

PE.AMI LIGHTING MANAGEMENT NODE Instruction Manual

Product name: PE.AMI-NDLM920N NC GPS

Document reference: DOC-INS-0025-01

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1 DESCRIPTION

PE.AMI Lighting Management Node is a key hardware element of PE.AMI, the wireless 6LoWPAN full mesh network platform by Paradox Engineering.

PE.AMI Lighting Management Node is a Sub-GHz IPv6/6LoWPAN hardware radio device. Connected to a light point, it collects information and communicates with the PE.AMI Gateway forwarding data, receiving commands and executing them to allow full remote control of the luminaire.

Together with PE.AMI Gateway and PE.AMI Central Management Suite, PE.AMI Lighting Management Nodes enable the implementation of Smart Lighting infrastructures based on a self-built, self-healing IPv6/6LoWPAN full-meshed network, allowing highly secure communications and bidirectional data transmission.

Conformity

The PE.AMI-920N NC GPS RF Lighting Management Node, complies with the following requirements:

- FCC (Federal Communications Commission) part 15

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC ID: **2AKPQ0701142823020**

IMPORTANT: Exposure to Radio Frequency Radiation: A separation distance of 20 cm or more must be maintained between the antenna of this device and persons during operation.

Operation at closer than 20cm is not permitted.

2 FEATURES

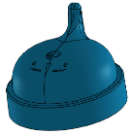
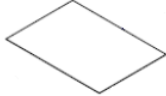
PE.AMI Lighting Management Node offers the following features:

- group and control lamps to switch on/off, dim digital DALI, analogue 0-10V and PWM interfaces and read out alarms and operating parameters.
- grant operations, data acquisition and respect of scheduling tables even in case of wireless connection break up.
- A super-capacitor ensures the RTC (Real Time Clock) of the PE.AMI-NDLM to operate in case of shortage/leakage of the main power supply, and for up to 5 days off grid power (i.e. during the day lighting off).
- comprehensive event logger and scheduler.
- An embedded astronomical clock, managing local celestial events such as sunrise and sunset based on geographical coordinates.
- Analog input and dry contact input interfaces are available to allow connecting light sensors,

- motion sensors, external alarms and other devices.
- Real Time Clock.
 - Measures active, reactive energies.
 - Current, voltage RMS measurement.
 - Provision of self-built, self-healing widespread IPv6-based full-meshed network providing highly secure communication infrastructure which can be used for bidirectional data transmission.

3 CONTENT LIST

The box contains the following items:

Part	Code	Description	Q.ty	Figure
Node	PE.AMI-NDLM920N NC GPS	PE.AMI Lighting Management node	1	
Instruction manual	DOC-INS-0025	This document	1	

4 WARNINGS FOR INSTALLERS AND USERS

The following instructions provide important information to safely install, use and maintain PE.AMI Lighting Management Node. Please read carefully.

- Unpack the device and check possible damage.
- Keep potentially hazardous packaging (plastic bags, polystyrene etc.) out of the children reach.
- Dispose of packaging in compliance with current waste disposal requirements.
- Make sure the installation version complies with current safety standards.
- An Omni-polar mains isolator with at least a 3 mm gap between contacts must be installed upstream from the unit on the electrical system of the building.
- Before connecting the device, make sure the voltage indicated on the power plate corresponds to that of the mains power supply.
- The device must only be used for the purpose for which it is intended. Any other use is considered improper and dangerous.
- The manufacturer declines all responsibility for damage resulting from improper, incorrect or negligent use.
- Before cleaning or servicing the device, disconnect it from the main power.
- In case of breakdown and/or faulty operation, disconnect the device from the main power supply.
- Repairs must only be carried out by the manufacturer.
- Failure to comply with the above requirement may compromise the safety of the device.
- The installer must ensure that devices are supplied with user instructions (where provided).
- The various units comprising the installation must only be used for the purpose for which they are intended.
- Keep this document along with the device.

5 HOW TO INSTALL PE.AMI-NDLM920N NC GPS NODE

Important: Paradox Engineering is not responsible for errors or damages caused by wrong mounting operations.

5.1 Mounting

PE.AMI-NDLM920N NC GPS Node must be mounted on Luminaire with a NEMA ANSI C136.41-2013 7 pin socket.



Figure 1 Bottom side. 7pins NEMA plug

5.2 Connections

Pinouts of PE.AMI-NDLM920N NC GPS Node are shown in the following image, from socket point of view:

Pin	Description
N	GRID Neutral
LO	LOAD Phase
LI	GRID Phase
1 (+)	Dimming (+)
2 (-)	Dimming (-)
3	Not used
4	Not used

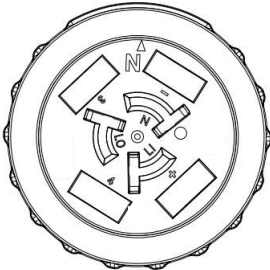

 A technical diagram showing the internal wiring of the 7-pin NEMA socket. The diagram is circular and shows the arrangement of the seven pins. The pins are labeled with their respective functions: N (GRID Neutral), LO (LOAD Phase), LI (GRID Phase), 1 (+) (Dimming (+)), 2 (-) (Dimming (-)), 3 (Not used), and 4 (Not used). The diagram also shows the physical layout of the pins and the internal electrical connections.

Figure 2 Pinout on the NEMA socket.

5.3 GPS Module

Embedded GPS module on the PE.AMI-NDLM920N NC GPS Node allows to automatically gather the following information from the GPS satellite network:

- Latitude
- Longitude
- Date & Time

It is recommended to install the PE.AMI-NDLM920N NC GPS Node under a good GPS coverage.

6 DIMENSIONS

PE.AMI-NDLM920N NC GPS Node dimensions shown in mm and [inches].

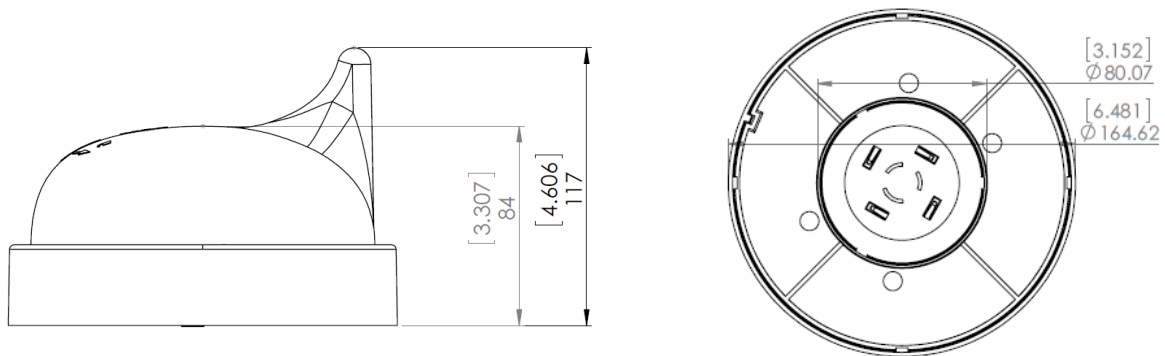


Figure 3 dimensions of PE.AMI-NDLM920N NC GPS

7 Characteristics

Environmental

Item	Description
Material	PC-ABS
Dimensions	Radius 164 mm Height 117 mm
Operating Temperature range	-30 +55 ° C
Humidity	5 – 90%
IP rating	IP65

Power ratings and safety parameters

Item	Unit	Description
Power supply	Vac	100 - 240
Electrical insulation	-	Class II equivalent
Power consumption	W	4 (max)
Min / Idle-status consumption	W	0.5

Sub-GHz Radio Narrowband Interface permitted configurations

Item	Unit	Description
Radio frequency band	MHz	902.42-927.58
Spectrum access		Frequency hopping, 75 channels, channel spacing 340 kHz
Radio frequency band	MHz	909-921
Spectrum access		Frequency hopping, 75 channels, channel spacing 160 kHz

Light control & metering

Item	Unit	Description
Maximum load (LED)	VA	120
Failure mode		FAIL ON
Type of switch	-	Normally Closed (NC) contacts
Dimming Maximum current output	mA	10
Dimming Maximum sink current	mA	20
Dimming Interfaces	-	DALI BUS PWM 0-10V Analog DALI Master (broadcast only) (IEC 60929)

Energy metering

Item	Unit	Description
Sensor type	-	Shunt Accuracy: 2% on I, V Accuracy: 5% on power (W)
Supported measurements	-	Line Irms, Line Vrms, Line Frequency, Active and Reactive Power, Active and Reactive Energy

Standalone main features

Item	Description
1	Non-volatile setup & events scheduling
2	Relative and absolute programmable commands
3	Astronomical calendar & Real time clock
4	Programmable power-on default operating mode. External sensor programmable input

8 Antennas

The PE.AMI-NDLM920N NC GPS Node has an omnidirectional integrated antenna.

9 LABEL SPECIFICATIONS

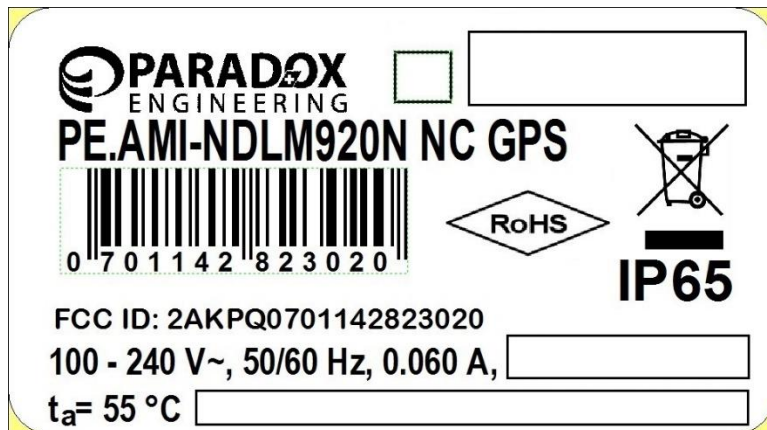

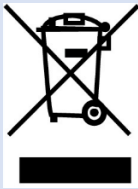




Figure 4 Label of PE.AMI-NDLM920N NC GPS

Specifications of the label icons

Symbol	Description
	RoHS compliance mark.
	Waste Electrical and Electronic Equipment Directive (WEEE Directive) mark.
	Paradox Engineering mark.
	UL listed mark

10 COMPLIANCE

Compliance

Standards	Notes
EN 60529:1991 + A1:2000 + A2:2013	Degrees of protection provided by enclosures (IP Code)
ANSI C136.41-2013	NEMA 7 twist-lock connectors with dimming control

11 ORDERING CODES

Ordering codes for PE.AMI Lighting Management Node

Product name	EAN13 UPC code
PE.AMI-NDLM920N NC GPS	0701142823020

12 REVISION HISTORY

Revision history

Revision	Document No.	Date	Description
00	DOC-INS-0025-00	25.11.2016	First emission of this document
01	DOC-INS-0025-01	02.02.2016	Added FCC logo and FCC statements

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