



TRYSTAR®

Fast-Transfer Emergency Lighting Inverter



FastLITE™ MODEL FST
525 W – 2.2 kW SINGLE PHASE

APPLICATIONS:

- Schools / Universities
- Parking Structures / Garages
- Hospitals / Clinics
- Office Buildings
- Shopping Malls
- Theaters
- Hotels / Motels
- Apartment Buildings
- Correctional Facilities
- Worship Facilities

DESIGN FEATURES & MONITORING

Trystar engineers and manufactures the industry's highest quality **centralized emergency lighting inverters**, capitalizing on many 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, self-testing / 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.

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. (See Page 3 for a detailed description of both.)

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 ²	Yes	Yes
Egress Lighting Integrity Test ³	No	Yes
Remote Monitoring via Network Communications ³	No	Yes

NOTES: 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.

LOCAL & REMOTE MONITORING

Basic Monitor

The **Model FST's** monitoring system includes:

- Self-Test Diagnostics
- Audible Alarms
- Protected ON/OFF Switch
- Automatic Battery Test
- Push-To-Test Feature

The **FST's** startup sequence and self-test indicators:

- Inverter Off – Yellow LED blinks until inverter is turned on (ON pushbutton).
- Inverter Ready – Once the ON pushbutton is pressed, green LED is illuminated to indicate battery backup is available.
- Test Active – Yellow LED illuminates when automatic (or manual) monthly (or annual) test is being performed.

The **FST's** status and diagnostic indicators:

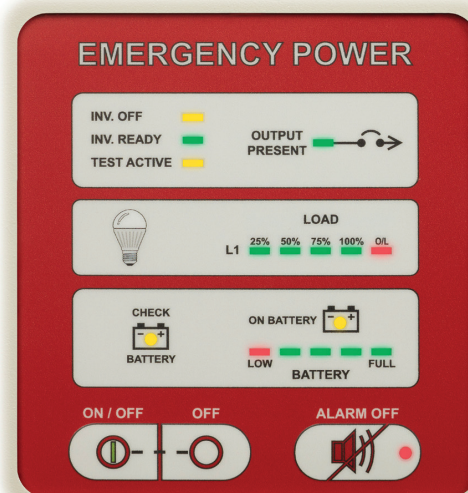
- Output Present
- Percent of Battery
- On Battery
- Check Battery
- Percent Load
- Alarm Status

Intellistat TS™ Monitor

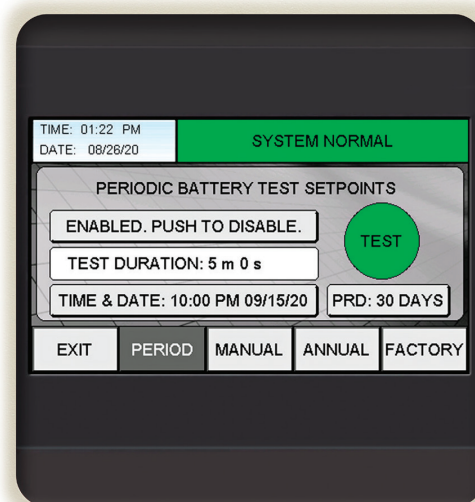
The optional **Intellistat TS™** monitor provides full-access to all of the inverter's features, allows all programming to be done directly from the touchscreen display, and provides complete system diagnostics and testing. The touchscreen display allows the entry of the date / time values, system set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

The **Intellistat TS's** features include:

- LCD display of all electrical parameters.
- NFPA-compliant automatic battery testing / logging.
- User-programmable automatic system testing.
- System alarm annunciation.
- Audible alarm with alarm silence.
- Alarm status display.
- Programmable alarm set-points.
- Date and time display.



For illustration purposes, all LED's are illuminated



The color touchscreen display on the Intelistat TS provides all electrical parameters, inverter status, programmable inverter and battery testing, and data-logging.

- Multi-layer password protection.
- Non-volatile clock and memory.
- Logs up to 25 battery test events.
- 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.

Alarms & Status

The **Intellistat TS** is capable of announcing up to 18 different alarm conditions and 7 operating conditions. (Consult factory or [Model FST webpage](#) for product specifications.)

Egress Lighting Integrity Test

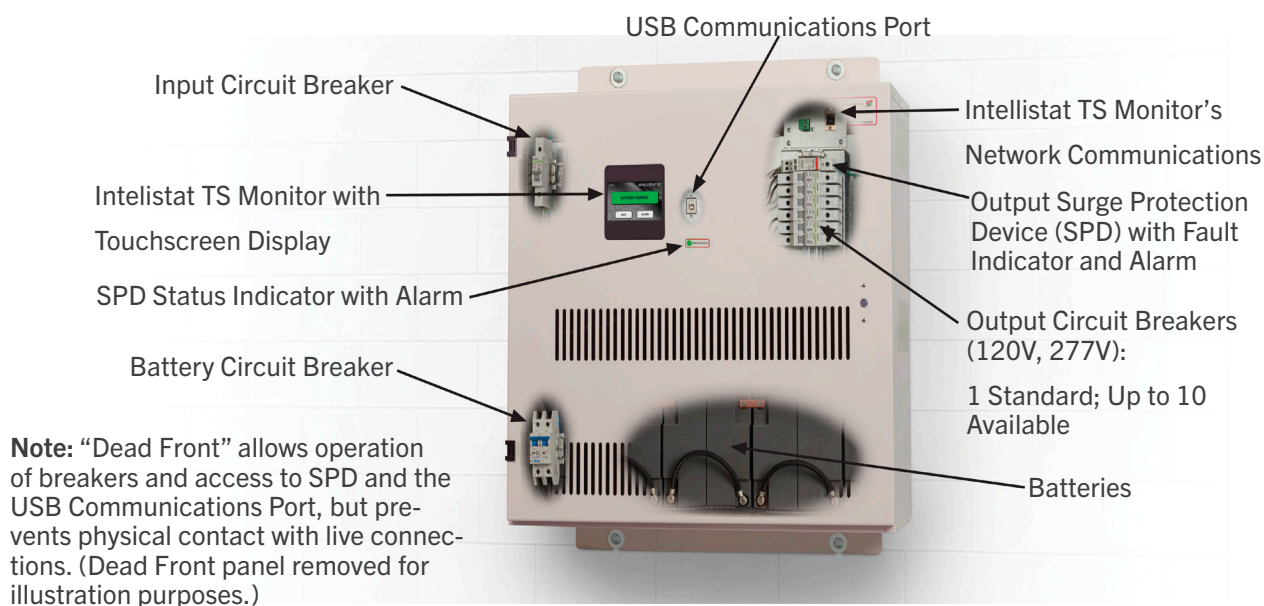
To satisfy NFPA-mandated periodic and annual requirements, the **Intellistat TS** automatically initiates the testing of all life safety circuits, regardless of egress lighting design (“always on” or “normally off / switched”). The **Intellistat TS** then compares power consumption during the test period 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.

PRODUCT LAYOUT & FEATURES

Model FST Product Layout



Wall-Mount Inverter shown with Intellistat TS Monitor

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 (See Pages 2 and 3 for descriptions.)
- 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 (See descriptions at the bottom of this page.)
- 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 (See Back Cover for details.)
- “Intellistat TS” monitor (See Pages 2 and 3 for descriptions.)
- “Intellistat TS” network communications. (See Page 3 for details.)
- “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 10 unmonitored or 6 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 fused switches on 347V units. (Available fuse ratings include 6A 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 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.)

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 $\pm 10\%$ or $+10\%$, -15% (without battery usage)
Operating Frequency	60 Hz $\pm 5\%$ 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	$\pm 5\%$ 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 $\pm 0.5\%$ 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	$\leq 3\%$ 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 (See Page 4 “Standard” and “Optional Features”)
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 (See Page 2 for details)
Electrical Configurations	“Normally On” output and “Normally Off / Switched” output (See Page 4 for a detailed description)
Output Surge Protection	Optional Surge Protection Device (SPD) provided to increase life and reliability of LED fixtures / drivers. (See Page 4 for details)
Output Distribution	One (1) output circuit breaker or monitored, fused switch provided as standard. (See Page 4 for output circuit breaker options)
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. (See Pages 2 and 3 for details)
Intellistat TS Monitor	Monitor with high resolution, color touchscreen display for monitoring system status and parameters, and to access programmable inverter and battery testing. (See Pages 2 and 3 for details)

FastLITE™
MODEL FST

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. (See Page 4 for details)

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

PRODUCT SELECTION GUIDE

MODEL NUMBER GUIDE

Product	Input / Output VAC	Freq	kVA / kW	Monitor	Battery*	Distribution	Enclosure
FST	AA = 120 JJ = 277 VV = 347	X = 60Hz	525 W 750 W 1.1 kW 1.44 kW 1.5 kW 1.7 kW 2 kW 2.2 kW	0 = Basic Monitor 1 = Intellistat Intellistat with 2 = TCP/IP MODBUS TCP MODBUS RS485 BACnet/IP BACnet MS/TP	S = 90 min C = 30 min D = 60 min E = 120 min N = Other Battery Option	0 = Standard Output Breaker or Fuse 1 = Optional Output Breakers or Fuses	W = Wall Mount F = Floor Mount

Model Number Example: FST - AAX - 1.5kW - 1S0F

Description: 1.5kW UL924 Listed Inverter, 120 VAC Input / Output, Intellistat Monitor, 90 Minute Battery, & One (1) Standard Output Breaker, Floor-Mount Enclosure.

Note: Consult factory for output distribution options.

Battery*: 90 minute runtimes are UL 924 Listed – Emergency Lighting Equipment. All other runtimes are UL 924 Listed – Auxiliary Lighting & Power Equipment. 30, 60, and 90 minute runtimes are C-UL Listed to CSA Standard C22.2 No. 141-15.

FST MODELS - WALL MOUNTED							
WALL-MOUNTED MODELS		WEIGHTS (LBS.) ¹				FULL LOAD BTU'S / HOUR ²	
MODELS	kVA / kW	90 MIN	30 MIN	60 MIN	120 MIN	BATTERY MODE	NORMAL MODE
FST - **X - 525W - ***W	525 W	216	140	158	n/a	341	85
FST - **X - 750W - ***W	750 W	216	140	216	n/a	451	92
FST - **X - 1.1kW - ***W	1.1 kW	n/a	158	216	n/a	662	92
FST - **X - 1.44kW - ***W	1.44 kW	n/a	216	n/a	n/a	867	92
FST - **X - 1.5kW - ***W	1.5 kW	n/a	216	n/a	n/a	903	92
FST - **X - 1.7kW - ***W	1.7 kW	n/a	216	n/a	n/a	1023	92

¹Above weights reflect 120V models. Add 18 lbs. for both 277V & 347V models. Packaging and shipping materials add approximately 50 lbs.

²Above BTU's / Hour reflect models with the highest heat output.

Cabinet Dimensions: 26.3"W x 11"D x 24"H

Note: The 525W and 750W models with runtimes up to 90 minutes may be floor-mounted using an optional 24"H floor stand. All other models are available in the standard floor-mount cabinet (see below).

FST MODELS - FLOOR MOUNTED							
FLOOR-MOUNTED MODELS		WEIGHTS (LBS.) ¹				FULL LOAD BTU'S / HOUR ²	
MODELS	kVA / kW	90 MIN	30 MIN	60 MIN	120 MIN	BATTERY MODE	NORMAL MODE
FST - **X - 525W - *** F	525 W	n/a	n/a	n/a	292	341	85
FST - **X - 750W - *** F	750 W	n/a	n/a	n/a	292	451	92
FST - **X - 1.1kW - *** F	1.1 kW	305	210	268	355	610	92
FST - **X - 1.44kW - *** F	1.44 kW	355	268	305	452	730	92
FST - **X - 1.5kW - *** F	1.5 kW	355	268	305	452	760	92
FST - **X - 1.7kW - *** F	1.7 kW	385	268	331	452	870	92
FST - **X - 2kW - *** F	2 kW	490	283	355	490	1070	92
FST - **X - 2.2kW - *** F	2.2 kW	490	283	355	630	1100	96

¹Above weights reflect 120V models. Add 18 lbs. for both 277V & 347V models. Packaging and shipping materials add approximately 50 lbs.

²Above BTU's / Hour reflect models with the highest heat output.

Cabinet Dimensions: 26.3"W x 11"D x 53"H

NOTE: For floor-mounted 525W and 750W models with runtimes up to 90 minutes, see NOTE under the wall-mount matrix above.

Warranty: Trystar guarantees the inverter to be free of defects in material and workmanship for a period of (2) years following shipment from the factory. Batteries are covered under a 1-year full, 9-year pro-rated warranty. Consult factory for details.

