

LiNX[®] Control System

REM500, Supplement to power wheelchair user manual

en

Remote

User Manual



This manual **MUST** be given to the user of the product.
BEFORE using this product, this manual **MUST** be read and saved for future reference.



Yes, you can.

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1 General

1.1 About This Manual

This document is a supplement to the mobility device's documentation.

For more information about the product, for example product safety notices and product recalls, contact your local Invacare representative. Before reading this manual, make sure you have the latest version. You will find the latest version on the Invacare website. For the address and website see the back page of this manual.

1.2 Symbols

Signal symbols and/or words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. See the information below for definitions of the signal words.



DANGER!

-Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING!

-Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION!

-Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage or minor injury or both.



-Indicates a hazardous situation that could result in damage to property if it is not avoided.



Gives useful tips, recommendations and information for efficient, trouble-free use.



This symbol identifies a list of various tools, components and items which you will need in order to carry out certain work.

1.3 Prescription Statement

Per 21 CFR 801.109(b)(1) the device is labeled for prescription use only.



CAUTION!

Federal Law (USA) restricts this device to sale by or on the order of a licensed physician.

1.4 Intended Use



Refer to the user manual for the power wheelchair base and for the seating system for the intended use of the mobility device.

1.4.1 Intended Use—REM 500

The LiNX REM500 is a remote of the LiNX family, intended to allow powered wheelchair users to interact with the LiNX system. The REM500 remote allows control of drive, actuator, lighting and connectivity functions. It provides an input for battery charging and contains a Bluetooth interface for connectivity functions only (HID and diagnostics). It is not possible to control the wheelchair via Bluetooth. The REM500 remote does not contain a joystick and is intended to be used with a separate input source, including alternative drive input controls such as head controls. It is capable of providing information about the active user input.

1.5 Indication for Use

Refer to the user manual for the base and for the seat for the indication for use for the mobility device.

1.6 Service Life

The expected service life is five years, presuming the product is used daily and in accordance with safety instructions, maintenance instructions and intended use as stated in this manual.

2 Safety

2.1 General Guidelines

-  The safety section contains important information for the safe operation and use of this product. Refer to the wheelchair base and seating system user manuals for additional safety and operation information.

 **WARNING!**
Risk of Death, Injury or Damage
 Improper use of this product may cause injury or damage.
 -If you are unable to understand the warnings, cautions or instructions, contact a health care professional or provider before attempting to use this equipment.
 -DO NOT use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as user manual, service manuals or instruction sheets supplied with this product or optional equipment.

 **WARNING!**
Risk of Death, Injury or Damage
 Continued use of the product with damaged parts could lead to the product malfunctioning and causing injury to the user and/or caregiver.
 -Check all product components and carton for damage and test components before use. In case of damage or if the product is not working properly, stop using the product and contact a qualified technician or Invacare for repair.

 **WARNING!**
Risk of Injury, Damage or Death
 Improper setup, service, adjustment or programming may cause injury, damage or death.
 -Qualified technician MUST set up, service and program the wheelchair.
 -DO NOT allow non-qualified individuals to perform any work or adjustments on the wheelchair.
 -DO NOT set up or service the wheelchair while occupied except for programming or unless otherwise noted.
 -Turn off power BEFORE adjusting or servicing the wheelchair. Note that some safety features will be disabled.
 -Ensure all hardware is securely tightened after setup, service or adjustments.
 -Warranty is void if non-qualified individuals perform any work on this product.

 **DANGER!**
Risk of Death, Serious Injury, or Damage
 Continued use of a wheelchair that is not set to the correct specifications may cause erratic behavior of the wheelchair, resulting in death, serious injury, or damage.
 -Performance adjustments should only be made by professionals of the healthcare field or persons fully conversant with this process and the driver's capabilities.
 -After the wheelchair has been set up/adjusted, check to make sure that the wheelchair performs to the specifications entered during the set up procedure. If the wheelchair does not perform to specifications, turn the wheelchair Off immediately and reenter set up specifications. Contact Invacare, if wheelchair still does not perform to correct specifications.

 **WARNING!**
Risk of Injury or Damage
 Failure to remove the LiNX Access Key (LAK) from the wheelchair after programming is complete may lead to unauthorized access to the wheelchair settings.
 -Always remove the LAK from the wheelchair when programming is complete.

 **WARNING!**
Risk of Serious Injury or Damage
 Use of unapproved accessories may result in serious injury or damage.
 -Invacare products are specifically designed and manufactured for use in conjunction with approved Invacare accessories. Unapproved accessories have not been tested by Invacare and are not recommended for use with Invacare products.
 -DO NOT use unapproved accessories.
 -To obtain approved Invacare accessories, contact Invacare by phone or at www.invacare.com.

 **WARNING!**
Risk of Serious Injury or Damage
 Loss of power due to loose electrical connections could cause the wheelchair to suddenly stop, resulting in serious injury or damage.
 -ALWAYS ensure all electrical connections are tightly connected so they don't vibrate loose.



WARNING!

Risk of Injury or Damage

Connector pins on the cables connected to the power module can still be live even when the system is off. Human contact or other materials may cause an electrical short. To prevent injury or damage due to electrical shorts:

- Cables with live pins should be connected, restrained or covered (with non-conductive materials) so they are not exposed to human contact or materials that could cause electrical shorts.
- When cables with live pins have to be disconnected, (for example, when removing the bus cable from the remote for safety reasons) make sure to restrain or cover the pins (with non-conductive materials).



DANGER!

Risk of Death, Serious Injury, or Damage

Corroded electrical components due to water, liquid exposure, or incontinent users can result in death, serious injury, or damage.

- Minimize exposure of electrical components to water and/or liquids. Electrical components damaged by corrosion **MUST** be replaced immediately.
- Wheelchairs that are used by incontinent users and/or are frequently exposed to water/liquids may require replacement of electrical components more frequently.



DANGER!

Risk of Death, Serious Injury, or Damage

Lighted cigarettes dropped onto an upholstered seating system can cause a fire, resulting in death, serious injury, or damage.

Wheelchair occupants are at particular risk of death or serious injury from these fires and resulting fumes because they may not have the ability to move away from the wheelchair.

- DO NOT smoke while using this wheelchair.



WARNING!

Risk of Injury, Damage or Death

Improper routing of cable(s) may cause a tripping, entanglement or strangulation hazard that may result in injury, damage or death.

- Ensure all cable(s) are routed and secured properly.
- Ensure there are no loops of excess cable extending away from the chair.
- Close supervision and attention is needed when operating the wheelchair near children, pets or people with physical/mental disabilities.



WARNING!

Risk of Injury, Damage or Death

Pinched or severed cable(s) may be a shock or fire hazard and may cause injury, damage or death.

- Ensure all cable(s) are routed and secured properly.
- Inspect cable(s) periodically for proper routing, pinching, chafing or other similar wear.
- Replace any damaged cables immediately.



Risk of Damage to the Mobility Device

There are no user-serviceable parts inside any case.

- Do not open or disassemble any case.



As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection. Invacare recommends working with a qualified rehab technology provider, such as an ATP, (Assistive Technology Professional).

The information contained in this document is subject to change without notice.

2.1.1 Live Edit Guidelines



WARNING!

Risk of Injury or Damage

Rapid and unfamiliar parameter changes may lead to injury or damage.

- Qualified technicians should make the user aware that in live edit mode, the performance of the wheelchair will be changed instantly.
- After programming in live edit mode, the wheelchair performance should be checked for driving safety. Ensure the wheelchair performance is appropriate to the capabilities and needs of the user.
- Users should use caution when driving the wheelchair while operating in Live Edit mode.
- Users should use care to stay in the programming range.
- Always perform live edit changes in a safe environment.



Live edit adjustments are best done in an unrestricted but safe area. The presence of an attendant is recommended. The Bluetooth® range of the programmer is 33 ft (10 m). If the wheelchair drives out of range of the Bluetooth programmer, the programmer must reconnect before the parameters can be changed.

2.1.2 Usage Guidelines



DANGER!

Risk of Death, Serious Injury, or Damage

Misuse of the wheelchair may cause component failure and/or cause the wheelchair to start smoking, sparking, or burning. Death, serious injury, or damage may occur due to fire.

- DO NOT use the wheelchair other than its intended purpose. If the wheelchair starts smoking, sparking, or burning, discontinue using the wheelchair and seek service IMMEDIATELY.



WARNING!

Risk of Injury, Damage or Death

Misuse of wheelchair may result in injury, damage or death.

- Use care when operating the wheelchair on roads, streets or other roadways.
- Use care when operating the wheelchair when vision is impaired by poor lighting such as unlit rooms, during the night or similar situations.
- ALWAYS be aware of motor vehicles and your surroundings.



WARNING!

Risk of Injury, Damage or Death

Use of the wheelchair while judgment or ability is impaired may result in injury, damage or death.

- DO NOT operate the wheelchair under the influence of alcohol, medications or other substances that impair judgment or function.
- Changing medications may affect your ability to operate the wheelchair. Discuss the impact on your ability to operate the wheelchair with a health care professional when changing medications.
- DO NOT operate the wheelchair under conditions where judgment or function may be impaired. This may include but is not limited to lack of sleep or poor sight.
- Always be aware of your surroundings.



WARNING!

Risk of Injury, Damage or Death

Loss of traction or stability on rough or unstable terrain may cause injury, damage or death.

- Use care when operating the wheelchair on rough or unstable terrain. This would include but is not limited to areas of rock, mulch, mud, uneven pavement, roots and similar conditions.
- Be aware of your surroundings and conditions that might affect the ability to operate the wheelchair.



WARNING!

Risk of Serious Injury

Impacting objects in the surrounding environment can cause serious injury.

- When maneuvering the wheelchair around, ALWAYS have assured cleared distance with all objects in environment.



CAUTION!

Risk of Injury

The remote module can get hot when exposed to strong sunlight for long periods.

- Do not leave mobility device in direct sunlight for long periods.



DANGER!

Risk of Death, Serious Injury, or Damage

A malfunctioning joystick could cause unintended/erratic movement resulting in death, serious injury, or damage.

- If unintended/erratic movement occurs, stop using the wheelchair immediately and contact a qualified technician.

2.1.3 Setup and Service Guidelines



DANGER!

Risk of Death, Serious Injury, or Damage

Use of incorrect or improper replacement (service) parts may cause death, serious injury, or damage.
-Replacement parts **MUST** match original Invacare parts.
-ALWAYS provide the wheelchair serial number to assist in ordering the correct replacement parts.



WARNING!

Risk of Serious Injury

Sharp edges can cause serious injury.
-Be mindful that some parts may have sharp edges. Use caution when encountering these sharp edges.



WARNING!

Risk of Serious Injury

Hot surfaces can cause severe burns.
-Be mindful of potential hot surfaces and avoid touching.



WARNING!

Risk of Death, Serious Injury, or Damage

An improperly connected joystick could cause loss of power, resulting in death, serious injury, or damage.
-Ensure the joystick is securely connected to controller.



CAUTION!

Risk of Damage

Operating the wheelchair in rain or dampness may cause the wheelchair to malfunction electrically and mechanically or prematurely rust or may damage the upholstery.
-DO NOT leave the wheelchair in a rain storm of any kind.
-DO NOT use the wheelchair in a shower.
-DO NOT leave the wheelchair in a damp area for any length of time.
-Check to ensure that the battery covers are secured in place, joystick boot is NOT torn or cracked where water can enter and that all electrical connections are secure at all times. DO NOT use if the joystick boot is torn or cracked. If the joystick boot becomes torn or cracked, replace IMMEDIATELY.

3 Electromagnetic Compatibility (EMC) Information

3.1 Electromagnetic Compatibility

-  Refer to the power wheelchair base and seating system user manuals for more electromagnetic compatibility information for your mobility device.

Dynamic Controls Electronic Controllers have been tested on typical, representative vehicles to confirm compliance with the following appropriate EMC standards:

- USA: ANSI/RESNA WC-2:2009 Sec 21
- Europe: EN12184:2014, ISO7176 - 21:2009

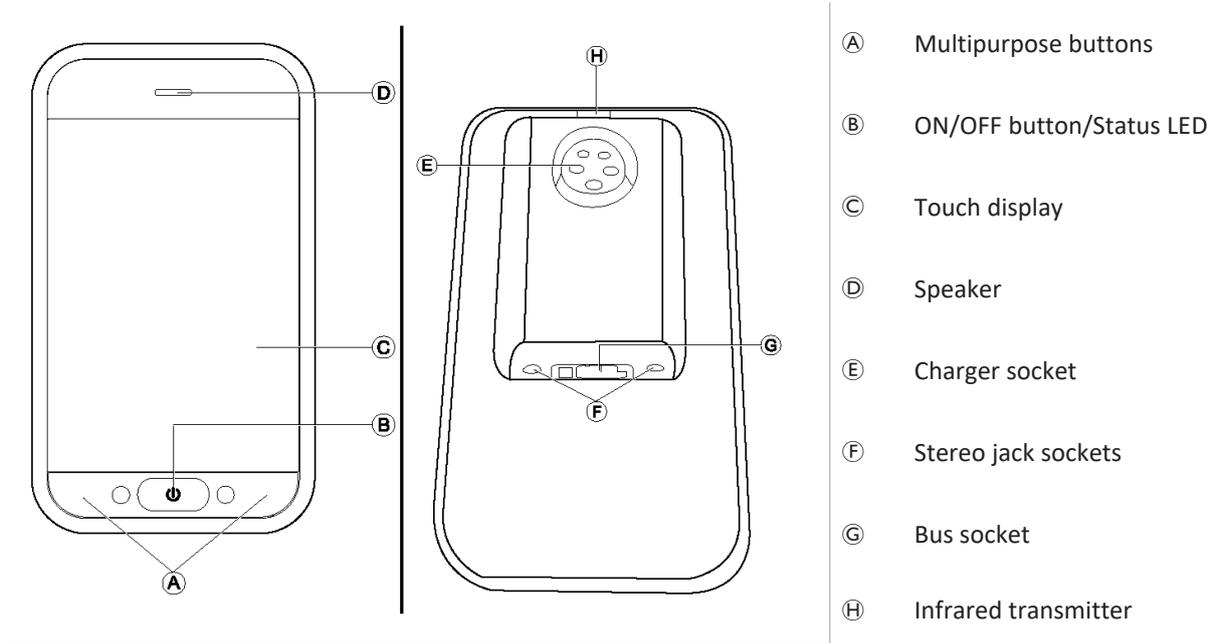
National and international directives require confirmation of compliance on particular vehicles. Since EMC is dependent on a particular installation, each variation must be tested. The guidelines in this section are written to assist with meeting EMC requirements in general.

3.1.1 Minimizing Emissions

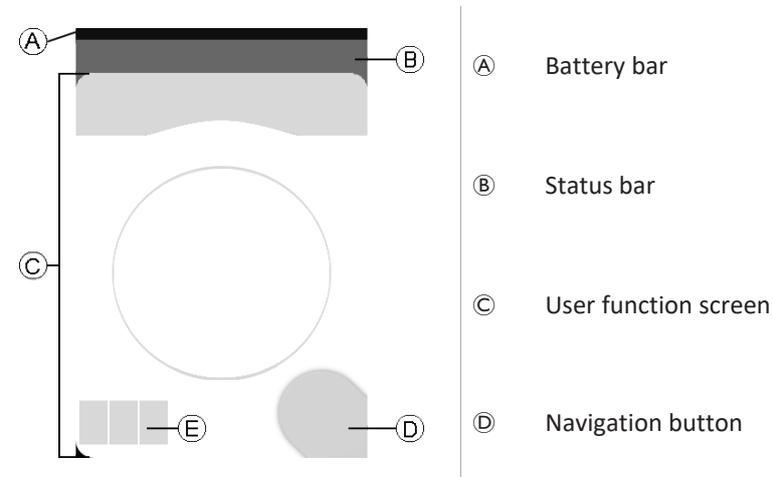
To minimize emissions and to maximize the immunity to radiated fields and ESD, follow the wiring recommendations in the LiNX System Service Manual.

4 Components

4.1 User Interface—REM500



4.2 Screen Composition Overview

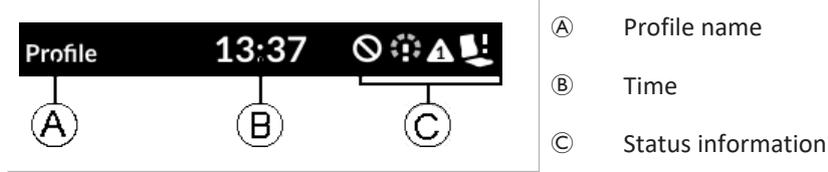


4.2.1 Battery Indicator

The battery indicator provides a graphical display of the battery's current state of charge and, when a battery charger is connected, the charging status.

	Battery bar displays green when state of charge is between 60 and 100%.
	Battery bar displays orange when state of charge is between 20 and 59%.
	Battery bar displays red when state of charge is less than 20%.
	Charging.

4.2.2 Status Indicator



4.2.3 Profile Name

The profile name can be set only by the provider.

4.2.4 Time

The time displays as a 12- or 24-hour clock. It is set using the coordinated universal time (UTC) and an offset based on the location (country) of the user. The UTC is acquired when a system is connected to a programming and diagnostic tool. The country-based offset is set through the remote module’s status screen. For more information, refer to 6.1.6 *Menu Screen, page 26*.

4.2.5 Status Information

Icons indicate the current state of the LiNX system.

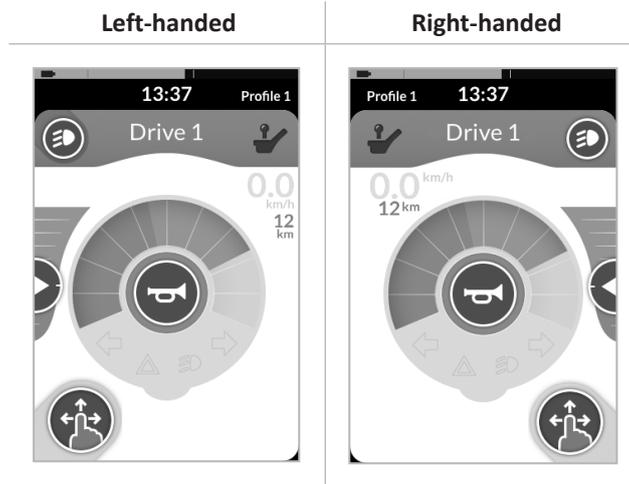
	<p>Indicates a drive lock-out is active. A drive lock-out is a state that prevents the wheelchair from being driven. Refer to 6.15.3 <i>Speed Reduction and Seating Function Inhibits, page 54</i> for more information about lock-outs and slow-downs.</p>
	<p>Indicates a drive slow-down is active. A drive slow-down is a state that prevents the wheelchair from being driven at the standard speed for safety reasons. Instead, the wheelchair is allowed to drive at a reduced speed for the duration of the active drive slow-down. Refer to 6.15.3 <i>Speed Reduction and Seating Function Inhibits, page 54</i> for more information about lock-outs and slow-downs.</p>
	<p>Indicates a fault occurred. The number indicates the type of fault. Refer to 8.1 <i>Fault Diagnosis, page 84</i> for more information about fault codes.</p>
	<p>Indicates a seating lock-out is active. A seating lock-out is a state that prevents the wheelchair’s seating from being operated. Refer to 6.15.3 <i>Speed Reduction and Seating Function Inhibits, page 54</i>, for more information about lock-outs and slow-downs.</p>
	<p>Indicates Bluetooth connectivity is disabled. Refer to 6.19 <i>Disabling Bluetooth, page 78</i> for more information about disabling Bluetooth.</p>

Three battery alarms display on the right side of the status bar. For more information, refer to 6.20.1 *Battery Alarms, page 79*.

4.3 User Function Screen Overview

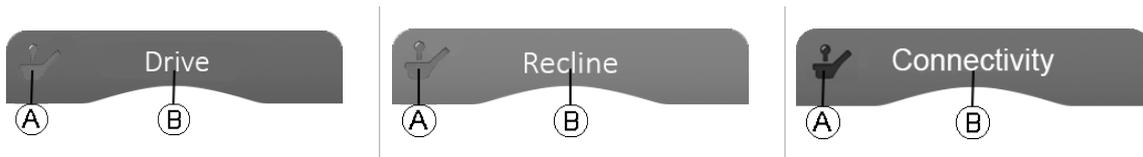
4.3.1 Left- or Right-Handed

With the LiNX system, it is possible to adjust the function screens for left-handed or right-handed users.



 In this manual, only right-handed function screens display. All buttons have the same functions for right- and left-handed users, so the descriptions can be used for left-handed users, too.

4.3.2 Function Screen Header



The function screen type is identified by the color of the function screen header:

- green indicates a drive screen
- orange indicates a seating screen
- blue indicates a connectivity screen
- purple indicates a utility screen

The icon **A** indicates the type of primary input.

The text **B** is programmable by your provider and can be used to name the function.

Indicator	Meaning
	REM400 REM500
	REM2xx
	ACU
	CREM CREM-LF

Indicator	Meaning
	Head Array
	Sip and Puff
	User Switch

4.3.3 Drive Screen



Drive screens can be preset with different maximum speeds to fit your needs and your environment. For example, a drive screen with a preset lower maximum speed can be used indoors, and a drive screen with a preset total maximum speed can be used outdoors. In addition, you can also control the preset maximum speed. Refer to *6.4.2 Maximum Speed Control, page 39*. With a drive screen, you can also sound the horn and operate the lighting functions. Refer to *6.10 Operating the Horn, page 47* and to *6.7 Operating the Lights, page 44*.

The function information displays either the latched driving mode (refer to *6.5 Using Latched Driving Mode, page 39* or the Gyro indication (refer to the following table).

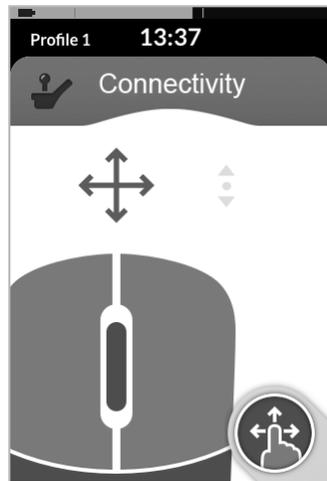
No Symbol	No Gyro is connected to the system or enabled for drive function.
	Gyro is disabled.
	Gyro is enabled.

4.3.4 Seating Screen



Seating screens are used to operate the seating functions. Refer to 6.15.1 *Through Seating Screens, page 50*.

4.3.5 Connectivity Screen



Connectivity screens allow you to communicate with external devices. The connectivity function included on your remote is a mouse mover. The mouse mover allows you to control the cursor on a PC or laptop screen with a user input on the wheelchair, such as the joystick on the remote module or buttons connected via control inputs. For more information about Connectivity screens and how to use them, refer to 6.16 *Using Connectivity Screens, page 55*.

4.3.6 Utility Screen



Fig. 4-1 Example three-quadrant (3Q) navigation utility screen

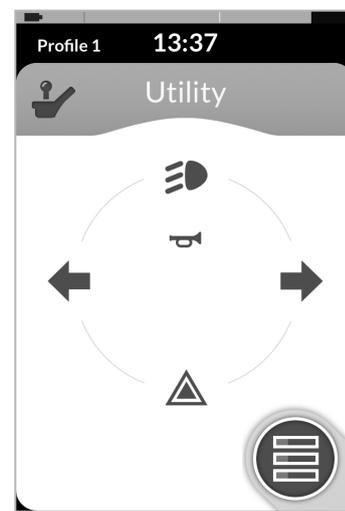
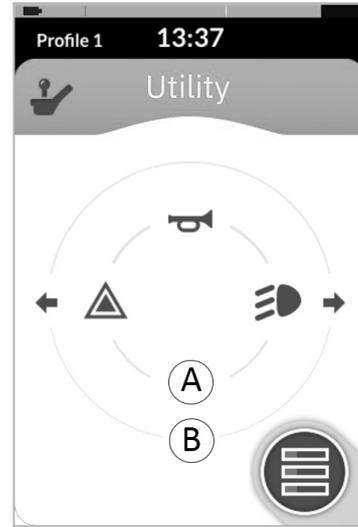


Fig. 4-2 Example four-quadrant (4Q) navigation utility screen

The utility screen allows you to operate system controls (such as the lighting functions and the horn), as well as control outputs with external inputs. The Utility screen function is suitable for both three-quadrant (3Q) and four-quadrant (4Q) inputs. The utility screen allows you to operate two controls/outputs per quadrant, according to the duration the user input is activated:

- Ⓐ Short/Momentary press
- Ⓑ Long press



By default, this function is enabled only for chair configurations with an external control input that will not allow the control of the horn or lights. Contact your provider to change the configuration and to set your desired operations. For an example of how to use a utility screen in daily use, see 6.11 *Operating Lighting Functions and the Horn via the Utility Function Card*, page 47.

4.3.7 Arrangement

		Function Screens					
		F1	F2	F3	F4	F5	F6
Profiles	P1						
	P2						
	P3						
	P4						

User function screens are arranged in rows of profiles. Each profile can hold user function screens, which can be of the same type. For example, a profile can include all drive screens or can be a mixture of drive, seating and connectivity screens. The maximum number of function screens across all profiles is 40. For example, a configuration with five profiles can hold up to eight function screens.

4.4 Navigation Button

Depending on the configuration of the remote module and the user’s needs, the navigation button displays on the bottom-left or bottom-right of the screen.

When activated, the navigation button changes color from grey to blue.

The navigation button has two important functions:

1. A visual indication of the configured interaction mode.



Configured for swipe-and-tap actions

This means swiping and tapping the screen activates different functions.



Configured for tap actions

This means only tapping the screen activates different functions. Swipe inputs are ignored.



For more information about changing the interaction mode, refer to 6.1.6 *Menu Screen*, page 26.

2. A navigation function, depending on context and activation duration. For example, while viewing an active user function screen, a short press on the Navigation button opens the screen preview display. Refer to 6.2 *Navigating User Function Screens*, page 28. A long press opens the status screen. Refer to 6.1.6 *Menu Screen*, page 26.

External inputs can also be used to interact with the system. Refer to 6.18 *Secondary Inputs*, page 67.

4.5 Labels on the Product

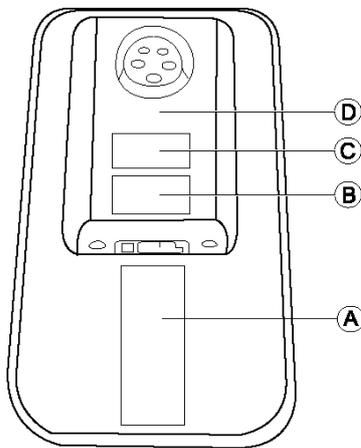


Fig. 4-3 Rear side of the DLX-REM500

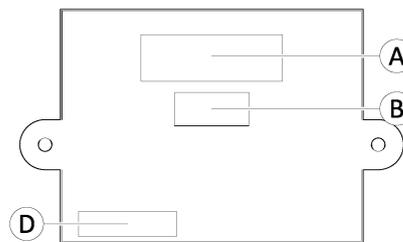
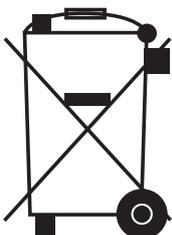


Fig. 4-4 Rear side of the DLX-IN500 input module

4.5.1 Explanation of Label Symbols



Waste Electrical and Electronic Equipment Directive (WEEE) symbol.

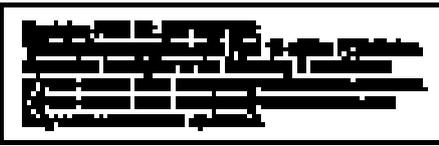
This product has been supplied from an environmentally aware manufacturer. This product may contain substances that could be harmful to the environment if disposed of in places (landfills) that are not appropriate according to legislation.

- The ‘crossed out wheeled bin’ symbol is placed on this product to encourage you to recycle wherever possible.

- Please be environmentally responsible and recycle this product through your recycling facility at its end of life.

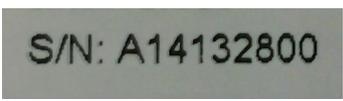
4.5.2 Labels on Adaptive Switch Labs Parts

Labels of Adaptive Switch Labs parts are located either on the left rear side of the part (head arrays) or on the interface box. Depending on the part, not all labels are available.

	<p>Product label (head array) containing:</p> <ul style="list-style-type: none"> • (A): Adaptive Switch Labs logo • (B): Serial number
	<p>Product label (interface boxes) containing:</p> <ul style="list-style-type: none"> • (A): Model number • (B): Serial number • (C): Adaptive Switch Labs logo • (D): Adaptive Switch Labs contact information
	<p>Product label containing:</p> <ul style="list-style-type: none"> • Adaptive Switch Labs Bluetooth registration • Information about conditions

4.5.3 Serial Number and Date of Manufacture

The serial number on a Dynamic Controls product provides both the date of manufacture as well as a unique serial number for the particular module.

	<p>The format, as shown above, is MYynn timer, where:</p> <ul style="list-style-type: none"> • M is for the month of manufacture, using the letters A to L (A = Jan, B = Feb, C = Mar, etc.), • YY is the year of manufacture, • nnnnnn is a unique six-digit sequential number. <p>For example, the remote serial number begins with A14. This indicates the remote was manufactured in January 2014. Its unique sequential value is 132800.</p>
---	--

5 Setup

5.1 Connecting the Remote

**CAUTION!****Risk of Unintended Stops**

If the plug of the remote cable is broken, the remote cable may come loose while driving. The remote could suddenly switch off when losing power. This results in an unintended stop.

-Always check the plug of the remote for damage. Contact your provider immediately in case of a damaged plug.

**Risk of Damage to the Remote**

The remote plug and connector socket fit together in one way only.

-Do not force them together.

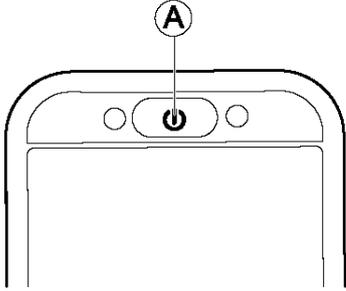
1. Lightly push to connect the plug of the remote cable and the connector socket. The plug must lock in place with an audible click.

6 Usage

6.1 Operating the Remote

6.1.1 Powering Up the Remote

1. Press the ON/OFF key **A**.



The Start screen lights up.



The status LED inside the ON/OFF button lights up green if no fault is present at power up. After a few seconds, the display is ready to use.

If there is a fault with the system when powering up, the status LED indicates the fault with a series of red flashes, and a fault icon displays in the status bar. For more information about fault indication, refer to *1.1 Fault codes and diagnosis codes, page 1*.

6.1.2 Powering Down the Remote

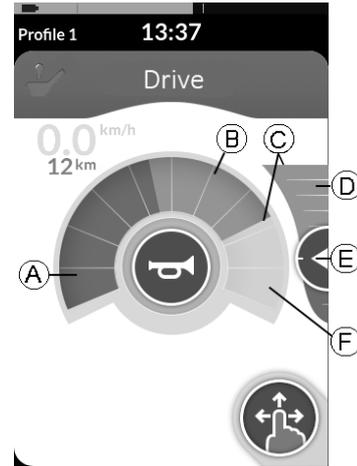
1. Press the ON/OFF key **A**.



The shutdown screen displays.

After a few seconds, the remote powers down.

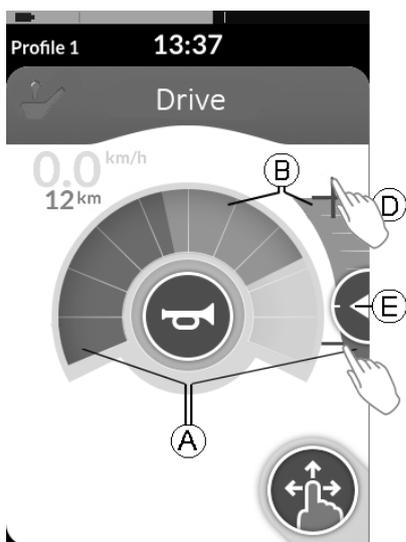
6.1.3 Maximum Speed Control



The speedometer is divided into 10 segments that represent the speed range of the wheelchair. Each segment can display in one of three colors.

- The green section **A** displays the speed range, determined by the set point **E** on the speed slider **D**.
- The yellow section **B** displays the preset maximum speed range **C**, depending on the programming of the drive screen.
- The grey section **F** indicates the total maximum speed range of the wheelchair is not reached in the depending drive function.

In each drive screen, you can control the preset maximum speed depending on your needs.



1.

Swipe-and-Tap Mode	Tap Mode
Slide the set point (E) up or down.	Tap the top or bottom of the speed slider (D). Plus and minus symbols indicate where to tap.

The proportion of the green sections (A) and yellow sections (B) on the speedometer and the speed slider correspond to the position of the set point (E).



As soon as you start driving, the speed slider and Navigation button disappear from the display. The current speed on the speedometer, if it is enabled.

6.1.4 Menu Screen Controls

Buttons

Buttons are used to perform an action, such as  to close the screen.

Currently we use the following buttons on our remotes:

Symbol	Action
	Close the screen.
	Return to the previous screen.
	Open the next screen/level. Note this button displays only if a next menu entry exists.
	Increase or decrease the clock hour or minute value.



Fig. 6-1 Example of a button

1. Tap the button (A) to perform the action.

Switches

Switches are used to change between two different states, such as **ON** and **OFF**. The current state displays on the screen.



Fig. 6-2 Example of a switch

1. Tap on the switch (A) to change the state.

Sliders

Sliders are used to continuously change the value of a setting .

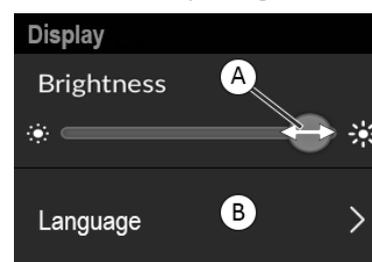


Fig. 6-3 Example of a slider

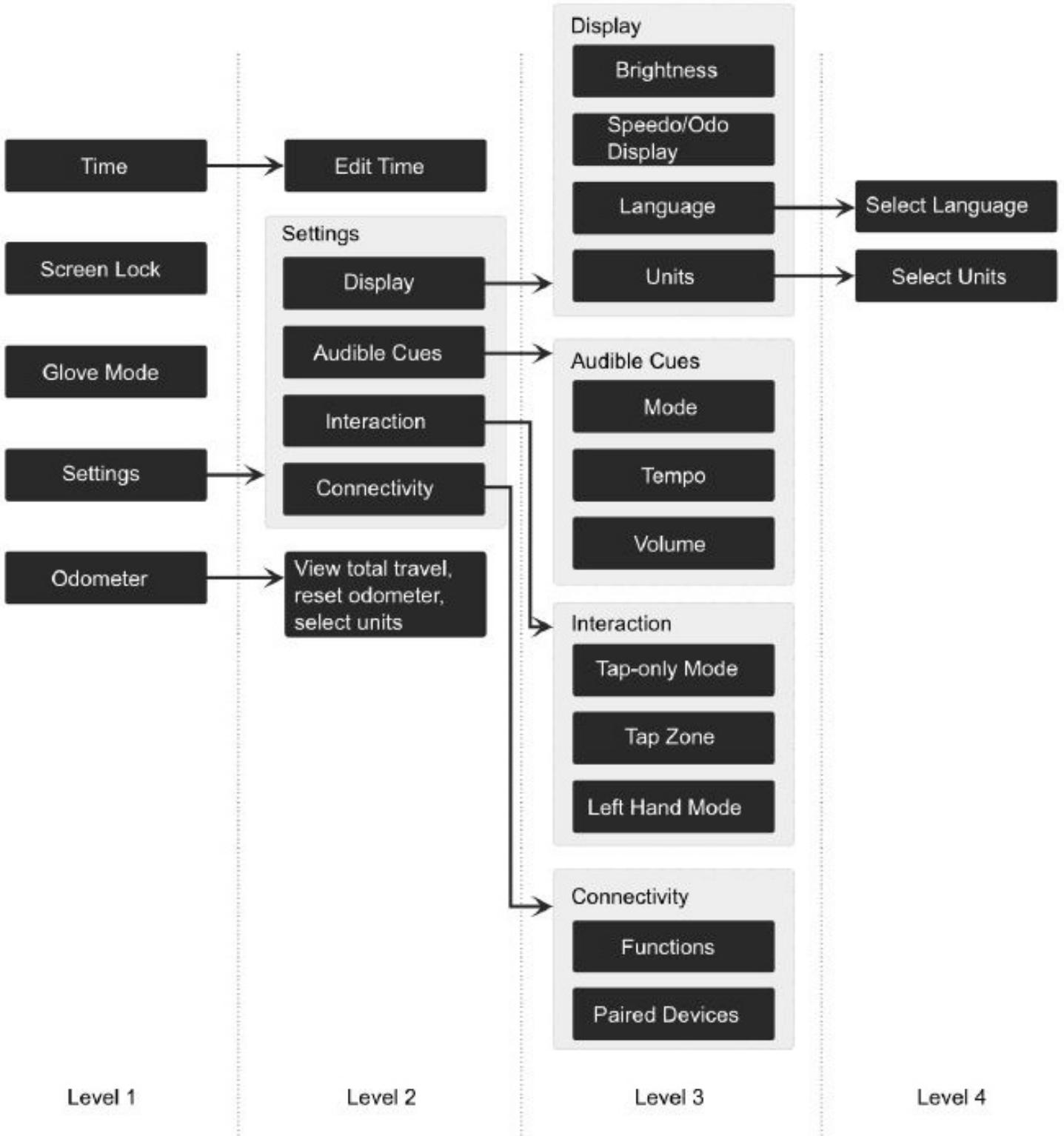
1. Tap and hold the circle (A) within the slider.
2. Swipe the circle to the right to increase the value. Swipe the circle to the left to decrease the value.

6.1.5 Menu Screen Settings

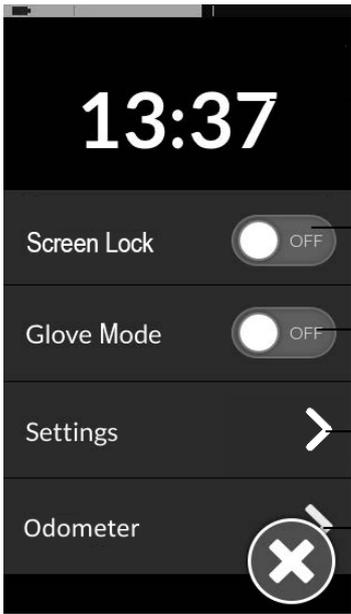
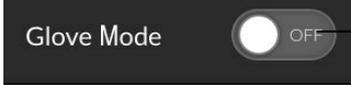
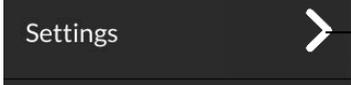
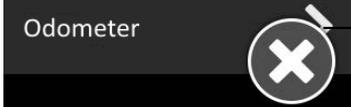
The remote can be configured from the Menu screen. The Menu screen offers different settings to customize the display.

Menu Structure

The menu structure is shown below. Level 1 of the menu structure is on the left, and the sub-menus are in levels 2-4 to the right. For example, to adjust the brightness of the display, select Settings > Display > Brightness.

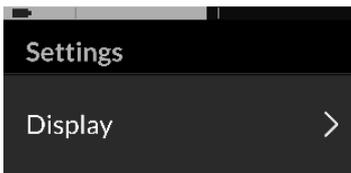
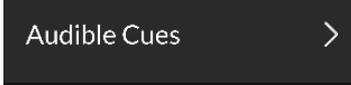
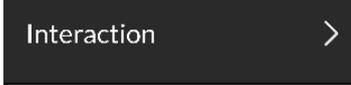


Menu Screen

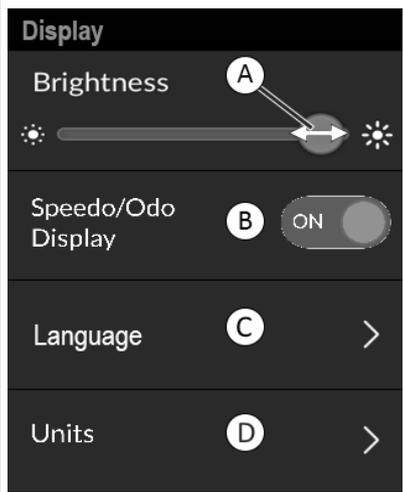
	Label	Entry	Function
	Ⓐ	Clock	View and edit the time.
	Ⓑ	Screen Lock	Activate the screen lock.
	Ⓒ	Glove Mode	Activate Glove Mode. During Glove Mode, the touch screen becomes more sensitive and allows user interaction with the screen while the user is wearing gloves.
	Ⓓ	Settings	Open the Settings menu.
	Ⓓ	Settings	Open the Settings menu.

Settings Menu

The Settings menu allows you to change settings in three different categories:

	Label	Entry	Function
	Ⓐ	Display	Open Display settings.
	Ⓑ	Interaction	Open Interaction settings.
	Ⓒ	Connectivity	Open Connectivity settings.
	Ⓓ	Back	Return to the previous level.
	Ⓓ	Back	Return to the previous level.

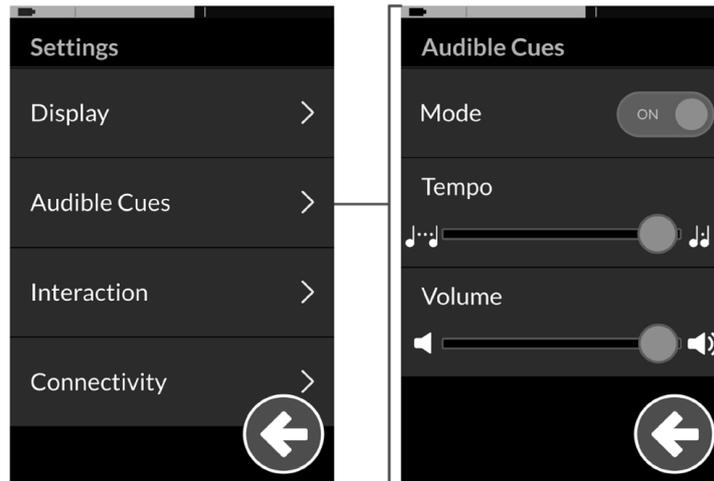
Display

	Label	Entry	Function
	A	Brightness	Decrease or increase screen brightness.
	B	Language	Change the Menu screen user interface to the selected language.

Interaction

	Label	Entry	Function
	A	Tap-Only Mode	Toggle between tap mode and swipe-and-tap mode
	B	Tap Zone	<p>Define the area used for detecting a tap action on the touch screen. It sets the area around the point of initial contact, within which a tap is recognized. Outside this area, further, continuous contact is considered a drag/swipe.</p> <p>Recommendation:</p> <ul style="list-style-type: none"> • Good dexterity → Low value (small tap zone) • Poor dexterity → High value (large tap zone) <p> This parameter does not change the area around fixed inputs, such as buttons or links. It is solely for the area around the first point of contact when tapping or swiping.</p>
	C	Left Hand Mode	Toggle between right-hand and left-hand usage of the remote. When the switch is set to ON, all user controls (for example, the Navigation button, speed slider, and lighting controls) are displayed and operable from the left-hand side of the screen.

Audible Cues



Audible cues are sounds played through the REM500 remote speaker in response to certain system events or navigation actions performed by the user. They are designed to help users understand what function or profile they are using and are especially beneficial for:

- users with impaired vision or users who cannot see the display
- users who want additional feedback from their actions without the need to constantly monitor the display

In addition to enabling audio cues, the user can also set the volume and the tempo. The tempo specifies the speed at which the audio cues are played.

To enable audible cues, as well as set the tempo and volume from the remote:

1. On the remote, open the Settings menu.
2. Tap the Audible Cues menu item.
3. Tap the Mode button to select On.
4. To set the tempo, move the slider to the left to slow the tempo or to the right to speed up the tempo.
5. To set the volume, move the slider to lower the volume or to the right to raise the volume. Note the volume must be set for each remote in your system.

Connectivity

For more information about connectivity settings, see [6.16.1 Connectivity Card Configuration, page 55](#).

6.1.6 Menu Screen

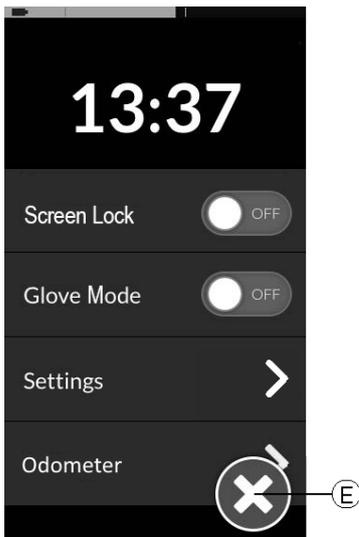
Opening the Menu Screen

1. Tap and hold the Navigation button (A) until the Menu screen displays.



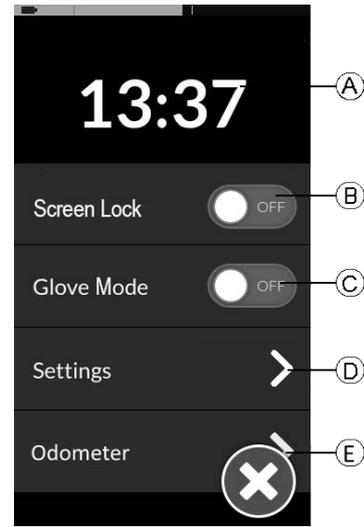
Closing the Menu Screen

1. Tap button (E) to close the Menu screen.



Configuring the Menu Screen

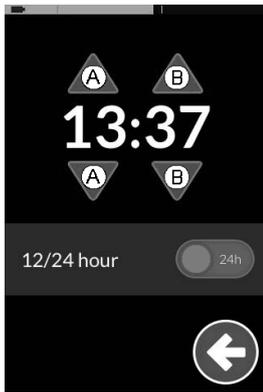
Configure the remote from the Menu screen.



	Entry	Function
(A)	Clock	View and configure the time. See 6.1.7 <i>Configuring the Time</i> , page 26.
(B)	Screen Lock	Activate the screen lock. See 6.1.8 <i>Locking the Screen to Avoid Unintentional Response</i> , page 27.
(C)	Glove Mode	Activate Glove Mode. The touch screen becomes more sensitive, allowing the user to interact with the screen while wearing gloves.
(D)	Settings	Open the Settings menu. For configuring settings, see 1.1 <i>Configuring Settings</i> , page 1.
(E)	Odometer	View total travel data, reset the odometer and select the units of measure. See 1.1 <i>Configuring Odometer</i> , page 1.

6.1.7 Configuring the Time

1. Tap the clock to edit the time display. In Time Edit mode, the clock displays a time picker where the hour and minute values can be changed independently.
2. Tap arrows (A) to adjust the hour value or (B) to adjust the minute value.



3. If necessary, tap switch © to toggle between a 12- and 24-hour clock.

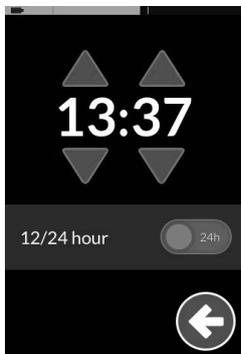
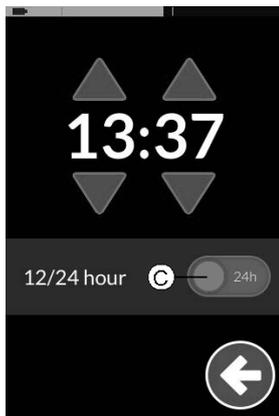


Fig. 6-4 24-hour clock

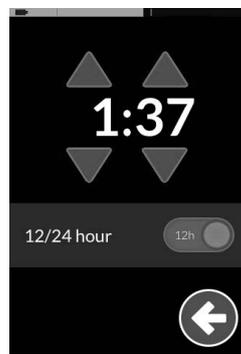
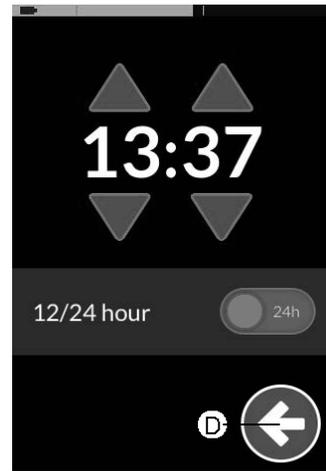


Fig. 6-5 12-hour clock

4. Tap button © to return to the Menu screen.

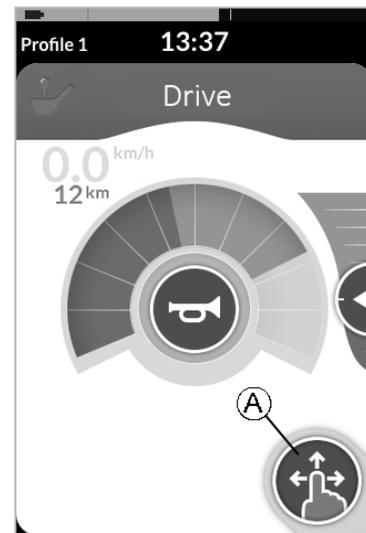


6.1.8 Locking the Screen to Avoid Unintentional Response

The screen lock is a security feature the user can activate to prevent other people accidentally or intentionally interfering with the touch screen. It also prevents any unintentional response caused by rain or other liquids that may land on the touch screen.

When the screen lock is activated, the screen continues to display normally, but it does not respond to any swipe or tap action.

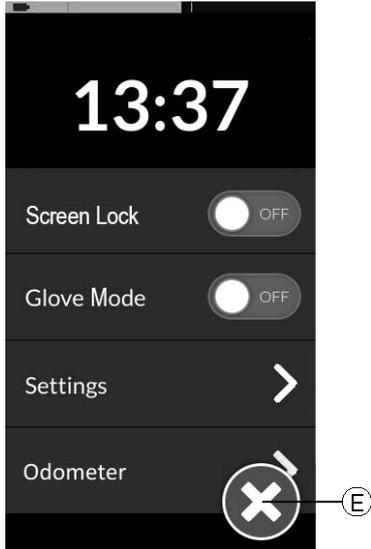
1. Tap and hold the Navigation button (A) to open the Menu screen.



2. Tap the Screen Lock switch (A) to lock the screen.



3. Tap button  to close the Menu screen.



Screen lock is activated.

-  Turn the remote off and on (power-cycle) to deactivate the screen lock.
-  Keep the touch screen dry to ensure proper response during use.

6.2 Navigating User Function Screens

User function screen navigation depends on how the Navigation button is configured. Refer to *4.4 Navigation Button, page 17*, for more information about possible configurations. You can locate and select a function screen by navigating through the programmed profiles and functions. Navigation depends on your needs and abilities and include the following methods:

- Direct navigation
- Indirect navigation

6.2.1 Function Change Inhibits

Function change blocked is a safety feature that prevents accidental driving or seating movements when:

- a function change should be carried out when the user performs an action on the active function.



The user must finish the current action to change the function. Otherwise, a function change blocked overlay displays.

6.2.2 Direct Navigation

To navigate profiles and functions, move from an active function screen to an adjacent function screen. The function screen immediately becomes active.

-  Direct navigation is not performed with an active user input (for example, the remote) because the active user input is used to operate only the active function screen (for example, moving the remote to drive); instead, the user navigates through the profiles and functions using the touch screen or other control inputs.

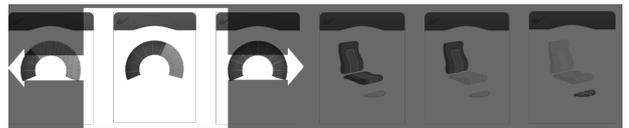
Using Swipe-and-Tap Mode

Changing Function Screens

1. Swipe over the screen or tap the Navigation button to open the screen preview display.



2. Swipe left or right to change function screens.

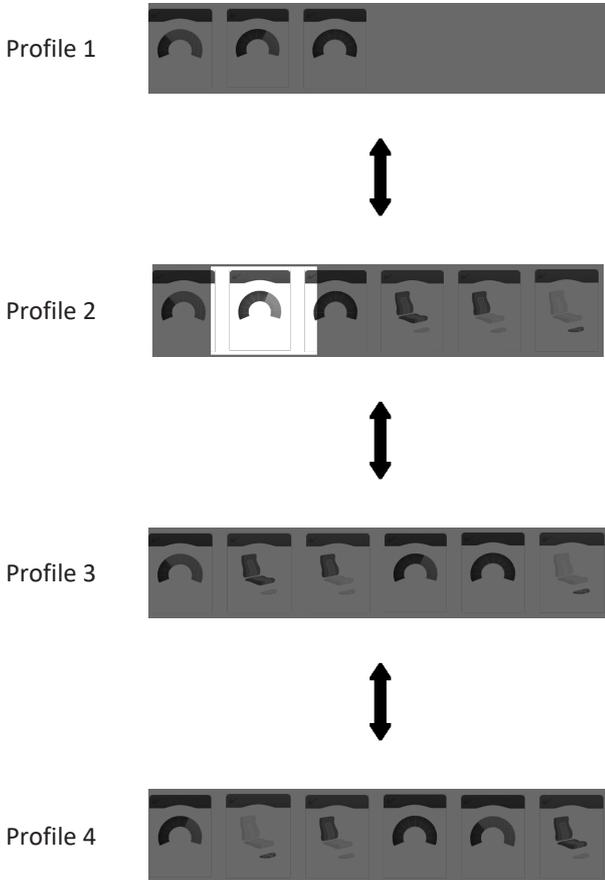


3. Tap the selected function screen, tap the Navigation button or wait several seconds to activate the selected function screen.

Changing Profiles

1. Swipe up or down to activate another profile.

The screen view focuses on the first function screen or the last-used function screen in the profile, depending on how the programming is set up.

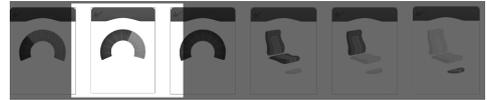


2. Swipe left or right to change function screens.
3. Tap the selected function screen, tap the Navigation button or wait several seconds to activate the selected function screen.

Using Tap Mode

Changing Function Screens

1. Tap the Navigation button (short press) to open the screen preview display.



2. Tap to the left or right of the screen in the middle of the display to change function screens.

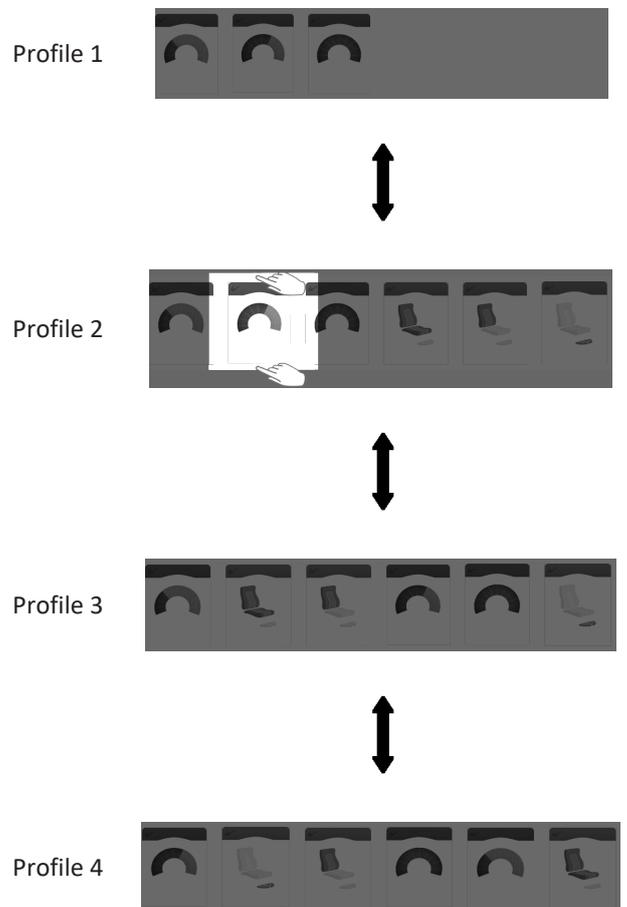


3. Tap the selected function screen, tap the Navigation button or wait several seconds to activate the selected function screen.

Changing Profiles

1. Tap above or below the function screen in the middle of the display to activate another profile.

The screen view focuses on the first function screen or the last-used function screen in the profile, depending on how the programming is set up.



2. Tap the Navigation button or wait several seconds to activate the selected function screen.

Using a Control Input (CI)

A control input can be any external switch, for example, an egg switch or a lipswitch, at a Sip and Puff Array.

1. Short press to change the function screen.
2. Long press to change the profile.

No screen preview displays. The function screens change and become active.

6.2.3 Indirect Navigation

Indirect navigation is the ability to navigate through different profiles and function screens, independently from the touch display, with the help of the active user input (for example, a head array).

By default, indirect navigation is disabled. Contact your provider if indirect navigation should be enabled.

Similar to the drive function, there is a difference between a three-quadrant (3Q) and a four-quadrant (4Q) operation.

User Input Type	Mapping for Menu Select	Mapping for Scan Select
4Q: <ul style="list-style-type: none"> • Joystick • Sip and Puff • Sip and Puff Head Array 	Left input: previous menu Right input: select Reverse input: next item in menu Forward input: previous item in menu	Left input: select Right input: select Reverse input: select Forward input: select
3Q: <ul style="list-style-type: none"> • Head Array • Four-Switch Proximity Array 	Left input: select Right input: next item in menu Reverse input: disabled Forward input (Four-Switch Proximity Array only): disabled	Left input: select Right input: select Reverse input: disabled Forward input (Four-Switch Proximity Array only): disabled

6.2.4 Menu Select

With menu select, you perform both the navigation and the function screen selection.

Menu select can be set to display in list view or in grid view.

Both menu select and menu scan provide two views to navigate the menus: list view and grid view. List view displays the menu items in one of two vertically selectable lists. One list displays the profiles, and the second displays the selected profile's functions. Grid view displays the menu items in a single grid and includes both the profiles (rows) and the functions (columns) at the same time. Grid view permits vertical and horizontal directions to simplify the transition between profiles and functions.



In list view, the number of functions in a single profile that can display is limited to 23. Any functions beyond this number are not selectable from the menu. These functions are still available through methods, such as control input or interaction with the touch screen. The 23-function limitation does not apply to grid view.

Controlling Navigation

The following sections show how to navigate the menus with menu select and menu scan in list and grid views. The means of navigating and selecting menu items depends on the navigation view (list or grid) and the user input configuration (4Q/3Q).

Menu Select List View			
	Action	Result	Mapping
4Q	Forward ¹	Menu Up: navigate to menu item above current	
	Reverse ¹	Menu Down: navigate to menu item below current	
	Left	Back	
	Right	Select menu item	
3Q	Left	Select menu item	
	Right	Menu Down: navigate to menu item below current	

¹ Auto-repeat is enabled. While the joystick remains deflected, the menu item highlight will continue to move through the menu items at a fixed rate.

Menu Select Grid View			
	Action	Result	Mapping
4Q	Forward	Menu Up: navigate to profile above current	
	Reverse	Menu Down: navigate to profile below current	
	Short left	Menu Left: navigate to function left of current	
	Long left	Exit menu	
	Short right	Menu Right: navigate to function right of current	
	Long right	Select function	

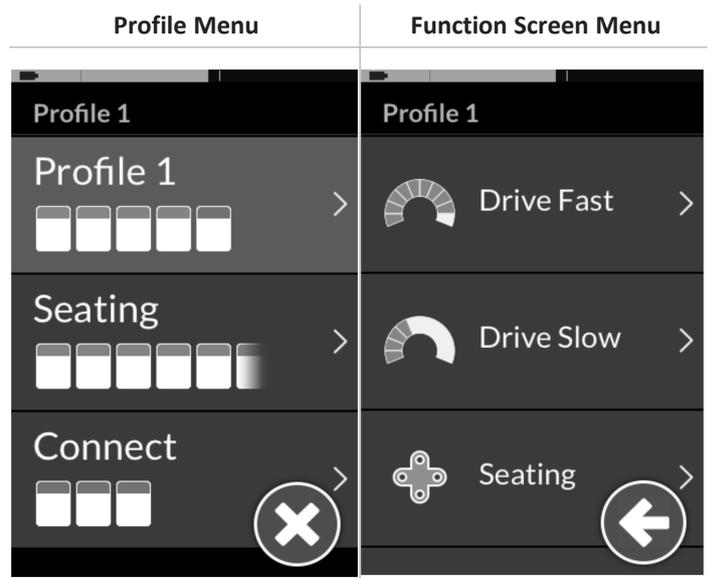
3Q	Short left	Select function	
	Long left	Exit	
	Short right	Menu Right: navigate to function right of current	
	Long right	Menu Down: navigate to profile below current	

Menu Scan Grid View			
	Action	Result	Mapping
4Q	Any quadrant ¹ or left, right ¹	Select menu item	
3Q	Any quadrant ¹ or left, right ¹	Select menu item	

¹ Depends on Scan Selection setting.

Menu Scan List View			
	Action	Result	Mapping
4Q	Any quadrant ¹ or left, right ¹	Select menu item	
3Q	Any quadrant ¹ or left, right ¹	Select menu item	

¹ Depends on Scan Selection setting.



To navigate the menus with menu select, select a profile from the Profile menu and then select a function screen from the Function Screen menu. Before making a selection, you can move within and between the menus (profile to function screen and vice versa) as necessary.

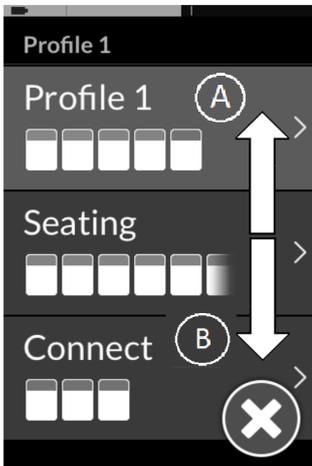
Navigation Entry

Indirect navigation is started via an external switch (for example, an egg switch) by default. Indirect navigation can be started without an external switch via **Stand by select**. Stand by select means indirect navigation starts automatically after a period of time without user activity. Stand by select must be enabled by your provider, and the period of time can also be set by your provider. Indirect navigation is entered in the following ways:

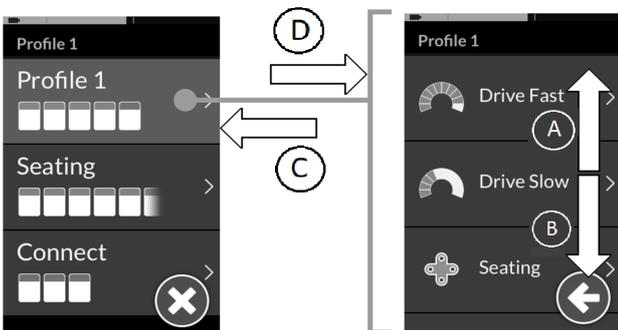
- If the Navigation entry is set to **First Profile**, the menu selection starts at the first profile in the Profile menu. You select a profile before moving into the selected profile's Function Screen menu. You can then select a function screen from the Function Screen menu or return to the Profile menu to select a different profile.
- If Navigation entry is set to **Active User Function**, the menu selection starts at the currently selected function screen in the Function Screen menu. From there you can choose to navigate the Function Screen menu, select a function screen or move to the Profile menu and select a different profile.

Menu Select with 4Q Operation

1. Press the external switch.
The Profile menu opens.

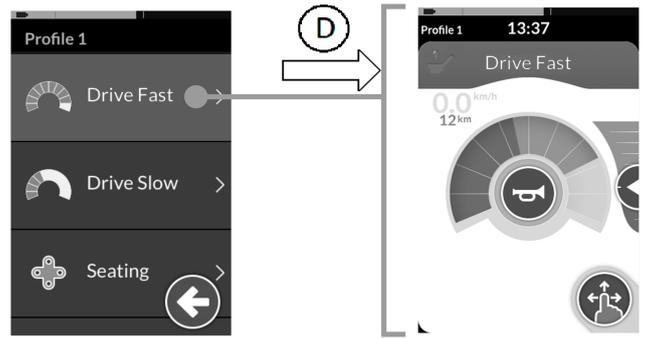


2. Give forward input (A) or reverse input (B) to switch between profiles.
3. Give right input (D) to select the profile.
The Function Screen menu opens.



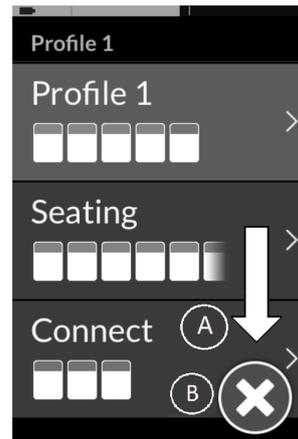
4. Give forward input (A) or reverse input (B) to switch between function screens.
5. Give left input (C) to switch back to the previous menu.

6. Give right input (D) to select the function screen.

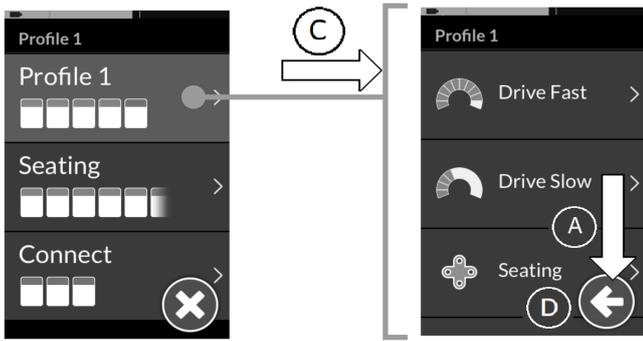


Menu Select with 3Q Operation

1. Press the external switch.
The next function screen displays.
2. Press the external switch again to switch through all the function screens in the profile.
When all function screens are switched through, the Profile menu opens.
3. Give right input (A) to change the profile.



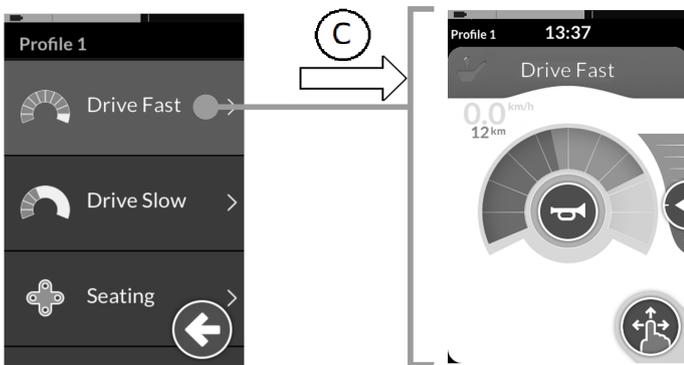
4. To close the profile menu, give right input until the Close button (B) is selected.
Give left input to close the profile menu.
5. Give left input (C) to select the profile.
Give right input (A) to change the function screen.



6. To return to the Profile menu, give right input until the Back button **D** is selected.

Give left input to go back to the Profile menu.

7. Give left input **C** to select the function screen.

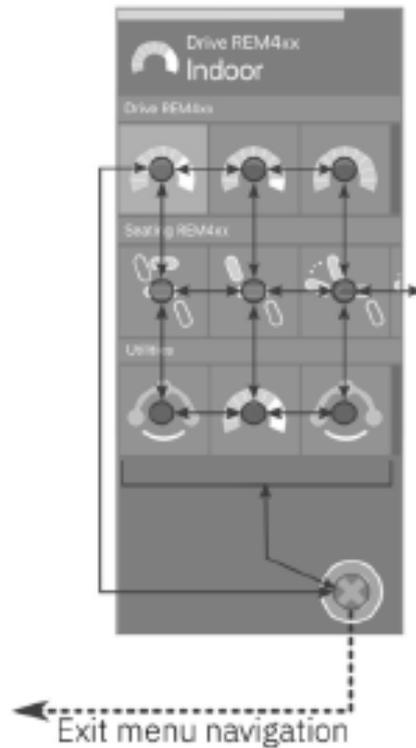


Menu Select in Grid View

With menu select in grid view, menu items display in one grid, showing profiles and functions at the same time. The user navigates the menu by moving vertically or horizontally from one menu item to the next. Movement and selection is determined by the user input quadrant mapping detailed above. When a menu item becomes selectable, its background is highlighted blue. The user typically navigates to the required function, moving horizontally within profiles or vertically across profiles, and select it. At that point, the function becomes active.

I In list view, the number of functions in a single profile that can display is limited to 23. Any functions beyond this number are not selectable from the menu. These functions are still available through other methods, such as control input or interaction with the touch screen. The 23-function limitation does not apply to grid view.

The grid view can display a limited number of profiles and functions at any one time. Further functions and profiles, if available, can be revealed by navigating down for profiles and right for functions.



4Q users can navigate through the menu in both directions vertically (up/down) and both directions horizontally (left/right). Navigating vertically, a forward command navigates to the previous profile in the menu, and a reverse command navigates to the next profile. Navigating horizontally, a short left command navigates to the previous function, and a short right command navigates to the next function. At any time, a function can be selected with a long right command—when a function is selected, it becomes active. If a long left command is given at any point, the menu is exited. Alternatively, the user can navigate to and select the exit button to leave menu navigation.

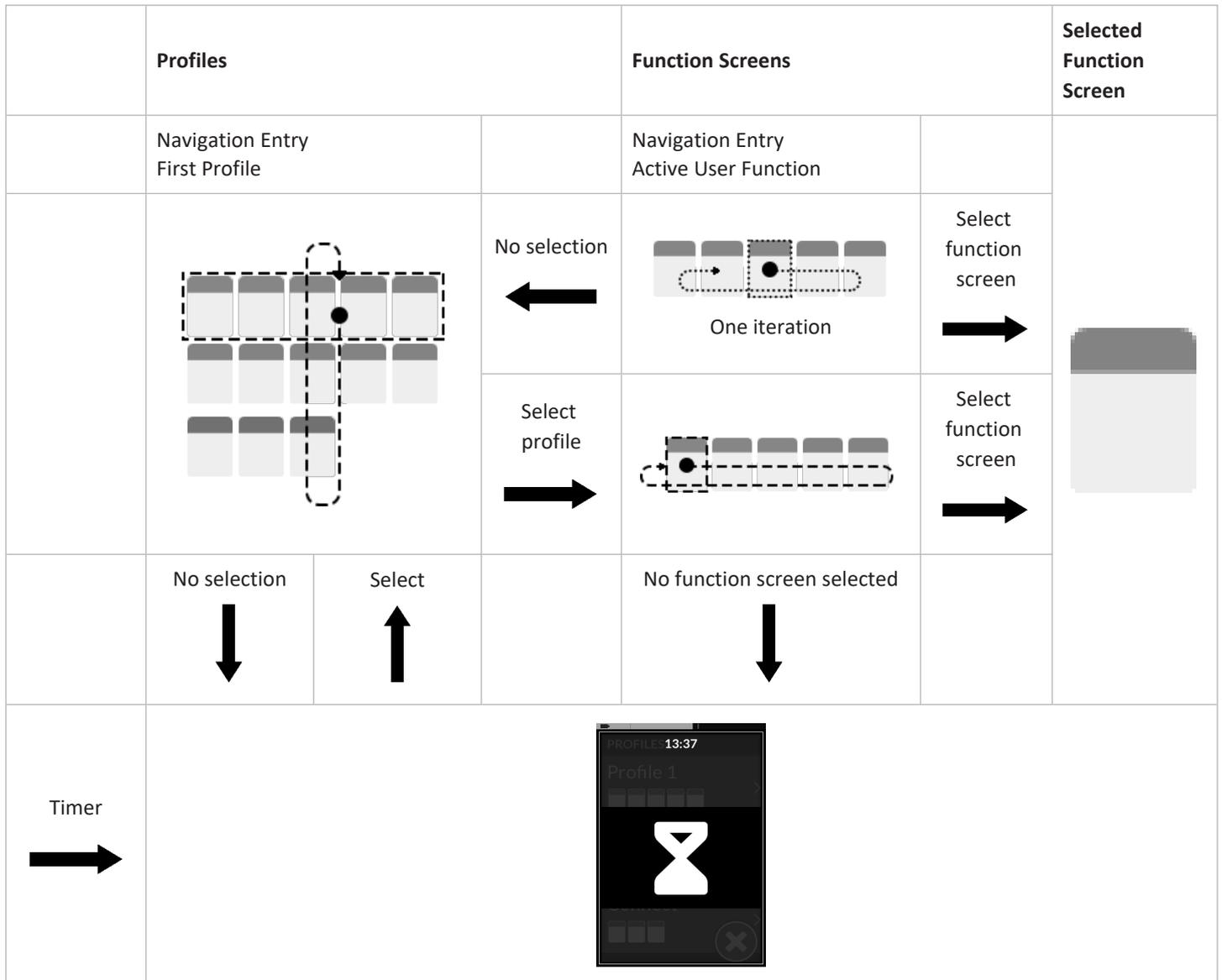
3Q users can navigate in one direction vertically (down) and one direction horizontally (right). Navigating vertically, a long right navigates to the next profile in the menu. Horizontally, a short right command navigates to the next function. At any time, a function can be selected with a short left command. If a long left command is given at any point, the menu is exited. Alternatively, the user can navigate to and select the exit button to leave menu navigation.

Navigation Entry—Menu Select

For convenience, the entry point to the menus is controlled with the Navigation Entry parameter. The parameter can be set to one of the following:

- first profile
- first function in active profile
- active user function

6.2.5 Scan Select Overview



Navigation Entry—Menu Select

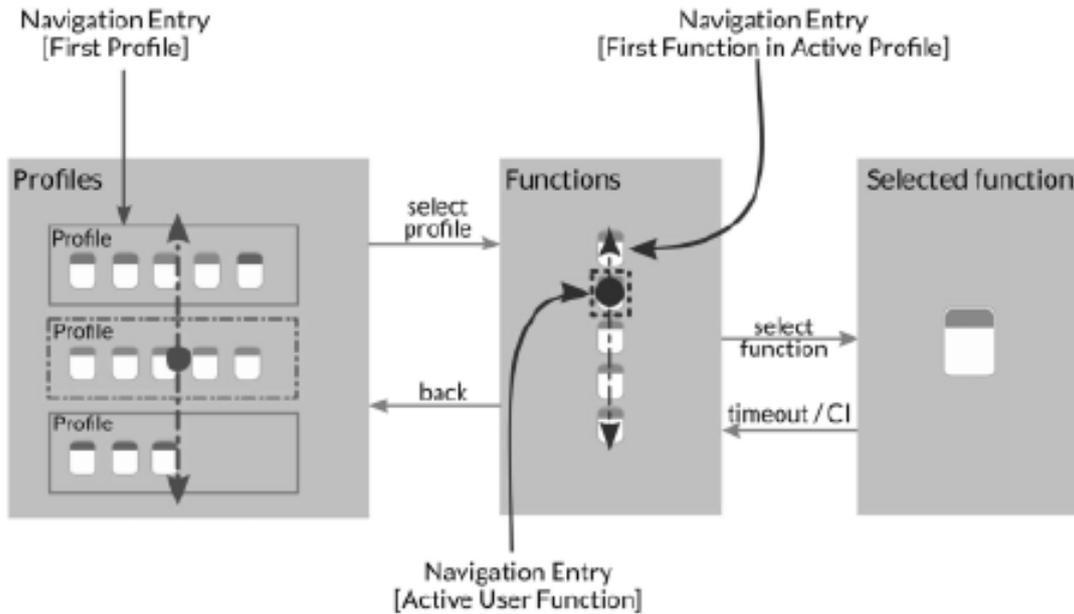
For convenience, the entry point to the menus is controlled with the Navigation Entry parameter. The parameter can be set to one of the following:

- first profile
- first function in active profile
- active user function

In list view:

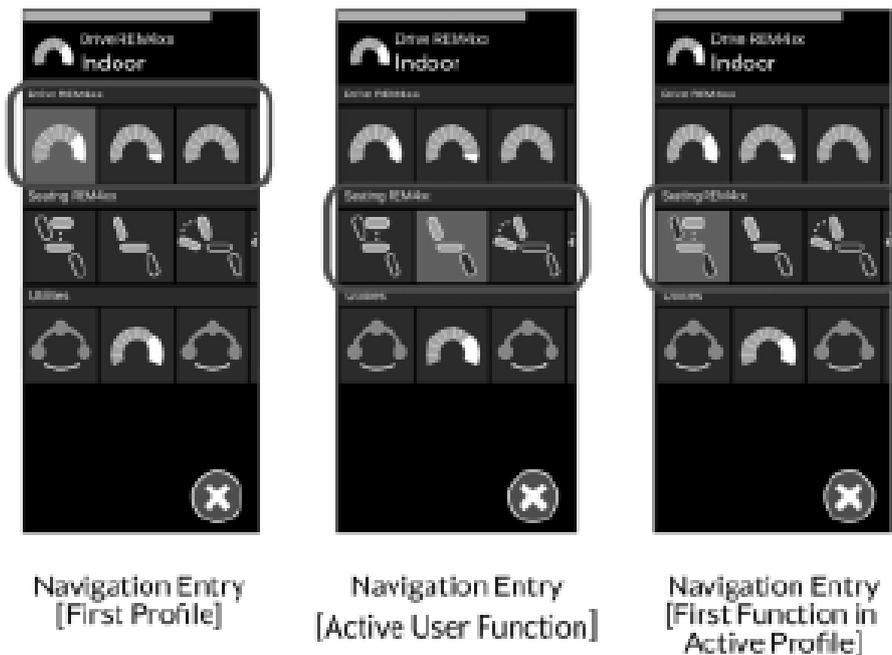
- If Navigation Entry is set to First Profile, the menu selection starts at the first profile in the profile menu. To continue, the user selects a profile before moving into the selected profile function menu. The user then either selects a function from the function menu or returns to the profile menu to select a different profile.
- If Navigation Entry is set to Active User Function, the menu selection starts at the currently selected function in the function menu. From here the user chooses to navigate the function menu, select a function or move up into the profile menu and select a different profile.

- If Navigation Entry is set to First Function in Active Profile, the menu selection starts at the first function in the currently selected profile. From here the user chooses to navigate the function menu, select a function or move up into the profile menu and select a different profile.



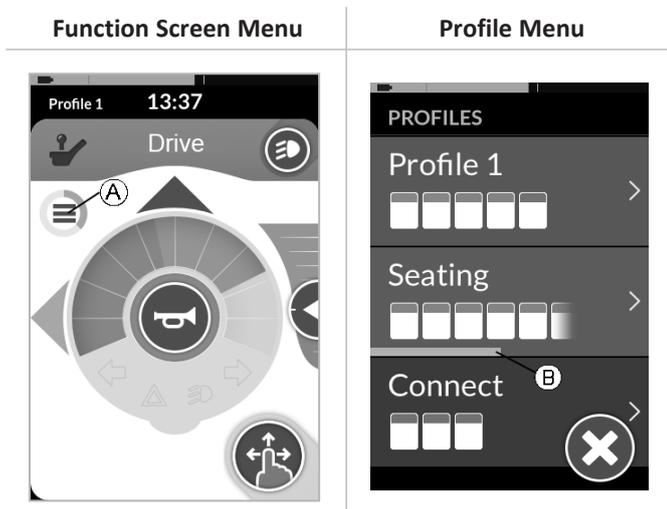
In grid view:

- If Navigation Entry is set to First Profile, the menu selection starts at the first function in the first profile (below left). To continue, the user is free to move between functions and profiles before selecting a function.
- If Navigation Entry is set to Active User Function, the menu selection starts at the currently selected function (below middle). From here the user can choose to navigate the functions in the profile or move up or down into the other profiles before selecting a function.
- If Navigation Entry is set to First Function in Active Profile, the menu selection starts at the first function in the currently selected profile (below right). From here the user can choose to navigate the functions in the profile or move up or down into the other profiles before selecting a function.



6.2.6 Scan Select

With scan select, the system performs the navigation and you select the function screen. Scan select provides you with a semi-automated process for navigating through the profiles and function screen menus by displaying you one menu item (or navigation control) at a time. For each menu item displayed, you can choose to select it or ignore it. If ignored, the next menu item is displayed on the touch screen after a small period of time. The period is set by the provider.



The period of time before the next item is displayed, is shown by an indicator ring **A** or an indicator bar **B**.



Each menu is iterated a set number of times. This number is set by your provider. If no selection is made when the set number of iterations is reached, the system enters an idle state, displayed by the overlay above.

The system can enter the idle state from either the profile menu or the function screen menu. To exit the idle state, you must provide a select command. The profile menu is always entered when exiting the idle state.

Navigation Entry

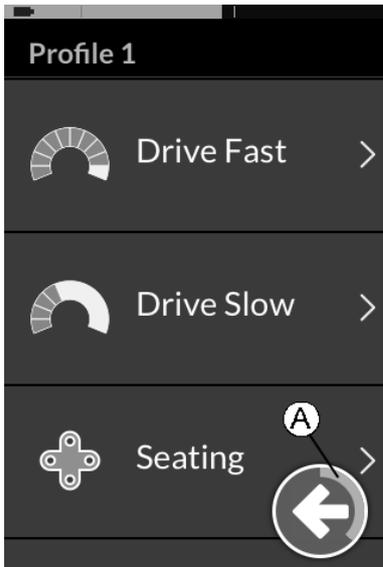
By default, the indirect navigation is started via an external switch, for example, an egg switch.

If **Stand by select** is enabled by your provider, the indirect navigation starts automatically after a period of time without user activity. This period can be set by your provider. There are two different ways, the indirect navigation is entered, refer to 6.2.5 *Scan Select Overview*, page 35 for a detailed graphic:

- If Navigation entry is set to **First Profile**, the first item in the profile menu displays on the touch screen. If this item is not selected, the system iterates through the profile menu until a profile is selected or until the number of iterations is reached, at which point the menu displays the idle state. If a profile is selected before the system goes into the idle state, the system displays the first item in the function screen menu. If this item is not selected, the system iterates through the function screen menu until a function screen is selected or until the number of iterations is reached, at which point the menu displays the idle state.
- If Navigation entry is set to **Active User Function**, the currently selected function screen item is displayed on the touch screen. If this function screen is not selected, the system iterates once through the remaining function screen items in the profile, wrapping around from the last menu item to the first, if necessary. During this single iteration, a function screen must be selected; otherwise, the menu reverts to the profile menu. If the system reverts to the profile menu, the first item in the profile menu displays on the touch screen. If this item is not selected, the system iterates through the profile menu until a profile is selected or until the number of iterations is reached, at which point the menu displays the idle state. If a profile is selected before the system goes into idle state, the system displays the first item in the function screen menu. If this item is not selected, the system iterates through the function screen menu until a function is selected or until the number of iterations is reached, at which point the menu displays the idle state.

Scan Select with 4Q or 3Q Operation

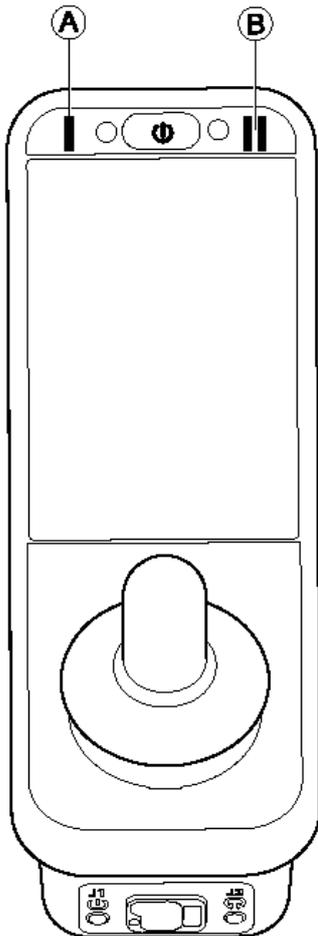
User Input Type	Mapping for Scan Select
4Q: <ul style="list-style-type: none"> • Joystick • Sip and Puff • Sip and Puff Head Array 	Left input: select Right input: select Reverse input: select Forward input: select
3Q: <ul style="list-style-type: none"> • Head Array • Four-Switch Proximity Array 	Left input: select Right input: select Reverse input: disabled Forward input (Four-Switch Proximity Array only): disabled



Like menu select, it is possible to go back from the function screen to the profile menu or close the profile menu. The control navigation items display in the scanning process. An indicator ring shows the duration of time before the next item displays.

1. Give a select input if control navigation item **A** displays.

6.3 Using the Multipurpose Buttons



By default, you can change profiles and function screens with the multipurpose buttons.

1. Press the left button **A** to switch to the next profile.
2. Press the right button **B** to switch to the next function screen.

6.4 Using Proportional Driving Mode

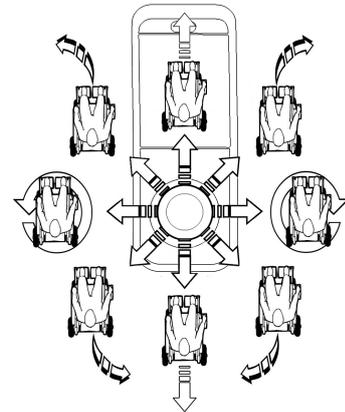
6.4.1 External Joystick

The REM500 is a touch display and does not include a joystick. Drive movements are performed by external inputs.

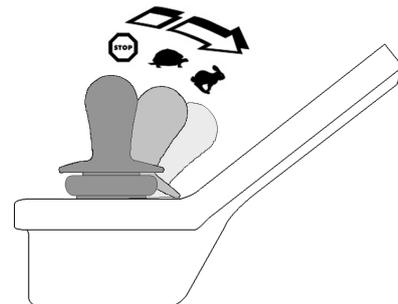
-  The following explanation applies only to external inputs that include a joystick. For information about using external inputs, such as a Head Array, without a joystick, refer to the corresponding chapters in this manual.

The external joystick controls the direction and speed of the wheelchair.

When the external joystick is deflected from the neutral (center) position, the wheelchair moves in the direction of the external joystick movement.



The speed of the wheelchair is proportional to the external joystick deflections. That is, the farther the external joystick moves from the neutral position, the faster the wheelchair travels.



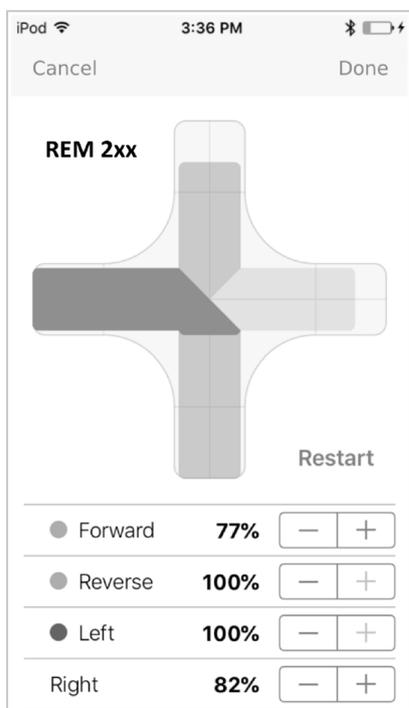
If the external joystick is moved back to the neutral position, the wheelchair slows down and stops.

If the external joystick is released from any position other than the neutral position, the external joystick returns to the neutral position and the wheelchair slows down and stops.

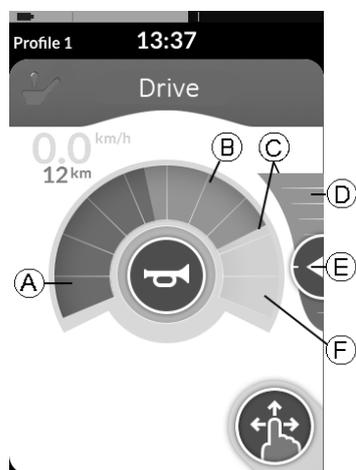
The external joystick can also be used to wake the system from sleep mode, if this parameter is enabled by the provider. Refer to *6.13 Using Sleep Mode*, page 48.

Joystick Shaping

Joystick shaping is used to calibrate a joystick to reduce the extent to which users must deflect their joystick to reach full demand in one or more quadrants. This feature, which must be configured by providers, may benefit users with limited hand movement. Contact your provider for more information.



6.4.2 Maximum Speed Control



The speedometer is divided into 10 segments that represent the speed range of the wheelchair. Each segment can display in one of three colors.

- The green section (A) displays the speed range, determined by the set point (E) on the speed slider (D).
- The yellow section (B) displays the preset maximum speed range (C), depending on the programming of the drive screen.

- The grey section (F) indicates the total maximum speed range of the wheelchair is not reached in the depending drive function.

In each drive screen, you can control the preset maximum speed depending on your needs.



1.

Swipe-and-Tap Mode	Tap Mode
Slide the set point (E)	Tap the top or bottom of the speed slider (D). Plus and minus symbols indicate where to tap.

The proportion of the green sections (A) and yellow sections (B) on the speedometer and the speed slider correspond to the position of the set point (E).



As soon as you start driving, the speed slider and Navigation button disappear from the display. The current speed on the speedometer, if it is enabled.

6.5 Using Latched Driving Mode

Latched driving modes allow you to latch (or maintain) a forward or reverse speed so you can drive without continuously providing a drive command.



Risk of Unintended Movement

When you send a forward or reverse command, the wheelchair drives forward or reverse at a constant speed and will continue driving at that constant speed until one of the following occurs:

- the external stop switch is pressed (refer to 6.15.2 *Through External Switches, page 51*)
- an emergency stop is performed (refer to 6.6 *Using Emergency Stop, page 43*)
- an opposite command is received (a reverse command when driving forward or a forward command when driving reverse)
- the Latch Drive Timeout is expired



To avoid potentially dangerous situations, Invacare recommends to make yourself familiar with the latched driving mode, especially with the commands to stop the wheelchair.



The term *command*, mentioned in this manual, means the input depending on the type of control, e.g. joystick movements or sip and puff commands. Refer to 6.18.6 *Using the Sip and Puff Head Array, page 71* for more information about the Sip and Puff Head Array.



By default, latched driving mode is preset in combination with a Sip and Puff only and with a Sip and Puff Head Array. For all other types of control, latched driving mode is not a default setup but can be enabled by your provider.



Each drive function can be assigned with a latched driving mode by your provider. The six latched driving modes, which are indicated on the lower left of the drive screen, and their corresponding symbols are listed in the following table.



1 Step Up



3 Step Up



5 Step Up



3 Step Up/Down



5 Step Up/Down



Cruise Control



The Latch Drive Timeout period is restarted whenever a subsequent drive command is given.



The Latch Drive Timeout parameter is set by the provider. To change the parameter, contact your provider.

6.5.1 Turn Commands

The wheelchair can be steered while in latched driving mode. If a turn command is given, the wheelchair remains in latched driving mode and also responds to the turn command for the turn command duration. The Latch Drive Timeout period is restarted whenever a turn command is given. When the Latch Drive Timeout expires, the wheelchairs stops.

6.5.2 External Stop Switch

To set up a wheelchair for latched driving, an external stop switch must be fitted to the wheelchair. Ideally, the external stop switch should be highly visible and easily accessible to provide an extra level of safety and security for the user.

External Stop Switch Test

The external stop switch test checks that the external stop switch is functioning correctly. The test is conducted once per power cycle when:

- the wheelchair is powered up in a latched drive mode function
- a latched drive mode function is selected following a non-latched drive mode function

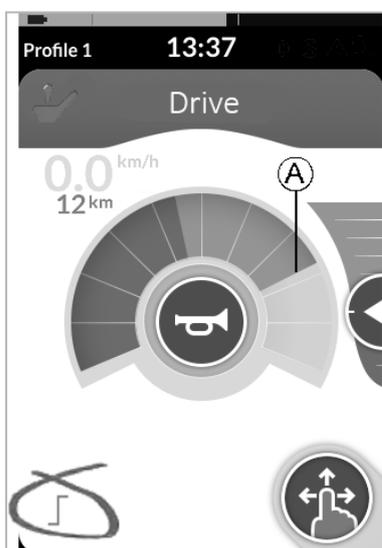


The external stop switch test is indicated by a screen overlay.

1. Press the external stop switch to complete the test.

 The wheelchair does not drive until the external stop switch test is completed successfully.

6.5.3 1 Step Up



In this mode, a single drive command (forward or reverse) causes the wheelchair to accelerate to the maximum drive speed $\text{\textcircled{A}}$ of the selected drive screen and remain at that speed for the programmed Latch Drive Timeout period as long as no further command is given.

Driving

1. Give a drive command in the desired direction (forward or reverse).
2. Release the drive command.

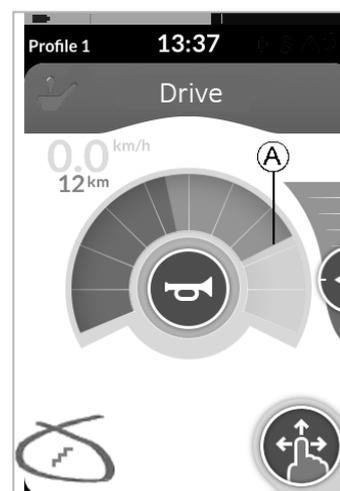
The wheelchair speed accelerates to the maximum drive speed of the selected drive screen.

Stopping

Use one of the following methods to stop:

- Give a drive command in the opposite direction (a reverse command when driving forward or a forward command when driving in reverse).
 - Press the external stop switch.
 - Perform an emergency stop.
- Let the Latch Drive Timeout expire.

6.5.4 3 Step Up



In this mode, you can step through one of three fixed speeds. The speeds available are 33%, 67% and 100% of the maximum preset reverse or forward speed $\text{\textcircled{A}}$ of the selected drive screen. The speed is maintained for the programmed Latch Drive Timeout period as long as no further command is given.

Driving

1. Give a drive command in the desired direction (forward or reverse).
2. Release the drive command.

The wheelchair speed accelerates to 33% of the maximum drive speed.

3. Give a forward command when driving forward or reverse command when driving in reverse to accelerate to the next fixed speed.

4. Release the drive command.

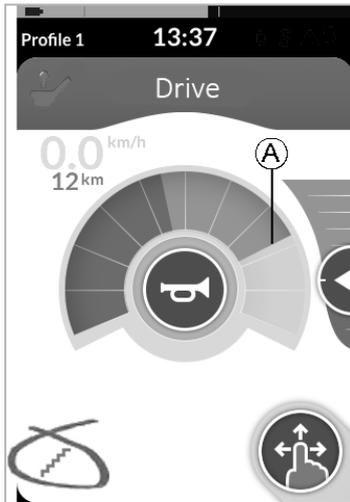
The new speed is held constantly.

Stopping

Use one of the following methods to stop:

- Give a drive command in the opposite direction (a reverse command when driving forward or a forward command when driving in reverse).
- Press the external stop switch.
- Perform an emergency stop.
- Let the Latch Drive Timeout expire.

6.5.5 5 Step Up



In this mode, you can step through one of five fixed speeds. The speeds available are 20%, 40%, 60%, 80% and 100% of the maximum preset reverse or forward speed (A) of the selected drive screen. The speed is maintained for the programmed Latch Drive Timeout period as long as no further command is given.

Driving

1. Give a drive command in the desired direction (forward or reverse).
2. Release the drive command.
3. The wheelchair speed accelerates to 20% of the maximum drive speed.
4. Give a forward command when driving forward or a reverse command when driving in reverse to accelerate to the next fixed speed.
5. Release the drive command. The new speed is held constantly.

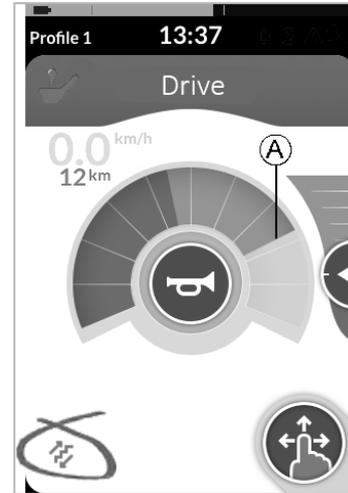
Stopping

Use one of the following methods to stop:

- Give a drive command in the opposite direction (a reverse command when driving forward or a forward command when driving in reverse).

- Press the external stop switch.
- Perform an emergency stop.
- Let the Latch Drive Timeout expire.

6.5.6 3 Step Up/Down



In this mode, you can step up or down through one of three fixed speeds. The speeds available are 33%, 67% and 100% of the maximum preset reverse or forward speed (A) of the selected drive screen. The speed is maintained for the programmed Latch Drive Timeout period as long as no further command is given.

Driving

1. Give a drive command in the desired direction (forward or reverse).
 2. Release the drive command. The wheelchair speed accelerates to 33% of the maximum drive speed.
 3. Give a forward command when driving forward or a reverse command when driving in reverse to accelerate to the next fixed higher speed.
 4. Give a reverse command when driving forward or a forward command when driving in reverse to decelerate to the next fixed lower speed.
-  A drive command in the opposite direction must be less than one second; otherwise, the wheelchair stops.
5. Release the drive command. The new speed is held constantly.

Stopping

Use one of the following methods to stop:

- Give a drive command longer than one second in the opposite direction (a reverse command when driving forward or a forward command when driving in reverse).
- Press the external stop switch.

- Perform an emergency stop.
- Let the Latch Drive Timeout expire.

6.5.7 5 Step Up/Down



In this mode, you can step up or down through one of five fixed speeds. The speeds available are 20%, 40%, 60%, 80% and 100% of the maximum preset reverse or forward speed [Ⓐ] of the selected drive screen. The speed is maintained for the programmed Latch Drive Timeout period as long as no further command is given.

Driving

1. Give a drive command in the desired direction (forward or reverse).
2. Release the drive command. The wheelchair speed accelerates to 20% of the maximum drive speed.
3. Give a forward command when driving forward or a reverse command when driving in reverse to accelerate to the next fixed higher speed.
4. Give a reverse command when driving forward or a forward command when driving in reverse to decelerate to the next fixed lower speed.

 The drive command in the opposite direction must be less than one second; otherwise, the wheelchair stops.

5. Release the drive command. The new speed is held constantly.

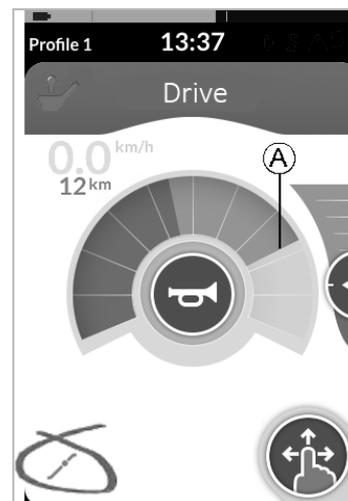
Stopping

Use one of the following methods to stop:

- Give a drive command longer than one second in the opposite direction (a reverse command when driving forward or a forward command when driving in reverse)
- Press the external stop switch

- Perform an emergency stop
- Let the Latch Drive Timeout expire

6.5.8 Cruise Control



In this mode, you do not have fixed steps and can choose the latched speed yourself. The speed is maintained for the programmed Latch Drive Timeout period as long as no further command is given.

Driving

1. Give and hold a drive command in forward or reverse until the wheelchair accelerates to the desired speed.
2. Release the drive command. The wheelchair speed is held constantly.
3. If the maximum drive speed [Ⓐ] is not reached, give and hold the drive command again in the same direction.
4. Release the drive command. The new speed is held constantly.
5. Give a drive command in the opposite direction (reverse when driving forward or forward when driving in reverse) to decelerate.
6. Release the drive command. The new speed is held constantly.

Stopping

Use one of the following methods to stop:

- Give a less-than-one-second drive command two times in the same direction.
- Press the external stop switch.
- Perform an emergency stop.
- Let the Latch Drive Timeout expire.

6.6 Using Emergency Stop

If you press the ON/OFF button while driving, an emergency stop is carried out. The remote powers down after an emergency stop.

6.7 Operating the Lights

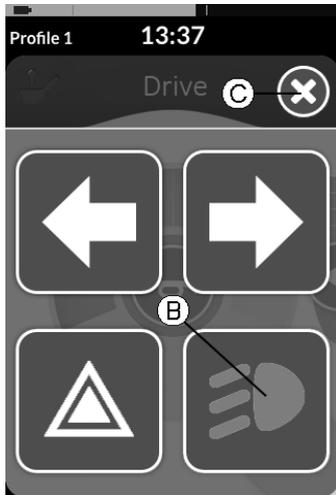
-  If you drive outside, turn on the position lights in bad visibility conditions or darkness.
-  To operate the position lights, you must stop the mobility device.

6.7.1 Turn On the Position Lights

1. Tap the Lighting control button .



2. On the Lighting button panel overlay, tap the Position Lights symbol .



The position lights turn on. The Position Lights icon becomes illuminated in the Lighting dashboard.

3. Tap button  to close the Lighting button panel.



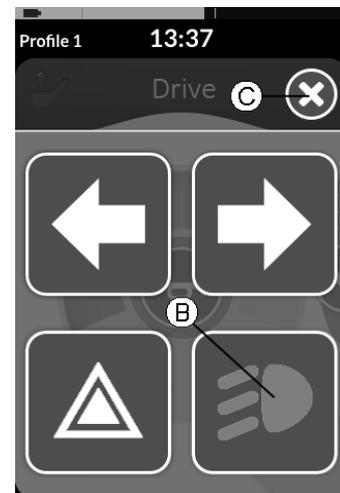
-  If you start driving, the Lighting button panel overlay closes, and the position lights remain turned on.

6.7.2 Turn Off the Position Lights

1. Tap the Lighting control button .



2. Tap the Light symbol  to turn off the position lights.



3. Tap button  to close the Lighting button panel.

 If you start driving, the Lighting button panel overlay closes.

6.8 Operating the Hazard Lights

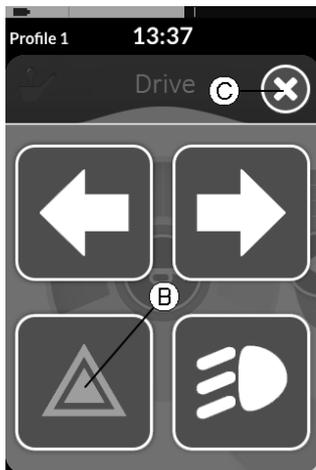
 To operate the hazard lights, you must stop the mobility device.

6.8.1 Turn On the Hazard Lights

1. Tap the Lighting control button .



2. Tap the Hazard lights symbol .



The Hazard lights icon becomes illuminated in the lighting dashboard.



3. Tap the button  to close the Lighting button panel.

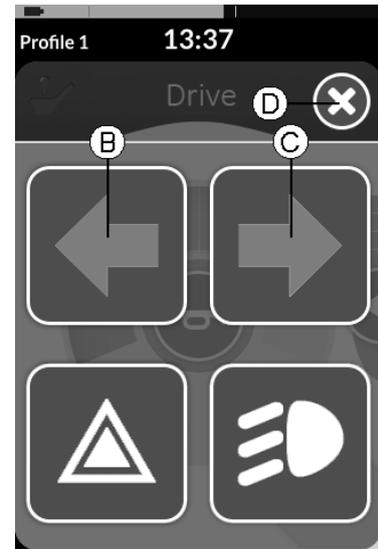
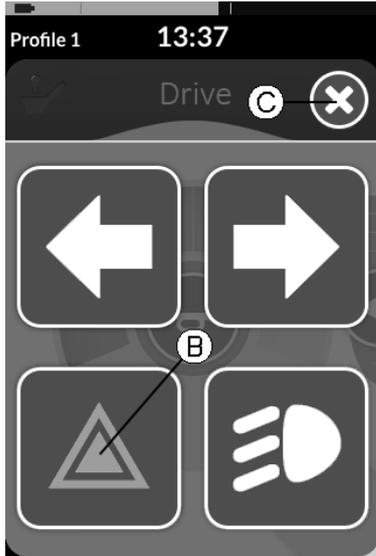
 If you start driving, the Lighting button panel overlay closes, and the hazard lights remain on.

6.8.2 Turn Off the Hazard Lights

1. Tap the Lighting control button .



2. Tap the Hazard lights symbol **B** .



The left or right indicator icon becomes illuminated in the lighting dashboard.

 If you start driving, the Lighting button panel overlay closes.

6.9 Operating the Turn Signals

 To operate the turn signals, you must stop the mobility device.

6.9.1 Turn On the Turn Signals

1. Tap the Lighting control button **A** .



- 3.
4. Tap the button **D** to close the Lighting button panel.

 If you start driving, the Lighting button panel overlay closes.

 After more than 10 seconds, the turn signal turns off.

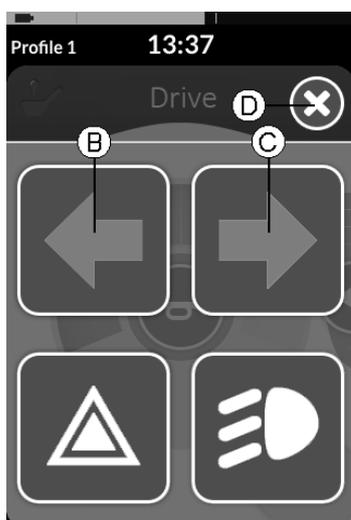
2. Tap the left turn signal symbol **B** or the right turn signal symbol **C** to turn on the turn signal.

6.9.2 Turn Off the Turn Signals

1. Tap the Lighting control button **A**.



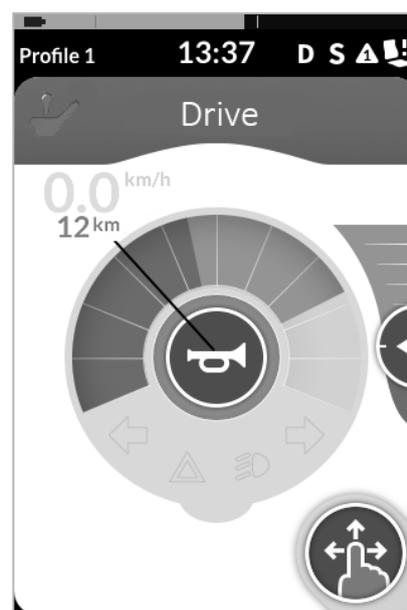
2. Tap the left turn signal symbol **B** or the right turn signal symbol **C** to turn off the turn signal.



 If you start driving, the Lighting button panel overlay closes.

6.10 Operating the Horn

1. Tap the Horn button **A** to sound the horn.

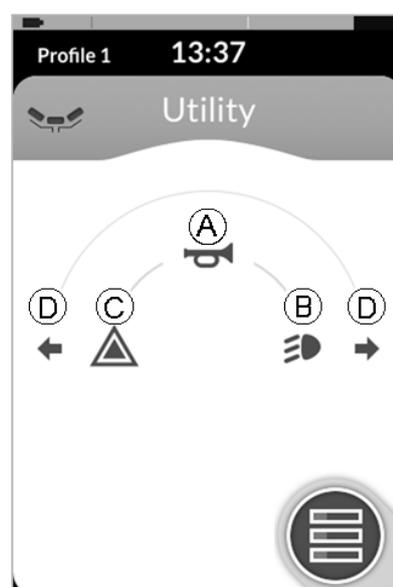


The horn sounds as long as the button is tapped.

6.11 Operating Lighting Functions and the Horn via the Utility Function Card

Via a utility function card, you can operate the lighting functions and horn with an external input. The utility function card is part of one or more profiles and can be activated like a drive or seating function card.

1. Activate the utility function card.
2. Give a demand according to the following list:



- Give a forward demand **A** to sound the horn.
- Give a short demand to right **B** to turn on/off the position lights.

- Give a short demand to left © to turn on/off the hazard lights.
- Give a long demand to left or right © to turn on the left or right turn signal. Give a short demand to turn off the turn signal.

 Turn signals turn off after 10 seconds.

 Activate a drive function card to drive normally while position lights and hazard lights remain on.

6.12 Locking/Unlocking the Remote

 The lock feature is not set to ON at the factory but can be enabled by your provider. If this parameter is set to ON, you can lock/unlock the system as described.

6.12.1 Locking the Remote

1. Press the ON/OFF button for more than three seconds, until a locking overlay displays. The remote powers down.



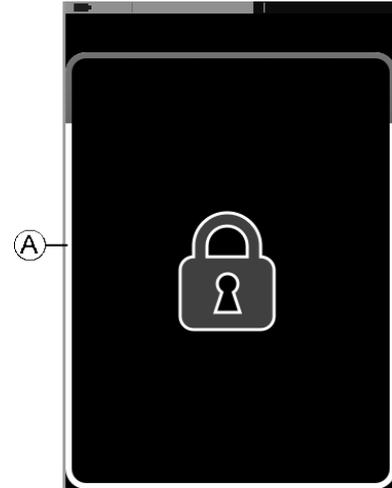
When powering up the remote, the locking overlay displays.

6.12.2 Unlocking the Remote

1. Press the ON/OFF button.

Tap the locked display until the white frame around the locking screen  fills. The touch display is unlocked and

can be used again.



 If you do not apply the unlock sequence or the ON/OFF button is pressed again before the unlock sequence is complete, the system returns to the locked state and powers down.

6.13 Using Sleep Mode

Sleep mode is not set at the factory but can be enabled by your provider. If this parameter is set to ON, the system goes into sleep mode after a period of time without user activity. This period can be set by the provider.

Before a system goes into sleep mode, the system enters a transition period. During the transition period, the touch display and all indicators slowly dim until they switch off. During the transition, sleep mode can be interrupted by moving the joystick, pressing the ON/OFF button or tapping on the touch display.

To wake the system from sleep mode, press the ON/OFF button or move the joystick, if this parameter has been enabled by the provider.

6.14 Using Rest Mode

The rest state of the LiNX system provides the occupant with a safe environment in which to sleep, rest or carry out other activities without fear of accidentally triggering an unwanted action with the driver control.

The rest state is entered automatically after a period of user inactivity (timeout) or manually by the user via a control input, as configured by the provider. Contact your provider for more information.

6.14.1 Entering Rest

The system can be programmed to enter rest automatically after a period of inactivity or manually via a control input or both. Specifically, rest can be entered from:

- A drive or seating function via timeout
- Any function via a control input, such as an egg switch

- Menu select via timeout
- Menu navigation via control input

 Entry to rest is prohibited when a system is being programmed. If the system is in rest and a LiNX Access tool connects to a LAK, rest is exited.

Entering Rest from a Drive or Seating Function via Timeout

To enter rest from a drive or seating function via timeout, the function's profile must be enabled for timeout into rest and the rest timeout must expire. The rest timeout is reset whenever there is user activity.

Entering Rest from Any Function via Control Input

To enter rest from any function via a control input, a user must activate a control input that has been configured to enter rest when activated. Entry to rest will not occur in the following conditions:

- There is any demand from the driver control
- The wheelchair is driving
- Any seating actuator is active

Entering Rest from Menu Select via Timeout

To enter rest from menu select via timeout, the profile that was active before entering menu navigation must be enabled for timeout into rest and the rest timeout must expire. The rest timeout is reset whenever there is user activity.

Entering Rest from Menu Navigation via Control Input

To enter rest from menu navigation via control input, a user must activate a control input that has been configured to enter rest when activated. Entry to rest will not occur in the following conditions:

- There is any demand from the driver control
- Any seating actuator is active

6.14.2 In Rest

If audible cues are enabled in the system, when the system transfers into rest from a function or menu navigation, an audible signal is emitted to let the user know that they are entering into the rest state.

The LiNX system can operate in the rest state with the driver control fully or partly disabled. When the driver control is fully disabled, user demands from the driver control have no effect. This is the most secure option for users, giving them the confidence that any subsequent demands from the driver control, intentional or accidental, will not result in any action, such as driving or seating.

When the driver control is partly disabled, the system is allowed to respond to a long press into one or more of the driver control's quadrants to perform a preconfigured action. The action could be Exit Rest or one of any number of available actions.

Although the partly disabled mode does not provide the same extent of confidence as the fully disabled mode, it is useful for those users that require quick access to valued or often-used functions and actions. For example, the driver control can be configured to provide quick access to a favorite menu or function.

When in rest mode, the rest screen displays:



6.14.3 Exiting Rest

The system remains in rest until one of the following occurs:

- Normal operation is resumed manually.
- The system times out into sleep if configured to do so.
- The system is power cycled.

How normal operation is resumed manually depends on if the driver control is fully disabled or partly disabled.

To manually resume normal operation when the driver control is **fully disabled**, the user can:

- Activate a control input that is normally configured for accessing user functions, menu navigation or settings.
- Activate a control input that is normally configured for performing a profile or function change.
- Activate a control input that is specifically configured to exit rest and return the user to the location they were in before entering rest; this is used for both user functions and menu navigation.

To manually resume normal operation when the driver control is **partly disabled**, the user can:

- Perform a long press into a quadrant that is configured for accessing user functions, menu navigation or settings.
- Perform a long press into a quadrant that is specifically configured to exit rest and return the user to the location they were in before entering rest.
- Perform long press into a quadrant that is configured for performing a profile or function change or any other action available when configuring the long press.

If audible cues are enabled, an audible signal is emitted as the system re-enters the functions or navigation menu.

6.15 Operating Powered Seating Functions

Powered seating functions, such as powered elevating legrests or powered recline, are carried out as described in this section.

6.15.1 Through Seating Screens

 By default, every seating screen displays a single powered seating function. Different configurations are listed below. Contact your provider to change the configuration.



Choose the seating screen with the seating function you want to operate. Refer to 6.2 *Navigating User Function Screens, page 28*.

1. Give a forward or reverse command to operate the seating function.



When a motion becomes active, the Navigation button disappears (A), the active direction of the motion (B) displays, the other direction becomes inactive (C) and the Drive Lockout icon (D) displays in the status bar.

The motion is deactivated as soon as the command is released or when the motion reaches its end-of-travel.

Symbols and their Meanings



Powered seat tilt



Powered recline



Seat lifter



Left or center-mount powered elevating legrest



Right powered elevating legrest



Both powered elevating legrests

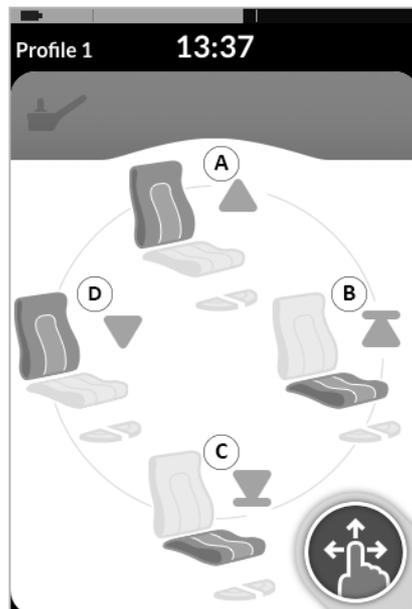


Powered recline and powered elevating legrests

Other Configurations

 The displayed function screens are configuration examples only.

Four-Quadrant Configuration



- (A) Seat lifter up
- (B) Powered recline up
- (C) Seat lifter down
- (D) Powered recline down

All four quadrants are used for operating powered seating functions.

1. Give and hold a forward **A**, reverse **C**, left **D** or right command **B** to operate the seating function.

The motion is deactivated as soon as the command is released or when the motion reaches its end-of-travel.

Latched Configuration

A latched configuration allows you to operate a motion without continuously providing a command.

A latched configuration can be a single powered seating function or a four-quadrant configuration.

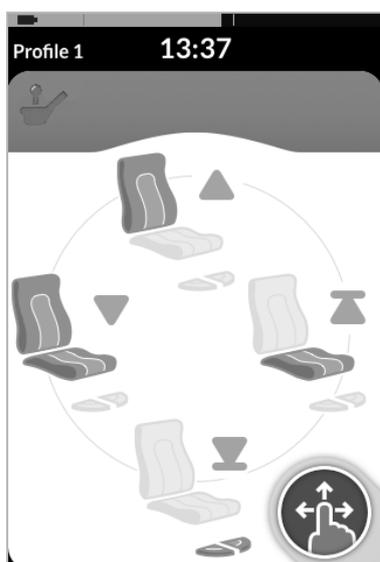
1. Give a command to the front or rear to operate the seating function.



2. Release the command.

The motion is deactivated when the joystick is deflected again or when the motion reaches its end-of-travel.

-  In a four-quadrant configuration, it is possible to mix the motion operations as displayed in the example.



6.15.2 Through External Switches

-  Not all configurations and combinations of powered seating functions through external switches are available on all products.

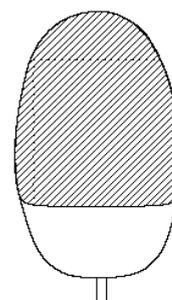
With an external switch, seating functions can be controlled while driving and without using .

When the seating function is activated without a seating screen, a small overlay displays on the touch display to inform the user the seating is being controlled externally. The overlay remains on the touch display for the duration of the seating operation.

Egg Switch

The egg switch alternates powered seating functions of the following single power configurations:

- Powered recline only
- Powered seat tilt only
- Center-mount elevating legrest (LNX) only

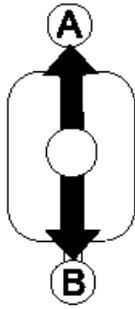


1. Make sure the mobility device is on a level surface and is turned on.
2. Press and hold the tagged area of the egg switch to run the powered seating function.
3. Release the egg switch if the desired seating position is reached. If the egg switch is pressed again within three seconds, the powered seating function moves in the same direction.
4. To alternate direction, press the egg switch after it has been released for more than three seconds.

Stereo Toggle Switch

The stereo toggle switch alternates powered seating functions of the following single power configurations:

- Powered recline only
- Powered seat tilt only
- Center-mount elevating legrest (LNX) only



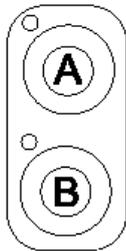
1. Make sure the mobility device is on a level surface and is turned on.
2. Deflect and hold the toggle switch up (A) or down (B) to move a particular seating function.

The seating function moves as long as the toggle switch is deflected.

Stereo Button Switch

The stereo button switch alternates powered seating functions of the following single power configurations:

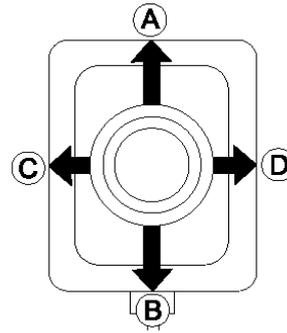
- Powered recline only
- Powered seat tilt only
- Center-mount elevating legrest (LNX) only



1. Make sure the mobility device is on a level surface and is turned on.
2. Press and hold the stereo buttons (A) or (B) to move a particular seating function.

The seating function moves as long as the button is pressed.

4-way Toggle Switch



1. Make sure the mobility device is on a level surface and is turned on.
2. Deflect and hold the toggle switch in the appropriate direction to move a particular seating function.

The seating function moves as long as the toggle switch is deflected.

See the following tables for direction and powered seating function combinations.

 The tables show the factory settings. For reprogramming, contact your provider.

Powered Seat Tilt and Powered Recline

(A) (Forward)	Powered seat tilt up
(B) (Reverse)	Powered seat tilt down
(C) (Left)	Powered recline up
(D) (Right)	Powered recline down

Powered Seat Tilt, Recline, Elevate and Legrest

(A) (Forward)	Powered seat tilt toggle up/down
(B) (Reverse)	Powered seat recline and legs up/down
(C) (Left)	Powered seat elevate up/down
(D) (Right)	Powered seat legs up/down

Powered Seat Tilt and LNX Legrest

(A) (Forward)	Powered seat tilt up
(B) (Reverse)	Powered seat tilt down
(C) (Left)	LNX up
(D) (Right)	LNX down

Powered Recline and LNX Legrest

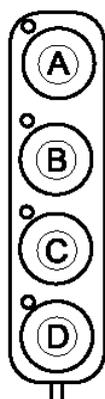
- | | |
|-------------|------------------------------|
| Ⓐ (Forward) | Powered recline and LNX up |
| Ⓑ (Reverse) | Powered recline and LNX down |
| Ⓒ (Left) | LNX up |
| Ⓓ (Right) | LNX down |

Powered Seat Tilt and Elevating Seat

- | | |
|-------------|------------------------|
| Ⓐ (Forward) | Powered seat tilt up |
| Ⓑ (Reverse) | Powered seat tilt down |
| Ⓒ (Left) | Elevating seat up |
| Ⓓ (Right) | Elevating seat down |

Dual-Powered Elevating Legrests

- | | |
|-------------|--------------------------------------|
| Ⓐ (Forward) | Left powered elevating legrest up |
| Ⓑ (Reverse) | Left powered elevating legrest down |
| Ⓒ (Left) | Right powered elevating legrest up |
| Ⓓ (Right) | Right powered elevating legrest down |

4-way Button Switch

1. Make sure the mobility device is on a level surface and is turned on.
2. Press and hold the appropriate button to move a particular seating function.

The seating function moves as long as the button is pressed.

See the following tables for buttons and powered seating function combinations.

 The following tables show the factory settings. For reprogramming, contact your provider.

Powered Seat Tilt and Powered Recline

- | | |
|---|------------------------|
| Ⓐ | Powered seat tilt up |
| Ⓑ | Powered seat tilt down |
| Ⓒ | Powered recline up |
| Ⓓ | Powered recline down |

Powered Seat Tilt, Recline, Elevate and Legrest

- | | |
|---|---------------------------------------|
| Ⓐ | Powered seat tilt toggle up/down |
| Ⓑ | Powered seat recline and legs up/down |
| Ⓒ | Powered seat elevate up/down |
| Ⓓ | Powered seat legs up/down |

Powered Seat Tilt and LNX Legrest

- | | |
|---|------------------------|
| Ⓐ | Powered seat tilt up |
| Ⓑ | Powered seat tilt down |
| Ⓒ | LNX up |
| Ⓓ | LNX down |

Powered Recline and LNX Legrest

- | | |
|---|------------------------------|
| Ⓐ | Powered recline and LNX up |
| Ⓑ | Powered recline and LNX down |
| Ⓒ | LNX up |
| Ⓓ | LNX down |

Powered Seat Tilt and Elevating Seat

- | | |
|---|------------------------|
| Ⓐ | Powered seat tilt up |
| Ⓑ | Powered seat tilt down |
| Ⓒ | Elevating seat up |
| Ⓓ | Elevating seat down |

Dual-Powered Elevating Legrests

- | | |
|---|--------------------------------------|
| Ⓐ | Left powered elevating legrest up |
| Ⓑ | Left powered elevating legrest down |
| Ⓒ | Right powered elevating legrest up |
| Ⓓ | Right powered elevating legrest down |

10-way Switch

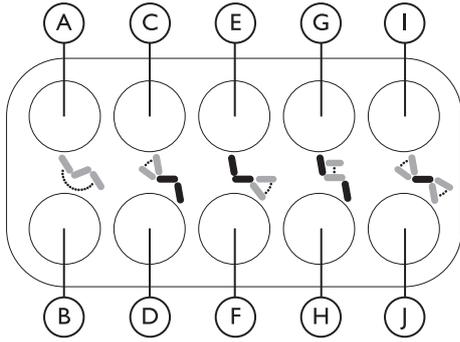


Fig. 6-6 Button Layout 1

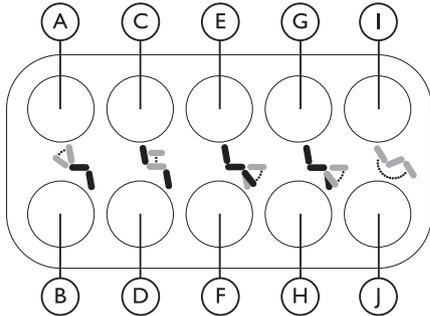


Fig. 6-7 Button Layout 2

 Button layouts in this manual represent the factory settings. The 10-way Switch can be customized to operate other functions than those that are shown. Contact an Invacare provider to customize the 10-way Switch.

1. Make sure the mobility device is on a level surface and is turned on.
2. Press and hold the button to move a particular seating function. The seating function moves as long as the button is pressed.

 The following tables describe the factory settings. For reprogramming, contact your provider.

The buttons in the lower row move the seating function to its home position. See the following table for details.

A
B
C
D
E
F
G

H
I
J

6.15.3 Speed Reduction and Seating Function Inhibits

 The mentioned speed reduction and seating function limits do not apply to all Invacare wheelchair models.

Speed Reduction

If the elevating seat is adjusted above a certain point, the drive electronics considerably reduce the speed of the wheelchair. If speed reduction is activated, drive mode can be used only to carry out movements in reduced speed and not for regular driving. To drive normally, adjust the elevating seat until the speed reduction is deactivated again.



Speed reduction is shown in the display. If the elevating seat is raised above a certain point, an icon with an exclamation point displays in the status bar. This indicator remains active until speed reduction is deactivated by lowering the elevating seat.

Seating Function Inhibits

Tilt Limit



The maximum tilt limit switch functions to prevent the seat tilt or recline from extending beyond a maximum preset angle when the elevating seat is raised above a certain point. The seating electronics stop automatically, a grey exclamation point displays on the seating screen and tilting or reclining backward is inhibited .



An icon with a seat and an exclamation point displays in the status bar. The icon remains active until the tilt limit is deactivated by lowering the elevating seat.

Elevating Seat Lockout



The seating electronics are equipped with an elevating seat lockout switch to prevent the elevating seat from rising above a certain point when the seat tilt or recline is adjusted above a certain point. The seating electronics stop automatically, a grey exclamation point displays on the seating screen and extend is inhibited ^(A).



An icon with a seat and an exclamation point displays in the status bar. This icon remains active until the elevating seat lockout is deactivated by moving the seat tilt or recline up.

6.16 Using Connectivity Screens

Connectivity screens allow you to communicate with external devices. Connectivity functions supported by your remote are a mouse mover and a switch control. By default, these functions are disabled. Contact your provider to activate the Connectivity screens.

The mouse mover function allows you to control the cursor on a PC or laptop screen with a wheelchair user input, such as the joystick on the remote module or external joysticks. At the moment a four-quadrant operation is needed to use the mouse mover.

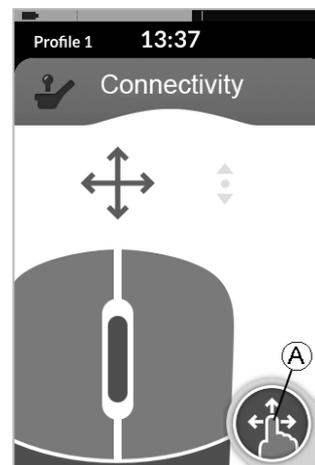
The switch control function is an accessibility feature that allows you to navigate and select items on your mobile device (Android and iOS) using the remote joystick or touch screen.

6.16.1 Connectivity Card Configuration

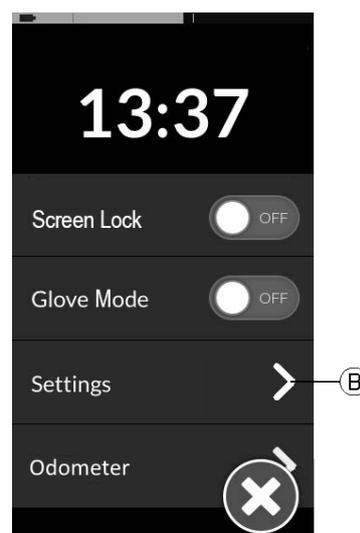
Pairing the LiNX System with a User's Device

To pair the LiNX system with a user's PC, laptop or mobile device, open the Connectivity Settings menu.

1. Long press the Navigation button ^(A).

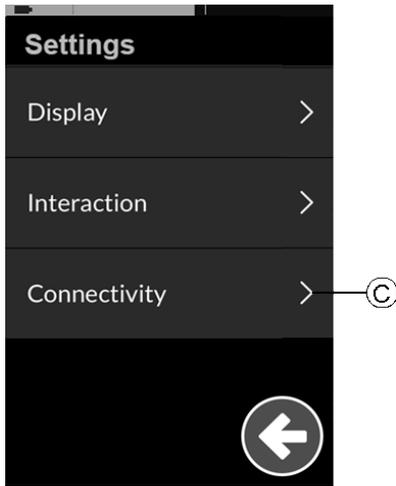


2. On the status display, open the Settings menu ^(B).

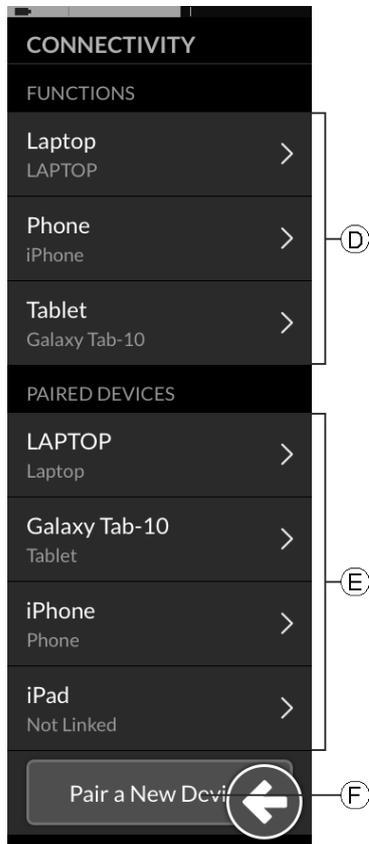


3. From the Settings menu, open the Connectivity menu ^(C). Note the Connectivity menu is split into two sections:

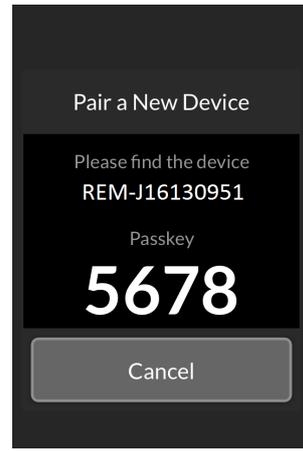
- ^(D) Functions
- ^(E) Paired devices



4. Tap the **Pair New Device** button **F** at the bottom of the menu.



The pairing passkey and the LiNX device name you are pairing with display on the touch screen. In this example, the LiNX device name is REM-J16130951.



Pairing a Mobile Device with the LiNX system

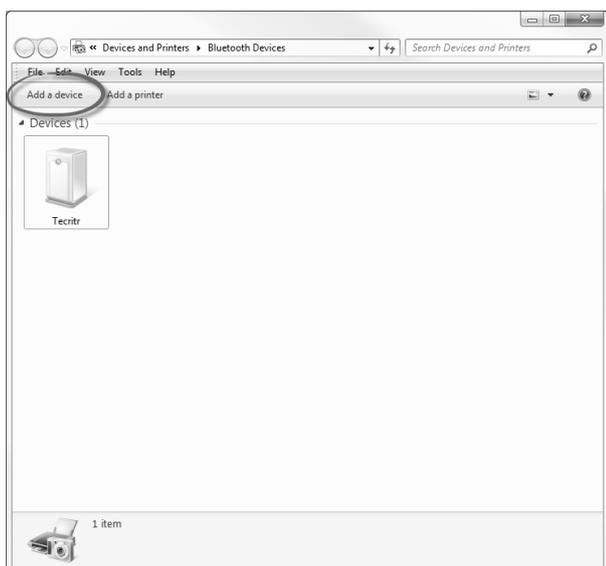
- ⓘ Perform this operation promptly following the pairing process on your remote (see *Pairing the LiNX System with a User's Device, page 55*); otherwise, a timeout will occur.

See your mobile device user manual for information about how to establish a Bluetooth connection with your remote.

Pairing a PC or Laptop with a LiNX System

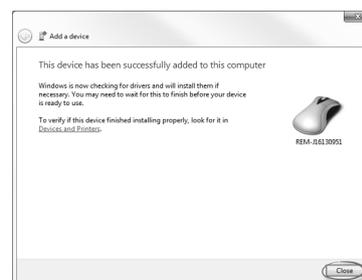
- ⓘ Perform this operation promptly following the pairing process on your remote (see *Pairing the LiNX System with a User's Device, page 55*); otherwise, a timeout will occur.

1. Open the **Devices and Printers** dialog box on your Windows PC or laptop by selecting one of the following:
 - Start > Devices and Printers
 - Start > Control Panel > Devices and Printers
 - Icon tray > Bluetooth Device icon
2. From the **Devices and Printers** dialog box, click the **Add a device** button.

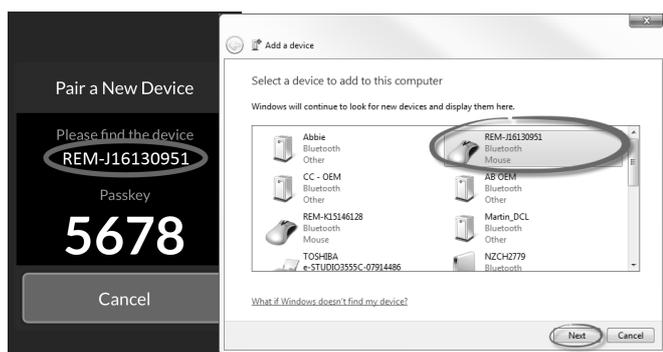
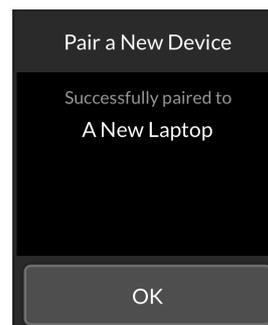


- From the list of available devices that displays, locate and select the LiNX device name that displays on the touch screen (for example, REM-J16130951).

Click the **Next** button.

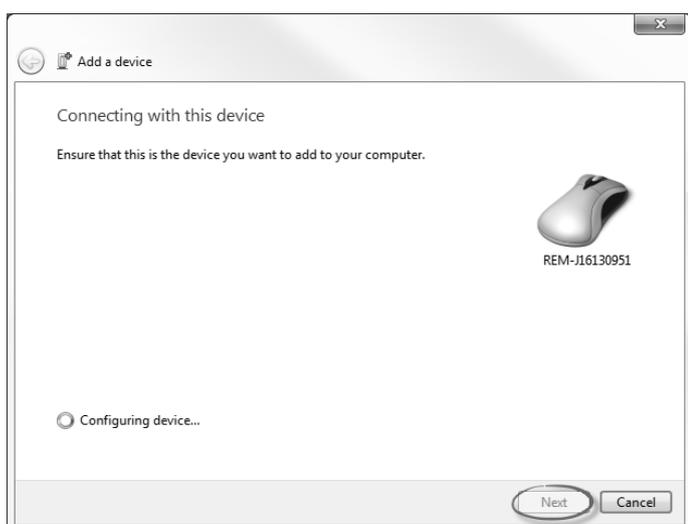
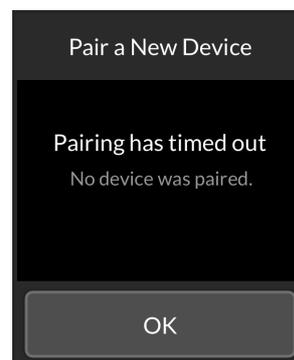


If the device successfully pairs, a confirmation screen displays on the remote module. Tap the **OK** button to proceed.



- Wait for the device to connect. Click **Next** as soon as the device is connected.

If no device is paired within the set timeout period, "No device was paired" displays. Tap the **OK** button to proceed.



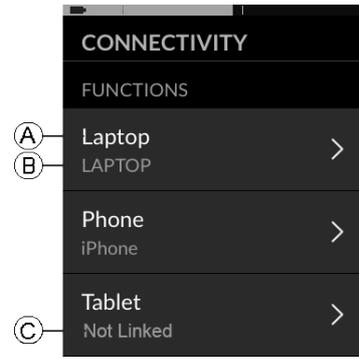
- Click the **Close** button to complete the pairing.

 The LiNX system permits up to 10 devices to be paired at any time. If you reach this limit and need to add more devices, consider forgetting paired devices. See *Removing Paired Devices*, page 59.

Linking the Connectivity Card with the User's Device

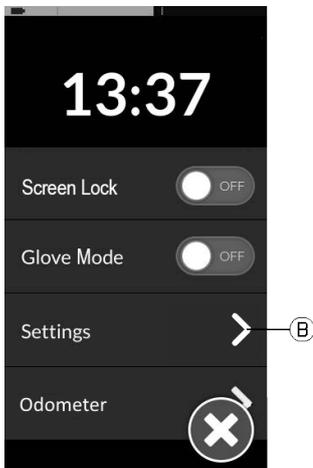
Connectivity cards must be linked to a paired device. To link a connectivity card to a device, open the Connectivity Settings menu.

1. Long press the Navigation button (A).



The names of the connectivity cards display in the **Functions** section.

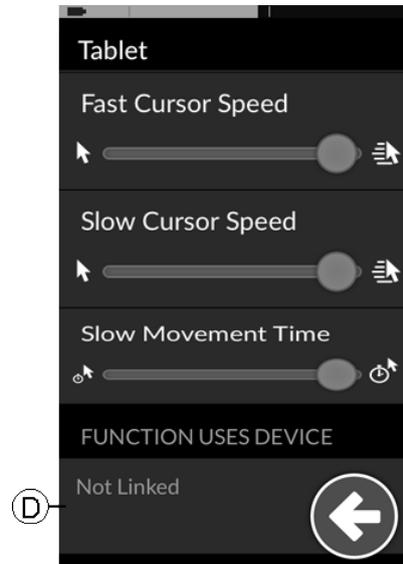
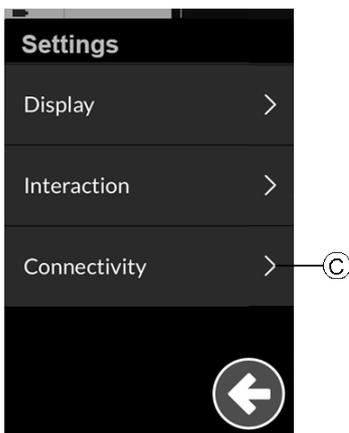
2. On the Status display, open the Settings menu (B).



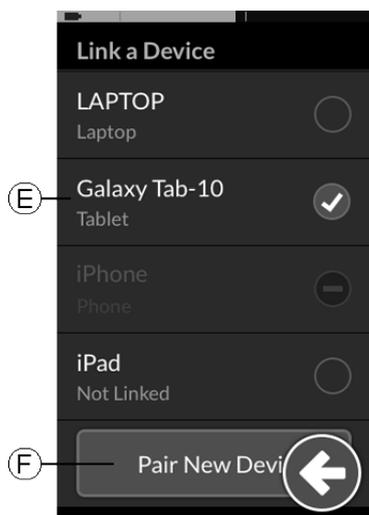
- (A) Function name
- (B) Linked device
- (C) No linked device

4. Tap the appropriate menu item to link the connectivity card with a paired device.
5. If you use a mouse mover function card, note the cursor speed settings display on top. Scroll down to the **Function Uses Device** section.
6. Tap the **Not Linked** button (D).

3. On the Settings menu, open the Connectivity menu (C).



7. Select a paired device in the list (E), or tap the **Pair New Device** button (F) to pair with a new device. A green hook behind the device name identifies an active device.



Connecting Devices with the LiNX System

To connect to a device, select the appropriate connectivity card from a profile. If the connectivity function is paired to a device and the device is linked to the function, it attempts to connect to the device via Bluetooth.

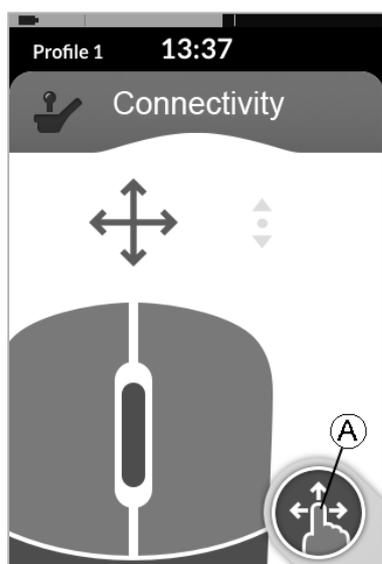
The Bluetooth status indicator shows when the Bluetooth connection between the LiNX system and the user's device is:

Disconnected	Connecting	Connected

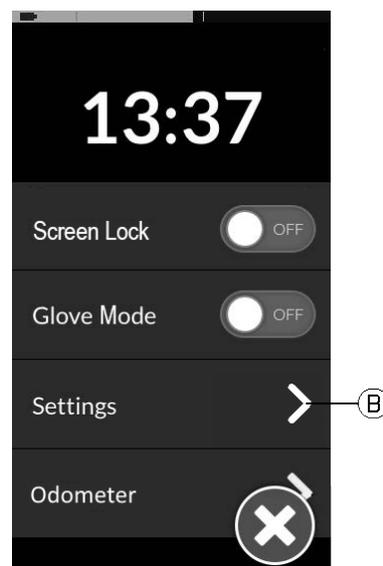
If the Bluetooth fails to connect, the status reverts to disconnected.

Removing Paired Devices

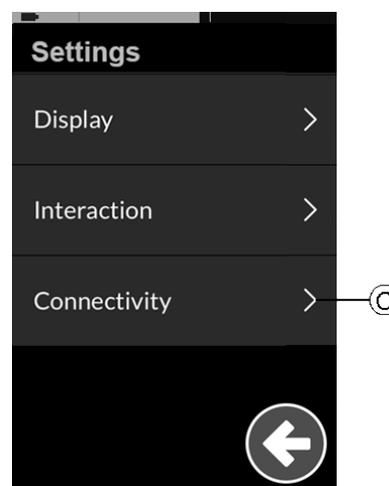
1. Long press the Navigation button (A).



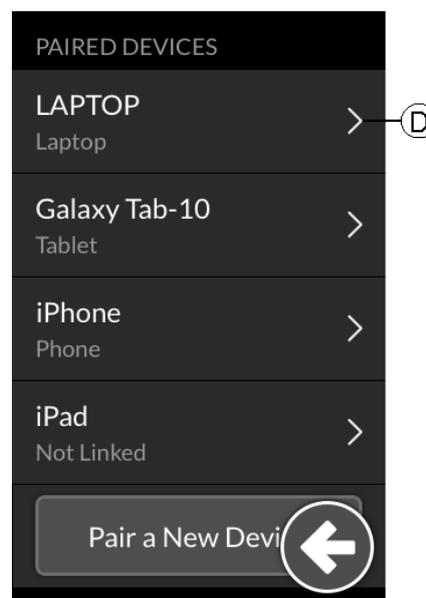
2. On the Status display, open the Settings menu (B).



3. From the Settings menu, open the Connectivity menu (C).



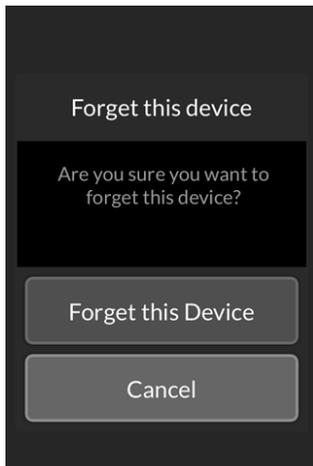
4. In the **Paired Devices** section, select the paired device (for example, laptop (D)) you want to remove.



5. Check the details on the following screen, and tap the **Forget this Device** button.

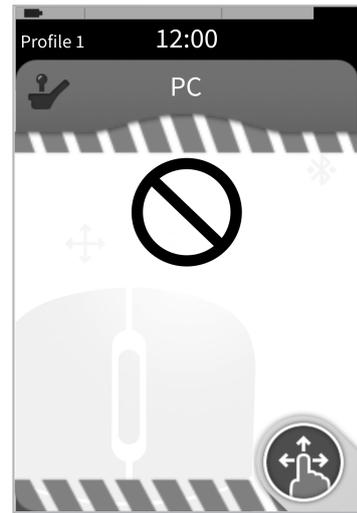


6. Tap the **Forget this Device** button again, or tap the **Cancel** button to cancel the removal operation.



Selecting a Connectivity Card

For more information about selecting user function cards, see 6.2.2 *Direct Navigation*, page 28 or 6.2.3 *Indirect Navigation*, page 30.



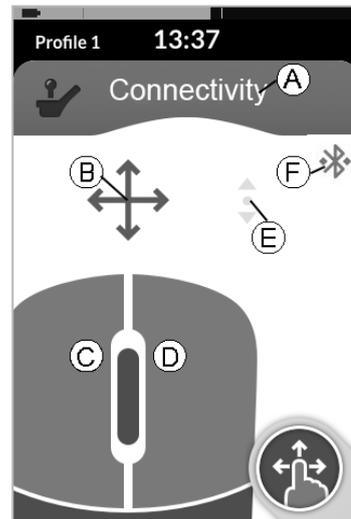
If a connectivity card in the profile is not configured fully or is subject to an error, it is classified as inoperable. See the preceding image.

A connectivity card can be inoperable for several reasons, including:

- the function’s primary input is missing
- the Bluetooth module has hardware errors
- a device is not linked
- Bluetooth is not enabled

For the latter two reasons, the card can be selected because the issues are rectified later.

6.16.2 Mouse Mover



- (A) Connectivity screen name
- (B) Mouse move indicator
- (C) Left mouse button
- (D) Right mouse button
- (E) Scroll indicator
- (F) Bluetooth connection status

Connectivity screen name		The name can be used to uniquely identify this screen's purpose.
Mouse move indicator		The mouse move indicator changes from grey to blue when active. That is, when the user input controls the connected device's cursor.
Left and right mouse buttons		Tap the touch screen left and right mouse buttons to perform left and right mouse clicks.
Scroll indicator		The scroll indicator changes from grey to blue when active. That is, when the user input controls the connected device's scrolling.
Bluetooth status		The Bluetooth status indicator shows the status of the Bluetooth connection between the LiNX system and your device: <ul style="list-style-type: none"> disconnected connecting connected

Setting up a Mouse Mover

The following setup procedure assumes connectivity cards are available and selectable in one or more profiles and the connectivity cards provide mouse mover functions. It also assumes the PC or laptop, to which the LiNX system will connect, has an active Bluetooth connection.

To use a mouse mover function:

1. The LiNX system must be paired via Bluetooth with a user's device
2. The connectivity card must be linked to the paired device

The setup procedure can be performed in any order and includes the following tasks:

- Selecting a connectivity card
- Pairing the LiNX system with a user's device
- Linking the connectivity card with the user's device
- Configuring the mouse mover function (cursor speed)

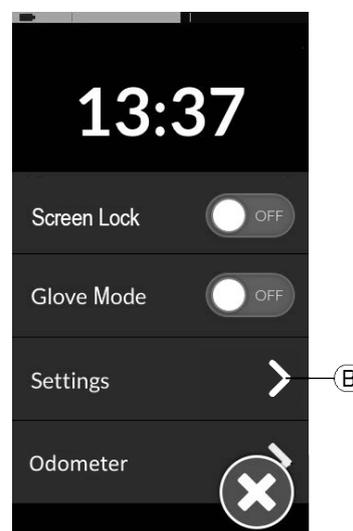
Configuring the Mouse Mover Function (Cursor Speed)

The cursor speed settings can be found in the Connectivity function menu.

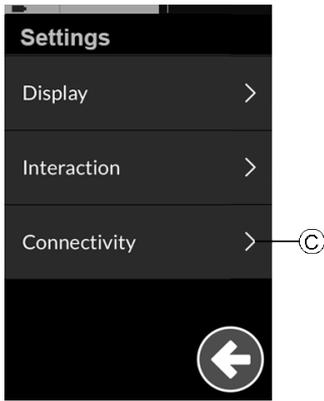
1. Long press the Navigation button **A**.



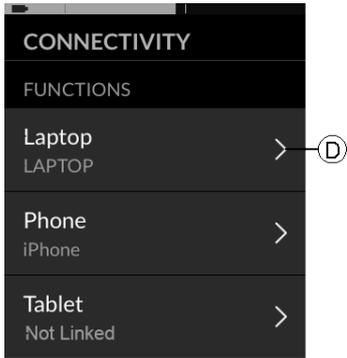
2. On the Status display, open the Settings menu **B**.



3. From the Settings menu, open the Connectivity menu **C**.

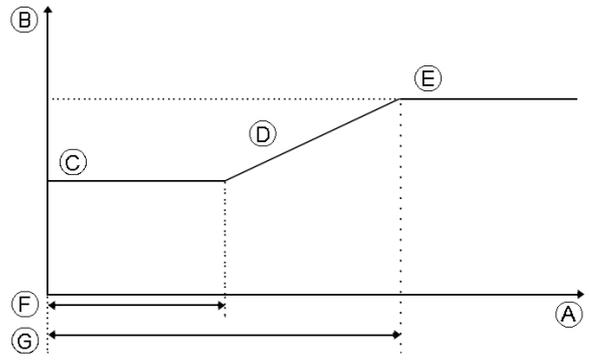
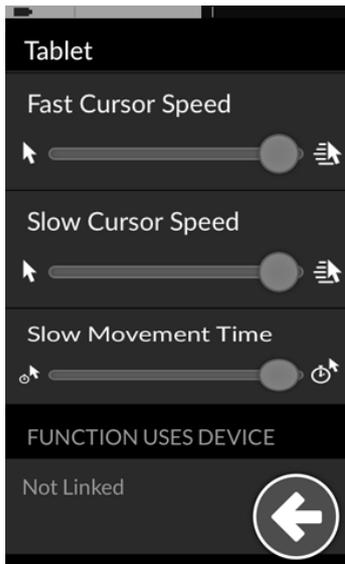


4. Open a connectivity function, for example **D**, to configure the cursor settings.



For each mouse mover function, you can set the following cursor settings:

- Fast Cursor Speed
- Slow Cursor Speed
- Slow Movement Time



- A** X-axis: Time
- B** Y-axis: Speed
- C** Slow Cursor Speed
- D** Ramp
- E** Fast Cursor Speed
- F** Slow Movement Time
- G** 2x Slow Movement Time

Slow Cursor Speed **C**: Sets the speed at which the mouse cursor moves when initially deflected. It remains at this speed for the duration set by the Slow Movement Time **F**. The Slow Cursor Speed is set so you can move the mouse cursor slowly over small distances, which is useful for small adjustments such as moving between screen icons that are close together. Slow Cursor Speed should be set equal to or less than Fast Cursor Speed **E**.

Fast Cursor Speed **E**: Sets the speed at which the mouse cursor ramps **D** up after the Slow Movement Time **F** expires. During the Slow Movement Time, however, the mouse cursor speed moves at Slow Cursor Speed **C** setting. The Fast Cursor Speed is set so you can move the cursor quickly over large distances. Fast Cursor Speed should be set equal to or greater than Slow Cursor Speed.

Slow Movement Time **F**: Sets the length of time for which the mouse moves at the Slow Cursor Speed **C** before increasing to the Fast Cursor Speed **E**. The ramp time, between the end of the Slow Cursor Speed and the start of the Fast Cursor Speed, equals this setting time **G**.

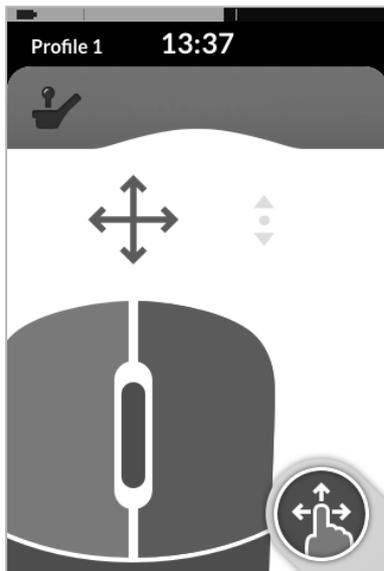
Operating the Mouse Mover

The following operation description assumes a connectivity card with a mouse mover function is set up as described in *Setting up a Mouse Mover, page 61*.

Moving the Cursor

The cursor moves on the user's device in the direction that is mapped to the input. The speed of the cursor is initially slow, which is ideal for close or fine movements. The cursor speed increases after a short period (defined by Slow Movement Time) to allow the cursor to move a greater distance in a shorter timeframe. For more information about cursor settings, see *Setting up a Mouse Mover*, page 61.

Right or Left Click



To perform a right or left click, tap the corresponding buttons on the touch screen. When a button is tapped, it changes color from grey to blue.

Scrolling

The scroll mode button is an external button, such as an egg switch or buddy button.

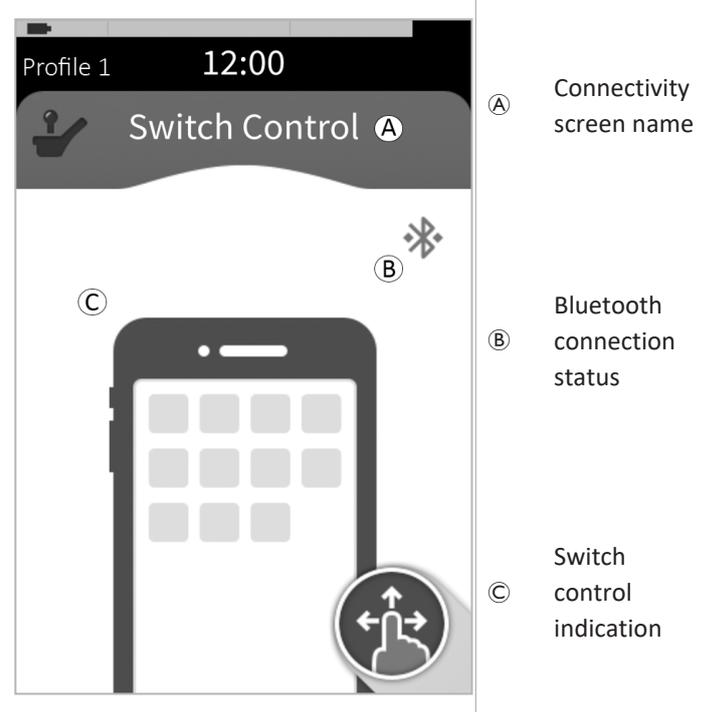
1. Press and hold the scroll mode button.
2. Use the assigned user input or programmed control inputs to perform up and down scroll actions.
3. To stop scrolling, release the scroll mode button.

Disconnecting

To stop using the mouse mover function, select a different function card from a profile. When the connectivity card is deselected, the Bluetooth connection disconnects.

6.17 Using Switch Control

6.17.1 Switch Control General Information



Connectivity screen name		The name can be used to uniquely identify this screen's purpose.
Bluetooth status		<p>The Bluetooth status indicator shows the status of the Bluetooth connection between the LiNX system and your device:</p> <ul style="list-style-type: none"> • disconnected • connecting • connected
Switch control indication		<p>The switch control indication varies depending on if your device is connected via Bluetooth and whether a switch control input is active:</p> <ul style="list-style-type: none"> • disconnected • connected • active

6.17.2 Switch Control Setup

The following setup procedure assumes a switch control connectivity screen is available and selectable in one or more profiles. It also assumes the user's device (iOS or Android) to which the LiNX system connects has an active Bluetooth connection.

To use a switch control function, both of the following statements must be true:

1. The LiNX system must be paired (via Bluetooth) with a user's device.
2. The switch control connectivity screen must be linked to the paired device.

The setup process can be performed in any order and involves the following tasks:

- Selecting a switch control connectivity screen
- Pairing the LiNX system with a user's device

- Linking the switch control connectivity screen with the user's device
- Configuring switch control

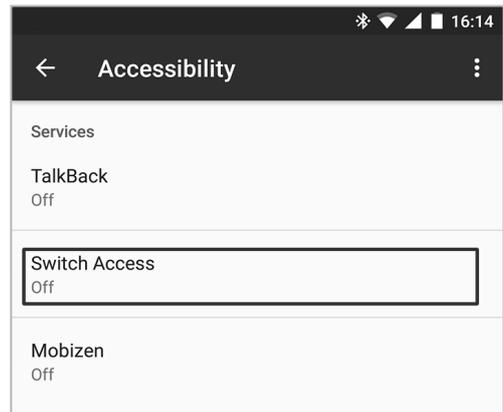
Configuring Switch Control

Before you can use switch control, you must identify the switches you will use and assign an action to each switch. For example, if you want your mobile phone to return to the Home screen when you tap the remote's touch screen, identify the touch screen as a switch input and assign that switch's action to the Home button.

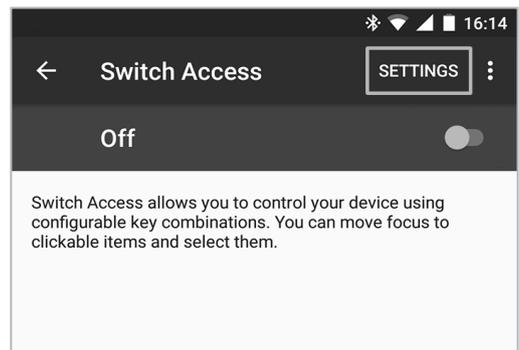
Configuring Switch Control (Android)

Based on different Android version in the market, the description on your mobile device can differ. For more information look into your user manual or at **Android Accessibility Help** pages.

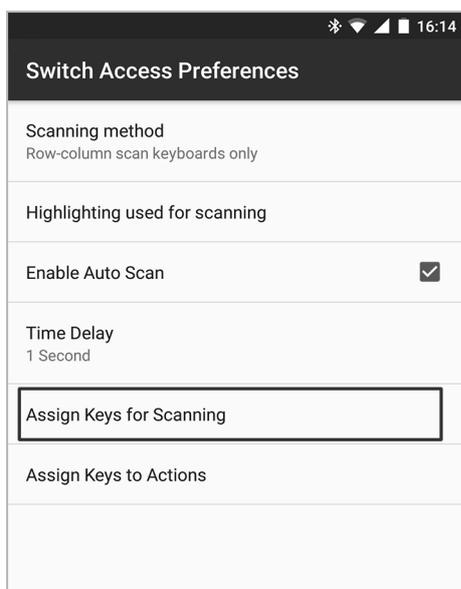
1. Open the switch control menu on your mobile device. **Settings > Accessibility > Switch Access**



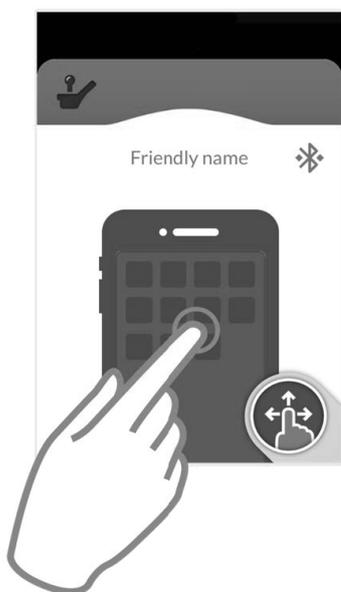
2. Open the Settings menu.



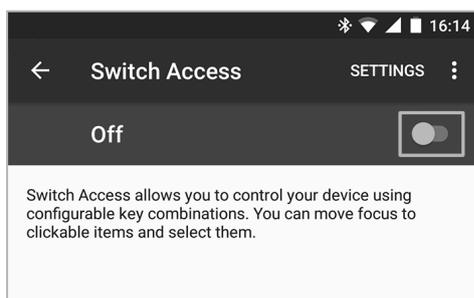
3. Open the Assign Keys for Scanning menu or the Assign Keys to Actions menu. Android placed functions in two different menus.



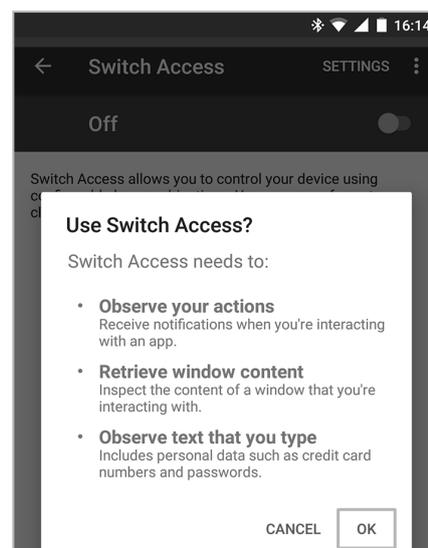
4. Activate the external switch. For example, tap the touch screen or deflect the joystick to the left.



5. Click Save.
6. If required, repeat the previous steps to add more switches.
7. Activate Switch Control.

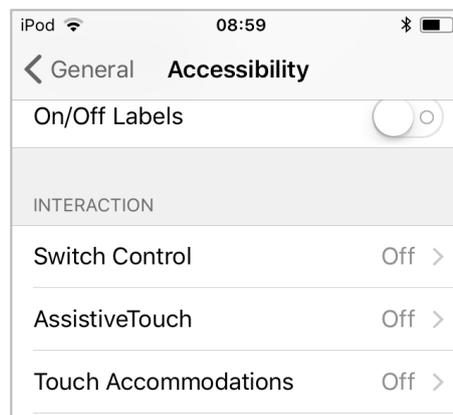


8. Click OK to activate Switch Control.



Configuring Switch Control (iOS)

1. Open the switch control menu on your mobile device.
Settings > General > Accessibility



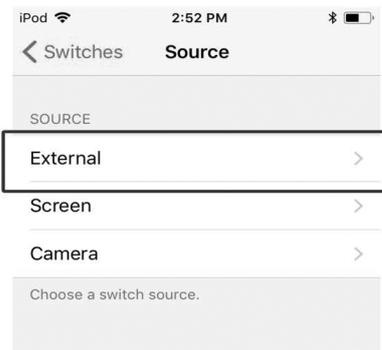
2. Open the Switches menu.



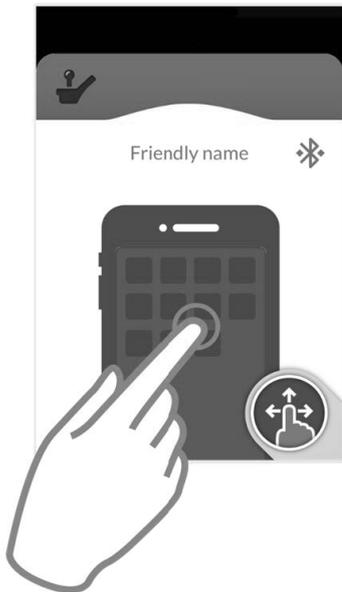
3. Tap Add New Switch.



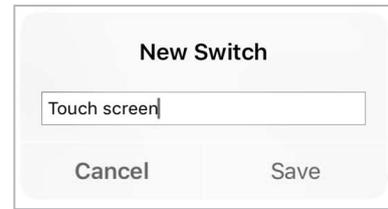
4. Tap External. You are prompted to activate the external switch.



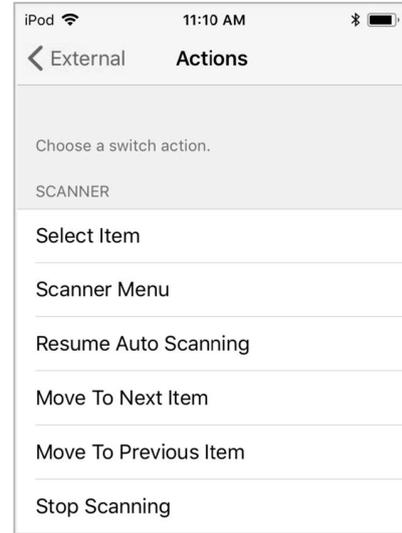
5. Activate the external switch. For example, tap the touch screen or deflect the joystick to the left.



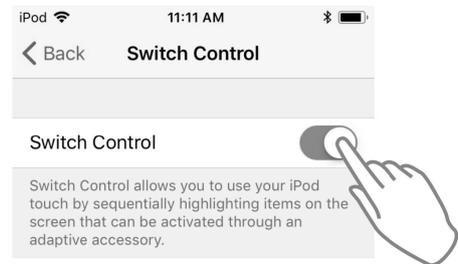
6. Name the external input with a unique name, such as **Touch screen** or **Right**. Then click Save.



7. Assign an action to the switch. From the Actions menu, choose a switch action, such as Select Item.



8. If required, repeat the previous steps to add more switches.
9. Activate Switch Control.



6.17.3 Switch Control Operation

The following description assumes a connectivity screen with a switch control function is set up as described in 6.17.2 *Switch Control Setup*, page 64.

Controlling a Mobile Device

1. Press the preassigned switch on your remote. Your mobile device executes the action.

Disconnecting

To stop using the switch control function, select a different function screen from a profile. When the switch control connectivity screen is deselected, the Bluetooth connection disconnects.

6.18 Secondary Inputs



CAUTION!

Risk of Injury

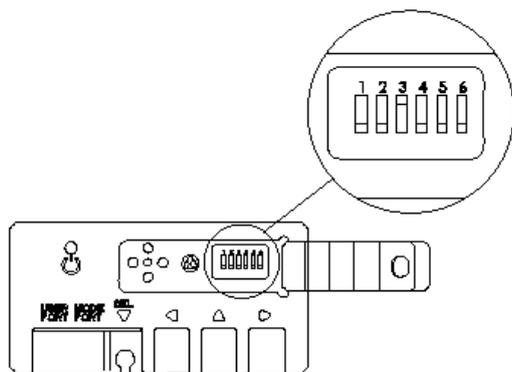
If an external input is used, unrequested functions or speed settings can lead to unexpected operations.
-To avoid unexpected operations, check which function is operated and the function speed setting.

If you are unable to use a standard joystick, you can control the system via an external input. All of the following inputs can control the driving function. Some of the following inputs allow you to switch the function screens to control seating or light functions, if available.

With a proportional joystick or the Sip and Puff Head Array, the wheelchair can be driven forward, reverse, right or left by a four-quadrant (4Q) operation without additional switches. This is different to an operation based on three quadrants (3Q), such as a Head Array or a Four-Switch Proximity Array. There you have the possibility to move forward, right or left with the aid of proximity sensors. To allow the wheelchair to be driven in reverse or changing function screens, an additional switch or sensor is required.

The Head Array and the Four-Switch Proximity Array are provided with a Proton Box so your provider can fit the arrays to your individual needs by using the dip switches.

Default dip switch setup:



- 1 Reset/Reverse switch turned off.
- 2 Not used at the moment.
- 3 Turned on, to power up with wheelchair.
- 4 Not used at the moment.
- 5 Not used at the moment.
- 6 Audible input indicator turned off.



All components mentioned below describe the default setup. For individual setup, contact your provider.

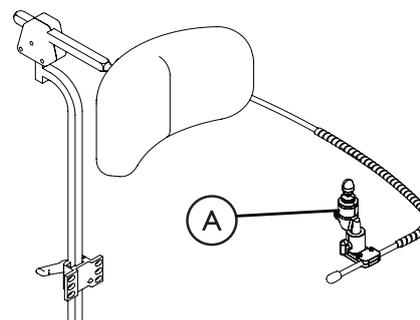
6.18.1 Using the ASL 128 Molecule Joystick (Chin Control)

Manually adjustable

This proportional joystick needs less force to be deflected than a standard joystick.

Driving

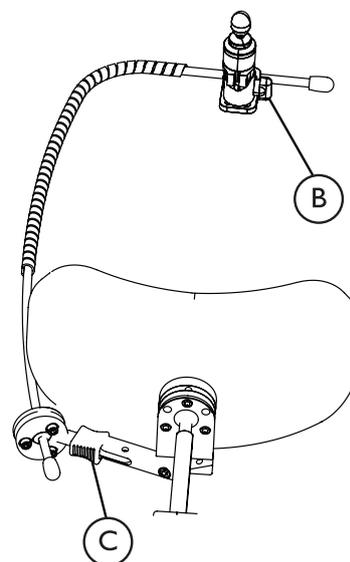
1. Deflect the drive joystick (A) from the neutral position to drive in the desired direction.



For more information about driving, refer to 6.1 *Operating the Remote*, page 20.

Moving the Chin Control

1. Loosen the wing bolt (B) to adjust the joystick.



2. Perform one of the following:
 - Swivel Inward—Move the joystick inward until it clicks in place.
 - Swivel Outward—Press the locking device (C) (behind the headrest), and move the joystick outward.

Changing Function Screens



For information about the difference between the function screen and the profile, refer to 4.3 *User Function Screen Overview*, page 13.

If a patient access switch is available:

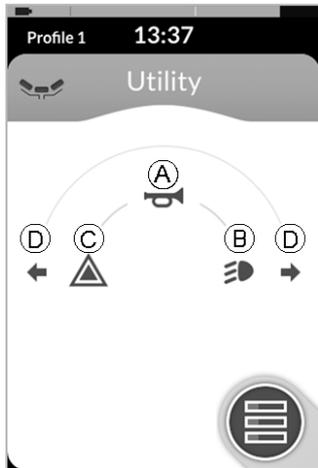
1. Short press the egg switch to change the function screen.
2. Long press the egg switch to change the profile.

For operating the powered seating functions, refer to *6.15.1 Through Seating Screens, page 50*.

Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give an input to the front (A) to turn on the horn.
3. Give a short input to the right (B) to turn on/off the position lights.
4. Give a short input to the left (C) to turn on/off the hazard lights.
5. Give a long input to the left or right (D) to turn on/off the left or right turn signal.

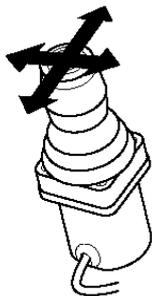
 Activate a drive function screen to drive normally while the position and hazard lights remain turned on.

 After more than 10 seconds, the turn signals turn off.

6.18.2 Using the Compact Single Switch Joystick

Driving

1. Deflect the joystick from the neutral position to drive in the desired direction.

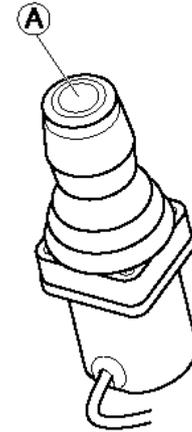


For more information about driving, refer to *6.4 Using Proportional Driving Mode, page 38*.

Changing Function Screens

 For information about the difference between the function screen and the profile, refer to *4.3 User Function Screen Overview, page 13*.

1. Short press the joystick button (A) to change the function screen.
2. Long press the joystick button (A) to change the profile.

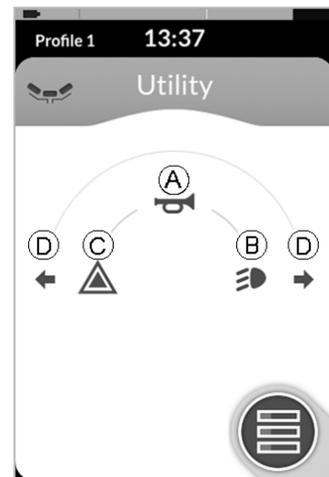


For information about operating powered seating functions, refer to *6.15.1 Through Seating Screens, page 50*.

Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give an input to the front (A) to turn on the horn.

3. Give a short input to the right **B** to turn on/off the position lights.
4. Give a short input to the left **C** to turn on/off the hazard lights.
5. Give a long input to the left or right **D** to turn on/off the left or right turn signal.

 Activate a drive function screen to drive normally while the position and hazard lights remain turned on.

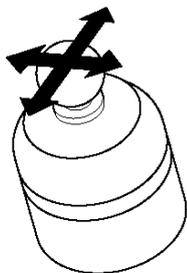
 After more than 10 seconds, the turn signals turn off.

6.18.3 Using the Micro Extremity Control joystick

This proportional joystick needs only a little force to be deflected.

Driving

1. Deflect the joystick from the neutral position to drive in the desired direction.

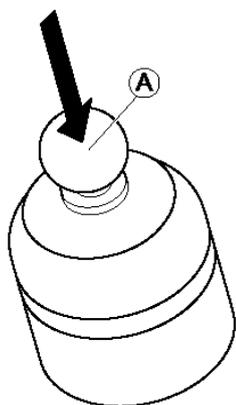


For more information about driving, refer to *6.4 Using Proportional Driving Mode, page 38*.

Changing Function Screens

 For the difference between the function screen and the profile, refer to *4.3 User Function Screen Overview, page 13*.

1. Short press joystick **A** to change the function screen.
2. Long press joystick **A** to change the profile.

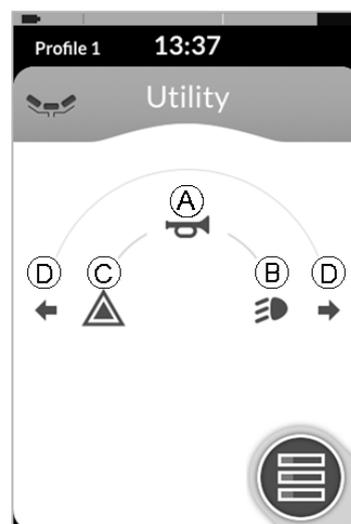


For information about operating the powered seating functions, refer to *6.15.1 Through Seating Screens, page 50*.

Operating the Lighting Functions and Horn

Via a utility function screen you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the lighting function screen.



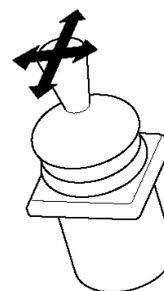
2. Give an input to the front **A** to turn on the horn.
3. Give a short input to the right **B** to turn on/off the position lights.
4. Give a short input to the left **C** to turn on/off the hazard lights.
5. Give a long input to the left or right **D** to turn on/off the left or right turn signal.

 Activate a drive function screen to drive normally while the position and hazard lights remain turned on.

 After more than 10 seconds, the turn signals turn off.

6.18.4 Using the Pediatric Compact Joystick

1. Deflect the joystick from the neutral position to drive in the desired direction.



For more information about driving, refer to *6.4 Using Proportional Driving Mode, page 38*.

Changing Function Screens

Refer to *6.2 Navigating User Function Screens, page 28* for more information about changing the function screens.

 For the difference between a function screen and profile, refer to *4.3 User Function Screen Overview, page 13*. For operating the powered seating functions, refer to *6.15.1 Through Seating Screens, page 50*.

Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give input to the front **A** to turn on the horn.
3. Give short input to the right **B** to turn on/off the position lights.
4. Give short input to the left **C** to turn on/off the hazard lights.
5. Give long input to the left or right **D** to turn on/off the left or right turn signal.

 Activate a drive function screen to drive normally, while position lights and hazard lights remain turned on.

 After more than 10 seconds, the turn signals turn off automatically.

6.18.5 Using the Sip and Puff



WARNING!

Risk of Injury or Damage

Improper mounting or maintenance of the Sip and Puff control, including the mouthpiece and breath tube, may cause injury or damage. Water inside the Sip and Puff interface module may cause damage to the unit. Excessive saliva residue in the mouthpiece/straw can reduce performance. Blockages, a clogged saliva trap or air leaks in the system may cause the Sip and Puff not to function properly.

- Ensure moving parts of the wheelchair, including the operation of powered seating, DO NOT pinch or damage the Sip and Puff tubing.
- Saliva trap **MUST** be installed to reduce risk of water or saliva entering the Sip and Puff interface module.
- Occasionally flush the mouthpiece to remove saliva residue.
- The mouthpiece/straw **MUST** be completely dry before installation.
- If Sip and Puff does not function properly, inspect system for blockages, clogged saliva trap or air leaks. As necessary, replace mouthpiece, breath tube and saliva trap.



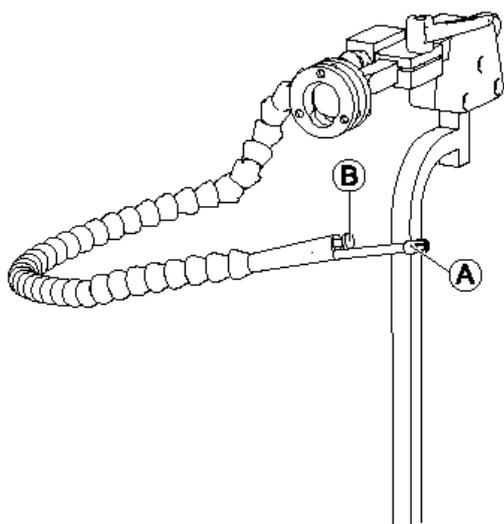
Contact your Invacare provider for more information about maintaining and troubleshooting the Sip and Puff system. For maintenance and cleaning instructions, see *Maintenance, page 1*.



Sip and Puff is not the most maneuverable or intuitive control method and therefore requires a considerable amount of training. In the early tuning stages. This training is best done outdoors in an unrestricted but safe area. Also, the presence of an attendant is recommended.

Driving

The drive function screens for the Sip and Puff are preset in latched driving mode. For more information, refer to *6.5 Using Latched Driving Mode, page 39*.



1. Puff hard into the mouthpiece (A) to drive forward.
2. Sip hard at the mouthpiece to drive in reverse.
3. When in latched driving mode, puff softly into the mouthpiece to veer to the right.
4. When in latched driving mode, sip softly at the mouthpiece to veer to the left.

 For more information about the calibration of hard and soft inputs, refer to the service manual of the LINX system.

Stopping

A lipswitch (B) is mounted to the mouthpiece. This switch can be used as an external stop switch, when in latched driving mode. While you are in latched driving, you do not need to give a drive input all the time, but the mouthpiece must stay inside your mouth. As soon as the lipswitch is pressed while driving, the wheelchair stops.

Changing Function Screens

The lipswitch can also be used as a mode function switch.

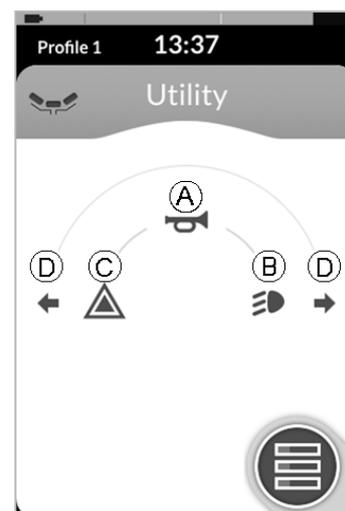
 For the difference between a function screen and profile, refer to *4.3 User Function Screen Overview, page 13*.

1. Stop the wheelchair.
2. Short press the lipswitch to change the function screen.
3. Long press the lipswitch to change the profile.

Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give input to the front (A) to turn on the horn.
3. Give short input to the right (B) to turn on/off the position lights.
4. Give short input to the left (C) to turn on/off the hazard lights.
5. Give long input to the left or right (D) to turn on/off the left or right turn signal.

 Activate a drive function screen to drive normally while the position lights and hazard lights remain on.

 After more than 10 seconds, the turn signals turn off automatically.

6.18.6 Using the Sip and Puff Head Array



WARNING! **Risk of Serious Injury**

Proximity sensors are sensitive to water. If enough water is present close to the sensors, they may be activated and the mobility device may start moving unintentionally.

- Do not operate Head Array with wet hair.
- Do not operate Head Array in wet weather.
- Do not operate Head Array in any circumstances where water may come close to sensors.



WARNING! **Risk of Serious Injury**

Sensor pads are made of water-resistant vinyl to let water quickly run off the pads before activating the sensors.

If the sensor pads are damaged, water may get in and the mobility device may start driving unintentionally. If the sensor pads are covered by water-absorbing material, the mobility device may start driving unintentionally.

- Do not operate Head Array if sensor pads are damaged. Change sensor pads immediately.
- Do not cover sensor pads with any material.



WARNING!

Risk of Injury or Damage

Improper mounting or maintenance of the Sip and Puff control, including the mouthpiece and breath tube, may cause injury or damage. Water inside the Sip and Puff interface module may cause damage to the unit. Excessive saliva residue in the mouthpiece/straw can reduce performance. Blockages, a clogged saliva trap or air leaks in the system may cause the Sip and Puff not to function properly.

- Ensure moving parts of the wheelchair, including the operation of powered seating, DO NOT pinch or damage the Sip and Puff tubing.
- Saliva trap MUST be installed to reduce risk of water or saliva entering the Sip and Puff interface module.
- Occasionally flush the mouthpiece to remove saliva residue.
- The mouthpiece/straw MUST be completely dry before installation.
- If Sip and Puff does not function properly, inspect system for blockages, clogged saliva trap or air leaks. As necessary, replace mouthpiece, breath tube and saliva trap.



Contact your Invacare provider for more information about maintaining and troubleshooting the Sip and Puff system. For further maintenance and cleaning instructions, see *Maintenance, page 1*.



Sip and Puff is not the most maneuverable or intuitive control method and therefore requires a considerable amount of training. In the early tuning stages, this is best done outdoors in an unrestricted but safe area. Also the presence of an attendant is recommended.

Inside the Head Array pads, there are proximity sensors, that allow you to steer the wheelchair in the desired direction with the movement of your head. This means that the head does not need to touch the pads or press a switch to activate driving. If the head comes within 6 mm of a sensor, the sensor is activated and the wheelchair starts driving. By default, the Head Array powers up as soon as the wheelchair is powered up and powers down as soon as the wheelchair is powered down.

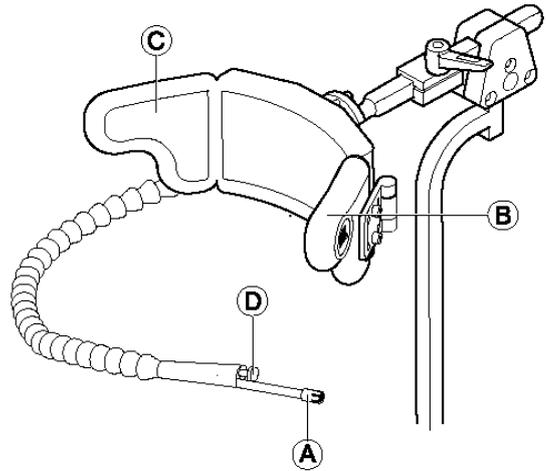


Be aware that when powering up automatically with the wheelchair, your head has to be more than 6 mm away from the proximity sensors; otherwise, a drive OON warning displays and prevents the wheelchair from driving. For more information about OON, refer to 8.2 OON (“Out Of Neutral”), page 85.

Driving

This component combines simple sip-and-puff controls with head movements. Right and left turns are controlled by sensors located in the pads of the Head Array.

The drive function screens for the Sip and Puff Head Array are preset in latched driving mode. For more information, refer to 6.5 Using Latched Driving Mode, page 39.



1. Puff into the mouthpiece ① to drive forward.
2. Sip at the mouthpiece ① to drive in reverse.
3. When in latched driving mode, activate the left pad ② to veer to the left.
4. When in latched driving mode, activate the right pad ③ to veer to the right.



To revolve, you only need to activate the left or right pad.

Stopping

A lipswitch ④ is mounted to the mouthpiece. This switch can be used as an external stop switch when in latched driving mode. While you are in latched driving mode, you do not need to give a drive input all the time, but the mouthpiece must stay inside your mouth. As soon as the lipswitch is pressed while driving, the wheelchair stops.

Changing Function Screens

The lipswitch can also be used as a mode function switch.



For the difference between a function screen and profile, refer to 4.3 User Function Screen Overview, page 13.

1. Stop the wheelchair.
2. Short press the lipswitch to change the function screen.
3. Long press the lipswitch to change the profile.



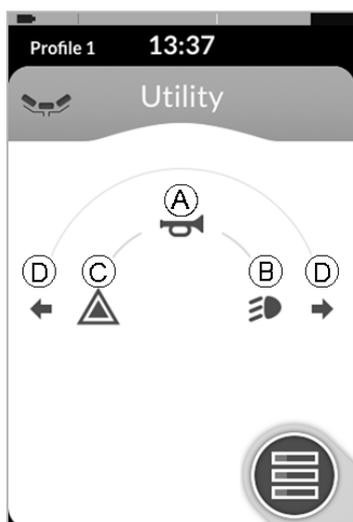
Seating functions can only be operated with the right or left pad of the head array.



Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give input to the front **A** to turn on the horn.
3. Give short input to the right **B** to turn on/off the position lights.
4. Give short input to the left **C** to turn on/off the hazard lights.
5. Give long input to the left or right **D** to turn on/off the left or right turn signal.

 Activate a drive function screen to drive normally while position lights and hazard lights remain turned on.

 After more than 10 seconds, the turn signals turn off automatically.

6.18.7 Using the Head Array



WARNING! **Risk of Serious Injury**

Proximity sensors are sensitive to water. If enough water is present close to the sensors, they may be activated and the mobility device may start moving unintentionally.

- Do not operate Head Array with wet hair.
- Do not operate Head Array in wet weather.
- Do not operate Head Array in any circumstances where water may come close to sensors.



WARNING! **Risk of Serious Injury**

Sensor pads are made of water-resistant vinyl to let water quickly run off the pads before activating the sensors.

If sensor pads are damaged, water may get in and mobility device may start driving unintentionally. If sensor pads are covered by water-absorbing material, the mobility device may start driving unintentionally.

- Do not operate Head Array if sensor pads are damaged. Change sensor pads immediately.
- Do not cover sensor pads with any material.

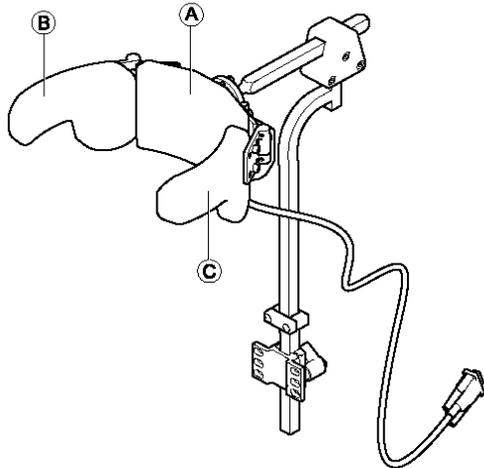
The Head Array is a three-quadrant operation. Inside the Head Array pads, there are proximity sensors that allow you to steer the wheelchair in the desired direction with the movement of your head. This means the head does not need to touch the pads or press a switch to activate driving. If the head comes within 6 mm of a sensor, the sensor is activated and the wheelchair starts driving.

By default, the Head Array powers up as soon as the wheelchair is powered up and powers down as soon as the wheelchair is powered down.



Be aware that when powering up automatically with the wheelchair, your head has to be more than 6 mm away from the proximity sensors; otherwise, a drive OON warning displays and prevents the wheelchair from driving. For more information about OON, refer to 8.2 OON ("Out Of Neutral"), page 85.

Driving



1. Activate the forward drive function screen.
Activate the center pad **A** to drive forward.
2. Change to the reverse drive function screen.
Activate the center pad **A** to drive in reverse.
3. Change back to the forward drive function screen.
Activate the center pad **A** and right pad **B** at the same time to veer to the right.
4. Activate the center pad **A** and left pad **C** at the same time to veer to the left.

Indicators for forward and reverse are shown in the following display.



To revolve, you only need to activate the left or right pad.

Changing Function Screens

For the difference between a function screen and profile, refer to *4.3 User Function Screen Overview, page 13*.

1. Short press the mode switch to change the function screen.
2. Long press the mode switch to change the profile.

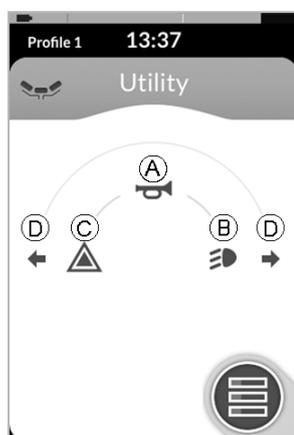
Seating functions can only be operated with the right or left pad of the head array.



Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give input to the front (A) to turn on the horn.
3. Give short input to the right (B) to turn on/off the position lights.
4. Give short input to the left (C) to turn on/off the hazard lights.
5. Give long input to the left or right (D) to turn on/off the left or right turn signal.

 Activate a drive function screen to drive normally while position lights and hazard lights remain turned on.

 After more than 10 seconds, the turn signals turn off automatically.

6.18.8 Using the Four-Switch Proximity Array



WARNING!

Risk of Serious Injury

Proximity sensors are sensitive to water. If enough water is present close to the sensors, they may be activated and the mobility device may start moving unintentionally.

-Do not operate Four-Switch Proximity Array in wet weather.

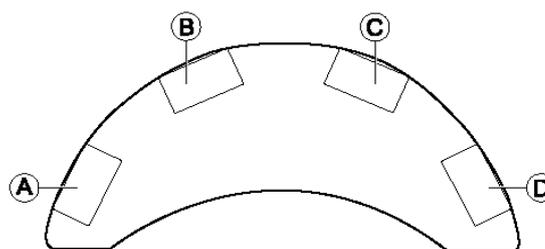
-Do not operate Four-Switch Proximity Array in any circumstances where water may come close to sensors.

The Four-Switch Proximity Array is a three-quadrant operation. The Four-Switch Proximity Array offers four proximity sensors that allow the user to operate a mobility device or change the function screens. The sensors are activated as soon as an input comes within 6 mm of the sensors.

By default, the sensors power up as soon as the wheelchair is powered up and power down as soon as the wheelchair is powered down.

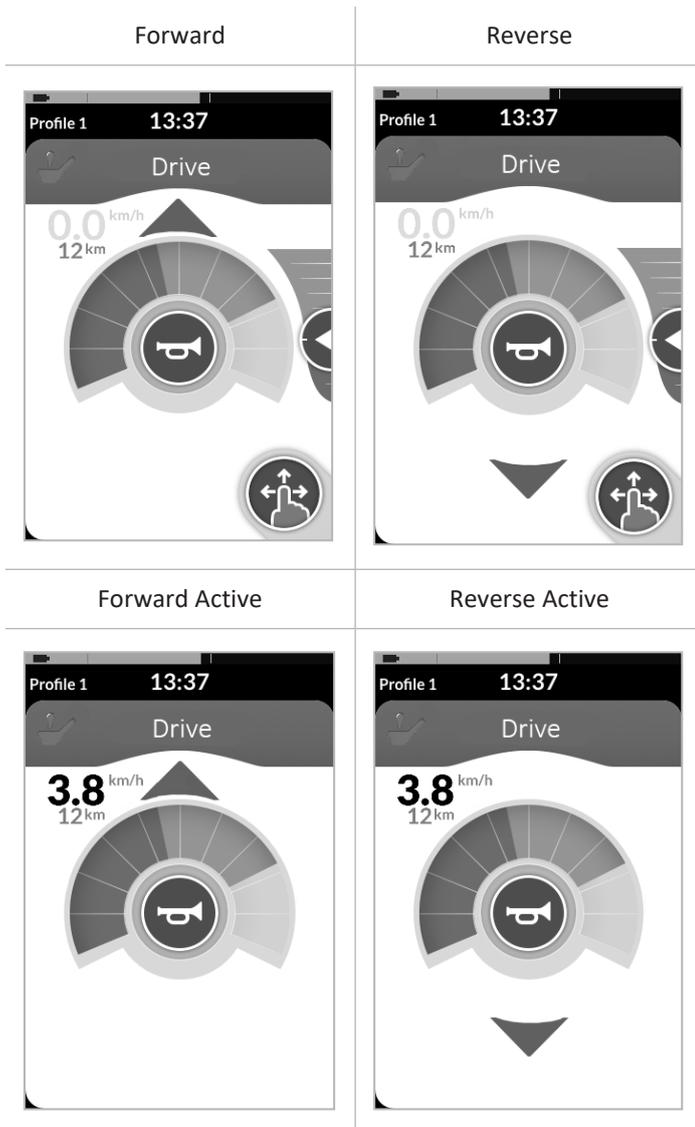
 Be aware that when powering up automatically with the wheelchair, you must not cover the proximity sensors; otherwise, a drive OON warning displays and prevents the wheelchair from driving. For more information about OON, refer to 8.2 OON ("Out Of Neutral"), page 85.

 The picture below shows a configuration example in combination with an Eclipse Tray. For individual adjustment, contact your provider.



1. Cover sensor (B) to drive forward.
2. To drive in reverse, cover sensor (D) to change direction.
Cover sensor (B) to drive in reverse.
3. Cover sensors (A) and (B) to veer to the left.
4. Cover sensors (C) and (B) to veer to the right.
5. Cover sensor (D) to change the function screen.

Indicators for forward and reverse are shown in the following display.

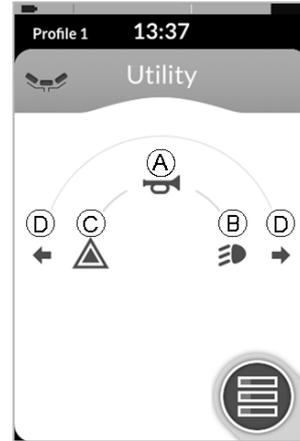


 To revolve, you only need to cover sensors **A** or **C**.

Operating the Lighting Functions and Horn

Via a utility function screen, you are able to operate the lighting functions with an external input. The utility function screen is part of one or more profiles and can be activated like a drive or seating function screen.

1. Activate the utility function screen.



2. Give input to the front **A** to turn on the horn.
3. Give short input to the right **B** to turn on/off the position lights.
4. Give short input to the left **C** to turn on/off the hazard lights.
5. Give long input to the left or right **D** to turn on/off the left or right turn signal.

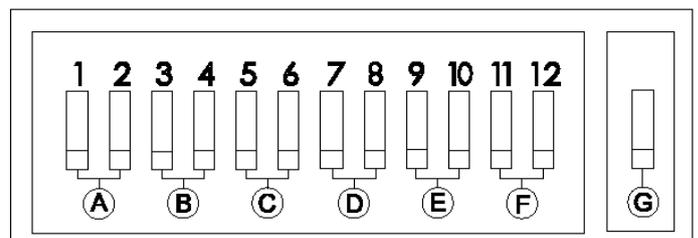
 Activate a drive function screen to drive normally while position lights and hazard lights remain turned on.

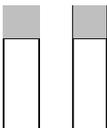
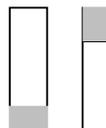
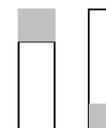
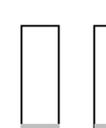
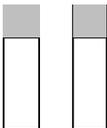
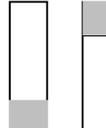
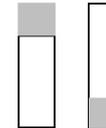
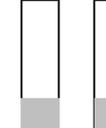
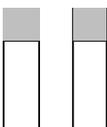
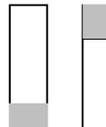
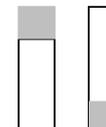
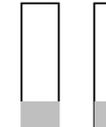
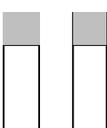
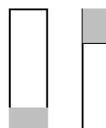
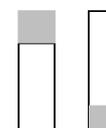
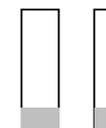
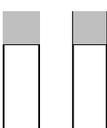
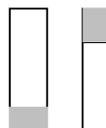
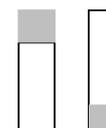
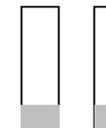
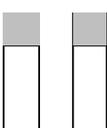
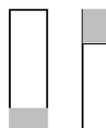
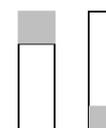
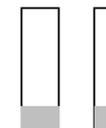
 After more than 10 seconds, the turn signals turn off automatically.

6.18.9 Using the Wireless Mouse Emulator

1. Turn on the Bluetooth on your proton box by pressing an external switch until you hear a long beep.
2. Connect the Wireless Mouse Emulator via the USB port with your computer.
3. Mouse emulator and Head Array connect automatically.
4. Default setup is:
 - Back pad: Mouse moves up and down
 - Right pad: Mouse moves left and right
 - Left pad: Select

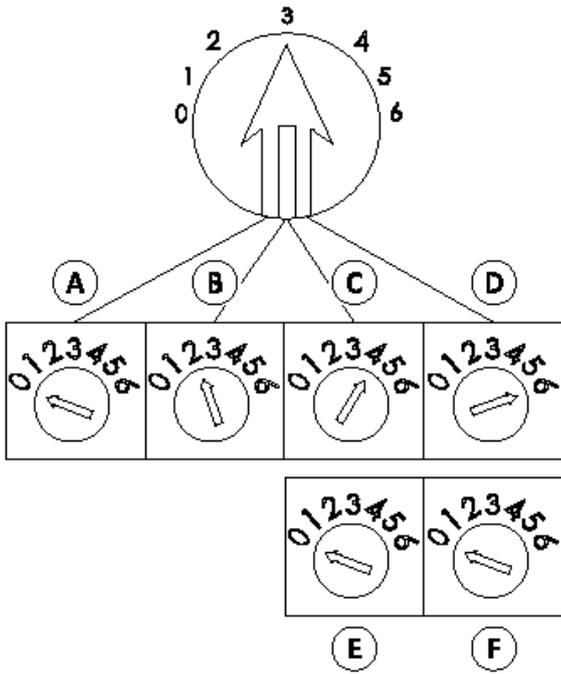
Mouse movement and behavior can be changed via the switches at the back of the Wireless Mouse Emulator.



Ⓐ	Dip switch 1 & 2: Initial mouse movement			
	 slow	 medium slow	 medium fast	 fast
Ⓑ	Dip switch 3 & 4: Maximum cursor or mouse speed			
	 disabled	 2x base	 4x base	 8x base
Ⓒ	Dip switch 5 & 6: Cursor delay			
	 disabled	 1.0 sec	 2.0 sec	 4.0 sec
Ⓓ	Dip switch 7 & 8: Switch delay			
	 disabled	 0.5 sec	 1.0 sec	 2.0 sec
Ⓔ	Dip switch 9 & 10: Latch delay			
	 disabled	 1.0 sec	 2.0 sec	 4.0 sec
Ⓕ	Dip switch 11 & 12: Cursor movement options			
	 3 switch	 4 switch	 4 switch	 5 switch

Ⓖ	 OFF	 ON		
---	--	---	--	--

Ⓐ	This is a slower speed initially for precise targeting. It is set and used in conjunction with Cursor Delay to give the user the ability to move the mouse slowly at first and then speed up after a set amount of time to move across the screen efficiently.
Ⓑ	This setting controls the maximum speed of the cursor and is the speed the mouse will obtain after the initial speed. Note the base speed is set in the control panel of the computer's mouse settings.
Ⓒ	This is the initial amount of time the switch must be pressed and held before the mouse speeds up. This setting is used in conjunction with Initial Mouse Movement and Maximum Cursor settings.
Ⓓ	This setting controls the amount of time the directional switches must be activated before the cursor will move. This is to allow for inadvertent switch closures. Note this applies to directional switches only.
Ⓔ	This setting controls the amount of time the Left and Right Click switch must be held before it will latch. Once the latch is no longer required, press the Right Click or Left Click switch for the same length of time to deactivate the latch.
Ⓕ	Switch 11 and 12 should be in the DOWN position when using with the Head Array for 3 switch mouse emulation.
Ⓖ	OFF: Original mouse speed; better for PC. ON: Increases mouse speed by 1/3; better for MAC.



Numbers 0 to 6 describe the action the mouse should perform. Letters A to F describe the direction of the input, which leads to the mouse action.

Number	Mouse Action
0	No change
1	Down
2	Left
3	Right
4	Up
5	Right click
6	Left click

The following adjustments are examples only and can be adjusted by your provider.

	Input Direction	Mouse Action
A	Reverse	No change
B	Left	Left and right mouse direction
C	Right	Up and down mouse direction
D	Forward	Left click

	Input Direction	Mouse Action
E	Left click	No change
F	Right click	No change

 Input direction/Mouse action (0–6) cannot be duplicated in any two switches, except for zero.

6.19 Disabling Bluetooth

The embedded Bluetooth functionality can be disabled when powering up the system.

1. Press and hold the ON/OFF button for more than three seconds.



The disabled Bluetooth functionality is indicated by an icon in the status bar and the status LED inside the ON/OFF button pulsing for a duration of six seconds.

Bluetooth functionality resumes the next time the system is powered up again.

6.20 Charging the Batteries



WARNING!

Risk of Injury, Damage or Death

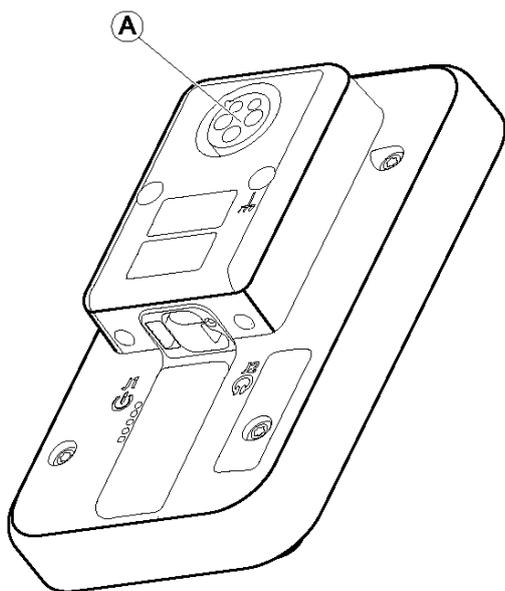
Improper routing of the charger cord(s) may cause a tripping, entanglement or strangulation hazard that may result in injury, damage or death.

- Ensure all charger cord(s) are routed and secured properly.
- Close supervision and attention is needed when charging the wheelchair near children, pets or people with physical/mental disabilities.



Refer to the charger user manual, the power wheelchair base user manual and instructions supplied with the batteries for more information about charging the batteries.

1. Plug the battery charger into the remote charger socket .



If the remote is powered up, the battery gauge indicates the system is connected to the charger by sequence and then displaying the approximate battery charge state at the end of the sequence.

The LiNX system does not have to be powered up when charging the batteries; however, if it is not powered up, the battery gauge does not indicate the charging state. For more information about the charging state, refer to the charger user manual or the power wheelchair base user manual.

While charging, the wheelchair is in drive inhibit mode. For more information about drive inhibit mode, refer to 8.3 *Drive Inhibit Indication*, page 86.

i **NEW Batteries Only**—The wheelchair power must be on during charging to ensure accurate battery charge levels display on the remote. New batteries must be fully charged. The battery synchronization procedure **MUST** be performed within 24 hours of powering on the wheelchair. The battery synchronization procedure can be found in the LiNX service manual and must be performed by a provider or qualified technician.

6.20.1 Battery Alarms

Three battery alarms display on the right-hand side of the status bar:

6.21 Using the USB Charger



WARNING!

Risk of Injury

If you use a mobile phone while operating the mobility device, accidents could lead to injury or property damage.

-Only use a mobile phone in conjunction with hands-free equipment to operate the mobility device while driving.



Risk of Property Damage

Handle the USB charger with care; otherwise, damage could occur.

- Always keep the USB charger dry. If the USB charger gets wet, let the USB charger dry before use.
- Do not use or store the USB charger in dusty or dirty areas.
- Do not insert sharp objects into the USB ports.



WARNING!

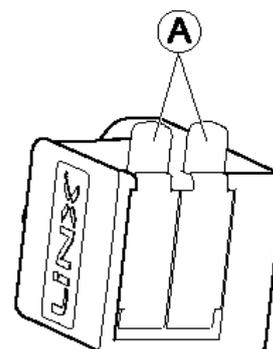
Risk of Injury or Damage

Erratic or unintended movement of the wheelchair may occur if wireless transmitters are connected to the wheelchair. To avoid injury or damage:

- DO NOT use the USB charger connector as a wireless transmitter.
- Only use the USB charger for the purposes described in this manual.

With the USB charger, you can charge the battery of your mobile phone or a compatible device when you do not have access to a regular power source. Both USB ports can be used at the same time, and each USB port has a charging current up to 1 A.

1. Open the bung **A**.



2. Connect the device with the USB port.



Replace the bung when the USB ports are not in use.



Use of the USB charger influences the drive range of the mobility device. For more information about the drive range, refer to the Technical Data chapter in the mobility device user manual.

7 Maintenance

7.1 Maintenance Information



Risk of Damage to the Remote

There are no user-serviceable parts in any electronic component.

-Do not attempt to open any case or undertake any repairs, else warranty will be voided and the safety of the system may be compromised.



If any component is damaged in any way, or if internal damage may have occurred (for example by being dropped), have it checked by qualified personnel before operating.

Where any doubt exists, consult your nearest Invacare provider.

7.2 Setup/Delivery Inspection



Setup/delivery inspection should be performed by the provider at the time of delivery/setup.

Initial adjustments should be made to suit your personal body structure needs and preferences. Thereafter weekly, monthly and periodic inspections should be performed by the user/attendant between six-month service inspections.

Every six months, and as necessary, take your wheelchair to a qualified technician for a thorough inspection and servicing.

- Check all parts for shipping damage. In case of damage, DO NOT use.
- Check that cables are routed and secured properly to ensure cables do NOT become entangled and damaged during normal operation of the seating system.
- Ensure proper operation of powered functions (for example, drive, seating and legrests).

7.3 User/Attendant Inspection Checklists



Every six months, and as necessary, take your wheelchair to a qualified technician for a thorough inspection and servicing. Weekly, monthly, and periodic inspections should be performed by the user/attendant between six-month service inspections.

Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair MUST be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.

7.3.1 Inspect/Adjust Weekly

- Ensure proper operation of powered functions (for example, drive, seating and legrests).

7.3.2 Inspect/Adjust Monthly

- Check all components for loose, damaged or corroded components, such as connectors, terminals or cables. Contact your Invacare provider to replace damaged components.
- Ensure all connectors are fully mated.
- Inspect cables to ensure they are properly routed and secured. Periodic inspection is recommended as it may reveal loose and/or damaged cables. Contact your Invacare provider to re-secure or replace cables.
- Check for and remove any foreign objects or material.

7.3.3 Inspect/Adjust Periodically

- Check the joystick boot for damage. Contact your Invacare provider for replacement if it is damaged.
- Check that all labels are present and legible. Replace them if necessary.

7.4 Service Inspection



Every six months, take your wheelchair to a qualified technician for a thorough inspection and servicing.

Service inspections MUST be performed by a qualified technician.

The following are recommended items to inspect during regular service inspections performed by a qualified technician. Actual items to be inspected during the service inspection may vary according to the specific wheelchair:

7.4.1 Six-Month Inspection

- Inspect cables to ensure they are properly routed and secured. Periodic inspection is recommended as it may reveal loose and/or damaged cables. Re-secure all loose cables and replace them by following the recommendations outlined in the LiNX service manual.
- Ensure proper operation of powered functions (drive, seating, legrests, etc.).
- Inspect electrical components for signs of corrosion. Replace them if they are corroded or damaged.
- Check that all labels are present and legible. Replace them if necessary.

7.5 Cleaning



WARNING!

Risk of Injury, Damage or Death

Electrical shock may cause injury, damage or death.

- Always unplug the product from the electrical outlet before cleaning.
- Always unplug accessories from the electrical outlet before cleaning.



CAUTION!

Risk of Damage

Cleaning or maintenance may cause damage to carpeting or flooring.

- Place the wheelchair in a well-ventilated area where cleaning or maintenance can be performed without risk of damage to carpeting or flooring.



CAUTION!

Risk of Damage

Exposure to liquids may damage components or accessories of wheelchair and electronics.

- DO NOT spray with any type of water or liquid.
- Electrical components damaged by corrosion MUST be replaced immediately.



CAUTION!

Risk of Damage

Improper cleaning may cause damage to the product.

- DO NOT use chemicals, solvents or abrasive cleaners.



Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle.

Keep all electronic components free of dust, dirt and liquids.

1. Use a cloth dampened with warm water and mild non-abrasive soap to clean this product.
2. Dry the surface with a dry cloth.
3. DO NOT use solvents or kitchen cleaners.

7.5.1 Cleaning the Sip and Puff



IMPORTANT!

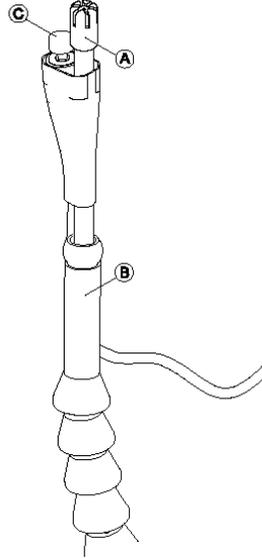
Risk of Damage to the Input Module

Improper mounting or maintenance of the Sip and Puff control may cause damage to the input module by water or saliva.

- The mouthpiece and breath tube MUST be completely dry before installation.

Cleaning at least twice a week is recommended.

1. Remove the mouthpiece ① and lipswitch ③ from the gooseneck ②.

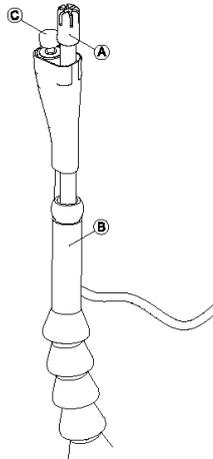


2. Remove the breath tube from the saliva trap. See 7.7 *Replacing the Saliva Trap*, page 83.
3. Position the catch can beneath the breath tube to collect water, and rinse.
4. Flush the mouthpiece and breath tube with warm running water.
5. Rinse with oral rinse to disinfect.
6. Let dry completely before installation.
7. Install the mouthpiece, lipswitch and breath tube.

7.6 Replacing the Mouthpiece

! **Risk of Damage to the Input Module**
Improper mounting of the mouthpiece may cause damage to the input module by water or saliva.
-Mouthpiece **MUST** be completely dry before installation.

1. Remove the mouthpiece ① from the gooseneck ②.
Make sure to leave the lipswitch ③ in the shrink sleeving, which keeps the lipswitch and mouthpiece together.

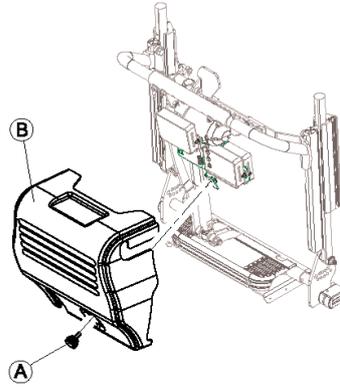


2. Insert a new mouthpiece.

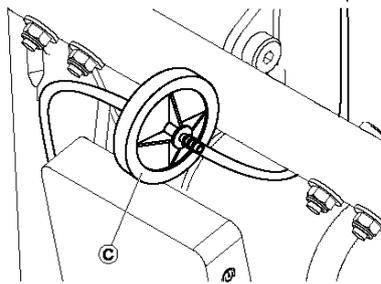
7.7 Replacing the Saliva Trap

- ! Risk of Damage to the Input Module**
 If the saliva trap is inserted the wrong way round, the input module can be damaged by water or saliva.
 -Make sure to insert the saliva trap in the correct orientation.
 -Saliva trap **MUST** be installed to reduce risk of water or saliva entering the input module.

1. Remove the screw/hand screw (A) and backrest shroud (B)



2. Remove the saliva trap (C) from the tube.



3. Insert a new saliva trap with the INLET imprinting facing toward the input module.

8 Troubleshooting

8.1 Fault Diagnosis

If the electronic system shows a fault, use the following fault-finding guide to locate the fault.

-  Ensure the drive electronics system is powered up before starting any diagnosis.

If the Status Display is OFF:

- Check whether the drive electronics system is powered up.
- Check whether all cables are correctly connected.
- Ensure the batteries are not discharged.

If a Fault Number Displays in the Status Display:

- Proceed to the next section.

8.1.1 Fault Codes and Diagnosis Codes

If there is a fault with the system when it is powered up, a fault icon  displays in the status bar. The number inside the triangle indicates the fault type.



Additionally, the status LED inside the ON/OFF button flashes red. The number of flashes matches the number in the fault icon in the status bar.

The table below describes the fault indication and a few possible actions that can be taken to rectify the problem. The actions listed are not in any particular order and are suggestions only. The intention is that one of the suggestions may help clear the problem. If in doubt, contact your provider.

	Fault Description	Possible Action
	Remote fault	<ul style="list-style-type: none"> • Check cables and connectors. • Contact your provider.
	Network or configuration fault	<ul style="list-style-type: none"> • Check cables and connectors. • Recharge the batteries. • Check the charger. • Contact your provider.
	Motor 1 ¹ fault	<ul style="list-style-type: none"> • Check cables and connectors. • Contact your provider.
	Motor 2 ¹ fault	<ul style="list-style-type: none"> • Check cables and connectors. • Contact your provider.

	Fault Description	Possible Action
	Left magnetic brake fault	<ul style="list-style-type: none"> • Check cables and connectors. • Ensure the left magnetic brake is engaged. • Refer to the “Pushing the mobility device in freewheel mode” chapter in the wheelchair user manual. • Contact your provider.
	Right magnetic brake fault	<ul style="list-style-type: none"> • Check cables and connectors. • Ensure the right magnetic brake is engaged. • Refer to the “Pushing the mobility device in freewheel mode” chapter in the wheelchair user manual. • Contact your provider.
	Module fault (other than remote module)	<ul style="list-style-type: none"> • Check cables and connectors. • Check modules. • Recharge the batteries. • If the chair was stalled, reverse away or remove any obstacles. • Contact your provider.

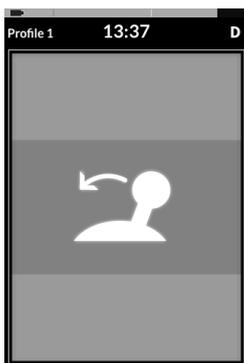
Configuration of the motors depends on the wheelchair model.

8.2 OON (“Out Of Neutral”)

OON (“Out Of Neutral”) is a safety feature that prevents accidental driving or seating movements when:

- The system is powering up
- After a function change
- When the system comes out of an inhibit or drive lockout

8.2.1 Drive OON Warning



The joystick must be in the center position:

- When a system is powering up
- On a function change
- When transitioning from a drive lockout or inhibit state

Otherwise, a drive OON warning displays by an overlay. During a drive OON warning, the OON overlay displays and the wheelchair does not drive. If the joystick is returned to the center position, the warning clears and the wheelchair drives normally.

8.2.2 Seating OON Warning

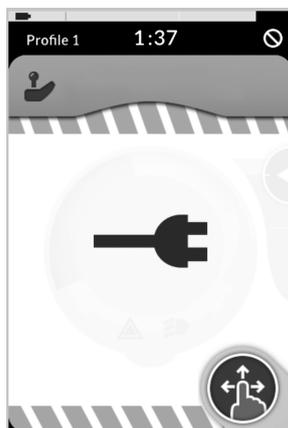


When a system is powering up or after a function change, no direct access switches can be active; otherwise, a seating OON warning displays.

During a seating OON warning, the OON overlay displays and the seating motions do not operate. If the switches are deactivated, the warning clears and the seating motions operate normally.

8.3 Drive Inhibit Indication

The drive inhibit mode ensures the wheelchair does not drive when it is connected to the charger. The following screen indicates the drive inhibit mode.



9 Technical Data

9.1 Technical Specifications

9.1.1 Mechanical Specifications

Permissible Operating, Storage and Humidity Conditions	
Temperature range for operation according to ISO 7176-9:	-13°F (-25°C)-122°F (+50°C)
Recommended storage temperature:	59°F (15°C)
Temperature range for storage according to ISO 7176-9:	-40°F (-40°C)-149°F (+65°C)
Operation humidity range according to ISO 7176-9:	0–90% RH
Degree of protection:	IPX4 ¹

1 IPX4 classification indicates the electrical system is protected against spray water.

Operating Forces	
Joystick	1.9 N
Power button	2.5 N

9.1.2 Electrical Specifications

Parameter	Minimum	Nominal	Maximum	Units
Operating voltage (V _{batt})	17	24	34	V
Idle current	-	70	-	mA at 24V
Quiescent current (power off)	-	-	0.23	mA at 24V

10 Wireless Technology

10.1 Wireless Technology Overview

The LiNX control system uses Bluetooth wireless technology. Bluetooth is a wireless communications system that is designed to operate in short-range wireless personal area networks (WPAN).

LiNX supports both the Smart (low energy) and Classic Bluetooth protocols. These operate in the spectrum range 2.400 GHz to 2.4835 GHz industrial, scientific and medical (ISM) band. Bluetooth Classic uses 79 x 1 MHz channels, and Bluetooth Smart uses 40 x 2 MHz channels.

Within a channel, data is transmitted using Gaussian frequency shift modulation. The bit rate is 1Mbit/s, and the maximum transmit power is 5mW. Both Bluetooth protocols use frequency hopping to counteract narrowband interference problems.

Bluetooth Technology Specifications

Technical Specification	Classic Bluetooth	Smart (Low Energy) Bluetooth
Class	Class 2	
Distance/Range (theoretical maximum)	10 m (33 ft)	
Over the Air Data Rate	1-3 Mbit/s	1 Mbit/s
Application Throughput	0.7-2.1 Mbit/s	0.27 Mbit/s
Security	56/128-bit and application layer user defined	128-bit AES with Counter Mode CBCMAC and application layer user defined
Robustness	Adaptive fast frequency hopping, FEC, fast ACK	Adaptive frequency hopping, Lazy Acknowledgment, 24-bit CRC, 32-bit Message Integrity Check
Latency (from a non-connected state)	Typically 100 ms	6 ms
Network Topology	Scatternet	
Power Consumption	5 mW	
Service Discovery	Yes	
Profile Concept	Yes	

10.2 Intended Wireless (Electromagnetic) Environment

The intended environments for the LiNX wheelchair are defined as the user's home, assisted living facilities, nursing homes, vocational settings and healthcare facilities. Across these environments, numerous medical and non-medical equipment items also operate wirelessly.

10.3 LiNX Wireless Functions

The LiNX control system functions that use Bluetooth include:

- **Mouse mover**—controls the mouse cursor on a PC, laptop or other portable device.
- **Remote diagnostics**—provides status information of the powered wheelchair (battery status, fault conditions etc.).
- **Configuration**—allows a trained provider, dealer, therapist or clinician using the programming and diagnostic tools to configure the LiNX control system.

10.3.1 Mouse Mover

The system can operate as a standard wireless PC mouse, where the joystick or other user input can be used to move the cursor on the screen on a PC, laptop or other similar device. Buttons within the system can also be used to emulate a “left click” and “right click”.



When in Mouse Mover mode, the wheelchair is stationary and unable to drive.

10.3.2 Remote Diagnostics

The system transmits wheelchair-specific diagnostic information to an Apple iOS device. This information helps with the technical support of the wheelchair.

The information provides the status of the wheelchair electronics, including:

- Battery charge status
- Active and historical fault data
- Wheelchair driving time
- Information about the modules attached to the wheelchair (e.g., module serial numbers)

The information updates once every 12 hours when connected or when requested by an application on the iOS device. Note the wheelchair may be in motion at the time of transmission.

10.3.3 Configuration

The LiNX Programming and Diagnostic (P&D) tools use Bluetooth to communicate with the LiNX control system via the LiNX Access Key (LAK). The LAK is a standalone device that plugs into a remote module. A system cannot be configured without using the LAK and only manufacturers, trained providers, dealers, therapists or clinicians have access to the LAK. This means that end users, their friends, relatives or caregivers cannot change the configuration.

There are two levels of access:

- Manufacturer (or OEM)
- Distributor (provider/clinician)

The levels of access permit the following:

- **LAK Manufacturer Level**

With this level, the manufacturer sets the system's default parameters to suit a particular wheelchair.

- **LAK Distributor Level**

With this level, a subset of the system's parameters is configured by trained providers, dealers, clinicians or therapists. Critical parameters are limited within a predetermined range as set by the manufacturer.

Although the wheelchair may be in motion when the system is being configured, instructions for safe use, training and built-in safety mechanisms minimize the potential for non-life threatening injuries resulting from inappropriate configuration of the wheelchair. The likelihood of the aforementioned hazardous situation occurring is remote. A human intermediary, knowledgeable in the control system and specific user needs, can intervene to prevent harm to the wheelchair user during wheelchair setup. The P&D tools do not allow direct control of the LiNX wheelchair. Complete control of the wheelchair remains with the end-user at all times. Should a user determine during the customization process that the wheelchair setup is inappropriate in providing full control in everyday usage, they may return the joystick to the neutral position and the wheelchair will come to a complete and safe stop in a controlled manner.

Similarly, the user, provider, therapist or clinician may at any time turn off the control system using the power button/s within the system (for example, on the primary remote module or the attendant control unit). Such action will also bring the wheelchair to a complete and safe stop in a controlled manner.

10.4 Quality of Service

As per the risk assessment, none of these items can cause or contribute to a safety hazard should the data link be compromised. Data latency and/or the probability of loss of service creates an inconvenience only and does not inhibit the user's therapy or treatment.

10.4.1 Data Integrity

Errors in the integrity of the data transmitted are a nuisance and will not cause a safety-related issue. Data is not used for clinical purposes.

Loss of or incorrect data transmitted in Mouse Mover mode could result in the loss of or incorrect movement of the user's PC cursor. Similar conditions exist with normal off-the-shelf USB or wireless PC mice when their batteries are low.

Loss of diagnostic data transmitted could result in a gap in historical information presented to a service technician. Errors in the wheelchair-specific diagnostic information could result in short-term erroneous information being presented to a technician. Both conditions may result in wheelchair troubleshooting taking longer than initially estimated.

Loss of configuration data transmitted in programming and diagnostic mode would result in no effect. The existing wheelchair configuration would be maintained. Errors in the configuration data transmitted would be rejected by built-in safety mechanisms and/or detected during the subsequent evaluation of the configuration updates through the prescribed user testing.

- † The programming and diagnostic tools serve no specific medical purpose and do not control the wheelchair's operation. Complete control of the wheelchair's actions remain with the user at all times.

10.4.2 Safeguards and Redundancy

Safeguards will include warnings in the user manuals around minimum separation distances, the ability to turn off the Bluetooth connections, inherent encryption of the Bluetooth protocols, and direct indication to a user when a connection is made.

Due to the nature of the functions using the wireless technology, there is no requirement for redundancy.

Security risks are addressed by compliance to recognized standard AAMI-TIR57:2016 - Principles for medical device security - Risk management (FDA recognition No: 13-83) and the NIST Framework, as appropriate.

The built-in safety features, such as and without limitation, necessity for the LiNX Access Key to be physically present when configuring the device, the use of standard Bluetooth security protocols, single connection at any point in time, limited range, limited exposure time and the visual indication of an established connection, minimize the threats and vulnerabilities from malicious attack.

10.5 Wireless Coexistence

Wireless coexistence testing has been conducted in line with ANSI C63.27 using the radiated anechoic chamber (RAC) test method. The LiNX Access Key has been tested per ISO 7176-21:2009 Clause 5.2.3 at 20 v/m field strength. During testing the LiNX Access Key disconnected from its paired device when subjected to a frequency of 2.44 GHz. The function of the wheelchair was not impacted by the disruption of the LiNX Access Key wireless communication. If the LiNX Access Key becomes disconnected from its paired device during use, remove the wheelchair from the RF field and wirelessly reconnect the device.

10.6 Cybersecurity

The LiNX product range has been designed with cybersecurity in mind to assure device functionality and safety. The cybersecurity measures taken address:

- The embedded software
- The programming and diagnostic tools' software
- Bluetooth wireless technology

10.6.1 Cybersecurity Controls

A number of controls are in place to assure the LiNX system software maintains its integrity from the point of origin, to the point at which a system leaves the control of the manufacturer and during product use.

These are summarized below:

- Devices leaving the point of origin are equipped with a tamper-evident seal, which allows for the detection that a product's case has been opened and thus potentially compromised. The Factory Test Interface is not accessible without opening the case of any given module.
- Once the system leaves the point of origin, it can only have its software upgraded using the Programming and Diagnostic tools by a healthcare professional or a service technician with a LiNX Access Key (LAK) connected to the charging port. Access controls and licensing are provided through the physical LAK.
- Programming can occur only using either the P&D tools or via the Single Wire Communication interface, both through the charging port. The embedded system ensures safe envelopes for programmed parameters.
- The system will run only valid software. Cyclic Redundancy Checks (CRC) are conducted on the software before it is executed.
- LiNX products use Class 2 Bluetooth wireless technology. This technology has built-in safety features that can maximize the product's integrity. These features include:
 - Operating range to 10 m (33 ft)
 - Use of standard Bluetooth security protocols
 - Single connection at any point in time

- Limited exposure time
- Visual indication when in a connectivity function

10.6.2 User Actions

Users are not required to take any specific actions in order to assure cybersecurity of the LiNX system. However, should the user be concerned about the Bluetooth connection for any reason, the user can switch off the Bluetooth functionality by powering down the system. The user also has the option to power up the system with the Bluetooth functionality disabled.

11 Warranty

11.1 Limited Warranty—US

Except as otherwise set forth below, Invacare warrants that the following components of the mobility device (“product”) will be free from defects in materials and workmanship for a period of one (1) year from the date Invacare ships the product to the original purchaser or provider: base frame, electronics and electrical components (excluding batteries), motors, powered seating actuators, gearboxes, bearings and bushings, seat frame, fixed seat post, upholstered materials, padded materials, casters, tires, and tubes (excluding normal wear and tear). Invacare warrants all product batteries will be free from defects in materials and workmanship for a period of six (6) months from the date Invacare ships the product to the original purchaser or provider. The warranties described above are referred to as the “Warranty”. A copy of the original product invoice is required for coverage under the Warranty.

11.2 Limited Warranty—Canada

Except as otherwise set forth below, Invacare warrants the base frame of the mobility device (“product”) will be free from defects in materials and workmanship for a period of five (5) years from the date Invacare ships the product to the original purchaser or provider. Invacare warrants that the seat frame and fixed seat post will be free from defects in materials and workmanship for a period of three (3) years from the date Invacare ships the product to the original purchaser or provider. Invacare warrants that the following components of the product will be free from defects in materials and workmanship for a period of two (2) years from the date Invacare ships the product to the original purchaser or provider: electronics and electrical components (excluding batteries), motors, powered seating actuators, gearboxes. Invacare warrants that the following components of the product will be free from defects in materials and workmanship for a period of one (1) year from the date Invacare ships the product to the original purchaser or provider: bearings and bushings, upholstered materials (excluding normal wear and tear), padded materials (excluding normal wear and tear), brake pads (excluding normal wear and tear), casters (excluding normal wear and tear), tires and tubes (excluding normal wear and tear). Invacare warrants all product batteries will be free from defects in materials and workmanship for a period of six (6) months from the date Invacare ships the product to the original purchaser or provider. The warranties described above are referred to as the “Warranty”. A copy of the original product invoice is required for coverage under the Warranty.

11.3 Repair or Replacement

Invacare's sole obligation and the original purchaser's exclusive remedy under the Warranty is limited to Invacare's repair and/or replacement, at Invacare's option, of defective components and batteries covered by the Warranty. Such repair or replacement does not include any labor or shipping charges incurred by Invacare in the replacement and/or repair of any such component or battery. For Warranty service, please contact the provider from whom you purchased your product. In the event you do not receive satisfactory Warranty service, please write directly to Invacare at the address on the bottom of the back cover. Provide provider's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to Invacare without Invacare's prior written authorization.

11.4 Disclaimers

The Warranty may not be modified or waived in any manner whatsoever without Invacare's express written authorization. THE WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCEPT AND TO THE EXTENT AS MAY BE PROHIBITED BY STATE OR PROVINCIAL LAW, IN NO EVENT SHALL INVACARE BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM OR ARISING OUT OF OR RELATED TO A DEFECT IN ANY PRODUCT, OR INVACARE'S PERFORMANCE OR FAILURE TO PERFORM ANY OF ITS OBLIGATIONS UNDER THIS WARRANTY, WHETHER OR NOT INVACARE HAS BEEN ADVISED, KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS.

11.4.1 Limitations and Exclusions

The Warranty is extended only to the original purchaser who purchases the product new and unused from Invacare or a provider. The Warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under the Warranty will end upon any such subsequent sale or other transfer of title to any other person. The Warranty does not apply to serial numbered products if the serial number has been removed or defaced, products subject to neglect, abuse, accident, improper operation, maintenance or storage, commercial or fleet use, products modified without Invacare's express written authorization (including, but not limited to, modification through the use of unauthorized parts or attachments), products damaged by reason of repairs made to any component without Invacare's express written authorization, or to a product damaged by circumstances beyond Invacare's control, and such evaluation will be solely determined by Invacare.

The Warranty does not apply to problems arising from normal wear and tear or failure to adhere to the product instructions. A change in operating noise, particularly relative to motors and gearboxes does not constitute a failure or defect and will not be repaired or replaced as all products are expected to exhibit changes in operating noise due to aging.

Notes

Notes

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