

aumüller
ASSEMBLY INSTRUCTION OFV1 M-COM
 LOCKING DRIVE FOR WINDOWS
 according to Machinery Directive
 2006/42/EG (annex VI) CE



EN
 Note the detailed assembly instructions!
 Links to safety instructions, detailed assembly
 instructions, and manufacturer statements:
 Please scan in the QR code and follow the link to
 the **AUMÜLLER** homepage.

DE
 Ausführliche Montageanleitung beachten!
 Links zu Sicherheitshinweisen, ausführlichen Montage-
 Anweisungen und Hersteller-Erklärungen:
 Bitte QR-Code einlesen und Link zur **AUMÜLLER**-
 Homepage verfolgen.

FR
 Respectez les instructions de montage détaillées !
 Liens vers les consignes de sécurité, détaillée instruc-
 tions de montage et les explications du fabricant:
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 page d'accueil de **AUMÜLLER**.

CN
 请遵守安全说明!
 关于装配说明的链接 (详细的) 和制造商声明
 请读取 QR 码并跟踪 **AUMÜLLER** 主页的链接。

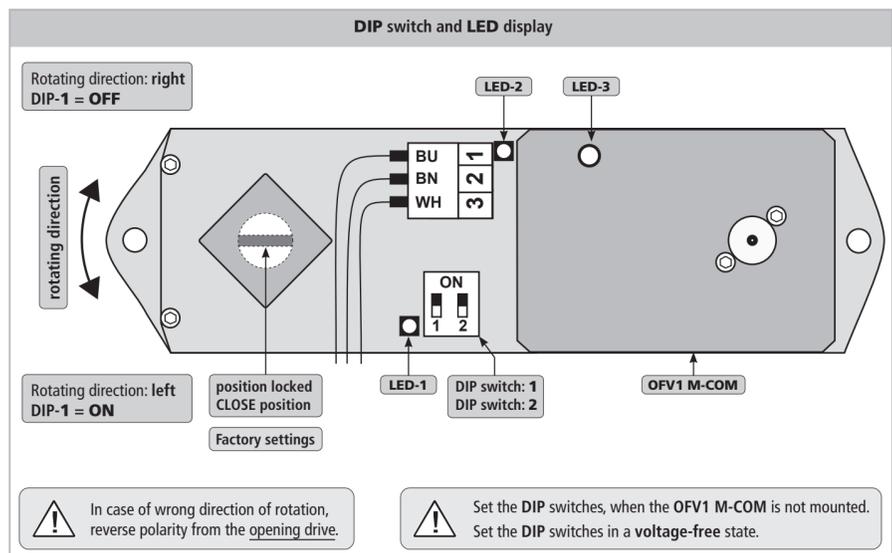
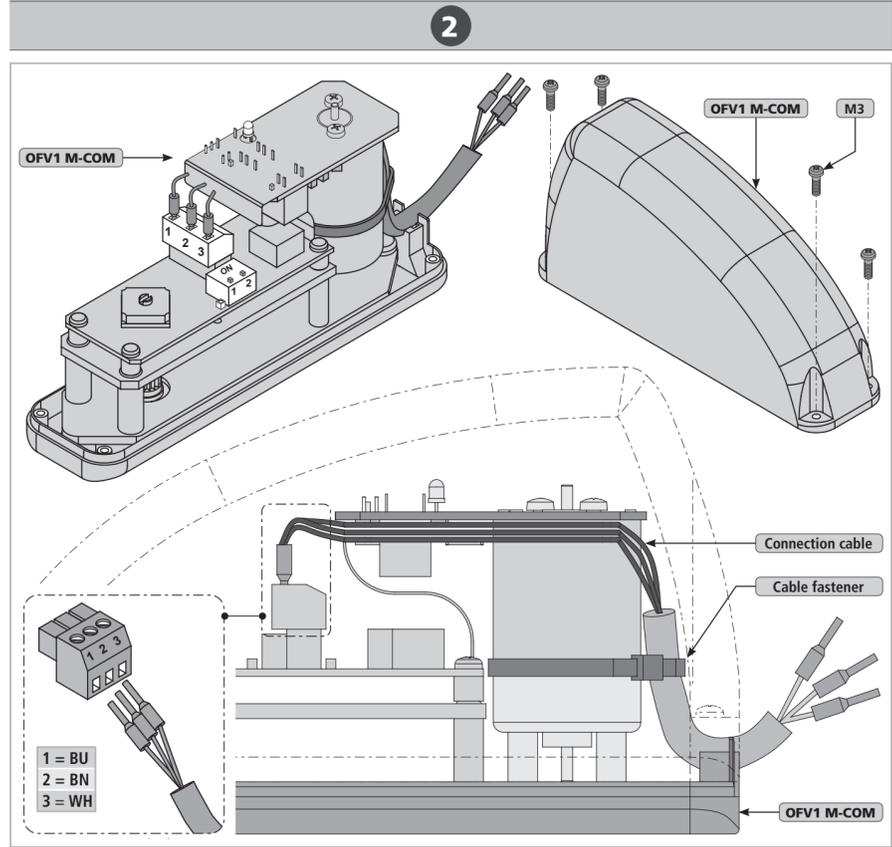
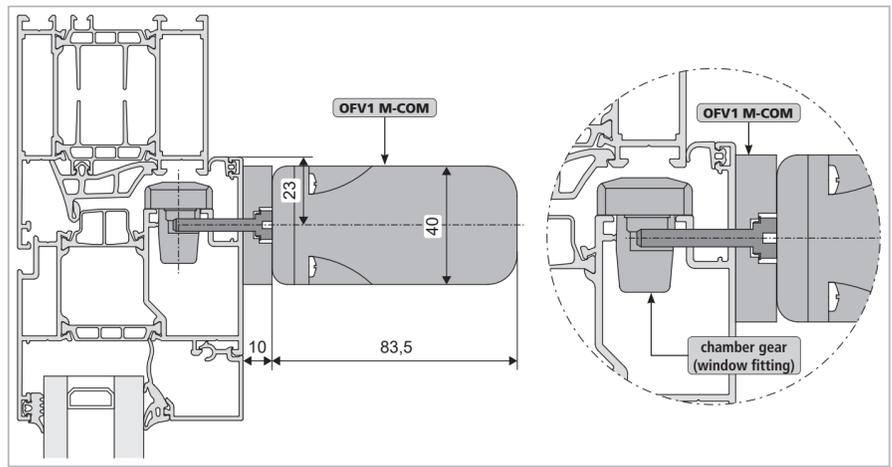
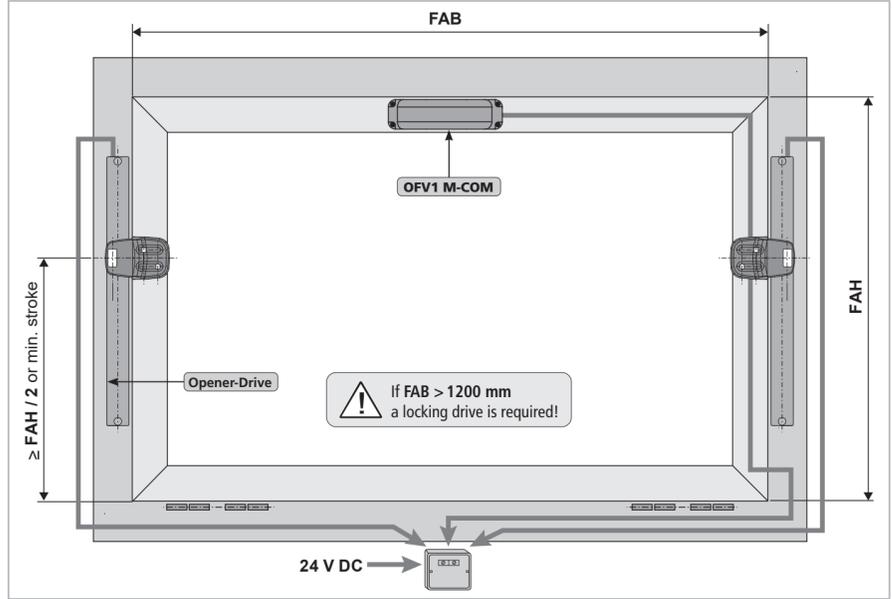
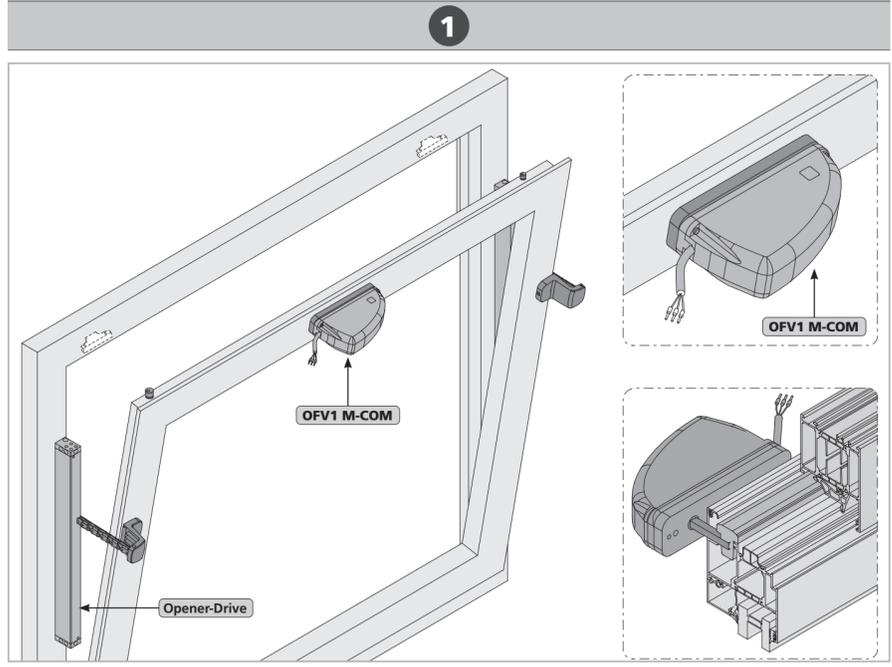
RU
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 перейдите по ссылке на главную страницу
AUMÜLLER.

PL
 Przestrzegać szczegółowej instrukcji
 montażu!
 Link do szczegółowy instrukcji montażu i
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 Proszę zeskanować kod QR i otworzyć stronę
AUMÜLLER.

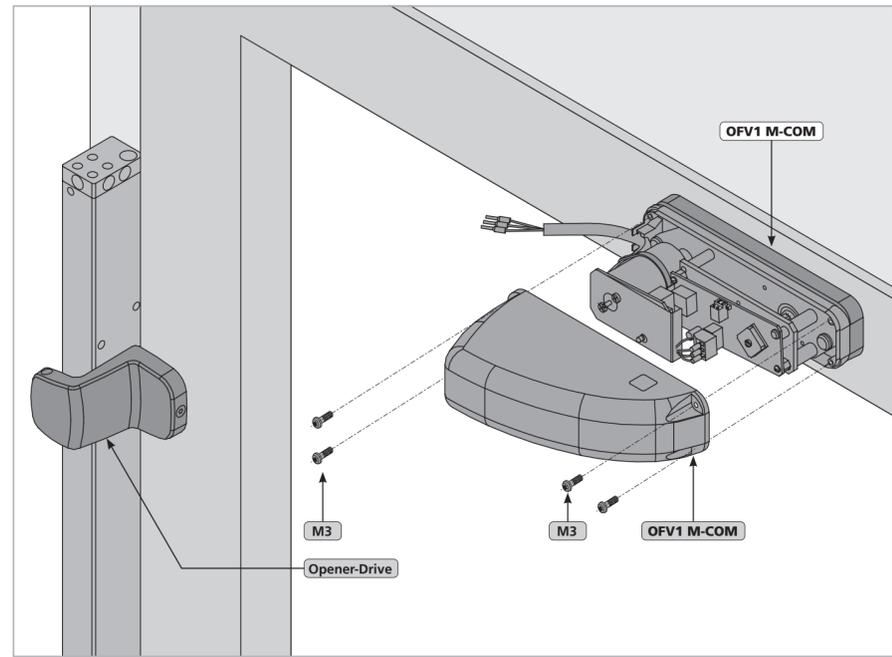
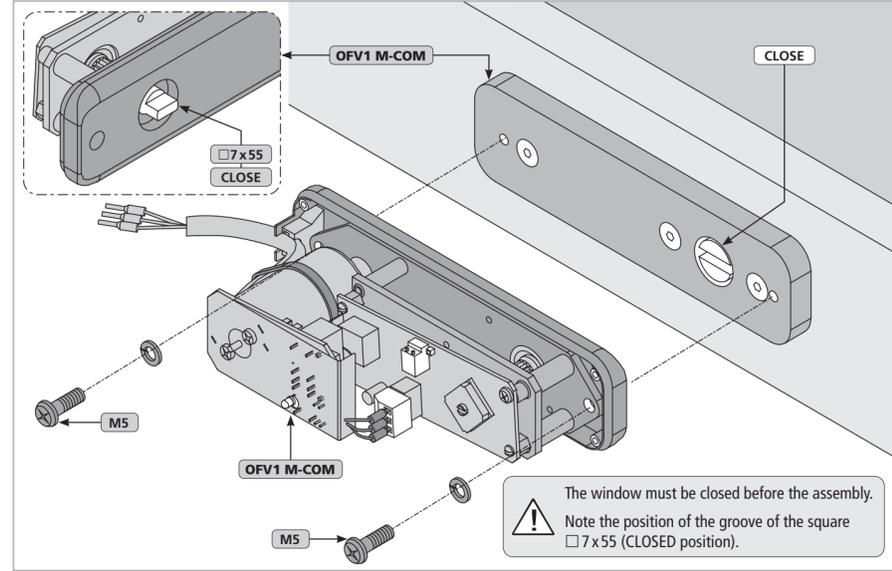
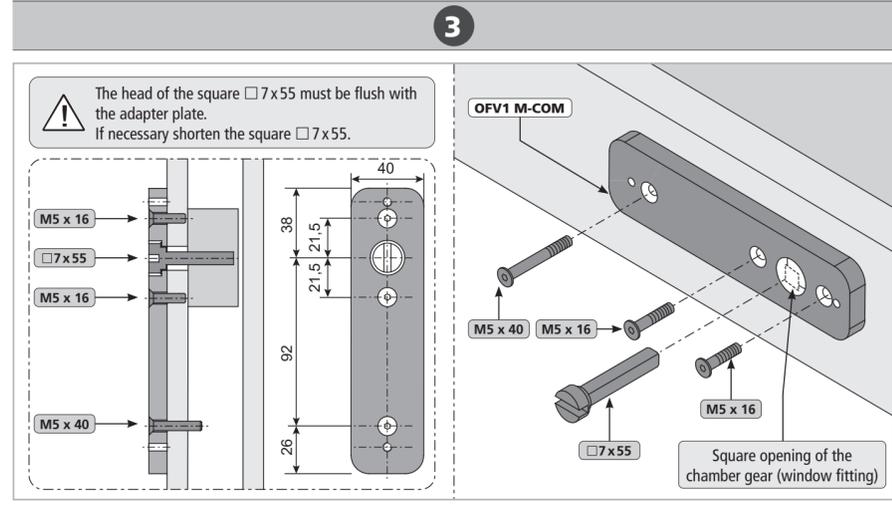
NL
 Montage-instructies in acht nemen!
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 montage-instructies en fabrikantenverklaringen:
 Gelieve QR-code in te lezen en link naar de
AUMÜLLER-homepage te volgen.



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 9000021211_V0.2_KW38.2023



DIP switch		LED display	
DIP-1 OFF	rotating direction: right (casement DIN left)	LED-1 OFF	ready for operation
ON	rotating direction: left (casement DIN right)	green	OFV1 M-COM in operation
		green: blinking	opening drive in operation
		red	OFV1 M-COM fault
		red: blinking	opening drive fault
		LED-2 OFF	power supply: none
		green	power supply: in CLOSE direction
		red	power supply: in OPEN direction
DIP-2 OFF	angle of rotation 180°	LED-3 OFF	OFV1 M-COM non-operation
ON	angle of rotation 90°	green	OFV1 M-COM left rotation
		red	OFV1 M-COM right rotation



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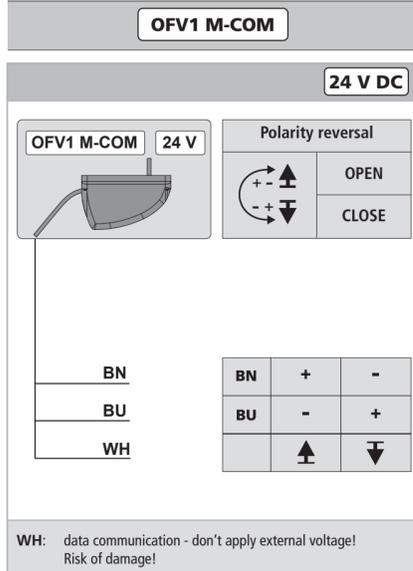
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EN

DE

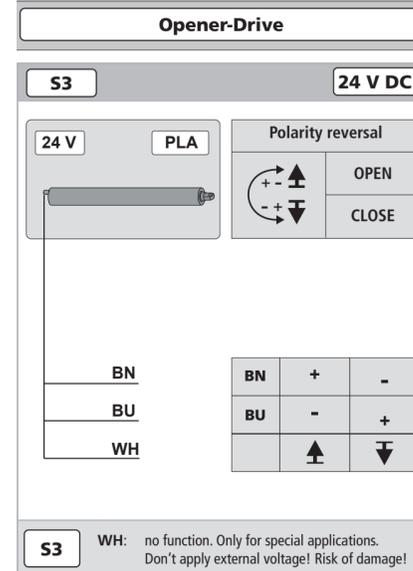
FR

CN

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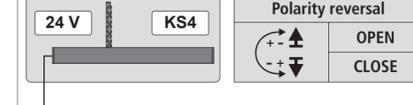
PL

NL



S3

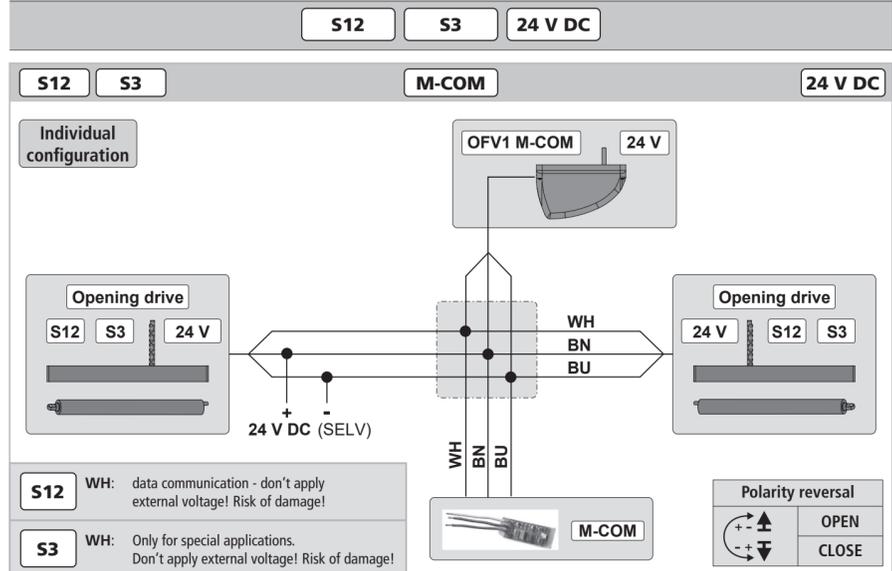
24 V DC



S12



S12

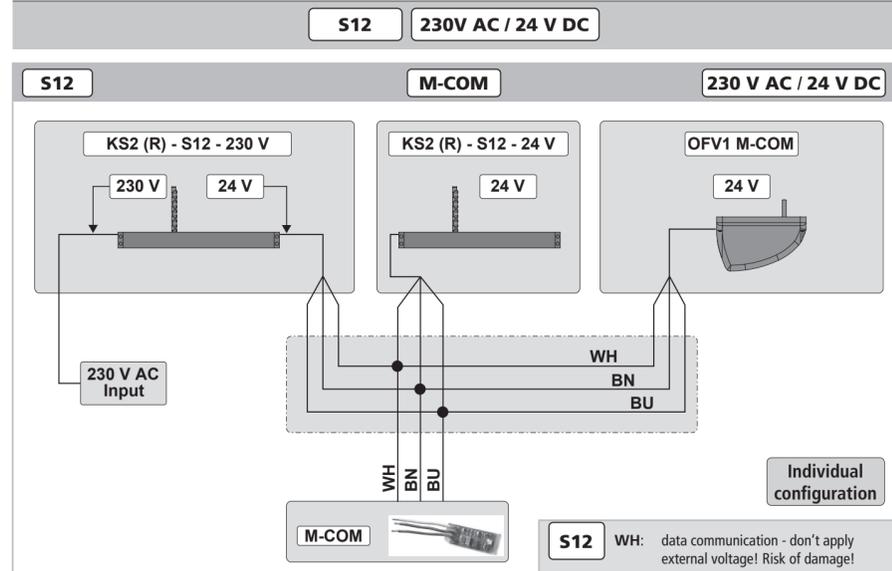


S12

S3



Requires factory programming or customer programming with Parametrier-Interface!



S12



Requires factory programming or customer programming with Parametrier-Interface!

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Assembly and Commissioning Instructions

according to Machinery Directive 2006/42/EC (annex VI)



OFV1 M-COM - LOCKING DRIVE FOR WINDOWS

CE

M-COM



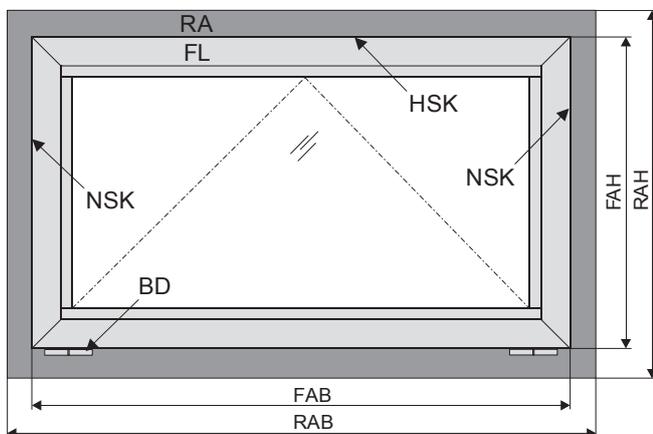
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Abbreviations

Index of abbreviations

These abbreviations are used consistently throughout these assembly & operating instructions. Unless stated differently, all dimensions indicated in this document are in mm. General tolerances in accordance with DIN ISO 2768-m.

A	drive
AK	connection cable / drive cable
AP	cover cap
BD	hinge
Fxxx	casement bracket
FAB	overall width of casement
FAH	overall height of casement
FG	casement weight
FL	casement
FÜ	casement overlap
HSK	main closing edge
Kxxx	frame bracket
L	construction length of drive
MB	central hinge
NRWG	NSHEV – natural smoke and heat exhaust ventilation
NSK	side closing edge
RA	frame
RAB	overall width of frame
RAH	overall height of frame
RWA	SHEV – smoke and heat exhaust ventilation
SL	snow load
→	opening direction



Target group

These instructions are intended for trained personnel and operators of systems for natural smoke ventilation (NRA / RWA) (natural smoke exhaust system / smoke and heat exhaust system) and natural ventilation via windows, who are knowledgeable of operating modes as well as the remaining risks of the system.

Warning and safety symbols in these Instructions:

The symbols used in the instructions shall be strictly observed and have the following meaning:

⚠ DANGER Failure to comply with the warning notes results in irreversible injuries or death.

⚠ WARNING Failure to comply with the warning notes can result in irreversible injuries or death.

⚠ CAUTION Failure to comply with the warning notes can result in minor or moderate (reversible) injuries.

NOTE Failure to comply with the warning notes can lead to damage to property.

⚡ **Caution / Warning**
Danger due to electric current.

⚠ **Caution / Warning**
Risk of crushing and entrapment during device operation (is provided as a sticker with the drive).

⚠ **Attention / Warning**
Risk of damage to / destruction of drives and / or windows.

⚠ WARNING Once the assembly and commissioning has been completed, the installer of a machine „power-operated window and door“ shall hand these instructions over to the end-user. The end-user shall store these instructions in a safe place for further reference and use, if required.

⚠ WARNING This device is not intended for use by persons (including children) with physical, sensory or mental limitations or lacking experience and / or knowledge, unless they are supervised by a person who is responsible for the safety or were instructed by him on the usage of this equipment. Children should be supervised to ensure that they are not playing with this device.

Cleaning and operator's maintenance may not be performed by children without supervision.

Intended use

Area of application / Scope of application

This drive is intended for the electromotive opening and closing of windows in facade and roof areas.

The main task of this product, in combination with a window and a suitable external control unit, **is to evacuate hot smoke and combustion gases in case of fire**, to save human lives and protect material assets. Furthermore, with the electromotive operated window and a suitable external control unit, **the natural ventilation** of the building can be ensured.

NOTE

By attaching the drive to a movable element of the window a so-called "power-operated window" is created which, according to the Machinery Directive 2006 / 42 / EG, represents a machine.

Intended use according

The drive is intended for stationary installation and electrical connection at the window as part of a building.

The drive is in combination with an external Control Unit (e.g. from **AUMÜLLER**) released for its proper use at a power-operated window for the following use:

- Application for natural ventilation
 - with an installation height of the drive and the bottom side of sash of at least 2,5 m above the floor, **or**
 - with an opening width at the HSK of the driven part of < 200 mm by a simultaneous speed of < 15 mm/s at the HSK in closing direction.
- Application as NRWG (natural smoke and heat exhaust ventilator(s) for ventilation without dual purpose for ventilation in accordance with EN12101-2.

Pay attention to possible hazards on tilting or rotating windows, whose secondary closing edges are located at less than 2,5 m installation height above the floor, under consideration of the Control Unit and usage!

WARNING

We as manufacturers are well aware of our duties and responsibilities regarding the development, manufacturing and placing of safe window drives on the market and consistently implement them. Ultimately, however, we have no direct influence on the usage of our drives. Therefore, as a precaution, we point out the following:

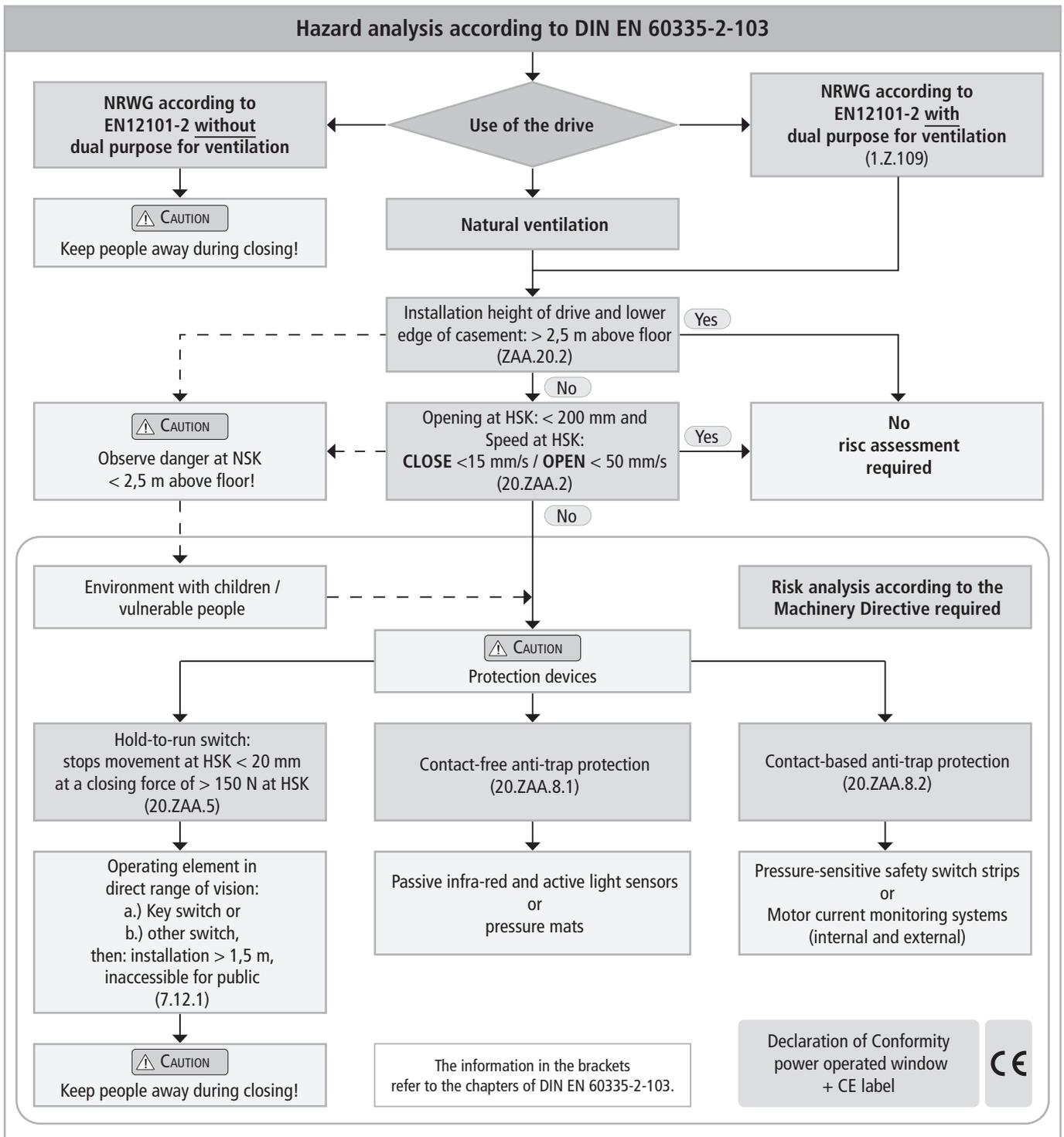
- The **constructor or his agent** (architect, specialist planner) **are obligated to evaluate the hazards to persons**, outgoing from the usage, installation position, opening parameters and from the external Control Unit of the power operated window, **already in the planning phase and to establish necessary protective measures.**
- The **constructor / manufacturer** of the machine "power-operated window" **must implement the planned protective measures** at the installation site or, if not yet established, **determine them** by its own responsibility and detect or **minimize possible remaining risks.**

The need for a risk assessment at the installation site due to the reasonably foreseeable misuse.

A risk assessment in accordance with the Machinery Directive 2006 / 42 / EG for the usage of the power-operated window for natural ventilation is absolutely necessary under the following conditions:

- the installation height of the drive and lower edge of casement < 2,5 m above the floor **and one of the following conditions:**
- the opening width at the HSK > 200 mm, **or**
- the closing speed at the HSK is > 15 mm/s, **or**
- the opening speed at the HSK is > 50 mm/s, **or**
- the closing force at the HSK is > 150 N

The following flow chart can be applied, which also includes the protective measures in accordance with EN 60335-2-103/2016-05.



Casement data

Facade: bottom-hung window, top-hung-window, side-hung window.
 Roof: roof window / sky light.
 Opening direction: inward opening, outward opening.
 Profile material: aluminum, steel, plastic or wood.

When inspecting the drives for conformity with on-site requirements the following items must be observed:

- total weight of casement (glass + frame),
- casement size (FAB x FAH),
- driving force and stroke,
- mounting site at the window frame and casement frame.

NOTE

The casement measurements supplied are only for orientation purposes. It is imperative that the **force-path diagram** of the drives are observed.

Safety instructions



It is important to follow these instructions for the safety of persons. These instructions shall be kept in a safe place for the entire service life of the products.

Risk of crushing and entrapment! Window can close automatically!



The integrated load cut-off stops the drive during closing and opening when the drive is overloaded.

The compressive force is absolutely sufficient to crush fingers in case of carelessness.

Area of application

The drive shall only be used according to its intended use. For additional applications consult the manufacturer or his authorized dealer.

Do not misuse the drive for other lifting operations!



Do not allow children to play with this drive or its electric controls, including the remote control!

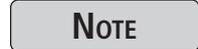
Always check whether the system complies with current regulations. Special attention must be paid to the opening width, the opening area, the opening time and the opening speed of the window, the temperature range of the drives / external devices and cables as well as the cross section of the connecting cables as function of the cable length and power consumption.



All devices must be permanently protected from dirt and moisture, if the drive is not explicitly suitable for use in wet areas (see technical data).

Installation

These instructions address expert and safety-conscious electricians and / or qualified personnel knowledgeable in electrical and mechanical drive installation.



The safe operation, avoidance of injury to persons and damage to property, as well as risks, is only guaranteed by proper installation and setting according to these installation instructions.

All specifications for installation must be checked independently and, if necessary, adjusted at the installation site. The connection assignment, the electrical supply data (see product label) and performance limits (see technical data) as well as the mounting and installation instructions of the drive must be strictly observed and adhered to!



Never connect 24 V DC drives to 230 V AC mains voltage!
Danger to life!

Do not reach into the window rabbet or the operating element (chain or spindle) during installation and operation! Ensure that, based on the installation position and the opening movement of the casement, persons cannot be trapped between the driven part of the window and surrounding fixed components (e.g. wall).

Mounting material

The required mounting material must fit with the drive and occurring load and, if necessary, supplemented.



Before installing the drive, check whether the casement is in good mechanical condition, the weight in balance and whether it opens and closes easily!

Danger spots by crush and shear points

<p>Side-hung</p>	<p>Bottom-hung</p>	<p>Roof windows / skylight domes</p>	<p>Louvre windows</p>
<p> Danger spots: crush and shear points according to DIN EN 60335-2-103</p>			

Crush and shear points

To avoid injuries, **crushing and shear points** between casement and frame must be secured **against entrapment up to an installation height of 2,5 meters above the floor** with appropriate measures. This can be achieved e.g. by using contact-based or contactless protective devices against entrapment, which stop the motion through contact or through interruption by a person. At a force higher than 150 N at the main closing edge the motion must stop within 20 mm. A warning symbol at the opening element must indicate this clearly.

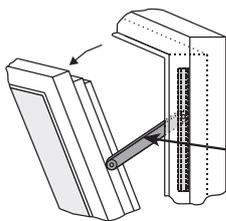
Unintentional or independent opening or falling

Casements are to be hinged or secured such way that in case one of the mounting elements fails it will not crash / slam down or move in an uncontrolled manner by e.g. using double suspensions, safety scissors, casement stays. Tilting windows shall be equipped with safety scissors or similar devices to avoid damages and risks of injury for persons through improper installation and operation. The safety scissors must be adjusted to the opening stroke of the drive (see technical data) to avoid blocking. The opening width of the safety scissors must be bigger than the drive stroke.



WARNING

The movable casement must be secured against unintentional or independent opening as well as falling down.



safety scissors

Routing cables and electrical connection

Routing or installing of electrical cables and connections may be performed only by specialist companies. Never operate drives, control units, operating elements and sensors at operating voltages and connections contrary to the specifications of the manufacturer.

All relevant national instructions shall be observed for the installation.



All-pole disconnecting devices shall be installed in the permanent electrical installation or external Control Unit for the drive.

The mains supply lines 230 V / 400 V AC shall be protected separately!



24V DC drives may only be connected to power supply sources that comply with SELV specifications.

NOTE

In the case of tandem / multiple operation of drives connected in series, the cross-section of the connection cable must be checked autonomously, depending on the total current consumption of the drive system.



WARNING

Damaged mains supply lines of drives with plug connectors may only be replaced by the manufacturer or qualified service / maintenance personnel!

Power cables which are fixed to the drive casing cannot be replaced. If the cable is damaged the device must be scrapped!

The types of cable, cable lengths and cross-sections shall be selected in accordance with the manufacturer's technical data. If necessary, the cable types shall be coordinated with the competent local authorities and energy supply companies. Low-voltage lines (24 V DC) shall be routed separate from the high-voltage lines. Flexible cables may not be flush-mounted. Freely suspended cables shall be equipped with strain reliefs.



Cables must be laid such way that they cannot be sheared off, twisted or bent during operation. Drive cables laid inside window profiles must be protected by insulating tubes with a sufficient temperature resistance. Through holes shall be equipped with cable sleeves!

Clamping points shall be checked for tightness of threaded connections and cable ends. Access to junction boxes, clamping points and external drive control boxes shall be ensured for maintenance work.

Commissioning, operation and maintenance

After the installation and after each modification in the set up all functions shall be checked with a trial run. It shall be ensured that drive and casement are set correctly and that security systems, if available, are functioning properly.

After the installation of the system is completed the end-user shall be instructed in all important operating steps. If necessary, he must be advised of all remaining risks / dangers.

The end-user shall be specifically instructed that no additional forces, except pushing and pulling forces in the opening and closing direction of the casement, may be applied to the spindle, chain or lever of the drive.

NOTE Post warning signs!

During the proper assembly of drives with mounting elements at a window, and the connection to an external control unit, the interfaces resulting from mechanical and electrical performance characteristics of single elements shall be observed.

Other persons must be kept away from the casement when a hold-to-run switch (pushbutton) is operated or when a window, which has been opened by a smoke and heat exhaust system, is closing!

 **CAUTION**

The operating element of hold-to-run switches must be installed within direct view from the window, but apart from moving elements. If the switch is not a key-operated switch it must be installed at a minimum height of 1,5 m and inaccessible to the public!

 **CAUTION**

Do not allow children to play with permanently mounted control devices and keep remote controls out of reach for children!

 **CAUTION**

 During cleaning, maintenance work and while exchanging parts the drive must be completely disconnected from the power supply and secured against unintentional reactivation.

 **WARNING** Do not actuate the drive or the casement when repair or re-setting works are performed!

Replacement parts, fasteners and controls

The drive shall only be operated with control devices from the same manufacturer. There is no liability, warranty or customer service if third-party parts are used. Exclusively original spare parts of the manufacturer shall be used for mounting elements or expansions.

Ambient conditions

The product may not be subjected to impacts or falls, or to vibrations, moisture, aggressive vapors or other harmful environments, unless the manufacturer released it for one or more of these environmental conditions.

- **Operation:**
 Ambient temperature: -5 °C ... +60°C
 Relative humidity: < 90% less 20°C;
 < 50% less 40°C;
 no formation of condensation

NOTE Observe temperature range during installation!

We recommend the use of wind and rain sensors in order to avoid weather-related damages to drives, windows and buildings thru open window sashes.

NOTE

- **Transport / Storage:**
 Storage temperature: -5°C ... +40°C
 Relative humidity: < 60%

Accident prevention regulations and workmen's compensation insurance guidelines

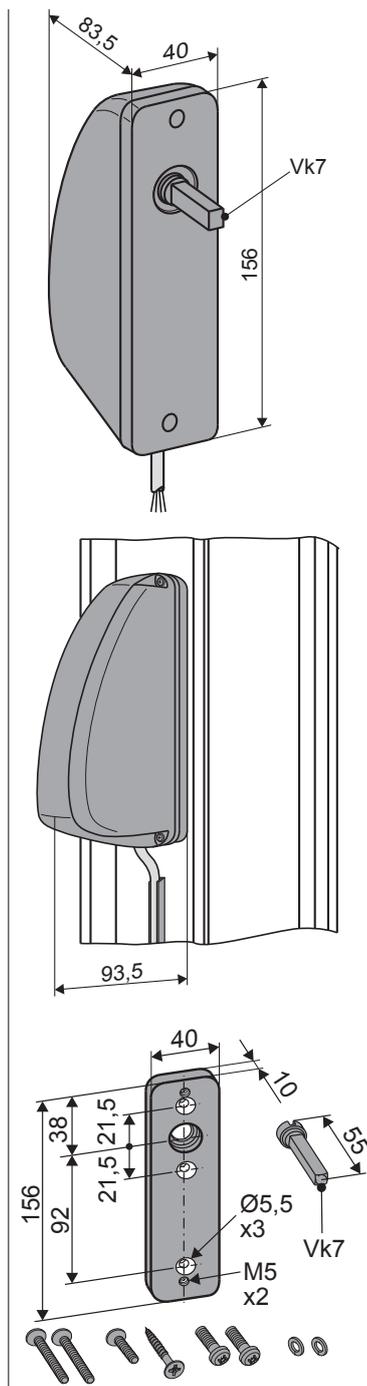
For work on or in a building or building part the provisions and instructions of the respective accident prevention regulations (local workmen's compensation insurance guidelines) shall be observed and adhered to.

Declaration of Conformity and of Incorporation

The drive is manufactured and inspected in accordance with European guidelines. The respective Declaration of Conformity and of Incorporation is on hand.

In case that the use of the drive differs from the intended use, a risk evaluation for the power operated window shall be performed and a Declaration of Conformity according Machinery Directive 2006 / 42 / EG issued.

Data sheet OFV1 M-COM



- With Internal Intelligent Control Electronics and sequence control for drives type S2 / S3 / S12
- Two adjustable rotation angles 90° / 180°
- Opening direction selectable: right / left turning
- Square shaft adapter 7x55 mm

- M-COM suitable Internal Intelligent Control Electronics and sequence control for drives S3 / S12
- Star wiring
- Current of the drives does not run over OFV1 M-COM
- Sequence control via communication wire

Technical data

U_N	Rated voltage	24V DC (19 V ... 28 V)
I_N	Rated current	0,8 A
I_A	Cut-off current	1,1 A
I_O	Quiescent current	< 28 mA (10 Nm)
	Opening drives	with S3 / S12
P_N	Rated power	19 W
DC	Duty cycle	5 cycles (ED 30 % - ON: 3 min. / OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +60 °C
M	Torque max.	10 Nm
F_H	Initial torque	22 Nm
	Rotating angle direction	yes (self-learning)
	Rotating angle	90 ° / 180° (right / left)
t	Runtime	90° - 4,5 s; 180° - 9,0 s
	Connecting cable	non-halogen, grey 3 x 0,5 mm ² , ~ 3 m
	Housing	ABS, greywhite
	Dimensions (W x H x D)	40 x 156 x 83,5 mm
	Sound pressure level	≤ 70 dB (A)

Order data

Version	PU / pcs.	Part.-No.
OFV1 M-COM	1	513860

Explanations on the product label

The product label informs about:

- manufacturer's address
- article reference number and name
- technical characteristics
- date of manufacturing with firmware version
- certifications
- serial number

NOTE

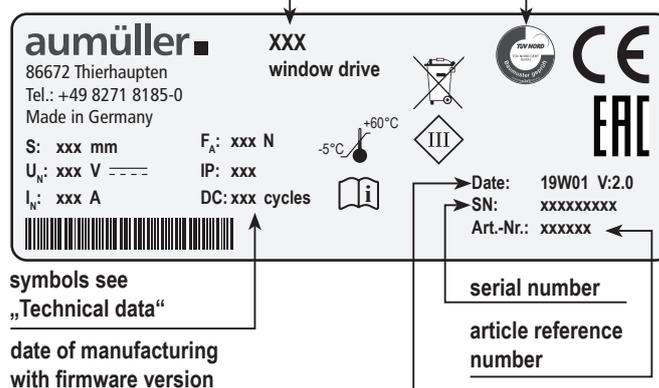
Never install and operate damaged products.

In the event of any complaints, please indicate the product serial number (SN) (see product label).

Exemplary representation

Product designation

certifications



Determination of locking points

The number of locking points depends on:

- object-specific requirements
- processing guidelines and authorized ranges of application of the manufacturer
- EN 12102-2 NRWG (depending of profile group and wind load classification **WL**)
- EN 12207 Air permeability
- EN 12208 Driving rain tightness
- EN 12210 Resistance to wind load
- EN 1627 Burglar resistance
- EN 14351-1 Window or door standard
- DIN 1991-1-3 Snow loads
- DIN 1991-1-4 Wind loads

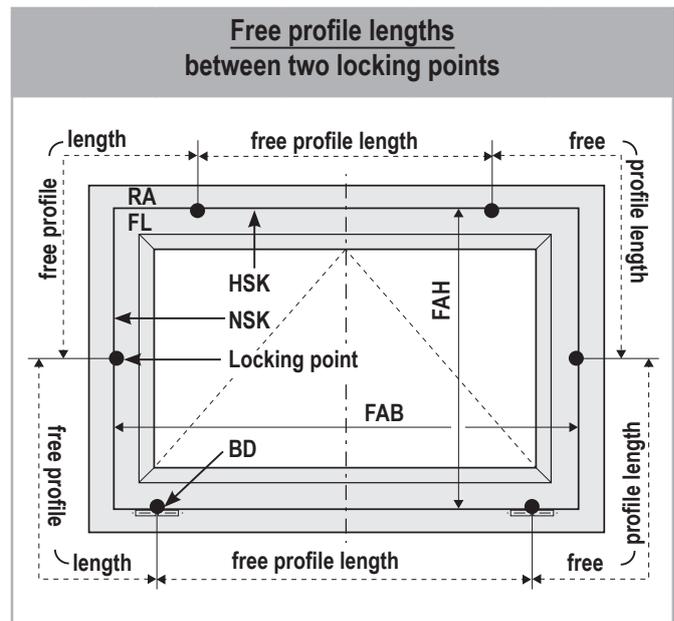


Only the worst case with secured values and application ranges must serve as a basis.

Locking points are centers / axes of the following components: casement hinges / stays (**BD**), sealing points of the locking system, application points of directly actuating drives (force transmission axes at 90° to the casement profile, with closed window).

Drives used in SHEV mounting devices such as: RWA 1000, RWA 1050, RWA 1100 are not included in the locking points.

Free profile lengths are effective distances between two locking points. Corner and edge distances shall be calculated as straight lines.



		Free profile length for lx^4 -values of the window casement profiles			
		20-34 cm ⁴	35-50 cm ⁴	51-55 cm ⁴	56-99 cm ⁴
Static wind slipstream loads on the SHEV - according to EN 12101-2.	WL 1000	1300 mm	1500 mm	1700 mm	1900 mm
	WL 1500	1200 mm	1400 mm	1600 mm	1800 mm
	WL 2000	1100 mm	1275 mm	1450 mm	1650 mm
	WL 2500	900 mm	1025 mm	1150 mm	1275 mm
	WL 3000	800 mm	900 mm	1000 mm	1100 mm

Values apply only for AUMÜLLER ferralux NRWG.

NOTE

The number of locking points or the free profile length between two locking points are described into the respective system documents of the window profile. This information must be adhered. The requirements for the tightness of the windows according to EN 14351-1 must be observed!

INSTALLATION STEP 1: Inspection before the installation



Important instructions for a safe installation. Observe all instructions, wrong installation may result in serious injury!

Storage of drives at the construction site

Protective measures against damages, dust, moisture or contamination shall be taken. Store drives intermediately only in dry and well ventilated rooms.

Inspection of drives before installation

Check drives and window before installation for good mechanical condition and completeness. The chains / spindles of the drives must be extendable or retractable easily. The casement must run smoothly and the weight must be in balance.

NOTE

We recommend the use of our test kit for the inspection of drives with the rated voltage 24V= / 230V~ (see table below). Damaged products may not be operated under any circumstance.

Test kit for drives

Order number:	533984
Application:	Test kit to test the running behavior and to support the commissioning of 24 V DC or 230 V AC window drives
Supply voltage:	230V AC
Drive voltage:	24V DC / 230V AC
Drive current:	max. 5 A
Fine fuse:	5.0 A slow-blow
Power Consumption:	1 W / 12 W (Battery level is maintained / charged)
Ambient temperature:	-15 °C ... + 40 °C
Degree of protection:	IP20 / IP65 (case open/closed)
Electrical protection:	Protection class 1, ES1 according to EN IEC 62368-1
Housing:	plastic (PP)
Dimensions (WxHxD):	400 x 300 x 168 mm
Weight:	approx. 5,3 kg
Controls:	3x switches / 2x push buttons
Display:	TFT-Display, colored
Scope of delivery:	1x test kit / 1x mains plug 4x safety banana plugs 1x operating manual (German, English)



The test procedure of drives may only be performed on a non-slip and secured mat or a test fixture. During the test run the test element must not be interfered with. The test may only be conducted by or under the supervision of expert personnel.

For testing chain drives the chain must be extended and retracted at an angle of approx. 90°. The spindle tubes of spindle drives in round housing tubes must be secured against independent spinning before starting the test to avoid deviations in the integrated position encoder.

Inspection of the intended use

The planned use of the drive must be checked for compliance with its intended use. If used otherwise the liability and warranty claim expires.

Predictable misuse

It is imperative that foreseeable misuse of drives is avoided! Here are a few examples:

- do not connect 24 V DC drives to a 230 V AC mains voltage,
- observe synchronous run and sequence control by drives with multiple interconnection (if existing),
- use drives only indoors,
- avoid additional force influences, e.g. transverse forces.

Testing mechanical requirements

Prior to the start of the installation check whether :

- the support surface and the profile static for the load transmission is sufficient,
- a support construction for the secure fastening of the drives is required,
- cold bridges (thermal separation) are avoidable at action points,
- there is sufficient space for the swivel movement of the drive.

If not, counter measures must be taken!



The support surface of the frame brackets or casement brackets must rest completely on the window or frame profile. There must be no tilting of the fastening elements during extension and retraction of the drives. A safe and solid fastening must be ensured at the window profile.



It is imperative that the sufficiently mechanical stiffness of the fastener type as well as of the swivel range of the drive is observed.

If this is not guaranteed another type of fastening or another type of drive must be selected.

INSTALLATION STEP 2: Installation prerequisite and Installation preparation

The following conditions must be fulfilled for the installation of the drives so they can be properly assembled with other parts and constructed to a complete machine at the window without impairing the safety and health of persons:

1. The design of the drive must fulfill the requirements.
2. The fastening accessories (casement brackets or frame brackets) must fit the window profile; the profile-dependent hole lay-out must be complied with.
3. The space required for the installation of the drive on the frame and casement profile must be sufficient.
4. The window must be in perfect mechanical condition before the installation. It should open and close easily.
5. The fastening material for the installation of the drive must fit the window material (see table).

Wood windows	Wood screws: i.e. DIN 96, DIN 7996, DIN 571 round head with slot, round head with cross, hex head, special type
steel, stainless steel, aluminum windows	Self-tapping screws, thread screws, sheet-metal screws i.e. ISO 4762, ISO 4017, ISO 7049, ISO 7085, DIN 7500 cylinder head with hex socket, internal serration (Torx), Phillips head or external hex head blind rivet nut
plastic windows	Screws for plastic i.e. DIN 95606, DIN 95607, ISO 7049, ISO 7085, DIN 7500 round head with cross, external hex head, Torx

Recommendation: if possible, screw through two cavity webs

Tools required

- Marker,
- Grains,
- Hammer,
- Knife,
- Screwdriver (cross, Torx),
- Hexagonal wrench,
- Torque wrench,
- Power drill,
- Threadlock adhesive,
- possibly a tool for blind rivet nuts.

Check window data on site

- Measure FAB and FAH.
- Check / calculate weight of casement.
If unknown, it can be determined approximately with the following formula:

$$G \text{ (Casement weight [kg])} = \frac{\text{FAB [m]} \cdot \text{FAH [m]} \cdot \text{Glass thickness [mm]} \cdot 2,5 \cdot 1,1}{\text{glass-density} \cdot \text{frame share}}$$

- Check / calculate the required drive force and compare with drive data. If unknown, it can be determined approximately with the following formula:

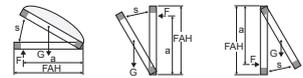
$$F \text{ [N]} = \frac{5,4 \cdot G \text{ [kg]} \cdot s \text{ [m]}}{a \text{ [m]}}$$

Facade

$$F \text{ [N]} = \frac{5,4 \cdot G \text{ [kg]} \cdot \text{FAH [m]}}{a \text{ [m]}}$$

Roof

- a = Distance of action point to hinges
- F = Drive force
- s = Stroke



Scope of delivery:

Prior to assembly, check items quantity in the delivery for completeness.

Accessories for locking drive	
	Assembly and Commissioning Instructions
	1x Adapter plate
	1x Square: Vk 7 x 55
	2x Countersunk screw M 5 x 40 1x Countersunk screw M 5 x 16 1x Spax countersunk screw 4,5 x 30
	2x Head screw M 5 x 16 2x Spring rings
	1x Cable fastener
	1x Connecting cable
	1x Plug-in terminal
	1x Warning sign sticker „Risk of entrapment“

INSTALLATION STEP 3: Assembly opening drive

- Mount opening drive (see separate „Assembly and Commissioning Instructions“ for each window-drive).
- Make the connection for the control voltage to the opening drive (see chapter: „Electric connection“).
- Unhook the opening drive spindle / opening drive chain from the window casement, so that the casements can be manually moved.

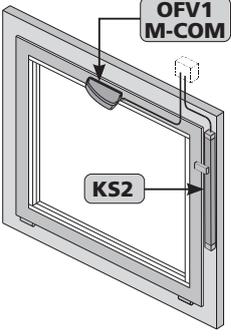
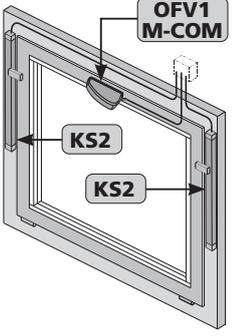
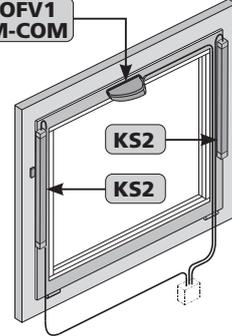
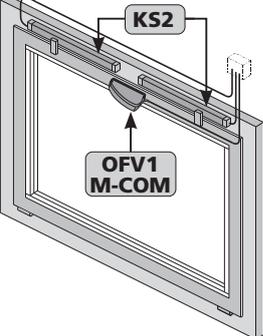
OFV1 M-COM (with software SW-V2)

The opening drives **must have** an integrated disconnection and / or an electronic overload disconnection.

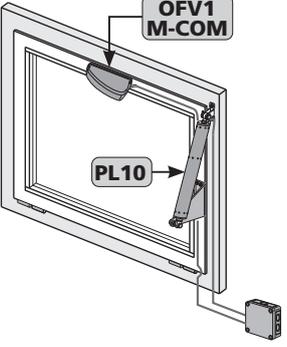
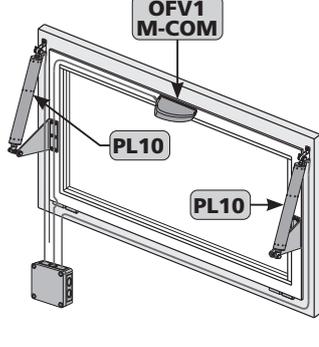
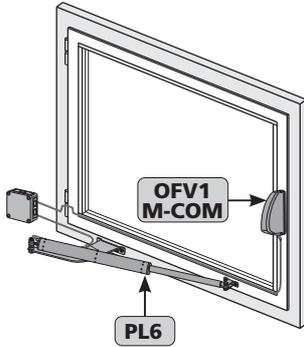
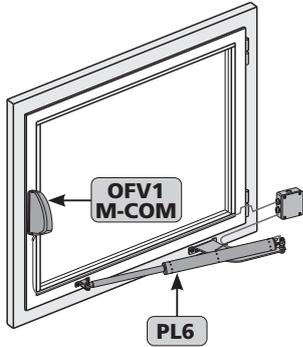
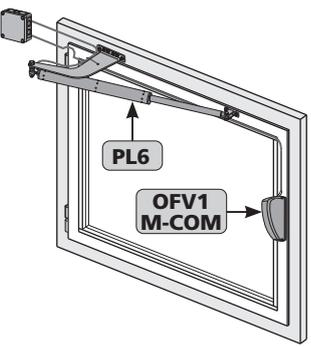
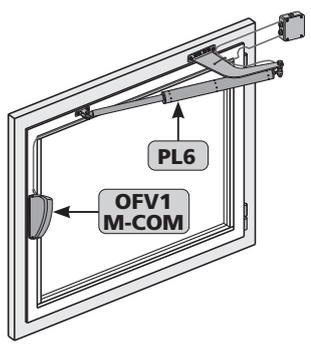
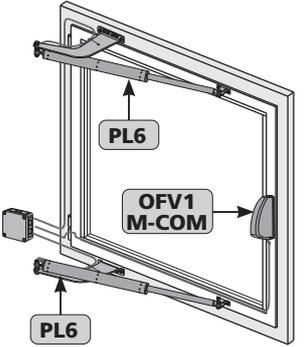
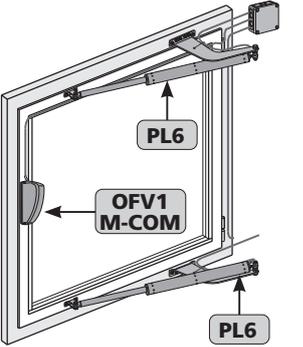
- M-COM suitable internal load dependent cut-off switch and sequence control. For drives with internal load dependent cut-off switch **S3 / S12**
- Star wiring. Sequence control via communication wire.
Current of the drives does not run over **OFV1 M-COM**.

Application examples

Chain drives - inward opening window

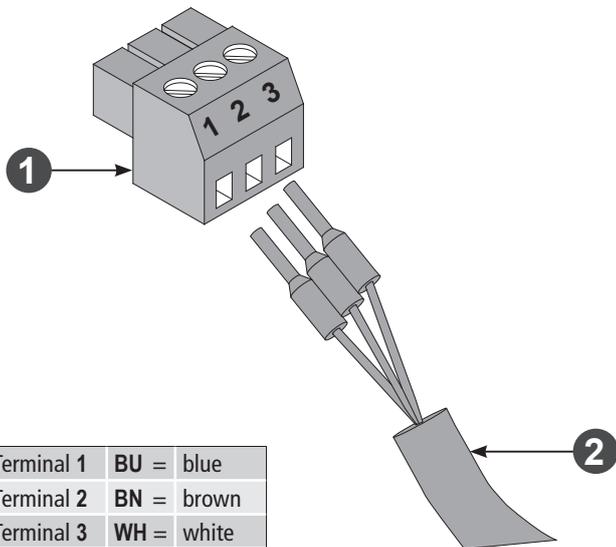
Solo - KS2 as frame assembly	Tandem - KS2 as frame assembly	Tandem - KS2 as casement assembly	Tandem - KS2 as frame assembly
			
View on bottom-hung		View on bottom-hung	

Spindle drives - inward opening window

Solo - PL10 as frame assembly	Tandem - PL10 as frame assembly	Solo - PL6 as frame assembly	Solo - PL6 as frame assembly
			
View on bottom-hung		View on side-hung	
Solo - PL6 as frame assembly	Solo - PL6 as frame assembly	Tandem - PL6 as frame assembly	Tandem - PL6 as frame assembly
			
View on side-hung		View on side-hung	

INSTALLATION STEP 4: Remove the housing and plug in the connection cable

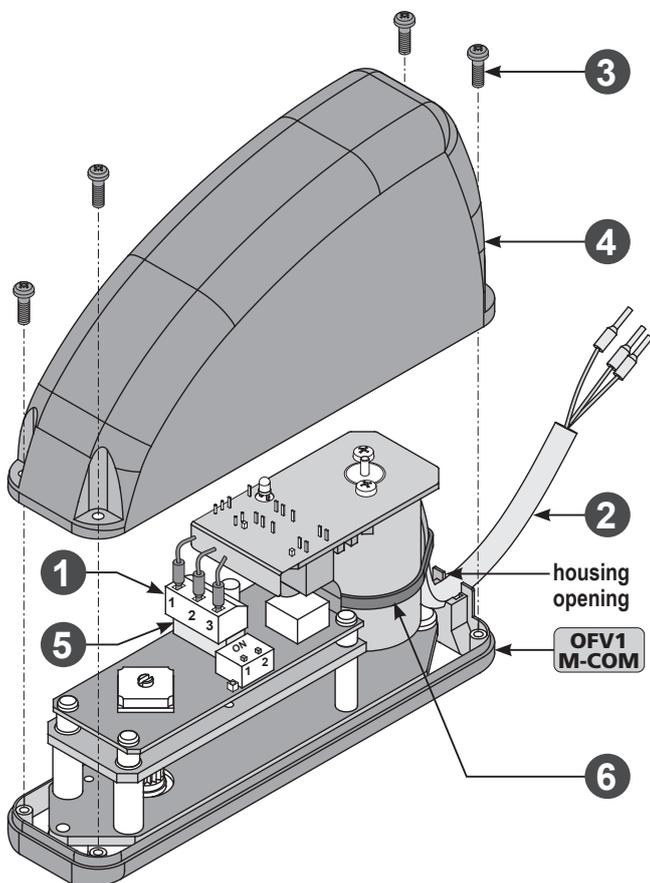
- Clamp the plug-in terminal ① at connection cable ②.



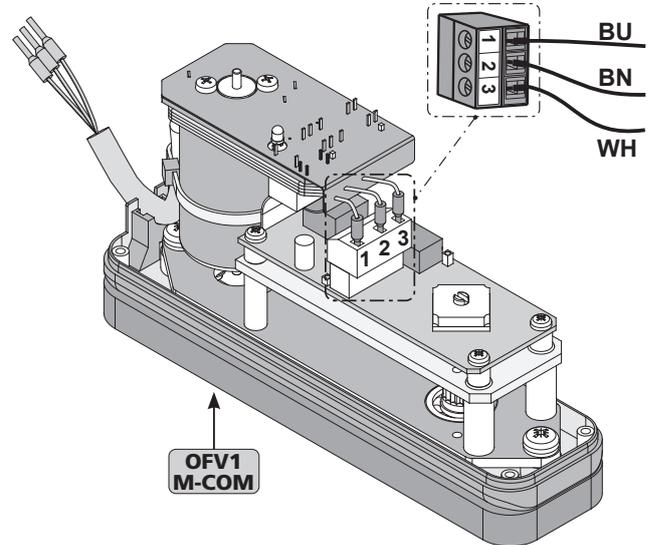
Terminal 1	BU = blue
Terminal 2	BN = brown
Terminal 3	WH = white

- Loosen the screws ③ and remove the housing ④ from the locking drive OFV1 M-COM.

- Insert the lock-tight plug-in terminal ① with the connection cable ② in the terminal block ⑤ from the locking drive OFV1 M-COM.

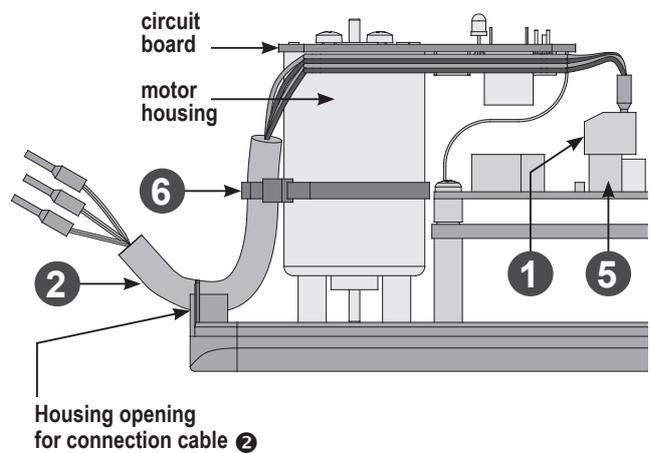


Terminal assignment OFV1 M-COM



Terminal 1	BU = blue	} Configuration is done by M-COM For drives with software S3/S12
Terminal 2	BN = brown	
Terminal 3	WH = white	

- Lay the connection cable ② under the circuit board.
- Secure connection cables ② on motor housing with supplied cable fastener ⑥.
- Cut off protruding end of cable fastener ⑥.
- Lead connecting cable ② through the housing opening.

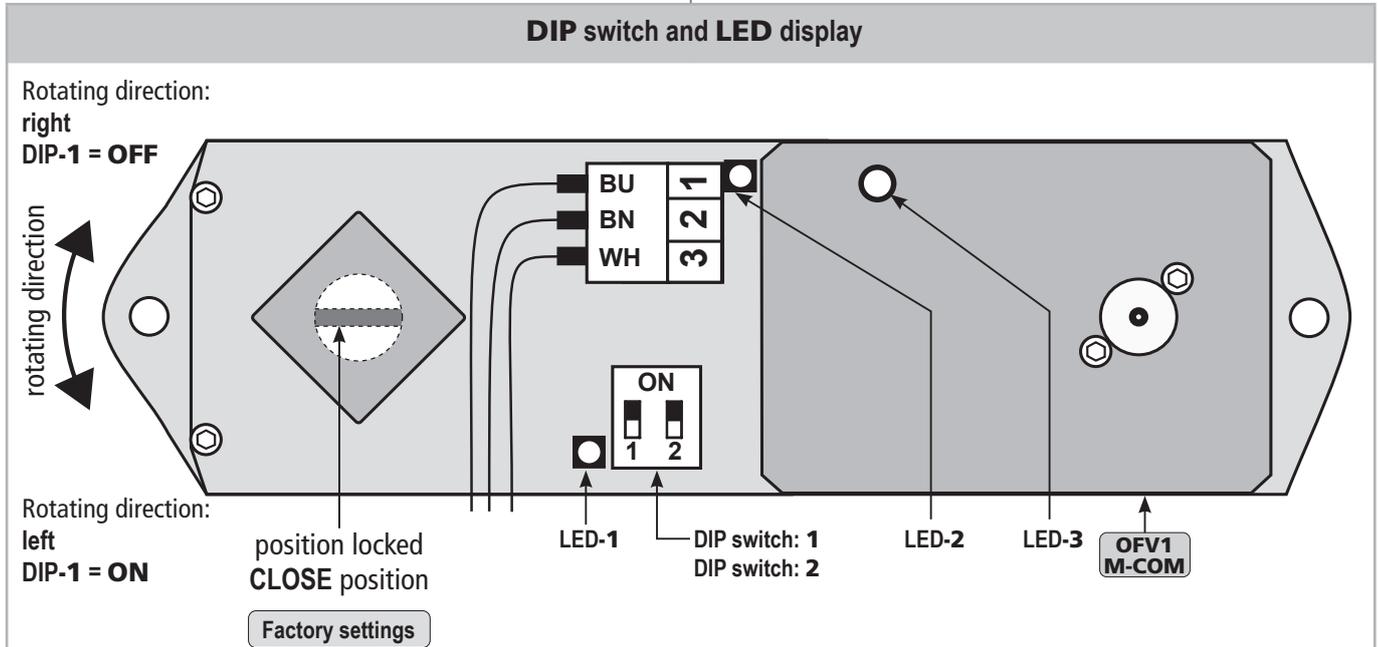


INSTALLATION STEP 5: DIP switch and LED display

- Set the DIP switches, when the locking drive **OFV1 M-COM** is not mounted.



Set the DIP switches in a **voltage-free** state.



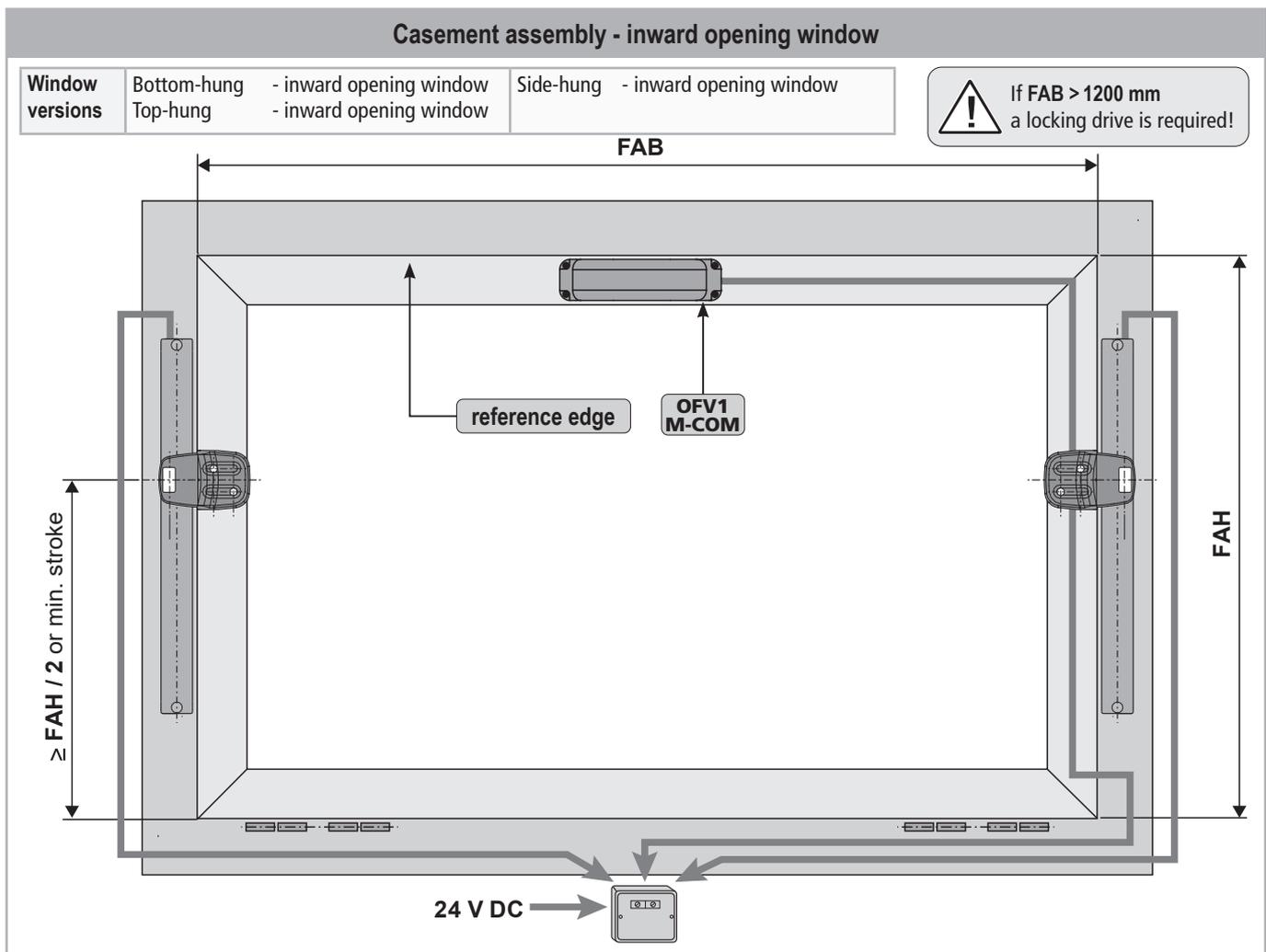
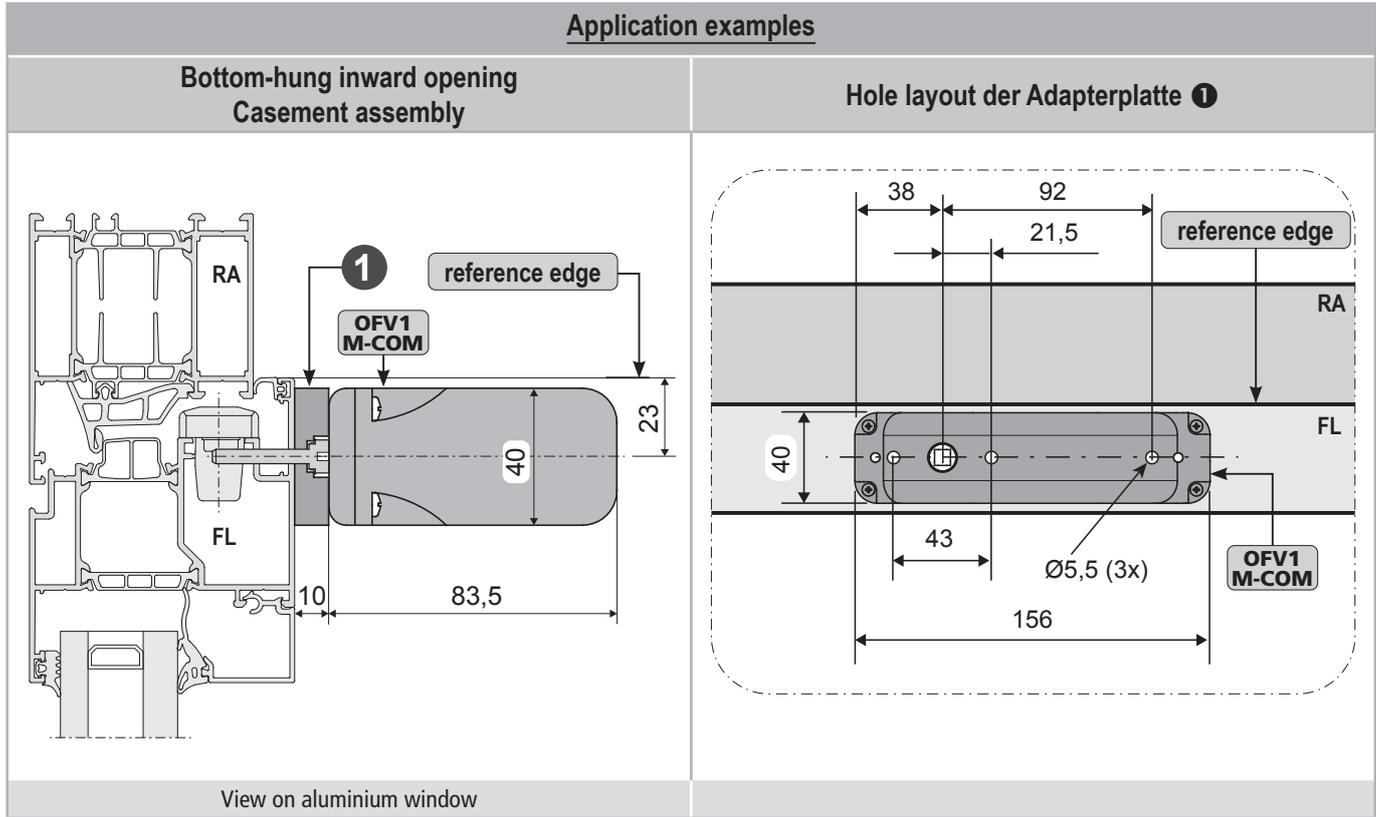
NOTE

In case of wrong direction of rotation, reverse polarity from the opening drive.

BN	=	brown
BU	=	blue
WH	=	white

DIP switch		LED display	
DIP-1 OFF rotating direction: right (casement DIN left) ON rotating direction: left (casement DIN right)		LED-1 OFF ready for operation green OFV1 M-COM in operation green: blinking opening drive in operation red OFV1 M-COM fault red: blinking opening drive fault	
		LED-2 OFF power supply: none green power supply: in CLOSE direction red power supply: in OPEN direction	
DIP-2 OFF angle of rotation 180° ON angle of rotation 90°		LED-3 OFF OFV1 M-COM non-operation green OFV1 M-COM left rotation red OFV1 M-COM right rotation	

INSTALLATION STEP 6: Hole layout for OFV1 M-COM



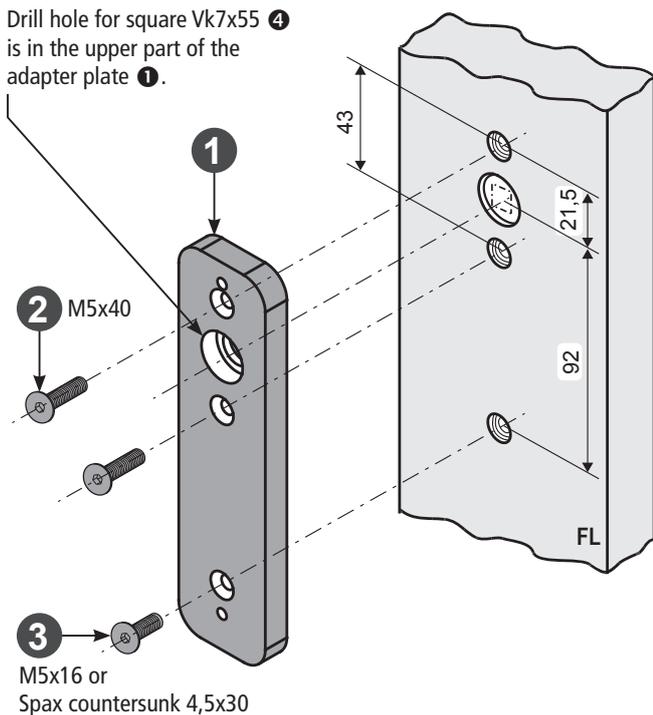
INSTALLATION STEP 7: Assembly OFV1 M-COM

- Use the handle to manually close and lock the window.
- Unscrew handle.
- Use screws 2 to attach adapter plate 1 on window. Use existing boreholes of handle.
- Fasten the adapter plate 1 with an additional suitable screw 3. Drill appropriate hole.



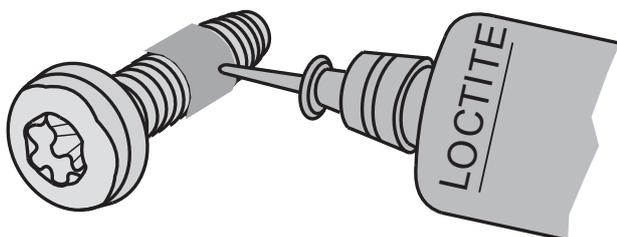
Remodel the adapter plate 1 so, that the square Vk7x55 4 is in the upper part of the adapter plate 1.

Drill hole for square Vk7x55 4 is in the upper part of the adapter plate 1.

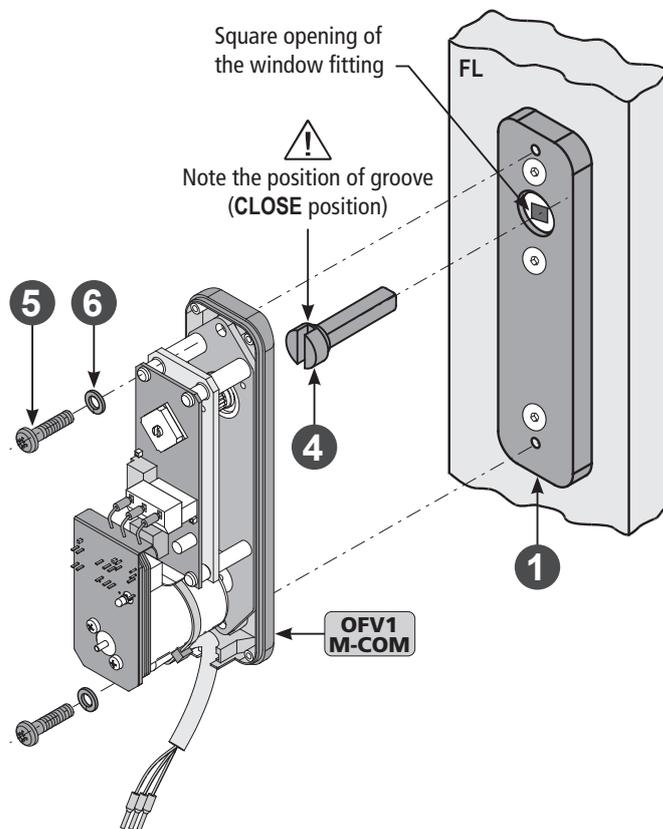


Carefully clear away drilling swarfs to prevent seals from being damaged. Avoid surface scratches, for example by using masking tape.

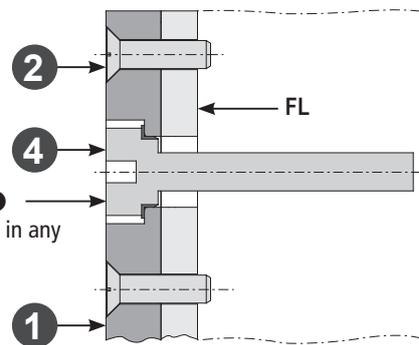
- Secure fasteners against loosening; e.g. by applying removable thread-locking compound such as "Loctite".



- Plug the square Vk7x55 4 in the square opening of the chamber gear (window fitting). Pay attention to the correct slot position (CLOSE position).
- If necessary shorten the square Vk7x55 4.



The head of the square Vk7x55 4 must be flush with the adapter plate 1. It may not protrude in any way.



Square Vk7x55 4 may not protrude in any way.

- Insert the locking drive OFV1 M-COM into groove of square Vk7x55 4 and fasten it with two screws 5 and spring rings 6 on the adapter plate 1.



Install square Vk7x55 4 and locking drive OFV1 M-COM in CLOSED position.

INSTALLATION STEP 8A: Test run and installation - Assembly with M-COM

The opening drive and the locking drive **OFV1 M-COM** must be tested **separately**.

- The opening drive is unhinged.

Test run: Opening drive

- **Switch on the control voltage** at the opening drive.
- Move opening drive in **OPEN** direction.
- Move opening drive in **CLOSE** direction.
- Ensure the easy movement of the casement.
- **Switch off the control voltage** from the opening drive.

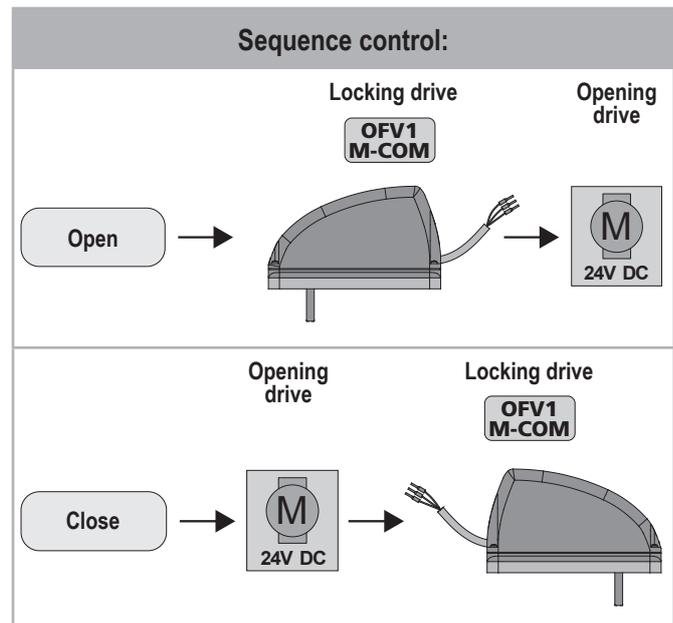
Test run: Locking drive **OFV1 M-COM**

- Make the connection for the control voltage to the locking drive **OFV1 M-COM** (see chapter: „Electric connection - INSTALLATION STEP 11A“).



During **start-up** of locking drive **OFV1 M-COM** the 24 V-control voltage may be switched on only with unhinged opening drive.

- **Switch on the control voltage** at locking drive **OFV1 M-COM** - in **CLOSE** direction.
- Switch the control voltage - from the locking drive **OFV1 M-COM** in **OPEN** direction.
- Check the locking drive **OFV1 M-COM** to function.
- If necessary, correct the DIP switches (see chapter: „DIP switches and LED display“).
- **Switch off the control voltage** from the locking drive **OFV1 M-COM**.



- Hinge opening drive on casement.
- Make mechanical settings in accordance with „Assembly and Commissioning Instructions“ of the drives.

Installation: M-COM

- Installing the **M-COM** (see separate „Installation Instructions“ for M-COM) and make the electrical connection - in accordance with chapter: „Electric connection - INSTALLATION STEP 11A“.



Installing **M-COM** in a voltage-free state. The configuration is always in **CLOSE** direction.

- **Switch on the control voltage** at locking drive **OFV1 M-COM** and at opening drive - in **CLOSE** direction.
- **M-COM** is configured (see LED display).
- Check sequence control.
- Ensure the easy movement of the casement.

INSTALLATION STEP 8B: Test run and installation as a factory preprogrammed set

The opening drive and the not mounted locking drive **OFV1 M-COM** must be tested **together**.

NOTE

Drives from the factory preprogrammed sets do not work individually!

- The opening drive is unHINGED.

Test run:

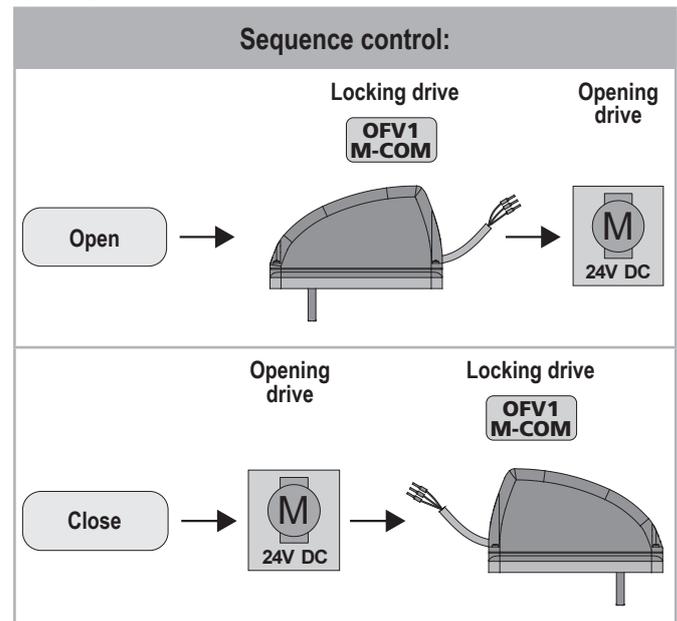
Locking drive OFV1 M-COM is mounted, opening drive is unHINGED.

- Make the connection for the control voltage to the locking drive **OFV1 M-COM** (see chapter: „Electric connection - INSTALLATION STEP 11B“).



During **start-up** of locking drive **OFV1 M-COM** the 24 V-control voltage may be switched on only with unHINGED opening drive.

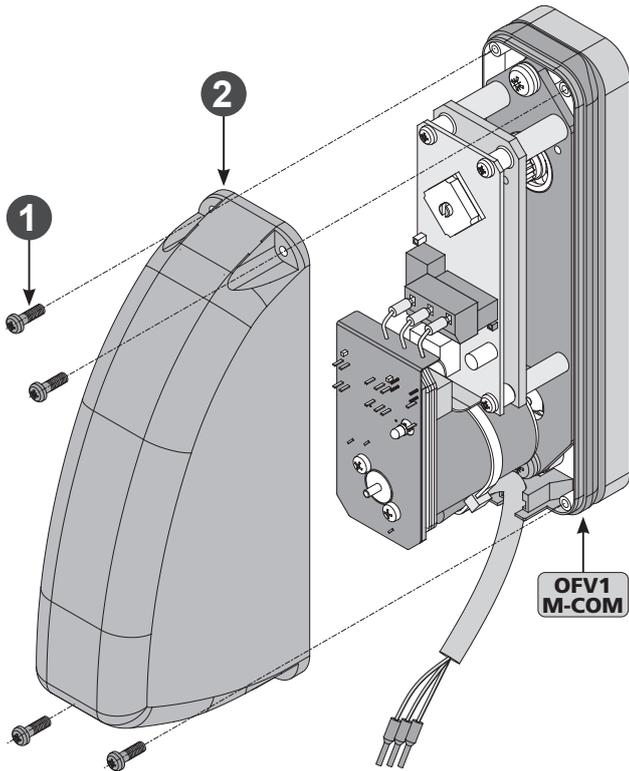
- **Switch on** repeatedly the **control voltage** at locking drive **OFV1 M-COM** and at the opening drive - in **CLOSE**-direction and **OPEN**-direction. In this check the locking drive **OFV1 M-COM** to function and the sequence control.
- If necessary, correct the DIP switches (see chapter: „DIP switches and LED display“).
- Move locking drive **OFV1 M-COM** and the opening drive in **OPEN** direction.
- Ensure the easy movement of the casement.
- **Switch off** the **control voltage** from the locking drive **OFV1 M-COM** and form the opening drive.
- Hinge opening drive on casement.
- Make mechanical settings in accordance with „Assembly and Commissioning Instructions“ of the drives.
- **Switch on** repeatedly the **control voltage** at locking drive **OFV1 M-COM** and at the opening drive - in **CLOSE**-direction and **OPEN**-direction.
- Check sequence control.
- Ensure the easy movement of the casement.



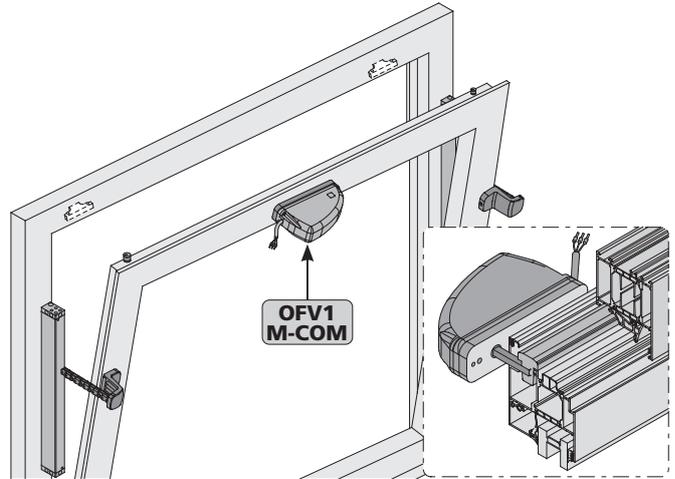
NOTE

When subsequent programming with **Parameterisation-Interface** the same assembly steps as in the installation must be carried out with **preprogrammed set** (see separate: Installation Instructions for Parameterisation-Interface).

INSTALLATION STEP 9: Mount the housing on the OFV1



■ Using the screws ① and mount the housing ② on the locking drive OFV1 M-COM.

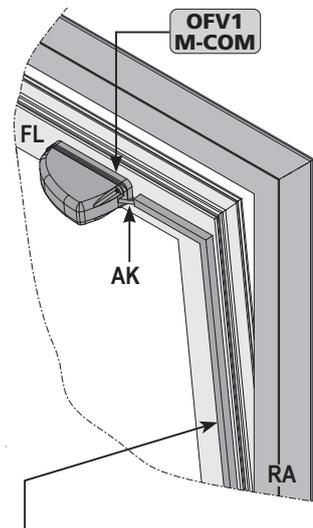


Note cable routing!
(see chapter „Cable routing“)
Check function! (see chapter
„Safety check and Performing Test Run“).

INSTALLATION STEP 10: Cable routing

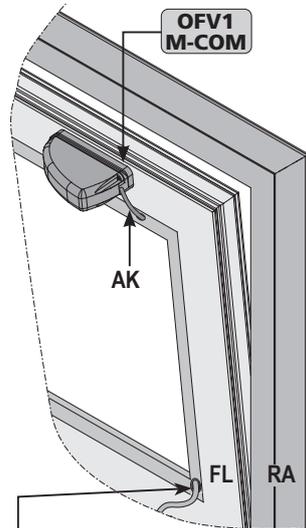
Cable routing on or in the casement

Cable on casement



Cable duct glued on
(in addition secured with
countersunk screws against
breaking away).

Cable in glazing bead



Drill hole in glazing bead
(cable bushing protects against
damage to cable).

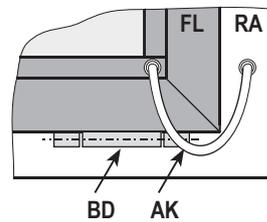
Connection cable routing on the casement:

- Cable must be protected against damage (shearing-off, kinking, splitting), i.e. by using bushings.

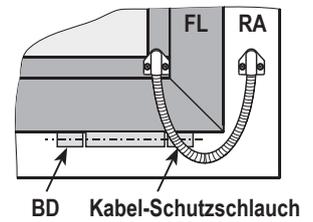


Upon removal of the glazing bead is the danger that the glass may fall.

Cable crossover without protective cable hose



Cable crossover with protective cable hose



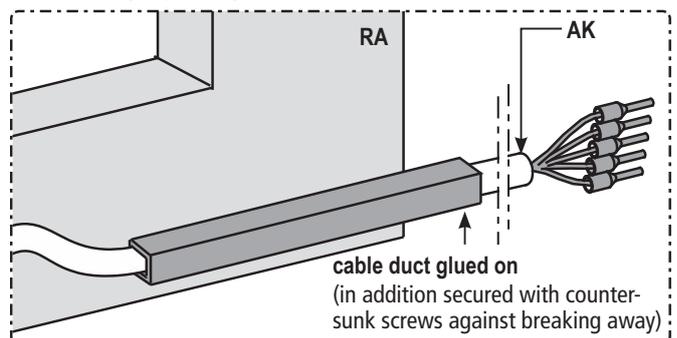
Connection cable routing on the hinge side:

- Make sure that during opening or closing procedure the cable will not be damaged by shearing-off, kinking, crushing.
- Protect cable feedthrough in profile e.g. by using cable bushings, cable transitions.

Cable routing on the frame

■ Route cable on the frame or mullion/transom.

Cable must be protected against damage (shearing-off, kinking, splitting).



cable duct glued on
(in addition secured with counter-
sunk screws against breaking away)

INSTALLATION STEP 11: Electric connection



Make sure when establishing the connection that there is no voltage at the terminals! Unused wires must be safely insulated!

The running direction of the drive may be changed by interchanging (polarity reversal) the wires „BN – (brown)“ - „BU – (blue)“.

Wire colour coding		Direction of travel
Colour	DIN IEC 757	OPEN
white	WH	CLOSE
brown	BN	Polarity reversal
blue	BU	
green	GN	
violet	VT	
grey	GY	

Connection assignment from the locking drive

BN	+	-
BU	-	+

WH is used for communication in systems with synchronized multi-drive operation.

Connection assignment: opening drive S12

BN	+	-
BU	-	+

WH is used for communication in systems with synchronized multi-drive operation.

Version Z:
contact max. 24 V, 500 mA (min. 10mA)
In drives KS4: standard „CLOSE“ optional „OPEN“

Connection assignment: opening drive S3

BN	+	-
BU	-	+

WH is used for communication, (run monitoring / multi-drive operation)

AK, non halogen, 3 x 1,0 mm²

S3 = Internal load dependend cut-off switch, post cycle resistant

Connection assignment: opening drive S12

BN	+	-
BU	-	+

WH is used for communication in systems with synchronized multi-drive operation.

AK, non halogen, 3 x 1,0 mm²

S12 = Internal intelligent cut-off switch, programmable

INSTALLATION STEP 11A:

**Multi-drive operation:
Opening drive and locking drive with M-COM**

WH connection.
Drives does not work, if not connected.

drive 1 (S12 S3) drive 2 (S12 S3)

AK AK

OFV1 M-COM

WH

BN BU

24 V DC control from control unit

junction box site-supplied

Polarity reversal

WH in drives with (S12) - is used for communication, in systems with synchronized multi-drive operation

WH in drives with (S3) - is used for communication (run monitoring / multi-drive operation)

Optional: 1 to 4 drives and max. 2 locking drives are possible.

INSTALLATION STEP 11B:

**Multi-drive operation:
Opening drive (master /slave) and locking drive**

master (S12 S3) slave (S12 S3)

OFV1 M-COM AK AK

Opening drive Opening drive

WH

BN BU

24 V DC control from control unit

junction box site-supplied

Polarity reversal

WH connection.
Drives does not work, if not connectede

The programming of the drives in multi-drive occurs at factory or on site with Parameterisation-Interface

WH in drives with (S12) - is used for communication, in systems with synchronized multi-drive operation

WH in drives with (S3) - is used for communication (run monitoring / multi-drive operation)

Optional: 1 to 4 drives and max. 2 locking drives are possible.

M-COM (Main control unit)

Order number:	524177
Application:	Configuration module for the automatic configuration and monitoring of max. 4 opening / 2 locking drives type S12 / S3 in multi-drive systems.
Rated voltage:	24V DC +/- 20%, (max. 2 Vss)
Current consumption:	<12 mA
Drive type:	S12
Protection class:	IP30 rubber jacket
Ambient temperature:	0 °C ... + 70 °C
Dimensions:	45 x 17 x 6 mm
Connecting wires:	3 wires 0,5 mm ² x 50 mm

Feature / Equipment:
printed circuit board with connecting wires for integration in site-supplied junction box.

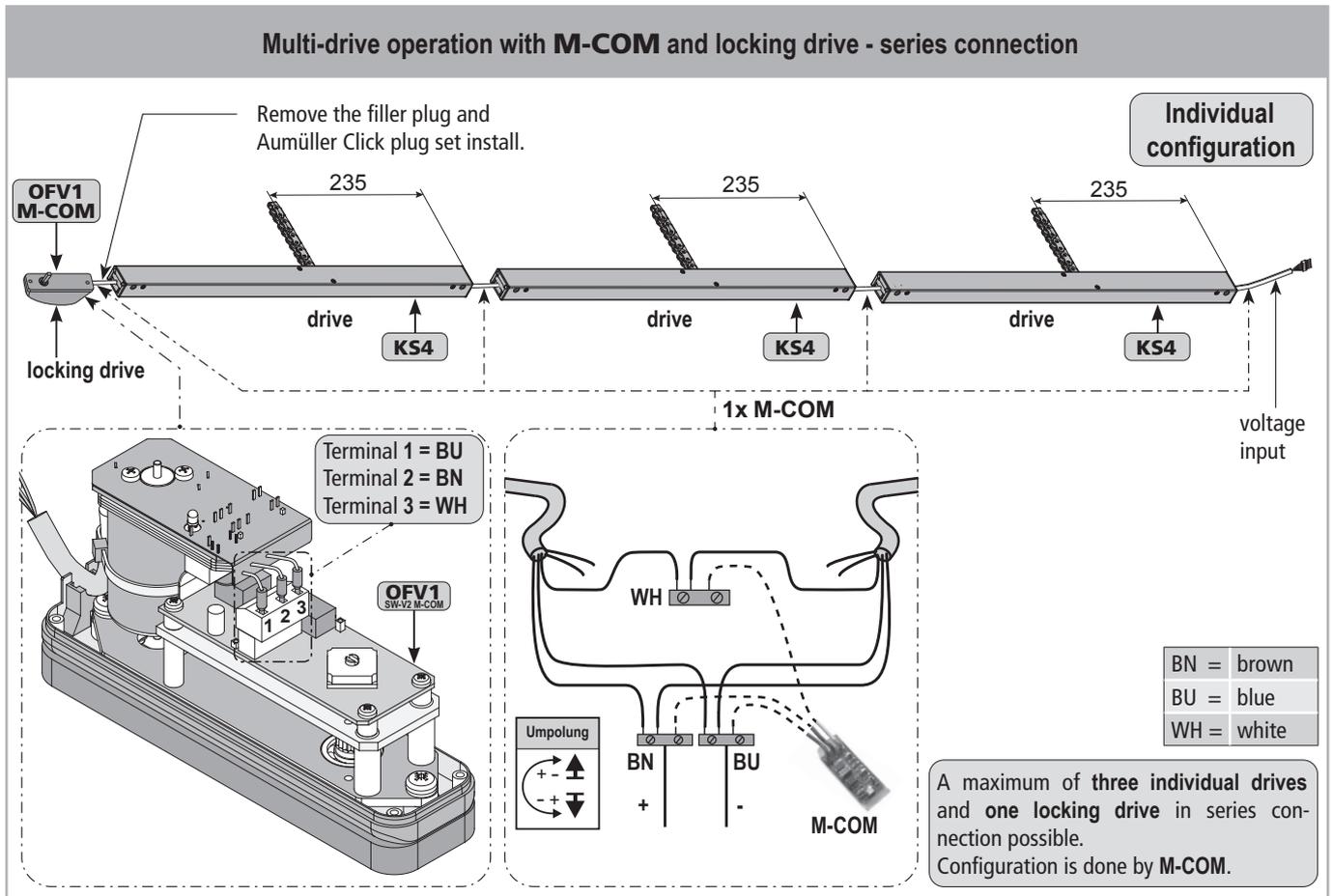
Parameterisation-Interface

Order number:	524178
Application:	Hardware interface for parameterisation of Aumüller drives with the AUMÜLLER software DCT.
Rated voltage:	24V DC +/-20%
Parameterizable drives:	24 V DC type S12, S3 230 V AC type S12
Connections:	3x Pluggable screw terminals 1,0 mm ² 1x USB port
Scope of delivery:	1x Interface 1x USB cable 1x Connection cable

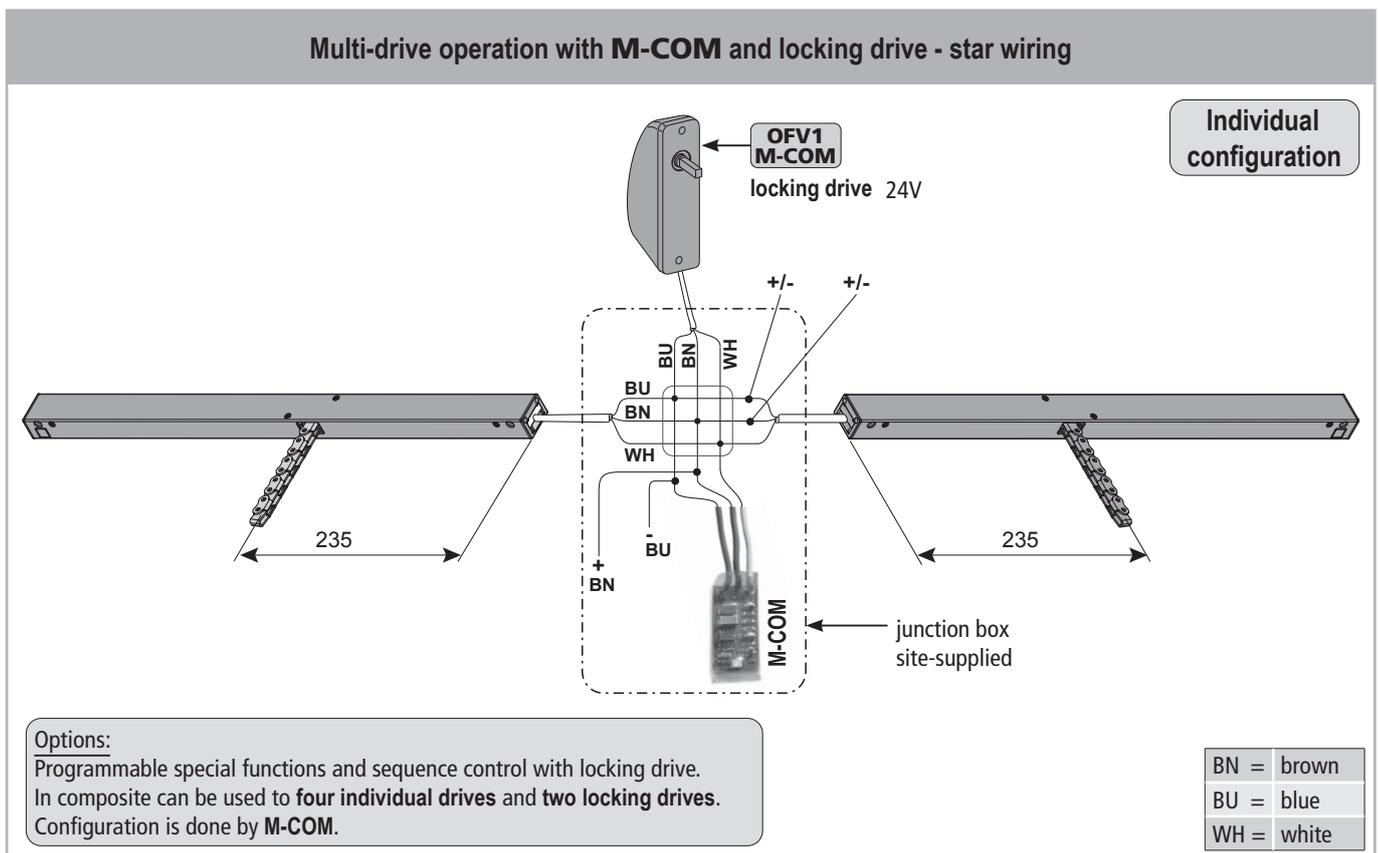
Features / Equipment:
Power supply 24V DC is not included in the scope of delivery!

Any reconfiguration of a drive is entirely at the user's own risk and responsibility.

Series connection - multi-drive operation configured with M-COM



Star wiring - multi-drive operation configured with M-COM



INSTALLATION STEP 12: Supply lines of Control Unit to the Drives

Observe current regulations and guidelines regarding the "Fire behavior of building materials-circuit integrity maintenance of electric cable systems" (E30, E60, E90) and the prescribed constructional regulations!

RECOMMENDATION

For safety reasons a cable of the next higher wire cross section should be selected.

Formula to calculate

the required wire cross-section of a supply line

24V

$$A \text{ mm}^2 = \frac{I_A \text{ (total)} * L_m \text{ (length supply line)} * 2}{2,0V_{\text{(voltage drop)}} * 56 \text{ m} / (\Omega * \text{mm}^2)}$$

Calculation example

Available data:

- cut-off current per drive (i. e. 2 x 4.0A) from data sheet
- length to be bridged from the last window to the control unit (i. e. 10 meters)

$$A = \frac{(2 * 4,0A) * 10m * 2}{2,0V * 56m / (\Omega * \text{mm}^2)}$$

A = 1,42mm² -> **1,5mm²** chosen

Laying and connecting the drive cable

- Avoid extreme temperature differences in the installation area (danger of condensation).
- Set clamping point close to window and ensure accessibility.
- Ensure expansion possibilities of the drive and the drive cable.
- Consider the cable length and the cross sections of the drives supply lines.

INSTALLATION STEP 13: Safety check and Test run

Check the mounted system for its safety; perform test run and commissioning.

Safety test:

- Connect operating voltage.
- Check fastening (frame brackets, casement brackets) for firm fit or tightening.

Test run:

- Visual inspection of casement movements.
- Stop immediately by malfunction!
- Pay attention to collision with facade construction and correct installation, if required.

Risk evaluation:

Before operating a power-operated window to which window drives were mounted, which were sold by the manufacturer as incomplete machines according to installation declaration, the possible risk to ahazard of persons must be determined, evaluated and minimized by taking appropriate technical measures in accordance with the Machinery Directive. Separate documents for performing a risk assessment can be downloaded from the homepage of

Firm AUMÜLLER AUMATIC GmbH
(www.aumueller-gmbh.de).

Operation of the power-operated window

When operating the power-operated window safety instructions must be observed, specifically those pertaining to commissioning, operation and maintenance.

Help in case of Malfunctions, Repairs and Maintenance

Professional repair of a defect drive can only be performed at the manufacturer's factory or manufacturer-certified specialist company. Unauthorized opening or manipulation of the drive terminates warranty.

1. Exchange defect drives or have them repaired by the manufacturer.
2. In case of problems during installation or normal operation the following table might be useful:

Problem	Possible causes	Possible solutions
Locking drive does not start	<ul style="list-style-type: none"> • Duration of mains power supply too short • Drive run direction from the opening drive is not correct • Connecting cable not connected • DIP switch is wrong setting 	<ul style="list-style-type: none"> • Adjust supply voltage as specified in the technical documentation • Check drive cables change polarity • Check all connection cables • Setting the DIP switch properly
Locking drive does not unlock in direction OPEN and/or does not lock in direction CLOSED	<ul style="list-style-type: none"> • DIP switch is wrong setting 	<ul style="list-style-type: none"> • Setting the DIP switch properly
LED-1 red	<ul style="list-style-type: none"> • OFV1 M-COM fault short circuit / cable break in the drive line or defect in the electronics 	<ul style="list-style-type: none"> • Check the connection from the OFV1 M-COM and check the OFV1 M-COM
LED-1 red blinking	<ul style="list-style-type: none"> • opening drive fault 	<ul style="list-style-type: none"> • Check the connection from the opening drive and check the opening drive
LED-2 OFF	<ul style="list-style-type: none"> • none power supply 	<ul style="list-style-type: none"> • Check the connection

Maintenance and modification

To ensure continuous function and safety of the drive periodic maintenance by a specialist company is required at least once a year (as mandated by law for smoke and heat exhaust systems). Operational readiness must be checked regularly. Frequent inspection of the system for imbalance and signs of wear or damages of cables and fastening elements must be performed.

During maintenance contaminations must be removed from the drive. Fastenings and clamping screws must be checked for tightness. Test runs during the opening and closing procedure of the devices must be performed.

The drive itself is maintenance-free. Defect devices may only be repaired in our factory. Only replacement parts of the manufacturer may be used. When the connection cable of this device is damaged it must be replaced by the manufacturer or his customer service or a similarly qualified person to avoid endangerment.

It is recommended to conclude a maintenance contract. A sample maintenance contract can be downloaded from the homepage of

Firm Aumüller Aumatic GmbH
(www.aumueller-gmbh.de).

While cleaning the windows, drives may not have direct contact with water or cleaning agents. Drives must be protected from dirt and dust during the construction phase or renovations.

Maintenance process

1. Open or extend power-operated casement completely.
2. Completely disconnect the system from the mains and secure it against automatic or manual activation.
3. Check windows and fittings for damages.
4. Check all mechanical fastenings (if required, observe information on torques in installation instructions).
5. Check electric drives for damages and contaminations.
6. Check connecting cables (drive cable) for:
 - tightness of the cable screw
 - functionality of the strain relief
 - damages
7. Check the mobility of hinges and fittings and re-adjust or apply lubricant, e.g. silicone spray (observe the instructions of the manufacturer of this window system).
8. Check peripheral seal, remove contaminations or replace.
9. Perform cleaning to maintain functionality (e.g. clean extending elements of the drive, such as chains or spindles by damp wiping them with acid or lye-free agents and drying them and, if required, lubricate them with cleansing oil e.g., Ballistol).
10. Turn on operating voltage.
11. Open and close the power-operated window via the operating voltage (functional test).
12. If available, check and re-adjust protection systems of the safe guard fixture.
13. Check the intactness of the CE label at the power-operated system (e.g. SHEV/Natural smoke and heat exhaust ventilators).
14. Check the intactness of warning instructions and labels at the respective drive.
15. Perform a risk assessment in accordance with Machinery Directive 2006 / 42 / EG, if required, e.g. after modifying the machine.

Demounting

The drives are demounted by reversing the steps, as for the installation. The adjustments are omitted.

1. Completely disconnect the system from the power supply before demounting a drive.
2. After demounting a drive the window must be secured against independent opening.

Dispose of parts according to the locally applicable legal provisions.

Disposal

The symbol of the „crossed-out dustbin“ means that you are legally obliged to collect these appliances separately and recycle them in an environmentally friendly manner. Do not throw old electrical appliances into the household waste! Information on return options can be found at: <https://www.aumueller-gmbh.de/umweltschutz>

Before disposing of old electronic devices, please delete all personal data stored on them, if available. Remove any device batteries or rechargeable batteries and put them in the old battery collection. Tape the poles beforehand to avoid a short circuit.

Dispose of the shipping and transport material, separated according to material, in the appropriate recycling bin.



Liability

We reserve the right to change or discontinue products at any time without prior notice. Illustrations are subject to change. Although we take every care to ensure accuracy, we cannot accept liability for the content of this document.

Warranty and Customer Service

In principal apply our:

„General Terms for the Supply of Products and Services of the German Electrical Industry (ZVEI)“.

The warranty corresponds with legal provisions and applies to the country in which the product has been acquired.

The warranty includes material and manufacturing defects incurred during normal use.

The warranty period for delivered material is twelve months.

Warranty and liability claims for personal injuries or material damages are excluded, if caused by one or more of the following:

- No proper incoming goods inspection.
- Improper use of the product.
- Improper installation, commissioning, operation, maintenance or repair of the product.
- Operating the product by defect and improper installed or not functioning safety and protection devices.
- Ignoring instructions and installation requirements in these instructions.
- Unauthorized constructional modifications at the product or accessories.
- Disaster situations due to effects of foreign bodies and Acts of God.
- Wear and tear.

Contact persons for possible warranty claims, for spare parts or accessories are the employees of the responsible branch office or the responsible person at

Firm AUMÜLLER AUMATIC GmbH.

Contact data are available at our homepage

(www.aumueller-gmbh.de)

Certificate and Declaration of Conformity

We declare under our sole responsibility that the product described under "Data sheet" is in conformity with the following directives:

- 2014/30/EU
Directive relating to Electro-Magnetic Compatibility
- 2014/35/EU
Low voltage Directive



We further declare that the drive is an incomplete machine within the meaning of the European Machinery Directive (2006/45/EG).

Technical file and declaration at firm:

AUMÜLLER AUMATIC GmbH
Gemeindewald 11
D-86672 Thierhaupten

Ramona Meinzer
Managing Director (Chairman)

Note:

The proof of the application of a quality management system is for company:

AUMÜLLER AUMATIC GmbH
according to the certification basis **DIN EN 9001** as well the "Declaration of Incorporation and Conformity" can be accessed via the QR code or directly on our homepage:
(www.aumueller-gmbh.de)



Translation of the original instructions (German)

Important note:

We are aware of our responsibility, which is why we present life-supporting and value-preserving products with greatest possible conscientiousness. Although we make every effort to ensure that the data and information are as correct and up-to-date as possible, we still cannot guarantee that they are free from mistakes and errors.

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Basically the General Terms and Conditions of **AUMÜLLER AUTOMATIC GmbH** apply to all offers, supplies and services.

The publication of these assembly and commissioning instructions supersedes all previous editions.

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