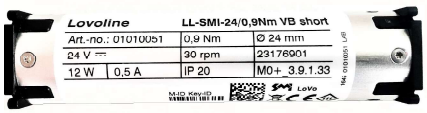
DATA SHEET

LL21 Motordrive digital

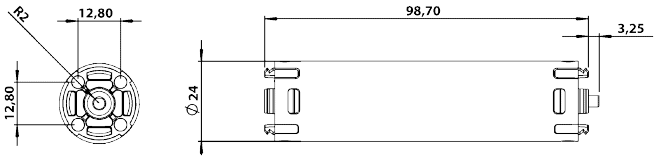


PRODUCT DATA

Product name	Article-No.
LL21 SMI 24V DC Motor	01010051

Product name additional component	Article-No.
LL-Progset-ME24/SMI-24	54185740

Dimensions



+ U-MOD™ Plug-&-Perform Shading Automation

SHORT DESCRIPTION

- **LL21** SMI-LovoLine-Motordrive 24VDC – sidewise drive
- For precise control of blinds in parallel operation ...
  - in **SMI-mode** (*I-06 M1 SMI-Com*) of up to 16 motordrives via bidirectional communication between motor and **SMI**-controller
  - in **Switch mode** (*I-06 M1 Switch*) of up to 8 motordrives by switch, remote (VRS) or KNX via **LL21-**controller (no SMI !!!)

Properties and functions:

- *soft set:* Precise blind correction by turning in lower end pos.
- *slow run*: Slow apporach and retraction in the end positions without presenting a hazard, it must be switched off.
- *safe stop*: obstacle detection and brake functionality
- *reverse run*: Electronic change of direction (LL-Progset Art. 54185740)
- Programmable upper and lower end position (LL-Progset Art. 54185740)
- Programmable intermediate blind position (LL-Progset Art. 54185740)
- Motor connection cable with IP67-plug (frame rebate space)

What is SMI?

SMI is the abbreviation for **S**tandard **M**otor **I**nterface. SMI has been developed to connect intelligent motors for roller shutters and sun protection devices. SMI allows the transmission of messages from the control system to the motor and vice versa. SMI allows products from different manufac-turers to be combined. The SMI interface simplifies the use of highquality solutions and increases the compatibility between standard motors and controls from different manufacturers. Applications for sunscreens require the greatest robustness and economy. SMI was developed to meet these requirements.

Intented use

This type of motor listed in this manual is a low-voltage motor, that is specifically for precise control of venetian blinds and designed for indoor applications. The motor can be used in switch or in BUS mode.

The motor cannot be used in potentially explosive area. This type of motor is designed for using in a single sunshade system.

TECHNICAL DATA

Current (max.)	0.5A
Operation Voltage	24VDC (Supply voltage range 22-28VDC)
Power Consumption	Indle 0,2W / Rated power 6W / Max. power 12W
Protection Class	IP 20
Torque	Rated torque 65 Ncm / Max. torque 90 Ncm, during speed 23 min^{-1}
Speed	5 - 30 min^{-1}
Application	Blind system: Insulating Glass Unit, Glass Cavitiy, Interior
Operation Temperature	-10°C ... +85°C
Max. Duty Cycle	10 Min. / room temperature +25 °C
Connection Terminal	Pancon 4-pin

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SAFETY AND INSTALLATION INSTRUCTIONS ⚠

- Contact a professional electrician for installation.
- Check the motor for signs of mechanical damage after un-
  packing. If you notice any shipping damage, do not start up
  the motor and notify your supplier immediately.
- The motor should only be used for the purpose specified by
  the manufacturer (refer to the operating instructions). Any
  changes or modifications thereof are not permissible and will result in loss of all warranty claims.
- If the motor or the connected blind cannot be operated, switch off power consumption.
- When performing work on the windows, motor or connected shades, protect them against unauthorised or unintentional operation.
- Technical data can be found on the type label of the motor.
- Children are not allowed, to play with fixed controls. Keep remotes away from children.
- The installation has to be checked frequently for imbalance or of signs of wear, damaged cables or springs, if applicable.
- Before mounting the motor, all unnecessary cables have to be removed and all equipment not needed for the operation, should be placed out of service.
- The actuating element of manual release has to be placed at a height under 1.8 m.
- If a motor is controlled by a switch with OFF-default setting, the switch has to be mounted in sight of the device, but has to be removed from moving parts, at a height over 1.5 m.
- Stationary mounted control units have to be fixed in sight.
- The rated torque and the rated operating time must be in compliance with the attributes of the driven parts.

ATTENTION!

Parallel connection of tubular motor with electronic limit posi-tion are allowed. The maximum switching contact load of the connected control device (switch, motor control, actuators etc.) must be observed.

ATTENTION!

Tubular motor might be switched off before reaching the limit position:

Extraordinary large increases of load (anti-block-function) – obstacles, sunshade system keeps jamming, tubular motor is overloaded.

Remedy action:

- Removing the obstacle.
- Check the mechanical parts of the sunshade system.
- Use the correct tubular motor according the spezification of the sunshade system.

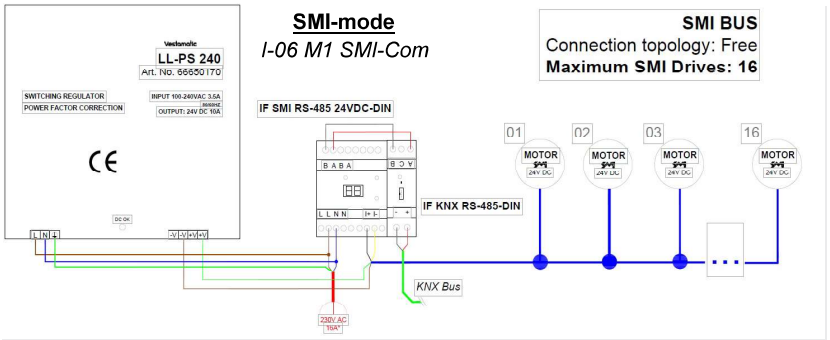
ATTENTION!

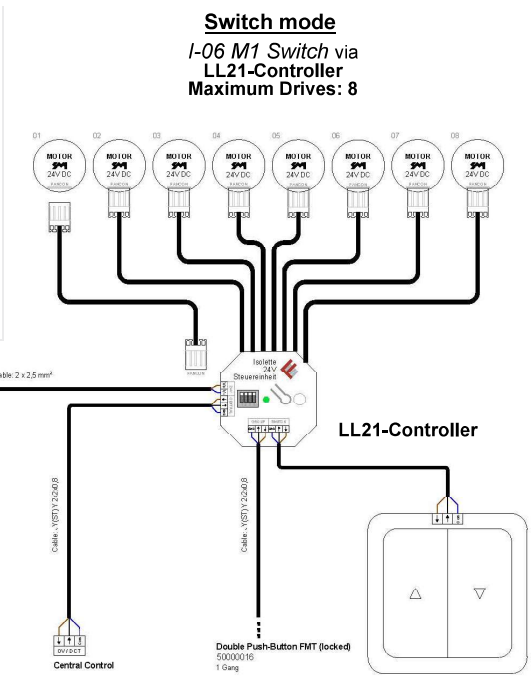
SMI-Motors must be connected to certified SMI-Actuators. Parallel connection of tubular motor with electronic limit position are allowed. The maximum switching contact load of the con-nected control device (switch, motor control, actuator, etc.) must be observed.

The combination of different operating modes is not allowed. To change the operating mode from communication mode to switch mode, push sequential the UP- and DOWN-button.

Also in the switch mode, we recommend the wiring between the motor and the switch with a 4-wire cable.

CONNECTION AND ASSEMBLY





Please regard different circuit diagrams!

The motor has a terminal connection Pancon MAS-CON Series CE / CT 100.
The electrical connection must be carried out according to the wiring diagram (see next pages). You will find suitable connection cables in the accessory program (not included in the scope of delivery).

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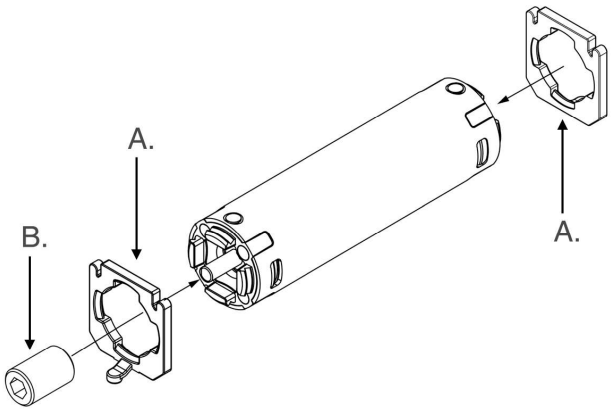
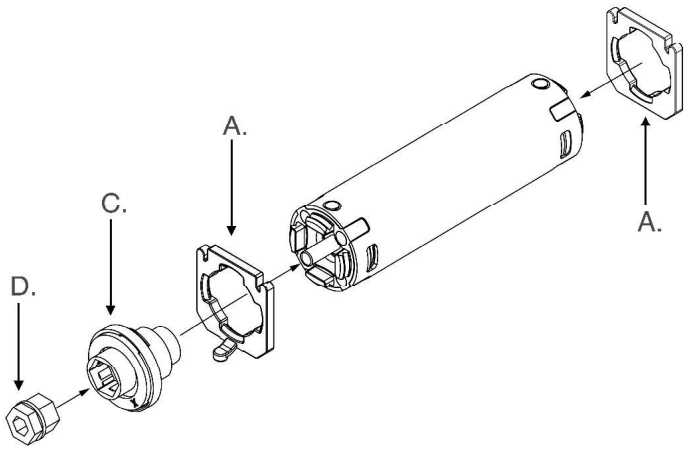
LL21 SMI 24V DC Motor

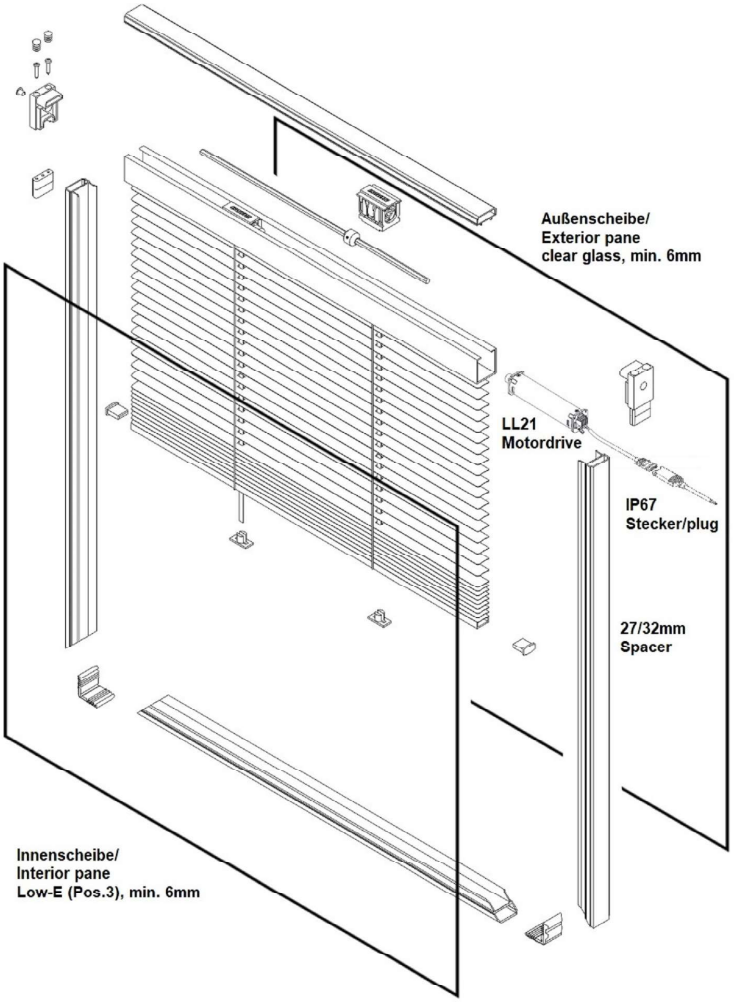
Assembly Shaft adapter (rigid)

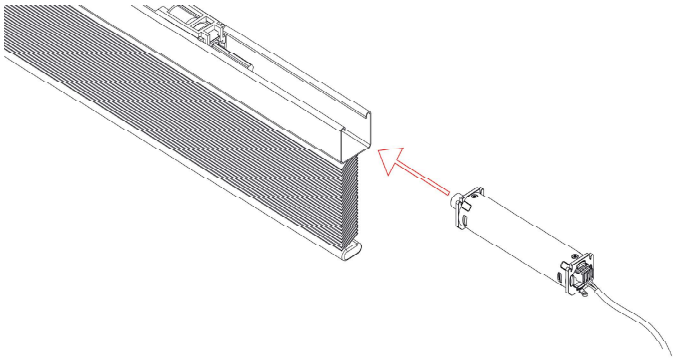


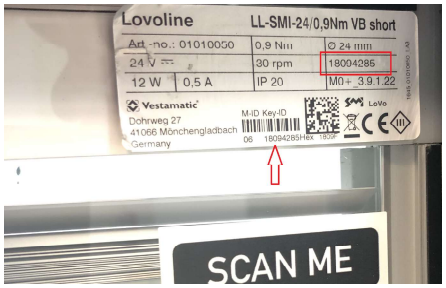
Assembly Shaft adapter (flexible)

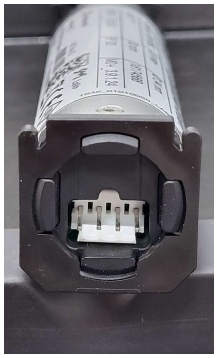


Installation in head rail



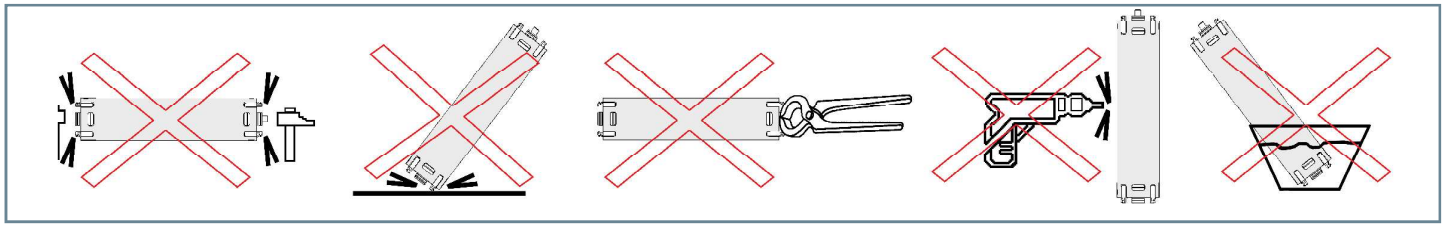






IMPORTANT:

- **Regard installation direction!**
  (Label on top, Plug pins on the lower part)
- **Remark Motor-ID/Key-ID (SMI) on manufacturing documents!**
- **Add additional label to the product delivery!** (necessary for drive installation in SMI-Mode and drive specification)



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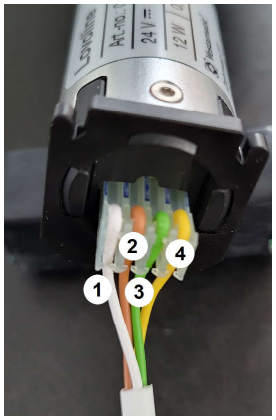
LL21 SMI 24V DC Motor

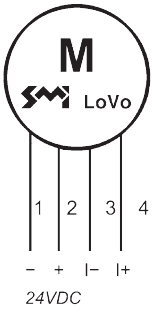
Regard direction!
- Label on top
- Plug pins on lower part

1 GND - / white
2 24VDC + / brown
3 SMI-BUS - / UP / green
4 SMI-BUS + / DOWN / yellow



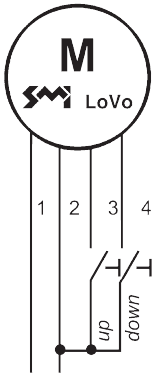
Switch mode
I-06 M1 Switch

Connections



1 GND - / white
2 24VDC + / brown
3 SMI-BUS - / UP / green
4 SMI-BUS + / DOWN / yellow

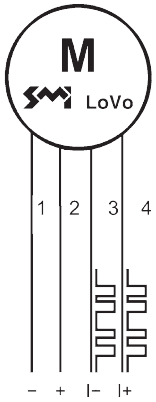
Up / down switch mode



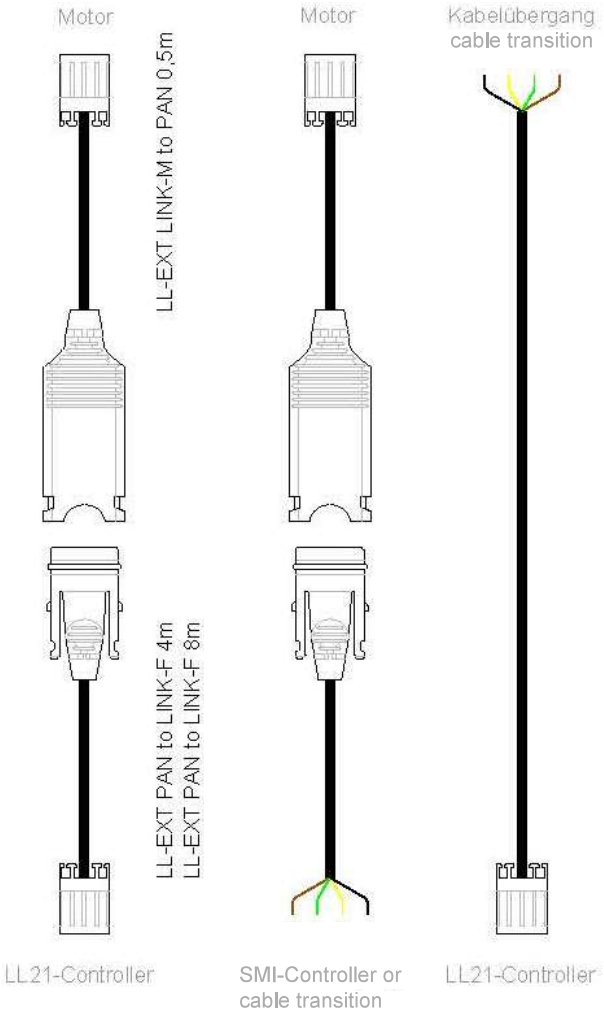
via **LL21-Controller**

SMI-mode
I-06 M1 SMI-Com

Communication mode



via **SMI-Controller**



SETTING

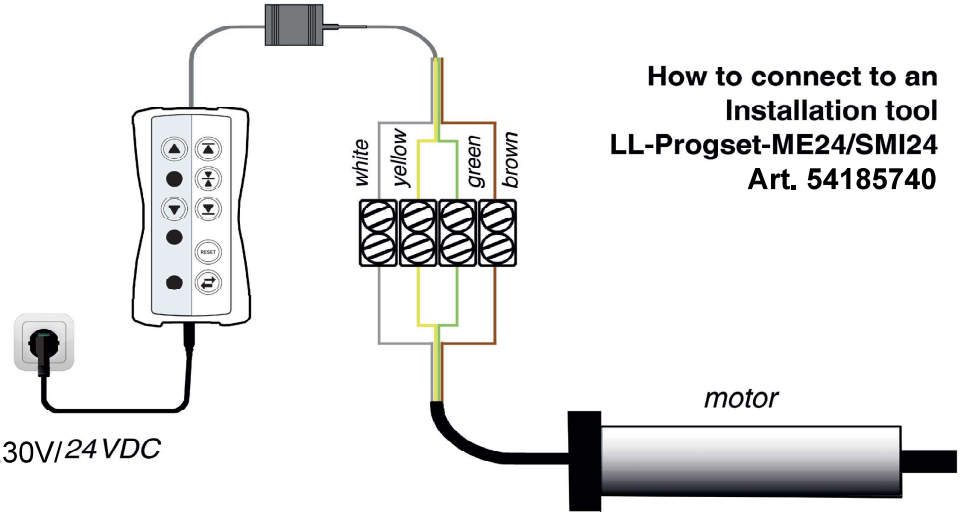
Connection to the Installation tool (LL-Progset-ME24/SMI24 / Art.-no.: 54185735).

- Switch off the power supply. Connect the individual wire to the motor and to the installation tool.
- It is important that the motor-wire-colors correspond with the installa-tion-tool-wire-colors, otherwise the motor turning direction could be set incorrect. Switch on the power supply.
- The installation tool is not suitable for continuous operation and should only be used for setting the limit positions.

Progset with Progtool-adaptor

LL-Progtool
Art.-no.: 54185737

Connect Progtool-adaptor with RJ12-plug on both sides!



How to connect to an Installation tool LL-Progset-ME24/SMI24 Art. 54185740

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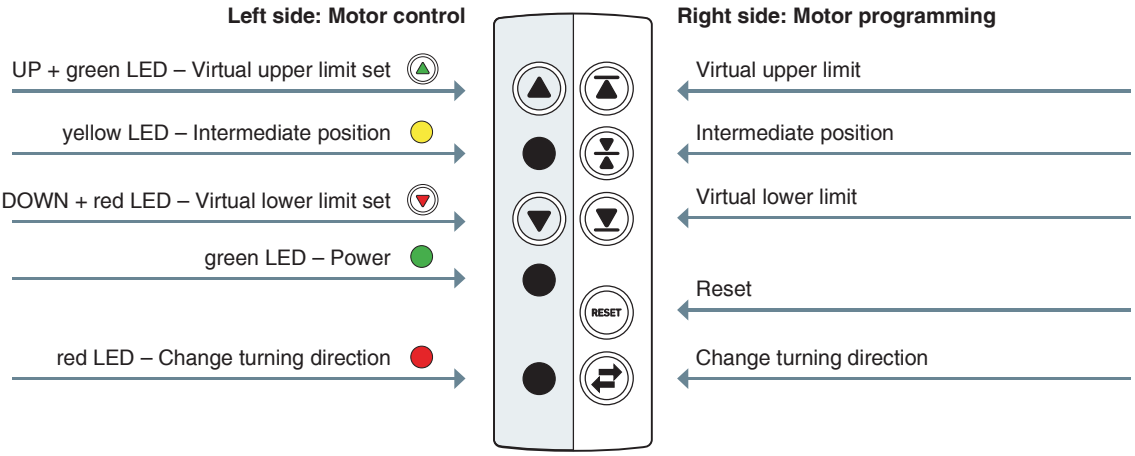
LL21 SMI 24V DC Motor - LL Progset



Motor control

Button	Control motor in **UP** direction Hold down the button to move the motor in **UP** direction.					
LED	**green LED** – upper limit position:		green			
	OFF	when no “Upper limit” is set.				
	Blinking	when “Upper limit” or „Reset“ programming is in progress.				
	Lit solid	when “Upper limit” programming sequence has completed.				
LED	**yellow LED** – Intermediate position:		yellow			
	OFF	when no “Intermediate position” is set.				
	Blinking	when “Intermediate position” programming is in progress.				
	Lit solid	when “Intermediate position” programming sequence has been completed.				
Button	Control motor in **DOWN** direction Hold down the button to move the motor in **DOWN** direction.					
LED	**red LED** – Virtual lower limit position:		red			
	OFF	when no “Virtual lower limit” is set.				
	Blinking	when “Virtual lower limit” or „Reset“ programming is in progress.				
	Lit solid	when “Virtual lower limit” programming sequence has completed.				
LED	**green LED** – Power:		green			
	OFF	when powerless (it is safe to connect a motor to the Installation Tool).				
	Lit solid	when attached to mains 230VAC.				
LED	**red LED** – Change turning direction**:**		red			
	OFF	when no “Change turning direction” is used.				
	Blinking	when “Change motor turning direction” programming sequence is in progress.				
	Lit solid	when “Change motor turning direction” programming sequence has completed.				

Motor programming

Button	Set “Virtual upper limit position”.	
Button	Set “Intermediate position”.	
Button	Set “Virtual lower limit position”.	
Button	Reset	
Button	Change motor turning direction.	

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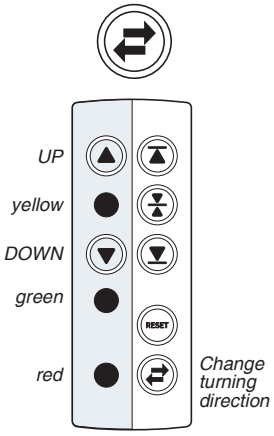
LL21 SMI 24V DC Motor - LL Progset



Changing motor turning direction

- Hold down the button ▲ or ▼ to check the motor turning direction.
- When the motor reacts in opposite direction (motor goes down when you press UP and vice-versa), you need to change the motor direction. Motor direction can only be changed during installation phase, when no limit positions are set.
- Press the button ⇄ shortly.
- The *red* LED ● starts blinking as long as the change motor turning direction process is in progress.
- The *red* LED ● lit solid if the process is finished and the motor will give a feedback (short UP / DOWN movement).

Setting electronic limit position

IMPORTANT!
The motor starts to move with a short delay time during installation phase, when no limit positions are set.

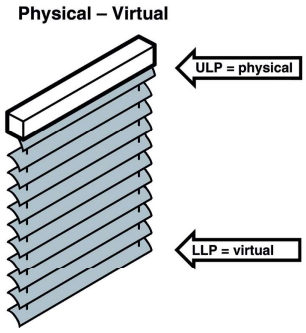
Electronic limit position setting combination

ULP = is an abbreviation for **U**pper **L**imit **P**osition.

LLP = is an abbreviation for **L**ower **L**imit **P**osition.

Following combinations virtual / physical limit position settings are possible:

Physical – Virtual

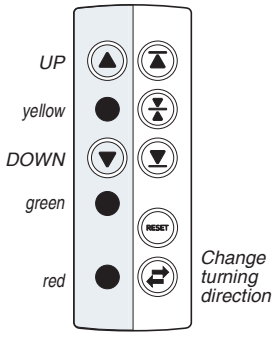


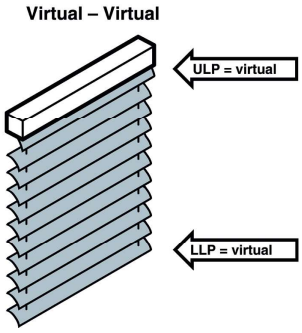
Upper limit position is physical, lower limit position is virtual.

Start with lower limit position setting

- Hold down the button ▼ to move the motor in the requested *lower* limit position.
  For precise moving of the motor briefly press the button ▼, press again and hold.
- Press the button ⏬ shortly.
- The *red* LED of button ▼ starts blinking as long as the limit setting process is in progress.
- The *red* LED of the button ▼ lit solid if the process is finished and the motor will give a feedback (short up / down movement).
- Hold down the button ▲ till motor stops automatically at the *upper* limit position.
- The motor then relieves the slat pack slightly below the physical upper limit position.
- The *green* LED of button ▲ lit solid if the process is finished.
- The installation procedure is finished and the limit position settings are saved.
- Press the button ▼ or ▲ for more than 5 seconds = self-locking. Press the opposite button to stop drive.
- Briefly press the button ▼ or ▲ = Changing the slat position (Fine adjustments).

Virtual – Virtual





Both upper and lower limit position are virtual.

Start with lower limit position setting

- Hold down the button ▼ to move the motor in the requested *lower* limit position.
  For precise moving of the motor briefly press the button ▼, press again and hold.
- Press the button ⏬ shortly.
- The *red* LED of button ▼ starts blinking as long as the limit setting process is in progress.
- The *red* LED of the button ▼ lit solid if the process is finished and the motor will give a feedback (short UP / DOWN movement).
- Hold down the button ▲ to move the motor in the requested *upper* limit position.
  For precise moving of the motor briefly press the button ▲, press again and hold.
- Press the button ⏫ shortly.
- The *green* LED of button ▲ starts blinking as long as the limit setting process is in progress.
- The motor then moves to the physical stop. After that it returns to the virtual upper limit position.
  Attention: The motor must not be interrupted by other commands during this process.
- The installation procedure is finished and the limit position settings are saved.
- Press the button ▼ or ▲ = self-locking.
- Press the opposite button to stop drive.

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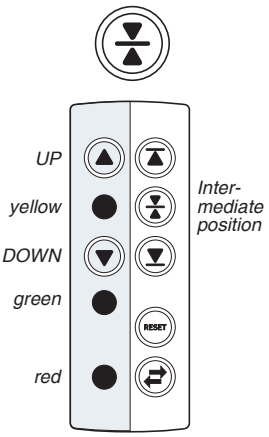
LL21 SMI 24V DC Motor - LL Progset



Save intermediate position

- The intermediate position can be saved only after the lower and upper limit positions have been saved finally.
- Press the button ▼ or ▲ for more than 5 seconds = selflocking. Press the opposite button to stop drive.
- Briefly press the button ▼ or ▲ = Changing the slat position.
- Press the button “Intermediate position” shortly to confirm the settings.
- The *yellow* LED ● starts blinking as long as the intermediate position is in progress.
- The *yellow* LED ● lit solid if the process is finished. The motor will give a feedback (short UP/DOWN movement) to confirm that the installation procedure has ended.
- The stored intermediate position can be changed/overwritten at any time.

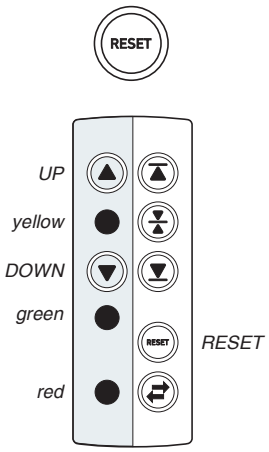
Motor – RESET

Delete the limit position settings of the motor

- Press the RESET ⊖ button, till the LEDs start blinking.
- The LEDs keep blinking as long as the motor RESET process is in progress.
- When the process is finished, the LEDs turn off.

  The motor limit positions have been cleared, and can be set again. The motor will shortly move during the RESET sequence.

  After successful RESET the motor gives a short feedback (UP/DOWN movement).



Note for operation

When the lower limit position is reached, the motor still performs a reversal (fan out of the slats) in order to ensure that all the slats lie neatly in the conductor cord and do not stick together.

The slats are then closed in the lower limit position (factory setting).

If the slats are supposed to have a different position (angle) after reaching the lower limit position, an intermediate position with the desired angle can be stored on the level of the lower limit position.

Manual operation via push button:

- Press the ▼ or ▲ button for more than 5 seconds = self-locking. The motor moves to the respective limit position or to the intermediate position (if stored).
- Press the opposite button to stop drive.
- Briefly press the button ▼ or ▲ = Changing the slat position (Fine adjustements).
- Slow turning by pressing the ▼ or ▲ button for a longer time, complete turning takes approximately 4 seconds.

  Skipping the intermediate position (if stored):
  Press ▼ or ▲ for more than 5 seconds = self-locking.
  If the motor is in self-locking mode, briefly press the same ▼ or ▲ button again.

Performance of a reference run:

- After 10 complete cycles (up/down) or when the motor was deenergized.
- To test the shutter mechanism, which can change under the influence of temperature and humidity.
- A reference run is always carried out at the end of an ascent, by driving/detecting the motor against the physical stop. Then it moves back into the position of the upper limit position.

Declaration of conformity

CE This product complies with the essential requirements. The Declaration of Conformity concerning this product is available on our website: www.vestamatic.com.

Maintenance

The motor is maintenance free.

Disposal of waste

The disposal of electrical equipment and batteries in household waste is strictly forbidden.

The symbol (dustbin crossed out, in line with WEEE Appendix IV) indicates separate collection of electrical and electronic products in EU countries. Do not dispose of the device or battery in your household waste. Ask your town or local council about the return and collection systems available in your area to dispose of this product.

Warranty

Principally, the General Terms and Conditions of the manufacturer, Vestamatic GmbH apply. The terms and conditions are part of the sales documents and handed over to the operator upon delivery. Liability claims for personal or material damages are excluded when they can be attributed to one or more of the following causes:

- Unintended use of the product.
- Opening of the product by the customer.
- Improper installation, commissioning, or operation of the product.
- Non-compliance with the technical specifications.
- Non-observance of the safety provisions and instructions of the Operating Instructions.
- Operation of the product with improperly installed connections, defective safety devices or improperly installed safeguards.
- Modifications to the product.

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IMPORTANT SAFETY INSTRUCTIONS

- Engage a certified electrician for the installation.
- The motor must be inspected for any damages.
- If it is damaged, it must not be put into operation under any circumstances. In the case of damage during transport, the supplier must be informed.
- The motor is intended only for proper use (as described in the operating manual). Any changes or modifications are not allowed, otherwise, any warranty claims will be void.
- If safe operation of the motor is no longer guaranteed, the motor must be taken out of service immediately.
- If any work is being carried out on the shading system or its components, they must be secured against unintentional operation.
- Technical data can be found on the motor's nameplate.
- Do not allow children to play with electrical components and keep them out of reach of children.
- The entire electrical system must be regularly inspected by qualified personnel for any defects or damage.

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