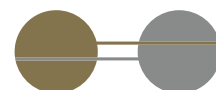


Product catalogue

12.07.2018



DK Information	UK Information	F Information	D Informationen	SE Information
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Løsninger	Solutions	Solutions	Lösungen	Lösingar
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Styring Brand- og komfort- ventilation	Controls For smoke and natural ventilation	Commandes pour désenfumage et ventilation de confort	Steuerungen für Rauch- und Wärmeabzug	Styrning Brand- och komfort- ventilation
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Styring Komfort- ventilation	Controls For natural ventilation	Commandes Pour la ventilation naturelle	Steuerungen für natürliche lüftung	Styrning Komfort- ventilation
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Motorer	Actuators	Moteurs	Antriebe	Motorer
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Sensorer	Sensors	Detecteurs	Sensoren	Sensorer
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Beslag	Brackets	Fixations	Beschläge	Beslag
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Tilbehør	Accessories	Accessoires	Zubehör	Tillebehör
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Referencer	References	References	Referenzen	Referenser
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DK
Information

UK
Information

F
Information

D
Informationen

SE
Information



Information about

WindowMaster



History

WindowMaster A/S was founded in 1990. Its founding vision is to create better buildings that have plenty of fresh air and excellent and safe indoor climates. The company employs around 130 people in Denmark, Germany, England, Switzerland and Norway and works with an extensive network of certified partners around the world.

WindowMaster has specialised in the development, production and marketing of window actuators for all types of façades and windows, and has also developed indoor climate control solutions for natural ventilation, hybrid ventilation and smoke ventilation. Today WindowMaster is able to offer a broad range of products and solutions. The driving force at the centre of our development has been to ensure that our solutions assist in providing a sustainable environment for those who use the buildings, by requiring far less energy than traditional methods.

Natural and mixed mode ventilation

In 2000 WindowMaster supplied its first project with a complete indoor climate solution for natural ventilation. The solution, which was for a school, was based on intelligent window actuators combined with individual automatic control of the indoor climate in all the classrooms.

Since this first project, WindowMaster has now supplied full indoor climate control solutions for over 500 building projects across Europe, for offices, schools, universities, industrial buildings and shopping centres. Experience from these projects, together with close cooperation with a wide range of international universities and institutes, has led to WindowMaster becoming the market leader within sustainable indoor climate solutions.

Due to the continued focus of attention on the energy consumption of our buildings, in order to reduce their CO₂ impact, WindowMaster is working intensively on developing natural ventilation solutions

further, to also include mixed mode solutions. These solutions are where low-energy ventilation systems with heat recovery are used as a supplement to the natural ventilation during the coldest winter months.

Smoke ventilation

Supplying window actuators and controls for life safety applications, such as smoke ventilation, has been at the core of WindowMaster's development since it was founded. Our product range spans from simple standard solutions for staircases in residential buildings to advanced project solutions for office, industrial and institutional buildings, as well as shopping centres of all sizes.

Today we have a very broad and competitive product range within smoke ventilation, our reference projects are to be found all over Europe. Our products are approved according to international recognised standards such as EN 12101-2, EN 12101-10, DIN 18231 and VdS.

To gain optimum utilisation of the compulsory smoke ventilation systems, many of our customers choose to combine the systems with comfort control of the windows.

Motorised windows

WindowMaster has developed several different innovative window actuators for surface mounting as well as for complete integration within the window frame. Architects and building owners throughout Europe are especially enthusiastic about the solutions for complete integration. Due to our modular concept and our extensive product range we are able to offer cost efficient solutions with a high technical quality to almost every need within modern facades.

Our trained technicians work closely with the façade and window manufacturers in order to develop the optimum solution for the integration of actuators within the specific window profiles.

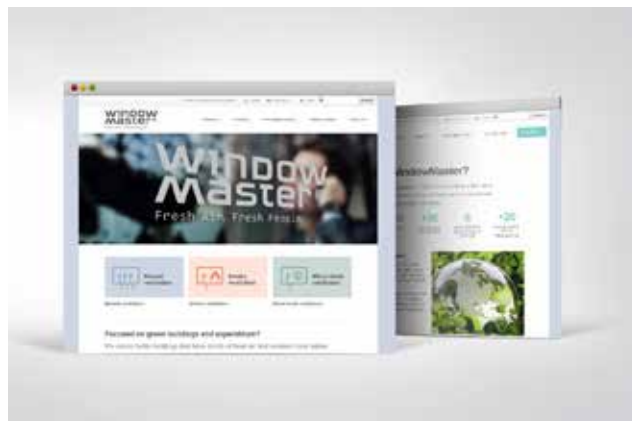
Information about WindowMaster

WindowMaster customer service

From answers on general questions about our products, specific enquiries concerning orders to consultancy regarding planning WindowMaster is able to help you.

windowmaster.com

Aside from the personal consultation, information about products and services can be found on our home pages **windowmaster.com**



Contact

SALES DEPARTMENT

Our sales team is able to answer questions concerning the choice of product, pricing and delivery times on WindowMaster products as well as questions concerning active projects.

SERVICE

WindowMaster has a network of service technicians at their disposal, who will carry out repairs and maintenance according to your needs.







MAINTENANCE OF SMOKE VENTILATION SYSTEMS

WindowMaster offer special maintenance agreements for smoke ventilation systems with an annual inspection of the complete system, thereby complying with the current regulations, which the owner of the system is responsible for.

Phone	+44 (0) 1536 614070
Fax	+44 (0) 1536 614071
E-mail	info@windowmaster.co.uk
Internet	www.windowmaster.com (in the menu "About us" → "Customer Centre")

General

WindowMaster products	
Connection	WindowMaster window actuators must only be connected to genuine WindowMaster power supplies. If power supplies other than WindowMaster are used for connection to WindowMaster window actuators then this will invalidate in full any warranty or guarantee for WindowMaster window actuators. WindowMaster take no responsibility for the performance of WindowMaster products or third party products in this instance.
Cleaning	Product surface may be cleaned with a soft damp cloth using a small amount of household cleaner diluted in water.
Maintenance	<p>Power supplies are to be regularly tested. Maintenance of smoke ventilation systems is to be carried out at least once per year, according to the national guidelines.</p> <p>Actuators are to be regularly tested and lubricated, and the window hinges are to be lubricated according to the suppliers maintenance instructions.</p> <p>Sensors are to be regularly tested, cleaned and calibrated every 3 years.</p> <p>All faults, loose parts or other irregularities should immediately be repaired.</p> <p>WindowMaster offers service agreements to secure the long term reliability of the products. Please see separate sheet for further details.</p>
Smoke ventilation	<p>Connectors mounted at the factory must be replaced by ceramic connectors. Always use silicon cables.</p> <p>Smoke ventilation systems are to be tested according to building regulations. WindowMaster offers a service agreement for comfort and smoke ventilation solutions. Please see separate sheet for further details.</p>
Transportation	Protect against humidity during transport, storage and installation.
Packing disposal	The packing can be disposed of together with ordinary household waste and recycled.
Product disposal	Disposal of the product should conform to regulations for electronic waste and not with usual household waste.
Legal notice	WindowMaster claims no responsibility or guarantee for the topicality, correctness or completeness of the accessed information and reserves rights to supply and change the information at any time.

Symbol description		
	Natural ventilation	The product is suitable for comfort ventilation.
	Smoke ventilation	The product is suitable for smoke ventilation.
	Smoke ventilation EN 12101	The product is suitable for smoke ventilation accordingly to EN 12101. Please contact WindowMaster for further information.
	Smoke ventilation B300	The product is suitable for smoke ventilation accordingly to B300. Please contact WindowMaster for further information.
24V	±24V control	The product is to be connected to a ±24V power supply.
230V	Rated voltage	Symbol for rated voltage 120V, 230V and 230-400V.
MAX 4A	Maksimal output current	Symbol for max. 4A, max. 4.8A, max. 20A and max. 60A.
	MotorLink®	The product communicates with power supplies with MotorLink® – an intelligent patented digital communication from WindowMaster. This provides millimetre-by-millimetre control of the actuator, 3 open/close speeds, pressure safety function, fully synchronised actuators without external synchronisation module and early fault indication of any potential faults
	TrueSpeed™	The product can with the TrueSpeed™ technology slow down the actuator movement (down to 1mm per second), which enables the actuators to run completely silent.
VdS	VdS approved	The product is certified in accordance with VdS.
KNX	KNX product	The product is KNX certified.
BACnet	BACnet product	The product is BACnet certified.
Modbus	Modbus product	The product is Modbus certified.
LON	LON product	The product is LON certified.
	io-homecontrol® product	The product is a io-homecontrol® product
	UL certification – Controls	UL certification for USA according to UL325 and for Canada according to CSA C22.2 no.247-14
	UL certification – Actuators	UL certification for USA according to UL325 and for Canada according to CSA C22.2 no.247-14
CNBOP-PIB	CNBOP-PIB certification	CNBOP-PIB certification

Cable dimensions

For the maximum cable length for power supplies in conjunction with standard actuator (taking into consideration the stated cable cross sections) please refer to the following table.

Maximum cable length: always routed from the power supply to the last junction box

Actuator current: sum of all motor currents per group

Note

- do not use green/yellow (ground) wire!
- formula to calculate the max cable length
- maximum voltage drop in the cable UL: 2V

$$\text{Max cable length} = \frac{\text{admissible voltage drop (UL)} \times \text{conductivity of copper (56)} \times \text{cable cross section (a)}}{\text{total max. actuator current (I) in amps} \times 2}$$

Cable specifications is a guide only, overall responsibility resides with the electrical contractor on site.

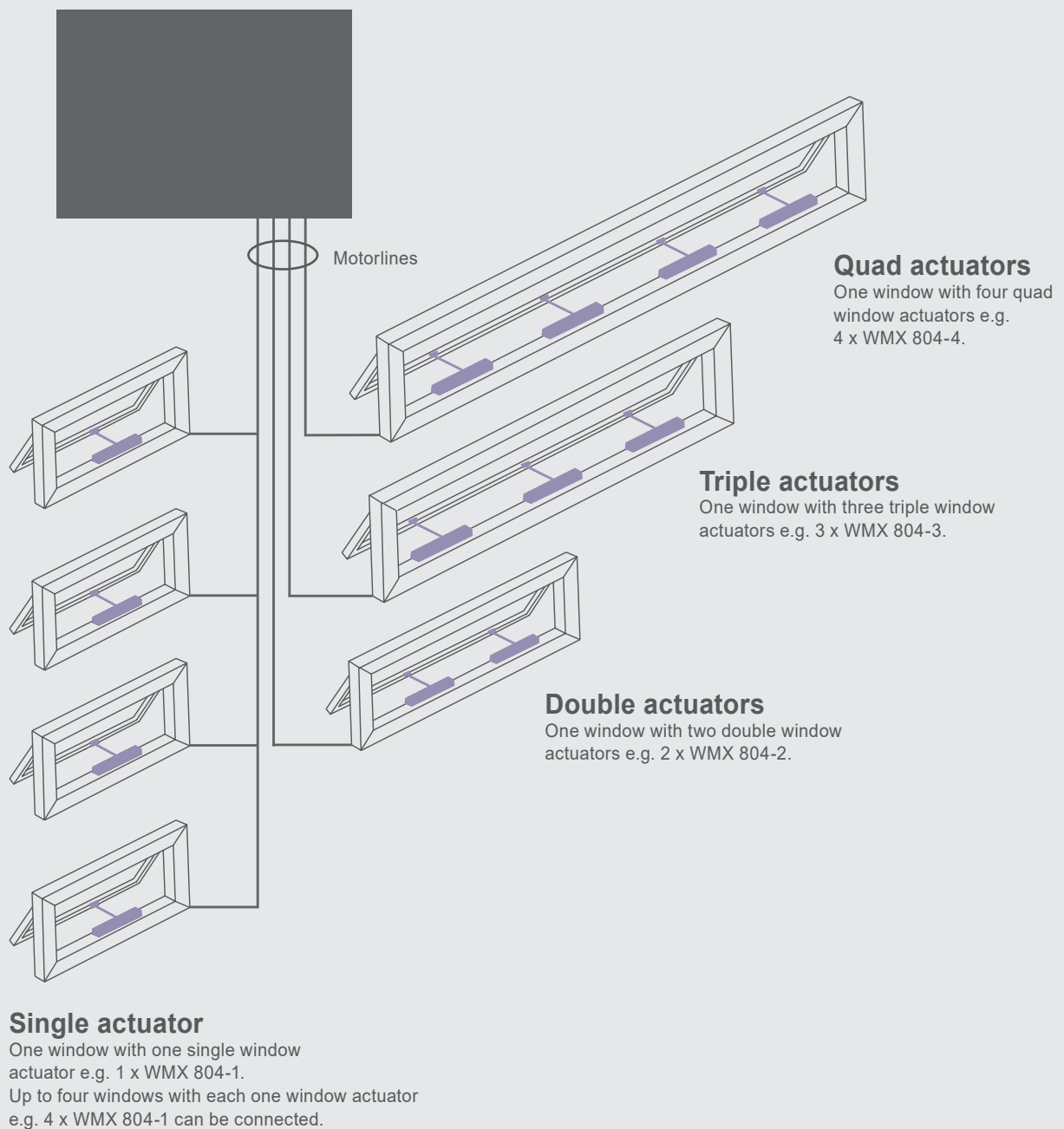
Max. cable length when actuator is connected to power supply

Cable cross section (a) (do not use green/yellow (ground) wire!)	3 x 0.75 mm ²	3 x 1.50 mm ²	3 x 2.50 mm ²	3 x 4.00 mm ²	3 x 6.00 mm ²	5 x 1.50 mm ² 2 wires in parallel	5 x 2.50 mm ² 2 wires in parallel	
Total actuator current [I]								
±24V power supply								
1A	42	84	140	224	336	168	280	meters
2A	21	42	70	112	168	84	140	meters
3A	14	28	47	75	112	56	93	meters
4A	11	21	35	56	84	42	70	meters
5A	8	17	28	45	67	34	56	meters
6A	7	14	23	37	56	28	47	meters
7A	6	12	20	32	48	24	40	meters
8A	5	11	18	28	42	21	35	meters
MotorLink® power supply								
1A	42	50	50	50	50	50	50	meters
2A	21	42						meters
3A	14	28	47	50	50	42	50	meters
4A	11	21	35					meters
5A	8	17	28	45	50	34	47	meters
6A	7	14	23	37		28		meters
7A	6	12	20	32	48	24	40	meters
8A	5	11	18	28	42	21	35	meters

General

Actuator variants on one MotorLink® motorline

1. When connecting window actuators one should pay attention to:
 - the max current load of the MotorControllers: the max load on the MotorController is 10A per motorline (simultaneously load). The simultaneously max current consumption of all motorlines must not exceed max 20A.
 - the cable length and cross section: the max distance between the MotorController and the window actuators is 50m, however with a max voltage drop of 2V in the cable
2. Aside from window actuators; espagnolettes type WMB 81x-n (one single or two double actuators), can be connected to the window. When connecting an espagnolette each window must have its own motorline



DK
Løsninger

UK
Solutions

F
Solutions

D
Lösungen

SE
Lösingar





DK
Styring
Brand- og
komfort-
ventilation

UK
Controls
For smoke and
natural
ventilation

F
Commandes
pour désenfumage
et ventilation
de confort

D
Steuerungen
für Rauch- und
Wärmeabzug

SE
Styrning
Brand- och
komfort-
ventilation



WSC 204KP: opens during smoke,
with integrated breakglass unit and keypad



WSC 204: opens during smoke
WSC 204BZ: closes during smoke



WSC 204MH: opens during smoke,
steel housing

1.05

WSC 204 / WSC 204BZ / WSC 204KP / WSC 204MH

Smoke control panel 4.8A



Natural
ventilation



Smoke ventilation
EN 12101

230V

Rated voltage

MAX
4.8A

Maksimal
output current

CNBOP-
PIB

CNBOP-PIB
certification

Application

- 1 smoke / comfort ventilation group
- control of window actuators up to 4.8A
- with microprocessor
- smoke extraction and comfort ventilation in smaller and medium sized buildings
- expandable with additional modules
- incl. 2 pcs. back-up batteries type WSA 003

Smoke control panel for control of 24V DC actuators for smoke extraction and daily comfort ventilation.

The smoke control panel is especially suitable for surveillance of smaller areas, e.g. staircases, smaller sport centres and restaurants.

WSC 204 / WSC 204BZ / WSC 204KP

The smoke control panel is supplied in plastic housing and can be either countersunk mounted or surface mounted (frame for surface mounting is supplied).

WSC 204

The smoke control panel opens the windows actuators during smoke.

WSC 204BZ

The smoke control panel closes the windows actuators during smoke.

WSC 204KP

The smoke control panel opens the windows actuators during

smoke. The panel is supplied with one break glass unit and one keypad both integrated in the door. As the keypad and break glass unit are internal to the smoke panel installation is easy and quick and saves costs. The keypad is used for daily comfort ventilation.

WSC 204MH

The smoke control panel opens the windows actuators during smoke. The smoke control panel is supplied in steel housing and is suitable for surface mounting.

Extension

By linking several smoke control panels in a master/slave system, the smoke control unit can also be used in larger buildings (master/slave module type WSA 301 required).

Special technical features

- approval according to EN 12101-10
- for smoke extraction combined with comfort ventilation
- built-in uninterruptible power supply 2 pcs. WSA 003 (min. 72h battery back-up in case of voltage loss)
- cable surveillance on break glass unit
- cable surveillance on smoke detector input (if used)
- survey on actuator outlet
- breakage of smoke signal lines 1 and 2 are seen separately via diodes on the bottom plate
- fault display via diagnostic LEDs
- incident reporting is programmable as smoke triggering
- smoke triggering when temperature inside the compact unit exceeds 72°C

Connection options

- actuator with end switch or electrical load switch of
- tripping by BMS via potential-free contact (ASV module WSA 306 required)
- in connection with comfort ventilation signals from BMS units can be received
- wind/rain sensor without additional plug in module
- 15 ventilation keypads with "indicator" or as many "open" indicators
- 10 smoke detectors type WSA 300 61 or WSA 310
- 4 break glass units (primary), type WSK 320 or type WSK 321
- 15 break glass units (secondary), type WSK 330

Technical specifications

Output current	Max. 4.8A	
Primary voltage	230V AC $\pm 10\%$, 150W, 50/60Hz $\pm 10\%$	
Actuator secondary voltage	Rated voltage Open circuit voltage at 230V AC Open circuit voltage at 253V AC Motor voltage at 230V AC / 4.8A load Ripple at max. load (4.8V) Open circuit voltage at battery operation	24V typ. 28V DC max. 31.3V DC typ. 22V DC max. 6% (= 3.8Vpp) min. 18.7V DC
Inrush current	Max. 6A < 5msec	
Standby consumption	4W	
Emergency power supply	> 72h	
Operating condition	-5°C - +40°C, max. 90% relative humidity (not condensing)	
Switch-on-duration	ED max. 40% (max. 4 min per 10 min)	
Material	WSC 204 / WSC 204BZ / WSC 204KP: plastic housing for countersunk or surface mounting WSC 204MH: steel housing for surface mounting	
Colour	WSC 204 / WSC 204BZ / WSC 204KP: white (RAL 9016) WSC 204MH: grey (RAL 7035)	
Size	WSC 204 / WSC 204BZ / WSC 204KP: 368 x 353mm (W x H) Surface mounting D=97mm Countersunk mounting D=95mm, hole in wall 325 ± 5 x 311 ± 5 x min. 80mm (W x H x D) WSC 204MH: 300 x 300 x 120mm (W x H x D)	
Weight	WSC 204 / WSC 204BZ / WSC 204KP: 4.7kg excl. batteries / 7.5kg incl. batteries WSC 204MH: 6kg excl. batteries / 10kg incl. batteries	
IP rating	WSC 204 / WSC 204BZ / WSC 204KP (plastic housing): IP30 WSC 204MH (steel housing): IP54	
Approval / certification	WSC 204 / WSC 204BZ / WSC 204KP: approved according to EN 12101-10 WSC 204 0102: approved according to CNBOP-PIB	
Delivery includes	Smoke control panel with 2 pcs. back-up batteries 12V/3.4Ah (2 x WSA 003) WSC 204 / WSC 204BZ / WSC 204KP: supplied with a plastic frame for surface mounting	
Spare parts	See the spare part list on our web site www.windowmaster.com under "Products"	
Note	We reserve the right to make technical changes	

WSC 204 / WSC 204BZ / WSC 204KP / WSC 204MH

Smoke control panel 4.8A

Items	Item no.
Smoke panel 4.8A, plastic housing	WSC 204 0102
Smoke panel 4.8A, plastic housing, closes during smoke (<i>primary for CH</i>)	WSC 204BZ 0102
Smoke panel 4.8A, plastic housing, with integrated break glass unit and keypad in the door	WSC 204KP 0102
Smoke panel 4.8A, steel housing	WSC 204MH 0102

Accessories	Item no.
Smoke detector	WSA 300 61
Alarm and fault module (master/slave)	WSA 301
Linking of wind/rain signal	WSA 302
Time ventilation module	WSA 303
Gap ventilation module	WSA 304B
ASV module	WSA 306
End module	WSA 432
Smoke detector end module	WSA 433
See separate product sheets for further information	



1.20

WSC 304 6101/6102

Smoke control panel 4A



Natural
ventilation



Smoke
ventilation



Rated voltage



Maksimal
output current

Application

- 1 smoke / comfort ventilation group
- control of window actuators up to 4A
- with microprocessor
- smoke extraction in smaller and medium sized buildings
- expandable with additional modules
- incl. 2 back-up batteries

Smoke control panel for control of 24 VDC actuators for smoke extraction and daily comfort ventilation.

The smoke control panel is especially suitable for surveillance of smaller areas, e.g. staircases, smaller sport centres and restaurants.

By linking several smoke control panels in a master/slave system, the compact panel can also be used in larger buildings (master/slave module WSA 301 required).

Special technical features

- for smoke ventilation combined with comfort ventilation
- built-in uninterruptable power supply (min. 72h battery back-up in case of voltage loss)
- cable surveillance on break glass unit
- cable surveillance on smoke detector input (if used)
- survey on actuator outlet
- breakage of smoke signal lines 1 and 2 are seen separately via diodes on the bottom plate
- fault display on diagnostic LEDs
- incident reporting is programmable as smoke triggering

- smoke triggering when temperature inside the compact unit exceeds 72°C
- plastic-steel housing with white frame for surface mounting,
- IP30

Connection options

- actuator with end switch or electronical load switch of
- tripping by BMS via potential-free contact (ASV module WSA 306 required)
- in connection with comfort ventilation signals from BMS units can be received
- wind/rain sensor without additional plug in module
- 15 ventilation keypads with "indicator" or any number of "open" indicator
- 10 smoke detectors type WSA 300 61 or WSA 310
- 4 break glass units (primary) type WSK 320 or type WSK 321
- 15 break glass units (secondary) type WSK 330

Smoke control panel 4A

Technical specifications			
Primary voltage	230 VAC $\pm 10\%$		
Secondary voltage		6101	6102
	max. open circuit voltage at 230 VAC motor voltage at rated load max. ripple	32.0 VDC 24.5 VDC 6.0 Vpp	28.0 VDC 21.7 VDC 3.0 Vpp
Output current	max. 4A		
Operating condition	+10°C - +45°C		
Emergency power supply	> 72h		
Material	plastic-steel housing for countersunk or surface mounting		
Colour	white (RAL 9016)		
Size	368 x 353 x 95mm (W x H x D)		
Weight	4.7kg excl. batteries / 7.5kg incl. batteries		
IP rating	IP30		
Delivery includes	smoke control panel with 2 pcs. back-up batteries 12V/2Ah (WSA 002) and frame for surface mounting		
Note Primary voltage	we reserve the right to make technical changes		

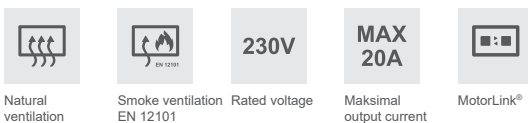
Items	Item no.
Smoke panel 4 A	WSC 304 6101
Smoke panel 4 A, reduced actuator output voltage	WSC 304 6102

Accessories	Item no.
Alarm and fault module (master/slave)	WSA 301
Linking of wind/rain signal	WSA 302
Time-ventilation module	WSA 303
Gap ventilation module	WSA 304B
ASV module	WSA 306
End module	WSA 432
Smoke detector end module	WSA 433
Lock cylinder incl. key	WSA 437
For further information, see the respective product sheets in this chapter and the chapter "Accessories"	



1.50

CompactSmoke™ WSC 310 / WSC 320 STANDARD Smoke control panel 10-20A



Natural
ventilation

Smoke ventilation
EN 12101

Rated voltage
230V

Maksimal
output current
MAX
20A

MotorLink®

Application

- smoke extraction and daily comfort ventilation
- 2 smoke / 2 daily ventilation groups
- 10 and 20A panels
- to be used with $\pm 24V$ standard actuators and/or MotorLink® actuators
- configuration on DIP switches
- less cabling as the panel uses bus technology
- low power consumption

Compact smoke control panel for the control of $\pm 24V$ DC actuators and actuators with MotorLink® for smoke ventilation and daily comfort ventilation. The panel can be used in small and medium sized buildings as well as in building sections e.g. stair cases and restaurants.

The panel is configured on DIP switches.

Panel versions

The STANDARD panel is supplied in two versions:

- 10A, 2 smoke zones / 2 daily ventilation groups:
WSC 310 S 0202
- 20A, 2 smoke zones / 2 daily ventilation groups:
WSC 320 S 0202

The panel is also supplied as a PLUS version where the configuration is done on the build in touchscreen – please see the separate product sheet for further information.

Smoke zone / break glass unit

Break glass units from the WSK 5 series are to be used together with this panel.

The panel registers if break glass units are connected to one or two inputs on the panel and will based on this automatically configure the smoke zones. When connecting to one input, one smoke zone with two motor lines will be configured, and when connecting to two inputs two smoke zone each with one motor line will be created.

On each line up to five break glass units type WSK 503 or WSK 504 can be connected.

If keypad and smoke detector are to be connected to the break glass unit, break glass unit type WSK 501 or WSK 502 is to be used. Only connect one of this type of unit, the remaining (up to four) break glass units must be type WSK 503 or WSK 504.

20A on one motor line (only WSC 320)

WSC 320 with 20A includes up to two motor lines each with 10A. If there is a need of more than 10A on one motor line, DIP switch 2.5 is set to 20A. Hereafter one motor line can be loaded with 20A or two motor lines can loaded up to a total of 20A e.g. 17A and 3A.

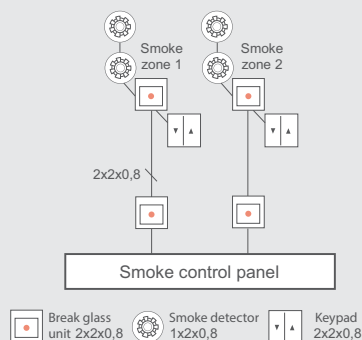
Cabling

The panel uses bus technology and the overall cabling for break glass units, smoke detectors and keypads is significantly reduced compared to other types of smoke panels.

The panel has 1 input for a smoke detector, 2 inputs for break glass units (where up to 10 break glass units can be connected) and 2 inputs for ventilation keypads (no max number of keypads).

Use break glass unit WSK 503 or WSK 504 when smoke detectors are connected to the smoke detector input in the panel.

Use break glass unit WSK 501 or WSK 502 when smoke detector is connected to the break glass unit – see example:



Cable surveillance

Actuators with MotorLink® are monitored via data communication. If the actuator variants are not the same, a LED will indicate error.

For cable monitoring on $\pm 24V$ actuators and actuators not supplied by WindowMaster an "end of line module" type WSA 510 (10k Ω resistor) is to be added.

Back-up batteries

Built-in uninterruptible power supply for min. 72h in case of power loss (batteries are supplied).

Specifications

- approval according to EN 12101-10
- automatically limited opening for comfort ventilation without additional modules
- triggering by BMS via potential-free contact without any additional modules
- configuration via DIP switches
- max. output voltage 27,6VDC @ 230VAC
- LED indication of the status of the panel
- simple installation – less cabling

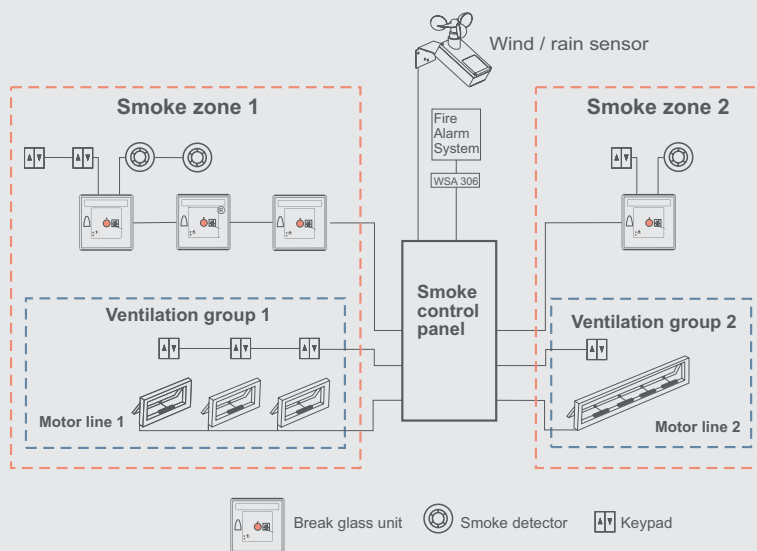
System example with WSC 320 STANDARD

Smoke control panel (20A) with two smoke zones.

The keypads and smoke detectors are cabled directly to the break glass units in the smoke zones, which means the need for cabling in the building is significantly reduced.

A wind/rain sensor is connected to close the windows during comfort ventilation in case of high wind and/or rain.

The smoke ventilation panel is connected to the Fire Alarm System (common for both smoke zones).



Description of the panel

Each panel includes a power supply unit WCA 3P1 (10A) or WCA 3P2 (20A), which is connected to the mains, a main control card WCA 3SS as well as two back-up batteries.

For information on connections please see the installation guide.

Description of card

Main card WCA 3SS

The card contains:

- 2 motor lines for $\pm 24V$ standard actuators or MotorLink® actuators
- 2 inputs for keypads for comfort ventilation
- 2 inputs for break glass units
- 1 input for smoke detector
- 1 input for 24V/48V (primarily for France)
- output for fault signal to Fire Alarm System
- input for weather station (WLA 330 or WLA 331)
- connection for USB device



Configuration / DIP switches

For configuration the smoke panel has DIP switches. The factory settings for all the DIP switches is OFF.

DIP switch

Switch	Description	ON / OFF function
1.1	230V power failure	ON: The windows close in case of power failure. OFF: No change in position in case of power failure.
1.2	Momentary action CLOSE (comfort ventilation)	ON: The window actuators run as long as the comfort keypad is pressed. OFF: The windows close completely when pressing the comfort keypad once.
1.3	Momentary action OPEN (comfort ventilation)	ON: The window actuators run as long as the comfort keypad is pressed. OFF: The windows open completely when pressing the comfort keypad once.
1.4	System fault triggers alarm	ON: In case of fault (yellow LED lights), the system will go into Alarm and the windows will open. OFF: Only fault indication
1.5	VdS triggering by alarm	ON: When the alarm is triggered the actuators will, in accordance with VdS 2581, for a duration of 30min be triggered to shortly reverse and open every second minute. OFF: Normal alarm.
1.6	Smoke detector – CLOSE (primarily used in Switzerland)	ON: When the alarm is triggered by a smoke detector, the windows will close in all smoke zones. A following operation of a break glass unit will leave the system in alarm but trigger the actuators to open the windows. Break glass units have higher priority than smoke detectors. OFF: Regardless if the alarm is triggered by smoke detectors or break glass units, the window actuators will open the windows
1.7	24V / 48V input active (primarily used in France)	ON: The 24V / 48V input is active. Only one smoke zone is possible. OFF: The 24V / 48V input is inactive. Up to 2 smoke zones are possible.
1.8	Actuators with higher run time than 61sec. (both closing and opening time)	ON: The panel will leave actuator voltage on for 180 sec. Used for non EN 12101-2 conform actuators. OFF: Used with actuators with a run time of less than 60 sec. (normal)

Continued on the next page

For configuration the smoke panel has DIP switches. The factory settings for all the DIP switches is OFF..

Max numbers of actuators per motor line and panel

The table shows the maximum number of actuators, which can be connected per motor line and panel depending on the type of the actuator and panel.

The total power consumption of all the connected actuators must not exceed 10A for the WSC 310 and 20A for the WSC 320.

Continued on the next page

Continued (WSC 310 / WSC 320 STANDARD)

WMU 861-1	6	4	6	4	12	8
WMU 861-2	6	2	6	4	12	4
WMU 861-3	6	3	6	3	12	6
WMU 861-4	4	4	4	4	12	8
WMU 842 / 862 / 882-1	4	4	4	4	8	8
WMU 842 / 862 / 882-2	4	2	4	2	8	4
WMU 842 / 862 / 882-3	3	3	3	3	6	6
WMU 842 / 862 / 882-4	4	4	4	4	8	8
WMU 863 / 883-1	2	2	2	2	6	6
WMU 863 / 883-2	2	2	2	2	6	4
WMU 863 / 883-3	0	0	0	0	6	6
WMU 863 / 883-4	0	0	0	0	4	4
WMU 864 / 884-1	2	2	2	2	4	4
WMU 864 / 884-2	2	2	2	2	4	4
WMU 864 / 884-3	0	0	0	0	3	3
WMU 864 / 884-4	0	0	0	0	4	4
WMU 885 / 895-1	2	2	2	2	4	4
WMU 885 / 895-2	2	2	2	2	4	4
WMU 885 / 895-3	0	0	0	0	3	3
WMU 885 / 895-4	0	0	0	0	4	4
WMX 503 / 504 / 523 / 526-1	20	4	20	8	40	8
WMX 503 / 504 / 523 / 526-2	20	2	20	4	40	4
WMX 503 / 504 / 523 / 526-3	18	3	18	6	39	6
WMX 503 / 504 / 523 / 526-4	20	4	20	8	40	8
WMX 803 / 804 / 823 / 826-1	10	4	10	8	20	8
WMX 803 / 804 / 823 / 826-2	10	2	10	4	20	4
WMX 803 / 804 / 823 / 826-3	9	3	9	6	18	6
WMX 803 / 804 / 823 / 826-4	8	4	8	8	20	8
WML 820/825	10	0	10	0	20	0
WML 860-1	10	4	10	8	20	8
WML 860-2	10	2	10	4	20	8
WML 860-3	9	3	9	6	18	6
WML 860-4	8	4	8	8	20	8
WMB 801/802*	Actuators with a total of max. of 4A can be connected to the locking actuator					
WMB 811/812 **	10	2	10	4	20	4

* 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

Actuator type / number of speeds

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

- $\pm 24V$ DC standard actuator – 1 speed (H&S)
- MotorLink® actuator – 3 speeds (H&S / manually operated / automatically)

The different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications		
Output current (nominel)	WSC 310: 10A / WSC 320: 20A	
Motor lines Ventilation groups Smoke zones	Max 2 motor lines (a line can be either a $\pm 24V$ standard motor line or a MotorLink® motor line) in max 2 ventilation groups and max 2 smoke zones	
Primary voltage	230V AC, 50Hz (85-264V AC, 47-63Hz)	
Actuator secondary voltage	Motor voltage Open circuit voltage at 230V AC (no load) Ripple at max load	24V DC ($\pm 15\%$) 27.6V DC @ 20°C max 6% (3.5Vpp)
Power consumption	<p>WSC 310: min 3.2W¹⁺², typ. 4.8W¹⁺³. At max load 300W WSC 320: min 5.0W¹⁺², typ. 5.6W¹⁺³. At max load 600W</p> <p>1) no load: system operational but no motors are running 2) min: with 1 x WSK 501 break glass unit and 1 x WSA 300 smoke detector 3) max load: with 1 x WSK 501 break glass unit, 4 x WSK 503 break glass unit and 10 x WSA 300 smoke detector</p>	
Inrush current on primary site	70A < 5ms Max 3 x WSC 310/320 per 10 A supply group. Circuit breaker "C" characteristic.	
Operating condition	-5°C - +40°C, max. 95% relative humidity (not condensing) EN 12101-10: Operation class A, Environmental class 1, with IP value increased to IP 54 (according to EN 12101-10 is min. IP 30 required)	
Emergency power supply	>72 hours in accordance with EN 12101-10	
Switch-on duration	ED 40% (4 min. per 10 min.)	
Cable connection	Actuator: flexible max 6mm ² / solid max 10mm ² Other components: min 0.2mm ² / max 1.5mm ²	
Size and weight	WSC 310: 400 x 300 x 120mm (WxHxD), 6.0kg no batteries, 10.8kg with batteries (2xWSA 007) WSC 320: 400 x 300 x 210mm (WxHxD), 8.6kg no batteries, 16.6kg with batteries (2xWSA 012)	
Material	Metal housing for surface mounting	
Colour	Grey (RAL 7035)	
IP rating	IP54	
Certification	EN 12101-10.	
Delivery includes	CompactSmoke™ smoke ventilation panel. Supplied with: <ul style="list-style-type: none"> • WSA 510 end of line module, 2 pcs. • WSA 501 10kΩ resistors (package of 10 pcs.) • Back-up battery type, 2 pcs. WSA 007 (WSC 310) or WSA 012 (WSC 320) 	
Spare parts	See the spare part list on our website www.windowmaster.com under "Products"	
Note	We reserve the right to make technical changes	

CompactSmoke™ WSC 310 / WSC 320 STANDARD

Smoke control panel 10-20A

Items	Item number
Smoke control panel 10A, 2 smoke zones / 2 daily ventilation groups, 2 comfort inputs, 2 back-up batteries WSA 007	WSC 310 S 0202 E1
Smoke control panel 20A, 2 smoke zones / 2 daily ventilation groups, 2 comfort inputs, 2 back-up batteries WSA 012	WSC 320 S 0202 E1
Accessories	Item number
Break glass unit with signal, plastic housing. With data communication and input for smoke detector. Max. one break glass unit on each line. Colour of the housing = x: red = 1, yellow = 2, grey = 3, blue = 4, orange = 5	WSK 501 000x 01
Break glass unit with signal, metal housing. With data communication and input for smoke detector. Max. one break glass unit on each line. Colour of the housing = x: yellow = 2, grey = 3, orange = 5	WSK 502 000x 01
Break glass unit with signal, plastic housing. With data communication. No input for smoke detector or keypad. Max five units per line. Colour of the housing = x: red = 1, yellow = 2, grey = 3, blue = 4, orange = 5	WSK 503 000x 01
Break glass unit with signal, metal housing. With data communication. No input for smoke detector or keypad. Max five units per line. Colour of the housing = x: yellow = 2, grey = 3, orange = 5	WSK 504 000x 01
Smoke detector	WSA 300
Rain sensor	WLA 331
Rain/wind sensor	WLA 330
End of line motor module with resistance	WSA 510
10kΩ resistance, 10 pcs.	WSA 501
Fire Alarm System module	WSA 306
Cables for smoke ventilation – see separate product sheet for further information	WLL 8xx



1.55

CompactSmoke™ WSC 310 / WSC 320 PLUS Smoke control panel 10-20A

		230V	MAX 20A		KNX	BACnet
Natural ventilation	Smoke ventilation EN 12101	Rated voltage	Maksimal output current	MotorLink®	KNX product	BACnet product

Application

- smoke extraction and daily comfort ventilation
- up to 10 smoke zones / 10 daily ventilation groups
- 10A and 20A versions
- to be used with $\pm 24V$ standard actuators and/or actuators with MotorLink®
- comfort ventilation via bus communication KNX, BACnet IP or BACnet MS/TP
- less cabling as the panel uses bus technology
- wind direction depending H&S ventilation
- more panels can be linked (master/slave)
- low power consumption

Smoke control panel for the control of $\pm 24V$ DC actuators and actuators with MotorLink® for smoke ventilation and daily comfort ventilation. The panel can be used in small and medium sized buildings as well as in building sections e.g. stair cases and restaurants.

Easy configuration via the built-in touch screen.

Panel types

The PLUS panel is supplied in three versions:

- 10A, 2 smoke zones / 2 daily ventilation groups
WSC 310 P 0202
- 20A, 2 smoke zones / 2 daily ventilation groups
WSC 320 P 0202
- 20A, 10 smoke zones / 10 daily ventilation groups
WSC 320 P 1012

The number of smoke zones and ventilation groups is the max number possible. These are to be configured via the built-in touch screen and thus be fitted to the building.

The panel is also supplied as a STANDARD version where the configuration is done on DIP switches – please see the separate product sheet for further information.

Communication card

The panel can be expanded with a communication card thus comfort ventilation will be possible via bus communication KNX, BACnet IP or BACnet MS/TP together with e.g. NV Comfort® or NV Advance®. The card is to be bought separately.

Card types:

- WCA 3FK with KNX
- WCA 3FM with BACnet MS/TP
- WCA 3FB with BACnet IP

Break glass unit

Break glass units from the WSK 5 series are to be used together with this panel. The units are configured and assigned to smoke zones via the build in touch screen

On each line up to five break glass units type WSK 503 or WSK 504 can be connected.

If keypads and smoke detectors are to be connected to the break glass unit, break glass unit type WSK 501 or WSK 502 is to be used. Only one of these types can be connected per line, the remaining (up to four) break glass units must be type WSK 503 or WSK 504.

Smoke zone / ventilaton group / motor line

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

A ventilation group can contain motor lines with $\pm 24V$ standard actuators and MotorLink[®] actuators, whereas a motor line can only have $\pm 24V$ standard actuators or MotorLink[®] actuators connected.

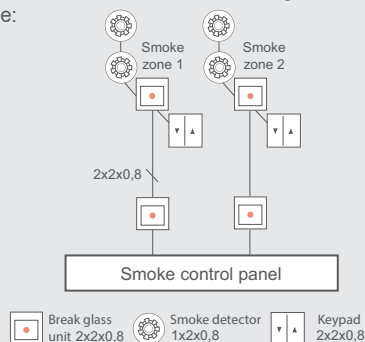
Cabling

The panel uses bus technology and the overall cabling for break glass units, smoke detectors and keypads is significantly reduced compared to other types of smoke panels.

The panel has 1 input for a smoke detector, 2 inputs for break glass units (where up to 10 break glass units can be connected) and 2 or 12 inputs for ventilation keypads (no max number of keypads).

Use break glass unit WSK 503 or WSK 504 when smoke detectors are connected to the smoke detector input in the panel.

Use break glass unit WSK 501 or WSK 502 when smoke detectors are connected to the break glass unit – see example:



Linking smoke panels

By linking several panels together the panels can be used in large buildings. Max total master/slave cable length between two panels is 200m.

Commissioning

The PLUS panel 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 shown on the touch screen.

Back-up batteries

Built-in uninterruptible power supply for min. 72h in case of power loss (batteries are supplied).

Specifications

- approval according to EN 12101-10
- automatically limited opening for comfort ventilation – no additional modules required
- simple installation due to substantially less cabling
- field bus cards are available for KNX, BACnet IP and BACnet MS/TP
- max. output voltage 27.6VDC @230VAC
- flexible open system design
- easy configuration at start up / expanding / rebuilding on the 2 1/2" 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

Connection options

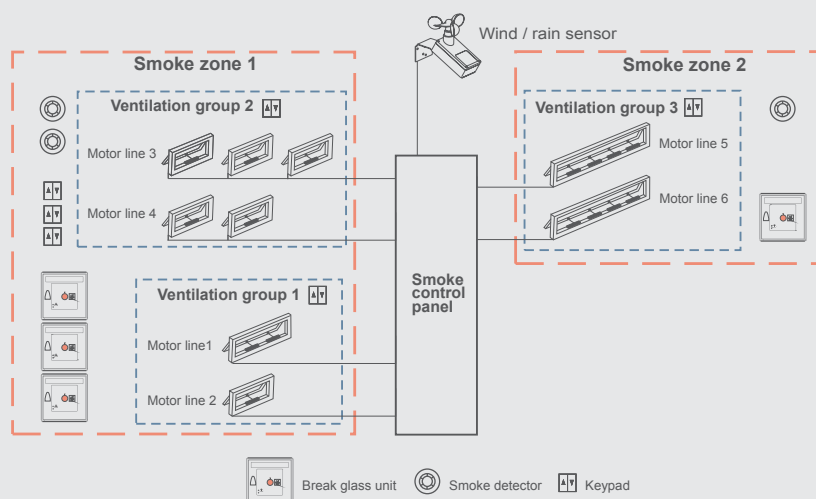
- triggering by BMS via potential-free contact – no additional modules required
- magnetic clamps – for further information see the installation guide

System example with WSC 320 P 1012

The keypads and smoke detector units are cabled directly to the break glass units in the smoke zones, which means that the need for cabling in the building is significantly reduced.

A wind/rain sensor is connected to close the windows during comfort ventilation in case of high wind and/or rain.

The smoke ventilation panel is connected to the Fire Alarm System (common for both smoke zones).



Description of the panel

Each panel includes a power supply unit WCA 3P1 (10A) or WCA 3P2 (20A), which is to be connected to the mains, a main control card WCA 3PS with a build in touch screen as well as two back-up batteries.

If the panel has more than two motor lines, the card type WCA 3M8 is also included.

If the panel has more than two keypad input, the cards type WCA 3KI and WCA 3M8 are also included.

A communication card for bus communication KNX, BACnet IP or BACnet MS/TP can be ordered seperately.

Description of cards

Main card WCA 3SP

The card contains:

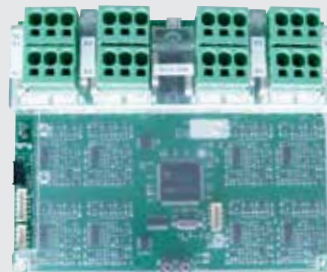
- 2 motor lines for $\pm 24V$ standard actuators or MotorLink[®] actuators
- 2 inputs for keypads for comfort ventilation
- 2 inputs for break glass units
- 1 input for smoke detector
- 1 input for 24V/48V
- output for fault signal to Fire Alarm System
- input for weather station incl. wind direction (WLA 330/331/340 + WOW 201/202)
- Input for master/slave connection (WSK-Link[™])
- 2 ethernet connections
- connection for USB host and USB device
- connection for fieldbus card
- touch screen for configuration, commissioning and maintenance



Motor line card WCA 3M8 (only WSC 320 1012)

The card contains:

8 motor lines for $\pm 24V$ standard actuators or MotorLink[®] actuators



Input card WCA 3KI (only WSC 320 1012)

The card contains:

connections for 10 keypads



Fieldbus card

The connection of a fieldbus card enables communication and access to the available bus-objects depending on the chosen system. Smoke extraction function has always higher priority than comfort commands from the field bus and it is recommended only to use field bus for comfort purposes.

There is a set of KNX and BACnet objects available for each motor line, ventilation group and smoke zone, which provides the options for status and commands. For further information on available objects see "KNX Application Programming Description" and BACnet PICS" on our web site www.windowmaster.com

Status options

E.g. actual position, fault and operation status and the max opening angle (degrees).

Command options

This will mostly be used for target position commands with different priority and MotorLink® actuator speed.

Fieldbus cards

- WCA 3FK Fieldbus card with KNX interface
- WCA 3FM Fieldbus card with BACnet MS/TP interface
- WCA 3FB Fieldbus card with BACnet IP key

Max numbers of actuators per motor line and panel

The table shows the maximum number of actuators, which can be connected per motor line and panel depending on the type of the actuator, panel and connected card.

The total power consumption of all the connected actuators must not exceed 10A for WSC 310 and 20A for WSC 320.

WSC 310 / WSC 320 PLUS

Actuator type	Per motor line		WSC 310 PLUS		WSC 320 PLUS		
	± 24V actuators	MotorLink® actuators	± 24V actuators	MotorLink® actuators	± 24V actuators	MotorLink® actuators	
				2 motor lines		2 motor lines	10 motor lines
WMS 306-1	10	4	10	8	20	8	20
WMS 306-2	10	2	10	4	20	4	20
WMS 306-3	9	3	9	6	18	6	18
WMS 306-4	8	4	8	8	20	8	20
WMS 309-1	10	4	10	8	20	8	20
WMS 309-2	10	2	10	4	20	4	20
WMS 309-3	9	3	9	6	18	6	18
WMS 309-4	8	4	8	8	20	8	20
WMS 409 xxxx 01	5	0	5	0	10	0	0
WMS 409-1	5	4	5	4	10	8	10
WMS 409-2	4	2	4	4	8	4	10
WMS 409-3	3	3	3	3	6	6	9
WMS 409-4	4	4	4	4	8	8	8
WMS 515	2	0	2	0	4	0	0
WMU 836-1	10	4	10	8	20	8	20
WMU 836-2	10	4	10	8	20	4	20
WMU 836-3	9	3	9	6	18	6	18
WMU 836-4	8	4	8	8	20	8	20

Continued on the next page

Continued (WSC 310 / WSC 320 PLUS)							
WMU 861-1	6	4	6	4	12	8	12
WMU 861-2	6	2	6	4	12	4	12
WMU 861-3	6	3	6	3	12	6	12
WMU 861-4	4	4	4	4	12	8	12
WMU 842 / 862 / 882-1	4	4	4	4	8	8	8
WMU 842 / 862 / 882-2	4	2	4	2	8	4	8
WMU 842 / 862 / 882-3	3	3	3	3	6	6	6
WMU 842 / 862 / 882-4	4	4	4	4	8	8	9
WMU 863 / 883-1	2	2	2	2	6	6	6
WMU 863 / 883-2	2	2	2	2	6	4	4
WMU 863 / 883-3	0	0	0	0	6	6	6
WMU 863 / 883-4	0	0	0	0	4	4	4
WMU 864 / 884-1	2	2	2	2	4	4	4
WMU 864 / 884-2	2	2	2	2	4	4	4
WMU 864 / 884-3	0	0	0	0	3	3	3
WMU 864 / 884-4	0	0	0	0	4	4	4
WMU 885 / 895-1	2	2	2	2	4	4	4
WMU 885 / 895-2	2	2	2	2	4	4	4
WMU 885 / 895-3	0	0	0	0	3	3	3
WMU 885 / 895-4	0	0	0	0	4	4	4
WMX 503 / 504 / 523 / 526-1	20	4	20	8	40	8	40
WMX 503 / 504 / 523 / 526-2	20	2	20	4	40	4	20
WMX 503 / 504 / 523 / 526-3	18	3	18	6	39	6	30
WMX 503 / 504 / 523 / 526-4	20	4	20	8	40	8	40
WMX 803 / 804 / 823 / 826-1	10	4	10	8	20	4	20
WMX 803 / 804 / 823 / 826-2	10	2	10	4	20	8	20
WMX 803 / 804 / 823 / 826-3	9	3	9	6	18	6	18
WMX 803 / 804 / 823 / 826-4	8	4	8	8	20	8	20
WML 820/825	10	0	10	0	20	0	0
WML 860-1	10	4	10	8	20	8	20
WML 860-2	10	2	10	4	20	8	20
WML 860-3	9	3	9	6	18	6	18
WML 860-4	8	4	8	8	20	8	20
WMB 801/802*	Actuators with a total of max. of 4A can be connected to the locking actuator						
WMB 811/812 */**	10	2	10	4	20	4	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

Actuator type / number of speeds

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

- $\pm 24V$ DC standard actuator – 1 speed (H&S)
- MotorLink® actuator – 3 speeds (H&S / manually operated / automatically)

The different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications		
Output current (nominal)	WSC 310: 10A / WSC 320: 20A	
Motor lines	Motor lines:	WSC 310 / 320 0202: max 2, WSC 320 1012: max 10 A motor line can contain either $\pm 24V$ standard actuators or MotorLink® actuators
Ventilation groups	Ventilation groups:	WSC 310 / 320 0202: max 2, WSC 320 1012: max 10 Via the software more motor lines can be connected in the same group
Smoke zones	Smoke zones:	WSC 310 / 320 0202: max 2, WSC 320 1012: max 10
Primary voltage	230V AC, 50Hz (85-264V AC, 47-63Hz)	
Actuator secondary voltage	Motor voltage Open circuit voltage at 230V AC (no load) Ripple at max load	24V DC ($\pm 15\%$) 27.6V DC @ 20°C max 6% (3.5Vpp)
Power consumption	<p>WSC 310: min 3.2W¹⁺², typ. 4.8W¹⁺³. At max load 300W WSC 320: min 5.0W¹⁺², typ. 5.6W¹⁺³. At max load 600W</p> <p>1) no load: system operational but no motors are running 2) min: with 1 x WSK 501 break glass unit and 1 x WSA 300 smoke detector 3) max load: with 1 x WSK 501 break glass unit, 4 x WSK 503 break glass unit and 10 x WSA 300 smoke detector</p>	
Inrush current on primary site	70A < 5ms Max 3 x WSC 310/320 per 10 A supply group. Circuit breaker "C" characteristic.	
Operating condition	-5°C - +40°C, max. 95% relative humidity (not condensing) EN 12101-10: Operation class A, Environmental class 1, with IP value increased to IP 54 (according to EN 12101-10 is min. IP 30 required)	
Emergency power supply	>72 hours in accordance with EN 12101-10	
Switch-on duration	ED 40% (4 min. per 10 min.)	
Cable connection	Actuator: flexible max. 6mm ² / solid max. 10mm ² Other components: min. 0.2mm ² / max. 1.5mm ²	
Size and weight	WSC 310: 400 x 300 x 120mm (WxHxD), 6kg no batteries, 10.8kg with batteries (2xWSA 007) WSC 320: 400 x 300 x 210mm (WxHxD), 8.6kg no batteries, 16.6kg with batteries (2xWSA 012)	
Material	Metal housing for surface mounting	
Colour	Grey (RAL 7035)	
IP rating	IP54	
Certification	EN 12101-10.	
Delivery includes	10A or 20A smoke ventilation panel. Supplied with: <ul style="list-style-type: none"> • WSA 510 end of line module: WSC 310 / 320 0202: 2 pcs., WSC 320 1012: 10 pcs. • WSA 501 10kΩ resistors (package of 10 pcs.) • Back-up battery type, 2 pcs. WSA 007 (WSC 310) or WSA 012 (WSC 320) 	
Spare parts	See the spare part list on our website www.windowmaster.com under "Products"	
Note	We reserve the right to make technical changes	

CompactSmoke™ WSC 310 / WSC 320 PLUS

Smoke control panel 10-20A

Items	Item number
Smoke control panel 10A, 2 smoke zones / 2 daily comfort groups, 2 inputs for keypads, 2 back-up batteries type WSA 007, programmable, can be expanded with fieldbus	WSC 310 P 0202 E1
Smoke control panel 20A, 2 smoke zones / 2 daily comfort groups, 2 inputs for keypads, 2 back-up batteries type WSA 012, programmable, can be expanded with fieldbus	WSC 320 P 0202 E1
Smoke control panel 20A, 10 smoke zones / 10 daily comfort groups, 12 inputs for keypads, 2 back-up batteries type WSA 012, programmable, can be expanded with fieldbus	WSC 320 P 1012 E1
Accessories	Item number
Fieldbus card with KNX interface	WCA 3FK
Fieldbus card with BACnet MS/TP interface	WCA 3FM
Fieldbus card with BACnet IP key	WCA 3FB
Break glass unit with signal, plastic housing. With data communication and input for smoke detector. Max. one break glass unit on each line. Colour of the housing = x: red = 1, yellow = 2, grey = 3, blue = 4, orange = 5	WSK 501 000x 01
Break glass unit with signal, metal housing. With data communication and input for smoke detector. Max. one break glass unit on each line. Colour of the housing = x: yellow = 2, grey = 3, orange = 5	WSK 502 000x 01
Break glass unit with signal, plastic housing. With data communication. No input for smoke detector or keypad. Max five units per line. Colour of the housing = x: red = 1, yellow = 2, grey = 3, blue = 4, orange = 5	WSK 503 000x 01
Break glass unit with signal, metal housing. With data communication. No input for smoke detector or keypad. Max five units per line. Colour of the housing = x: yellow = 2, grey = 3, orange = 5	WSK 504 000x 01
Smoke detector	WSA 300
Rain sensor	WLA 331
Rain/wind sensor	WLA 330
Rain/wind sensor, with pulse output	WLA 340
Wind speed sensor + Wind direction sensor	WOW 201 + WOW 202
Bracket for junction box	WOW 203
Junction box for WOW 201 and WOW 202	WOW 204
End of line motor module with resistance	WSA 510
10kΩ resistance, 10 pcs.	WSA 501
Fire Alarm System module	WSA 306
Cable for wind / rain sensor WLA 340, 4m UV resistant, 4 x 2 x 0.75mm ²	WLL 604
Cables for smoke ventilation – see separate product sheet for further information	WLL 8xx



WSC 520
2 x WSA 017



WSC 540
4 x WSA 017



WSC 560
6 x WSA 017



2.20

FlexiSmoke™ WSC 520 / WSC 540 / WSC 560

Modular smoke ventilation panel 20-60A



Natural
ventilation



Smoke ventilation
EN 12101

**230 /
400V**

Rated voltage

**MAX
60A**

Maksimal
output current



MotorLink®

KNX

KNX product

BACnet

BACnet
product

**CNBOP-
PIB**

CNBOP-PIB
certification

Application

- for heat and smoke ventilation (H&S) and daily comfort ventilation
- only one type of group (each group can be set as H&S and/or natural ventilation)
- low power consumption
- 20A, 40A or 60A as standard per panel, more panels can easily be linked without any additional modules
- for both $\pm 24V$ standard motors and/or motors with MotorLink®
- easy configuration via the built-in touch screen
- less cabling as the panel uses bus technology
- wind direction depending H&S ventilation is standard
 - additional modules are not needed

Modular smoke ventilation panel for the control of $\pm 24V$ DC motors and motors with MotorLink® for smoke ventilation and daily comfort ventilation. The modular panel can be used in larger and medium sized buildings e.g. shopping centres, schools or sport/leisure facilities. Comfort ventilation also possible with KNX or BACnet IP due to bus technology together with eg. NV Comfort® or NV Advance®.

By linking several panels together the panels can be used in very large buildings. The linking of panels can be carried out from the beginning or later via CAN. Distance between two smoke control panels up to 250m with maximum total distance of 1000m.

Built-in uninterruptible power supply for min. 72h in case of power loss (batteries are to be ordered separately).

Special technical features

- approval according to EN 12101-10
- approval according to prEN 12101-9 requested
- automatically limited opening for comfort ventilation without additional modules
- field bus modules are available for KNX and BACnet IP
- max. output voltage 27.6VDC @230VAC
- modular plug-in card design
- flexible open system design
- simple installation – due to substantially less cabling
- easy configuration at start up / expanding / rebuilding on the 3½" 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

Connection options

- triggering by BMS via potential-free contact without any additional modules
- one $\pm 24V$ DC standard motor line up to 20A in the WSA 5PS module without additional modules or up to 10A per motor line (standard motors and/or motors with MotorLink®) on the motor modules, max. total of 20A per section
- up to 30 break glass units per 20A section, 10 of the units can be connected with a smoke detector – up to 10 detectors per unit
- magnetic clamps – for further information see the installation instruction

Structure

Sections

The FlexiSmoke™ smoke ventilation panel is available in three different sizes 20A, 40A and 60A. The smoke ventilation panel consists of 20A-sections, thus WSC 520 contains one section, WSC 540 two sections and WSC 560 three sections.

Modules

Each section contains the WSA 5PS power supply module, the WSA 5MC overall control module and 3 slots for expansion modules. The WSA 5MC overall control module is available with or without field bus interface for KNX or BACnet IP.

At the 3 slots the WSA 5IO input/output module, the WSA 5SM $\pm 24V$ standard motor module or the WSA 5ML MotorLink® motor module can be connected. The type and number of the modules are specifically to suit the smoke panel required function.

Motor groups and motor lines

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

Each 20A section contains one 20A motor line for connection of $\pm 24V$ standard motors on the WSA 5PS module. If more motor lines are needed, one or more motor modules WSA 5SM are inserted. Each motor module contains four motor lines.

For connection of motors with MotorLink® insert one or more motor modules WSA 5ML. Each motor module contains four motor lines.

It is possible to insert both motor module types in the same 20A section, thus the section will operate both $\pm 24V$ standard motors and motors with MotorLink®.

A 20A-section can contain up to 13 $\pm 24V$ standard motor lines or 12 MotorLink® motor lines as well as 1 $\pm 24V$ standard motor line. The total power consumption of all the motors must not exceed 20A.

Selection of modules

Expansion modules are selected specifically for the task.

Example of module selection:

- a) 1 input/output module and no additional modules
- b) 1 input/output module and 1 $\pm 24V$ standard motor module
- c) 3 $\pm 24V$ standard motor modules

Expansion modules are mounted in the three expansion slots.

Expansion module position:

If an input-/output module is selected it is inserted in the first slot. If further modules are inserted, the input-/output modules are inserted before the motor modules and the MotorLink® motor modules are inserted before the $\pm 24V$ motor modules.

The item no. of the panel specifies the type and mounting of the expansion modules in the section/sections

Adding panels

The smoke ventilation panel can be expanded by adding more FlexiSmoke™ panels in the CAN inputs on the WSA 5MC module.

The CAN cable between two smoke ventilation panels must not exceed 250m and the total cable length must not exceed 1000m.

Break glass unit

Break glass units 5-series are to be used together with FlexiSmoke™. The units are configured and assigned to smoke zones via the touch screen in the smoke control panel.

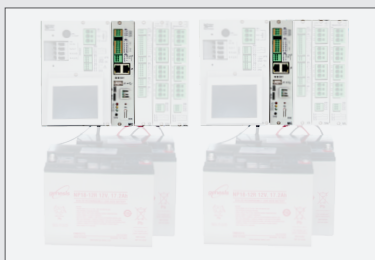
Inputs / outputs

All inputs and outputs on the FlexiSmoke™ smoke ventilation panel can be freely configured – this means that they can be assigned to functions across modules and 20A-sections.

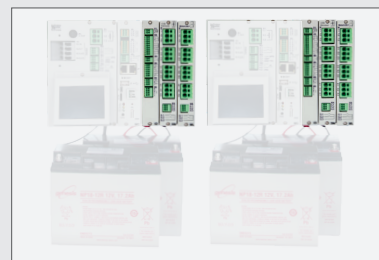
Modules in a FlexiSmoke™ (example with a WSC 540)



WSA 5PS power supply module
– one module in each section



WSA 5MC overall control module
– one module in each section



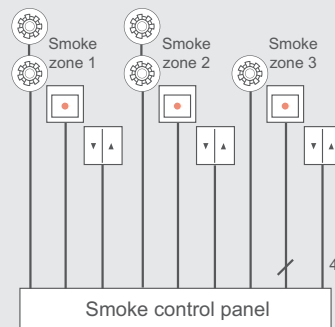
Free slots for connection of expansion modules type WSA 5IO, WSA 5SM and/or WSA 5ML – 3 free slots in each section

Cabling

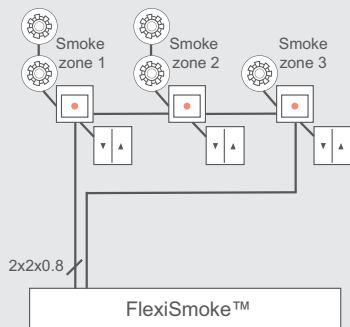
FlexiSmoke™ uses bus technology and the overall cabling for break glass units, smoke detectors and keypads is significantly reduced compared to other types of smoke panels:

- the break glass units are series connected, therefore is not necessary to cable from each break glass unit to the smoke ventilation panel
- keypads for ventilation and smoke detectors are connected directly to the break glass units in the smoke areas

Typical cabling (other systems)



Cabling with FlexiSmoke™



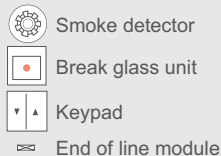
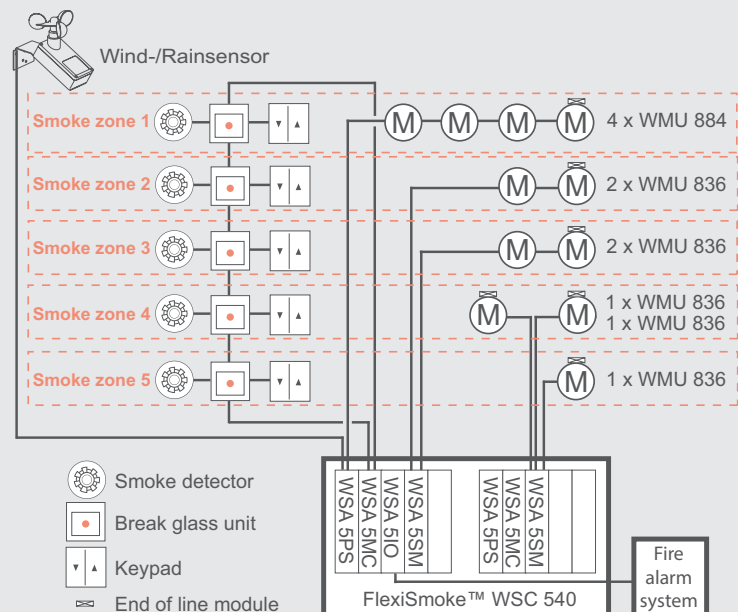
System example with WSC 540

Smoke ventilation panel with two sections (2 x 20A) configured in five smoke zones. Total $\pm 24V$ standard motor power consumption in the first section is 20A (smoke zone 1 - 2 - 3) and the total $\pm 24V$ standard motor power consumption in second section is 2A (smoke zone 4 - 5).

The keypads and break glass units are cabled directly to the break glass units in the smoke zones which means that the need for cabling in the building is significantly reduced.

A wind/rain sensor is connected to close the windows during comfort ventilation in case of high wind and/or rain.

The smoke ventilation panel is connected to the Fire Alarm System via the WSA 510 module.



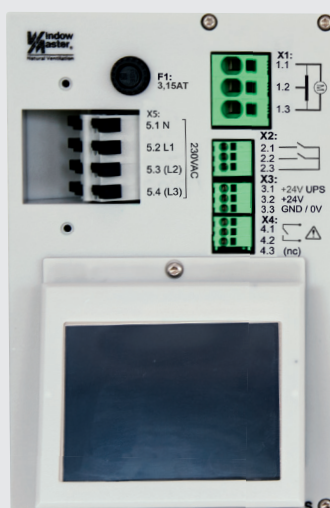
Description of modules

Power supply module (WSA 5PS)

Each 20A section contains WSA 5PS power supply module.

The module contains:

- one motor line for $\pm 24V$ standard motors
- two free configurable inputs for connection of eg. wind/rain sensor WLA 330 or keypad for comfort ventilation
- one output for additional power supply to sensors
- output for fault signal
- connection of power supply
- touch screen for configuration, commissioning and maintenance



- X1: 1.1 (white) } 20A motor line
- 1.2 Cable surveillance } $\pm 24V$ motors
- 1.3 (brown)
- X2: 2.1 Open } input
- 2.2 Close
- 2.3 GND / 0V
- X3: 3.1 24V UPS } AUX power
- 3.2 24V
- 3.3 GND / 0V
- X4: 4.1 } fault signal to Fire Alarm System
- 4.2
- 4.3 (nc)
- X5: 5.1 N } power supply 230/400V AC
- 5.2 L1
- 5.3 (L2)
- 5.4 (L3)

Description of modules (continued)

Overall control module (WSA 5MC)

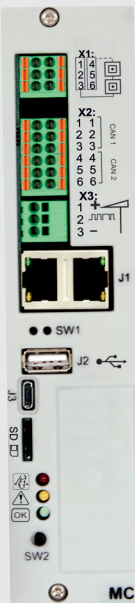
Each 20A section contains an overall control module WSA 5MC.

The module is available with or without field bus interface for KNX and BACnet (BACnet IP).

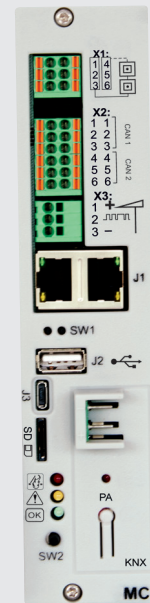
The module can contain i.a.:

- two inputs for break glass unit type WSK 501 or WSK 502
- CAN bus interface for connection of more smoke ventilation panels
- connection of weather station with wind direction detection
- LEDs for status of the smoke control panel
- connection for field bus for KNX (only modules with communication)

WSA 5MC



WSA 5MC KNX



- X1: 1.1 1.4 24V
1.2 1.5 Lin
1.3 1.6 GND / 0V } break glass unit
WSK 501 / 502
- X2: 2.1 CAN GND
2.2 CAN low
2.3 CAN high
2.4 CAN GND
2.5 CAN low
2.6 CAN low } CAN 1
CAN 2
- X3: 3.1 24V
3.2 communication
3.3 GND / 0V } weather station with
wind direction
- J1: 2 x ethernet BACnet IP
- SW1: reset all
- J2: USB host
- J3: USB device
- SD: SD-micro card
- KNX: KNX connection
- LED 1/2/3: status
- PA: button for switching between normal / addressing mode for transferring of physical address
- SW2: (not connected)

Input / output module (WSA 5IO)

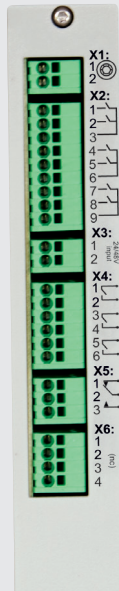
The WSA 5IO module contains:

Inputs

- 1 connection for external smoke detector when no break glass unit is connected
- 3 free configurable inputs for connection of e.g. keypads for comfort ventilation or inputs from Fire Alarm System
- 1 24/48V Fire Alarm System input – primarily used in France

Outputs

- 3 free configurable solid state outputs
- 1 free configurable potential free output for connection to e.g. Fire Alarm System or siren



- X1: 1.1 + } connection of smoke
1.2 - } detector WSA 300
- X2: 2.1 In 1.1
2.2 In 1.2
2.3 GND / 0V
2.4 In 2.1
2.5 In 2.2
2.6 GND / 0V
2.7 In 3.1
2.8 In 3.2
2.9 GND / 0V } inputs
- X3: 3.1 + } 24/48V input
3.2 - }
- X4: 4.1 Out 1
4.2 Out 1
4.3 Out 2
4.4 Out 2
4.5 Out 3
4.6 Out 3 } outputs
(solid state)
- X5: 5.1 NC
5.2 com
5.3 NO } output (pot. free)
- X6: 6.1
6.2
6.3
6.4 } (not connected)

Motor modules

WSA 5SM

±24V standard motor module

WSA 5SM motor module provides:

- 4 motor lines for ±24V standard motors
- 1 x 2 free configurable inputs for connection of e.g. keypad or wind/rain sensor

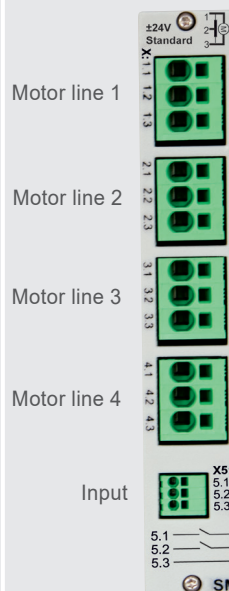
WSA 5ML

MotorLink® motor module

WSA 5ML motor module provides:

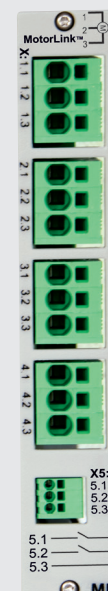
- 4 motor lines for motors with MotorLink®
- 1 x 2 free configurable inputs for connection of e.g. keypad or wind/rain sensor.

ML-comm = MotorLink® communication.



WSA 5SM

- X1: 1.1 24V / 0V
1.2 Cable surveillance
1.3 0V / 24V
- X2: 2.1 24V / 0V
2.2 Cable surveillance
2.3 0V / 24V
- X3: 3.1 24V / 0V
3.2 Cable surveillance
3.3 0V / 24V
- X4: 4.1 24V / 0V
4.2 Cable surveillance
4.3 0V / 24V
- X5: 5.1 Input
5.2 Input
5.3 GND / 0V



WSA 5ML

- X1: 1.1 24V
1.2 ML-comm
1.3 0V
- X2: 2.1 24V
2.2 ML-comm
2.3 0V
- X3: 3.1 24V
3.2 ML-comm
3.3 0V
- X4: 4.1 24V
4.2 ML-comm
4.3 0V
- X5: 5.1 Input
5.2 Input
5.3 GND / 0V

Number of motor lines, inputs and outputs depending on the combination of the three expansion modules

The table shows the number of motor lines and inputs obtained per 20A section depending on the combination of the expansion modules.

Combination of expansion modules	Number				
	Motor lines ±24V standard	Motor lines MotorLink®	Inputs x 2	Outputs (solid state)	Outputs (relay) (nc+no))
000	1	0	1	0	0
I00	1	0	4	3	1
S00	5	0	2	0	0
IS0	5	0	5	3	1
IIS	5	0	8	6	2
SS0	9	0	3	0	0
ISS	9	0	6	3	1
SSS	13	0	4	0	0
M00	1	4	2	0	0
IM0	1	4	5	3	1
IIM	1	4	8	6	2
MM0	1	8	3	0	0
IMM	1	8	6	3	1
MMM	1	12	4	0	0
MS0	5	4	3	0	0
IMS	5	4	6	3	1
MSS	9	4	4	0	0
MMS	5	8	4	0	0
IIO	1	0	7	6	2
III	1	0	10	9	3

Actuator type / number of speeds

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

- ±24V DC standard actuator – 1 speed (H&S)
- MotorLink® actuator – 3 speeds
(H&S / manually operated / automatically)

The different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Max numbers of motors per motor line which can be connected per module

Type of motor	Max total 20A per section				
	Note: WSC 520 has one section, WSC 540 has two sections, WSC 560 has three sections				
	WSA 5PS module 1 x 20A-motor line $\pm 24V$	WSA 5SM module 4 x 10A-motor lines $\pm 24V$		WSA 5ML module 4 x 10A-motor lines MotorLink®	
		Motors per motor line	Motors per module	Motors per motor line	Motors per module
WMS 409 xxxx 01	10	5	10	0	0
WMS 409-1	10	5	10	4	16
WMS 409-2	10	4	10	2	8
WMS 409-3	9	3	9	3	12
WMS 409-4	8	4	10	4	16
WMS 515	4	2	4	0	0
WMU 836-1	20	10	20	4	16
WMU 836-2	20	10	20	2	8
WMU 836-3	18	9	18	3	12
WMU 836-4	20	8	20	4	16
WMU 861-1	13	6	13	4	13
WMU 861-2	12	6	12	2	8
WMU 861-3	12	6	12	3	12
WMU 861-4	12	4	12	4	12
WMU 862-1 / WMU 882-1	9	4	9	4	9
WMU 862-2 / WMU 882-2	8	4	8	2	8
WMU 862-3 / WMU 882-3	9	3	9	3	9
WMU 862-4 / WMU 882-4	8	4	8	4	8
WMU 863-1 / WMU 883-1	6	2	6	2	6
WMU 863-2 / WMU 883-2	6	2	6	2	6
WMU 863-3 / WMU 883-3	6	3	6	3	6
WMU 863-4 / WMU 883-4	4	4	4	4	4
WMU 864-1 / WMU 884-1	4	2	4	2	4
WMU 864-2 / WMU 884-2	4	2	4	2	4
WMU 864-3 / WMU 884-3	3	0	0	0	0
WMU 864-4 / WMU 884-4	4	0	0	0	0
WMU 885-1	4	2	4	2	4
WMU 885-2	4	2	4	2	4
WMU 885-3	3	0	0	0	0
WMU 885-4	4	0	0	0	0
WMX 503 / 504 / 523 / 526-1	40	20	40	4	16
WMX 503 / 504 / 523 / 526-2	40	20	40	2	8
WMX 503 / 504 / 523 / 526-3	39	18	39	3	12
WMX 503 / 504 / 523 / 526-4	40	20	40	4	16
WMX 803 / 804 / 823 / 826-1	20	10	20	4	16
WMX 803 / 804 / 823 / 826-2	20	10	20	2	8
WMX 803 / 804 / 823 / 826-3	18	9	18	3	12
WMX 803 / 804 / 823 / 826-4	20	8	20	4	16
WML 820/825	20	10	20	0	0
WMB 801/802*	max. 4A connected to the WMB		max. 4A connected to the WMB		0
WMB 811/812*/**	20	10	20	2	2

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

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

Technical specifications		
Output current (nominal)	WSC 520: 20A / WSC 540: 40A / WSC 560: 60A	
Motor lines Motor groups Smoke zones	Per 20A section: max. 13 motor lines (1 x 20A \pm 24V standard motor line and 12 x \pm 24V standard / MotorLink® motor lines) in max 13 motor groups and max 13 smoke zones Via the software more motor lines can be connected in the same group	
Primary voltage	WSC 520: 1 x 230V AC (\pm 10%) / 50Hz WSC 540: 2 x 230V AC (\pm 10%) / 50Hz WSC 560: 3 x 230V AC (\pm 10%) (400V AC) / 50Hz	
Actuator secondary voltage	Motor voltage Open circuit voltage at 230V AC (no load) Ripple at max load	24V DC (\pm 15%) 27.6V DC @ 20°C max 6% (3.5Vpp)
Power consumption	WSC 520: min 2,5W ¹⁺² , typ. 2,8W ¹⁺³ . At max load 540W WSC 540: min 5,0W ¹⁺² , typ. 5,6W ¹⁺³ . At max load 1080W WSC 560: min 7,5W ¹⁺² , typ. 8,4W ¹⁺³ . At max load 1620W 1) no load: system operational but no motors are running 2) min: with 1 x WSK 501 break glass unit and 1 x WSA 300 smoke detector per 20A section 3) max load: with 4 x WSK 501 break glass unit and 4 x WSA 300 smoke detector per 20A section	
Inrush current on primary site	WSC 520: 30A / WSC 540: 60A* / WSC 560: 90A* <0,05ms *= 30A > 0,05ms on each phase	
Operating condition	-5°C - +40°C, max. 95% relative humidity (not condensing) EN 12101-10 and prEN 12101-9 Class 1 with IP value increased to IP 54	
Emergency power supply	>72 hours in accordance with EN 12101-10	
Switch-on duration	ED 40% (4 min. per 10 min.)	
Cable connection	Actuator: flexible max 6mm ² /solid max 10mm ² , other components: min 0.2mm ² /max 1.5mm ²	
Size and weight	WSC 520: 380 x 600 x 210mm (WxHxD), 17kg no batteries, 28kg with batteries (2xWSA 017) WSC 540: 600 x 600 x 210mm (WxHxD), 26kg no batteries, 49kg with batteries (4xWSA 017) WSC 560: 1000 x 760 x 210mm (WxHxD), 57kg no batteries, 90kg with batteries (6xWSA 017)	
Material	Metal housing for surface mounting	
Colour	Grey (RAL 7035)	
IP rating	IP54	
Approval / certification	WSC 520/540/560: Approved according to EN 12101-10. Approval according to prEN 12101-9 requested. WSC 5MC KNX (module): Certified and listed by BACnet Interest Group Europe. See certificate and pics on our website www.windowmaster.com	
Delivery includes	FlexiSmoke™ smoke ventilation panel. Supplied with: <ul style="list-style-type: none"> • WSA 510 end of line module, 1 pcs. • WSA 501 10kΩ resistors (package of 10 pcs.): WSC 520/1 package, WSC 540/2 packages, WSC 560/3 packages If the module WSA 5SM is a part of the panel delivery will include 4 pcs. WSA 510 end of line module per "WSA 5SM" module.	
To be ordered separately	Back-up battery type WSA 017 (12V/17-18Ah) – order two batteries per 20A section	
Spare parts	See the spare part list on our website www.windowmaster.com under "Products"	
Note	We reserve the right to make technical changes	

Item code composition		
1	Size of the smoke control panel – Choose overall amps	
	A. 20A	= WSC 520
	B. 40A	= WSC 540
	C. 60A	= WSC 560
2	Overall control module – with or without field bus interface?	
	A. Without field bus interface (WSA 5MC NCO)	= 0
	B. With field bus interface (KNX/BACnet IP)	= K
3	Expansion module in slot 3* – the first free slot in the section	
	A. No module	= 0
	B. WSA 5IO – input/output module*	= I
	C. WSA 5ML – motor module for motors with MotorLink®	= M
	D. WSA 5SM – motor module for ±24V standard motors	= S
4	Expansion module in slot 4* – the second free slot in the section	
	A. No module	= 0
	B. WSA 5IO – input/output module*	= I
	C. WSA 5ML – motor module for motors with MotorLink®	= M
	D. WSA 5SM – motor module for ±24V standard motors	= S
5	Expansion module in slot 5* – the third free slot in the section	
	A. No module	= 0
	B. WSA 5IO – input/output module*	= I
	C. WSA 5ML – motor module for motors with MotorLink®	= M
	D. WSA 5SM – motor module for ±24V standard motors	= S
6	Certification	
	Approval according to EN 12101-10	= E
	Approval according to prEN 12101-9 requested	
7	Product version	= 1

To be defined per
20A section

* **Expansion module position**

- A. If an input-/output module is selected, it is inserted in slot 3.
 B. If further modules are inserted, the input-/output modules are inserted before the motor modules and the MotorLink® motor modules are inserted before the ±24V motor modules.

Examples with FlexiSmoke™		
Number/type of motor groups and other functions	Expansion modules	Item number
Examples with WSC 520		
1 ±24V standard motor line	No communication No expansion modules	WSC 520 0000 E1
5 ±24V standard motor lines	1 x WSA 5SM ±24V standard motor module	WSC 520 0S00 E1
5 ±24V standard motor lines and KNX/BACnet IP field bus interface	1 x WSA 5MC overall control module with KNX/BACnet IP 1 x WSA ±24V 5SM standard motor module	WSC 520 KS00 E1
5 ±24V standard motor lines, KNX/BACnet IP field bus interface and input / output module	1 x WSA 5MC overall control module with KNX/BACnet IP 1 x WSA 5IO input/output module 1 x WSA 5SM ±24V standard motor module	WSC 520 KIS0 E1
9 ±24V standard motor lines, KNX/BACnet IP field bus interface and input / output module	1 x WSA 5MC overall control module with KNX/BACnet IP 1 x WSA 5IO input/output module 2 x WSA 5SM ±24V standard motor modules	WSC 520 KISS E1
8 MotorLink® motor lines, 1 ±24V standard motor line and KNX/BACnet IP field bus interface	1 x WSA 5MC overall control module with KNX/BACnet IP 2 x WSA 5ML MotorLink® motor modules	WSC 520 KMM0 E1
12 MotorLink® motor lines, 1 ±24V standard motor line and KNX/BACnet IP field bus interface	1 x WSA 5MC overall control module with KNX/BACnet IP 3 x WSA 5ML MotorLink® motor modules	WSC 520 KMMM E1
Examples with WSC 540 and WSC 560		
18 ±24V standard motor lines	2 x WSA 5IO input/output module 4 x WSA 5SM ±24V standard motor modules	WSC 540 0ISS 0ISS E1
20 MotorLink® motor lines, 3 ±24V standard motor lines and KNX/BACnet IP field bus interface	3 x WSA 5MC KNX/BACnet IP field bus interface modules 5 x WSA 5ML MotorLink® motor modules	WSC 560 KM00 KMM0 KMMM E1

Modular smoke ventilation panel 20-60A

Modules	Item no.
Power supply module 20A with 1 pcs. end of line module WSA 432	WSA 5PS
Overall control module without field bus interface	WSA 5MC NCO
Overall control module with field bus interface for KNX/BACnet IP	WSA 5MC KNX
Input/output module	WSA 5IO
Motor module for $\pm 24V$ standard motors with 4 pcs. end of line module WSA 432	WSA 5SM
Motor module for MotorLink® motors	WSA 5ML
Motor module for RENSON motor, 5A	WSA 5S5
Accessories	Item no.
Back-up battery for WSC 5xx, 12V, 17-18Ah (order two batteries per 20A section)	WSA 017
Break glass unit with signal, primary, plastic housing, with data communication. Smoke detectors and keypads can be connected to the break glass unit. Colour of the housing = x: red = 1, yellow = 2, grey = 3, blue = 4, orange = 5	WSK 501 000x 01
Break glass unit with signal, primary, metal housing, with data communication. Smoke detectors and keypads can be connected to the break glass unit. Colour of the housing = x: yellow = 2, grey = 3, orange = 5	WSK 502 000x 01
Break glass unit with signal, primary, plastic housing, with data communication. Smoke detectors and keypads can not be connected to the break glass unit. Requires FlexiSmoke™ firmware version 0.85 or later. Colour of the housing = x: red = 1, yellow = 2, grey = 3, blue = 4, orange = 5	WSK 503 000x 01
Break glass unit with signal, primary, metal housing, with data communication. Smoke detectors and keypads can not be connected to the break glass unit. Requires FlexiSmoke™ firmware version 0.85 or later. Colour of the housing = x: yellow = 2, grey = 3, orange = 5	WSK 504 000x 01
Smoke detector	WSA 300
Rain sensor	WLA 331
Rain/wind sensor	WLA 330
Rain/wind sensor, with pulse output	WLA 340
Wind speed sensor	WOW 201
Wind direction sensor	WOW 202
Bracket for junction box	WOW 203
Junction box for WOW 201 and WOW 202	WOW 204
End of line motor module with resistance, 10 pcs.	WSA 510
Cable for CAN connection, 2x2x0.33mm ² , sold in hole meters	WLL 501
10k Ω resistance, 10 pcs.	WSA 501
Fire Alarm System module	WSA 306
Cable for wind and rain sensor WLA 340, 4m UV-resistant cable 4 x 2 x 0.75mm ²	WLL 604
Cables for comfort ventiation – see separate product sheet for further information	WLL 7xx
Cables for smoke ventilation – see separate product sheet for further information	WLL 8xx



2.40

WLS xxM

Smoke control panel LON MotorLink®



Natural
ventilation



Smoke
ventilation



Rated voltage



Maksimal
output current



MotorLink®



LON product

Application

- for smoke ventilation combined with comfort ventilation via LON
- one smoke / more comfort ventilation groups
- control of 24 VDC window actuators with MotorLink®
- the windows can also be operated individually via keypads when comfort ventilation
- LONWorks compatible

Smoke control panel for control of 24 VDC actuators with MotorLink® for smoke extraction and daily comfort ventilation controlled via LON.

The windows are controlled individually via the integrated LON modules. It is possible to connect individual keypads, so a user at any time can open and close a window via a keypad if more or less fresh air is desired.

The smoke control panel contains motor lines. The number of motor lines depends on the variant of the panel – see the item table. Each motor line has a max. load of 4A and is able to control up to 4 MotorLink® actuators. The total max power consumption of the motor lines depends on the variant of the smoke control panel – see technical information, "Output".

WLS xxM can be integrated in a TP/FT 10 LON® network via the integrated FT 3120® Free Topologi Smart Transceiver LON modules. The number of modules depends on the variant of the smoke control panel – see technical information, "Bus connection". The LON modules contains

a LonWorks compatible functional profile with a number of network variable in order to ensure a flexible integration with other LonWorks products and controls. A LONMaker plug-in for easy parameter setup is available.

Description

The smoke control panel controls the window actuators. The communication between the smoke control panel and the individual window actuators are done digitally via MotorLink® in a 3-core wire (power and communication wire).

The smoke control panel controls the window actuators in such a way that:

- the actuators have three different opening/closing speeds:
 - automatically control speed – actuators run slowly and almost soundlessly.
 - manual control speed – actuators run faster and more audibly.
 - H&S and safety control speed – actuators run fastest. H&S control always has highest priority.
- the position of the windows is controlled with millimetre accuracy. This is done via the position feedback from the actuators to the smoke control panels. Via this communication the system continuously registers the extent of the window opening.
- the smoke control panel immediately registers if a malfunction occurs on one of the actuators or cables

Special technical features

- for smoke extraction combined with comfort ventilation via LON
- integrated LonWorks compatible LON modules
- smoke control panel for window actuators and espagnolette actuators with MotorLink®
- the number of motor lines depends of the the variant of the panel
- three different opening/closing speeds on the actuators
- position feedback
- millimetre-by-millimetre control of the actuators
- built-in uninterruptible power supply min. 72h for smoke ventilation (back-up batteries to be ordered separately)
- cable surveillance on break glass unit
- cable surveillance on smoke detector input (if used)
- immediate indication if malfunction on an actuator or cable
- fault display via diagnostic LEDs

- grey metal housing for surface mounting
- IP rating IP54

Connection options

- actuators with MotorLink®
- tripping by BMS via potential-free contact (ASV module WSA 306 required)
- total actuator power consumption max.16A, 32A or 48A
- in connection with comfort ventilation signals from BMS units can be received via LON
- wind/rain sensor without additional plug in module
- 10 smoke detectors type WSA 300 61 or WSA 310
- 10 break glass units (primary) type WSK 320 or WSK 321
- 10 break glass units (secondary) type WSK 330
- keypads for comfort ventilation

Technical information

Field bus	LON, TP/FT 10 media, LonWorks			
Field bus tool support	LonWorks compatible functional profile. A LONMaker plugin for easy parameter setup is available.			
Actuator control module	WLA 01M			
Primary voltage	WLS 16M: 1x230 VAC, ±10%, 1x500VA, 50Hz WLS 32M: 2x230 VAC, ±10%, 2x500VA, 50Hz WLS 48M: 3x230 VAC, ±10%, 3x500VA, 50Hz			
Secondary voltage	24 VDC, 4A per motor line, total max output see "Output"			
Inrush current	max. 20A < 5msek			
Standby consumption	WLS 16M 041A: ca. 12W without actuators ca. 20W with 16 actuators (power consumption when the actuator is not running) WLS 16M 081B: ca. 14W without actuators ca. 22W with 16 actuators (power consumption when the actuator is not running) WLS 32M 081B: ca. 19W without actuators ca. 35W with 32 actuators (power consumption when the actuator is not running) WLS 32M 161K: ca. 23W without actuators ca. 39W with 32 actuators (power consumption when the actuator is not running) WLS 48M 121J: ca. 26W without actuators ca. 50W with 48 actuators (power consumption when the actuator is not running)			
Open circuit voltage	33V at 253VAC			
Ripple	5Vpp at 24V = 10%			
Connection	primary side	screw joints up to:	4 mm² flexible cable 6 mm² solid cable	
	secondary side	screw joints up to:	Keypads / sensors	Actuators
			1.5 mm² flexible cable	4 mm² flexible cable
			2.5 mm² solid cable	6 mm² solid cable
	max voltage drop 2V however max 50m actuator cable			
Bus connection	connections with screw terminal numbers of LON modules: 041A: 1pcs., 081B: 2pcs., 121J: 3pcs., 161K: 4pcs.			
Local manual control input	one for each motor line			
Output	16M: max. 16A, 32M: max. 32A, 48M: max. 48A			
Safety transformer	the smoke control panel contains a safety transformer according to EN 61558			
Battery back-up	> 72t (2 pcs. back-up batteries - to be ordered separately)			

Technical information (continued)	
Operating conditions	-5°C - +40°C, for indoor installation, the controller may not be covered
Material	steel cabinet, lacquered, for surface mounting
Colour	grey (RAL 7035)
Size	see item table
IP rating	IP54
Delivery includes	smoke control panel
To be ordered separately	2 pcs. back-up batteries type WSA - see item number in the item table
Note	we reserve the right to make technical changes

Items	Size (BxHxD)	Battery	Item no.
Smoke control panel 16A, 4 motor lines, 1 smoke group	600 x 600 x 210mm	WSA 024	WLS 16M 041A
Smoke control panel 16A, 8 motor lines, 1 smoke group	600 x 600 x 210mm	WSA 024	WLS 16M 081B
Smoke control panel 32A, 8 motor lines, 1 smoke group	600 x 600 x 210mm	WSA 024	WLS 32M 081B
Smoke control panel 32A, 16 motor lines, 1 smoke group	600 x 760 x 210mm	WSA 024	WLS 32M 161K
Smoke control panel 48A, 12 motor lines, 1 smoke group	600 x 760 x 210mm	WSA 033	WLS 48M 121J

Accessories	Item no.
Battery 1 pcs. (always use two similar batteries)	see item table
ASV module (line surveillance module for ASV connection)	WSA 306
Smoke detector	WSA 300 61
Different heat detector	WSA 310
Rain sensor	WLA 331
Break glass unit WSK 320, WSK 321, WSK 329 or WSK 320	see product sheet
Ventilation keypad e.g. WSK 100, WSK 102 or WSK 300	see product sheet
For further information, see the respective product sheets in this chapter and the chapter "Sensors" and "Accessories"	

Max. number of window actuators which can be connected on max. numbers of motor lines																	
Type of actuator	Actuator current consumption	Variant of actuator	Possible combinations														
			WLS 16M 041A			WLS 16M 081B			WLS 32M 081B			WLS 32M 161K			WLS 48M 121J		
			Windows	actuators	motor lines	Windows	actuators	motor lines	Windows	actuators	motor lines	Windows	actuators	motor lines	Windows	actuators	motor lines
WMX 802/804-n WMX 820/824-n WMU 836/861-n WMS 306/309-n	1A	-1	16	16	4	16	16	8	32	32	8	32	32	16	48	48	12
-2		4	8	4	8	16	8	use WLS 16M 081A			16	32	16	12	24	12	
-3		4	12	4	5	15	5	8	24	8	10	30	10	12	36	12	
-4		4	16	4	use WLS 16M 041A			8	32	8	use WLS 32M 081B			12	48	12	
-1		4	4	4	8	8	8	use WLS 16M 081A			16	16	16	12	12	12	
-2		4	8	4	8	16	8	use WLS 16M 081A			16	32	16	12	24	12	
-3		4	12	4	5	15	5	8	24	8	10	30	10	12	36	12	
-4		4	16	4	use WLS 16M 041A			8	32	8	use WLS 32M 081B			12	48	12	
WMU 862-n WMS 409-n	2A	-1	8	8	4	8	8	8	16	16	8	16	16	16	24	24	12
-2		4	8	4	8	16	8	use WLS 16M 081A			use WLS 16M 081A			12	24	12	
-1		4	4	4	8	8	8	use WLS 16M 081A			16	16	16	12	12	12	
-2		4	8	4	8	16	8	use WLS 16M 081A			use WLS 16M 081A			12	24	12	
WMU 863/883-n	3A	-1	4	4	4	5	5	5	8	8	8	10	10	10	12	12	12
WMU 863/883-n + WMB*		-1	4	4	4	5	5	5	8	8	8	10	10	10	12	12	12
WMU 864/884-n	4A	-1	4	4	4	use WLS 16M 041A			8	8	8	use WLS 32M 081B			12	12	12
WMU 864/884-n + WMB*		-1	4	4	4	use WLS 16M 041A			8	8	8	use WLS 32M 081B			12	12	12
WMU 885-n	5A	-1	3	3	3	use WLS 16M 041A			6	6	6	use WLS 32M 081B			9	9	9
WMU 885-n + WMB*		-1	3	3	3	use WLS 16M 041A			6	6	6	use WLS 32M 081B			9	9	9
Actuator variants: -1 = single actuator, -2 = syncro actuator, -3 = triple actuator, -4 = quad actuator																	
In the MotorController each motorline can have a max load of 4A. The total max current consumption of all motorlines must not exceed 16A, 32A or 48A.																	
*A WMB 01M or WMB 02M espagnolette actuator can be connected to one window and each window must have its own motorline.																	

Smoke control panel LON MotorLink®

Actuator variants on one motor line

1. The smoke control panel has motor lines:

- WLS 16M 041A – 4 motor lines
- WLS 16M 081B and WLS 32M 081B – 8 motor lines
- WLS 32M 161K – 16 motor lines
- WLS 48M 121J – 12 motor lines

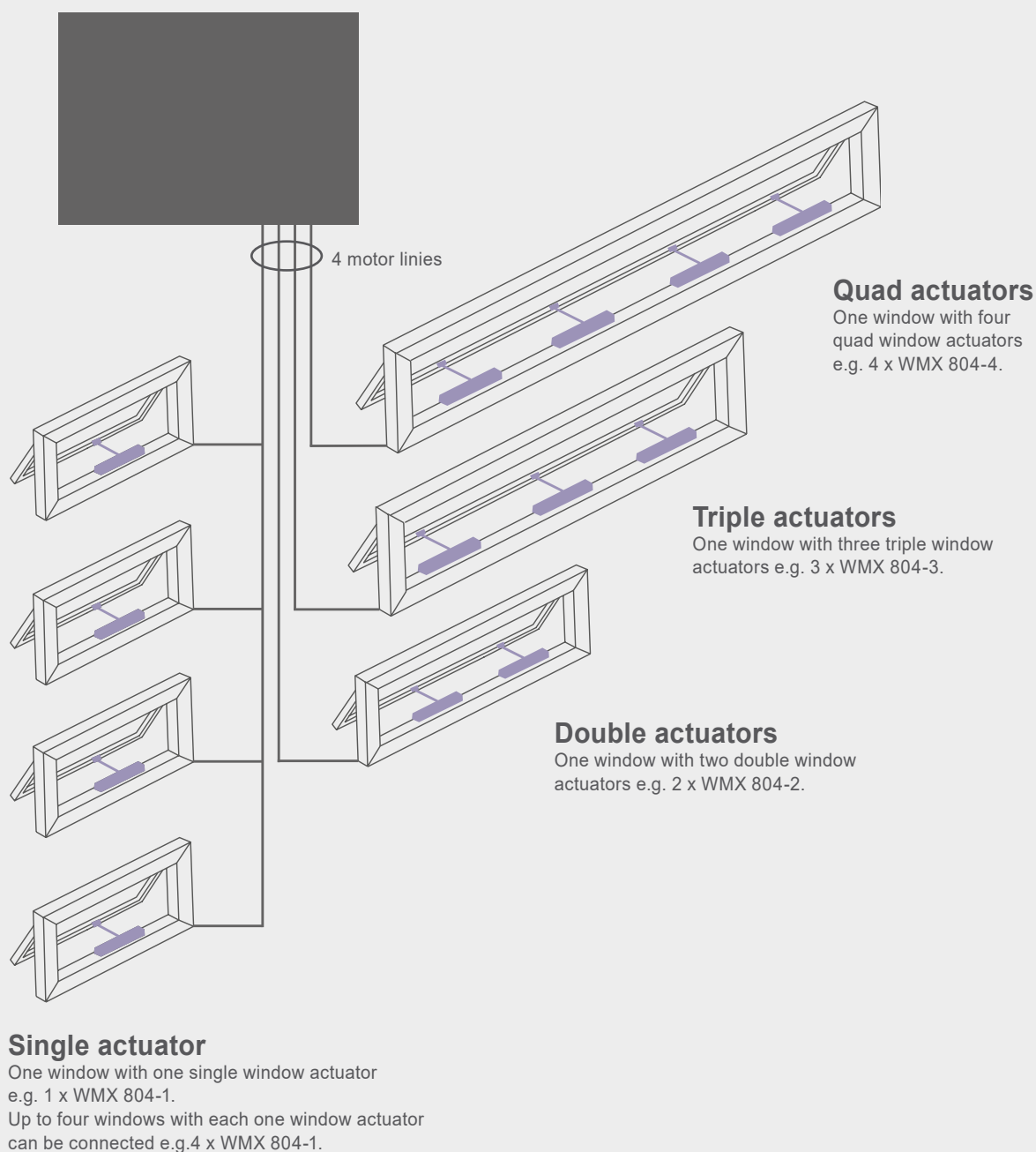
2. When connecting window actuators one should pay attention to:

- the max current load of the smoke control panel:
the max load on the smoke control panel is 4A per motor line (simultaneously load). The simultaneously max current consumption of all motor lines must not exceed max 16A, 32A or 48A.

• the cable length and cross section:

- max voltage drop 2V in the cable, however max distance between the smoke control panel and the window actuators is 50m

3. Aside from window actuators; espagnolette actuators type WMB 01M or WMB 02M can be connected to the window. When connecting an espagnolette actuator each window must have its own motor line.





3.10

WSA 301 / 302 / 303 / 304B

Modules for WSC 2xx / 3xx smoke ventilation panel



Natural
ventilation



Smoke
ventilation

WSA 301

Alarm and fault module (master/slave)

The module for external signalling of alarm and malfunction of a smoke ventilation panel. Also necessary when linking several smoke ventilation panels.

WSA 301 for WSC 204 and WSC 304 61

Technical specification

- Fault:** 1 potential free change-over switch (max. 60 VDC, 1A)
- Alarm:** 1 potential free change-over switch (max. 60 VDC, 1A) with 3-poled connection plug for potential free surveillance or as surveyed 2-core signalling for linking of smoke ventilation units.
- Bus fault:** 2-poled connector for 2-core BUS-cable for signalling fault back to the main (first) break glass unit of the cascade.

WSA 302

Linking of wind/rain signal

Linking of the wind/rain signal from one WSC 2xx or 3xx smoke control panel to the next smoke control panel (master-slave).

Technical specification

Transmission: 1 x potential free change-over contact max. 60 VDC, 1A.

Green LED display: green LED lights up when the wind/rain sensor is triggered.

WSA 303

Time ventilation module

The module is used for the automatic closing of windows or vents after a set period of vents being open.

In comfort ventilation mode, the module ensures that the windows or vents will close automatically after a preset time, meaning if windows and vents have been opened, they will always be closed again after the predefined period of time. The delay can be set between between 1 and 30min.

To be used together with smoke control panel type WSC 204 and 304.

Special technical features:

- the windows or vents automatically close after 1 to 30min after the last opening (depending on the potentiometer setting)
- the module has no function when the potentiometer is set against the right-hand stop.

Modules for WSC 2xx / 3xx smoke ventilation panel

WSA 304B

Gap ventilation module

The module is used for time restricted opening of the comfort ventilation function.

It is not always necessary for an electric actuator to open a ventilation unit (window or light dome) by its full stroke. Sometimes, a small gap is sufficient for ventilation purposes.

This module enables time-controlled limitation of the actuator stroke.

The module has no influence on the actuator when an "EMERGENCY OPEN" function is triggered. In this case the actuator opens to its maximum stroke.

WSA 304B for WSC 204 and 304 61

Special technical features:

- the opening time can on the potentiometer be set from:
1 - 60 sek.: WSA 304B
- even re-triggered in "OPEN" direction the window will not open further than set preset opening value

Items	Item no.
Alarm and fault module for WSC 204, 304 01 and 304 61	WSA 301
Linking of wind/rain signal for WSC 204 and 304	WSA 302
Time ventilation module for WSC 204 and 304	WSA 303
Gap ventilation module for WSC 204 and 304 61	WSA 304B

We reserve the right to make technical changes



3.20

WSA 306

ASV module for smoke panels



Natural
ventilation



Smoke
ventilation

Application

Integrated in smoke control panels to ensure a cable surveillance.

The smoke detector input can be used for transmitting on a signal from an external fire detecting system (ASV). This requires a potential-free ASV contact and the ASV module.

ASV OPEN function

To generate a trip (EMERGENCY OPEN) of the smoke ventilation group actuating the potential-free contact in the ASV. All smoke ventilation actuators "OPEN" automatically. The ventilation buttons are now out of operation. The break glass unit has priority than an ASV trip.

ASV CLOSE function

It is also possible to have a ASV CLOSE function.

To generate a trip (EMERGENCY CLOSE) of the smoke ventilation group actuating the potential-free contact in the ASV. All smoke ventilation actuators "CLOSE" automatically. The ventilation buttons are now out of operation. The break glass unit has priority than an ASV trip.

Contact WindowMaster for further information.

ASV module for WSC 204, WSC 304 61 and FlexiSmoke™ WSC 5xx.

WSA 306

ASV module for smoke panels

Items	Item no.
ASV-module for WSC 204, WSC 304 16 and FlexiSmoke™ WSC 5xx	WSA 306

We reserve the right to make technical changes



WSA 432



WSA 433



WSA 510

3.40

WSA 432 / 433 / 510

Accessories for WSC smoke panels



Smoke
ventilation

Application

Spare parts for smoke control panels type WSC.

WSA 432

End of line motor module: for monitoring of window actuators.
For smoke control panel type CompactSmoke™ WSC 2xx / 3xx and FlexiSmoke™ WSC 5xx.

WSA 433

Smoke detector end module: for monitoring of smoke detectors.
For smoke panels type CompactSmoke™ WSC 204 / 304.

WSA 510

End of line motor module: for monitoring of window actuators.
For smoke control panel type CompactSmoke™ WSC 310 / 320 and FlexiSmoke™ WSC 5xx.

WSA 432 / 433 / 510

Accessories for WSC smoke panels

Items	Item no.
End of line motor module for smoke control panel type CompactSmoke™ WSC 2xx / 3xx and FlexiSmoke™ WSC 5xx	WSA 432
Smoke detector end module for smoke panel type CompactSmoke™ WSC 204 / 304	WSA 433
End of line motor module for smoke control panel type CompactSmoke™ WSC 310 / 320 and FlexiSmoke™ WSC 5xx	WSA 510
We reserve the right to make technical changes	

WSA 002



WSA 003



WSA 007



WSA 012



WSA 017



WSA 024



WSA 042



WSA 065

4.10

WSA 002 / 003 / 007 / 012 / 017 / 024 / 042 / 065

Back-up batteries for WSC smoke panels



Smoke
ventilation

Application

12V back-up batteries for smoke control panels and modular smoke ventilation panel type WSC 2xx, WSC 3xx, WSC 4xx and WSC 5xx.

The necessary capacity is found in the description of the respective compact unit.

2 identical batteries are always required.

WSA 002 / 003 / 007 / 012 / 017 / 024 / 042 / 065

Back-up batteries for WSC smoke panels

Items	Capacity	Size (WxHxD)	Weight	Item no.
Battery of ~2Ah, for WSC 304	ca. 2Ah	178 x 60 x 34 mm	1,0kg	WSA 002
Battery of 3,4Ah, for WSC 204	3,4Ah	134 x 68 x 67 mm	1,5kg	WSA 003
Battery of 7Ah, for WSC 308 / 310	7Ah	151 x 94 x 65 mm	2,7kg	WSA 007
Battery of 12Ah, for WSC 316 / 320 / 416	12Ah	151 x 94 x 98 mm	4,0kg	WSA 012
Battery of 17-18Ah, for WSC 5xx	17-18Ah	177 x 167 x 75 mm	5,5kg	WSA 017
Battery of 24Ah, for WSC 424 / 432	24Ah	165 x 125 x 175 mm	8,8kg	WSA 024
Battery of 42Ah, for WSC 448	42Ah	196 x 174 x 163 mm	13,0kg	WSA 042
Battery of 65Ah, for WSC 464	65Ah	271 x 190 x 166 mm	22,6kg	WSA 065
Two identical batteries are always required. We reserve the right to make technical changes				

DK

Styring

Komfort-
ventilation

UK

Controls

For natural
ventilation

F

Commandes

Pour la
ventilation
naturelle

D

Steuerungen

für natürliche
lüftung

SE

Styrning

Komfort-
ventilation



Control panel



Weather station

1.10

NV Solo®

Natural ventilation in one zone



Natural
ventilation

Application

- natural ventilation in one zone
- automatic indoor climate control
- easy to install – easy to operate
- suitable for offices, staircases, hallways, atria, etc.

NV Solo® provides automatic opening and closing of the window/windows in the room. In order to achieve the desired indoor climate, the system takes both the indoor and outdoor temperatures into account. The window/windows opens and closes stepwise.

The control panel allows manual opening and closing of the windows. 30 minutes after NV Solo® has been operated manually, the system returns to automatic mode.

The control panel has an integrated temperature sensor and also displays the indoor and outdoor temperatures. Control panel has an alarm information and operating mode, as well as buttons for manual operation and setting the automatic controls.

The safety feature in NV Solo® ensures that the windows are closed in case of rain, strong wind and low outdoor temperature.

The settings for the automatic mode can be changed.

Additional window actuators can be connected to NV Solo® in one group (zone).

The battery powered control panel communicates wirelessly with the weather station, this makes the system easy to install and suitable for later installation as no cables are required to install the control panel.

The signals from NV Solo® are transmitted via the MotorController to the actuator mounted in or on the window frame. The choice of actuator and MotorController depends on the concrete window dimensions.

The weather station has sensors for outdoor temperature, wind speed and rain, as well as a signaller to the comfort or smoke ventilation systems.

NV Solo® can also be connected to existing control systems or smoke ventilation systems.

Natural ventilation in one zone

Application examples

NV Solo® is versatile in controlling natural ventilation in offices, entrance areas and common rooms, where room climate can be improved through the use of motorized windows.

In relation with safety systems NV Solo® can i.e. also be used in stair cases, where in case of fire smoke is extracted via a roof window. NV Solo® thereby adds an additional usage to the system by providing comfort ventilation to the room. The smoke ventilation always has higher priority.

Maximum distance between the control panel and the weather station:

- up to 200m in free range
- up to 2 storeys in buildings with concrete ceilings

Control panel – technical specifications

Supply voltage	2 x 1.5V (2 batteries AA/LR6 – included) or 2 x 1.2V (2 batteries AA/LR6)
Operating condition	-10°C - +50°C, max. 80% relative humidity (not condensing) indoor installation
Size	103 x 98 x 28mm (W x H x D)
Colour	white (RAL 9016)

Weather station – technical specifications

Supply voltage	13 - 30 VDC / 12-24 VAC, ca. 1.9VA
Operating condition	-30°C - +60°C
Output signal	open/close - potential free
Size	96 x 77 x 118mm (W x H x D)
Colour	white / frosted plastic

General – technical specifications

Delivery includes	control panel, weather station and two AA/LR6 batteries
Note	we reserve the right to make technical changes

Item	Item no.
NV Solo®	NV Solo



230V

NV Comfort® touch screen with adaptor



NV Comfort® software card



NV Comfort® basis package

1.20

NV Comfort® Standard / Plus KNX control



Natural
ventilation



KNX product

Application

- central control of indoor climate with the potential for individual control in every room
- suitable for both new buildings and for the refurbishment of small and medium-sized buildings
- control of the natural ventilation in up to four/eight rooms/zones
- the Standard version controls the natural ventilation and the heating (radiators)
- the Plus version controls the natural ventilation, the heating (radiators), mechanical fans, lighting and sun screening
- to be combined with WindowMaster MotorControllers and window actuators with MotorLink® technology, which provides millimetre-precise control of window openings at three speeds

Description

NV Comfort® provides an effective solution for ensuring the optimal indoor climate in each room/zone according to individual pre-defined requirements. The control is ideally suited for both new buildings and the refurbishment of smaller and medium-sized buildings such as offices, hotels, schools, exhibition buildings and sports centres, where there is focus on a comfortable and healthy indoor climate, as well as on low energy consumption and minimal impact on the environment.

With NV Comfort®, the various air, heat and light functions in the building are controlled centrally so that synergy between the functions is achieved and the building's energy consumption is thereby reduced.

NV Comfort® comes in two versions:

Standard: Control of windows and heating (radiators)

Plus: Control of windows and heating (radiators) and mechanical fans, lighting and sun shading

Window control (Standard and Plus versions)

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 the pre-defined values of the operating parameters for temperature, CO₂ level and humidity compared to the measurements of the outdoor temperature, wind speed and rain from the connected weather station. It is also possible to configure predefined airing times.

The system has a built-in safety feature so that the opening of windows is restricted in the event of high wind speeds and the windows are closed in the event of strong wind or rain.

Heating (Standard and Plus versions)

NV Comfort® controls the radiators via KNX thermal actuators so that the heating is turned on or off based on predefined temperature set-points. This ensures a comfortable and stable room temperature during both heating and ventilation periods. NV Comfort® can also be integrated with the building's heating plant.

Mixed mode ventilation (Plus version)

If the number or size of a building's windows is not sufficient to achieve an optimal indoor climate with natural ventilation, external fans (mechanical ventilation) can be connected and used at peak loads, since NV Comfort® Plus can send a signal (ON/OFF signal and/or 0-10V (0-100%)) to the fans and dampers in a balanced ventilation system.

Light (Plus version)

By connecting PIR detectors, it is possible to turn off the lighting automatically when a room is vacated, thereby reducing the building's energy consumption.

Sunlight protection (Plus version)

The sun screening function allows venetian blinds, awnings etc. to be controlled automatically, both in summer and winter, so that the position of the sun screening 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.

Operation

The overall operation of the installation is performed using the touch screen, where there are menus for the daily operation of both the building level and a zone-by-zone level, as well as menus for setting the operating parameters so that windows and any connected heating, mechanical fans, lighting and sun screening are controlled automatically.

The user also has the option of overriding the functions on the touch screen, i.e. open or close the windows, control the heating, sun screening, blinds etc.

Individual keypads can also be fitted in all the connected rooms so that the user has the option of quickly and easily opening or closing the windows and any sun shades in a room. After manual operation, the system will automatically switch back to automatic mode after an individually configured period of time.

It is possible to lock the touch screen with PIN codes at two levels. In a school, for example, this will mean that a screen can be locked so that only a caretaker has access to everything on the screen (general level), the teachers have access to the daily operation (user level), while the students have no access to operate the screen.

Function

NV Comfort® is a pre-programmed KNX product with combined control and colour touch screen with algorithms and functions that ensure uncomplicated design, implementation, installation and operation.

The controls' pre-programmed parameters can thus be regulated on the screen at the general level so that the control is specifically adapted to a given building with the option of also configuring individual values for each of the connected rooms/zones.

Window openings are controlled automatically so that the indoor climate remains optimal. Control is based on the room temperature, CO₂ level and the relative humidity compared to outdoor conditions: temperature, wind speed and rainfall.

The windows can be controlled in two groups per room/zone so that e.g. facades and skylights can be controlled individually.

The communication between NV Comfort® and the installation's sensors and actuators occurs via the KNX bus. Communication between NV Comfort® and the individual window actuators also occurs via MotorLink®, which continuously monitors and controls the window openings with millimetre-precision and also allows the windows to be opened and closed at three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Combination options

NV Comfort® must be used in conjunction with WindowMaster MotorLink® window actuators and MotorControllers and keypad, sensors and KNX products – refer to the accessory list. For combination with io-homecontrol® products or smoke ventilation, please contact WindowMaster for further information.

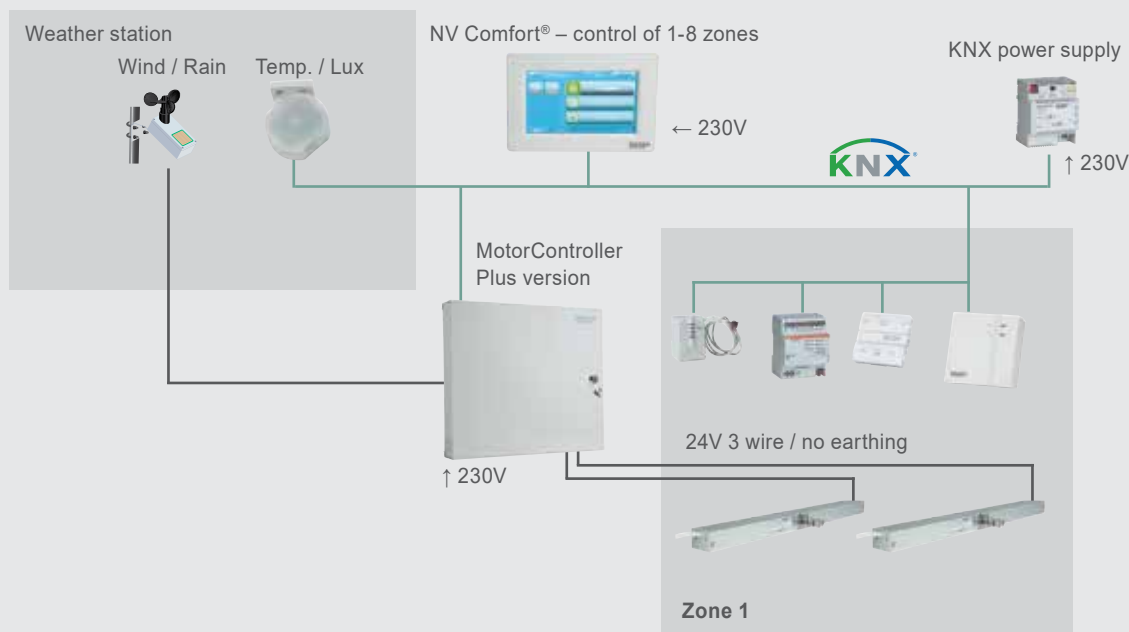
Installation

NV Comfort® is a bus-based solution at KNX standard, which must be configured and commissioned with ETS (KNX Engineering Tool software) by an ETS-trained electrician.

The features can be implemented and activated independently from each other and as needed, so the system at any time can be adapted to each project.	Functionality				
	Natural ventilation	Heat-control	Mechanical ventilation (mixed mode)	Light-control	Sun screening
Standard 4 zones: NV Comfort® touch screen with adaptor NV Comfort® soft ware card, 4 rooms/zones, Standard NV Comfort® basis pack (KNX power supply + weather station)	✓	✓	–	–	–
Standard 8 zones: NV Comfort® touch screen with adaptor NV Comfort® soft ware card, 8 rooms/zones, Standard NV Comfort® basis pack (KNX power supply + weather station)	✓	✓	–	–	–
Plus 4 zones: NV Comfort® touch screen with adaptor NV Comfort® soft ware card, 4 rooms/zones, Plus NV Comfort® basis pack (KNX power supply + weather station)	✓	✓	✓	✓	✓
Plus 8 zones: NV Comfort® touch screen with adaptor NV Comfort® soft ware card, 8 rooms/zones, Plus NV Comfort® basis pack (KNX power supply + weather station)	✓	✓	✓	✓	✓

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 one zone and component connections.

NV Comfort® – natural ventilation



Composition of a NV Comfort® solution

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

1. Which features

Besides natural ventilation and heating are other functions 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 than 8 rooms/zones, select extra screen/screens and the necessary software cards.

3. Basic package

Select NV Comfort® basic package (KNX power supply + weather station).

4. Number of windows and actuators

Determine the number of windows to be controlled. Determine the number of actuators.

For new windows, the window manufacturer can deliver the windows with built-in MotorLink® actuators.

5. Number of MotorControllers

Decide on the number of MotorControllers. One MotorController can control up to 10 windows in different zones. The distance between the window actuators and the MotorController depends on the cable dimensions, though max. 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 and preferably one keypad per window or workplace.

7. Other components

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

Example of solution

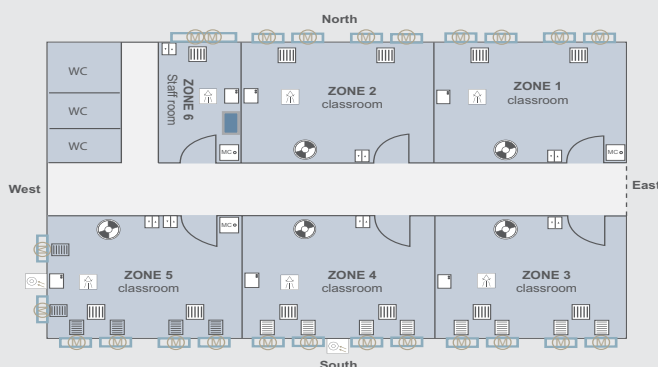
NV Comfort® can be used for many different buildings. The illustration below shows how the NV Comfort® solution can be compiled for two a school.

School with mixed mode ventilation

The school building consists of five classrooms with mixed mode ventilation and one staff room. Each classroom has four windows, each equipped with one actuator, and the window in the staff room is equipped with two actuators.

The windows in classrooms 3, 4 and 5 also have sun shades. In each room is fitted with one keypad, one room sensor (temp. / CO₂ / humidity) and one PIR detector.

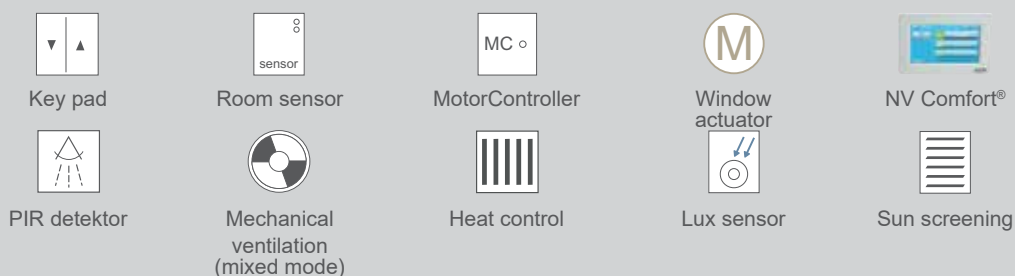
Classrooms 3, 4 and 5 are also fitted with one LUX sensor. The NV Comfort® screen is placed in the staff room.



The following components have been used:

- 1 x NV Comfort® touch screen with adaptor
– NVC KNX A02
- 1 x NV Comfort® software card, 8 rooms/zones, Plus
– NVC SC 8P 0
- 1 x NV Comfort® basic package – NVC BP KNX 11
- 22 x actuators, single
- 2 x actuators, double
- 2 x MotorController – WCC 320 S 0810 KNX
- 1 x MotorController – WCC 320 P 1012
- 1 x fieldbus card – WCA 3FK
- 6 x room sensor (temperature / CO₂ / humidity)
– WET 112
- 6 x PIR detector, ceiling – WEO 120
- 6 x keypad, operation of a single window group
- 3 x keypad, operation of a double window group
- 2 x lux sensor – WEL 100
- 1 x sun screening actuator, 8 channels – WEA 250 0802
- 1 x thermo actuator for 12 radiators – WEV 112
- 12 x thermo valve actuator – WEV 113
- 12 x valve adaptor – WEV 114
- 1 x output module for the mechanical ventilation
– WEA 165

Symbols:



NV Comfort® touch screen – NVC KNX A02		
Material	Plastic cabinet with brushed anodised aluminium surround + adaptor	
Touch screen	7" LCD Wide VGA	
Size	Touch screen Aluminium surround	185 x 126 x 52mm (W x H x D) 211 x 140 x 5mm (W x H x D)
Installation	NV Comfort® touch screen can be surface mounted or flush to the wall. Surface mounting: frame type NVC A100 (to be ordered separately). Flush mounting: NV Comfort® can be flushed mounted as it is or in an installation housing. Installation housing type NVC A201, NVC A202 or NVC A203 (to be ordered separately).	
Power supply	Touch screen: 24VDC, 0.65A via net adaptor (typical consumption 6W) Net adaptor: 90-265VAC, 50-60Hz, 0.4A, cable length 1.8m, the adapter is supplied with plugs for Western Europe, United Kingdom and US	
Power supply KNX	Max. 10mA	
Bus connection	KNX bus	
NV Comfort® software card – NVC SC xx x		
Material	SD card	
NV Comfort® basic package NVC BP KNX 11 includes:		
Wind and rain sensor – WLA 340		
Material	Housing/anemometer in plastic, bracket in metal	
Size	80 x 160 x 55mm (W x H x D) without anemometer	
Power supply	24VDC (+20/-10%) (typical consumption 100mA)	
Relay output	1 x potential free switch, 60V/1A	
Wind speed	Pulse output	
Protection type	IP65	
Cable for the wind and rain sensor – WLL 608		
Material	4m UV-resistant cable 4 x 2 x 0.75mm²	
Outdoor temperature and lux sensor and GPS – WET 200		
Material	Self extinguishing thermoplastic	
Size	Sensor: 75 x 31 x 65mm (W x H x D) Bracket: 52 x 38 x 57mm (W x H x D)	
Power supply	KNX bus voltage	
Protection type	IP54	
KNX power supply – WEA 102		
Size	4 DIN-rail modules of 18mm	
Power supply	120-230 VAC, 50-60Hz	
Power consumption	Ca. 24 VA (nominal)	
Output voltage	29 VDC, 640mA, up to 64 KNX devices in one bus line	
Output current	640mA, short circuit limited to 1.5A	
Protection type	IP20	
General		
Operation conditions	NV Comfort®, WEA 102: -5°C - +40°C. Max.90% RH, non condensing WLA 340: -20°C - +60°C WET 200: -30°C - +55°C	
Notice	We reserve the right to make technical changes	

NV Comfort® Standard / Plus

KNX control

Items	Item no.
NV Comfort® touch screen with adaptor	NVC KNX A02
NV Comfort® software card, 4 rooms/zones, Standard	NVC SC 4S 0
NV Comfort® software card, 8 rooms/zones, Standard	NVC SC 8S 0
NV Comfort® software card, 4 rooms/zones, Plus	NVC SC 4P 0
NV Comfort® software card, 8 rooms/zones, Plus	NVC SC 8P 0
NV Comfort® basic package (KNX power supply + weather station)	NVC BP KNX 11

Accessories	Item no.
NV Comfort® frame in brushed aluminium, surface mounting, 209 x 138 x 52.5mm (W x H x D)	NVC A102
NV Manager™ - log analysis and online operation of one NV Comfort® controller	-
Temperature-, CO ₂ level and humidity sensor	WET 112
Lux sensor, outdoor	WEL 100 0101
PIR wall (presence detector)	WEO 102 0101
PIR ceiling (presence detector)	WEO 112 0101
MotorController 10A, 4 motor lines 10A each, max. 10A total, 10 KNX input	WCC 310 S 0410 KNX
MotorController 20A, 8 motor lines 10A each, max. 20A total, 10 KNX input	WCC 320 S 0810 KNX
MotorController 10A, 2 motor lines each 10A, max. 10A total, 2 inputs*	WCC 310 P 0202
MotorController 10A, 6 motor lines each 10A, max. 10A total, 12 inputs*	WCC 310 P 0612
MotorController 10A, 10 motor lines each 10A, max. 10A total, 12 inputs*	WCC 310 P 1012
MotorController 20A, 2 motor lines each 10A, max. 20A total, 2 inputs*	WCC 320 P 0202
MotorController 20A, 6 motor lines each 10A, max. 20A total, 12 inputs*	WCC 320 P 0612
MotorController 20A, 10 motor lines each 10A, max. 20A total, 12 inputs*	WCC 320 P 1012
*To enable KNX communication: Fieldbus card with field bus interface to KNX	WCA 3FK
KNX valve actuator for heat control	WEV 110
6-channel output for operating thermo actuator type WEV 113	WEV 111
12-channel output for operating thermo actuator type WEV 113	WEV 112
Thermo actuator for WEV 111 and WEV 112 (valve adaptor to be ordered separately)	WEV 113
Valve adaptor for WEV 113 for Danfoss RA	WEV 114
Valve adaptor for WEV 113 for e.g. Onda, Schlösser, Oventrop (M30x1.5), Heimeier	WEV 115
Sun screening actuator – shutter module, 2 channels	WEA 250 0202
Sun screening actuator – shutter module, 4 channels	WEA 250 0402
Sun screening actuator – shutter module, 8 channels	WEA 250 0802
Analogue input module, 4-channel	WEA 163
Digital input module, 4-channel	WEA 164
Digital output module, 4-channel, potential free	WEA 165
Analogue output module 0-10V, 4 channel, master	WEA 166
Power supply 24V AC, 0,83A for WEA 166/167	WEP 224 0080

See separate product sheets for further information.

The function of the products is tested together with NV Comfort®. If alternative KNX products are used, others have to ensure that the combination of products functions is as intended and without problems.



1.22

NV Manager™

Log analysis and online operation of NV Comfort®



Natural
ventilation

KNX

KNX product

Application

- logging of the controller's data recorded for
 - rooms: temperature, CO₂, humidity, lux and event log
 - weather: temperature, wind speed and rain
- online support from WindowMaster
- online operation of NV Comfort® control
- online display of the current status of the controller

Description

The NV Manager™ application enables logging information about the room climate (temperature, CO₂, humidity and lux level) and the outdoor weather data (temperature, wind speed and rain).

Log data are used for example for analyses, energy optimization and operational documentation. Log data are displayed on tabs as tables and diagrams and the period for which the data are to be displayed are selected on each tab. All log data in tables can be exported to an Excel sheet.

The NV Comfort® controller can be operated online via a PC when using the NV Manager™ application.

This is useful when you from one place want to remote control and monitor controls that are placed in several buildings or are placed on different floors.
The application can also be used for online operation during start-up and optimization.

Installation

The NV Manager™ is accessed via a PC application. The installation link is activated directly on the system menu.

The NV Comfort® is connected to a LAN connection with internet access and requires no special configuration of the router or firewall.

The communication is encrypted and access demands password protected login.

In addition to the main user (administrator) more users (guest users) can be added thus more people have online access and are able to operate the NV Comfort® and the log data online.

Log analysis and online operation of NV Comfort®

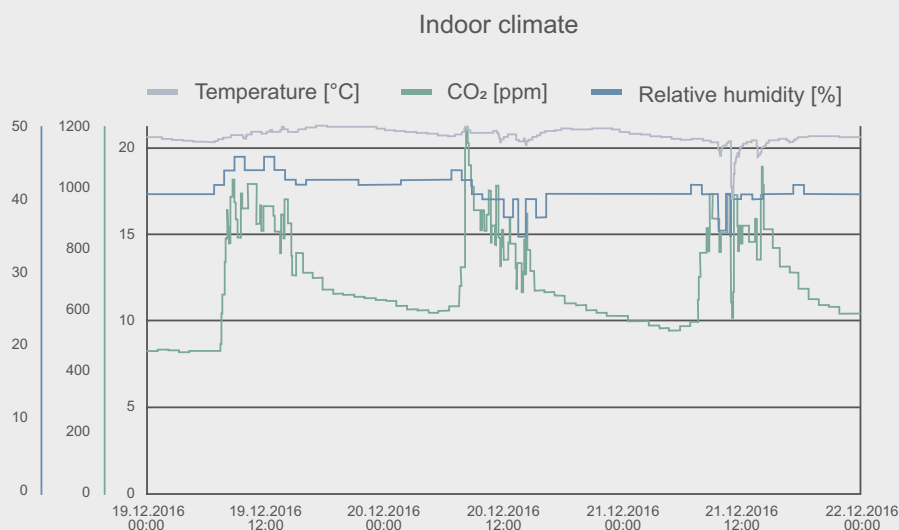
Examples on log data for indoor climate and weather

Example 1:

Log data for the indoor climate in one room for three days.

The diagram shows:

- temperature (grey)
- CO₂ (green)
- humidity (blue)

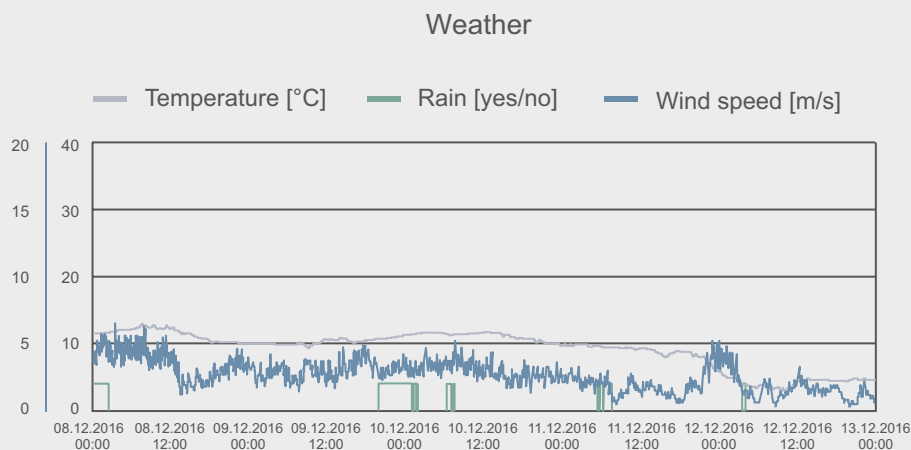


Example 2:

Log data for weather for five days.

The diagram shows:

- rain (green)
- temperature (grey)
- wind speed (blue)



NV Manager™ license agreement

The NV Comfort® software card (both Standard and Plus) from software version 2.2.1.4 are supplied with NV Manager™. Former software versions can be updated with the NV Manager™ application.

More NV Comfort® controllers can be assigned to one NV Manager™ application, if they have license.

There is a free trial period of 3 months, hereafter the license is concluded on an annual basis.

For further information please contact WindowMaster.



WEV 111



WEV 112



WEA 163



WEA 164



WEA 165



WEV 113



WEV 114



WEV 115



WEV 110



WEA 166



WEP 224 0080



WEL 100



WEA 250 0202



WEA 250 0402



WEA 250 0802

1.25

WEA 163 / 164 / 165 / 166 / 250 • WEL 100 • WEP 224 0080 • WEV 110 / 111 / 112 / 113 / 114 / 115 KNX accessories for NV Comfort®



Natural
ventilation



KNX product

Applications

- for NV Comfort® Standard and Plus solutions:
control of radiators and floor heating
- for NV Comfort® Plus solutions:
control of mechanical ventilation, light and sun screening

Depending on the building requirements:

- NV Comfort® Standard / Plus can receive and send signals to heat control, operation type and status functions
- NV Comfort® Plus can receive and send signals to the functions hybrid ventilation, light and sun screening control.

The signal exchange is communicated via KNX standard input/output modules and actuators.

Heat control in the individual room

(NV Comfort® Standard / Plus)

NV Comfort® has the ability to control the heating within individual rooms. This function allows seamless coordination between ventilation and heating ensuring unnecessary heat loss.

NV Comfort® can provide 0-10V DC (0-100%) / ON/OFF or pulse-width modulation signals.

The actuator driven, proportional (continuous) valve is connected to the European Installation Bus. Connection to KNX is done directly without additional bus coupler. The supply voltage to the ventilator actuators comes from the KNXbus.

Typical interface components:

- WEV110: KNX valve actuator. The actuator is supplied with power via KNX and requires no separate power supply
- WEV 111/112: 6-12 channel output module for controlling thermo actuator WEV 113
- WEV 113: thermo actuator 24V
- WEV 114/115: adaptor rings for WEV 113
- WEA 165: 4-channel potential free output module. Typically used to start a ventilator or to open a closed valve.
- WEA 166: 4-channel 0-10V analogue output

Option for external input controls

(NV Comfort® Standard / Plus)

NV Comfort® can receive information via third party systems for control such as:

- winter ventilation
- activate secure periods
- building status (in use, in secure use, not in use)
- windows are kept closed
- automatic switch off

Typical interface components

WEA 164: 4-channels input module

Information of operation status

(NV Comfort® Standard / Plus)

NV Comfort® can provide information about operation status:

- need for heat in one or more rooms
- building status (occupied, occupied – secured, unoccupied)
- windows are kept closed
- automatic switch off

Typical interface components

WEA 165: 4-channel potential free output module. Typically used to start a ventilator or to open a closed valve.

Mechanical ventilation (hybrid ventilation)

(NV Comfort® Plus)

If the number or size of a building's windows is not sufficient to achieve an optimal indoor climate with natural ventilation, external fans (mechanical ventilation) can be connected and used at peak loads, since NV Comfort® Plus can send a signal ON/OFF signal and/or 0-10V (0-100%) to the fans and dampers in a balanced ventilation system.

Typical interface components

WEA 165: 4-channel potential free output module

WEA 166: 4-channel 0-10VDC analogue output.

Sun screening

(NV Comfort® Plus)

The sun screening function allows blinds, awnings etc. to be controlled automatically, both in summer and winter, so that the position of the sun screening 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.

Typical interface components

WEL 100: lux sensor, outdoor

WEA 250: sun screening actuator – shutter modules:

- WEA 250 0202: with 2 channels
- WEA 250 0402: with 4 channels
- WEA 250 0802: with 8 channels

KNX accessories for NV Comfort®

Items	Item no.
Analogue input module, 4-channel Manufacturer: ABB. Type: AE/S 4.1.1.3. Homepage: www.ABB.com	WEA 163
Digital input module, 4-channel Manufacturer: ABB. Type: BE/S 4.20.1. Homepage: www.ABB.com	WEA 164
Digital output module, potential free, 4-channel Manufacturer: ABB. Type: SA/S 4.10.1. Homepage: www.ABB.com	WEA 165
Analogue output module 0-10V, 4-channel, master Manufacturer: ABB. Type: AA/S 4.1. Homepage: www.ABB.com	WEA 166
Sun screening actuator – shutter module with 2 channels Manufacturer: ABB. Type: JRA/S 2.230.5.1. Homepage: www.ABB.com	WEA 250 0202
Sun screening actuator – shutter module with 4 channels Manufacturer: ABB. Type: JRA/S 4.230.5.1. Homepage: www.ABB.com	WEA 250 0402
Sun screening actuator – shutter module with 8 channels Manufacturer: ABB. Type: JRA/S 8.230.5.1. Homepage: www.ABB.com	WEA 250 0802
Lux sensor, outdoor Manufacturer: Theben AG. Type: LUNA 133 KNX. Homepage: Theben.de	WEL 100
Power supply 24V AC, 0,83A for WEA 166/167	WEP 224 0080
KNX valve actuator for heat control Manufacturer: Theben. Type: Cheops drive KNX. Homepage: www.Theben.de	WEV 110
6-channel output for operating thermo actuator type WEV 113 Manufacturer: Theben. Type: HMT 6 KNX. Homepage: www.Theben.de	WEV 111
12-channel output for operating thermo actuator type WEV 113 Manufacturer: Theben. Type: HMT 12 KNX. Homepage: www.Theben.de	WEV 112
Thermo actuator for WEV 111 and WEV 112 (valve adaptor to be ordered separately) Manufacturer: Theben. Type: ALPHA 24V. Homepage: www.Theben.de	WEV 113
Valve adaptor (for WEV 113) for Danfoss RA Manufacturer: Theben. Type: VA 78. Homepage: www.Theben.de	WEV 114
Valve adaptor (for WEV 113) for e.g. Onda, Schlösser, Oventorp (M30x1,5), Heimeier Manufacturer: Theben. Type: VA 80. Homepage: www.Theben.de	WEV 115
The function of the products is tested together with NV Comfort®. For product descriptions, applications and ETS – pls. see the manufacturer's homepages.	



2.20

WUC 102 Unicontrol control unit



Natural
ventilation

230V

Rated voltage

Application

- for 24V DC window actuators
- 1 comfort ventilation group up to max.3A
- can be combined with external temperature sensor, timer or BMS
- rain/wind sensor can be connected
- multiple devices can be linked to form large groups

The control unit can be used for operation of 24 VDC window actuators and other electric accessory products (e.g. Venetian blinds) with a total power consumption of max 3A.

The WUC 102 is as standard equipped with an output voltage area of 20-30V.

The control unit has 2 clamp connections for motors as well as 3 signal inputs (A,B,C) for "OPEN/CLOSE" function for WindowMaster sensors (only use potential free switches) and keypads (switches). It is also possible to connect keypad WSK 100.

The WUC 102 is fitted with current measurement, which will disconnect the control unit if temporary overloaded.

Input signal is to be potential free.

Specifications

- ventilation function in 1 group up to max. 3A
- OPEN/CLOSE manually by external ventilation switch
- 3 potentialfree inputs (OPEN/CLOSE) with priority sequence with the possibility of connecting rain/wind/sensor, timer, thermostat and keypads.

Technical specifications	
Primry voltage	230V AC $\pm 10\%$, 300VA, 50Hz
Inrush current on primary side	Max. 10A < 10msec
Secondary voltage	Low: 17-27V DC High: 20-30V DC (standard) Max. current: $\pm 24V$ DC / 3A
Standby consumption	3W at 230V
Ripple at full load	10% (2Vpp)
Open circuit	30V at 53V
Operating condition	-5°C - +45°C°, for indoor installation, the control unit may not be covered
Switch on duration	ED 40% (max. 2 min. per 5min.)
Material	Polycarbonate, fire retardant according to UL 94-5V
Colour	White (NCS 1000)
Size	180 x 110 x 70mm (W x H x D)
Weight	1.4kg
Protection type	IP20
Mounting	It is recommended to mount WUC 102 on a vibration-free surface
Delivery	Control unit with 1.2m cable and standard plug for connection to the mains supply
Note	We reserve the right to make technical changes

Items	Item no.
UniControl control unit	WUC 102 0103
UniControl control unit (UK version, 240V AC)	WUC 102 0403

Accessories	Item no.
Keypad push-button, flush mounting	WSK 100 1161
Room thermostat	WLA 110
Rain/wind sensor	WLA 330
Rain sensor	WLA 331

Unicontrol control unit

WindowMaster actuators	Max. number of windows actuators which can be connected (max 3A total)	
	Secondary voltage: high (standard) (max. 30V)	Secondary voltage: low (max. 27V)
WMS 306 / WMS 306 (-1/-2)	2	*
WMS 309 / WMS 309 (-1/-2)	2	*
WMS 409-1	1	*
WMU 836 (-1/-2)**	2	*
WMU 861-1**	1	*
WMU 862-1**	1	*
WMU 882-1**	1	*
WMX 503/504/523/526 (-1)**	5	*
WMX 503/504/523/526 (-2)**	4	*
WMX 803/804/823/826 (-1)**	3	*
WMX 803/804/823/826 (-2)**	2	*

* The actuator is not suitable for this voltage.

** Aside from a window actuator (window actuators) it is also possible to connect a espagnolette actuator type WMB 801/802 or WMB-811/812 (single or double).



3.10

WCC 310 / 320 STANDARD MotorController



Natural
ventilation



Rated voltage



MotorLink®



KNX product

Application

- for daily comfort ventilation
- to be used with $\pm 24V$ standard window actuators and window actuators with MotorLink®
- 4 or 8 motor lines
- 10A or 20A
- with or without KNX

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 4 or 8 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

The MotorController is supplied in 4 variants:

With 10A:

- WCC 310 S 0410: 10A, 4 motor lines, 10 inputs
- WCC 310 S 0410 KNX: 10A, 4 motor lines, 10 KNX-inputs

With 20A:

- WCC 320 S 0810: 20A, 8 motor lines, 10 inputs
- WCC 320 S 0810 KNX: 20A, 8 motor lines, 10 KNX-inputs

In the MotorController each motor line can have a max load

of 10A. The total max current consumption of all motor lines must not exceed 10A / 20A.

The MotorController is also supplied as a PLUS version where the configuration is done on the built-in touchscreen – 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.

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:

- $\pm 24V$ DC standard actuator – 1 speed (speed B)
- MotorLink® actuator – 3 speeds
(safety / manually operated / automatically)

The different speeds

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- safety control speed – actuators run fastest.

Common input

The actuators can be controlled via four common inputs. All switch contacts must be potential free.

When connecting sensors the auxiliary power from the built-in 24V DC 0.23A power supply can be used.

Option 1

Common CLOSE ALL/safety (rain) function
Actuator speed: B.

Option 2

Self-hold function on all actuator groups.
Switch closed = self-hold.

Option 3

Common "OPEN" function for all actuator groups.
No self-hold.
Actuator speed: B.

Option 4

Common "CLOSE" function for all actuator groups.
No self-hold.
Actuator speed: B.

MotorController with KNX

The MotorController is integrated into KNX projects using the relevant application. In the application there are a number of communication objects and parameters, which help ensure a flexible integration with other KNX products and control units.

For further information on available objects see "KNX Application Program Description" on our web site www.windowmaster.com.

Specifications

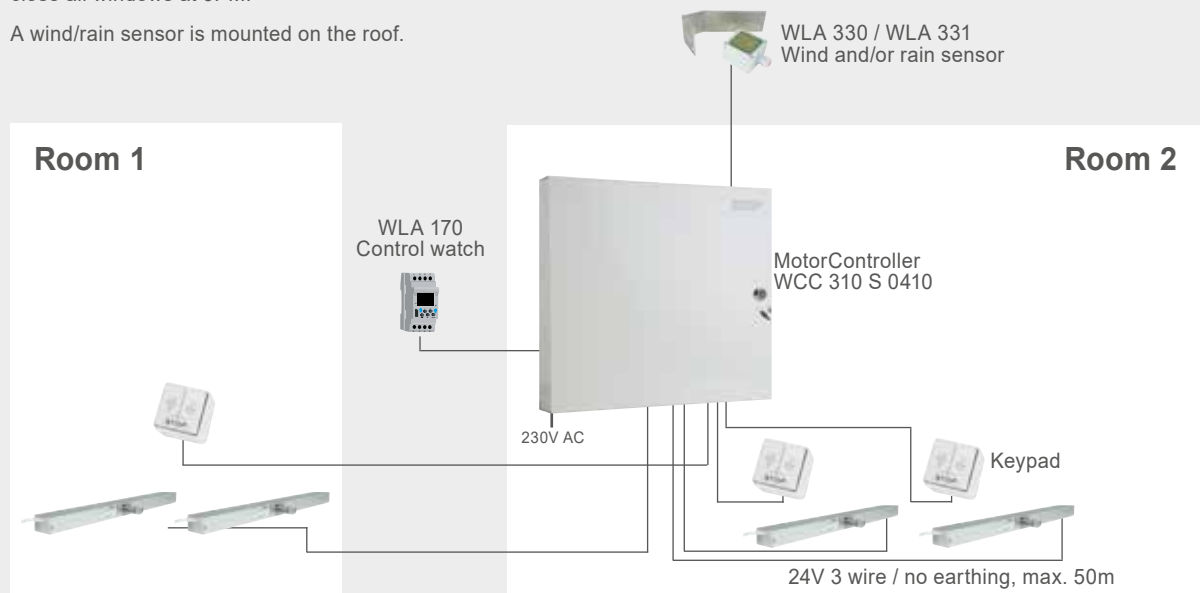
- 4 motor lines (comfort ventilation groups) up to 10A or 8 motor lines (comfort ventilation groups) up to 20A
- max. 10A/motor line
- supplied with or without KNX
- one comfort input "Close all"
- max. output voltage 27.6VDC @230VAC
- simple and fast installation

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 S 0410 with timer control and wind/rain sensor

In each room actuators with MotorLink® have been connected as well as individual keypads for individual operation of the windows. A control timer is mounted for opening/closing windows in room 1 and 2 at predefined times e.g. open/close during lunch time and close all windows at 6PM.

A wind/rain sensor is mounted on the roof.

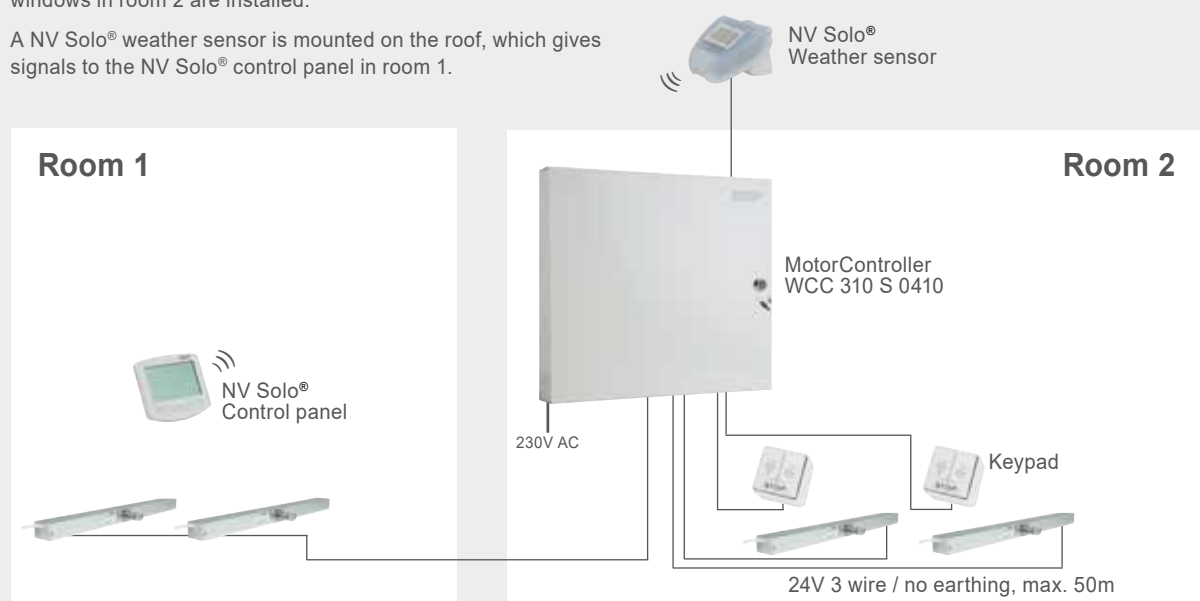


Example 2: WCC 310 S 0410 with NV Solo®

In each room actuators with MotorLink® have been connected. In room 1 a NV Solo® a control panel with built in temperature sensor and keypads for individual operation of the actuators in room 1 is installed.

In room 2 individual keypads for individual operation of the windows in room 2 are installed.

A NV Solo® weather sensor is mounted on the roof, which gives signals to the NV Solo® control panel in room 1.



Technical specifications		
Output current	WCC 310: 10A / WCC 320: 20A	
Motor lines	4 or 8 motor lines A line can be either a ±24V standard motor line or a MotorLink® motor line.	
Primary voltage	230V AC, 50Hz (85-264V AC, 47-63Hz)	
Actuator secondary voltage	Nominal voltage Open circuit voltage at 230V AC (no load) Ripple at max load	24V DC (±15%) 27.6V DC @ 20°C max 6% (3,5Vpp)
Power consumption	WCC 310: min 1.1W ¹ , typ. 3W ² . At max load 305W WCC 320: min 1.1W ¹ , typ. 3.5W ³ . At max load 605W 1) min.: 1 actuator 2) typ.: 16 MotorLink® actuators + rain sensor 3) typ.: 32 MotorLink® actuators + rain sensor	
Inrush current on primary site	70A < 5ms Max 3 x WCC 310/320 per 10 A supply group. Circuit breaker “C” characteristic.	
Operating conditions	-5°C – +45°C, for indoor installation, the controller may not be covered	
Switch-on duration	ED 40% (4 min. per 10 min.)	
Connection cable	Actuators Flexible max 6mm² / solid max 10mm², max. 2V power loss. MotorLink® actuator however cables max. 50m Other components Min 0.2mm² / max 1.5mm²	
Size	355 x 320 x 76mm (BxHxD)	
Material	Lacquered metal housing for surface mounting	
Colour	White (RAL 9010)	
Weight	WCC 310: 4kg / WCC 320: 4.8kg	
IP rating	IP20	
Delivery includes	MotorController	
Spare parts	See the spare part list on our website www.windowmaster.com under “Products”	
Note	We reserve the right to make technical changes	
Technical specifications – KNX version only		
Field bus	KNX TP1	
Engineering software tool	ETS 4 / 5 application	
BUS connection	KNX bus connection terminal	
Current consumption KNX	< 1 x 10mA (1 physical address))	

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[®] actuator) and MotorController.

Notice: For actuators with MotorLink[®] 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 STANDARD – maximum numbers of actuators						
Actuator type	Per motor line		Per WCC 310 S 0410		Per WCC 320 S 0810	
	$\pm 24V$	MotorLink [®]	$\pm 24V$	MotorLink [®]	$\pm 24V$	MotorLink [®]
WMS 306-1	10	4	10	10	20	20
WMS 306-2	10	2	10	8	20	16
WMS 306-3	9	3	9	9	18	18
WMS 306-4	8	4	8	8	20	20
WMS 309-1	10	4	10	10	20	20
WMS 309-2	10	2	10	8	20	16
WMS 309-3	9	3	9	9	18	18
WMS 309-4	8	4	8	8	20	20
WMS 409 xxxx 01	5	0	5	0	10	0
WMS 409-1	5	4	5	5	10	10
WMS 409-2	4	2	4	4	10	10
WMS 409-3	3	3	3	3	9	9
WMS 409-4	4	4	4	4	8	8
WMU 836-1	10	4	10	10	20	20
WMU 836-2	10	4	10	8	20	16
WMU 836-3	9	3	9	9	18	18
WMU 836-4	8	4	8	8	20	20
WMU 861-1	6	4	6	6	12	12
WMU 861-2	6	2	6	6	12	12
WMU 861-3	6	3	6	6	12	12
WMU 861-4	4	4	4	4	12	12
WMU 842 / 862 / 882-1	4	4	4	4	8	8
WMU 842 / 862 / 882-2	4	2	4	4	8	8
WMU 842 / 862 / 882-3	3	3	3	3	6	6
WMU 842 / 862 / 882-4	4	4	4	4	8	8
WMU 863 / 883-1	3	3	3	3	6	6
WMU 863 / 883-2	2	2	2	2	6	6
WMU 863 / 883-3	3	3	3	3	6	6
WMU 863 / 883-4	0	0	0	0	0	0
WMU 864 / 884-1	2	2	2	2	4	4
WMU 864 / 884-2	2	2	2	2	4	4
WMU 864 / 884-3	0	0	0	0	0	0
WMU 864 / 884-4	0	0	0	0	0	0
WMU 885 / 895-1	2	2	2	2	4	4
WMU 885 / 895-2	2	2	2	2	4	4
WMU 885 / 895-3	0	0	0	0	0	0
WMU 885 / 895-4	0	0	0	0	0	0

Continued on the next page

WCC 310 / WCC 320 STANDARD – maximum numbers of actuators (continued)

Actuator type	Per motor line		Per WCC 310 S 0410		Per WCC 320 S 0810	
	±24V	MotorLink®	±24V	MotorLink®	±24V	MotorLink®
WMX 503 / 504 / 523 / 526-1	20	4	20	16	40	32
WMX 503 / 504 / 523 / 526-2	20	2	20	8	40	16
WMX 503 / 504 / 523 / 526-3	18	3	18	12	39	24
WMX 503 / 504 / 523 / 526-4	20	4	20	16	40	32
WMX 803 / 804 / 823 / 826-1	10	4	10	10	20	20
WMX 803 / 804 / 823 / 826-2	10	2	10	8	20	16
WMX 803 / 804 / 823 / 826-3	9	3	9	9	18	18
WMX 803 / 804 / 823 / 826-4	8	4	8	8	20	20
WML 820/825	10	0	10	0	20	0
WML 860-1	10	4	10	10	20	20
WML 860-2	10	2	10	8	20	16
WML 860-3	9	3	9	9	18	18
WML 860-4	8	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 */**	10	2	10	8	20	16

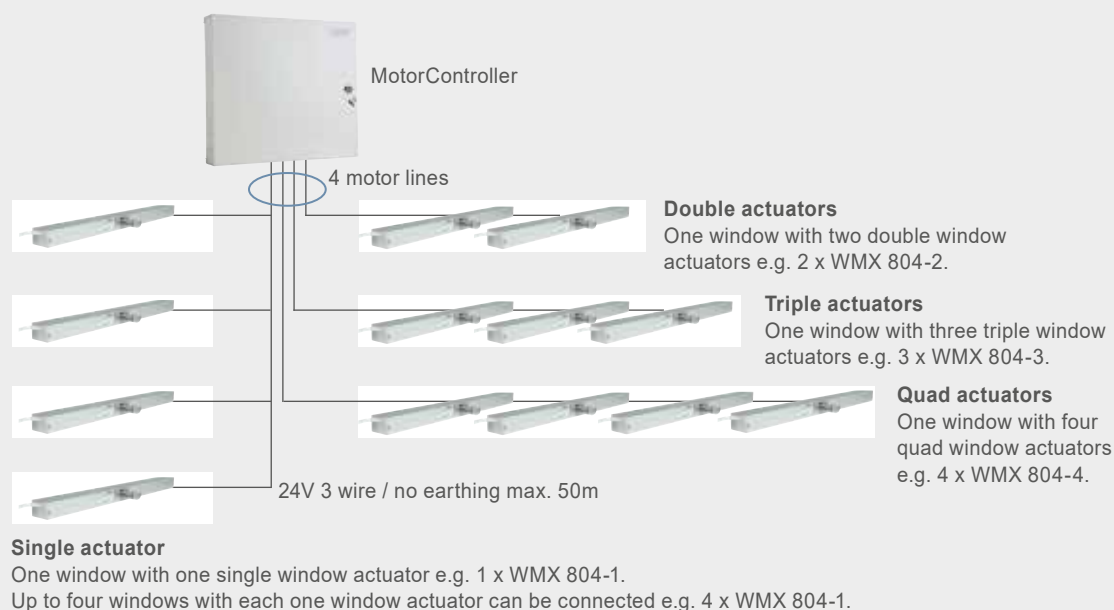
* Do not exceed the total power consumption of the motor line

** 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 10A 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 50m

- 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.



WCC 310 / 320 STANDARD

MotorController

Variants	Item no.
MotorController 10A, 4 motor lines 10A each, max. 10A total, 10 input	WCC 310 S 0410
MotorController 10A, 4 motor lines 10A each, max. 10A total, 10 KNX input	WCC 310 S 0410 KNX
MotorController 20A, 8 motor lines 10A each, max. 20A total, 10 input	WCC 320 S 0810
MotorController 20A, 8 motor lines 10A each, max. 20A total, 10 KNX input	WCC 320 S 0810 KNX

Accessories	Item no.
Keypad, flush mounting	WSK 100 1161
Keypad, type FUGA, surface mounting (DK version)	WSK 102
Keypad, flush mounting (CH version)	WSK 300
Keypad KNX – for one window / window group, connection via KNX (DK version)	WEK 112
Keypad KNX – for two windows / window groups, connection via KNX (DK version)	WEK 122
Room thermostat	WLA 110
Rain and wind sensor	WLA 330
Rain sensor	WLA 331



3.20

WCC 310 / 320 PLUS MotorController



Natural
ventilation

230V

Rated voltage



MotorLink®

KNX

KNX product

BACnet

BACnet
product

Modbus

Modbus
product

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

With 20A:

- WCC 320 P 0202: 20A, 2 motor lines, 2 inputs
- WCC 320 P 0612: 20A, 6 motor lines, 12 inputs
- WCC 320 P 1012: 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 10A. 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 (speed B)
- MotorLink® actuator – 3 speeds
(safety / manually operated / automatically)

The different speeds

- A. automatically control speed – actuators run slowly and almost soundlessly.
- B. manual control speed – actuators run faster and more audibly.
- C. safety control speed – actuators run fastest.

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 Comfort® and 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.

Configurering / commisioning / 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
- 20A on one motor line (only WCC 320)
- event log

Specifications

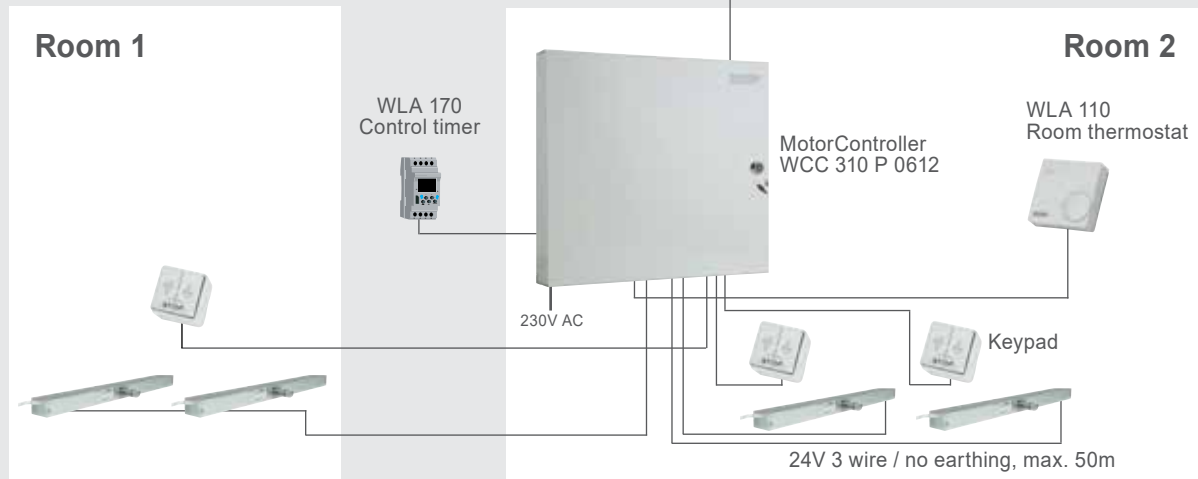
- 2, 6 or 10 motor lines (comfort ventilation groups) with up to 10A / 20A
- max. 10A/motor line
- automatically limited opening for comfort ventilation – no additional modules required
- field bus cards are available for KNX, BACnet IP MS/TP and Modbus TCP/RTU/RS485
- max. output voltage 27.6VDC @230VAC
- 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 0612 with timer control and wind/rain sensor

In each room actuators with MotorLink® have been connected as well as individual keypads for individual operation of the windows. A room thermostat is mounted, so the windows open / close when the temperature exceeds / falls below the set temperature settings. A control timer for opening/closing windows in room 1 and 2 at predefined times e.g. open/close during lunch time and close all windows at 6PM.

A wind/rain sensor is mounted on the roof.

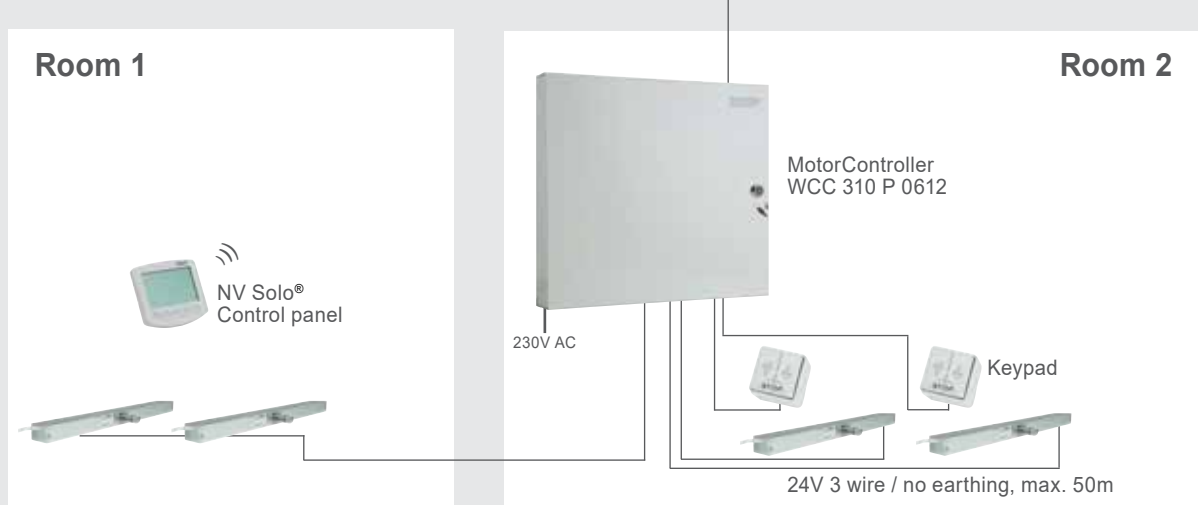


Example 2: WCC 310 P 0612 with NV Solo®

In each room actuators with MotorLink® have been connected. In room 1 a NV Solo® a control panel with built in temperature sensor and keypads for individual operation of the actuators in room 1 is installed.

In room 2 individual keypads for individual operation of the windows in room 2 are installed.

A NV Solo® weather sensor is mounted on the roof which gives signals to the NV Solo® control panel in room 1.



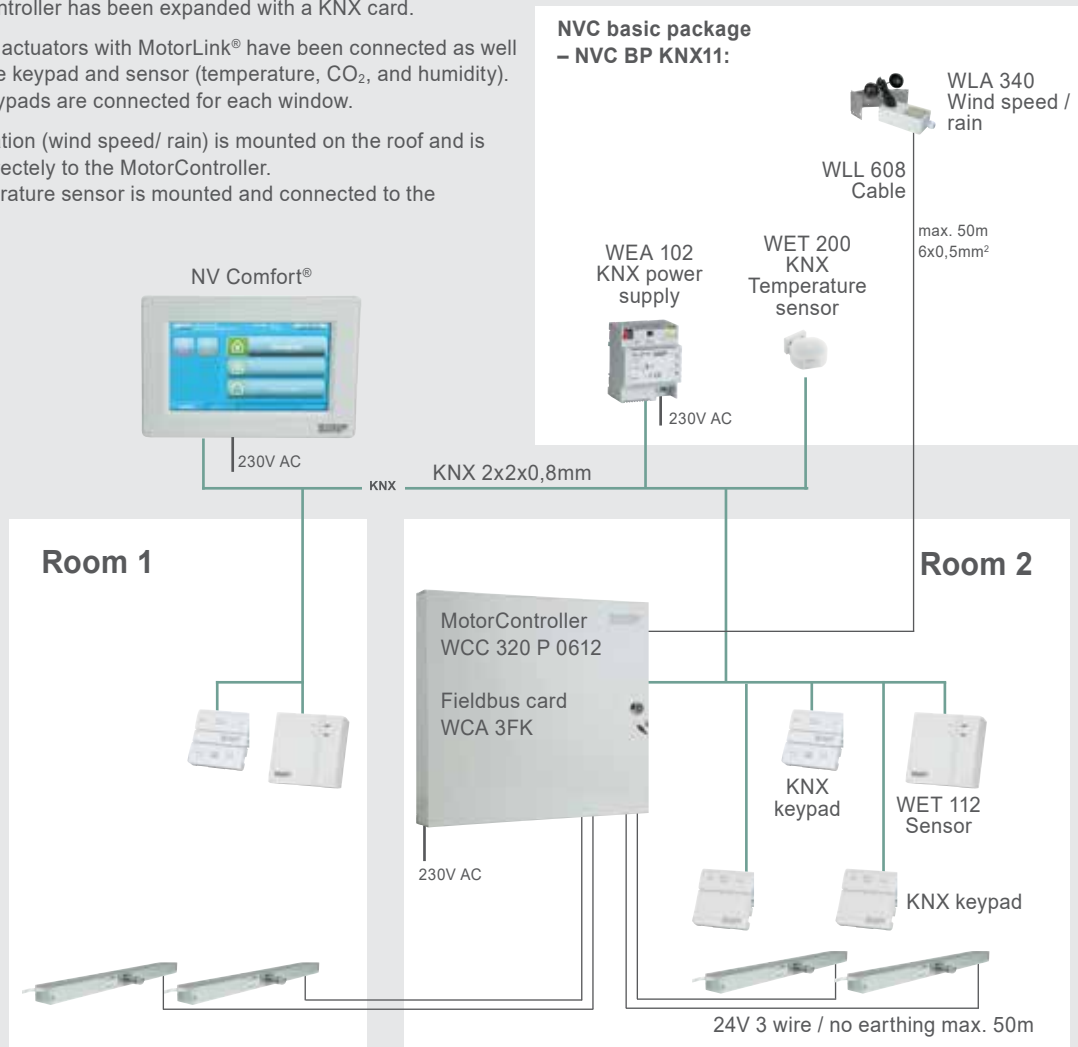
Example 3: WCC 320 P 0612 expanded with KNX card and connected to NV Comfort® controller and weather station

The MotorController has been expanded with a KNX card.

In each room actuators with MotorLink® have been connected as well as an override keypad and sensor (temperature, CO₂, and humidity). In room 2, keypads are connected for each window.

A weather station (wind speed/ rain) is mounted on the roof and is connected directly to the MotorController.

A KNX temperature sensor is mounted and connected to the NV Comfort®.



Example 4: WCC 320 P 1012 expanded with KNX card

The MotorController can control MotorLink® actuators as well as $\pm 24V$ DC standard actuators. The configuration is easily done in the configuration menu on the touch display.

$\pm 24V$ DC standard actuator

✓ Configuration, Motor line, S1 X1

Output mode	$\pm 24V$ motor
Motor configuration	No cable monitoring
Stroke time	60 s
Motor group	1

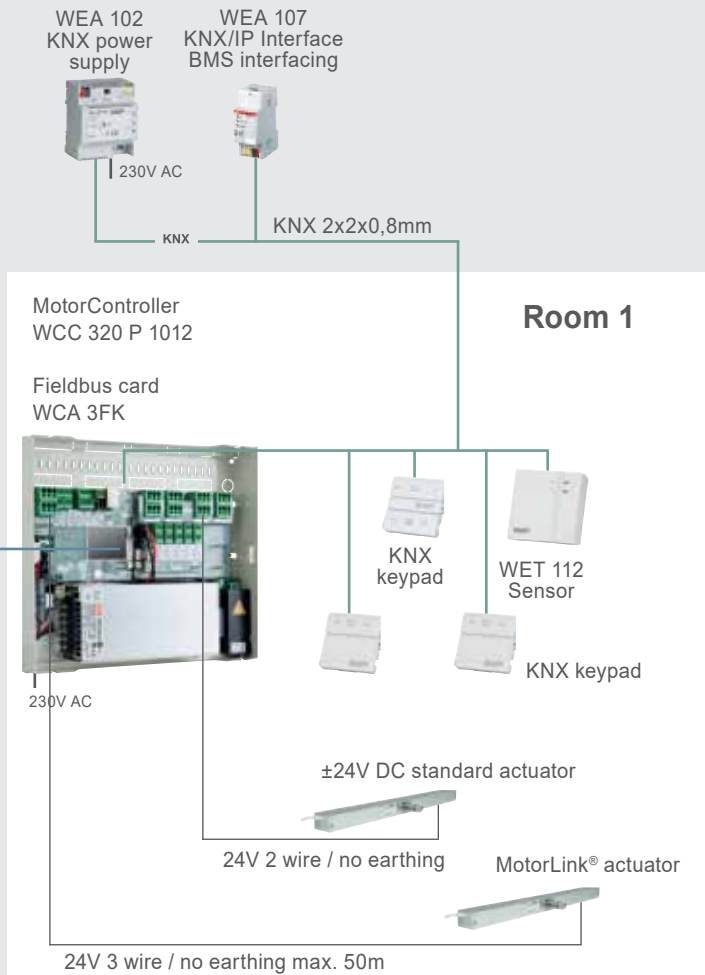
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MotorLink® actuator

✓ Configuration, Motor line, S1 X1

Output mode	MotorLink®
Expected no. of motors	1
Motor group	1
Expected no. of locking motors	None

↩ ⬇



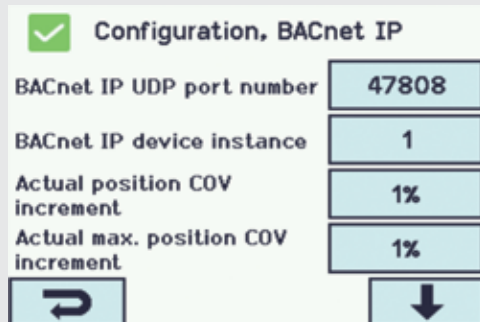
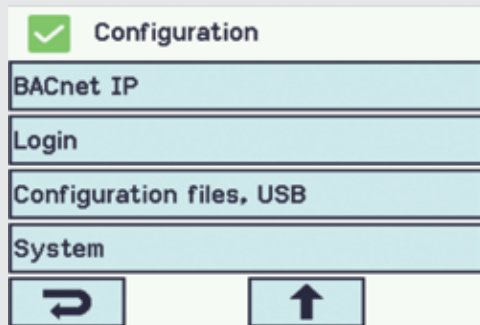
Example 5: WCC 320 P 1012 expanded with BACnet MS/TP / Modbus RTU/RS485 card or BACnet-IP key

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 www.windowmaster.com

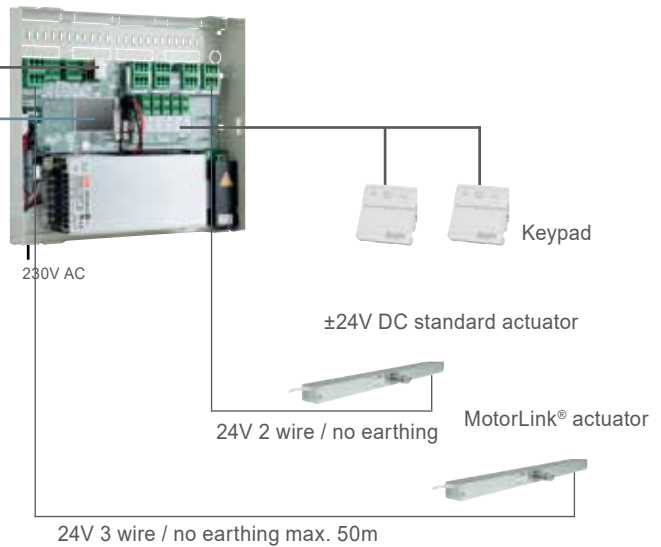


Room 1

MotorController
WCC 320 P 1012

Fieldbus key
WCA 3FB

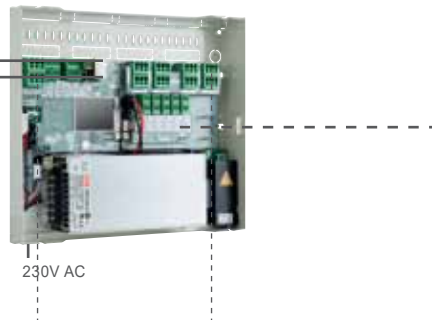
Fieldbus interface
WCA 3FM



MotorController
WCC 320 P 1012

Fieldbus key
WCA 3FB

Fieldbus interface
WCA 3FM



Technical specifications		
Output current	WCC 310: 10A / WCC 320: 20A	
Motor lines	2, 6 or 10 motor lines A line can be either a ±24V standard motor line or a MotorLink® motor line.	
Primary voltage	230V AC, 50Hz (85-264V AC, 47-63Hz)	
Actuator secondary voltage	Nominal voltage Open circuit voltage at 230V AC (no load) Ripple at max load	24V DC (±15%) 27,6V DC @ 20°C max 6% (3,5Vpp)
Power consumption	WCC 310: min 2W ¹ , typ. 4.2W ² . At max load 305W WCC 320: min 2W ¹ , typ. 5W ³ . At max load 605W 1) min.: 1 MotorLink® actuator 2) min.: 20 MotorLink® actuators + rain sensor 3) min.: 40 MotorLink® actuators + rain sensor	
Inrush current on primary site	70A < 5ms Max 3 x WCC 310/320 per 10 A supply group. Circuit breaker “C” characteristic.	
Operating conditions	-5°C – +45°C, for indoor installation, the controller may not be covered	
Switch-on duration	ED 40% (4 min. per 10 min.)	
Connection cable	Actuators Flexible max 6mm² / solid max 10mm², max. 2V power loss. MotorLink® actuator however cables max. 50m Other components Min 0,2mm² / max 1,5mm²	
Size	355 x 320 x 76mm (WxHxD)	
Material	Lacquered metal housing for surface mounting	
Colour	White (RAL 9010)	
Weight	WCC 310: 4kg / WCC 320: 4.8kg	
IP rating	IP20	
Delivery includes	MotorController	
Spare parts	See the spare part list on our website www.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® actuator) and MotorController.

Notice: For actuators with MotorLink® 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 – maximum numbers of actuators						
Actuator type	Per motor line		Per WCC 310 P 1012		Per WCC 320 P 1012	
	±24V	MotorLink®	±24V	MotorLink®	±24V	MotorLink®
WMS 306-1	10	4	10	10	20	20
WMS 306-2	10	2	10	10	20	20
WMS 306-3	9	3	9	9	18	18
WMS 306-4	8	4	8	8	20	20
WMS 309-1	10	4	10	10	20	20
WMS 309-2	10	2	10	10	20	20
WMS 309-3	9	3	9	9	18	18
WMS 309-4	8	4	8	8	20	20
WMS 409 xxxx 01	5	0	5	0	10	0
WMS 409-1	5	4	5	5	10	10
WMS 409-2	4	2	4	4	10	10
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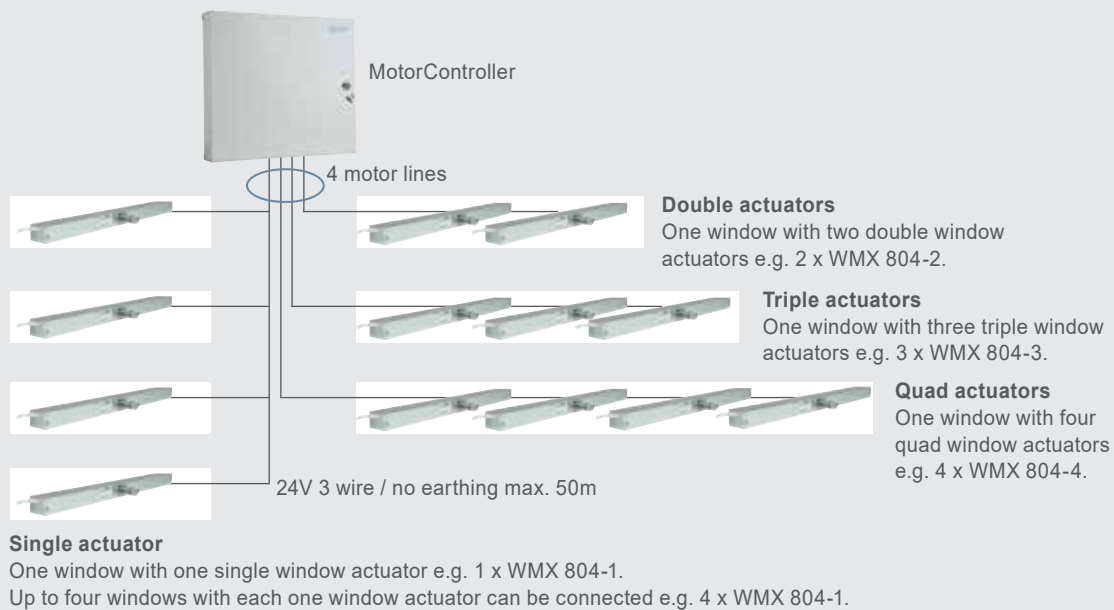
WCC 310 / WCC 320 PLUS – maximum numbers of actuators (continued)						
Actuator type	Per motor line		Per WCC 310 P 1012		Per WCC 320 P 1012	
	± 24V	MotorLink®	± 24V	MotorLink®	± 24V	MotorLink®
WMS 409-3	3	3	3	3	9	9
WMS 409-4	4	4	4	4	8	8
WMU 836-1	10	4	10	10	20	20
WMU 836-2	10	4	10	10	20	20
WMU 836-3	9	3	9	9	18	18
WMU 836-4	8	4	8	8	20	20
WMU 861-1	6	4	6	6	12	12
WMU 861-2	6	2	6	6	12	12
WMU 861-3	6	3	6	6	12	12
WMU 861-4	4	4	4	4	12	12
WMU 842 / 862 / 882-1	4	4	4	4	8	8
WMU 842 / 862 / 882-2	4	2	4	4	8	8
WMU 842 / 862 / 882-3	3	3	3	3	6	6
WMU 842 / 862 / 882-4	4	4	4	4	8	8
WMU 863 / 883-1	3	3	3	3	6	6
WMU 863 / 883-2	2	2	2	2	6	4
WMU 863 / 883-3	3	3	3	3	6	6
WMU 863 / 883-4	0	0	0	0	4***	4***
WMU 864 / 884-1	2	2	2	2	4	4
WMU 864 / 884-2	2	2	2	2	4	4
WMU 864 / 884-3	0	0	0	0	3***	3***
WMU 864 / 884-4	0	0	0	0	4***	4***
WMU 885 / 895-1	2	2	2	2	4	4
WMU 885 / 895-2	2	2	2	2	4	4
WMU 885 / 895-3	0	0	0	0	3***	3***
WMU 885 / 895-4	0	0	0	0	4***	4***
WMX 503 / 504 / 523 / 526-1	20	4	20	20	40	40
WMX 503 / 504 / 523 / 526-2	20	2	20	16	40	20
WMX 503 / 504 / 523 / 526-3	18	3	18	18	39	30
WMX 503 / 504 / 523 / 526-4	20	4	20	20	40	40
WMX 803 / 804 / 823 / 826-1	10	4	10	10	20	20
WMX 803 / 804 / 823 / 826-2	10	2	10	10	20	20
WMX 803 / 804 / 823 / 826-3	9	3	9	9	18	18
WMX 803 / 804 / 823 / 826-4	8	4	8	8	20	20
WML 820/825	10	0	10	0	20	0
WML 860-1	10	4	10	10	20	20
WML 860-2	10	2	10	10	20	20
WML 860-3	9	3	9	9	18	18
WML 860-4	8	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 */**	10	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
*** When the motor line is configured as 20A

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 10A 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 50m

- 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.

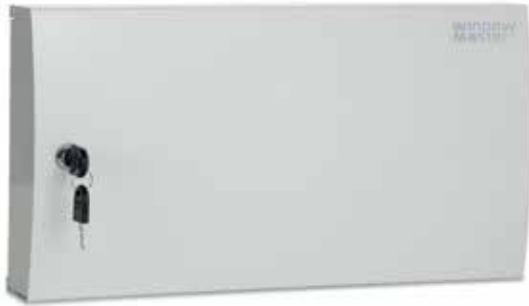


Variants	Item no.
MotorController 10A, 2 motor lines each 10A, max. 10A total, 2 inputs	WCC 310 P 0202
MotorController 10A, 6 motor lines each 10A, max. 10A total, 12 inputs	WCC 310 P 0612
MotorController 10A, 10 motor lines each 10A, max. 10A total, 12 inputs	WCC 310 P 1012
MotorController 20A, 2 motor lines each 10A, max. 20A total, 2 inputs	WCC 320 P 0202
MotorController 20A, 6 motor lines each 10A, max. 20A total, 12 inputs	WCC 320 P 0612
MotorController 20A, 10 motor lines each 10A, max. 20A total, 12 inputs	WCC 320 P 1012

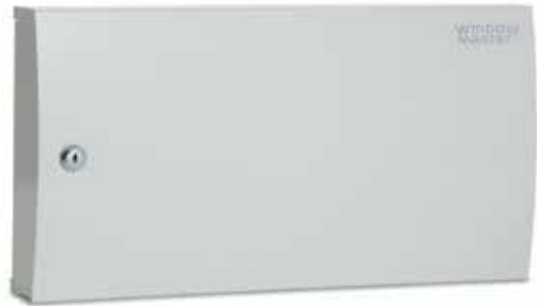
WCC 310 / 320 PLUS

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
Keypad, flush mounting	WSK 100 1161
Keypad, type FUGA, surface mounting (DK version)	WSK 102
Keypad, flush mounting (CH version)	WSK 300
Keypad KNX – for one window / window group, connection via KNX (DK version)	WEK 110
Keypad KNX – for two windows / window groups, connection via KNX (DK version)	WEK 120
Room thermostat	WLA 110
Room thermostat KNX: temperature, CO ₂ and humidity	WET 112
Wind/rain sensor	WLA 330
Rain sensor	WLA 331



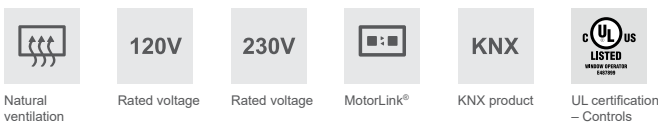
WEC 16M (230V AC)



WEC 16M UL (120V AC)

4.05

WEC 16M / WEC 16M UL MotorController KNX



Application

- for 24 VDC window and espagnolette actuators with MotorLink®
- WEC 16M 040A KNX – 4 motorlines of 4A
- WEC 16M 080B KNX – 8 motorlines of 4A (total max. 16A)
- individual operation via keypads with KNX

The MotorController is used for control of 4 or 8 motorlines each with up to 4 MotorLink® window actuators.

The window actuators open and close automatically via the MotorController. It is possible to connect individual keypads, so a user at any time can open and close a window via a keypad if more or less fresh air is desired. If the MotorController is connected to the control unit NV Comfort®, the windows can be operated manually via the NV Comfort® touch screen.

The MotorController is available in several versions:
230V without UL certification

- WEC 16M 040A KNX – 16A, 4 actuator groups
- WEC 16M 080B KNX – 16A, 8 actuator groups

120V with UL certification

- WEC 16M UL 040A KNX – 16A, 4 actuator groups
- WEC 16M UL 080B KNX – 16A, 8 actuator groups

The "040A" version has four motor lines and the "080B" version has eight motor lines. Each motor line can have a max load of 4A but the total maximum current consumption of all the motor lines must not exceed 16A.

The windows are controlled individually via the integrated KNX-module, one in the "040A" and two in the "080B".

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

Description

The MotorController controls the window actuators. The communication between the MotorController and the individual window actuators are done digitally via MotorLink® in a 3-core wire (power and communication wire).

The MotorController controls the window actuators in such a way that:

- the actuators have three different opening/closing speeds:
 - automatically control speed – actuators run slowly and almost soundlessly.
 - manual control speed – actuators run faster and more audibly.
 - H&S and safety control speed – actuators run fastest.
- the position of the windows 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 registers if a malfunction occurs on one of the actuators

The MotorController is by means of the matching ETS4 application integrated in KNX projects. In the application there are a number of communication objects and parameters, which are to ensure a flexible integration with other KNX products and control units.

- three opening/closing speeds for the window actuators
- position feedback
- control of the windows is to millimetre accuracy
- immediate recognition of possible actuator malfunction
- easy and flexible mounting

A program for setting the different parameters via KNX in the individual actuators can be supplied.

Specifications

- with integrated KNX modules
- to be used together with MotorLink® window actuators and espagnolette actuators
- 4 or 8 motor lines of 4A – total max of 16A (16A may not be exceeded)

Technical data				
Field bus	KNX TP1			
Engineering software tool	ETS 4 application			
Primary voltage	WEC 16M (not UL): 230 VAC, ±10%, 500VA, 50Hz			
	WEC 16M UL: 120 VAC ±10%, 620VA, 50-60Hz			
Secondary voltage	24 VDC, 4 or 8 motor lines with 4A per motor line however total max of 16A (see the combination table next page and the combination drawing on the last page)			
Inrush current	max. 20A < 5msec			
Standby consumption	ca. 7W (power consumption, when the actuator is not running)			
open circuit voltage	33V at 253V			
Ripple	5 Vpp at 24V = 10%			
Connection	primary side	screw joints up to:	4 mm² flexible cable 6 mm² solid cable	
	secondary side	screw joints up to:	Keypads	Actuators
			1.5 mm² flexible cable	4 mm² flexible cable
			2.5 mm² solid cable	6 mm² solid cable
	max voltage drop 2V however max 50m actuator cable			
Bus connection	KNX bus connection terminal			
Current consumption KNX	WEC 16M 040A / WEC 16M UL 040A: < 1 x 10mA (1 physical address) WEC 16M 080B / WEC 16M UL 080B: < 2 x 10mA (2 physical addresses)			
Safety transformer	the MotorController contains a safety transformer according to EN 61558			
Operating conditions	-5°C - +45°C, for indoor installation, the controller may not be covered			
Material	steel cabinet, lacquered			
Colour	white (RAL 9010)			
Size	455 x 240 x 88mm (W x H x D)			
Weight	7.5kg			
IP rating	IP20			
Certification	WEC 16M UL: certified according to UL Std. 325, Cert. to CAN/CSA C22.2 No. 247-14			
Delivery includes	MotorController. The UL certified version is not supplied with a key.			
Note	we reserve the right to make technical changes			

Items	Item no.
MotorController 230V, KNX, with 4 motor lines of 4A, max. 16A total. With key.	WEC 16M 040A KNX
MotorController 230V, KNX, with 8 motor lines of 4A, max. 16A total. With key.	WEC 16M 080B KNX
MotorController 120V, KNX, with 4 motor lines of 4A, max. 16A total, UL certified. Without key.	WEC 16M UL 040A KNX
MotorController 120V, KNX, with 8 motor lines of 4A, max. 16A total, UL certified. Without key.	WEC 16M UL 080B KNX

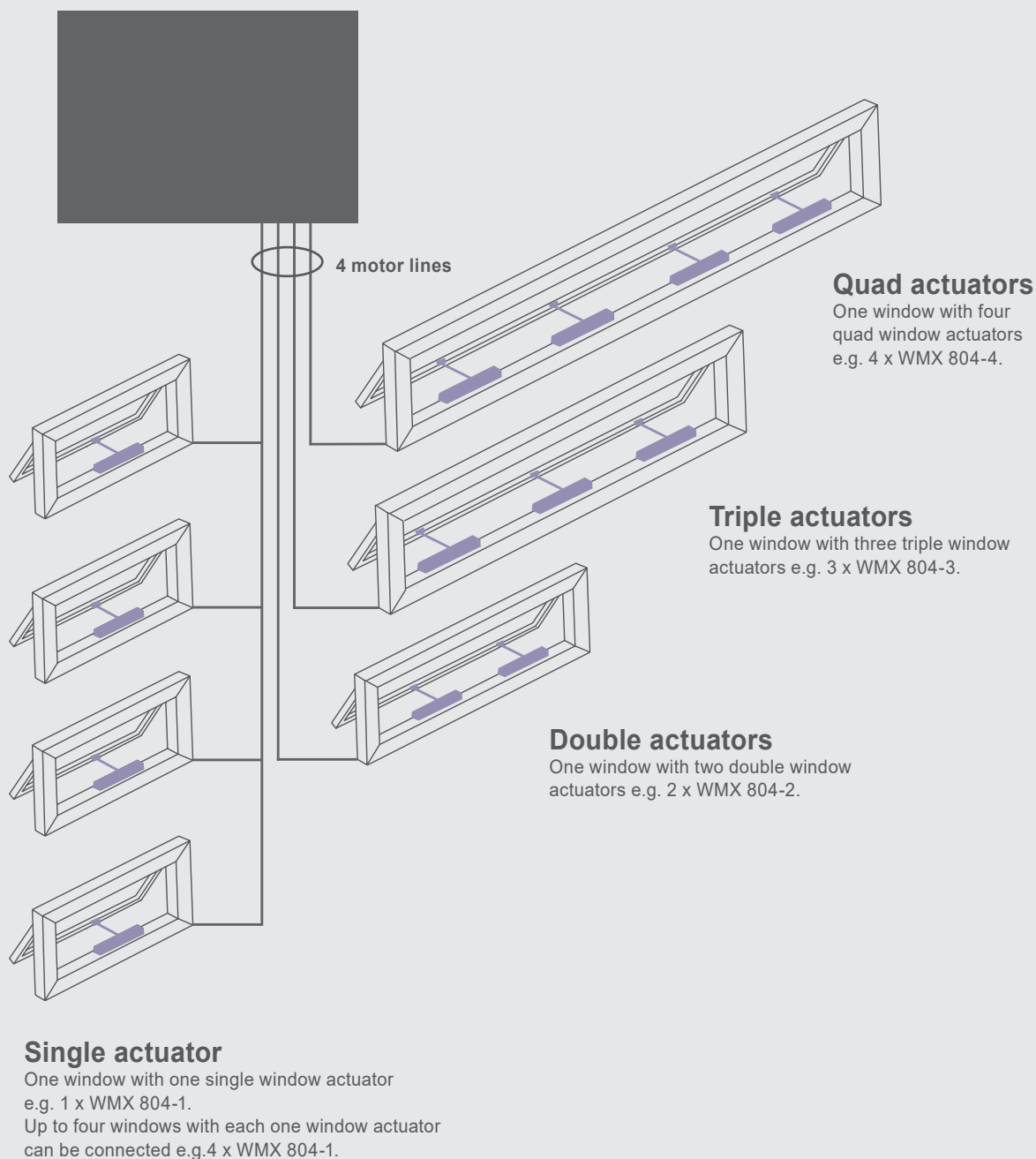
Accessories	Item no.
Keypad KNX – for one window / window group, connection via KNX	WEK 112
Keypad KNX – for two windows / window groups, connection via KNX	WEK 122

Combination table		
Window actuator type	Max. number of window actuators which can be connected	
	WEC 16M 040A KNX WEC 16M UL 040A KNX	WEC 16M 080B KNX WEC 16M UL 080B KNX
WMX 503/504/523/526-n*	16	32
WMX 803/804/823/826-n*	16	16
WMU 836-n*	16	16
WMU 861-n*	8	16
WMU 862-n*	8	8
WMU 863/864-1*	4	4
WMU 882-n*	8	8
WMU 883/884*	4	4
WMU 885-1*	**	**
WMS 306-n*	16	16
WMS 309-n*	16	16
WMS 409-n*	8	8
WMB 811-1x*	4	8
WMB 81n-2x*	8	16
<p>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 16A.</p> <p>* Up to two locking actuators / espagnolette actuators WMB 811 or WMB 812 (one single or two double) can be connected to one window and each window must have its own motor line.</p> <p>** Please contact WindowMaster</p>		

MotorController KNX

Combination drawing: Actuator variants on one motor line

1. The MotorController WEC 16M 040A and WEC 16M UL 040A have 4 motor lines and the MotorController WEC 16M 080B and WEC 16M UL 080B KNX have 8 motor lines
2. When connecting window actuators one should pay attention to:
 - The max current load of the MotorControllers: the max load on the MotorController is 4A per motor line (simultaneously load). The simultaneously max current consumption of all motor lines must not exceed max 16A.
3. Aside from window actuators; espagnolette actuators type WMB 811 / WMX 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.





WLC 16M (230V AC)



WLC 16M UL (120V AC)

4.15

WLC 16M / WLC 16M UL MotorController LON



Natural
ventilation



Rated voltage



Maksimal
output current



MotorLink®



LON product



UL certification
– Controls

Application

- for comfort ventilation via LON
- for 24 VDC window and espagnolette actuators with MotorLink®
- WLC 16M 040A – 4 motor lines of 4A
- WLC 16M 080B – 8 motor lines of 4A (total max. 16A)
- the windows can also be operated individually via keypads
- LONWorks compatible

MotorController for control of 24 VDC actuators with MotorLink® for daily comfort ventilation controlled via LON.

The windows are controlled individually via the integrated LON modules. It is possible to connect individual keypads, so a user at any time can open and close a window via a keypad if more or less fresh air is desired.

The MotorController contains motor lines. The number of lines depends on the variant of the panel – WLC 16M 040A has 4 motor lines and WLC 16M 080B has 8 motor lines. Each motor line has a max. load of 4A and is able to control up to 4 MotorLink® actuators. The total maximum current consumption of all the motor lines must not exceed 16A.

WLC 16M can be integrated in a TP/FT 10 LON® network via the integrated FT 3120® Free Topologi Smart Transreceiver LON modules. The number of modules depends of the variant of the smoke control panel – see technical information, "Bus connection". The LON modules contains a LonWorks compatible functional profile with a number of

network variable in order to ensure a flexible integration with other LonWorks products and controls. A LONMaker plug-in for easy parameter setup is available.

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

WLC 16M is also available in a version for integration in smoke ventilation systems, where the smoke ventilation function has the highest priority, see separate product sheet for further information about WLS xxM. Furthermore, the WLC 16M is also available in an UL certified version.

Description

The MotorController controls the window actuators. The communication between the MotorController and the individual window actuators are done digitally via MotorLink® in a 3-core wire (power and communication wire).

The WLC 16M controls the window actuators in such a way that:

- the actuators have three different opening/closing speeds:
 - automatically control speed – actuators run slowly and almost soundlessly.
 - manual control speed – actuators run faster and more audibly.
 - H&S and safety control speed – actuators run fastest.

- the position of the windows 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 registers if a malfunction occurs on one of the actuators or cables.

Specifications

- daily comfort ventilation controlled via LON
- with integrated LonWorks compatible LON modules

- to be used together with MotorLink® window and espagnolette actuators
- 4 or 8 motor lines of 4A – however total output max 16A
- three opening/closing speeds for the window actuators
- position feedback
- control of the windows is to millimetre accuracy
- immediate recognition of possible actuator or cable malfunction
- easy installation and flexible mounting

Technical information				
Field bus	LON, TP/FT 10 medie, LonWorks			
Field bus tool support	LonWorks compatible functional profile. LonMaker plugin for easy parameter setup is available.			
Primary voltage	WLC 16M (not UL): 230 VAC, ±10%, 500VA, 50Hz			
	WLC 16M UL: 120 VAC ±10%, 620VA, 50-60Hz			
Secondary voltage	24 VDC, 4 or 8 motorlines with 4A per motorline however total output max 16A			
Inrush current	max. 20A < 5msec			
Standby consumption	WLC 16M 040A:ca. 9W without actuators ca. 15W with 16 actuators (power consumption, when the actuator is not running) WLC 16M 080B:ca. 13W without actuators ca. 19W with 16 actuators (power consumption, when the actuator is not running)			
Open circuit voltage	33V at 253V			
Ripple	5 Vpp at 24V = 10%			
Connection	primary side	screw joints up to:	4 mm² flexible cable 6 mm² solid cable	
	secondary side	screw joints up to:	Keypads	Actuators
			1.5 mm² flexible cable	4 mm² flexible cable
			2.5 mm² solid cable	6 mm² solid cable
	max voltage drop 2V, however max 50m actuator cable			
LON connection	connections with screw terminal WLC 16M 040A 1 Neuron ID / WLC 16M UL 040A 1 Neuron ID WLC 16M 080B 2 Neuron ID / WLC 16M UL 080B 2 Neuron ID			
Local manual control input	one for each motor line			
Output	16A			
Safety transformer	the MotorController contains a safety transformer according to EN 61558			
Operating conditions	-5°C - +45°C, for indoor installation, the controller may not be covered			
Material	steel cabinet, lacquered			
Colour	white (RAL 9010)			
Size	455 x 240 x 88mm (W x H x D)			
Weight	7.5kg			
IP rating	IP20			
Certification	WEC 16M UL: certified according to UL Std. 325, Cert. to CAN/CSA C22.2 No. 247-14			
Delivery includes	MotorController. The UL certified version is not supplied with a key.			
Note	we reserve the right to make technical changes			

Items	Item no.
MotorController 230V, LON with 4 motor lines of 4A, max. 16A total. With key.	WLC 16M 040A
MotorController 230V, LON with 8 motor lines of 4A, max. 16A total. With key.	WLC 16M 080B
MotorController 120V, LON, with 4 motor lines of 4A, max. 16A total, UL certified. Without key.	WLC 16M UL 040A
MotorController 120V, LON, with 8 motor lines of 4A, max. 16A total, UL certified. Without key.	WLC 16M UL 080B

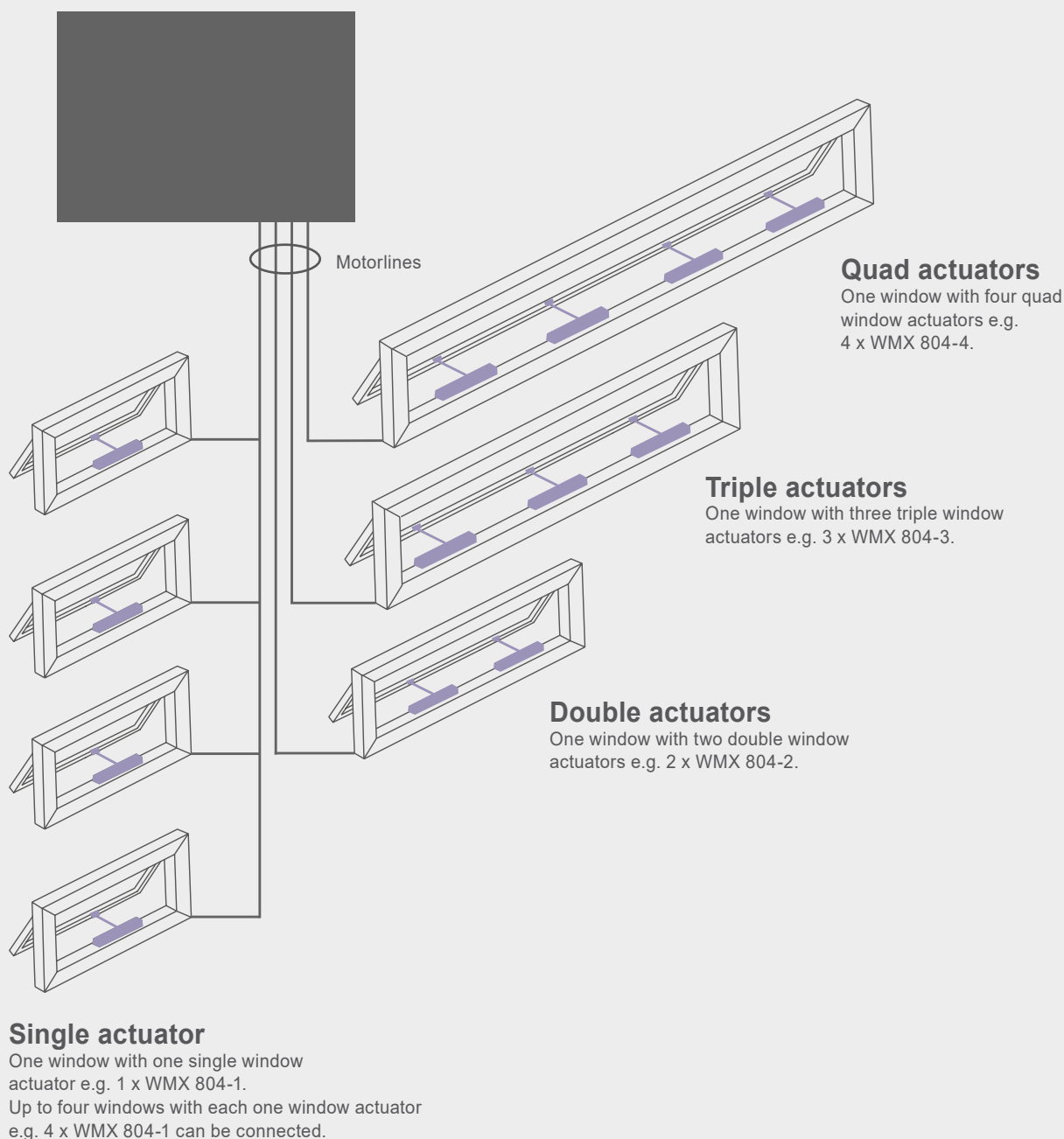
Accessories	Item no.
Ventilation keypad	WSK 100 1161

Combination table		
Window actuator type	Max. number of window actuators which can be connected	
	WLC 16M 040A LON / WLC 16M UL 040A LON	WLC 16M 080B LON / WLC 16M UL 080B LON
WMX 503/504/523/526-n*	16	32
WMX 803/804/823/826-n*	16	16
WMU 836-n*	16	16
WMU 861-n*	8	16
WMU 862-n*	8	8
WMU 863/864-1*	4	4
WMU 882-n*	8	8
WMU 883/884*	4	4
WMU 885-1*	**	**
WMS 306-n*	16	16
WMS 309-n*	16	16
WMS 409-n*	8	8
WMB 811-1x*	4	8
WMB 81n-2x*	8	16
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 16A.		
* Up to two locking actuators / espagnolette actuators WMB 811 or WMB 812 (one single or two double) can be connected to one window and each window must have its own motor line.		
** Please contact WindowMaster		

MotorController LON

Actuator variants on one motor line

1. The MotorController WLC 16M 040A and WLC 16M UL 040A has 4 motor lines and the WLC 16M 080B and WLC 16M 080B has 8 motor lines
 - The cable length and cross section: max voltage drop 2V in the cable, however max distance between the MotorController and the window actuators is 50m
2. When connecting window actuators one should pay attention to:
 - The max current load of the MotorControllers: the max load on the MotorController is 4A per motor line (simultaneously load). The simultaneously max current consumption of all motor lines must not exceed max 16A.
3. Aside from window actuators; espagnolette actuators type WMB 01M/02M (one single or two double actuators) can be connected to the window. When connecting an espagnolette actuator each window must have its own motorline.





WIC 01M / WIZ 01M

io-homecontrol® control unit / remote control



Natural
ventilation



Rated voltage



MotorLink®



io-homecontrol®
product

Application

- WIC 01M: io-homecontrol® control unit for WindowMaster window actuators with MotorLink®
- WIZ 01M: package consisting of the WIC 01M control unit and a WIR 100 remote control
- a perfect fit for small buildings
- 100% compatible with other certified io-homecontrol® products from e.g. VELUX or VELFAC
- easy to install and configure, no installer, no special tools
- easily upgradable to a system consisting of several control units operable by the same remote
- can form part of a fully automated system including up to 200 different io-homecontrol® products
- robust RF-Communication having great reach and a very high level of security

WIC 01M

WIC 01M io-homecontrol® control unit 230/240VAC/24VDC is used for operation of up to two 24VDC WindowMaster MotorLink® actuators with a total simultaneous current consumption of up to 1A.

The control unit has input for rain sensor and is furthermore equipped with current sensing and will in case of overload be interrupted temporarily.

Housing in fire retardant polycarbonate and integrated double isolated transformer.

WIZ 01M

Package consisting of a WIC 01M io-homecontrol® control unit and a WIR 100 one-way remote control.

Specifications

WIC 01M and WIR 100 are io-homecontrol® compatible, i.e. they can communicate with other io-homecontrol® products from other suppliers.

E.g. the WIC 01M can be connected to VELUX and VELFAC window actuators and sun screening products (one actuator and one sun screening product). This is possible via the two way control unit KLR 200 (see list of accessories)

Technical specifications: control unit WIC 01M	
Primary voltage	230 VAC $\pm 10\%$, 50/60Hz, max. 35W
Inrush current on primary side	Max. 10A < 1msec
Secondary voltage	24 VDC, max. 0.8A
Idle consumption	2.4W at 230 VAC (single actuator connected)
Ripple at full load	< 1% (0.3Vpp)
Open circuit voltage	24V $\pm 1V$
Isolation/ground connection	The unit is a double isolated class II product, i.e. ground connection is not required
Operating condition	-5°C - +45°C, max 85% relative humidity, indoor mounting, must not be covered
Switch on duration	ED max. 40% (max. 2min. per 5min.)
Material	Fire retardent polycarbonate housing in compliance with UL 94-5V
Colour	White (NCS 1000)
Size	180 x 110 x 70mm (W x H x D)
Weight	0.530kg
IP rating	IP20
Delivery	Control unit with 1.2m cable and adaptor for UK
Radio frequency band	868-870MHz
Note	We reserve the right to make technical changes

Technical specifications: remote control WIR 100	
Supply voltage	2 x AAA batteries 1,5V
Reach	300m outdoor, 70m indoor
Colour	White
Size	52 x 128 x 18mm (W x H x D)
Radio frequency band	868-870MHz
Delivery	One-way remote control with 2 x AAA batteries 1,5V and mounting bracket
Note	We reserve the right to make technical changes

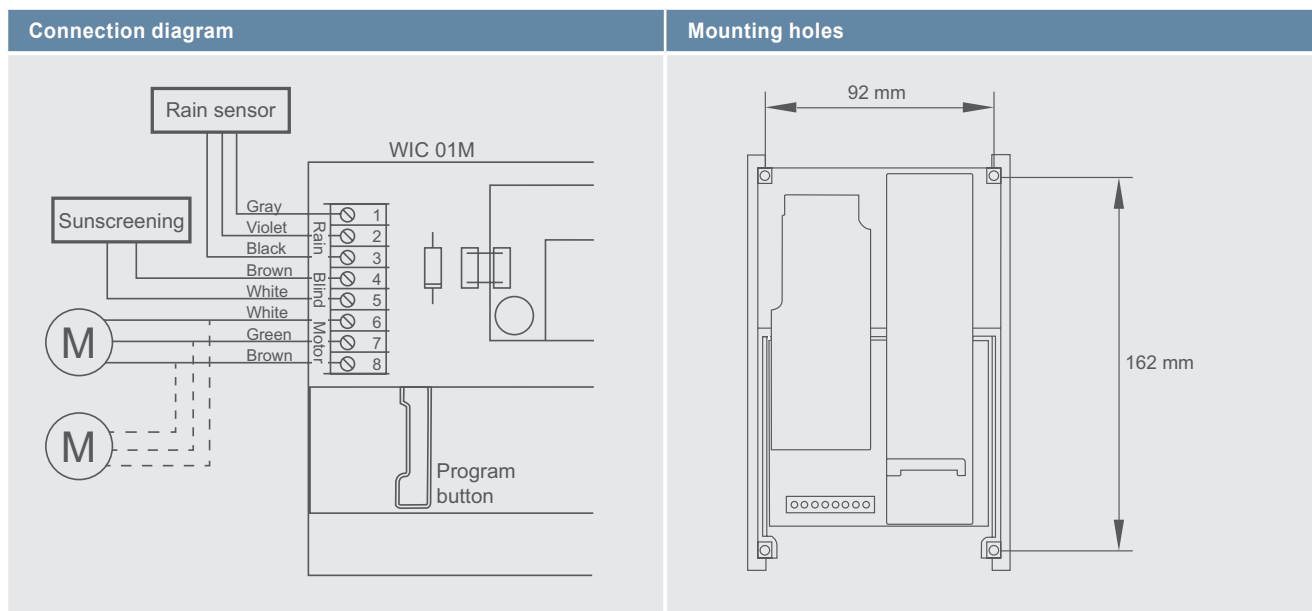
Items	Item no.
io-homecontrol® control unit	WIC 01M 0103
io-homecontrol® control unit WIC 01M and one-way remote control WIR 100	WIZ 01M 0103

WIC 01M / WIZ 01M

io-homecontrol® control unit / remote control

Accessories	Item no.
Remote control – one-way remote control	WIR 100
Remote control – two-way remote control	KLR 200
Rain sensor	WLA 515

WindowMaster actuator type (-1 = single, -2 = double)	Max. number of actuators which can be connected to the control unit	Max. number of locking actuators WMB 01M/02M (single) which aside from the window actuators can be connected to the control unit
WMX 503-1	1	1
WMX 503-2	2	1
WMX 504-1	1	1
WMX 504-2	2	1
WMX 523-1	1	1
WMX 523-2	2	1
WMX 526-1	1	1
WMX 526-2	2	1
WMX 803-1	1	-
WMX 804-1	1	-
WMX 823-1	1	-
WMX 826-1	1	-
WMX 836-1	1	-





WUF 121



WUF 110



WUF 150

WUF 110 / 121 / 150

Actuator interfaces



Natural
ventilation



Rated voltage

Application

- the motor interface is used for individual operation of a $\pm 24V$ DC actuator from a 230V AC control system
- the interface has one phase for opening the window and one phase for closing the window
- to be used with one or more WindowMaster $\pm 24V$ DC actuators with a total power consumption of 1A, 3A or 5A as well as a keypad e.g. WSK 100
- there are three variants of the actuator interface:
WUF 110: max. 1A
WUF 121: max. 3A
WUF 150: max. 5A

WUF 110

Interface for actuators with a total power consumption of max 1A. See table for further information on actuator type and numbers.

The interface can be installed in the window profile next to the WindowMaster window actuator or fitted on the window frame.

The connection to the actuator is made via a 2-pin connector. The 2m or 10m 3-core cable is connected to the 230V main supply via the switch.

WUF 120

Interface for actuators with a total power consumption of max 3A. See table for further information on actuator type and numbers.

The interface can be installed on the wall. No special tools are required.

The 1.3m 3-core cable is connected to the 230V main supply via the switch.

WUF 150

Interface for actuators with a total power consumption of max 5A. See table for further information on actuator type and numbers.

Up to eight interfaces can be connected in parallel to the same switch. Notice the peak current and on side fuse characteristic.

The interface can be installed on the wall or on the ceiling next to the actuators. No special tools are required.

230 Volt and actuator connections are done via screw terminals. The interface are not supplied with cables.

WUF 110 Technical specifications	
Max power consumption	1A – see table below for possible actuator types and numbers
Primary voltage	230V AC, ±10%, 50/60Hz, 50VA
Secondary voltage	24V DC, max. 0,8A
Inrush current on primary side	Max. 10A < 1msec.
Standby consumption	Max. 2W by 230V (no actuators runs)
Open circuit voltage	24V ± 1V by 230V
Ripple by full load	< 1% (0.3Vpp)
Insulation / Earthing	The interface is a double insulated class 2 product, which means it will not require earth connection
Max. switching capacity between both phases	Max. 1μF
Constant power	Yes
Operating conditions	-5°C - +45°C, max. 85% relative humidity, for indoor installation, the interface may not be covered
Switch on duration	ED max. 40% (max. 2min. per 5min.)
Material	Plastic cabinet
Colour	Grey (RAL 7004)
Size	160 x 29 x 42mm (W x H x D)
Weight	350g
IP rating	IP44
Delivery includes	Interface with 2m or 10m net cable and 0.1m cable with nylon connector on the secondary side (24V)
Note	We reserve the right to make technical changes

WindowMaster actuator type	Max. number of window actuators, connected to the WUF 110
	Secondary voltage (max. 27 V)
WML 825*	1
WMX 503-1/504-1/523-1/526-1* WMX 503-2/504-2/523-2/526-2*	2
WMX 803-1/804-1/823-1/826-1*	1
*Aside from a window actuator(s) it is also possible to connect a locking/espagnolette actuator (single) type WMB 801 or WMB 811.	

WUF 121 Technical specifications		
Max power consumption	3A – see table below for possible actuator types and numbers	
Primary voltage	230V AC, ±10%	
Secondary voltage	Nominal Low High	±24V DC, 3A 17-27V DC. 20-30V DC (standard)
Inrush current on primary side	Max. 10A<10msec	
Standby consumption	3W by 230V (no actuators runs)	
Open circuit	30V by 253	
Ripple at full load	10% (2Vpp)	
Insulation / Earthing	The interface is a double insulated class II product, which means it will not require earth connection	
Constant power	Yes	
Operating condition	-5°C - +45°C for indoor installation, the interface may not be covered	
Switch on duration	ED max 40% (max. 2min. per 5min.)	
Material	Housing in shockproof fire retardant polycarbonate in accordance with UL 94-5V	
Colour	White (NCS 1000)	
Size	180 x 110 x 70mm (W x H x D)	
Weight	1.4kg	
IP rating	IP20	
Delivery includes	Actuator interface with 1.3m mains cable (without a cable for connection to the actuators, connection on the terminal block)	
Note	We reserve the right to make technical changes	

WindowMaster actuator type	Max. number of window actuators, connected to the WUF 121	
	Secondary voltage high (standard) (max. 30V)	Secondary voltage low (max. 27V)
WML 825	3	*
WMS 306-1 / 306-2	2	*
WMS 309-1 / 309-2	2	*
WMS 409-1	1	*
WMU 831 / 836 -1 **	3	*
WMU 831 / 836 -2 **	2	*
WMU 842-1 **	1	*
WMU 851 / 861 -1 **	3	*
WMU 851 / 861 -2 **	2	*
WMU 852 / 862 / 863 -1 **	1	*
WMU 882 / 883-1 **	1	*
WMX 503 / 504 / 523 / 526 -1 ** WMX 503 / 504 / 523 / 526 -2 ** WMX 503 / 504 / 523 / 526 -3 **	6	*
WMX 503 / 504 / 523 / 526 -4 **	4	*
WMX 803 / 804 / 823 / 826 -1 **	3	*
WMX 803 / 804 / 823 / 826 -2 **	2	*
WMX 803 / 804 / 823 / 826 -3 **	3	*

* The actuator is not suitable for this voltage.

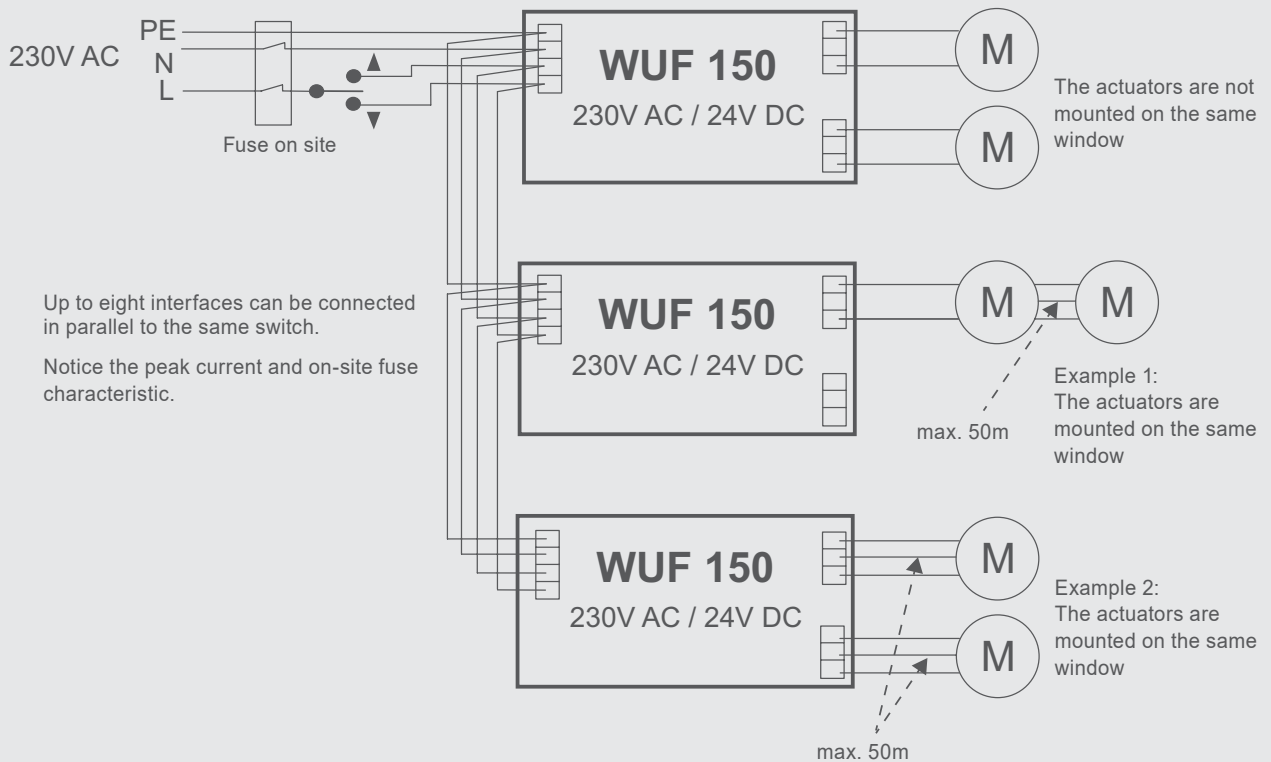
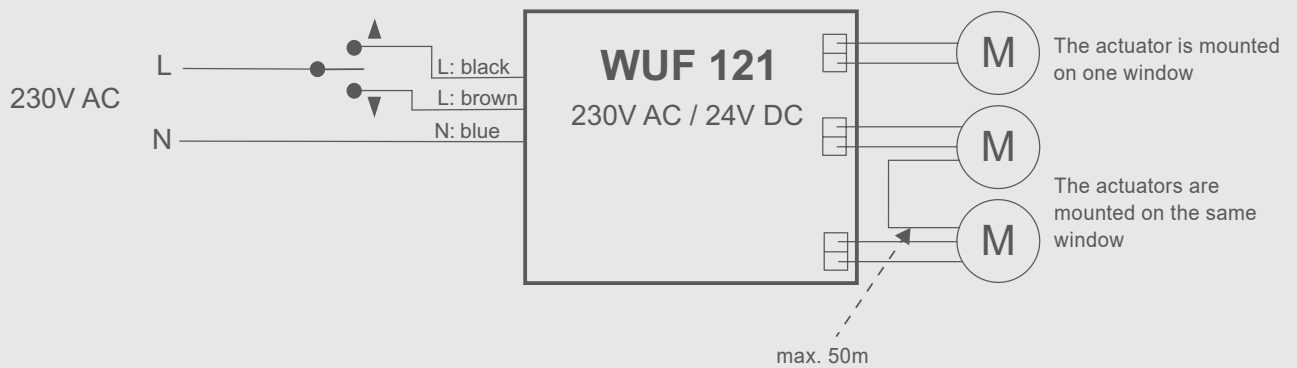
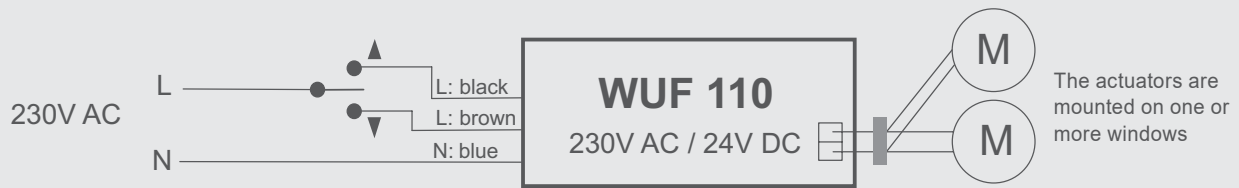
** Aside from a window actuator(s) it is also possible to connect locking/espagnolette actuator(s) type WMB 801 or WMB 811 / WMB 812.

WUF 150 Technical specifications	
Max power consumption	5A – see table below for possible actuator types and numbers
Primary voltage	230V AC, $\pm 10\%$, 50-60HZ, 120VA
Secondary voltage	$\pm 24V$ DC $\pm 2\%$, 5A
Inrush current on primary side	Max. 10A<10msec
Fuse on site	Up to eight interfaces in parallel under one 10A automatic fuse with C, D or K characteristic
Standby consumption	3W by 230V (no actuators runs)
Open circuit	24V by 253
Ripple at full load	Max. 2%
Connection	Primary site: 2.5mm ²
	Secondary site: 4mm ²
Insulation / Earthing	Class I product accordingly EN 60 850-1, why earth connection is required
Constant power	Yes
Operating condition	-5°C - +50°C max. 90% RH, for indoor installation, the interface may not be covered or exposed directly to the sun
Switch on duration	ED max 40% (max. 4min. per 10min.)
Material	ABS
Colour	White (RAL 9010)
Size	208 x 172 x 81mm (W x H x D)
Weight	1.4kg
IP rating	IP30
Delivery includes	Interface with screw terminals for 230 Volt and actuators connections. The interface units are supplied without cables.
Note	We reserve the right to make technical changes

WUF 150 continued	
WindowMaster actuator type	Max. number of window actuators, connected to the WUF 150
WML 825 ¹⁾	5
WMS 306 ¹⁾	4
WMS 309 ¹⁾	4
WMS 409 ¹⁾	2
WMS 306 -1 / -2 ²⁾	4
WMS 309 -1 / -2 ²⁾	4
WMS 409 -1 / -2 ²⁾	2
WMU 831 -1 ²⁾	5
WMU 831 -2 ²⁾	4
WMU 836 -1 / -2 ²⁾	4
WMU 842 -1 / -2 ²⁾	4
WMU 851 / 861 -1 ²⁾	5
WMU 851 / 861 -2 ²⁾	4
WMU 852 / 862 -1 ²⁾	2
WMU 863 -1 ²⁾	1
WMU 864 -1 ³⁾	1
WMU 882 -1 ²⁾	2
WMU 883 -1 ²⁾	1
WMU 884 -1 ³⁾	1
WMU 885 -1 ³⁾	1
WMU 895 -1 ³⁾	1
WMX 503 / 504 / 523 / 526 -1 / -2 ²⁾	10
WMX 503 / 504 / 523 / 526 -3 ²⁾	9
WMX 503 / 504 / 523 / 526 -4 ²⁾	8
WMX 803 / 804 / 823 / 826 -1 ²⁾	5
WMX 803 / 804 / 823 / 826 -2 ²⁾	4
WMX 803 / 804 / 823 / 826 -3 ²⁾	3

1) Aside from a window actuator(s) it is also possible to connect a locking/espagnolette actuator(s) type WMB 801.
2) Aside from a window actuator(s) it is also possible to connect a locking/espagnolette actuator(s) type WMB 801 or WMB 811 / WMB 812.
3) Aside from a window actuator it is also possible to connect locking/espagnolette actuator(s) type WMB 811 / WMB 812.

Connection



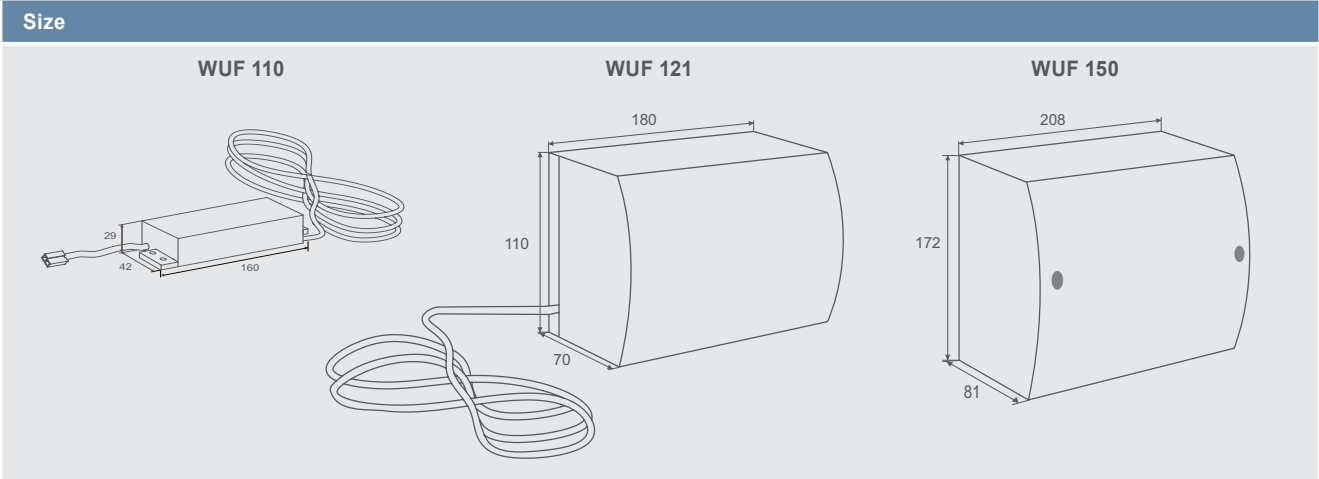
Notice:

When more actuators are mounted on the same window, all the actuators must be of the same variant meaning that all are to be either double, triple or quad.

WUF 110 / 121 / 150

Actuator interfaces

Items	Item no.
Actuator interface 230 VAC / 24 VDC, 1A, 2m cable	WUF 110 01
Actuator interface 230 VAC / 24 VDC, 1A, 10m cable	WUF 110 02
Actuator interface 230 VAC / 24 VDC, 3A	WUF 121
Actuator interface 230 VAC / 24 VDC, 5A	WUF 150



A close-up, slightly out-of-focus photograph of a man with short brown hair and a light beard, wearing a dark blue button-down shirt. He is looking towards the left, out of a large window. The background outside the window is a bright, blurred green landscape with trees. A semi-transparent horizontal band with a light beige background and thin white geometric lines (circles and triangles) runs across the middle of the image, containing five text labels.

DK
Motorer

UK
Actuators

F
Moteurs

D
Antriebe

SE
Motorer



WMX 503 / 503 UL / 803 / 803 UL Chain actuator



Natural
ventilation



Smoke
ventilation

24V

±24V control



MotorLink®



UL certification
– Actuators

1.34

Description

- optimized design for concealed installation in window profiles
- WMX 503 / 503 UL / 803 UL: for comfort ventilation
- WMX 803: for smoke and comfort ventilation
- to be used with all window types
- to be used together with ±24V control units or control units with MotorLink®
- can be used together with espagnolette WMB
- external safety edge can be connected directly to the actuator (actuator version 'E')
- available with and without UL certification:
 - Europe: order without UL certification
 - USA / Canada: order with UL certification (version UL)
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single actuator (-1), double actuator (-2), triple actuator (-3) and quad actuator (-4).

The synchro actuators (-2, -3 and -4) are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Pressure safety function

The risk of entrapment is reduced as the actuators are programmed to reverse if they encounter obstacles when closing. The set points determining when the actuators are to reverse are individually adjustable and can be adjusted after installation using the programming box WAT 100.



Version S



Version E

Opening speeds

One speed:

Actuators connected to ± 24 VDC control units (e.g. WUC) can be run with one speed – see the following page for opening speed.

Three speeds:

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications

Permitted constant pressure load	45N by 10,000 opening and closing movements (up to 150N for special version with shorter chain lengths)
Permitted constant tractive load	WMX 503 / 503 UL: 150N by 10,000 opening and closing movements WMX 803 / 803 UL: 200N by 10,000 opening and closing movements
Locking force	3000N
Permitted short pressure load when chain has run to end stop	100N
Short pressure capacity on motor	Max. 150N (e.g. at the beginning of opening: sticky gasket, ice, wind speed)
Chain opening	50 – 250mm in increments of 10mm, maximum opening depends on the window construction
Opening speed	7mm/s (programmable 3mm/s up to 9.5mm/s)
Window types	Window types and sizes must be agreed with the window supplier and WindowMaster
Window width	Min. 365mm, maximum width depends on the window construction and the number of window actuators
Window height	Min. 400mm, maximum height depends on the window construction and the number of window actuators
Nominal voltage	24 VDC (max. 10% ripple)
Voltage	20 - 36V DC
Max. open-circuit voltage	Max. 36V DC
Current consumption	WMX 503 / 503 UL: max. 0.5A WMX 803 / 803 UL: max. 1A
Operating condition	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4 min. per 10 min)
Material	Lacquered zinc housing with 10mm zinc cromate passivated steel chain and a 100mm cable with fast-in/fast-on connectors for connection to the extension cable WLL
Colour	Grey (RAL 9006)
Size	342 x 30 x 42mm (W x H x D)
Weight	1.0kg
IP rating	IP20 - when surface mounted / IP32 - when concealed
Certification	Actuators with "U" in the article no. are UL certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14 and is supplied with UL approved cables UL STYLE 2464
SHE test	WMX 503 / 503 UL / 803 UL: not SHE tested WMX 803*: tested in accordance with DIN 18232-3, section 3.6 (30 minutes at 300°C) *The construction of the actuator is identical with WMX 802, which has passed the SHE test
Life span	Tested with 10,000 opening and closing movements
Delivery includes	Actuator with 100mm cable with fast-in/fast-on connector for WLL cable
To be ordered separately	WLL extension cable
Note	We reserve the right to make technical changes

Brackets	Item no.
Chain bracket with split	WAB 860
Window fitting for wooden windows	WAB 867
Multi bracket	WAB 801
Chain bracket for integrated WMX	WAB 833
See separate product sheets for further information.	

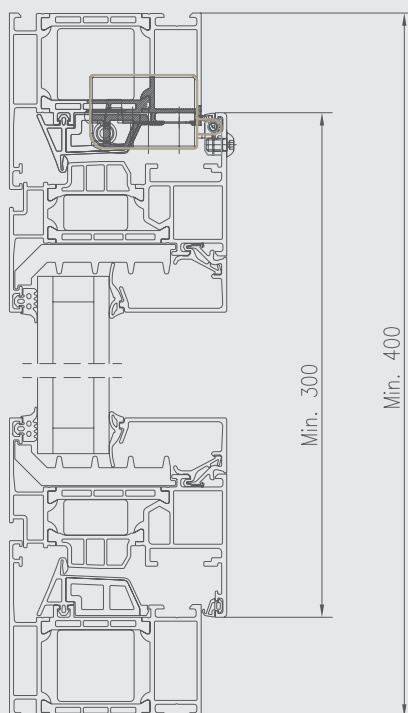
Product code composition <i>(actuator supplied in sealed plastic packaging)</i>						
WMX 503 WMX 803	-n	G	xxx	z	v	3
						Product version: 3
						Certification: 0 = CE, U = CE + UL
						Actuator hardware version: S = standard, E = with connection for pressure safety (E: not UL actuator)
						Chain opening: 50 – 250mm, in increments of 10mm (050 = 50mm)
						Colour: G = grey
						Actuator variant: 1= single, 2 = double, 3 = triple, 4 = quad
Explanation of product code structure:						
WMX 503-2G070E 03		WMX 503 actuator, double synchronisation, grey, 70mm chain opening, with connection for pressure safety, with CE certification, product version 3.				

Product code composition (actuator supplied in sealed plastic packaging and cardboard box)				
WMX 803	n	G	01	03
				Product version: 03
			Market variant: 01 = for Europe	
		Colour: G = grey		
	Actuator variant: 1 = single, 2 = double			
Explanation of product code structure: (the actuator is supplied with 250mm chain opening and standard hardware version "S")				
WMX 803-2G 0103		WMX 803 actuator, double synchronisation, grey, for Europe, product version 3.		

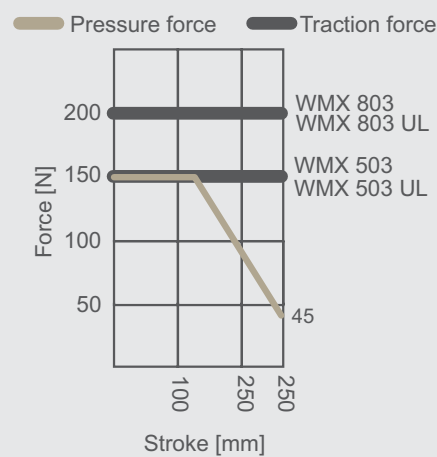
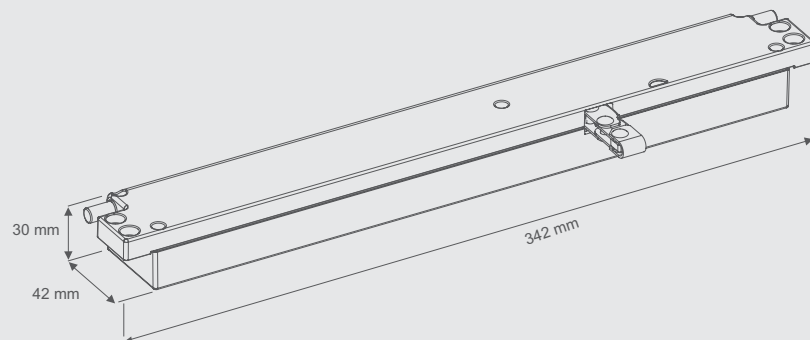
WMX 503 / 503 UL / 803 / 803 UL

Chain actuator

Installation suggestion



For questions regarding the concealed installation – contact WindowMaster





WMX 504 / 504 UL / 804 / 804 UL

Chain actuator



Natural
ventilation



Smoke
ventilation



±24V control



MotorLink®



UL certification
– Actuators

1.41

Description

- designed for surface mounting
- WMX 504 / 504 UL / 804 UL: for comfort ventilation
- WMX 804: for smoke and comfort ventilation
- to be used with all window types
- to be used together with ±24V control units or control units with MotorLink®
- can be used together with espagnolette WMB
- external safety edge can be connected directly to the actuator (actuator version 'E')
- available with and without UL certification:
 - Europe: order without UL certification
 - USA / Canada: order with UL certification (version UL)
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single actuator (-1), double actuator (-2), triple actuator (-3) and quad actuator (-4).

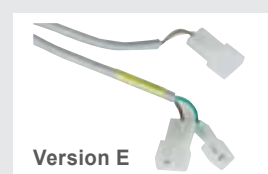
The synchro actuators (-2, -3 and -4) are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Pressure safety function

The risk of entrapment is reduced as the actuators are programmed to reverse if they encounter obstacles when closing. The set points determining when the actuators are to reverse are individually adjustable and can be adjusted after installation using the programming box WAT 100.



Version S



Version E

Opening speeds

One speed:

Actuators connected to ± 24 VDC control units (e.g. WUC) can be run with one speed – see the following page for opening speed.

Three speeds:

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications

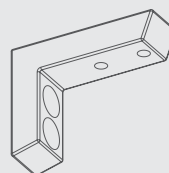
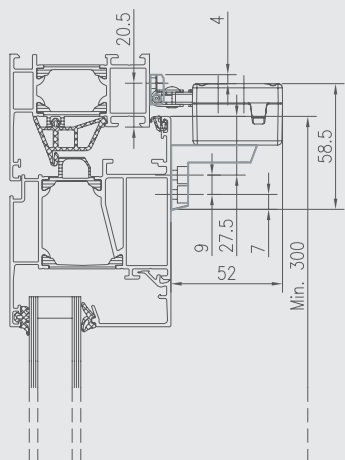
Locking force	3000N
Permitted short pressure load when chain has run to end stop	100N
Short pressure capacity on motor	Max. 150N (e.g. at the beginning of opening: sticky gasket, ice, wind speed)
Chain opening	50 - 250mm in increments of 10mm, maximum opening depends on the window construction
Opening speed	7mm/s (programmable from 3mm/s to 9.5mm/s)
Window types	Window types and sizes must be agreed with the window supplier and WindowMaster
Window width	Min. 365mm, maximum width depends on the window construction and the number of window actuators
Window height	Min. 300 / 400mm (see installation suggestions 1 and 3), maximum height depends on the window construction and the number of window actuators
Nominal voltage	24 VDC (max. 10% ripple)
Voltage	20 - 36 VDC
Max. open-circuit voltage	Max. 36 VDC
Current consumption	WMX 504 / 504 UL: max. 0.5A WMX 804 / 804 UL: max. 1.0A
Operating condition	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. per 10min)
Material	Lacquered zinc housing with 10mm zinc cromate passivated steel chain and a 1.9m 3-core 0.34mm ² cable with fast-in/fast-on connectors for connection to the extension cable WLL WMX 504 / 804: 1.9m grey silicone cable WMX 504 UL / 804 UL: 1.9m UL listed/recognized cable in grey (grey actuator) or white (white actuator)
Colour	Aluminium (RAL 9006) or white (RAL 9010), other RAL colours available at additional price
Size	332 x 29 x 42mm (W x H x D)
Weight	1.0kg
IP rating	IP20 – when surface mounted / IP32 – when concealed
Certification	Actuators with “U” in the article no. are UL certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14 and is supplied with UL approved cables UL STYLE 2464
SHE test	WMX 504 / 504 UL / 804 UL: not SHE tested WMX 804*: tested in accordance with DIN 18232-3, section 3.6 (30 minutes at 300°C) *The construction of the actuator is identical with WMX 802, which has passed the SHE test
Life span	Tested with 10,000 opening and closing movements
Delivery includes	Actuator with 1.9m cable with fast in/fast out connector for WLL cable
To be ordered separately	Brackets and WLL extension cable
Note	We reserve the right to make technical changes

Brackets	Item no.
Chain bracket with tight-fitting bolt, WMX, for sash or frame	WAB 801
Chain bracket with split, for sash or frame	WAB 860
Chain bracket for wooden windows, for sash	WAB 867
Angle bracket for actuator, aluminium RAL 9006	WAB 804 0101
Angle bracket for actuator, white RAL 9010	WAB 804 1101
Z bracket for actuator WMX 504/804/526/826. Sash min. 800mm	WAB 805
Z bracket for actuator WMX 804 – for windows with offset sash min. 15mm	WAB 807
See separate product sheets for further information.	

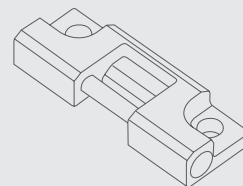
Product code composition <i>(actuator supplied in sealed plastic packaging)</i>						
WMX 504 WMX 804	n	x	xxx	x	x	3
						Product version: 3
						Certification: 0 = CE, U = CE + UL
				Actuator hardware version: S = standard, E = with connection for pressure safety strip <i>(E: not UL actuator)</i>		
			Chain opening: 50 – 250mm, in increments of 10mm (050 = 50mm)			
		Colour: G = grey, W = white				
	Actuator variant: 1= single, 2 = double, 3 = triple, 4 = quad					
Explanation of product code structure						
WMX 504-2G070E 03		WMX 504 actuator, double synchronisation, grey, 70mm chain opening, with connection for pressure safety strips, with CE certification, product version 3				

Product code composition (actuator supplied in sealed plastic packaging and cardboard box)				
The actuator is supplied with 250mm chain opening and actuator hardware version standard 'S'.				
WMX 804	n	x	01	03
			Product version: 03	
			Market variant: 01 = for Europe	
			Colour: G = grey, W = white	
		Actuator variant: 1 = single, 2 = double		
Explanation of product code structure				
WMX 804-2G 0103			WMX 804 actuator, double synchronisation, grey, for Europe, product version 3.	

Installation suggestion 1

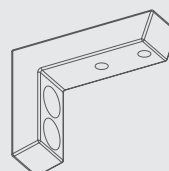
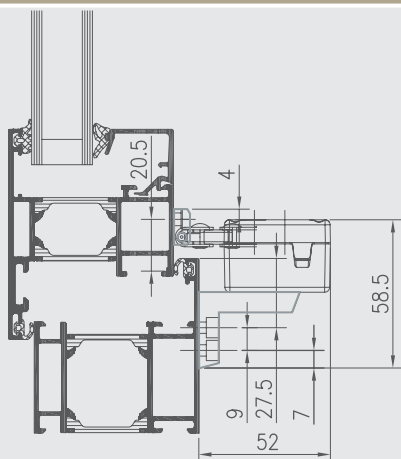


WAB 804 0101

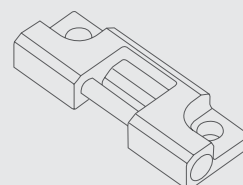


WAB 801

Installation suggestion 2

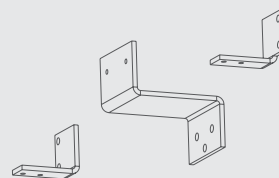
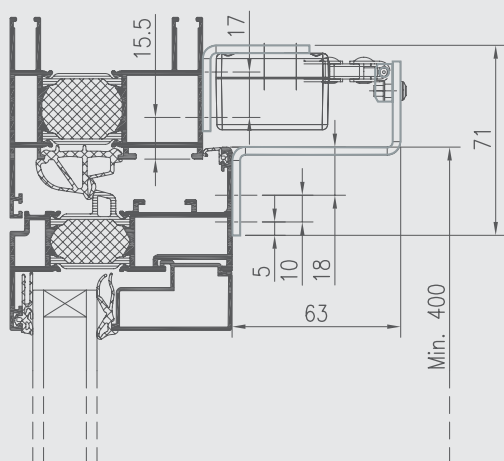


WAB 804 0101

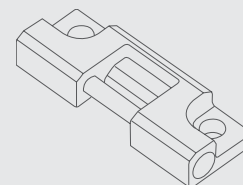


WAB 801

Installation suggestion 3



WAB 805

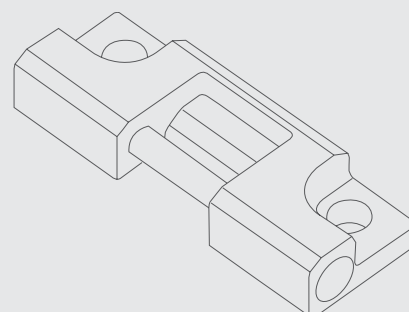
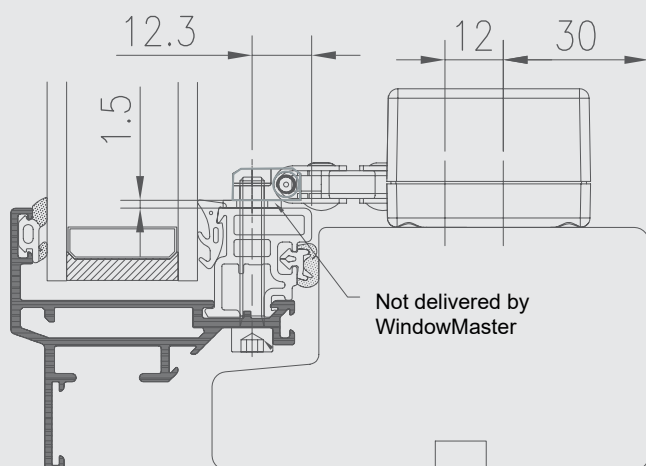


WAB 801

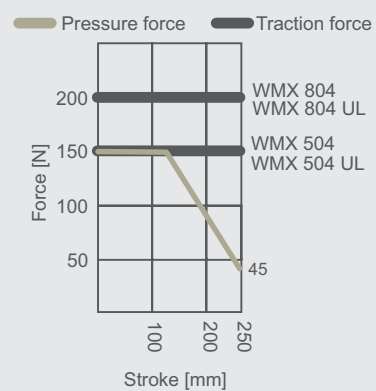
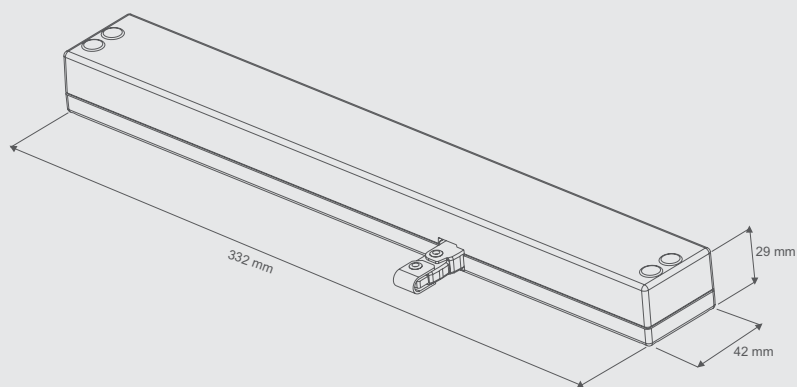
WMX 504 / 504 UL / 804 / 804 UL

Chain actuator

Installation suggestion 4



WAB 801





WMX 523 / 523 UL / 823 / 823 UL

Chain actuator



Natural
ventilation



Smoke
ventilation



±24V control



MotorLink®



UL certification
– Actuators

1.51

Description

- optimized design for concealed installation in window profiles
- WMX 523 for comfort ventilation
- WMX 823 for smoke and comfort ventilation
- to be used with all window types
- to be used together with ±24V control units or control units with MotorLink®
- can be used together with espagnolette WMB
- external safety edge can be connected directly to the actuator (actuator version 'E')
- available with and without UL certification:
 - Europe: order without UL certification (version 0)
 - USA / Canada: order with UL certification (version U)
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single actuator (-1), double actuator (-2), triple actuator (-3) and quad actuator (-4).

The synchro actuators (-2, -3 and -4) are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Pressure safety function

The risk of entrapment is reduced as the actuators are programmed to reverse if they encounter obstacles when closing. The set points determining when the actuators are to reverse are individually adjustable and can be adjusted after installation using the programming box WAT 100.



Version S



Version E

Opening speeds

Actuators connected to ± 24 VDC control units (e.g. WUC) can be run with one speed – see the following page for opening speed.

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.

- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications	
Locking force	3000N
Permitted short pressure load when chain has run to end stop	400N
Short pressure capacity on motor	WMX 523: max. 150N (e.g. at the beginning of opening: Sticky gasket, ice, wind speed) WMX 823: max. 200N (e.g. at the beginning of opening: Sticky gasket, ice, wind speed)
Chain opening	50 – 500mm in increments of 10mm, maximum opening depends on the window construction
Opening speed	WMX 523: 7mm/s / WMX 823: 9mm/s (programmable 3mm/s - 9.5mm/s)
Window type	For vertical or horizontal installation in the frame of inward and outward opening windows, window types and sizes must be agreed with the window supplier and WindowMaster
Window width	Min. 550mm, maximum width depends on the window construction and the number of window actuators
Window height	Min. 700mm, maximum height depends on the window construction and the number of window actuators
Nominal voltage	24V DC (max. 10% ripple)
Voltage	20-36V DC
Max. open-circuit voltage	Max. 36V DC
Current consumption	WMX 523: max. 0.5A / WMX 823: max. 1A
Working condition	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4 min. per 10 min)
Material	Lacquered zinc housing and zinc chromate passivated steel chain and a 100mm cable with fast-in/fast-on connectors for connection to the extension cable WLL
Colour	Aluminium (RAL 9006), other RAL colours available at additional price
Size	517 x 30.5 x 42mm (W x H x D)
Weight	1.3kg
IP rating	Surface mounted: IP 20, concealed: IP 32
Certification	Actuators with "U" in the article no. are L certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14 and is supplied with UL approved cables UL STYLE 2464 (primary for U.S./Canada)
SHE test	WMX 823: In accordance with DIN 18232-3, section 3.6 (30 minutes at 300°C) and part B300 of BS EN 12101-2 WMX 523 / 823U: Not SHE tested
Life span	Tested with 10,000 opening and closing movements
Delivery includes	Actuator with 100mm connection cable with fast-in/fast-on connector for WLL cable
To be ordered separately	Brackets and standard extension cables (WLL)
Note	We reserve the right to make technical changes

Brackets and accessories	Item no.
Chain bracket with tight-fitting bolt, WMX, for sash or frame	WAB 801
Chain bracket for integrated WMX, for sash	WAB 833
Chain bracket with split, for sash or frame	WAB 860
Chain bracket for Schüco systems, for sash	WAB 863
Chain bracket for wooden windows, for sash	WAB 867
Mounting profile for WMX 820 (tested in accordance with EN 12101-2)	WAB 909 0384
See separate product sheets for further information.	

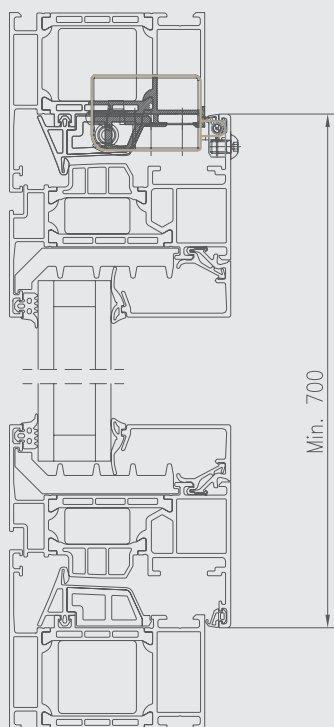
Product code composition <i>(actuator supplied in sealed plastic packaging)</i>						
WMX 523 WMX 823	-n	x	xxx	x	x	3
						Product version: 3
						Certification: 0 = CE, U = CE + UL
						Actuator hardware version: S = standard, E = with connection for pressure safety strip <i>(E: not UL actuator)</i>
						Chain opening: 50 – 500mm, in increments of 10mm (050 = 50mm)
						Colour: G = grey
						Actuator variant: 1 = single, 2 = double, 3 = triple, 4 = quad
Explanation of product code structure						
WMX 523-2G070E 03		WMX 523 actuator, double synchronisation, grey, 70mm chain opening, with connection for pressure safety strip, with CE certification, product version 3.				

Product code composition <i>(actuator supplied in sealed plastic packaging and cardboard box)</i>				
The actuator is always supplied with chain opening 500mm and actuator hardware version standard "S".				
WMX 823	-n	x	01	03
				Product version: 03
			Market variant: 01 = for Europe	
		Colour: G = grey		
	Actuator variant: 1 = single, 2 = double			
Explanation of product code structure				
WMX 823-2G 0103		WMX 823 actuator, double synchronisation, grey, for Europe, product version 3.		

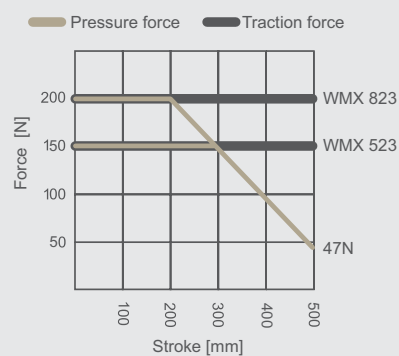
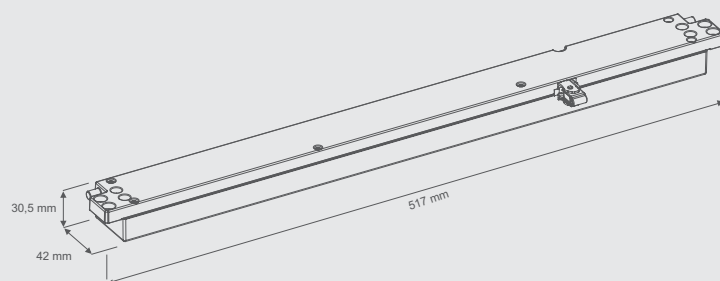
WMX 523 / 523 UL / 823 / 823 UL

Chain actuator

Installation suggestion



For questions regarding the concealed installation – contact WindowMaster





WMX 526 / 526 UL / 826 / 826 UL

Chain actuator



Natural
ventilation



Smoke
ventilation

24V

±24V control



MotorLink®



UL certification
– Actuators

1.61

Description

- designed for surface mounting
- WMX 526 / 526 UL / 826 UL: for comfort ventilation
- WMX 826: for smoke and comfort ventilation
- to be used with top/hung, bottom/hung and turning windows
- to be used together with ±24V control units or control units with MotorLink®
- can be used together with espagnolette WMB
- external safety edge can be connected directly to the actuator (actuator version 'E')
- available with and without UL certification:
 - Europe: order without UL certification
 - USA / Canada: order with UL certification (version UL)
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close function
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single actuator (-1), double actuator (-2), triple actuator (-3) and quad actuator (-4).

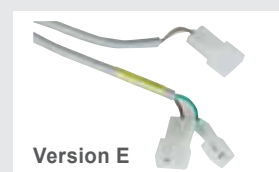
The synchro actuators (-2, -3 and -4) are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Pressure safety function

The risk of entrapment is reduced as the actuators are programmed to reverse if they encounter obstacles when closing. The set points determining when the actuators are to reverse are individually adjustable and can be adjusted also after installation using the programming box WAT 100.



Version S



Version E

Opening speeds

One speed:

Actuators connected to ± 24 VDC control units (e.g. WUC) can run with one speed – see the following page for opening speed.

Three speeds:

Actuators connected to control units with MotorLink® (e.g. WCC) can run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications

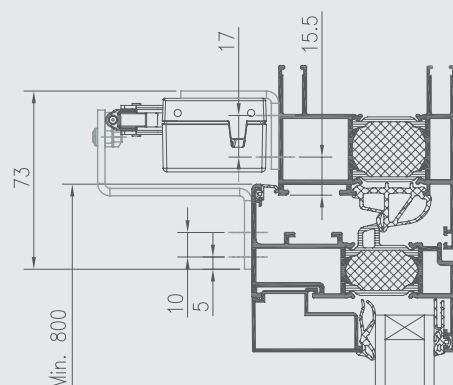
Pressure force	See diagram
Traction force	See diagram
Locking force	3000N
Chain stroke	50 – 500mm in increments of 10mm. Special version up to 600mm possible (only for bottom hung windows) – contact WindowMaster for further information.
Speed	WMX 526 / 526 UL: 7mm/s WMX 826 / 826 UL: 9mm/s (programmable 3 - 9mm/s)
Window type	Tophung, bottomhung and turning windows
Window width	Min. 700mm, maximum width depends on the window construction and the number of window actuators
Window height	Min. 700mm, maximum height depends on the window construction and the number of window actuators
Power consumption	24V DC (max. 10% ripple)
Voltage	20-36V DC
Open-circuit voltage	Max. 36V DC
Current consumption	WMX 526 / 526 UL: max. 0.5A WMX 826 / 826 UL: max. 1A
Operating conditions	-5°C - +74°C. Max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. per 10min)
Material	Lacquered zinc house with 13mm zinc cromate passivated steel chain and 3-core 0,34mm ² cable with fast-in/fast-on connectors for connection to the extension cable WLL WMX 526 / 826: 4.9m grey silicone cable WMX 526 UL / 826 UL: 1.9m UL listed/recognized cable in grey (grey actuator) or white (white actuator)
Colour	Aluminium (RAL 9006) or white (RAL 9010), other RAL colours available at additional price
Size	487 x 30,5 x 42mm (W x H x D)
Weight	1,3kg
IP rating	Surface mounted: IP 20, concealed: IP 32
Certification	Actuators with 'U' in the article no. are UL certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14 and is supplied with UL approved cables UL STYLE 2464
SHE test	WMX 526 / 526 UL / 826 UL: not SHE tested WMX 826: tested in accordance with DIN 18232-3, section 3.6 (30 minutes at 300°C) and part B300 of BS EN 12101-2
Life span	Tested with 10,000 opening and closing movements
Delivery	WMX 526 / 826: actuator with 4.9m cable and fast-in/fast-on connector for WLL cable WMX 526 UL / 826 UL: actuator with 1.9m UL listed/recognized cable
To be ordered separately	Brackets and standard extension cables type WLL
Note	We reserve the right to make technical changes

Item code composition <i>(actuator supplied in sealed plastic packaging)</i>						
WMX 526 WMX 826	n	x	xxx	x	x	3
					Product version: 3	
					Certification: 0 = CE, U = CE + UL	
					Actuator hardware version: S = standard, E = with connection for pressure safety strip <i>(E: not UL actuator)</i>	
					Chain opening: 50 – 500mm, in increments of 10mm (050 = 50mm)	
					Colour: G = grey, W = white	
Actuator variant: 1= single, 2 = double, 3 = triple, 4 = quad						
Explanation of product code structure						
WMX 526-2G070E 03			WMX 526 actuator, double synchronisation grey, 70mm chain opening, with connection for pressure safety strip, with CE certification, product version 3			

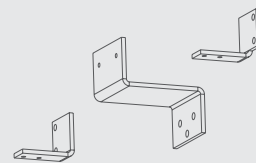
Item code composition <i>(actuator supplied in sealed plastic packaging and cardboard box)</i>				
The actuator is supplied with 500mm chain opening and actuator hardware version standard "S".				
WMX 826	n	x	01	03
			Product version: 03	
			Market variant: 01 = for Europe	
		Colour: G = grey, W = white		
	Actuator variant: 1 = single, 2 = double			
Explanation of product code structure				
WMX 826-2G 0103		WMX 826 actuator, double synchronisation, grey, for Europe, product version 3.		

Accessories	Item no.
Chain bracket with tight-fitting bolt, WMX, for sash or frame	WAB 801
Chain bracket with split, for sash or frame	WAB 860
Chain bracket for wooden windows, for sash	WAB 867
Angle bracket for actuator, grey RAL 9006	WAB 804 0101
Angle bracket for actuator, white RAL 9010	WAB 804 1101
Z bracket for actuator WMX 504/804/524/824/526/826. Sash min 800mm.	WAB 805
Actuator bracket for buttomhung window	WAB 845
Actuator bracket	WAB 824B
See separate product sheets for further information.	

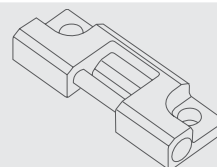
Installation suggestion 1



* The cable cover must face towards the window hinge!

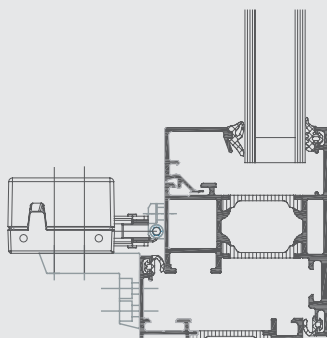


WAB 805



WAB 801

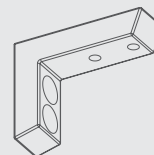
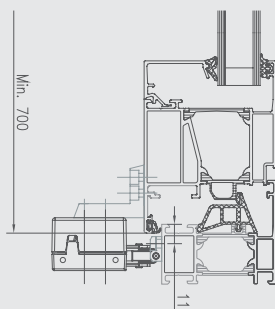
Installation suggestion 2



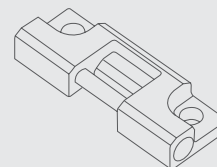
IMPORTANT!

Mount the actuator so the bottom of the housing faces towards the centre of the window

Installation suggestion 3

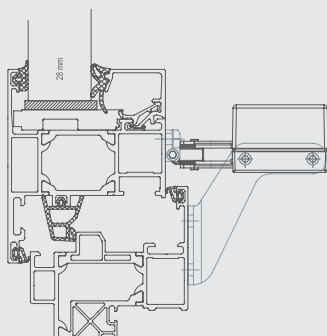


WAB 804 - 0101 grey / -1101 white



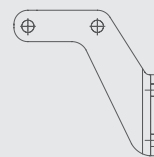
WAB 801

Installation suggestion 4

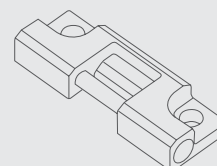


IMPORTANT!

Mount the actuator so the bottom of the housing faces towards the centre of the window



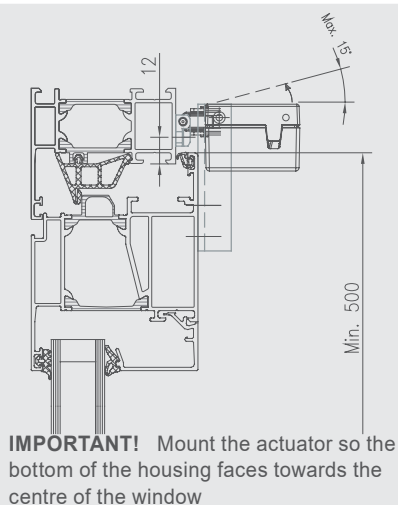
WAB 824B



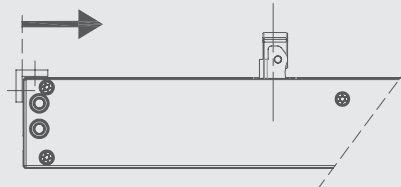
WAB 801

Chain actuator

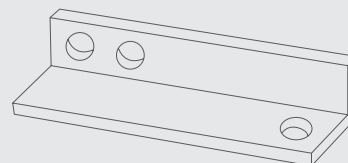
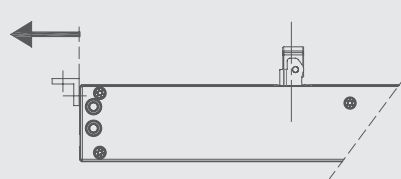
Installation suggestion 5



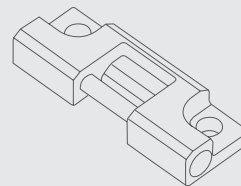
Actuator with limited 15° rotation mounted:



Actuator unlimited rotation mounted:

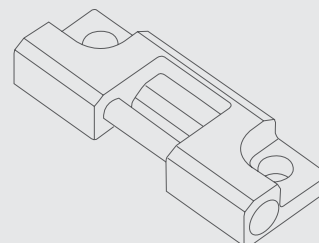
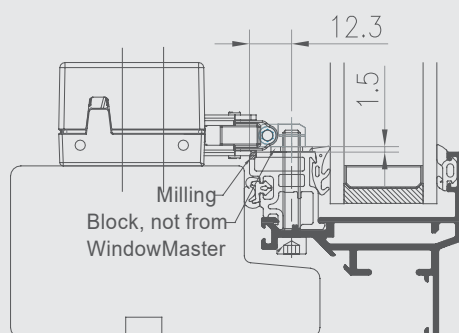


WAB 845



WAB 801

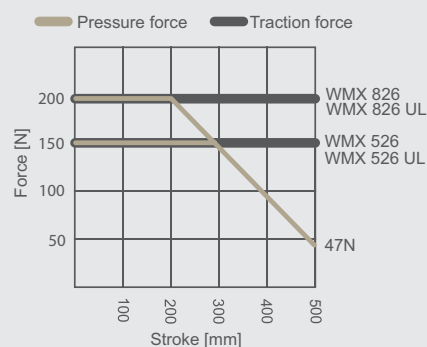
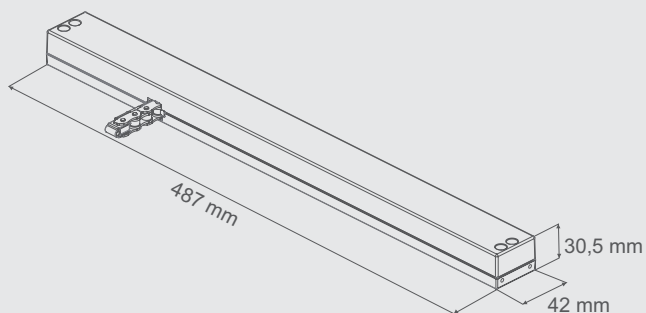
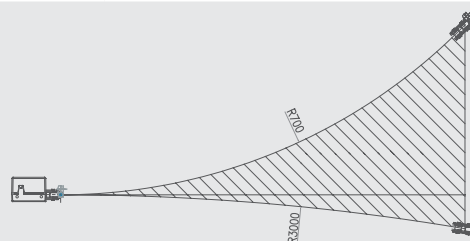
Installation suggestion 6



WAB 801

IMPORTANT!

Mount the actuator so the bottom of the housing (marked with a yellow label) faces towards the centre of the window





WMU 836 Chain actuator 300N



2.11

Description

- designed for surface mounting
- for comfort ventilation
- for smoke ventilation DIN 18232-3
- for smoke ventilation EN 12101-2: The EN-actuators are approved according to EN 12101-2 with selected profiles
- to be used with all window types
- to be used together with $\pm 24V$ control units or control units with MotorLink®
- can be used together with espagnolette WMB
- available with and without UL certification:
 - Europe: order without UL certification
 - USA / Canada: order with UL certification (version UL) – the UL actuator is supplied without cable
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close function
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single actuator (-1), double actuator (-2), triple actuator (-3) and quad actuator (-4).

The synchro actuators (-2, -3 and -4) are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.



Notice: Cable is not supplied when actuators are shipped to USA and Canada.

Opening speeds

The number of window actuator running speeds (up to three) depends on the type of control unit to which the window actuator is connected.

One speed:

Actuators connected to ± 24 VDC control units (e.g. WUC) can be run with one speed – see the following page for opening speed.

Three speeds:

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications

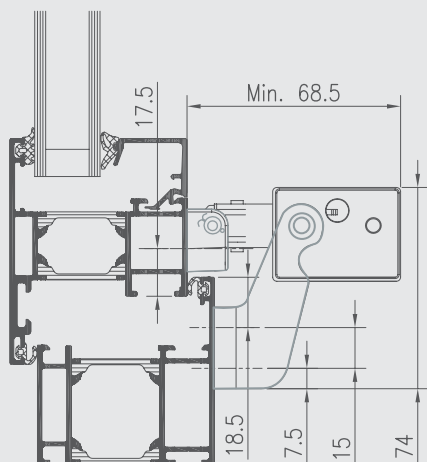
Pressure force	See variant table and stroke / force diagram
Traction force	300N
Locking force	3000N
Chain stroke	400, 600, 800 and 1000mm
Opening speed	11 - 14mm/s
Window types	Tophung, bottomhung, pivot and turning window - vent size should be confirmed with the window supplier and WindowMaster
Nominal voltage	24 VDC (max. 10% ripple)
Voltage	20 - 36 VDC
Open circuit voltage	Max. 36 VDC
Current consumption	Max. 1,0A
Consumption of power	Max. 24W
Operating conditions	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. per 10min)
Material	Anodised aluminium housing with stainless steel chain WMU 836: with 5m grey silicone cable 3-cores 0.75m ² WMU 836 UL: without cable
Colour	Anodized aluminium. RAL colours available at an additional price
Size	34 x 47mm (H x D), length (L) depending on chain stroke – see table
Weight	400mm: 2.2kg, 600mm: 2.6kg, 800mm: 3.0kg, 1000mm: 3.4kg
IP rating	IP32
Fire test	Testet according to DIN 18232-3, part 3.6 (30 min./300°)
EN approval	Approved according to EN 12101-2 section 7.5 with selected profiles – please contact WindowMaster for further information. The EN actuator opens the window completely within 60 sec.
Certification	Actuators with "UL" in the article no. are UL certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14. Primarely used in USA and Canada.
Life span	Tested with 10,000 opening and closing movements
Delivery includes	WMU 836: actuator with 5m cable WMU 836 UL: actuator without cable
To be ordered separately	Actuator bracket and chain bracket
Note	We reserve the right to make technical changes

Description of product code composition				
WMU 836	-n	xx	xxxx	0103
			Product version: 3	
		Stroke: 0400 = 400mm, 0600 = 600mm, 0800 = 800mm, 1000* = 1000mm		
	Certification			
	EN: For actuator approved according to EN 12101-2 the item number must contain EN. Notice: Are supplied with strokes of 400mm, 600mm and 800mm.			
	UL: For UL certified actuator the item number must contain UL.			
Actuator variant: 1 = single, 2 = double, 3 = triple, 4 = quad				
* 1000mm is not supplied as EN-12101-2 approved actuator				
Example of product code				
WMU 836-2 EN 0600 0103		WMU 836 actuator, double synchronisation, EN 12101-2 approved, 600mm chain stroke, product version 3		

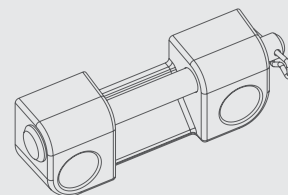
Items	Chain stroke [mm]	Compressive force [N] * (only bottom hung window)	Length (L) [mm] (incl. screws = 18mm)	Item no. Europe	Item no. USA/Canada
Single actuator	400	300	568	WMU 836-1 0400	WMU 836-1 UL 0400
	600	300	668	WMU 836-1 0600	WMU 836-1 UL 0600
	800	0*	768	WMU 836-1 0800	WMU 836-1 UL 0800
	1000	0*	868	WMU 836-1 1000	WMU 836-1 UL 1000
Double actuator	400	300	568	WMU 836-2 0400	WMU 836-2 UL 0400
	600	300	668	WMU 836-2 0600	WMU 836-2 UL 0600
	800	0*	768	WMU 836-2 0800	WMU 836-2 UL 0800
	1000	0*	868	WMU 836-2 1000	WMU 836-2 UL 1000
Triple actuator	400	300	568	WMU 836-3 0400	WMU 836-3 UL 0400
	600	300	668	WMU 836-3 0600	WMU 836-3 UL 0600
	800	0*	768	WMU 836-3 0800	WMU 836-3 UL 0800
	1000	0*	868	WMU 836-3 1000	WMU 836-3 UL 1000
Quad actuator	400 mm	300 N	568 mm	WMU 836-4 0400	WMU 836-4 UL 0400
	600 mm	300 N	668 mm	WMU 836-4 0600	WMU 836-4 UL 0600
	800 mm	0 N*	768 mm	WMU 836-4 0800	WMU 836-4 UL 0800
	1000 mm	0 N*	868 mm	WMU 836-4 1000	WMU 836-4 UL 1000
Actuators approved according to EN 12101-2 – contact WindowMaster					

Accessories	Item no.
Bracket set for frame mounting	WAZ 101
Bracket set for sash mounting	WAZ 102
Chain bracket for WMU 836 / 936	WAB 811
Actuator bracket for WMU 836 / 936	WAB 812
Actuator bracket for WMU 836	WAB 824
Z-Bracket for inward opening windows	WAB 825
Actuator bracket for WMU 836 / 936 / 866	WAB 836A
Actuator bracket for WMU 836 / 936 / 866	WAB 836B
Chain bracket for WMU 836 / 936	WAB 836E
Actuator bracket for WMU 836 – sash mounting	WAB 836P
Shortening electronically of chain	WKK
See separate product sheets for further information.	

Installation suggestion 1

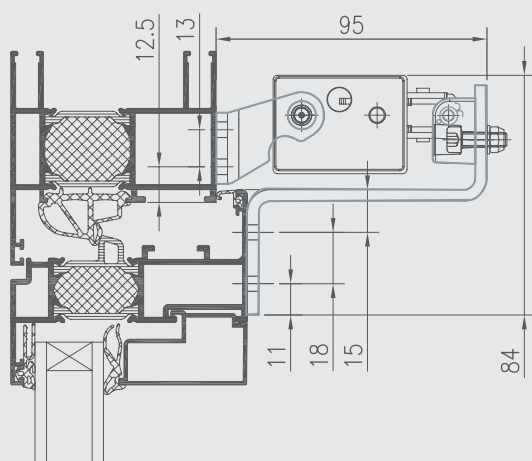


WAB 836B

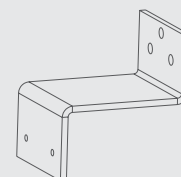


WAB 836E

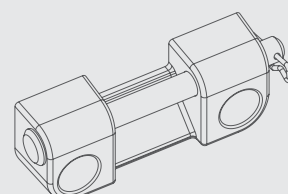
Installation suggestion 2



WAB 824

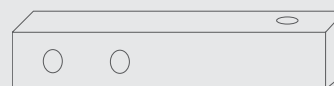
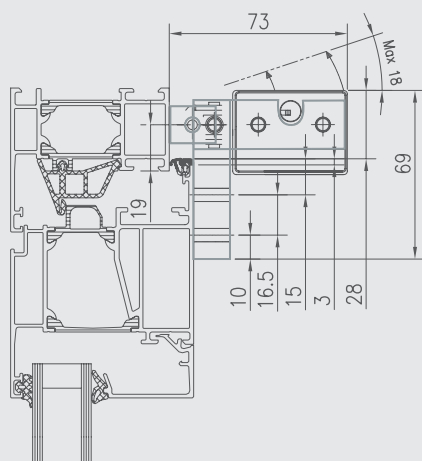


WAB 825

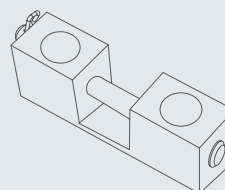


WAB 836E

Installation suggestion 3

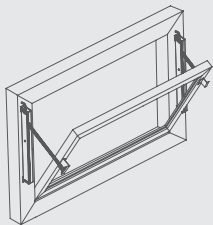
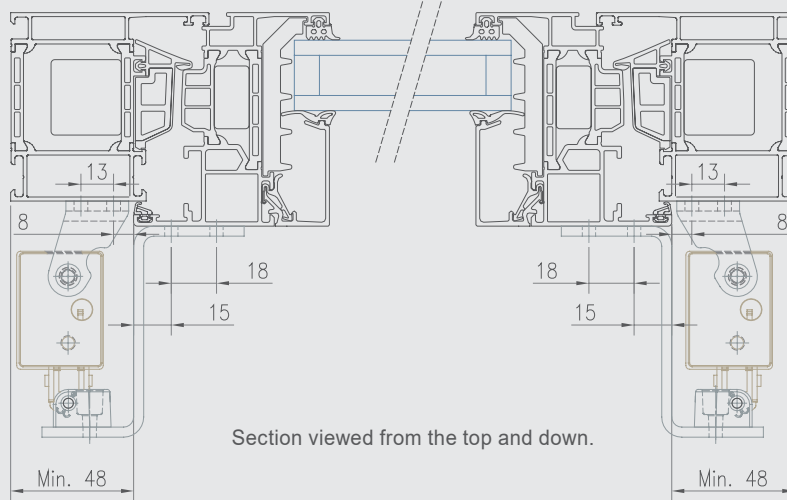


WAB 812



WAB 811

Installation suggestion 4 (frame mounting)

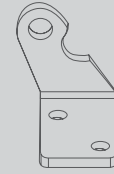


Solution:

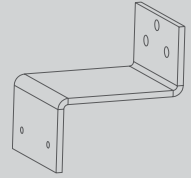
2 x actuator WMU 836-2 xxxx
1 x bracket set WAZ 101.

The actuator cable exit has to turn upward.

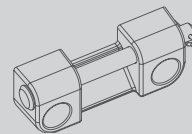
Bracket set WAZ 101 consists of:



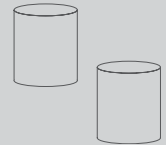
2 x WAB 824



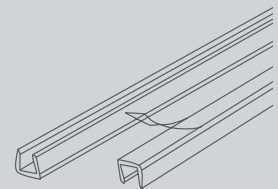
2 x WAB 825



2 x WAB 836E

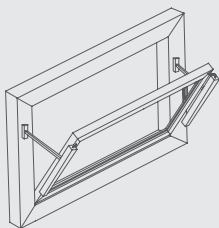
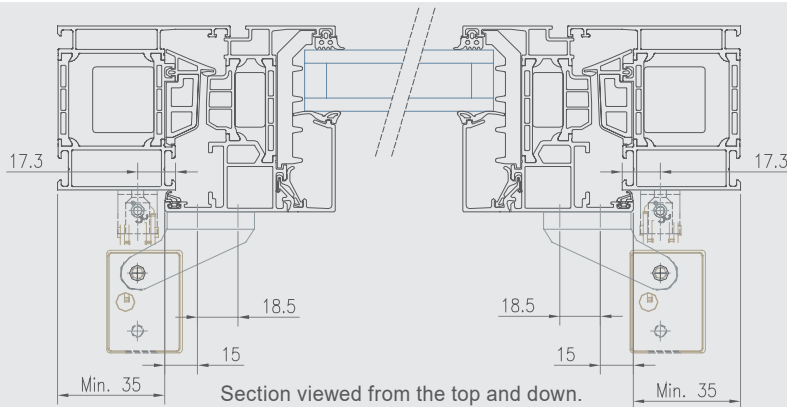


2 x brass tubes



2 x cable channels 1m

Installation suggestion 5 (sash mounting)

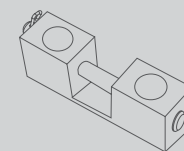


Solution:

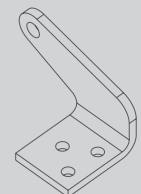
2 x actuators WMU 836-2 xxxx
1 x bracket set WAZ 102.

The actuator cable exit has to turn upward.

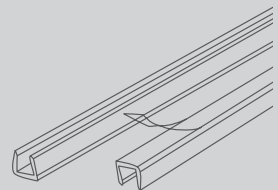
Bracket set WAZ 102 consists of:



2 x WAB 811



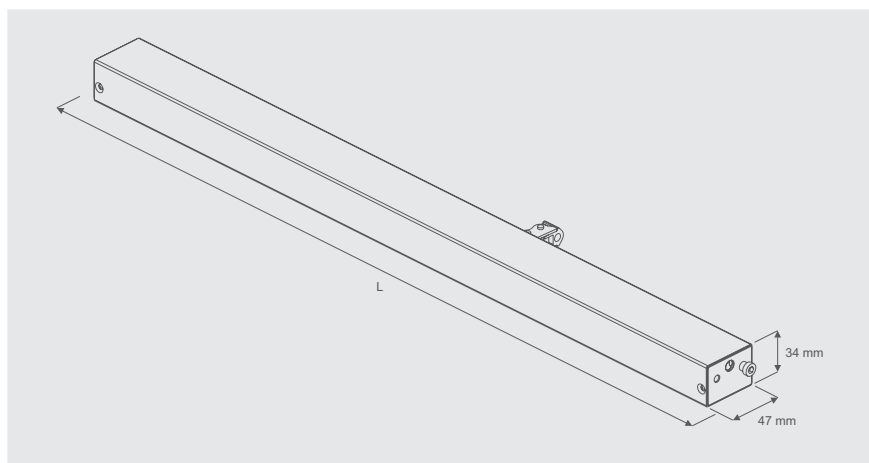
2 x WAB 836P



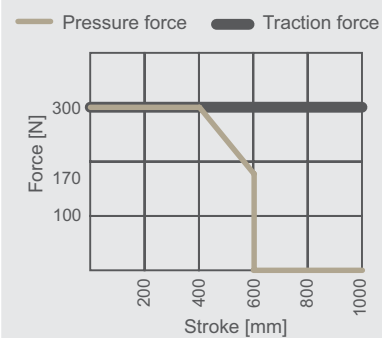
2 x cable channels på 1m

WMU 836

Chain actuator 300N



L = Length (incl. screws) – see table of items





WMD 820 Door actuator 250N



Smoke ventilation
B300

24V



MotorLink®

2.12

Description

- Designed for doors and surface mounting
- For replacement air for windows and doors
- Can be used together with espagnolette WMB
- Synchronization of up to two actuators – no need for an external synchronization module
- Genuine position feedback when using control unit with MotorLink®
- Soft close function
- The electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box (also after installation)
- Built-in electronic load switch-off/end stop
- Electronic actuator with micro controller
- The actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- Easy mounting
 - Output for electronic lock max 1A
 - Potential free feedback for fully open (special version)

Actuator variants

The actuator is available in several different versions inward or outward opening versions: Single actuator (-1) and double actuator (-2).

The synchro actuator (-2) is equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position.

On large windows up to two actuators can be mounted on the same window – with no need for an external synchronization module.

Opening speeds

The number of actuator running speeds depends on the type of control unit to which the actuator is connected.

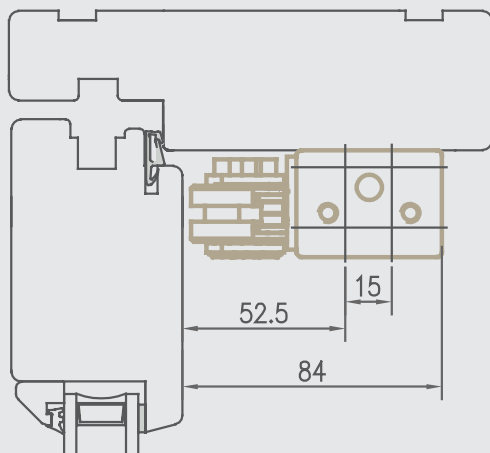
Technical specifications	
Traction force on the arm roller	250N
Locking force	2000N
Maximum opening angle	OU 90° / IN 98°
Opening speed	< 60 sec
Window & Door types	Side hung windows & doors – vent or door size should be confirmed with both the window supplier and WindowMaster
Nominal voltage	24 VDC (max. 10% ripple)
Voltage	20 - 36 VDC
Open circuit voltage	Max. 36 VDC
Potential free output	F version, 18Ω, max 100 mA
Current consumption	Max. 1A
Electronic lock	S version, max 1A
Consumption of power	Max. 24W
Operating conditions	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. per 10min)
Material	Anodised aluminium housing with stainless steel chain With 5m grey silicone cable 5-cores 0.34m²
Colour	Anodized aluminium. RAL colours available at an additional price
Size	34 x 76mm (H x D), length (L) 668mm – (688mm incl. brackets) / (D = 81mm incl. arm roll)
Weight	3.5kg
IP rating	IP32
Fire test	Tested according to B300, part 3.6 (30 min. / 300°)
Certification	B300 tested according to EN 12101-2
Life span	Tested with 10,000 opening and closing movements
Delivery includes	Actuator with 5m cable
To be ordered separately	Brackets
Note	We reserve the right to make technical changes

Description of product code composition						
WMD 820	-nG	XX	X	X	01	
					Product version: 1	
				S= Standard, E= Entrapment, F= Feedback		
				0= No delay, 1= Short delay, 2= Long delay		
			Inward (IN) or Outward (OU)			
			Actuator variant: 1 = single, 2 = double & G = grey			
Example of product code						
WMD 820-1G IN 1S 01			WMD 820 actuator, single, grey, IN inwards, short delay, standard, product version 1			

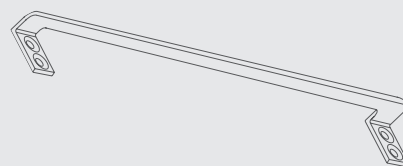
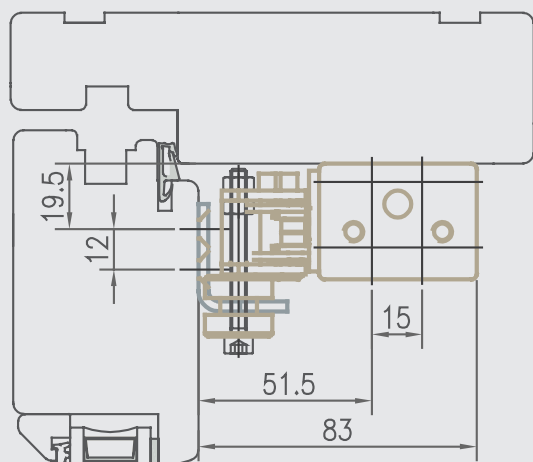
Items	Maximum opening angle	Initial pressure force [N]	Length (L) [mm] without brackets	Item no.
1 motor on a door				
Single actuator	98°	250	668	WMD 820-1G IN 1S 01
				WMD 820-1G IN 2S 01
				WMD 820-1G IN 1E 01
				WMD 820-1G IN 1F 01
	90°			WMD 820-1G OU 1S 01
				WMD 820-1G OU 2S 01
				WMD 820-1G OU 1E 01
				WMD 820-1G OU 1F 01
First motor on a double door (sequential control)				
Single actuator	98°	250	668	WMD 820-2G IN 1S 01
	90°			WMD 820-2G OU 1S 01
Second motor on a double door (sequential control)				
Single actuator	98°	250	668	WMD 820-2G IN 2S 01
				WMD 820-2G IN 2E 01
				WMD 820-2G IN 2F 01
	90°			WMD 820-2G OU 2S 01
				WMD 820-2G OU 2E 01
				WMD 820-2G OU 2F 01
2 motors on a window (synchro)				
Double actuator	98°	250	668	WMD 820-2G IN 0S 01
				WMD 820-2G IN 0E 01
				WMD 820-2G IN 0F 01
	90°			WMD 820-2G OU 0S 01
				WMD 820-2G OU 0E 01
				WMD 820-2G OU 0F 01
Actuators approved according to EN 12101-2 – contact WindowMaster				

Accessories	Item no.
Actuator bracket for WMD 820	WDB 820B
Actuator bracket inwards for WMD 820	WAB 825
Actuator bracket outwards for WMD 820	WDB 820M
Actuator bracket Z-bracket inwards for WMD 820	WDB 820L
Actuator bracket Z-bracket inwards for WMD 820	WDB 820R
See separate product sheets for further information.	

Installation suggestion 1

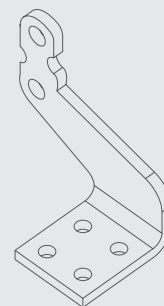
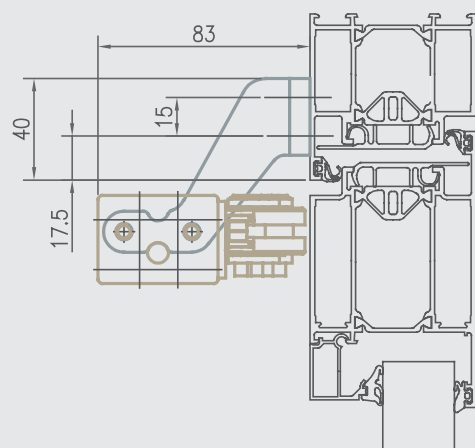


Installation suggestion 2



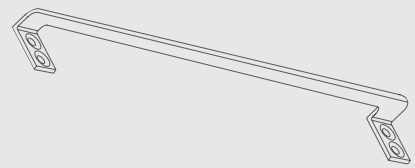
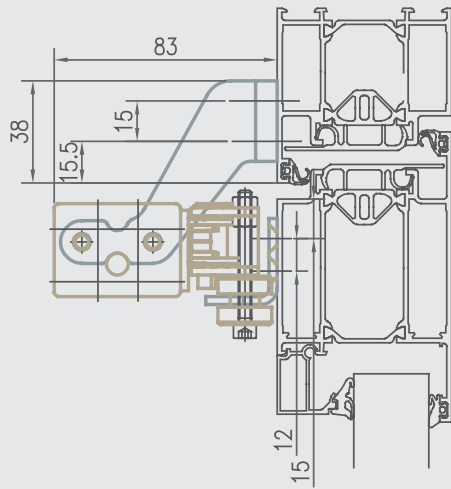
WDB 820M

Installation suggestion 3

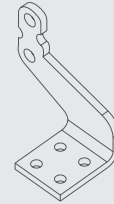


WDB 820B

Installation suggestion 4

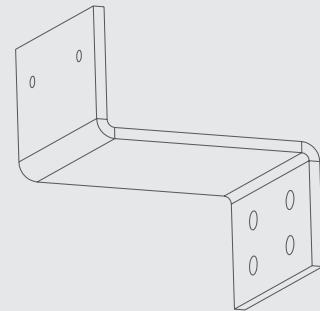
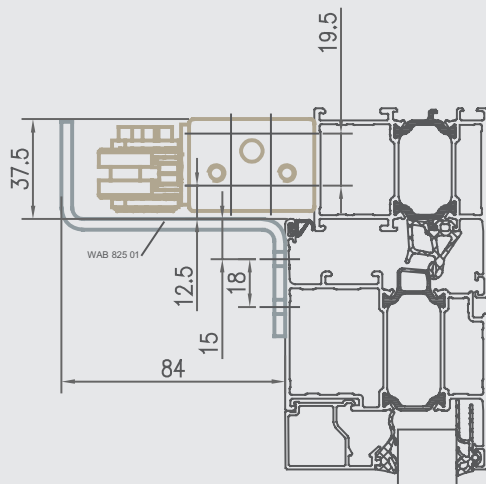


WDB 820M



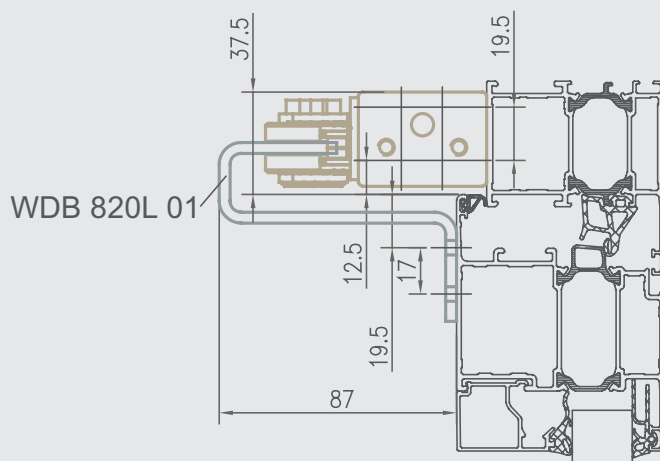
WDB 820B

Installation suggestion 5

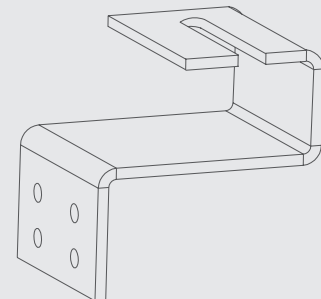
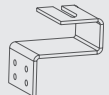


WAB 825

Installation suggestion 6



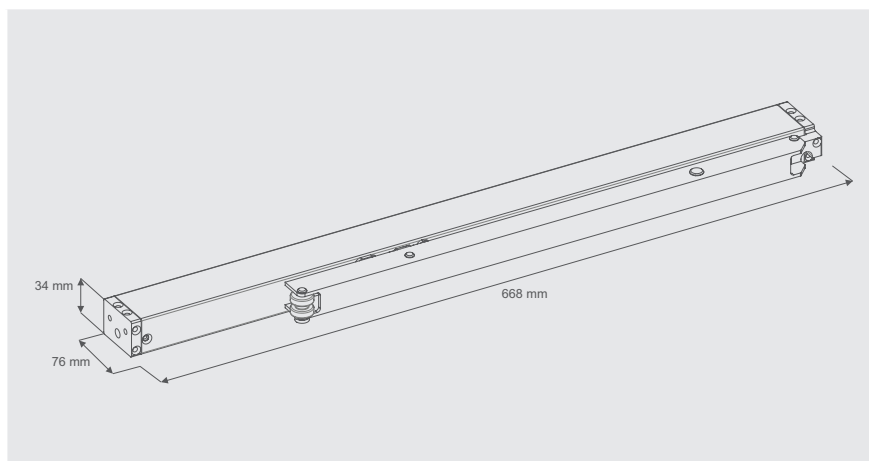
WDB 820R



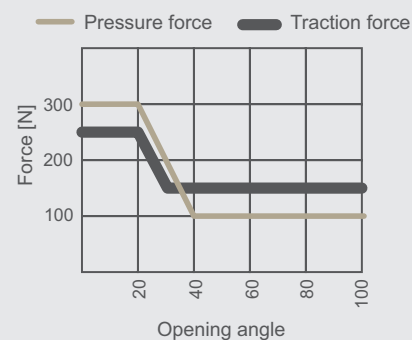
WDB 820L

WMD 820

Door actuator 250N



L = Length (incl. screws) – see table of items





WMU 836 03

Chain actuator for VELUX window



Natural
ventilation



Smoke
ventilation

2.20

Application

- chain actuator for VELUX windows
- for smoke and comfort ventilation
- chain stroke 600mm

24V DC chain actuator for VELUX top hung, tilt-and-swing windows GPL and GPU from size M06 and VK from size 045.

The housing and the chain is protected against corrosion.

Special technical features

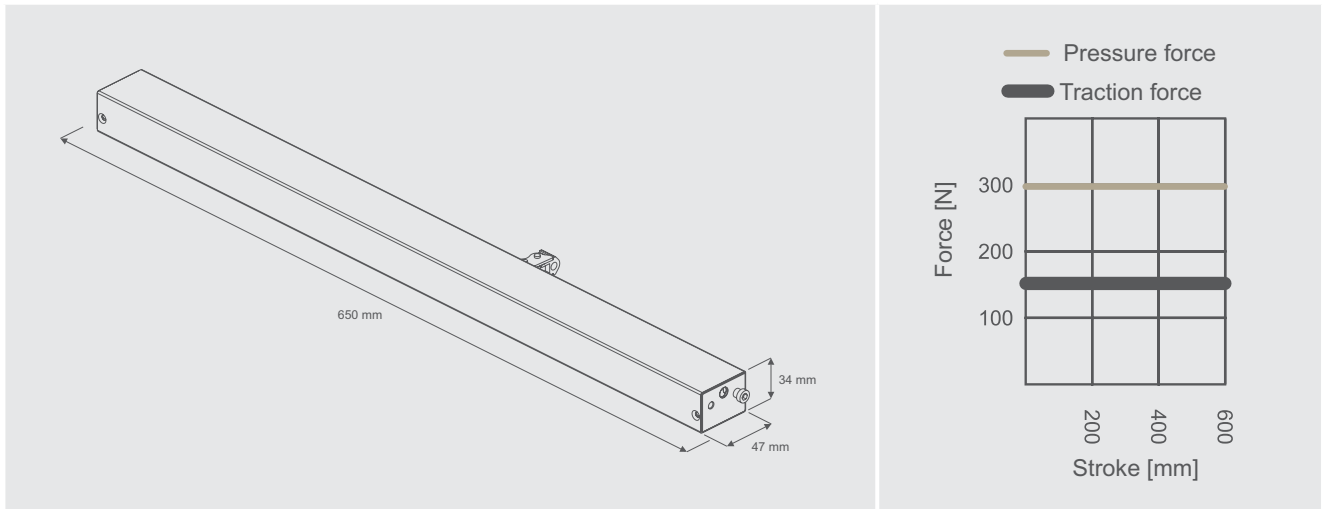
- built-in electronic load switch off
- chain stroke 600mm
- aluminium housing with stainless steel chain

WMU 836 03

Chain actuator for VELUX window

Technical specifications	
Force (pressure/tractive)	150N / 300N
Chain stroke	600mm
Opening speed	11mm/s (programmable up to 14mm/s)
Nominal voltage	24V DC (max. 25% ripple)
Voltage	20 - 36V DC
Open-circuit voltage	max. 36V DC
Current consumption	max. 1A
Operating conditions	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. per 10min.)
Material	anodised aluminium housing with stainless steel chain
Colour	anodized aluminium (EV1)
Size	650 x 34 x 47mm (W x H x D)
Weight	2.6kg
IP rating	IP32
Fire test	testet according to DIN 18232-3, part 3.6 (30 min./300°)
Life span	tested with 10,000 opening and closing movements
Delivery includes	actuator with 2m cable, chain bracket WAB 836E, actuator bracket WAB 836B 01 and cover
Note	we reserve the right to make technical changes.

Item	Item no.
Chain actuator for VELUX window	WMU 836 03





WMU 831 / 851 / 852

Chain actuator up to 500N



Natural
ventilation



Smoke ventilation
B300

24V

±24V control



MotorLink®



TrueSpeed™

2.25

Description

- Designed for surface mounting
- For comfort ventilation
- To be used with all window types
- To be used together with $\pm 24V$ control units or control units with MotorLink®
- Can be used together with espagnolette WMB
- Available with and without cable:
 - Europe: S = cable/ Z = no cable
 - USA / Canada: Order without cable = Z
- Synchronization of up to four window actuators – no need for an external synchronization module
- Genuine position feedback and three speeds when using control unit with MotorLink®
- Soft close function
- The electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible to do after installation
- Built-in electronic load switch-off/end stop
- Electronic actuator with micro controller
- The actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- Easy mounting

Actuator variants

The actuator is available in four different versions with or without cable:
single actuator (-1), double actuator (-2), triple actuator (-3) and quad actuator (-4).
The synchro actuators (-2, -3 and -4) are equipped with a

patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Opening speeds

The number of window actuator running speeds (up to three) depends on the type of control unit to which the window actuator is connected.

One speed:

Actuators connected to $\pm 24 VDC$ control units (e.g. WUC) can be run with one speed – see the following page for opening speed.

Three speeds:

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- Automatically control speed – actuators run slowly and almost soundlessly.
- Manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.



Notice: Cable is not supplied when actuators are shipped to USA and Canada.

Technical specifications	
Pressure force	See variant table and stroke / force diagram
Traction force	300N
Locking force	3000N mounting front otherwise 2000N
Chain stroke	400, 500, 600 mm depending on variant
Opening speed	7 - 12mm/s
Window types	Tophung, bottomhung, pivot and turning window – vent size should be confirmed with the window supplier and WindowMaster
Nominal voltage	24 VDC (max. 10% ripple)
Voltage	20 - 36 VDC
Open circuit voltage	Max. 36 VDC
Current consumption	Min. 1A or Max. 2A depending on variant
Consumption of power	1A = Max. 24W & 2A = Max. 48W
Operating conditions	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. per 10min)
Material	Aluminium housing with steel chain WMU 831 / 851 / 852 S: With 5m grey silicone cable 3-cores 0.75m ² WMU 831 / 851 / 852 Z: Without cable
Colour	Aluminium RAL 9006. RAL colours available at an additional price
Size	42 x 57 x 605 mm (H x D x L)/(L= 605 + 18 = 623 mm incl. screws)
Weight	400mm: 2.2kg, 500mm: 2.4kg, 600mm: 2.6kg
IP rating	IP32
Fire test	B300 tested according to EN 12101-2:2003
Life span	Tested with 10,000 opening and closing movements
Delivery includes	WMU 831 / 851 / 852 S: Actuator with 5m cable and plug WMU 831 / 851 / 852 Z: Plug incl. but actuator without cable
To be ordered separately	Actuator, motor and chain bracket
Note	We reserve the right to make technical changes

Description of product code composition				
WMU 831 WMU 851 WMU 852	-n	G	xxx x	01
			Product version: 1	
			Stroke: 0400 = 400mm, 0500 = 500mm, 0600 = 600mm & Z = Zero cable/ S = Standard cable	
		Grey		
	Actuator variant: 1 = single, 2 = double, 3 = triple, 4 = quad			
Example of product code				
WMU 852-2G 600S 01		WMU 852 actuator, double synchronisation, Grey, S incl. cable, 600mm chain stroke, product version 1		

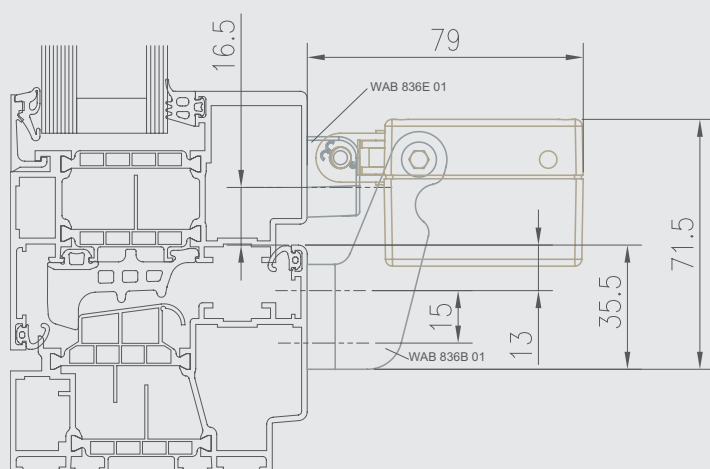
Items 1A<60sec	Chain stroke [mm]	Pressure force [N] * (only bottom hung window)	Length (L) [mm] (incl. screws = 18mm)	Item no. with cable	Item no. without cable
Single actuator	400	300	623	WMU 831-1G 400S 01	WMU 831-1G 400Z 01
	500			WMU 831-1G 500S 01	WMU 831-1G 500Z 01
	600			WMU 831-1G 600S 01	WMU 831-1G 600Z 01
Double actuator	400			WMU 831-2G 400S 01	WMU 831-2G 400Z 01
	500			WMU 831-2G 500S 01	WMU 831-2G 500Z 01
	600			WMU 831-2G 600S 01	WMU 831-2G 600Z 01
Triple actuator	400			WMU 831-3G 400S 01	WMU 831-3G 400Z 01
	500			WMU 831-3G 500S 01	WMU 831-3G 500Z 01
	600			WMU 831-3G 600S 01	WMU 831-3G 600Z 01
Quad actuator	400			WMU 831-4G 400S 01	WMU 831-4G 400Z 01
	500			WMU 831-4G 500S 01	WMU 831-4G 500Z 01
	600			WMU 831-4G 600S 01	WMU 831-4G 600Z 01

Items 1A>60sec	Chain stroke [mm]	Pressure force [N] * (only bottom hung window)	Length (L) [mm] (incl. screws = 18mm)	Item no. with cable	Item no. without cable
Single actuator	400	500	623	WMU 851-1G 400S 01	WMU 851-1G 400Z 01
Double actuator				WMU 851-2G 400S 01	WMU 851-2G 400Z 01
Triple actuator				WMU 851-3G 400S 01	WMU 851-3G 400Z 01
Quad actuator				WMU 851-4G 400S 01	WMU 851-4G 400Z 01

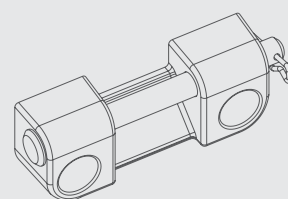
Items 2A<60sec	Chain stroke [mm]	Pressure force [N] * (only bottom hung window)	Length (L) [mm] (incl. screws = 18mm)	Item no. with cable	Item no. without cable
Single actuator	400	500	623	WMU 852-1G 400S 01	WMU 852-1G 400Z 01
	500			WMU 852-1G 500S 01	WMU 852-1G 500Z 01
	600			WMU 852-1G 600S 01	WMU 852-1G 600Z 01
Double actuator	400			WMU 852-2G 400S 01	WMU 852-2G 400Z 01
	500			WMU 852-2G 500S 01	WMU 852-2G 500Z 01
	600			WMU 852-2G 600S 01	WMU 852-2G 600Z 01
Triple actuator	400			WMU 852-3G 400S 01	WMU 852-3G 400Z 01
	500			WMU 852-3G 500S 01	WMU 852-3G 500Z 01
	600			WMU 852-3G 600S 01	WMU 852-3G 600Z 01
Quad actuator	400			WMU 852-4G 400S 01	WMU 852-4G 400Z 01
	500			WMU 852-4G 500S 01	WMU 852-4G 500Z 01
	600			WMU 852-4G 600S 01	WMU 852-4G 600Z 01

Accessories	Item no.
Actuator bracket for WMU 852/ 851/ 831	WAB 852A
Actuator bracket for WMU 852/ 851/ 831	WAZ 852i
Z-Bracket for inward opening windows	WAB 827
Actuator bracket for WMU 836 / 852 / 851 / 831 / 936 / 866	WAB 836B
Actuator bracket for WMU 836 / 852 / 851 / 831/ 936 / 866	WAB 836H
Chain bracket for WMU 836 / 852 / 851 / 831 / 936	WAB 836E
See separate product sheets for further information.	

Installation suggestion 1

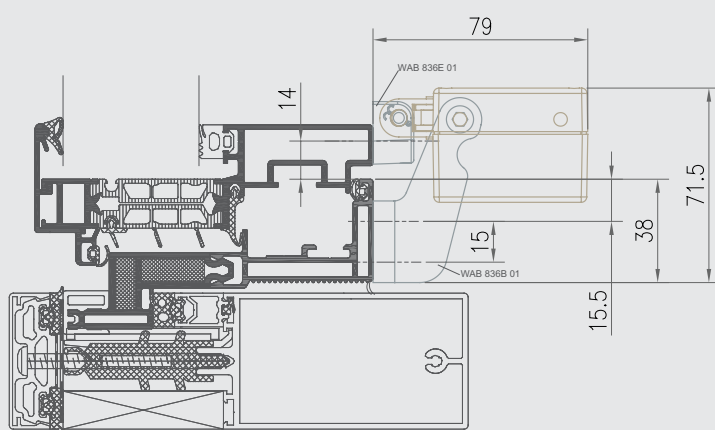


WAB 836B

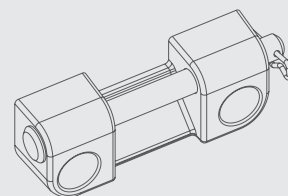


WAB 836E

Installation suggestion 2

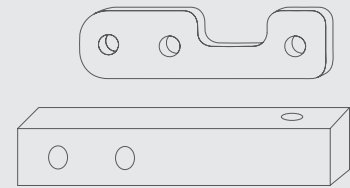
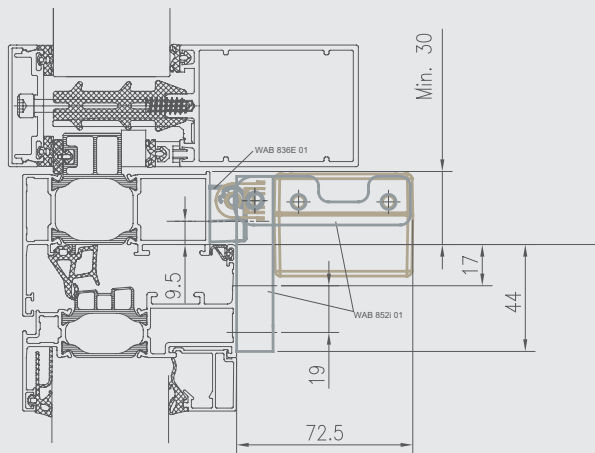


WAB 836B

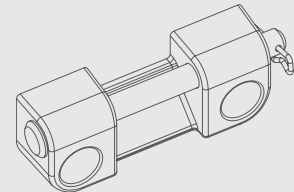


WAB 836E

Installation suggestion 3

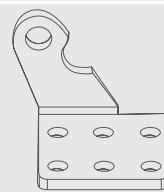
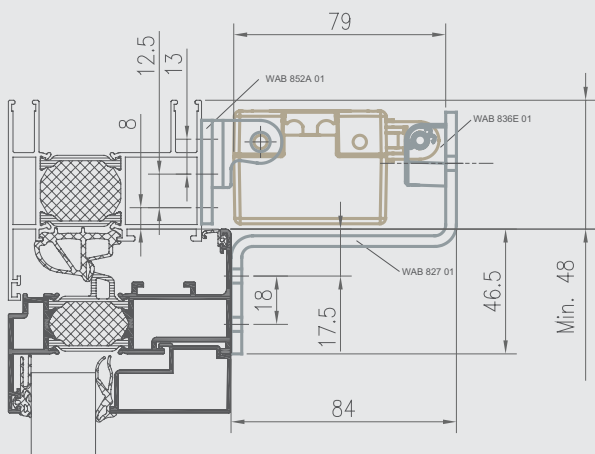


WAB 852i

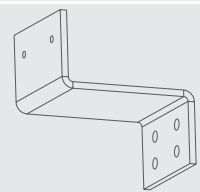


WAB 836E

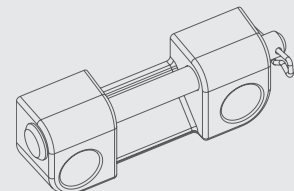
Installation suggestion 4



WAB 852A

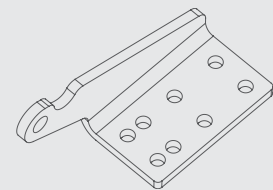
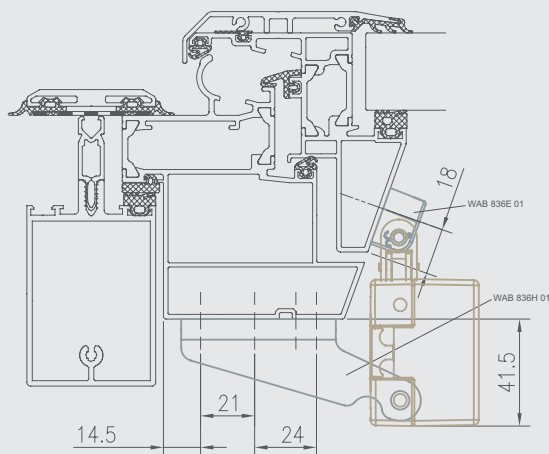


WAB 827

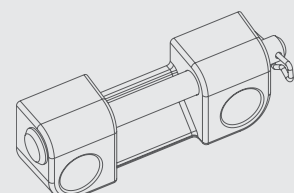


WAB 836E

Installation suggestion 5



WAB 836H

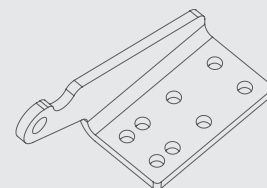
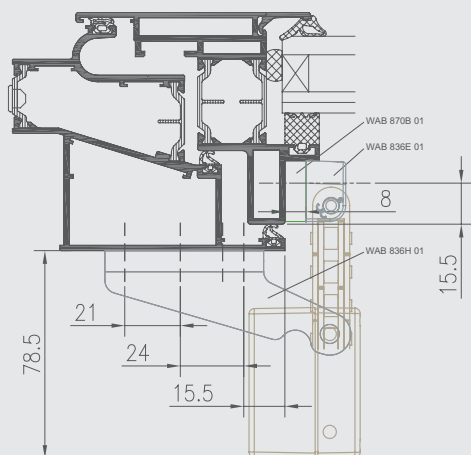


WAB 836E

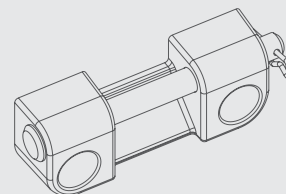
WMU 831 / 851 / 852

Chain actuator up to 500N

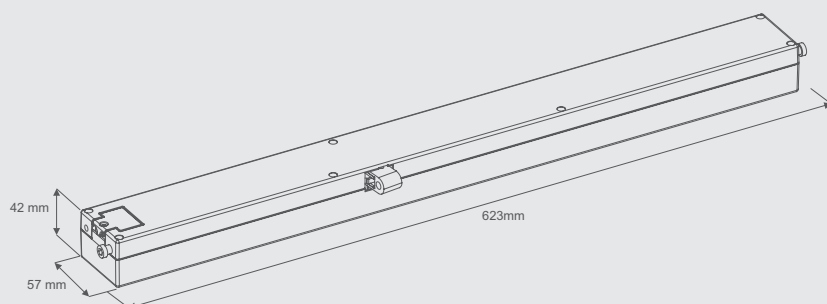
Installation suggestion 6



WAB 836H

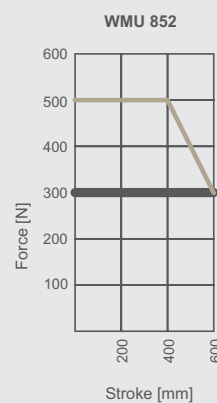
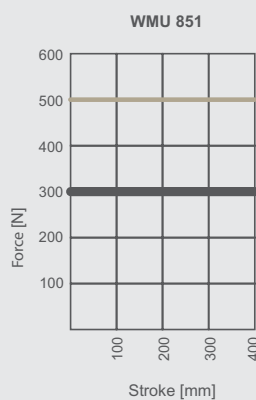
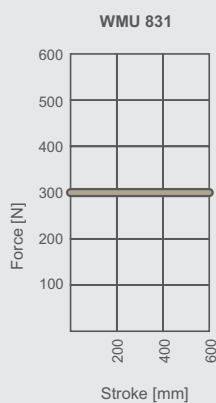


WAB 836E



L = Length (incl. screws)

— Pressure force
— Tractive force





WMU 936 Chain actuator 300N 230VAC



Natural
ventilation

230V

Rated voltage

2.31

Description

- designed for surface mounting
- for comfort ventilation
- to be used with tophung, bottomhung, pivot and turning windows
- Connection to existing electric installations as the window actuator runs on 230 VAC installations
- soft close function
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Pressure safety function

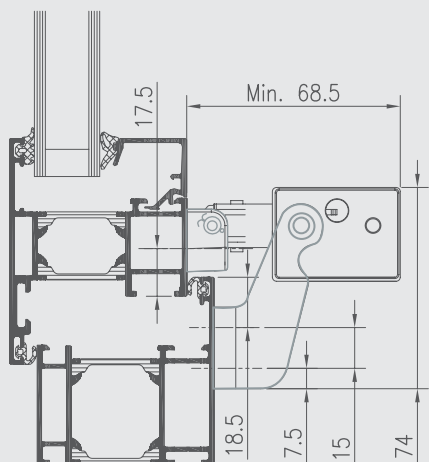
The risk of entrapment is reduced as the actuators are programmed to reverse if they encounter obstacles when closing.

Technical specifications	
Pressure force	see pressure/tractive diagram
Tractive force	300N
Locking force	3000N
Chain stroke	400, 600, 800 and 1000mm
Opening speed	11mm/s
Window types	tophung, bottomhung, pivot and turning windows vent size should be confirmed with the window supplier and WindowMaster
Voltage	230 VAC $\pm 10\%$, 50/60Hz, max. 50VA
Starting current	6A<1mSec
Insulation / earthing	the actuator is a double insulated class II product which means it will not require earth connection
Operating conditions	-5°C - +45°C max. 85% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 4min. pro 10min)
Material	aluminium housing with stainless steel chain and 1.9m white cable 3-core 0.75mm ²
Colour	anodized aluminium, RAL colours available at an additional price
Size	34 x 47mm (H x D), (L) length depends on chain stroke – see table
Weight	400mm - 2.8kg, 600 mm - 3.2kg, 800mm - 3.6kg, 1000mm - 4.0kg
IP rating	IP32
Fire test	tested according to DIN 18232-3, section 3.6 (300min./300°C)
Delivery includes	actuator with 1.9m cable
To be ordered separately	actuator and chain bracket
Note	we reserve the right to make technical changes

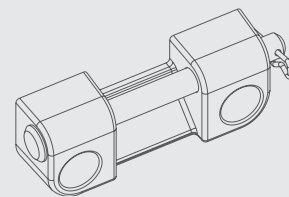
Items			
Chain stroke [mm]	Compressive force [N]	Length [mm] (L)	Item-no.
400	300	737	WMU 936-1 0400
600	300	837	WMU 936-1 0600
800*	0N - only for bottom hung windows	937	WMU 936-1 0800
1000*	0N - only for bottom hung windows	1037	WMU 936-1 1000

Brackets	Item-no.
Actuator bracket for WMU 836 / 936 / 866	WAB 836A
Actuator bracket for WMU 836 / 936 / 866	WAB 836B
Chain bracket for WMU 836 / 936	WAB 836E
Chain bracket for WMU 836 / 936	WAB 811
Actuator bracket for WMU 836 / 936	WAB 812
Actuator bracket 43mm	WAB 824
Z-Bracket for inward-opening windows	WAB 825
See separate product sheets for further information.	

Installation suggestion 1

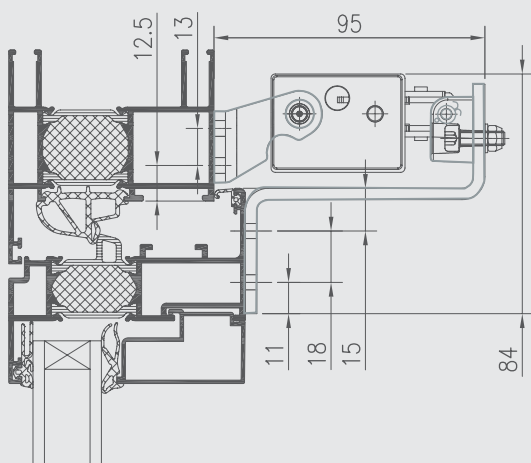


WAB 836B

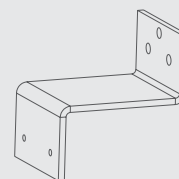


WAB 836E

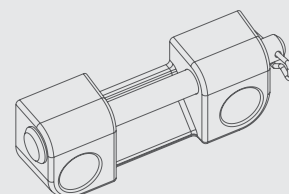
Installation suggestion 2



WAB 824

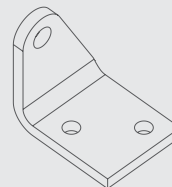
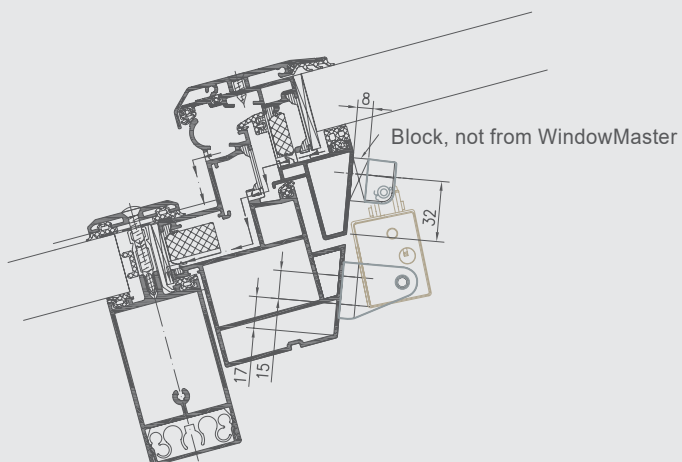


WAB 825

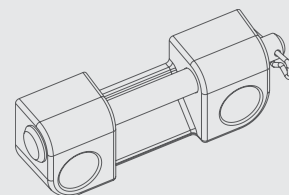


WAB 836E

Installation suggestion 3



WAB 836A

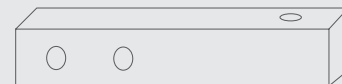
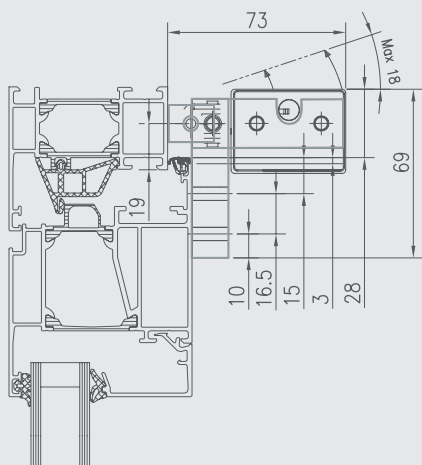


WAB 836E

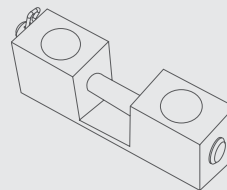
WMU 936

Chain actuator 300N 230VAC

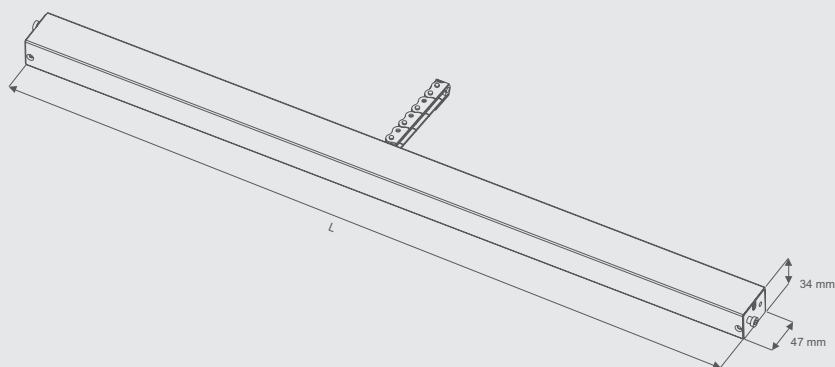
Installation suggestion 4



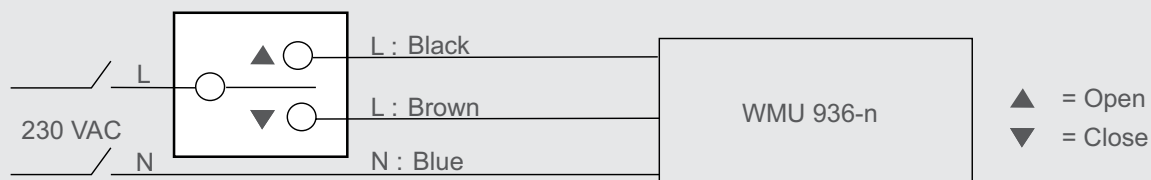
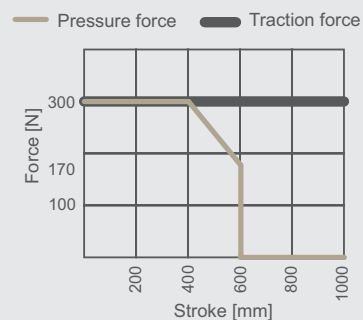
WAB 812



WAB 811



L = Length, see table for items





WMU 842 / 861 / 862 / 863 / 864 / 882 / 883 / 884 / 885 / 895

incl. UL-versions

Chain actuator up to 1500N



Natural
ventilation



Smoke
ventilation



Smoke ventilation
EN 12101

24V

±24V control



MotorLink®



UL certification
– Actuators

2.45

Description

- the actuator is an extremely strong chain actuator especially developed for large and heavy roof openings and windows in the facades
- an elegant alternative to traditional spindle actuators
- for comfort ventilation
- for smoke ventilation when the actuator opens the window completely within 60sec. (opening time) – approved according to EN 12101-2 with selected profiles
- to be used together with ±24V control units or control units with MotorLink®
- can be used together with espagnolette WMB
- synchronization of up to 4 window actuators – no need for an external synchronization module
- genuine position feedback and 3 speeds when using control unit with MotorLink®
- soft close function
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, this is also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting
- actuators for US and Canada are UL certified and are supplied without cable

Actuator variants

The actuator is available in four different versions: single WMU 86x/88x-1, double WMU 86x/88x-2, triple WMU 86x/88x-3 and quad WMU 86x/88x-4. The actuators are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Pressure safety function

The risk of entrapment is reduced as the actuators are programmed to reverse if they encounter obstacles when closing. The set points determining when the actuators are to reverse are individually adjustable and can be adjusted after installation using the programming box WAT 100.



Notice: Cable is not supplied when actuators are shipped to USA and Canada.

Opening speed

Actuators connected to ± 24 VDC control units (e.g. WUC) can be run with one speed – see "Opening time" in the table of items.

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications

Pressure force		Constant load	Snow load	
	WMU 842	max. 400N	-	
	WMU 86x	max. 600N	max. 600N (programmable 300-600N)	
	WMU 88x	max. 750N	max. 1000N (programmable 300-1000N)	
	WMU 895	max. 1000N	max. 1500N (programmable 300-1500N)	
	– see also the diagrams force/stroke on the last page			
Tractive force	500N (programmable up to 1000N)			
Locking force	3000N			
Chain stroke	Depending on variant – see table of items "Chain stroke" WMU 842/862/864/882/884/885/895: 1000mm special version – please contact WindowMaster			
Opening speed	Depending on variant – see table of items "Opening time"			
Window types	Top hung, bottom hung, turning, pivot, roof window and light dome			
Nominal voltage	24V DC (max. 10% ripple)			
Voltage	19 - 32V DC			
Open-circuit voltage	Max. 32V DC			
Current consumption	Depending on variant – see table of items "Current consumption"			
Operating conditions	-15°C - +74 °C max. 90% relative humidity (not condensing)			
Switch-on-duration	ED 20% (max. 4min. per 20min.)			
Material	Anodised aluminium housing with zinc chromate passivated steel chain Europe: actuator with 5m grey silicone cable 3-core 0.75mm² US/Canada: actuator without cable			
Colour	Anodised aluminium. RAL colours at an additional price			
Size	54 x 80 mm (H x D). Width depending on variant - see table of items "Width"			
Weight	Depending on variant – see table of items "Weight"			
IP rating	IP54			
Life span	Tested with 10,000 opening and closing movements - lifetime minimum as specified in the table below			
Proposal for EN test modes		10.000 ventilation openings 500mm	1.000 smoke openings	5 smoke openings with snow load
	WMU 862	600N	500mm / 600N	500mm / 600N
	WMU 863	600N	600mm / 600N	600mm / 600N
	WMU 864	600N	750mm / 600N	750mm / 600N
	WMU 883	750N	300mm / 750N	300mm / 1000N
	WMU 884	750N	600mm / 750N	600mm / 1000N
	WMU 885	750N	750mm / 750N	750mm / 1000N
	WMU 895	825N	750mm / 825N	750mm / 1500N

Technical specifications continued	
EN approval	Approved according to EN 12101-2 with selected profiles – please contact WindowMaster for further information
Certification	Actuators with "UL" in the article no. are UL certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14. The actuators are primarily used in US and Canada.
Delivery includes	Europe: actuator with 5m connection cable US/Canada: actuator without cable
Note	we reserve the right to make technical changes

Description of product code composition						
WMU 8	x	x	-n	xx	xxxx	0104
						Produkt version: 4
					Chain stroke: 0300 = 300mm, 0500 = 500mm, 0600 = 600mm, 0750 = 750mm, 1000 = 1000mm*	
					Certification EN: For actuator approved according to EN 12101-2 the item number must contain EN EN 12101-2 approved actuator variants are only available as 'Single' and 'Double'. UL: For UL certified actuator the item number must contain "UL". The actuators are marked with the UL logo on the actuator label and are not supplied with cable. WMU 842 and WMU 895 are not available as UL certified version.	
					Actuator variant: 1=single, 2=double, 3=triple, 4=quad	
					Power consumption: 1 = 1A, 2 = 2A, 3 = 3A, 4 = 4A, 5 = 5A	
Pressure force: 4 = 400N*, 6=600N, 8=1000N, 9=1500N**						

* Special version – for further information please contact WindowMaster.

** Pressure force at snowload

Explanation of product code structure

WMU 861-1 0300 0104 WMU 861 actuator, pressure force 600N, power consumption 1A, single variant, not certified, chain stroke 300mm, product version 4.

WMU 883-2 UL 0500 0104 WMU 883 actuator, pressure force 1000N, power consumption 3A, double variant, UL certified, chain stroke 500mm, product version 4.

WMU 842 / 861 / 862 / 863 / 864 / 882 / 883 / 884 / 885 / 895

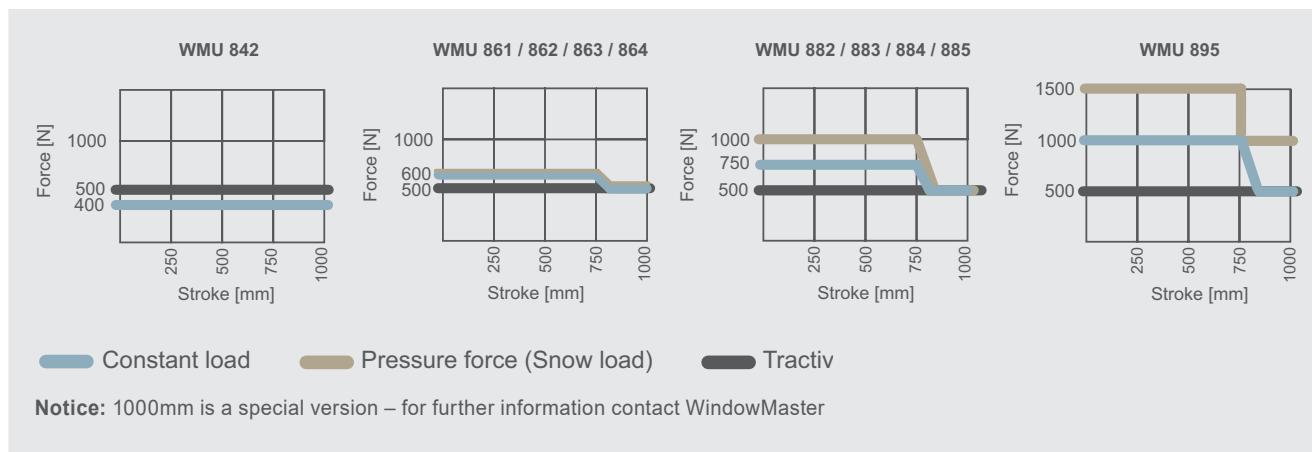
incl. UL-versions

Chain actuator up to 1500N

Accessories	Item no.
Electronically shortening of chain	WKK – WMU actuator
Actuator bracket for WMU 8xx, heavy bracket (EN approved)	WAB 836H
Chain bracket for WMU 8xx	WAB 836E
See separate product sheets for further information	

Installation suggestion 1	Installation suggestion 2
	WAB 836E

	Width (xxx) depending on variant – see table of items
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WML 860

Louvre actuator



Natural
ventilation

24V

±24V control



MotorLink®

4.20

Description

- designed for surface mounting as well as concealed installation in window profiles
- for comfort ventilation
- for louvre
- discreet and slimline design
- to be used together with ±24V control units or control units with MotorLink®
- external safety edge can be connected directly to the actuator (actuator version 'E')
- synchronization of up to four louvre actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator versions

The actuator is available as single or syncro as well as version A or B.

Single- / syncro actuator

Single actuator (-1):

The single actuator is required, if the actuator is to drive as a single unit.

Syncro actuator (variant -2, -3 or -4):

The syncro actuators are required if two, three or four actuators are to drive together on one window.

The actuators which are to drive together, need to be the same variant.

A / B versions

The version describes the zero point/opening direction of the actuator.

The window is closed, when the actuator is at the zero point.

A version:

The actuator's zero point is away from the centre of the actuator housing.

The gear rack's stroke (opening direction) is towards the centre of the actuator housing – see the the dimension drawing on the last page.

B version:

The actuator's zero point is towards the centre of the actuator housing.

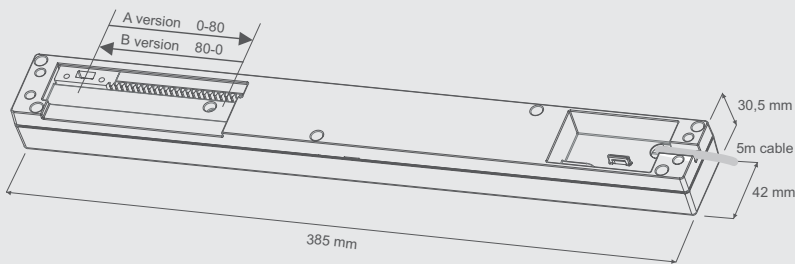
The gear rack's stroke (opening direction) is away from the centre of the actuator housing – see the the dimension drawing on the last page.

Technical specifications	
Pressure force	600N (programmable), momentary (max 500ms) permissible pressure force: 900N
Traction force	600N (programmable), momentary (max 500ms) permissible traction force: 900N
Locking force	2000N
Stroke	10 - 80mm, in increments of 10mm
Opening speed	1,5mm/s (programmable 0,5 - 1,5mm/s)
Window types	Louvre
Nominal voltage	24V DC (max. 10% ripple)
Voltage	19 - 32V DC
Max. open-circuit voltage	Max. 32V DC
Current consumption	Max. 1A
Consumption of power	Max. 24W
Operating condition	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch-on-duration	ED 40% (max. 2 min. per 5 min)
Material	Corrosion protected housing with 5m grey cable 3-core 0,34mm ² with fast-in/fast-on connector
Colour	Grey (RAL 9006), other RAL colours available at additional price
Size	385 x 30,5 x 42mm (W x H x D)
Weight	1kg
IP rating	IP20
Life span	11.000 opening and closing movements, full stroke
Delivery includes	Louvre actuator with 5m cable with fast-in/fast-on connector
Note	We reserve the right to make technical changes

Product code composition							
WML 860	-n	G	x	xx	x	x	3
							Product version: 3
						Certification: 0 = CE	
						Actuator hardware version: S = standard, E = with connection for pressure safety	
						Stroke: 10 – 80mm, in increments of 10mm (eg. 50mm = 50)	
						Version: A = the zero point of the actuator is away from the centre of the actuator B = the zero point of the actuator is closer to the centre of the actuator	
						Colour: G = grey	
						Actuator variant: 1= single, 2 = double, 3 = triple, 4 = quad	
Explanation of product code structure:							
WML 860-2GA70S 03:		WML 860 actuator, double synchronisation, grey, A version, 70mm stroke, standard actuator hardware, with CE certification, product version 3.					

WML 860

Louvre actuator

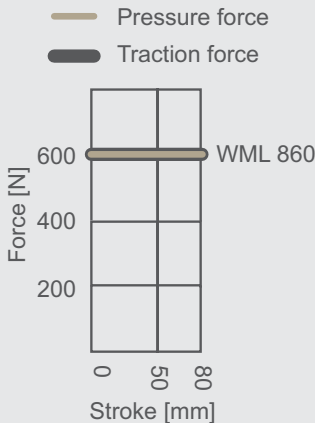


A version

The actuator's zero point is away from the centre of the actuator housing. The gear rack's stroke (opening direction) is towards the centre of the actuator housing.

B version

The actuator's zero point is towards the centre of the actuator housing. The gear rack's stroke (opening direction) is away from the centre of the actuator housing.





WAB 806
espagnolette bracket

WMB 801 / 802

Espagnolette actuator



Natural
ventilation



Smoke
ventilation



Smoke ventilation $\pm 24V$ control
EN 12101

24V

5.10

Description

- window espagnolette actuator
- optimized design for concealed installation in window profiles
- to be used together with window actuators from WindowMaster
- to be used together with 24 VDC control units
- approved according to EN 12101-2 with selected profiles – please contact WindowMaster for further information
- for smoke and comfort ventilation
- built-in electronic load switch-off/end stop
- corrosion protected housing
- easy mounting

In combination with the window actuator type WMX or WMU the espagnolette makes it electrically possible to lock/open the espagnolette system.

The espagnolette actuator is surface mounted to aluminium, plastic or wooden window frames.

Up to two espagnolette actuators can be mounted on the same window.

The WMB 801/ 802 can only be used on windows with no handle and where the tilt position comes before the turn position.

The window's espagnolette system can be set in three positions: lock, tilt and turn.

The turn position is set via an external switch; the window can hereafter be opened manually. The external switch is not delivered with the espagnolette actuator.

Espagnolette bracket type WAB 806 with automatic emergency detachment is included. The bracket transmits the espagnolette actuator's movement to the espagnolette system in the window.

Variants

The espagnolette actuator is available in two variants:

The WMB 801 is used on espagnolette systems, which locks counter clockwise (seen from the inside).

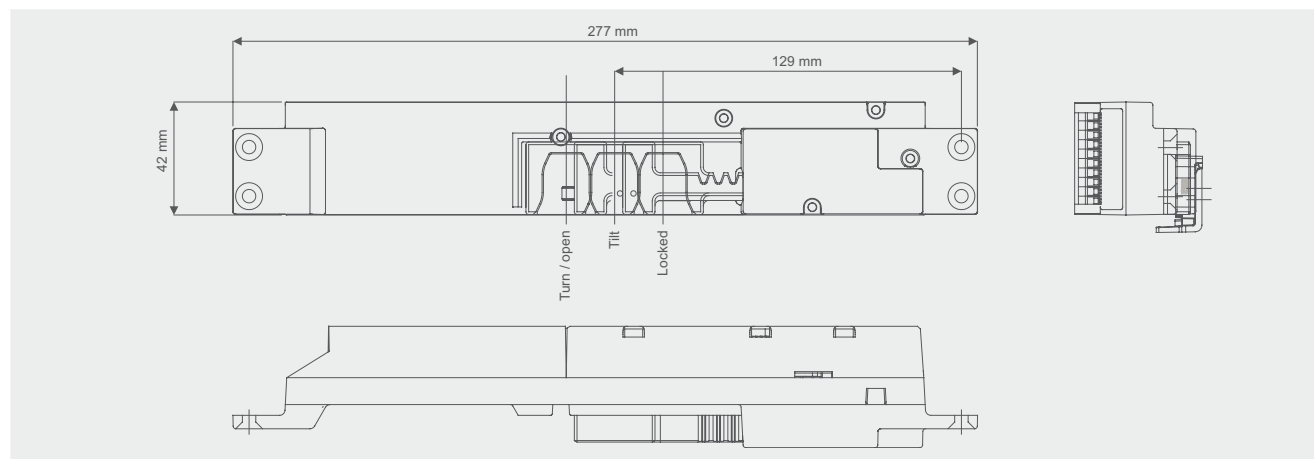
The WMB 802 is used on espagnolette systems, which locks clockwise (seen from the inside).

Espagnolette actuator

Technical specifications	
Locking force	min. 750N at 10,000 opening and closing movements
Espagnolette movement	0mm (lock), 18mm (tilt), 36mm (turn)
Power consumption	24 VDC nominal (max. 25% ripple)
Voltage	20 - 36 VDC
Open circuit voltage	40V
Current consumption	max. 1A
Consumption of energy	max. 24W
Operating conditions	-10°C - + 60°C. max. 90 % relative humidity (not condensing)
Material	WMB 801/802: zinc housing protected against corrosion WAB 806: chromium-plated
Colour	grey (RAL 7004)
Size	WMB 801/802: 277 x 45 x 42mm (W x H x D) WAB 806: 50 x 28 x 17mm (W x H x D)
Weight	1.1kg
Function	WMB 801 is used for espagnolette systems, which lock counter-clockwise WMB 802 is used for espagnolette systems, which lock clockwise (both seen from the inside)
Installation dimensions	277 x 33 x 42mm (W x H x D)
Fire test	WMB 801/802 is approved according to DIN 18232-3, section 3.6 (30 Min./300°C)
Delivery includes	espagnolette actuator with espagnolette bracket WAB 806 0101
To be ordered separately	standard connection cable type WLL
Note	we reserve the right to make technical changes

Items	Item no.
Espagnolette actuator, which locks counter clockwise (seen from the inside)	WMB 801
Espagnolette actuator, which locks clockwise (seen from the inside)	WMB 802
Espagnolette actuator approved according to EN 12101-2	contact WindowMaster

Brackets	Item no.
Espagnolette bracket	WAB 806





WMB 811 / WMB 812

Espagnolette actuator



Natural
ventilation



Smoke ventilation
B300



24V



MotorLink®



UL certification
– Actuators

5.20

Description

- for smoke and comfort ventilation
- locking actuator for windows with espagnolette system
- to be surface mounted or concealed
- discreet and slim line design
- cable connection hidden in the actuator cavity – no need for junction box
- to be used together with $\pm 24V$ control units or control units with MotorLink®
- used together with window actuators with MotorLink®
- 3 speeds when using control unit with MotorLink®
- soft close
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke – with the WAT 100 programming box, also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- easy mounting
- the actuator is UL certified

Compact 24 VDC espagnolette, which automatically locks/opens the espagnolette system on the window, in such a way that the CE approval of the window is maintained. This unit can also be used should increased protection against weather or break in be desired.

Closing force of 2000N per espagnolette.

The espagnolette is fitted on windows with an espagnolette system without handles, together with electric window actuators with MotorLink®. The espagnolette can be surface

mounted on or concealed in aluminium, timber or plastic window frames.

The espagnolette system can be set in two positions: locked/open.

The espagnolette bracket can be fitted in two different positions and thereby adjusted to the window profile. The bracket is supplied with the espagnolette.

Actuator variants

The espagnolette is available in single and double version, meaning up to two espagnolette actuators can be mounted on the same window.

Both the single and the double version can be used with up to four window actuators on the same window.

Single WMB (one WMB)

WMB 811-1 L: single, locking to the left

WMB 811-1 R: single, locking to the right

Double WMB (two WMB on the same window)

WMB 811-2 L: double, first WMB, locking to the left

WMB 811-2 R: double, first WMB, locking to the right

WMB 812-2 L: double, second WMB, locking to the left

WMB 812-2 R: double, second WMB, locking to the right

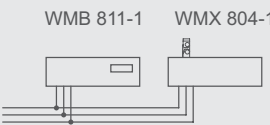
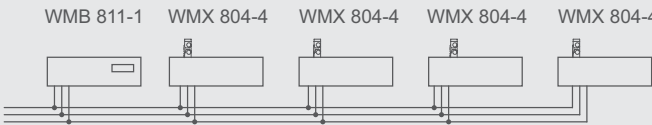

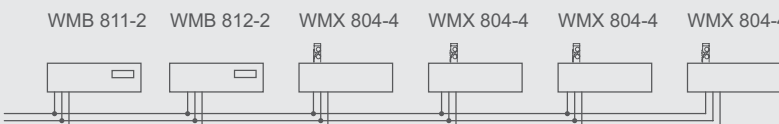


**Cable connection
hidden in the
actuator cavity**

Espagnolette actuator

Technical data	
Pressure force / load	500N (programmable)
Tractive force	500N (programmable)
Closing force	2000N (break in force)
Espagnolette movement	18mm (programmable 1-20mm)
Opening speed	depending on the connected window actuator (min. 7sec and max. 20sec)
Window types	top, bottom and side hung windows
Nominal voltage	24 VDC (max. 10% ripple)
Voltage	19 - 32 VDC
Open circuit voltage	max. 32 VDC
Current consumption	max. 1A
Power consumption	max. 24W
Temperature	-5°C - +74°C, max. 90% relative humidity (not condensing)
Switch on duration	ED 40% (2min. per 5min.)
Material	zinc housing protected against corrosion
Colour	powder paint RAL 9006 (grey), other colours against additional cost
Dimension	285 x 30 x 42mm (W x H x D)
Weight	1kg
Connection	100mm grey 3-core 0.34mm ² silicone cable with connector
IP rating	IP20
Certification	certified accordingly to UL 325 and CAN/CSA-22.2 No. 247-14,
Fire test	B300 tested according to EN 12101-2:2003
Lifetime	11,000 open and close movements, full stroke
Delivery includes	espagnolette with 100mm cable with fast-in /fast-on stick and espagnolette bracket
Note	we reserve the right to make technical changes

Items	Item no.
Espagnolette actuator single, locking to the left (seen from the inside)	WMB 811-1 L
Espagnolette actuator single, locking to the right (seen from the inside)	WMB 811-1 R
Espagnolette double, first WMB, locking to the left (seen from the inside)	WMB 811-2 L
Espagnolette actuator double, first WMB, locking to the right (seen from the inside)	WMB 811-2 R
Espagnolette actuator double, second WMB, locking to the left (seen from the inside)	WMB 812-2 L
Espagnolette actuator double, second WMB, locking to the right (seen from the inside)	WMB 812-2 R

Combination options (here shown with WMX 804-n window actuator)	
 <p>WMB 811-1 single espagnolette actuator with one window single actuator</p>	 <p>WMB 811-1 single espagnolette actuator with up to four quad window actuators</p>
 <p>WMB 811-2 + WMB 812-2 double espagnolette actuators with one single window actuator</p>	 <p>WMB 811-2 + WMB 812-2 double espagnolette actuators with up to four quad window actuators</p>

WLL connection cable is to be ordered separately



WMS 306-n Spindle actuator 600N



Natural
ventilation



Smoke
ventilation

24V

±24V control



MotorLink®

6.11

Description

- for smoke and comfort ventilation
- strong actuator suitable for roof openings
- to be used together with ±24V control units or control units with MotorLink®
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close function
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, this is also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single WMS 306-1, double WMS 306-2, triple WMS 306-3 and quad WMS 306-4.

The actuators are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Opening speeds

Actuators connected to ±24 VDC control units (e.g. WUC) can run with one speed – see the following page for opening speed.

Actuators connected to control units with MotorLink® (e.g. WCC) can run with three different speeds:

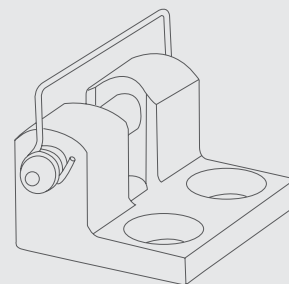
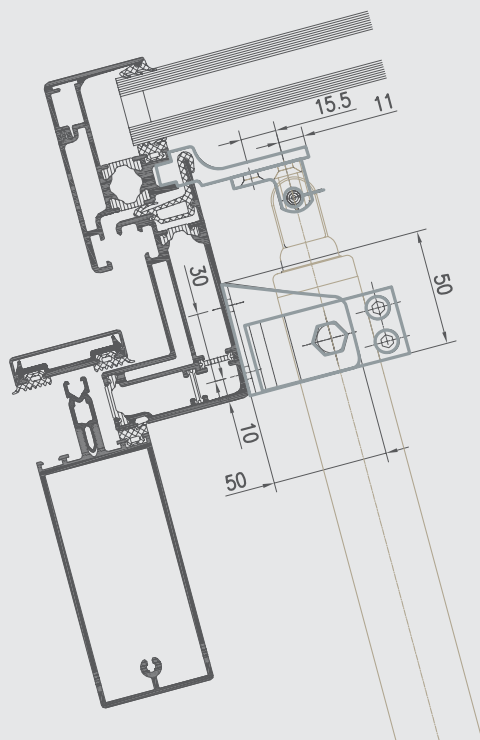
- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications	
Pressure / Tractive force	600N / 600N
Locking force	3000N (break in force)
Spindle stroke	300, 500 and 750mm
Opening speed	5mm/s (full load)
Nominal voltage	24V DC (+30% -20%) max. 10% ripple
Voltage	19 - 31V DC
Open circuit voltage	Max. 40V DC
Current consumption	Ca. 1A
Consumption of energy	Max. 24W
Operating conditions	-5°C - +74°C max. 90% relative humidity (not condensing)
Switch on duration	ED 30% (max. 3min. per 10min.)
Material	Aluminium
Colour	Anodized aluminium EV1, other RAL colours at extra cost
Size	ø36mm, length depends on spindle stroke – see table
Weight	See table
Connection cable	5m grey connection cable in silicon 3-core 0.75mm ² ø7.0mm
IP rating	IP54 according to EN 50529
Delivery includes	Actuator with 5m connection cable
Note	We reserve the right to make technical changes

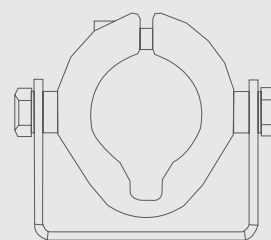
Items	Stroke [mm]	Length (L) [mm]	Weight [kg]	Item no.
Single actuator	300	623	1.5	WMS 306-1 0300
	500	823	1.8	WMS 306-1 0500
	750	1073	2.2	WMS 306-1 0750
Double actuator	300	623	1.5	WMS 306-2 0300
	500	823	1.8	WMS 306-2 0500
	750	1073	2.2	WMS 306-2 0750
Tripple actuator	300	623	1.5	WMS 306-3 0300
	500	823	1.8	WMS 306-3 0500
	750	1073	2.2	WMS 306-3 0750
Quad actuator	300	623	1.5	WMS 306-4 0300
	500	823	1.8	WMS 306-4 0500
	750	1073	2.2	WMS 306-4 0750

Brackets	Item no.
Actuator bracket with clamping ring – 40mm	WSB 300 0001
Actuator bracket with clamping ring – 73 / 86mm	WSB 300 0002
Actuator bracket with clamping ring – 65mm	WSB 300 0003
Bottom screw	WSB 300 0004
Wing bracket with bolt retaining cotter pin	WSB 300 0010
Wing bracket with fixing bolt	WSB 300 0011
Wing bracket with pin and retaining bracket	WSB 300 0012
See separate product sheets for further information.	

Installation suggestion 1

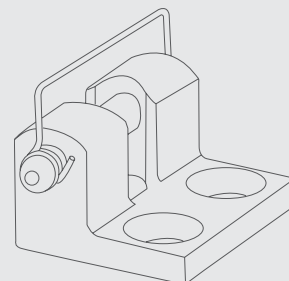
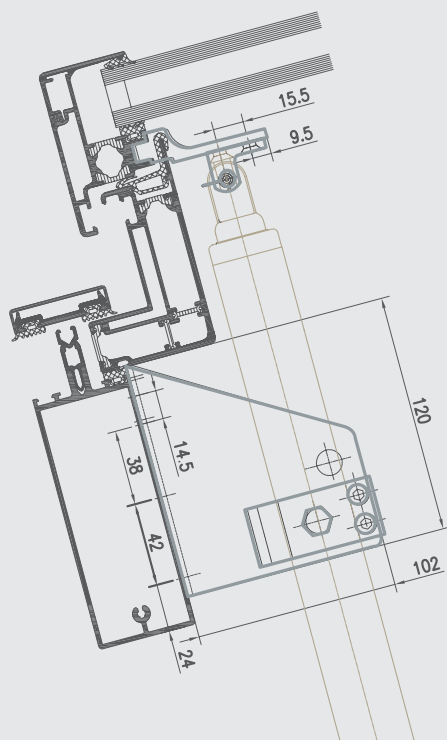


WSB 300 0012

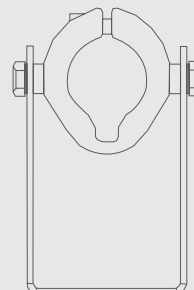


WSB 300 0001

Installation suggestion 2



WSB 300 0012

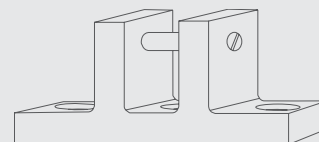
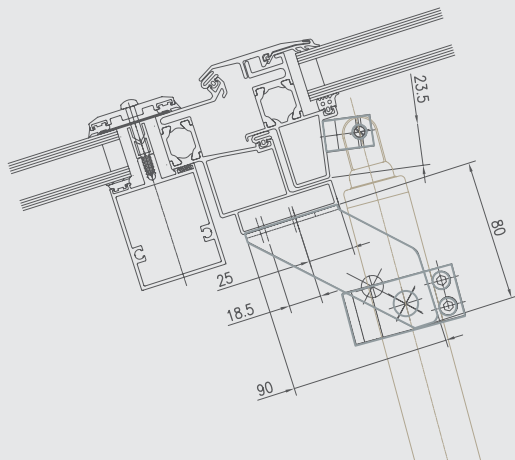


WSB 300 0002

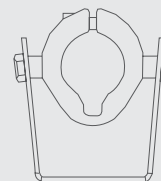
WMS 306-n

Spindle actuator 600N

Installation suggestion 3

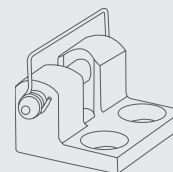
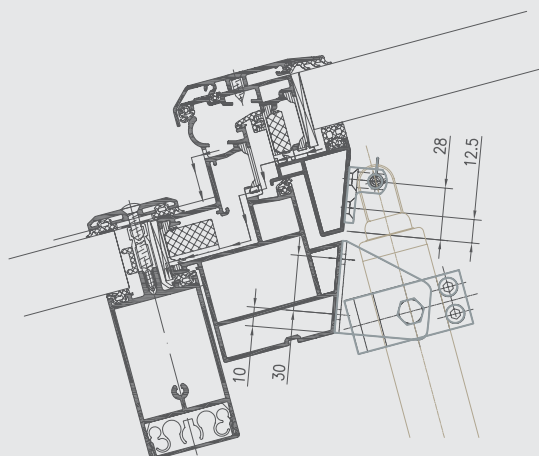


WSB 300 0011

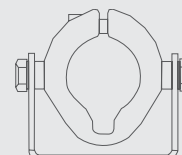


WSB 300 0003

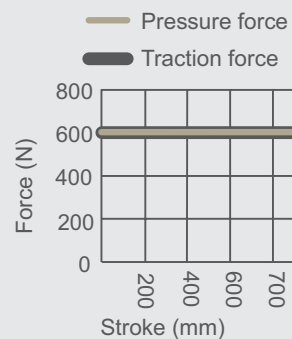
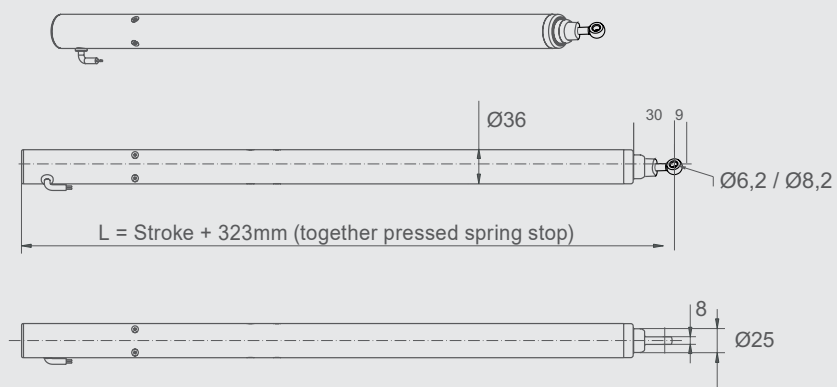
Installation suggestion 4



WSB 300 0012



WSB 300 0001





WMS 309-n Spindle actuator 900N



Natural
ventilation



Smoke
ventilation

24V

±24V control



MotorLink®

6.21

Description

- for smoke and comfort ventilation
- strong actuator suitable for roof openings
- to be used together with ±24V control units or control units with MotorLink®
- synchronization of up to four window actuators – no need for an external synchronization module”
- genuine position feedback and three speeds when using control unit with MotorLink®”
- soft close function
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, this is also possible following installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single WMS 309-1, double WMS 309-2, triple WMS 309-3 and quad WMS 309-4.

The actuators are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Opening speeds

Actuators connected to ±24 VDC control units (e.g. WUC) can run with one speed – see the following page for opening speed.

Actuators connected to control units with MotorLink® (e.g. WCC) can run with three different speeds:

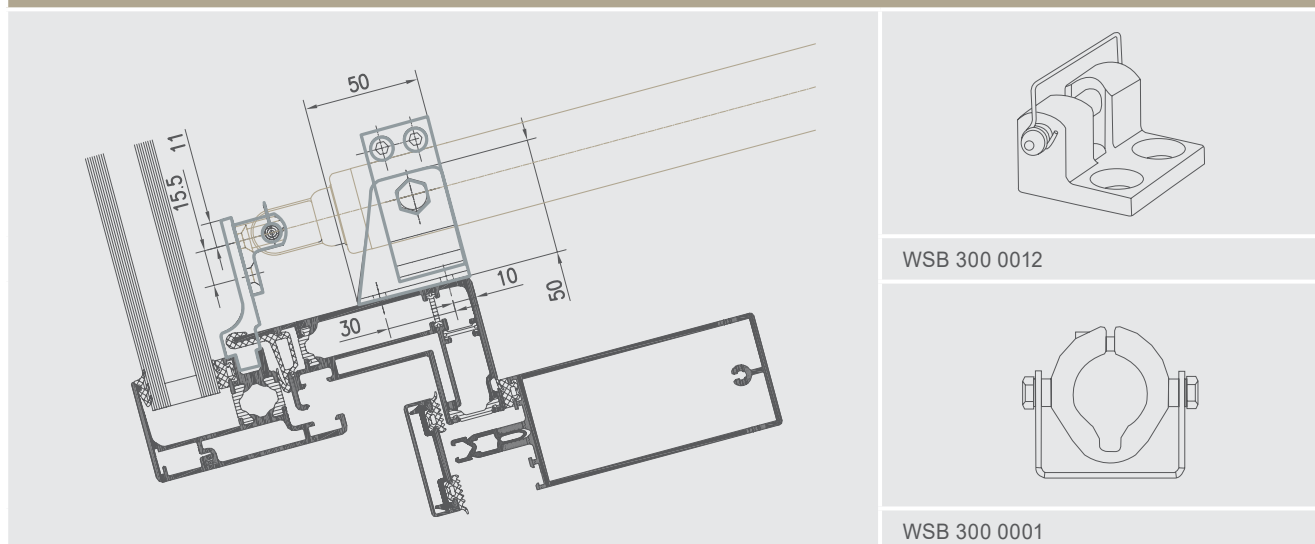
- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

Technical specifications	
Pressure / Tractive force	900N / 900N
Locking force	2800N
Spindle length	300, 500, 750 and 1000mm
Opening speed	5.8mm/s (full load)
Nominal voltage	24V DC (max. 10% ripple)
Voltage	19 - 29 VDC
Open circuit voltage	Max. 32V DC
Current consumption	Max. 1A
Consumption of energy	Max. 24W
Operating conditions	-5°C - +74°C max. 90% relative humidity (not condensing)
Switch on duration	ED 30% (max. 3min. per 10min.)
Material	Aluminium tube
Colour	Natural anodised (EV1), other RAL-colours at additional cost
Size	ø36mm, length depending on spindle stroke – see table
Connection cable	5m grey connection cable in silicon 3-core 0.75mm² ø7.0mm
Weight	See table
IP rating	IP54 according to EN 50529
Delivery includes	Actuator with 5m connection cable
Note	We reserve the right to make technical changes

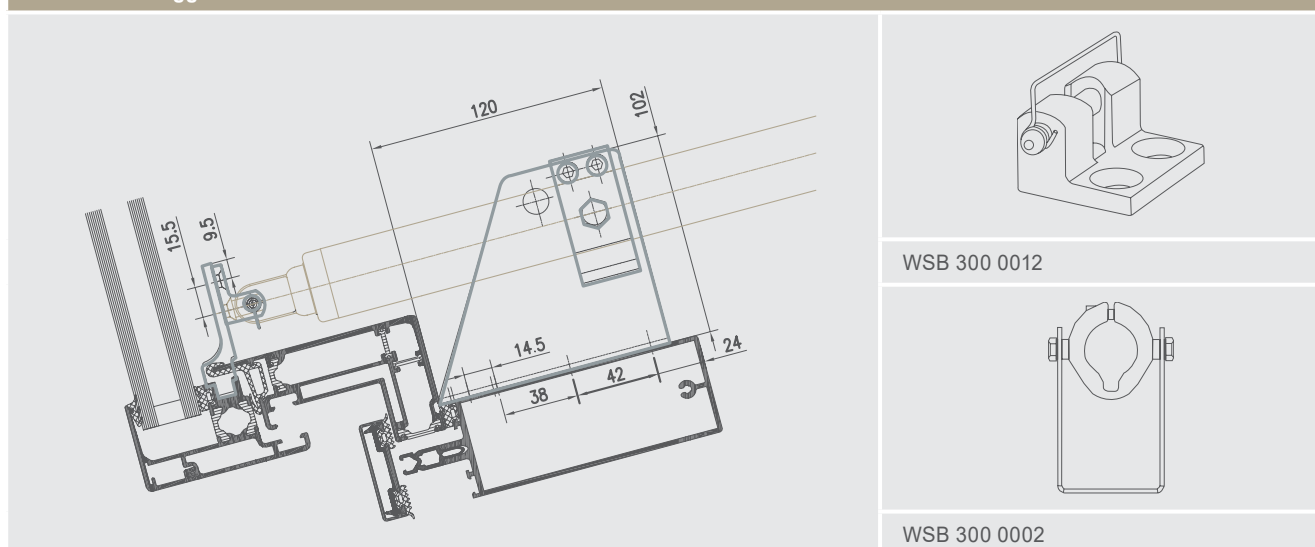
Items	Stroke [mm]	Length (L) [mm]	Weight [kg]	Item no.
Single actuator	300	671	1.7	WMS 309-1 0300
	500	871	2.1	WMS 309-1 0500
	750	1121	2.5	WMS 309-1 0750
	1000	1371	3.1	WMS 309-1 1000
Double actuator	300	671	1.7	WMS 309-2 0300
	500	871	2.1	WMS 309-2 0500
	750	1121	2.5	WMS 309-2 0750
	1000	1371	3.1	WMS 309-2 1000
Triple actuator	300	671	1.7	WMS 309-3 0300
	500	871	2.1	WMS 309-3 0500
	750	1121	2.5	WMS 309-3 0750
	1000	1371	3.1	WMS 309-3 1000
Quad actuator	300	671	1.7	WMS 309-4 0300
	500	871	2.1	WMS 309-4 0500
	750	1121	2.5	WMS 309-4 0750
	1000	1371	3.1	WMS 309-4 1000

Brackets	Item no.
Actuator bracket with clamping ring – 40mm	WSB 300 0001
Actuator bracket with clamping ring – 73 / 86mm	WSB 300 0002
Actuator bracket with clamping ring – 65mm	WSB 300 0003
Bottom screw	WSB 300 0004
Bracket with bolt and retaining cotter pin	WSB 300 0010
Bracket with fixing bolt	WSB 300 0011
Bracket with pin and retaining bracket	WSB 300 0012
See separate product sheets for further information.	

Installation suggestion 1



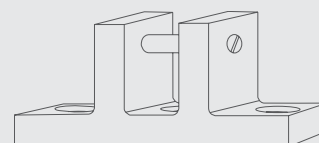
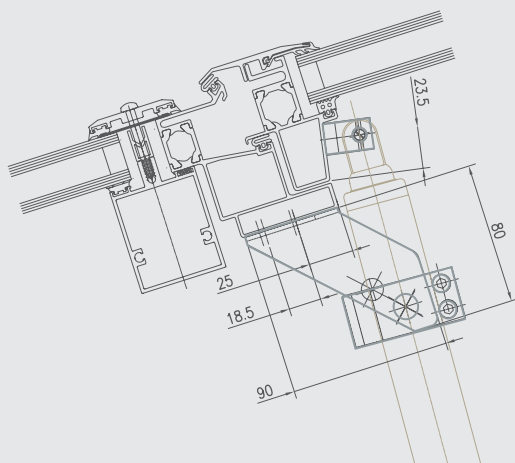
Installation suggestion 2



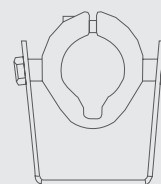
WMS 309-n

Spindle actuator 900N

Installation suggestion 3

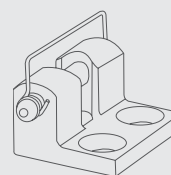
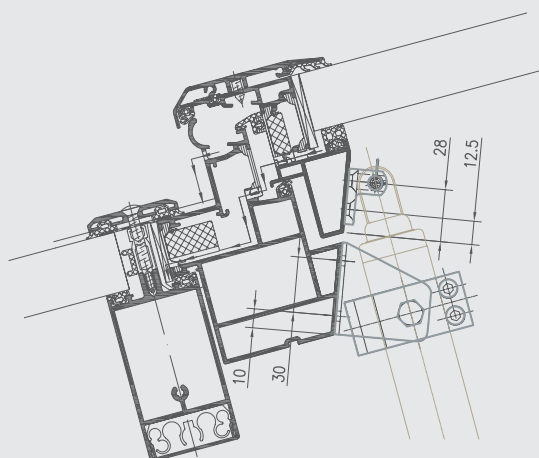


WSB 300 0011

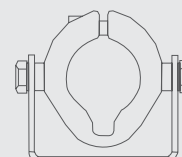


WSB 300 0003

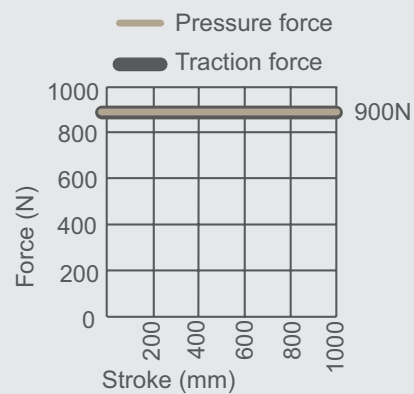
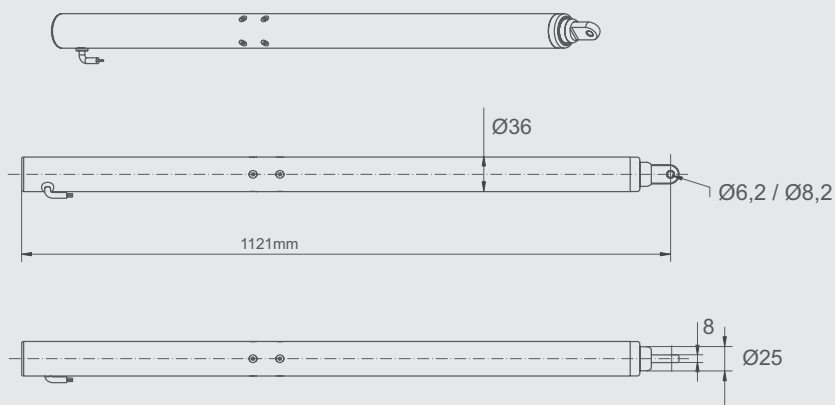
Installation suggestion 4



WSB 300 0012



WSB 300 0001





WMS 409-n Spindle actuator 900N



Natural
ventilation



Smoke
ventilation



Smoke ventilation
EN 12101

24V



MotorLink®

6.31

Description

- for smoke and comfort ventilation
- approved according to EN 12101-2 with selected profiles – please contact WindowMaster for further information
- complete opening of the window within 60 sec. (depending on the programming)
- strong actuator suitable for roof openings
- to be used together with $\pm 24V$ control units or control units with MotorLink®
- synchronization of up to four window actuators – no need for an external synchronization module
- genuine position feedback and three speeds when using control unit with MotorLink®
- soft close function
- the electronics in this actuator can be programmed to suit specific requirements – i.e. pressure- and traction force, stroke, speed/sound level – with the WAT 100 programming box, also following possible after installation
- built-in electronic load switch-off/end stop
- electronic actuator with micro controller
- the actuator has an integrated reverse function to ensure a prolonged life span of the window gaskets
- easy mounting

Actuator variants

The actuator is available in four different versions: single WMS 409-1, double WMS 409-2, triple WMS 409-3 and quad WMS 409-4.

The actuators are equipped with a patented synchronization function, in which the actuators communicate directly with each other, which ensures the actuators operate at exactly the same speed and position. On large windows up to four actuators can be mounted on the same window – with no need for an external synchronization module.

Opening speeds

Actuators connected to ± 24 VDC control units (e.g. WUC) can be run with one speed – see the following page for opening speed.

Actuators connected to control units with MotorLink® (e.g. WCC) can be run with three different speeds:

- automatically control speed – actuators run slowly and almost soundlessly.
- manual control speed – actuators run faster and more audibly.
- H&S and safety control speed – actuators run fastest. H&S control always has highest priority.

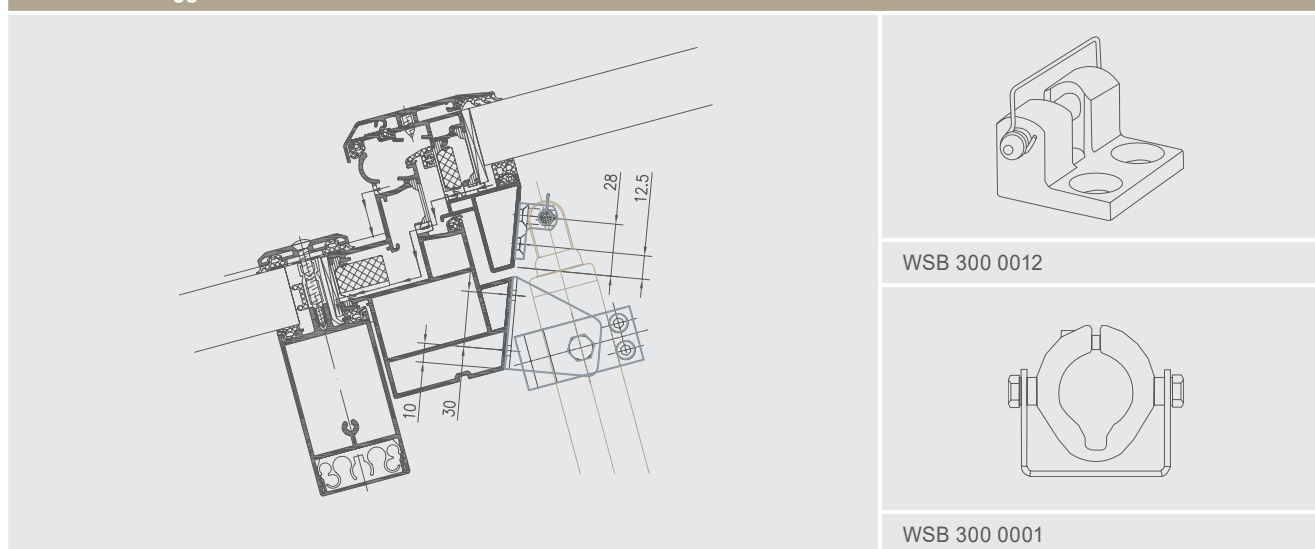
Technical specifications	
Pressure / Tractive force	900N / 900N
Locking force	2850N (break in force)
Spindle stroke	300, 500, 750 and 1000mm
Opening speed	12.5mm/s (full load)
Nominal voltage	24V DC (max. 10% ripple)
Voltage	19 - 32V DC
Open circuit voltage	Max. 32V DC
Current consumption	1.8A
Consumption of energy	Max. 44W
Operating conditions	-5°C - +74°C max. 90% relative humidity (not condensing)
Switch on duration	ED 30% (max. 3min. per 10min.)
Material	Aluminium
Colour	Aluminium EV1, other RAL-colour available at extra cost
Dimension	ø36mm, length (L) depending on spindle length - see table
Connection cable	5m grey connection cable in silicone 3-core 0.75mm² ø7.0mm
Weight	See table
IP rating	IP54 according to EN 50529
Life span	Tested with 10,000 opening and closing movements
EN certification	Approved according to EN 12101-2 with selected profiles – please contact WindowMaster for further information
Delivery includes	Spindle actuator with 5m connection cable
Note	We reserve the right to make technical changes

Items	Stroke	Length (L)	Weight	Item no.
Single actuators	300mm	665mm	1.8kg	WMS 409-1 0300*
	500mm	865mm	2.3kg	WMS 409-1 0500*
	750mm	1115mm	2.7kg	WMS 409-1 0750*
	1000mm	1335mm	3.1kg	WMS 409-1 1000
Double actuators	300mm	665mm	1.8kg	WMS 409-2 0300*
	500mm	865mm	2.3kg	WMS 409-2 0500*
	750mm	1115mm	2.7kg	WMS 409-2 0750*
	1000mm	1335mm	3.1kg	WMS 409-2 1000
Triple actuators	300mm	665mm	1.8kg	WMS 409-3 0300
	500mm	865mm	2.3kg	WMS 409-3 0500
	750mm	1115mm	2.7kg	WMS 409-3 0750
	1000mm	1335mm	3.1kg	WMS 409-3 1000
Quad actuators	300mm	665mm	1.8kg	WMS 409-4 0300
	500mm	865mm	2.3kg	WMS 409-4 0500
	750mm	1115mm	2.7kg	WMS 409-4 0750
	1000mm	1335mm	3.1kg	WMS 409-4 1000

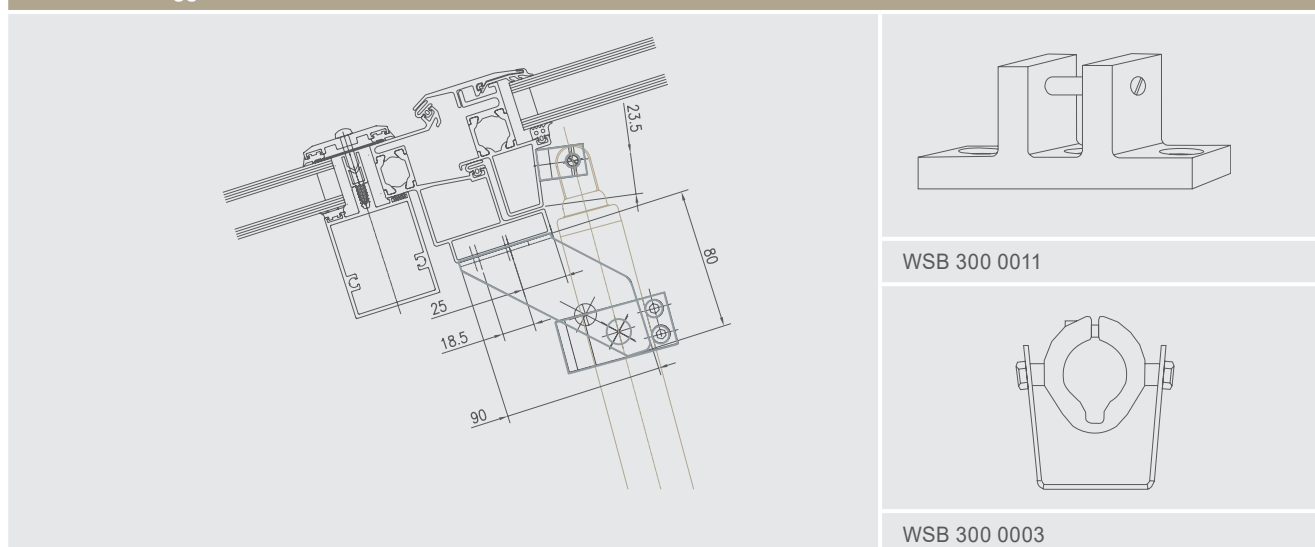
*For actuator approved according to EN 12101-2 the item number must contain EN.
EN 12101-2 approved actuator variants are only available as 'Single' and 'Double', e.g. WMS 409-n EN 0300.

Brackets	Item no.
Actuator bracket with clamping ring – 40mm	WSB 300 0001
Actuator bracket with clamping ring – 73 / 86mm	WSB 300 0002
Actuator bracket with clamping ring – 65mm	WSB 300 0003
Bottom screw	WSB 300 0004
Bracket with bolt and retaining cotter pin	WSB 300 0010
Bracket with fixing bolt	WSB 300 0011
Bracket with pin and retaining bracket	WSB 300 0012
See separate product sheets for further information.	

Installation suggestion 1



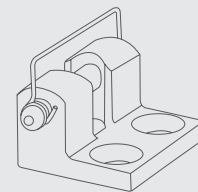
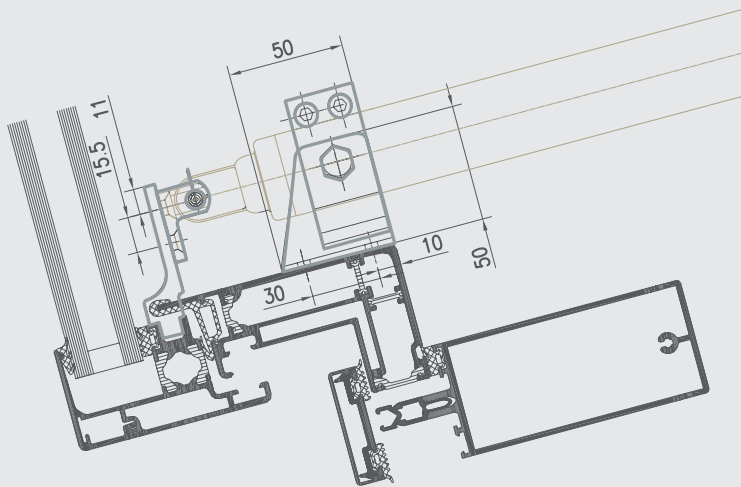
Installation suggestion 2



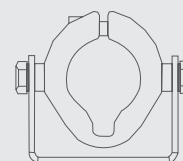
WMS 409-n

Spindle actuator 900N

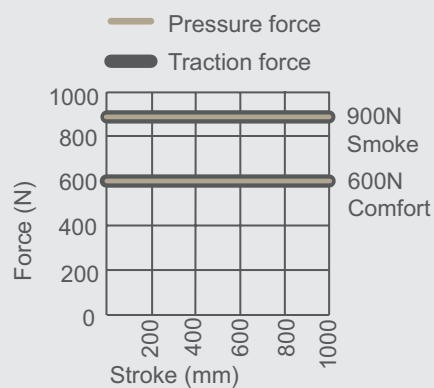
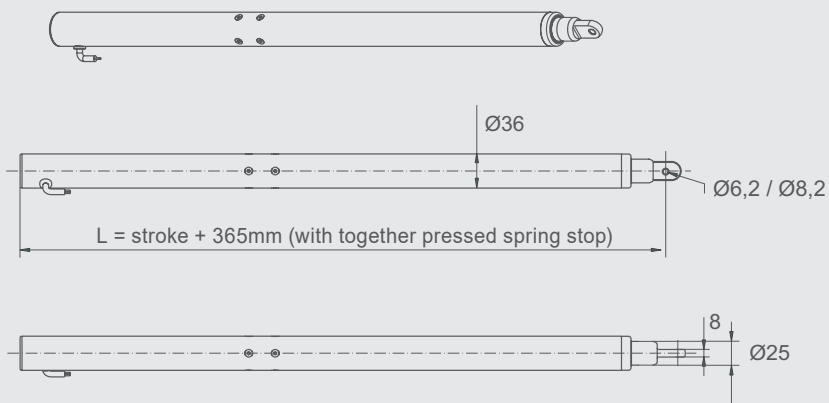
Installation suggestion 3



WSB 300 0012



WSB 300 0001





DK
Sensorer

UK
Sensors

F
Detecteurs

D
Sensoren

SE
Sensorer



WSA 300 61 Smoke detector



Smoke
ventilation

VdS

VdS approved

Application

- smoke registration triggers alarm
- for smoke panels
- the signal from the smoke detector has the highest priority in the WSC smoke panel
- VdS approval

A registration of smoke triggers the smoke detector and a signal is sent to the WSC smoke panel for activating the alarm.

The smoke detector works on the basis of the scattered light principle.

The trigger is indicated by a visual signal on the detector itself via a red LED.

The signal from the smoke detector has the highest priority in the WSC smoke panel.

The smoke detector is approved according to VdS.
Approval no. G200017.

Special technical features

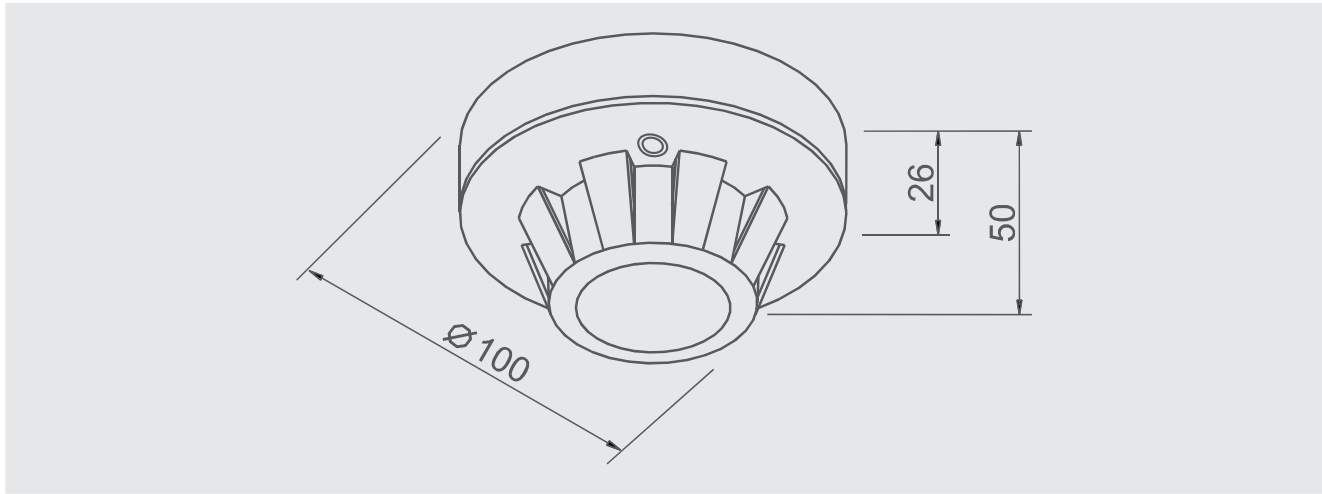
- easy mounting and installation
- delivery includes mounting plate
- horizontal mounting
- alarm by smoke detection
- visual signal directly on the detector (red LED)
- approval in accordance with VdS.
VdS approval no.: G200017
- signal transmission via 2-wire

WSA 300 61

Smoke detector

Technical specifications	
Connecting voltage	24V DC
Current consumption rest	55µA
Current consumption alarm	52 mA at 24V
Operating condition	-20°C - +60°C, max. 95% RH (not condensating), horizontal mounting
VdS approval	VdS approval no.: G200017
Material	Plastic
Colour	White (RAL 9003)
Size	100 x 50mm (Ø x H)
Signal transmission	2-wire
Alarm indication	Red LED on the smoke detector
IP rating	IP22D according to EN 60529
Delivery includes	Smoke detector incl. mounting plate
Note	We reserve the right to make technical changes.

Item	Item no.
Smoke detector for smoke panels type WSC	WSA 300 61





WSA 310 Differential heat detector



Smoke
ventilation

VdS

VdS approved

Application

- for detection of rapid temperature increase
- for smoke panels
- the signal from the differential heat detector has the highest priority in the WSC panel
- the detector is VdS approved

The differential heat detector is reacting to a rapid rise in temperature, and ensures early detection of fires.

The differential heat detector is used in areas where surrounding conditions do not permit the use of smoke detectors.

The differential heat detector has wide intake holes to allow the air flow to reach the terminal sensors immediately, where the heat is measured and evaluated. Indication of alarm via red LED.

With a rapid rise in temperature and at a maximum temperature of 75°C the differential heat detector is triggered and will send signal to and the smoke panel for activating the alarm.

The signal from the differential heat detector has priority in the WSC unit.

The differential heat detector is tested according to Vds.
Approval no.: G200060

Special technical features

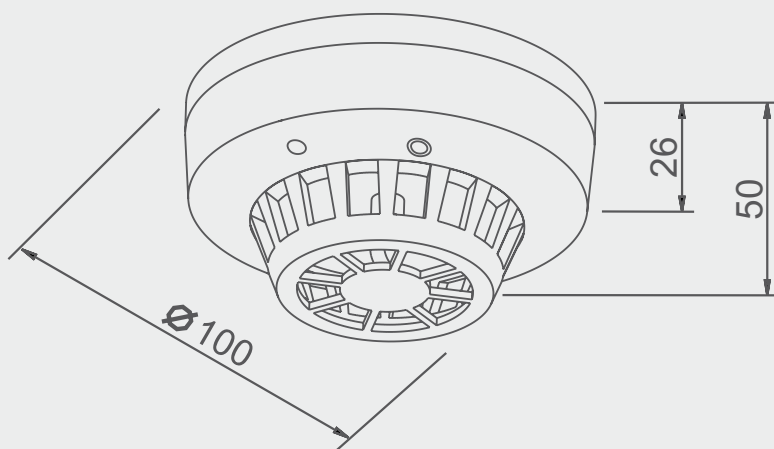
- easy mounting and installation
- delivery includes mounting plate
- horizontal mounting
- alarm in case of a rapid rise in temperature and at a max. temperature of 75°C, visual signal on the differential heat detector (red LED)
- VdS approval. Approval-no.: G200060
- signal transmission in 2-wire technology

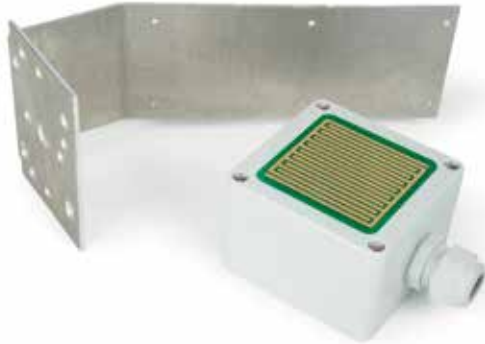
WSA 310

Differential heat detector

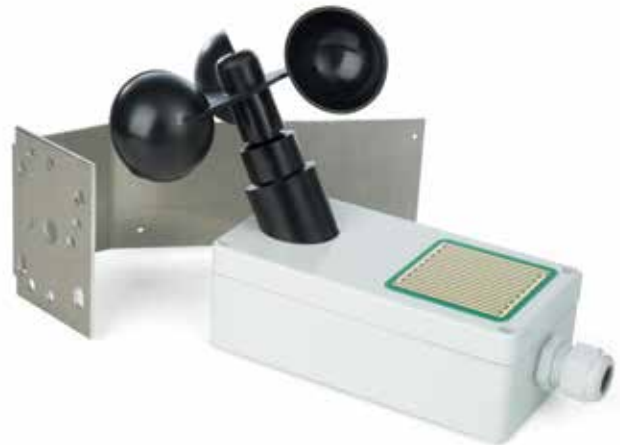
Technical specifications	
Power supply	24 VDC
Current consumption rest	55µA
Current consumption alarm	52mA by 24V
Operating condition	-20°C - +60°C, max. 95% RH, non condensing, horizontal mounting
Approval	VdS-approval no.: G 200060
Material	plastic
Colour	white (RAL 9010)
Size	100 x 50mm (Ø x H)
Signal transmission	2-wire technology
Alarm indication	via red LED on the differential heat detector
IP rating	IP23D according to B5 EN 60529
Delivery includes	differential heat detector incl. mounting plate
Notice	we reserve the right to make technical changes

Item	Item no.
Differential heat detector for smoke units type WSC	WSA 310 01





WLA 331



WLA 330

WLA 330 / 331

Wind and rain sensors



Natural
ventilation



Smoke
ventilation

Application

- 24V sensor for the automatic closure of windows and light domes in the case of wind/rain
- complete with mounting brackets
- for direct control of smoke ventilation units and control units

WLA 330

Wind- / rain sensor

- compact wind/rain sensor
- wind speed measurement
- DIP switch for parameter setting
- CLOSED can be programmed for the event of a voltage failure

The wind/rain sensor comprises an anemometer and a rain sensor surface.

The wind/rain sensor can be activated by a change-over-contact.

Measurement for wind: via wind wheel m/s

Measurement for rain: conductivity measurement on the heated sensor surface

The settings sensitivity and the delay are changeable.

The settings for the for sensor, for the wind trigger threshold, the activation delay, the drop out delay and the trip in the event of a mains failure are made by a six pole DIP switch in the sensor.

The wind and rain sensor is to be placed as high as possible however minimum 2 meters above the highest point of the building go give a true measuring.

WLA 331

Rain sensor

- compact rain sensor
- DIP switch for parameter setting
- automatic CLOSE in case of power failure (adjustable)

The rain sensor comprises a rain sensor surface.

The rain sensor can be activated by a change-over-contact.

Measurement principle for rain: conductivity measurement on the heated sensor surface

Special technical features:

- 24V AC/DC
- release via potential free change-over-contact
- WLA 330:
 - wind trigger threshold is adjustable
 - rain drop out delay is adjustable
 - wind activation delay is adjustable
 - wind drop out delay is adjustable
- WLA 331:
 - rain drop out delay is adjustable

WLA 330 / 331

Wind and rain sensors

Technical specifications		
Rated voltage	18 - 26 VAC / 20 - 32 VDC	
Material	plastic housing	
Colour	grey	
Size	WLA 330 WLA 331	80 x 160 x 55mm (W x H x D) without anemometer 80 x 80 x 55mm (W x H x D)
Weight	WLA 330 WLA 331	ca. 0.7kg ca. 0.3kg
Circuit output	1 x potential free change over contact, 60V/2A	
Setting for monitoring	off/on	
Setting for rain drop out delay	WLA 330 / WLA 331: 10min. / 20min.	
Setting for wind drop out delay	WLA 330: 10min. / 20min.	
Setting for wind activation delay	WLA 330: 2sec. / 5sec.	
Setting for wind trigger threshold	WLA 330: ca. 3 -14m/s (±20%)	
IP rating	IP65	
Delivery includes	sensor with mounting brackets	
Notice	we reserve the right to make technical changes	

Items	Item no.
Wind- / Rain sensor	WLA 330
Rain sensor	WLA 331



WLA 340

Wind and rain sensor



Natural
ventilation



Smoke
ventilation

Application

- 24V sensor for the automatic closure of windows and light domes in the case of wind/rain
- complete with mounting brackets
- for direct control of smoke ventilation units and control units
- compact wind/rain sensor

The wind/rain sensor comprises an anemometer and a rain sensor surface.

Measurement for wind: via wind wheel m/s

Measurement for rain: conductivity measurement on the heated sensor surface

The wind and rain sensor is to be placed as high as possible, minimum 2 meters above the highest point of the building go give a true measuring.

Specifications

- 24V AC/DC
- release via potential free change-over-contact (rain only)
- heated surface
- wind speed pulses for wind measurements
- open contact at rain
- close contact at rain

WLA 340

Wind and rain sensor

Technical specifications	
Rated voltage	18 - 26 VAC / 20 - 32 VDC, 45 mA at idle, max. 60mA
Material	Plastic housing
Colour	Grey
Size	80 x 160 x 55mm (W x H x D) (without anemometer) 80 x 235 x 175mm (W x H x D) (with anemometer)
Weight	ca. 0.7kg
Circuit output	1NO, 1NC x potential free change over contact, 60V/2A
Rain drop out delay	10min.
IP rating	IP65
Delivery includes	Sensor with mounting brackets
Notice	We reserve the right to make technical changes

WLA 340 – Pulse		
Pulse data The pulse which the wind sensor transmits to the control unit / panel e.g. NV Comfort® or FlexiSmoke™, depends on the measured wind speed. See table for the wind depending pulse.	Wind speed [m/s] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Pulse [Hz] 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
	Pulse explanation 	

Items	Item no.
Wind / Rain sensor, with pulse output, to NV Comfort®, FlexiSmoke™, CompactSmoke™ and WCC 310/320	WLA 340



WLA 110 Room thermostat



Natural
ventilation

Description

Room thermostat for temperature control via automatic opening and closing of windows.
The room thermostat is installed on the wall. No special tools are required.

Application

Room thermostat WLA 110 is used for control via WindowMaster control systems.

The desired temperature is set on the thermostat scale. When the temperature exceeds the temperature set, the room thermostat sends a signal to the control unit, which activates the window actuators. When the temperature has dropped to the desired level, the windows will automatically close again.

If window operation through a keypad is desired, the sensor function may be switched off on the switch, positioned on the front of the thermostat.

The thermostat can be connected directly to control units WUC 101, WUC 102 and WCC 310 / 320.

Special technical features

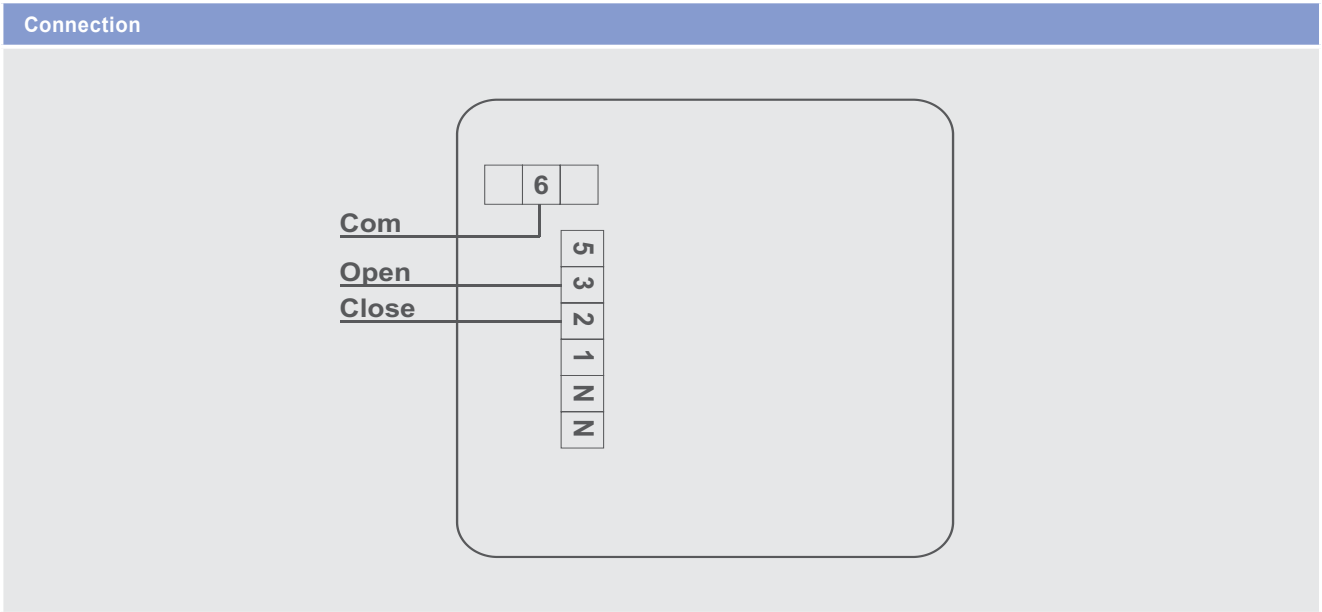
- measuring range: +5°C - +30°
- signal to control units
- easy installation

WLA 110

Room thermostat

Technical specifications	
Switching voltage	24V DC max 1.25A / 24V AC max. 2A
Measuring range	+5°C - +30°C
Hysteresis	0.5K
Operating conditions	+5°C - +50°C, the room thermostat must not be covered
Material	polycarbonate housing
Colour	white (RAL 9010)
Size	75 x 75 x 25mm (W x H x D)
Weight	0.1kg
Connection	the room thermostat WLA 110 is connected to the WindowMaster control system using a 3-core cable WLL 100
IP rating	IP30
Delivery includes	room thermostat
To be ordered separately	3-core cable WLL 100
Note	we reserve the right to make technical changes

Item	Item no.
Room thermostat	WLA 110





WLA 150

Temperature and CO₂-sensor



Natural
ventilation

Application

- Automatic indoor climate control
- Regulates after optimum temperature interval 22-23.5°C and CO₂-interval max. 975-1025ppm
- display for temperature and CO₂ level
- easy installation
- suited for offices, class rooms atriums etc.

Sensor for temperature and CO₂ regulation by automatic opening and closing of windows equipped with window actuators and WindowMaster MotorControllers.

The sensor is mounted indoor on the wall. No special tools are required.

Description

The sensor measures the room temperature and CO₂ level and sends signals to the MotorController to open the windows if the temperature exceeds 23.5°C or the CO₂ level exceeds 1025ppm. The opening of windows is done in 10 seconds increment at 5 minute intervals, until the desired level is reached. The closing of windows is equally done in 10 seconds increments at 5 minute intervals.

Temperature

If the room temperature exceeds 23.5°C the windows will open for 10 seconds. If after 5 minutes the temperature remains above 23.5°C, the windows will open further for another 10 seconds. The process repeats itself until the

windows are fully open or the room temperature drops to less than 22°C.

As long as the CO₂ level is below 925 ppm, the sensor will stabilize the room temperature between 22 and 23.5°C, by closing or opening the windows respectively in 10 seconds increments at 5 minute intervals.

CO₂ level

If the CO₂ level rises above 1025 ppm and the room temperature is above 21°C, the windows will open for 10 seconds. If the CO₂ level remains above 1025ppm after 5 minutes, the windows will continue to open in further 10 seconds increments until the CO₂ level drops below 975ppm or the room temperature drops below 21°C.

Manuel operation

Connection of a ventilation keypad enables manual operation of the windows and thereby overriding the sensor. The ventilation keypad will override the sensor for 1 hour, after 1 hour the system will return to automatic operation.

Specifications

- measuring range:
 - temperature -20°C – +60°
 - CO₂: ±1% of measuring range ±5% of the measured value
- signal to the MotorController
- easy mounting and connection

Connection of wind / rain sensor is recommended.

WLA 150

Temperature and CO₂-sensor

Technical specifications	
Supply voltage	24V AC/DC ±20% 50-60 Hz. The sensor can be supplied directly from the WindowMaster MotorController.
Power consumption	≤3W average
Output	2 x relay output. Potential free: Opening signal: NC1-NO1-Com1 Closing signal: NC2-NC2-Com2. Minimum load 1 mA/5V Maximum load 0.5 A/125V AC - 1A / 24V DC
Input	1 x Digital input, do not apply voltage. 1 mA at closed contact, 5V at open contact. Closed contact > 5 sec. switch off automatic for 1 hour
Measuring range	Temperature: -20°C – +60°C ±0,1°C CO ₂ : ±1% of measuring range ±5% of the measured value
Operating conditions	-0°C – +50°C, max. 95% relative humidity (not condensing), indoor mounting, the sensor must not be covered
Material	plastic housing
Colour	white
Dimension	83 x 120 x 31mm (W x H x D)
Connection	max. 1.5mm ² cable, screw terminals
Note	Limit values for temperature and CO ₂ respectively are programmed in the sensor and cannot be changed.
Delivery includes	sensor
Note	We reserve the rights to make technical changes

Item	Item no.
Temperature and CO ₂ -sensor	WLA 150



WET 112

Temperature, CO₂ and humidity sensor, KNX



Natural
ventilation

KNX

KNX product

Application

Indoor sensor for measuring temperature, CO₂-level and the relative humidity.

The sensor has two 4-coloured LEDs to show the CO₂- and humidity level:

- CO₂-level is shown in the colours green, yellow, orange or red
- humidity level is shown in the colours yellow, green, red or blue

Specifications

- temperature is measured between 0-40°C
- CO₂-level is measured between 300-9999ppm
- relative humidity is measured between 0% -100%
- the measurements are sent directly via the KNX bus

WET 112

Temperature, CO₂ and humidity sensor, KNX

Technical specifications	
Current consumption	< 12mA
Power supply	by KNX bus
BUS connection	KNX bus connector
BUS-interface module (BCU)	integrated
Operating conditions	-5°C - +45°C, for indoor wall mounting, not to be mounted in a dusty environment
Material	plastic
Colour	white
Size	74 x 74 x 28mm (W x H x D)
Weight	150g
CO ₂ accuracy	300 - 1000 ppm ±120 ppm 1000 - 2000 ppm ±250 ppm 2000 - 5000 ppm ±300 ppm 5000 - 9999 ppm
Humidity, relative, range of measurement	1 - 100% ±5%
Temperature, range of measurement	0 - 40°C ±1%
IP rating	IP20
Delivery includes	sensor
Note	we reserve the right to make technical changes

Item	Item nr.
Temperature, CO ₂ -, and humidity sensor KNX	WET 112



DK
Beslag

UK
Brackets

F
Fixations

D
Beschläge

SE
Beslag



WAB 805

Bracket for chain actuator



Natural
ventilation



Smoke
ventilation

Description

- for actuator type WMX 804-n and WMX 826-n

Z-bracket for mounting on inward opening windows, where the actuator is mounted on the frame.

Requires a free frame height of more than 35mm.

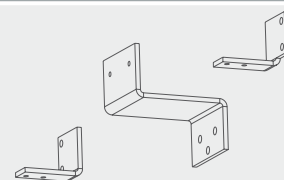
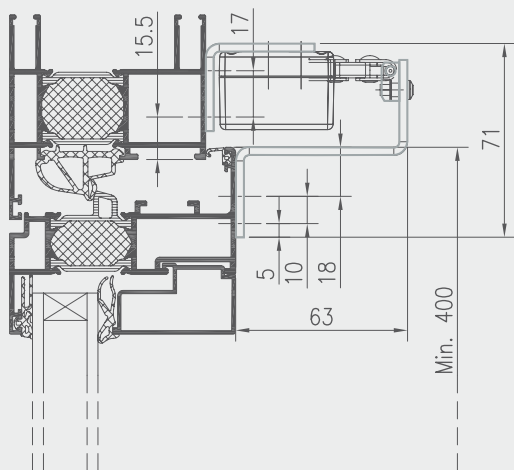
WAB 805

Bracket for chain actuator

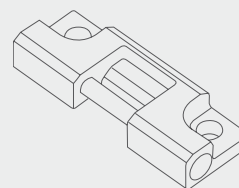
Technical specifications	
Material	steel
Colour	grey (RAL 9006) or white (RAL 9010)
Delivery includes	1 x Z-bracket, 2 x window brackets with screws
Note	we reserve the right to make technical changes

Items	Item no.
Z-brackets grey (RAL 9006)	WAB 805 0101
Z-brackets white (RAL 9010)	WAB 805 1101

Installation suggestions with WMX 804

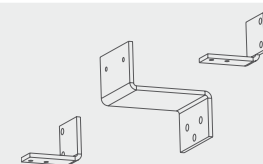
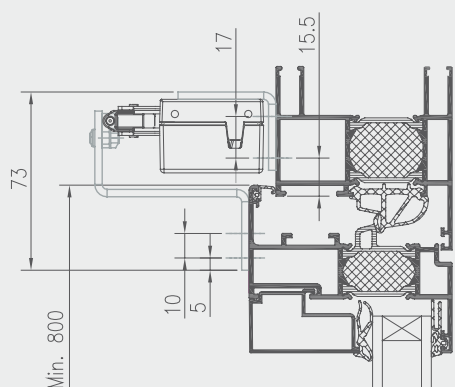


WAB 805

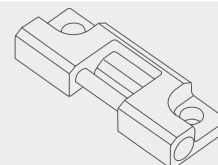


WAB 801

Installation suggestions with WMX 826



WAB 805



WAB 801

* The cable cover must face towards the window hinge!



WSB 300 0001



WSB 300 0002



WSB 300 0003



WSB 300 0004

WSB 300 0001 / 300 0002 / 300 0003 / 300 0004

Brackets with clamping ring for mounting spindle body



Natural
ventilation



Smoke
ventilation

Description

- motor brackets for spindle actuators type WMS 306 / 309 / 409
- for mounting of spindle actuators

WSB 300 0001

For WMS 306 / 309 / 409

For universal fixing options of facades and roof windows. The motor bracket can be moved along the whole length of the operator body.

The distance from the mounting surface of the motor bracket to the center of the spindle 40mm.

WSB 300 0002

For WMS 306 / 309 / 409

For universal fixing options of facades and light domes. The motor bracket can be moved along the whole length of the operator body.

The distance from the mounting surface of the motor bracket to the center of the spindle 73mm respectively 86mm.

WSB 300 0003

For WMS 306 / 309 / 409

For universal fixing options of facades and roof windows. The motor bracket can be moved along the whole length of the operator body.

The distance from the mounting surface of the motor bracket to the center of the spindle 50mm respectively 86mm.

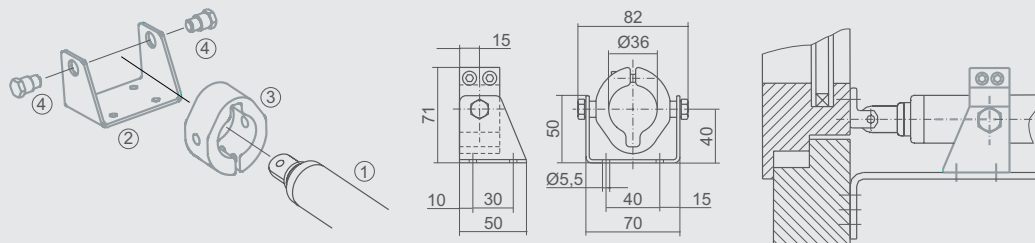
WSB 300 0004

For WMS 306 / 309 / 409

Bottom screw M8, for bottom suspension of spindle actuators in conjunction with mounting brackets WSB 300 0010.

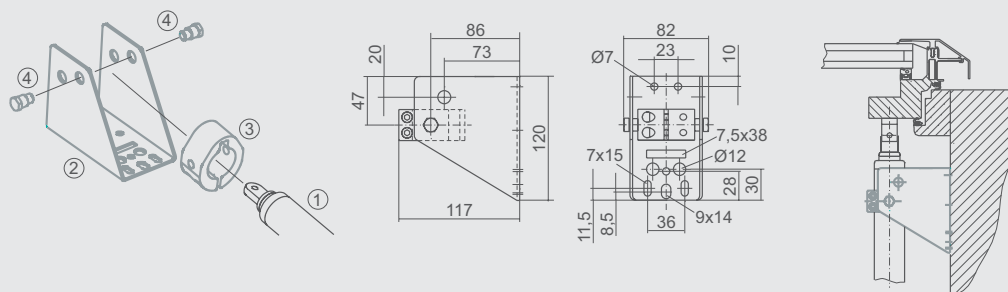
Can not be ordered separately, must be ordered with the actuator.

Mounting suggestion: WSB 300 0001



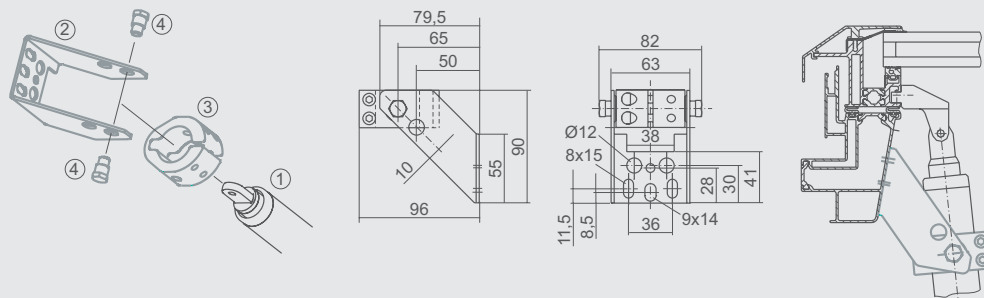
1. Spindle actuator 2. Bracket 3. Clamping ring 4. Screw

Mounting suggestion: WSB 300 0002



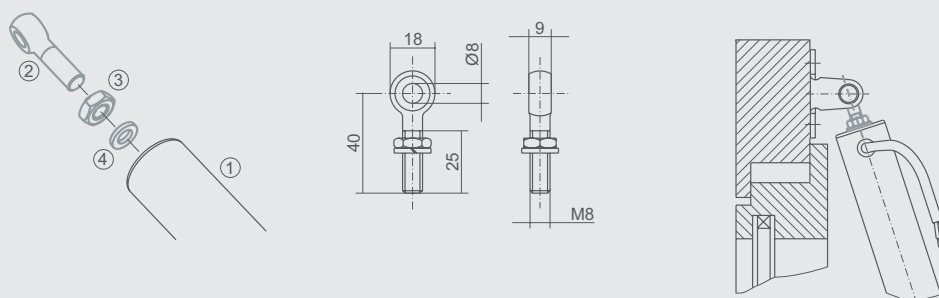
1. Spindle actuator 2. Bracket 3. Clamping ring 4. Screw

Mounting suggestion: WSB 300 0003



1. Spindle actuator 2. Bracket 3. Clamping ring 4. Screw

Mounting suggestion: WSB 300 0004



1. Spindle actuator 2. Eye screw 3. Screw nut 4. Washer

Items	Item no.
Motor bracket with clamping ring for spindle actuators type WMS 306 / 309 / 409. The distance from the mounting surface of the motor bracket to the center of the spindle is 40mm.	WSB 300 0001
Motor bracket with clamping ring for spindle actuators type WMS 306 / 309 / 409. The distance from the mounting surface of the motor bracket to the center of the spindle is 73mm respectively 86mm.	WSB 300 0002
Motor bracket with clamping ring for spindle actuators type WMS 306 / 309 / 409. The distance from the mounting surface of the motor bracket to the center of the spindle 50mm respectively 65mm.	WSB 300 0003
Bottom screw for spindle actuators type WMS 306 / 309 / 409	WSB 300 0004

WSB 300 0001 / 300 0002 / 300 0003 / 300 0004

Brackets with clamping ring for mounting spindle body



WSB 300 0010



WSB 300 0011



WSB 300 0012

WSB 300 0010 / 300 0011 / 300 0012

Wing brackets for spindle actuators



Natural
ventilation



Smoke
ventilation

Application

- bracket for spindle actuator type WMS 306 / 309 / 409
- up to max 1500N.

WSB 300 0010

Bracket for fixing the pushrod to the window- or dome frame, as well as fixing of the spindle actuator with a bottom screw type WSB 300 0004.

Supplied with bolt and retaining cotter pin.

WSB 300 0011

Bracket for fixing the pushrod to the window- or dome frame. Supplied with bracket with fixing bolt.

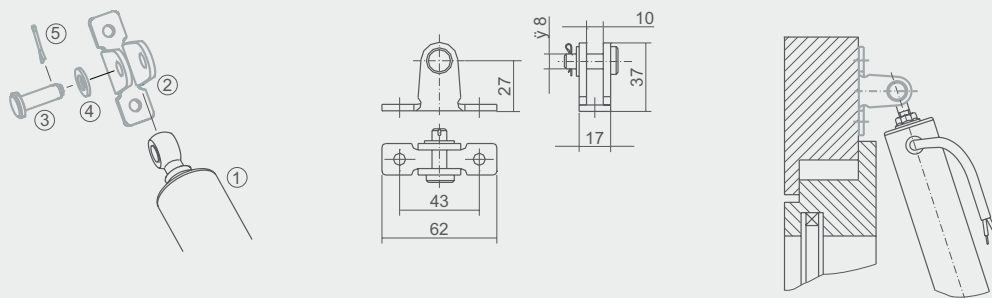
WSB 300 0012

Bracket for fixing the pushrod to the window- or dome frame. Supplied with pin and retaining brace.

WSB 300 0010 / 300 0011 / 300 0012

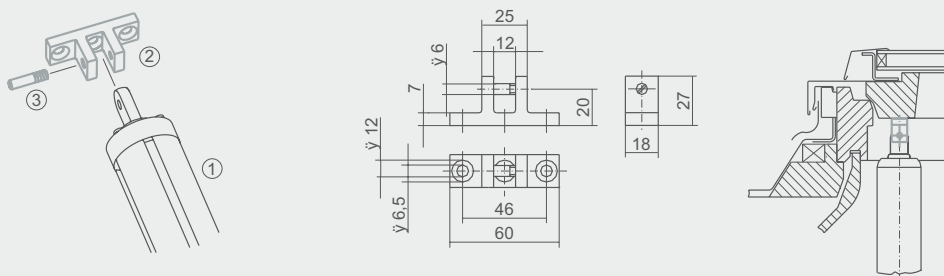
Wing brackets for spindle actuators

Installation suggestion – WSB 300 0010



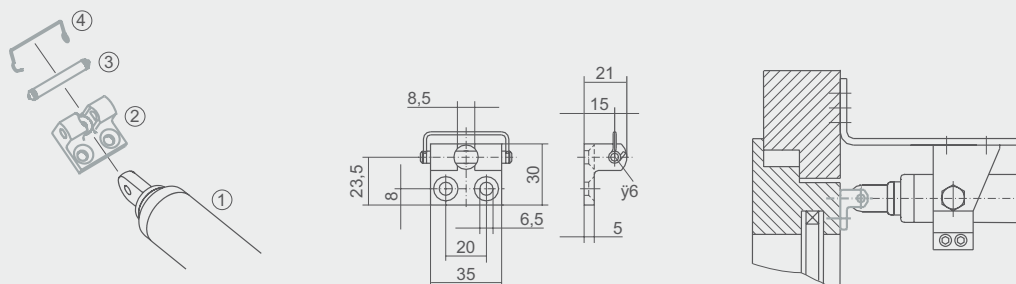
1. Spindle actuator 2. Bracket 3. Bolt 4. Washer 5. Pin

Installation suggestion – WSB 300 0011



1. Spindle actuator 2. Bracket 3. Fixing bolt

Installation suggestion – WSB 300 0012



1. Spindle actuator 2. Bracket 3. Pin 4. Safety bracket

Items	Item no.
Bracket with bolt and retaining cotter pin	WSB 300 0010
Bracket with fixing bolt	WSB 300 0011
Bracket with pin and retaining bracket	WSB 300 0012



Ceiling bulkhead

UP

C50/4

06

P2

DK
Tilbehør

UK
Accessories

F
Accessoires

D
Zubehör

SE
Tillbehör



LIC 47/47



WSK 320 / 321 / 501 / 503
Primary break glass unit,
plastic housing



WSK 330
Secondary break glass unit,
plastic housing



WSK 328 / 329 / 502 / 504
Primary break glass unit,
metal housing



WSK 331
Secondary break glass unit,
metal housing



WSK 320 / 321 / 328 / 329 / 330 / 331 / 501 / 502 / 503 / 504

Break glass unit



Smoke
ventilation



VdS approved



CNBOP-PIB
certification

Application

- for manual activation of smoke ventilation system
- break glass unit with the highest priority in smoke ventilation panels
- lockable housing in plastic or metal
- surface mounting
- spare parts (glass, keys etc.) can be ordered separately

WSK 3-series

Break glass units for smoke ventilation panels type:

- WSK 204
- WSK 304

WSK 320 and WSK 330 break glass units (plastic housing) in the colour orange are approved in accordance with VdS.

WSK 5-series

Break glass unit with data communication (break glass unit bus).

Break glass units for smoke ventilation panels type:

- WSK 310, WSK 320
- WSK 520, WSK 540, WSK 560

WSK 501 / WSK 502:

Smoke detectors and keypads can be connected to the break glass units.

WSK 503 / WSK 504:

No components can be connected to the break glass units.

Notice that the smoke control panels WSK 310 and WSK 320 have a max limit of break glass units that can be connected. For further information – see the respective sheets for the panels.

Notice that the smoke control panels WSK 520, WSK 540 and WSK 560 must have firmware 0.85 or later if break glass units WSK 503 or WSK 504 are connected.

Primary / secondary break glass unit

The break glass units are supplied as primary or secondary.

Primary

- with or without audible fault/alarm signal
- the three coloured LED indicates fire triggering or if a fault is present on the system
- with built-in reset button which can be activated, if the break glass unit has been used

Secondary

- without audible fault alarm signal
- the red LED indicates fire triggering

Specifications

- "SMOKE VENT" text labels are included in the delivery
- easy mounting / installation
- lockable housing
- integrated cable monitoring, which is triggered by a cable break in the smoke unit (adjustable)
- housing in plastic (available in 5 different colours) or metal (available in 3 different colours)
- with data communication (the WSK 5 series)

Press function

- press button for "EMERGENCY OPEN"
- re-set button (behind the door) after activation:
WSK 320 / 321 / 328 / 329 / 501 / 502 / 503 / 504

LED-Display

- red LED "EMERGENCY"
- yellow LED "fault":
WSK 320 / 321 / 328 / 329 / 501 / 502 / 503 / 504
- green LED "operation"
WSK 320 / 321 / 328 / 329 / 501 / 502 / 503 / 504

Acoustic Signal

- "EMERGENCY OPEN" and "fault":
WSK 320 / 329 / 501 / 502 / 503 / 504

WSK 320 / 501 / 503

Break glass unit (primary)

- break glass unit *with* an audible signal
(when opening the door the signal will be interrupted)
- plastic housing

WSK 321

Break glass unit (primary)

- break glass unit *without* an audible signal
- plastic housing

WSK 328

Break glass unit (primary)

- break glass unit *without* an audible signal
- metal housing

WSK 329 / 502 / 504

Break glass unit (primary)

- break glass unit *with* an audible signal
(when opening the door the signal will be interrupted)
- metal housing.

WSK 330

Break glass unit (secondary)

- break glass unit *without* an audible signal
- plastic housing

WSK 331

Break glass unit (secondary)






- break glass unit *without* an audible signal
- metal housing

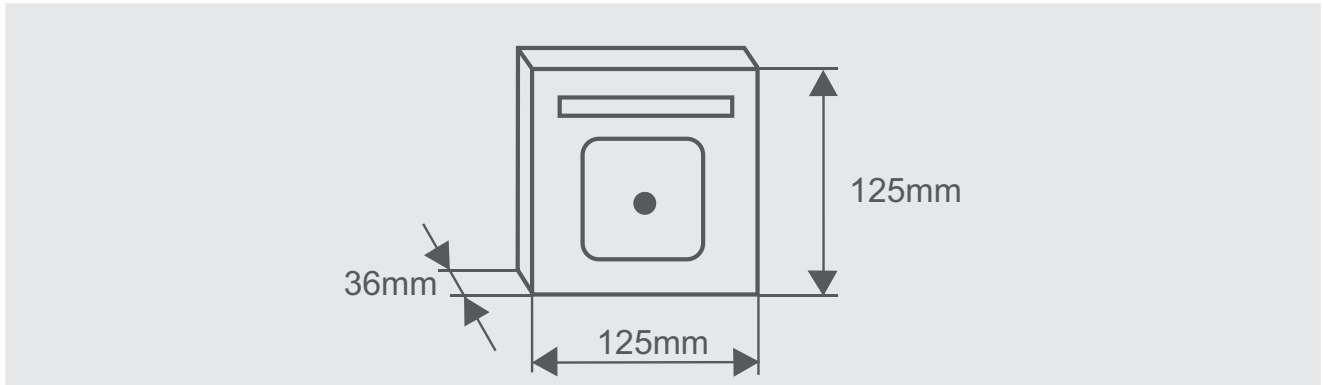
Technical specifications

Rated current	24 VDC	
Rated current at fault indication	WSK 3xx: 15mA WSK 5xx: 1mA (without smoke detectors)	
Data communication	WSK 3xx: no WSK 5xx: yes (break glass unit bus)	
VdS-approval	WSK 320 / 330: orange plastic housing is approved in accordance with VdS 2592 (approval no.: G 505010)	
Housing	Plastic or metal, according to DIN/EN54 or DIN 14655	
Colour	<ul style="list-style-type: none">● red● yellow● grey● blue● orange	<ul style="list-style-type: none">RAL 3000RAL 1021RAL 7035RAL 5015RAL 2011
Size	125 x 125 x 36mm (W x H x D)	
IP rating	IP40	
Delivery includes	Break glass with key unit and "SMOKE VENT" text labels	
Spare parts	See the spare part list on our web site www.windowmaster.com under "Products"	
Note	We reserve the right to make technical changes	

WSK 320 / 321 / 328 / 329 / 330 / 331 / 501 / 502 / 503 / 504

Break glass unit

Items													Item no.	
						Colour code							(x = colour code number)	
Type			Housing			1	2	3	4	5				
Primary	Secondary	Audible signal	Plastic	Metal						VdS	Data com.			
WSK 3 series														
To be used with smoke control panels type: WSC 204 WSC 304	+		+	+		+	+	+	+				WSK 320 000x 01	
	+		+	+						+	+		WSK 320 000x 61	
	+			+		+	+	+	+	+			WSK 321 000x 01	
	+				+		+	+		+			WSK 328 000x 01	
	+		+		+		+	+		+			WSK 329 000x 01	
		+		+		+	+	+	+				WSK 330 000x 01	
		+		+						+	+		WSK 330 000x 61	
		+			+		+	+		+			WSK 331 000x 01	
WSK 5 series														
To be used with smoke control panels type: WSC 310 / 320 WSC 520 / 540 / 560	+		+	+		+	+	+	+	+		+	WSK 501 000x 01	
	+		+		+		+	+		+		+	WSK 502 000x 01	
	+		+	+		+	+	+	+	+		+	WSK 503 000x 01	
	+		+		+		+	+		+		+	WSK 504 000x 01	





WSK 601

Fireman's override switch



Smoke
ventilation

Application

- 3-position switch for manual override of Open / Close function of smoke system
- triggering of Open / Close override function in one or more smoke zones
- Open / Close function is configured on the smoke control panel
- switch configurable to have the highest priority in smoke control panels
- visual and audible alarm when wired into the local break glass if set to override position
- plastic housing
- flush or surface mounting
- hinged cover

Used for smoke control panels type:

- WSC 310 P, WSC 320 P
- WSC 520, WSC 540, WSC 560

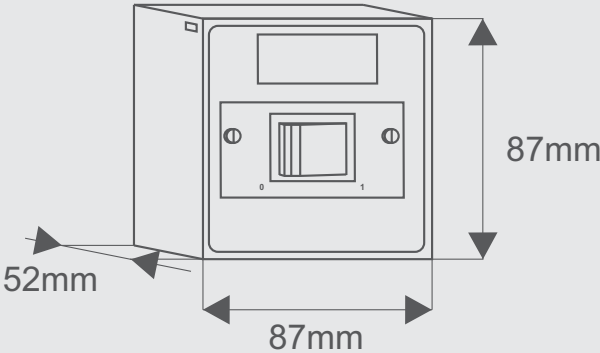
The switch is connected directly to the comfort inputs on a break glass unit type WSK 501 / 502.

Notice that the smoke control panels WSC 310 P and WSC 320 P must have firmware 1.26 or later if a fireman's override switch type WSK 601 is to be connected.

Notice that the smoke control panels WSC 520, WSC 540 and WSC 560 must have firmware 0.91 or later if a fireman's override switch WSK 601 is to be connected.

Technical specifications	
Maximum voltage	24 VDC or 240 VAC
Current rating	2 A @ 240 VAC, 6A @ 24 VDC
Housing	Plastic (ABS)
Colour	Orange
Size	87 x 87 x 52mm (W x H x D)
Operating conditions	-20C - +70C, max 95% relative humidity (not condensing)
IP rating	IP24D
Delivery includes	Fireman's override switch
Note	We reserve the right to make technical changes

Items	Item no.
Fireman's override switch	WSK 601 0101





WSA 209



WSA 210 1161

WSA 209 / 210 1161

Key switch



Natural
ventilation

Application

- for the manual operation of the ventilation / window actuators
- assurance that only authorized persons operate the ventilation / window actuators
- surface or flush mounting
- for schools, institutions and public areas

The key switch can be used in offices, schools or other public areas. With the mounting of the key switch the manual operation of the ventilation / actuators can only be controlled by authorized persons who have a key (e.g. teacher or janitor)

The key switch can be surface or flush mounted. When surface mounted the frame type WSA 209 01 must be used. The frame is to be ordered separately.

Special technical features

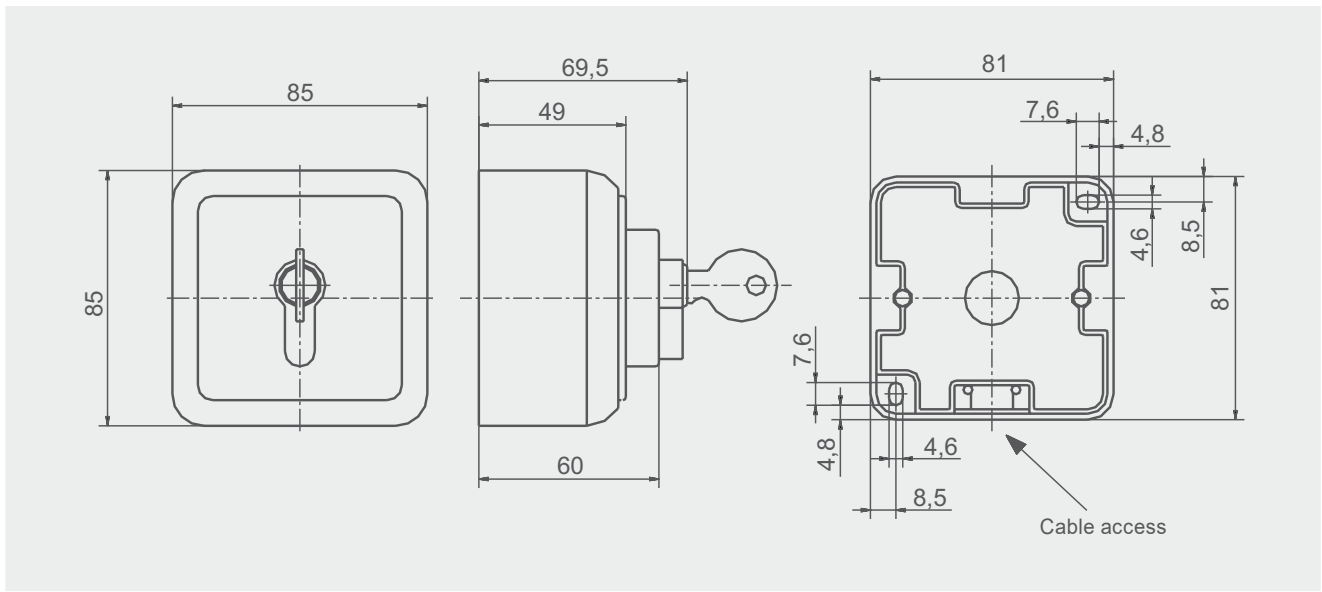
- "OPEN/CLOSE" function
- easy installation
- lockable half profile cylinder
- delivered with 3 keys
- 81 x 81 x 35mm (W x H x D)

WSA 209 / 210 1161

Key switch

Item	Item no.
Key switch with 3 keys	WSA 210 1161

Accessories	Item no.
Surface mounted frame for ventilation and key switches 85 x 85 x 47mm (W x H x D)	WSA 209



We reserve the right to make technical changes



WSK 100 1161



WSK 102



WSK 103



WSK 300 11

WSK 100 1161 / 102 / 103 / 300 11

Ventilation keypads



Natural
ventilation



Smoke
ventilation

Application

- ventilation keypad with OPEN / CLOSE / STOP function
- secondary priority when connecting to smoke units
- keypad without mechanical lock

The ventilation keypad is used for the manual opening and closing of electrically operated windows, smoke vents or light domes.

The ventilation keypad signal has second priority in the smoke unit, meaning the signals from smoke detectors, smoke ventilation switches and external smoke alarm units have first priority.

For connecting to all WindowMaster natural ventilation and smoke ventilation panels.

WSK 100 1161

Surface or flush mounting.

When surface mounting WSA 209 01 mounting frame must be used. The frame is to be ordered separately.

WSK 102

Surface mounting.

Model Fuga. (DK version)

WSK 103

Surface mounting.

Model Fuga.

WSK 300 11

Flush mounting.

(CH version)

WSK 100 1161 / 102 / 103 / 300 11

Ventilation keypads

Technical specifications		
Function	OPEN / CLOSE / STOP	
Material	plastic housing	
Colour	white	
Size	WSK 100 1161 WSK 102 WSK 103 WSK 300 11	81 x 81 x 15mm (W x H x D) 52 x 52 x 44mm (W x H x D) 50 x 50 x 17mm (W x H x D) 88 x 88 x 11mm (W x H x D)
Note	we reserve the right to make technical changes	

Items	Item no.
Ventilation keypad	WSK 100 1161
Ventilation keypad model FUGA (<i>DK version</i>)	WSK 102
Ventilation keypad model FUGA, delivered with 6m 3-core 0.25mm ² cable.	WSK 103
Ventilation keypad (<i>CH version</i>)	WSK 300 11

Accessories	Item no.
Frame for surface mounting (for WSK 100)	WSA 209



430630



430821



314602



1510683

WSK Thermokon 314602 / 430630 / 430821 / 1510683

Battery free wireless keypad and remote control



Natural
ventilation



Smoke
ventilation

Applications

- wire less keypad with with OPEN / CLOSE / STOP function
- remote control with OPEN / CLOSE / STOP function
- secondary priority when connecting to smoke units
- battery free
- less cabling

The ventilation keypad and remote control are used for the manual opening and closing of electrically operated windows, smoke vents or light domes.

The ventilation keypad signal and the remote control signal have second priority in the smoke unit, meaning the signals from smoke detectors, smoke ventilation switches and external smoke alarm units have first priority.

The receiver, which receive signals from the keypad and remote control, can be connected to all WindowMaster control units and smoke ventilation panels. The receiver can receive up to 10 identical signals and thus can up to 10 keypads/remote controls be connected to the receiver. Is there more than one type of signal two receivers are to be used – please see application examples 1 and 2 on page 3.

Keypads and remote controls are battery-free, since they self power the required energy when used.

WSK Thermokon – 430630

Keypad with 2 channels. For the operation of one motor lines. To be used with one receiver type WSK Thermokon – 1510683.

WSK Thermokon – 430821

Keypad with 4 channels. For the operation of two motor lines. To be used with two receivers type WSK Thermokon – 1510683.

WSK Thermokon – 314602

Remote control with 4 channels. For the operation of two motor lines. To be used with two receivers type WSK Thermokon – 1510683.

WSK Thermokon – 1510683

Receiver SRO-VA for WSK Thermokon remote controls and wire less keypads. Up to 10 keypads/remote controls be connected to the receiver.

The receiver is connected to a control unit or smoke ventilation panel.

The receiver has a programmable operation time (opening/closing time), which is preset to 10 sec.

The receiver has three options for operating the open / close / stop function on the keypad and remote control:

Option 1 (preset)

Long press: opens/closes the actuators in the preset operation time or until stop is pressed

Short press: stop

Option 2

Short press: opens/closes the actuators in the preset operation time or until stop is pressed

Short press: stop

Option 3 (deadman function)

Opens/closes the actuators as long as the button is pressed, but no longer than the preset operation time.

Technical specifications**WSK Thermokon 430630 / 430821 – wire less keypads with 2 or 4 channels**

Function	Keypads for operation of one or two motor lines. 2-channel: operation of one motor line, used with one receiver WSK Thermokon – 1510683 4-channel: operation of two motor lines, used with two receivers WSK Thermokon – 1510683
Mounting	Glued (double-sided mounting film enclosed) or screwed onto flat surface
Material	Plastic
Colour	White
Size	61 x 61 x 15mm (W x H x D)
Delivery includes	Keypad and double-sided adhesive foil

WSK Thermokon 314602 – remote control with 4 channels

Function	Remote control for operation of two motor lines. Used with two receivers WSK Thermokon – 1510683
Material	Plastic
Colour	Black
Size	50 x 83 x 25mm (W x H x D)
Weight	50g
Delivery includes	Remote control

WSK Thermokon 1510683 – receiver SRO-VA

Function	The receiver receives signals from WSK Thermokon keypads and remote controls. With programmable operation time as well as three operation modes for the keypads and remote controls.
Supply voltage	24V from a WindowMaster control unit or smoke ventilation panel
Standby consumption	1,5W
IP rating	IP20
Mounting	Screwed onto flat surface The receiver can also be hidden in a box (not supplied by WindowMaster)
Material	ABS
Colour	Red
Size	71 x 48 x 35mm (W x H x D)
Delivery includes	Receiver

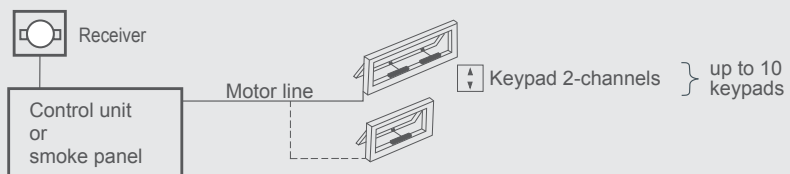
Generally for keypads, remote control and receiver

Range/operation	30m: when visual contact or through max. 5 wood walls 20m: when max 2 brick walls 10m: when reinforces concrete or through max. 1 ceiling
Receiving frequency	868 MHz
Operating conditions	-20°C - +60°C, max. 95% relative humidity (not condensing), for indoor use
Note	We reserve the right to make technical changes

Application example 1

The receiver as well as the window actuator(s) are connected to a control. The control can be either a control unit or a smoke ventilation panel.

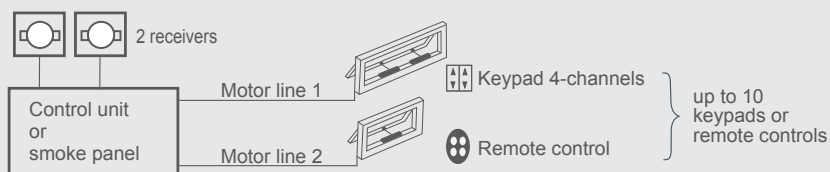
The window(s) is operated on the 2-channel wireless keypad.



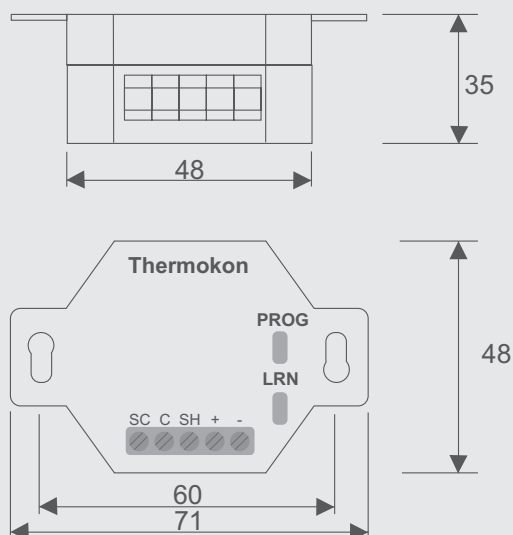
Application example 2

The receivers and window actuators are connected to a control. The control can be either a control unit or a smoke ventilation panel.

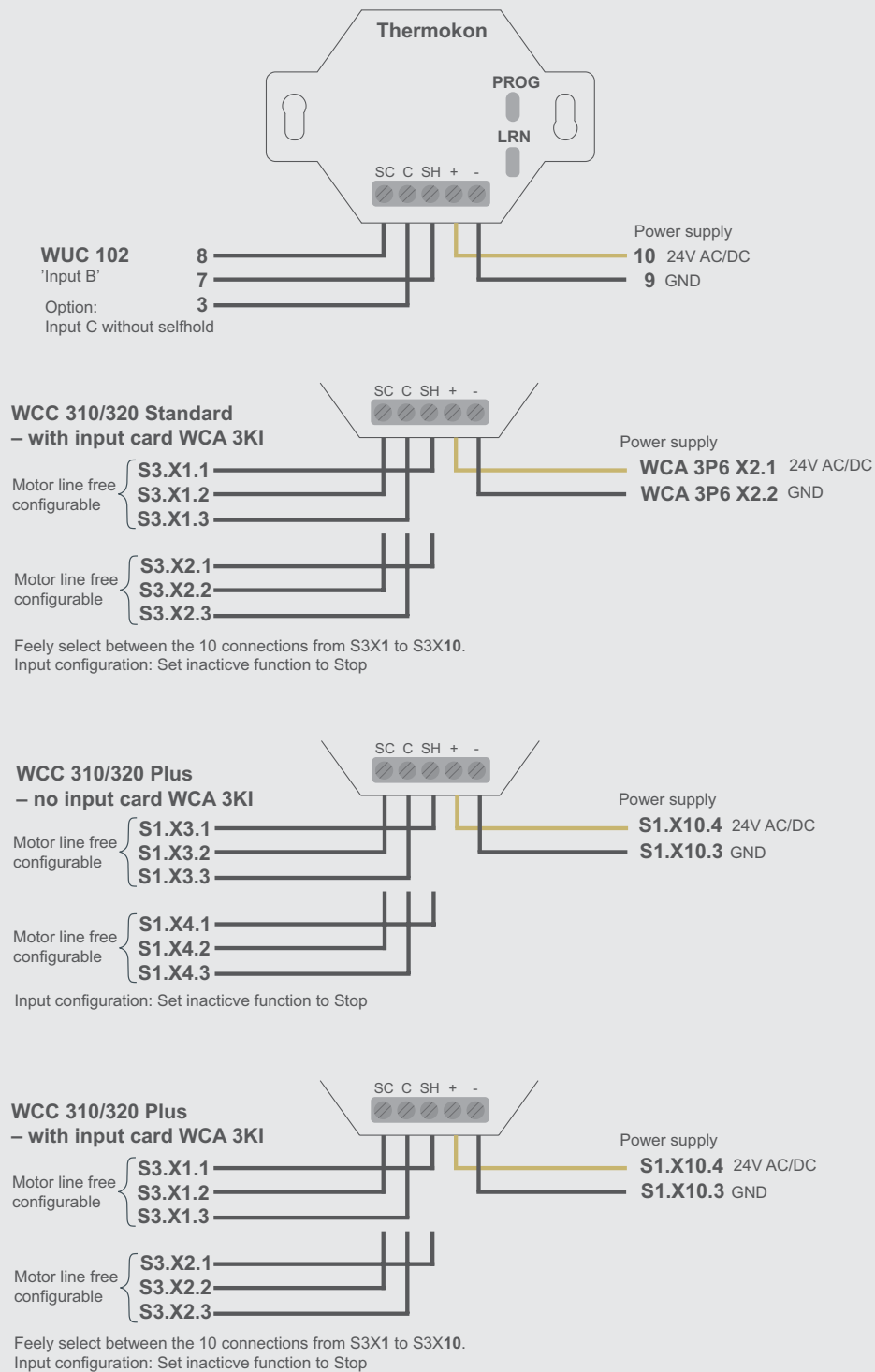
The windows are operated on the wireless 4-channel keypad or on the remote control



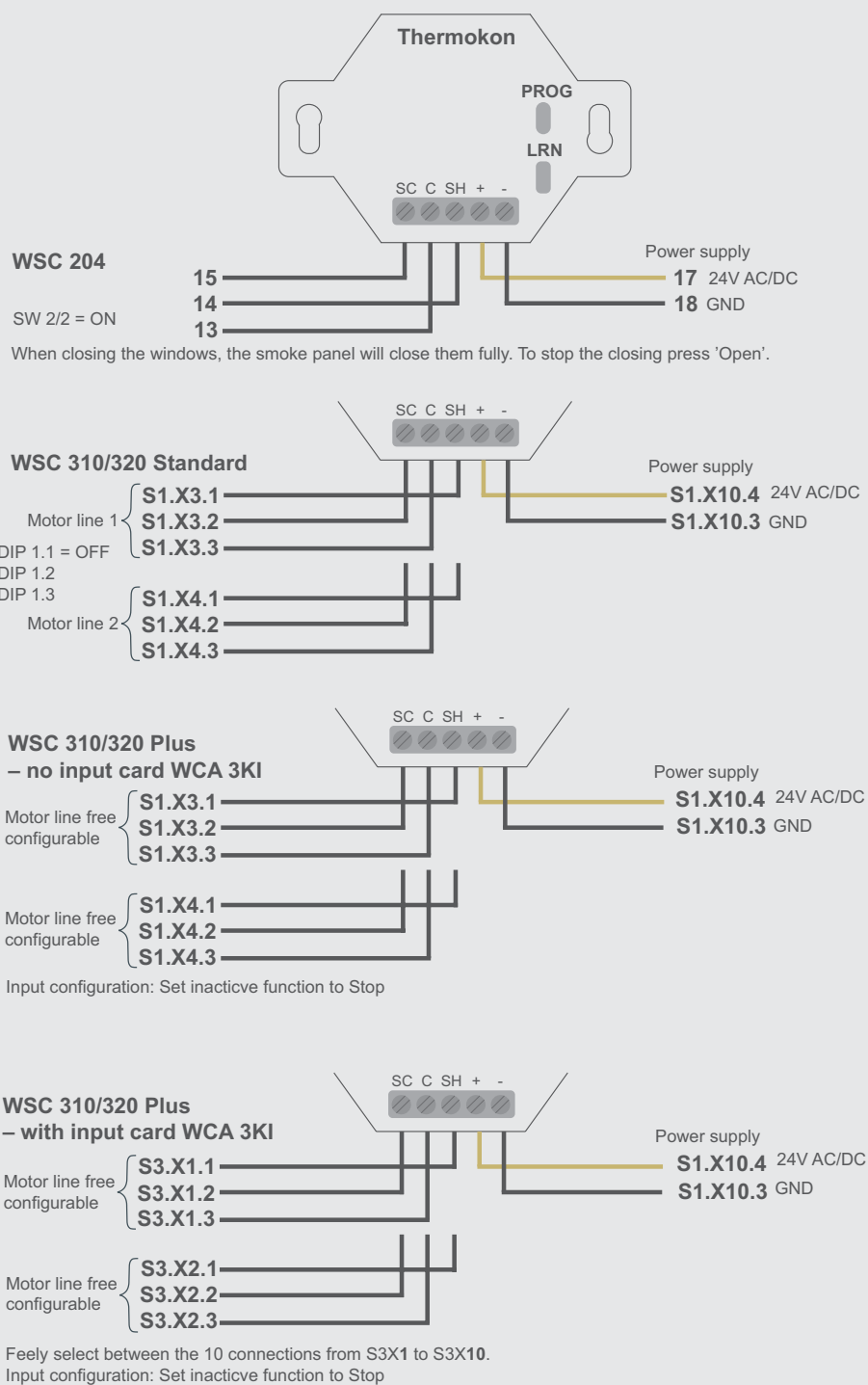
Dimensional drawing: WSK Thermokon – 1510683 receiver SRC-DO2



Connection to control units (examples)

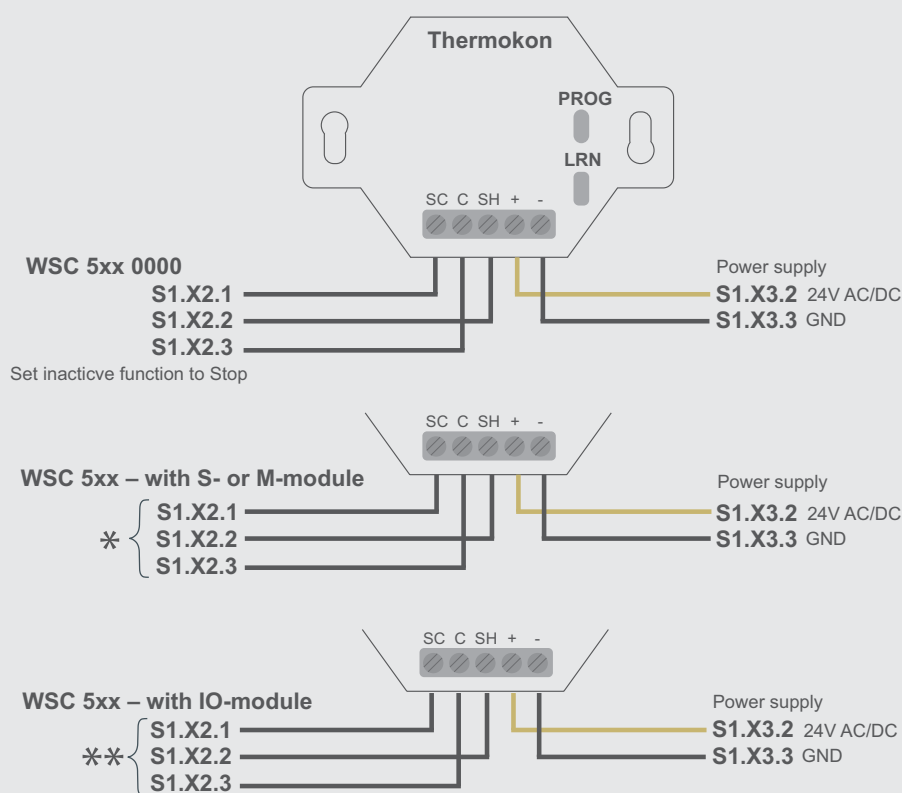


Connection to smoke control panels – CompactSmoke™ (examples)



Battery free wireless keypad and remote control

Connection to smoke ventilation panel – FlexiSmoke™ (examples)



* Alternatively it can be connected on the S-module respectively the M-module. Depending on where the module(s) is located, the connection can be made on S3, S4 or S5 on

X5.1
X5.2
X5.3

Set inactive function to Stop

** Alternatively it can be connected on the IO-module. Depending on where the module(s) is located, the connection can be made on S3, S4 or S5 on

X4.1 or X4.4 or X4.7
X4.2 X4.5 X4.8
X4.3 X4.6 X4.9

Set inactive function to Stop

Items	Item number
Keypad, 2-channel, wireless, for control of one motor line To be used with one receiver type WSK Thermokon – 1510683	WSK Thermokon – 430630
Keypad, 4-channel, wireless, for control of two motor lines To be used with two receivers type WSK Thermokon – 1510683	WSK Thermokon – 430821
Remote control, 4-channel, for control of two motor lines To be used with two receivers type WSK Thermokon – 1510683	WSK Thermokon – 314602
Receiver SRO-VA for WSK Thermokon wireless keypads and WSK Thermokon remote controls	WSK Thermokon – 1510683

Accessories	Item number
Antenna, internal: SRE-Repeater UP, 230V	WSK Thermokon – 556736
Antenna, external: SRE-Repeater / B, 230V	WSK Thermokon – 593830
Antenna extender 10m	WSK Thermokon – 257206



WSA 852



WLL 831



WLL 833



WLL 11M SIHF



WLL 822



WLL 832

WLL 8xx

Cables for smoke ventilation



Natural
ventilation



Smoke
ventilation

Application

- silicone cable for smoke ventilation use

For description and dimensioning of the cable, see the next pages.

Cable is to be installed according to national guidelines.

Cable dimensions

For the maximum cable lengths to SHV control in conjunction with standard actuators (taking the stated cable cross sections into consideration) please refer to the following table:

Maximum cable length – always routed from the control panel to the last junction box
Actuator current – sum of all actuator currents per group module

Note

- 3-core wires are required for each actuator supply cable (- / + / monitoring purpose) until the last junction box.
- green/yellow (ground) wires are not to be used!
- maximum voltage drop in the cable UL: 2V
- formula for the calculation of the maximum cable length
- cable length between control units using MotorLink® (Wxx xxM) and window actuators, however **maximum 50m!**

$$\text{max. cable length} = \frac{\text{admissible voltage drop (UL)} \times \text{conductivity of copper (56)} \times \text{cable cross section (a)}}{\text{total max. actuator current (I) in amps} \times 2}$$

Cable specifications is a guide only, overall responsibility resides with the electrical contractor on site.

Max. cable length when actuator is connected to power supply

Cable cross section (a) (do not use green/yellow (ground) wire!)	3 x 0.75 mm ²	3 x 1.50 mm ²	3 x 2.50 mm ²	3 x 4.00 mm ²	3 x 6.00 mm ²	5 x 1.50 mm ² 2 wires in parallel	5 x 2.50 mm ² 2 wires in parallel	
Total actuator current [I]								
±24V power supply								
1A	42	84	140	224	336	168	280	meters
2A	21	42	70	112	168	84	140	meters
3A	14	28	47	75	112	56	93	meters
4A	11	21	35	56	84	42	70	meters
5A	8	17	28	45	67	34	56	meters
6A	7	14	23	37	56	28	47	meters
7A	6	12	20	32	48	24	40	meters
8A	5	11	18	28	42	21	35	meters
MotorLink® power supply								
1A	42	50	50	50	50	50	50	meters
2A	21	42						meters
3A	14	28						meters
4A	11	21				42		meters
5A	8	17	28			34		meters
6A	7	14	23	37		28	47	meters
7A	6	12	20	32	48	24	40	meters
8A	5	11	18	28	42	21	35	meters

WLL 8xx

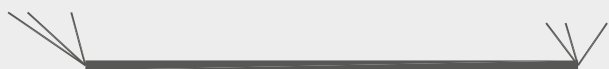
Cables for smoke ventilation

WLL 11M SIHF



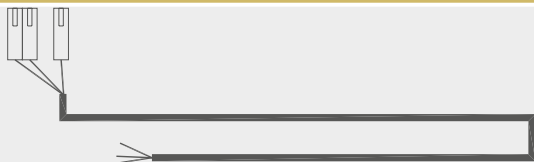
Material	silicone, grey 5m, 3-core 0.75mm ²
Application	cable for 2 actuators
Delivery includes	cable

WLL 822



Material	silicone, grey 2m, 3-core 0.75mm ²
Application	cable for 2 actuators
Delivery includes	cable

WLL 831



Material	silicone, grey 5m, 3-core 0.75mm ²
Application	cable for 2 actuators
Delivery includes	1 x cable with attached fast-on socket

WLL 832



Material	silicone, grey 2m, 3-core 0.75mm ² 0.1m, 3-core 0.75mm ²
Application	cable for 2 actuators
Delivery includes	1 x cable with attached fast-on socket

WLL 833



Material	silicone, grey 10m, 3-core 0.75mm ²
Application	cable for 2 actuators
Delivery includes	1 x cable with attached fast-on socket

Items

Item no.

Cable for smoke ventilation for 2 actuators 5m 3-core 0.75mm ²	WLL 11M SIHF
Cable for smoke ventilation for 2 actuators 2m 3-core 0.75mm ²	WLL 822
Cable for smoke ventilation for 2 actuators 5m 3-core 0.75mm ²	WLL 831
Cable for smoke ventilation for 2 actuators 2m 3-core 0.75mm ²	WLL 832
Cable for smoke ventilation for 2 actuators 10m 3-core 0.75mm ²	WLL 833
Ceramic terminal block	WSA 852 (944676)



WLL 11M



WLL 15M



WLL 721



WLL 722



WLL 723

WLL 7xx Cables for natural ventilation



Natural
ventilation

Application

- LSZH cables for comfort ventilation use

For description and dimensioning of the cables, see the following pages.

Cable dimensions

For the maximum cable length to control unit panel in conjunction with standard actuators (taking into consideration the stated cable cross sections) please refer to the following table.

Maximum cable length: (always routed from the control panel to the last junction box)

Actuator current: sum of all motor currents per group module

Note

- do not use green/yellow (ground) wire!
- formula to calculate the max cable length
- maximum voltage drop in the cable UL: 2V
- cable length between control units using MotorLink® (Wxx xxM) and window actuators, however **maximum 50m!**

$$\text{Max cable length} = \frac{\text{admissible voltage drop (UL)} \times \text{conductivity of copper (56)} \times \text{cable cross section (a)}}{\text{total max. actuator current (I) in amps} \times 2}$$

Cable specifications is a guide only, overall responsibility resides with the electrical contractor on site.

Max. cable length when actuator is connected to power supply

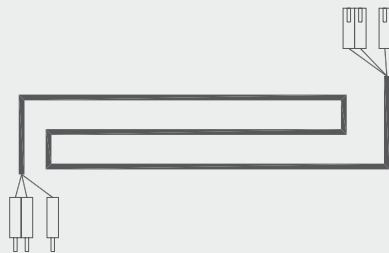
Cable cross section (a) (do not use green/yellow (ground) wire!)	3 x 0.75 mm ²	3 x 1.50 mm ²	3 x 2.50 mm ²	3 x 4.00 mm ²	3 x 6.00 mm ²	5 x 1.50 mm ² 2 wires in parallel	5 x 2.50 mm ² 2 wires in parallel	
Total actuator current [I]								
±24V power supply								
1A	42	84	140	224	336	168	280	meters
2A	21	42	70	112	168	84	140	meters
3A	14	28	47	75	112	56	93	meters
4A	11	21	35	56	84	42	70	meters
5A	8	17	28	45	67	34	56	meters
6A	7	14	23	37	56	28	47	meters
7A	6	12	20	32	48	24	40	meters
8A	5	11	18	28	42	21	35	meters
MotorLink® power supply								
1A	42	50	50	50	50	50	50	meters
2A	21	42						meters
3A	14	28						meters
4A	11	21						meters
5A	8	17	28	45	50	34	50	meters
6A	7	14	23	37		28		meters
7A	6	12	20	32		24		meters
8A	5	11	18	28	42	21	35	meters

WLL 11M

Material	LSZH, grey 5m, 3-core 0.75mm ²
Application	cable for connection of WMB with control unit
Delivery includes	1 x cable with attached fast-on plug

WLL 15M

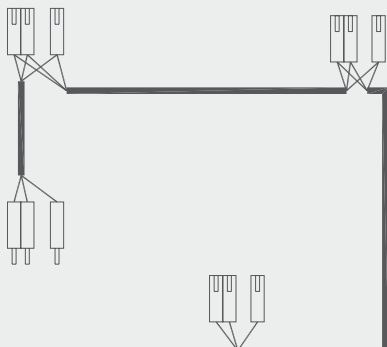
Material	LSZH, grey 10m, 3-core 0.75mm ²
Application	cable for connection of WMB with control unit
Delivery includes	1 x cable with attached fast-on plug

WLL 721

Material	LSZH, grey 6m 3-core 0.75mm ²
Application	cable for connecting 2 WMX
Delivery includes	1 x cable with attached fast-on plug and socket

WLL 722

Material	LSZH, grey 2m 3-core 0.75mm ² 0.1m, 3-core 0.75mm ²
Application	cable for 2 WMX
Delivery includes	2 x cable with attached plug and socket

WLL 723

Material	LSZH, grey 2 x 2m (3-core 1.50mm ²) 0.1m, (3-core 1.50mm ²)
Application	cable for 3 WMX
Delivery includes	3 x cable with attached fast-on plug and socket

WLL 7xx

Cables for natural ventilation

Items	Item no.
Cable for 1 actuator WMX, ventilation (5m 3-core 0.75mm ²)	WLL 11M
Cable for 1 actuator WMX, ventilation (10m 3-core 0.75mm ²)	WLL 15M
Cable for connecting 2 actuators WMX, ventilation (6m 3-core 0.75mm ²)	WLL 721
Cable for 2 actuators WMX, ventilation (2m 3-core 0.75mm ² + 0.1m 3-core 0.75mm ²)	WLL 722
Cable for 3 actuators WMX, ventilation (2 x 2m 3-core 1.50mm ² + 0.1m 3-core 1.50mm ²)	WLL 723



DK
Referencer

UK
References

F
References

D
Referenzen

SE
Referenser

WindowMaster aspires to protect people and the environment by creating a healthy and safe indoor climate, automatically ventilating spaces with fresh air through facade and roof windows in buildings. We offer the construction industry foresighted, flexible and intelligent window actuators and control systems for natural ventilation, mixed-mode ventilation, and smoke ventilation – of the highest quality.

WindowMaster employs around 135 highly experienced cleantech specialists in Denmark, Norway, Germany, the United Kingdom, Ireland, Switzerland, and the United States. In addition, we work with a vast network of certified partners. With our extensive expertise built up since 1990, WindowMaster is ready to help the construction industry meet its green obligations and achieve their architectural and technical ambitions.

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