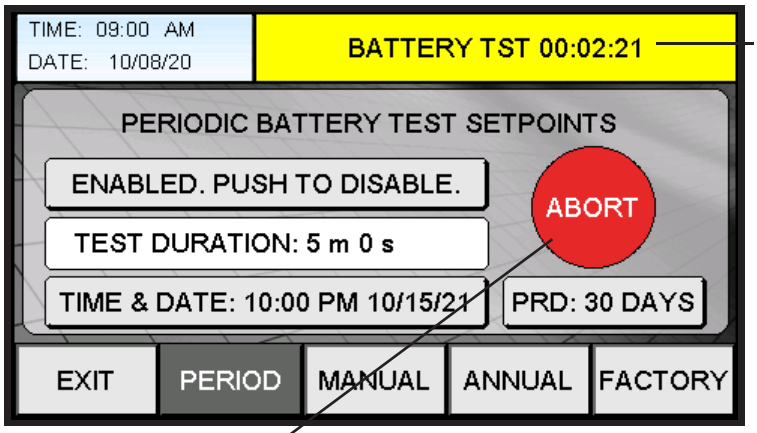
Press the "TEST" button to invoke a battery test * (Duration is dependant on battery option purchased). The duration is preset at the factory and is not user accessible. Contact the factory should the duration time need to be modified.

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

* **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.

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.



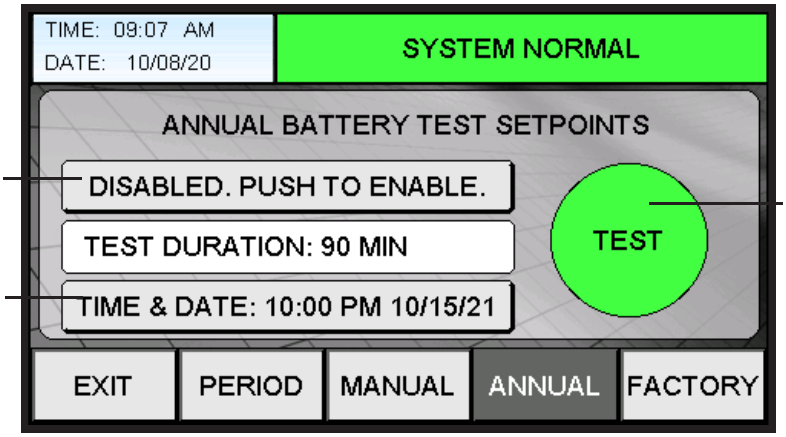
The timer will count down until the test is complete and then terminate the test automatically. Test results can be found in the "TST LOG" Menu.

While testing the button will change from "TEST" 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.

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. Tap to edit.



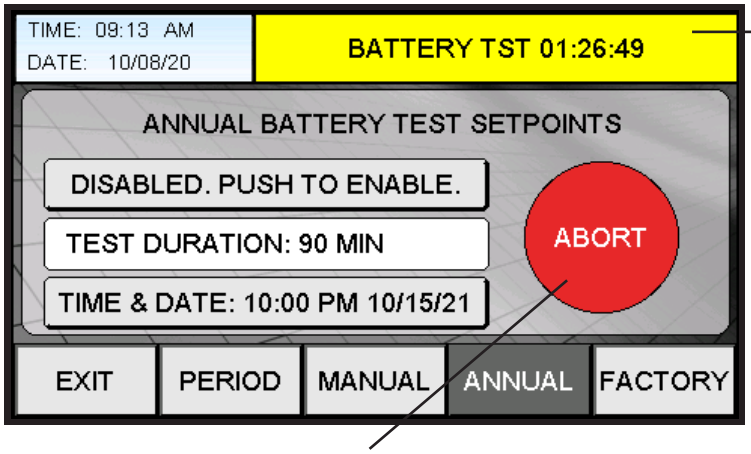
Press the "TEST" button to invoke a battery test * (Duration is dependant on battery option purchased). The duration is preset at the factory and is not user accessible. Contact the factory should the duration time need to be modified.

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

* **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.

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.



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.

While testing the button will change from "TEST" 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)

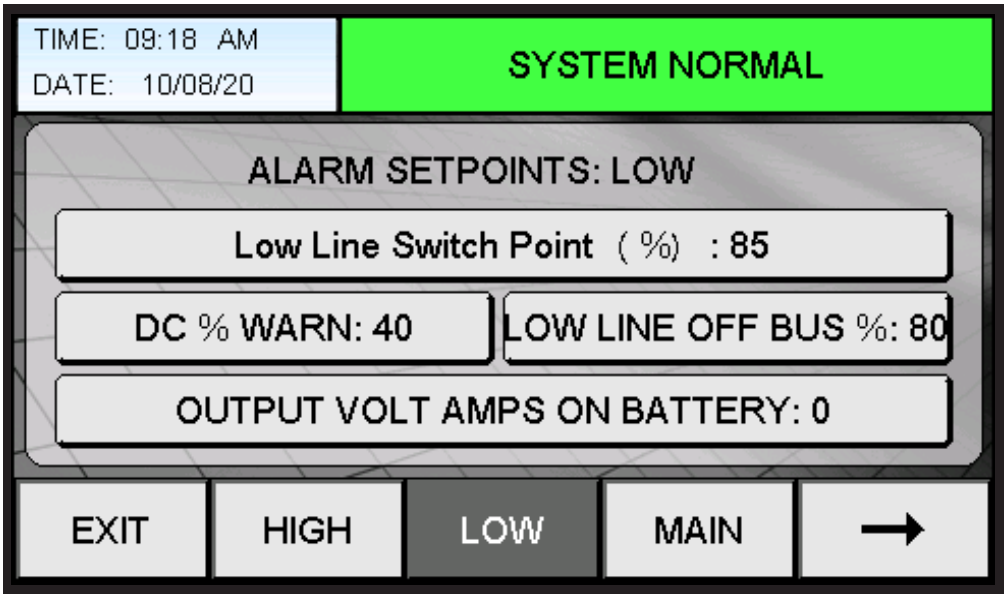
DEFAULT CUSTOMER PASSWORD = 05151

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.

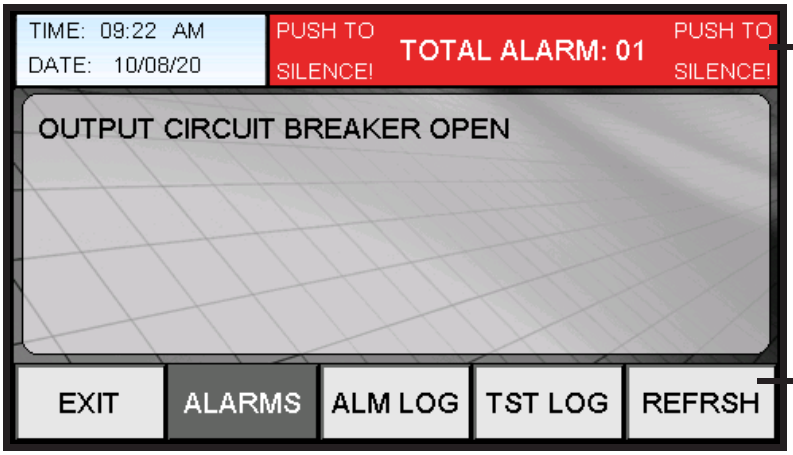
If there is not a consistent emergency egress lighting load level (VA) when on battery (during periodic testing or an actual power outage), then this test cannot be used properly. In this case the setting should be left at the factory default level of 0 VA.

SCREEN PATH : MAIN / SETUP / ALARM SETPOINTS LOW / OUTPUT VOLT AMPS ON BATTERY



ALARMS, ALARM LOGS AND TEST LOGS

TYPICAL ALARM SCREEN

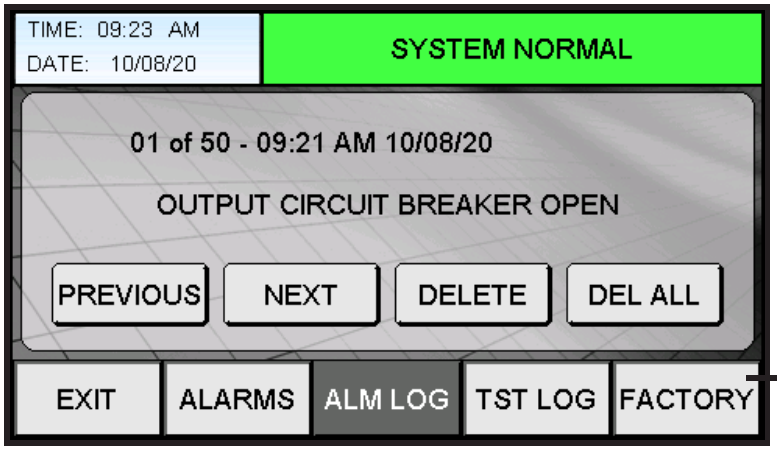


ALARMS CLEAR AUTOMATICALLY AFTER EVENT IS CORRECTED AND ARE RECORDED IN ALARM LOG

PUSH TO SILENCE

PUSH TO REFRESH ALARM CONDITIONS

TYPICAL ALARM LOG SCREEN

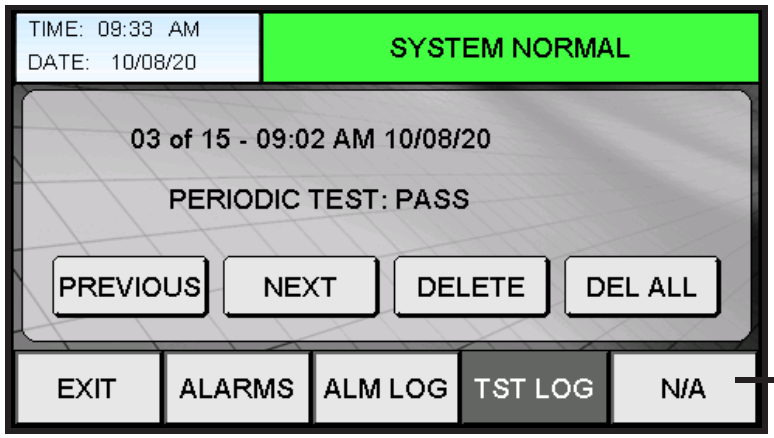


STORES UP TO 25 EVENTS.

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

NOT FUNCTIONAL FROM THIS SCREEN

TYPICAL TEST LOG SCREEN



STORES UP TO 25 EVENTS.

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

NOT FUNCTIONAL FROM THIS SCREEN

ALARM MESSAGES AND DEFINITIONS

ALARM	CURRENT	LOG	DESCRIPTION
AC INPUT VOLTS HIGH	X	X	The Incoming line is above the specified range
AC INPUT VOLTS LOW	X	X	The Incoming line is below the specified range
AC OUTPUT VOLTS HIGH SHUTDOWN	X	X	The Inverter Voltage is above the specified range
AC OUTPUT VOLTS LOW SHUTDOWN	X	X	The Inverter Voltag is below the specified range
BAD TEMPERATURE SENSOR	X	X	The Battery Temperature sensor is not plugged in or bad
BATTERY CURRENT HIGH	X	X	The battery current went outside of the safe range
BATTERY PERCENTAGE LOW WARNING	X	X	The systems capacity went below the setpoint on battery
BATTERY TEST FAILED	X	X	A battery test has found a weak or bad battery
CHARGER FAILED: BATT TST & BACKUP N/A	X	X	The charger has failed or the battery breaker was opened
CMM OVERVOLTAGE!	X	X	Some failure caused the Nositive Bus Voltage to go high
DC BUS OVERVOLTAGE!	X	X	Some failure caused the Positive Bus Voltage to go high
DC NOT AVAILABLE SHUTDOWN	X	X	The system needed to go to battery when backup was not available
DRIVER UVLO	X	X	There was a problem with the power supplues for the IGBT Drivers
FAULT SHUTDOWN	X	X	There was a desaturation of the IGBTs on battery
HEATSINK OVERTEMPERATURE	X	X	The power devices got too hot, likely from a fan issue
HIGH BATTERY VOLTAGE	X	X	The Battery Voltage went too high, possibly from a charger issue
LAST POWER OFF: NORMAL	-	X	The system was turned off from the Off Button(s)
LOSS OF SYNCHRONIZATION	X	X	The system lost synchornization with the Line
LOW LINE OFF BUS ACTIVE	X	X	The Offbus was activated due to the line going below the setpoint
LOW OUTPUT VA ON BATTERY TEST	X	X	While doing a battery test the VA was lower than the setpoint
LPO: FREQUENCY OUT OF RANGE START	X	X	The incoming frequency is ouside of the specified range
LPO: LOW BATTERY SHUTDOWN!	X	X	The system shutdown from the batteries being fully run down
OFF BUS ACTIVE	X	-	The Offbus is active
ON BATTERY X.X MIN	X	X	The system is on battery power due to the input being out of range
OUTPUT CIRCUIT BREAKER OPEN	X	X	An Output Circuit Breaker is open
OUTPUT VA HIGH	X	X	The Output VA is outside of the systems limits
OVERLOAD SHUTDOWN	X	X	The system VA went outside of the the specified limits on Battery
PRE-CHARGE FAIL	X	X	The bus was not precharged, there may be a component failure
REMOTE OFF BUS ACTIVE	X	-	The Remote Offbus was activated
RSTRT RQRD, PWR DN & CYCLE BRKR	X	X	The system needs to be restarted in order to have battery backup
SPD ALARM	X	X	The SPD module has prevented an overvoltage or is not plugged in
Note: Please see the trouble shooting section for more information on these alarms and possible fixes			

FACTORY PRESETS

ITEM	FACTORY SETTING
HIGH OUTPUT VA PER PHASE	THIS IS PRE SET TO THE VA RATING OF THE UNIT (NOT SET TABLE)
HIGH DC CHARGING AMPS	THIS IS PRE SET TO 12 AMPS (NOT SETTABLE)
LOW LINE SWITCH POINT %	90 (SETTABLE FROM 90 TO 85)
LOW DC WARNING %	40 (SETTABLE FROM 0 TO 85)
LOW LINE OFF BUS %	80 (SETTABLE FROM 80 TO 95)
LOW OUTPUT VOLT AMPS ON BATTERY	0
AUTO RESTART	ENABLED
USER PASSWORD	05151 - USER DEFINED
SET CLOCK	PER SHIPPING ADDRESS
OFFBUS ON / OFF DELAY (S)	0 (SETTABLE FROM 0 SECONDS TO 8 SECONDS)
OFFBUS ON / OFF DELAY (M)	0 (SETTABLE FROM 0 MINUTES TO 15 MINUTES)
UNIT IDENTIFIER	'ENTER USER-DEFINED IDENTIFIER'
PERIODIC (MONTHLY) TEST DURATION	5 MINUTES - SEE BELOW
PERIODIC (MONTHLY) TIME AND DATE	PER SHIPPING ADDRESS
PERIODIC (MONTHLY) PERIOD	30 DAYS
MANUAL TEST DURATION	5 MINUTES - SEE BELOW
ANNUAL TEST DURATION	5 MINUTES - SEE BELOW
ANNUAL TIME AND DATE	PER SHIPPING ADDRESS

BATTERY TEST DURATIONS - ALL MONITORS			
Battery Time	**Periodic Test Duration**	**Annual Test Duration**	**Manual Test Duration**
=> 90 Minutes	5 Minutes	<= Total Battery Time*	5 Minutes
60-89 Minutes	5 Minutes	<= Total Battery Time	5 Minute
30-59 Minutes	1 Minute	<= Total Battery Time	1 Minute
=< 29 Minutes	30 Seconds	<= Total Battery Time	30 Seconds
* 4 Hours Maximum			

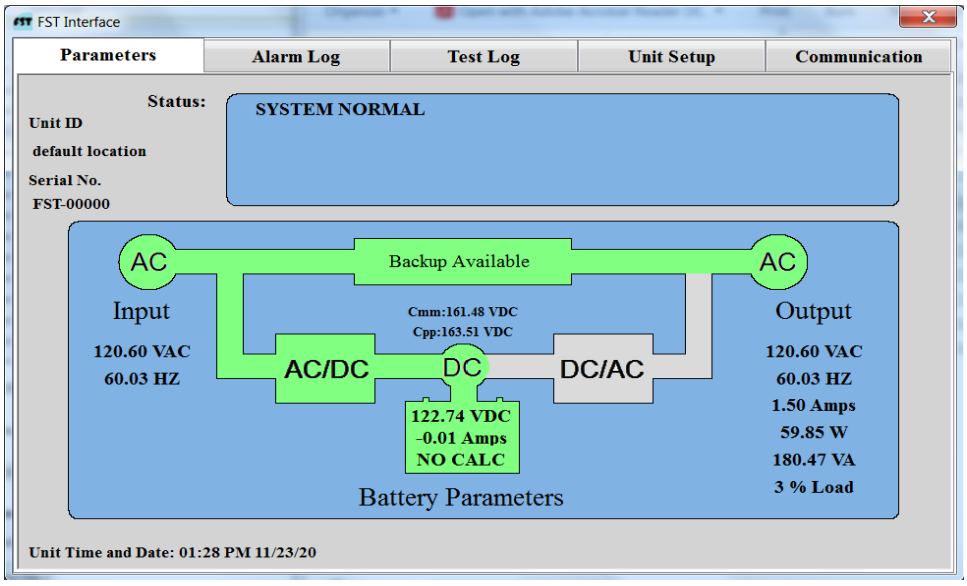
TROUBLESHOOTING

ALARM	POSSIBLE CAUSE / SOLUTION
AC INPUT VOLTS HIGH = XXX V	1. Check that your incoming line is not high
	2. System may require calibration
	3. Sensing may be bad, May need to replace Power Board
AC INPUT VOLTS LOW = XXX V	1. Check that your incoming line is not low
	2. System may require calibration
	3. Sensing may be bad, May need to replace Power Board
AC OUTPUT VOLTS HIGH SHUTDOWN	1. System may require calibration
	2. Sensing, Inverter Components, or Output IGBT may be bad, replace the Power Board
AC OUTPUT VOLTS LOW SHUTDOWN	1. System may require calibration
	2. Sensing, Inverter Components, or Output IGBT may be bad, replace the Power Board
BAD TEMPERATURE SENSOR	1. Ensure the temperature sensor is connected
	2. Ensure the temperature sensor is making good connection
	3. Check condition of the cable for potential damage
	4. Replace the temperature sensor
BATTERY CURRENT HIGH	1. System may require calibration
	2. Sensing, Boost Components, or Boost FET may be bad, replace the Power Board
BATTERY PERCENTAGE LOW WARNING	1. This will occur normally while the unit is On Battery for an extended period of time
	2. If received when not on battery then check that the setpoint is set properly
	3. Sensing may be bad, May need to replace Power Board
BATTERY TEST FAILED	1. Batteries may not have been fully charged
	2. Batteries may be weak and need replacement
	3. Could need updated Control program to v1.33 or newer
CHARGER FAILED: BATT TST & BACKUP N/A	1. Ensure DC breaker is not tripped
	2. DC Switch or Charger Compnents may be bad, replace the Power Board
DC BUS OVERVOLTAGE OR CMM OVERVOLTAGE	1. System may require calibration
	2. Other alarms could indicate the source of this alarm
	3. Boost Components could be bad, replace Power Board
DC NOT AVAILABLE SHUTDOWN	1. Charger may have failed, then Unit needed to go to battery
	2. Other alarms could indicate the source of this alarm
DRIVER UVLO	1. Power Supplies may be bad, change Power Board
FAULT SHUTDOWN	1. The Inverter IGBTs Desaturated while on Battery Power
	2. This stems from a load issue, Too much current was drawn while on battery
	3. Could be from a load short on the Output of the Unit
	4. Could be from high inrush from a Transformer Load (Cannot turn on transformers on battery)

ALARM	POSSIBLE CAUSE / SOLUTION
HEATSINK OVERTEMPERATURE	1. Check for a bad fan, blocked ventalation, or the fans not plugged in
	2. May be in an uncontrolled environment with too high of an Ambient
HIGH BATTERY VOLTAGE	1. Number of batteries is not set properly
	2. System may need calibration
	3. Sense component may be bad, replace Power Board
LAST POWER OFF: NORMAL	1. The last time the unit was powered off was from someone pressing the off button
LOSS OF SYNCHRONIZATION	1. The unit went to Battery because of a loss of synchronization with the Input Line
	2. Check the stability of the Frequency of the Input Line
LOW LINE OFF BUS ACTIVE	1. Ensure incoming line is not below the treshold for this condition
	2. The Setpoint for this may need to be adjusted
LOW OUTPUT VA ON BATTERY TEST	1. Some of the lights are out that are powered by this unit
	2. The Setpoint may not be set properly
	3. System may require calibration
LPO: FREQUENCY OUT OF RANGE START	1. The frequency of the incoming line was outiside of the limits for either 50 Hz or 60 Hz
LPO: LOW BATTERY SHUTDOWN	1. Unit may have shut down normally from being on battery from a power outage
	2. If the run time was not met, batteries may not have been charged or a battery may be bad
	3. Number of Batteries may not be set properly
	4. If this occurs on startup, Check DC breaker is closed
	5. Could be bad sense components, replace Power Board
ON BATTERY X.X MIN	1. 0.0 m is the log for going to battery, the next on battery log will be from when it returned
	2. Ensure there is not a low line condition
	3. Ensure there is not loss of line
OUTPUT CIRCUIT BREAKER OPEN	1. Reset breaker that tripped
	2. There is too much load on whichever breaker tripped
	3. The unit may not have this feature and may need a jumper loaded on the Relay Board
OUTPUT VA HIGH	1. Ensure system is not overloaded
	2. System may require calibration
	3. Sense components may be bad, replace Power Board
OVERLOAD SHUTDOWN	1. The unit was overloaded while on battery
	2. With resistive load, if the line is low, the power will be greater while on battery
PRE-CHARGE FAIL	1. Precharge diodes may have gone bad, replace the Power Board
RSTRT RQRD, PWR DN & CYCLE BRKR	1. The unit must be powered off, the breaker must be cycled and the unit turned on again
	2. This usually occurs with a charger failure
SPD ALARM	1. The SPD device has prevented an overvoltage successfully and needs to be replaced

FST INTERFACE

OVERVIEW



This section of the manual provides step-by-step instructions for viewing the FastLITE Model FST's parameters, alarm log, test log, unit setup, and communications.

A free download of this interface program and an interactive PDF of this manual are found on our website: https://www.trystar.com/resource-search/

From our homepage www.trystar.com, you can also click on the Customer Support navigation tab, and select Software Downloads from the menu.

INTRODUCTION

The FST Interface Application enables the FastLITE Model FST to communicate directly with a computer, laptop, or Windows tablet. By using a USB A/B Cable (printer cable), the user's remote device can be connected to the FST's USB Communications Port to enable all setup and data viewing. The FST Interface Application also enables the alarm event log and battery test log to be viewed and electronically saved as a report document to comply with NFPA 101, section 7.9.3.1.3.

The Interface consists of (5) main screens, which include the following features:

Parameters

- View parameters.
- View system status.
- View active alarms and faults.

Alarm Log

- View a log of past alarm events.
- Save the log of past alarm events.

Test Log

- View a log of past battery test events.
- Save the log of past battery test events.

Unit Setup

- Set up the parameters for the battery tests, including date, time, and period for the periodic test.
- Set up the system parameters (e.g., low line switch point, offbus settings, etc).

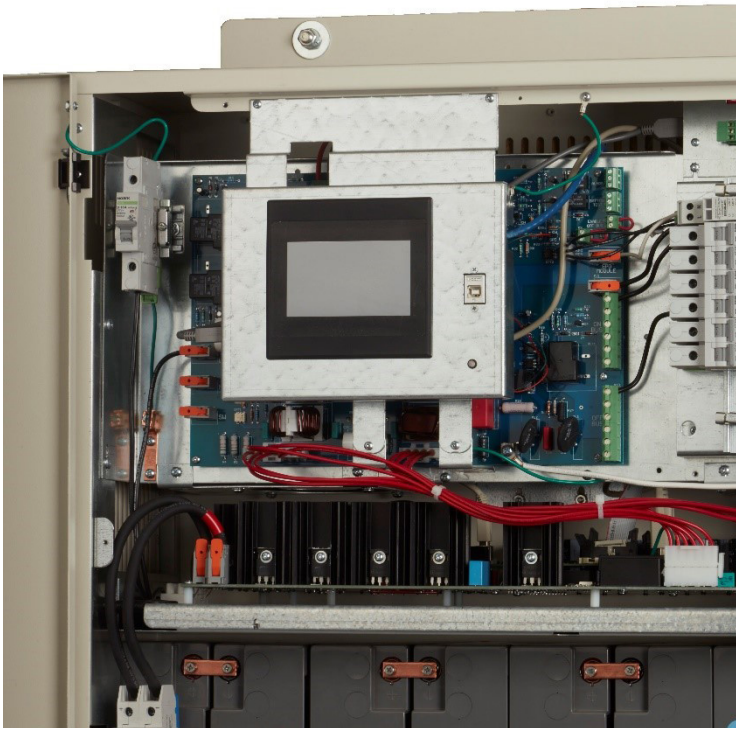
Communications

- Connecting the Model FST to the computer, laptop, or Windows tablet.
- Set up, start, and stop communication.

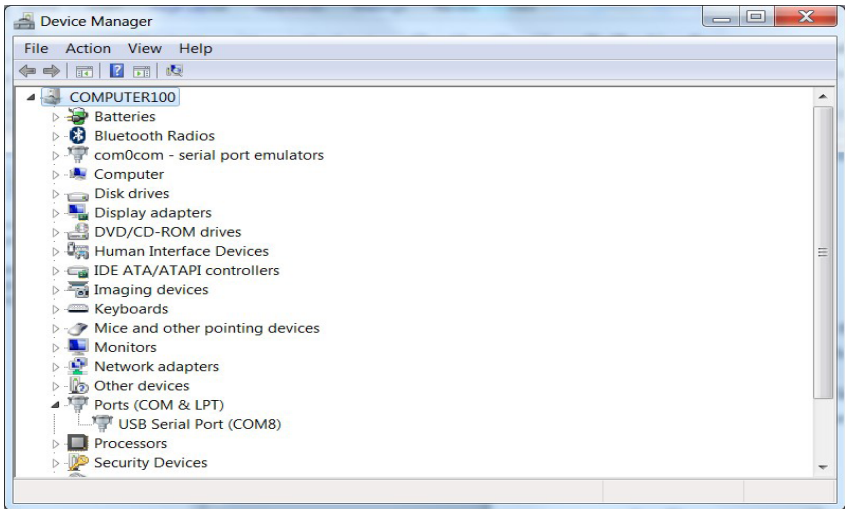
QUICK START

This section will discuss the method of connection to the application and walk you through getting the application working with the Unit.

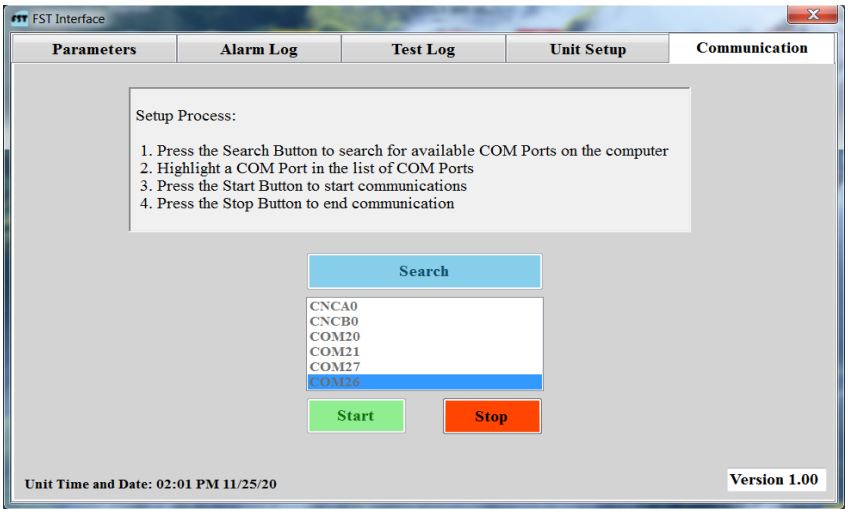
1. Connect the USB B Side of the Cable to the Unit's USB Port circled in the picture below, and the USB A Side of the Cable to the Computer, Tablet, or Laptop.



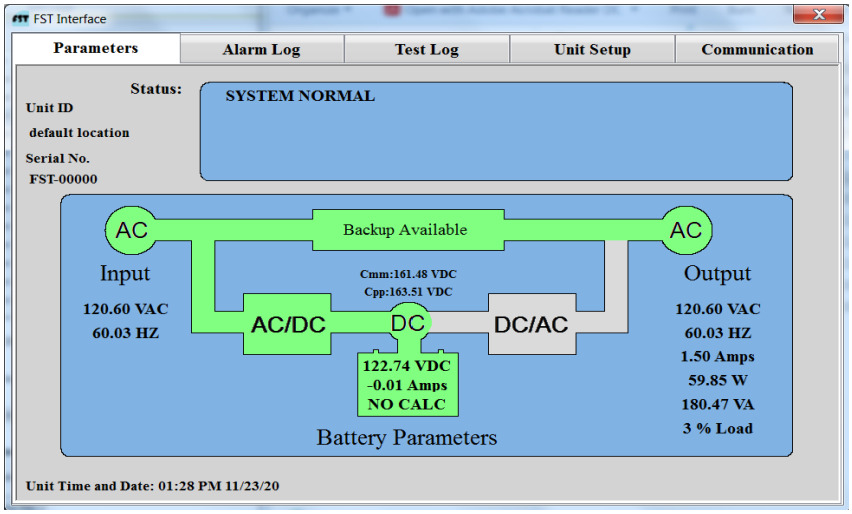
2. The computer will start to install drivers for a Virtual COM Port. When the drivers are done installing, go to device manager and check the ports for the USB Serial Port's COM number.



3. Open the FST Interface application, and press the Communication Tab. Press the "Search" Button on this tab and a list of available COM Ports will be shown. Select the Virtual COM Port of the system from "Part 2.", and press the "Start" button to start communications.

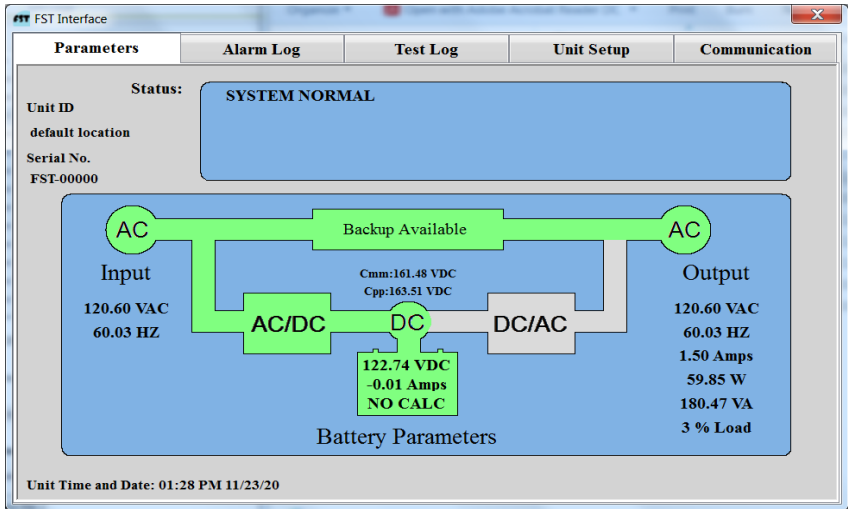


4. Press the Parameters Tab, and the system status as well as the parameters should now be present.

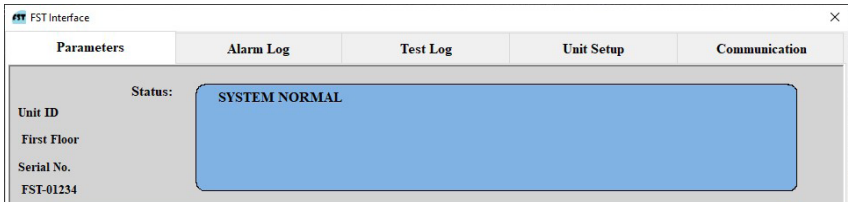


PARAMETERS

The Parameters tab displays the system's status as well as the real time voltages and currents of the system. A line diagram is also provided to display power flow through the system. This tab is where the Unit Identifier and Serial number can be seen.



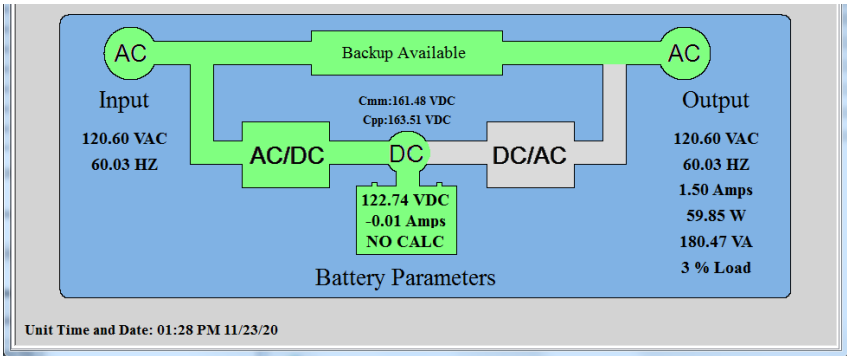
SYSTEM STATUS PANEL



The System Status Panel indicates the system status as well as displays current alarms. The statuses and alarms it indicates are:

- System Normal
- Offbus Returning
- System on Battery
- Unit Overloaded
- High Output Voltage
- High Input Voltage
- Low VA Out on Battery Test
- Manual Restart Required
- High Battery Voltage
- Output Circuit Breaker Open
- Bus Voltage High
- System Testing
- Offbus Connecting
- Offbus Active
- Battery Test Fail
- Low Output Voltage
- Low Input Voltage
- Overload On Battery
- Low Battery Warning
- SPD Alarm
- Bad Temperature Sensor
- Weekly Diagnostic Fail
- Unit Initializing
- Remote Offbus Active
- Power to Load, No Backup
- High Battery Current
- No Communication
- Low Battery Shutdown
- DC Not Available Shutdown
- Frequency Out of Range
- IGBT Desaturated
- Heatsink Overtemperature
- Charger Failed

REAL TIME PARAMETERS AND LINE DIAGRAM



The real time parameters provided are:

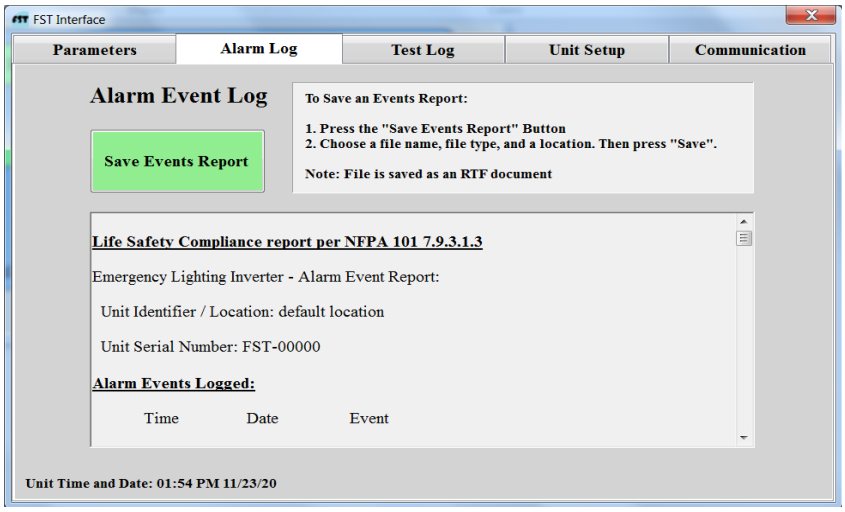
- Input Voltage: Incoming Line to the System
- Input Frequency: Incoming Line Frequency
- Output Voltage: Output Voltage to the Load, comes from the Line or the Inverter while on battery
- Output Frequency: Frequency of Output Voltage to the Load
- Output Current: Load Current
- Output Watts: Load Watts
- Output VA: Load VA
- Percentage Load: Percentage of Rated Load
- Positive DC Bus Voltage: This comes from the line, or DC/DC Boost and is used for charging the batteries or providing the DC for the Output Inverter on Battery
- Negative DC Bus Voltage: This comes from the line or DC/DC Boost and is used for charging the batteries or providing the DC for the Output Inverter on Battery
- Battery Voltage: DC Voltage of Battery String
- Battery Amps: Charging current on line or discharging current on battery
- Battery Capacity: The current amount of charge capacity on the battery string

The Line Diagram is intended for a quick check of the system power flow. The diagram shows power flow for the following states:

- System Off
- System Normal
- On Battery
- System Testing
- Charger Failed

ALARM LOG

The Alarm Log tab gives the user a place to view past alarm events and save the log to a file.



ALARM EVENT REPORT WINDOW

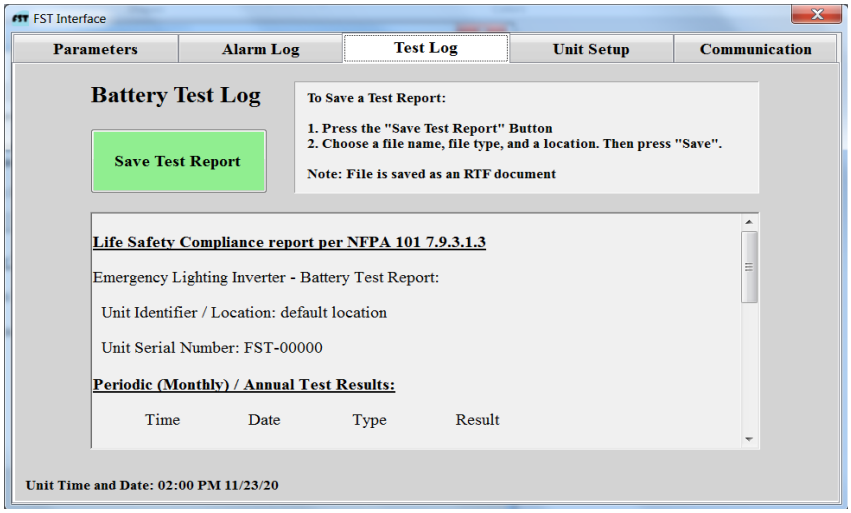
This window displays the most recent 250 Alarm Events. The user can use the scroll bar to scroll through the log to see all of the events.

SAVE EVENTS REPORT

This button gives the user the ability to save the alarm log as either a .txt, .doc, or an .rtf. All of these files types save the file in Rich Text Format, so a rich text reader like Microsoft Word will need to be used to properly view the file.

TEST LOG

The Test Log tab gives the user a place to view past battery test events and save the event report to a file.



BATTERY TEST REPORT WINDOW

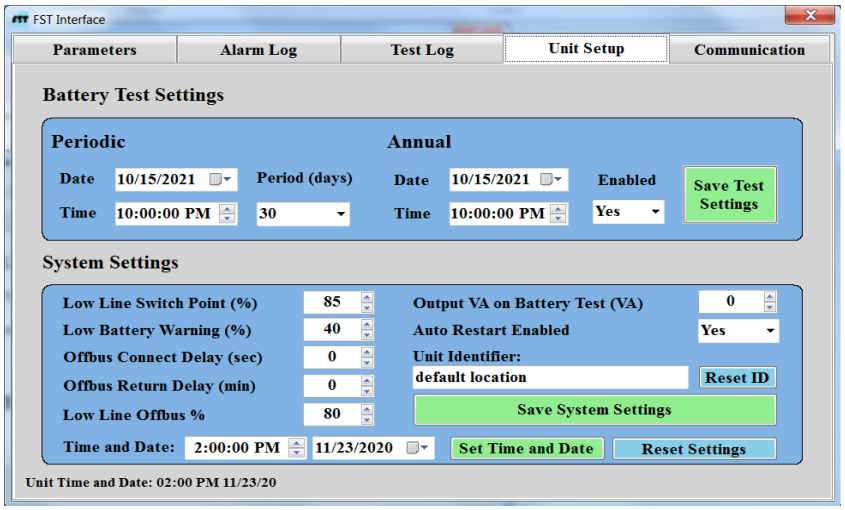
This window displays the most recent 25 Battery Test Events. The user can use the scroll bar to scroll through the log to see all of the events.

SAVE TEST REPORT

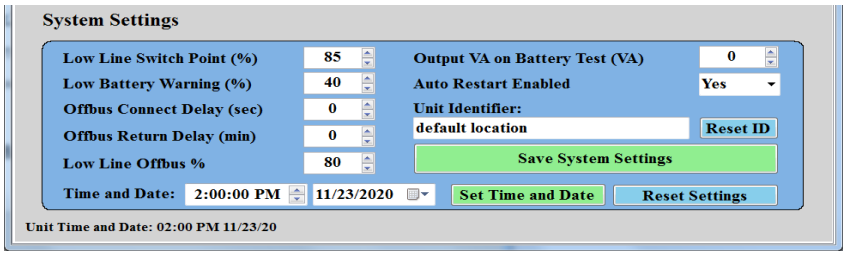
This button gives the user the ability to save the Test Report as either a .txt, .doc, or an .rtf. All of these files types save the file in Rich Text Format, so a rich text reader like Microsoft Word will need to be used to properly view the file.

UNIT SETUP

The unit setup tab can be used to setup up battery test and system setting.



SYSTEM SETTINGS

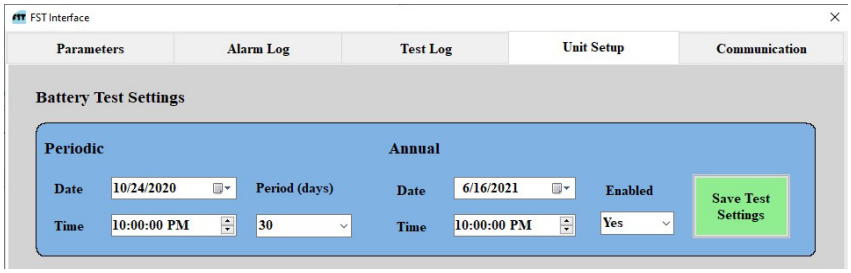


To change the system settings, make all desired changes then press “Save System Settings”. The time and date are set seperately and use the “Set Time and Date” button. The password for both is 05151.

- Low Line Switch Point: The point at which the unit will switch to battery for a low line condition in % of Nominal Line. It can be set between 85% of nominal line to 90% of nominal line.
- Low Battery Warning: The percentage of battery capacity at which point the system will give a low battery warning alarm. It can be set between 0% capacity to 85% capacity.
- Offbus Connect Delay: The time in seconds that the offbus will delay turning on (0s to 10s).

- OffBus Return Delay: The time in minutes that the offbus will delay turning off (0m to 15m).
- Low Line Offbus %: When the Input Voltage goes below this percentage of nominal line the offbus will be activated. It can be set from 80% of nominal line to 95% of nominal line.
- Output VA on Battery Test: When the Load VA goes below this point in VA on a battery test the unit will give a “Low Output VA on Battery Test” alarm.
- Auto Restart Enabled: If enabled, the unit will auto restart if a condition caused the unit to shut down while on battery.
- Unit Identifier: This is where the 35 character max identifier for the unit can be set. The reset button can be used to reset it back to its last value in the middle of changing the text box.
- Time and Date: Sets the inverter time and date. After chosen, press “Set Time and Date” to store.
- Reset Settings: Press this to reset all system settings to their currently saved values.

BATTERY TEST SETTINGS



To change the battery settings, make all desired changes then press ”Save Test Settings”. The password is 05151.

- Periodic Test Date: The date at which the next periodic test will occur
- Periodic Test Time: The time at which the net periodic test will occur
- Periodic Test Period: The number of days between periodic tests, this can be set to disabled, 7 days, 30 days, or 90 days
- Annual Test Date: The date at which the next annual test will occur
- Annual Test Time: The time at which the next annual test will occur

COMMUNICATION

This tab is where communications between the unit and the computer, tablet, or laptop are setup.

With the Unit connected to the computer, windows tablet, or laptop with a USB cable, press the search button to search for available COM Ports. Select the COM Port that is connected to your unit.

Note: Device Manager can be used to determine which COM Port is being used to connect to the Unit.

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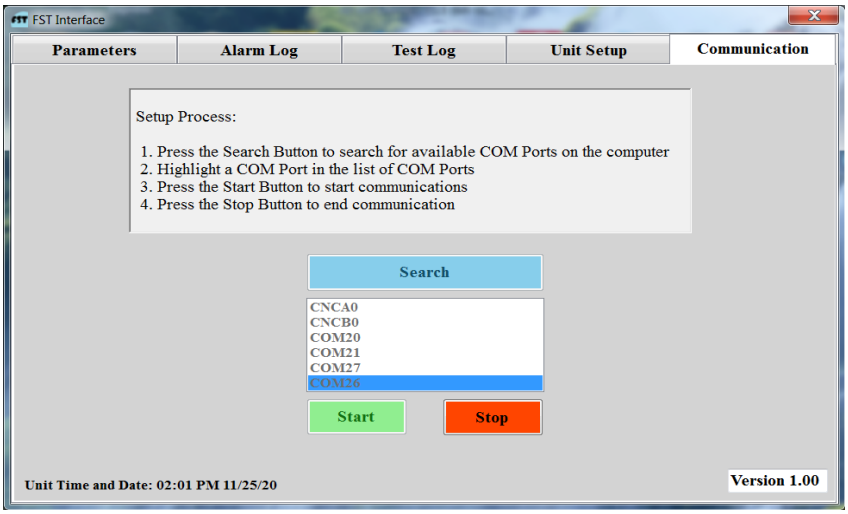


Press the “Start” button to start communications, and you can press the “Stop” button to stop communications.

See the Quick Start guide for more information about connecting to the unit.

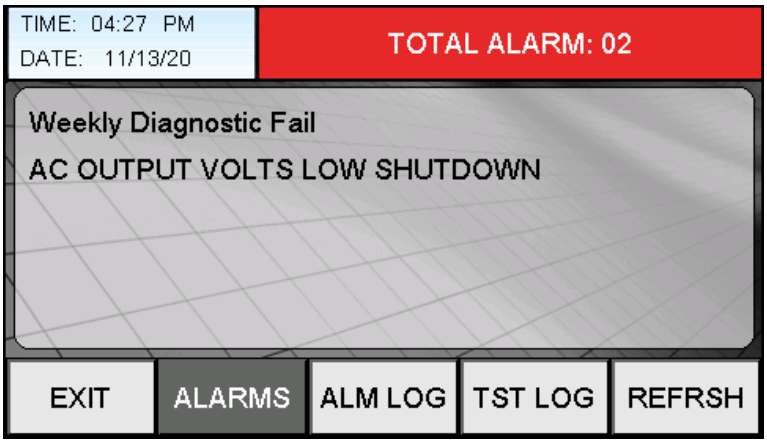
WEEKLY SELF-DIAGNOSTICS

WEEKLY SELF-DIAGNOSTICS

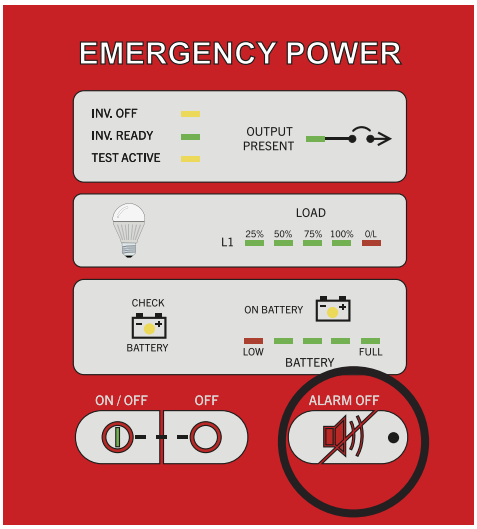
In addition to NFPA 101- and CSA-mandated periodic and annual testing, the unit performs a weekly no load test of the inverter, without use of the battery. During this test, no alarm or indication is given unless the inverter test fails. If it fails, the unit will alarm, general alarm contacts will switch state, and the fault will be logged and the unit shuts down. After a test takes place or the unit goes to battery for any reason, the next test will automatically happen 7 days later.

With the Intellistat monitor a diagnostic test failure will be indicated as a “Weekly Diagnostic Failure”. For units with the basic monitor, only the General Alarm is indicated. See “**Operation - Basic Monitor”; Page 69.** See **“FST Interface”; Page 65** for reporting instructions.

INTELLISTAT MONITOR



BASIC MONITOR



GENERAL ALARM - PUSH TO SILENCE

MAINTENANCE PROCEDURES

GENERAL MAINTENANCE

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

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

The lighting inverter should be checked monthly for battery operation. Take precautions to have the lighting load in a mode that could tolerate a shut down. See ***"Maintenance Procedures* - Battery Testing"; Page 73** for instructions.

COMPLETE MAINTENANCE CHECK

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

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

SYSTEM OPERATION

1. With power on, check display functions of unit for proper operation.
2. Turn the AC input breaker off, the unit will go into inverter mode.
3. Turn the AC input breaker back on, and the unit will return to normal mode.

VISUAL INSPECTION

4. Open Door.
5. Turn the unit off by means of the monitor and disconnect the battery connector. Then turn off the main input breaker on the unit and the main feed breaker.
3. Check for burnt, frayed, broken or loose connections. Look closely in the following areas: Input and Output connections, circuit breakers, and battery terminals.
4. Correct any loose connection s, replace any physically burned or broken componentsw. Use extreme care when replaceing components to assure correct installation.

GENERATOR TEST

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

A. Check the generator operation with no load. The unit should switch to inverter when the generator turns on. After a minute or so the lighting inverter should switch back to normal mode and run off the generator

B. Check the generator with the loads.

BATTERY MAINTENANCE

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.

WARNING

Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries. SEE "INSTALLATION PRECAUTIONS"

Accidental shorts will cause severe arcing, burning or battery explosion - wear eye protection and use insulated tools when servicing batteries. Remove all jewelry.

NOTE: Never mix batteries with a different brand or size. Never mix old and new batteries. Dispose of batteries properly. Do not open, mutilate or dispose in a fire.

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. If batteries must be replaced, contact the factory or see ***"Installation - Battery Installation and Wiring"; Page 18.***

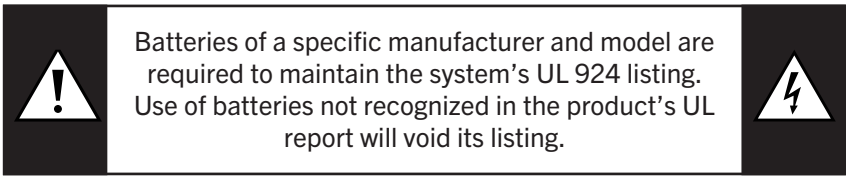
ANNUAL INSPECTION

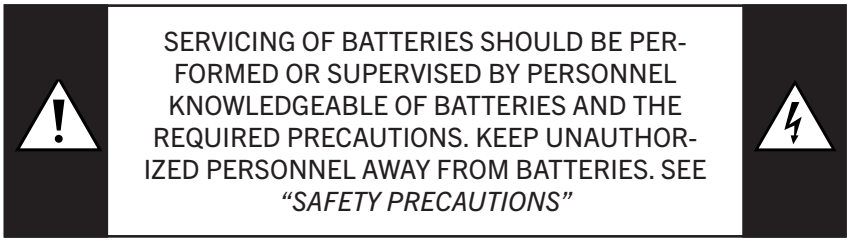
1. Conduct a visual inspection of the batteries.
2. Record the battery string voltage.
3. Record the charge voltage.
4. Record the individual battery voltages. The accuracy of the DMM (Digital Multimeter) must be .05% (on DC scale) or better. The DMM must be calibrated to NIST traceable standards. Because float readings are affected by discharge and recharges, these readings must be taken when batteries have been on continuous, uninterrupted float for at least one month. Batteries should be within +/- 0.30 volts of the average battery float voltage.
5. Record the ambient temperatures.
6. Record individual battery ohmic readings.
7. Record all interunit and terminal connection resistances. Micro-ohm

readings should be taken during this inspection. If any reading differs by more then 20% from initial readings taken, retorque the connection. Recheck the micro-ohm reading. If the reading remains high, clean the contact surface accordingly.

Battery Cleaning - Batteries, cabinets, racks and modules should be cleaned with clear water or a mixture of baking soda and water. Never use solvents to clean the battery.

Capacity Testing - Capacity test should not be run unless the battery's operation is questionable. Do not discharge the batteries beyond the specified final voltage. When discharging at higher rates, extra connectors may need to be added to prevent excessive voltage drop. When performing capacity testing and recording data use IEEE 1188 instructions. Should it be determined that any individual battery(ies) or cell(s) need to be replaced, contact the factory.





VOLTAGES, TEMPERATURES & OHMIC READINGS

Record keeping is an important part of stationary battery maintenance and warranty coverage. This information will help in establishing a life history of the battery and inform the user if and when corrective action needs to be taken. See **"Battery Maintenance Report"** below.

While it is acceptable to operate at temperatures less than 77°F (25°C), it will require longer charging time to become fully recharged. Also, the capacity will be less at operating temperatures below 77°F (25°C). After installation and when the batteries have been on float charge for one week, the following data should be recorded:

1. Battery string terminal voltage
2. Charger voltage
3. Individual battery float voltages
4. Individual battery ohmic readings
5. Ambient temperatures
6. Terminal connections should be checked to verify that the installer did torque all connections properly. Microohm readings should be taken across every connection. Refer to meter manufacturer's instructions for proper placement of probes. If any reading differs by more than 20% from its initial installation value, re-torque the

connections. If the reading still remains high, clean contact surfaces as required.

BATTERY MAINTENANCE REPORT

INSPECTION DATE _____

COMPANY _____

ADDRESS _____

BATTERY LOCATION AND/OR NUMBER _____

NO. OF UNITS/STRING _____

NO. OF UNITS/STRING _____

TYPE _____

DATE NEW _____

DATE INSTALLED

_____

INDIVIDUAL BATTERY READINGS CHARGER OUTPUT_____

AIR TEMPERATURE _____ °F TOTAL CHARGER
STRING VOLTAGE _____PANEL METER VOLTS

_____

UNIT #	VOLTS	OHMS OR MHOS	UNIT #	VOLTS	OHMS OR MHOS	UNIT #	VOLTS	OHMS OR MHOS	UNIT #	VOLTS	OHMS OR MHOS	UNIT #	VOLTS	OHMS OR MHOS	UNIT #	VOLTS	OHMS OR MHOS
1			2			3			4			5			6		
7			8			9			10			11			12		

AVG. VOLTAGE AVG. VOLTAGE AVG. VOLTAGE AVG. VOLTAGE

_____

READINGS TAKEN BY: _____

REMARKS / RECOMMENDATIONS _____
READINGS SHOULD BE TAKEN AT INSTALLATION AND ANNUALLY
THEREAFTER _____

_____

BATTERY TESTING

BATTERY TESTING - BASIC MONITOR

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.

MANUAL BATTERY TEST - BASIC MONITOR

1. On the front display, press and hold the “Alarm Silence” button for three (3) seconds. This will force the inverter into battery mode.
2. The unit will stay in battery mode for the programmed duration, then return to normal mode. See **“Battery Test Durations”** at the end of this section.
3. After the test has elapsed, if the check battery light is illuminated, there may be weak batteries. If this condition exists, contact the factory.

If the low battery condition is reached for longer than 10 seconds, then the battery test will stop and the “Check Battery” light will illuminate.

AUTOMATIC PERIODIC (WK, MNTH, QRTR) BATTERY TEST - BASIC MONITOR

GENERAL - The inverter is preset at the factory for automatic monthly testing enabled and takes place on the programmed calendar date. Starting with the 15th day of the following month from the actual ship date at 10 P.M. See **“Battery Test Durations”; Page 77** at the end of this section. 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 test, a general alarm condition will exist. The date, time and the interval (none, 1day, 30 days or 90 days) of the test can be modified by the user. See **“Changing Battery Test Parameters”**; **Page 75** for details. Test durations are pre-programmed at the factory and are not user accessible.

If the health of the battery string is suspect, the “Check Battery” indicator light located on the local monitor will illuminate and the general alarm will continue to exist after the battery test is complete. A contact closure signal is also provided as a result of the general alarm status. 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 **“Customer Relay Contacts”; Page 36** for details. The USB Diagnostic Port and Communications Application can be used to view and save the diagnostic report. See **“FST Interface”; Page 65**

AUTOMATIC ANNUAL BATTERY TEST - BASIC MONITOR

GENERAL - The inverter is preset at the factory for automatic annual testing disabled. The test duration is determined by the amount of back up time purchased and is pre-programmed at the factory and takes place on the programmed calendar date. Twelve (12) months from the date of shipment, starting with the 15th day of the month, one year from the actual ship date at 10 P.M. 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 test, a general alarm condition will exist. The date and time of the test can be modified by the user. See **“Changing Battery Test Parameters”; Page 75** for details. Test durations are pre-programmed at the factory and are not user accessible.

If the health of the battery string is suspect, the “Check Battery” indicator light located on the local monitor will illuminate and the general alarm will continue to exist after the battery test is complete. 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 **“Customer Relay Contacts”; Page 36** for details. The USB Diagnostic Port and Communications Application can be used to view and save the diagnostic report. See **“FST Interface”; Page 65.**

CHANGING BATTERY TEST PARAMETERS - BASIC MONITOR

See **“FST Interface - Unit Setup”; Page 66** for instructions. See **“Battery Testing - Intellistat TS Monitor”; Page 75.**

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.

BATTERY TESTING - INTELLISTAT TS MONITOR

MANUAL BATTERY TEST - INTELLISTAT TS MONITOR

GENERAL - The inverter is preset at the factory for manual battery testing. See **“Battery Test Durations”; Page 77** at the end of this section. Check your display for the programmed battery test time (TEST MENU). During this time, the battery discharge rate is evaluated to determine the health of the battery string.

Testing Procedure:

1. On the Intellistat TS™ Monitor, select “Test” from the Main Menu. Enter the required password to continue. Select “MANUAL” from the menu and when the next sreen appears push the green TEST button. This will force the inverter into battery mode for the programmed duration.
2. The unit will stay in battery mode for the pre-programmed duration and then return to normal mode. You will have the option to abort the test if required. See **“Operation - Intellistat TS™ Monitor - Manual Battery Testing”; Page 50.**
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 going to the ALM LOG screen on the Intellistat TS™ Monitor a BATTERY TEST FAIL indication will be displayed in the TST LOG 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 **“Customer Relay Contacts”; Page 36** for details. Also See “Intellistat **Network Communications”; Page 33.** The USB Diagnostic Port and Communications Application can be used to view and save the diagnostic report. See **“FST Interface”; Page 65.**

AUTOMATIC PERIODIC (WK, MNTH, QRTR) BATTERY TEST - INTELLISTAT TS MONITOR

GENERAL - The inverter is preset at the factory for automatic monthly testing enabled and takes place on the programmed calendar date. See **"Battery Test Durations"; Page 77** at the end of this section. The programmed test date is on the 15th of the following month from date of shipment at 10PM. Check your display for the programmed battery test time (TEST MENU). During this time, the battery discharge rate is evaluated to determine the health of the battery string. The results of the test will be located in the TST LOG screen.

To force a periodic test:

1. On the Intellistat TS™ Monitor, select "Test" from the Main Menu. Enter the required password to continue. Select "PERIOD" from the menu and when the next screen appears push the green TEST button. This will force the inverter into battery mode for the programmed duration. The unit will stay in battery mode for the pre-programmed duration and then return to normal mode. You will have the option to abort the test if required. See **"Operation - Intellistat TS™ Monitor - Periodic Battery Testing"; Page 51.**
2. 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 going to the ALM LOG screen on the Intellistat TS™ Monitor a BATTERY TEST FAIL indication will be displayed in the TST LOG 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 **"Customer Relay Contacts"; Page 36** for details. Also See **"Intellistat Network Communications"; Page 33.** The USB Diagnostic Port and Communications Application can be used to view and save the diagnostic report. See **"FST Interface"; Page 65.**

AUTOMATIC ANNUAL BATTERY TEST - INTELLISTAT TS MONITOR

GENERAL - The inverter is preset at the factory for automatic annual testing disabled. The duration time is preset at the factory in accordance with the battery option purchased. See **"Battery Test Durations"; Page 77** at the end of this section. Check your display for the programmed battery test time (TEST MENU). During this time, the battery discharge rate is evaluated to determine the health of the battery string.

To force an annual test:

1. On the Intellistat TS™ Monitor, select "Test" from the Main Menu. Enter the required password to continue. Select "ANNUAL" from the menu and when the next sreen appears push the green TEST button. This will force the inverter into battery mode for the programmed duration. See "**Battery Test Durations"; Page 77** at the end of this section.
2. The unit will stay in battery mode for the pre-programmed duration and then return to normal mode. You will have the option to abort the test if required. See **"Operation - Intellistat TS™ Monitor - Annual Battery Testing"; Page 52.**

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 going to the ALM LOG screen on the Intellistat TS™ Monitor a BATTERY TEST FAIL indication will be displayed in the TST LOG 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 **“Customer Relay Contacts”; Page 36** for details. Also See **“Intellistat Network Communications”; Page 33.** The USB Diagnostic Port and Communications Application can be used to view and save the diagnostic report. See **“FST Interface”; Page 65.**

BATTERY TEST DURATIONS - ALL MONITORS			
Battery Time	**Periodic Test Duration**	**Annual Test Duration**	**Manual Test Duration**
=> 90 Minutes	5 Minutes	<= Total Battery Time*	Manual Test Duration
60-89 Minutes	5 Minutes	<= Total Battery Time	5 Minutes
30-59 Minutes	1 Minute	<= Total Battery Time	5 Minute
=< 29 Minutes	30 Seconds	<= Total Battery Time	1 Minute
* 4 Hours Maximum			

WARRANTY

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

https://www.trystar.com/services/warranty-information/

Trystar 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 (FST) / 2 Years parts*, 1 Year On-Site Labor*, Batteries 1 Year full*, 9 year prorated*.

  * Warranty begins from date of factory Start Up or 90 days from ship date; whichever comes first.

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1. This Warranty shall be effective only if and so long as the system is installed and operated in the manner specified in the manual which accompanied the product, and is operated within the ratings on the nameplate of the system.
2. This Warranty shall be effective provided the purchaser pays the cost of transporting the faulty component(s) to and from Trystar's factory at the purchaser's own expense, unless the item covered under service contract with Trystar. 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

Trystar. If after inspection the faulty component has been caused by misuse or abnormal conditions in the judgment of Trystar, 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. Trystar service personnel are not included in this warranty unless covered by a Trystar 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 Trystar service person, without the written permission of Trystar.
4. This Warranty is in lieu of all other warranties, expressed or implied. Trystar 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, Trystar 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://www.trystar.com/services/warranty-information/

CUSTOMER SUPPORT

TRYSTAR NATIONWIDE CUSTOMER SUPPORT

Trystar 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 10 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, Trystar offers hands on training at our training facility and part kits. For more information, contact Trystar Customer Support Department at 1-800-521-4792.

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

APPENDIX A

RELATIVE DRAWINGS

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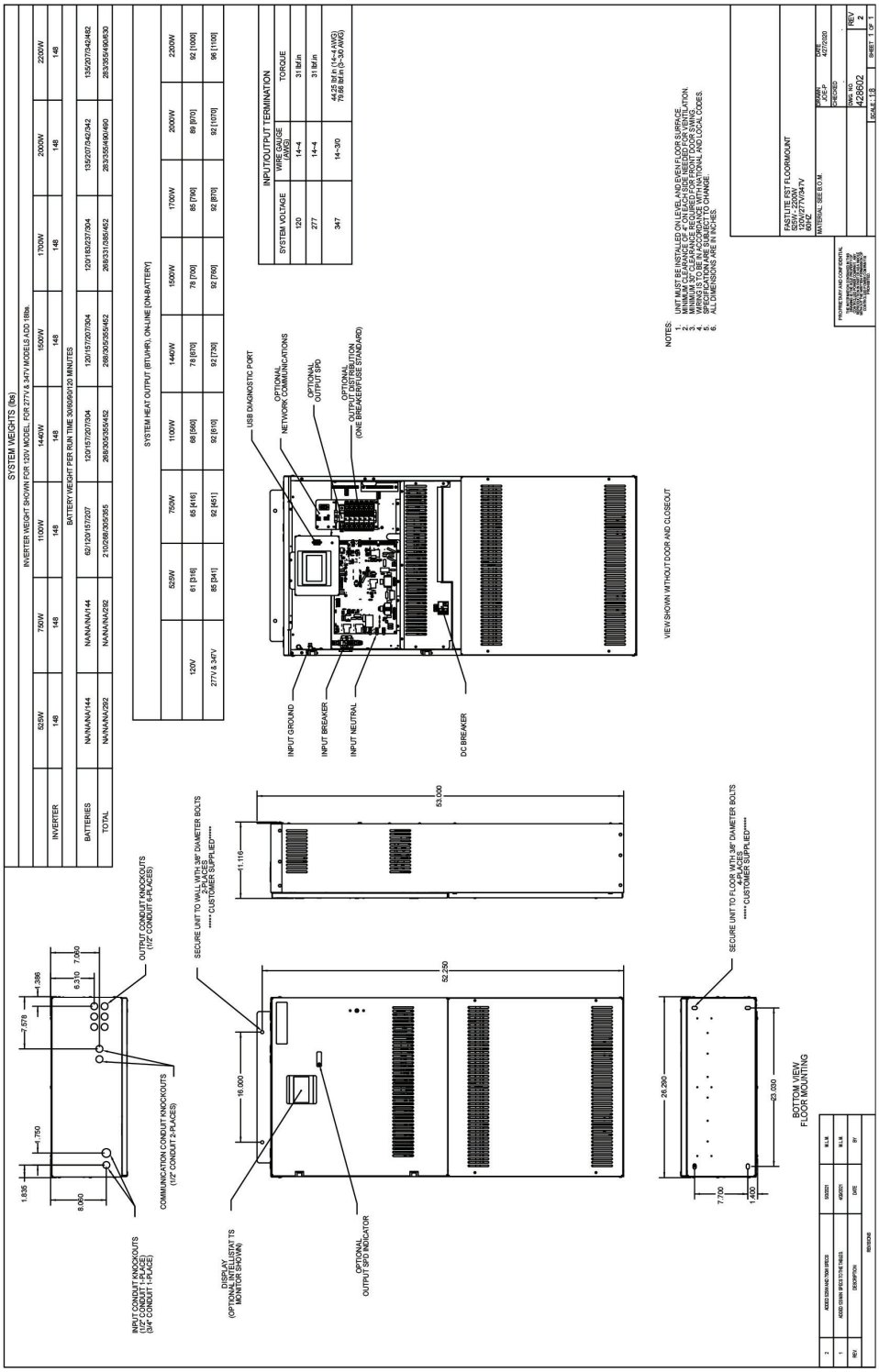
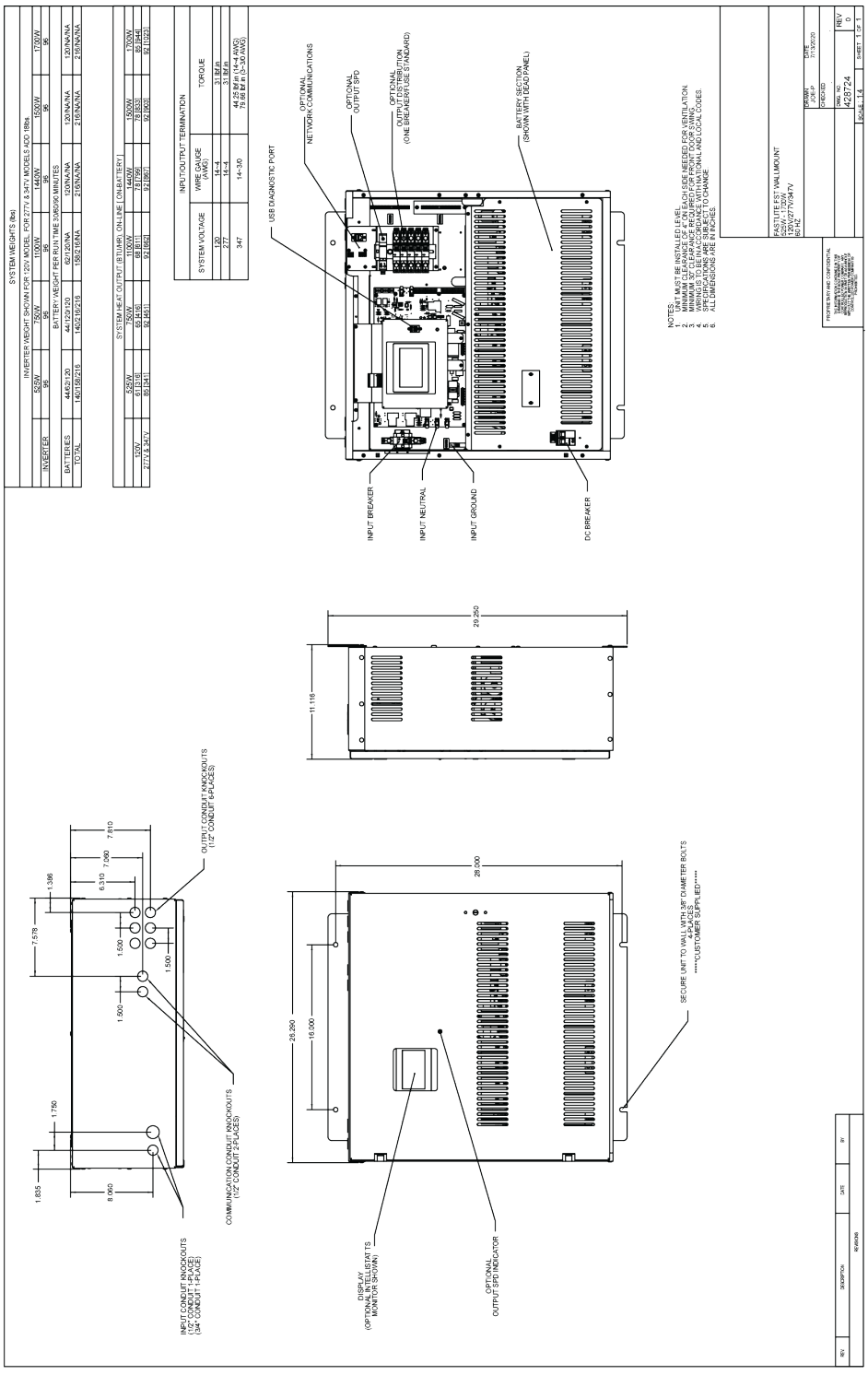
SCHEMATICS

CABINET OUTLINE

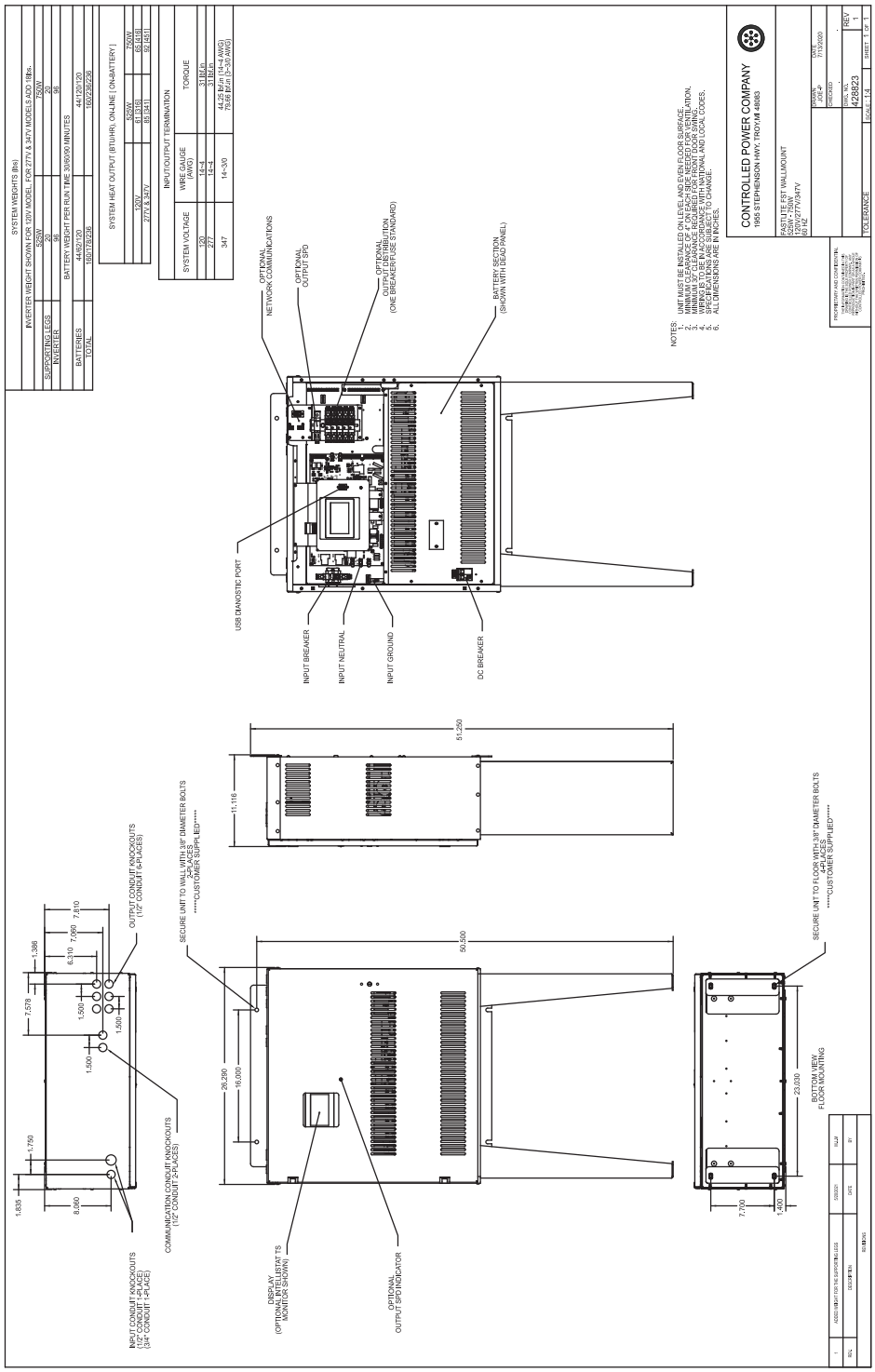
CABINET OUTLINE - 525W - 2200W FLOOR MOUNT



CABINET OUTLINE - 525W - 1700W WALL MOUNT

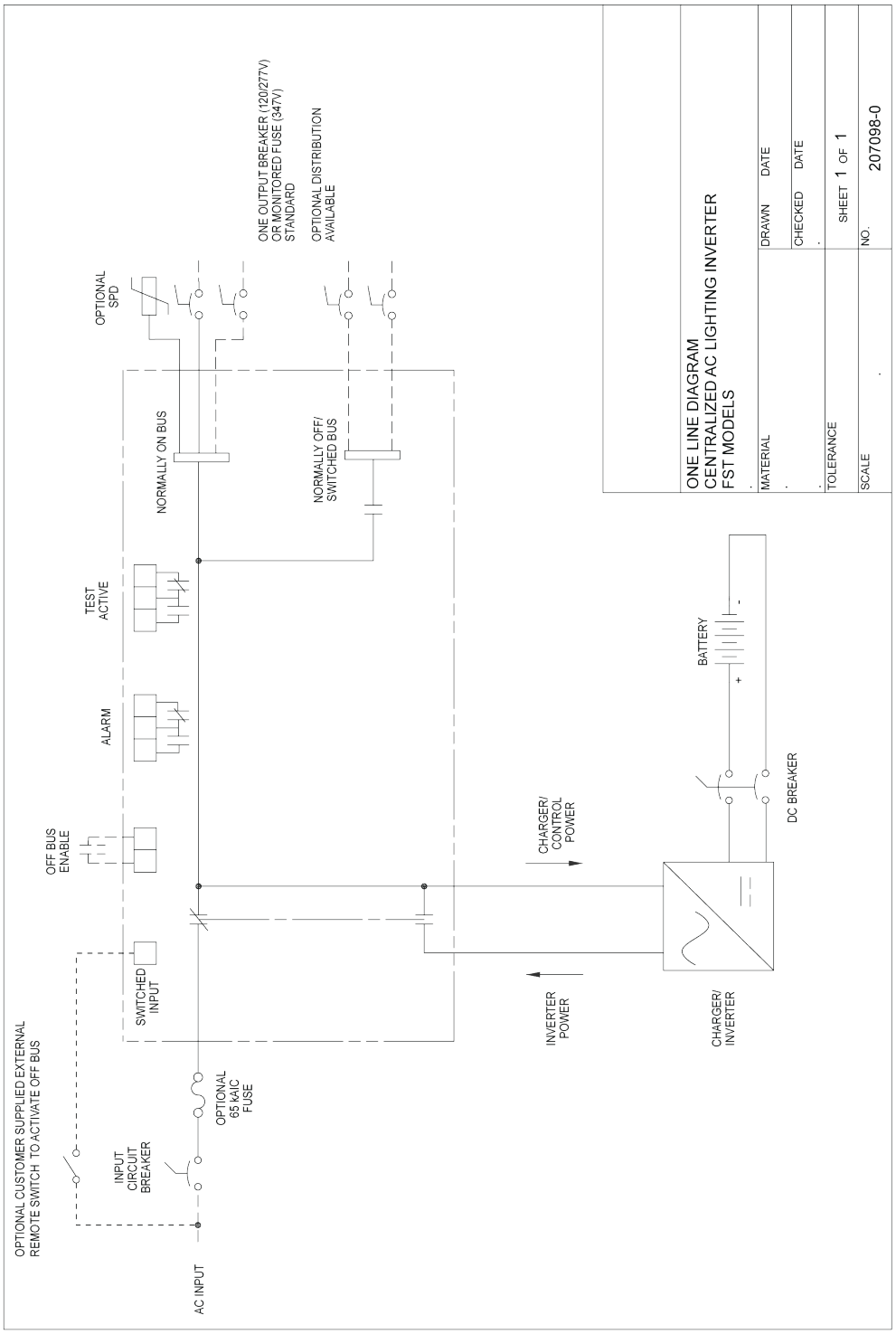


CABINET OUTLINE - 525W - 750W WALL MOUNT WITH OPTIONAL PEDESTAL



ONE LINE DIAGRAM

ONE LINE DIAGRAM



CUSTOMER NOTES AND SETTINGS

CUSTOMER NOTES AND SETTINGS

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