T-Light™ LCU (Light Control Unit) NEMA

User Manual

Model: LCUN2GUS

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About Telematics Wireless Products

Telematics Wireless products have been evaluated as Information Technology Equipment (ITE), which may be installed in Central Offices, Telecommunication Centers, offices, computer rooms, and similar commercial-type indoor or outdoor locations.

Telematics Wireless is an Associate Member of the TALQ Consortium, and its products are ELEXON-approved.

LCU NEMA Description

LCU NEMA is a luminaire control unit, easily installed on top of the luminaire utilizing a standard (twist and lock) NEMA socket. LCU NEMA is a unit of the T-Light Galaxy star network. Control features offer On/Off and dimming level operations. Monitoring features include identification of lamp and measurement of electrical parameters. The LCU NEMA is controlled by the Smart Lighting System Control Management Software (CMS) via a Data Communication Unit (DCU) gateway.

There are two unit models:

LCU NEMA include internal antenna

LCU NEMA with antenna connector for external antenna.

Figure 2 – System Topology

Standard Features

- Light sensor - Operates as a photocell with the integrated microcontroller and is used as a backup light control in the event of microcontroller failure.
- Energy meter - Continuous measurement collection and aggregation with 1% accuracy.
- Integrated RF antenna.
- Over the air firmware updates.
- Each unit is configurable as a repeater, resulting in one additional 'hop' from the DCU.
- Real Time Clock.
- Network data is protected by AES 128 encryption and, optionally, AES 256.
- Relay Control for LED driver/ballast power.
- Alarms for power extremes and maximum temperature.
- "Auto Detection and Verification" Software

"Auto Detection and Verification" Software

The LCU NEMA includes the Telematics "Auto Detection and Verification" software that automatically detects and stores the ballast type (1-10V or DALI) in the LCU. The ballast type is then retrieved during the commissioning process, thereby eliminating the need to enter it manually into the CMS.

Optional Features

- Built-in GPS receiver for full auto-commissioning.
- Built-in NFC chip for data exchange with hand-held device.

LCU NEMA (Internal antenna)

LCU NEMA (External antenna)

Specifications

Radio

Parameter	Value
Operating Frequency	450 - 470 MHz License band
Channel bandwidth	6.25KHz
Modulation	4GFSK
Data Rate	4.8 kbps
Output Transmission Power	Up to +36dBm/ 4Watt max.
Receiver Sensitivity	-118dBm@4.8 kbps

Power and control Interface

Parameter	Value
Operating Input Voltage	110-277V AC @50-60Hz
Load Current – NEMA 5-pin	3A
Load Current – NEMA 7-pin	10A
Internal Surge Protection	350J (10kA)
Dimming – Ballast/Driver Communication Protocols	DALI Analog 0-10V, PWM

Wiring diagram for a NEMA receptacle with dimming pads

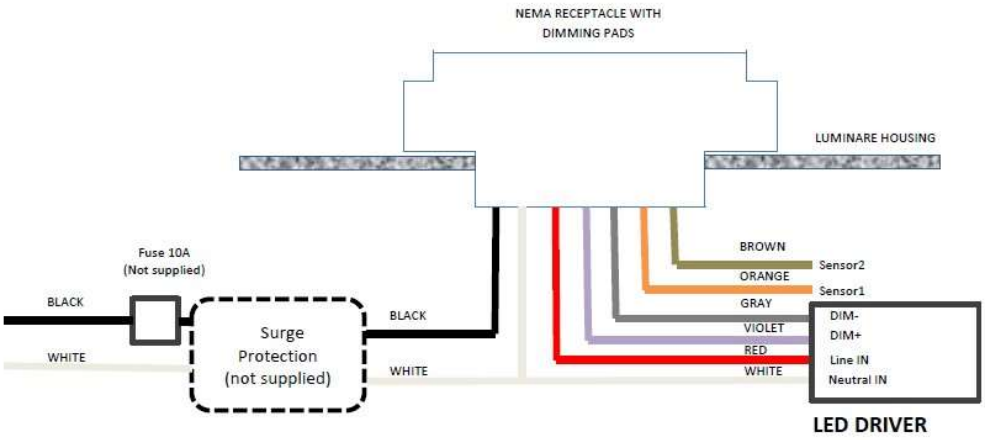
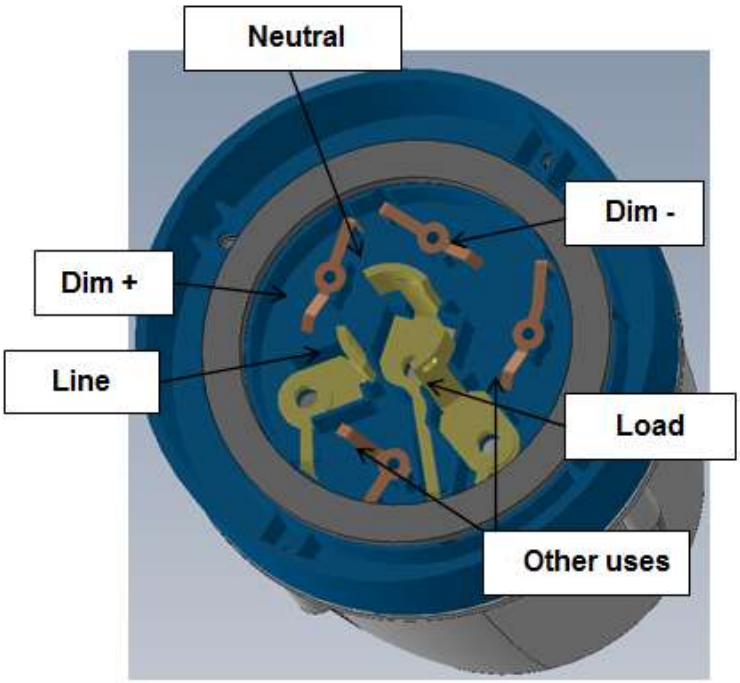


Figure 3 - NEMA Receptacle Wiring Diagram for LCU NEMA

#	Wire Color	Name	Purpose
1	Black	Li	AC Line In
2	White	N	AC Neutral
3	Red	Lo	AC Line Out: Load
4	Violet	Dim+	DALI(+) or (+)0-10V or PWM or RS485-A
5	Gray	Dim-	Common GND: DALI(-) or (-) 0-10V or RS485-B
6	Brown	Reserved 1	Digital IO or Analog In or RS485-A
7	Orange	Reserved 2	Digital IO or RS485-B

LCU NEMA Contacts



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7	Orange	Reserved 2	Digital IO or RS485-B

LCU NEMA Pin Options

		LED Driver		
Model	**Pin 1-2** **Black-White**	**Pins 3-2** **Red-White**	**Pins 5-4** **Gray-Violet**	**Pins 6-7** **Brown-Orange**
External NEMA 5-pin – Standard	Main AC Line IN Main AC Neutral IN	AC for lamp Line OUT Neutral IN	Dimming – 0-10V Analog, DALI, PWM, Modbus RS485	N/A
External NEMA 7-pin - Optional	Main AC Line IN Main AC Neutral IN	AC for lamp Line OUT Neutral IN	Dimming – 0-10V Analog, DALI, PWM, Modbus RS485	For user purposes, for example, sensors, Modbus RS485, GPIO-digital or analog

Physical Specifications

Parameter	Value
Dimension	3.467 in D x 4.173 in H (88 mm D x 106 mm H)
Weight	225 g

Environment

Operation Temperature	-40° F to 161.6° F (-40° C to +72° C)
IP Rating	IP 66 per IEC 60529-1

Standards Compliance

Radio	USA	FCC 47CFR part 90 (mask E)
	Canada	RSS 119
	Europe	ETSI EN 300-113-2
EMC	USA	FCC 47CFR part 15 subpart B
	Canada	ICES-003
	Europe	EN 301-489-1, EN 301-489-3
Safety	USA	UL 916
	Canada	CSA C22.2 NO. 205.
	Europe	IEC 61347-2-11:2001 (IEC 61347-1:2007)

Regulation Information

FCC Part 15 Regulation Class B device

The digital circuit of this device has been tested and found to comply with the limits for a Class B digital device, pursuant to part 90 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Class B Notice

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B)/NMB-3(B)
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numerique de la classe B est conforme a la norme NMB-003 du Canada.

FCC interference Notice

This device complies with part 90 of the FCC rules. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

FCC and Industry Canada Radiation Hazard Warning

The antenna used for this transmitter must be installed to normally provide minimum separation distance of at least 20 cm from all persons.

Le dispositif doit être placé à une distance d'au moins 20 cm à partir de toutes les personnes au cours de son fonctionnement normal. Les antennes utilisées pour ce produit ne doivent pas être situés ou exploités conjointement avec une autre antenne ou transmetteur.

Installation Requirements

Mandatory Customer-Supplied Equipment

System integrity for the LCU NEMA is ensured with the mandatory installation of customer-supplied voltage and current surge protection equipment.

Mandatory Voltage Surge Protection

***Warning**: To prevent damage due to power network voltage surges, it is mandatory that you also provide and install a surge protection device to protect the LCU and the luminaire driver.*

Mandatory Current Surge Protection

***Warning**: To prevent damage due to power network current surges, it is mandatory that you also provide and install a 10 amp slow-blow fuse or circuit breaker to protect the LCU and the luminaire driver.*

Location

The LCU NEMA is installed on the top surface of the luminaire cover utilizing a standard (twist and lock) NEMA socket.

Post-Installation Commissioning

In order for the installed LCU NEMA units to be recognized in the Telematics Wireless Smart Lighting System, the serial numbers and GPS coordinates of the LCU NEMA units must be added to the CMS Equipment Inventory as part of the commissioning process. The level of automation in the Commissioning process depends on the optional equipment installed in the LCU NEMA:

- GPS – Commissioning is fully automated. Commissioning is complete after the CMS Administrator executes the relevant command.
- NFC – Commissioning is partially automated. The required serial number and GPS coordinates are obtained at the installation site with an Android smartphone and a Telematics app. Commissioning is complete after the CMS Administrator executes the relevant command.
- No GPS or NFC – Commissioning is a partially manual process:

- Installer obtains the GPS coordinates of the LCU NEMA with a handheld GPS device.
- Installer records the serial number and GPS coordinates.
- CMS Administrator imports the recorded values into the CMS Equipment Inventory, one by one or by batch.

Contact Details

Contact your local Telematics technical support representative, or contact us at:

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