



WINDOW MASTER WCC 103 Motor Controller Instruction Manual

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**WINDOW
Master®**
Fresh Air. Fresh People.

WINDOW MASTER WCC 103 Motor Controller



Safety regulations

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 from 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 before starting up the actuators, which exclude the danger of injury.
- For safety reasons, we recommend installing opening restrictors on bottom-hung windows.
- If windows are subjected to rain and/or high wind loads, we recommend connecting a wind/rain sensor to the motor controller for the automatic closing of the windows.
- The motor controller is to be located in a safe place, protected from the effects of fire and smoke.
- The motor controller is to be surface mounted.
- The MotorController is supplied by 230V AC.
- The manufacturer does not assume any liability for possible damage resulting from inappropriate use.

230V AC

- 230V AC can cause death, severe bodily injury, or significant property damage.
- The motor controller must be disconnected from the power supply before being opened, mounted, or performing any alteration of the construction.
- Power supply to the MotorController must be done via an external two-pole or multi-pole circuit breaker. The

motor controller is to be supplied with a Phase conductor, Neutral conductor, and Earth conductor

- Applicable national regulations must be complied with.

Application

- The MotorController is solely designed for the automatic opening and closing of windows, flaps, and doors.
- Always check that the system complies with applicable national regulations.
- The cable cross-section will depend on wire length and power consumption. See chapter “Cable dimensioning”.

Cabling and electrical connection

- WindowMaster recommends powering the MotorController from its own group.
- Cable routing and connection – adhere to national regulations.
- Establish the cable types, if necessary, with the local approval bodies.
- Do not conceal flexible cables.
- The junction box must be accessible for maintenance purposes.
- Disconnect all poles of the mains voltage before starting maintenance work or making changes to the system.
- Secure the system to prevent unintentional switching on again.

Route all low voltage cables (24VDC) separate from the power current cables. Design cable types, lengths, and cross-sections per the technical information. Cable specifications are a guide only, the overall responsibility resides with the electrical contractor on site. Installation must be per the national electrical regulations.

Introduction to WCC 103

- WCC 103 is a motor controller that controls (opens/closes) 1 or more $\pm 24\text{V}$ standard window actuators based on a signal from the connected components, e.g. comfort keypad (operating keypad) room sensors and weather sensors.
- We recommend always connecting the comfort keypad when sensors and other operators are connected so that users always, via the comfort keypads, can override the signals and open or close windows themselves should there be a need for more or less fresh air.

The MotorController's construction

- The MotorController contains a 75W primary power supply (SMPS-switched mode power supply) and a printed circuit board with input, output and auxiliary supply (AUX).
- WCC 103 has 1 motor line to which $\pm 24\text{V}$ standard actuators can be connected; the number of connected actuators depends on the actuator type; the following table lists the max number of actuators. Total power consumption for all connected motors incl. load on X7 (AUX max. 0.5A) may not, however, exceed 3A.

MotorController variants

Item composing				
WCC 1	03	xx	0x	
			<u>Version</u> x = MotorController version	
			<u>Variant</u> 01 = Standard variant with Schuko plug 04 = UK variant with UK network adapter	
			<u>MotorController size</u> 03 = 3A	
MotorController series 1				

Max number of actuators per MotorController

The table shows the maximum number of actuators. Total power consumption for all connected actuators incl. load on X7 (AUX max 0.5A) may not exceed 3A. Only $\pm 24V$ standard actuators may be connected to WCC 103.

Actuator type	Max number $\pm 24V$ actuators that may be connected to WCC 103 B T
WMD 820-1	3
WMD 820-2	2
WMD 820-3	3
WMS 306 / 309-1	3
WMS 306 / 309-2	2
WMS 306 / 309-3	3
WMS 409 xxxx 01	1
WMS 409-1	1
WMU 831 / 851-1	3
WMU 831 / 851-2	2
WMU 831 / 851-3	3
WMU 836-1	2
WMU 836-2	2
WMU 852-1	3
WMU 852-2	2
WMU 852-3	3
WMU 861-1	2
WMU 861-2	2
WMU 842 / 862 / 882-1	1
WMU 863 / 883-1	1
WMX 503 / 504 / 523 / 526-1	6
WMX 503 / 504 / 523 / 526-2	6
WMX 503 / 504 / 523 / 526-3	6

WMX 503 / 504 / 523 / 526-4	4
WMX 803 / 804 / 813 / 814 / 823 / 826 -1	3
WMX 803 / 804 / 813 / 814 / 823 / 826 -2	2
WMX 803 / 804 / 813 / 814 / 823 / 826 -3	3
WML 820 / 825	3
WML 860-1	3
WML 860-2	2
WML 860-3	3
WMB 801/802	3
WMB 811 / 812 / 815 / 816 / 817 / 818 *	2
<p>*with 2 locking actuators on the same motor line use: 1 x WMB 811 and 1 x WMB 812. 1 x WMB 815 and 1 x WMB 816 or 1 x WMB 817 and 1 x WMB 818</p>	

Accessories

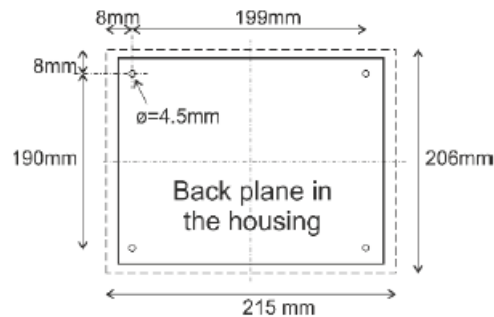
Accessories	
Rain sensor	WLA 331
Rain / windspeed sensor	WLA 330
Comfort keypad, 1 window or 1 window group	WSK 110 0A0B
Comfort keypad, model FUGA, surface mounting (CH version)	WSK 300
Comfort keypad, model FUGA, surface mounting	WSK 103
Room thermostat: temperature	WLA 110

Technical data

Technical data		
Output current	3A incl. load on X7 (max 0.5A)	
Secondary voltage	Voltage	24V DC (±15%)
	Resting potential with 230V AC without load ad	24V DC @ 20°C Ripple with full load 150mVp-p
AUX	24V DC, 500mA	
Motor groups / Motor lines	1 motor group with 1 motor line for ±24V standard actuators	
Primary voltage	100-240 VAC 0.85A 50/60Hz	
Power consumption	Idling < 0.5W Full load 77 W	
Leakage current	Max 0.75mA @240VAC	
Inrush current on primary side	65A < 5ms w. 230V	
	Max. 6 x WCC 103 per 10A power supply group. Circuit breaker “C” type.	
±24V	Min. 500ms	
LED signalling	2 green LEDs and 1 yellow indicate via blinking sequences failure and/or status of the system and motor line. See paragraph on “Status and troubleshooting via LED” for a detailed description and blinking sequences.	
Connection cable	Actuators	flexible max. 6mm² / solid max. 10 mm² min 0.2mm² / max. 1.5mm²
	Other components	
Operating conditions	-5°C – +45°C, for indoor mounting, the MotorController must not be covered	
Max actuator activation duration (duty cycle)	ED 40% (4 min. per 10 min.)	
Material	Plastic	
Colour	White (RAL 9016)	
Size	215 x 206 x 37mm (W x H x D)	
Weight	0.92kg	
Protection class	IP 20	
Safety class	I (with PE)	
Delivery	Standard version:	MotorController with 1.2 m cable with Schuko plug
	UK version:	MotorController with 1.2 m cable with Schuko plug and UK net work adapter
Note	We reserve the right to make technical changes	

Mounting

- The motor controller may either be mounted horizontally or vertically on a wall.
- The MotorController is fixed to the wall through the back plate's Ø4.5 mm mounting holes.
- The motor controller should be mounted in a secure location so that it is protected against the effects of fire and smoke.



Installation

Cable routing

The safety regulations in these guidelines must be closely followed. Regarding low-power cable configuration, we refer you to the chapter "Cable dimensioning". The cable cross sections listed in the table of cable lengths must not be reduced.

- The cables are led into the MotorController's cabinet via cut-outs in the bottom.
- When routing cables, all applicable national regulations must be complied with.
- The MotorController is supplied with a 1.2 m cable with a Schuko plug.

Connecting cables in the motor controller

- Cables are to be connected per the chapter "Connection plan for WCC 103", the short chapters, and other relevant paragraphs in these guidelines.
- Please ensure that connections are correctly executed – incorrect connections can lead to functional failure in the MotorController or external products.
- The installation must at all times adhere to the applicable regulations, standards, and guidelines.

Connecting protective earth and 230V AC

WCC 103 is factory-fitted with a power supply cable with a 230V Schuko plug with earth wire.

Installation of comfort keypad

The comfort keypad should be mounted in a visible position and within easy reach.

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:

If internal coverings are removed the live current parts are exposed.

Guidelines for mounting/installation

- the motor controller should be mounted on the wall in such a way that there is free access for service inspections
- 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's supply cable lengths into account when laying the cables
- connect the cables by the drawings provided by the manufacturer
- route the cables in the building according to the regulations in this instruction
- check all system functions

Cable dimensioning

Cables should be routed in compliance with applicable regulations.

Max. cable length

The maximum permitted cable lengths from the motor controller to the actuators, taking into account the cable cross-section, are shown in the following table.

The formula for calculating max. actuator cable length

Max. cable length = permitted voltage drop 2V (UL) x copper's conductivity (56) x cable cross-section in mm² (a)

Max. total actuator current per motor line in amperes (I) x 2

For ±24V standard actuators, the cable cross-section may not be less than 0.75 mm², irrespective of the result of the above formula.

- **Maximum actuator cable length:** Always measured from the motor controller to the last junction box + actuator cable Permissible max. voltage drop in the line: 2 Volt
- **Total actuator current:** The sum of all the connected actuators max. current consumption per motor line
- **Note:** do not use the PE wire/green/yellow wire in the actuator cable!

Example

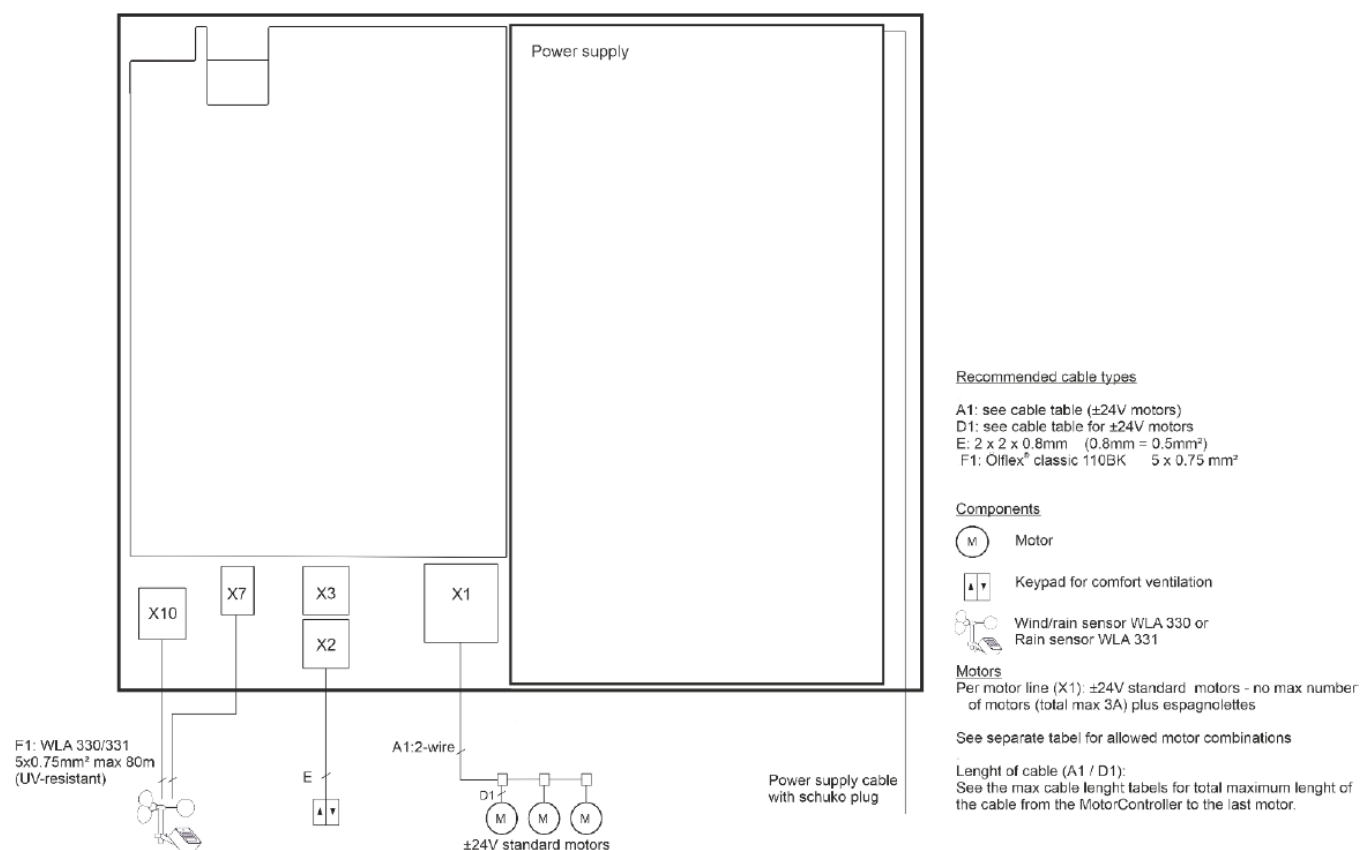
Max. actuator cable length with cable cross-section of 0.75mm² and 2A current consumption: $(2 \times 56 \times 0.75) : (2 \times 2) = 21\text{m}$

Max. cable length – ±24V standard actuators

The actuator cable must have 2 wires minimum.

±24V standard actuators						
The PE wire/the green-yellow earth wire must <u>not</u> be used						
Cable- cross-section [a]						
Total actuator current [I]	3-wire 0.75 mm ²	3-wire 1.50 mm ²	5-wire 1.50 mm ² 2- wire parallel	3-wire 2.50 mm ²	5-wire 2.50 mm ² 2- wire parallel	3-wire 4.00 mm ²
1A	42m	84m	168m	140m	280m	224m
2A	21m	42m	84m	70m	140m	112m
3A	14m	28m	56m	47m	93m	75m

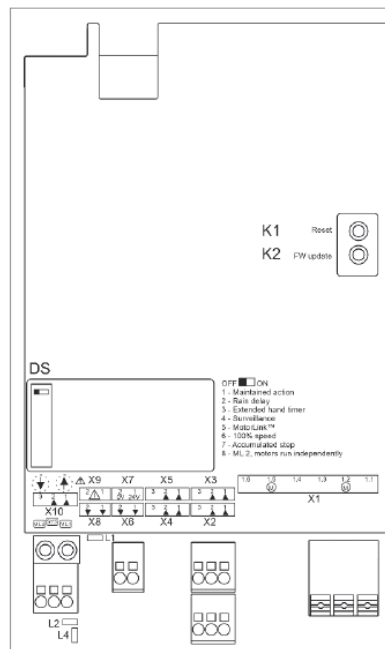
Connection plan for WCC 103



The above connection plan shows a WCC 103 MotorController

Connection description

On the WCC 103, the following can be connected: $\pm 24V$ standard actuators, comfort keypad, thermostat, and similar plus wind/rain sensor.



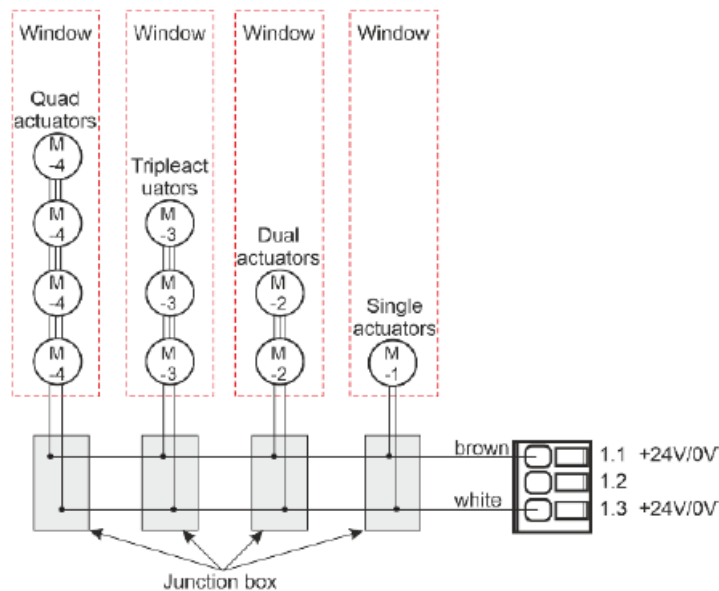
X1	1.1 24V / 0V	} Motor line #1	X8	8.1 Output #2	} Status (open) (only available on the 106BT version)
	1.2 0V / 24V				
	1.3 0V / 24V				
	1.4 24V / 0V	} Motor line #2 (only available on the 106BT version)	X9	9.1 Fault	} Output (only available on the 106BT version)
	1.5 0V / 24V				
	1.6 0V / 24V				
X2	2.1 Open	} Comfort keypad #1	X10	10.1 Open	} Weather station
	2.2 Close				
	2.3 GND / 0V				
X3	3.1 Open	} Automatic control #1	DS	DIP switch 1	
	3.2 Close				
	3.3 GND / 0V				
X4	4.1 Open	} Comfort keypad #2 (only available on the 106BT version)		↕ ⬆ Close and open all windows	
	4.2 Close				
	4.3 GND / 0V				
X5	5.1 Open	} Automatic control #2 (only available on the 106BT version)	K1	Reset	
	5.2 Close				
	5.3 GND / 0V				
X6	6.1 Output #1	} Status (open) (only available on the 106BT version)	K2	Firmware update	
	6.2 Output #1				
X7	7.1 24V	} AUX, power supply for external sensor	L1	LED 1 - Sum error	
	7.2 0V				
			L2	LED 2 - System status	
			L4	LED 4 - Motorline #1 status	

X1	WCC 103 contains one motor line to which only $\pm 24V$ standard actuators can be connected.
	<u>Data</u>
	1.1 24V / 0V
	1.2
	1.3 0V / 24V
	The number of permitted actuators on the motor line depends on the actuator type. The total current consumption connected to the motor line may not exceed 3A incl. load on X7 (AUX). In addition to the actuators,
	locking actuators of type WMB 8xx may also be connected. The locking actuators' power consumption is not
	included in the calculated 3A as the actuators and locking actuators do not run simultaneously.
	All actuators on the same motor line run/are operated at the same time.
	All actuators on a motor line must be the same type.
	Connection/cable diameter: flexible max 6 mm ² / solid max 10 mm ² .
	Cable length: see the chapter "Cable dimensioning".

Connecting variants to standard actuators on motor line 1

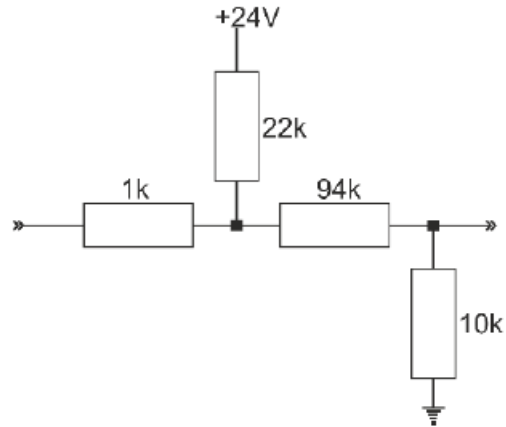
Standard $\pm 24V$ actuators Example with max. 3A current consumption

- a) 3 pcs. WMX 826-1
- b) 2 sets of 3 pcs. WMX 504-3
- c) 1 pc. WMU 883-1
- d) 2 pcs. WMU 861-2



Input for connection of comfort keypad

Input circuit (simplified)



Data:

2.1 Open

2.2 Close

2.3 GND / 0V

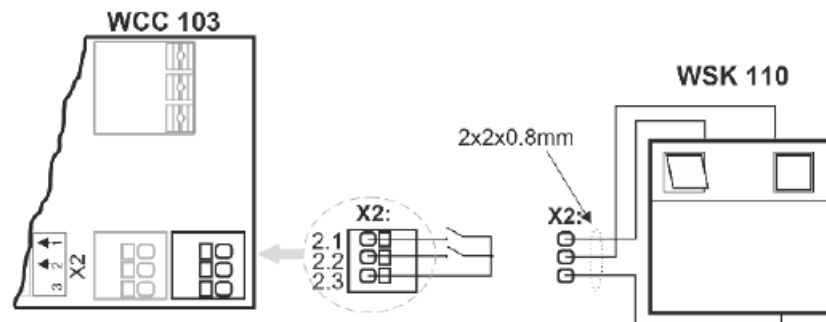
X2

With the factory-set values, the input is:

“Active” if the resistor is less than $5k\Omega$ “Inactive” if the resistor is greater than $8k\Omega$.

Input has a pull-up current of approx. 1mA (min. 0.9mA, max. 1.1mA) if input short-circuits.

Example: Comfort keypad connected to input X2

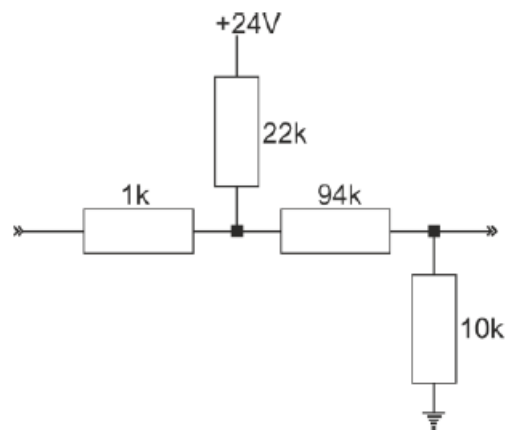


Long press (>500ms): open/close actuator, actuator runs to end stop Short press: actuator stops running

X3	<p>Input for automatic control.</p> <p><u>Data:</u></p> <p>3.1 Open</p> <p>3.2 Close</p> <p>3.3 GND / 0V</p> <p>X3 must be controlled by a potential/volt-free contact. X3 has lower priority than X2.</p> <p>X3 is blocked for 30 minutes after X2 has received a command (from production code 11BM03KW).</p>
X7	<p>AUX, power supply for the weather station, for example. See "X10" for a description of the connection of rain/wind sensors.</p> <p><u>Data:</u></p> <p>7.1 24V</p> <p>7.2 0V</p> <p>Maximum 500 mA</p> <p>Mains must be switched off, before connecting any kind of external equipment to X7!</p> <p>Connected consumption must be included in the controller's total load, which must not exceed 3A.</p>

Connecting wind/rain sensors of type WLA 330 or WLA 331. Wind/rain sensors must be connected on both X10 and X7.

Input circuit (simplified)



Data:

10.1 Open

10.2 Close (Rain)

10.3 GND / 0V

X10

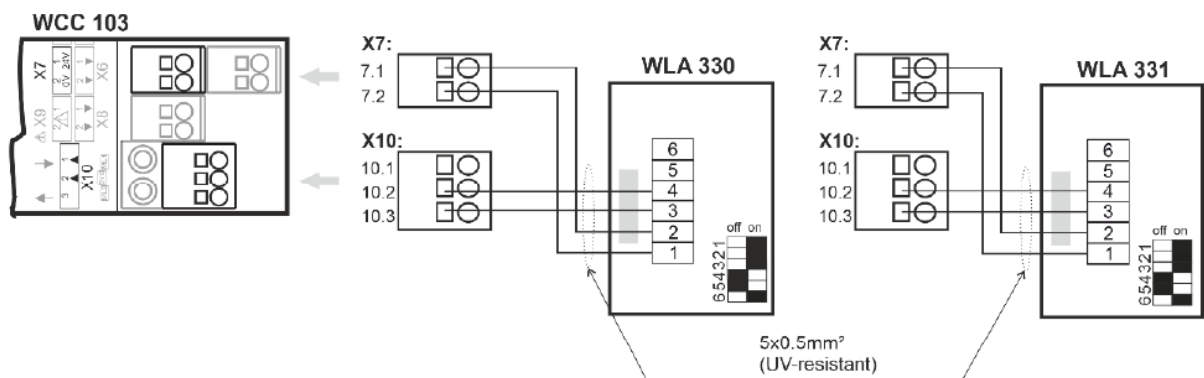
With the factory-set values, the input is:

“Active” if the resistor is less than $5k\Omega$ “Inactive” if the resistor is greater than $8k\Omega$.

Input has a pull-up of approx. 1mA (min. 0.9mA, max. 1.1mA)

Connecting wind/rain and rain sensor

WLA 330 and WLA 331– the sensor’s settings are set on the sensor.



DIP switches 1-3 on WLA 330 must be set in relation to windspeed tolerances. See the guideline for WLA 330 for DIP switch settings.

DS	<p>DIP switch for configuration of holding on connected comfort keypad on X2.</p> <p>ON = holding activated OFF = holding deactivated</p> <p>Factory setting = OFF</p>
↓ ↑	Close / Open all windows
K1	Reset
K2	FW update; to be used in line with firmware updates
LED 1	<p>The yellow LED indicates an error on the motor controller. If the diode is off, there is no error/failure.</p> <p>See chapter, "Status and troubleshooting via LED" for more information.</p>
LED 2	<p>The green LED that shows the status of MotorController. If the diode lights constantly, there is no error /failure.</p> <p>See chapter, "Status and troubleshooting via LED" for more information.</p>
LED 4	<p>The green LED shows the status of the motor line.</p> <p>If the diode lights for 2.4 sec, and is off for 0.8 sec (repeated continuously) there is no error/failure on the motor line. See chapter, "Status and troubleshooting via LED" for more information.</p>

Status and troubleshooting via LED

- In the event of failure/error of the motor controller, one or more diodes will light and/or blink.
- On the WCC 103, there are 3 diodes – 2 green and 1 yellow – that can indicate errors on the motor controller.
- Irrespective of which diode lights or blinks, the indicator is based on a 3.2-second sequence that is repeated continuously. Each sequence is defined by 32 x 0.1 second time segments.
- If there are several errors on the MotorController simultaneously they are displayed by priority, i.e. error messages for the most critical failures are shown first and repeated until the failure is remedied. Then error number two is shown, which likewise is repeated until the error is remedied etc. The following overview shows the most frequently occurring errors, if an error other than those listed below is indicated, contact WindowMaster.

Yellow diode – LED 1

If the yellow diode lights, this indicates an error on the motor controller.

- Black = diode off

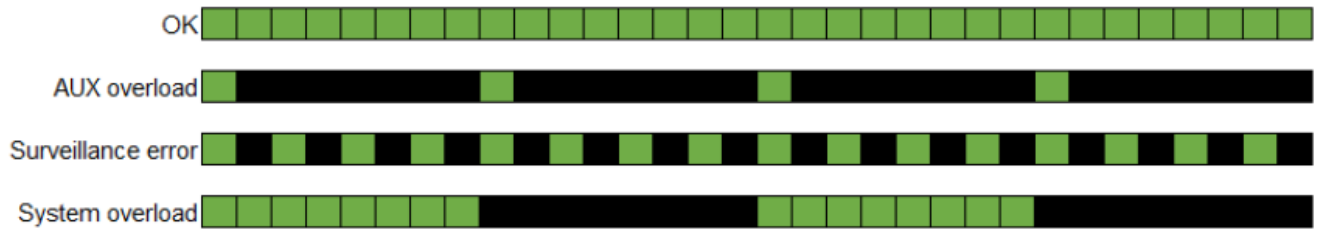


The error indicator on the yellow diode is a total error indicator. Detailed information on the error type can be decoded on the green diode.

Green diode – LED 2

If the green diode LED 2 (closest to X10) blinks, this indicates an error on the motor controller.

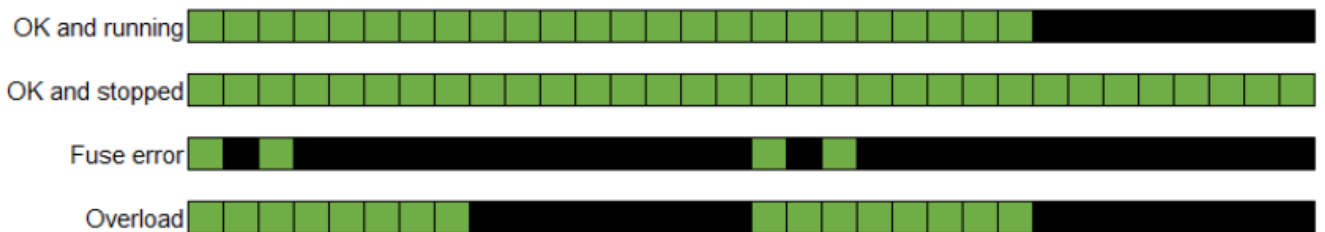
- Black = diode off



Green diode – LED 4

The green diode LED 4 (furthest from X10) indicates the status of or error on the motor line.

- Black = diode off



Commissioning and test run

In the event of error messages, refer to chapter “Status and troubleshooting via LED”.

MotorController fully installed, without operating power

1. Check all mechanical and electrical components for damage.
2. Check all screw and plug connections for tightness and/or firm seating.
3. Check that all external components are installed; check polarity for the $\pm 24V$ actuators

With network power

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

Comfort keypad

Look closely at the actuators as they open and close – there must not be any obstacles in any position and the actuator connection wires must not be overstrained with pulling or pinching.

- Test every single comfort keypad.

Wind/rain sensor

1. Open the actuators with the comfort keypads.
 2. Dampen the rain sensor, and the actuators close completely.
 3. While the actuators are running, press the Open button on the comfort keypad. The actuators must neither open nor stop.
- If commissioning proceeds correctly, the lid of the MotorController may be fitted.
 - If commissioning does not proceed correctly, i.e., there is an error in one of the test points, refer to chapter "Connection description" If necessary, re-test the cable routing by chapter "Connection plan for WCC 103".

Maintenance

- Control and maintenance should only be done by the manufacturer or an authorized partner.
- Remove all soiling from the MotorController. Check fastening and clamping screws for firm seating.
- Carry out a test run of the entire system (see 'Commissioning and test run').
- Only have defective units repaired in our factory. Only install original spare parts.
- The expected minimum lifetime for the MotorController is 10 years.

Maintenance agreement


WindowMaster offers a maintenance agreement for MotorController. Contact our service department for further information:

- **Tel.** +44 1536 614 070 or
- info.uk@windowmaster.com

Components declaration

- The MotorController has been produced and tested in compliance with European guidelines.
- The "Declaration of Conformity" is supplied with the MotorController as a separate document.

Documents / Resources

	<p>WINDOW MASTER WCC 103 Motor Controller [pdf] Instruction Manual WCC 103 Motor Controller, WCC 103, Motor Controller, Controller</p>
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References

- [User Manual](#)

