OL-N2-NB Series

Smart Lighting Controller

NEMA 7, LPWA NB-IoT/LTE-M communication technology

Feature

- Cellular Low Power Wild Area Network (LPWAN) with NB-IoT/LTE-M network technology
- Smart control dimming function with 0-10V interface or DALI protocol
- Intelligent and autonomous operation based on predefined schedules
- Electrical parameters monitoring
- Fault detection supporting
- Integrated accelerometer for tilt detection
- Intelligent operation based on predestinate schedule
- Compatible with the ANSI C136-41 NEMA type LED luminaires.
- Wide operating temp range -20°C to +70°C
- Secured Cloud Platform connection with MQTT/MQTT-TLS
- Supporting Firmware-Over-the-Air (FOTA)

Introduction

ORing's smart lighting series managed wireless controllers are designed for street Streetlight applications. Thanks to cellular-based, licensed-band LPWA communication technologies, they can use the advantages to operate securely and stable in large group being at the same time economic and energy saving.

OL-N2-NB series provides electrical parameters monitoring function - Vrms(V), Irms(I), Power Factor(PF), Frequency(Hz), Power(W) as well as fault detection including over/under voltage, over/under current, lamp/driver fault, device failure, luminaire or poll damage to minimize downtimes and help users save time spent on troubleshooting.

OL-N2-NB series also include the G-Sensor to do the tilt detection, can send the alarm in any damage. Furthermore, it is designed as the autonomous sensing device, which controls dimming with sunrise time, smart dimming procedure through analyzing data, and so on.

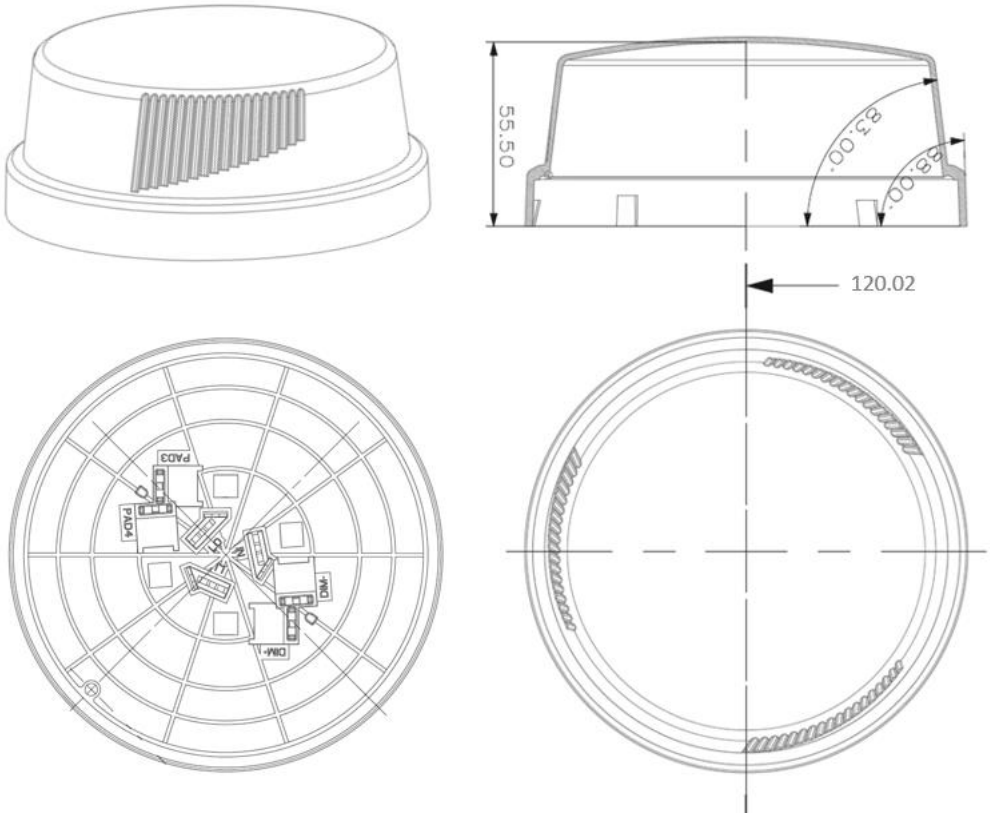
Specification

ORing Lighting Model		OL-N2-NB SERIES	
Connected			
Pin Define		7pin connector	
Controller Feature			
Dimmable Function Feature		DALI	AO(0-10Vdc)
Electrical parameters monitor		Vrms(V)、Irms(I)、Power Factor(PF)、Frequency(Hz)、Power(W)	
Lighting Control	ON	●	
	OFF	●	
Up-Link Feature			
Working Mode		NB-IoT and LTE-M	
SIM Card Type		Nano SIM Card Chip SIM Card	
Wireless			
NB-IoT		**Frequency Band:** B1/B2/B3/B4/B5/B8/B12/B13/B20/B28 **AT Command:** 3GPP Rel-13 and enhanced AT commands **Data rate:** up to 62.5 kb/s UL / up to 27.2 kb/s DL	
LTE-M		**Frequency Band:** B1/B2/B3/B4/B5/B8/B12/B13/B20/B28 **AT Command:** 3GPP TS27.007, 27.005 and other enhanced AT Commands **Data rate:** up to 375 kb/s UL / up to 300 kb/s DL	
Electrical Specification			
AC Input Voltage		110-264Vac ±10%	
Output Load Current		Max. 2A	
Frequency		50/60Hz	
Power Consumption		Max. 1.35W	
Supply Current	DALI	10mA	
	AO(0-10Vdc)	1mA	
Protection / Certification			
Inrush Current Protection		5A@10ms pulse	
EMC (Electromagnetic Compatibility)		EN 55032/55024	
EMI (Electromagnetic Interference)		CISPR 32, FCC Part 15B Class B CNS 13438 (NCC: CCAM19NB0030T7)	
ESD (Electro Static Discharge)		IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV	
RS (Radiated Susceptibility)		IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m	
EFT (Electrical fast transient)		IEC 61000-4-4 EFT: Power 1 kV; Signal 0.5 kV	
Surge		IEC 61000-4-5 Surge Power: 2 kV;	
CS (Conducted Susceptibility)		IEC 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m; Signal: 3 V/m	

RF (radio frequency)	PLMN11 (LET-NB / LET-M1) (NCC: CCAM19NB0030T7)
Safety	CNS 14336-1 (NCC: CCAM19NB0030T7) IEC 60950-22
Firmware	
Firmware update	OTA (Over the air)
Physical Characteristic	
Enclosure	IP65
Dimensions	Φ120 x 55.5mm
Weight(g)	190g
Environmental	
Storage Temperature	-40˚C to +80˚C
Operating Temperature	-20˚C to +70˚C
Operating Humidity	0 to 95%
Additional Sensor Support Feature	
Accelerometer	Static g-force measurement for tilt/roll angle
Light Sensor	Detection Range: 0.001 lx to 100k lx
Warranty	2 Years

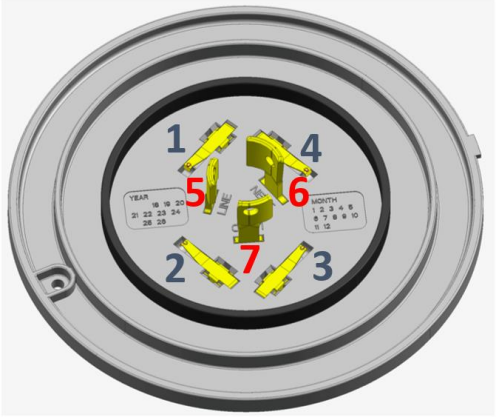
*For warranty period and details, please contact with ORing's sales person.

Dimension and Drawing



Connector

- 7 position: 3 power contacts + 2 dimming/signal contacts



Pin NO.	Description
1	DALI+ or 0~10V Dimming Contact
2	LSI (Logic Signal Input)
3	GND
4	DALI- or 0~10V Dimming Contact
5	Power Contact – LINE
6	Power Contact – NEUT
7	Power Contact – LOAD

Ordering Information

Model Name	Description
OL-N2T5GA1-NBG-UR-00	Lighting, NEMA2, NB-IOT, 0~10V Dimming control, G Sensor, Band3/8/28
OL-N2D5GA1-NBG-UR-00	Lighting, NEMA2, NB-IOT, Dali Dimming control, G Sensor, Band3/8/28

*Note: if need other model, please contact to ORing sale person.

Packing List

OL-NB Series Controller x1

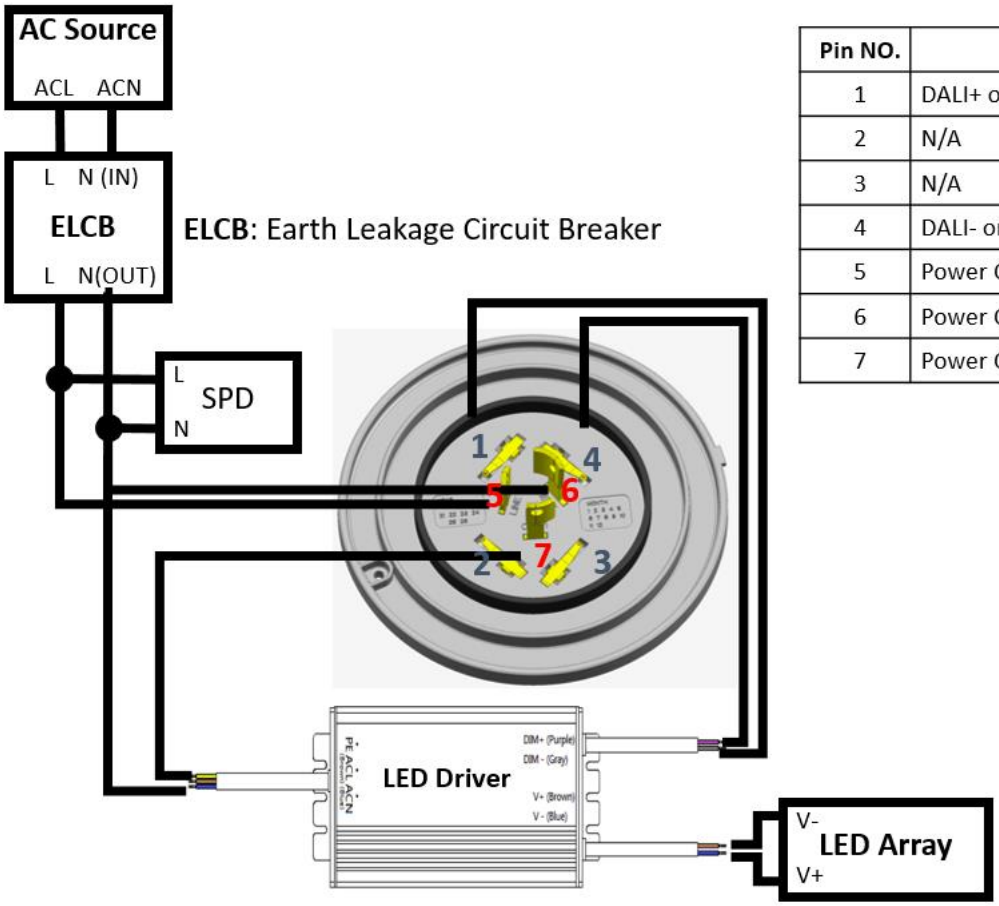
Appendix A

Safety Warnings and Cautions (This is for Taiwan only)

警語	適用產品
根據 NCC 低功率電波輻射性電機管理辦法規定： 第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。 第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。	適用產品：低功率(LP0002)
減少電磁波影響，請妥善使用 Support FDD LTE 700/900//1800MHz	
警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被 要求採取某些適當的對策。 標示方式：設備本體及使用說明書	
電信服務提供商必須啟用 LTE 安全功能 *加密演算法 EEA0 僅限用於緊急狀態 *韌體更新階段，不適用加密演算法 EEA0	
與本產品連線之平台需具有識別碼重複撿查判斷機制，以確保本產品連線識別碼的唯一性。	
後台監控伺服器如具備夜間關燈的功能，後台監控伺服器須具有進行身分鑑別的功能，操作人員方能執行關燈動作。	

Appendix B

Application Wiring: Lighting controller Wiring Diagram



Pin NO.	Description
1	DALI+ or 0~10V Dimming Contact
2	N/A
3	N/A
4	DALI- or 0~10V Dimming Contact
5	Power Contact – LINE
6	Power Contact – NEUT
7	Power Contact – LOAD

Note: shoud use ELCB (Earth Leakage Circuit Breaker, 15A/220V) between AC Source and Lighting controller.

Appendix C

Naming Rule and Ordering information

Model Name	Description
OL-N2T5GA1-NB*	Lighting, NB-IOT, 0~10V Dimming control, G Sensor
OL-N2D5GA1-NB*	Lighting, NB-IOT, Dali Dimming control, G Sensor

*: RF Band	
NB-IoT	
AS	Band 1、3、5、8
EU	Band 3、8、20、28
NA	Band 2、4、12、13
G	Global
Chip Model	
U	Ublox
R	R410