



## WindowMaster NV Systems and BMS Integration

The WindowMaster range provides Natural Ventilation solutions that can be tailored to suit your project needs. The systems operate independently, partially or fully controlled by a BMS. A number of the options are outlined below.

### Simple System

#### Operating independent of a BMS

- The simplest form of window automation can occur when the actuators operate in two wire mode, and simply open or close as signalled by an occupant pressing a button.
- If you require additional features such as precise position control and feedback, early indication and online parameter set up, MotorLink™ MotorControllers and MotorLink™ Actuators should be selected.

### Controlled System

#### Integrated with BACnet

- There can be direct communication from the BMS to the MotorControllers that are controlling the actuators, signalling them to either open or close the windows according to when the BMS sees appropriate. This may be when temperature or CO2 set points are exceeded for example or they may be manually operated.
- To make integration possible with BACnet the following products will be required:
  - FlexiSmoke™ BACnet Controller (WSC 520)
  - MotorController BACnet (WBC 16M)
  - The appropriate actuators to operate your windows or louvres
  - Batteries (if you require fail-safe battery back-up)

#### Integrated with KNX

- There can be direct communication from the BMS to the MotorControllers that are controlling the actuators.
- To make integration possible the following products will be required:
  - FlexiSmoke™ KNX Controller (WSC 520)
  - Motor Controller KNX (WEC 16M)
  - The appropriate actuators to operate your windows or louvres
  - Batteries (if you provide fail-safe battery back-up)

### Automatic System

#### Incorporating NV Comfort

- The NV Comfort is a bus-based solution that is KNX compatible. Operation with BACnet is possible using a gateway.
- It can integrate with a BMS. This means that the NV Comfort will control the natural ventilation, heating, cooling and shading of the building to provide the occupant with a higher level of thermal comfort.
- The NV Comfort can also act as the BMS and control the natural ventilation, heating, cooling and shading, as well as having inputs available for communication with other systems, such as security.
- It can report back to the BMS to provide information on the status of all the systems that it is controlling.
- The NV Comfort must be used in conjunction with WindowMaster MotorLink™ Window Actuators and MotorControllers. This means it will receive precise position control and feedback, three speed operation and all the additional MotorLink features that allow finer ventilation control.



## Window Master NV Comfort™

### NVC KNX A00

#### A simple indoor climate solution

NV Comfort™ controls façade and roof windows so they automatically open and close by incremental amounts to achieve the desired room temperature and CO2 levels. It allows a finer degree of control over natural ventilation.

NV Comfort™ is a bus-based solution for KNX, making it simple for a trained electrician to install and operate. If you wish to operate the NV Comfort™ with BACnet, this is made possible with the use of a gateway – please contact us for more information.

#### Features

Setting of the desired room temperature and CO2 levels can be done individually for each room from one central location in the building via the NV Comfort™ touch screen. At any time the user can open or close the window via a keypad within the room. After a pre-defined time, the system will return to automatic control.



MotorLink™ technology is used in the NV Comfort™ and enables the system to register the opening distance of each window. It also means that windows can be opened at three different speeds, and will stop and open immediately if impeded during closing. See the MotorLink™ section of our website for more information.

### CHOOSING FUNCTIONALITY

In addition to ensuring an optimum indoor climate, NV Comfort™ is able to make buildings more energy-efficient. It allows different installations in the building, such as natural ventilation, mechanical ventilation, heat control and sunshades, to be controlled centrally. The interaction between these systems reduces the buildings energy consumption.

NV Comfort™ is available in two versions: NV Comfort™ Standard and NV Comfort™ Plus.

The differences are; the NV Comfort™ Standard will only control the Heating, as opposed to the complete HVAC systems as the NV Comfort™ Plus will do. The NV Comfort™ Plus is also capable of controlling the sunshading of the building. As can be seen in the table below, they can both control the Natural Ventilation of the building.

#### Natural Ventilation

A healthy and comfortable indoor climate is ensured through the automatic control of the opening of skylights and façade windows. The size of the window openings and the frequency of opening are configured based on pre-defined parameters of; indoor temperature, CO2 levels and humidity and taking into account measurements of outdoor temperature, wind speed and rain. It is also possible to configure predefined airing or night purging times.

#### Control of Heating

NV Comfort™ Plus can signal the heating to be turned on or off based on pre-defined temperature set points. This can help ensure a higher level of occupant comfort and a more stable room temperature during heating and ventilation.

#### Control of HVAC

NV Comfort™ can also control the HVAC system so that the heating or cooling is turned on or off based on predefined temperature set points. This is particularly important if the number and size of the buildings windows is not sufficient to achieve an optimal indoor climate. This interaction between the natural ventilation and HVAC systems will reduce the buildings energy consumption.

#### Sunlight Protection

The sun screening function in the NV Comfort™ Plus allows Venetian blinds, awnings, to be controlled automatically. The position of the can be continually adapted to the prevailing lighting and heating situation in a room. This allows an optimal use and exploitation of the sun screening product as well as optimising the use of solar thermal energy. The actual control is based on measurements of lux and temperature.



## NV Comfort™ Standard vs. NV Comfort™ Plus Comparison

	NV Comfort™ Standard	NV Comfort Plus™
Natural Ventilation	Yes	Yes
Control of Heating	Yes	Yes
Control of HVAC	No	Yes
Control of Sunshading	No	Yes

## Technical Specifications

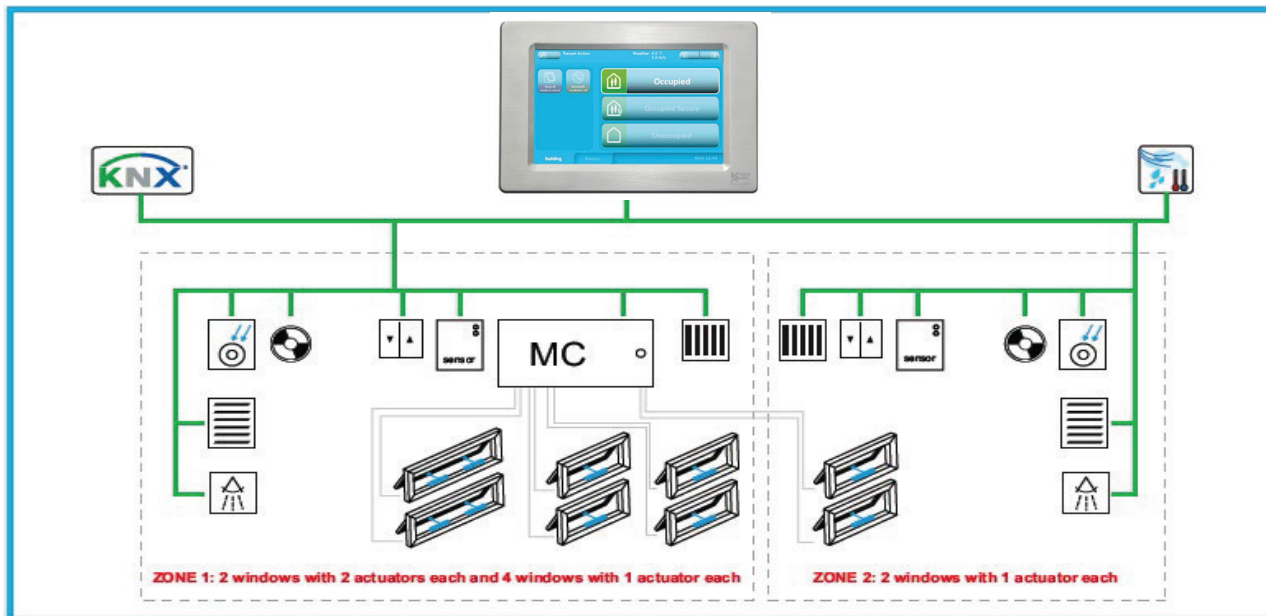
Item no.	08/NVC KNX A00
Screen	7" LCD - Wide VGA
Size	Touch Screen: 185 x 126 x 51mm (WxHxD) Aluminium surround: 211 x 140 x 5mm (WxHxD)
Material	Plastic housing with front surrounding in brushed anodised aluminium
Voltage supply	18 - 35 VDC
Cable length	1.8m



## NV Comfort™

### – CHOOSING THE SOLUTION

NV Comfort™ can be connected to a number of components so that the control can be adapted to the specific project. An example is shown here with two zones and component connections.



We recommend the following steps in the configuration of a NV Comfort™ solution:

#### 1. Which Features?

Define whether; besides the natural ventilation and heating, other functions need to be controlled, e.g. mechanical fans, lighting, and sun screening. If not, select NV Comfort™ Standard. If so, select NV Comfort™ Plus.

#### 2. Number of Zones?

Determine the number of rooms/zones to be controlled. For 1-4 rooms/ zones, select software card for 4 rooms/zones. For more rooms/zones (up to 8) select software card for 8 rooms/zones. When more rooms/zones are required, select extra screen/screens and the necessary software cards.

#### 3. Basic Package

Select NV Comfort™ basic package (KNX or BACnet power supply + weather station)

#### 4. Number of Windows and Actuators?

Determine the number of windows to be controlled. Select actuator packages with single and/or synchro actuators – see page 34.

#### 5. Number of MotorControllers?

Decide on the number of MotorControllers. One MotorController can control up to 8 windows in different zones. The distance between the window actuators and the MotorController depends on the cable dimensions, with a max. of 50m.

#### 6. Number of Sensors and Keypads?

Each zone is equipped with a room sensor (combined temperature, CO2 and humidity sensor) and, if Plus is selected, possibly also a LUX and a PIR sensor. Each room should also have at least one keypad.

#### Other Components

If heat, mechanical ventilators, light or sun shading is to be controlled, components for these functions must be selected.