

The model 3110 Electrical Test System offers fully automatic testing for quality control of high intensity discharge (HID) lighting equipment. When used on the factory production line, these high-speed totally digital test systems are able to perform 100% quality control testing by verifying electrical performance characteristics. These test units consist of a computer, power circuits, electronic logic and measuring circuits. Electrical specifications for as many as 2,000 ballast or luminaire types can be retained on disk storage for verification of pass/fail comparisons.

CAPABILITIES

- ◇ Specifications and test procedure protocol are stored on disk with the capability to add others for additional ballast/luminaire types
- ◇ No meters to read—all data acquisition is performed by the computer
- ◇ Tests are performed automatically and compared against stored specifications
- ◇ Opto-couplers isolate computer and all electronics from the power circuits
- ◇ Built-in protection against surges and transients
- ◇ Line voltage is checked frequently during testing. (Automatically adjusted with computerized power supply option)
- ◇ Modular electronic construction and rugged, factory-floor design
- ◇ No need for special computer or electrical training
- ◇ Testing luminaires up to 1500 watts.



SAFETY

All circuitry is designed for the primary goal of operator safety.

- ◇ Digital and ballast power circuitry are protected using ground fault interrupting (GFI) circuits. These circuits provide fast shut-down in the event of excessive current flow to earth ground, as the result of ballast malfunctions or luminaire wiring errors.
- ◇ Green safety lights are mechanically interlocked to the ballast power output circuitry. This insures that the safety lights cannot operate if ballast power is active.
- ◇ Dual coupled start buttons insure the operator must use both hands during testing, eliminating the possibility of touching the fixture under test. The test program is halted in the event the start buttons are deactivated. Upon re-activation of the start buttons, the test proceeds.

DESCRIPTION

Testing capabilities of the Model 3110 HID Electrical Test System Unit include:

- ◇ Ground continuity
- ◇ Hipotential (Hi-pot)
- ◇ Open circuit voltage on secondary
- ◇ Magnetizing current on primary during open secondary
- ◇ Primary current with shorted secondary
- ◇ Secondary current with shorted secondary
- ◇ HID pulse voltage (up to 4000 volts)

Operation

At the start of a production run, the operator enters a ballast or luminaire catalog number and voltage. The ballast specifications are transferred into computer memory automatically from disk storage. The test luminaire is then connected to the test unit by a snap-action test probe, and the operator presses a start button. The computer software sends a series of signals to an electronic interface which in turn causes the test unit's power circuits to initiate the required series of tests. At the end of each test, and electronic data acquisition system measures the test results, which are then stored on the computer.

The software compares the test results against the specifications and indicates a pass or fail. Proper performance of internal circuits are checked and verified by the computer while testing is performed. Voltage and current surges during power switching do not affect test results since readings are taken only when the surges subside.

Total test time is approximately 15 seconds for ballasts and non-ignitor luminaires. Test time for luminaires with ignitors is approximately 20 seconds. In case of a failure, a fault diagnosis can be displayed. Test results may also be displayed on screen after each test.

A printout of test results can be produced for each test.

Test Notes

- ◇ Ground continuity on luminaires is checked first. Other tests are aborted if a failure is detected.
- ◇ The hipotential test voltage is operator-selectable from 0 - 2500 volts. Both break-down and leakage are checked. Leakage current limit is selectable from 0 to 10 milliamps with a factory setting of 5 milliamps.
- ◇ Open circuit voltage. For HPS and pulse start metal halide luminaires, automatic dampening of the starting pulse occurs during this test.
- ◇ HID pulse voltage. The presence and amplitude of the starting pulse is sensed, up to 4000 volts.
- ◇ Auxiliary quartz lamp test. Both current and voltage-type relays are accommodated. Available as an option.

Voltages & Power

- ◇ The Model 3110 Electrical Test System requires a supply of power rated at 30 amps, with a supply voltage identical to the rated voltage of the luminaire under test. The required test voltage is indicated on the computer monitor, and actual test voltage being supplied to the luminaire is checked by the system immediately prior to testing. Optionally, LSI offers two forms of power supply. A manual supply is available that is switchable to 120, 208, 240, 277 and 480 volts. A variable transformer is provided for line voltage adjustment. A totally automated power supply is also offered, operating under computer control, that selects and maintains the required test voltage.
- ◇ Power requirements are two isolated 120 VAC, one 20 amp and one 30 amp circuit, with good earth grounding.

Other Features

- ◇ All measurements are taken on true RMS meters with accuracy of $\pm 0.25\%$, ± 2 digit.
- ◇ By connecting an optional printer, a print-out of test results can be produced showing serial numbers, customer's name and order number for all tests. Optionally, a print out of just failures may be requested.
- ◇ Pass/fail information is computer stored by part number, serial number or order number for quality assurance analysis.
- ◇ Quick release connectors are available for mogul and medium sockets.
- ◇ Dimensions for both models are approximately 50 inches high by 24 inches deep by 24 inches wide.

Operating Conditions

Temperature: 40 to 100 °F (4 to 38°C)

Humidity: Up to 80% RH

Customized Systems

The engineering staff at Lighting Sciences will be pleased to work with your company and discuss any special requirements you may have.

About Lighting Sciences, Incorporated

Since 1979, Lighting Sciences has offered an ever-broadening variety of consulting and testing services in addition to developing a full range of lighting design and analysis software. Advanced equipment in our laboratories includes a vast array of specialized instrumentation calibrated and maintained to meet stringent industry and government specifications. Also, our development and testing facilities are a perfect solution for small companies without their own Research and Development departments or for supplementing facilities found in overworked larger companies or government agencies. If you require your own quality control equipment, our staff is available to design and manufacture the equipment you need. We also market a full line of computer software used for optical design and photometric processing.

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