

Installation manual

Edition 1, August 2021

Twister Pro

Twister Pro (D36) 1500 mm Black/Red/Green
(P030-11/12/13) - Twister Pro (D36) 300 mm Black/Red/
Green (P030-21/22/23)



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About this manual

Installation manual

This manual contains **useful and important information** about your device.
Please read it carefully before use and store safely for future reference.

Our team will be happy to answer your questions.

mo-vis bv

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Important information



CAUTION: Incorrect use or installation may lead to risk of injury to the user and damage to the wheelchair or other property. In order to reduce these risks, you should carefully read this installation manual, paying particular attention to the safety instructions and warning texts.



NOTICE: Only install this product on a wheelchair where the wheelchair manufacturer allows the installation of third party parts.

Warranty

mo-vis bv warrants the product to be free from defects in material and workmanship for a period of 2 years under proper use, care and service. The dealer should never keep mo-vis products in stock for a period more than 6 months prior to delivery to the end-user. mo-vis' warranty will never exceed a period of 2 years and 6 months after shipment.

All warranties do not extend beyond the initial purchaser from an authorized mo-vis dealer or mo-vis itself.

Repair and replacement

For warranty service, contact your dealer (or us if bought directly). In the event of a defect in material or workmanship, the dealer or customer must obtain a Return Merchandise Authorization (RMA) number from us. The product must be shipped to a service centre designated by mo-vis. mo-vis will repair or, at mo-vis' option, replace any product covered by the warranty.

Amendments

No person is authorized to alter, extend or waive the warranties of mo-vis.

Disclaimer and limitations of remedies

The express warranties set forth in this agreement are in lieu of all other warranties of merchantability or fitness of purpose. In no event shall mo-vis be liable for any direct, indirect, incidental or consequential damages resulting from any defect in this product.

Warranty of parts subject to “normal wear and tear” (e.g. joystick handles, pads, ...) are not covered in the warranty except as it applies to defects in material or construction.

Voiding of warranties

The foregoing warranties are contingent upon the proper installation, use, maintenance and care of the product. The warranty will be void if the product has been installed or used improperly, or if it has been repaired or any part replaced by persons other than mo-vis or an authorized dealer. This product is considered as a non-serviceable part.

The addition of equipment or features that are not manufactured or recommended by mo-vis could affect the intended function of the mo-vis product and may invalidate the warranty.

Technical support



TROUBLE:

In case of technical problems:

- 1 Contact mo-vis at contact@mo-vis.com or +32 9 335 28 60.
- 2 Always state the device serial number when contacting us. This ensures you are provided with the correct information.

Warning labels

Please read this manual, the safety instructions and warning texts carefully, in order to reduce the risks associated to the device. Our products are safe under normal and reasonably foreseeable operating conditions.



NOTE: This symbol indicates general notes and information.



CAUTION: This symbol indicates caution for a hazardous situation that, if not avoided, could result in minor or moderate injury.



WARNING: This symbol indicates a warning for a hazardous situation that, if not avoided, could result in death or serious injury.

Limited liability

mo-vis accepts **no liability** for personal injury or damage to property that may arise from the failure of the user or other persons to follow the recommendations, warnings and instructions in this manual.



CAUTION: Carry out only the service and maintenance activities specified in this manual, as long as you comply with the demands stated in this manual for a specific action. In case of doubt, contact mo-vis.



WARNING: The device should always be tested without any person sitting in the wheelchair after every alteration of the physical installation or adjustment of the parameters.

Operation

Normally open switch

The Twister Pro can be used as a standard normally open switch: it will activate when pressed down. Simply plug in the Twister Pro into a 3.5 mm female jack on a switch-adapted device, joystick or computer.

To activate the Twister Pro, simply press anywhere on the top of the activation surface. You will feel and hear an audible 'click'.





NOTE: The Twister Pro is by default delivered and set as a normally open switch.


Safety button

The Twister Pro can also be configured using a dip switch on the bottom, so that it functions as a safety button.



 **NOTE:** The safety feature can detect if the switch is disconnected or if the cable is in short circuit. This provides additional safety to the device!

 **NOTE:** This feature allows to be compliant with the *ISO 7176:14-2008 §7.2.3.4 Leakage Current Test*.

 **NOTE:** This functionality is only possible when the host system supports this.

Installation



CAUTION: Before you start with the installation:

- Please check the packaging and verify that all items are included.
- Make sure that you have all the necessary documentation and knowledge to install this device.
- Check the condition of the device.

Installation Plan

Set up an installation plan before beginning the installation. Based on the users' needs and capabilities, this plan should take into account:

- Where which part of the device should be placed.
- How the device will be operated.
- A robust and reliable positioning. Hard or sudden movements of the wheelchair may not disorganize the installation.



WARNING: Protect the device against bumps. Mind damaging the unit and wiring. Make sure that cabling is mounted in such a way that excessive wear and tear is avoided.



WARNING: Make sure that loose parts of the cable are out of reach to avoid strangulation or other injuries.



CAUTION: Long periods of repetitive motion using the product may be associated with nerve, tendon or muscle injury in your hands, wrists, arms, shoulders, neck or back. See a qualified health professional for pain, numbness, weakness, swelling, burning, cramping or stiffness.



CAUTION: Do not pull or wrap the cable around the device.

Installation

- 1 Define the position of the device. Make sure that it is easily accessible to the user.
- 2 The device should be mounted on a flat surface. It should be mounted securely with consideration for minimal risk of jamming or blocking (access to) the device.



NOTE: Use the delivered screws for surfaces with a thickness of up to 2 mm. If you use a thicker surface, be aware that the depth of the insert is 3 mm max.

- 3 The connector jack should stay clean and needs to be inserted completely into the device.


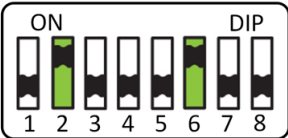
Adjusting the dip switch

Adjust the dip switch by following these steps:

- 1 Disconnect the switch.
- 2 Remove the rubber insert on the bottom of the device.
- 3 Configure the dip switch by using a small screwdriver (see positions below).
- 4 Reapply the rubber insert.



CAUTION: If the rubber insert is not fitted correctly or even at all, this can compromise the waterproofness of the device.

POSITION	FUNCTIONALITY
	Default position: compatible with default systems which require a normally open connection.
	R-net resistor values: Compatible with Curtiss-Wright specifications for the CJSM II and Omni II.

POSITION	FUNCTIONALITY
	LiNX Band 10 resistor value
	LiNX Band 1 resistor value

5 You can now reconnect and use the device.



NOTE: Some R-net and LiNX parameters need to be set correctly before the safety switch functionality is operational. See .

External configuration

In order for the safety switch functionality to work, some parameters of the wheelchair electronics need to be set correctly:

- [Curtiss-Wright R-net parameters on page 16](#)
- [Dynamic Controls parameters on page 17](#)

Curtiss-Wright R-net parameters

For more information, please refer to the *Curtiss-Wright manual SK77981-14 | R-net Technical Manual | Chapter 7 - Controls*.

External Profile Jack Detect

Controls > Global > External Profile Jack Detect

VALUE	DESCRIPTION
Off	The Twister Pro will function as a normally open switch.
On	The Twister Pro will be able to detect both open- and short-circuits in the wiring. If such conditions are detected, the function associated with the External Profile Switch Jack will be disabled and a warning will be displayed on the screen.



NOTE: Controls > External Profile Jack Function > Actuator Switches should be set to **No** for the button to be able to detect open- and short circuits.

External On/Off Jack Detect

Controls > Global > External On/Off Jack Detect

VALUE	DESCRIPTION
Off	The Twister Pro will function as a normally open switch.
On	The Twister Pro will be able to detect both open- and short-circuits in the switch itself or its wiring. If such conditions are detected, a trip will occur.
Limp	The Twister Pro will be able to detect both open- and short-circuits in the switch itself or its wiring. If such conditions are detected, the system will still allow Drive but at a reduced speed and will issue a visual and auditive warning.

Dynamic Controls parameters

For more information, please refer to the *GBK54036 LiNX Systems Installation Manual*.

LiNX control inputs recognize a number of distinct resistor bands. For each band, a different action can be selected (e.g. driving, actuator motions, profile and function navigation and lighting).

Control inputs can be configured to monitor for errors, such as short circuit, invalid open circuit, missing or unreliable states.

mo-vis has chosen resistor bands 1 and 10: the Twister Pro can perform monitoring function in these bands, when the dip switch is set to the right values (see [Installation on page 12](#)).



NOTE: This setting is only accessible with a LiNX Access Key DLX-HKEY-02.

Chair Set-up > Modules > Rem XXX > Left/Right Jack Socket Tip > Advanced > Monitored

VALUE	DESCRIPTION
Off	The Twister Pro will function as a normally open switch.
On	The Twister Pro will be able to detect both open- and short-circuits in the wiring. The error is indicated to the user and logged in the system.

Maintenance

The device is maintenance-free. Under regular circumstances of use, the device and different parts do not require additional maintenance. Please refer to the *User Manual* of the device for cleaning instructions.



WARNING: As dust and dirt could lead to reduced functionality, all parts of the device should be cleaned on a regular basis (monthly) or whenever needed.

Monthly inspection

Monthly, or whenever needed, check whether:

- All bolts and screws are still firmly tightened.
- There is no damage to any wiring.
- There is no excessive wear to any of the parts.

Technical data

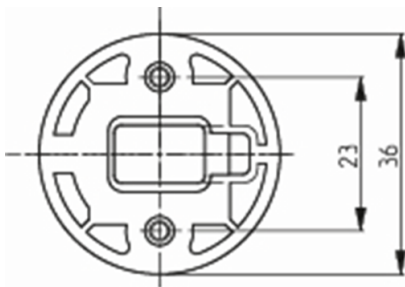
Product description & code

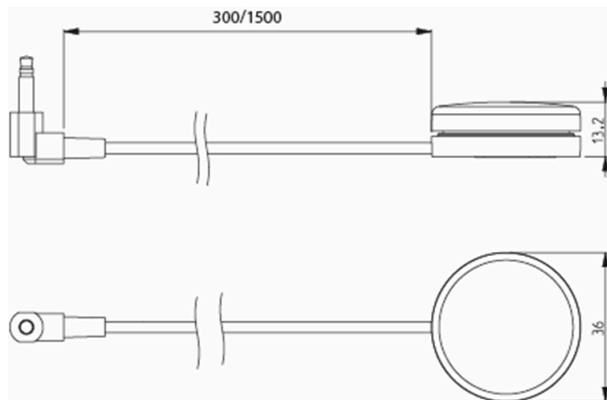
- P030-11 Twister Pro (D36) 1500 mm Black
- P030-12 Twister Pro (D36) 1500 mm Red
- P030-13 Twister Pro (D36) 1500 mm Green
- P030-21 Twister Pro (D36) 300 mm Black
- P030-22 Twister Pro (D36) 300 mm Red
- P030-23 Twister Pro (D36) 300 mm Green

Specifications

SPECIFICATION	DESCRIPTION
Switch type	Normally open. Optional safety feature based on resistor values: R-net: 490E and LiNX: 654E or 660E
Activation Type & Force	The Twister Pro will be able to detect open- and short circuits. The error is indicated to the user and logged in the system.
Size & Weight	D:36 mm H:13.2 mm, 30 g/1.06 oz

SPECIFICATION	DESCRIPTION
Activation force	75 gr/2.65 oz
Maximum force	20 kg / 200N
Connection	3.5 mm mono jack, cable length 300 or 1500 mm (11.8 or 59.06 in)
Mounting	2 inserts M3 (3 mm/0.12 in depth, 23 mm/0.9 in center/center)







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Go to our website for more information on our products or share your experience with us via email.

