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Carla Locke
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LiNX® Control System

ACU, CREM, CREM-LF, Supplement to power wheelchair user manual

en Remote User Manual



Yes, you can.



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

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Yes, you can.



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Making Life's Experiences Possible®

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PART NUMBER: 1195718	REV: A	SHEET: 1 OF 1
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LiNX® Control System

ACU, CREM, CREM-LF, Supplement to power wheelchair
user manual

en Remote
User Manual



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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 a 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.



IMPORTANT

– 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—ACU

LiNX ACU

The LiNX ACU is a secondary remote module of the LiNX family, intended to allow an attendant of a powered wheelchair to interact with the LiNX System.

The ACU remote module allows control of drive and powered seating functions. Control can be transferred between user and attendant, and vice versa, via the remote modules in the system.

1.4.2 Intended Use—CREM and CREM-LF

LiNX CREM and CREM-LF

The LiNX CREM and CREM-LF are secondary remote modules of the LiNX family, intended to allow powered wheelchair users to interact with the LiNX System.

The CREM and CREM-LF secondary remote modules allow control of drive, powered seating and connectivity functions (depending on the configuration of the system). The CREM and CREM-LF remote modules are intended to be used with a LiNX module/remote module capable of providing information about the active user input. The CREM contains a standard-force joystick, while the CREM-LF contains a low-force joystick intended for users who are unable to use a standard-force joystick.

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 that the product is used daily and in accordance with safety instructions, maintenance instructions and intended use, 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, 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** setup, service and program the wheelchair.
- DO NOT allow non-qualified individuals to perform any work or adjustments on the wheelchair.
- DO NOT setup 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 the 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 that all electrical connections are tightly connected so they don't vibrate loose.

**WARNING!****Risk of Injury or Damage**

Connector pins on 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 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 judgement 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 judgement 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 judgement 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

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

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**

Improperly connected joystick could cause loss of power resulting in death, serious injury, or damage.

- Ensure the joystick is securely connected to controller.

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 minimise emissions and to maximise the immunity to radiated fields and ESD, follow the wiring recommendations in the LiNX System Service Manual.

4 Components

4.1 Attendant Control Unit

The remote is the input that operates the mobility device's functions and defines the icon displayed.

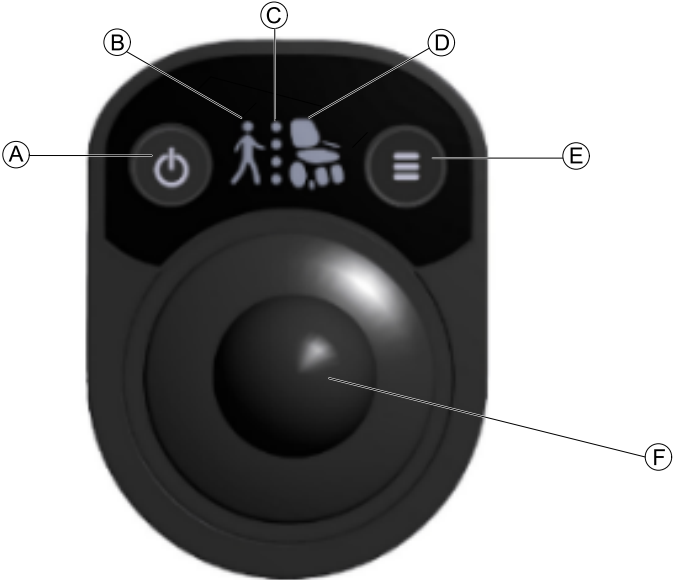


Fig. 4-1

Ⓐ	Power button (with status LED), EMERGENCY STOP	<ul style="list-style-type: none"> • Power up or power down the system, if remote is remote-in-charge • View the system's status • View fault indications (flash codes) • Request to be remote-in-charge • Lock the system • Emergency stop mobility device, if no restriction has been set
Ⓑ	Attendant-in-charge indicator	<ul style="list-style-type: none"> • Indicate that attendant control unit is in charge of the system
Ⓒ	Drive function indicator	<ul style="list-style-type: none"> • Indicates the selected attendant drive function
Ⓓ	Drive/seating function indicator	<ul style="list-style-type: none"> • Indicate if drive or which seating function is selected

Ⓔ	Mode button	<ul style="list-style-type: none">• Select function within attendant profile
Ⓕ	Joystick	<ul style="list-style-type: none">• Control speed and direction of drive and seating function

4.2 Compact Remote Module

The remote is the input that operates the mobility device’s functions and defines the icon displayed.

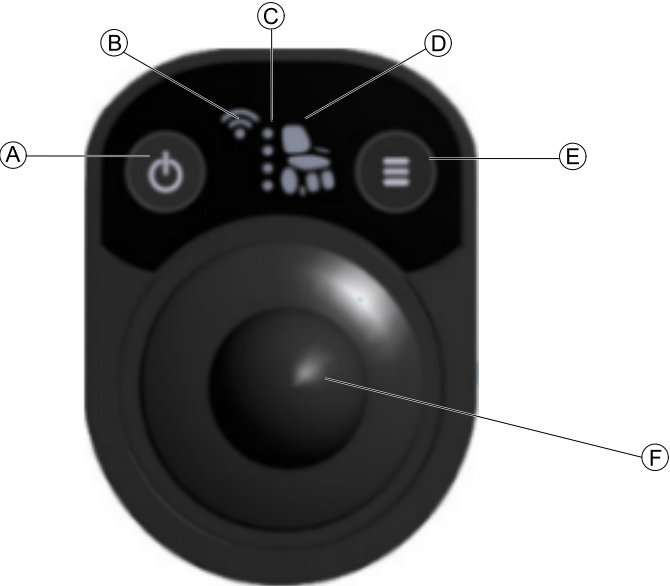


Fig. 4-2

This overview applies for CREM and CREM-LF joystick.

Ⓐ	Power button (with status LED), EMERGENCY STOP	<ul style="list-style-type: none">• power up or power down the system, if remote is remote-in-charge• view the system's status• view fault indications (flash codes)• request to be remote-in-charge• lock the system• emergency stop mobility device, if no restriction has been set
Ⓑ	Connectivity indicator	<ul style="list-style-type: none">• indicate that connectivity function is enabled and active
Ⓒ	Drive function indicator	<ul style="list-style-type: none">• indicates the selected compact remote drive function
Ⓓ	Drive/seating indicator	<ul style="list-style-type: none">• indicate if drive or which seating function is selected

Ⓔ	Mode button	<ul style="list-style-type: none"> select function and profile
Ⓕ	Joystick	<ul style="list-style-type: none"> control speed and direction of drive and seating functions

4.3 Drive/Seating Function Indicators

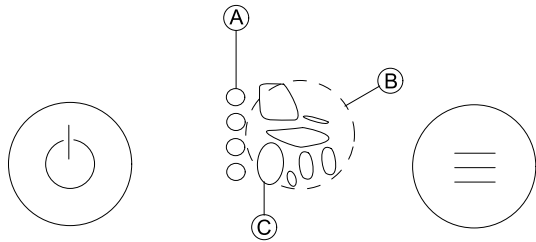


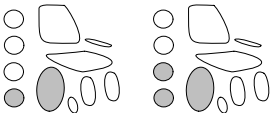
Fig. 4-3

Drive and seating function indicators Ⓐ to Ⓒ are in the center of the remote module and contain LED lights that light up, pulse or flash depending on the seating function, drive profile, and status (inhibit or fault).

The drive and seating functions are indicated by the:

	ACU	CREM and CREM-LF
Ⓐ	Attendant drive function indicator	Compact remote drive function indicator
Ⓑ	Seating indicator	
Ⓒ	Drive indicator	

Attendant Drive Function Indicator (ACU Only)



The attendant drive function indicator shows the selected attendant drive function using one or more LEDs. There can be up to four attendant drive functions, one is set as a factory default.

Drive Function Indicator (CREM and CREM-LF Only)

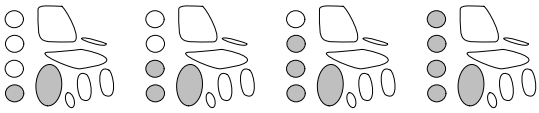


Fig. 4-4

The drive function indicator shows the selected compact remote drive function using one or more LEDs. There can be up to 4 drive functions, two are set as a factory default. For changing the drive function, see 5.4 Mode Button, page 24.

Drive Indicator

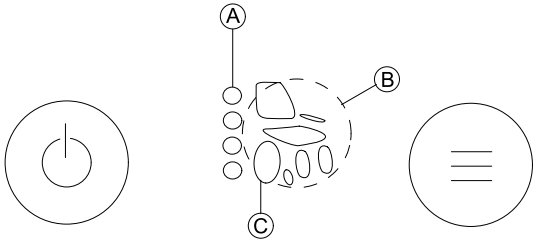


Fig. 4-5

The drive indicator © lights up in combination with or without other indicators when:

- Mobility device is ready to drive. See 5.6.1 *Attendant-in-Charge Indication (Attendant Control Unit)*, page 26 and 5.6.2 *User-in-Charge Indication (Compact Remote Module)*, page 26.
- A new drive function has been selected.
- Mobility device can be driven at reduced speed only. See 5.6.6 *Drive Slow-Down Indication*, page 28.
- Joystick is not in center position. See 5.6.5 *OON Indication*, page 27.
- Mobility device can not be driven at all. See 5.6.8 *Blocked Function Indication*, page 28 and 5.6.7 *Lock-Out Indication*, page 28.

Seating Indicator

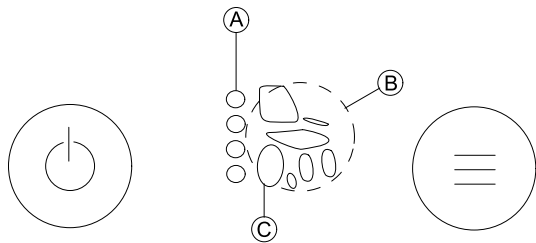




Fig. 4-6

The seating indicator © shows the selected seating function. For changing the seating function, see 5.4 *Mode Button*, page 24.

For a list of seating functions, see below.

Icon	Seating function
	Tilt
	Lifter
	Right Leg
	Recline
	Left Leg or powered center-mounted legrest

Icon	Seating function
	Both Legs
	Recline and Legs

4.4 Labels on the Product

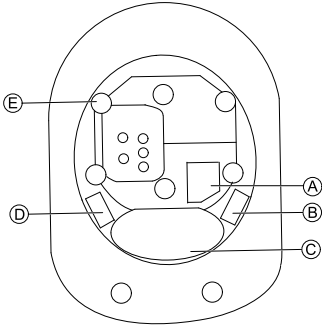





Fig. 4-7

Ⓐ	 READ INSTALLATION MANUAL BEFORE USE	Recommendation to read the user manual before using the module.
Ⓑ	IPx4	This is the enclosure's ingress protection rating.
Ⓒ		Product label containing: <ul style="list-style-type: none"> Dynamic Controls' website address The product's bar code The product's serial number The product's part number Dynamic Controls' dynamic logo

<div>D</div>		<p>This is the WEEE symbol (Waste Electrical and Electronic Equipment Directive).</p> <p>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.</p> <ul style="list-style-type: none">• The ‘crossed out wheelie 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.
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<div>E</div>		<p>Tamper evident seal. Warranty void if seal is broken.</p>
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Hardware and Application Firmware Version Label

The hardware and application firmware version label on a Dynamic Controls product contains information about the hardware and application version that applies for the particular module.

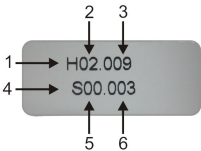


Fig. 4-8

- 1. Hardware version
- 2. Hardware major version
- 3. Hardware minor version
- 4. Application version
- 5. Application major version
- 6. Application minor version

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.

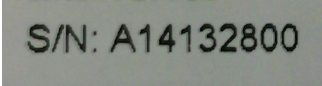


Fig. 4-9

The format, as shown above, is **MYNnnnnnn**, where:

- **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.

For example, the remote's serial number, as shown above, begins with A14 indicating that it was manufactured in January 2014, and its unique, sequential value is 132800.

5 Usage

5.1 Requesting Control of the Mobility Device

The remote-in-charge is the remote that controls the mobility device. If the secondary remote is not the remote-in-charge, then the secondary remote is not able to drive the mobility device or control the seating functions and all LEDs on the secondary remote are switched off.



By default, the remote module, that powers up the mobility device, is in-charge of the mobility device.



Press the button on the remote module that you want to use to control the mobility device.

The request is accepted and control is passed on from one remote module to another remote module in the system. The mobility device is ready-to-drive.



A restriction can be set, so that the secondary remote can not become remote-in-charge. See 5.6.3 *Restricted User Indication*, page 27.

5.2 Using the Joystick



CAUTION!

Risk of injury

The secondary remote modules may only be used with the authorized joystick knobs.

- Use of any other joystick knob requires that the installer test and confirm that the joystick returns to the neutral position whenever the joystick is deflected. Tests with the device mounted horizontally and with a water soaked knob (foam knobs only) are required if the installer judges these risks as significant.

The joystick controls the direction and speed of the mobility device's drive and seating functions.

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

The speed of the mobility device or powered seating function is proportional to the joystick deflection, so that the further the joystick is moved from the neutral position, the faster the mobility device or powered seating function travels.

If the user moves the joystick back to the neutral position, the mobility device or powered seating function slows down and stops.

If the user releases the joystick from any position other than the neutral position, the joystick will return to the neutral position and the mobility device slows down and stops.

The joystick can also be used to wake up the system when in sleep mode.

5.3 Power Button (with Status LED)



Fig. 5-1 Power Button on Attendant Control Unit



Fig. 5-2 Power Button on Compact Remote

The power button ① is on the left-hand side of the remote module, and contains a status LED that lights up or flashes depending on the status of the system:

- OFF—system down or sleeping
- Red (flashing)—powered ON - fault. See 7 *Troubleshooting*, page 34.
- Green—powered ON, ready to drive, the remote is the remote-in-charge. See 5.6.2 *User-in-Charge Indication (Compact Remote Module)*, page 26 or 5.6.1 *Attendant-in-Charge Indication (Attendant Control Unit)*, page 26.

You can use the power button for:

- Powering the system up and down
- Requesting to be user-in-charge
- Performing an EMERGENCY STOP
- Using lock function
- Interrupting or waking up from sleep
- Disabling connectivity (compact remote module only)

Powering Up and Down



1.

Press the button to switch the system ON. If there is no fault with the system, the status indicator lights up green.



2.

Press the button to switch the system OFF. The system powers down and the status indicator switches OFF.



By default, the remote module, that powers up the mobility device, is in-charge of the mobility device.



If the attendant is not the user-in-charge, then the attendant control unit's power button cannot power down the system. Pressing the power button when not the user-in-charge, sends a request to the system to become the user-in-charge.

Requesting to be User-in-Charge

To request control of the mobility device via secondary remote, see 5.1 *Requesting Control of the Mobility Device*, page 22.

Performing an EMERGENCY STOP

In the event that the mobility device is in a runaway situation or you want to stop a seating motion quickly, you can EMERGENCY STOP the mobility device. To stop the mobility device the remote of the user that wants to stop

the mobility device must be remote-in-charge. If the remote that you want to perform an emergency stop on is not remote-in-charge, you must request control to be in-charge of the mobility device first. See *5.1 Requesting Control of the Mobility Device*, page 22.



Press the button.



If the remote-in-charge has been restricted, the mobility device does not perform an emergency stop.

Using Lock Function

The lock function prevents unintentional use of the system. See *5.5 Lock Mode*, page 25.

Disabling Connectivity System-Wide



This chapter applies only for compact remote modules CREM and CREM-LF.

Connectivity gives access to more profiles. Connectivity can be disabled.



Press and hold button for three seconds during powering up.

The connectivity indicator and status LED pulse slowly for five seconds, then connectivity indicator LED switches off.

Interrupting or Waking Up from Sleep

Before the system goes to sleep there is a transition period during which you can interrupt the system from going to sleep.



Press the button.

Or:

Move the joystick.

5.4 Mode Button



Fig. 5-3 Mode Button on Attendant Control Unit



Fig. 5-4 Mode Button on Compact Remote

The Mode button ② is on the right-hand side of the remote module and contains a status LED that lights up, flashes or pulses depending on the status of the system:

- Lit together with all other LEDs on display — system powering up or remote has become remote-in-charge. See *5.6.1 Attendant-in-Charge Indication (Attendant Control Unit)*, page 26 and *5.6.2 User-in-Charge Indication (Compact Remote Module)*, page 26.
- Flashing 3x — remote locked. See *5.5 Lock Mode*, page 25.
- Lit while all other indicators are switched off — firmware upgrade mode.

You can use the mode button for:

- On attendant control unit:
 - Selecting attendant drive/seating functions within the attendant profile
- On compact remote module:
 - Selecting the drive/seating function within a profile (short press)
 - Selecting the profile (long press)


Selecting the Drive/Seating Function


You can use the mode button to navigate a list of drive and seating functions. The corresponding drive and seating function is indicated in the display.



Short press the button until the correct/seating function is indicated in the display.

2. With each subsequent short press you select the next available user function.

 When the last function in the list is reached, a further short press selects the user function at the beginning of the list.

 All drive/seating functions can be selected by the attendant via the attendant control unit.

Selecting the Profile

A profile is a set of settings for an environment, for example “at home”, “at work”, etc. You can use the mode button

to navigate a list of profiles. The corresponding profile is indicated in the display.



Long press the button until the correct drive profile is indicated in the display.

2. With each subsequent long press you select the next available drive profile.



When the last profile in the list is reached, a further long press selects the profile at the beginning of the list.

5.5 Lock Mode

You can use the lock function to restrict who can use the system, but also can help prevent unintentional use of the controls for when the system is not required for any length of time. You can only lock a system when it is powered up and you are user-in-charge.

If the mobility device or a powered seating function can not move further in one direction, there is *5.6.7 Lock-Out Indication, page 28*.


Locking the System




Press and hold the button for three seconds.

When entering a locked state, the mode button flashes quickly three times. The system is locked.




Unlocking the System

-  The secondary remote module can lock a system, but cannot unlock it since it has no touch display or horn button. To unlock a system locked by a secondary remote module, use a primary remote module.

For primary modules with touch displays:

- 
Press the button and at the same time:
- Tap and hold the lock screen. The system is unlocked.

For primary modules with physical horn buttons (e.g. REM2xx):

- 
Press the button.
 - 
Press the button twice. The system is unlocked.
-  The horn button must be pressed twice within 10 seconds of pressing the power button.

5.6 Reading the Indicators

5.6.1 Attendant-in-Charge Indication (Attendant Control Unit)



Fig. 5-5 Attendant-in-Charge Indication



Fig. 5-6 Attendant-Not-in-Charge Indication

The user-in-charge indication displays which remote module, attendant control unit or primary remote module, has control of the mobility device.

If the attendant control unit takes over control of the system, or powers up with the attendant in charge, the power button and mode button LEDs, speed indicator, attendant indicator and the selected profile on the attendant control unit switch on immediately, depending on the system status. If the primary remote has control of the system, all LEDs are switched off on the attendant control unit.

5.6.2 User-in-Charge Indication (Compact Remote Module)



Fig. 5-7 User-in-Charge Indication



Fig. 5-8 User-Not-in-Charge Indication

The user-in-charge indication displays which remote module, compact remote module or primary remote module, has control of the mobility device.

If the compact remote module takes over control of the system, or powers up with the compact remote module in charge, the power button LEDs, speed indicator, connectivity indicator and the selected profile on the compact remote module on the compact remote module switch on immediately. If the primary remote module has control of the system, all LEDs switch off on the compact remote module.

5.6.3 Restricted User Indication



The secondary remote can not become the remote-in-charge, if a restriction has been set. When a restricted user requests control, the request is denied. The status LED lights up green, then dims and finally switches off again.



For restricting a remote, contact your Invacare provider.

5.6.4 Sleep Indication

When transitioning into sleep mode, all lit LEDs start dimming for a period of two seconds until LEDs are completely switched off. All indicators remain switched off when the system is in sleep mode.



Deactivate sleep mode during transition period by moving joystick or pressing power button.



For setting sleep mode, contact your Invacare provider.

5.6.5 OON Indication

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 or
- when the system comes out of an inhibit or drive lock-out.

Drive OON Warning



Fig. 5-9

The joystick must be in the center position:

- when the system is powering up,
- on a function change or
- when transitioning from a drive lock-out or inhibit state.

Otherwise a drive OON warning is displayed.

During a drive OON warning, the LEDs flash continually to alert the user, and the mobility device does not drive. If the joystick is returned to the center position, the warning clears and the mobility device drives normally.

Seating OON Warning



Fig. 5-10

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

During a seating OON warning, the seating indicator flash continually to alert the user and the seating motions do not operate. If the direct access switches, e.g. 10-way-switch, are deactivated, the warning clears and the seating motions operate normally.

5.6.6 Drive Slow-Down Indication



Fig. 5-11

Drive slow down is a state that prevents the mobility device from driving the standard speed but allows the mobility to drive at reduced speed.

The drive LED and the corresponding seating function LEDs slowly pulse. The LEDs pulse for the duration of the operation of the driving or seating function.

5.6.7 Lock-Out Indication

Lock-outs make sure the mobility device only operates in positions that are safe for the user. Before the mobility device reaches a certain angle or height, a lock-out sets in.

Drive Lock-Out



Fig. 5-12

A drive lock-out is a state that prevents the mobility device from being driven. When the mobility device is in a drive inhibit state, the drive wheel LED and the corresponding seating function LEDs flash on and off.

This sequence continues for the duration of the drive lock-out.



To end the lock-out, move mobility device back into safe position.

Actuator Lock-Out



Fig. 5-13

An actuator lock-out is a state that prevents seating motions. When the mobility device is in an actuator lock-out state, the seating function LEDs flash for a minimum of three flashes, unless interrupted.

The sequence continues for the duration of the actuator lock-out.



To end the lock-out, move mobility device back into safe position.

5.6.8 Blocked Function Indication

A blocked function indication is displayed if the user tries to change a function while operating in another function. A change of function is by default not permitted.

The blocked function indication differs depending on what caused the block.



To avoid blocked function indications wait until one function is completed, before selecting the next function.

Blocked Drive Function



Fig. 5-14

If a drive function causes the block:

- The drive wheel indicator flashes quickly three times;
- The seating indicator switches off while the drive wheel indicator flashes.
- Wait until one function is completed, before selecting next function.

Blocked Seating Function



Fig. 5-15

If a seating function causes the block:

- The seating indicator flashes quickly three times;
- The seating indicator switches off while the drive wheel indicator flashes.

5.7 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 forces 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.

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 Maintenance

6.1 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.

6.2 Setup/Delivery Inspection



Setup/delivery inspection should be performed by provider at time of delivery/set up.

Initial adjustments should be made to suit your personal body structure needs and preference. Thereafter weekly, monthly and periodic inspections should be performed by user/attendant between the 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 that cables do NOT become entangled and damaged during normal operation of seating system.
- ❑ Ensure proper operation of powered functions (Example: drive, seating and legrests).

6.3 Wear and Tear Information

General Information

Normal wear and tear items and components include but are not limited to: all upholstery items including seat and back upholstery, arm and calf pads, cushions, wheels, tires and casters, all types of batteries, joystick overlays and inductive rubberized protective boots.

Invacare reserves the right to ask for any item back that has an alleged defect in workmanship. Refer to the Warranty section in this manual for specific warranty information.

Refer to the Inspection Checklists for proper preventative maintenance schedule.

This is just a general guideline and does not include items damaged due to abuse and misuse.

Product Type	Product Wear and Tear
Wheelchairs	Wheels, Brake Assembly, Hand Grips

Mobility Hardware and Electronics	Rubber Urethane Tires and Casters, Handgrips, Joystick Inductive Tops, Joystick Overlays, Motors and Gearboxes (if exposed to prolonged moisture, urine, etc.), Stability Lock
Upholstery and Seating	Arm pads, Seat Cushion Foam, Seat Cushion Covers, Back Cushion Foam, Back Cushion Covers, Headrest Foam, Headrest Covers, Footplate Covers, Calf Pad (if applicable) Foam and Cover
Batteries	Lead acid/Lithium, Coin cell (watch type), Gel (6 months)

6.4 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 user/attendant between the 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.

6.4.1 Inspect/Adjust Weekly

- ☐ Ensure proper operation of powered functions (Example: drive, seating and legrests).

6.4.2 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 that all connectors are fully mated.
- ☐ Cables shall be inspected periodically to ensure that they are routed and secured properly. 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.

6.4.3 Inspect/Adjust Periodically

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

6.5 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:

6.5.1 Six Month Inspection

- ☐ Cables shall be inspected periodically to ensure that they are routed and secured properly. Periodic inspection is recommended as it may reveal loose and/or damaged cables. Re-secure all loose cables and replace 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 if corroded or damaged.
- ☐ Check that all labels are present and legible. Replace if necessary.

6.6 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 dry cloth.
3. DO NOT use solvents or kitchen cleaners.

7 Troubleshooting


7.1 General Information on Troubleshooting

The following information is intended to support you recognize and rectify faults on the remote.

In case you require assistance, contact your authorized Invacare provider.

7.2 Fault Indication

When a fault occurs, a flash code is displayed on both the primary remote module and the secondary remote module. A flash code, which is displayed on the status indicator, is a number of flashes separated by a 1.6 second gap; the number of flashes depends on the fault. For example, one flash represents flash code one; two flashes represents flash code two, and so on.

 Faults that affect the safety of the mobility device cause the mobility device to stop, while less critical ones are indicated but allow the mobility device to continue driving. Some faults automatically clear when the fault condition is removed (non-latched) while others are latched and must be cleared by turning the controller off, waiting five seconds, then turning the system on again.


Faults are categorized according to their source — that is, there are local faults (those that relate to the secondary remote module), and there are system faults (those that relate to one or more system modules). Local faults take priority with the secondary remote module and so local faults are displayed on the secondary remote module

instead of system faults **if** both local and system faults occur at the same time.

When there is a local fault, the power button flashes red. All other indicators are switched off. It is possible that the rest of the system might not indicate a fault. All local faults (faults with the secondary remote module) are displayed as:

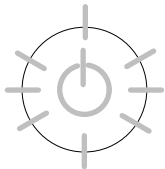
Flash Code 1: Remote Fault

When there is a system fault, the power button flashes red. All other LEDs continue to operate according to their role. The rest of the system indicates the same fault or a related flash code. System faults are displayed according to the flash codes described in *7.2.1 Fault Codes and Diagnosis Codes, page 34*.

 Contact your Invacare provider.

7.2.1 Fault Codes and Diagnosis Codes

If there is a fault with the system when it is powered up, the status indicator flashes red. The number of flashes indicates the type of fault.



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 you clear the problem. If in doubt, contact your provider.

Flash code	Fault description	Possible action
1	Remote fault	<ul style="list-style-type: none"> • Check cables and connectors. • Contact your provider.
2	Network or configuration fault	<ul style="list-style-type: none"> • Check cables and connectors. • Recharge the batteries. • Check charger. • Contact your provider.
3	Motor 1 ¹ fault	<ul style="list-style-type: none"> • Check cables and connectors. • Contact your provider.
4	Motor 2 ¹ fault	<ul style="list-style-type: none"> • Check cables and connectors. • Contact your provider.
5	Left magnetic brake fault	<ul style="list-style-type: none"> • Check cables and connectors. • Check left magnetic brake is engaged. • Refer to the chapter “Pushing the mobility device in freewheel mode” in the user manual of your wheelchair. • Contact your provider.

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

1 Configuration of the motors depending on the wheelchair model

8 Technical data

8.1 Technical Specifications

Mechanical Specifications

Permissible operating, storage and humidity conditions	
Temperature range for operation according to ISO 7176–9:	<ul style="list-style-type: none"> • -13 °F (–25 °C)– +122 °F (+50 °C)
Recommended storage temperature:	<ul style="list-style-type: none"> • 59 °F (15 °C)
Temperature range for storage according to ISO 7176–9:	<ul style="list-style-type: none"> • -40 °F (–40 °C)– +149 °F (+65 °C)
Operating humidity range according to ISO 7176–9:	<ul style="list-style-type: none"> • 0–90%RH
Degree of protection:	IPX4 ¹

Operating forces			
	ACU	CREM	CREM-LF
Joystick	<ul style="list-style-type: none"> • 1.6 N 	<ul style="list-style-type: none"> • 1.6 N 	<ul style="list-style-type: none"> • 1.1 N
Power button	<ul style="list-style-type: none"> • <2.5 N 	<ul style="list-style-type: none"> • <2.5 N 	<ul style="list-style-type: none"> • <2.5 N
Mode button	<ul style="list-style-type: none"> • <2.5 N 	<ul style="list-style-type: none"> • <2.5 N 	<ul style="list-style-type: none"> • <2.5 N

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

9 Wireless Technology

9.1 Wireless Technology Overview

The LiNX control system makes use of 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 1MHz channels and Bluetooth Smart uses 40 x 2MHz 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 max.)	10m (33ft)	
Over the Air Data Rate	1–3 Mbit/s	1 Mbit/s
Application Throughput	0.7–2.1 Mbit/s	0.27 Mbit/s

Technical Specification	Classic Bluetooth	Smart (low energy) Bluetooth
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 Acknowledgement, 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	

9.2 Intended Wireless (Electromagnetic) Environment

The intended environments for the LiNX wheelchair are defined as the users home, assisted living facilities, nursing

homes, vocational settings and health care facilities. Across these environments, there are numerous different items of both medical and non-medical equipment that also operate wirelessly.

9.3 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**—by a trained provider, dealer, therapist or clinician using the programming and diagnostic tools, configures the LiNX control system.

9.3.1 Mouse Mover

The system is able to 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.

9.3.2 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:

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

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

9.3.3 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) and
- 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.

Whilst 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 set-up.

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 set-up 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.

9.4 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.

9.4.1 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 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.

9.4.2 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.

9.5 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.

9.6 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, and
- Bluetooth wireless technology.

9.6.1 Cybersecurity Controls

A number of controls are in place to assure that 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 is provided through the physical LAK.
- Programming can only occur using either the P&D tools or via Single Wire Communication interface, both through the charging port. The embedded system ensures safe envelopes for programmed parameters.

- The system will only run 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);
 - the use of standard Bluetooth security protocols;
 - single connection at any point in time;
 - limited exposure time, and
 - visual indication when in a connectivity function.

9.6.2 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, if they so desire.

10 Warranty

10.1 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.

10.2 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.

10.3 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.

10.4 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.

10.5 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.

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