



## WCC 310 / 320 PLUS UL UL MotorController



Natural ventilation

120V

Rated voltage



MotorLink®

KNX

KNX product

BACnet

BACnet product

Modbus

Modbus product



UL certification – Controls

### Application

- for daily comfort ventilation
- to be used with  $\pm 24V$  standard window actuators and window actuators with MotorLink®
- 2, 6 or 10 motor lines
- 10A or 20A
- can be expanded with field bus card with interface for KNX, BACnet IP MS/TP and Modbus TCP/RTU/RS485
- with build-in touch screen for configuration

MotorController for the control of  $\pm 24V$  DC standard actuators and actuators with MotorLink® for daily comfort ventilation. It can also control espagnolette / locking actuators.

The MotorController is used for control of 2, 6 or 10 individual motor lines. The number of actuators, which can be connected on each motor line depends on the type of actuator – see the table “Max numbers of actuators per motor line and MotorController” for type and number.

### Versions

MotorController is supplied in 6 variants:

With 10A:

- WCC 310 P 0202 U1: 10A, 2 motor lines, 2 inputs
- WCC 310 P 0612 U1: 10A, 6 motor lines, 12 inputs
- WCC 310 P 1012 U1: 10A, 10 motor lines, 12 inputs

With 20A:

- WCC 320 P 0202 U1: 20A, 2 motor lines, 2 inputs
- WCC 320 P 0612 U1: 20A, 6 motor lines, 12 inputs
- WCC 320 P 1012 U1: 20A, 10 motor lines, 12 inputs

All versions can be expanded with field bus card.

In the MotorController each motor line can have a max load of 4A. The total max current consumption of all motor lines must not exceed 10A / 20A.

The MotorController is also supplied as a STANDARD version – please see the separate product sheet for further information.

### Description

The MotorController controls (opens/closes) the window actuators based on the signals from the connected components e.g. keypads, room sensor, weather sensor and BUS commands.

We recommend keypads are used in conjunction with ventilation automation to allow local manual user override.

## Communication

The communication between the MotorController and each window actuator is done via a 2 or 3 wire cable this depends, if the actuator has MotorLink® or not.

### Actuators without MotorLink®

The communication is controlled via a 2 wire cable. If a 3 wire cable is used, cable monitoring can be added and is to be selected on the touch screen in the MotorController. The positioning of the windows is based on time control with a limited precision.

### Actuators with MotorLink®

The communication is controlled digitally via MotorLink® in a 3-core (power and communication wire).

The position of the window is controlled with millimetre accuracy. This is done via the position feedback from the actuators to the MotorController. Via this communication the system continuously registers the extent of the window opening.

The MotorController immediately reports if a malfunction occurs on one of the motor lines.

## Actuator speeds

This MotorController gives the possibility of up to three window actuator speeds depending on the type of actuator connected:

- ±24V DC standard actuator: 1 speed (type B)
- MotorLink® actuator – 2 speeds (type B / C)
- MotorLink® actuator and bus communication: 3 speeds (type A / B / C)

### The different speeds

- A: Slow and almost soundless chain drive when operated automatically
- B: Faster and audible when manually operated by comfort ventilation
- C: 100% chain drive when operated by security functions

## Communication card

The MotorController can be expanded with a communication card (fieldbus card) thus daily comfort ventilation will be possible via bus communication KNX, BACnet IP MS/TP or Modbus TCP/RTU/RS485 together with comfort controls e.g. NV Advance®.

The field bus card is to be ordered separately.

### Card types

- WCA 3FK: KNX interface
- WCA 3FB: BACnet-IP key
- WCA 3FM: BACnet MS/TP / Modbus RTU/RS485 interface

The MotorController is integrated into KNX and BACnet projects using the relevant application.

In the application there are a number of communication

objects and parameters, which help to ensure a flexible integration with other KNX/BACnet products and control units.

For further information on available objects see "KNX Application Program Description", "BACnet PICS" and "Modbus register description" on our web site [www.windowmaster.com](http://www.windowmaster.com).

## Configuring / commissioning / maintaining

The MotorController PLUS is configured, commissioned and maintained via the built in LCD touch screen – easy and simple without the use of an external PC.

For easy commissioning and quick troubleshooting when maintaining the system, faults in the system will be displayed on the touch screen.

### Configuration options

- 2 outputs as comfort group 1 respectively comfort group 2
- wind speed sensor to be connected directly
- master/slave when linking with e.g. smoke control panels type WSC 310 or WSC 320
- output when error
- input can be freely configured
- speeds can be configured
- sequence control
- ventilation timer
- event log

## Specifications

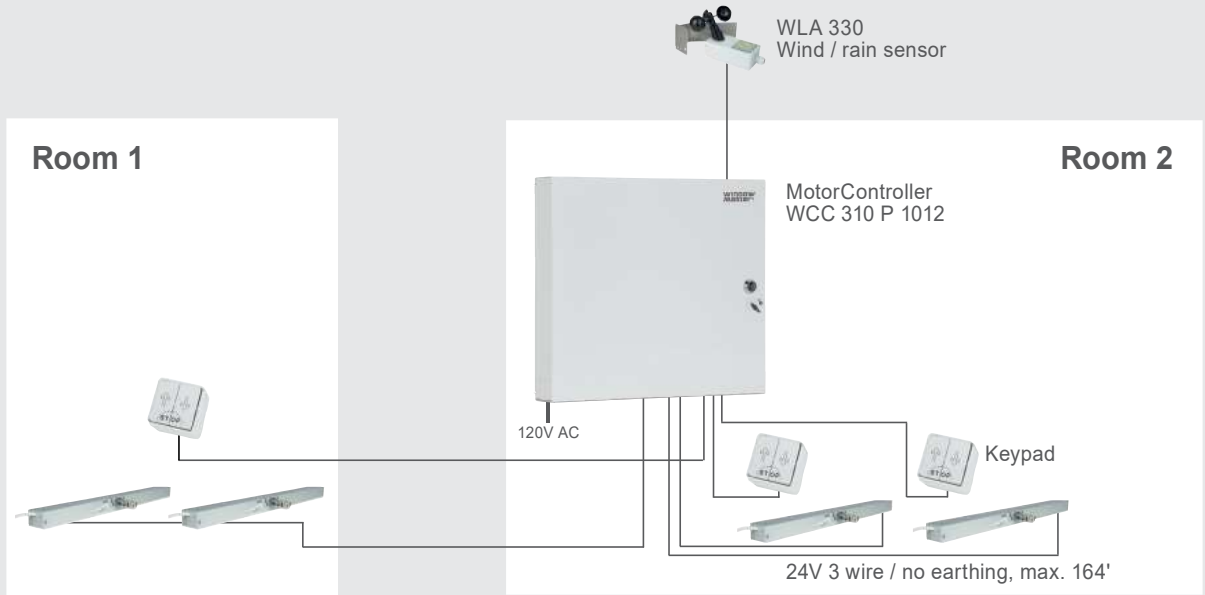
- 2, 6 or 10 motor lines (comfort ventilation groups) with up to 10A / 20A
- max. 4A/motor line
- automatically limited opening for comfort ventilation – no additional modules required
- field bus cards are available for KNX, BACnet IP MS/TP and Modbus TCP/RTU/RS485
- max. output voltage 27.6VDC @120VAC
- easy configuration at start up / expanding / rebuilding on the 2½" LCD built in touch screen in the panel – this can also be done on a PC without any additional modules
- the touch screen is also used for quick troubleshooting when maintaining the system
- simple and fast installation

Actuator and power supply cables are quickly and easily connected to the MotorController. The cable access can be made from the top or from underneath the MotorController, which can be mounted vertically or horizontally on the wall.

**Example 1: WCC 310 P 1012 with wind / rain sensor**

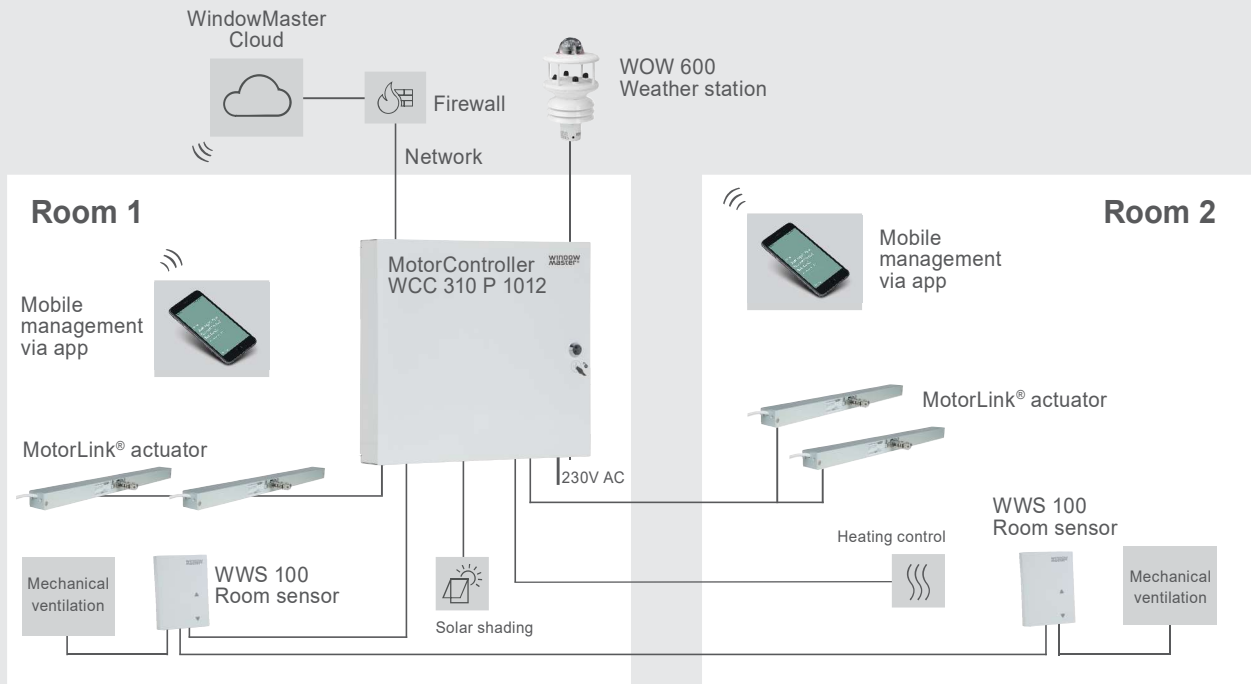
In each room actuators with MotorLink® have been connected as well as individual keypads for individual operation of the windows.

A wind/rain sensor is mounted on the roof.



## Example 2: An independent solution – no BMS-integration

- Control of natural ventilation, mixed mode ventilation (incl. mechanical ventilation), heating and solar shading.
- The indoor sensors are connected directly to the MotorController via WSK-Link™.
- The weather station is connected directly to the MotorController.
- The log data is stored in the cloud.
- The configuration is performed on the MotorController screen and/or from the pc.
- Cloud based remote monitoring
- Mobile app



For more information please see the NV Embedded® data sheet

**Example 3: WCC 320 P 1012 expanded with BACnet MS/TP / Modbus RTU/RS485 card or BACnet-IP key**

Two fieldbus modules can turn the WCC MotorController into a BACnet MotorController supporting either:

- BACnet MS/TP or Modbus RTU/RS485
- BACnet IP or Modbus TCP

BACnet configuration is easily done in the BACnet menu on the touch display.

Download PICS / Modbus register description from [windowmaster.com](http://windowmaster.com)

**Configuration**

- BACnet IP
- Login
- Configuration files, USB
- System

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**Configuration, BACnet IP**

BACnet IP UDP port number: **47808**

BACnet IP device instance: **1**

Actual position COV increment: **1%**

Actual max. position COV increment: **1%**

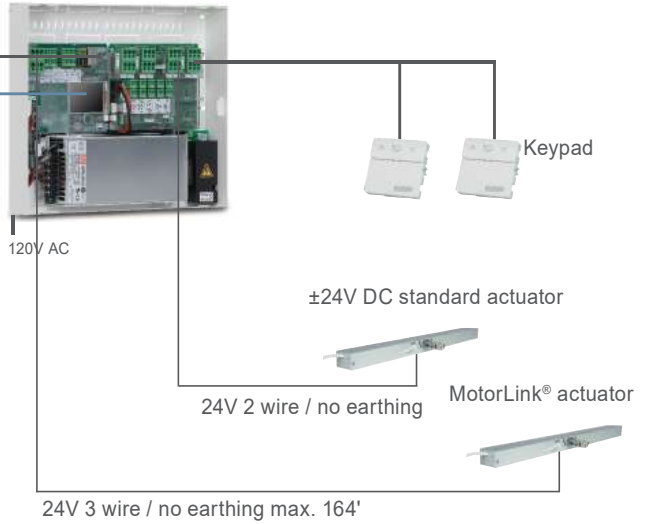
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**Room 1**

MotorController  
WCC 320 P 1012

Fieldbus key  
WCA 3FB

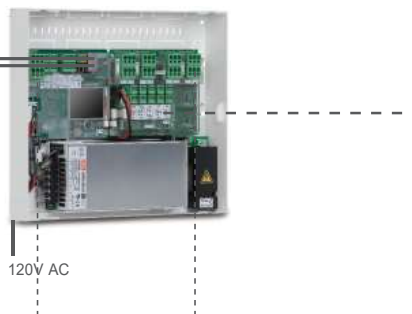
Fieldbus interface  
WCA 3FM



MotorController  
WCC 320 P 1012

Fieldbus key  
WCA 3FB

Fieldbus interface  
WCA 3FM



BACnet

Technical specifications							
Output current	WCC 310: 10A / WCC 320: 20A						
Motor lines	2, 6 or 10 motor lines A line can be either a $\pm 24V$ standard motor line or a MotorLink <sup>®</sup> motor line.						
Primary voltage	120V AC, 60Hz (85-264V AC, 47-63Hz)						
Actuator secondary voltage	<table border="1"> <tr> <td>Nominal voltage</td> <td>24V DC (<math>\pm 15\%</math>)</td> </tr> <tr> <td>Open circuit voltage at 120V AC (no load)</td> <td>27,6V DC @ 20°C</td> </tr> <tr> <td>Ripple at max load</td> <td>max 6% (3,5Vpp)</td> </tr> </table>	Nominal voltage	24V DC ( $\pm 15\%$ )	Open circuit voltage at 120V AC (no load)	27,6V DC @ 20°C	Ripple at max load	max 6% (3,5Vpp)
Nominal voltage	24V DC ( $\pm 15\%$ )						
Open circuit voltage at 120V AC (no load)	27,6V DC @ 20°C						
Ripple at max load	max 6% (3,5Vpp)						
Power consumption	<p>WCC 310: min 2W<sup>1</sup>, typ. 4.2W<sup>2</sup>. At max load 305W  WCC 320: min 2W<sup>1</sup>, typ. 5W<sup>3</sup>. At max load 605W</p> <p>1) min.: 1 MotorLink<sup>®</sup> actuator  2) min.: 20 MotorLink<sup>®</sup> actuators + rain sensor  3) min.: 40 MotorLink<sup>®</sup> actuators + rain sensor</p>						
Inrush current on primary site	<p>70A &lt; 5ms  Max 3 x WCC 310/320 per 10 A supply group.  Circuit breaker "C" characteristic.</p>						
AUX	24V DC, 230 mA						
Operating conditions	+23°F – +113°F, for indoor installation, the controller may not be covered						
Switch-on duration	ED 40% (4 min. per 10 min.)						
Connection cable	<p><b>Actuators</b>  Flexible max AWG 10 / solid max AWG 8, max. 2V power loss.  MotorLink<sup>®</sup> actuator however cables max. 164'  Min. AWG 22, 300V, 176°F  Listed / Recognized to UL 13</p> <p><b>Other components</b>  Min AWG 24 / max AWG 16  Listed / Recognized to UL 13</p> <p><b>Mains</b>  Mains must be done per relevant Electrical Code.  For permanent connection (rigid or flexible 1/2" conduit or equivalent) use the supplied 1/2" adaptor in the Knockout. Use AWG 10, 12, or 14 conductors (same size).  Listed / Recognized to UL 13</p>						
Size	1' 2" x 1' 5/8" x 3" (WxHxD)						
Material	Lacquered metal housing for surface mounting						
Colour	White (RAL 9010)						
Weight	WCC 310: 8.8lbs / WCC 320: 10.6lbs						
IP rating	IP20						
Certification	UL 325 and CSA C22.2 no 247-14 approved						
Delivery includes	MotorController						
Spare parts	See the spare part list on our website windowmaster.com under "Products"						
Note	We reserve the right to make technical changes						

## Max numbers of actuators per motor line and MotorController

The table shows the maximum number of actuators, which can be connected per motor line and MotorController depending on the type of actuator ( $\pm 24V$  standard or MotorLink<sup>®</sup> actuator) and MotorController.

**Notice:** For actuators with MotorLink<sup>®</sup> always max. 4 actuators per motor line. The total power consumption of all the connected actuators must not exceed 10A for WCC 310 and 20A for WCC 320.

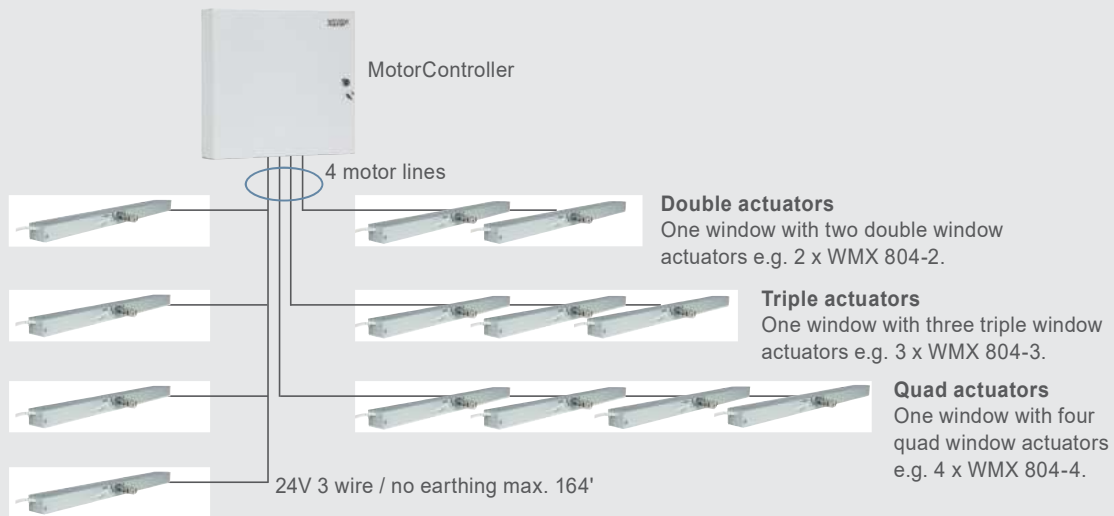
WCC 310 / WCC 320 PLUS UL – maximum numbers of actuators						
Actuator type	Per motor line		Per WCC 310 P 1012		Per WCC 320 P 1012	
	$\pm 24V$	MotorLink <sup>®</sup>	$\pm 24V$	MotorLink <sup>®</sup>	$\pm 24V$	MotorLink <sup>®</sup>
WMU 831 / 836 / 851-1	4	4	10	10	20	20
WMU 831 / 836 / 851-2	4	2	10	10	20	20
WMU 831 / 836 / 851-3	3	3	9	9	18	18
WMU 831 / 836 / 851-4	4	4	8	8	20	20
WMU 861-1	4	4	6	6	12	12
WMU 861-2	4	2	6	6	12	12
WMU 861-3	3	3	6	6	12	12
WMU 861-4	4	4	4	4	12	12
WMU 842 / 852 / 862 / 882-1	2	2	4	4	8	8
WMU 842 / 852 / 862 / 882-2	2	2	4	4	8	8
WMU 863 / 883-1	1	1	3	3	6	6
WMU 864 / 884-1	1	1	2	2	5	5
WMX 503 / 504 / 523 / 526-1	8	4	20	20	40	40
WMX 503 / 504 / 523 / 526-2	8	2	20	16	40	20
WMX 503 / 504 / 523 / 526-3	6	3	18	18	39	30
WMX 503 / 504 / 523 / 526-4	8	4	20	20	40	40
WMX 803 / 804 / 813 / 814 / 823 / 826-1	4	4	10	10	20	20
WMX 803 / 804 / 813 / 814 / 823 / 826-2	4	2	10	10	20	20
WMX 803 / 804 / 813 / 814 / 823 / 826-3	3	3	9	9	18	18
WMX 803 / 804 / 813 / 814 / 823 / 826-4	4	4	8	8	20	20
WMB 801/802*	Actuators with a total of max. of 4A can be connected to the locking actuator					
WMB 811/812 **	4	2	10	10	20	20

\* Do not exceed the total power consumption of the motor line  
 \*\* When having two locking actuators on one motor line use: 1 x WMB 811 and 1 x WMB 812

## MotorLink® combinations: Actuator variants on one MotorLink® motor line

- When connecting window actuators one should pay attention to:
  - The max current load of the MotorControllers is 4A per motor line. The simultaneously max current consumption of all motor lines must not exceed 10A on a WCC 310 and 20A on a WCC 320. Actuators with MotorLink®: max 4 actuators per motor line.
  - The cable length and cross section: max voltage drop 2V in the cable, however max distance between the MotorController and the window actuators is 164'.

- Aside from window actuators; espagnolette actuators type WMB 811 / 812 (one single or two double actuators) can be connected to the window. When connecting an espagnolette actuator each window must have its own motor line.



### Single actuator

One window with one single window actuator e.g. 1 x WMX 804-1.

Up to four windows with each one window actuator can be connected e.g. 4 x WMX 804-1.

Variants	Number of motor lines	Number of inputs	Item no.
MotorController 10A	2 motor lines each 3.15A	2 inputs	WCC 310 P 0202 Ux
MotorController 10A	6 motor lines each 3.15A (in total max. 10A)	12 inputs	WCC 310 P 0612 Ux
MotorController 10A	10 motor lines each 3.15A (in total max. 10A)	12 inputs	WCC 310 P 1012 Ux
MotorController 20A	6 motor lines each 3.15A (in total max. 20A)	12 inputs	WCC 320 P 0612 Ux
MotorController 20A	10 motor lines each 3.15A (in total max. 20A)	12 inputs	WCC 320 P 1012 Ux



## WCC 310 / 320 PLUS UL

# UL MotorController

Accessories	Item no.
Fieldbus card with field bus interface to KNX	WCA 3FK
Fieldbus card with field bus key to BACnet-IP	WCA 3FB
Fieldbus card with field bus interface to BACnet MS/TP or Modbus RTC/RS485	WCA 3FM
Wind and rain sensor	WLA 330
Rain sensor	WLA 331
Wind and rain sensor	WLA 340
Wind speed sensor unit	WOW 201
Wind direction sensor unit	WOW 202
Interface box for weather station	WOW 204
USB stick for log-data, back-up and firmware updates	WCA 304
USB stick for NV Embedded®	NVE Dongle
Comfort keypad for 1 window or 1 window group	WSK 110 0A0B
Comfort keypad for 2 windows or 2 window groups	WSK 120 0A0B 0A0B

All dimensions are originally in metric units and converted into imperial units.  
For exact measurements please refer to documentation with metric values.