
ANSI C136.41-2013 Dimming Light Controller Base

1. SCOPE

1.1. Content

This specification defines performance, tests and quality requirements for the ANSI C136.41-2013 Dimming Light Controller Base Assembly used in dimmable roadway and area lighting applications. For test purposes, the TE Connectivity ANSI C136.41-2013 Dimming Light Controller Base will be mated to ANSI C136.10 compliant Dimming Receptacle.

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.

1.3. Qualification Test Results

Successful qualification testing on the subject product line has not been completed. The Qualification Test Report number for this testing is 501-TBD.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- [114-32159](#): (Application Specification) ANSI C136.41-2013 Dimming Light Controller Base Assembly and Cover
 - [501-134078](#): (Qualification Test Report) ANSI C136.41-2013 Dimming Light Controller Base Assembly and Cover
 - [108-32059](#): (Product Specification) ANSI C136.41-2013 Dimming Receptacles
 - [114-32115](#): (Application Specification) ANSI C136.41-2013 Dimming Receptacles

 - [114-32148](#): (Application Specification) ANSI C136.41-2013 Rotatable Dimming Receptacles
 - [501-134036](#): (Qualification Test Report) ANSI C136.41-2013 Dimming Receptacles
- #### 2.2. Industry Documents
- ANSI C136.10-2010: American National Standard for Roadway and Area Lighting Equipment - Locking-Type Photo Control Devices and Mating Receptacles – Physical and Electrical Interchangeability and Testing
 - ANSI C136.41-2013: American National Standard for Roadway and Area Lighting Equipment – Dimming Control between an External Locking Type Photo Control and Ballast
 - UL 773: Plug-In Locking Type Photo Controls for Use with Area Lighting
 - EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- #### 2.3. Reference Document
- [109-197](#): Test Specification (TE Test Specification vs EIA and IEC Test Methods)

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Ratings

- Power Contact Voltage: 600 volts AC/DC
- Power Contact Current: 15 amperes maximum per circuit at 25°C ambient temperature
- Signal Dimming Contact Voltage: 30 volts DC
- Signal Dimming Contact Current: 1.5 amperes maximum per circuit at 25°C ambient temperature
- Operating Temperature: -40 to +85°C

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing and Application Specification	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low Level Contact Resistance (LLCR).	ΔR of 30 milliohms maximum	EIA-364-23. Subject mated receptacle and Light Controller to 20 millivolts open circuit at 100 milliamperes maximum. See Figure 3 and 4.
Insulation resistance.	500 megaohms minimum.	EIA-364-21. Test unmated Light Controller Base only. Test at 500VDC level. Test between adjacent power contacts; between power and signal contacts.
Dielectric Withstanding Voltage	One minute hold with no breakdown or flashover.	UL 773, Section 32 2500 volts AC (rms) at sea level. Test unmated Light Controller Base only. Test between power contacts; between signal contacts; between power and signal contacts.
Current Cycling(Heating Test), Power Contacts Only	30°C T-rise maximum during the "ON" period of the cycle.	ANSI C136.10-2010, Section 11.1. Apply 15 amperes to line and load contacts of Light Controller Base and test receptacle for 15 cycles, each consisting of 20 hours "ON" and 4 hours "OFF". Precondition Light Controller Base by mating and unmating to a receptacle 5 times.

Test Description	Requirement	Procedure
Temperature Rise vs Current	30°C maximum temperature rise at 15.0 amperes for power contacts and 1.5 amperes for signal dimming contacts.	EIA-364-70, Method 1 Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C. Power line & load (but not neutral) circuits and all dimming signal contact shall be energized and monitored during testing.
MECHANICAL		
Power Blade Contact Retention in Housing Base	15.0 lbs. minimum	EIA-364-29 Apply force by pushing in the direction of the mating face at a rate of 25.4mm/min. on power contact solder tails.
Vibration	No discontinuities of 1 microsecond or longer duration. See Note (a).	Mated specimens shall be subjected to a simple harmonic motion having an amplitude of either 0.250 in double amplitude (maximum total excursion) or 3.5 g peak, whichever is less. The vibration frequency shall be varied logarithmically between the approximate limits of 5 Hz and 55 Hz. The entire frequency range of 5 Hz to 55 Hz and return to 5 Hz shall be traversed at a rate of one octave/minute. This cycle shall be repeated for one hour in each of three mutually perpendicular directions, so that the motion shall be applied for a total period of 3 hours. Lead wires shall be secured to vibration table 76.2mm from rear of connector. See Figure 5.
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note (a).	EIA-364-27, Condition H. Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 5.
Durability.	See Note (a)	EIA-364-9. Subject Light Controller Base and receptacle to 25 mating and un-mating cycles at the rate of 120 cycles per hour.
ENVIRONMENTAL		
Salt Spray	See Note.	IEC 60512-11-6 Exposure time is 240 hours. Test Photo Control Base mated to a Dimming Receptacle.

Test Description	Requirement	Procedure
Thermal shock.	See Note.	EIA-364-32, Test Condition I. Subject unmated specimens to 25 cycles between -40 and 65°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.
Humidity	Must be subjected to DWV within 10 minutes from removal of humidity test chamber.	UL 773, Section 23. Subject mated Light Controller Base and receptacle to 96% non-condensing humidity for 168 hours at a temperature of 50°C.
Temperature life.	See Note.	EIA-364-17, Method A, Test Condition 4, Test Time Condition B. Subject mated specimens to 100°C for 500 hours.
Shelf Aging	Conditioning only - Must meet subsequent test requirements	Subject Light Controller base with cover installed to 65+/-3°C for 240 hrs.
Immersion Protection 6X(dust)	Must meet IP6X. No dust shall be present within the cover of the light control assembly.	IEC 60529. Subject Light Controller Base with cover installed to the IP6X(dust) requirements. Samples shall be mated to a mounted receptacle.
Immersion Protection X6(jet spray)	Must meet IPX6. No water shall be present within the cover of the light control assembly.	IEC 60529. Subject Light Controller Base only with cover installed to the IPX6(jet spray) requirements. Samples shall be mated to a mounted receptacle.
Impact	See Note.	IEC 62262 Subject assembled Photo Control Base and Cover to IK09(10J) impact. During testing, Photo Control assembly shall be mated to a Dimming Receptacle.



NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

Figure 1 end

3.4. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)									
	A	B	C	D	E	F	G	H	I	J
	Test Sequence (b)									
Initial examination of product	1	1	1	1	1	1	1	1	1	1
LLCR	2,6	2,5,7,9	2,4,6,8		2,4					
Insulation resistance				2,7						
Dielectric withstanding voltage				3,6						
Current Cycling (Heating Test)						2(c)				
Temperature Rise vs. Current		3,10								
Power Contact retention in housing base							2			
Vibration	4	8(d)	7							
Mechanical shock	5									
Durability	3									
Salt Spray					3					
Thermal shock				4						
Humidity		4(c)	3(c)	5						
Temperature life		6	5							
Shelf Aging								2	2	
Immersion Protection 6X(dust)								3		
Immersion Protection X6(jet spray)									3	
Impact										2
Final examination of product	7	11	9	8	5	3	3	4	4	3



NOTE

- (a) Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Reference Figure 3 for test group quantities of part numbers to be tested. For Test Groups A, B, C, D, E, F, and J, the Photo Controller Base shall be mated to Dimming Receptacle Base 2213362-X receptacle (any dash number with 4 dimming contacts), for duration of test.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition with 5 durability cycles.
- (d) During vibration, the mated receptacle and Light Controller Base shall be energized at an 18°C temperature rise level and 100% connector current loading.

Figure 2 end

P/N	Description	Test Group											Total Qty	
		A	A	B	C	D	E	F	G	H	I	J		J
		Quantity(minimum)												
2213730-1	76mmø Base, 7 pos.	6		6		6	3	3		3				27
1-2213871-1	76mmø Base, 5 pos.											3		3
2213871-2	81mmø Base, 7 pos.		3		3				3	5	5		3	22
1-2213748-1	76mmø Cover, Medium					6	3	3		3		3		18
1-2306129-1	76mmø Cover, Tall	6		6										12
2213805-1	76mmø Sleeve,Medium											3		3
1-2306130-1	81mmø Cover,Medium		3		3					5	5		3	19
2213996-1	81mmø Sleeve,Medium		3		3								3	9

Figure 3: Test Sample Selection

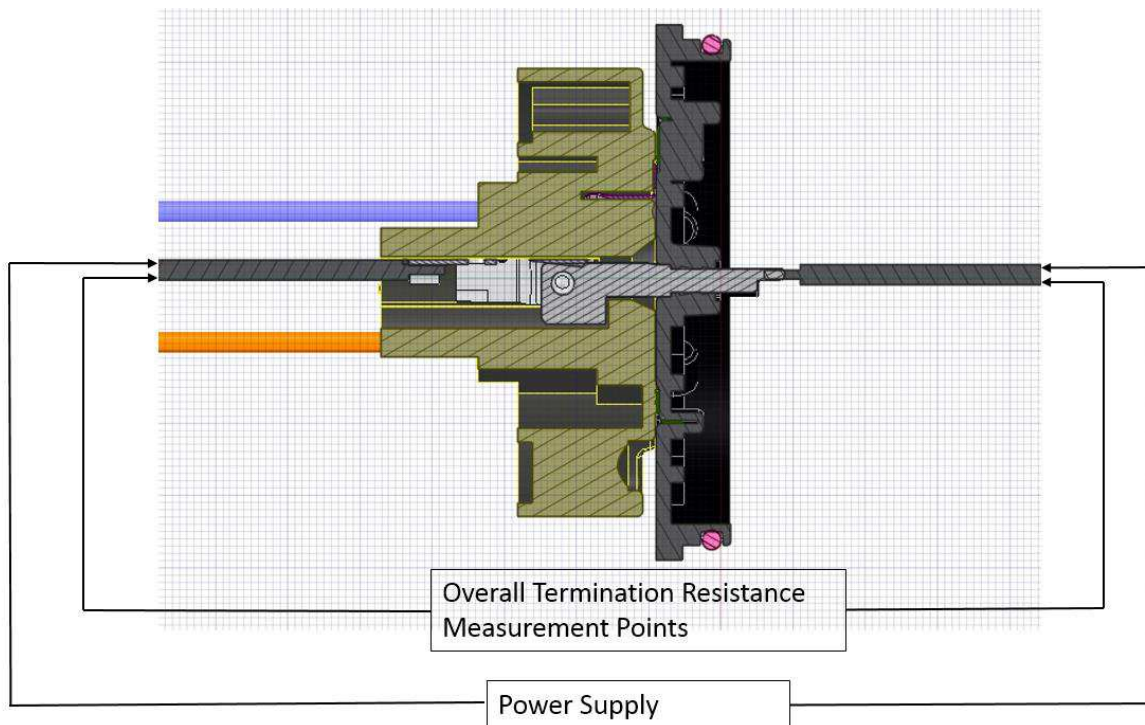


Figure 4

(LLCR Measurement Points – Power Contacts)

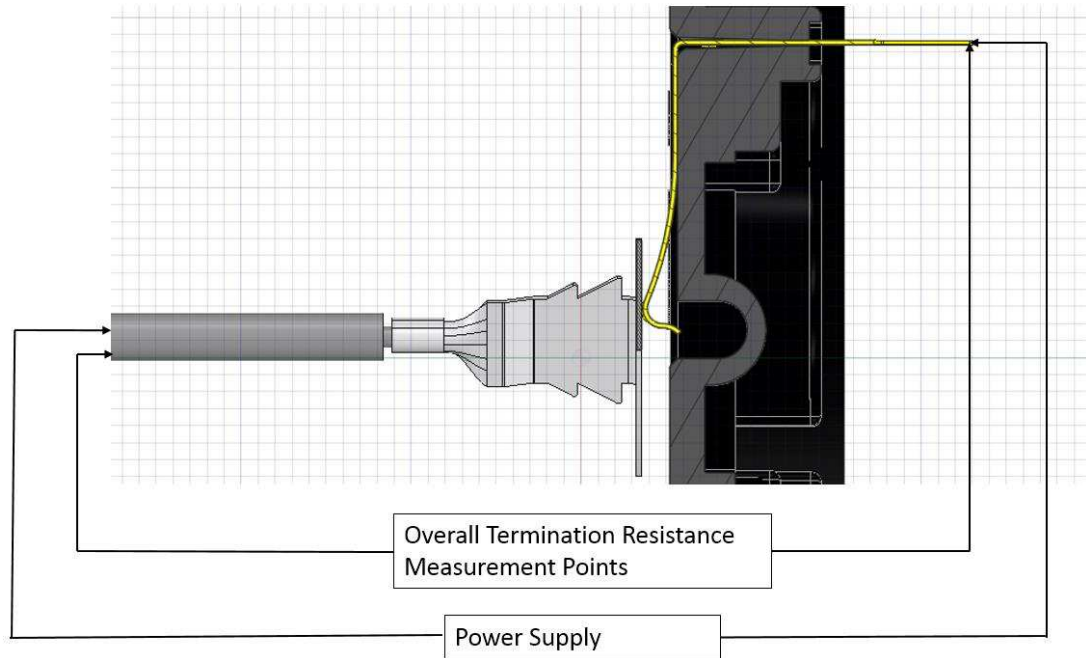


Figure 5

(LLCR Measurement Points – Signal Dimming Contacts)
(Receptacle housing removed for clarity.)

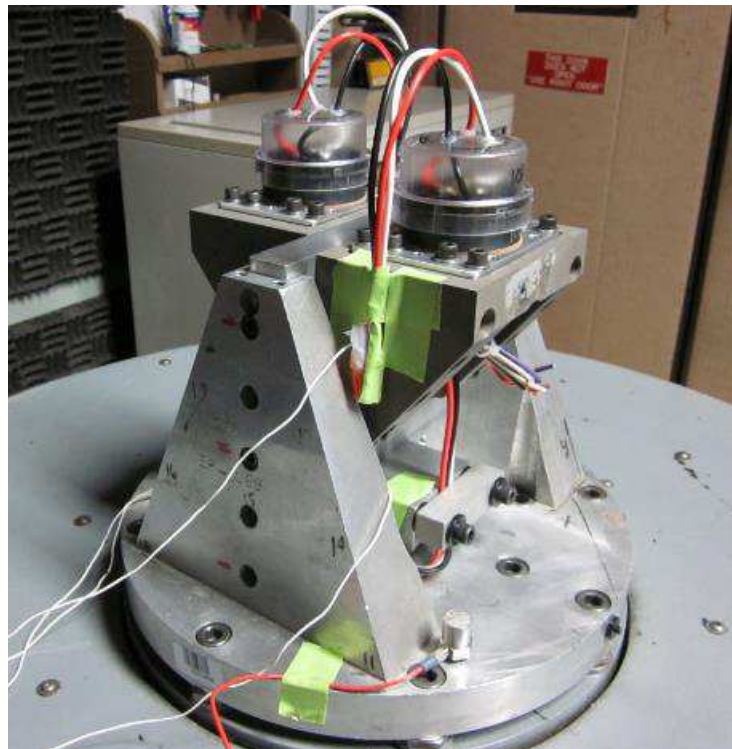


Figure 6

(Vibration and Mechanical Shock Mounting Fixture)