



USER MANUAL

Stealth Products

Alternative Drive Controls



All-Round Heavy Duty Joystick

Stealth's mo-Vis Series Multifunctional Operable
Wheelchair Joystick



Stealth Products strives for 100% customer satisfaction. Your complete satisfaction is important. Please contact us with feedback or suggested changes that will help improve the quality and usability of our products.

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General

The Stealth mo-Vis Series All-Round Heavy Duty Joystick, with its SUB D9 pin connector, is compatible with R-Net™, Q-Logic™, Curtis, and Pilot+ connections.

- The mo-Vis All-Round Heavy Duty joystick is compatible with DX, DX2, and soon to be liNX systems with the use of the appropriate interface.

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 due to failure of the following instructions will void the warranty.

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

The All-Round Heavy Duty Joystick's integrated cabling is considered a non-serviceable part.

If this document contains information you do not understand, or there are concerns about safety or operation, contact your supplier.

- The All-Round Heavy Duty Joystick is compatible with all chairs except Invacare.

Important Information!

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.
- Maintain our products according to our instructions on care and maintenance.
- Devices should be installed and adjusted by a trained technician.

Supplier Reference

Supplier: _____

Telephone: _____

Address: _____

Purchase Date: _____

Model: _____

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

The installation instructions will guide you through the options and possibilities with the product. Stealth's mo-Vis Series All-Round Heavy Duty Joystick should be adjusted with the mo-Vis Configurator Software.

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 1-800-965-9229.

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.

Ordering Documentation

You can download additional copies of this user manual on the Stealth website:

<https://stlpro.site/stealth-docs>

and search: *mo-Vis All-Round Heavy Duty Joystick User Manual* in the search bar at the top of the page.

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, LLC does not warrant damage due to, but not limited to:

- Misuse, abuse, or misapplication of products.
- Modification of product without written approval from Stealth Products, LLC.
- Any alteration or lack of serial number, where applicable, will automatically void this warranty.
- Stealth Products, LLC is liable for replacement parts only.
- Stealth Products, LLC is not liable for any incurred labor costs.

No person is authorized to alter, extend, or waive the warranties of Stealth Products, LLC.

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

Covers: 2 years

Hardware: 5 years

Electronics: 3 years

In Case of Product Failure

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

1. Call Stealth at +1 (512) 715-9995 or toll free +1-800-965-9229.
2. Request the Returns Department or obtain an RA from the Returns Department and follow department or documentation instructions.

1.0 Customer Satisfaction	i
2.0 Important Information	ii
3.0 Introduction	iii
4.0 Warranty	iv
5.0 Table Of Contents	v
6.0 Warning Labels	ix
6.1 Warning Labels	ix
6.2 Limited Liability	ix
6.3 Testing	ix
7.0 Design And Function Of The All-Round Heavy Duty Joystick.....	1
7.1 Intended Use.....	1
7.2 Purpose	2
7.3 Features.....	2
7.4 Mounting.....	2
8.0 Parts And Accessories	3
8.1 All-Round Joystick Heavy Duty Package	3
8.2 All-Round Joystick Heavy Duty Accessory	3
8.3 All-Round Joystick Heavy Duty Unit Detail	4
9.0 Functioning.....	5
9.1 Joystick Safety	5
9.2 Safe Driving	5
10.0 Installation Instructions	6
10.1 Preparations.....	6
10.2 Tools	6
10.3 Installation Plan	6
11.0 All-Round Heavy Duty Joystick Installation	7
11.1 Installation	7

12.0 Defining Position.....	8
12.1 Defining Parameter Settings	8
12.2 Parameter Settings.....	8
Programming Instructions	
13.0 Q-Logic™ Setup.....	10
13.1 Q-Logic Programmer Setup	10
14.0 Q-Logic™ Joystick Setup	12
14.1 Q-Logic™ 2.....	12
Joystick Setup	12
Center Deadband	12
Axis Deadband	12
Tremor Suppression	13
Assign Direction Function.....	13
Switch Operations.....	14
Joystick Calibration.....	14
Joystick Throw	15
14.2 Q-Logic™ 3.....	15
Joystick Setup	15
Joystick Calibration.....	16
Joystick Throw	16
Assign Direction.....	16
Center Deadband	17
Tremor Suppression	17
Switch Operation.....	17
15.0 R-Net™ Setup.....	18
15.1 R-Net™ Omni Setup	18
15.2 Joystick Calibration	19
15.3 R-Net™ Proportional Joystick Setup.....	20

15.4 Throw.....	20
Active Throw	20
Throw Details	20
15.5 Axis Orientation	21
Active Orientation	21
Orientation Details.....	21
15.6 Center Deadband	21
16.0 mo-Vis Configurator Software	22
16.1 Software Capabilities.....	22
16.2 Software Download Instructions	22
17.0 Testing	28
17.1 Check All-Round Heavy Duty Joystick	28
17.2 Operational Test.....	28
17.3 Test Drive.....	29
17.4 Stop Test.....	29
18.0 Error Codes	30
18.1 Joystick Data.....	30
19.0 Fault Logs	31
20.0 Settings	32
20.1 Parameter Settings.....	32
20.2 Mounting Settings	32
20.3 Deadband Settings	33
20.4 Tilt	33
20.5 Compensation Mode	34
20.6 Compensation Factor.....	35
21.0 First Time Use	37
21.1 Dealer Assistance.....	37
21.2 User Testing	37

21.3 Conditions of Use 37

22.0 Maintenance 38

22.1 Cleaning..... 38

22.2 Monthly Check 38

22.3 Maintenance Free 38

23.0 Technical Data 39

23.1 Product Description & Code 39

23.2 Joystick Connectors 39

23.3 Dimensions..... 39




23.4 Required Force..... 39

23.5 EMC Requirements..... 40

Warning Labels

6.1

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

 DANGER	Identifies an imminent situation which (if not avoided) will result in severe injury, death, and property damage .
 WARNING	Identifies a potential situation which (if not avoided) will result in severe injury, death, and property damage .
 CAUTION	Identifies a potential situation which (if not avoided) will 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

6.2

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

6.3

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

The All-Round Heavy Duty Joystick should always be tested without any person sitting in the wheelchair until every alteration of the physical installation or adjustment of the joystick is complete.

Intended Use

7.1

The All-Round Heavy Duty Joystick is a joystick module which can be connected directly to the wheelchair electronics.

The All-Round Heavy Duty Joystick is a compact, proportional joystick which requires medium force and movement. (650g, 1.43lbf).

WARNING

The joystick operates with high sensitivity. Protect the joystick against bumps. A good movement coordination and force control is required.

WARNING

Do not use on surfaces that you are unsure of. Always follow instructions provided by the wheelchair manufacturer about driving on safe surfaces, angle of ascent, and angle of descent.

WARNING

Do not use the joystick as only support for your hand or limbs. Movements and shocks may disrupt controls.

Purpose

7.2

The All-Round Heavy Duty Joystick is a large, extremely durable proportional joystick for heavy duty use. This joystick can serve as a hand or foot operated joystick and has been developed for users with excessive force (spasticity, dystonia, etc....).

Features

7.3

The All-Round Heavy Duty Joystick is:

- Fully proportional with increased throw and force.
- 650g (1.43lb) of force.
- Linkable with one or two switches: on/off (pwr) and mode (in) with any 1/8" (3.5mm) jack.
- Integrated interface, and equipped with a mini USB connection for configuration purposes.
- Fully adjustable to individual possibilities.
- Easily configurable with the free mo-Vis Configuration Software.
- R-Net™, Q-Logic™, Curtis, and Pilot + compatible.

Mounting

7.4

The All-Round Heavy Duty Joystick can be mounted at any location on the wheelchair:

- Use the default double m6 x 12 connection bolts.
- On any flat surface.
- The IDM-HDMT is used for mounting onto Gatlin hardware.

All-Round Heavy Duty Joystick Package

8.1

An All-Round Heavy Duty Joystick package consists of the following parts:



Product Description	Product Code
All-Round Heavy Duty Joystick set, with integrated cabling	IDM-HD

All-Round Heavy Duty Joystick Accessory

8.2

All Heavy Duty joysticks will be supplied with the IDM-HDMT mounting hardware for mounting onto the Gatlin hardware. If a replacement is needed, the bracket is available to order as a separate part.



Product Description	Product Code
mo-Vis Heavy Duty Joystick Mount Clamp	IDM-HDMT

All-Round Heavy Duty Joystick Unit Detail

8.3

The connections of the All-Round Heavy Duty Joystick unit have protective covers to avoid the intrusion of dust or moisture during usage.

NOTICE

Before inserting a connector, remove the protective cover.

CAUTION

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



When in use, a blue LED light on the All-Round Heavy Duty Joystick indicates the proper functioning of the unit. In case of an error, the LED flashes.

The light indicates the front of the joystick.

Please see "Error Codes" for a list of blinking light indications. (Section 18.0)

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

Common practice to navigate the wheelchair with the All-Round Heavy Duty 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.

Joystick Safety

9.1

- **Do not use** if the joystick handle is damaged, missing, or cracked.
- **Do not use** if the joystick does not return to neutral position independently.
- **Do not use** if the joystick does not move to and from neutral position smoothly.

Safe Driving

9.2

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

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



WARNING

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

Preparations

10.1

Only a qualified service technician may install the All-Round Heavy Duty Joystick.

WARNING

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

Tools

10.2

Use the proper tools to install and adjust the All-Round Heavy Duty Joystick to the desired mounting hardware.

CAUTION

The use of improper tools may cause damage to the device.

Installation Plan

10.3

Set up an installation plan before beginning the installation. This plan should take into account:

- Where the All-Round Heavy Duty Joystick should be placed.
- How the All-Round Heavy Duty Joystick will be operated: by hand, foot, etc.
- The positioning of the joystick. Do not place the joystick where it may be obstructed from moving in any direction.

CAUTION

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

Installation

11.1

1. Mount the unit with the two included m6 x 12 bolts at the desired location.
 - Do not mount the unit using the screw holes at the bottom of the unit.
2. Place and secure all cabling on the wheelchair.

WARNING

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.
4. Connect the cabling to the wheelchair electronics.

CAUTION

Before inserting a connector, remove the protective cover. Keep the protective cover in case connections are used.

WARNING

All wheelchair electronics must be switched off.

If the All-Round Heavy Duty 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 or parameter settings.
- To define the movements during the installation procedure, we advise having at least a dealer profile.
- An interface box is not attached at the end of the cable, it is built into the joystick. The All-Round Heavy Duty is not calibrated. By running the diagnostic field test with the Configuration Software, the joystick can be calibrated in order to meet the specific needs of the customer.

Defining Parameter Settings

12.1

To define parameter settings, proceed as follows:

- Connect the All-Round Heavy Duty Joystick to a PC. Use a standard mini-USB cable.
- Configure the parameters with the software.
- Upload the configuration.
- Test the configuration and adjust if necessary.

Parameter Settings

12.2

Please see “Settings” for a list of all parameter settings. (Section 20.0)

- The mo-Vis Configurator Software is optional to download. The joystick and its settings can be configured through the chair’s display.

Programming Instructions

Q-Logic™ Programmer Setup

13.1

Bookmark Buttons

Select *Options* in the main menu. Button actions are displayed on screen above corresponding buttons. In other menus hold button to bookmark settings, and press button to quickly go to bookmark.

Plus & Minus

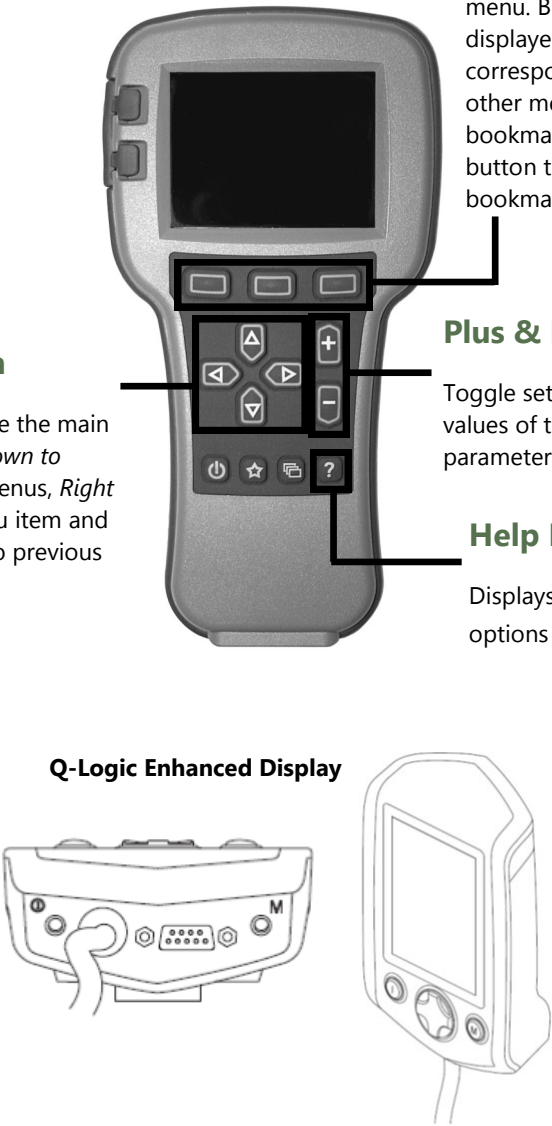
Toggle settings or changes values of the highlighted parameter.

Help Button

Displays information about options selected on screen.

Navigation

Arrows navigate the main menu. *Up & Down* to navigate the menus, *Right* to open a menu item and *Left* to return to previous menu.



Q-Logic Enhanced Display

NOTE: Q-Logic™ Enhanced Display and Q-Logic™ Handheld Programmer required.

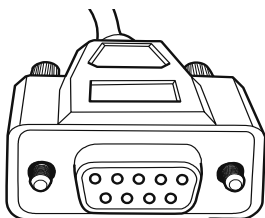
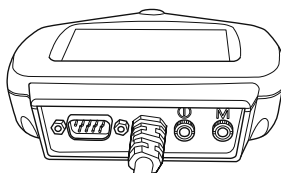
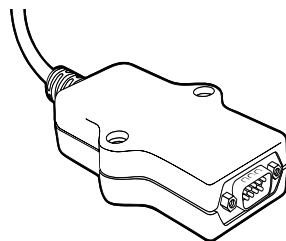
NOTICE

For new chairs that have never been programmed, a power cycle will need to be completed after the joystick has been calibrated and before the joystick throw can be adjusted.

1. Plug in the Q-Logic™ Handheld Programmer (Previous Page) to the Q-Logic™ ED (Enhanced Display) or to the standalone Joystick if SCIM (Specialty Control Input Module - Figure 3) is in use.
2. On the Q-Logic™ Programmer, navigate to *Program Adjustments* ▸ *Specialty Control* ▸ *Active Device*.
3. Toggle *Active Device* to *Proportional* with the *Plus & Minus* ± buttons.
4. Unplug the Q-Logic™ Handheld Programmer and *Turn Off* the system. The chair should now be programmed to recognize the All-Round Joystick. Be sure to re-engage the motors before operation.

NOTICE

If using Q-Logic™ Specialty Control Input Module (SCIM Figure 3), you will need any type of mechanical switch to plug into the power port of the standalone joystick to power ON/OFF the chair and ensure the SCIM as master control. Q-Logic™ programmer required.

9-Pin Connector**Figure 1****Q-Logic™ Drive Control System****Figure 2****Q-Logic™ SCIM****Figure 3**

Q-Logic™ 2


14.2

Joystick Setup

1. Plug in the Q-Logic™ Handheld Programmer to the Q-Logic™ ED (Enhanced Display) or to the standalone joystick if SCIM (Specialty Control Input Module - Figure 1) is in use.
2. On the Q-Logic™ Programmer, navigate to *Program Adjustments* ▸ *Specialty Control* ▸ *Proportional* ▸ *Joystick Set Ups* ▸ *Proportional*. Here you can fine tune joystick performance and functionalities such as:
 - *Center and Axis Deadband*
 - *Tremor Suppression*
 - *Assign Direction*
 - *Joystick Calibration and Throw*
 - *Switch Operation*



Center Deadband

The Center Deadband parameter defines how far the joystick must be moved from neutral position to engage moving the power chair. The value corresponds to the diameter of a circle around the joystick center position. No drive or menu instruction will be executed unless the joystick is moved out of this circle.

- Select *m: Center Deadband* option with the navigation's *Up & Down* buttons,  then press the *Right* button. ▸
- Use the *Plus & Minus* \pm buttons to adjust the *Center Deadband*. Adjustment ranges from 5 to 50%. Press *Left* navigation button to save.




Axis Deadband

The Axis Deadband parameter defines how far the joystick has to move to be recognized. This can be helpful, if a toggle command has to be made.

- Select *m: Axis Deadband* option with the navigation's *Up & Down* buttons,  then press the *Right* button. ▸
- Use the *Plus & Minus* \pm buttons to adjust the *Axis Deadband*. Adjustment ranges from 5 to 50%. Press *Left* navigation button  to save.

Tremor Suppression

The tremor suppression sets a neutral range that suppresses possible tremors (trembling of hand or drive surface conditions) on the joystick. Setting from 0% to 100%.



1. Follow *Section 15.1* Steps 1 and 2.
2. Select *m: Tremor Suppression* option with navigation's *Up & Down* buttons,  then press the *Right* button. 
3. Using the *Plus & Minus* \pm buttons to adjust tremor suppression. To turn back off, adjust to 0%.
4. When done, press *Left* navigation button  to return to menu and save.

NOTICE

When short command is used to operate the power chair, the Tremor Suppression should not be set over 90%, otherwise any short throw will be ignored.




Assign Direction Function

The Assign Direction Function allows you to set the axis direction. For example, if you want to change *Forward* (X axis 0 to 100) to *Reverse* (X axis 0 to -100) or *Left* (Y axis 0 to -100) to *Right* (Y axis 0 to 100). If you switch *Forward* to *Reverse*, the system will automatically change *Reverse* to *Forward*. Same with *Left* and *Right*. Parameters are measured by percent (%).

1. Follow *Section 15.1* Steps 1 and 2.
2. Select *Assign Direction* option with navigation's *Up & Down* buttons,  then press the *Right* button.  Then follow screen instructions.
3. When done, press OK to save.

Switch Operations

The Switch Operations parameter sets the joystick to operate like a switch input making it not proportional. When the joystick is moved out of neutral, more than 50% of the operating range, it will activate full throttle (100%) corresponding to the desired direction. Switch Operations can be set *ON* or *OFF*.



1. Follow *Section 15.1* steps 1 and 2.
2. Select *m: Switch Operations* option with navigation's *Up & Down* buttons,  then press the *Right* button.  Then follow screen instructions.
3. Use the *Plus & Minus* buttons \pm to toggle ON/OFF.
4. When done, press *Left* navigation button  to return to menu and save.

Joystick Calibration

Calibrating your joystick will set the range of motion for the axes or re-center it to improve operation.



CAUTION

Calibration **MUST** be done for the joystick. This is a new safety feature update included in the Q-Logic™ Programmers.

1. Follow *Section 15.1* steps 1 and 2
2. Select *Calibrate* option with navigation's *Up & Down* buttons,  then press the *Right* button. 
3. Programmer will prompt for a calibration of the joystick. Follow directions and spin the joystick twice.
4. Calibration will be complete. Press *OK* to save. Exit screen.
5. Power cycle chair.

Joystick Throw


The throw is the place where the joystick is stopped in a particular direction. Throw distance is the maximum distance/angle the shaft can be moved in a particular direction. The throw should be set to the maximum distance/force the individual utilizing it is capable of.

1. Once power cycle from *Section 15.7* is complete, follow *Section 15.1* steps 1 and 2.
2. Select *Throw* option with navigation's *Up & Down* buttons,  then press the *Right* button. 
3. This setting will turn power chair's system to *IDLE MODE*, press *OK* if prompted. Then follow screen instructions.
4. Angle shaft with individual's maximum force. Adjust the parameters by pressing the *Plus* or *Minus* buttons. \pm
5. When it is all done you will be prompted to save the new configuration. Press *Yes* to save.




Q-Logic™ 3

14.2


Joystick Setup

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display folder, select *Input Configuration*.
5. With the *Plus* and *Minus* buttons \pm , select *Proportional*.
6. Use the *Left* navigation button  to return to the Main Menu and save.


Joystick Calibration

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display menu, with the *Up and Down* buttons,  select *Proportional Input*.
5. With the *Right* navigation button,  select *Proportional Calibration*. The programmer will read 'Roll the joystick in two full circles.' Select *OK* and verify that calibration was successful.
6. With the *Left* navigation button,  select back until you exit completely. Unplug the programmer and cycle power the chair.

Joystick Throw

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display menu, with the *Up and Down* buttons,  select *Proportional Input*.
5. In the Proportional Input folder, select *Proportional Throw*. Follow the prompts on the programmer.

Assign Direction

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display menu, with the *Up and Down* buttons,  select *Proportional Input*.
5. In the Proportional Input folder, select *Proportional Assign Directions*. Follow the prompts on the programmer.

Center Deadband

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display menu, with the *Up and Down* buttons, Δ select *Proportional Input*.
5. In the Proportional Input folder, select *Center Deadband*.
6. With the *Plus and Minus* buttons \pm , adjust the center deadband value.
7. Use the *Left* navigation button \square to exit menu.

Tremor Suppression

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display menu, with the *Up and Down* buttons, Δ select *Proportional Input*.
5. In the Proportional Input folder, select *Tremor Suppression*.
6. With the *Plus and Minus* buttons, adjust the tremor suppression value.
7. Use the *Left* navigation button \square to exit menu after selections have been made.

Switch Operation

1. Plug the Q-Logic handheld programmer into the back of the display.
2. On the programmer, select *Program Adjustments*.
3. In the Program Adjustments menu, select *Enhanced Display*.
4. In the Enhanced Display menu, with the *Up and Down* buttons, Δ select *Input Configuration*.
5. With the *Plus and Minus* buttons \pm , select *Proportional Switch Op*.
6. Use the *Left* navigation button \square to exit the menu after selections have been made.

R-Net™ Omni Setup

15.1

Mode

Switch mode to drive, power seating, or OBP (onboard programming).

Navigation

Up & Down button to navigate the menus, *Right* button to open a menu item and *Left* button to return to previous menu.

Profile

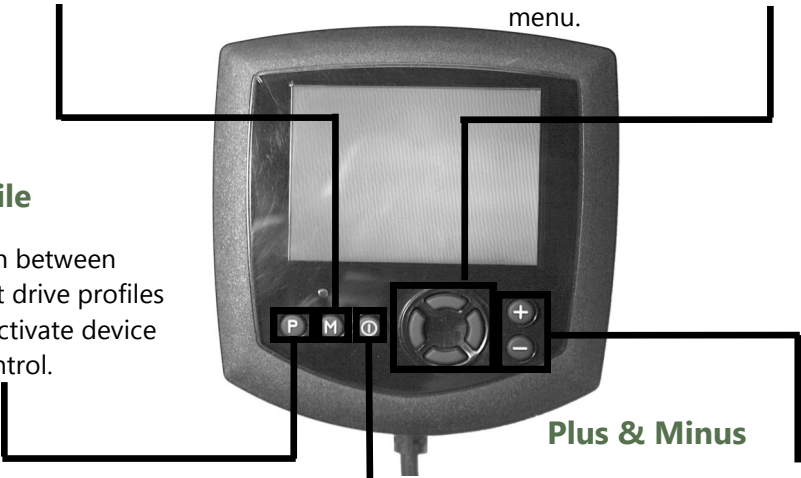
Switch between preset drive profiles and activate device as control.

Power

Turns chair *ON/OFF*.

Plus & Minus

Toggle settings or changes value of the highlighted parameter.



R-Net™ Programming Dongle

1. Plug in the R-Net™ Programming Dongle (Previous Page) in line with the Omni display (Previous Page) and chair's electronics, and then power *ON* the chair.
 2. Press the *Mode* button until you reach the *OBP* (Onboard Programming) menu. The *OBP* menu will appear as an hourglass while loading.
 3. With the navigation buttons, navigate to *Omni* ▸ *Global* ▸ *Sleep 12V*, and toggle *Sleep 12V* to *On* with the *Plus & Minus* ± buttons.
 4. Navigate back ⏪ to the *Omni* menu, then navigate to *Omni* ▸ *Port 1* (or *Port 2* if the All-Round is in Port 2).
 5. In the *Port* menu, toggle *SID* to *Prp* with the *Plus & Minus* ± buttons.
 6. In the *Port* menu, navigate ± to *Switches*.
 7. In the *Switch* menu, toggle *Switch Detect* to *Off* with the *Plus & Minus* ± buttons.
 8. In the *Switch* menu, toggle *9 Way Detet* to *Off* with the *Plus & Minus* ± buttons.
 9. Navigate back ⏪ to the *Omni* menu, and then navigate to *Profiled*.
 10. In the *Profiled* menu, configure a profile to use the port for the All-Round Joystick.
 11. Power off the chair, remove the R-Net™ Programming Dongle, reconnect the Omni Display, and power on the chair.
- The chair should now be programmed to recognize the All-Round Heavy Duty Joystick. Be sure to re-engage the motors before operation.

Joystick Calibration

15.2

1. Plug in the R-Net™ Programming Dongle in line with the Omni Display and chair's electronics, then power on the chair.
2. Press the *Mode* button until you reach the *OBP* (Onboard Programming) menu. The *OBP* menu will appear as an hourglass while loading.
3. With the navigation buttons, navigate to *System* ▸ *Joystick Calibration*.
4. The system will ask to set each direction independently by pressing towards that specific direction. For example *Forward* (0 to 100), *Left* (0 to -100), *Reverse* (0 to -100) and *Right* (0 to 100). Figures are measured by percentage (%).
5. Calibration will be successful when the axis to the referred direction reaches its maximum and its counterpart axis is close to 0. For example, *Forward* will look like:
 ⇒ forward/reverse 90% > left/right 3%
Left will look something like:
 ⇒ forward/reverse 5% > left/right -87%
6. When all four axes are calibrated, you will see a green checkmark on screen.
7. Power off the chair, remove the R-Net™ Programming Dongle, reconnect the Omni Display, and power on the chair.

R-Net™ Proportional Joystick Setup

15.3

1. Plug in the R-Net™ Programming Dongle in line with the Omni display and chair's electronics, then power on the chair.
2. Press the *Mode* button until you reach the *OBP* (Onboard Programming) menu. The *OBP* menu will appear as an hourglass while loading.
3. With the navigation buttons, navigate to *Controls* ▸ *Joystick*. Here you can fine tune joystick performance and functionalities such as:
 - *Active Throw Details*
 - *Active Orientation and Orientation Details*
 - *Deadband*

Throw

15.4

The Throw is the place where the joystick is stopped in a particular direction. Throw distance is the maximum distance/angle the shaft can be moved in a particular direction. The throw should be set to the maximum distance/force the individual utilizing it is capable of.

Active Throw

- Follow first 3 steps in *Section 16.3*
- Use the navigation's *Up & Down* buttons, ▲ select *Active Throw* from list and press *Right* button. ▸ Select Port with *Up & Down* button ▲ then *Right* ▸ again to set up.
- System will guide you through the setup, following the on screen instructions move Joystick towards the defined direction with the maximum force possible. Press the *Plus* button + to save and proceed to the next step. Values range from 25% to 100%.

Throw Details

Throw Details will allow you to see all Active Throw setups for all profiles. To select profiles, move navigation buttons (*Left* or *Right*) ◀ ▸ and to select axis (*Up* or *Down*). ▲ The selected axis/profile can be adjusted by increments of 1 or in increments of 10 using the *Plus & Minus* buttons ±. For increments of 10, keep *Plus* or *Minus* button ± pressed. Values range from 25% to 100%.

Axis Orientation

15.5

The Axis Orientation allows you to switch the axis behavior. For example, the X-axis (*Forward/Reverse*) can be switched making *Forward* direction *Reverse*.

Active Orientation

- Follow first 3 steps in *Section 16.3*
- Using the navigation's *Up & Down* buttons, Δ select *Active Direction* from list and press *Right* button. Σ Then press *Plus +* for Port 1 or *Minus -* for Port 2 to select port to set up.
- System will prompt you to set the *Forward* (X-axis) by angling shaft. Automatically, *Reverse* will be set to opposite value. Values available: N (*North/Forward*), W (*West/Left*), S (*South/Reverse*) or E (*East/Right*)
- Next you will be prompted to set the *Left* (Y-axis) by angling shaft. Automatically, *Right* will be set to opposite value. Values same as step 3. Power cycle chair.

Orientation Details

Orientation Details is similar to Throw Details, but it sets the direction of proportional controllers listed in each profile. Values are set as *Yes/No* to Invert *Forward/Reverse* (InvFR) or *Left/Right* (InvLR). To swap axis, change value on *SWAP* row either *Yes/No*. Power cycle chair.

Center Deadband

15.6

The Center Deadband parameter defines how far the joystick must be moved from neutral position to engage motors on the power chair. The value corresponds to the diameter of a circle around the joystick center position. No drive or menu instruction will be executed unless the joystick is moved out of this circle.

- Follow first 3 steps in *Section 16.3*.
- Use the navigation's *Up & Down* buttons, Δ select *Deadband* from list and press *Right* button. Σ
- To select port, use navigation buttons *Left/Right*. $\Leftarrow \Sigma$ When in desired position, press *Plus* or *Minus* \pm buttons to increase or decrease value. Values range from 10 to 50%.

Software Capabilities

16.1

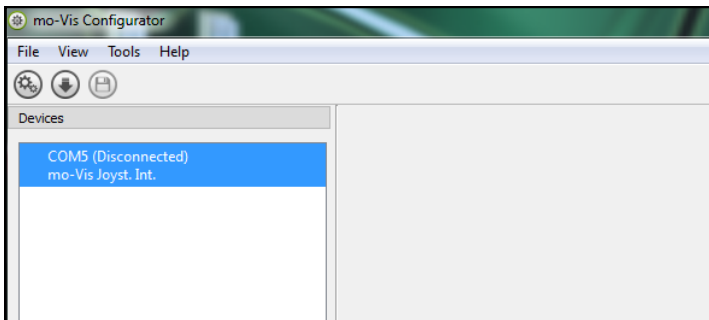
- The mo-Vis Configurator Software is compatible with Windows 7, Windows 8, and Windows 10 systems.
- The mo-Vis Configurator Software is NOT compatible with Android or IOS systems.
- The software is an optional feature that will allow minimal adjustments. All adjustments of the joystick including deadband, calibration, throw, etc. can be completed through the chair's display.


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

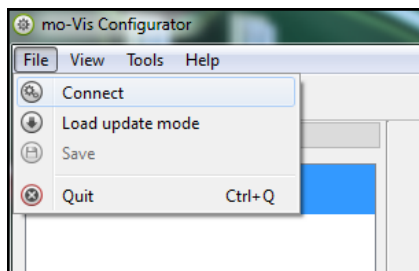
Software Download

16.2

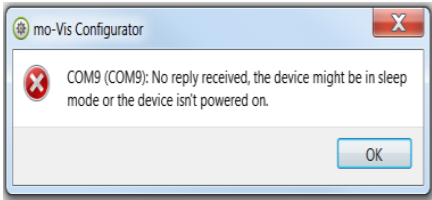
1. You can download the software on Stealth's website: www.stealthproducts.com
2. Connect the mo-Vis Joystick to the PC using a mini USB cable.
3. Open the mo-Vis Configurator Software. Your computer will choose a COM port and recognize the product that is linked to the PC, but will still show the status "Disconnected".



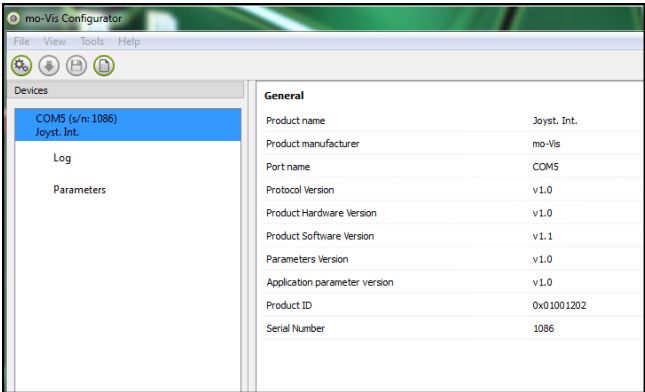
4. Click on the Connect icon  to make the connection between the Configurator Software and the All-Round Heavy Duty Joystick, or choose in the menu bar, File-Connect. To disconnect the device, click on the same icon to disconnect, or click on File and then click Disconnect.



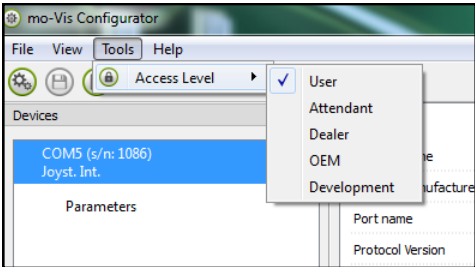
5. When the device is in sleep mode or not powered on, you will get this message:



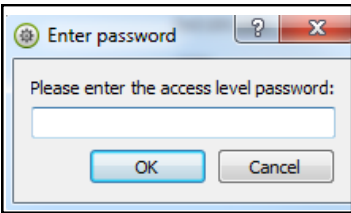
6. Once the connection is made, the software will receive all the details and information out of the mo-Vis device and will display them on the right-hand side of the window.



7. The software program always starts at the lowest Access Level. In order to receive more information or see and change more parameters, you can upgrade your Access Level from User to Attendant or Dealer.

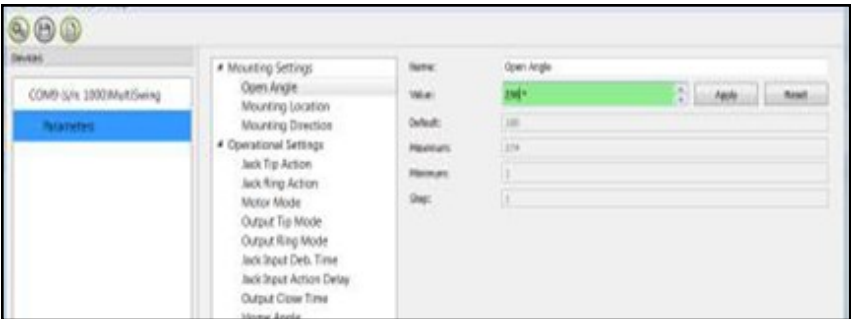


- Click on the *Tools* tab in the menu bar and change the Access Level from *User* to *Attendant* or *Dealer*.
- You will be asked to enter your password. This password will need to be requested.



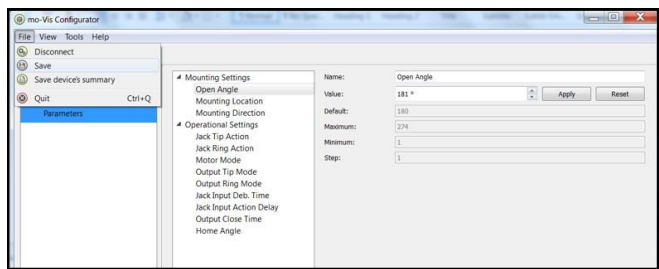
Attention: These passwords are case sensitive!!

- After the password has been correctly entered, you will be asked to restart the application. **Any unsaved changes will be lost. If you did make changes and want 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*.
- When *Parameters* is selected, a list of parameters will be shown, depending on the device that is connected to the PC.
 - 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.
 - This parameter can now be changed by entering a new value in the textbox, by clicking the arrows next to the text box, or by selecting a new value from the drop down box.
 - Values that are being changed will be shown in green.

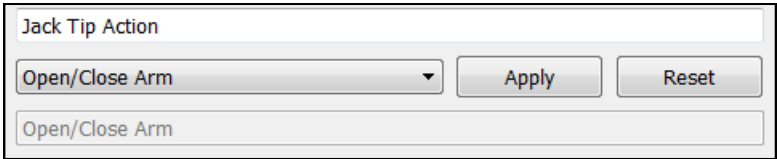


- Click *Apply* to write the temporary value in the device. You can immediately test it, but the new value is not stored yet.
- If you lose connection, any changes you made will be lost. If you would like to store the parameter values into the device, click on the *Save* icon or click in the menu bar,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

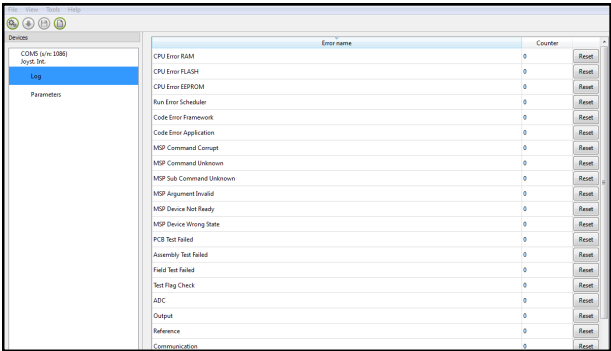
Attention: When a parameter is changed without clicking the *Apply* button, the new values are not remembered. Once another parameter setting is selected, the previous parameter will go back to the original setting.



Clicking on the *Reset* Button will set the parameter value back to the default value. Click *Apply* to store locally and *Save* to make the change to the device.

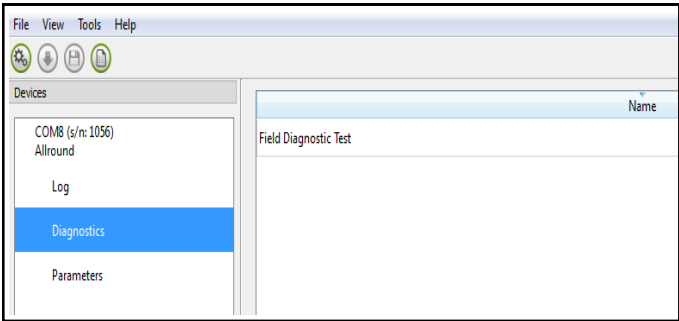


10. When your Access Level is set to *Dealer Level* the categories *Log* and *Diagnostics* will be displayed as well.
- When *Log* is selected, an overview of all occurred errors and/or actions will be displayed with a number of times that they occurred, and a *Reset* button to set the counter back to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

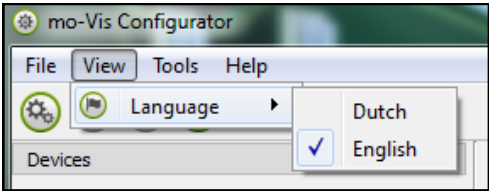



Error name	Counter	
CPU Error RAM	0	Reset
CPU Error FLASH	0	Reset
CPU Error EEPROM	0	Reset
Run Error Scheduler	0	Reset
Code Error Framework	0	Reset
Code Error Application	0	Reset
MSP Command Corrupt	0	Reset
MSP Command Unknown	0	Reset
MSP Sub Command Unknown	0	Reset
MSP Argument Invalid	0	Reset
MSP Device Test Ready	0	Reset
MSP Device Wrong State	0	Reset
PCB Test Failed	0	Reset
Assembly Test Failed	0	Reset
Field Test Failed	0	Reset
Test Flag Check	0	Reset
ADC	0	Reset
Output	0	Reset
Reference	0	Reset
Communication	0	Reset


- When *Diagnostics* is selected, you will be able to run a Field Diagnostic Test. Click on *Field Diagnostic Test* and then *Run Test* to start the Field Test.



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

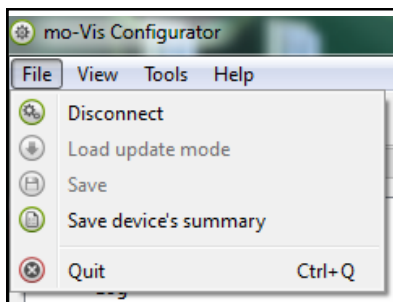


12. Save the device summary. You can save all general product information and values of the different parameters in any folder on your computer.
- Make sure the device is connected to the USB port of the PC.
 - If the device is recognized it will appear in the *Device View*.
 - Select the correct device 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.

13. To close the Configurator Software, choose *File-Quit (Ctrl +Q)* in the menu bar, or click on the X 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 clicked **Apply**.

If you use the small cross on the right corner of the window, the software will automatically ask if you would like to save your changes before closing.



After installation of the All-Round Heavy Duty Joystick, execute the following tests before the wheelchair is delivered or put into service, in this order:

- Check the All-Round Heavy Duty Joystick for intactness
- Operational Test
- Test Drive
- Stop Test

Check That The All-Round Heavy Duty Joystick

17.1

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

Operational Test

17.2

1. Activate the wheelchair operating system.
2. The LED light on the joystick must be on. If the light 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.

WARNING

Execute this test only on a level surface, in an open area free of obstacles.

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 (pwr) and mode (in) switch functions properly.

Test Drive

17.3

- Perform a test drive with the wheelchair.
- Check whether the wheelchair and all of its operations are fully functioning in all positions the user may use the All-Round Heavy Duty Joystick and switches.
- Check that no cabling or parts may become damaged or hindered in any possible position of the wheelchair.

Stop Test

17.4

- 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.

When a fault occurs, the LED light of the All-Round Heavy Duty 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 Cable
3	Power Supply	Check 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

Joystick Data

18.1

Operational Force	650g. , 1.43 lbf
Angle Center to End	18°
Length of stick from Mechanical Pivot	120mm
Travel from Center	40mm (1.57in)
Max. Vertical Load	76,478 grams (168.6 lbf)
Max. Horizontal Load	76,478 grams (168.6lbf)
Expected Life	>2,800,000
Mass	800g

Interface Cord Length	1800mm (180cm)
Joystick Cord Length	NA
Operating Temp.	-13°F to 122°F (-25°C to 50°C)
Storage Temp.	40°F to 149°F (-40°C to 50°C)
Immunity Level ISO7176-21	20V/m 26Mhz to 2.5Ghz
Emission Level ISO7176-21	CISPR 11 Class B
ESD ISO7176-21	8kV 4kV Contact

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 Error FLASH CPU Error EEPROM	CPU consistency check failed.	Replace PCB
Run Error Scheduler Code Error Framework Code Error Application	Firmware consistency check failed.	Update Software or Replace PCB.
PCB Test Failed Assembly Test Failed	Factory test failed.	A fault occurred during factory testing.
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 Output Reference	ADC Conversion error. The interface outputs are out of spec.	Check interface cable, replace PCB interface.
Joystick (Sensor)	The sensor (joystick) is faulty.	Check cable to sensor (joystick) and/or replace sensor (joystick).
Accelerometer	The accelerometer fails.	Replace PCB interface.

Parameter Settings

20.1

With the mo-Vis Configurator Software you can change the parameters of the All-Round Heavy Duty Joystick. Depending on your profile (User, Attendant, Dealer, OEM), you will be able to change a number of parameters.

Mounting Settings (User Level)

20.2

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

Deadband Settings

20.3

Setting	Description	Parameters	
Deadband	Neutral zone around the joystick center position. Prevents creeping of the wheelchair after releasing the joystick.	Default	5%
		Min.	5%
		Max.	10%

Tilt

20.4

Setting	Description	Parameters
Enable	<p>-The joystick can detect the joystick tilt referenced to the earth's gravitation.</p> <p>-The wheelchair will stop driving when this parameter is enabled, and the joystick is tilted more than the angle defined in the Angle setting.</p> <p>-Important: The joystick needs to be tilted longer than 5s.</p>	

Setting	Description	Parameters	
Angle	<p>-The angle the joystick tilt is compared to.</p> <p>-When the joystick tilt is larger than the angle specified in this parameter, the wheelchair will halt after approximately 5 seconds.</p>	Default	40°
		Min.	5°
		Max.	40°

NOTICE

The joystick needs to be tilted longer than 5 seconds.

Compensation Mode

20.5

Setting	Description	Parameters	
Compensation Mode	<p>-Defines activation of the compensation algorithm.</p> <p>-For R-Net: Can be set individually for each profile.</p> <p>-If the joystick is mounted on a location that may multiply the value of a shock (ex. On an arm), the setting should be lowered to "Weak" or "Very Weak".</p> <p>-Front wheel-driven wheelchairs are less affected by this factor than back wheel-driven ones.</p>	Off	Always deactivated
		Manual	(De) activated manually by user.
		On	Always activated

Compensation Factor

20.6

Setting	Description	Parameters	
Compensation factor	Lowers forward/backward (Y) driving speed on rough terrain. Wheelchair type and weight have an impact on this factor. - Heavy loaded wheelchairs may need to lower the setting to Weak. - Light wheelchairs may need to increase the setting to Strong.	Very weak	Almost no slow down.
		Weak	Slows down less compared to Normal.
		Normal	Default setting
		Strong	Slows down more compared to normal.
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 from overcoming 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

Setting	Description	Parameters	
(De) activation Pattern	<p>Active if compensation mode is set to Manual.</p> <p>To activate/deactivate: nudge the joystick Forward + Backward + Forward.</p> <ul style="list-style-type: none">- Agile users may be able to execute this pattern quite quickly.- Set this parameter according to the agility of the user.- Caution: "Slow" may cause the wheelchair to drive while executing the pattern.	Fast	Fast executing speed.
		Normal	Normal executing speed.

Dealer Assistance

21.1

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

21.2

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) button.

Have the user test all positions of the All-Round Heavy Duty Joystick:

- Are the All-Round Heavy Duty Joystick and switches within easy reach?
- Can the user safely operate the wheelchair with minimal effort?
- Is the placement of the joystick and buttons in an optimal position for the user?

If needed, adjust the All-Round Heavy Duty Joystick to the proper position.

Explain to the customer possible problems and how to address them.

Conditions Of Use

21.3

The All-Round Heavy Duty 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 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

22.1

- Clean all parts of the All-Round Heavy Duty Joystick on a regular basis (monthly) or when needed.
- Gently remove dust and dirt with a damp cloth.
- Use only non-aggressive household cleaning agents.

WARNING

Do not immerse in water or use excessive amounts of liquid. Do not apply additional lubricants to the moving parts.

Monthly Check

22.2

Monthly or when 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.

Maintenance Free

22.3

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

Product Description & Code

23.1

- All-Round Heavy Duty Joystick Set (IDM-HD)
- Heavy Duty Joystick Mount Clamp (IDM-HDMT)

Joystick Connectors

23.2

- 1/8" (3.5mm) mono jack in on/off
- 1/8" (3.5mm) mono jack in mode
- Mini USB
- SUB D9 connector with cable

Dimensions

23.3

- All-Round Heavy Duty Joystick 6.89in x 3.38in x 3.38inin (H x W x D)

Required Force

23.4

- All-Round Heavy Duty Joystick: 650g. (1.43lbf)

EMC Requirements

23.5

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.

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

Installation Date: _____

Dealer: _____

Dealer Stamp:



Serial Number Sticker:





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