

## FRE-220-NEMA-NB1-M1 - NB-IoT, LTE-M compatible, luminaire controller

Plug-and-play upgrade for lamps compatible with NEMA socket connected (ANSI C136.41) with full lamp management and feedback functionality.

- › NEMA socket connected (ANSI C136.41).
- › Enables individual remote management of streetlight lamps with electronic driver up to 400W (ON/ OFF/ Dimming).
- › Specially designed and optimized for LTE networks.
- › Autonomous operation based on predefined schedules, light level sensor and adaptive lighting.
- › Adaptive lighting capabilities based on digital input for motion sensing.
- › Bandwidth efficient with minimal communication requirements.
- › Secure communication based on encryption keys.
- › Wide range of electrical parameters monitoring: V, W, A, VAR, Wh, VARh and PF.
- › Advanced data synchronization and notification mechanism.
- › Internal precision Real time clock (RTC) with backup battery.
- › Infrared interface for local configuration.
- › Dry contact digital input (for PIR sensor, photocell sensor, open door sensor etc.).
- › Integrated light level sensor.
- › Over The Air (OTA) firmware update.
- › Designed lifetime: 10+ years.
- › TALQv2 certified solution.



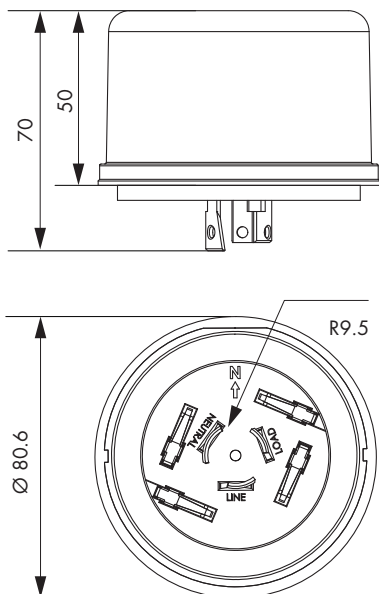


## FRE-220-NEMA-NB1-M1

Lamp Type	LED, CF, HID with electronic driver
Maximum lamp power	400W (optional up to 750W) *
Functions / Operation mode	ON / OFF / Dimming
Dimming range	1%-100% (depending on lamp control gear)
Control interface	Analog 1-10 V / 0-10 V / DALI Logarithmic and Linear
Power supply	85- 275VAC / 50Hz-60Hz
External interface	infrared
Network interface	NB-IoT / LTE-M
LTE supported frequencies	worldwide
Internet protocol version	IPv4/IPv6
Inter-node mesh communication	Optionally available, with motion sensor add-on
Last gasp	Optional
Firmware update	IR (infrared) / OTA (over the air)
GNSS	Optional- Geolocation and precision time (GPS, GLONASS)
Security	Encrypted communication based on security keys (AES128-bit)
Surge protection	max 10kA (IEC 61000-4-5)
Internal scheduling memory	128 events (daily / weekdays / weekends / fixed date / exceptions)
Measurement accuracy	MID grade ( $\pm 1\%$ )
Average power consumption	0.9W
Maximum power consumption	2W
Precision Real Time Clock (RTC)	Yes, battery operated
Battery operation time	10 years +
Real-time lamp operation	Yes
Digital input	1x dry contact (for PIR sensor, photocell sensor, open door sensor etc.)
Tilt sensor	Optional (configurable threshold for tilt & roll)
Light sensor	Integrated. Configurable threshold.
Ingress protection	IP66 (IEC 60529)
Impact protection	IK09 (IEC 62262)
Operating temperature range	-25°C to +70°C
Weight	115 $\pm$ 5 g
Dimensions (diameter x height)	80 x 70 mm
Mounting	7pin NEMA socket (ANSI C136.41)
Compliant standards	• RED Directive: LVD Directive & protection of health (EN IEC 62368-1, EN IEC 62479), EMC Directive (ETSI EN 301 489-1, ETSI EN 301 489-2), Efficient use of radio spectrum (ETSI EN 301 908-1, ETSI EN 301 908-13, ETSI EN 303 413) • RoHS Directive • Environmental Testing: EN 60068-2-1, EN 60068-2-2
Certifications	CE, FCC, UL- in the process of certification

\* The controller can be used for luminaires over 750W together with an external contactor, and with limited functionalities (no dimming, no measurements).

### DIMENSIONS (mm):



### CERTIFICATIONS:



### MEASURED PARAMETERS:

- › Lamp power
- › Line voltage
- › Current
- › Active power
- › Reactive power
- › Apparent power
- › Power factor
- › Energy consumption (active/ reactive)
- › Lamp / controller- running hours counter
- › Lamp On / Off cycles counter
- › Dimming level at the moment of interrogation (optional). It needs to be specified before product shipping.

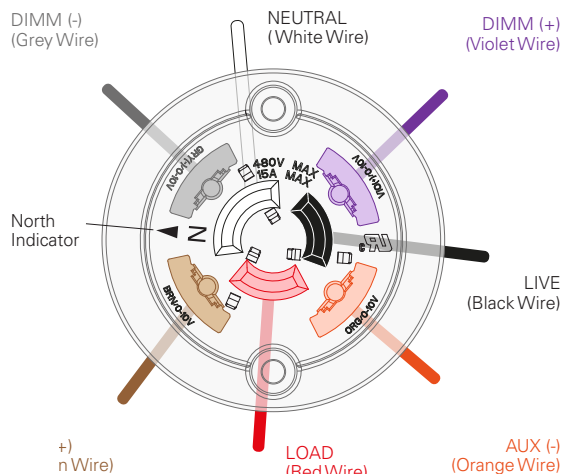
### CONFIGURABLE PARAMETERS:

- › Astronomical calendar scheduler
- › Predefined scheduler
- › Start state ( Photocell / Schedule / Manual)
- › ON/OFF power threshold
- › Over/ under voltage threshold
- › Over/ under current threshold
- › Strike retry count
- › Fade time
- › Lamp warming time
- › Lamp cooldown time
- › Light level threshold
- › Data transmission setup
- › Alert priority setup
- › Use of necessary light flux (Adjustable Lighting Output)- Only ON/OFF based on photocell value
- › Maintaining of constant light flux (Constant Lumen Output)- depending on the control gear

### ALARMS MONITORED:

- › Over/ under voltage detection
- › Over/ under current detection
- › Lamp or driver fault detection
- › Device failure

### ELECTRICAL CONNECTIONS:



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