

All-round Joystick

Multifunctional operable wheelchair joystick



All-round Joystick Omni (P002-71)

All-round Joystick Omni Light (P002-72)

Contact & Product

mo-Vis bvba



Biebuyckstraat 15 D
9850 Nevele - Belgium

Website: www.mo-vis.com

E-mail: contact@mo-vis.com

Telephone: +32 9 335 28 60

All-round Joystick User & Installation manual

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Important information about this Manual

Congratulations for choosing a mo-Vis product! If you would like to learn more about mo-Vis and its products, we invite you to visit our website: www.mo-vis.com.

Before you install or begin using this product, it is important that you read and understand the content of these installation and operating instructions, the safety instructions in particular.

The installation instructions will guide you as an installer through the options and possibilities with the mo-Vis product. The mo-Vis product should be adjusted with the mo-Vis Configurator software.

The operating instructions are primarily intended to acquaint you with the functions and characteristics of the mo-Vis product and how you can use it in the best manner possible. They also contain important safety and maintenance information, as well as describe possible problems that can arise during use.

Always keep the operating instructions handy in connection with your wheelchair, since the need for important information can arise concerning its use, safety and maintenance.

All information, pictures, illustrations and specifications are based on the product information that was available at the time of printing. Pictures and illustrations shown in these instructions are representative examples and are not intended to be exact depictions of the various parts of the product.

We reserve the right to make changes to the product without prior notice.

Referenced products

This manual is valid for the All-round Joystick and the All-round Joystick Light. For readability purposes, we only mention “All-round Joystick”. Whenever “All-round Joystick” is mentioned, it also applies for the All-round Joystick Light, unless stated otherwise.

Ordering documentation

You can download additional copies of this User & Installation manual on the mo-Vis website: www.mo-vis.com.

Support, scrapping and spare parts

Technical support

In case of technical problems, we advise you to contact your dealer. If the dealer is not available, or unknown, please contact mo-Vis bvba by email support@mo-vis.com or by phone +32 9 335 28 60. Always state the device serial number when contacting mo-Vis. This ensures you are provided with the correct information.

Spare parts and accessories

Spare parts and accessories must be ordered by the dealer at mo-Vis bvba.

Scrapping & recycling

For scrapping, adhere to your local waste legislation. Dispose of obsolete electronic parts responsibly in accordance with local recycling regulations.

Warranty

mo-Vis bvba warrants the All-round Joystick to be free from defects in material and workmanship for a period of 2 years under proper use, care & service. All warranties only cover parts and do not extend beyond the initial purchaser from an authorised mo-Vis dealer.

Start of the warranty period

Each warranty shall begin on the date the product is first delivered to the customer.

Repair and replacement

For warranty service, we advise you to contact the dealer from whom the product was purchased. In the event of a defect in material or workmanship, the dealer must obtain a return authorisation (RA) number from mo-Vis and 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.

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. pads,

joystick balls, batteries ...) are not covered in the warranty except as it applies to defects in material or construction.

Amendments

No person is authorised to alter, extend or waive the warranties of mo-Vis.

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 authorised dealer. The All-round Joystick, integrated cabling included, 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.

Understanding usage

The health care professional (authorised installer) is responsible for understanding the intended use of the mo-Vis equipment, the specifications and its programming parameters. mo-Vis cannot be held responsible for damage caused by incorrect installation or incorrect use of the product. Misuse, mishandling or storage is not covered by this warranty.

Safety precautions

General

The All-round Joystick is intended to be fitted on any power wheelchair with Omni connection. For other connections a separate interface is needed.

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 instruction manual, paying particular attention to the safety instructions and warning texts.

Any unauthorised use of the product may lead to increased risk of accident. Carefully follow the recommendations in this manual in order to prevent accidents from use.

The All-round Joystick, integrated cabling included, is considered as a non-serviceable part.

In case of doubt for alterations and adjustments, always contact a qualified service engineer.

Warning labels

This manual contains the following warning labels, which are intended to draw attention to situations that could lead to unwanted problems, e.g. personal injury or damage to the wheelchair.

**CAUTION!**

Please use caution where the symbol appears.

**WARNING!**

Please use extreme caution where the symbol appears. Failure to observe warnings can lead to personal injury or property damage.

**CAUTION!****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!****EMC Requirements**

The electronics of a power wheelchair and its options can be affected by external electromagnetic fields (for example from mobile telephones). Similarly, the electronics of the wheelchair or options themselves can also emit electromagnetic fields that can affect the immediate surroundings (for example certain alarm systems in businesses).



The limit values for Electromagnetic Compatibility (EMC) with respect to power wheelchairs are set in the harmonised standards for the EU in the Medical Devices Directive, No. 93/42/EEC. All-round Joystick complies with these limit values.

WARNING!

Assembly

The All-round Joystick should only be installed or adjusted by a qualified service engineer or someone with adequate knowledge to perform the adjustment in an expert manner.

Maintenance and service

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. All other service, alterations to and interventions on the All-round Joystick must be carried out by a qualified service engineer or someone with adequate knowledge to perform the adjustment in an expert manner. In case of doubt, contact a qualified service engineer or mo-Vis.

Use only spare parts or accessories approved or recommended by mo-Vis. All other use could lead to changes which might impair the function and safety of the product. It could also lead to the warranty becoming void.



CAUTION!

Testing

The All-round Joystick should always be tested without any person sitting in the wheelchair after every alteration of the physical installation or adjustment of the joystick parameters.

Design and function of the All-round Joystick

Purpose

The All-round Joystick is the compact version of a standard electronics wheelchair joystick module. Developed for all-round use, it is suitable for the major part of wheelchair users. It can be used as a standard joystick, chin joystick or as an attendant joystick. The All-round Joystick Light has the same specifications, but with medium force (ca. 120 gr - 4.23 oz). Both joysticks are positioned at the top of our joystick series:

- **All-round Joystick:** regular size joystick, regular force (ca. 250 gr – 8.81 oz)
- **All-round Joystick Light:** regular size joystick, medium force (ca. 120 gr – 4.23 oz)
- **Multi Joystick:** smaller size joystick, limited force (ca. 50 gr – 1.76 oz), operated with finger, chin, lip, ...
- **Micro Joystick:** very small sized joystick, minimal force (ca. 10 gr – 0.3 oz), operated with finger, chin, tongue, lip, ...

Features

The All-round Joystick is:

- Fully proportional with standard throw and force (ca. 250 gr – 8.82 oz) (All-round Joystick), or with medium throw and force (ca. 120 gr – 4.23 oz) (All-round Joystick Light)

- Built in a compact housing, with two 3.5 mm jacks for switch input
- Linkable with one or two switches (on/off and mode switch), with any 3.5 mm jack
- Integrated interface with Omni connection
- Mini USB connection for configuration purposes
- Fully adjustable to individual possibilities and needs with well-thought electronics
- Easily configurable with the free mo-Vis Configuration software: positioning of the joystick. For other parameters, the wheelchair software settings are used.
- Omni, Easy Rider and DX compatible (for easy Rider or DX, an interface is required. Contact your dealer or mo-Vis for more information).

Mounting


The All-round Joystick can be mounted at any location on the wheelchair.

- On any flat surface: with 4 bolts
- Use the Quick-to-mount (Q2M) to install the All-round Joystick on any other location on the wheelchair.
- Use the Multi Swing Mounting arm to easily install the All-round Joystick as a chin joystick.
- You can equally use any other mounting system.

Parts and accessories


All-round Joystick package

An All-round Joystick package consists of the following parts:

	Product description	Product code
	All-round Joystick Omni set, with integrated cabling	P002-71 P002-72 (light)
	All-round Joystick manual	D-P002-71-70-00 D-P002-72-70-00 (light)

All-round Joystick accessories

For mounting and further personalisation, the following accessories are available:

	Product description	Product code
	Mounting set 8 mm for Quick-to-Mount system	M002-60

	Product description	Product code
	Mounting set 6 mm for Quick-to-Mount system (M001-09 Adapting Rod 10-6mm included)	M002-61
	All-round Joystick Ball - 48 mm diameter - 38 mm height	M002-76
	Satellite Twister (incl. All-round insert), short cable (300 mm)	P005-40 (black) P005-41 (red) P005-42 (yellow) P005-43 (blue) P005-44 (green)

All-round Joystick unit detail

The connections of the All-round Joystick unit have protective covers to avoid the intrusion of dust or moist during usage.



CAUTION!

Before inserting a connector, remove the protective cover.



CAUTION!

Always put or keep the protective cover in case the connections are not used.



When in use, a green LED on the All-round Joystick indicates the proper functioning of the unit. In case of an error, the LED flashes. See Error codes on page 34.

Ordering spare parts

Spare parts and accessories must be ordered by the dealer at mo-Vis bvba.

Always mention Product code & Product description of items to be ordered.

mo-Vis configurator software

The All-round Joystick positioning is adjustable with the mo-Vis Configurator software.

Software download

- You can download the software on the mo-Vis website: www.mo-vis.com.
- For all details on how to install and use the software, we advise you to consult the manual of the mo-Vis Configurator software (included in the software download).

Profiles

Depending on your profile (user, attendant, dealer, OEM), you will be able to configure a number of parameters for the All-round Joystick.

- For a user profile, no password is required.
- Attendant, Dealer and OEM profiles require a password.

Intended use

The All-round Joystick is a joystick module which can be connected directly to the wheelchair electronics with the Omni connector, to control the wheelchair functions. With an optional interface, you can also connect to other systems (a.o. Easy Rider, DX).

The All-round Joystick is a proportional joystick which requires standard force and movement. The All-round Joystick Light requires medium force and movement.

Safety precautions



CAUTION!

Protect the joystick against bumps.



WARNING!

Avoid hitting obstacles during driving.



WARNING!

Mind damaging the unit and wiring. Make sure that cabling is mounted in such a way that excessive wear and tear is avoided.

Functioning

The movements of the joystick are translated into according movements of the wheelchair, e.g. driving or menu navigation.

Common practice to navigate the wheelchair with the All-round Joystick is as follows:

- **Direction:** point the joystick into the direction you want the wheelchair to move. The wheelchair then moves in that direction.
- **Speed:** the further you move the joystick from the default (center) position, the faster the wheelchair moves.
- **Stop:** whenever you release the joystick, the joystick moves back to the default (center) position and the wheelchair stops.

Safe driving

It is mandatory to have a wheelchair power on/off switch – which immediately shuts down the wheelchair power and electronics – within easy reach of the user while driving. This allows to instantly stop the wheelchair in case of problems or an emergency.



WARNING!

The on/off switch must be available to the user at all times.

In case the wheelchair responds in an unexpected way, the user must immediately release the joystick or use the power on/off switch.

Connection options

You can connect one or two switches to the All-round Joystick. One connection is to control the power (pwr) on and off, one connection is to control a mode (in).

The All-round Joystick has a cable with a SUB D9 connector and a 3.5 mm jack connection. The SUB D9 connector and the 3.5 mm jack connector can be directly plugged into the electronics of the wheelchair. The joystick then controls the wheelchair in all its functions (driving, electric gears, lights ...). To connect to an Easy Rider or other system, an extra separate interface is needed.

The red 3.5 mm jack connector (pwr) can be used to directly route the signal of an attached switch to a wheelchair 3.5 mm jack input.

Installation instructions

Preparations

Qualified service engineer

Only a qualified service engineer may install the All-round Joystick.



WARNING!

An incorrect programming of the wheelchair electronics may cause damage to the devices, or injury to the user.

Tools

Use an Allen wrench to install the mo-Vis Quick-to-mount and All-round Joystick.



CAUTION!

Use the proper tools to install and adjust the All-round Joystick. The use of improper tools may cause damage to the device.



CAUTION!

Do not tighten screws with an excessive force.

Installation plan

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

- Where which part of the All-round Joystick should be placed.
- How the All-round Joystick will be operated: hand, chin or by attendant.
- A robust and reliable positioning. Hard or sudden movements of the wheelchair may not disorganise the installation.



CAUTION!

Protect the joystick against bumps



WARNING!

Mind damaging the unit and wiring. Make sure that cabling is mounted in such a way that excessive wear and tear is avoided.



CAUTION!

Any connection must always be secured with all delivered screws. Only use the screws provided in the package.

Serial number sticker

The additional serial number sticker which can be found in the package should be adhered to the back of this manual.

Joystick table mount

When mounting the All-round Joystick on a flat surface (e.g. a table), insert 4 M4 bolts (not included in the package) through the surface to secure the All-round Joystick directly on the surface.



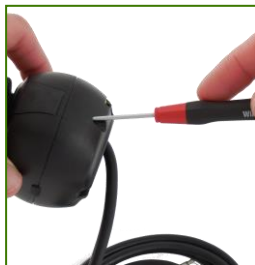
CAUTION!

Tighten the bolts firmly, but not excessively. Excessive force may damage the unit.

Satellite Twister installation

You can mount one or two Satellite Twister to the All-round Joystick.

1. Define the location of the Satellite Twister(s): left, right or on both sides.
2. Unscrew and remove the cover for the Satellite Twister connection with a Phillips screwdriver.
3. Place the Satellite Twister firmly into the open slot.
4. Use the screw of the cover to secure the Satellite Twister to the All-Round Joystick.
5. If required, place a second Satellite Twister in the same way.
6. Connect the cabling of the Satellite Twister to the All-round Joystick.

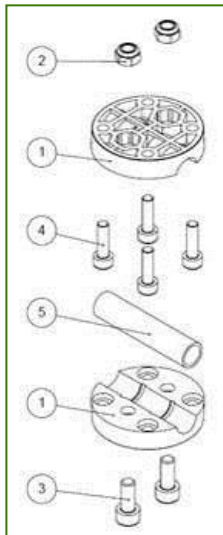


CAUTION!

Tighten the screws firmly, but not excessively. Excessive force may damage the unit.

Joystick mounting set installation

1. Define the position of the joystick.
When the USB connection points towards the user, a forward movement of the joystick will result in an according forward movement of the wheelchair. If needed, you can change this positioning in steps of 90° with the mo-Vis Configurator software.
2. Determine which of the 2 slots you will use to guide the cable.
3. Place the two M5 locknuts (2) in the first mounting plate
4. Secure the Mounting Plate (1) with the 4 M4 bolts (4) to the base of the joystick housing.
5. Place the adaptor 6-10 mm (6 mm mounting set), or use the heat shrink (8 mm mounting set) (5) on an 8 mm rod.
6. Secure the second Mounting Plate with the 2 M5 bolts (3)



CAUTION!

Tighten the screws firmly, but not excessively. Excessive force may damage the unit.

All-round Joystick installation

- 1. With 6 mm mounting set:** slide the unit over a Q2M rod, or any other 6 mm rod, to position the All-round Joystick on the wheelchair.
With 8 mm mounting set: If an 8 mm rod is used, use a heat shrink (included in the mounting set) on the rod to guarantee a firm connection.
 - You can use any other Q2M rod, e.g. a C-rod or S-rod, which are included in the mo-Vis Multi Swing.
 - Contact your dealer or mo-Vis for more information.
- 2.** Place and secure all cabling on the wheelchair.



WARNING!

Mind damaging the unit and wiring. Make sure that cabling is mounted in such a way that excessive wear and tear is avoided.

- 3.** If required, place a power on/off (pwr) and/or mode (in) switch, secure their cabling and insert their connections.



CAUTION!

Before inserting a connector, remove the protective cover.



CAUTION!

Always put or keep the protective cover in case the connections are not used.

4. Connect the cabling to the wheelchair electronics



WARNING!

All wheelchair electronics must be switched off during installation.

Defining position (parameters)

If the All-round Joystick is not mounted with the USB connection pointing towards the user, you can adjust the Joystick direction in steps of 90° with the mo-Vis Configurator software.

- This software must be installed and ready to use on a pc.
- Depending on your profile (user, attendant, dealer, OEM), you will be able to change a number of parameter settings.
- To define the movements during the installation procedure, we advise having at least a dealer profile.

Defining parameter settings

To define the parameter settings, proceed as follows:

1. Connect the All-round Joystick to a pc. Use a standard mini-USB – USB cable.
2. Configure the parameters with the software.
3. Upload the configuration.
4. Test the configuration and adjust if necessary.

Parameter settings

Please see “Parameter Settings” for a list of all parameter settings.

Testing

After installation of the All-round Joystick, execute the following tests before the wheelchair is delivered or put into service, in according order:

1. Check the All-round Joystick for intactness
2. Operational test
3. Test drive
4. Stop test

Check the All-round Joystick for intactness

Check whether:

- The joystick is not bent or damaged
- Housing, cabling and all connectors are not damaged
- The joystick returns to its default position when moving and releasing the joystick forward, backward, left and right.

Operational test



WARNING!

Execute this test only on a level surface, with at least one meter of free space around the wheelchair.

1. Activate the wheelchair operating system.
2. The green LED on the joystick must be on.
If the LED flashes, an error is detected. Do not proceed before resolving the error.
3. Move the joystick slowly forward until you hear the parking breaks switch off.



CAUTION!

The wheelchair may start moving.

4. Immediately release the joystick. You should hear the parking break react within a few seconds.
5. Repeat steps 3 and 4 three times, while slowly moving the joystick towards you, to the left and to the right.
6. Check whether the power on/off and mode Switch function properly.

Test drive

Make a test drive with the wheelchair.

- Check whether the wheelchair and all its functionalities function fully correctly in all positions the user may use the All-round Joystick and switches.
- Check no cabling or parts may get damaged or hindered in any possible position of the wheelchair.

Stop test

Drive full speed ahead and shut down the wheelchair with the power on/off switch.

The wheelchair may not suddenly stop, but must slow down to a gradual stop.

Dealer assistance

During first time use by the user it is advised that the dealer or service engineer assists and explains the different possibilities to the customer (the user and/or his attendant).

If needed, the dealer can make final adjustments.

User testing

It is important that the customer is fully aware of the installation, how to use it and what can be adjusted to optimise his experience.

As a dealer, proceed as follows:

1. Explain and show the customer how you have executed the installation, and explain the function of every (new) button.
2. Have the user test all positions of the All-round Joystick:
 - Are the All-round Joystick and switches within easy reach?
 - Can the user safely operate the wheelchair with the least effort?
 - Is the placement of the joystick and buttons in all available positions optimal for the user?
3. If needed, adjust the All-round Joystick.
4. Explain to the customer possible problems and how to address them.

Using the All-round Joystick

Conditions of use

The All-round Joystick is intended for use as installed by the dealer, in accordance to the installation instructions in this manual.

The foreseen conditions of use are communicated by the dealer or service engineer to the user and/or attendant during the first time use.

If the conditions of use change significantly, please contact your dealer or a qualified service engineer to avoid excessive wear and tear or unintended damage.

Error codes

When a fault occurs, the LED of the All-Round Joystick will start to flash. A long delay is followed by a number of flashes with a short delay. Count the number of flashes and look up the according error message in the table below.

Flash count	Reason	Required action
2	Connection	Check Omni Cable
3	Power Supply	Check Omni Cable Check Omni Cable Replace PCB
4	Joystick Sensor	Check/Replace Sensor
7	Test Flag failed or diagnostic failed	Redo tests and/or replace PCB.
8	CPU fault	Replace PCB
9	Scheduler fault	Update Software or Replace PCB
10	Coding Error	Update Software or Replace PCB

Fault log

A fault log with counters is maintained. The fault log can be accessed by the configurator (Dealer Level). Below is an overview registered faults.

Fault	Reason	Required action
CPU Error RAM	CPU consistency check failed.	Replace PCB
CPU Error FLASH		
CPU Error EEPROM		
Run Error Scheduler	Firmware consistency check failed.	Update Software or Replace PCB
Code Error Framework		
Code Error Application		
PCB Test Failed	Factory test failed.	A fault occurred during factory testing.
Assembly Test Failed		
Field Test Failed	Field test failed (Calibration).	A fault occurred during field testing (Calibration).
Test Flag Check	One or more test flags not set.	Redo tests and/or replace PCB.
ADC	ADC Conversion error.	Check OMNI Cable, replace PCB interface
Output	The OMNI outputs are out of spec.	
Reference		
Joystick (Sensor)	The Sensor (Joystick) faulty	Check cable to sensor (joystick) and/or replace sensor (joystick)
Accelerometer	The Accelerometer fails	Replace PCB interface

Maintenance

Cleaning

Clean all parts of the All-round Joystick on a regular basis (monthly), or whenever needed.

- Gently remove dust and dirt with a damp cloth
- Use only non-aggressive disinfectant cleaning agents



WARNING!

Do not immerse in water or use excessive amounts of liquid.



CAUTION!

Do not apply additional lubricants to the moving parts.

Joystick knob

The knob on top of the Joystick can be removed without tools.

- You may shortly immerse the knob in warm water with a gentle cleaning agent.

Let the knob dry before putting it back on.

- If the knob is damaged, worn out or remains dirty, replace the knob (product code M002-74). Contact your dealer or mo-Vis for spare parts

Maintenance of the optional All-round Joystick Ball (product code M002-76) is similar to the maintenance of the joystick knob.

Monthly check

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

Yearly check

We advise to have at least yearly a full check of the wheelchair and its operating systems by a qualified service engineer.

Contact your local dealer or mo-Vis for more information.

Maintenance free

The All-round Joystick is maintenance-free. Under regular use circumstances, the Joystick with integrated interface unit and different parts do not require additional maintenance.

Parameter settings

With the mo-Vis Configurator Software you can change the parameters of the All-round Joystick. Depending on your profile (user, attendant, dealer, OEM) you will be able to change a number of parameters.

Mounting Settings (User Level)

Setting	Description	Parameters	
Mounting direction	Mounting direction of the All-round Joystick...	Default	0°
		Min.	0°
		Max.	270°
		Steps	90°

Product description & Code

- All-round Joystick Omni (P002-71)
- All-round Joystick Omni Light (P002-72)

Joystick connectors

- 3.5 mm mono jack in on/off
- 3.5 mm mono jack in mode
- Mini USB
- Omni (SUB D9) connector with cable
3.5 mm mono jack out with cable

Dimensions

- 110 x 66 x 60 mm / 4.33 x 2.60 x 2.36 in (HxWxD)
- 96.5 x 66 x 60 mm / 4.33 x 2.60 x 2.36 in (HxWxD) (light)

Required Force

- All-round Joystick : ca. 250 gr (8.82 oz)
- All-round Joystick Light: ca. 120 gr (4.23 oz)

Installation date: . . / . . /

Dealer:



Dealer stamp:

A large, empty rectangular box with a thin green border, intended for a dealer stamp.

Serial number sticker

A large, empty rectangular box with a thin green border, intended for a serial number sticker.