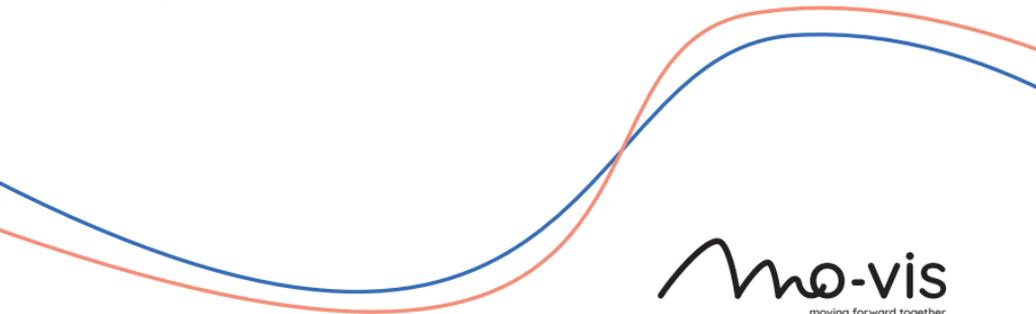


Installation manual

Edition 5, July 2021

Hand warmer




mo-vis
moving forward together

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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.

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

Use an Allen wrench to install the device.



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.

Installation

Mounting options

The Hand Warmer can be mounted on any location on the power chair:

- You can mount the Hand Warmer with the M012-45 Hand Warmer mounting set to easily install the Hand Warmer on the wheelchair (tray, armrest ...).



NOTE: Preferably, you mount the Hand Warmer with the Q2M half clamp, but you may also fix the device on a flat surface with dual lock pads. At the bottom of the Hand Warmer 2 rimmed spaces are provided to place these dual lock pads.

- You can equally use any other mounting system.

Mounting with the Hand Warmer mounting set

To install the Hand Warmer unit, proceed as follows:

- 1 Define the place and position of the Hand Warmer on the power chair.



WARNING:

At full power, the device will produce warm air (up to 80°C/158°F). It is advised to leave a minimum distance between the hand and the Hand Warmer of at least 10 cm (4 in).



If the distance is less, it is necessary to limit the maximum temperature to 70°C/158°F or less (see [Parameter settings on page 18](#)).



WARNING: The device's air inlet and outlet are both at the front. Leave at least a distance of 5 cm (2 in) between the front of the device and any object.



WARNING: The device has an open structure at the front. Mount the device in such a way that no water (e.g. rain) can enter the device. Some drops of water will not cause problems, but excess water must be avoided.



NOTE: It is advised to use the Hand Warmer Dome or another protective device to protect the Hand Warmer when used in outside conditions.

- 2 Secure the Q2M Clamp half and bolt on the bottom of the Hand Warmer housing. Two positions in 90° steps are possible.

- 3 Slide the unit over the Q2M Rod (or any other 6 mm rod), to position the Hand Warmer on the wheelchair.

You can use any other part of the Q2M system to complete the installation.



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

Connection

Place and connect the Hand Warmer extension lead with the Hand Warmer connector and lead the XLR power cable to the power chair joystick module or battery.

Secure the power cable to the wheelchair with straps or cable fasteners.



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: The XLR power cable connector contains a fuse. Use an adapter to connect to non-XLR power connections.



NOTE: The XLR connector is internally fused with a fuse of 5A. This is necessary because the wire gauge cannot carry more current. Therefore, it is not allowed to cut the XLR connector and make a

connection directly to the wheelchair batteries unless a fuse of max. 5A is added.

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://mo-vis.com>
- Software requirement: Windows version 10
- 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

The Hand Warmer is equipped with an isolated mini USB connection at the back.



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

SETTING	DESCRIPTION	PARAMETERS	
Auto off	<p>The device will automatically switch off after a set time (in minutes).</p> <p> NOTE: Changing the level will reset the timer.</p> <p> NOTE: A value of 0 means that the device will never switch off.</p>	240	Default
		0	Min.
		600	Max.
		1	Step
Levels	<p>The number of available power levels.</p> <p> NOTE: If there are 3 levels, then the device will use the average value of the minimum and maximum temperature and fan speed for the 2nd level (see below).</p> <p> NOTE: If there is only 1 level, then the device will use the lowest temperature and fan speed (see below).</p>	3	Default
		1	Min.
		3	Max.
Minimum	The temperature (in °C) of the heater at	50	Default

SETTING	DESCRIPTION	PARAMETERS	
temperature	the lowest power level.	40	Min.
		80	Max.
		5	Step
Maximum temperature	The temperature (in °C) of the heater at the highest power level.	75	Default
		40	Min.
		80	Max.
		5	Step
Minimum fan speed	The fan speed (airflow) (in %) at the lowest power level.	20	Default
		10	Min.
		100	Max.
		5	Step
Maximum fan speed	The fan speed (airflow) (in %) at the highest power level.	85	Default
		10	Min.
		100	Max.
		5	Step

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 Hand Warmer and the Hand Warmer Dome (optional) positioned in accordance with the user's needs?
 - Can the user safely operate the Hand Warmer with the least effort?
 - Is the heating of the Hand Warmer optimal for the user in all levels?
- 3 If needed, adjust the Hand Warmer and retest until you have found the optimal position and functioning.
- 4 Explain the possible problems and how to address them, to the user.

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.

Error codes

The device contains a controller that continuously checks the integrity of the device. Whenever a problem is detected, the device will be switched off automatically. When this happens, check the fault flash code or use the configurator to check why the device stopped.

LED error codes



TROUBLE: When a fault occurs, the LED will start to flash. There is a long delay and then a number of flashes with a short delay. Count the number of flashes and look up the according code in the table below.

FLASH COUNT	REASON	REQUIRED ACTION
1	-	-
2	-	-
3	Power supply, under/ over voltage	Check power connections and power cable
4	Temp sensor	Replace PCB
5	Power switch	Replace PCB

FLASH COUNT	REASON	REQUIRED ACTION
6	ADC internal analog to digital converter	Replace PCB
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

FAULT	REASON	REQUIRED ACTION
CPU error RAM	CPU consistency check failed	Contact mo-vis
CPU error FLASH		
CPU error EEPROM		
Run error scheduler	Firmware consistency check failed	Contact mo-vis
Code error framework		
Code error application		
MSP command corrupt	Corrupt command was received	Connection with the PC went wrong. Update firmware (contact mo-vis) or update the Configurator Software. Try again.
MSP command unknown	Unknown command was received	
MSP sub command unknown	Unknown sub command was received	
MSP argument invalid	Invalid argument received	
MSP device not ready	Device was not ready to receive an MSP command	

FAULT	REASON	REQUIRED ACTION
MSP device wrong state	The device is not able to receive a command in the current device	
PCB test failed	Factory test failed	Contact mo-vis
Application test failed		
Field test failed		
Test flag check	One or more test flags not set	Redo tests and/or contact mo-vis
ADC	ADC conversion error	Replace device
Under/over supply	Over/under voltage detected	Check the power connection and power cable
Too hot	Heating system or temp sensor faulty	Remove dust in device. If not solved, replace device.
Power switch	Internal safety power switch faulty	Replace device
Temp sensor	Temp sensor failed	



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

