

Stealth Products®



**Alternative
Drive Controls**



Hand Warmer

Owner's Manual - Maintenance Guide
Stealth's mo-vis Series Adjustable Heating Device

mo-vis
moving forward together

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Customer Satisfaction

Stealth Products is committed to 100% customer satisfaction. Your complete satisfaction is important to us. Please contact us with feedback or suggestions to help us improve the quality and usability of our products.

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General

Read and understand all instructions prior to the use of the product. Failure to adhere to instructions and warnings in this document may result in property damage, injury, or death. Product misuse or failure to follow instructions will void the warranty.

Immediately discontinue use if any function is compromised, if parts are missing or loose, or if any component shows signs of excessive wear. Consult with your supplier for repair, adjustment, or replacement.

All persons responsible for fitting, adjustment, and daily use of the devices discussed in these instructions must be familiar with and understand all safety aspects of the devices mentioned. In order for our products to be used successfully, you must read and understand all instructions and warnings, and maintain our products according to our instructions on care and maintenance.

The installation instructions will guide you through this product's options and possibilities.

Instructions are written with the expressed intent of use with standard configurations. They also contain important safety and maintenance information, as well as describe possible problems that can arise during use. For further assistance, or more advanced applications, please contact your supplier or **Stealth Products** at (512) 715-9995 or toll free at (800) 965-9229.

Always keep the operating instructions in a safe place so they may be referenced as necessary.

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.

 **CAUTION**

These products are designed to be fitted, applied, and installed exclusively by a healthcare professional trained for these purposes. The fitting, application, and installation by a non-qualified individual could result in serious injury.

Warranty

Our products are designed, manufactured, and produced to the highest of standards. If any defect in material or workmanship is found, Stealth Products will repair or replace the product at our discretion. Any implied warranty, including the implied warranties of merchantability and fitness for a particular purpose, shall not extend beyond the duration of this warranty. **Stealth Products** does not warrant damage due to, but not limited to: misuse, abuse, or misapplication of product, and/or modification of product without written approval from **Stealth Products, LLC**. Any alteration or lack of serial number, where applicable, will automatically void all warranty.

Stealth Products, LLC is liable for replacement parts only. **Stealth Products, LLC** is not liable for any incurred labor costs.

Stealth Products warrants against failure due to defective materials or workmanship:

Covers: 2 years
Hardware: 5 years
Electronics: 3 years

In the event of a product failure covered by our warranty, please follow the procedures outlined below:

Call **Stealth Products** at (512) 715-9995 or toll free at (800) 965-9229.

Request a Return Authorization (RA) form from the Returns Department and follow the documentation instructions.

You can download additional copies of this manual by accessing the Stealth website (<https://stlpro.site/stealth-docs>) and searching "mo-vis Hand Warmer" in the search bar at the top of the page.

Supplier Reference

Supplier:	
Telephone:	
Address:	
Purchase Date:	
Model:	

Warning Labels

Warnings are included for the safety of the user, client, operator, and property. Please read and understand what the signal words **DANGER**, **WARNING**, **CAUTION**, **NOTICE**, and **SAFETY** mean, and how they could affect the user, those around the user, and property.



DANGER

Identifies an **imminent** situation which, if not avoided, may result in **severe injury, death, and property damage**.



WARNING

Identifies a **potential** situation which, if not avoided, may result in **severe injury, death, and property damage**.



CAUTION

Identifies a **potential** situation which, if not avoided, may result in **minor to moderate injury and property damage**.

NOTICE

Identifies important information not related to injury, but possible **property damage**.

SAFETY

Indicates steps or instructions for safe practices, reminders of safe procedures, or important safety equipment that may be necessary.

Limited Liability

Stealth Products, LLC 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.

Stealth Products does not hold responsibility for final integration of final assembly of product to end user. **Stealth Products** is not liable for user death or injury.

Testing

Initial setup and driving should be done in an open area free of obstacles until the user is fully capable of driving safely.

The mo-vis Hand Warmer should always be tested without any person sitting in the wheelchair until every alteration of the physical installation or adjustment is complete.

- The Hand Warmer is intended to be fitted on any power wheelchair with 24V connection.
- 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 attention to the safety instructions and warnings.
- Any unauthorized 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 Hand Warmer unit is a non-serviceable part.
- Always contact your dealer or service technician for questions concerning the operation or adjustment of the Hand Warmer.

CAUTION

At full power the Hand Warmer will produce warm air (up to 70°C/158°F). It is advised to leave a minimum distance between the hand and the warmer of 100mm (4 in.).

CAUTION

The Hand Warmer's air inlet and outlet are both at the front of the unit. Leave at least a minimum distance of 50mm (2 in.) Between the front of the Hand Warmer and any object.

WARNING

The Hand Warmer has an open front structure. It should be mounted in a manner that will minimize the chance that water or fluids can enter the enclosure. Moisture or humidity should not cause problems; but, excess water must be avoided.

WARNING

The XLR connector contains an internal 5A fuse to protect the wire, as it is not rated to carry more current. If the XLR connector is removed to make a direct connection to the chair, a 5A fuse must be installed to the circuit to protect the wire from short circuit or overload.

- The Hand Warmer continuously measures the temperature and supply voltage. When a fault is detected the device will switch itself off. If there is an undetected fault, the interface contains an additional internal fast blow fuse of 4A and a PTC fuse of 3A.

Intended Use

Control of a wheelchair is partially dependent on the ability of the user to make precise inputs to a joystick or other input device. Cold weather, air conditioning, impaired circulation or degenerative disorders can often hinder a user's ability to make the motions they need to make to effectively control their wheelchair. The mo-vis Hand Warmer has been designed to address these circumstances by providing warmth and comfort where it is needed, at the input device, leading to increased flexibility, a reduction in pain and discomfort from cold joints and muscles, and increased confidence and independence.

Features

The Hand Warmer is:

- An electric heater powered by the wheelchair battery power (24V).
- Smart, containing its own control electronics.
- Efficient, drawing in air on the same side as it blows the air, reducing energy loss, especially when used with a cover or shield.
- Easily configurable using the mo-vis Configurator Software.
- Adjustable, with a minimum temperature of 104°F (40°C) and a maximum temperature of 122°F (50°C).

Mounting

The Hand Warmer can be mounted at any location on the wheelchair.

- Use the included rod, clamp, and bolt.
- On a flat surface.
- The optional dome (IDM-DOME) can be mounted with the provided Velcro to a flat surface.

Hand Warmer Set

The Hand Warmer Set (IDM-HW) consists of the following parts:



**Hand
Warmer
Unit**



**Warmer
Extension
Lead
180cm**



**Hand
Warmer
Mounting
Kit**

- *Quick-to-Mount Half Clamp 6mm diameter, 14mm long*
- *Quick-to-Mount Rod, 6mm in diameter, 50mm long*
- *Hand Warmer Dual Lock (22mmx9mmx3.5mm) 2 pieces*

Hand Warmer Accessory

A dome-shaped hood is optionally available to enclose the area around the hands and better maintain the air temperature.



Product Description	Product Code
2-Hands Dome	IDM-DOME

- This dome reduces heat loss, resulting in a decreased power consumption, without compromising comfort.
- The dome can be ordered as an optional accessory.
- The dome is delivered with four sets of hook and loop tape strips to attach the dome to any flat surface, such as a Tray.
- The dome openings can be easily adjusted by cutting or shaving in order to meet the user's needs.



CAUTION

Use the proper tools to adjust the dome openings.
The warranty will be voided for any fault as a result of adjusting the dome.

Preparations

Installation of the Hand Warmer should be performed only by a qualified service technician.

Tools

Installation and adjustment of the Hand Warmer should be done only with the proper tools.

Installation Plan

Set up an installation plan before starting the installation of the Hand Warmer. This plan should be based on the user's needs:

- Where should the Hand Warmer be placed?
- How will the Hand Warmer be operated?
- What are the necessary Hand Warmer parameter settings?



Use the proper tools to install and adjust the Hand Warmer. The use of improper tools may cause damage to the device.



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

Installation

Define the place and position of the Hand Warmer on the wheelchair. The Hand Warmer can be mounted on any location of the chair.

Secure the Quick-to-Mount half clamp and bolt to the bottom of the Hand Warmer housing. (Two positions in 90° increments are possible)

Slide the unit over a Quick-to-Mount rod to position the Hand Warmer on the wheelchair. (The rod and bolt are included)



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

Connecting

Place and connect the Hand Warmer Extension Lead (included) with the Hand Warmer connector and lead the XLR power cable to the wheelchair joystick or battery. Secure the power cable to the wheelchair.



Make sure that cabling is mounted in such a way that excessive wear and tear is avoided.



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

Operation and Level Selection

At the back of the device, a push button and jack connection are available. A button connected to the jack connection has the same functionality as the on-board push button.

The functionality of the button is to cycle through the levels (power settings) of the device. You can adjust the number of levels using the mo-vis Configurator Software to alter the parameters.

The green LED at the front of the Hand Warmer interface indicates the status of the device.

Mode	LED Indicator
Sleep Mode	Off
Stand-by	Short on, very long off
Active level 1	Short on, long off
Active level 2	Short on, medium off
Active Level 3	Short on, short off
Fault	Number of flashes, long off

Parameter Configuration

The device is equally equipped with an isolated mini USB connection at the back. Use this connection to connect the device to a PC to connect with the mo-vis software.

Automatic Error Detection

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

Software Capabilities

It is possible to adjust the working of the Hand Warmer according to the user's needs. The following are fully adjustable:

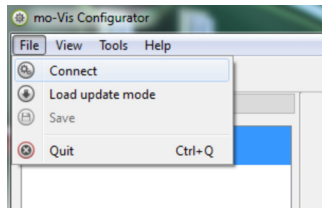
- Auto Off Time
- Number of Power Settings (Maximum of 3)
- Minimum/Maximum temperature of the heater.
- Minimum/Maximum speed of the fan (airflow).

Software Download

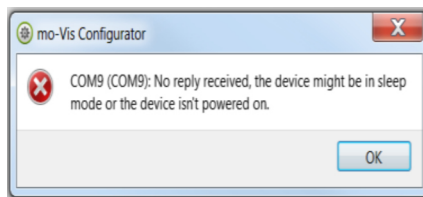
The software is available from the Stealth website: www.stealthproducts.com.

Configuration

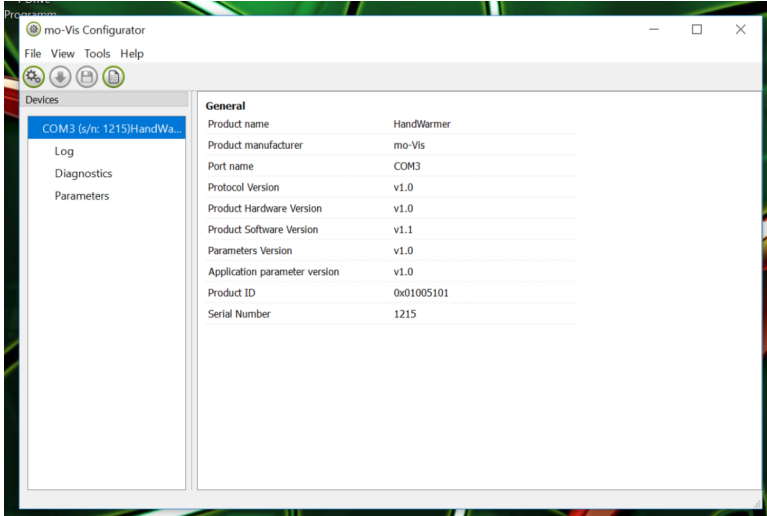
1. Connect the Hand Warmer to the PC using a mini USB cable.
2. Open the mo-vis Configurator Software. Your computer will choose a COM port and recognize the product that is linked to the PC, but will still show the status "Disconnected".
3. Click on the *Connect* icon to make the connection between the Configurator Software and the Hand Warmer, or choose in the menu bar, *File > Connect*.



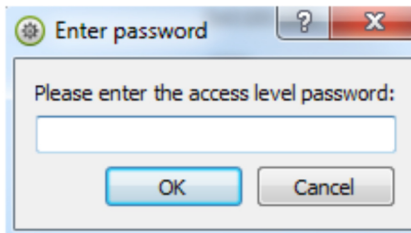
4. When the device is in sleep mode or not powered on you will receive this message:



- Once the connection is made, the software will receive all the details and information out of the mo-vis device and will display them on the right hand side of the window.

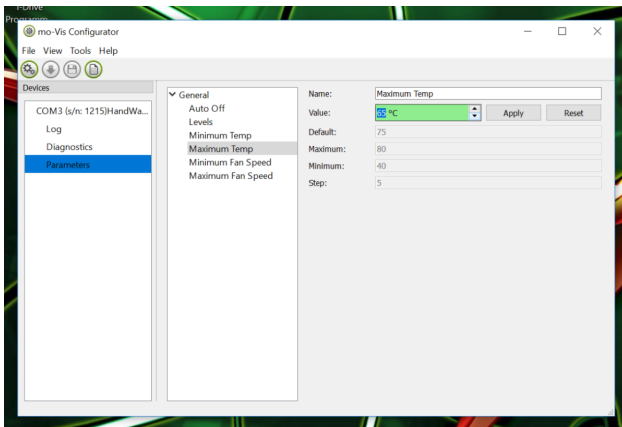
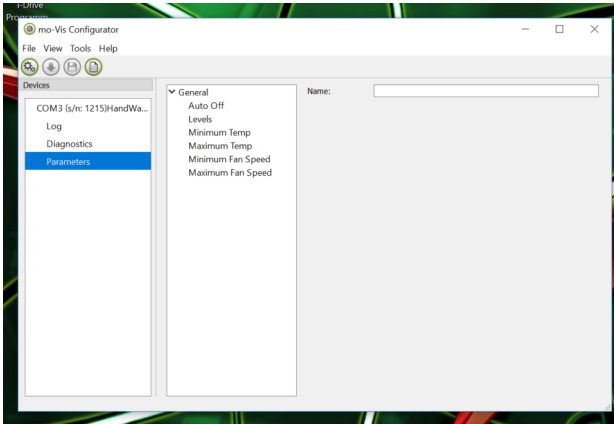


- The software program always starts at the lowest *Access Level*. In order to receive more information or view and edit more parameters, you can upgrade your *Access Level* from *User* to *Attendant* or *Dealer*. To change levels, click on *Tools*. In the drop down menu, select the *Access Level* you would like to use. For a *User* profile, no password is required. You will be asked to enter your password. Contact Stealth at the numbers listed in the front of the manual to request passwords for elevated access.



- After the password has been correctly entered, you will be asked to restart the application. Any unsaved changes will be lost. If you made changes and would like to save them, choose *NO* and first save your changes. If it is okay to restart the application, click *Yes*. The device will now be disconnected. Repeat Step 4 to connect the device back to the computer. Depending on the *Access Level*, you will see *General Information*, *Parameters*, *Log*, and *Diagnostics*.

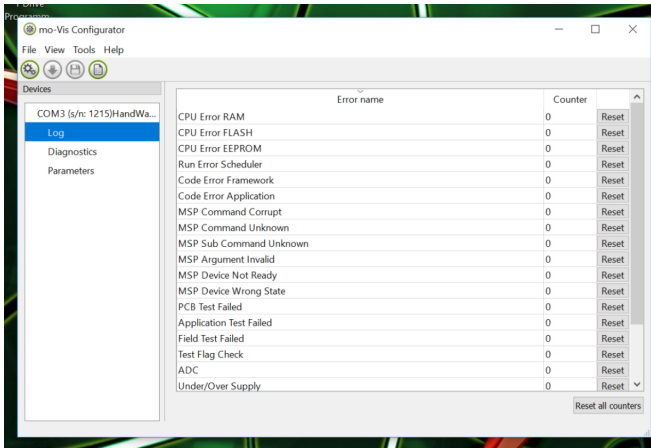
8. When *Parameters* is selected, a list of parameters will be shown. By selecting the specific parameter you wish to adjust, the view on the right will display the stored *Default*, *Minimum* and *Maximum* values of the specific parameter. The parameter can now be changed by entering a new value in the text box, by clicking the arrows next to the box, or by selecting a new value from the drop down box. Values that are being changed will be shown in green.



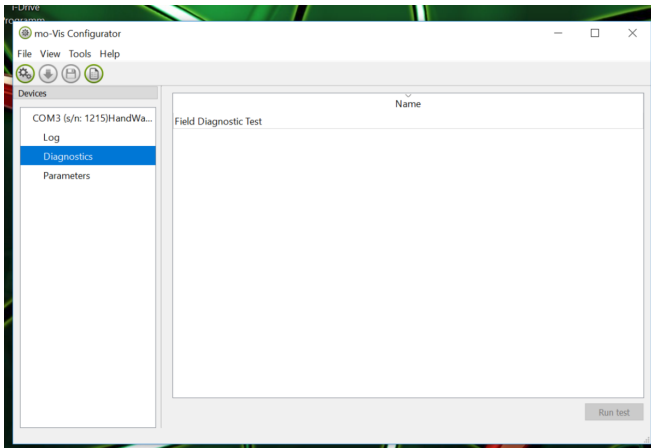
Click *Apply* to write the temporary value in the device. You can immediately test it, but the new value is not permanently stored yet. If you lose connection, any changes you made will be lost. If you would like to store the parameter values into the device, click on the *Save* icon or click in the menu bar, *File > Save*. The new parameter values will now be stored permanently in the device.

Attention: When a parameter is changed without clicking the *Apply* button, the new values are not stored. If another parameter setting is selected, the previous parameter will return to the setting it had before the edit. Clicking on the *Reset* button will set the parameter value to its default value. Click *Apply* to store locally and *Save* to make the change to the device.

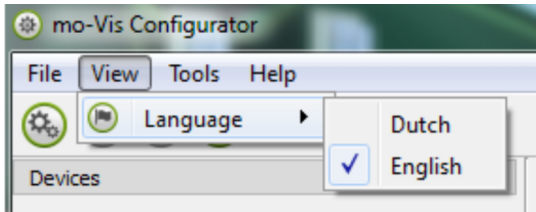
- When your *Access Level* is set to *Dealer*, the categories *Log* and *Diagnostics* will be displayed as well. When *Log* is selected, an overview of all encountered errors and/or actions will be displayed along with the number of times they were encountered, and a *Reset* button to set the counter back to zero.



When *Diagnostics* is selected, you will be able to run a *Field Diagnostic Test*. Click on *Field Diagnostic Test* > *Run Test* to initiate a Field Test.



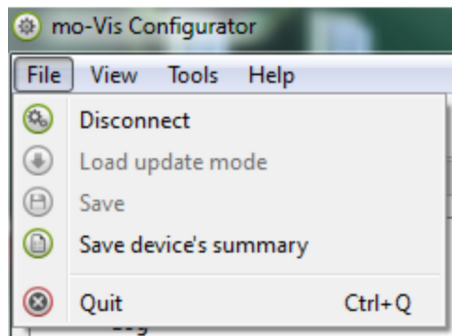
10. To change the language of the Configurator Software, click *File > View* on the menu bar and select the language you prefer.



11. Save the device summary. You can save all general product information and values of the different parameters in any folder on your computer. Make sure the Hand Warmer is connected to the USB port of PC. If the Hand Warmer is recognized it will appear in the *Device View*. Select the correct device in *Device View*. Click on the menu bar on *File > Save > Device's Summary* or click directly on the *Save Device Summary* icon. Choose a location to save the file.
12. To close the Configurator Software, choose *File > Quit (Ctrl-Q)* in the menu bar, or click on the X in the upper right corner of the window.

Attention: you will lose all unsaved values if you quit the software without first clicking on *Apply and Save*. If you use the menu bar to quit, your values will be saved automatically once you have clicked *Apply*.

If you use the X in the upper right corner of the window to close the application, the software will automatically ask if you would like to save your changes before closing.



After the installation of the Hand Warmer, execute the following tests before the wheelchair is delivered or put into service, in this order:

- Check the Hand Warmer
- Operational Test
- Test Drive

Check the Hand Warmer

- Is it damaged in any way?
- Are all housings, cables, and connectors undamaged?
- Does the unit achieve the programmed temperature for the user?

Operational Test

Activate the wheelchair and check for any error messages. If the LED light is flashing, an error has been detected. Do not proceed before resolving this error.

Test Drive

The Hand Warmer can be mounted at any location on the wheelchair.

Perform a test drive with the wheelchair.

Check that the chair and Hand Warmer and all of its operations are fully functioning.

Check that no cabling or parts may become damp.



Check that the Hand Warmer is the correct temperature and that the user can operate the chair properly with the Hand Warmer attached.

Fault Codes

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	Not Used	Not Used
2	Not Used	Not Used
3	Power Supply - Under/Over Voltage	Check power connections/cable
4	Temperature Sensor	Replace PCB
5	Power Switch	Replace PCB
6	ADC - Internal Analog-to-Digital Converter	Replace PCB
7	Test failed or diagnostic failed	Redo Tests - Replace PCB
8	CPU Fault	Replace PCB
9	Scheduler Fault	Update Software - Replace PCB
10	Coding Error	Update Software - Replace PCB

If the problem persists after intervention, please contact your dealer to assist with the problem.

Error Codes

As a user or attendant, you can make a limited number of parameter adjustments with the mo-vis Configurator Software.

Although the number of parameters you can change as a user or attendant is limited, we advise changing only parameters you are familiar with.

For a list of parameter settings, refer to the “Parameter Settings” section in this manual.

Fault	Reason	Required Action
CPU Error RAM	CPU Consistency check failed	<i>Replace PCB</i>
CPU Error FLASH		
CPU Error EEPROM		
Run Error Scheduler	Firmware consistency check failed	<i>Update Software or Replace PCB</i>
Code Error Framework		
Code Error Application		
MSP Command Corrupt	Corrupt command was received	<i>Connection with the PC (Configurator program) went wrong. Try again.</i>
MSP Command Unknown	Unknown command was received	<i>Connection with the PC (Configurator Program) went wrong. Update Firmware or update Configurator Software. Try again.</i>
MSP Sub Command Unknown	Unknown Sub-Command was received	
MSP Argument Invalid	Invalid argument received	
MSP Device Not Ready	Device is not ready to receive an MSP command	
MSP Device Wrong State	The device is not able to receive a command in the current device state.	
PCB Test Failed	Factory test failed	<i>A fault occurred during factory testing.</i>
CPU Error FLASH		
Field Test Failed	Field Test Failed (Calibration).	<i>A fault occurred during field testing. (Calibration)</i>
Test Flag Check	Corrupt Command was received.	<i>Connection with the PC (Configurator Program) went wrong. Try Again.</i>
ADC	ADC Conversion Error	<i>Replace Device</i>
Under/Over Supply	Over/Under voltage detected	<i>Check the power connection and power cable</i>
Too Hot	Heating system or temp sensor is faulty	<i>Remove dust in device and replace device id not solved.</i>
Power Switch	Internal safety power switch faulty	<i>Replace Device</i>
Temp Sensor	Temp sensor failed	

User Adjustments

As a user or attendant, you can make a limited number of parameter adjustments with the mo-vis Configurator Software.

Although the number of parameters you can change as a user or attendant is limited, we advise changing only parameters you are familiar with.

For a list of parameter settings see the section labeled "Parameter Settings".



WARNING

Changes in parameter settings may cause damage to devices or to the wheelchair, or may cause injuries to those around.



CAUTION

Only change parameters or test new settings when there is no person sitting in the wheelchair.

Parameter Settings

With the mo-vis Configurator Software you can change the parameters of the Hand Warmer. Depending on your user profile (User, Attendant, Dealer, OEM), you will be able to change a number of parameters.

Parameter	Min	Max	Default	Description
Auto Off	0	600	240	<ul style="list-style-type: none"> - The device will automatically switch off after a set time (in minutes) - Changing the level (using the button) will reset the timer. - A value of 0 means the device will never switch off.
Levels	1	3	3	- The number of available power levels
Min. Temperature	40°C 104°F	80°C 176°F	50°C 122°F	- The temperature of the heater at the lowest power level
Max. Temperature	40°C 104°F	80°C 176°F	75°C 167°F	- The temperature of the heater at the highest power level
Min. Fan Speed	10	100	20	- The fan speed (airflow - in %) at the lowest power setting
Max. Fan Speed	10	100	85	- The fan speed (airflow - in %) at the highest

Dealer Assistance

During first time use by the client, it is advised that the dealer or service technician assists and explains the different drive configurations to the customer (the user and/or the 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 in order to gain as much mobility as possible. As a dealer, proceed as follows:

- Explain and show the customer how you have executed the installation, and explain the function of every new item.

Have the user test all positions of the **mo-vis Hand Warmer** (and the optional 2-handed dome):

- Is the mo-vis Hand Warmer well positioned in accordance with the client's needs?
- Can the user safely operate the mo-vis Hand Warmer with the least effort?
- Is the heating of the **mo-vis Hand Warmer** in available levels optimal for the user?
- If needed, adjust the **mo-vis Hand Warmer** and retest until it is in the optimal position and functions properly.
- Explain to the customer the possible problems and how to address them

Conditions of Use

The Hand Warmer is intended for use as installed by the dealer, in accordance to the instructions in this manual.

- The foreseen conditions of use are communicated by the dealer or service technician 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 technician to avoid excessive wear and tear or unintended damage.

Cleaning

Clean all parts of the Hand Warmer and the optional 2-Hands Dome on a regular basis, or when needed.

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



Do not immerse the Hand Warmer in water or use excessive amounts of liquid near the Hand Warmer.

Monthly Check

Monthly, or as needed, check that:

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

Hand Warmer Maintenance

The Hand Warmer is maintenance-free. Under regular use circumstances, the Hand Warmer unit does not require additional maintenance.

Product Description and Code

- Hand Warmer Set (IDM-HW)
- Hand Warmer Dome (IDM DOME)

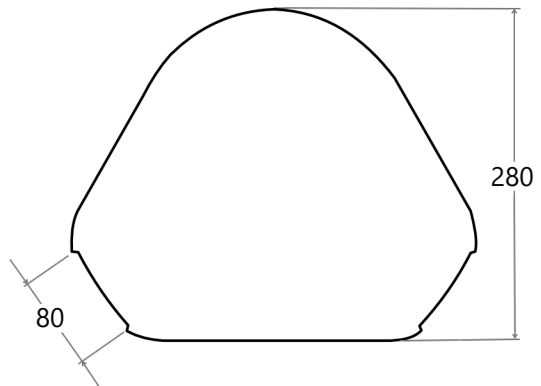
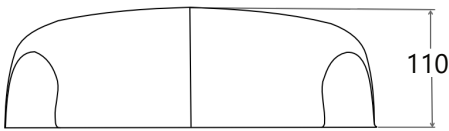
Dimensions

Hand Warmer Dimensions:

- 50mm x 29mm x 29mm (H x W x D)
- 1.97 in x 1.41 in x 1.41 in (H x W x D)

Hand Warmer Dome Dimensions:

- 100mm x 80mm x 280mm (H x W x D) (W = Width of hand opening)
- 3.93 in x 3.14 in x 11.02 in (H x W x D) (W = Width of hand opening)



Power Supply

- Safety Limits: 12 to 35V
- Normal Use: 18 to 26V

Current Supply

- At full power: 2.0A

Power Consumption

- Idle Mode: 20 mA
- Sleep Mode: 1.7 mA

Cable Length

- Pigtail: 150mm (5.9 in.) (.49 foot)
- Extension Lead: 1800mm(70.86 in.) (5.9 ft)

XLR Connector

- Pin 1: V+ (internally fused 5A)
- Pin 2: GND
- Pin 3: NC

Weight

- 125g (4.4 oz)

Heater Temperature Solution

- 100°C (212°F)

EMC Requirements

The electronics of a power wheelchair and its options can be affected by external electromagnetic fields (ex. mobile phones). Similarly, the electronics of the wheelchair or options themselves can also emit electromagnetic fields that can affect the immediate surroundings.

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



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Warranty Information



Home Page



Online User Manual



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