TORONTECH

EMERGENCY LIGHTING SYSTEM TESTER

Emergency Lighting System Tester — ToronFT™ FEL-EI

ToronFT™ FEL-EI Emergency Lighting System Tester is a comprehensive electrical testing platform designed for the performance qualification of fire emergency lighting and evacuation indication systems installed in general industrial and civil buildings, as well as system lamps with special performance requirements installed in other environments. By integrating battery charging test functions, battery discharge detection, and component surface temperature monitoring into a single coordinated test system, the ToronFT™ FEL-EI enables manufacturers and testing laboratories to fully characterize the electrical performance of emergency lighting and evacuation indication products.

The Emergency Lighting System Tester provides the measurement infrastructure required to evaluate overcharge current detection, discharge current behavior, termination voltage control, and surface temperature of internal battery components — all of which are critical to verifying the safe, reliable operation of emergency lighting systems during and after fire events.

APPLICATIONS

Emergency Lighting System Tester — ToronFT™ FEL-EI Applications

- Fire emergency lighting and evacuation sign manufacturers: electrical performance qualification for product listing and certification
- Third-party certification and testing laboratories: battery charge/discharge and temperature testing per international emergency lighting standards
- Building services and fire protection engineering: acceptance testing and commissioning verification of emergency lighting systems
- Quality assurance departments: production-line and incoming inspection electrical performance verification

- R&D departments: evaluation of new battery technologies, charging algorithms, and LED driver designs for emergency lighting applications


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Standards

The ToronFT™ FEL-EI supports fire emergency lighting and evacuation indication system testing in compliance with internationally recognized standards, including:

- IEC 60598-2-22: Luminaires — Particular requirements — Luminaires for emergency lighting
- ISO 30061: Emergency lighting — Location of facility information signs
- UL 924: Standard for emergency lighting and power equipment
- EN 1838: Applied lighting — Emergency lighting
- NFPA 101: Life Safety Code (emergency lighting requirements reference)

FEATURES

Emergency Lighting System Tester — ToronFT™ FEL-EI Key Features

- Suitable for fire emergency lighting and evacuation indication systems in industrial and civil buildings, and special-performance system lamps in other environments
- Battery charging test — component surface temperature detection: wire diameter thermocouples measure surface temperature of internal battery components during charging
- Battery charging test — overcharge current detection: continuously monitors charging current; maximum continuous overcharge current ≤ 0.05C5A (lead-acid: 0.05C20A)
- Battery discharge detection — termination voltage detection: power supply voltage adjustable 50%–150% of rated voltage for discharge cutoff verification
- Battery discharge detection — discharge current detection: range 0–1000 mA, resolution 1 mA — precise current profiling throughout the discharge cycle
- Integrated multi-function test platform covering charging, discharging, and thermal monitoring in one instrument

- Applicable to standard and special-performance emergency lighting system lamps across a broad range of installation environments

THEORY & METHOD

Theory and Method

Battery charging test evaluation uses wire diameter thermocouples to detect the surface temperature of internal battery components during the charging cycle, verifying that no component surface temperature exceeds safe operating limits. The overcharge current detection function continuously monitors the charging current and confirms that the maximum continuous overcharge current does not exceed 0.05C5A (or 0.05C20A for lead-acid batteries) — protecting battery cells from thermal runaway and premature degradation.

Battery discharge detection evaluates system performance during the simulated power-outage discharge cycle. The termination voltage detection function adjusts the power supply voltage across 50%–150% of the rated voltage to identify the voltage threshold at which the emergency lighting system correctly terminates discharge, protecting the battery from deep discharge damage. Discharge current is measured across the 0–1000 mA range with 1 mA resolution, providing precise current characterization throughout the discharge cycle.

TECHNICAL SPECIFICATIONS

Emergency Lighting System Tester — ToronFT™ FEL-EI Technical Specifications

Parameter	Specification

Model	ToronFT™ FEL-EI
Test Applications	Fire emergency lighting and evacuation indication systems (industrial, civil, special environments)
Surface Temperature Detection Method	Wire diameter thermocouples (internal component surface)
Max Continuous Overcharge Current	≤ 0.05C5A (lead-acid: 0.05C20A)
Termination Voltage Adjustment Range	50% – 150% of rated voltage
Discharge Current Detection Range	0 – 1000 mA
Discharge Current Resolution	1 mA

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