LUMAWISE* Z32 Light Emitting Diode (LED) Holder

1. SCOPE

1.1. Content

This specification defines performance, tests, and quality requirements for LUMAWISE Z32 LED holder.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. TE Documents

114-32045	Application Specification: LUMAWISE Z32 LED Holder
501-19218	Qualification Test Report: LUMAWISE LED Holder Type Z32
2213118	Product Drawing: LUMAWISE LED Holder Z32 Low Profile 1215
109-197	Test Specifications vs EIA and IEC Test Methods

2.2. Industry Documents

EIA-364, “Electrical Connector/Socket Test Procedures Including Environmental Classifications”

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, and physical dimensions specified on the applicable product drawing.

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

Voltage: 60 V DC (max)

Current: 2 A (max)

Operating temperature: -40° to ≤ 105°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical, and environmental performance requirements specified in paragraph 3.5. Unless otherwise specified, all tests shall be performed at ambient environmental conditions according to EIA-364.

Lumileds is a trademark.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial Examination of Product	The product shall meet the requirements of relevant product drawings.	Visual, dimensional and functional inspection, according to the quality inspection plan.
Visual Examination of Product	The product shall not have visible marks of damage, break or defect before and after the execution of the tests.	EIA-364-18
Electrical		
Low Level Contact Resistance (LLCR)	60 milliohms max initial ΔR 20 milliohms max	EIA-364-23, Option 1 Open voltage: 20 mV, max Current: 100 mA max
Insulation Resistance	500 mega-ohm min	EIA 364-21 Voltage: 500 V DC for 1 minute Tested between contact and ground plate.
Withstanding Voltage	No breakdown or flashover shall occur.	EIA 364-20 Ceramic based LED: 1120 V AC min for 1 minute Aluminum based LED: 700 V AC min for 1 minute Leakage current shall not exceed 0.5 mA. Tested between contact and ground plate.
Temperature Rise Versus Current Curve	ΔT< 30°C with I = 2 A	EIA 364-70, Method 2 Measured temperature rise at 0.5 A and increased current in steps of 0.5 A. After a stabilization period of 1 hour, temperature rose to 2 A. The holder with LED was mounted on a cooling device made from an 80 by 100 by 8-mm bare aluminum plate. Test specimen was attached to wire size 22 AWG.
Mechanical		
Tensile Strength	Stranded wire: 4 N min Solid wire: 8 N min	EIA-364-08 Testing speed: 25 mm/min
Vibration	No electrical discontinuity greater than 1 µsec shall occur. No physical damage.	EIA 364-28 Vibration frequency: 20 to 500 Hz, 3.10 g peak. Vibration direction: 3 mutually perpendicular directions Duration: 15 minutes each
Mechanical Shock	No electrical discontinuity greater than 1 µsec shall occur. No physical damage.	EIA 364-27, Test Condition H Accelerated velocity: 30 G half sinusoidal shock pulses Number of shocks: 3 in each direction applied along 3 mutually perpendicular directions with 18 total shocks.
Environmental		
Temperature Life	See note.	EIA-364-17, Method A, Test Condition 4 Subjected mated specimens for 500 hours. Test temperature: 125°C

Thermal Shock	See note.	EIA-364-32, Test Condition VIII Subjected specimens to 500 cycles between -40 and 105°C with 30-minute dwells at temperature extremes and 1-minute transition between temperatures.
Damp Heat Cycling	See note.	EIA-364-31, Method III Subjected specimens to 10 cycles (10 days) between 25 and 65°C at 80 to 100% RH.

NOTE
Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the product qualification and re-qualification test sequence given in Figure 2.

Figure 1

3.6. Product Qualification and Re-Qualification Test Sequence

SAMPLE DESCRIPTION	TEST GROUP (a)					
	A	B	C	D	E	F
	NUMBER OF SAMPLES					
20 AWG Solid Wire	10	10	—	2	10	10
22 AWG Solid Wire	10	10	10	2	10	10
20 AWG Stranded Wire	10	10	—	2	10	10
22 AWG Stranded Wire	10	—	10	2	10	10
LED Connection	10	—	—	—	10	10

TEST OR EXAMINATION	TEST SEQUENCE (b)					
Visual Examination of Product	1,9	1,3	1,3	1,6	1,5	1,5
LLCR	2,6			2,5	2,4	2,4
Insulation Resistance	4,7					
Withstanding Voltage	3,8					
Temperature Rise Versus Current Curve			2			
Tensile Strength		2				
Vibration				3		
Mechanical Shock				4		
Temperature Life					3	
Thermal Shock						3
Damp Heat Cycling	5					

(a) See paragraph 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

The samples for testing must be selected at random from the current production and shall be in accordance with relevant product drawings. Prior to the testing, the samples shall be stored at 50% relative humidity (RH) for 24 hours.

Each test group shall consist of 10 holders of which both contacts will be measured.

Applicable wire sizes are 22 and 20 AWG, stranded and solid.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Re-Qualification Testing

If changes that significantly affecting form, fit, or function are made to the product or manufacturing process, product assurance shall coordinate re-qualification testing consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens re-submitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.