



NV LogiQ Control System

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Detailed description

The occupied spaces will be naturally ventilated for the purpose of maintaining acceptable indoor air quality, thermal comfort, and energy efficiency, to the following current design guidance and regulations:

- CIBSE Guide A.
- CIBSE Guide B.
- CIBSE AM 10.
- Department for Education Building Bulletin101 (BB101).
- BS EN 13779.
- Building Regulation Approved Document F (ADF).
- Building Regulation Approved Document L (ADL).
- UK Government's Energy Consumption Guide 19 (ECON 19).

This is achieved by monitoring internal and external environmental conditions and applying adaptive control strategies to automate façade, windows, louvres, roof vents, roof terminals, extract fans etc in conjunction with internal heating and cooling products.

The system comprises of distributed independent Room Controllers, each incorporating their own inbuilt pre-programmed strategies, sensors and intuitive user interfaces within a single wall mounted unit for each room space, reducing cabling and installation costs plus providing system adjustment and operation from within each room. Common shared signals, such as weather and maintenance, are networked. System performance must be recorded continually post-occupancy to prove compliance and provide feedback to the client and design team.

Product guidance - As Standard

Room Controller:

The Room Controller is the key user interface and sensor module at the heart of the system within each room, providing simple intuitive use of the natural ventilation system. It is wall mounted in a location suitable for the inbuilt sensors.

- Enclosure:

- White polycarbonate ABS material, UL94 V0 flammability rating.
- 160 x 105 x 35 mm or smaller.

- User interface:

- User interface, integrated sensors and inbuilt strategy within a single controller.
- Backlit LCD graphic display indicating live sensor readings (CO2 temperature, humidity, time, date) and system status (mode).

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- Traffic Light CO2 indicator.
- Inbuilt incremental manual override with % position display.
- Intuitive menu control pad.
- Access port for NV LogIQ data stick.

- Sensors:

Inbuilt CO2, temperature and humidity sensors.

- AOV modulation:

5% incremental positioning to provide precise control and effective trickle ventilation.

- Security:

- Setup menu access protected by data stick security.
- Manual override function lockout facility.
- Global maintenance lockout facility.
- Programmable 'unoccupied' system lockout.
- Menu buttons may be disabled using data stick pass key.

PSU:

The PSU is the power and interface module for the Room Controller but can also be used as natural ventilation AOV PSU or BMS interface unit. It contains multiple connection terminals and commissioning features, and can operate a number of AOV devices.

- White polycarbonate ABS material, UL94 V0 flammability rating.
- 280 x 190 x 55 mm.

Outdoor Air Temperature (OAT) Sensor:

The OAT sensor enables the Room Controller to offer accurate summertime passive cooling (night purging) and effective thermal comfort and energy efficiency in wintertime.

- Grey ABS material, UL94 V0 flammability rating.
- 55 mm high x 90 mm diameter.
- Ingress protection rating IP65.

Combined Rain and High Wind Speed Detector:

The sensor allows the control system to close or reduce the opening of the AOVs to prevent weather ingress or damage as well as nuisance drafts. The system however can still provide reduced opening ventilation options during activated periods.

- Grey ABS material, UL94 V0 flammability rating.
- 160 x 80 x 55 mm.
- Ingress protection rating IP65.



Options

Product reference:

Consult manufacturer's literature for full details of M&E capabilities and requirements for system.

Modes of operation:

- Indoor Air Quality (IAQ):

The Room Controller will maintain IAQ within acceptable levels as the stated design guides and regulations, using CO₂ as the measurement criteria. It has the following features for IAQ performance:

- Inbuilt CO₂ sensor of NDIR self-calibrating type that is integrated within the controller enclosure.
- A tri-colour LED 'traffic light' visual display indicating IAQ status.
- On-screen CO₂ live reading displayed.
- Modulating operation of façade automatic opening vents (AOVs) in 5% increments of maximum opening distance relative to CO₂ level.
- Trickle ventilation mode with a maximum 5% of total opening distance.
- Unique seasonal modes to optimise IAQ and still maintain acceptable levels of thermal comfort and energy efficiency.
- 'Fresh air start' function at the start of an occupied day.

- Thermal Comfort (TC):

The Room Controller will maintain TC within acceptable levels as the stated design guides and regulations using temperature (°C) as the measurement criteria. It has the following features for TC performance:

- Inbuilt temperature sensor that is integrated within the Room Controller enclosure.
- Inbuilt incremental manual override with onscreen percentage indication, and adjustable auto mode lockout period.
- Ability to control heating valves, such as thermostatic radiator valves (TRVs), for optimized wintertime thermal comfort.
- Discrete summer and winter mode incremental opening of AOV relative to OAT to manage overheating in the summer and over cooling in the winter.
- Night purging: Inbuilt night purge passive cooling strategy for summertime TC.
- Rain/ high wind speed automated partial opening setpoint for sheltered AOVs to maintain TC and IAQ during rain and high wind speed conditions.

- Energy Efficiency (EE):

The IAQ and TC control strategies will maximise energy efficiencies. It has the following features for EE performance:

- Inbuilt night purge passive cooling strategy to reduce the need for

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mechanical cooling during summer periods.

- Restricted AOV winter operation to retain heating energy.
- Heating valve control to prevent heating and ventilation strategy conflict.
- Summertime overheating protection to prevent high temperature outside air entry.

Data logging and post occupancy evaluation:

The Room Controller records all sensor readings and the resultant AOV position demand, for post installation performance monitoring. This information can be downloaded by the client via the data port using a data stick which will be returned to the system supplier, who shall in turn provide feedback on the system performance relative to the acceptable setpoints within the design guides and regulations. This method of cost effective post occupancy evaluation (POE) provides essential feedback to the client and consultant of the system performance and allows optimum setpoint changes.

Product specification

Manufacturer

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Design As drawing
As schedule