# Installation Manual

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# Heavy Duty Joystick

## Heavy Duty Joystick Omni (P002-73) - Heavy Duty Joystick R-net (P002-77) - Heavy Duty Joystick LiNX (P002-80)



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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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| CH REP | CH-REP: SKS Rehab AG, Im Wyden, 8762 Schwanden GL, Switzerland. |
| UK CA | UK Responsible Person: QServe Group UK, Ltd., 49 Greek Street, London, WID 4EG, UK. |

# 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.

Other labels:

| | |
|---|---|
| REF | Catalogue number: indicates the manufacturer's catalogue number so that the medical device can be identified. |
| LOT | Batch code: indicates the |

| | |
|---|---|
| | manufacturer's batch code so that the batch or lot can be identified. |
|  | Medical device: indicates that the item is a medical device. |
|  | Date of manufacture: indicates the date when the medical device was manufactured. |
|  | Serial number: indicates the manufacturer's serial number so that a specific medical device can be identified. |
|  | Consult instructions for use or consult electronic instructions for use: indicates the need for the user to consult the instructions for use. |
|  | Keep dry: indicates a medical device that needs to be protected from moisture. |
|  | Do not use if package is damaged and consult instructions for use: indicates that a medical device should not be used if the package has been damaged or opened and that the user should consult the |

| | |
|---|---|
| | instructions for use for additional information. |
| CE | CE label: indicates that the manufacturer or importer affirms the good's conformity with European health, safety, and environmental protection standards. |
|  | WEEE: indicates that the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling. |
|  | Manufacturer: indicates the medical device manufacturer. |

# 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 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 product code and device serial number when contacting us. This ensures you are provided with the correct information.

# 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.

# Preparations

**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.

## Qualified service engineer

Only a qualified service engineer may install the device.

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

## Tools

**CAUTION:** Use proper tools to install and adjust the device. The use of improper tools may cause damage to 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:** Do not use the control as only support for hands or limbs. Movements and shocks may disrupt controls.

# Heavy Duty Joystick Installation

## Changing the joystick tip

If required, the joystick's tip may be replaced by a custom tip (for example a 'T'.

To remove the default joystick tip, open the rubber cover below the joystick from the bottom towards the top and use an open-ended 12 mm spanner to unscrew the tip.

**NOTE:** Replacing the joystick tip is not advised and should only be done after careful consideration and at your own risk. Contact mo-vis for more information.

## Installing the Heavy Duty Joystick

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 position in steps of 90° with the Configurator Software.

2 Mount the unit with the two included M6*12 bolts at the desired location. If you use the Heavy Duty Mounting Ring Assembly, see Heavy Duty Mounting Ring Assembly on page 17 .

**CAUTION:** Do not mount the unit using the screw holes at the bottom of the unit.

3 Place and secure all cabling on the power chair.

4 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. If the connections are not used, always put or keep the protective covers in.

**CAUTION:** This is Class I Medical Device (*MDR 2017/745*). All accessories, including switches, must also comply with the *MDR 2017/745* regulations (e.g. the mo-vis Twister, tested according to *EN12184* standards).

5 Connect the cabling to the wheelchair electronics.

**CAUTION:** All wheelchair electronics must be switched off during installation.

# Heavy Duty Mounting Ring Assembly



When mounting the Heavy Duty Joystick in a flat surface (for example tray or table top), you can use the Heavy Duty Mounting Ring Assembly (M002-28) to secure the joystick directly to the surface.



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

# Operation

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

Common practice to navigate the wheelchair with the joystick is as follows:

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

⚠ **CAUTION:** Avoid hitting obstacles during driving.

⚠ **WARNING:** When the LED light flashes and/or after every incident with the wheelchair or the mo-vis device, contact your dealer immediately to perform a functional test.

## LED status

The illumination of the LED on the joystick interface indicates the operational status of the joystick.

| JOYSTICK STATUS | COLOUR | LED TIMING | COUNT | STATE DESCRIPTION |
|---|---|---|---|---|
| Configur-ing | Orange | Fast | Not applicable | Wheelchair is configur-ing |
| Powercy-cle | Orange | Heartbeat | | Wheelchair waits for power cycle |
| Focus | Green | Always on | | System is in focus |
| Out of focus | Green | Heartbeat | | System is out of focus |
| Out of neutral | Green | Medium | | Joystick is out of neu-tral |
| Error | Red | Errors | See Error codes on page 45 | Something went wrong |

# Configuration

**WARNING:** Changes in parameter settings may cause damage to the device or power chair, or may cause injury to people.

**CAUTION:** Always change parameters and test the outcome without anyone sitting in the power chair.

## Software download

- You can download the Configurator Software on our website http://www.mo-vis.com
- Software requirement: Windows version 11, 64 bit
- For all details on how to install and use the software, we refer you to the *Configurator Software manual*.
- To configure the parameters of the device, you need dealer level access. This level is password-protected. Contact mo-vis to obtain the password.

**NOTE:** Never share your password with anyone and keep access to the Configurator Software strictly personal.

# Defining parameter settings

1 Connect the device to a PC. Use a standard USB-C cable.

> **CAUTION:** Before inserting a jack or USB cable, remove the protective cover. If the connections are not used, always put or keep the protective covers in.

2 Configure the parameters with the software.

3 Upload the configuration.

4 Test the configuration and adjust if necessary.

# Parameter settings

## *Compensation settings*

**Road Compensation** is a unique feature in the mo-vis joysticks. When you are driving on an uneven road with a special control mounted in a tray, or on an arm (or any other place where tremblements may be amplified), it can be very difficult to maintain control over the electric wheelchair and sometimes even unsafe. You can make this easier and safer, by enabling the **Road Compensation**.

There is an accelerometer inside the joysticks and when it vibrates, it sends a signal to the wheelchair to slow down to a predefined parameter.

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Compensation factor** | Lowers forward/backward (Y) driving speed on rough terrain.<br>Wheelchair type and weight have an impact on this factor:<br>• Heavy loaded wheelchairs may need to lower the setting to '**Weak**'.<br>• Light wheelchairs may need to increase the setting to '**Strong**'.<br>• If the joystick is mounted on a location that may multiply the value of a shock (e.g. on an arm), the setting should be lowered to '**Weak**' or '**Very weak**'.<br>• Frontwheel-driven wheelchairs are less affected by this factor than rearwheel-driven | Very weak | Almost no slow down |
| | | Weak | Slows down less compared to normal |
| | | **Normal** | Default setting |
| | | Strong | Slows down more compared to normal |
| | | Very strong | Slows down more compared to strong |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | wheelchairs. | | |
| **X compensation** | To limit the steering reaction if the wheelchair overreacts on steering commands. This may happen due to compensation on the X direction that prevents the wheelchair to overcome an obstacle due to the loss of torque. The value is based on the compensation in Y direction. | **None** | No compensation |
| | | 1/2 Y | X = 50% of Y level |
| | | 2/3 Y | X = 66% of Y level |
| | | Equal Y | X = 100% of Y level |
| **(De)activation pattern** | Active if compensation mode is set to '**Manual**'.<br>To activate/deactivate: nudge the joystick Forward + Backward + Forward.<br>• Agile users may be able to execute this pattern quite quickly.<br>• Set this parameter according to the agility of the user. | 4s | Min. |
| | | **5s** | Default |
| | | 10s | Max. |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | **NOTE:** A longer time to execture the pattern, may cause the wheelchair to drive while executing the pattern. | | |
| **Road Compensation** or **Profile 1/.../7 (R-net joystick)** | Defines activation of the compensation algorithm.<br>For R-net: can be set individually for each profile. | **Off** | Always deactivated |
| | | Manual | (De)activated manually by the user |
| | | On | Always activated |

## *Tilt settings*

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Tilt** | The joystick can detect the joystick tilt.<br>The wheelchair will stop driving when the parameter is set | On | Tilt is enabled |
| | | **Off** | Tilt is disabled |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | to '**On**' and the joystick is tilted more than 70° (default) in any direction.<br>The tilt sensor inhibit becomes inactive again when the angle becomes less than 65° (default).<br>The use of this functionality certainly makes sense when a movis joystick is integrated in a tray or other tilting surface/mounting aid.<br>**NOTE:** The tilt sensor response time is less than or equal to 5s. | | |
| **Angle** | Here you can choose at which angle the joystick will become inactive, when the tilt setting is enabled. | 0° | Min. |
| | | **70°** | Default |
| | | 180° | Max. |

## *Input settings for joysticks with Omni connection*

For joysticks with Omni connection, you can only program the **yellow tip**:

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Switch type** | Specification of the button connected to the yellow tip.<br><br>**NOTE:** It is only useful to program this as a safety switch with an Omni2 display. | None | This input will be ignored. |
| | | **Normal open** | You can connect a standard button or a safety switch (e.g. mo-vis Twister Pro). When the safety switch fails, it will **not** be detected and no warning is given. |
| | | Safety switch | You **must** connect a safety switch. When the safety switch fails, a warning will be given. |

For more information about the Twister Pro and its safety switch functionalities, please refer to the *Twister Pro Installation manual*.

**NOTE:** You have to program the safety switch both here in the mo-vis Configurator and in the R-net Programmer.

For a Multi Joystick, there is the additional option to program the yellow tip on the sensor itself. This parameter is called **Specific Input Setting**.

Another parameter that you can set is the **Debounce Timer**. This will be applied to all connected buttons except for the on/off button!

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Debounce timer** | The input button has to be pressed for longer than the debounce timer, before it is seen as an input. It can be useful to increase this timer, in case the user has a tremor. | **50 mS** | Min./Default |
| | | 2500 mS | Max. |
| | | 10 mS | Step |

## *Input settings for joysticks with R-net connection*

For joysticks with an R-net connection, you can program both the yellow and the red tip.

**Yellow tip**:

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Switch type** | Specification of the button connected to the yellow tip. | None | This input will be ignored. |
| | | **Normal open** | You can connect a standard button or a safety |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | | | switch (e.g. mo-vis Twister Pro). When the safety switch fails, it will **not** be detected and no warning is given. |
| | | Safety switch | You **must** connect a safety switch. When the safety switch fails, a warning will be given. |

For a Multi Joystick, there is the additional option to program the yellow tip on the sensor itself. This parameter is called **Specific Input Setting**.

**Red tip:**

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Switch type** | Specification of the button connected to the red tip. | Normal open | You can connect a standard button or a safety switch (e.g. mo-vis Twister Pro). When the safety switch fails, it will **not** be detected and no warning is |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | | | given. |
| | | Safety switch | You **must** connect a safety switch. When the safety switch fails, a warning will be given. |
| | | **Auto detect** | You can connect a standard button or a safety switch. When a safety switch is connected and it fails, a warning will be given. |

For more information about the Twister Pro and its safety switch functionalities, please refer to the *Twister Pro Installation manual*.

**NOTE:** You have to program the safety switch both here in the mo-vis Configurator and in the R-net Programmer.

Another parameter that you can set is the **Debounce Timer**. This will be applied to all connected buttons except for the on/off button!

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Debounce timer** | The input button has to be pressed for longer than the | **50 mS** | Min./Default |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | **debounce timer**, before it is seen as an input. It can be useful to increase this timer, in case the user has a tremor. | 2500 mS | Max. |
| | | 10 mS | Step |

## *Input settings for joysticks with LiNX connection*

For joysticks with LiNX connection, you can program both the yellow and the red tip and ring.

**Yellow tip**:

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Switch type** | Specification of the button connected to the yellow tip. | None | This input will be ignored. |
| | | **Normal open** | You can connect a standard button or a safety switch (e.g. mo-vis Twister Pro). When the safety switch fails, it will **not** be detected and no warning is given. |
| | | Safety switch | You **must** connect a |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | | | safety switch. When the safety switch fails, a warning will be given. |

**Yellow & red ring**:

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Switch type** | Specification of the button connected to the yellow ring. | **None** | This input will be ignored. |
| | | Normal open | You can connect a standard button or a safety switch (e.g. mo-vis Twister Pro). When the safety switch fails, it will **not** be detected and no warning is given. |
| | | Safety switch | You **must** connect a safety switch. When the safety switch fails, a warning will be given. |

**NOTE:** The functionality of the yellow tip and ring as well as the red ring is configurable in the LiNX access programmer.

**Red tip:**

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Switch type** | Specification of the button connected to the red tip. | Normal open | You can connect a standard button or a safety switch (e.g. mo-vis Twister Pro). When the safety switch fails, it will **not** be detected and no warning is given. |
| | | Safety switch | You **must** connect a safety switch. When the safety switch fails, a warning will be given. |
| | | **Auto detect** | You can connect a standard button or a safety switch. When a safety switch is connected and it fails, a warning will be given. |

For a Multi Joystick, there is the additional option to program the yellow tip on the sensor itself. This parameter is called **Specific Input Setting**.

For more information about the Twister Pro and its safety switch functionalities, please refer to the *Twister Pro Installation manual*.



**NOTE:** You have to program the safety switch both here in the mo-vis Configurator and in the LiNX Access programmer.

Another parameter that you can set is the **Debounce Timer**. This will be applied to all connected buttons except for the on/off button!

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Debounce timer** | The input button has to be pressed for longer than the **debounce timer**, before it is seen as an input. It can be useful to increase this timer, in case the user has a tremor. | **50 mS** | Min./Default |
| | | 2500 mS | Max. |
| | | 10 mS | Step |

## *Auditive feedback*

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Error/warning beep** | When the control goes into error or warning, it will show | Off | No beep when in error/warn- |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | the flash code on the LED (seeError codes on page 45 ) . With this setting, you can choose to also hear it via the buzzer. | | ing |
| | | **On** | Beep sounds the flash code when in error/ warning(see Error codes on page 45 ) |
| **Road compensation beep** | This parameter is only relevant, when you have set **Road Compensation** to **manual**. In that case, a sound will be heard when the road compensation is enabled/disabled.<br>• Enabled: 1 short beep<br>• Disabled: 2 short beeps | Off | No beep when **road compensation** is enabled/disabled |
| | | **On** | Short beep(s) when the **road compensation** is enabled/disabled |
| **Movement beep** | This parameter is only relevant, when you have set **Road Compensation** to **manual**. In that case, a sound will be heard to indicate when | Off | No beep when **road compensation (de)activation pattern** is can- |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | the (de)activation pattern is stopped or when a wrong pattern is executed. This will let the user know that the wheelchair will start to move. | | celled |
| | | **On** | Long beep when **road compensation (de)activation pattern** is cancelled |

## *Omni settings*

**NOTE:** This parameter group is only applicable for devices with a SUB D9 cable.

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| **Input Module** | It changes the output voltages of the SUB D9 connector depending on the host.<br><br>**NOTE:** If not changed, a slight deviance from the driving direction can be possible. | R-net Omni 1 | The input module is an R-net Omni display |
| | | **R-net Omni 2** | The input module is an R-net Omni 2 display |
| | | LiNX IN500 | The input module is a LiNX |

| SETTING | DESCRIPTION | PARAMETERS | |
|---|---|---|---|
| | | | IN500 module |
| | | Curtis SCIM | The input module is a Curtis model (e.g. SCIM) |

# Testing

After installation of the device, execute the following tests before the wheelchair is delivered or put into service.

## Check the device for intactness

Check whether:

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

## Operational test

⚠ **CAUTION:** Execute this test only on a level surface, with at least one metre of free space around the wheelchair.

⚠ **CAUTION:** The wheelchair may start to move during the test.

1 Activate the wheelchair operating system.

2 Check for any error message.

**TROUBLE:** for more information on the error messages, see Omni Control Connection on page 49 and R-net Joystick Connection on page 51

3 Move the joystick slowly forward until you hear the parking breaks switch off.

4 Immediately release the joystick. You should hear the parking break react within a few seconds.

5 Repeat 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 (pwr) and mode (in) switch function properly.

## Test drive

Do a test drive with the wheelchair.

1 Check whether the wheelchair and all its functionalities function correctly in all positions the user may use the control and switches.

2 Check whether cables or parts may not 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 must stop in such a way that it not endangers the user.

# First time use

During first time use by the user, it is advised that the dealer or service engineer assists and explains the different possibilities to the user and/or his attendant. If needed, the dealer can make final adjustments.

> ⚠ **CAUTION:** It is important that the customer is fully aware of the installation, how to use it and what can be adjusted to optimize his/her experience.

1 Explain and show the customer how you have executed the installation and explain the functionality of every (new) button.

2 Have the user test all positions of the device. If needed, adjust the (position of the) device.

- Are the control and the switches within easy reach?
- Can the user safely operate the power chair with the least effort?
- Is the placement of the device in all available positions optimal for the user?

3 Explain the possible problems and how to address them, to the user.

4 Draw the user's attention to the following:

> ⚠ **WARNING:** A functional test is needed when the LED light flashes in orange or red (if applicable) and/or after every incident with the wheelchair or the mo-vis device.

**WARNING:** The device should never be covered or blocked in order to avoid uncontrollable behavior of the control and/or the wheelchair.

# 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.

| | WHENEVER NEEDED | MONTHLY | YEARLY |
|---|---|---|---|
| Clean all parts of the device | ✓ | ✓ | |
| Inspection whether:<br>• all bolts and screws are still firmly tightened.<br>• there is no damage to any wiring.<br>• there is no excessive wear to | ✓ | ✓ | |

**Table 1: Maintenance**

| | WHENEVER NEEDED | MONTHLY | YEARLY |
|---|---|---|---|
| any of the parts. | | | |
| Full check of<br>• the wheelchair<br>• its operating systems<br>by a qualified service engineer. | ✓ | | ✓ |

**Table 1: Maintenance**

# Error codes

**TROUBLE:**
When a fault occurs, the LED of the control 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.

We have two categories:

- Warnings: LED will flash in orange. A warning can be resolved quite easily (see table below).
- Errors: LED will flash in red. An error might indicate a more serious issue and/or the device will have to come back to mo-vis.

| FLASH COUNT | LED | REASON | REQUIRED ACTION |
|---|---|---|---|
| 1 | Orange | There is an issue with one of the non-driving input jacks. | You have programmed an input type (e.g. safety switch, sip-and-puff), but the system cannot detect one. Check if you have connected |

| FLASH COUNT | LED | REASON | REQUIRED ACTION |
|---|---|---|---|
| | | | the correct input type and if you have set it up like that. Check if the input type is still functional (no broken cable or in short-circuit). |
| 2 | Orange | This parameter is only relevant when **Tilt** is set to **On**. When the device is tilted in an angle greater than the configured **Angle**, this warning will be given and you will not be able to drive. | This is normal behaviour. The warning will go away when the joystick is brought back to an angle that is less than the configured **Angle** for **Tilt**and you will be able to drive again. |
| 5 | Red | There is an issue with one of the driving input | You have programmed an input type (e.g. |

| FLASH COUNT | LED | REASON | REQUIRED ACTION |
|---|---|---|---|
| | | jacks. | safety switch, sip-and-puff), but the system cannot detect one. Check if you have connected the correct input type and if you have set it up like that. Check if the input type is still functional (no broken cable or in short-circuit). |
| 6 | Red | There is an issue with the wheelchair connection. | Make sure the SUB D9 cable is connected correctly and that the cable is not damaged. |
| 7 | Red | Miscellaneous | Contact mo-vis |
| 8 | Red | Double warning. | See solutions for |

| FLASH COUNT | LED | REASON | REQUIRED ACTION |
|---|---|---|---|
| | | | flash count 1 and 2. You will have to power off and on the device for it to be functional again. |
| 9 | Red | Test flag failed or Diagnostic failed | Redo tests and/or replace PCB. If problem persists, contact mo-vis. |
| 10 | Red | Coding error | Update software or replace PCB. Contact mo-vis. |

**TROUBLE:**
A fault log with counters is maintained. The fault log can be accessed by the configurator (dealer level). For more information, contact mo-vis.

# Omni Control Connection

## Purpose

A mo-vis Omni Control has a cable with a SUB D9 connector and a 3.5 mm jack connection. They can be plugged in directly to the electronics of the wheelchair. The control then controls the wheelchair in all its functions (driving, electric gears, lights …).

## Connectivity

The Omni Control allows you to connect to a wheelchair with a Curtiss-Wright Omni or Omni2 display.



**NOTE:** To connect with other types of electronics, there are third party adapters available.

## Features

The Omni Control Connection is an integrated part of a mo-vis Omni Control and consists of:

- Omni (SUB D9) connector with cable
- 3.5 mm mono jack out with cable

# Other information

These products were tested with an Omni 2 display by Curtiss-Wright.

# R-net Joystick Connection

## Purpose

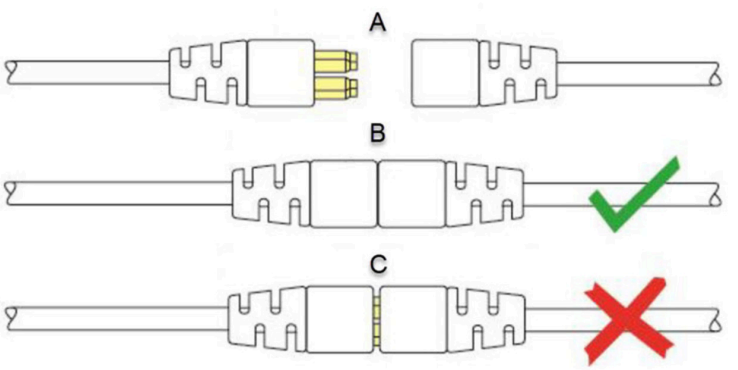
An R-net joystick has a communication cable with an R-net connector. The cable can be directly plugged into the R-net electronics of the wheelchair. The joystick then controls the wheelchair in all its functions (driving, electric gears …).

For more information about the R-net system, please refer to the Curtiss-Wright website http://www.cw-industrialgroup.com

## Connecting the R-net communication cable

To connect the communication cables, insert the connector into its mate and push firmly.

The connector is inserted correctly if the yellow pins are completely invisible. The connectors are secured using a friction system.




| | |
|---|---|
| A | not connected |
| B | correctly connected |
| C | incorrectly connected |

To disconnect the communication cables, firmly hold the connector housing and pull the connectors apart.

**NOTE:** Pull the connector apart in a straight line to not damage the connection pins.

## R-net parameters

Some R-net parameters need to be set for correct usage of the mo-vis R-net joysticks. For this we refer to the *Curtiss-Wright manual SK77981-14 | R-net Technical Manual | Chapter 3 - Progamming*

R-net (Ch. 3 - 4.4):**Profile Management** > **Input Device Type**:

- In most cases, this parameter needs to be set to **Universal** for all mo-vis joysticks.
- In combination with certain other devices (e.g. Scoot Control), it is advised to set this parameter to **JSM**. Please refer to the *Installation manual* of the other devices for more information.

**NOTE:** If you have several input devices of the same type, please refer to the *Curtiss-Wright manual SK77981-14 | R-net Technical Manual | Chapter 3 - Programming* to install as **Input Device Subtype**.

R-net (Ch. 3 - 7.5): **Controls** > **Global** > **Profile Button**: the default setting of this parameter is **Profiles**. If you want access to the modes for control of

other wheelchair functionalities, such as seating positions, etc., then you have to select **Profiles/Modes**.

**NOTE:** If there is no other control on the wheelchair, make sure to set the R-net sleeptimer to 0.

## R-net trip codes

**TROUBLE:**

When a fault is detected by the device, an R-net trip code will be generated. The trip code will be shown on the joystick (if it is present and equipped with a graphic display). The trip code will also be logged in the R-net system and can be investigated using the R-net PC Programmer.

If you want to learn more about trip codes, see the *Curtiss-Wright manual | SK77981-14 R-net Technical Manual*.

## Supported R-net parameters

The following R-net parameters of the wheelchair electronics may or may not be supported by the mo-vis joysticks.

| PARAMETER | SUPPORTED | FIRMWARE VERSION |
|---|---|---|
| **Joystick deadband** | Y | V03.03 |
| **Swap joystick axis** | Y | V03.03 |

## Other information

An R-net chipset is incorporated in our products. These products were tested with CJSM2 by Curtiss-Wright.

# LiNX Joystick Connection

## Purpose

A mo-vis LiNX Joystick has a communication cable with a LiNX connector. The cable can be directly plugged into the LiNX electronics of the wheelchair. The joystick then controls the wheelchair in all its functions (driving, electric gears …).

## Connectivity

The LiNX Joystick allows you to connect to a wheelchair with a LiNX REM 400 or REM 500.

## LiNX parameters

Some programming in the LiNX Access App needs to be done for correct usage of the mo-vis LiNX Joysticks. Please contact Dynamic Controls or mo-vis for more information.

# Technical data

## Product description & code

- P002-73 Heavy Duty Joystick Omni
- P002-77 Heavy Duty Joystick R-net
- P002-80 Heavy Duty Joystick LiNX

## Joystick connectors

- 3.5 mm mono jack on/off
- 3.5 mono jack in mode
- USB-C
- connector cable, depending on the joystick version (see Omni Control Connection on page 49 , R-net Joystick Connection on page 51 or LiNX Joystick Connection on page 55 for more information)

## Dimensions

| | | |
|---|---|---|
| Heavy Duty Joystick | 175 x 86 x 86 mm | 6.89 x 3.38 x 3.38 in |

# Required force

| | | |
|---|---|---|
| Heavy Duty Joystick | ca. 650 gr | 22.93 oz |

mo-vis

moving forward together

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