VELUX Modular Skylights

Electrical Handbook

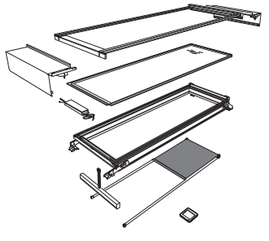
Version 2.1

velux.co.uk/modularskylights

Controlling VELUX Modular Skylights

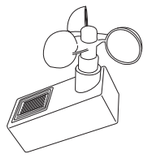
VELUX Modular Skylights and blinds offer two options of control, VELUX INTEGRA® and an Open System solution. VELUX INTEGRA® uses VELUX supplied operation devices to operate venting modules and roller blinds to any desired position. Alternatively, the modular skylight system can be controlled with an Open System solution, connected to ± 24 V DC. Options include io-homecontrol® compatible systems and common building automation fieldbus systems.

Index



homecontrol®

OS
Open system



Planning & Specifying 6

Planning the Electrical System 8
Ventilation 8
Wiring 8
Operators 9
Size of Installation 9
Module / Electrical Components 10
Electrical Components 11

VELUX INTEGRA® 13

Chain Actuator – VELUX INTEGRA® 14
Control System – KLC 400 15
Control Pad – KLR 200 16
Wall Switch – KLI 110 17
Interface for External Wall Switch – KLF 050 18
Interface for External Control Devices – KLF 200 19
Rain and Wind Sensor Set – KLA S105 20
Roller Blind – RMM 21

VELUX INTEGRA® Electrical Diagrams
Fixed Modular Skylights with Sunscreening 22
Fixed and Venting Modular Skylights without Sunscreening 23
Fixed and Venting Modular Skylights with Sunscreening (4 modules) 24
Fixed and Venting Modular Skylights with Sunscreening (4+ modules) 25

Open System 27

Comfort Ventilation
Chain Actuator – Comfort Ventilation 28

Comfort Ventilation Electrical Diagrams
Comfort Ventilation with ±24 V DC 32
Comfort Ventilation and Sunscreening with advanced MotorLink™ Control 33

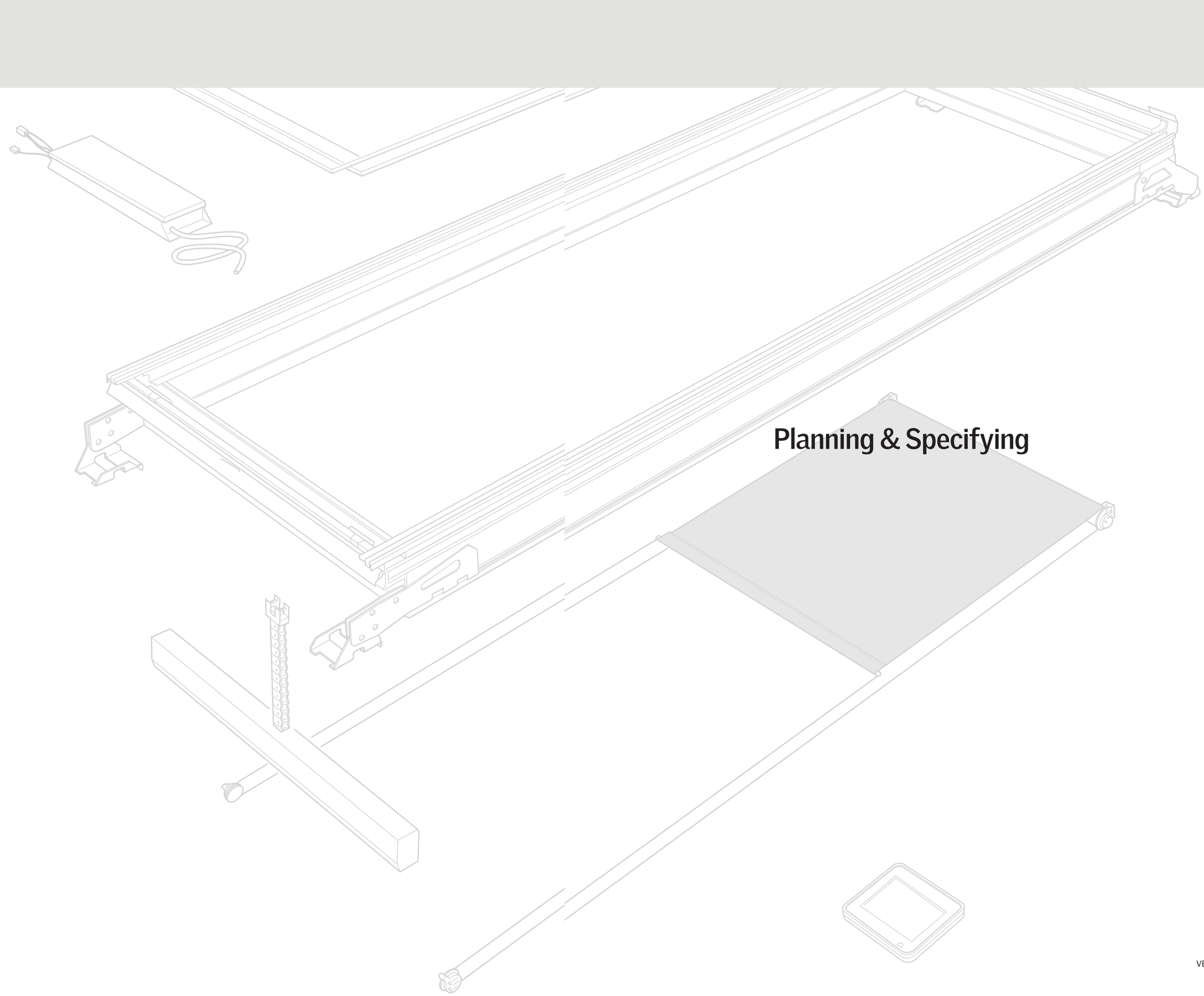
Smoke Ventilation
Chain Actuator – Smoke Ventilation 34

Smoke Ventilation Electrical Diagrams
Smoke Ventilation with ±24 V DC 36
Comfort and Smoke Ventilation with advanced MotorLink™ Control 37

Roller Blind RMM 38

Tips and Tricks 43

Combining VELUX INTEGRA® System and Open System 44
Recommended Placement of Rain and Wind Sensor 44
Wind Deviation by Building (side view) 45
Recommended Placement of KLF 200 as Repeater in VELUX INTEGRA® System 45
Placement of KLF 200 Interface and Repeaters in Complicated Building layout 46
Reduction of IO Signal 47



Planning & Specifying

Planning the Electrical System

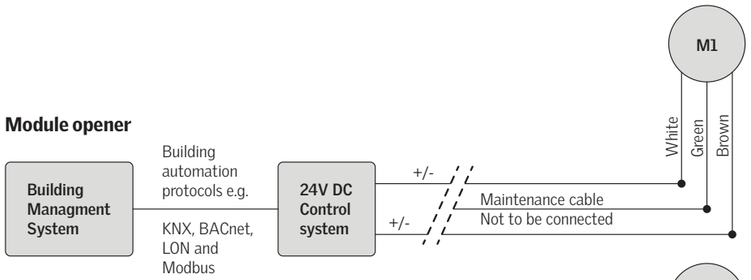
When planning the electrical system of your VELUX modular skylight installation, there are several things to consider.

You need to specify the functionality of the system, whether you have both venting modules and roller blinds or only one or the other, if there is a Building Management System already present, if you need smoke ventilation, how many users will operate and manage the system, how many sections it needs to be divided into, positioning and number of operation controls etc.

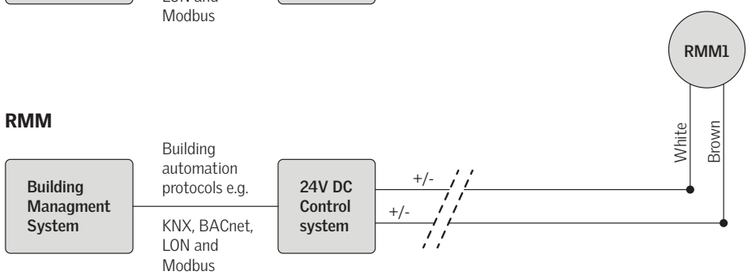
The electrical system for controlling the venting modules and the roller blinds can be supplied in two different systems, the VELUX INTEGRA® system or the Open System ±24V (OS ±24V).

The VELUX INTEGRA® system is a simple wireless system for comfort ventilation and control of roller blinds. The system is based on the io-homecontrol® protocol. All the components for VELUX INTEGRA® (actuators, control panels, sensors, etc.) are supplied by the VELUX Group. In the OS ±24V, the actuators (opening motors and roller blinds) are controlled by ±24V DC. In addition, the module actuator can be integrated in common building automation fieldbus systems, e.g. KNX, BACnet, LON and Modbus, through the integrated MotorLink™ technology. Connection to a fieldbus system requires a separate control box between fieldbus system and motor. For the OS ±24V, only the actuators are supplied by the VELUX Group.

Module opener



RMM



Ventilation

It is possible to use the venting modules for either smoke ventilation or comfort ventilation or both in combination. If only comfort ventilation is required, the VELUX INTEGRA® or the OS ±24V can be used. If smoke ventilation is required, only the OS ±24V can be used. The two systems can be combined in case the customer wants to control the venting modules centrally by a Building Management System and the roller blinds locally. A solution can then be to use the OS ±24V for operating venting modules and the VELUX INTEGRA® system for the roller blinds.

Wiring

In new build projects, wiring can and should be planned early on in the design phase of the project. When installing the VELUX INTEGRA® system, you only need to install standard 230V cabling to supply the KLC 400 power supply. If OS ±24V is selected, you need to design the ±24V cabling capacity to supply the actuators according to the maximum power consumption needed. In renovation projects, wiring can be a challenge in existing constructions. In such cases the VELUX INTEGRA® system could be preferable, as only 230V power cables need to be installed for each of the module actuators' power supply/control unit (KLC 400).

Operators

Buildings with only few users that are in the building on a regular basis (e.g. small offices and residential buildings) often have several different operators and the VELUX INTEGRA® system is to be considered. In buildings with many different people, who are not in the building on a regular basis (e.g. airports, shopping malls and other public buildings), the control should be centralized and with few instructed persons, and in this case the OS ±24V is more suitable.

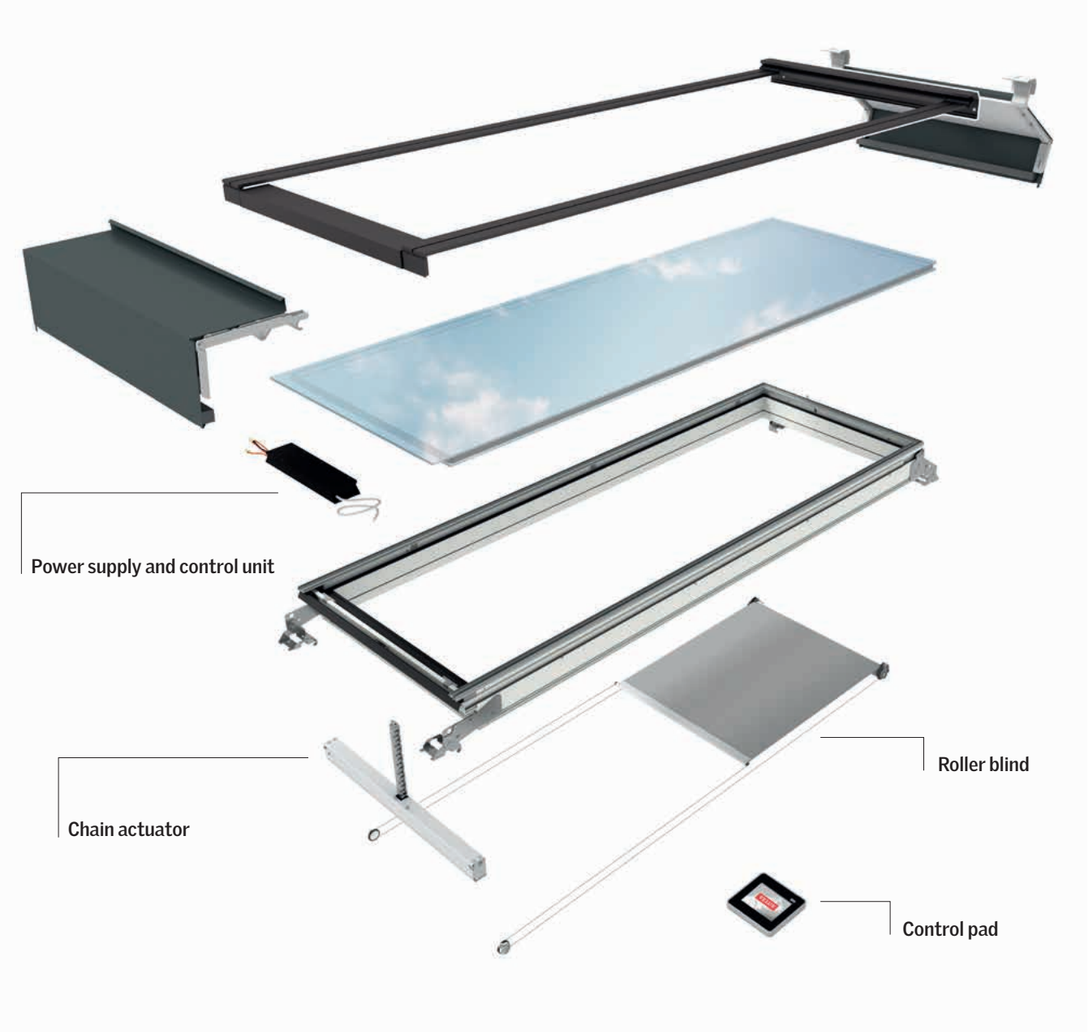
Size of Installation

Small installations (e.g. few skylights in the same area) will often require a simple standalone system like the VELUX INTEGRA® system. Large installations (e.g. many different skylights on different roofs) are likely to be integrated in a Building Management System, and the OS ±24V solution should be considered.

	VELUX INTEGRA®	Open System
Advantages:	• Easy installation • High security (same encryption as ATMs) • Feedback on remote control • Wireless solution (only power is needed) • Supported by the VELUX Group • All components from same supplier • Runs with other/existing VELUX io-homecontrol® system in the building. • Standalone control	• Unlimited options depending on control system • Smoke ventilation option • Flexible choice of control systems • Centrally located power supply and control • Connection to existing control system • Configuration of system can easily be changed after installation
Limitations:	• Only comfort ventilation • Limited range of wireless connection • Maximum 200 products in one remote control * • Some building materials will cause a reduction of the IO signal	• Installation and configuration require thorough planning • Not supported by the VELUX Group • Configuration only by certified technician

* For daily use the recommended maximum number of products in one remote control is 50.

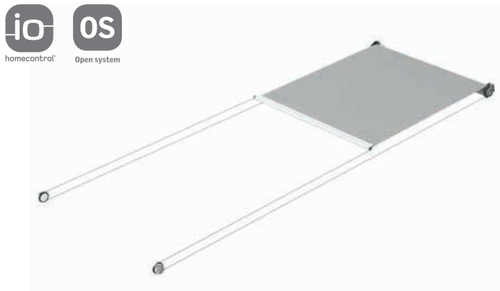
Module / Electrical Components



Electrical Components

Control pad	Power supply and control unit	Rain and wind sensor set
		KLA 105 KUX 110 KLF 200
KLR 200	KLC 400	KLA S105

Wall switch	Interface for external wall switch	Interface/Repeater for external control devices
KLI 110	KLF 050	KLF 200

Chain actuator	Roller blind
	
(No code – delivered with module HVC)	RMM + colour code (see Technical Handbook)

homec

VELUX INTEGRA®

Chain Actuator – VELUX INTEGRA®

Venting VELUX modular skylights are top-hung and use a hidden chain actuator integrated at the bottom profile.
The VELUX INTEGRA® chain actuator is based on the io-homecontrol® technology and uses the VELUX INTEGRA® control pad KLR 200 for user-friendly control.

VELUX INTEGRA®	
Material	Anodised aluminium housing with zinc cromate passivated steel chain
Weight	Max 5.5 kg
Control system	VELUX INTEGRA®
Supply cable*	0.3 m silicone cable, 4-core, 0.75 mm² (white, brown, black, red)
Chain stroke	Up to 410 mm (depending on module size)
Opening speed	4 mm/s
Sound level	TBD
Holding force (tractive)	5000 N (burglary strength) min.
Pressure force	1000 Newton
Tractive force	500 Newton
Operation conditions	-15°C - +76°C, max. 90% relative humidity (not condensing)
Nominal voltage**	24 V DC
Power consumption	Max. 200 W (peak)
Service	It is recommended to carry out a function test of the actuator at least once a year and to make sure that the skylight opens correctly
CE marking	The product is tested with the VELUX KLC 400 control units and complies with the EMC directive's requirements for use in residential, commercial and light commercial buildings
Reservation	The VELUX Group reserves the right to make technical changes.

* The supply cable is only for connection with VELUX control unit KLC 400 and may not be extended.
** Supplied by VELUX control unit KLC 400

VELUX modular skylights have a recommended minimum installation height of 2.5 m above floor level. In case of installation below that level, safety measures must be applied by the installer/user to prevent serious injury. No instruction or measure can eliminate the inherent hazards resulting from installation heights below 2.5 m.

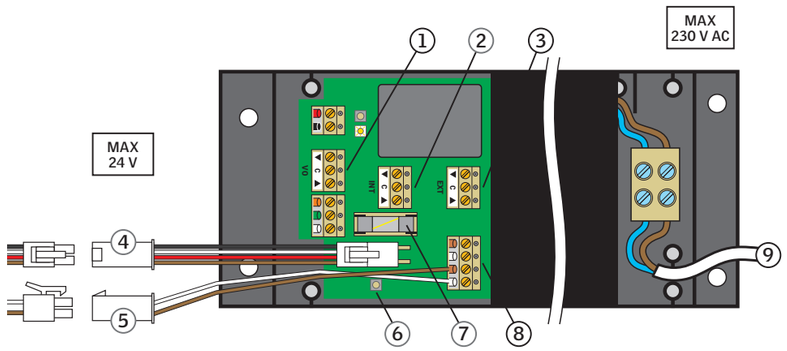
VELUX will not accept responsibility for damages, injury or death resulting from such installation. The installer/user is ultimately responsible for own omissions and actions. Measures could be for instance a motion sensor able to disconnect power from the control unit in case of any movement in the immediate vicinity of the VELUX modular skylights.

Control System – KLC 400

Venting modular skylights and blinds controlled with the VELUX INTEGRA® system will be powered and controlled from the control unit KLC 400.

Each KLC 400 can operate one venting skylight module and up to four roller blinds individually, in groups or simultaneously.

KLC 400	
Material and colour	Black fire resistant polycarbonate
Size and weight	Product including packaging: 587 mm x 80 mm x 166 mm (W x H x D) 2.0 kg Control unit: 380 mm x 36 mm x 87 mm (W x H x D) 1.5 kg
Installation	24 V DC SELV class III construction output. The control unit is for use in small/medium installations with VELUX modular skylights. The control unit is installed under the front flashing of VELUX modular skylights and functions at temperatures between -15°C and +50°C. ta = 40°C It is equipped with a 10 m 2-core cable (2 x 1.5 mm² H05VV-F) and plug for connection to the mains supply. Radio frequency range: 300 m range open field. Depending on the building construction, the indoor range is approximately 30 m.
IP rating	IPX4
Power consumption	Primary side: 230/240 V AC – 50 Hz / 200W Secondary side: 24 V DC – 5 A class III construction output.
Connection	The control unit is only to be used with VELUX modular skylights and VELUX roller blinds RMM. The control unit can supply power to one venting skylight module and/or up to four roller blinds RMM. The connection wires are prefitted with wire-to-wire connectors. The connection wire to the chain actuator may not be extended.
Compatibility	KLC 400 is based on radio frequency (RF) technology and signals are transmitted in the 868 MHz range. It is compatible with products with the io-homecontrol® logo and can be used with VELUX modular skylights chain actuator and roller blinds RMM. VELUX electrical products connected to KLC 400 can be operated by io-homecontrol® compatible activation controls.
CE marking	CE marked to indicate that it is in accordance with the following EU directives: CPR, LVD, MD, RoHS, WEEE, R&TTE, Packaging waste directive and EMC for household, trade and light industry. Combinations of VELUX electrical products meet the requirements of above-mentioned directives.
Note	The VELUX Group reserves the right to make technical changes.



Connection plan

1. Potential free entry for chain actuator.
2. Potential free entry for roller blinds.
3. Not in use.
4. Plug connector for chain actuator.
5. Plug connector for roller blinds.
6. Reset/configuration button. After long press (6-10 sec) registration in KLR 200 control pad must take place within 10 min.
7. Fuse 5x20mm T6,3AL 250V
8. Not in Use.
9. 230 V AC, consumption max 200 W.

Control Pad – KLR 200

Skylight systems installed with the VELUX INTEGRA® system are controlled with the VELUX INTEGRA® control pad KLR 200.

The control pad allows the skylight modules and blinds to be set in any position.

KLR 200	
Material and colour	ABS, white (NCS S 1000-N), black (RAL 9005) and metallic grey
Size and weight	Product including packaging: 235 x 153 x 48 mm (W x H x D), 250 g Control pad: 95 x 95 x 23 mm (W x H x D), 180 g
Use	For indoor use, maximum ambient temperature 50 °C Radio frequency range: 200 m range open field. Depending on the building construction, the indoor range is approximately 20 m. Maximum number of products is 200*
Power consumption	3 x Alkaline AA (1.5 V) batteries Expected battery lifetime: Approximately 1 year
Compatibility	Based on radio frequency (RF) technology, transmitted in 868 MHz range. Compatible with products with the io-homecontrol® logo. Can be used with all VELUX INTEGRA® and VELUX INTEGRA® Solar products.
CE marking	CE marked to indicate that it is in accordance with the following EU directives: CPR, LVD, MD, RoHS, WEEE, R&TTE, Packaging waste directive and EMC for household, trade and light industry. Combinations of VELUX electrical products meet the requirements of above-mentioned directives.
Note	This product has been designed for use with genuine VELUX products. The connection to other products may cause damage or malfunction. The VELUX Group reserves the right to make technical changes.

*Maximum recommended number of products is 100 and for daily use it is 50.

Wall Switch – KLI 110

Application
Control switch KLI 110 can be used for simple operation of io-homecontrol® compatible electrical products such as VELUX modular skylight operators and electrically operated blinds.

The control switch consists of:
- Control switch
- 2 x alkaline AAA batteries

The control switch can be used for individual operation of one motor or simultaneous operation of several motors.

Function
The control switch can make the electrical product travel to the maximum top or bottom position with one key pressure at the corresponding button (up or down). Furthermore, the electrical product can be stopped at any desired position by pressing the button longer. The control switch is based on wireless RF technology, which offers easy application with both new and existing installations with io-homecontrol® compatible products. An integrated security code ensures that operation can take place via authorised activation controls only. KLI 110 will operate all configured products which run simultaneously e.g. no time-lapse when running RMM.

Installation
The control switch is wall-mounted and can easily be fitted by the end user. As the control switch is battery driven, wiring is not necessary, which makes the installation very easy. The instructions enclosed with the product provide further information on installation and use.

KLI 110	
Material and colour	Control switch: ABS (plastic), white (NCS S 1000-N)
Size and weight	Product including packaging: 235 mm x 153 mm x 47 mm (W x H x D) Weight: 0.211 kg. Control switch: 82 mm x 82 mm x 12.5 mm (W x H x D) Weight: 0.139 kg.
Use and installation	The control switch is for indoor use, maximum ambient temperature 50°C. Radio frequency range: 300 m range open field. Depending on the building construction the indoor range is approximately 30 m. The control switch must not be covered and it must not be installed in rooms with high levels of humidity, e.g. bathrooms. Can operate an unlimited number of products.
Power consumption	2 x alkaline AAA (1.5 V) batteries. Expected battery lifetime: More than 5 years.
Compatibility	KLI 110 is based on radio frequency (RF) technology and signals are transmitted in the 868 MHz range. It is compatible with products with the io-homecontrol® logo and can be used with VELUX Modular Skylights and blinds.
CE marking	CE marked to indicate that it is in accordance with the following EU directives: LVD, MD, RoHS, WEEE, R&TTE, Packaging waste directive and EMC for household, trade and light industry. Combinations of VELUX electrical products meet the requirements of above-mentioned directives.
Note	The VELUX Group reserves the right to make technical changes.

Interface for External Wall Switch – KLF 050

Application
The switch interface KLF 050 can be used for basic operation of io-homecontrol® compatible electrical products, such as VELUX modular skylights and blinds by means of a wide range of standard wall switches. This will enable the user to choose a wall switch design for operating the products that matches the other wall switches in the building.

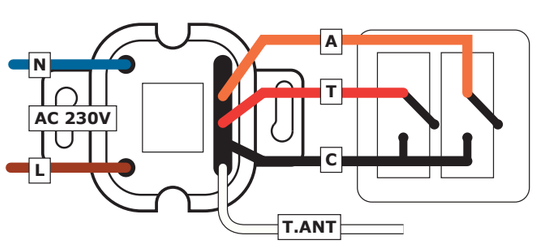
Function
The switch interface can be used for individual operation of one product or simultaneous operation of several products. The products are activated via the switch interface in the following ways:

- Activating one entry briefly will make the product run either completely up or down
- Activating entries will stop the product
- Activating one entry for more that one second will make the product run up or down until the switch is released.

Different types of wall switches can be used for operating products:

- Single momentary switch: Used for opening, closing or stopping a product
- Double momentary switch: one part of the wall switch is used for opening or stopping a product, while the other part is used for closing or stopping a product. KLF 050 will operate all configured products which run simultaneously e.g. no time-lapse when running RMM.

Installation
The switch interface is designed to be installed behind various wall switches in a build-in wall socket. The dimensions of the switch interface (43 x 43 x 25 mm) should be taken into account when choosing the wall switch as well as the build-in wall socket. The interface comes complete with cables for connection of mains supply and cables for direct connection to the wall switch, making it easy and fast to install. Installation must be carried out by a certified electrician or a similarly qualified person in accordance with national regulations. The switch interface will not function in built-in wall socket made of metal.



KLF 050	
Material and colour (visible parts)	PA6, white
Size and weight (including packaging)	Product in packaging: 213 x 116 x 96 mm, 0.117 kg. Switch interface: 43 x 43 x 25 mm (W x H x D), 0.025 kg.
Installation and use	Indoor installation at max 40°C. The interface is intended for concealed installation into permanent wall sockets. Radio frequency range: 300 m free field. Depending on building construction, the indoor range is approx. 30 m. However, constructions with reinforced concrete, metal ceilings and plaster walls with steel members may reduce the range.
Power consumption	1.2 W
Connection	230V AC mains supply. A current of 5-10 mA runs between the interface and the switches. The switches are not galvanically separated from the primany circuit. Function of interface entries: OPEN/UP/ON is controlled by connecting C and ▲ CLOSE/DOWN/OFF is controlled by connecting C and ▼ STOP is controlled by connecting C with both ▲ and ▼
Compatibility	Compatible with products with the io-homecontrol® logo. KLF 050 is based on one-way radio frequency (RF) technology and signals are transmitted in the 868 MHz range.
CE marking	This product has been CE marked to indicate that it is in accordance with relevant EU directives LVD, MD, R&TTE and EMC for household, trade and light industry.
Note	This product has been designed for use with genuine VELUX products, and other io-homecontrol® compatible products. The VELUX Group reserves the right to make technical changes.

Interface for External Control Devices – KLF 200

Application
Interface KLF 200 is used when io-homecontrol® labelled products are to be controlled by external control devices that are not io-homecontrol® compatible. Through the interface these devices can operate VELUX Modular Skylights and blinds. The interface consists of:
- Interface unit with potential free input and io-homecontrol® output
- 1.2 m cable with mains plug.

Function
The KLF 200 Interface is designed for control of 1-5 groups. Each group can handle several products of similar type. However, the individual groups may consist of any product type. Each group has a terminal for connection of the switch for opening and another terminal for connection of the switch for closing. As a default the interface will control the products in the group to the fully open and the fully closed positions.

The interface can operate up to 200 electrical products. The maximum number of products to be controlled in a single group is 200. The same product can be part of several groups if needed for local and whole-house control. 5 output terminals are available to provide a signal, for successful operation of an event triggered by the respective input terminal. A successful activation will make the potential free switch in the output terminal close for 2 seconds.

Using the optional web-based setup tool, more flexibility towards customization is made available. A powerful, yet easy to use setup guide allows customization of positions, priorities, output functionality a.o. details. Using the web-tool, full flexibility is given to the installer to define scenarios that can be triggered by each input terminal. A scenario is a snapshot of the products' position in the house at a given point in time. It could be e.g the product's positions required when the alarm system in your house is activated. Normally this would close the windows fully and roll down roller shutters and awnings blinds. This scenario could be triggered simply by a relay output from the alarm system that indicates "alarm system ON". Both terminals in each of the 5 inputs can be set up to trigger a scenario, giving a total of up to 10 scenarios in the interface.

Installation
The external control devices, which must have potential free switches, are connected to the potential free input in the interface. The interface is designed for wall-mounted use. The soft LED indicator on the front surface indicates power ON and function status, and should be taken into account when placing the interface.
The instruction leaflet enclosed with the product provides further information on setup and use.

KLF 200	
Material and colour	ABS, white (NCS S 1000-N)
Size and weight	Interface dimensions: 136 x 129 x 34 mm (W x H x D), 164 g
Use	For indoor use, maximum ambient temperature 50 °C Radio frequency range: 300 m range open field. Depending on the building construction, the indoor range is approximately 30 m Language: 32 individual languages included in the web-based setup tool that is supported by detailed context related help-functions. Can be used as repeater to extend the range of (2-way) RF signals in larger installations, where signals fail to reach certain electrical products. Prepared for future software updates.
Input for control	Potential free switch, with a rating of min 10 mA and 5 V DC. Control of 5 groups of products Please refer to the instruction leaflet for further information. The Ethernet terminal is for diagnostics/service by specialists in service organisations.
Output for feedback	Potential free switch, with a rating of max. 50mA and 30 V DC. The interface has 5 outputs to provide a signal for success for each of the 5 inputs. The output is normally open, and will close a circuit for the duration of 2 seconds after a successful operation of the products in that group. Please refer to the instruction leaflet for further information.
Power supply	Mains plug PSU with USB type micro B output with 1.2 m cable. Power consumption: 2W
Compatibility	Based on radio frequency (RF) technology, transmitted in 868 MHz range Compatible with products with the io-homecontrol® logo.
CE marking	CE marked to indicate that it is in accordance with the following EU directives: LVD, MD, RoHS, WEEE, R&TTE and EMC for household, trade and light industry.
Note	The VELUX Group reserves the right to make technical changes.

Rain and Wind Sensor Set – KLA S105

Contents of rain and wind sensor set KLA S105
- Rain and wind sensor KLA 105
- Power supply unit KUX 110
- Interface KLF 200

The rain and wind sensor consists of a rain sensor surface and a wind wheel. It is used for automatic control of comfort ventilation.

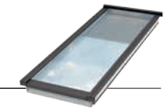
Function
The potential-free contact switches when the wind or rain sensor is actuated.
Note: Depending on your settings, the rain sensor will be reset 10 or 20 minutes after the last sensor actuation.

Rain and wind sensor – KLA 105	
Material and colour	Housing in grey plastic, mounting bracket in aluminium
Voltage	19,6 V DC (from power supply unit KUX 110)
Circuit output	1 potential-free charge over contact
Contact rating	20 V / 1,8 A
Dimensions	80 x 160 x 55 mm (WxHxD, without wind wheel)
Weight	Approx 0.7 kg
IP rating	IP65
Setting of wind trigger threshold	Approx 3 to 14 m/s (±20%). Recommended: 8 m/s
Setting of wind or rain drop out delay	10 min/20 min. Recommended: 10 min
Setting of wind actuation delay	2 sec/5 sec. Recommended: 5 sec
Note	To be connected to power supply 3UC A02 and interface KLF 100. 2-core connection cable not supplied.

Power supply unit - KUX 110	
Compatibility	The product is designed for use with genuine VELUX products and complies with the EMC directive's requirements for use in residential, commercial and light commercial buildings
Material and colour	Shockproof plastic, white (NCS S 1000-N)
Installation	Indoors in dry environment
Input current	230 V AC
Output current	19.6 V DC 1.6A
Operating temperature	ta = 50°C

Interface - KLF 200	
Material and colour	Shockproof plastic, white (NCS S 1000-N).
Size and weight	Interface dimensions: 136 x 129 x 34 mm (W x H x D), 164 g
Installation and use	For indoor use, maximum ambient temperature 50°C Radio frequency range: 300 m range open field. Depending on the building construction, the indoor range is approximately 30 m. Language: 32 individual languages included in the web based setup-tool that is supported by detailed context related help-functions. Prepared for future software updates. The interface must not be covered.
Power consumption	230 V AC, 2W
Connection	Mains plug PSU with USB type micro B output with 1.2 m cable.
Compatibility	KLF 200 is based on radio frequency (RF) technology, 868 MHz range, and is compatible with other products with the io-homecontrol® logo.
CE marking	KLF 200 is CE-marked to indicate that it is in accordance with the EU directives LVD, MD, R&TTE and EMC for household, trade and light industry.
Note	The VELUX Group reserves the right to make technical changes.

Roller Blind – RMM



VELUX INTEGRA® and Open System		
Materials (visible parts)	Fabric	Polyester
	Wire	Stainless steel
	Control bar	Anodized aluminium
	Top pulley wheels	Stainless steel
Colours (cloth)	Grey, white and black (silver on the backside of the black)	
Weight	Max 3.4 kg	
Installation	Please see installation instructions	
Combability	All VELUX modular skylights with VELUX INTEGRA® control system and ±24 V DC control systems	
Control system	VELUX INTEGRA® or ±24 V DC	
Supply cable	0.2 m cable, 2-core, 0,75 mm² (white, brown)	
RMM cable on skylight module	0.35 - 1.35 m cable, 3-core, 0,75 mm² (white, brown, green*)	
Running speed	70 mm/sec.	
Ip rating	IPX0	
Sound level	< 70 dB	
Operating conditions	-5°C - +75°C, max. 90% relative humidity (not condensing)	
Nominal voltage	24 V DC (max 10% ripple)	
Voltage	19-24 V DC	
Switch-on-duration	ED max 20% (2 minutes per 10 minutes)	
Power consumption	Max 1A	
Service	It is recommended to carry out a function test of the roller blind at least once a year and to make sure that the roller blind runs correctly	
CE marking	The product is tested with genuine VELUX control units and a ±24 V DC control system and complies with the EMC directive's requirements for use in residential, commercial and light commercial buildings	
UL approval	VELUX roller blind RMM is approved in accordance with UL 325, Door, Drapery, Gate, Louver, and Window Operators and Systems	
Reservation	The VELUX Group reserves the right to make technical changes.	

* Green cable has no function

Initialization
1. Connect the roller blind RMM to the control unit KLC 400
2. The RMM must be registered in a VELUX operation device within 10 min. of being connected to the power supply
3. The RMM is now ready for operation.

Calibration
The motor must be adjusted to the size of the module, before the roller blind can be operated. The adjustment will take place automatically the first time the roller blind is operated and again after 10 operations.

An automatic calibration also occurs with every 250 operations. Before the roller blind runs to the desired position, it runs all the way up and down. Do not interrupt the adjustment!

In rare occasions, the RMM will have to be calibrated manually, if it e.g. does not stop at the right position at the top or bottom. To manually calibrate the roller blind:

- switch off the power for min. 10 sec.
- within 30 seconds after reconnection, press the STOP key and subsequently the UP/DOWN key on the operation device

VELUX INTEGRA® Electrical Diagrams

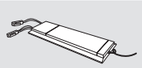
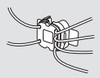
Fixed Modular Skylights with Sunscreening

Description
This combination consists of four fixed modular skylights HFC with roller blinds RMM.

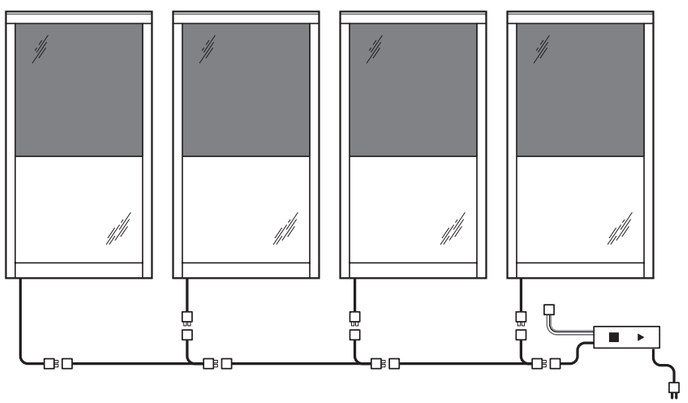
Possibilities and limitations
One control unit KLC 400 per four fixed modular skylights HFC with roller blinds RMM is required. Control unit KLC 400 must be positioned under the bottom flashing section of a modular skylight and is supplied with cables for connecting up to four roller blinds RMM in series.

Operation
Roller blinds RMM can be operated from either one of the following or a combination of:
- control pad KLR 200 – individual or simultaneous operation
- wall switch KLI 110 – simultaneous operation
- interface KLF 050 – simultaneous operation

The operational range between a roller blind and the control unit is approximately 30 metres indoors. But depending on the building construction and materials, the range can be longer.
If needed, the range can be extended by using VELUX INTEGRA® interface KLF 200 as a signal repeater station.

 **Control unit**	KLC 400	Requires 230 V AC supply	Power consumption max 200 W
Control pad	KLR 200	Handheld or wall mounted	Requires batteries
Wall switch	KLI 110	Wall mounted	Requires batteries
 **Interface**	KLF 050	Fitted into wall switch box supplied by others	Requires 230 V AC supply
Interface	KLF 200	Requires 230 V AC supply	

installations	Number of HFC with RMM per installation	Number of KLC 400
1	1-4	1
1	5-8	2
2	1-4	2



Fixed and Venting Modular Skylights without Sunscreening

Description
Combination with fixed modular skylights HFC and venting modular skylights HVC but without VELUX sunscreening products.

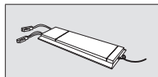
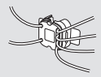
Possibilities and limitations
One control unit KLC 400 per one venting modular skylight HVC is required. Control unit KLC 400 must be positioned under the bottom flashing section of the venting modular skylight.

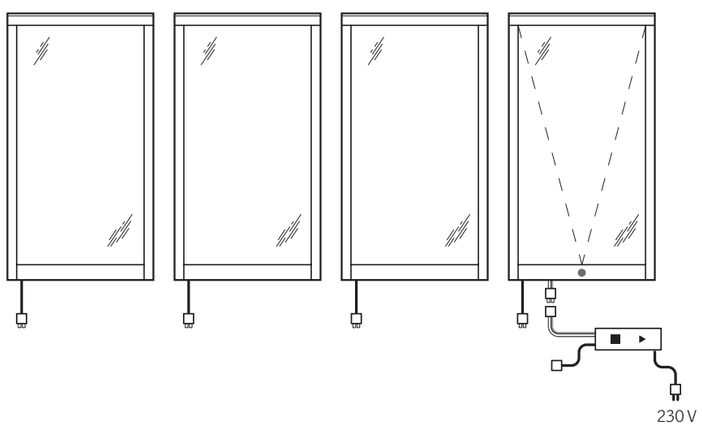
Operation
Venting modular skylights HVC can be operated from either one of the following or
a combination of:
- control pad KLR 200 – individual or simultaneous operation
- wall switch KLI 110 – simultaneous operation
- interface KLF 050 – simultaneous operation

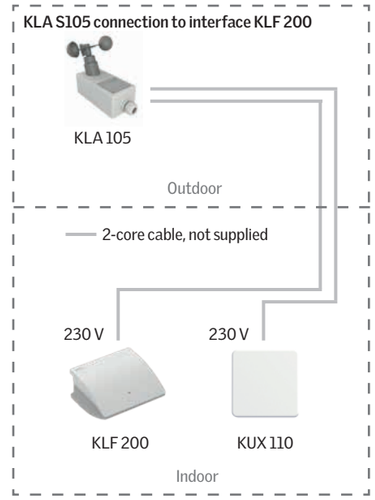
The operational range between the modular skylight and the control unit is approximately 30 metres indoors. But depending on the building construction and materials, the range can be longer. If needed, the range can be extended by using VELUX INTEGRA® interface KLF 200 as a signal repeater station.

Recommendation
It is recommended to install a rain and wind sensor set KLA S105 that will close the modular skylights in case of rain and strong wind. Rain and wind sensor set KLA S105 contains rain and wind sensor KLA 105, power supply unit KUX 110 and interface KLF 200. In large buildings with several installations, up to three additional interfaces KLF 200 can be set up as repeaters to extend the operation range of the rain and wind sensor signal.

Note: Only one repeater is possible between interface and control unit.

 **Control unit**	KLC 400	Requires 230 V AC supply	Power consumption max 200 W
Control pad	KLR 200	Hand held or wall mounted	Requires batteries
Wall switch	KLI 110	Wall mounted	Requires batteries
 **Interface**	KLF 050	Fitted into wall switch box supplied by others	Requires 230 V AC supply
Interface	KLF 200	Requires 230 V AC supply	
Rain and wind sensor set	KLA S105	Requires 2 x 230 V AC supply	Contact rating max. 1.8 A





Optional, but recommended

Fixed and Venting Modular Skylights with Sunscreening (4 modules)

Description
Combination with fixed modular skylights HFC and venting modular skylights HVC with roller blinds RMM.

Possibilities and limitations
One control unit KLC 400 per one venting modular skylight HVC and three fixed modular skylights HFC with roller blinds RMM is required. Subsequently, one control unit KLC 400 per four fixed modular skylights HFC with roller blinds RMM is required.

Control unit KLC 400 must be positioned under the bottom flashing section of the venting modular skylight and is supplied with cables for connecting up to four roller blinds RMM in series and one venting modular skylight HVC within the same installation.

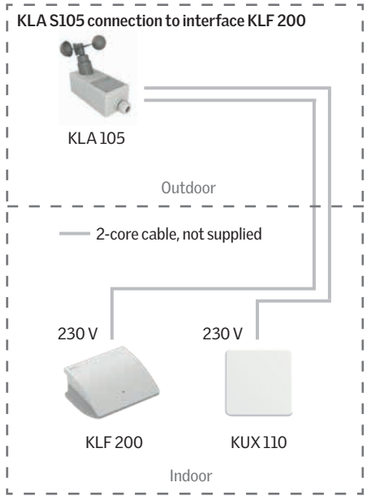
Operation
Venting modular skylights HVC and roller blinds RMM can be operated from either one of the following or a combination of:
- control pad KLR 200 – individual or simultaneous operation
- wall switch KLI 110 – simultaneous operation
- interface KLF 050 – simultaneous operation

The operational range between the modular skylight and the control unit is approximately 30 metres indoors. But depending on the building construction and materials, the range can be longer.
If needed, the range can be extended by using VELUX INTEGRA® interface KLF 200 as a signal repeater station.

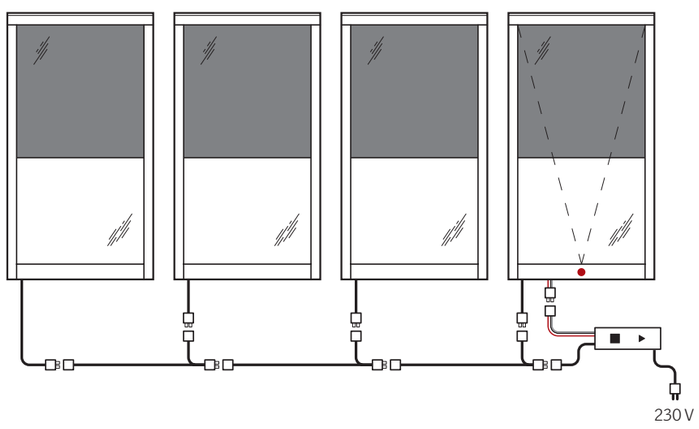
Recommendation
It is recommended to install a rain and wind sensor set KLA S105 that will close the modular skylights in case of rain and strong wind. Rain and wind sensor set KLA S105 contains rain and wind sensor KLA 105, power supply unit KUX 110 and interface KLF 200.
In large buildings with several installations, up to three additional interfaces KLF 200 can be set up as repeaters to extend the operation range of the rain and wind sensor signal.

Note: Only one repeater is possible between interface and control unit.

Control unit	KLC 400	Requires 230 V AC supply	Power consumption max 200 W
Control pad	KLR 200	Handheld or wall mounted	Requires batteries
Wall switch	KLI 110	Wall mounted	Requires batteries
Interface	KLF 050	Fitted into wall switch box supplied by others	Requires 230 V AC supply
Interface	KLF 200	Requires 230 V AC supply	
Rain and wind sensor set	KLA S105	Requires 2 x 230 V AC supply	Contact rating max. 1.8 A



Optional, but recommended



Fixed and Venting Modular Skylights with Sunscreening (4+ modules)

Description
Combination with fixed modular skylights HFC and venting modular skylights HVC with roller blinds RMM.

Possibilities and limitations
One control unit KLC 400 per one venting modular skylight HVC and three fixed modular skylights HFC with roller blinds RMM is required. Subsequently, one control unit KLC 400 per four fixed modular skylights HFC with roller blinds RMM is required.

Control unit KLC 400 must be positioned under the bottom flashing section of the venting modular skylight and is supplied with cables for connecting up to four roller blinds RMM in series and one venting modular skylight HVC within the same installation.

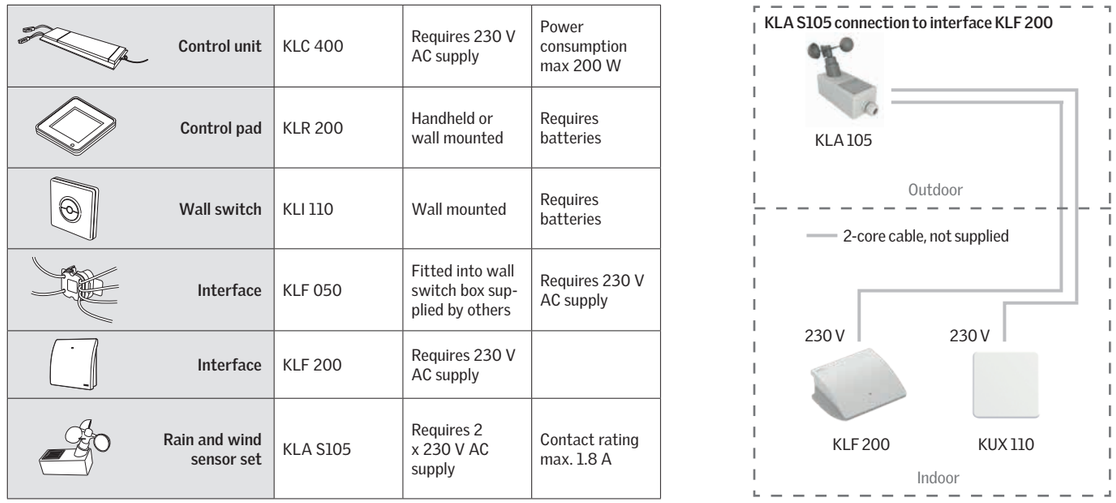
Operation
Venting modular skylights HVC and roller blinds RMM can be operated from either or a combination of:
- control pad KLR 200 – individual or simultaneous operation
- wall switch KLI 110 – simultaneous operation
- interface KLF 050 – simultaneous operation

The operational range between the modular skylight and the control unit is approximately 30 metres indoors. But depending on the building construction and materials, the range can be longer.
If needed, the range can be extended by using VELUX INTEGRA® interface KLF 200 as a signal repeater station.

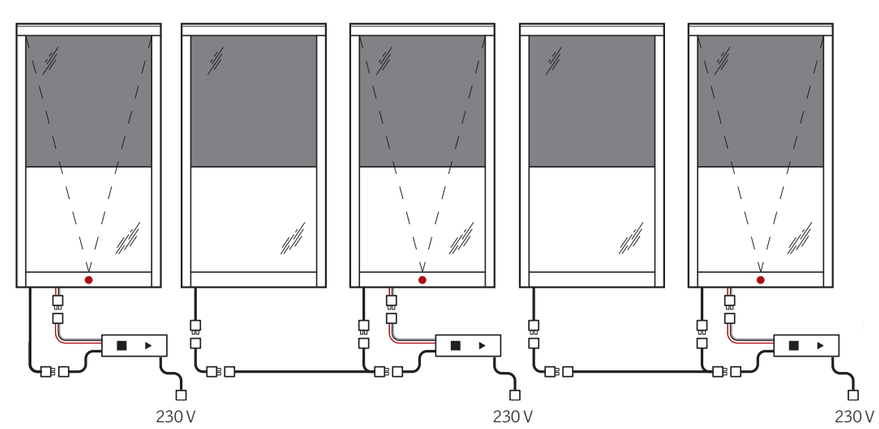
Recommendation
It is recommended to install a rain and wind sensor set KLA S105 that will close the modular skylights in case of rain and strong wind. Rain and wind sensor set KLA S105 contains rain and wind sensor KLA 105, power supply unit KUX 110 and interface KLF 200.
In large buildings with several installations, up to three additional interfaces KLF 200 can be set up as repeaters to extend the operation range of the rain and wind sensor signal.

Note: Only one repeater is possible between interface and control unit.

Control unit	KLC 400	Requires 230 V AC supply	Power consumption max 200 W
Control pad	KLR 200	Handheld or wall mounted	Requires batteries
Wall switch	KLI 110	Wall mounted	Requires batteries
Interface	KLF 050	Fitted into wall switch box supplied by others	Requires 230 V AC supply
Interface	KLF 200	Requires 230 V AC supply	
Rain and wind sensor set	KLA S105	Requires 2 x 230 V AC supply	Contact rating max. 1.8 A



Optional, but recommended



Open

Open System

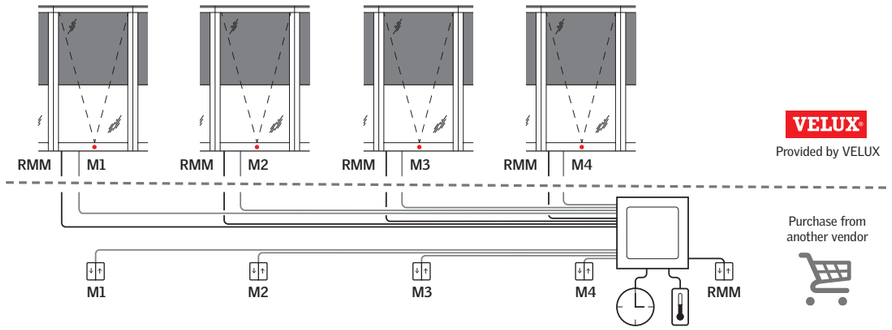
Chain Actuator – Comfort Ventilation

Venting VELUX modular skylights are top-hung and use a hidden chain actuator integrated at the bottom profile. The open system chain actuator enables you to connect the installation to your preferred building management system.

Open system – comfort ventilation	
Material	Anodised aluminium housing with zinc cromate passivated steel chain
Weight	Max 5.5 kg
Control system	MotorLink™ or ±24 V DC
Supply cable*	5 m grey silicone cable, 3-core, 0.75 mm² (white, brown, green**)
Chain stroke	Up to 410 mm in comfort ventilation (depending on module size)
Opening speed	7 mm/s (full load)
Sound level	32 dB (min speed)***
Holding force (tractive)	5000 N (burglary strength) min
Pressure force	1000 Newton
Tractive force	300-1000 Newton
IP rating	IPX4
Operation conditions	-15°C - +76°C, max. 90% relative humidity (not condensing)
Nominal voltage	24 V DC (max 10% ripple)
Voltage	19-32 V DC
Max Voltage	32 V DC
Switch-on-duration	ED max 20% (2 minutes per 10 minutes)
Current consumption	Max. 2A
Service	It is recommended to carry out a function test of the actuator at least once a year and to make sure that the skylight opens correctly
CE marking	The product is tested with the original WindowMaster control units and complies with the EMC directive's requirements for use in residential, commercial and light commercial buildings
Reservation	The VELUX Group reserves the right to make technical changes.

*At standard ± 24 V DC connection maximum distances from venting skylight to power supply in accordance with calculation on next page
**Green = Communication wire for MotorLink™
*** The sound level can vary depending on the building conditions

Chain Actuator – Comfort Ventilation



Wiring length/dimension

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

Admissible voltage drop (UL) = 2 V

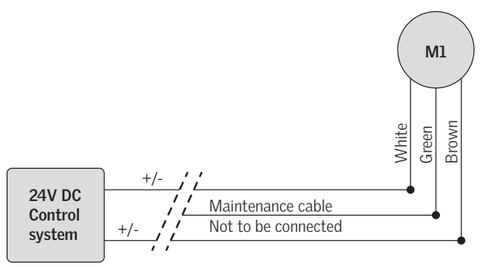
At MotorLink™ (3-core) connection maximum distances from roller blind to motor controller (power supply) is 50 m.

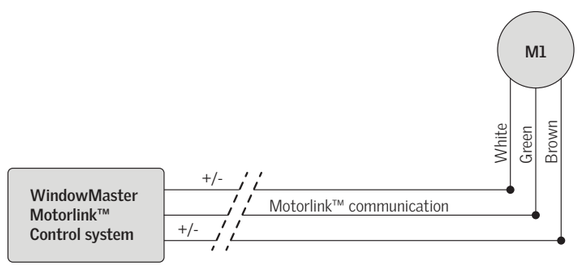
Max cable length when actuator is connected to power supply								
Cable cross section (a) / Total actuator current (I)	3 x 0.75 mm²	3 x 1.50 mm²	3 x 2.50 mm²	3 x 4.00 mm²	3 x 6.00 mm²	5 x 1.50 mm² 2 cords in parallel	5 x 2.50 mm² 2 cords in parallel	
2A	21	42	70	112	168	84	140	meters
4A	11	21	35	56	84	42	70	meters
MotorLink™ power supply								
2A	21	42	50	50	50	50	50	meters
4A	11	21	35			42		meters

Connection of actuator

For correct connection to control system, see control system instructions.

		White	Green	Brown
±24V DC	Open	+	Maintenance cable – Do not connect	-
	Close	-		+
WindowMaster MotorLink™	Depending on system type	+	MotorLink™ communication	-





Chain Actuator – Comfort Ventilation

Initialization

±24V DC
1. Connect the actuator's white and brown cords to a power supply.
2. Activate the chain actuator on the module one at a time, by switching the white and brown cords between + and – (OPEN/CLOSE) until the actuator operates.
3. The actuator is now ready for operation.

MotorLink™
1. Connect all three cords on the actuators cable to a MotorLink™ power supply with the power turned off.
2. Turn on the power supply.
3. Within 20 sec., the actuator will run in MotorLink™ mode.

Calibration

In rare occasions, the chain actuator will have to be calibrated.
It is necessary when:

1. The window does not close completely:
   If the actuator stops before the window is completely closed, open the window a couple of centimeters and close again. Repeat the procedure until the window is completely closed.

2. The window reverse approximately 5 cm:
   Due to the built-in function that reduces the risk of entrapment, the actuator can sometimes open up to 5 cm while closing. If this happens, open the window a few centimeters (NEVER OPEN COMPLETELY) and then close it. It might be necessary to repeat the procedure 3-5 times until the window is closed (the right 0% point has been set).

Open the window completely and see that it opens 100%.
The chain position 0% and 100% is now calibrated.

Important information
- All information in the HVC Declaration of Conformity applies!

VELUX modular skylights have a recommended minimum installation height of 2.5 m above floor level. In case of installation below that level, safety measures must be applied by the installer/user to prevent serious injury. No instruction or measure can eliminate the inherent hazards resulting from installation heights below 2.5 m.

VELUX will not accept responsibility for damages, injury or death resulting from such installation. The installer/user is ultimately responsible for own omissions and actions. Measures could be for instance a motion sensor able to disconnect power from the control unit in case of any movement in the immediate vicinity of the VELUX modular skylights.

Comfort Ventilation Electrical Diagrams

Comfort Ventilation and Sunscreening with ±24 V DC

Description
This example consists of venting modular skylights HVC with roller blinds RMM.

Possibilities
- Choice of control system protocol can be postponed till after purchase of VELUX modular skylights
- The modules can be operated by a building management system through a control system
- Centrally located power supply and control
- The maximum operational range between the modular skylight and the control unit is approximately 100 metres depending on voltage drop
- Regrouping and definition of systems can be changed after installation.

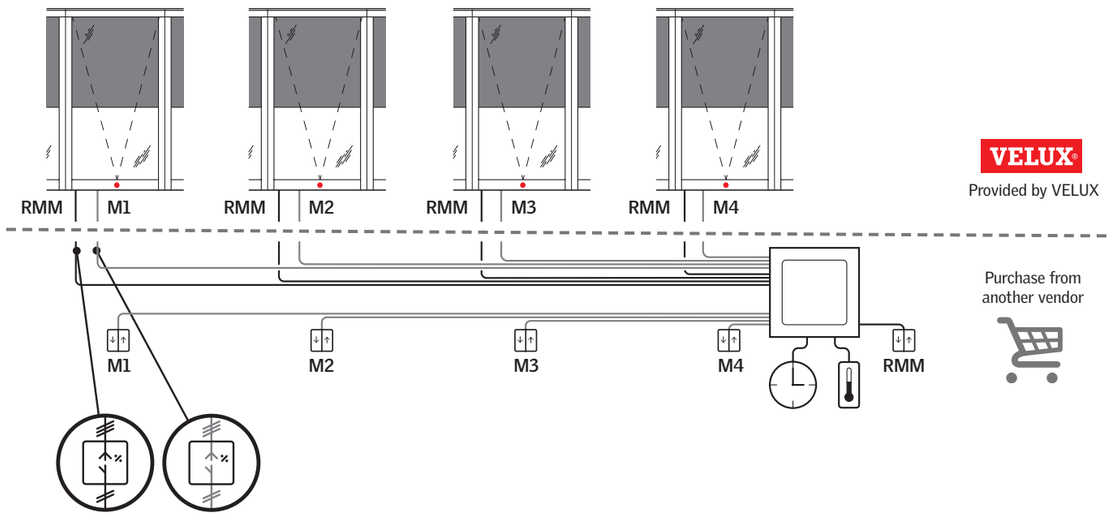
Limitations
- Configuration can only be done by a certified technician (not VELUX).

Recommendations
It is recommended to use a rain and wind sensor that will close the modular skylights in case of rain and strong wind (recommended setting: 8 m/s).

Component description
Chain actuator
- The supply cable is a 5 metres 3-core silicone cable approved for hidden installation (white, brown, green)
- Chain stroke is 353-410 mm depending on module size and application (programmable)
- Nominal voltage is 24 V DC (max. 10 % ripple)
- Current consumption max. 2A for comfort ventilation.

Roller blind
- The supply cable is a 0,5 metre 3-core cable (white, brown, green)
- Nominal voltage is 24 V DC (max. 10 % ripple)
- Current consumption max. 1A.

Further information about the products can be found on velux.co.uk/modularskylights.



M1-M4 = Actuator groups

Comfort Ventilation and Sunscreening with Advanced MotorLink™ Control

Description
This example consists of venting modular skylights HVC for comfort ventilation with VELUX sunscreening products, controlled by WindowMaster MotorLink™ control system.

Possibilities
- The modules can be operated by a building management system through a WindowMaster MotorLink™ control system via KNX/LON/BacNet/Modbus
- Centrally located power supply and control
- The maximum operational range between the modular skylight and the control unit is approximately 50 metres
- Regrouping and definition of systems can be changed after installation
- Stroke lengths can be changed after installation.

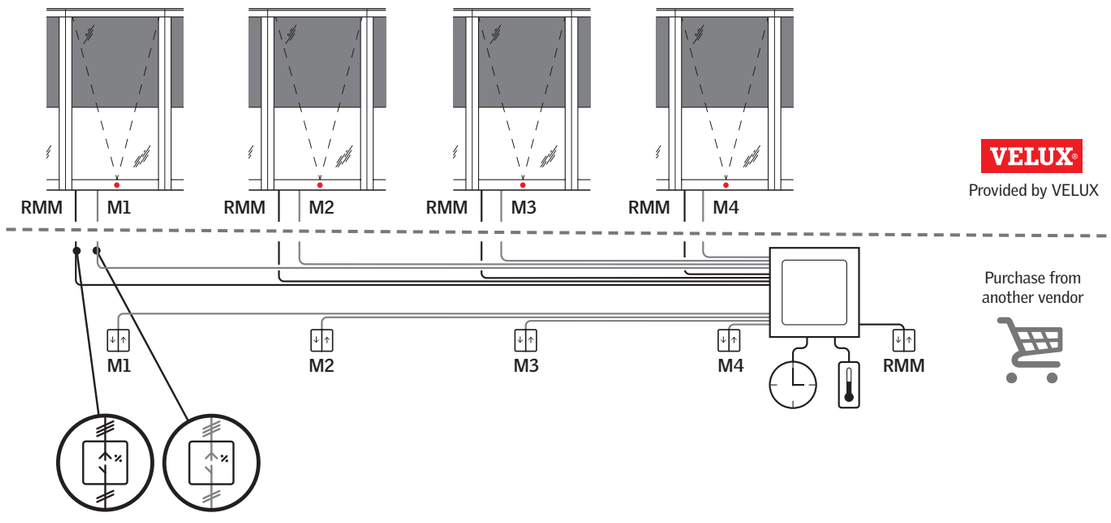
Limitations
- Configuration can only be done by a certified technician (not VELUX)

Recommendations
It is recommended to use a rain and wind sensor that will close the modular skylights in case of rain and strong wind (recommended setting: 8 m/s).

Component description
Chain actuator
- The supply cable is a 5 metres 3-core silicone cable approved for hidden installation (white, brown, green)
- Chain stroke is 353-410 mm depending on module size and application (programmable)
- Nominal voltage is 24 V DC (max. 10 % ripple)
- Current consumption, nominal max. 2A for comfort ventilation.

Roller blind
- The supply cable is a 0.5 metres 3-core cable (white, brown, green)
- Nominal voltage is 24 V DC (max. 10 % ripple)
- Current consumption max. 1A
- Note! RMM does not support WindowMaster MotorLink functionality.

Further information about the products can be found on velux.co.uk/modularskylights.



M1-M4 = Actuator groups

Chain Actuator – Smoke Ventilation

Venting VELUX modular skylights are top-hung and use a hidden chain actuator integrated at the bottom profile. The open system chain actuator enables you to connect the installation to your preferred Building Management System.

Open System – smoke ventilation	
Material	Anodised aluminium housing with zinc cromate passivated steel chain
Weight	Max 5.5 kg
Control system	MotorLink™ or ±24 V DC
Supply cable*	5 m grey silicone cable, 3-core, 0.75 mm² (white, brown, green**)
Chain stroke	Up to 700 mm (depending on module size)
Opening speed	13 mm/s (full load)
Sound level	32 dB (min speed)***
Holding force (tractive)	5000 N (burglary strength) min
Pressure force	1000 Newton
Tractive force	300-1000 Newton
IP rating	IPX4
Operation conditions	-15°C - +76°C, max. 90% relative humidity (not condensing)
Nominal voltage	24 V DC (max 10% ripple)
Voltage	19-32 V DC
Max Voltage	32 V DC
Switch-on-duration	ED max 20% (2 minutes per 10 minutes)
Current consumption	Max. 5.5A
Service	It is recommended to carry out a function test of the actuator at least once a year and to make sure that the skylight opens correctly.
CE marking	The product is tested with the original WindowMaster control units and complies with the EMC directive's requirements for use in residential, commercial and light commercial buildings.
Reservation	The VELUX Group reserves the right to make technical changes.

*At standard ± 24 V DC connection maximum distances from venting skylight to power supply in accordance to calculation:

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

Admissible voltage drop (UL) = 2 V

At MotorLink™ (3-core) connection maximum distances from roller blind to motor controller (power supply) is 50 m.
**Green = Communication wire for MotorLink™
*** The sound level can vary depending on the building conditions

Max cable length when actuator is connected to power supply								
Cable cross section (a) / Total actuator current (I)	3 x 0.75 mm²	3 x 1.50 mm²	3 x 2.50 mm²	3 x 4.00 mm²	3 x 6.00 mm²	5 x 1.50 mm² 2 cords in parallel	5 x 2.50 mm² 2 cords in parallel	
5.5A	7	15	25	40	61	30	50	meters
MotorLink™ power supply								
5.5A	7	15	25	40	50	30	50	meters

For connection of actuator, please refer to info on page 29.

Maximum drive time for comfort ventilation (HVC ---AB)		
Module length	Chain length [mm]	Drive time [sec]
800	353	27
1000	410	32
1200	410	32
1400	410	32
1600	410	32
1800	410	32
2000	410	32
2200	410	32
2400	410	32
2600	410	32
2800	410	32
3000	410	32

When using a smoke ventilation module (HVC- A) for comfort ventilation also, the chain stroke must be limited by the drive time in order to prolong the unit lifetime expectancy for the module. The drive time must be limited according to the table.

VELUX modular skylights have a recommended minimum installation heights of 2.5 m above floor level. In case of installation below that level, safety measures must be applied by the installer/user to prevent serious injury. No instruction or measure can eliminate the inherent hazards resulting from installation heights below 2.5 m.

VELUX will not accept responsibility for damages, injury or death resulting from such installation. The installer/user is ultimately responsible for own omissions and actions. Measures could be for instance a motion sensor able to disconnect power from the control unit in case of any movement in the immediate vicinity of the VELUX modular skylights.

Smoke Ventilation Electrical Diagrams

Smoke Ventilation with ±24 V DC

Description
This example consists of venting modular skylights HVC for smoke ventilation, without VELUX sunscreening products.

Possibilities
- Choice of control system protocol can be postponed till after the purchase of VELUX modular skylights
- Centrally located power supply and control with backup power supply
- The maximum operational range between the modular skylight and the control unit is approximately 100 metres depending on voltage drop
- Regrouping and definition of systems can be changed after installation.

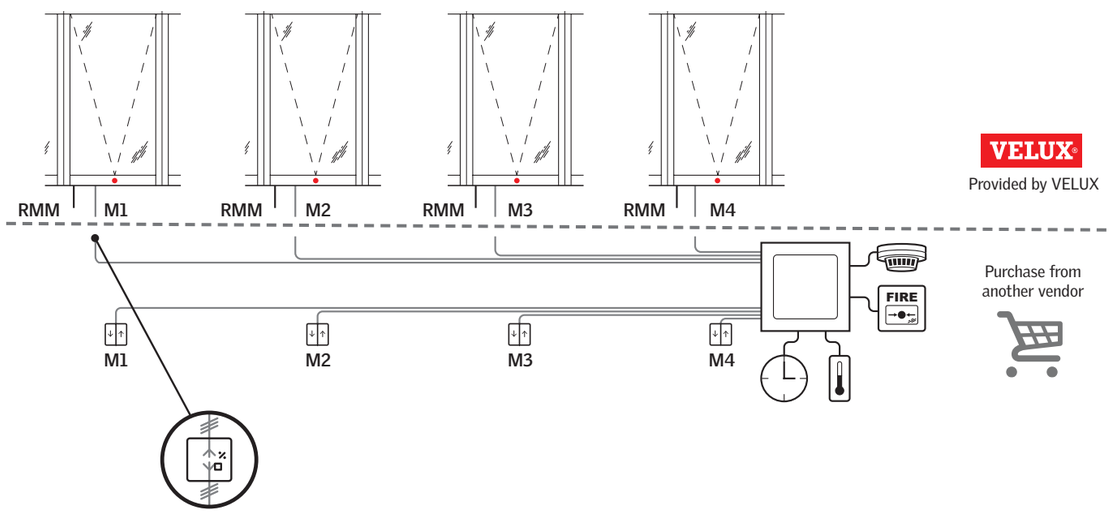
Limitations
- Configuration can only be done by certified technician (not VELUX)
- Smoke venting modules with roller blinds RMM are not covered by VELUX approvals, therefore the local authorities should be consulted if roller blinds are required in connection with smoke ventilation.

Recommendations
It is recommended to use a rain and wind sensor that will close the modular skylights in case of rain and strong wind (recommended setting: 8 m/s).

Component description
Chain actuator
The supply cable is a 5 metres 3-core silicone cable approved for hidden installation (white, brown, green)
- Chain stroke is 353-700 mm depending on module size and application
- Nominal voltage is 24 V DC (max. 10 % ripple)
- Current consumption max. 5.5A.

Roller blind
- All VELUX modular skylights have cables for roller blinds RMM pre-installed
- The smoke ventilators are tested and CE-marked in accordance with EN 12101-2. The tests were carried out without roller blinds by default.
- If a customer wishes to install roller blinds on the smoke ventilators subsequently, the VELUX Group recommends that the customer obtains written approval from the local fire authorities.

Further information about the products can be found on velux.co.uk/modularskylights.



M1-M4 = Actuator groups

Comfort and Smoke Ventilation with Advanced MotorLink™ Control

Description
This example consists of venting modular skylights HVC for smoke and comfort ventilation, without VELUX sunscreening products, controlled by a WindowMaster MotorLink™ control system.

Possibilities
- Centrally located power supply and control with 72 hours backup power supply.
- The modules can be operated by a building management system through WindowMaster MotorLink™ control system via KNX/LON/BacNet/Modbus
- The maximum operational range between the modular skylight and the control unit is approximately 50 metres
- Position control and speed parameters can be changed after installation
- Regrouping and definition of systems can be changed after installation
- There are different stroke lengths for comfort and smoke ventilation. The comfort stroke length must be set according to drive time table.

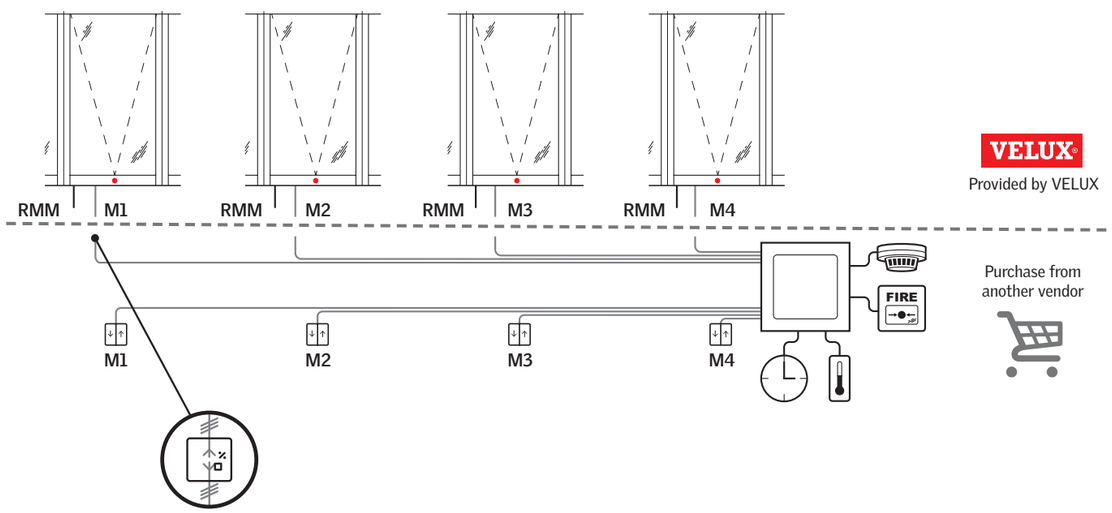
Limitations
- Configuration can only be done by a certified technician (not VELUX)
- Smoke venting modules with roller blinds are not covered by VELUX approvals, therefore the local authorities should be consulted if roller blinds are required in connection with smoke ventilation.

Recommendations
It is recommended to use a rain and wind sensor that will close the modular skylights in case of rain and strong wind (recommended setting: 8 m/s).

Component description
Chain actuator
- The supply cable is a 5 metres 3-core silicone cable approved for hidden installation (white, brown, green)
- Chain stroke is 353-700 mm depending on module size and application (programmable)
- Nominal voltage is 24 V C (max. 10 % ripple)
- Current consumption max. 5.5A.

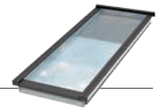
Roller blind
- All VELUX modular skylights have cables for roller blinds RMM pre-installed
- The smoke ventilators are tested and CE-marked in accordance with EN 12101-2:2003. The tests were carried out without roller blinds by default.
- If a customer wishes to install roller blinds on the smoke ventilators subsequently, the VELUX Group recommends that the customer obtains written approval from the local fire authorities.
- Note! RMM does not support WindowMaster MotorLink functionality.

Further information about the products can be found on velux.co.uk/modularskylights.



M1-M4 = Actuator groups

Roller Blind – RMM



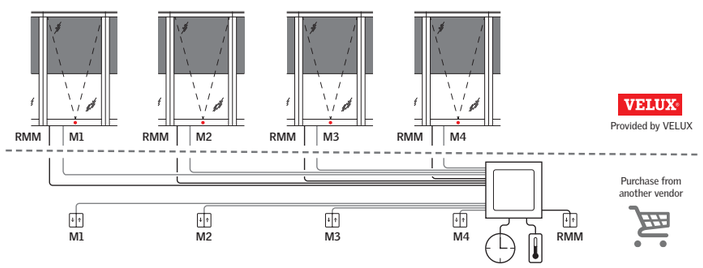
VELUX INTEGRA® and Open System		
Materials (visible parts)	Fabric	Polyester
	Wire	Stainless steel
	Control bar	Anodized aluminium
	Top pulley wheels	Stainless steel
Colours (cloth)	Grey, white and black (silver on the backside of the black)	
Weight	Max 3.4 kg	
Installation	Please see installation instructions	
Compatibility	All VELUX modular skylights with VELUX INTEGRA® control system and ±24 V DC control systems	
Control system	VELUX INTEGRA® or ±24 V DC	
Supply cable	0.2 m cable, 2-core, 0.75 mm² (white, brown)	
RMM cable on skylight module*	0.35 - 1.35 m cable, 3-core, 0.75 mm² (white, brown, green**)	
Running speed	70 mm/sec.	
IP rating	IPX0	
Sound level	< 70 dB	
Operating conditions	-5°C - +75°C, max. 90% relative humidity (not condensing)	
Nominal voltage	24 V DC (max 10% ripple)	
Voltage	19-24 V DC	
Switch-on-duration	ED max 20% (2 minutes per 10 minutes)	
Power consumption	Max 1A	
Service	It is recommended to carry out a function test of the roller blind at least once a year and to make sure that the roller blind runs correctly.	
CE marking	The product is tested with genuine VELUX control units and a ±24 V DC control system and complies with the EMC directive's requirements for use in residential, commercial and light commercial buildings.	
UL approval	VELUX roller blind RMM is approved in accordance to UL 325, Door, Drapery, Gate, Louver, and Window Operators and Systems.	
Reservation	The VELUX Group reserves the right to make technical changes.	

* For Open system ± 24 V DC connection, the maximum distance from roller blind to power supply is in accordance with the following calculation:

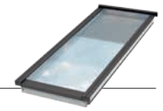
$$\text{Max.cable length} = \frac{\text{(admissible voltage drop (UL) x conductivity of copper (56) x cable cross section (a))}}{\text{(total max. actuator current (I) in amps x 2)}}$$

Admissible voltage drop (UL) = 2 V

** Green cable has no function



Roller Blind – Open System

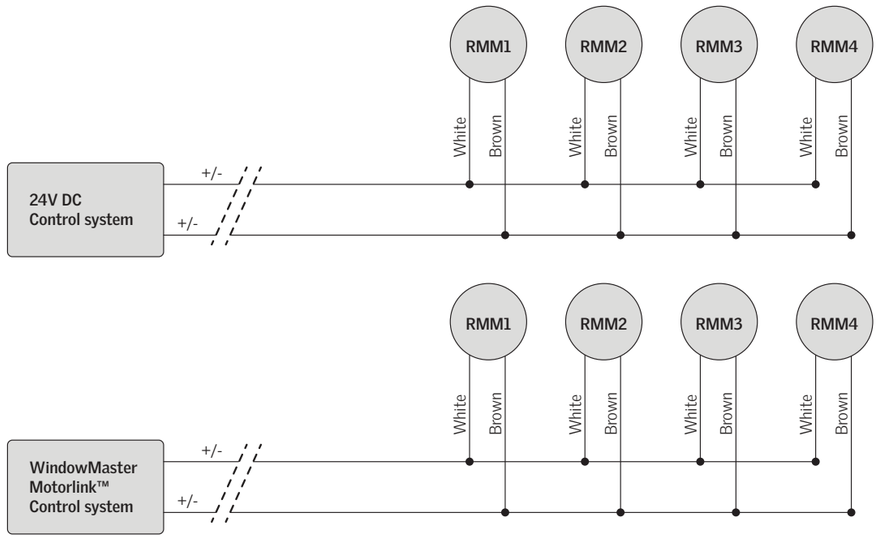


Max cable length when actuator is connected to power supply								
Cable cross section (a) / Total RMM current (I)	3 x 0.75 mm²	3 x 1.50 mm²	3 x 2.50 mm²	3 x 4.00 mm²	3 x 6.00 mm²	5 x 1.50 mm² 2 cords in parallel	5 x 2.50 mm² 2 cords in parallel	
1A	42	84	140	224	336	168	280	meters
2A	21	42	70	112	168	84	140	meters
3A	14	28	47	75	112	56	93	meters
4A	11	21	35	56	84	42	70	meters

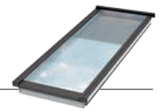
Connection of roller blind (RMM)

For correct connection to control system, see control system instructions.

		White	Brown
±24V DC	UP	-	+
	DOWN	+	-



Roller Blind – Open System



Initialization

±24V DC

1. Connect the white and brown cores on the modules' RMM cable to a power supply.
2. The RMM is now ready for operation.

Calibration

The motor must be adjusted to the size of the module before the roller blind can be operated. The adjustment will take place automatically the first time the roller blind is operated and again after 10 operations.
An automatic calibration also occurs with every 250 operations.
Before the roller blind runs to the desired position, it runs all the way up and down. Do not interrupt the adjustment!

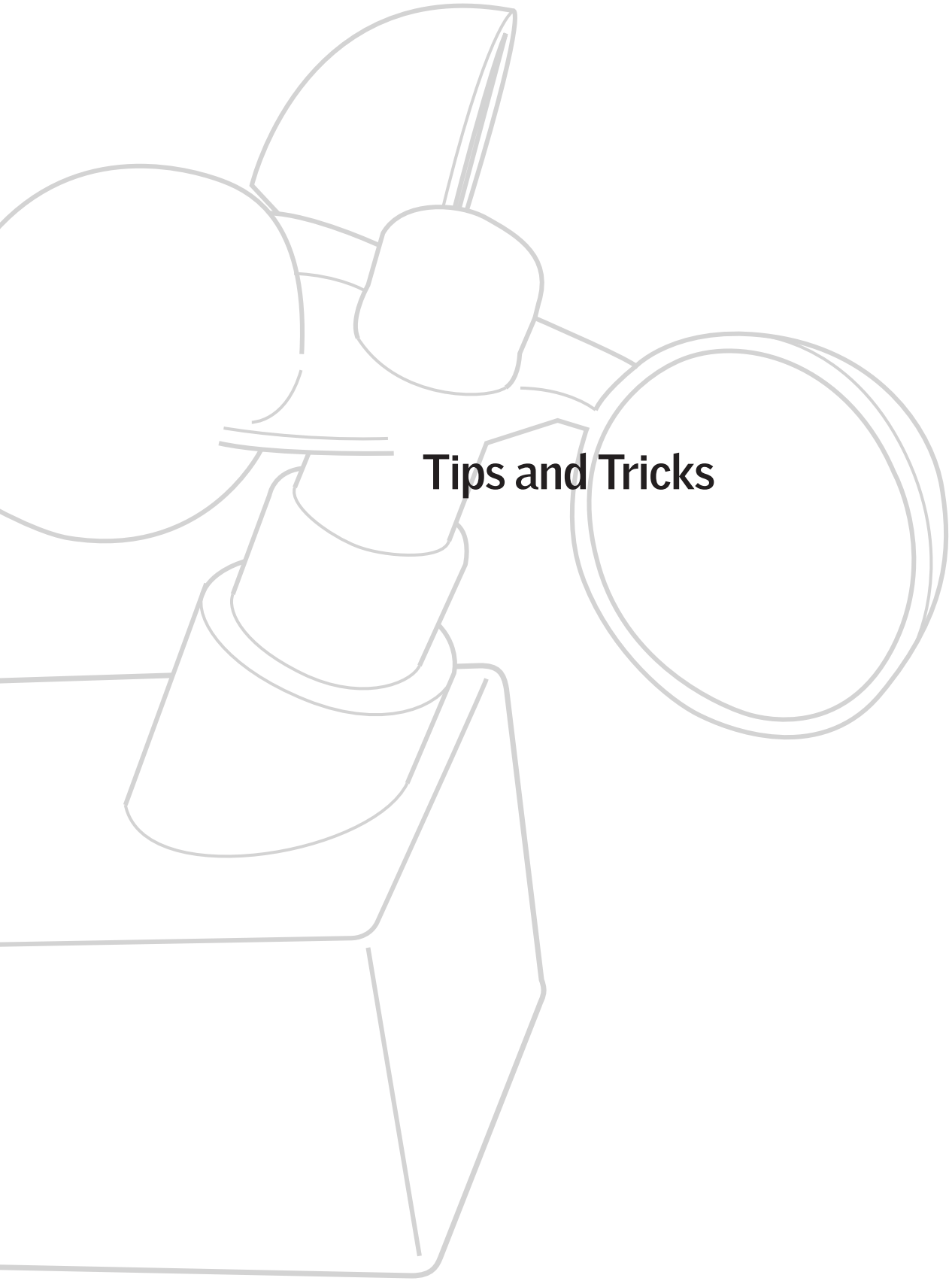
In rare occasions, the RMM will have to be calibrated manually, if it e.g. does not stop at the right position at the top or bottom.

To manually calibrate the roller blind:

- ensure that the roller blind is in the top position
- press the UP function on your wall switch 5 times in a row, for at least one second at a time
- press the DOWN on your wall switch.

Important information

- All information in the RMM Declaration of Conformity applies!
- The smoke ventilators are tested and CE marked in accordance with EN 12101-2. The tests were carried out without roller blinds by default. If a customer wishes to install roller blinds on the smoke ventilators subsequently, the VELUX Group recommends that the customer obtains written approval from the local fire authorities.
- The fire resistant modules are tested in accordance with EN 1365-2 and EN 1634-1. The classifications are expressed in accordance with EN 13501-2+A1. The tests are carried out without roller blinds by default. If a customer wishes to install roller blinds on the fire resistant modules subsequently, the VELUX Group recommends that the customer obtains written approval from the local fire authorities.



Tips and Tricks

Combining VELUX INTEGRA® System and Open System

It is possible to combine the VELUX INTEGRA® system with the open system and have the following combinations:

Actuators in open system with comfort ventilation and roller blinds in VELUX INTEGRA® system:
Can be used if you have a building management system to control the modules to open and close and want the control of the roller blinds only to be local.

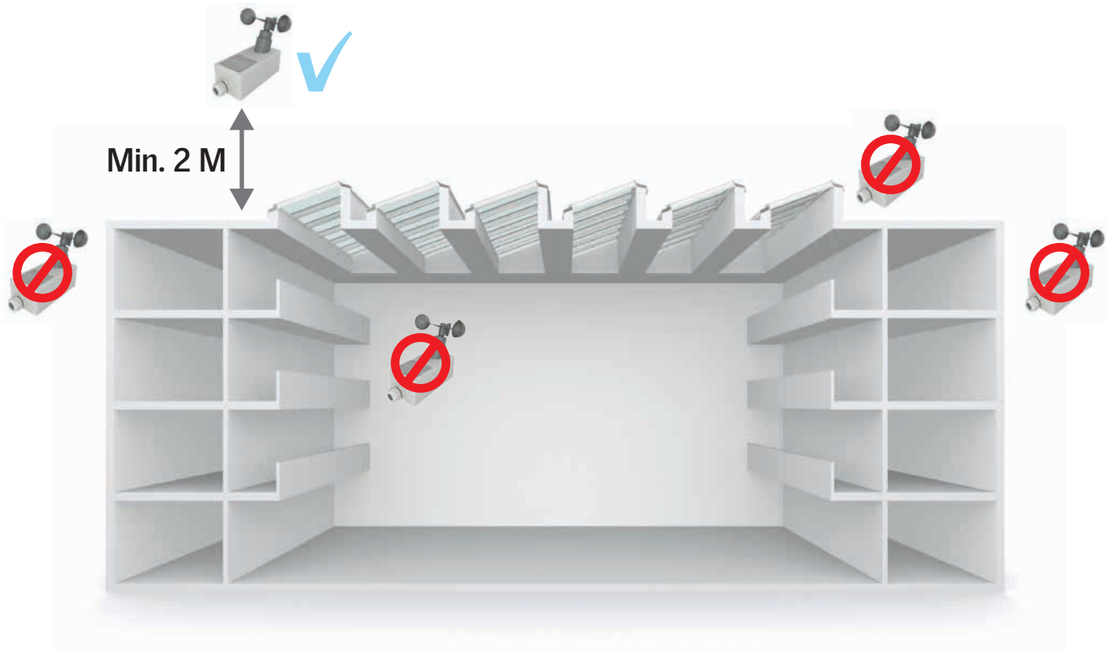
Actuators in open system with smoke ventilation and roller blinds in VELUX INTEGRA® system:
Can be used if you have a fire control system to control the modules to open and close in case of fire and want the control of the roller blinds only to be local.

Note: Smoke ventilation with roller blinds RMM are not covered by VELUX approvals, therefore the local authorities should be consulted if roller blinds are required with smoke ventilation.
The configuration can only be done by certified technician (not VELUX).

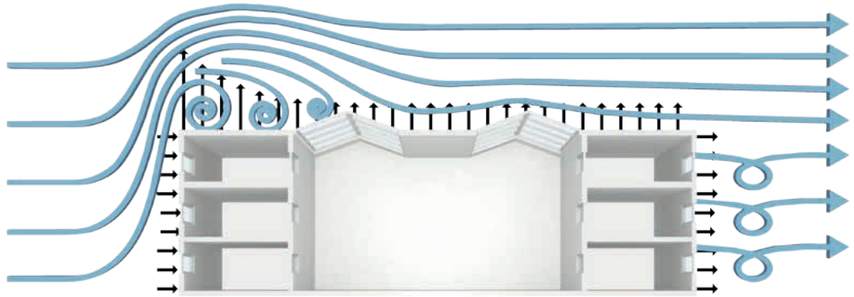
If the above combinations are required please contact your Technical Market Support and they will provide the necesarry electrical diagrams and documentation.

Recommended Placement of Rain and Wind Sensor

Best placement of KLA S105 is minimum 2 meters above roof level.



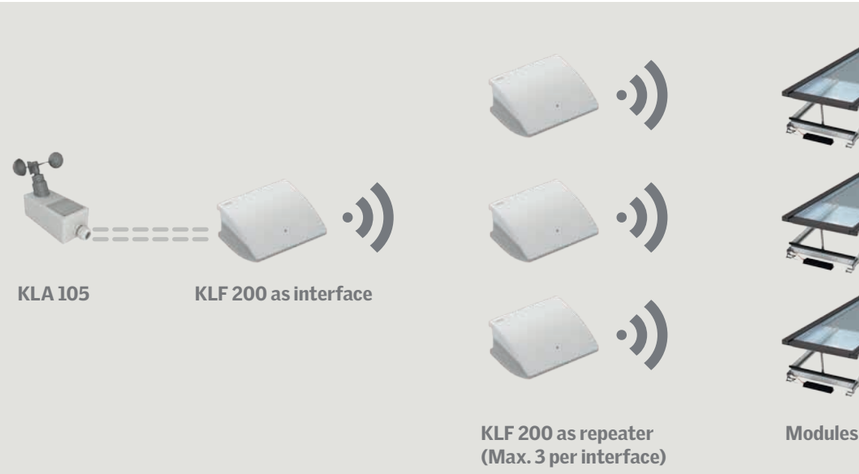
Wind Deviation by Building (side view)



Source of images: DE 611XB549 Report, Page 2, Figure 1 and page 11

Recommended Placement of KLF 200 as Repeater in VELUX INTEGRA® System

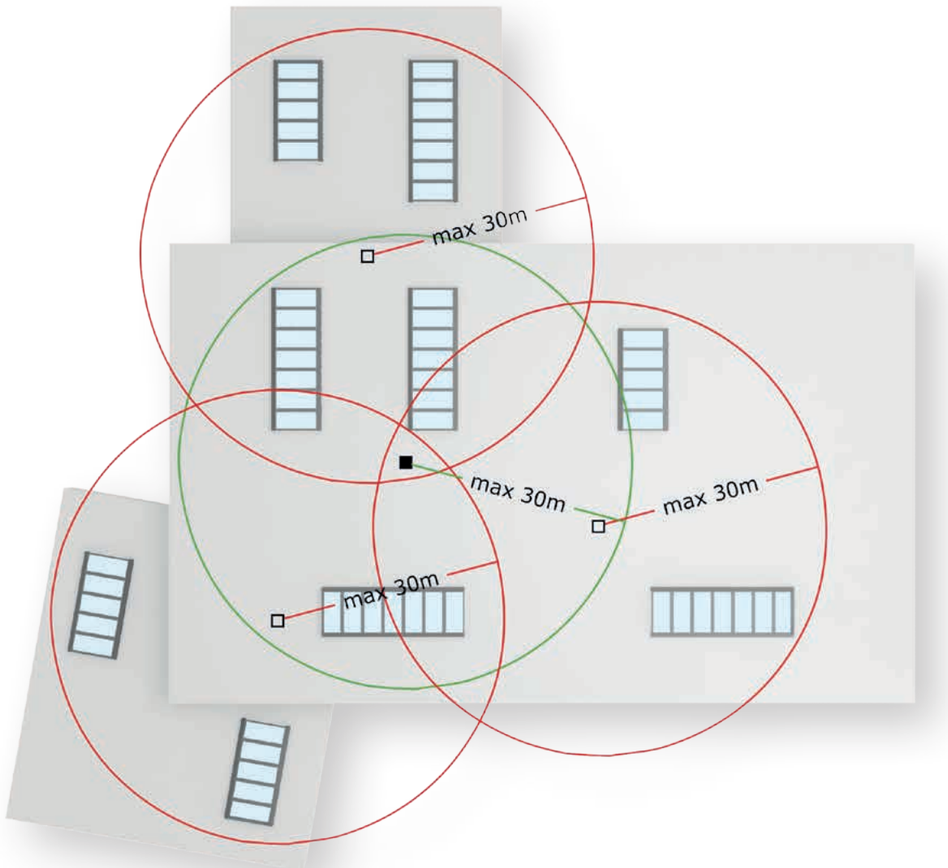
Dos – Up to three repeaters can be connected to one interface.



Don'ts – Signal can only be repeated one time in one direction.

Placement of KLF 200 Interface and Repeaters in Complicated Building Layout

Longlights
Roof
KLF 200 Interface
Signal max. radius 30 m
KLF 200 Repeater
Signal max. radius 30 m

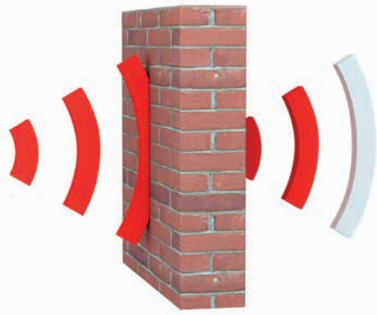


Reduction of IO Signal

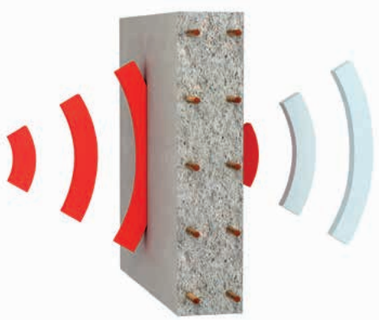
Some building materials will cause a reduction of the IO signal, this should also be considered when planning the control system.

The rule is: 100 m in open fields / 30 m in buildings

Wood, plaster walls.
Loss: 5 to 20%



Brick, concrete.
Loss: 20 to 40%



Reinforced concrete.
Loss: 40 to 90%

Enclosure in metal.
Loss: 90 to 100%

VELUX Company Ltd
Woodside Way
Glenrothes
Fife
KY7 4ND
Tel: 01592 778 916
Email: vms@velux.co.uk

Bringing light to life™

VELUX®

V11953-048-010 © 2017 VELUX GROUP. ® VELUX AND THE VELUX LOGO ARE REGISTERED TRADEMARKS USED UNDER LICENSE BY THE VELUX GROUP.