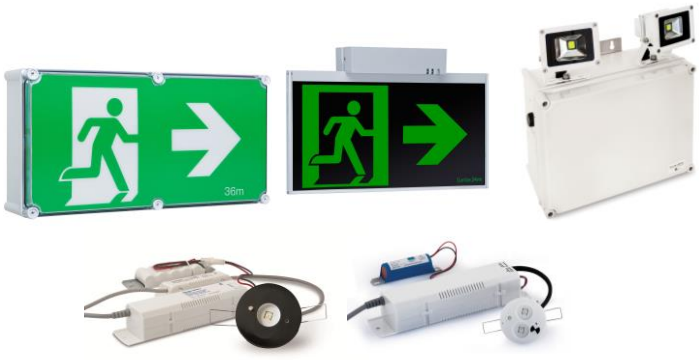
NHP Stanilite®

Consultant Specification

Nexus® Pro specification

Emergency and exit lighting monitored system

Version : 1.1



Technical Specification – Nexus® Pro

Table of Contents

1 General 4

1.1 Scope 4
1.2 Standards 4
1.3 Regulatory Requirements 4

2 Product Specification 6

2.1 Emergency Luminaires 6
2.2 Illuminated Exit Signs 6
2.3 Batteries 6
2.4 Nexus® Pro System 7
2.5 Luminaires 7
2.6 System Emergency and Exit Lighting Gateways 8
2.7 Nexus® Pro System Programming and Commissioning 9

1 General

Provide a Stanilite Nexus® Pro cloud based computerised automatic testing and monitoring system for the exit and emergency lighting comprising of:

- Self-contained emergency luminaires
- Self-contained illuminated exit signs
- Wiring and controls
- Associated monitoring system equipment

1.1 Scope

Provide emergency and exit lighting systems comprising:

- Self-contained emergency and exit luminaires with Nexus® Pro capability
- Luminaire wiring and controls
- All exit and emergency lights to be classified by an approved authority in accordance with ASNZS 2293 with the classification being clearly identified on the luminaire
- Local power and data cabling to be provided to each Nexus® Pro gateway
- Prior to installation contact the manufacturer to confirm coverage of all exit and emergency luminaires and produce a single line diagram showing locations of Nexus® Pro gateway. Allow to adjust from nominal locations indicated on electrical drawings if required
- Installation of the system in accordance with the manufacturers installation and commissioning guidelines

1.2 Standards

Reference documents

Comply with the following standards:

- AS/NZS 2293 – Emergency Escape Lighting and Exit Signs for Buildings
- AS/ACIF S009 - installation requirements for customer cabling (wiring rules)
- AS 3000 - exit and emergency lighting complying with all relevant clauses in the luminaires section of this specification
- AS IEC62443-4-1 – Secure product development lifecycle standards

1.3 Regulatory Requirements

Comply with requirements of:

- Building Code of Australia
- National Construction Code of Australia
- Applicable Local Government Authority
- Security of Critical Infrastructure Act 2018

2 Product Specification

2.1 Emergency Luminaires

Provide emergency luminaires supplied and installed to comply with AS/NZS 2293 and AS/NZS 3000 with the following:

- Be tested to comply with EMC Standard AS/NZS CISPR 15:2017
- Be tested in accordance with ASNZS 2293.3 with respect to thermal/duration, and photometry resulting in a classification
- The photometric classification shall be clearly labelled on the luminaire
- Test results of luminaire from a NATA or a recognised registered laboratory shall be available on request.
- EMC test results
- Heat rise test results
- Be adequately ventilated
- Be positioned to permit easy access for maintenance and replacement
- Have long life, low energy LED lamp source/s
- Have a minimum design life of 10 years
- Contain a mains failure relay or solid-state switch
- Have reverse battery polarity protection
- Have a clearly visible test push button and indicator LED

All emergency luminaires will be self-contained, non-maintained fittings complete with batteries, charger, electronic controls.
Provide mounting brackets, rods or wire suspension for ceiling mounting, surface wall mounting and cantilevered wall mounting as required.

2.2 Illuminated Exit Signs

Provide illuminated exit signs that incorporate the same general features as specified for emergency luminaires. In general:

- Front of house areas provide Edgelit blade style exits signs
- Back of house areas provide slide connect Quickfit style exit signs
- IP/IK rated exit signs to be utilized as required or specified in the luminaire schedule

All emergency luminaires will be self-contained, maintained fittings complete with batteries, charger, electronic controls.

Provide mounting brackets, rods or wire suspension for ceiling mounting, surface wall mounting and cantilevered wall mounting as required.

2.3 Batteries

Removable Stanilite Lithium Iron LiFePO4 single cell batteries to be used.

Batteries shall be suitably located away from heat sources such as transformers, ballasts and lamps to achieve optimum battery life. Batteries shall be securely fastened using purpose made clamps, incorporated into the battery pack or luminaire body. Battery connection shall be by quick connect tabs and receptacle connectors.

- Design life of 10 years
- Initial emergency period: 2 hours
- In service emergency period: 1.5 hours
- Labelling: date of manufacture, ampere hour rating and replacement part number

2.4 Nexus® Pro System

Provide a Stanilite Nexus® Pro IoT cloud based computerized automatic testing system to provide a real-time monitoring and testing of multiple networks of exit and emergency luminaires in accordance with the requirements of ASNZS 2293.

The System:

- All exit and emergency luminaires shall comply with the requirements of the radio communications class licence 2000 from ACMA (Australian Communications and Media Authority) for low interference potential devices (LIPD) and operate in the 2.400 to 2.483.5 GHz band with a maximum radiated power of 10mW.
- Operate autonomously in a dynamic manner so that the Bluetooth Low Energy mesh (BLE mesh) network forms automatically and adjusts automatically to changes in the RF environment
- Have autonomous flooding mesh communication technique to ensure communications are reliable between all wireless luminaires and gateways
- Be able to operate in areas of multiple wireless networks without interference with each other
- If multiple Nexus Pro gateways are required they do not require to be networked together for system operation they only require connection to the internet via either LAN, WiFi, or LTE connection.
- There should be no limit to the amount of Nexus® Pro gateways and exit and emergency luminaires in a system
- Will require a free smart device application (Nexus® Pro) available from Apple App store, or Google Play store, or any web browser (Chrome, Firefox, Opera etc) for system commissioning & management. The devices require internet access for commissioning and system management.
- Shall be backwards compatible to the Nexus® RF system by integrating a LAN connection between the Nexus® RF backbone with the Nexus® Pro gateway.
- The system shall be able to initiate tests to the Nexus® system, and incorporate the Nexus® RF fittings details and locations into the Nexus® Pro system
- Shall store all information such as site-based information and fitting information in the cloud against the users account and provides an encrypted database backup to users given access to the site
- Shall utilize encryption between fittings, gateways, smart devices, and the cloud-based service

2.5 Luminaires

All Stanilite Nexus® Pro exit and emergency luminaires shall have the following:

- be able to disconnect the emergency unit from the mains supply to test the emergency operation of the unit in the event of power failure
- record the battery discharge time achieved during this test
- store the data and results of all previous discharge tests in retainable non-volatile memory
- store all of their commissioned identification and configuration data in non-volatile memory so that the main system database can be rebuilt automatically at any time, including:
    - Power failure counter
    - Power on time
    - Full discharge test pass limit

- Charger board hardware revision
- Charger board firmware revision
- Temperature
- Current state
- Charger product ID
- Device unique ID (UUID)
- Configuration
- Comm board firmware version

So test data and reporting is not lost in the event of a gateway failure during commissioning or between tests.

Commissioning, configuration and all test results are to be stored in the cloud to protect against faulty or damaged hardware.

2.6 System Emergency and Exit Lighting Gateways

2.6.1 Nexus® Pro Gateway

Each Nexus® Pro gateway in the system shall

- Communicate wirelessly with a network of up to 2,000 Nexus® Pro luminaires and 30 Routers/Controllers and up to 5,000 luminaires from the Nexus® RF system
- Be able to connect to an IP backbone network (Ethernet or LAN), WiFi, or LTE network
- Be able to connect to an IP Backbone network (Ethernet or LAN) with an existing Nexus RF system in order to achieve backwards compatibility• Have HTTPS (SSL) and DHCP via static IP compatibility
- Have connection points: Dual Ethernet ports; Nano Sim card slot, SMA antenna connections for antennas for BLE Mesh, WiFi/Bluetooth, and LTE services;
- Programmable with a client selected IP address, subnet mask and gateway or DHCP via static IP address

Programmable with a client selected WiFi SSID with or without login credentials

Programmable with a client selected Cellular service

- Comply to CISPR 22

2.6.2 Nexus® Pro Gateway

In addition to router properties above, each Nexus® Pro gateway shall have

- Antennas for LTE connection and Bluetooth low energy mesh
- Bluetooth expansion module

Mounting provision for DIN rail and weatherproof applications

- Mounting provision for DIN rail and weatherproof applications

Each Nexus® Pro gateway requires local power and data point if the local area network is being utilised.

2.6.3 IP backbone data network

The system shall be able to share an IP (Ethernet or LAN) data network with other systems. Any such IP (Ethernet or LAN) network shall be installed in accordance with the AS/ACIF S009 cabling standard.

2.7 Nexus® Pro System Programming and Commissioning

Full commissioning of the Stanilite Nexus® Pro system shall be performed by the manufacturer. The contractor must engage the manufacturer directly to perform initial commissioning and testing of the system, ensure the system is fully updated with the correct device data, configured and operational.

This will form part of the acceptance of the emergency lighting system for the issuing of project practical completion.

The manufacturer shall also be engaged to perform the 6 and 12 monthly tests and produce a work instruction for any required remediation work during this period per ASNZS2293.

Hard copies of all test reports to be supplied and filed.

2.7.1 Commissioning

The system shall have the ability to be commissioned during construction without power being available.

Mobile Application Commissioning Process

Nexus® Pro allows the installing contractor to commission luminaires into a system prior to the luminaires being energized or network infrastructure being installed/operational.

The manufacturer provides the installer with an invitation to join the specific site network via any mobile web browser.

The installing contractor can then use any mobile device with Bluetooth (such as an android/iphone) and web connectivity to pair with the nearby luminaire, input a Single Point Unit ID and locality information as required below. This enables the building to be commissioned as it is constructed.

The following information is required and forms part of the baseline data requirement of ASNZS2293

- Single point unit ID
- Part number
- Unit type
- Location including building, area, position
- Drawing number and grid reference
- Floor level
- Circuit and distribution board

Common Requirements:

Single point unit ID names (SPU_ID) are to be clearly marked on all luminaires in accordance with ASNZS 2293. The SPU_ID must not be duplicated in the system and may consist of special characters, alphabetic and numerical digits up to 5 characters in length. Consult the manufacturer for recommendations of SPU_ID start sequences for multiple floored/multiple site systems.

Building	Level	Label Examples
1	0	B1-L0-01, B1-L0-02, B1-L0-03 etc

Building	Level	Label Examples
1	1	B1-L1-01, B1-L1-02, B1-L1-03 etc
2	0	B2-L0-02, B2-L0-03 etc
2	1	B2-L1-02, B2-L1-03 etc

Detailed as-built drawings must also be provided at the commissioning stage with the following information:

- Location of the Nexus Pro gateways and emergency/exit luminaires with SPU_ID's
- The gateway location must be accurately placed on the as buit drawings

Integration Into Existing Nexus® systems

The Nexus® Pro system shall be backward compatible with existing Nexus® infrastructure and capable of integration without loss of functionality. All associated works, including integration and commissioning, shall be carried out by Stanilite**.**