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LCNM

NEMA ANSI C136.41 5/7-Pin LoRaWAN® Lighting Controller Unit

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LoRaWAN® Lighting Controller Unit

This device is designed to withstand outdoor conditions and integrates seamlessly with existing lighting systems and third-party solutions. With open communication protocols, an open-source JavaScript payload decoder, and our custom Zenosmart Connect application, we prioritize cost-effective system integration.

NEMA ANSI C136.41 5/7-Pin LoRaWAN® Lighting Controller Unit

The control unit facilitates communication over LoRaWAN® and NB-IoT networks. It supports DALI, DALI-2, D4i, and 0–10 V analog interfaces for street light control. Its modern design ensures compatibility with industrial LED luminaires. Additionally, an optional GPS module is available to simplify map positioning and provide precise time synchronization.

The NEMA ANSI C136.41 5-Pin or 7-Pin Street Light Control Device is a high-tech wireless remote control unit specifically designed for LED street lights with ANSI C136.41 compatible connectors. Its simple plug-and-play installation enables quick and easy integration across various street lighting modules.

Measured and Monitored Parameters

- Lamp On-Time
- Ambient Light
- Control Device Temperature
- D4i Energy Records for Each Driver: Built-in measurements include current (A), voltage (V), power (W), energy (Wh), WB, W Fund, power factor (PF), lamp on-time, voltage sag, and voltage swell.
- Driver Faults
- Controller Tilt Movement, Collision Event
- GPS Location (optional)

Controller Features

- Controlling 4 DALI / DALI-2 Drivers Independently or via 0–10 V Analog Control
- Power Measurement: Via DALI Driver or Internal Circuit
- Reported D4i Energy Records for Each Driver (For D4i Drivers Only)
- Versatile, Astronomical Calendar-Based Dimming
- Time-Based Dimming Profiles
- Automatic Device Time Synchronization
- Light Intensity Sensor
- Remote Control and Configuration
- Multicast Control and Configuration
- Built-in Overcurrent Protection Circuit, Auto-Reset
- Configurable via Zenosmart App (iOS & Android)
- GPS Positioning (optional)
- Simple Plug-and-Twist Lock Installation
- Autonomous and Adaptive Operation (Configure Once, Then Run)
- Real-Time Control and Feedback
- RTC for Maintaining Time After Power Loss
- Built-in Tilt Sensor
- Overvoltage Protection
- Digital Input for External Events (LSI) (motion sensor, switch, photocell, etc.)
- Fully Documented Open Communication Protocol

Technical Specifications

Power Supply	
Power Source	100–240 VAC 0.2 A – (maximum load 15 A)
Maximum Power Consumption	3 W (Maximum)
Overvoltage Protection	Built-in Overvoltage Protection Circuit
Current Protection	Built-in Overcurrent Protection Circuit, Auto-Reset

Communication	LoRaWAN®	NB-IoT
Network Interface	LoRaWAN® 1.0.4 Class C	Compatible with 3GPP LTE Release 14 Cat-NB1 and Cat-NB2
RF Frequency	868 / 915/ 923 MHz	B3, B8, B20 (1710–1880, 880–960, 791–862 MHz
Receiver Sensitivity	-137 dBm @ 125 kHz BW SF12	-108 dBm for low band (CatM1), -107 dBm for mid band
Transmitter Power	Up to +22 dBm depending on the region	Up to +23 dBm
Network Security	Encrypted Communication Based on AES-128 Bit Security Keys	APN / VPN Support
GPS	GPS/GLONASS/BeiDou/QZSS	GPS/GLONASS/BeiDou/QZSS
Firmware Update (OTA)	Bluetooth and LoRaWAN®	
Bluetooth	Supported (optional)	

Interfaces	
DALI Control and Power Supply	Controls up to 4 DALI ballasts with built-in 15 VDC power supply
Analog Output	0–10 V or 1–10 V Analog Output
Logical Signal Input (LSI)	1 × 0–24 V logical signal input; configurable for warnings, dimming levels (analog/digital), etc.

Sensors	
Light Sensor	Integrated; configurable threshold value
Tilt Sensor	2-Axis Tilt Sensor

Lamp Control	
Dimming Range	0–100% (linear or logarithmic depending on controller settings)
Control Interface	DALI2 / DiiA (IEC 62386) / D4i / 0–10 V / 1–10 V Analog

Measurement	
Internal Parameters (For Non-D4i Drivers)	A, V, W, Wh, WB, Wfund, PF, lamp on-time, voltage drop (sag) and voltage rise (swell)
D4i Reported Parameters	V, W, Wh, PF, lamp on-time, and others (depending on controller features)
Measurement Accuracy	±0.5% for internal measurement circuit

Output Switch	Mechanical Contact Relay	Solid State Relay
Switching Type	5A (100,000 Operations)	2A (Zero-Cross Detection)

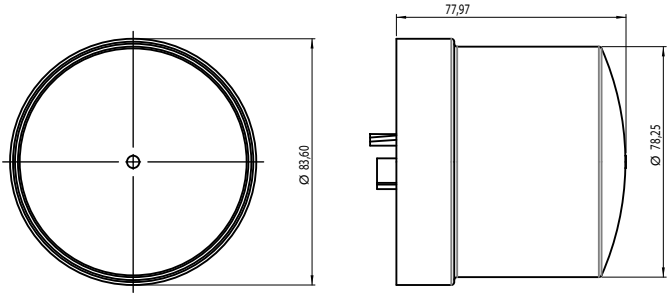
Timing	
Real-Time Clock (RTC)	Yes, supercapacitor backup (up to 15 days)

Environmental	
Input Protection	IP66 (IEC 60529)
Operating Temperature	-20 °C +... + 60 °C

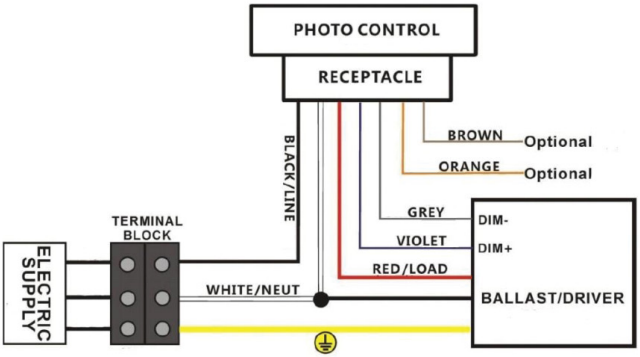
Mechanical	
Standard	ANSI C136.412013
Pins and Positions	5 or 7-pin and 3-pin power contacts; 2 or 4-pin dimming and signal contacts.
Weight and Dimensions	150 g and 76 mm × 70 mm (height × diameter)
Base and Dome Material	High-temperature-resistant polybutylene terephthalate & anti-UV, impact-resistant polycarbonate

Compatibility	
Standards	EN 613471, EN 61347211, EN 300 220, EN 62368, EN 301 489, EN 62479, EN 50581
Certificates	CE

Mechanical Dimensions



Cable Connection Guide



All dimensions are in millimeters (mm).

Order Code	LCNM	L	1	A	B	D	X	1	###
Communication Type									
LoRaWAN		L							
Nb-IoT		N							
Bluetooth		B							
Zigbee		Z							
Hardware Version (1~n)			1						
LoRaWAN Frequency									
Not available				X					
LoRaWAN EU 868				A					
LoRaWAN AU 915				B					
LoRaWAN US 915				C					
LoRaWAN AS 923-1				D					
LoRaWAN AS 923-2				P					
LoRaWAN AS 923-3				Q					
LoRaWAN AS 923-4				R					
LoRaWAN 868 Multi-Region (software configurable)				T					
LoRaWAN 915 Multi-Region (software configurable)				U					
Optional Bluetooth									
Not available					X				
Bluetooth for quick configuration and OTA					B				
Control Option									
DALI-2 / DiiA (IEC 62386) / D4i						D			
0-10V Analog						A			
GPS option									
Not available							X		
GPS							G		
Relay option									
None								0	
Solid State Relay								1	
Mechanical Contact Relay								2	
Sensor option									
None									X
Energy Analyzer									A
Light Sensor									B
PIR Sensor									C
Radar Sensor									D

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Zenosmart intelligently enhances energy efficiency and sustainability with innovative, AI-powered, IoT-based solutions, making life easier.

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