LiNX™

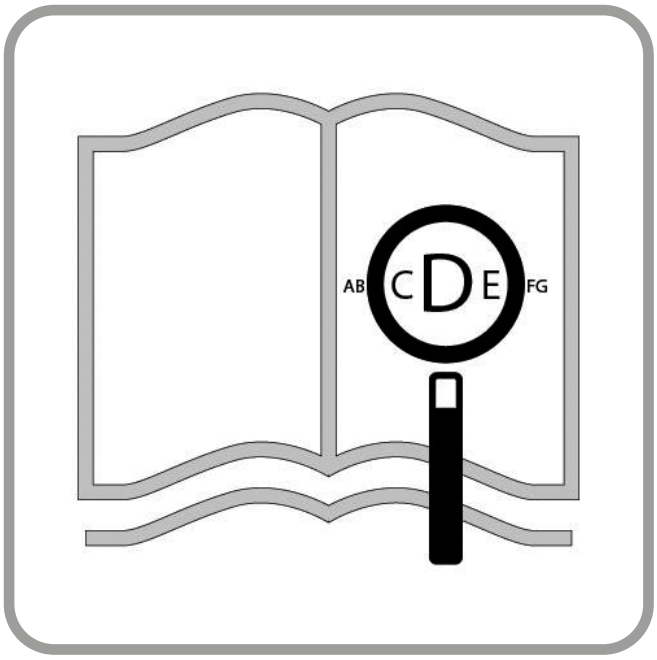
Controller

dynamic™

P/N SM101086 Rev. A

Dynamic™ LiNX™
Remote Modules
REM110 | REM210 | REM211 | REM215 | REM216

Instructions for Use



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In Spanish:

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ISO 7010-M002
Instruction manual/
booklet must be read!
(Blue Icon)

About this manual

Welcome to the operation manual for the LiNX remote modules.

This manual will help you to understand and operate the LiNX remote modules — please read and understand before operating.

Using this manual

This manual uses the following information boxes to convey important and useful information:

⚠ WARNING!

Warnings provide important information that must be followed in order to install, configure, and use the product safely and efficiently. Not following the instructions given in a warning can potentially lead to equipment failure, damage to surrounding property, injury or death.

NOTE

Notes provide supporting information in order to install, configure, and use the product. Not following the instructions given in notes can lead to equipment failure.

See also

The "See also" box provides cross-references to further information with clickable links to help you navigate the manual more easily.

Important information

Do not install, maintain or operate this equipment without reading, understanding and following this manual – including the Safety and Misuse Warnings – otherwise injury or damage may result. This manual contains integration, set up, operating environment, test and maintenance information needed in order to ensure reliable and safe use of the product.

The term 'programming' used in this manual refers to adjusting parameters and configuring options to suit an application and does not change or replace any firmware within the controller. When referring to upgrading the controller's firmware, the manual uses the term 'firmware upgrade'. Both programming and firmware upgrading are distinct functions and are performed using a controlled programming tool available only to authorized personnel.

The products described in this manual are not user-serviceable. Specialized tools are necessary for the repair of any component. Any attempt to gain access to or in any way abuse the electronic components and associated assemblies that make up the wheelchair controller system renders the manufacturer's warranty void and the manufacturer free from liability.

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Related documentation

A LiNX System comprises a number of modules (power module, remote module etc.) depending on the application. Each LiNX module has its own installation manual that describes the installation requirements for that particular module. Please visit: www.dynamiccontrols.com

1 Remote Modules instruction

1.1 Controls and indicators overview

1.1.1 REM110

Figure 1, below, shows the main features of the REM110 remote module. These features are described in more detail in the following sections.

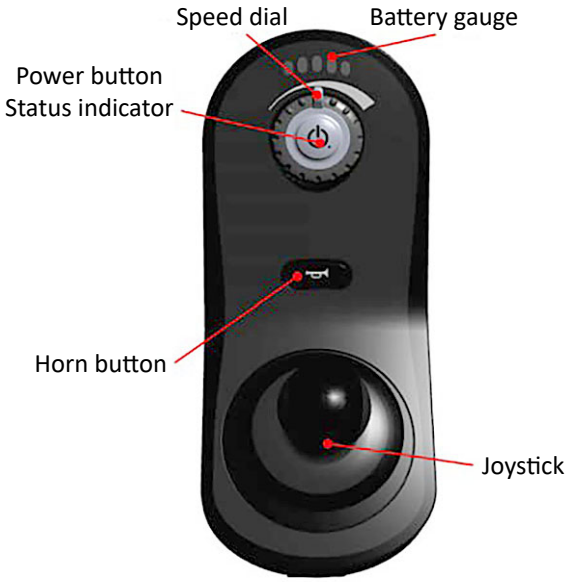


Figure 1: REM110 user interface

1.1.2 REM210, REM211

Figure 2, below, shows the main features of the REM210 and REM211 remote modules. These features are described in more detail in the following sections.

Figure 2: REM210, REM211 user interface

1.1.3 REM215, REM216

Figure 3, below, shows the main features of the REM215 and REM216 remote modules. These features are described in more detail in the following sections.

Figure 3: REM215, REM216 user interface

NOTE

The REM211 and REM216 have a white ring around the base of their joysticks to differentiate them from the REM210 and REM215 respectively.

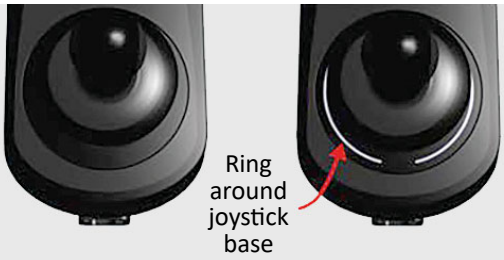


Figure 4: Identifying the REM211 and REM216

1.1.4 10-way Switch Overview

The LiNX 10-way switch (DLX-SW10-A / DLX-SW10T-A) is a hardware-only module that provides simple, direct access to regularly used functions.

It is typically used for common seating functions but can also be used to switch between favorite drive functions, or to control lighting.

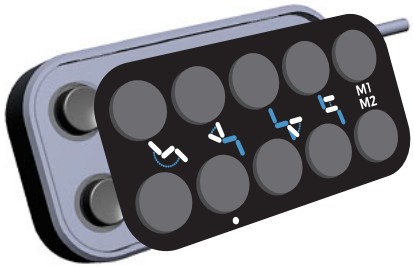


Figure 5: LiNX 10-way switch

1.2. Using the controls

1.2.1 Powering up and down

NOTE

In the unlikely event that the wheelchair is in a runaway situation, the user can press the remote module's power button to perform an EMERGENCY STOP. See section 1.2.2 Performing an emergency stop.

Figure 6: Power OFF

To switch **ON** the LiNX remote module, press the power button. The power button is the only user input that can activate the system.

If there is no fault with the system, the status indicator (through the power button) will light up green, and the battery gauge will display the current battery status.

If there is a fault with the system when powering up, the status indicator will indicate the fault with a series of red flashes (see LiNX System Manual for more information on fault indication).

Figure 7: Power ON

To switch **OFF** the system, press the power button; the system will power down and the status indicator will switch off.

The power button is also used to perform an EMERGENCY STOP—see next section—and lock the system—see section ***1.2.6 Using the lock function.***

WARNING!

A power button can power down a system only if its status indicator is illuminated (green or flashing red). If a power button's status indicator is off, the power button cannot be used to power down the system.

See also

1.3.1 The status indicator

1.2.2 Performing an emergency stop

If the user needs to stop the wheelchair quickly, or stop a seating motion quickly, the power button can be pressed to perform an EMERGENCY STOP. If driving, the wheelchair will come to a halt quickly; the rate at which it comes to a halt is set by the Emergency Deceleration parameter (which is set by the manufacturer).

1.2.3 Using the joystick

Figure 8:
The joystick

The joystick controls the direction and speed of drive and seating functions. It can be configured to work in proportional or discrete modes.

Direction control — driving

By default, when the joystick is deflected from the neutral position, the wheelchair will move in the same direction as the joystick. This default behavior, however, can be modified by rotating the joystick, flipping the remote module, or reassigning joystick quadrants. See the LiNX Systems Installation Manual for more details.

Direction control — seating

For seating functions, the direction of the seating motion (extend / retract) depends on how the input control has been configured.

Speed control — proportional mode

In proportional mode, the speed of the drive or seating function is proportional to the joystick deflection, so that the further the joystick is moved from the neutral position, the faster the drive or seating function will travel.

Speed control — discrete mode

In discrete mode, the speed of the drive or seating function is fixed and is activated when the joystick is deflected past a configurable threshold.

Stopping

In general, to stop driving or to stop a seating motion, either pull the joystick back to the neutral position, or release the joystick and it will automatically return to the neutral position. However, this operation does not work for latched driving modes.

The joystick can also be used to wake up the system when in sleep mode — see ***1.2.7 Interrupting or waking up from sleep***.

⚠ WARNING!

As the joystick is deflected, the size of the gap between the joystick skirt and the top of the remote module's body reduces; this can be a pinching hazard. The user should be instructed to release the joystick if any body part becomes pinched from deflecting the joystick.

1.2.4 Controlling maximum speed

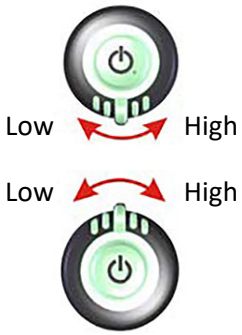


Figure 9: The speed dial (low profile module top, traditional style module bottom)

The speed dial allows the user to limit the maximum speed of the wheelchair (that is, the speed when the joystick is fully deflected) to suit their preference and environment.

The dial offers 10 discrete steps between the lowest speed (dial set to the left) and the highest speed (dial set to the right).

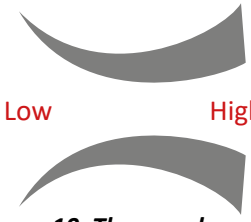


Figure 10: The speed symbol (low profile module top, traditional style module bottom)

As a visual reminder, a speed symbol (shown left) is positioned by the speed dial to indicate the low and high positions of the speed dial.

The speed symbol on the low profile module is below the speed dial; on the traditional remote modules, it is above the speed dial.

1.2.5 Using the horn

Figure 11: The horn button

The horn button is located below the power button. Press the horn button to sound the horn. The horn will sound for as long as the horn button is pressed.

The horn button is also used for unlocking a locked system — see below for more details.

1.2.6 Using the lock function

The lock function is used, primarily, 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.

When a system is locked (see next page), the system is powered down, and the user controls are not responsive. If the power button is pressed when the system is locked, the locked status is displayed to the user by the battery gauge.

To unlock the system, an unlock sequence must be performed (see next page) by the user within a specific time frame. If the sequence is not performed correctly, within the time frame, the system will remain locked and the system will power down again.

Figure 12: Power ON

To power down and lock the system, press and hold the power button for 4 seconds.

When entering the locked state, the battery gauge will indicate the transition by flashing LEDs 1, 3, and 5 (far left, middle, and far right) 3 times.

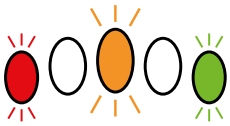


Figure 13: System locking

Figure 14: Power OFF

To power up and unlock the system, press the power button once, and then, press the horn button twice — the horn button must be pressed twice within 10 seconds of pressing the power button.

If the user implements the unlock sequence incorrectly, or the power button is pressed again before the unlock sequence is complete, the system will return to the locked state.

During an unlock attempt, the battery gauge will indicate the system is in a locked state by flashing LEDs 1, 3, and 5 (far left, middle, and far right) until either the system is powered off, unlocked, or the Sequence Timeout is reached.

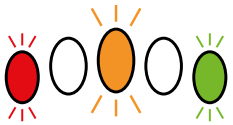


Figure 15: System unlocking

NOTE

- *the lock function is only available when the **Enable Lock** parameter is set to **Yes**;*
- *the LiNX remote module can be programmed when in a locked state;*
- *the LiNX remote module battery can be charged when in a locked state;*
- *if more than one remote module is used within the system, the unlock sequence will only operate with the remote module that powered up the system. Furthermore, the locked status indication will only be displayed on the remote module that powered up the system;*
- *the horn will not sound when pressing the horn button during the unlocking sequence.*

1.2.7 Interrupting or waking up from sleep

Before a system goes to sleep, the system enters a transition period, indicating to the user that it is about to enter sleep mode. If sleep mode is unwanted, the user can interrupt the process during this transition period by pressing the power button or deflecting the joystick. Note, however, if the joystick on the remote module is not the active function's user input, then it will be ignored and will not interrupt the process. When transitioning into sleep mode, all lit LEDs start dimming for a period of two seconds until completely switched off. All indicators remain switched off when the system is in sleep mode.

NOTE

To interrupt the transition period, any button can be pressed. However, the system will react accordingly to the button press. So, for example, pressing the horn button will make the horn sound and interrupt the transition period, preventing the system going to sleep.

The system is woken from sleep by:

- momentarily deflecting the joystick (see note below), or
- pressing the power button.

NOTE

*Set the **Enable Joystick Wakeup** parameter to enable this functionality.*

1.2.8 Changing drive function (REM210, REM211, REM215, REM216)

Figure 16: Drive function select button and display

The wheelchair's drive function can be selected with the drive function select button, which is located below the power button on the left-hand side of the remote module.

Press the top of the button to select the next drive function. Press the bottom of the button to select the previous drive function.

The drive function selected is indicated on the drive function indicator, which is located to the right-hand side of the drive select button. The indicator has three LEDs:

1. when drive function 1 is selected, the bottom indicator will be lit;
2. when drive function 2 is selected, the bottom and middle indicators will be lit;
3. when drive function 3 is selected, all indicators will be lit;
4. when drive function 4 or greater is selected, the top and bottom indicators will be lit;

1.2.9 Changing seating function (REM210, REM211, REM215, REM216)

Figure 17: Seating function select button

The wheelchair's seating function can be selected with the seating function select button, which is the rocker button located on the right-hand side of the remote module.

Press the top of the button to select the next seating function. Press the bottom of the button to select the previous seating function. Note that only seating functions that have been programmed will be available for selection.

The selected seating function is displayed on the drive/actuator status indicator as shown below.

Table 1: Seating function display

Seating function	Display	Seating function	Display	Seating function	Display
Tilt		Recline		Recline and legs	
Elevate		Left leg		Unspecified	
Right leg		Both legs		None	

1.2.10 What are memory positions?

A memory position describes a seating operation that automatically repositions the seating from its current position to a pre-defined target position with no more effort from the user other than a momentary push of a switch or joystick.

Using memory positions, a user no longer has to activate multiple motions or make multiple 'fine-tuning' adjustments to get to their favorite, or often-used seating position. Instead, when a memory position is activated, the seating moves directly to the selected target position quickly, reliably and consistently, saving the user both time and effort.

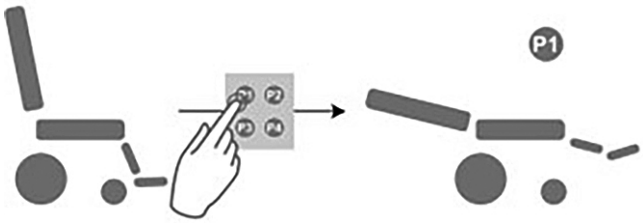


Figure 18: A memory position repositions the seating from any starting position to a pre-defined target position

For example, a momentary push on switch P1 in Figure 18 activates the actuators to reposition the wheelchair's backrest, seat pan, and legs from an upright, sitting position to a lying down position. Note that any starting position could have been used for this example, resulting in the same target position.

Memory positions can be considered as the automated version of motions. With motions, a user controls seating movements manually, selecting both the direction of the motion and when to stop the motion (unless a limit switch is activated). With memory positions, the LiNX system controls the seating movements automatically, selecting both the direction the actuators move and when to stop them. To do this, memory positions use feedback to calculate in which direction to begin moving and then to calculate where to stop. Feedback can be provided from either angle sensors or limit switches.

A LiNX system can have as many as 161 pre-defined memory positions available to the user, each of which is activated from either a direct access switch or a seating function. In addition, each memory position can be controlled in proportional, switched or latched modes (see Operating modes - seating functions and Operating mode - direct access).

Initially, the manufacturer is responsible for configuring memory positions, and naturally, these may not be suitable for all users. For this reason, memory positions can also be updated by the user through their remote module (REM2xx, REM400, REM500). This is useful for either fine-tuning the manufacturer-configured memory positions, or creating entirely new memory positions. Updating memory positions by the user is explained in the Updating memory positions section.

1.2.10.1 Operating memory positions

A user can select and activate any pre-defined memory position via a seating function, or by direct access, depending on their chair's configuration. Additionally, any memory position that uses angle feedback can also be updated through a remote module. The following sections show you how memory positions are selected, activated, and updated.

1.2.10.2 Selecting memory positions - REM2xx

To operate a memory position from a REM2xx remote module, use the seat function selector to scroll through the available seating functions.

Select the seating function that includes the memory position you want to move to, and then activate the memory position by deflecting the joystick left, right, forward, or reverse, depending on which quadrant the memory position is configured to.

Figure 19: Selecting and operating a memory position (REM2xx)

On activation of the memory position, the connectivity/position indicator LED (Figure 19) flashes on/off, once a second, for the duration that the memory position is active. As soon as the memory position reaches its target, the drive/actuator status LEDs and the connectivity/position indicator LED flash synchronously at a faster rate for a short duration to indicate that the memory position is complete.

1.2.10.3 Operating modes - seating functions

Memory positions activated from seating functions, and using a joystick-based remote module, operate in one of three modes:

- proportional
- switched
- latched

In **proportional mode**, the selected memory position drives its actuators towards its target for the duration that the joystick is deflected or until the target position is reached. If the joystick is released before the target is reached, the memory position stops driving the actuators. The speed of the memory position is proportional to the joystick's deflection within the memory position's quadrant.

In **switched mode**, the selected memory position drives its actuators towards its target for the duration that the joystick is deflected or until the target position is reached. If the joystick is released before the target is reached, the memory position stops driving the actuators. The speed of the memory position is selected and fixed through the LiNX Access tools.

In **latched mode**, the selected memory position drives its corresponding actuators towards its target until the target position is reached. The speed of the memory position is selected and fixed through the LiNX Access tools.

NOTE

If you need to deactivate the memory position before it reaches its target:

- *in **latched** mode: move the joystick into the same quadrant that activated the memory position and then release it again*
- *in **switched** or **proportional** mode: move the joystick back to the neutral position*

1.2.10.4 Selecting memory positions — direct access

Using direct access, memory positions are selected by the user from a switch such as a buddy button, or 10-way switch.

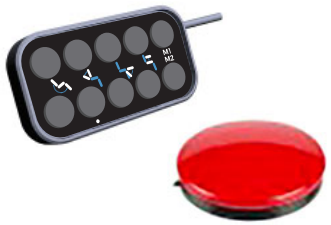


Figure 20: Direct access switches

1.2.10.5 Operating mode - direct access

Memory positions activated from direct access operate in one of two modes:

- switched
- latched

In **switched mode**, the selected memory position drives its corresponding actuators towards its target for the duration that the switch is pressed or until the target position is reached. If the switch is released before the target is reached, the memory position stops driving the actuators. The speed of the memory position is selected and fixed through the LiNX Access tools.

In **latched mode**, the selected memory position drives its corresponding actuators towards its target until the target position is reached. The speed of the memory position is selected and fixed through the LiNX Access tools.

NOTE

To stop a memory position that operates in latched mode, press the same switch again, or perform an emergency stop.

1.2.10.6 Updating memory positions

Memory positions can be updated by the user from their remote module by overwriting the target angles of an existing, pre-defined memory position. This is useful for the user for both fine-tuning a memory position or replacing a memory position. Note that not all memory positions are reconfigurable, such as those not configured to 'Allow Occupant to Update Position', or those that only use switch feedback.

1.2.10.7 Updating memory positions — REM2xx

NOTE

When using a REM2xx, only the last activated memory position can be updated. To make sure you are updating the correct memory position, the first step is always to activate the memory position that you want to update.

To update a memory position using a REM2xx:

1. activate the memory position that you want to update — this can be a momentary activation — you do not need to complete the memory position. For example, if you want to update a latched memory position stored in the left quadrant of a specific seating function, locate the seating function with the seat function selector (Figure 21), and then momentarily deflect the joystick left to activate the memory position and then left again to deactivate it. This memory position can now be updated in the next two steps.
2. reposition the seating to the new target position using motions (such as recline, tilt, etc.),
3. press and hold the bottom of the drive function selector and the seat function selector rocker switches simultaneously for five seconds to update the memory position that you selected in step 1 with the seating position you set in step 2.

After one second of the buttons being pressed, and for the remaining time they are held:

1. the backlights under the rocker switches pulse on/off synchronously at a rate of half a second on, then half a second off;
2. the seating indicator is illuminated for the selected memory position;
3. the connectivity/position indicator is illuminated.

Once the update is complete, the back lights under the rocker switches pulse at a quicker rate (quarter second on/quarter second off) three times to indicate that the update was successful. You can now release the buttons.

Figure 21: Updating memory positions — REM2xx

To update this memory position again, repeat the steps above from step 2 if, since updating this memory position:

- you have not activated another memory position, and
- you have not cycled the power

Otherwise, or to update another memory position, repeat the steps above from step 1.

NOTE

Note that some memory positions may be configured by the distributor so that they cannot be updated by the user. If the selected memory position cannot be updated, or no memory position has been activated since powering on the wheelchair, then the update will fail. If an update fails, it is indicated by pulsing the back lights under the rocker switches asynchronously (left ON, right OFF, then left OFF, right ON) for one second.

In addition to the visual indications, audible cues are also available when updating memory positions.
If enabled, audible cues are played when:

- the memory position update is in progress
- the memory position update succeeded
- the memory position update failed

For more on these and other audible cues, please see the LiNX Systems installation manual.

1.2.11 Controlling lights (REM215, REM216)

Lights (hazard lights and left indicator)

Lights (position and right indicator)

Figure 22: Lighting control buttons

Lighting control is available on the REM215 and REM216. There are two lighting control buttons, which are situated below the horn button.

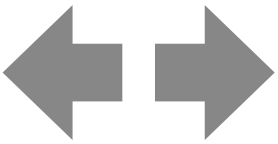
The left-hand button controls the left indicator and the hazard lights. The right-hand button controls the right indicator and the position lights. The operation of these is described below.

1.2.11.1 Hazard lights

To switch on the hazard lights, press and quickly release the left-hand lighting button once. LEDs behind the left-hand button and right-hand button will flash on and off for the duration the hazard lights are operating.

To switch off the hazard lights, press the left-hand or right-hand lighting button.

1.2.11.2 Indicator lights



To switch on the left indicator, press and hold the left-hand lighting button once. The LED behind the left-hand button will flash on and off for the duration the left indicator lights are operating.

To switch on the right indicator, press and hold the right-hand lighting button once. The LED below the right-hand button will flash on and off for the duration the right indicator lights are operating.

To switch off either indicator, press the left-hand or right-hand lighting button.

1.2.11.3 Position lights

To switch on the position lights, press and quickly release the right-hand lighting button once. The LED behind the right-hand button will remain on for the duration the position lights are operating.

To switch off the position lights, press the right-hand or left-hand lighting button.

1.2.12 Disabling Bluetooth

The embedded Bluetooth functionality can be disabled when powering up the system by pressing and holding the power button for more than three seconds. The disabled Bluetooth functionality is indicated to the user by the connectivity LED (REM210, REM211, REM215, REM216) and the status LED pulsing for a duration of six seconds.

1.3. Reading the indicators

1.3.1 The status indicator

The status indicator is located underneath the power button. When the system is not powered up, the status indicator is not lit.

When the system is powered up, and there are no faults with the system, the status indicator will be lit green.

If, when powered up, there is a fault with the system, then the status indicator will flash red. The number of flashes will indicate the type of error. For more information on flash codes, see Error indication in the LiNX System Installation Manual.

Figure 23: The status indicator

1.3.2 The battery gauge

The battery gauge comprises five different LEDs (1 x red, 2 x amber, 2 x green), situated above the remote module's horn button. The number of LEDs lit depends on the status of the battery, as shown below.

The battery gauge LEDs are also used to display charging information. See the LiNX System Installation Manual for more information on battery charging.

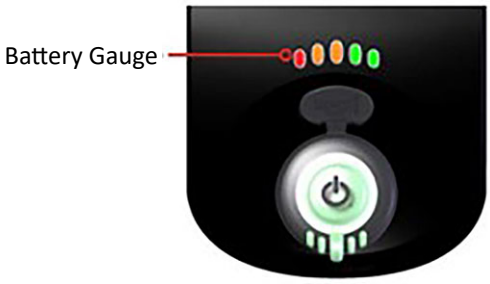


Figure 24: The battery gauge

1.3.2.1 Normal operation

Table 2: Battery gauge — normal operation

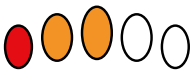
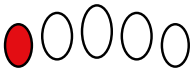
Battery Gauge	Battery Level	Notes
	Fully charged	This level is set by the Batt Gauge Minimum parameter. See the LiNX System Manual for more information.
		
		
	Consider charging battery	
	Battery needs charging	This level is set by the Batt Gauge Minimum parameter. See the LiNX System Manual for more information.

Figure 25: Battery gauge operation

1.3.2.2 High voltage warning

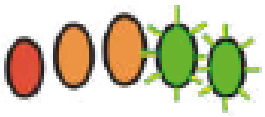


Figure 26: High voltage warning

A high voltage warning is indicated by all LEDs on, and the green LEDs flashing. This occurs when the battery voltage level has risen above the high voltage warning set-point.

1.3.2.3 Low voltage warning

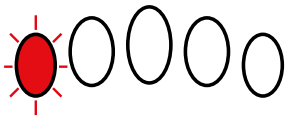


Figure 27: Low voltage warning

A low voltage warning is indicated with the left-most LED flashing. This occurs when the battery voltage level has decreased below its low voltage warning set-point. See Batt Gauge Low Voltage Warning in the LiNX System Manual for more information.

Charge the battery immediately.

1.3.2.4 Cut-off voltage

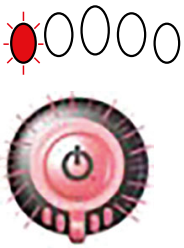


Figure 28: Cut-off voltage

When the battery voltage decreases below the battery cut-off voltage:

- the status indicator will flash (Flash code 2)
- the first (red) LED will flash on the battery gauge
- the horn will sound once every 10 seconds

1.3.3 Drive inhibit indication

Drive inhibit mode is indicated by the battery gauge with a right-to-left chase sequence.

The chase sequence starts with the green LED on the right-hand side, and one-by-one, each LED will switch on and then off. When the sequence completes at the left-most red LED, it begins again at the right-hand side.

The chase sequence continues until the error condition has been cleared.

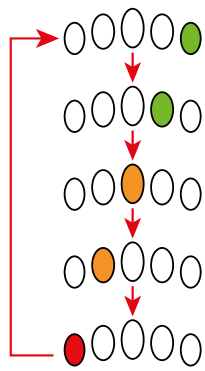


Figure 29: Drive inhibit chase sequence

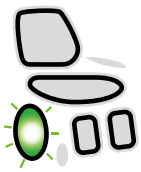


Figure 30: Drive wheel indicator flashing

For remote modules with a drive wheel indicator, if the joystick is deflected during a drive inhibit, the drive wheel indicator will flash simultaneously with the drive inhibit chase sequence described above. It will continue to flash for the duration that the joystick remains out of the neutral position.

1.3.4 OON indications

OON ("Out Of Neutral") is a safety feature that prevents accidental operation of wheelchair functions (driving, seating, etc.) when the system's primary input is in an out of neutral position.

For proportional joysticks, an out of neutral position is when the joystick is deflected such that it would normally produce demand in the system. For discrete (switch) joysticks, an out of neutral position is when the joystick is outside, or greater than, the switch threshold. For switches, out of neutral is when one or more switches are activated.

An OON indication is displayed when the primary input is out of neutral and one of the following:

- the system is powering up,
- after a function change,
- when the system comes out of an inhibit or drive lock-out
- when the settings menu is exited
- when indirect navigation is exited
- when Rest is exited
- on Live Handover (switching user input)

NOTE

OON activation is slightly different between a drive function and a non-drive function for quadrants that have no programmed output.

- *For non-drive functions, such as seating, OON is not activated if the primary input is in an out of neutral position in a quadrant that has NOT been programmed for an output. This is particularly useful, for example, for head-array users who may have just the left and right pads programmed for output, allowing them to rest their head on the middle pad without the fear of activating an OON.*
- *For drive functions, no matter how the quadrants are programmed, OON will always activate when the primary input is out of neutral when powering up or when waking up from sleep.*

1.3.4.1. Drive OON warning

During a drive OON warning, the battery gauge LEDs and drive wheel indicator (REM210, REM211, REM215, REM216 only) will flash continually to alert the user, and the wheelchair will not drive. If the joystick is returned to the center position, the warning will clear and the wheelchair will drive normally.

1.3.4.2. Seating OON warning (REM110, REM210, REM211, REM215, REM216)

During a seating OON warning, the battery gauge LEDs and seating indicator (REM210, REM211, REM215, REM216 only) will flash continually to alert the user, and the seating motions will not operate. If the switches are deactivated, the warning will clear and the seating motions will operate normally.

1.3.5 Drive and seating function indications (REM210, REM211, REM215, REM216)

In addition to the motion indications (described above), the drive / actuator status indicator will also display the following system state information:

- drive slow-down
- drive lock-out
- actuator lock-out

1.3.5.1. Drive slow-down

A drive slow-down is a state that prevents the wheelchair being driven at the standard speed but does allow the wheelchair to drive at a reduced speed.

To notify the user that a drive slow-down is active, the drive wheel LED **pulses** slowly on and off. (Figure 31)

Figure 31: Drive slow-down is active

If the system has been configured to display the reason for a drive slow-down, the drive wheel LED and the corresponding seating function LEDs **pulse** slowly on and off. (Figure 32)

Figure 32: Reason for Drive slow-down

The LEDs pulse for the duration of driving or seating function demand.

1.3.5.2 Drive lock-out

A drive lock-out is a state that prevents the wheelchair being driven.

To notify the user that a drive lock-out is active, the drive wheel LED **flashes** on and off. (Figure 33)

Figure 33: Drive lock-out is active

If the system has been configured to display the reason for a drive lock-out, the drive wheel LED and the corresponding seating function LEDs **flash** on and off. (Figure 34)

Figure 34: Reason for Drive lock-out

The LEDs flash for the duration of driving or seating function demand.

1.3.5.3 Actuator lock-out

To notify the user that the motion they want to use is locked-out, an actuator lock-out state is indicated by flashing the corresponding seating function LEDs. The LEDs flash for a minimum of three flashes and then for the duration of the seating function demand. (Figure 35)

Figure 35: Actuator lock-out

1.3.6 Firmware upgrade indication

When a system is in firmware upgrade mode, the status indicator remains switched on and all other indicators on the remote module are switched off. (Figure 36)

Figure 36: Firmware upgrade indication

1.4 Using dual remote modules

The LiNX 200 series power modules provide two communication bus connectors, allowing two remote modules to be connected at the same time. This is useful, for example, when a remote module is required for both an occupant and an attendant.

When two remote modules are connected in the same system, both are capable of operating the wheelchair, although only one of them will have control of the system at any one time. While one remote is in charge, the other will not respond to any commands except for its power button, which can always turn off the system.

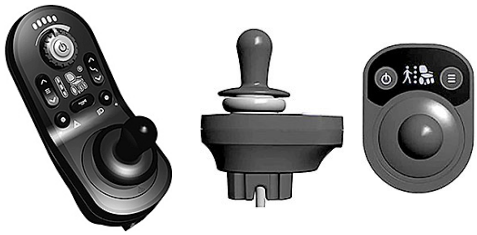


Figure 37: Dual remote modules

NOTE

The remote modules do not have to be the same type. The power module can connect to identical or different remote module types.

The following sections detail the general operation of the dual remote module feature.

1.4.1 Operation

Powering up

Either of the remote modules can power up the system with their own power button. The remote module that powers up the system will have control of the system (remote-in-charge). The other remote module (remote-not-in-charge) will have no control of the wheelchair except for its power button, which can still be used to switch off the system.

NOTE

If a programming and diagnostic tool is responsible for a system powering up when it connects to a LiNX Access Key, the remote module that hosts the LiNX Access Key will be in charge of the system.

Powering down

No matter which remote module is in charge in the dual remote system, the wheelchair can be powered down by pressing the power button on either remote module.

Swapping the remote-in-charge

To swap which remote module is in charge, power down the system with either remote module, and then power the system on again with the remote module that requires the control.

Remote-in-charge indication

Dual remote systems indicate who is in charge with the battery gauge — all other indicators display normally.

Remote-in-charge		Remote-not-in-charge
All indicators, including the battery gauge will display as normal.		All indicators will be switched off except the status indicator.
		
Figure 38: Remote-in-charge indication		***Figure 39: Remote-not-in-charge indication***

1.4.2 Fault handling and indication

If a fault exists on one of the remote modules in a dual remote system, then the fault is indicated on both modules.

If one of the remote modules in a dual system is faulty, the system can be driven with the other remote module. If, however, the power button on the remote-not-in-charge has a fault, then the system will not operate.

If one of the remote modules is disconnected from the system when it is powered down, the remaining remote module will display an error (FC:2) when the system is powered up again to indicate that it was expecting two remote modules in the system. To remove the error, cycle the power with the power button.

1.5 Controls and indicators overview

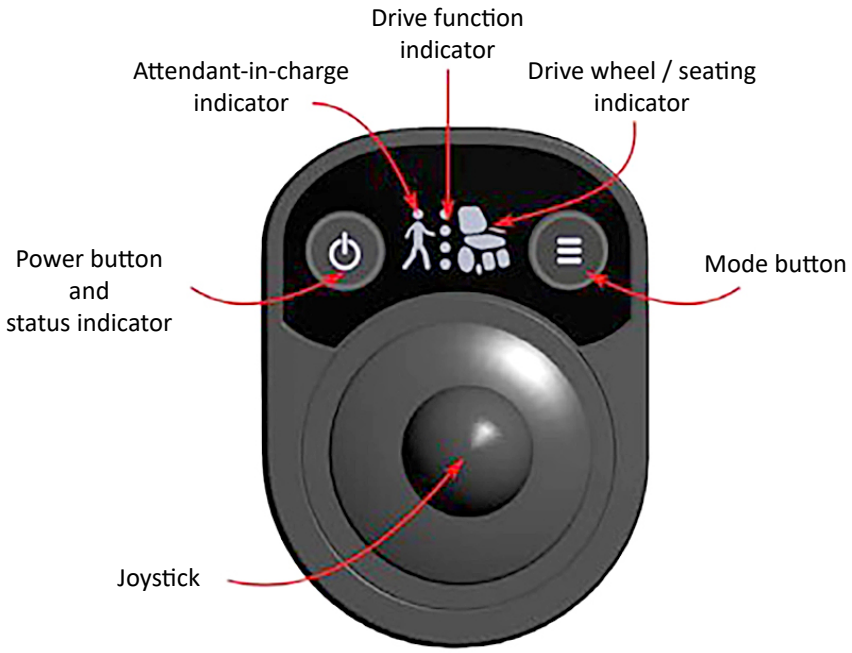


Figure 40: ACU200 controls and indicators

Table 3: Controls and indicators overview

Control / Indicator	Purpose
Power button and status indicator	Power up or down the system. Status indication (LEDs under button). Request to be user-in-charge (depends on settings).
Attendant-in-charge indicator	Lights up when the attendant is in charge of the system.
Drive function indicator	Displays the selected drive function.
Drive wheel / seating indicator	Displays which seating function is selected.
Mode button	Change function within the attendant profile.
Joystick	Control speed and direction of drive and seating functions.

1.6 Using the controls

⚠ WARNING!

Handheld use of the ACU may create a situation in which the trailing cable entraps the attendant's hand. If this situation occurs, the attendant must release the device to permit module rotation and safely disengage the hand.

1.6.1 Powering up and down

NOTE

In the unlikely event that the wheelchair is in a runaway situation, and the attendant is the user-in-charge, the attendant can press the ACU's power button to perform an emergency stop. See section 1.6.3 Performing an emergency stop.

The power button can be used to power up and down the LiNX system. The power button is also used to:

- perform an emergency stop — *1.6.3 Performing an emergency stop;*
- request to be user-in-charge — *1.6.2 Requesting to be user-in-charge*

To power up the LiNX system, press the power button. The power button is the only user input that can activate the system.

Figure 41: Status indicator: system on

If there is no fault with the system, the status indicator (through the power button) will light up green; the mode button will light up white; the connectivity indicator will light up blue (if connectivity has not been disabled) and the speed indicator will display the selected function's maximum speed.

Figure 42: Status indicator: system fault

If there is a fault with the system when powering up, the status indicator will indicate the fault with a series of red flashes (see 1.7.1 Status indicator and LiNX System Installation Manual for more information on fault indication).

⚠ WARNING!

A power button can power down a system only if its status indicator is illuminated (green or flashing red). If a power button's status indicator is off, the power button cannot be used to power down the system.

If the attendant is set as the user-in-charge, the system can be powered down by pressing the power button; the system will power down and all indicators will switch off.

NOTE

If the attendant is not the user-in-charge, then the ACU's power button cannot power down the system. Pressing the power button when not the user-in-charge will, instead, send a request to the system to become the user-in-charge. ***See 1.6.2 Requesting to be user-in-charge.***

1.6.2 Requesting to be user-in-charge

The user-in-charge is the user (attendant or occupant) that controls the wheelchair. If the attendant is not the user-in-charge, then the attendant will not be able to drive the wheelchair or control the seating functions and all indications on the ACU will be switched off.

To become the user-in-charge, the attendant must be the user that powers up the wheelchair, or, if the wheelchair is already powered up, then the attendant can request to be the user-in-charge by pressing the power button.

The request to be user-in-charge will be declined if the attendant is a restricted user (see note Restricted users), in which case the control of the system will remain with the occupant. If the attendant is not a restricted user, the request will be accepted, and the occupant will relinquish control to the attendant.

NOTE

Restricted users

A restricted user is an occupant or attendant that is prevented from being the user-in-charge once a system is powered up. By default, there are no restricted users in a LiNX system and both the attendant and the occupant can request to be the user-in-charge at any time by pressing the power button. However, for safety and other reasons, it may be appropriate to restrict the attendant or occupant from becoming the user-in-charge after power-up. If restricted, then any request to be the user-in-charge will be denied — in other words, pressing the power button will have no effect.

*To restrict a user, set the **Restricted user priority** parameter as shown below:*

- *No Restriction*
- *Occupant Priority*
- *Attendant Priority*
- *No Change Allowed*

By default, **Restricted user priority** *is set to No Restriction.*

- *To restrict the occupant, set **Restricted user priority** to Attendant Priority.*
- *To restrict the attendant, set **Restricted user priority** to Occupant Priority.*
- *To restrict both the attendant and occupant, set **Restricted user priority** to No Change Allowed.*

WARNING!

When setting either the occupant or the attendant as a restricted user in a user-in-charge system, consideration needs to be given to whether the benefit outweighs the risk, since the restricted user will be unable to take control from the user by activating the power button in an emergency.

1.6.3 Performing an emergency stop

If the attendant is the user-in-charge and needs to stop the wheelchair quickly, or stop a seating motion quickly, the power button can be pressed to perform an emergency stop. If driving, the wheelchair will come to a halt quickly; the rate at which it comes to a halt is set by the **Emergency Deceleration** parameter.

1.6.4 Using the joystick

Figure 43: The joystick

The joystick controls the direction and speed of drive and seating functions. It can be configured to work in proportional or switched modes.

Direction control

By default, when the joystick is deflected from the neutral position, the wheelchair will move in the same direction as the joystick. This default behavior, however, can be modified by rotating the joystick, flipping the remote module, or reassigning joystick quadrants. See the LiNX Systems Installation Manual for more details.

Direction control — seating

For seating functions, the direction of the seating motion (extend / retract) depends on how the input control has been configured. See the LiNX Systems Installation Manual for more details.

Speed control — proportional mode

In proportional mode, the speed of the drive or seating function is proportional to the joystick deflection, so that the further the joystick is moved from the neutral position, the faster the drive or seating function will travel.

Speed control — discrete mode

In discrete mode, the speed of the drive or seating function is fixed and is activated when the joystick is deflected past a configurable threshold — see Joystick Switch Threshold in the LiNX System Installation Manual.

Stopping

In general, to stop driving or to stop a seating motion, either pull the joystick back to the neutral position, or release the joystick and it will automatically return to the neutral position. However, this operation does not work for latched driving modes. For latched driving, see the LiNX Systems Installation Manual.

⚠ WARNING!

As the joystick is deflected, the size of the gap between the joystick skirt and the top of the remote module's body reduces; this can be a pinching hazard. The user should be instructed to release the joystick if any body part becomes pinched from deflecting the joystick.

1.6.5 Selecting the attendant functions

Use the mode button to select the attendant drive and seating functions.

The ACU operates within a dedicated profile. Within this profile, the attendant presses the mode button to select a drive function or seating function.

Pressing the mode button changes the attendant function.

Figure 44: Changing drive function with the mode button

For each press of the mode button, the selected attendant function advances by one through the attendant function list. The attendant function list wraps around itself, and so, when the last available function is reached, a further press will select the attendant function at the beginning of the list. For example, in ***Figure 45*** after reaching the attendant function called Seating n (n = the number of functions on your wheelchair), pressing the mode button once more will bring you back to the attendant function called ***Drive 1***.

When an attendant drive function is selected, it is displayed on the drive function indicator. When a seating function is selected, it is displayed on the seating indicator. See ***1.7.3 Drive and seating function indicators*** for more details.

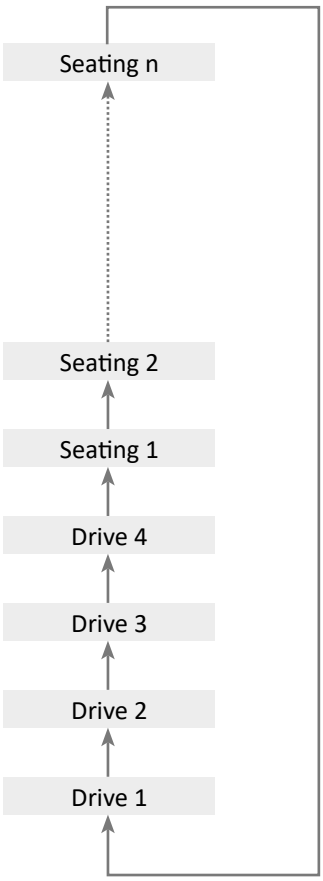


Figure 45: Selecting a function from an example attendant function list

1.6.6 Disabling connectivity

The system's connectivity can be disabled when powering up a system by holding down the power button for three seconds. To indicate that the connectivity is disabled, when the system powers up the status LED pulsates slowly, on and off, for five seconds.

NOTE

The system's connectivity is restored automatically on the next power cycle.

1.7. Reading the indicators

1.7.1 Status indicator

Figure 46: System on

The status indicator is located underneath the power button. When the system is not powered up, the status indicator is not lit.

Figure 47: System off

The status indicator will be lit green when:

- the system is powered up, and
- there are no faults with the system, and
- the attendant is the user-in-charge.

Figure 48: System fault

The status indicator will flash red when an error is detected. The number of flashes will indicate the type of error—see ***Table 4***.

Table 4: Error indication

Number of flashes	Error
1	Remote module / joystick error
2	Network or configuration error
3	Left motor error
4	Right motor error
5	Left park brake error
6	Right park brake error
7	Other system module error

1.7.2 Attendant-in-charge indicator

Figure 49: Attendant-in-charge

The attendant-in-charge indicator, shown left, is displayed when the attendant is the user-in-charge.

1.7.3 Drive and seating function indicators

The drive and seating functions are indicated with the:

- attendant drive function indicator,
- drive wheel indicator, and
- seating indicator.

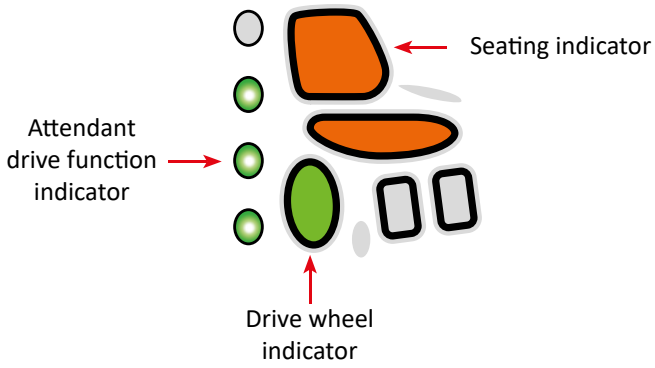


Figure 50: Attendant drive and seating indicator

When an attendant drive function is selected (see ***1.6.5 Selecting the attendant functions***), the drive wheel indicator is lit and the corresponding drive function number is displayed on the attendant drive function indicator using one or more of the four green LEDs.

Figure 51: Drive function indicator

The seating indicator shows the selected seating function. As the user steps through the seating functions with the mode button (see ***1.6.5 Selecting the attendant functions***), the corresponding seating LED is lit on the indicator. Possible seating indications are shown in ***Table 5***.

Table 5: Seating functions

Seating function	Display	Seating function	Display	Seating function	Display
Tilt		Recline		Recline and legs	
Elevate		Left leg		Unspecified	
Right leg		Both legs		None	

NOTE

Only configured seating functions can be selected and then displayed by the seating indicator.

1.7.4. Drive slow-down indication

A drive slow-down is a state that prevents the wheelchair being driven at the standard speed but does allow the wheelchair to drive at a reduced speed.

Figure 52: Drive slow-down

To notify the user that a drive slow-down is active, the drive wheel LED **pulses** slowly on and off.

Figure 53: Drive slow-down

If the system has been configured to display the reason for a drive slow-down, the drive wheel LED and the corresponding seating function LEDs **pulse** slowly on and off.

The LEDs pulse for the duration of driving or seating function demand.

1.7.5. Drive lock-out and drive inhibit indication

A drive lock-out is a state that prevents the wheelchair being driven.

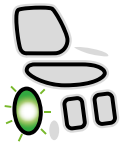


Figure 54: Drive lock-out

To notify the user that a drive lock-out is active, the drive wheel LED **flashes** on and off.

Figure 55: Drive lock-out

If the system has been configured to display the reason for a drive lock-out, the drive wheel LED and the corresponding seating function LEDs **flash** on and off.

The LEDs pulse for the duration of driving or seating function demand.

1.7.6. Actuator lock-out indication

An actuator lock-out is a state that prevents the seating motions operating.

Figure 56: Actuator lock-out

To notify the user that the motion they want to use is locked-out, an actuator lock-out state is indicated by flashing the corresponding seating function LEDs. The LEDs flash for a minimum of three flashes, unless interrupted, and then for the duration of the seating motion demand.

1.7.7 OON indications

OON ("**Out Of Neutral**") is a safety feature that prevents accidental operation of wheelchair functions (driving, seating, etc.) when the system's primary input is in an out of neutral position.

For proportional joysticks, an out of neutral position is when the joystick is deflected such that it would normally produce demand in the system. For discrete (switch) joysticks, an out of neutral position is when the joystick is outside, or greater than, the switch threshold. For switches, out of neutral is when one or more switches are activated.

An OON indication is displayed when the primary input is out of neutral and one of the following:

- the system is powering up,
- after a function change,
- when the system comes out of an inhibit or drive lock-out
- when the settings menu is exited
- when indirect navigation is exited
- when Rest is exited
- on Live Handover (switching user input)

NOTE

OON activation is slightly different between a drive function and a non-drive function for quadrants that have no programmed output.

- *For non-drive functions, such as seating, OON is not activated if the primary input is in an out of neutral position in a quadrant that has **NOT** been programmed for an output. This is particularly useful, for example, for head-array users who may have just the left and right pads programmed for output, allowing them to rest their head on the middle pad without the fear of activating an OON.*
- *For drive functions, no matter how the quadrants are programmed, OON will always activate when the primary input is out of neutral when powering up or when waking up from sleep.*

1.7.7.1 Drive OON warning

Figure 57: Drive OON warning

During a drive OON warning, the drive wheel indicator will flash continually to alert the user, and the wheelchair will not drive. If the joystick is returned to the center / neutral position, the warning will clear and the wheelchair will drive normally.

1.7.7.2 Seating OON warning

An actuator lock-out is a state that prevents the seating motions operating.

Figure 58: Seating OON warning

During a seating OON warning, the seating indicator will flash continually to alert the user, and the seating motions will not operate. If the switches are deactivated, the warning will clear and the seating motions will operate normally.

1.7.8 Restricted user indication

Figure 59: Restricted user indication

If the attendant requests to become the user-in-charge when the attendant is a restricted user, the request will be denied. This is indicated to the attendant by switching on the status LED (green) and then dimming it until it switches off again. This on-to-off process takes about one second.

1.7.9 Blocked function indication

By default, changing functions while operating within another function is not permitted. If the attendant attempts to change function while operating within another function, the function change will not occur and a blocked function indication is displayed.

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

If a **drive function** causes the block:

Figure 60: Blocked drive function

- the drive wheel indicator flashes quickly three times;
- the seating indicator switches off, if it was on, for the duration that the drive wheel indicator flashes.

If a **seating function** causes the block:

Figure 61: Blocked seating function

- the seating indicator flashes quickly three times;
- the drive wheel indicator switches off, if it was on, for the duration that the seating indicator flashes.

NOTE

*This functionality can be overridden for drive functions when driving, by setting **Enable Function Change Whilst Driving** to "On". As an example, this can be useful when the user wants to change the wheelchair's available speed without stopping, when moving from an indoor-based function to an outdoor-based function.*

*See **Enable Function Change Whilst Driving** in the parameter section in the LiNX System Installation manual for more information.*

1.7.10 Drive function selected indication

Figure 62: Drive function selected

Whenever a drive function is selected, the drive wheel indicator is lit.

1.7.11 Firmware upgrade indication

Figure 63: Firmware upgrade indication

When a system is in firmware upgrade mode, the status indicator remains switched on and all other indicators on the remote module are switched off.

1.7.12 User-in-charge indication

Figure 64: User-in-charge indication

When the attendant becomes the user-in-charge or the system powers up with the attendant in charge, all LEDs on the ACU, depending on the system status, will switch on immediately.

Figure 65: User not-in-charge indication

When the attendant is not the user-in-charge, all LEDs will be switched off on the ACU.

1.8 Battery charging

The battery charging socket of the LiNX system is a 5-pin XLR type, located on the LiNX remote module.

⚠ WARNING!

The XLR charger connector on the remote module is to be used exclusively for the intended purpose. Warranty will be voided if any unauthorized device is connected to this port.

To charge the wheelchair's battery, plug the battery charger into the remote module's XLR socket.

The battery gauge will indicate the system is connected to the charger by cycling between a left-to-right chase sequence, and then displaying the approximate battery charge state at the end of the chase sequence.

The LiNX system does not have to be powered up when charging the battery, however, if it is not powered up, then the battery gauge will not display the charging state/ chase sequence.

The battery charger's connector plug must be wired with a drive inhibit connection, as shown below.

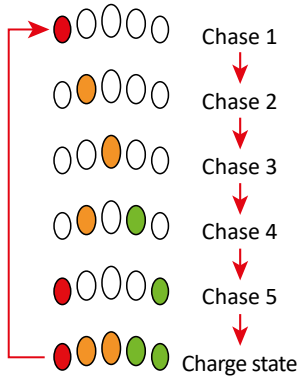


Figure 66: Battery charging chase sequence

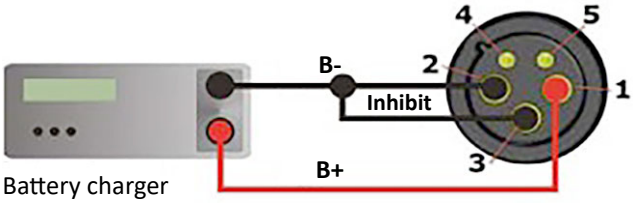


Figure 67: Battery charger and XLR charger connector

Pin	Signal
1	Battery positive (B+)
2	Battery negative (B-)
3	Drive inhibit
4	Communications bus high
5	Communications bus low

The drive inhibit signal ensures that the wheelchair does not drive when connected to the charger. This signal must be provided within the battery charger plug as a connection between pin 2 and pin 3. Ensure that the battery charger is compatible with this configuration before connecting it to the charging socket.

2 Appendices

2.1 Intended use and regulatory statement

2.1.1 Intended use — LiNX REM110

The REM110 is a variant of the LiNX remote module family, intended to allow powered wheelchair users to interact with the LiNX System. The REM110 allows control of drive functions, as well as providing an input for battery charging and a Bluetooth interface for programming and diagnostics.

2.1.2 Intended use — LiNX REM210, REM211, LiNX REM215, LiNX REM216

The LiNX REM210, REM211, REM215, and REM216 are remote modules of the LiNX family, intended to allow powered wheelchair users to interact with the LiNX System.

The REM210 and REM211 remote modules allow control of drive and actuator functions. The REM215 and REM216 remote modules allow control of drive, actuator and lighting functions.

All the above remote modules provide an input for battery charging. The REM211 and REM216 remote modules allow the use of alternative drive input controls, such as head controls.

2.1.3 Intended use — LiNX ACU200

The LiNX ACU200 is a remote module of the LiNX family, intended to allow an attendant of a powered wheelchair to interact with the LiNX System.

The ACU200 remote module allows control of drive and actuator functions. Control can be transferred between user and attendant, and vice versa, via the remote modules in the system.

2.1.4 Device classification

Europe

The LiNX remote module is a component of a Class I medical device as detailed in the Council Directive 93/42/EEC concerning Medical Devices.

USA

The LiNX remote module is a wheelchair component as detailed in 21 CFR § 890.3920 - Class I device.

2.1.5 Compliance and conformance with standards

The LiNX remote module has been designed such that the combination of the wheelchair and controller, along with accessories as applicable, complies with the Essential Requirements of EU Directive 93/42/EEC (and amendments) by adopting relevant clauses of harmonized standards EN12184 and EN12182, and relevant parts of the FDA Recognized Consensus Standard ANSI / RESNA WC-2 for performance.

2.2 Maintenance

The following instructions must be passed on to the operator before use of the product:

- Keep all electronic components free of dust, dirt and liquids. To clean the product, use a cloth dampened with warm soapy water. Do not use chemicals, solvents or abrasive cleaners, as this may cause damage to the product.
- Once a month, check all wheelchair components for loose, damaged or corroded components, such as connectors, terminals or cables. Ensure that all connectors are fully mated. Restrain all cables to protect them from damage. Replace damaged components. Check for and remove any foreign objects or material.
- Every 6 months, test all switchable functions on the electronics system to ensure they function correctly.
- 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.
- Where any doubt exists, consult your nearest service center or agent.

⚠ WARNING!

It is the responsibility of the end user to maintain the unit in a state of good repair at all times. If any component is damaged in any way, or if internal damage may have occurred, have it checked by qualified personnel before operating.

2.3. Safety and misuse warnings

2.3.1 Warnings and notices to be included in the user manual

The following warnings and notices are applicable to the installer and must be passed on to the end user before use of the product.

⚠ WARNING!

Do not install, maintain, or operate this equipment before you have read and understood all the instructions and all the manuals for this product and all the other products that you use or install together with this product. Follow the instructions of the manuals. If you do not follow all instructions, injury or damage can be the result.

⚠ WARNING!

The operator has the responsibility to keep the wheelchair in a good safe operating condition. To protect all the components (for example the cables) from damage, the operator must fasten them in optimum positions.

⚠ WARNING!

Immediately turn the controller off and consult your service agent if the wheelchair:

- *Is damaged*
- *Does not behave the same every time*
- *Does not respond normally, the way you expect it to*
- *Becomes hotter than normal*
- *Smokes*
- *Arcs*
- *Does not change its speed when you adjust the speed dial or slider*
- *Displays a fault on its fault indicator and the controller does not perform normally.*

⚠ WARNING!

Turn the controller off:

- *When not in use*
- *Before you get in or get out of the wheelchair*
- *If your wheelchair drives unintentionally*
- *During occupied or unoccupied transportation in a vehicle*

⚠ WARNING!

Do not drive the wheelchair if the controller indicates that the batteries are low, since the wheelchair may stop operating and the user may become stranded. If the batteries become completely empty, the wheelchair will stop suddenly and the batteries may be damaged.

⚠ WARNING!

Make sure that the battery charger that is used with the wheelchair has a drive inhibit function that is correctly connected for use with the controller. The maximum voltage on the inhibit pin must not exceed 3 V if a battery voltage is to be detected when the battery charger is connected. If you are not sure, ask your distributor or wheelchair manufacturer.

⚠ WARNING!

The maximum charging current for the LiNX wheelchair control system with PM 120 is 12 A.

⚠ WARNING!

Do not touch the connector pins. If you touch the pins, they can become dirty or they can be damaged by electrostatic discharge.

⚠ WARNING!

If operators of the wheelchair are left with limited or no mobility for any reason (for example, because the wheelchair loses electric power or breaks down), it is important that they can seek assistance from wherever they may be.

⚠ WARNING!

Go downhill slowly. Use caution. Going downhill at full speed may cause the wheelchair to experience sudden speed changes.

⚠ WARNING!
The controller can cause the wheelchair to come to a sudden stop. This can be dangerous. The installer must install a positioning belt, and the rider must wear it.

⚠ WARNING!
Operation of a wheelchair on steep slopes can be dangerous. Before you drive up or down a slope, make sure that the slope does not exceed the capability of the wheelchair.

⚠ WARNING!
Do not use the park brake release on a slope.

⚠ WARNING!
Make sure that the controller does not become colder or hotter than the minimum and maximum temperatures specified in this manual.

⚠ WARNING!
Most electronic equipment is influenced by Radio Frequency Interference (RFI). Be careful when portable communications equipment is used in the area around such equipment.

⚠ WARNING!
Performance adjustments must only be made by healthcare professionals, or by persons who completely understand the programming parameters, the adjustment process, the configuration of the wheelchair, and the capabilities of the driver. Wrong settings can make the wheelchair uncontrollable or unstable. An uncontrollable or unstable wheelchair can cause an unsafe situation such as a crash, with the risk of serious injury to the driver or bystanders, or damage to the wheelchair or surrounding property.

⚠ WARNING!
Performance adjustments must only be made in dry conditions.

⚠ WARNING!
The user should be made aware that when driving with the remote module their hand will not be protected from crushing, when, for example, maneuvering towards a table.

⚠ WARNING!
Users should be aware that module surfaces, such as the remote module's surface, can potentially get hot when exposed to strong sunlight for long periods.

⚠ WARNING!
The XLR port on the remote module is to be used exclusively for the intended purpose of charging the battery and/or programming the controller. Warranty will be voided if any unauthorized device is connected to this port.

⚠ WARNING!
Wireless functionality is not to be used for connections to medical devices or applications.

⚠ WARNING!
Users should be made aware that there is a potential finger trap between the mounting bolt and the cable of the USB charger and they should avoid this area.

⚠ WARNING!
If a fault is indicated on the wheelchair, the battery should be isolated before transporting to service.

NOTE
If a serious incident occurs involving this device with a user within the European Union (EU) or the UK, the user should report the incident to the manufacturer, the MHRA in the UK, and to the competent authority of the EU state in which the user resides.

NOTE
If there is a risk of collision with a person or object in close proximity, use the Joystick and/or speed dial or slider to reduce the speed of the wheelchair.

NOTE
Do not try to open or disassemble any case — there are no user-serviceable parts inside.

NOTE
In the case of an emergency while the wheelchair is driving, or when a seating motion is operating, press the On/Off button to perform an emergency stop and turn the controller off.

⚠ WARNING!
If the wheelchair loses electric power, an attendant must be able to move the wheelchair.

Refer to LiNX Remote Modules Installation Manual for the following safety information:
- instructions on the interpretation of the battery gauge;
- any special environmental storage conditions;
- the causes of electromagnetic interference and possible effects on the wheelchair.

2.3.2 Service and configuration warnings / notices

The following warnings and notices are applicable to the installation technician and the distributor or the therapist who supplies the wheelchair to the end user.

⚠ WARNING!
It is the responsibility of the installer to make sure that accessories that are connected to the wheelchair do not interfere with the operation of the controller.

⚠ WARNING!
Do not use the wheelchair frame as the electrical ground. Any electrical low-resistance connection to the frame is a safety risk and is not allowed by international safety standards.

⚠ WARNING!
After you have completed the installation, check it thoroughly. Correctly adjust all programmable options to suit the user before the wheelchair is used.

⚠ WARNING!
After you have configured the wheelchair, check to make sure that the wheelchair performs to the specifications entered in the programming procedure. If the wheelchair does not perform to specifications, reprogram it. Repeat this procedure until the wheelchair performs to specifications.

⚠ WARNING!
The distributor, therapist or other agent who supplies the wheelchair to the end user has the responsibility to make sure that the wheelchair is correctly configured for the needs of that user.

⚠ WARNING!
For each individual user, the wheelchair set up and configuration should take into consideration their:

- *technical knowledge, experience and education, and*
- *medical and physical condition, including the level of disability and capability (where applicable).*

⚠ WARNING!
It is the responsibility of the therapist/installer to minimize all risks of use error, including those arising from ergonomic features and/or the environment in which the device is intended to be used.

⚠ WARNING!
Prior to handing over the wheelchair, make sure that users are fully able to operate the product by providing them appropriate training on functionality and safety features, and having them test-drive the wheelchair in a safe area in the presence of their agent.

⚠ WARNING!
The controller can cause the wheelchair to come to a sudden stop. This can be dangerous to the operator. The installer must install a positioning belt and the rider must wear it.

⚠ WARNING!
Where any inconsistencies about wheelchair status occur between the LiNX system and what is reported by a programming tool, the installation technician should take the status as reported by the LiNX system as correct.

⚠ WARNING!
A LiNX Access Key is an intentional radio frequency (RF) transmitter. Before entering an RF-sensitive environment, unplug the LiNX Access Key from the remote module. Do not plug in the LiNX Access Key when in an RF-sensitive environment.

2.4. Electromagnetic compatibility

LiNX 100 series modules and LiNX 200 series modules
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.

2.5. Environmental statement

This product has been supplied from an environmentally aware manufacturer.

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

This product may contain substances that could be harmful to the environment if disposed of into a landfill.

Do not dispose of this product in fire.

2.6. Symbols and labelling

This section shows the symbols and labels that can be found on the LiNX remote modules.

2.6.1 Product label - remote modules

This label can be found on the underside of the Remotes.

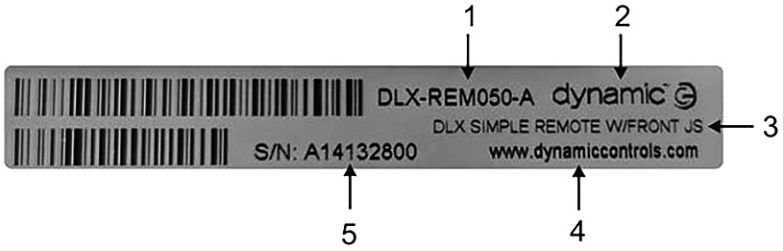


Figure 68: Product label - remote modules

Key:

1. Part number	4. Dynamic Controls website
2. Dynamic Controls logo	5. Serial number
3. Part description	

One of these labels can be found on the underside of a module.

Figure 69: Tamper evident seals

This label can be found on the underside of a module and details the hardware and application versions when manufactured. Any revision to the version label following a hardware or firmware upgrade by a third party (service center/ customer/ manufacturer) is the responsibility of that third party.

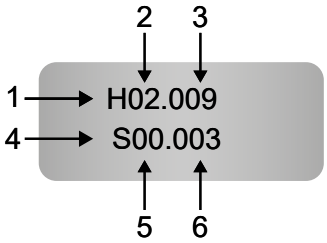
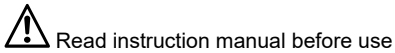


Figure 70: Hardware and application firmware version label

Key:

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

2.6.2 Other symbols and labels found on LiNX remote modules

Label	Purpose
IPx4	This is the enclosure's ingress protection rating.
	This is the WEEE symbol (Waste Electrical and Electronic Equipment Directive).
	The fuel pump indicates the battery charger input.
	Warning to read the instruction manual before using the module.
	Speed control (REM060, REM110, REM2xx)—indicates the direction for increasing/decreasing speed.
	The horn button.
	Function up - used on rocker buttons to select drive and seat functions.
	Function down - used on rocker buttons to select drive and seat functions.
	Power button / emergency stop.
	Function / mode.
	Seating function.
	Left indicator.
	Right Indicator.
	Hazard indicator.
	Positional lights.
	Wireless capable module.

2.6.3 Serial number and date of manufacture

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

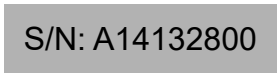


Figure 71: Serial number example

The format, as shown in ***Figure 64***, is **MYYnnnnnn**, where:

M is 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 6-digit sequential number.

For example, the module's serial number, as shown in ***Figure 71***, begins with A14 indicating that it was manufactured in January 2014, and its sequential value is 132800.

2.7 Warranty

THIS GUARANTEE DOES NOT AFFECT YOUR LEGAL RIGHTS IN ANY WAY.

Sunrise Medical* provides a guarantee, as set out in the warranty conditions, for wheelchairs to its customers covering the following.

WARRANTY CONDITIONS:

1. **FOR ONE (1) YEAR** - We warrant all Sunrise-made parts and components of this wheelchair including: motors, gearboxes, and electronic components, against defects in materials and workmanship for one year from the date of first consumer purchase.
2. **LIMITATIONS:**
    1. We do not warrant:
        a. Tires and tubes, upholstery, pads, and push handle grips.
        b. Damage from neglect, accident, misuse, or from improper installation or repair.
        c. Products modified without Sunrise Medical's express written consent.
        d. Damage from exceeding the weight limit.
    2. This warranty is VOID if the original chair serial number tag is removed or altered.
    3. This warranty applies in the USA and Canada only. Check with your authorized dealer to find out if international warranties apply.
    4. This warranty is not transferable and only applies to the first consumer purchase of this wheelchair through an authorized Sunrise Medical dealer.
    5. This guarantee is subject to the law of the country in which the product was purchased from Sunrise Medical.
3. **WHAT WE WILL DO** - Our sole liability is to repair or replace covered parts. This is the exclusive remedy for consequential damages.
4. **WHAT AUTHORIZED DEALER MUST DO -**
    1. Obtain from Sunrise Medical, while this warranty is in effect, prior approval for return or repair of covered parts. Contact Customer Service for a Returned Material Authorization (RMA) number and information as to where to return the product. Upon contacting Customer Service please provide Model number, Serial number, description of what is required for service/repair, and any additional information as to reason for service being performed to the wheelchair.
5. **NOTICE TO CONSUMER -**
    1. You must pay the cost of labor to repair, remove or install parts even if they are covered under warranty.
    2. If allowed by law, this warranty is in place of any other warranty (written or oral, express or implied, including a warranty of merchantability, or fitness for a particular purpose).
    3. This warranty gives you certain legal rights. You may also have other rights that vary from state to state or province to province.
6. This guarantee is subject to the law of the country in which the product was purchased from Sunrise Medical.

* Denotes the Sunrise Medical facility from which the product was purchased.

Additional Notes For Australia Only:

1. For goods provided by Sunrise Medical Pty Ltd in Australia, our goods come with a guarantee by Sunrise Medical that cannot be excluded under Australian Consumer Law.
2. You are entitled to a replacement or refund for a major failure and for compensation for any foreseeable loss or damage.
3. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
4. The benefits to you given by this warranty are in addition to your other rights and remedies under a law in relation to the goods to which the warranty relates.

Record your serial number here for future reference: _____

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