WCC 310 & WCC 320 UL Standard versions

Installation instruction

(Version 2207)

UL MotorController

For firmware version from: 2.09

Save this installation instruction to the end user

The latest version of this document can always be found on our website

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

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1 Safety information

1.1 Safety

Only allow correspondingly trained, qualified and skilled personnel to carry out installation work.

Reliable operation and the avoidance of damage and hazards are only guaranteed if installation and settings are carried out carefully in accordance with these instructions.

There may be personal danger by electrically operated windows:

- the forces occurring in the automatic mode can be such that parts of the body could get crushed
- when opened, actuators (spindles) could protrude into the room

For this reason, measures have to be taken prior to starting up the actuators, which exclude the danger of injury.

For safety reasons we recommend to install opening restrictors on bottom-hung windows.

In the event that windows are subjected to rain and/or high wind loads, we recommend connecting a wind/rain sensor to the MotorController for the automatically closing of the windows.

The MotorController is to be located in a safe place, protected from the effects of fire and smoke.
The MotorController is to be surface mounted.
The MotorController is to be supplied with 120V AC .
The manufacturer does not assume any liability for possible damage resulting from inappropriate use.

1.2 120V AC

120V AC can cause death, severe injury or considerable damage to assets.
The connection of the MotorController is reserved for qualified personnel.
Disconnect all poles of the MotorController from the supply voltage prior to opening, installation or assembling.
Installation and use according to the national regulations.

1.3 Application

The MotorController is exclusively designed for the automatic opening and closing of windows, flaps or doors.
Always check that your system meets the valid national regulations.
Pay particular attention to the opening cross section, the opening time and opening speed.
The cable cross sections depend on the cable length and current consumption (amperage).

1.4 Cable routing and electrical connection

Fuse the 120V AC power supply cable separately on site.
Cable routing and connection - adhere to national regulations.
Establish the cable types, if necessary, with the local approval bodies.
Do not conceal flexible cables.
Junction box must be accessible for maintenance purposes.
Disconnect all poles of the mains voltage prior to starting maintenance work or making changes to the system.
Secure the system to prevent unintentional switching on again.
Route all low voltage cables (24V DC) separate from the power current cables.
Design cable types, lengths and cross sections in accordance with the technical information.
Cable specifications is a guide only, the overall responsibility resides with the electrical contractor on site.
Installation must be in accordance with the national electrical regulations.

2 Structure of the MotorController

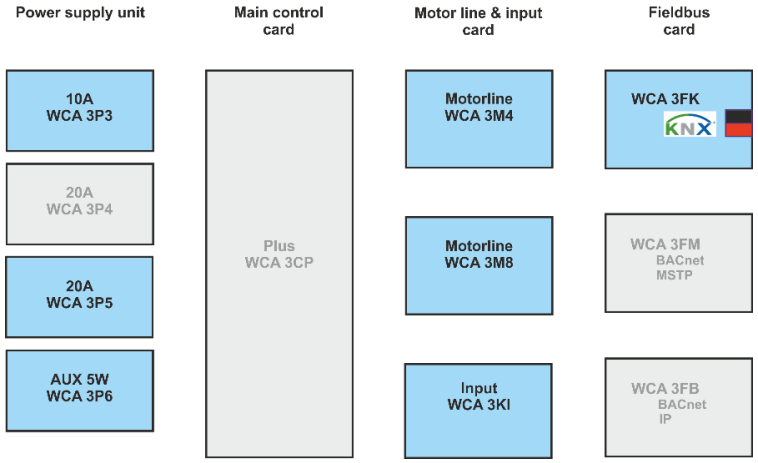
Sizes & Versions

The WCC 310 and WCC 320 MotorControllers are available in two different versions namely a Standard and a Plus version. This installation instruction only deals with the Standard versions. Please see separate installation instruction for the Plus versions of WCC 310 and WCC 320.

Cards

Each MotorController contains a power supply unit (SMPS), either a WCA 3P3 or a WCA 3P5 for the 10A or 20A version respectively, as well as a 5W auxiliary power supply for wind / rain sensor. Aside from the power supply units the Standard version also includes a motorline card type WCA 3M4 or WCA 3M8 with 4 and 8 motor lines respectively and an input card WCA 3KI with 10 inputs. Additionally, the Standard version is also available in a version with fieldbus interface for KNX.

If additional motor lines, inputs or fieldbus connection is required a Plus version of the MotorController is necessary.



Motor groups and motor lines

A motor group consists of one or more motor lines and all the motor lines are operated simultaneously.

All motor lines on the motor cards (WCA 3M4 & WCA 3M8) can be configured for either a ±24V standard actuators or MotorLink® actuators. A motor group can contain motor lines with both ±24V standard actuators and MotorLink® actuators, whereas a motor line only can have ±24V standard or MotorLink® actuators connected.

3 Variants of MotorControllers

Item composing							
WCC 3	**xx**	**S**	**xx**	**xx**	**xxx**	**Ux**	
						Ux = UL Std. 325 and product version number For NV Embedded® the MotorController must minimum be version U2	
					Fieldbus card " " = No fieldbus card KNX = Fieldbus card with interface to KNX		
				Input card 10 = Input card with 10 inputs			
			Motorline card 04 = Motor line card with 4 motor lines 08 = Motor line card with 8 motor lines				
		MotorController version S = Standard					
	MotorController size 10 = 10A 20 = 20A						
MotorController series 3							

3.1 MotorController versions

Number of motor lines and other functions	Cards	Item number
WCC 310 versions		
Standard version 4 motor lines 10 keypads / inputs	1 x WCA 3M4 UL 1 x WCA 3KI	WCC 310 S 0410 U3
Standard version 4 motor lines 10 keypads / inputs KNX interface	1 x WCA 3M4 UL 1 x WCA 3KI 1 x WCA 3FK	WCC 310 S 0410 KNX U3
WCC 320 versions		
Standard version 8 motor lines 10 keypads / inputs	1 x WCA 3M8 UL 1 x WCA 3KI	WCC 320 S 0810 U3
Standard version 8 motor lines 10 keypads / inputs KNX interface	1 x WCA 3M8 UL 1 x WCA 3KI 1 x WCA 3FK	WCC 320 S 0810 KNX U3

3.2 Max numbers of actuators per motor line and MotorContoller

The table shows the maximum number of actuators, which can be connected per motor line and MotorController depending on the type of the actuators, MotorController and connected cards. The total power consumption of all the connected actuators must not exceed 10A or 20A depending on MotorController size.

	Per motorline		Per 10A MotorController		Per 20A MotorController	
	± 24V Actuators	MotorLink® Actuators	± 24V Actuators	MotorLink® Actuators (4 Motorlines)	± 24V Actuators	MotorLink® Actuators (8 Motorlines)
WMU 836-1	4	4	10	10	20	20
WMU 836-2	4	2	10	8	20	16
WMU 836-3	3	3	9	9	18	18
WMU 836-4	4	4	8	8	20	20
WMU 861-1	4	4	8	8	16	16
WMU 861-2	4	2	8	8	16	16
WMU 861-3	3	3	6	6	15	15
WMU 861-4	4	4	8	8	16	16
WMU 842 / 862 / 882-1	4	4	4	4	8	8
WMU 842 / 862 / 882-2	4	2	4	4	8	8
WMU 863 / 883-1	3	3	3	3	6	6
WMU 864 / 884-1	1	1	2	2	4	4
WMX 503 / 504 / 523 / 526-1	8	4	20	16	40	32
WMX 503 / 504 / 523 / 526-2	8	2	20	8	40	16
WMX 503 / 504 / 523 / 526-3	6	3	18	12	39	24
WMX 503 / 504 / 523 / 526-4	8	4	20	16	40	32
WMX 803 / 804 / 823 / 826-1	4	4	10	10	20	20
WMX 803 / 804 / 823 / 826-2	4	2	10	8	20	16
WMX 803 / 804 / 823 / 826-3	3	3	9	9	18	18
WMX 803 / 804 / 823 / 826-4	4	4	8	8	20	20
WMB 801/802*	max. 4A connected to WMB					
WMB 811/812 */**	4	2	10	8	20	16

* Do not exceed the total power consumption of the motor line

** When having two locking actuators per motor line, it must be one of each type: 1 x WMB 811 and 1 x WMB 812

4 Accessories and spare parts

Accessories	
Rain sensor	WLA 331
Rain/wind speed sensor	WLA 330
USB stick for log-data, back-up and firmware updates	WCA 304
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
Spare parts	
10A power supply unit for WCC 310	WCA 3P3
20A power supply unit for WCC 320	WCA 3P5
5W 120 AC AC / 24V DC – 24V AUX supply for sensors	WCA 3P6
Motor line card with 4 motor lines incl cover	WCA 3M4 UL
Motor line card with 8 motor lines incl cover	WCA 3M8 UL
Input card with 10 inputs for e.g. comfort keypad incl. cover	WCA 3KI
3.15A fuse for motorline, 10 pcs (Littelfuse 807 13150440)	WCA 308

5 Technical data

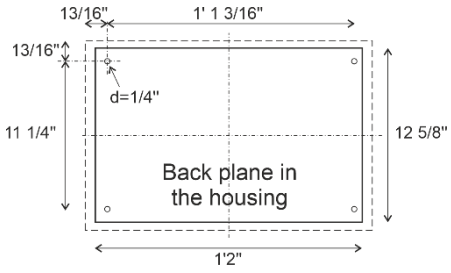
Technical data		
Output current (nominal)	WCC 310: 10A / WCC 320: 20A	
Secondary voltage	Voltage 24V DC (±15%) Open circuit voltage (no load) 27.6V DC @ 20°C Ripple at max load max. 6% (3.5Vpp)	
AUX	24V DC, 0.23A	
Motor lines	WCC 310 0410: max 4, WCC 320 0810: max 8 a line can be either ±24V standard motor line or MotorLink® motor lines	
Primary voltage	120V AC, 60Hz (85-264V AC, 47-63Hz)	
Power consumption	Idle consumption: WCC 310: min 1,1W[1], typ. 3W[2] WCC 320: min 1,1W[1], typ. 3,5W[3] 1) min.: 1 actuator 2) typ.: 16 MotorLink® actuators + rain sensor 3) typ.: 32 MotorLink® actuators + rain sensor Max: WCC 310: At max load 305W WCC 320: At max load 605W	
Leakage current	Max 1.2mA @ 240 VAC	
Inrush current on primary site	70A<5ms. Max 3 x WCC 310/320 per 10 A supply group. Circuit breaker “C” characteristic.	
±24V change over time	min 500ms	
LED message OK and fault	Green (flickering) Yellow	CPU working fault

Connection cable	Actuators	flexible max AWG 10 / solide max AWG 8 Min. AWG 22, 300V, 80°C Listed / Recognized to UL 13
	Other components	min AWG 24 / max AWG 16 Listed / Recognized to UL 13
	Mains	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).
Operating conditions	-5°C - +45°C, for indoor installation, the MotorController may not be covered	
Max actuator activation duration (duty cycle)	ED 40% (4min. per 10min.)	
Number of motor lines	WCC 310: 4 x 10A motor line for ±24V standard or MotorLink® motors WCC 320: 8 x 10A motor line for ±24V standard or MotorLink® motors	
Material	Metal housing for surface mounting	
Colour	White (RAL 9010)	
Size	1'2'' x 1' 5/8'' x 3'' mm (WxHxD)	
Weight	WCC 310: 8.8lbs WCC 320: 10.6lbs	
Protection class	IP 20	
Certification	UL 325 and CSA C22.2 no 247-14 approved	
Delivery	MotorController	
Note	We reserve the right to make technical changes	

6 Mounting

The MotorController is fixed to the wall through the Ø1/4'' holes in the back plane of the housing.

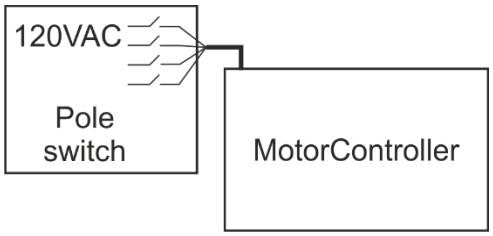
The MotorController is to be located in a safe place, protected from the effects of fire and smoke.



7 Installation

7.1 Cable routing

See also chapter 8 "Cable dimensioning" in this instruction. Do not reduce the cable cross sections specified in the cable lengths table.
All cables of the control (except the mains supply cable) carry 24V DC and have to be routed separate from the mains supply cable.
Adhere to the pertinent national and local regulations when routing the cables.
Ensure that the mains cable can be switched via an external or customer-supplied two-pole switch element or a switch element controlling all poles – see drawing.



7.2 Cables into housing

All connection terminals (except the mains terminals) are of the plug-in type.
Connect the connection cables in accordance with the terminal plan. Ensure that the connections are made correctly.
Incorrect cable clamping, mixing up numbers or colours could lead to malfunctions of the control MotorController or of the external components.

Ensure that the electrical cables are always routed according to the valid national and local regulations.

7.3 Connection of safety earth wire and 120V AC

See chapter 10 ‘Description of cards’, for further description.

7.4 Installation of the ventilation keypad

Ensure that the ventilation buttons are visible and well accessible. Do not install behind protruding walls, door panels or hidden by the building structure.

7.5 Assembly instructions

Always have assembly, installation, repair and maintenance of ventilation systems carried out by qualified personnel trained for this purpose.

Rules to be adhered to for setting up and installation

The following safety relevant rules have to be adhered to when planning the use of a ventilation system and its set-up and installation:

- The Provincial Building Ordinance of the provinces

Accident prevention regulations

Adhere to the general accident prevention regulations (APR), the APR for power operated windows and doors, and the installation rules in your country.

CAUTION:

Live components are directly accessible after opening the system housing.
Prior to inserting / removing cards disconnect to the MotorController from the mains supply.

- adhere to the installation instructions and your local energy providers
- select the place of installation such that free access is guaranteed for maintenance purposes
- select cables according to regulations in this instruction - take the calculation of the actuator supply cable lengths into account when laying the cables
- connect the cables in accordance with the drawings provided by the manufacturer
- route the cables in the building according to the regulations in this instruction
- check all system functions

8 Cable dimensioning

8.1 Max. cable Length

Maximum permissible cable length from the MotorController to the actuators taking into account the cable cross-section is shown in the following tables for “± 24V standard actuators“ and “MotorLink® actuators“.

8.1.1 Formula for the calculation of the maximum actuator cable length

$$\text{Max. cable length} = \frac{\text{permissible voltage drop 2V (}\mathbf{UL}\text{) x conductivity of copper(}\mathbf{56}\text{) x cable cross section in mm}^2\text{ (}\mathbf{a}\text{)}}{\text{max. actuator current total in amps (}\mathbf{I}\text{) }\mathbf{x\ 2}}$$

For both ±24V standard actuators and actuators with MotorLink® the cable must not be less than AWG 18 (cable cross section 0.82mm^2) regardless of the result of above formula.

Maximum actuator cable length: Always measured from the MotorController to the last junction box + cable to the motor

Permissible max. voltage drop in the line: 2 Volt

Actuating current: Sum of all actuator power consumption per motor line

Note: do not use the PE wire / green/yellow wire in the motor cable for communication!

Example

Max actuator cable length with AWG 18 (cable cross section 0.82mm^2) and actuator current 2A: (2 x 56 x 0.82) : (2 x 2) = 23m (76 ft)

8.1.2 Max cable length – ±24V standard actuators

The actuator supply cable must have 2 wires. If cable monitoring is requested min. 3: 2 wires current carrying / 1 wire for monitoring.

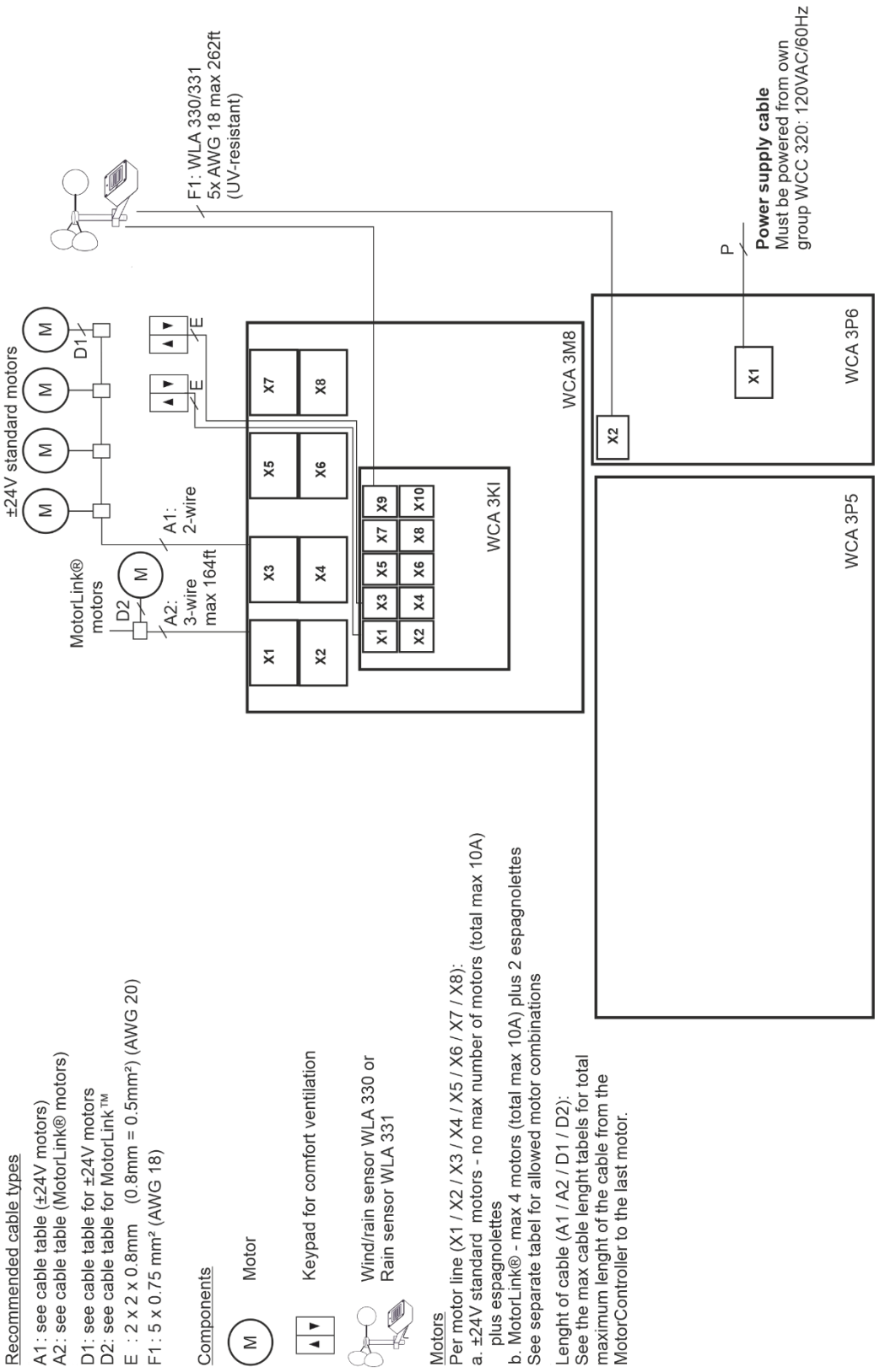
±24V standard actuators				
Do not use the PE wire / green/yellow wire!				
cable cross section [a] Total actuator current [I]	**AWG 18 (3 wire 0.82 mm²)**	**AWG 16 (3 wire 1.31 mm²)**	**AWG 14 (3 wire 2.08 mm²)**	**AWG 12 (3 wire 3.31 mm²)**
1A	151 ft	240 ft	382 ft	608 ft
2A	76 ft	120 ft	191 ft	304 ft
3A	50 ft	80 ft	127 ft	203 ft
4A	38 ft	60 ft	96 ft	152 ft
5A	30 ft	48 ft	76 ft	122 ft
6A	25 ft	40 ft	64 ft	101 ft
7A	22 ft	34 ft	55 ft	87 ft
8A	19 ft	30 ft	48 ft	76 ft
9A	17 ft	27 ft	42 ft	68 ft
10A	15 ft	24 ft	38 ft	61 ft
20A			19 ft	30 ft

8.1.3 Max cable length – actuators with MotorLink®

When using actuators with MotorLink® the max cable length is 164ft regardless of the result of the above mentions formula.

Actuators with MotorLink®				
Do not use the PE wire / green/yellow wire!				
cable cross section [a] Total actuator current [I]	**AWG 18 (3 wire 0.82 mm²)**	**AWG 16 (3 wire 1.31 mm²)**	**AWG 14 (3 wire 2.08 mm²)**	**AWG 12 (3 wire 3.31 mm²)**
1A	151 ft	164 ft		
2A	76 ft	120 ft	164 ft	
3A	50 ft	80 ft	127 ft	164 ft
4A	38 ft	60 ft	96 ft	152 ft
5A	30 ft	48 ft	76 ft	122 ft
6A	25 ft	40 ft	64 ft	101 ft
7A	22 ft	34 ft	55 ft	87 ft
8A	19 ft	30 ft	48 ft	76 ft
9A	17 ft	27 ft	42 ft	68 ft
10A	15 ft	24 ft	38 ft	61 ft
20A			19 ft	30 ft

9 Cable plan for connection to WCC 310 / 320 Standard version



Above connection plan shows a WCC 320 MotorController

10 Description of cards and mains connection

Each MotorController includes a main power supply unit (SMPS), an auxiliary power supply (AUX), a motor line card and an input card.

The size of the power supply unit determines the number and/or types of actuators, which can be connected to the MotorController. See table with overview of max number of allowed actuators per motor line/ MotorController (chapter 3.2).

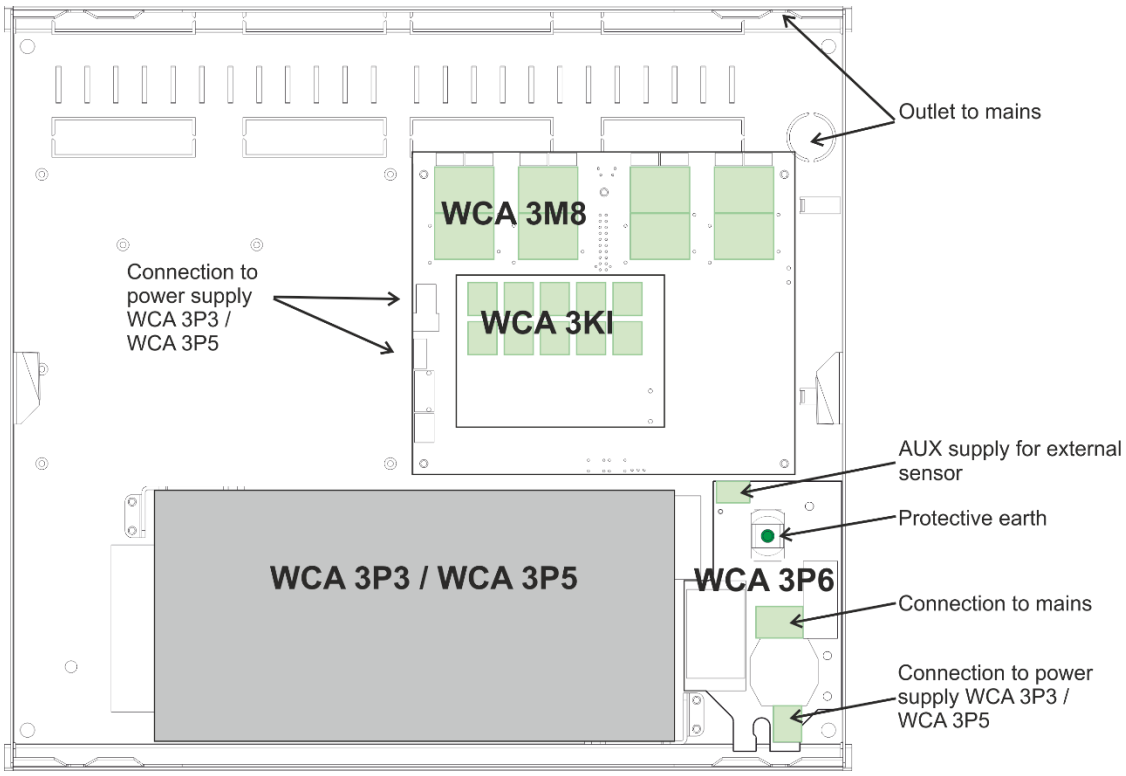
10.1 WCC connection to mains and power supply units – WCA 3P3, WCA 3P5 and WCA 3P6

The MotorController WCC 310, is supplied with a 305W SMPS power supply – WCA 3P3.
The MotorController WCC 320, is supplied with a 605W SMPS power supply – WCA 3P5

The power supply is, regardless of size, placed in the bottom of the MotorController beneath the motor line and input card. An AUX – WCA 3P6 – to which mains is connected, is located to the right of the power supply.

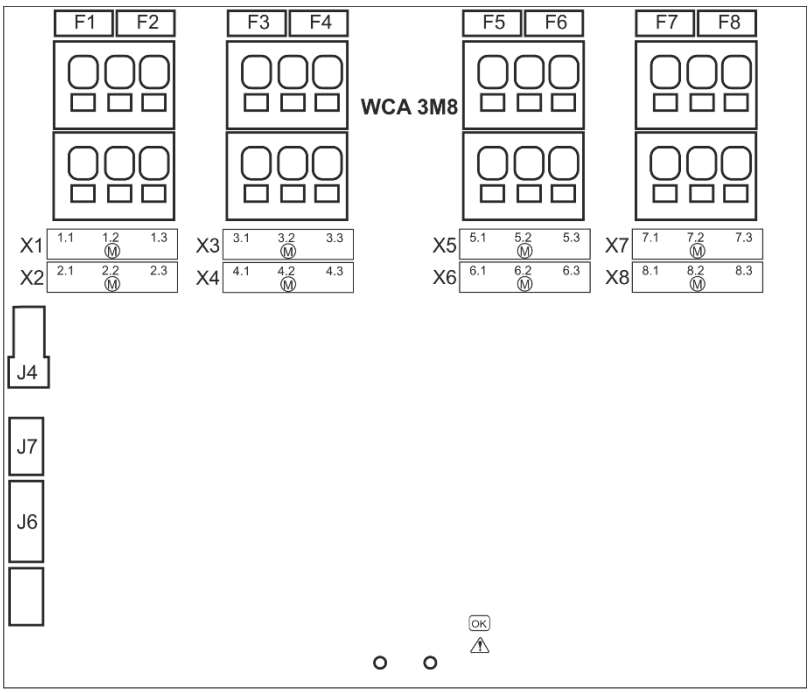
Outlet to mains is in the top of the MotorController.

The MotorController is grounded by means of protective earth via the green screw next to WCA 3P6.



10.2 Motor line card WCA 3M4 and WCA 3M8

The motor line cards WCA 3M4 and WCA 3M8, allows connection of 4 and 8 motor lines respectively either ±24V standard or MotorLink®.



X1 1.1 24V / 0V, 1.2 MotorLink, 1.3 0V / 24V } Motorline

X2 2.1 24V / 0V, 2.2 MotorLink, 2.3 0V / 24V } Motorline

X3 3.1 24V / 0V, 3.2 MotorLink, 3.3 0V / 24V } Motorline

X4 42.1 24V / 0V, 4.2 MotorLink, 4.3 0V / 24V } Motorline

X5 5.1 24V / 0V, 5.2 MotorLink, 5.3 0V / 24V } Motorline

X6 6.1 24V / 0V, 6.2 MotorLink, 6.3 0V / 24V } Motorline

X7 7.1 24V / 0V, 7.2 MotorLink, 7.3 0V / 24V } Motorline

X8 8.1 24V / 0V, 8.2 MotorLink, 8.3 0V / 24V } Motorline

F1-F8 Fuse 3.15A

J4 Connection to power supply

J6 Connection to input expansion module (WCA 3KI)

J7 Connection to power supply

Reset / programming

WCA 3M8 – motor line card with 8 motor lines

S2
X1 – X8

WCA 3M4 and WCA 3M8 has 4 and 8 motor lines respectively for connection of either ±24V standard or MotorLink® actuators.

±24V standard actuators	MotorLink® actuator
x.1 24V / 0V	x.1 0V
x.2	x.2 ML Communication
x.3 0V / 24V	x.3 24V

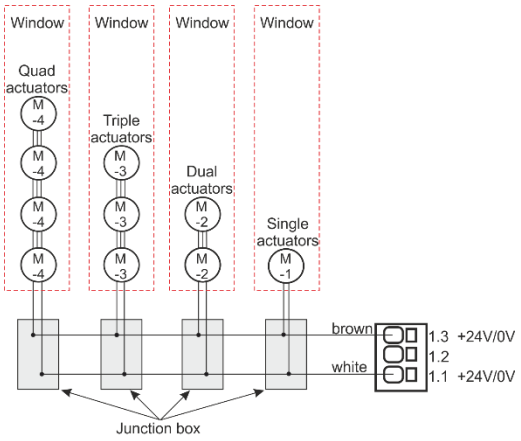
The number of actuators per motor line depends on the actuator type, the total power consumption of actuators connected to a motor line can max be 4A and the total max power consumption for both motor lines must not exceed 10A or 20A depending on type of MotorController.
Besides actuators also locking actuators (espagnolettes actuators) type WMB 801/802 and WMB 811/812 can be connected. The power consumption of the locking actuators are not to be included in the 10A / 20A as actuators and locking actuators do not run at the same time.

All actuators on the same motor line will run/be operated simultaneously.
All actuators on the same motor line must be of the same type.

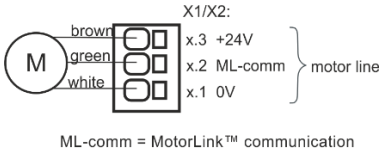
Connection / cable diameter: flexible max AWG 10 / solid max AWG 8.
Cable length: see the chapter "Cable dimensioning".

Standard ±24V actuators
Examples with 20A power consumption
a) 8 pcs. WMX 826-1
b) 4 sets of 2 pcs. WMX 826-2
c) 4 pcs. WMU 861-1
d) 2 sets of 2 pcs. WMU 842-2

Connection of variants of standard actuators on motor line X1



MotorLink® actuators
Examples with actuators per motor line
Ex. 1: 4 pcs. WMX 823-1
Ex. 2: 2 pcs. WMX 842-2
Ex. 3: 3 pcs. WMU 826-3



ML-comm = MotorLink™ communication

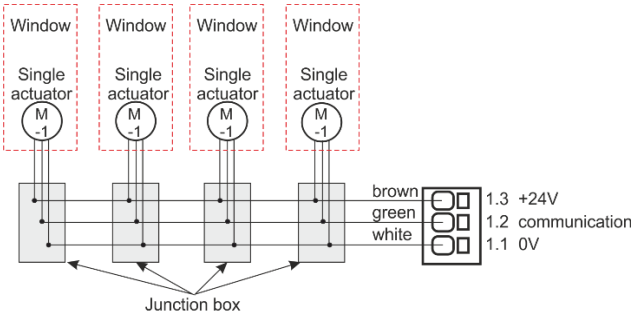
Allowed actuator combinations on a MotorLink® motor line
The eight motor lines on the motorline card can each be connected to one of the below shown combinations.

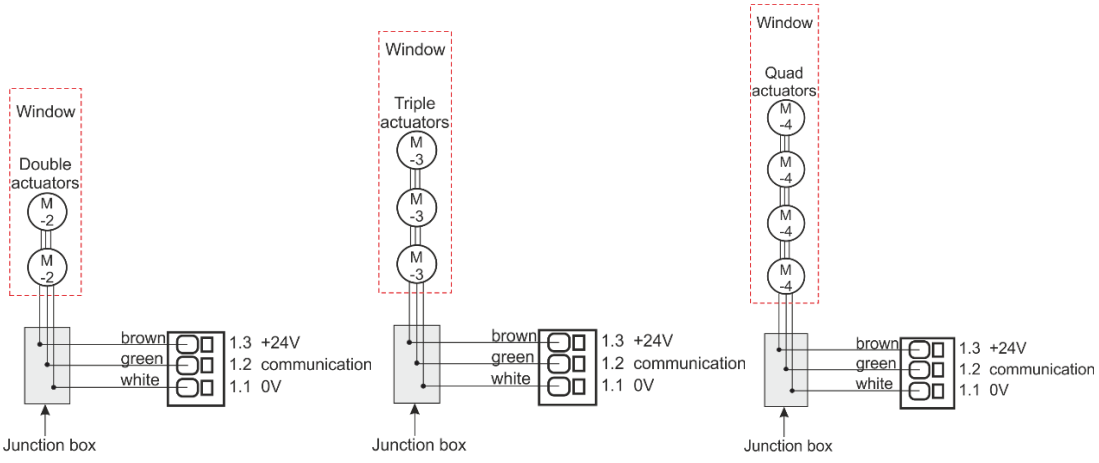
-1 (single): one window with one single window actuator. Up to four windows each with one single window actuator can be connected

-2 (double): one window with two double window actuators.

-3 (triple): one window with three triple window actuators.

-4 (quad): one window with four quad window actuators.





Cable monitoring
When using actuators with MotorLink®, the actuators with MotorLink® are monitored by data communication. When the team-size does not match, an error is indicated on the yellow diode.

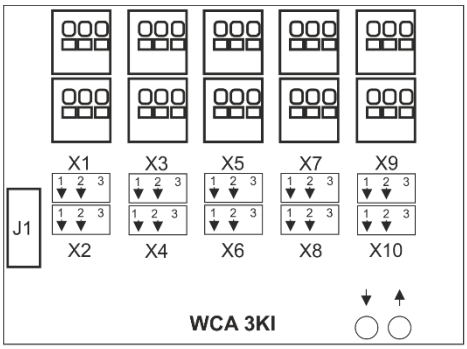
F1 - F8	3.15A fuse (WCA 308)
J4	Connection for power supply
J6	Connection to input card WCA 3KI
J7	Connection to power supply

R / P	Reset / Programming (used for firmware updates)
LED	Shows the status of the MotorController Yellow = fault Green fast flickering = CPU working, Green constant = CPU communication stopped (possible reset or contact WindowMaster)

10.3 Input card – WCA 3KI

The input card allows connection of 10 keypads.

The WCA 3KI is connected to WCA 3M4 / WCA 3M8 via cabel (J1 on WCA 3KI and J6 på WCA 3M4 / WCA 3M8).



X1 1.1 Open 1.1, 1.2 Close 1.2, 1.3 GND / 0V } Comfort keypad #1

X2 2.1 Open 2.1, 2.2 Close 2.2, 2.3 GND / 0V } Comfort keypad #2

X3 3.1 Open 3.1, 3.2 Close 3.2, 3.3 GND / 0V } Comfort keypad #3

X4 4.1 Open 4.1, 4.2 Close 4.2, 4.3 GND / 0V } Comfort keypad #4

X5 5.1 Open 5.1, 5.2 Close 5.2, 5.3 GND / 0V } Comfort keypad #5

X6 6.1 Open 6.1, 6.2 Close 6.2, 6.3 GND / 0V } Comfort keypad #6

X7 7.1 Open 7.1, 7.2 Close 7.2, 7.3 GND / 0V } Comfort keypad #7

X8 8.1 Open 8.1, 8.2 Close 8.2, 8.3 GND / 0V } Comfort keypad #8

X9 9.1 Close all / safety - weather, 9.2 Momentary action / maintained action, 9.3 GND / 0V

X10 10.1 Open all, 10.2 Close all, 10.3 GND / 0V } BMS / common

Close and open all windows

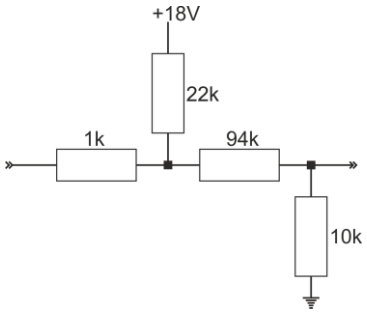
J1 Connection to actuator card

S3 X1 – X8

For connection of comfort keypads. S3.X1 - S3.X8 are potential free / dry contacts.

Data
x.1 Open x.1
x.2 Close x.2
x.3 GND / 0V

Open circuit (simplified)

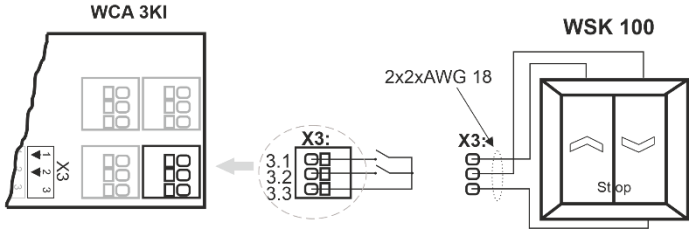


For WCC 310 0410 with only 4 motorlines input X5-X8 have no function.

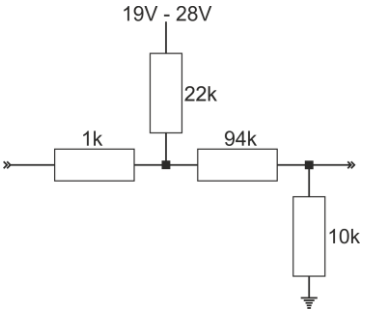
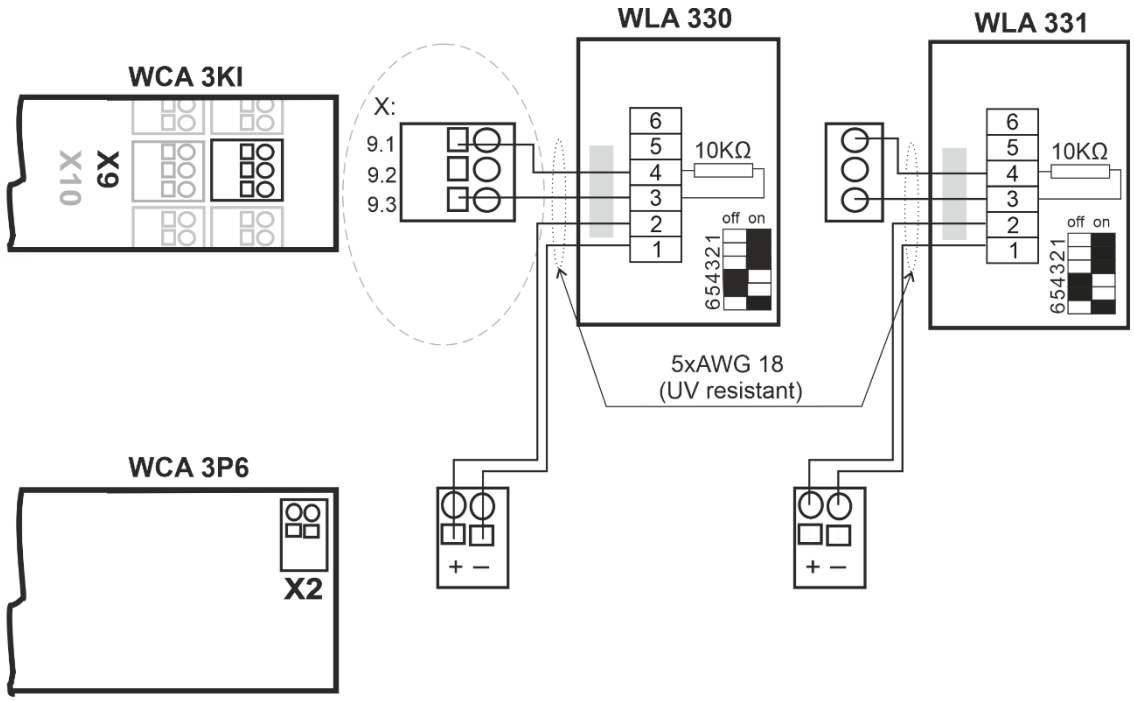
With the default values are input:
”Active” if the contact resistance is smaller than 2kΩ
”Inactive” if the contact resistance is bigger than 3kΩ.

Input has pull up current of approx. 0.8mA. (min 0.7mA, max 1mA)

Example: comfort keypad connected to input X3



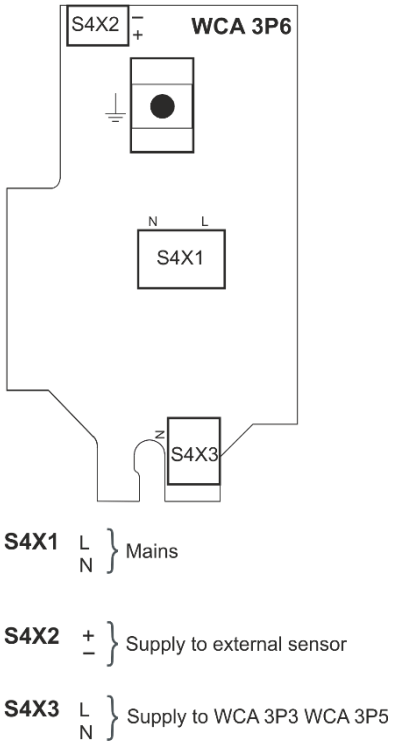
Long push (>500ms): open / close actuator, the actuator runs to end stop
Short push: the actuator stops runnig

S3 **X9**	Connection of wind / rain sensors type WLA 330 or rain sensor WLA 331. Wind / rain sensor is connected to both WCA 3KI and WCA 3P6 on X9 and X2 respectively. S3.X9 i potential free / dry contact. Data 9.1 close all / safety (all motor groups) 9.2 Momentary action / maintained action 9.3 GND / 0V Momentary action: the actuator only runs for as long as the keypad is activated. Maintained action: the keypad is activated shortly and the actuator runs until the keypad is re-activated. With the default values are input: ”Active” if the contact resistance is smaller than 4kΩ ”Inactive” if the contact resistance is bigger than 8kΩ. For values between 4 and 8kΩ the result will depend on the supply voltage. Input has pull up approx. 1mA. (min 0.7mA, max 1.4mA) Input circuit (simplified)  **Connection of wind/rain and rain sensors** WLA 330 and WLA 331– the settings of the sensors are set on the sensor.  DIP switch 1-3 on WLA 330 must be set for wind speed tolerances. Please refer to the installations instruction for the WLA 330 for DIP switch settings. If no wind / rain or rain sensor is connected to S3X9, a 10kΩ resistor must be connected between S3X9.1 and S3X9.3
S3 **X10**	S3.X10 i potential free / dry contact. Data: 10.1 Open all 10.2 Close all 10.3 GND / 0V X10.1 and X10.2 has lower priority than the individual inputs X1-X8. X10.1 and X10.2 is blocked for a period of 30 min after X1-X8 has received a command.
↓ ↑	Close / open all windows. When pressed together right after power has been connected the MotorController configures / registers connected components.
J1	Connection for power supply

10.4 Power supply card – WCA 3P6

Mains and protective earth is connected to the MotorController via the power supply card.

On the standard version of the MotorController the power supply card enables connection of weather station or other sensor.



S4 X1	Connection to mains.
S4 X2	Connection to e.g. weather station. See ”S3 X9” under ”Input car – WCA 3KI” for description of connetion of wind / rain sensor.
S4 X3	Connection to power supply WCA 3P3 (10A), or WCA 3P5 (20A)
⏚	Protective earth (PE).

11 Configuration of the MotorController

The MotorController is configured by pressing the two keys ”↑” and ”↓” on the input card, at the same time for 10 seconds.
The MotorController must be configured

- After re-installation, changes, or change of actuators
- When / if MotorLink® actuators are connected
- If the cables have been moved
- When components are removed from the MotorController

Note, during reconfiguration actuator outputs can be activated in both directions.

If the yellow diode on the motor line card blinks after a configuration, an error has occurred in the configuration, see chapter “Fault detection via LED” for identification of errors.

Actuators are to be connected on the motor lines. ±24V standard actuators and actuators with MotorLink® can be connected to all motor lines, but a motor line can only be connected to one type of actuators – either ±24V standard or MotorLink® actuators. The MotorController will automatically detect the type of actuator, which is connected to the MotorController.

12 Fault detection via LED

12.1 Fault detection on the MotorController

In case of error on the MotorController, the yellow diode on the motor line card will blink and via blink sequence indicate an error message. Depending on the type of error message will consist of 2 or 3 blink sequences, separated by a seconds pause. The first blink in an error message has a duration of one second, and thereby indicating when the error message (1st blink sequence) begins. The remaining blinks of the error message has a duration of 0.5 seconds. The error message is repeated until the error has been rectified. Between 2 error messages there is a pause of 2 sec.

Example of an error message
”7 blinks – 1sec. pause – 2 blinks – 1 sec. pause – 1 blink”.

1. There is an error on a local input
2. The error is on input X10.5, to which a rain sensor might be connected
3. The error is due to no connection to the sensor.

If there are more errors on the MotorController simultaneously, they are shown with priority, i.e. the error message for the most critical error is shown first and repeated until rectified. Then the error message number 2 is shown and repeated as well until the error is rectified etc. Below table, list the most common errors.

Error message					
1. Blink sequence		**2. Blink sequence**		**3. Blink sequence**	
Number of blinks	**Error on**	**Number of blinks**	**Error on or error type**	**Number of blinks**	**Error type**
1	System	1	Internal error (Watchdog reset)		
		2	Internal error (Program CRC)		
5	Actuator	1-8	X1-X8 (actuator output)	1	Actuator configuration – check the actuators, check the configuration, when using ±24V standard actuators check the termination
				2	Expected number of actuators - the found and expected number of MotorLink® actuators does not match – check actuator connections
				4	Internal error
				5	Configuration error on one or more motor lines, due to missing or burnt fuses. Check that all motor line fuses are mounted and that they are intact. Note that the number of blinks, in Blink sequence 2, does not necessarily indicate the faulty Motor line.
7	Local input	17	X9.1 (rain sensor)	1	Termination – check connection of sensor as well as termination.
10	Power supply	1	Internal error		
		2	Mains – check connection		
		5	Internal error		

If other errors or an “Internal error” are indicated, please contact WindowMaster.

13 Hardware error

If there are any hardware error on the MotorController it will be indicated by the diodes (yellow diode is lit).

14 Commissioning and test run

In case of hardware error please see chapter 13 “‘Hardware error”. To configure the MotorController press „↑“ and „↓“ (on the input card) at the same time for 10 seconds, see chapter 11.

We recommend that the software of the MotorController is updated the annual maintenance check!

14.1 The MotorController is completely installed, without the operating voltage applied

a) Check all mechanical and electrical components for damage.
b) Check all screw and plug connections for tightness and/or firm seating
c) Check that all external components are installed:
    1) ±24V actuators: check polarity

14.2 With mains voltage

Adhere to the relevant regulations!
Connect the mains cables and reapply the mains voltage.

14.3 Ventilation keypad

Closely observe the actuators during opening and closing. They must not be impaired in any position by the building structure. Observe that the actuator cables are not being subject to pulling or pinching. Check each ventilation keypad individually.

14.4 Wind/rain detector

a) Open the actuators with the comfort ventilation keypads.
b) Wet the rain sensor, the actuators will fully close.
c) While the actuators are running, press the Open button at the keypad. The actuators must neither open nor stop!
   Exception: If a manual override time (Man. operation after auto comm.).

If the start-up was successful, mount the door of the MotorController.

If the start-up was unsuccessful (error with one of the test run processes), please see chapter 10 “Description of cards”.
If necessary, check the wiring in accordance with the cable plan – see chapter 9 “Cable plan for connection to WCC 3xx”.

15 Maintenance

The MotorController and ventilation system should be checked, serviced and, if necessary, repaired at least once per year by the manufacturer or an authorized partner

Remove all soiling from the units of the ventilation system. Check fastening and clamping screws for firm seating.
Carry out a test run of the entire system (see chapter 14 ‘Commissioning and test run).
Only have defective units repaired in our factory. Only install original spare parts.

Check the operational condition at regular intervals. We recommend a WindowMaster service contract is taken out to ensure the right function of the ventilation system.

We recommend that the software of the MotorController is updated the annual maintenance check!

The expected minimum lifetime for the MotorController is 10 years.

15.1 Replacement 3M4, 3M8 and 3KI card

1. Disconnect the 120V
2. Remove the old card
3. Insert the replacement card.
4. Turn on the 120V .
5. The system will be ready again after approx. 2 seconds.

16 Declaration of Conformity

The MotorController is manufactured and tested accordingly to the European requirements.
The total system is not to be put into service until a declaration of conformity for the total system has been made.

The “Declaration of Conformity” is supplied with the MotorController as separate documents.