

Invacare[®] LiNX

en Controls System Service Manual



DEALER: Keep this manual. The procedures in this manual MUST be performed by a qualified technician.

Yes, you can:

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Contents

1 Gen	eral	5			
1.1	About this manual.	-			
1.2	Symbols in this manual				
1.3	General information				
1.4	Images in this manual	5			
2 Safe	ty	6			
2.1	Safety information.				
2.2	Safety notes on the electrical system				
3 Asse	mbly	7			
3.1	Tightening torques				
3.2	Imperial to metric conversion chart	7			
3.3	Overview Components				
3.4	Power module mounting	11			
3.5	Mounting positions on wheelchairs				
3.6	Port pin-outs.				
3.7	Actuator Port Configurations (Factory Setup)	13			
3.7		11			
3.7	(EU-Version with Modulite seat)	14			
5.7	version)	15			
3.7		10			
	and DLX-REM500 (with Ultra Low Maxx seat)	16			
3.7					
3.8	Wiring Diagrams				
3.9	Mounting the primary remotes	29			
3.9		20			
2.0	Modulite				
3.9 3.9	5				
3.9	5				
3.9					
	Mounting the secondary remotes				
	0.1 Mounting Intuitive Dual Control (IDC)				
3.1	0.2 Mounting the DLX-ACU200	35			
3.1	0				
3.1					
3.11	Mounting the ASL components				
3.1	8				
3.1 3.1	о I о ,				
	1.4 Mounting the Pediatric Compact Joystick				
3.1					
	sensors.				
3.12	Mounting the 10 way switch	45			
	2.1 Mounting the 10 way switch for Modulite	45			
3.1					
2.4	Maxx				
3.1					
4 Rep	acing Wheelchair Components	48			
4.1	General information on setup				
4.2	Battery Synchronisation on New Batteries				
4.3	Replacing Power Module as Spare Part				
4.4	Setup Procedure After Power Module Replacement				
5 Ove	rview LiNX Access tools	50			
5.1	The LiNX Access Key	50			
5.1	, (- ,	- 0			
5.2	Access PC tool)				
5.2					
-					
	sested programming procedure				
6.1	Step 1 – Power-up test				
6.2	Step 2 – Check motor orientation				
6.3 6.3		00			
tool)					
6.3					
	tool)				
6.4	Step 4 – Adjust Speed Settings				
6.5	Step 5 – Adjust acceleration settings	59			

7 Using the LiNX Access iOS tool	61
7.1 Navigation bar	61
7.1.1 Application menu.	
7.1.2 Changing Program Name Changing Program Name 7.2 Home screen <	
7.3 Connection context actions	
7.3.1 Connect to device screen	
7.3.2 Reading a program from the wheelchair	63
7.3.3 Restoring Default Wheelchair Configurations	63
7.3.4 Converting Configuration Files	
7.3.5 Modifying a Program7.3.6 Writing a program to the wheelchair	
7.3.7 Saving programs	
7.3.8 Upgrading firmware	
7.3.9 Storing the LAK certificate	
7.4 File context actions	
7.4.1 Load from file screen	
7.4.2 Writing Bundle Files 7.4.3 Opening files	
7.4.4 Deleting files	
7.4.5 E-mailing files	
8 Modifying wheelchair configuration with iOS tool	
8.1 Profile And Function Actions	
8.2 Modifying function and profile names	
8.3 Modifying drive parameters graphically	72
8.4 Modifying drive parameters numerically	
8.5 Modifying Lighting Parameters.	
8.6 Modifying Gyro Support in Drive Functions8.7 Programming Toggle Switches	
8.8 Modifying Seating Parameters	
8.9 Modifying Attendant Parameters	
8.10 Joystick Switch Threshold.	
8.11 Adjust quadrant operation	
8.11.1 Adjust drive directions	
8.12 Enable indirect navigation	
8.13 Installing / Setting up alternative inputs8.14 Installing / Setting up Alternative Outputs	
8.15 Sip and Puff installation.	
8.15.1 Sip and Puff calibration	
9 Using the LiNX Access PC tool	
9.1 Installing the software	
9.1.1 Using Bluetooth on a computer	
9.2 Layout overview	
9.3 Concepts	87
9.4 Checking and getting the latest version	
9.5 Connection context actions	88
9.5.1 Connecting/Disconnecting the LiNX Access PC tool	88
9.5.2 Write a program to a wheelchair	
9.5.3 Read a program from a wheelchair.	
9.5.4 Save a program as a file	
9.5.5 Storing the LAK certificate	
9.5.6 Upgrading Firmware.	
9.5.7Restoring Default Wheelchair Configurations9.5.8Loading Default Configurations	
9.5.9 Converting Configuration Files	
9.6 File context actions	
9.6.1 Open/Close a file	
9.6.2 Remove a file from list	
9.6.3 Writing bundle files to a chair	
10 Modifying wheelchair configuration with PC tool	93
10.1 Profile and Function Actions	
10.2 Modifying function and profile names	
10.3 Modifying drive parameters	
10.3.1 Modifying Lighting Parameters 10.3.2 Modifying Gyro Support in Drive Functions	
10.3.2 Modifying Gyro Support in Drive Functions 10.4 Programming Toggle Switches	
10.5 Modifying Seating Parameters	
10.6 Modifying Attendant Parameters	98
10.7 Joystick Switch Threshold.	
10.8 Setting up a system for latched driving	
10.9Adjust quadrant operation10.9.1Adjust drive directions	

4

10.10	Enable Indirect Navigation
10.11	Programming external switches
10.12	Programming multipurpose buttons
10.13	Installing / Setting up alternative inputs
10.14	Installing / Setting up Alternative Outputs
10.15	Sip and Puff installation
10.1	5.1 Sip and Puff calibration
11 Diag	nostics
11.1	Viewing System Summary 110
11.2	Viewing Active Errors
11.3	Viewing Chair Statistics 110
11.4	Viewing Live Diagnostics
11.5	Clearing the event log 112
12 Stru	cture of Program Names 113
12.1	Where-Used Matrices 113
12.2	Naming Format 114

1 General

1.1 About this manual

This service manual contains information about assembly, adjustment and advanced maintenance of the product. In order to ensure safety when handling the product, read the manual carefully and follow the safety instructions.

For pre-sale and user information, please see the user manual. Find the user manual on Invacare's website or contact your Invacare representative (see addresses at the end of this manual).

1.2 Symbols in this manual

In this manual, hazard statements are indicated by symbols. The symbols are accompanied by a signal word that indicates the severity of the risk.



łĭ

WARNING

Indicates a hazardous situation that could result in serious injury or death if it is not avoided.

CAUTION

Indicates a hazardous situation that could result in minor or slight injury if it is not avoided.

IMPORTANT

- Indicates a hazardous situation that could result in damage to property if it is not avoided.
- $\overset{\circ}{\underline{l}} \qquad \mbox{Gives useful tips, recommendations and} \\ information for efficient, trouble-free use.$

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

1.3 General information

• Service and maintenance work must be carried out taking this service manual into account.

- It is imperative that you observe safety information.
- Information about operation or about general maintenance and care work on the mobility device should be taken from service manual.
- You can find information about ordering spare parts in the spare parts catalogue.
- Spare parts must match original Invacare parts. Only use spare parts which have been approved by Invacare.
- We reserve the right to make any alterations on the grounds of technical improvements.
- For more information about the product, for example product safety notices and product recalls, contact your local Invacare representative. For address and website see back page of this manual.
- The mobility device may only be maintained and overhauled by qualified personnel.
- The minimum requirement for service technicians is suitable training, such as in the cycle or orthopedic mechanics fields, or sufficiently long-term job experience.
 - Experience in the use of electrical measuring equipment (multimeters) is also a requirement.
 - Special Invacare training is recommended.
- Alterations to the mobility device which occur as a result of incorrectly or improperly executed maintenance or overhaul work lead to the exclusion of all liability on the side of Invacare.
- If you have any problems or questions contact your provider.

1.4 Images in this manual

The detailed images in this manual are given marks to identify various components. Component marks in text and operational instructions always relate to the image directly above.

2 Safety

2.1 Safety information

WARNING!

The procedures in this service manual, must be performed by a specialized dealer or qualified service technician.

- Do not handle this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as user manuals, installation manuals or instruction sheets supplied with this product or optional equipment.

2.2 Safety notes on the electrical system

WARNING!

- Fire and burn hazard due to electrical shorts - The mobility device must be completely switched off before removal of voltage-carrying components. To do this, remove the batteries. For information about removing the batteries, refer to the service manual of the particular wheelchair.
 - Avoid short-circuiting the contacts when carrying out measurements on voltage-carrying components.



WARNING!

Risk of injury or damage due to electrical shorts

Connector pins on cables connected to the power module can still be live even when the system is off.

- Cables with live pins should be connected, restrained or covered (with non-conductive materials) so that 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).

Risk of damage to the connector pins

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

To maximize performance, minimize EMC emissions, maximize EMC and ESD immunity, and to keep the cabling of the wheelchair safe and tidy, observe the following guidelines:

- All wiring should comply with the requirements of ISO7176-14.
- Keep all cables as short as possible.
- All cables used should be resistant to fire to VW-1 (UL 1581) or similar.
- Avoid wire loops, especially loops of single wires instead of wire pairs.
- Try to run wires in pairs or bunches. For example, run the battery's positive and negative wires together, and the motor's positive and negative wires together. Bind wires together and fix them to the chassis.
- Do not route the cables (including the motor cable) near the motor case, where possible.
- Make sure that all vehicle sub-frames, particularly the motors and controller case, are electrically connected.
- Do not use the vehicle frame as the earth return. Any electrical low-resistance connection to the frame is a safety risk and is not allowed by international safety standards.
- To minimize electromagnetic emissions by the motor brushes, it may be necessary to fit capacitors between the brush holders and the motor case. Make sure that the leads are kept as short as possible. A suitable capacitor is 4n7, 2kV Ceramic.
- For best electrical performance, the wire size must be as large as possible, but no larger than what the crimp in the connector can withstand. Always use the correct tool for crimping.
- Recommended minimum wire sizes are shown in the wiring sections.
- For low-current signals, do not use wire sizes smaller than 0.5 mm²/20 AWG, because smaller wires are physically not strong enough for this application.
- The type of cable used must be appropriate for the mechanical and environmental abuse it is likely to encounter.
- Do not use damaged or abused cables. A damaged cable can potentially produce localized heat, sparks or arcing, and as such it can cause a fire.
- Protect all cables against possible contact with flammable material.
- If an extension loom is fitted, mount it with the female connector facing horizontal or downwards, and protect it from direct splashing. If the extension loom is to be used for frequent disconnection, mount the female connector so that it faces downwards.

3 Assembly

3.1 Tightening torques



CAUTION!

Risk of damage to mobility device due to improperly tightened screws, nuts or plastic connections.

- Always tighten screws, nuts etc. to the stated tightening torque.
- Only tighten screws or nuts which are not listed here fingertight.

The tightening torques stated in the following list are based on the thread diameter for the nuts and bolts for which no specific values have been determined. All values assume dry and de-greased threads.

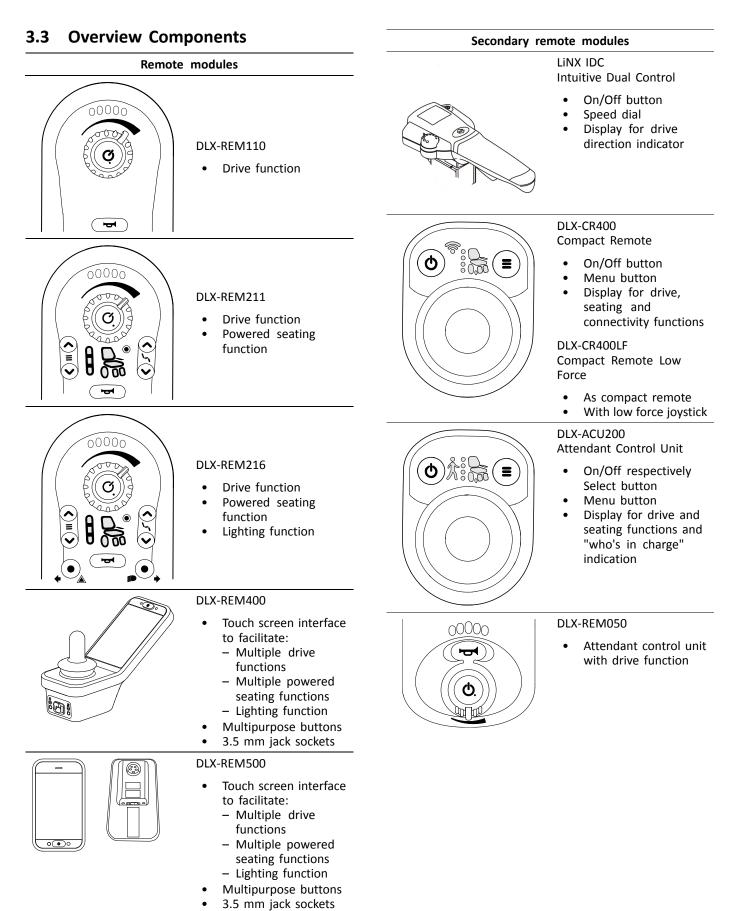
Thread	Tightening torque in Nm ±10%
M4	3 Nm
M5	6 Nm
M6	10 Nm
M8	25 Nm
M10	49 Nm
M12	80 Nm
M14	120 Nm
M16	180 Nm

3.2 Imperial to metric conversion chart

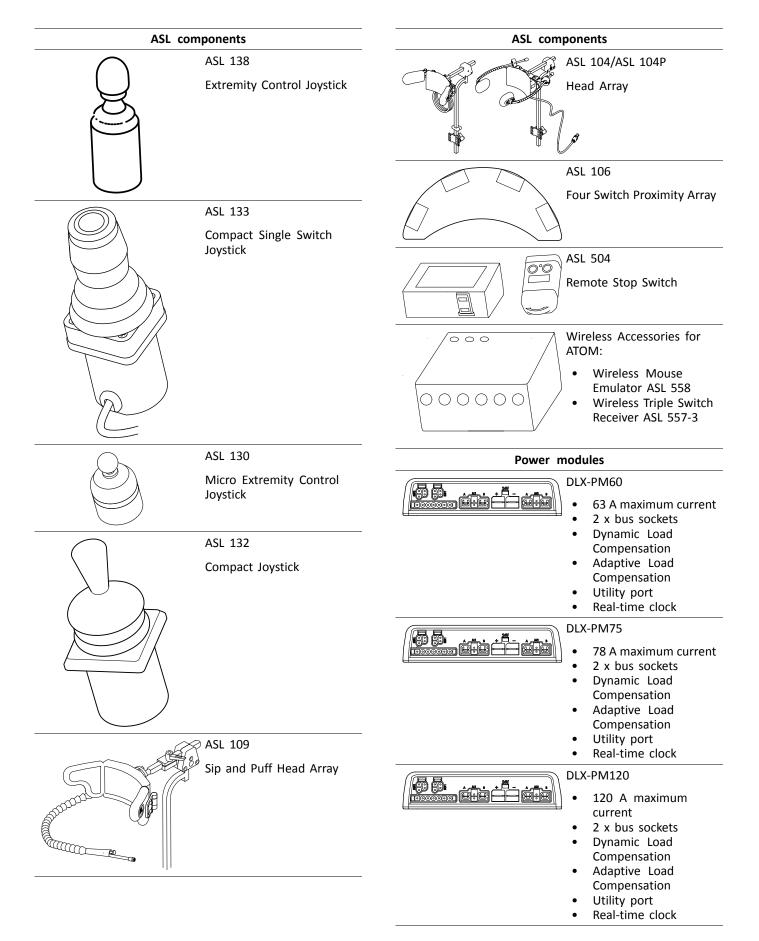
You can use this chart as an orientation to find the right tool size.

IMPERIAL	METRIC
inch	mm
5/64	1.9844
3/32	2.3813
7/64	2.7781
1/8	3.1750
9/64	3.5719
5/32	3.9688
11/64	4.3656
3/16	4.7625
13/64	5.1594
7/32	5.5563
15/64	5.9531
1/4	6.3500
17/64	6.7469
9/32	7.1438

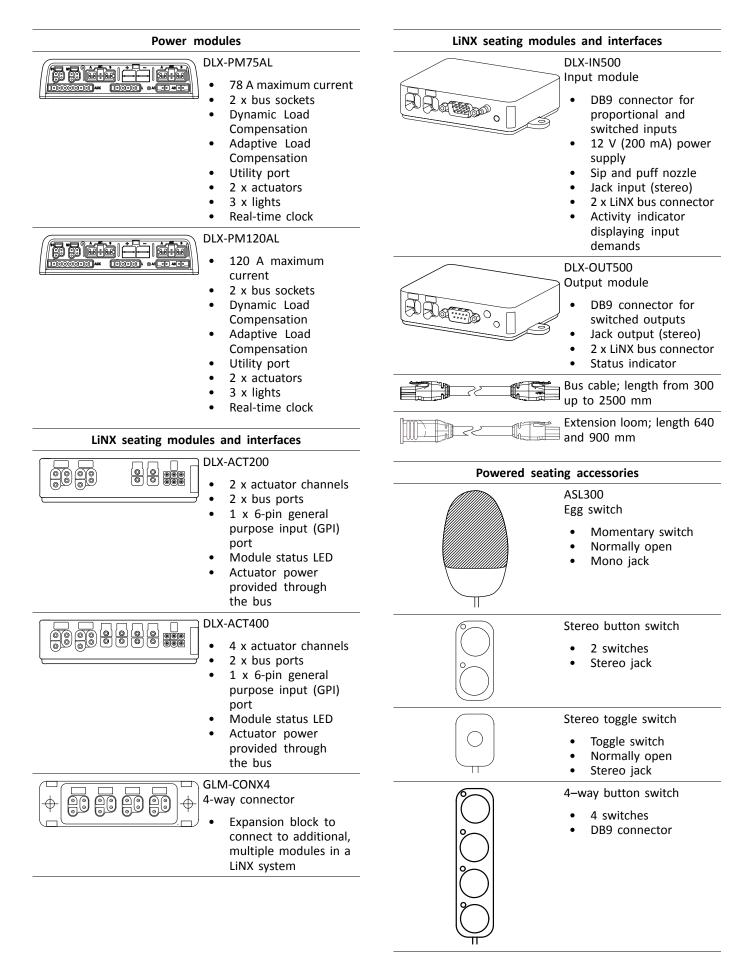
IMPERIAL	METRIC
inch	mm
19/64	7.5406
5/16	7.9375
21/64	8.3344
11/32	8.7313
23/64	9.1281
3/8	9.5250
25/64	9.9219
13/32	10.3188
27/64	10.7156
7/16	11.1125
29/64	11.5094
15/32	11.9063
31/64	12.3031
1/2	12.7000
33/64	13.0969
17/32	13.4938
35/64	13.8906
9/16	14.2875
37/64	14.6844
19/32	15.0813
39/64	15.4781
5/8	15.8750
41/64	16.2719
21/32	16.6688
43/64	17.0656
11/16	17.4625
45/64	17.8594
23/32	18.2563
47/64	18.6531
3/4	19.0500
49/64	19.4469
25/32	19.8438
51/64	20.2406
13/16	20.6375
53/64	21.0344
27/32	21.4313
55/64	21.8281
7/8	22.2250

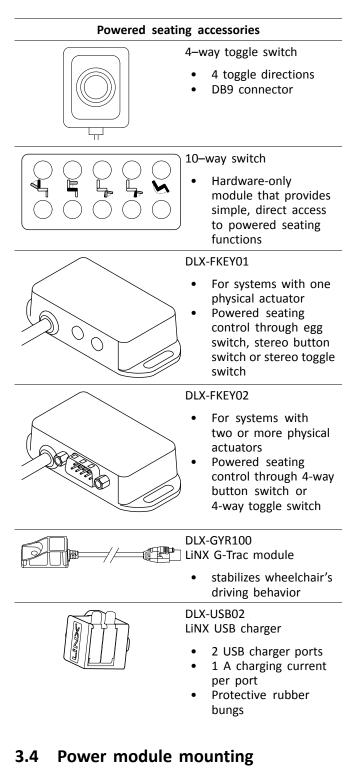


1605129-E



1605129-E

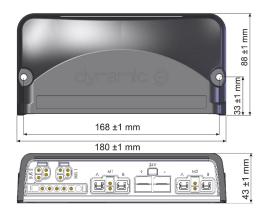




The mounting orientation of the power module that is specified by Invacare per wheelchair model must be kept.

Dimensions of the power modules

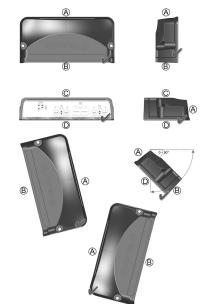
DLX-PM60, DLX-PM75, DLX-PM120



DLX-PM75AL, DLX-PM120AL



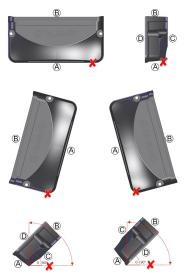
Correct mounting



- (A) Rear
- (B) Connectors
- © Top
- D Base

The power modules can be placed on its side or at an angle. When placing the power modules at an angle, ensure that the connectors (B) facing downwards, so that the connector recesses will not collect or retain foreign matter or liquids.

Incorrect mounting



- (A) Rear
- Connectors
- © Top
- D Base

Testing

The LiNX system must be fully tested after all modules and cables have been installed.

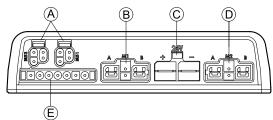
3.5 Mounting positions on wheelchairs

The positions of the power modules (A) and DLX-ACT200/400 (B) depending on wheelchair model and —configuration are shown in the table below. For further information about access to the components, refer to the Service manual of the particular wheelchair model.

Rear Wh	eel Drive	Center Wheel Drive		
Fox	R B	TDX SP2, TDX SP2 narrow base, TDX SP2 wide base with Modulite seat	R R C C C C C C	
Kite, Kite HD	A B	TDX SP2 narrow base and TDX SP2 wide base with Ultra Low Maxx seat		
Bora/Spectra XTR, Spectra XTR HD w/o lifter/tilt module				
Bora/Spectra XTR, Spectra XTR HD w lifter/tilt module	B			
Storm ⁴ , Storm ⁴ X-plore, Storm ⁴ Max ¹				

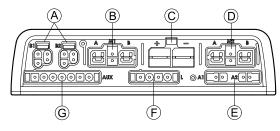
3.6 Port pin-outs

DLX-PM60, DLX-PM75, DLX-PM120



- A LiNX communication bus
- (B) Motor / park brake port M1
- © Battery port
- D Motor / park brake port M2
- (E) Utility port

DLX-PM75AL, DLX-PM120AL



- A LiNX communication bus
- B Motor / park brake port M1

- © Battery port
- D Motor / park brake port M2
- (E) Actuator ports
- E Lighting port
- G Utility port

3.7 Actuator Port Configurations (Factory Setup)

Actuator ports, properties and behavior per actuator are defined by Invacare. You can change speed, direction and operation mode. This is done in different menus, refer to 8.8 Modifying Seating Parameters, page 74.

Seating Motion

The seating movement is called seating motion. The seating motion defines the icon displayed on the user interface, overall speed, the individual actuators and their speeds. A seating motion can control one or more actuators. There are six seating motions defined in the factory set-up.

Seating Function

The seating function is the user input and defines how the motion is operated.

The "AL" power modules that feature actuators and lights, have two actuator ports. If required, the system is completed with the DLX-ACT200 or DLX-ACT400, based on the configuration. The following chapters detail the port set-up per module/configuration.

Channel	Seating motion (Icor	ı)	Seating function (Operation)	
8	Tilt),00	Proportional FWD/REV	
B	Recline		Proportional FWD/REV	<u></u>
©	Right leg	Both legs	Proportional FWD/REV	
D	Left leg/ Center-mounted legrest		Proportional FWD/REV	
Ē	Lifter),00	Proportional FWD/REV	

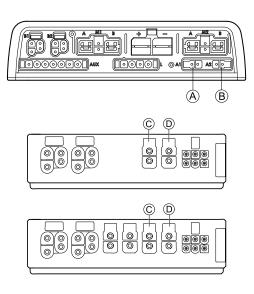
3.7.1 Port configurations for systems with DLX-REM2xx (EU-Version with Modulite seat)

Port configuration without lifter

Power module

DLX-ACT200

DLX-ACT400

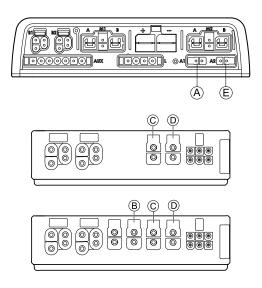


Port configuration with lifer

Power module

DLX-ACT200

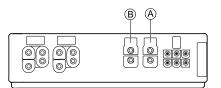
DLX-ACT400



3.7.2 Port configuration for non-expandable systems (US version)

Non-expandable systems are fitted with external switches and a functionkey, to control the powered seating functions. For more information about functionkeys, refer to chapter 3.7.4 Port Configurations for Functionkeys, page 17.

Single actuator systems

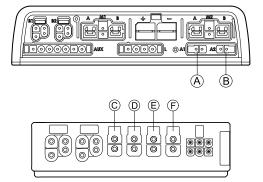


Channel	Seating motion (Icon)	Seating function (Operation)
۵	Recline only	Proportional FWD/REV
®	Tilt only	Proportional FWD/REV
®	LNX only	Proportional FWD/REV

Two actuator systems

Channel	Seating motion (Icon)	Seating function (Operation)				
۲	Tilt	Tilt	Recline	Left leg	Recline	Proportional FWD/REV
®	Lifter			Right leg	Tilt	Proportional FWD/REV

3.7.3 Port configuration for systems with DLX-REM400 and DLX-REM500 (with Ultra Low Maxx seat)



Channel	Seating motion (Icon)	Seating function (Operation)
۲	Tilt	Proportional FWD/REV
8	Lifter	Proportional FWD/REV
C	Legrest right	Proportional FWD/REV
٥	Legrest left	Proportional FWD/REV

Channel	Seating motion (Icon)	Seating function (Operation)
Ē	LNX	Proportional FWD/REV
Ē	Recline	Proportional FWD/REV

3.7.4 Port Configurations for Functionkeys

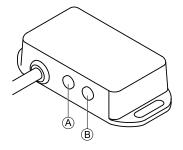
If the system is installed with an external switch, to control the powered seating functions (except a 10 way switch), a functionkey is required to interface the switches. There are two different configurations of functionkeys. The type of functionkey determines the behavior of the system in regards to the control of actuators. Properties and behavior per switch are defined by Invacare and can be reassigned via the port to which the control input is connected. Reassigning is done in the **CONTROL INPUTS/OUTPUTS** section of the respective module. See *10.11 Programming external switches, page102*

Type 1: Single Actuator System (SAS)

This functionkey is for systems with one physical actuator. It is available in one configuration:

• FKEY01TDC: actuator control through switches and joystick

External switches to control the powered seating functions, must be plugged into the Jack sockets, see table below.

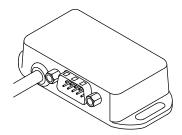


- A Mono jack to connect egg switch
- (B) Stereo jack to connect stereo button switch or stereo toggle switch

Type 2: Multi-Actuator System (MAC)

This functionkey is for systems with two or more physical actuators. It is available in one configuration:

• FKEY02TDC: actuator control through switches and joystick



The 4-way button switch or the 4-way toggle switch must be plugged into the DB9 socket.

3.8 Wiring Diagrams

- \mathring{l} The following diagrams show the wiring for a wheelchair in a complex configuration including multiple actuators, lights and attendant control unit.
- $\|$ To identify the required cable length, see tables below or measure the cable after removing it.

Wiring for configurations of Modulite seat with lifter, tilt, recline, powered elevating legrests, lights, attendant control unit, secondary remote, DLX-ACT400 and USB charger

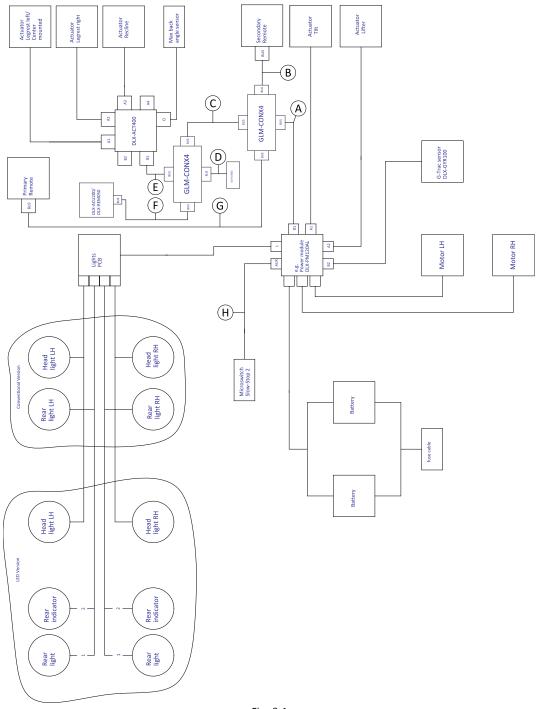
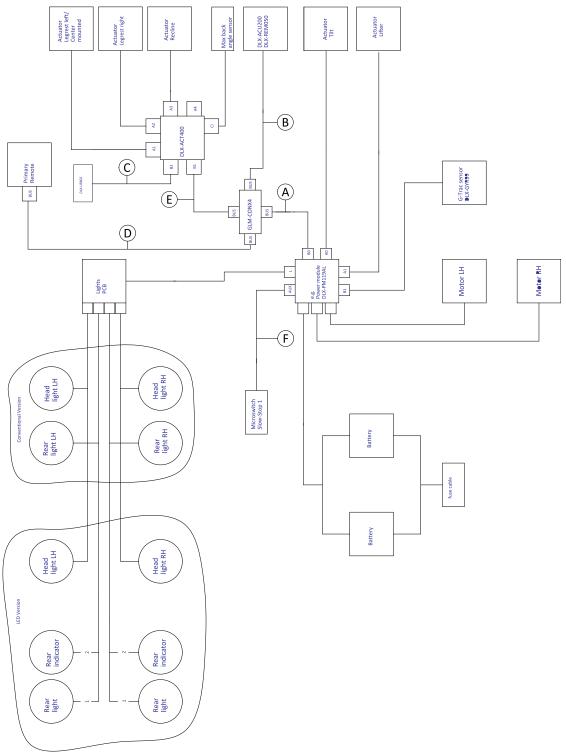


Fig. 3-1

 $\mathring{\mathbb{I}}$ Cable length may vary depending on mounting positions of primary and secondary remotes and of 4–way connector GLM-CONX4.

Model	۲	₿	©	D	Ē	Ē	G	θ
Kite	2500 mm	1500 mm	300 mm	700 mm	700 mm	1500 mm	1700 mm	700 mm
Spectra XTR ² HD, Bora/Spectra XTR Standard	1700 mm	1700 mm	300 mm	700 mm	700 mm	1200 mm	1500 mm	700 mm
TDX SP2	1500 mm	1200 mm	300 mm	300 mm	700 mm	1000 mm	1200 mm	300 mm
Storm ⁴ , Storm ⁴ X-plore	1500 mm	1200 mm	300 mm	500 mm	300 mm	1200 mm	1500 mm	300 mm

Wiring for configurations of Modulite seat with lifter, tilt, recline, powered elevating legrests, lights, attendant control unit, DLX-ACT400 and USB charger



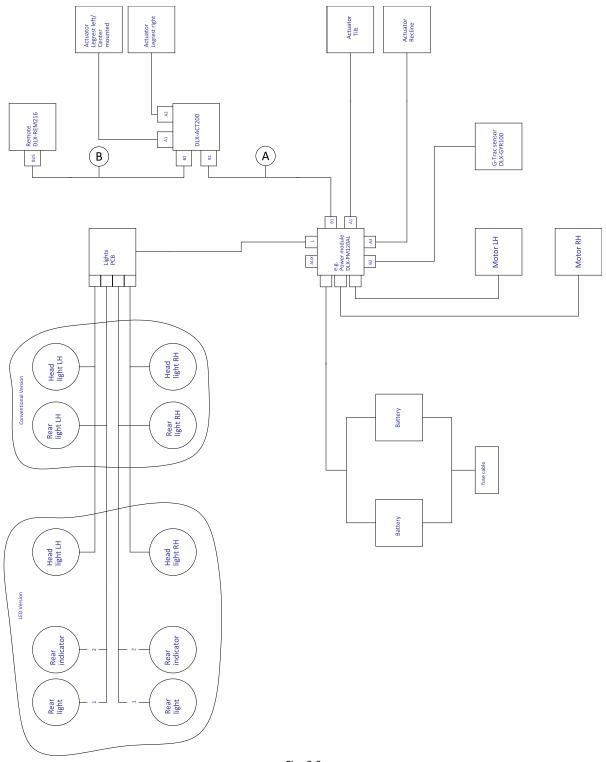


Cable length may vary depending on mounting positions of primary and secondary remotes and of 4-way connector GLM-CONX4.

Model	۲	B	©	D	Ē	ſ
Kite	2500 mm	1500 mm	700 mm	1700 mm	700 mm	700 mm
Spectra XTR ² HD, Bora/Spectra XTR Stan- dard	1700 mm	1200 mm	700 mm	1500 mm	700 mm	700 mm

Model	۲	B	©	D	Ē	ſ
TDX SP2	1500 mm	1000 mm	300 mm	1500 mm	700 mm	300 mm
Storm ⁴ , Storm ⁴ X-plore	1500 mm	1200 mm	500 mm	1500 mm	300 mm	300 mm

Wiring for configurations of Modulite seat with tilt, recline, powered elevating legrests, lights and DLX-ACT200

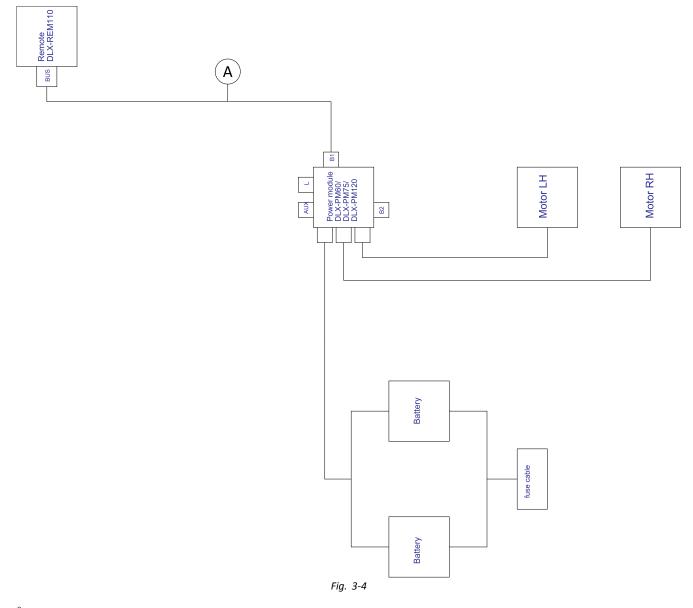




 \mathring{l} Cable length may vary depending on mounting positions of primary and secondary remotes.

Model	۲	₿
Kite	1500 mm	1500 mm
Spectra XTR ² HD, Bora/Spectra XTR Standard	1500 mm	1500 mm
TDX SP2	1700 mm	1000 mm
Storm ⁴ , Storm ⁴ X-plore	1200 mm	1500 mm

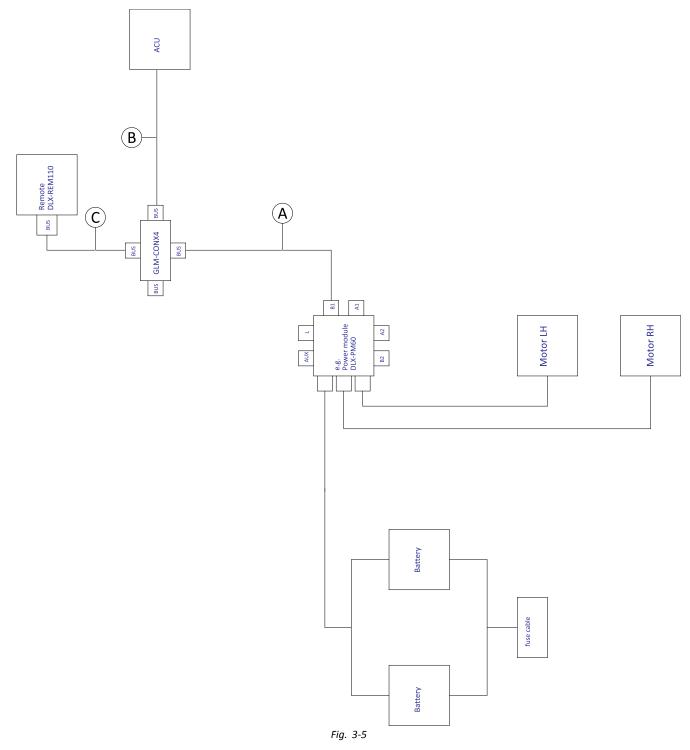
Wiring for Drive only configuration of Modulite seat



 \mathring{l} Cable length may vary depending on mounting positions of primary remote.

Model	8
Kite	2000 mm
Spectra XTR ² HD, Bora/Spectra XTR Standard	2000 mm
TDX SP2	1500 mm
Storm ⁴ , Storm ⁴ X-plore	2000 mm
Fox	1000 mm + 640 mm extension loom

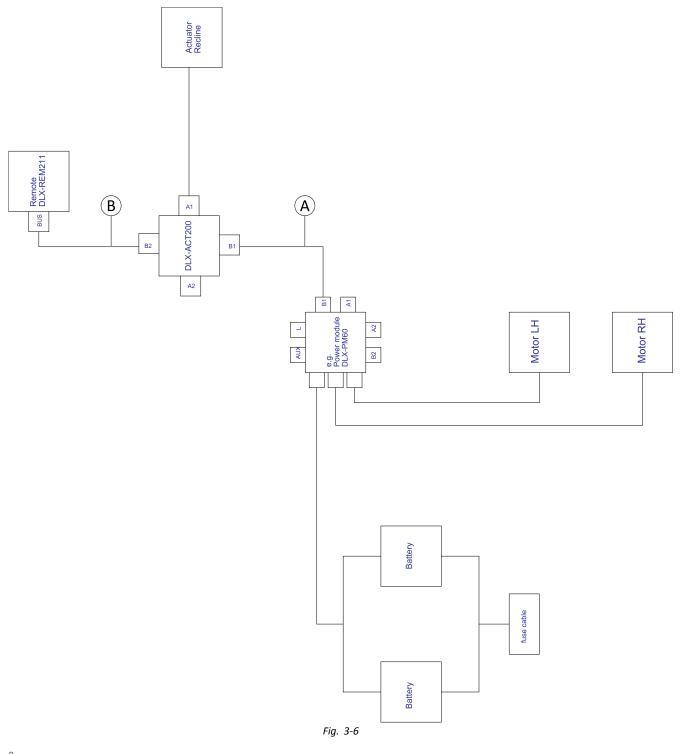
Wiring for Fox with Modulite Drive only with ACU



 $\begin{tabular}{ll} \hat{l} & \mbox{Cable length may vary depending on mounting positions of primary and secondary remotes and of 4-way connector GLM-CONX4. \end{tabular}$

A	300 mm + 640 mm extension loom
B	1000 mm
©	1000 mm

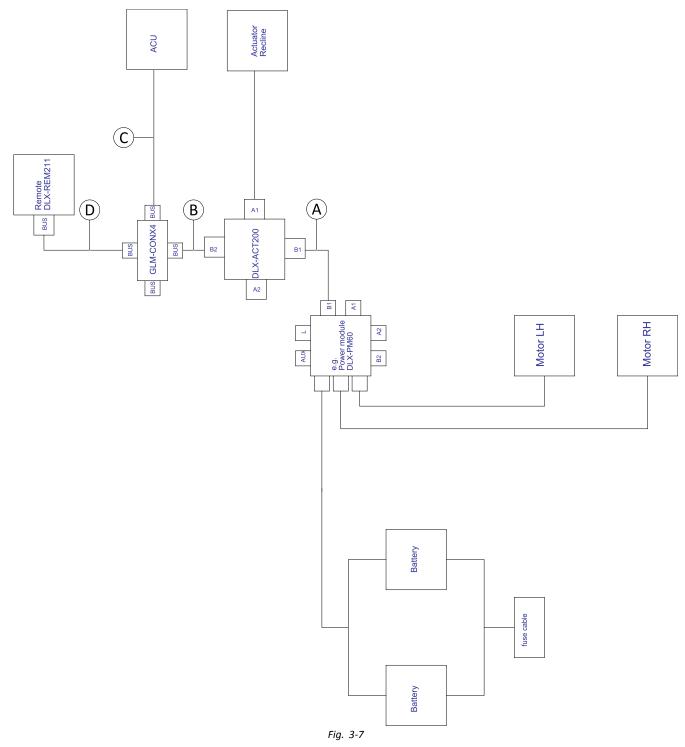
Wiring for Fox with Modulite Recline only



 \mathring{l} Cable length may vary depending on mounting positions of primary remote.

A	300 mm + 640 mm extension loom
B	1000 mm

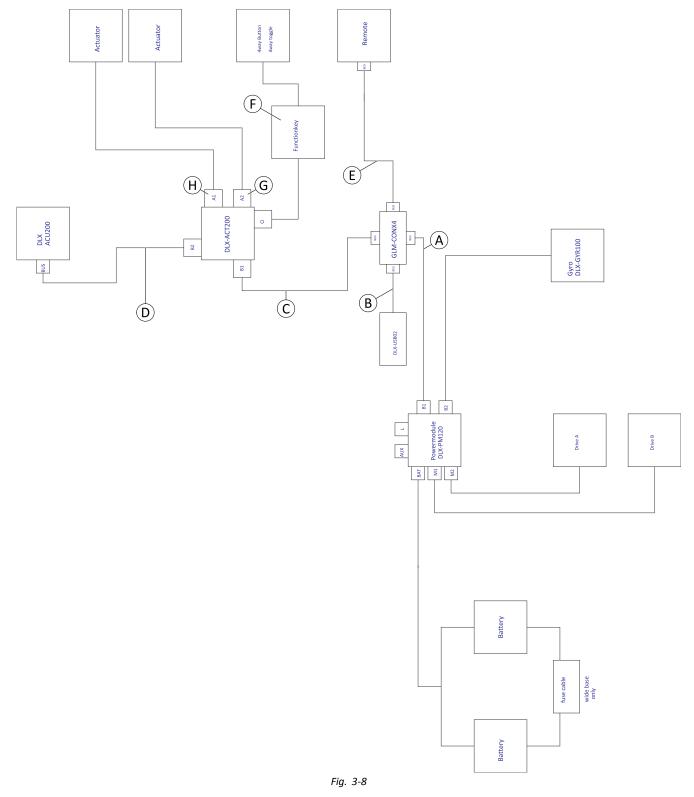
Wiring for Fox with Modulite Recline only and ACU



Cable length may vary depending on mounting positions of primary and secondary remotes and of 4-way connector GLM-CONX4.

A	300 mm + 640 mm extension loom
₿	500 mm
©	1000 mm
D	1000 mm

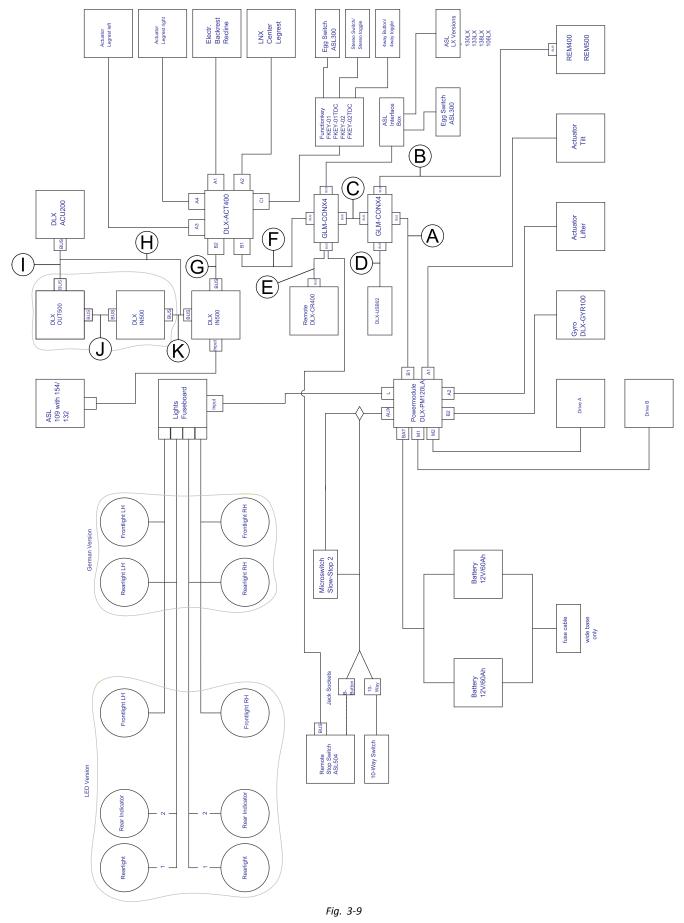
Wiring for Non expandable systems with Ultra Low Maxx seat (US only)



 $\begin{tabular}{ll} & Cable length may vary depending on mounting positions of primary and secondary remotes and of 4-way connector GLM-CONX4. \end{tabular}$

Configuration	۲	B	©	D	E	Ē	G	θ
Recline only	1200 mm	300 mm	700 mm	300 mm	1500 mm	Functionkey FKEY01/ FKEY01TDC	not used	Recline connected
Tilt /Recline	1200 mm	300 mm	700 mm	300 mm	1500 mm	Functionkey FKEY02/ FKEY02TDC	Tilt connected	Recline connected
LNX only	1200 mm	300 mm	1200 mm	300 mm	1500 mm	Functionkey FKEY01/ FKEY01TDC	LNX connected	not used
Tilt only	1200 mm	300 mm	1200 mm	300 mm	1500 mm	Functionkey FKEY01/ FKEY01TDC	Tilt connected	not used
Dual legs	1200 mm	300 mm	1200 mm	300 mm	1500 mm	Functionkey FKEY02/ FKEY02TDC	Legrest right connected	Legrest left connected
Recline/LNX	1200 mm	300 mm	1200 mm	300 mm	1500 mm	Functionkey FKEY02/ FKEY02TDC	LNX connected	Recline connected
Tilt/LNX	1200 mm	300 mm	1200 mm	300 mm	1500 mm	Functionkey FKEY02/ FKEY02TDC	LNX connected	Tilt connected
Tilt/Lifter	1200 mm	300 mm	1200 mm	300 mm	1500 mm	Functionkey FKEY02/ FKEY02TDC	Lifter connected	Tilt connected

Wiring for configurations with Ultra Low Maxx seat



Cable length may vary depending on mounting positions of primary and secondary remotes and of 4-way connector GLM-CONX4.

 ${1}$ Depending on configuration, the Egg switch ASL300 can be connected to the primary remote.

Configuration	w tilt, w recline, w/o lifter	w tilt, w/o recline, w/o lifter	w tilt, w recline, w lifter	w tilt, w/o recline, w lifter
A	1200 mm	1200 mm	1500 mm	1500 mm
B	1500 mm	1700 mm	1700 mm	1700 mm
©	700 mm	1200 mm	700 mm	1200 mm
D	300 mm	300 mm	300 mm	300 mm
٤ ¹	1700 mm	1200 mm	1200 mm	1200 mm
Ē	300 mm	300 mm	300 mm	300 mm
G	300 mm	300 mm	300 mm	300 mm
θ	300 mm	300 mm	300 mm	300 mm
0	300 mm	300 mm	300 mm	300 mm
0	300 mm	300 mm	300 mm	300 mm
ĸ	300 mm	300 mm	300 mm	300 mm

¹ Bus port either for DLX-CR400 or for Remote Stop Switch. Cannot be combined.

3.9 Mounting the primary remotes

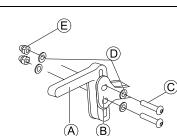
For more information about how remote holders are mounted to the wheelchair, refer to the service manual of the seating system.

3.9.1 Mounting DLX-REM1XX and DLX-REM2XX for Modulite

Standard remote holder

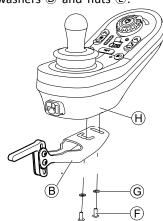
8 mm wrench





Mount joystick holder (A) to remote adapter (B) with screws (C), washers (D) and nuts (E).

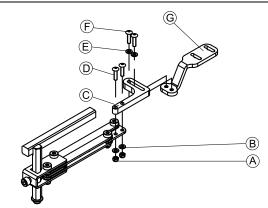
2.



Mount remote ${\mathbb H}$ to remote adapter ${\mathbb B}$ with screws ${\mathbb F}$ and washers ${\mathbb G}.$

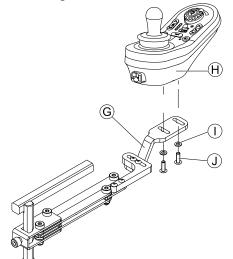
Swing away remote holder

- 4 mm Allen key
 - 3 mm Allen key
 - 8 mm wrench
 - 10 mm wrench



- 1. Pull screws $\mathbb O$ through bracket $\mathbb C$, remote holder and washers $(\mathbb B).$
- 2. Tighten screws with nuts A.

- Pull screws (F) through washers (E), bracket (C) and 3. bracket G and tighten screws.
- 4.

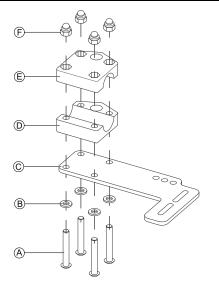


Tighten remote $\ensuremath{\mathbbmu}$ with screws $\ensuremath{\mathbbmu}$ and washers $\ensuremath{\mathbbmu}$ to bracket G.

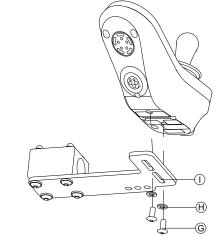
Remote holder for attendant

The remote is fitted to the wheelchair using a bracket on the push handle or the push bar.

- 4 mm Allen key ľ
 - 3 mm Allen key



- Pull screws (A) through washers (B), mounting plate (C) 1. and bottom side of bracket D.
- 2. Tighten bottom side of the bracket to push bar with the top side of the bracket (E) and nuts (F). 3.



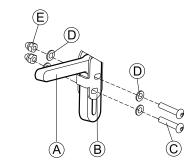
Fix remote to bracket ${\rm (I)}$ with screws ${\rm (G)}$ and washers Ĥ.

For mounting positions, refer to 3.10.4 Mounting the DLX-REM050, page 37.

Mounting DLX-REM2XX for Ultra Low 3.9.2 Maxx

Standard remote holder

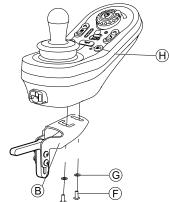
- 3 mm Allen key Ĭ
- 8 mm wrench



Mount joystick holder (A) to remote adapter (B) with screws ©, washers D and nuts E.



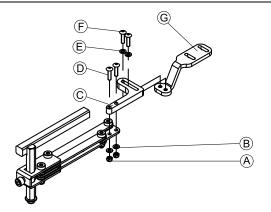
1.



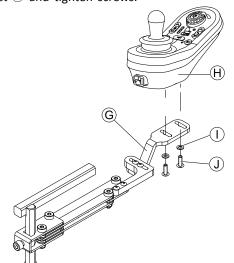
Mount remote \oplus to remote adapter \mathbb{B} with screws (F) and washers (G).

Swing away remote holder

- 3 mm Allen key
 - 4 mm Allen key
 - 8 mm wrench
 - 10 mm wrench



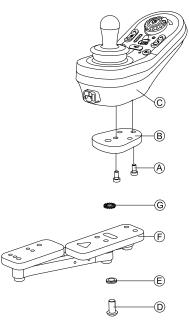
- 1. Pull screws D through bracket C, remote holder and washers B.
- 2. Tighten screws with nuts A.
- 3. Pull screws (F) through washers (E), bracket (C) and bracket (G) and tighten screws.
- 4.



Tighten remote ${\textstyle \textcircled{H}}$ with screws ${\textstyle \textcircled{D}}$ and washers ${\textstyle \textcircled{T}}$ to bracket ${\textstyle \textcircled{G}}.$

Quad Link remote holder

ĬĬ	٠	3 mm Allen key
	٠	5 mm Allen key



- 1. Mount LiNX remote adapter (B) with screws (A) to remote (C).
 - $\underbrace{\overset{\circ}{\exists}}_{\text{right or left for more adapter can be turned 90°}} The LiNX remote adapter can be turned 90° right or left for more adjustment options.$
- Mount remote to Quad Link

 f with screw D, Nord-Lock washer
 f and serrated lock washer G.
 - $\begin{tabular}{ll} \widehat{l} & Tighten screw \widehat{D} with a maximum torque of 25 Nm. \end{tabular}$

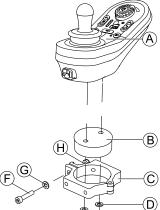
Remote holder for attendant

The remote is fitted to the wheelchair using a bracket on the push handle or the push bar.

Ĭ	•	3	mm	Allen	key
	•	5	mm	Allon	kov

- 5 mm Allen key8 mm wrench
- 1.

2.



Mount remote (A) with and support drum (B) to clamp (C) with screws (E) and washers (D).

(E)

Risk of damage to the remote
 The maximum torque to tighten the screw is 1 Nm.
 Do not exceed this rating as it may

- Do not exceed this rating as it may damage the remote.

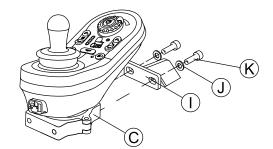
Fix support drum ${}^{\textcircled{}}$ in clamp ${}^{\textcircled{}}$ with screw ${}^{\textcircled{}}$, washer ${}^{\textcircled{}}$ and nut ${}^{\textcircled{}}$.

3.

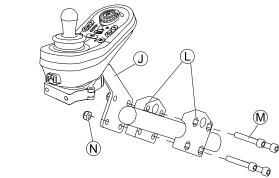
4.

1.

2.



Attach clamp $\mathbb C$ to bracket $\mathbb O$ with screws $\mathbb K$ and washers $\mathbb O.$

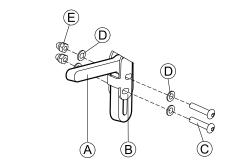


Attach bracket (\mbox{I}) to gripper clamp (\mbox{L}) with screws (\mbox{M}) and nuts $(\mbox{N}).$

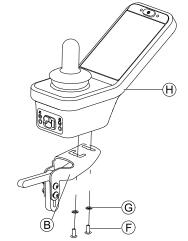
3.9.3 Mounting the DLX-REM400

Standard remote holder

ļĭ	٠	3 mm Allen key
	٠	8 mm wrench



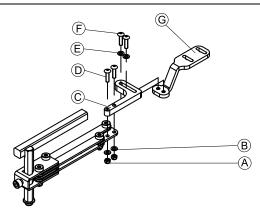
Mount joystick holder (A) to remote adapter (B) with screws (C), washers (D) and nuts (E).



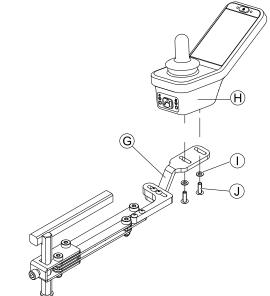
Mount remote ${\textstyle \textcircled{}}$ to remote adapter ${\textstyle \textcircled{}}$ with screws ${\textstyle \textcircled{}}$ and washers ${\textstyle \textcircled{}}$.

Swing away remote holder

- 4 mm Allen key
- 3 mm Allen key
 - 8 mm wrench
- 10 mm wrench



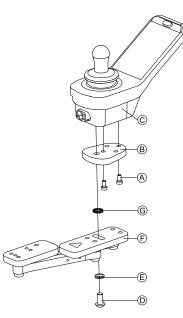
- 1. Pull screws $\mathbb D$ through bracket $\mathbb C$, remote holder and washers $(\mathbb B).$
- 2. Tighten screws with nuts \triangle .
- Pull screws (F) through washers (E), bracket (C) and bracket (G) and tighten screws.
 4.



Tighten remote with screws (A) to bracket (G).

Quad Link remote holder

	•	3 mm Allen key
	٠	5 mm Allen key



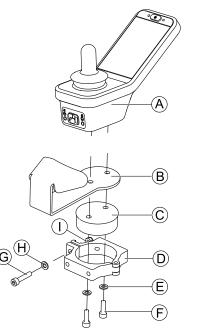
- 1. Mount LiNX remote adapter (B) with screws $\textcircled{\sc B}$ to remote $\textcircled{\sc C}.$
 - $\mathring{\underline{I}}$ The LiNX remote adapter can be turned 90° right or left for more adjustment options.
- Mount remote to Quad Link

 with screw D
 ,
 Nord-Lock washer
 and serrated lock washer G
 .
 - $\mathring{\underline{I}}$ Tighten screw \mathbb{D} with a maximum torque of 25 Nm.

Remote holder for attendant

The remote is fitted to the wheelchair using a bracket on the push handle or the push bar.

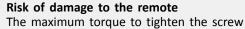
- 3 mm Allen key
 - 5 mm Allen key
 - 8 mm wrench



Mount remote (A) with support (B) and support drum (C) to clamp (D) with screws (F) and washers (E).

2.

1.

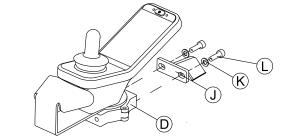


- is 1 Nm.
- Do not exceed this rating as it may damage the remote.

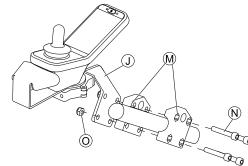
Fix support drum $\mathbb C$ in clamp $\mathbb D$ with screw $\mathbb G$, washer $\mathbb H$ and nut $\mathbb O.$

3.

4.



Attach clamp $\mathbb D$ to bracket $\mathbb J$ with screws $\mathbb C$ and washers $\mathbb K.$



Attach bracket ${\rm (I)}$ to gripper clamp ${\rm (M)}$ with screws ${\rm (N)}$ and nuts (O).

3.9.4 Mounting Toggle Switches on the DLX-REM400

The toggle switches are suitable for the DLX-REM400–B remote module only — they must not be installed to the DLX-REM400–A version.

1605129-E

- TX8 Torx key
 - Opening pick (or similar)
 - Two additional screws (included in mounting kit)
 - Label kit (included in mounting kit)

1.

2.

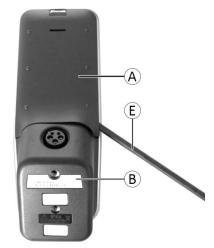


Fig. 3-10

Remove rear shroud A using opening pick E.

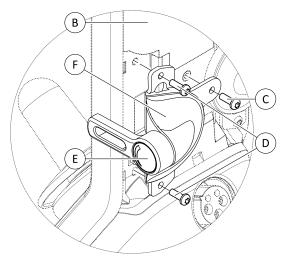


Fig. 3-11

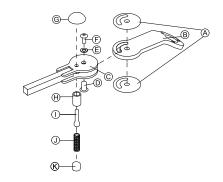
Loosen and remove four silver screws D.

- 3. Mount toggle switch (F) to remote (B) with screws (C) and (D).
- Repeat step 2 and 3 to install second switch / blanking plate.
- 5. Install new rear shroud included in mounting kit.
- 6. Install labels (E) on both toggles.

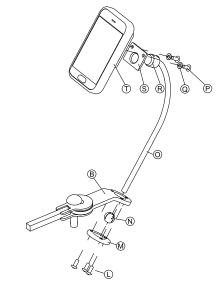
3.9.5 Mounting the DLX-REM500

Swing away remote holder

- 3 mm Allen key
 - 4 mm Allen key
 - Medium-strength thread-locking fluid, e.g. Loctite 243



- 1. Connect slip sticker B with joint arm B and insert into support C.
- 2. Fix with sleeve nut $\mathbb D$, washer $\mathbb E$ and screw $\mathbb F.$
 - $\overset{\circ}{\underline{l}} \qquad \mbox{Apply medium-strength thread-locking fluid to} screw (F).$
- 3. Insert locking bolt B and compression spring O through support C and joint arm B.
- 4. Fix with locking knob $\ensuremath{\mathbb{G}}$ and grub screw $\ensuremath{\mathbb{D}}$.
 - $\underbrace{\overset{\circ}{\underline{j}}}_{\text{grub screw }} \text{Apply medium-strength thread-locking fluid to}$



Insert bracket \circledcirc into joint arm (B), clamp ball (N) and clamp ring (M).

Fix with screws ①.

6. Mount remote $\mathbb T$ to support plate $\mathbb S$ and clamping bush $\mathbb R$ with washers $\mathbb Q$ and screws $\mathbb P.$

Nucleus remote holder

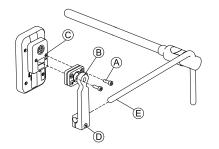


5.

CAUTION! Risk of Injury and Damage

Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage.

- Deburr cut after cutting excessive length.
- Re-install end cap after deburring.
- 4 mm Allen key • 3/16" Allen key



- Mount remote © to bracket B with screws A. 1.
- Pull bracket B over nucleus E. 2.
- 3. Tighten bracket to nucleus with screw D.

3.10 Mounting the secondary remotes

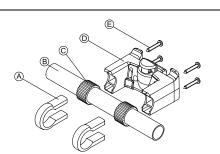
For more information about how remote holders ñ are mounted to the wheelchair, refer to the service manual of the seating system.

3.10.1 Mounting Intuitive Dual Control (IDC)

Mounting the KLICKfix adapter

Standard mounting

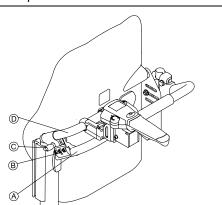
łĭ Phillips screwdriver



- 1. Position the tightening clamps (A) on the wheelchair push handle B.
- Make sure, the rubber band C is between the 2. tightening clamps and the push handle.
- Fit the KLICKfix adapter D onto the tightening clamps. 3.
- 4. Tighten the screws (E).

Mounting on the Ultra Low Maxx seating system

- 4 mm (3/16") Allen key
- ۱ĭ Phillips screwdriver



- Fix the retaining clamp (B) on the wheelchair push 1. handle (A).
- Slide the adapter tube D through the retaining clamp. 2.

- Tighten the wing bolt ©. 3.
- Mount the KLICKfix adapter on the adapter tube, refer 4. to chapter Standard mounting.

3.10.2 Mounting the DLX-ACU200

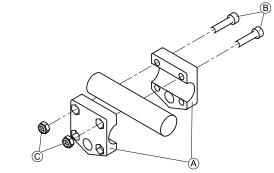
Mounting for Modulite seating system

Ĭ	•	3 mm Allen key 5 mm Allen key
	٠	8 mm wrench
	٠	10 mm wrench

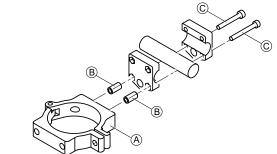


2.

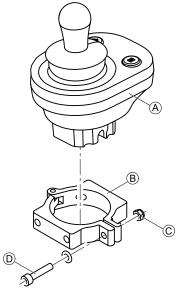
3.



Attach gripper clamp (A) to tube with screws (B) and nuts ©.



Attach clamp (A) and spacers (B) to gripper clamp with screws ©.



Risk of damage to the remote The maximum torque to tighten the screw is 1 Nm.

- Do not exceed this rating as it may damage the remote.

Set remote (A) in clamp (B) and tighten screw (D) and nut ©.

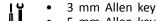
1.

Mounting for Ultra Low Maxx seating system

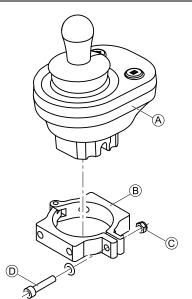
1.

2.

3.



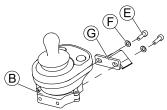
- 5 mm Allen key
- 8 mm wrench



Risk of damage to the remote

- The maximum torque to tighten the screw is 1 Nm.
- Do not exceed this rating as it may damage the remote.

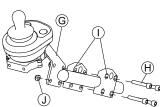
Set remote (A) in clamp (B) and tighten screw (D) and nut ©.



Attach clamp B to bracket G with screws E and washers **(F)**.

3.

2.



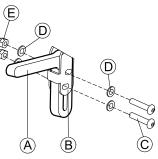
Attach bracket G to gripper clamp \bigcirc with screws Hand nuts \mathbb{O} .

Mounting the DLX-CR400 3.10.3

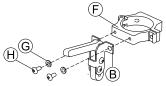
and DLX-CR400LF

Standard remote holder

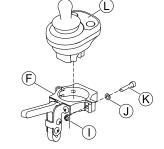
ĬĬ	٠	3 mm Allen key
	٠	4 mm Allen key
	٠	8 mm wrench



Mount joystick holder (A) to DLX-CR400 adapter (B) with screws \mathbb{O} , washers \mathbb{D} and nuts \mathbb{E} .



Attach clamp (F) to DLX-CR400 adapter (B) with washers $\ensuremath{\mathbb{G}}$ and screws $\ensuremath{\mathbb{H}}$.



Risk of damage to the remote

- The maximum torque to tighten the screw is 1 Nm.
 - Do not exceed this rating as it may damage the remote.

Set remote \bigcirc in clamp \bigcirc and tighten screw \bigotimes and washer \bigcirc with nut \bigcirc .

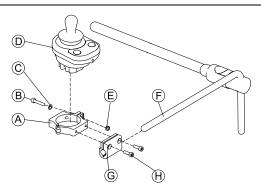
Nucleus remote holder



CAUTION! **Risk of Injury and Damage**

Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage.

- Deburr cut after cutting excessive length.
- Re-install end cap after deburring.
- 4 mm Allen key lĭ ٠
 - 8 mm wrench



1.

Risk of damage to the remote The maximum torque to tighten the screw is 1 Nm.

- Do not exceed this rating as it may damage the remote.

Set remote D in clamp A and tighten screw B and washer © with nut E.

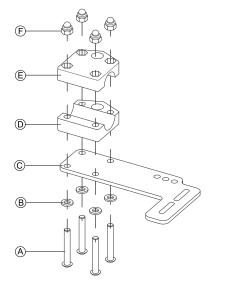
- Pull clamp bracket G over nucleus E. 2.
- Attach clamp (A) to clamp bracket (G) and fix everything 3. with screws \mathbb{H} .

3.10.4 Mounting the DLX-REM050

! `	4 mm Allen	key
------------	------------	-----

3 mm Allen key

The attendant control unit is fitted to the wheelchair using a bracket on the push handle or the push bar.

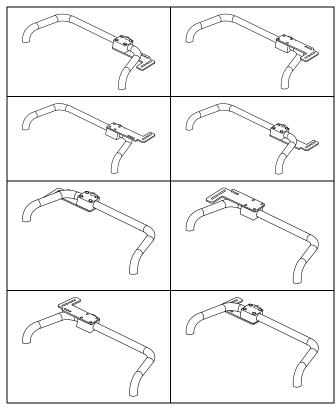


- 1. Pull screws (A) through washers (B), mounting plate (C) and bottom side of bracket D.
- Tighten bottom side of the bracket to push bar with 2. the top side of the bracket E and nuts F. 3.
 - G

Pull screws $\ensuremath{\mathbb{G}}$ through washers $\ensuremath{\mathbb{H}}$ bracket $\ensuremath{\mathbb{O}}$ and attendant control unit.

- Tighten screws. 4.
- Connect attendant control unit. 5.

Mounting positions



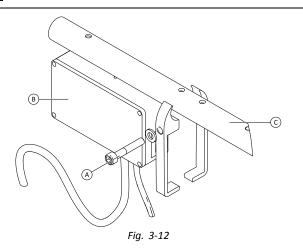
3.11 Mounting the ASL components

For more information about how remote holders ຶ່ງໄ are mounted to the wheelchair, refer to the service manual of the seating system.

3.11.1 **Mounting Interface Boxes**

Mounting ASL Joystick Interface Box for Ultra Low Maxx

5 mm Allen key •

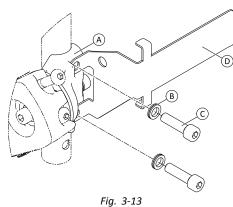


- Loosen screw (A). 1.
- Install Interface Box [®]. 2.
- Place both parts onto armrest tube © and re-tighten 3. screw A.

Mounting ASL Joystick Interface Box for Modulite

- 3 mm Allen key ł۲
- 6 mm Allen key

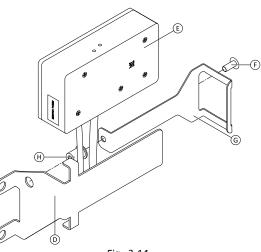
- illustration below shows left-hand mounted holder on seat with mounted flip-up armrest. Armrest holder (A) can be replaced by saddle washer and also mounting position can varify. Installation order is the same.
- 1.





- Loosen and remove upper screw C and washer B.
 Install base holder D. Ensure that armrest holder (saddle washer) A is installed in correct way and hot
- (saddle washer) (a) is installed in correct way and both holes are in line.
- 3. Re-insert screw and washer.
- 4. Repeat steps one to three for second screw.
- 5. Tighten both screws $\mathbb C$ to 6 Nm.
- 6.

7.

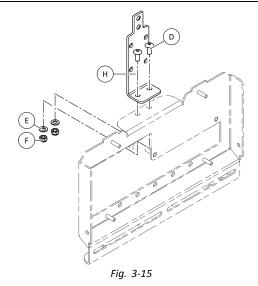




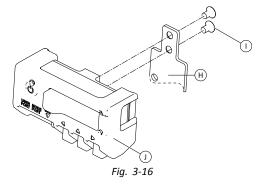
Install well nut H, interface box E and holder G. Tighten bolt F to 0.3 Nm.

Mounting ASL106 Interface Box for Ultra Low Maxx (Manual Recline)

- 1/8 in Allen key
- 3 mm Allen key
- 8 mm wrench



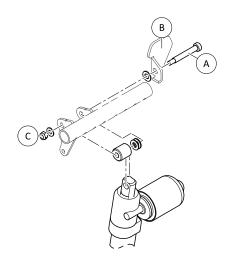
- 1. Insert bolts D.
- 2. Install holder \oplus , washers E and nuts F.
- 3. Tighten nuts (F).
- 4.



Tighten interface box \oplus to holder \oplus with screws \oplus .

Mounting ASL106 Interface Box for Ultra Low Maxx (Powered Recline)

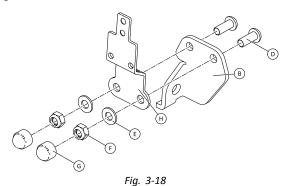
ĬĬ	•	1/8 in Allen key
	•	5 mm Allen key
	٠	6 mm Allen key
	•	13 mm wrench



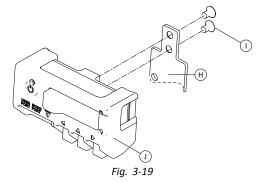


Loosen and remove nut $\mathbb{C},$ washers, spacers and bolt $\mathbb{A}.$

- 2. Re-insert bolt (A) and flange (B), washers, spacers and nut (C).
- 3. Tighten nut.
- 4.



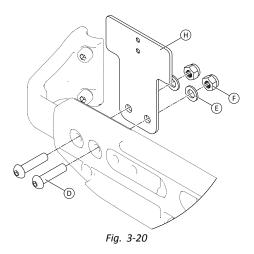
- Insert bolts D.
- 5. Install holder \oplus , washers E and nuts F.
- 6. Tighten nuts (F).
- 7. Install end caps G.
- 8.



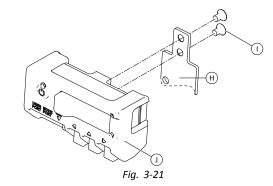
Tighten interface box ${\rm (})$ to holder ${\rm (}{\rm H}$ with screws ${\rm (}{\rm)}.$

Mounting ASL106 Interface Box for Modulite

- 1/8 in Allen key
- 5 mm Allen key
- 13 mm wrench

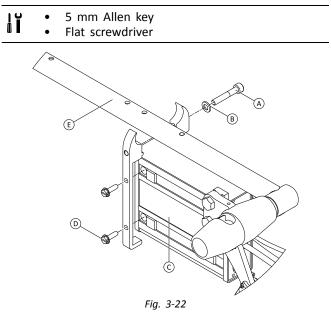


- 1. Insert bolts D.
- 2. Install holder (H), washers (E) and nuts (F).
- Tighten nuts (F).
 4.



Tighten interface box \mathbb{O} to holder \mathbb{O} with screws \mathbb{O} .

Mounting ASL154 Sip And Puff Interface Box for Ultra Low Maxx



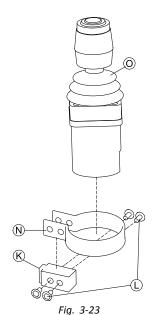
- 1. Loosen screw (A).
- 2. Place holder on armrest tube $\textcircled{\mbox{$\mathbb E$}}$ and re-tighten screw (A).
- 3. Install Interface Box \mathbb{O} and tighten screws \mathbb{D} .

3.11.2 Mounting the Compact Single Switch **Joystick**

Lateral Tray Mount

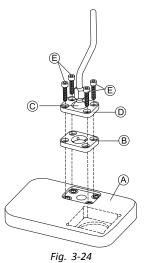
•	1/8" Allen key 5/32" Allen key
•	3/16" Allen key

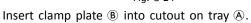
1.



Insert joystick O in clamp N, pull clamp over adapter block K and fix with screws L.

2.





Fix clamp plate (B), clamp ball (C) and upper clamp 3. plate D with screws E.

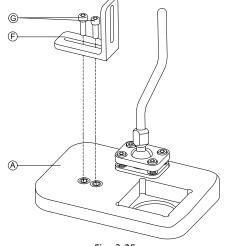
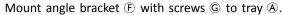
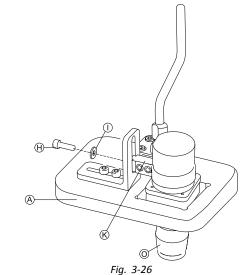


Fig. 3-25





Insert remote O into tray A.

Fix adapter block ${\mathfrak K}$ to angle bracket ${\mathfrak F}$ with screw ${\mathfrak H}$ 6. and washer \bigcirc .

Nucleus Tray Mount

4.

5.

CAUTION!

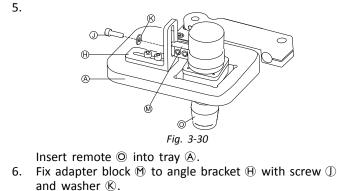
Risk of Injury and Damage Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage.

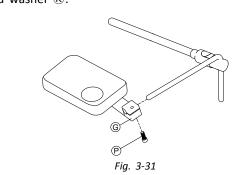
- Deburr cut after cutting excessive length.Re-install end cap after deburring.

Ĭ	•	1/8" Allen key
	٠	5/32" Allen key
	•	3/16" Allen kev



7.





Pull hitch mount G over nucleus and tighten with $\mathsf{screw}\ \mathbb{P}.$

Nucleus Only Mount

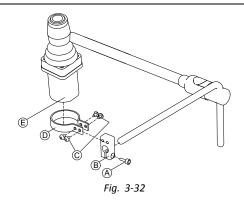


Risk of Injury and Damage

Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage.

- Deburr cut after cutting excessive length.
- Re-install end cap after deburring.

1/8" Allen key ١ĭ 5/32" Allen key

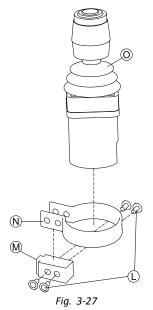


- Pull adapter block [®] over nucleus and tighten with 1. screw (A).
- 2. Insert remote (E) into clamp (D).
- 3. Mount clamp \mathbb{D} to adapter block \mathbb{B} with screws \mathbb{C} .

3.11.3 Mounting the Micro Extremity Control Joystick

Lateral Tray Mount

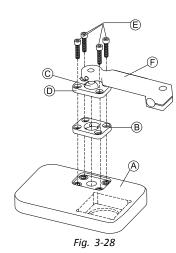
Ĭ	٠	1/8″ Allen key
	٠	5/32" Allen key
	•	3/16" Allen key



Insert joystick ^(O) in clamp ^(N), pull clamp over adapter block \mathfrak{M} and fix with screws \mathbb{C} .

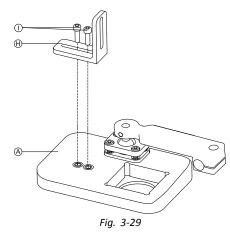
2.

1.

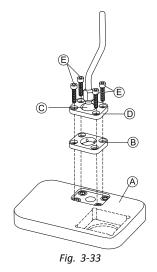


Insert clamp plate [®] into cutout on tray [®].

- Fix clamp plate B, clamp ball C and upper clamp 3. plate D with screws E.
- 4.



Mount angle bracket Θ with screws \bigcirc to tray \triangle .



- 1. Insert clamp plate ^B into cutout on tray ^A.
- 2. Fix clamp plate B, clamp ball C and upper clamp plate D with screws E. 3.

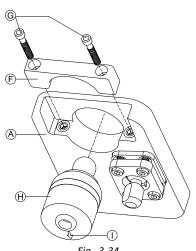


Fig. 3-34

Insert remote \oplus from below into tray \triangle . Make sure, arrow ${\scriptstyle (\ensuremath{\mathbb J})}$ shows into reverse driving direction.

Nucleus Tray Mount

<u>/ľ</u>

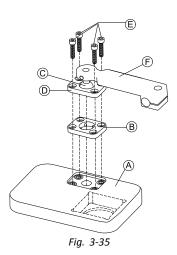
CAUTION! Risk of Injury and Damage

Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage.

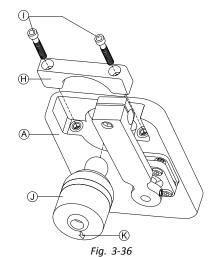
- Deburr cut after cutting excessive length.
- Re-install end cap after deburring.

1 • 1	/8" Allen	key
--------------	-----------	-----

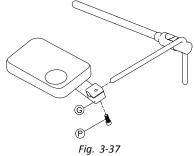
- 5/32" Allen key •
 - 3/16" Allen key •



- 1. Insert clamp plate B into cutout on tray A.
- 2. Fix clamp plate [®], clamp ball [©] and upper clamp plate D with screws E. 3.



Insert remote \oplus from below into tray A. Make sure, arrow (K) shows into reverse driving direction.



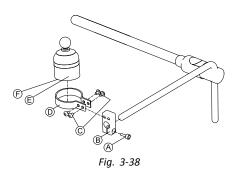
Pull hitch mount G over nucleus and tighten with $\text{screw } {\mathfrak P}.$

Nucleus Only Mount

4.

CAUTION! Risk of Injury and Damage Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage. – Deburr cut after cutting excessive length. – Re-install end cap after deburring.

- 1/8" Allen key łĭ
- 5/32" Allen key



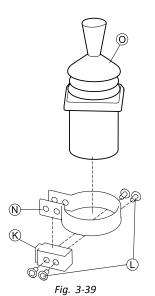
- 1. Pull adapter block (B) over nucleus and tighten with screw (A).
- Insert remote (E) into clamp (D). Make sure, arrow
 (F) (not visible in picture) shows into reverse driving direction.
- 3. Mount clamp D to adapter block B with screws C.

3.11.4 Mounting the Pediatric Compact Joystick

Lateral Tray Mount

ĬĬ	٠	1/8" Allen key
	•	5/32" Allen kev

- 3/16" Allen key
- 1.





Insert remote
into clamp
into clamp
into clamp over adapter block
into adapter with screws
into a clamp
intoa clamp
into a clamp
into a clamp
intoa

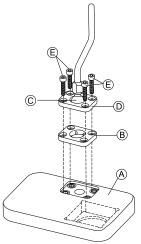


Fig. 3-40 Insert clamp plate [®] into cutout on tray [®].

- 3. Fix clamp plate (B), clamp ball (C) and upper clamp plate (D) with screws (E).
- 4.

5.

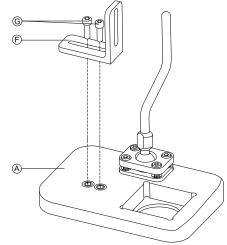
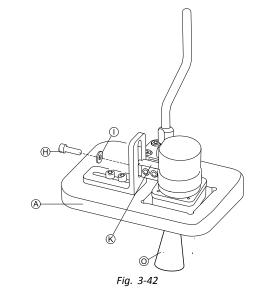


Fig. 3-41

Mount angle bracket (F) with screws (G) to tray (A).



Fix adapter block ${\ensuremath{\mathbb S}}$ to angle bracket ${\ensuremath{\mathbb F}}$ with screw ${\ensuremath{\mathbb H}}$ and washer ${\ensuremath{\mathbb O}}.$

Nucleus Tray Mount

CAUTION!

Risk of Injury and Damage

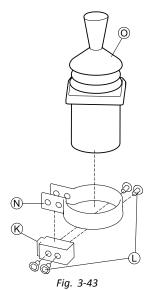
Remaining burrs and missing end caps after modifications on rods, such as shortened rod, can lead to injury or damage.

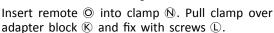
- Deburr cut after cutting excessive length.
- Re-install end cap after deburring.

• 1/8" Allen key

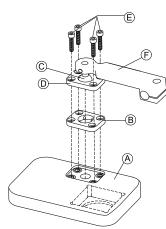
5/32" Allen key

3/16" Allen key



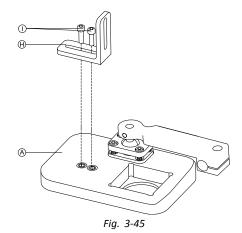




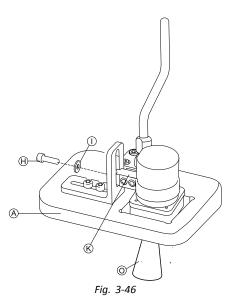




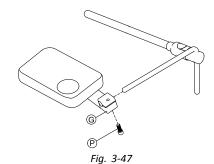
- Insert clamp plate ^B into cutout on tray ^A.
- Fix clamp plate B, clamp ball C and upper clamp 3. plate D with screws E.
- 4.



Mount angle bracket \oplus with screws \bigcirc to tray A.



Fix adapter block ${\mathfrak M}$ to angle bracket ${\mathfrak H}$ with screw ${\mathbb J}$ and washer \mathbb{K} .



Pull hitch mount G over nucleus and tighten with screw **P**.

Nucleus Only Mount

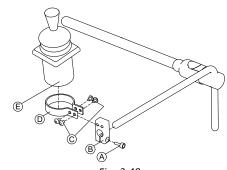
5.

6.

CAUTION!

Risk of Injury and Damage Remaining burrs and missing end caps after modifications on rods, such as shortened rod,

- can lead to injury or damage. - Deburr cut after cutting excessive length.
- Re-install end cap after deburring.
- łĭ 1/8" Allen key
- 5/32" Allen key





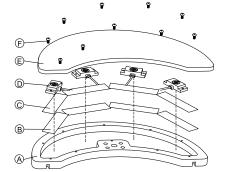
- Pull adapter block [®] over nucleus and tighten with 1. screw (A).
- 2. Insert remote (E) into clamp (D).
- 3. Mount clamp D to adapter block B with screws C.

3.11.5 Mounting the eclipse tray with proximity sensors

- 3/32" Allen key łĭ
 - 5/32" Allen key 3/16" Allen key

 - 4x loop straps 25x100 mm
 - 4x hook straps 25x100 mm

1.



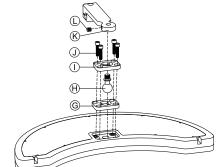
Fix hook straps (B) inside eclipse tray (A).

- Cut loop straps © accordingly shape of proximity 2. sensors D.
- Fix loop straps to proximity sensors. 3.
- Fix loop straps to hook straps. 4.
- 5.

6.

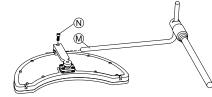
Pay attention that wiring of proximity sensors ĵ fit into intended gaps.

Fix coverage E to eclipse tray with screws F.



Insert clamp plate G into cutout on eclipse tray.

- Fix clamp plate, clamp ball Θ and upper clamp plate 7. \bigcirc with screws $\bigcirc.$
- Screw hitch mount (K) to clamp ball with grub screw (L). 8. 9.

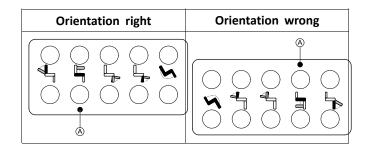


Pull hitch mount over nucleus 10 and tighten with screw N.

3.12 Mounting the 10 way switch

For more information about how 10 way switch ĭ holders are mounted to the wheelchair, refer to the service manual of the seating system.

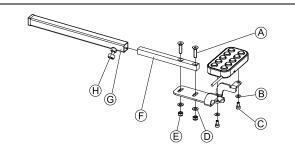
While mounting the 10 way switch or changing the labeling, the orientation spot (A) must face downwards, see table below.



Mounting the 10 way switch for 3.12.1 Modulite

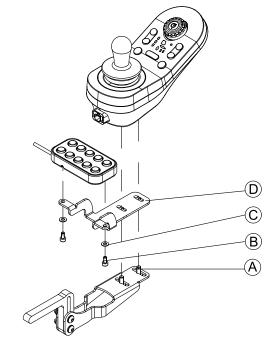
Mounting at the front

- 3 mm Allen key ١ĭ
 - 4 mm Allen key
 - 8 mm wrench



- 1. Tighten 10 way switch to bracket with screws © and washers ^B.
- Tighten bracket to remote mounting tube (F) with 2. screws (A), washers (D) and nuts (E).
- Insert remote mounting tube inside mounting bracket 3. G.
- 4. Adjust 10 way switch to desired position.
- Tighten wing screw Θ . 5.

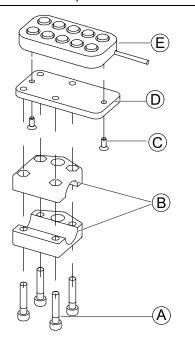
In combination with DLX-REM211/DLX-REM216



- 1. Tighten 10 way switch to bracket D with screws B and washers ©.
- Tighten bracket to remote mounting bracket with 2. screws A.

Mounting at the rear (for attendants)

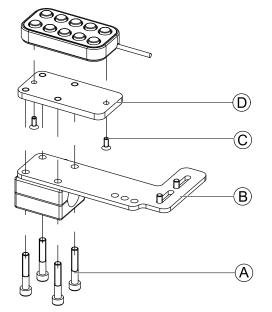
• 3 mm Allen key • 4 mm Allen key



The 10 way switch is fitted to the rear of the wheelchair using a bracket ${\ensuremath{\mathbb B}}$ on the push handle or push bar.

- 1. Tighten mounting plate D with screws C to 10 way switch E.
- 2. Pull screws () through bracket () and mounting plate ().

In combination with DLX-REM050 (attendant control unit)

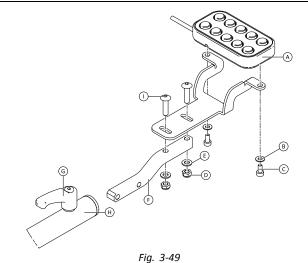


- 1. Tighten 10 way switch to mounting plate $\mathbb D$ with screws $\mathbb C.$
- 2. Tighten mounting plate ${\mathbb D}$ to mounting plate ${\mathbb B}$ with screws A.
 - For the possible positions of the attendant control unit, refer to 3.9.3 Mounting the DLX-REM400, page 32.

3.12.2 Mounting the 10 way switch for Ultra Low Maxx

Mounting at the front

- 3 mm Allen key
- 8 mm wrench

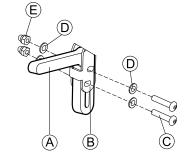


- 1. Tighten 10 way switch B to bracket with screws C and washers B.
- 2. Tighten bracket to remote mounting tube E with bolts I , washers E and nuts D.
- 3. Insert remote mounting tube inside mounting bracket $\boldsymbol{\varTheta}.$
- 4. Adjust 10 way switch to desired position.
- 5. Tighten lever G.

In combination with DLX-REM2XX or DLX-REM400

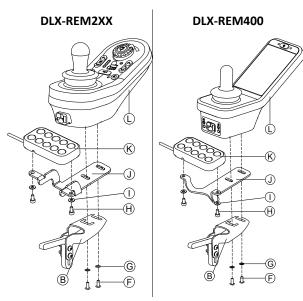
3 mm Allen key
8 mm wrench

3.12.3 Changing Labeling



Mount joystick holder (A) to remote adapter (B) with screws (C), washers (D) and nuts (E).

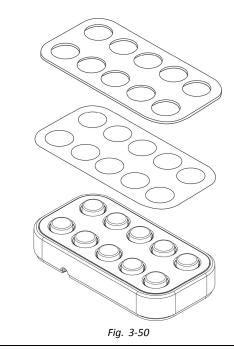
2.



Mount remote \mathbbm{G} to remote adapter \mathbbm{B} and support sheet \mathbbm{O} with screws \mathbbm{F} and washers $\mathbbm{G}.$

3. Mount 10 way switch 𝔅 to support sheet ① with screws 𝔅 and washers ①.

For more information about mounting the 10 way switch for attendants, refer to the service manual of the Ultra Low Maxx.



Small pointed tool (Nylon screw or similar)
 Label

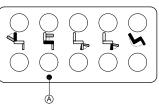


Fig. 3-51 Correct orientation of labeling

1. Remove switch from bracket.

2.



Fig. 3-52

Insert tool in upper two holes ${}^{\textcircled{B}}$ on rear side and push out covering plate and labeling on other side.

- 3.
- NoteWhile installing new labeling, ensure that
orientation spot (A) faces downwards and
correct function icons are shown.

Replace labeling.

- 4. Install covering plate.
- 5. Install switch to bracket.

4 Replacing Wheelchair Components

4.1 General information on setup

The tasks described in this chapter are intended to be performed by trained and authorized service technicians for initial setup. They are not intended to be performed by the user.

4.2 Battery Synchronisation on New Batteries

The LiNX enhanced battery gauge integrates new technology that determines the State of Charge (SOC) of lead-acid batteries more accurately than conventional battery gauges which are based on battery-terminal voltage.

- The new enhanced gauge estimates the real SOC by looking at a number of factors, not just instantaneous terminal voltage, which on its own, is a poor indicator of SOC.
- The gauge does not measure current, which is difficult to do in a power wheelchair system.
- The gauge determines if the battery is charging or discharging, and depending on this state, applies logic and calculations to find the real SOC. Part of this is knowing the recent history of the battery use.
- The gauge models the discharge based on the terminal voltage, the rate of change of terminal voltage and how long the battery has been in this state, to get an actual SOC.
- The new gauge differentiates between real charging and regenerated voltage or recovery, which causes a distortion of the charge estimate in conventional gauges.
- If the battery is actually charging, the change in SOC is calculated based on where it is in the charge cycle, the rate of change in the terminal and how long it has been charging.

New Batteries

The enhanced battery gauge uses the recent charge / discharge history of the battery to calculate the SOC. When new batteries are connected, this history is no longer applicable , but the gauge will continue to calculate the SOC based on the information from previous battery. To rectify this, the enhanced battery gauge needs to be synchronised to the new batteries.

Battery manufacturers recommend that batteries are formatted when new. This involves cycling the battery a number of times without deep discharging them. This procedure does note impact on the gauge synchronisation for new batteries.

Synchronizing new Batteries

- 1. Connect new batteries to power wheelchair.
- 2. Reset battery statistics using LiNX Access tools, see *Resetting battery usage, page 111*
- 3. Connect power wheelchair to battery charger. This must be done with system switched ON or within 24 hours of system being switched on.

- 4. Leave power wheelchair connected to battery charger for longer than ten minutes.
- Wait until battery gauge displays more than 80 % (5 LEDs).
- 6. Leave power wheelchair connected to battery charger for at least two hours. For a new battery, the time should be an extended period as per battery manufacturer's recommendations.

4.3 Replacing Power Module as Spare Part

Replacing power module sets configuration and included parameters back to default settings. Up to eight pre-configured configurations for different wheelchairs were stored on power module until June 2018. For rules for file naming, see *12 Structure of Program Names, page 113*

- Use recommend to take backups of current configuration, if possible. For more information on creating backups see 7.3.7 Saving programs, page 64 for iOS or 9.5.4 Save a program as a file, page 89 for PC.
- 1. If possible, take backup of current configuration.
- 2. Replace power module. For more information see corresponding service manual of wheelchair.
- 3. Connect wheelchair and LiNX Access tool.
- 4. Perform setup procedure. See 4.4 Setup Procedure After Power Module Replacement, page 48.

4.4 Setup Procedure After Power Module Replacement

After replacing a power module we recommend that you perform following procedures to ensure that customized settings of your user wont be lost and the user gets access to the latest features of LiNX.

Upgrading Firmware / Write Bundle File

Upgrading the firmware of the LiNX components to the latest versions allow your user to use the newest features and other improvements Invacare introduced for the wheelchair. Currently there are two different ways to ensure that your system is up-to-date:

- Using Firmware Upgrade Mode (needs internet connection)
- Write Bundle File

Bundle files contain at least one wheelchair configuration and/or the latest firmware upgrades for the installed LiNX components.

- 1. Upgrade firmware to latest release.
 - a. Firmware Upgrade Mode: For iOS tool, see 7.3.8 Upgrading firmware, page 65. For PC tool, see 9.5.6 Upgrading Firmware, page 89.
 - b. **Bundle File**: For iOS tool, see 7.4.2 Writing Bundle Files, page 66. For PC tool, see 9.6.3 Writing bundle files to a chair, page 92.

Restoring Backup File

^o We recommend to write a previously saved backup file to wheelchair after installing a new power module.

Replacing Wheelchair Components

- 1. Restore backup file to wheelchair. For iOS tool, see 7.3.6 Writing a program to the wheelchair, page 64. For PC tool, see 9.5.2 Write a program to a wheelchair, page 88.
- 2. If needed, modify parameters to match user needs.

Calibrating Adaptive Load Compensation (ALC)

During the ALC calibration process an utility calculates motor resistance values to help providing a more consistent motor speed. In case of installing a new power module the module must re-learn this values.

1. Perform suggested programming procedure. See 6.3 Step 3 – Set load compensation, page 56.

Converting Old Configurations (Optional)

 Convert configuration to enable latest feature, such as Switch Control.
 For iOS tool, see 7.3.4 Converting Configuration Files, page 63. For PC tool, see 9.5.9 Converting Configuration Files, page 91.

Setting up Alternative Inputs (Optional)

For iOS tool, see 8.13 Installing / Setting up alternative inputs, page 79. For PC tool, see 10.13 Installing / Setting up alternative inputs, page 106

- 1. Set parameter **Profile User Input** or **User Function Input** on desired function or profile to **Input Module** or to **Third Party**, depending on component input.
- 2. Set parameter User Input Configuration (Chair Setup \rightarrow Modules \rightarrow IN 5xx / TPI) to desired input type.
 - $\underbrace{\overset{\circ}{\underline{l}}}_{\text{ installed input type.}} Check if default value of parameter meets installed input type.$
- 3. Modify other parameters, depending on used component.

Setting up Alternative Outputs (Optional)

 Set parameters for short and long press in utility card to desired values.
 For iOS tool, see 8.14 Installing / Setting up Alternative Outputs, page 80. For PC tool, see 10.14 Installing / Setting up Alternative Outputs, page 106

Modifying Lighting Parameters (Optional)

1. Edit lighting parameters to desired values. For iOS tool, see 8.5 Modifying Lighting Parameters, page 73. For PC tool, see 10.3.1 Modifying Lighting Parameters, page 94.

Modifying Gyro Support in Drive Functions (Optional)

1. Set parameter **Gyro Enabled Drive Function** to desired value.

For iOS tool, see 8.6 Modifying Gyro Support in Drive Functions, page 74. For PC tool, see 10.3.2 Modifying Gyro Support in Drive Functions, page 95.

5 Overview LiNX Access tools

The LiNX system is programmed during manufacturing with default settings. These settings can be modified with a programming tool to suit the user.

The LiNX system can be programmed with one of two programming and diagnostic tools:

- LiNX Access iOS tool used with Apple's iPhone, iPad and iPod touch with iOS 9.0 or later and
- LiNX Access PC tool used with Windows-based PCs or laptops with Windows 7 or later.

The programming and diagnostic tools communicate with a LiNX system via Bluetooth. The Bluetooth capability of a LiNX system is provided by a LiNX Access Key inserted into the remote module's XLR socket.

If your PC does not have built-in Bluetooth, then a Bluetooth adaptor plugged into a spare USB port can be used instead.

Both, the iOS and the PC programming tools, offer a Live edit mode that allows certain parameters to be programmed, and take effect, while the system is live (e.g. while driving). For more information, refer to 7.3.5 *Modifying a Program, page 63*.

5.1 The LiNX Access Key

- The LiNX Access Key is recommended for indoor use only, or outdoors in dry conditions.
 - The LiNX Access Key must not be plugged in when in radio frequency (RF) sensitive environments.
 - Always inspect the LiNX Access Key for damage before using it.
 - Ensure that the LiNX Access Key is fully inserted into the XLR socket before use.
 - Confirm that the connection is made to the wheelchair that is to be programmed by checking the LED on the LiNX Access Key.
 - Take care while driving around during tuning of the wheelchair not to damage the LiNX Access Key by hitting a solid object. Always keep a clear distance from any objects that could damage the LiNX Access Key.
 - The surface of the LiNX Access Key can get hot if left in direct sunlight for long periods.
 - Do not leave the LiNX Access Key connected to the system when the wheelchair is powered down or when the wheelchair is to be stored for a long time, as the Access Key will continue to draw from the batteries when the system is off. If left in place, the expected storage life of the system will not be met and the batteries may be damaged.

The LiNX Access Key provides the Bluetooth connection for a programming tool to communicate with a LiNX system.



The LiNX Access Key plugs directly into the remote module's XLR port A. REM2xx displayed in picture, works for REM400 and REM500 the same way.

The LiNX Access Key has a blue status indicator to show when it is:

- powered up, but not connected (indicator flashes slowly),
- connecting (indicator flashes quickly) or
- connected (indicator permanently on).

If the blue status indicator turns completely off while trying to connect, or while connected, remove the LiNX Access Key from the remote module, wait for 5 seconds and the reinsert it into the remote module before trying to connect again.

Before the programming tools can be used for programming and diagnostics, you need to pair the devices, which is the process of connecting the devices via Bluetooth. The pairing process differs depending on the programming tool that is used.

5.1.1 Rename LiNX Access Key (only possible with LiNX Access PC tool)

The LiNX Access Key is normally identified with the letters **LAK** followed by a series of characters, for example: **LAK-L12147605**. Although each name is unique, identifying one key from another may become difficult when you have more than one LiNX Access Key. As an option, you can change the names of the keys to more familiar names.

1. Right-click on LiNX Access Key in **Open a Connection** tab. You may have to close your connection if you are already in a connection context.

2.	Op	pen a Connection		Dpen a
	G	Find more		🗗 Ope
	-	Q Search	×	Q :
		PAST CONNECTIONS		C:/
		LAK-C14134853 C14134853, Last connected: Mon May 9 09:15:24 2016 GM	OFM	Moi
		cristions, case connected, monthly 5 05.15.24 2010 cim	Connect	iu
			Set Friendly Name	
			Forget Device	1
			Re-establish device pair	ing ^{ju}

Select Set Friendly Name option from context menu.

3.

Bluetooth friendly name		
Enter a new friendly name	e:	
Design Dept.		
	Cancel	Ok

Enter new name into text box and click **OK** button.

After clicking ${\bf OK}$ button the wheelchair is power-cycled and the friendly name is updated. A confirmation screen

is displayed, informing you that the name was changed successfully.

5.2 Overview Functions

	Top level parameter categories	Parameter subcategories
	Chair Configs	
	Restore to Default Config	
	Diagnostics/Chair Log	For details see following table
		Speed Demand
		Turn Demand
		Motor Voltage
	Live Diagnostics ¹	Motor Current
		Motor Resistance
		Battery Voltage
		Speed Dial
LiNX Access Tool (iOS or PC)	System Summary System modules with hardware number, firm number and serial number	
	Functions	Different kind of functions and profiles
		Drive Settings
		Switched Driving
		Sleep Settings
	User Preferences	Lock Settings
		User Function Navigation
		Control Input/Output Settings
		Display Settings
		Energy Use Settings
	Chair Setup	For details see following table
	Lighting	Turn indicators
	Lighting	Position

Top level parameter	Parameter subcategories	
	Active Errors	Active error list
Diagnostics/Chair Log	Chair Log/Event Log	Log
	Chair Statistics	Battery usage
		Drive statistics

^{1.} Live Diagnostics only available in Connection context mode

Top level parameter	Parameter subcategories		
		Power Module	Power Module
			MotorsLoad Compensation
			Control Inputs/Outputs 1–4
			Display Settings
		Primary Remotes	User Input
			Control Inputs/Outputs Jack Sockets
Chair Setup	Modules	Secondary Remotes	User Input
			User Input
		ТРІ	Control Inputs/Outputs 4–32
		Input Module	User Input
			Control Inputs/Outputs Jack Socket
		4.072002	Angle Sensor - Triggers
		ACT200 ²	Control Inputs/Outputs 1–4
		ACT4002	Angle Sensor - Triggers
		ACT400 ²	Control Inputs/Outputs 1–4
	Actuator Motions ²		Identification
		Seating Motion ²	Behavior
			Actuator Channels

5.2.1 Overview User Preferences

	:16 PM	es 🖹
Drive Settings		
Drive Delay At Startup	0.0s	
Switched Driving		
Constant Speed Trigger	10%	- +
Veer at low speed	15.00°	- +
Veer at High Speed	2.50°	
High Speed Refer- ence	50%	- +
Sleep Settings		

iPod 08:06	* 🖚
K Back User Preferences	
Sleep Settings	
Enable Sleep Timeout	No
Sleep Timeout Duration	—© 5min
Enable User Input Wakeup	Yes
Lock Settings	
Enable Lock	-D _{Yes}
User Function Navigation	
Cycle Profiles	Yes
Profile Change uses last used function	— E Yes
Restricted user priority No I	Restriction
Startup Function Last use	d Function

iPod 08:06	* 🖦
K Back User Preferences	
User Function Navigation	
Timeout for navigation entry	5s
Menu Scan Rate	4,0s
Number of Menu Scan Cycles by fore Idle	e- 3 —€
Scan Selection	Disabled
Navigation type Men	u Select
Navigation Entry Active User	Function
Navigation preference Us	er Input
Control Input/Output Settings	
Activation Time	6 0,7s

	Read Write	C12H10A9B01X-03 🛛 😓 Reset to Default	😂 Manage		2
0 -	LAK-H16166775 C12H10A9B01X-03 Flexible Navigation ① v5.1	User Preferences			
Ho	me	DRIVE SETTINGS			
> Fun	octions	Drive Delay At Startup	=A)	+	0.0 s
Use	er Preferences	SWITCHED DRIVING			
− Èl Cha	air Log	Constant Speed Trigger	-(B)	- [+	5 %
_		Veer at Low Speed			35.00 °
Cha	air Setup	Veer at High Speed			10.02 °
🕽 Ligi	hting	High Speed Reference			35 %
		SLEEP SETTINGS	\bigcirc		
		Enable Sleep Timeout	-(<u>c</u>)		Off ×
		Sleep Timeout Duration			5 min
		Enable User Input Wakeup			On 🗸
		LOCK SETTINGS			
		Enable Lock	-(D)		Off ×
		USER FUNCTION NAVIGATION	\bigcirc		
		Cycle Profiles	-(E)		On 🗸
		Profile Change Uses Last Used Function			On 🗸
		Attendant/Occupant priority		N	Priority
		Startup Function		Last used	Function
		Timeout for Navigation Entry	-(F)		5 s
		Menu Scan Rate	U		4.0 s
		Number of Menu Scan Cycles Before Idle			3
		Scan Selection			Disabled
		Navigation Type		Me	nu Select
		Navigation Entry		Active User	Function
		Navigation Preference		u	lser Input
		Enable Timeout for Navigation Entry			Off X
		CONTROL INPUT/OUTPUT SETTINGS	0		
		Activation Time	-(G)	- +	0.7 s
		DISPLAY SETTINGS			
		User Clock Display Mode	-(H)		24 Hour
		User Clock Offset Hours			0 h
		User Clock Offset Minutes			0 min
		Language			English
		Digital Speed Slider Interactivity		A	utomatic
		ENERGY USE SETTINGS	\sim		
		Automatic Power Off	-(1)		On V
	er parameters ×	Low Power Mode Duration			1 hour

A	Drive Settings	Drive Delay At Startup : Allows time delay to be set up between power-up and driving.
		These parameters set veer behavior of drive functions which use switched inputs, for example a Sip and Puff array. They are unique to switched driving and independent of forward, reverse and turn parameters that are used in driving and turning with proportional inputs, such as joysticks.
		Constant Speed Trigger : Sets minimum forward / reverse speed during veer. If wheelchair is stationary or travelling at a low speed (lower than Constant Speed Trigger), speed ramps up to Constant Speed Trigger . Once at Constant Speed Trigger , speed remains constant.
₿	Switched Driving	 d Driving Veer at Low Speed: Provides possibility of maximum veering at lowest speed. Value must be set greater than Veer at High Speed. Speed at which Veer at Lo Speed is applied is set by Constant Speed Trigger. Veer at High Speed: Is set to produce less veering at higher speeds. Value must be less than Veer at Low Speed. Speed at which Veer at High Speed is applied set by High Speed Reference.
		High Speed Reference: Sets point at which Veer at High Speed is applied. When wheelchair travels at speeds lower than this, veer is defined by graph between Veer at Low Speed and Veer at High Speed. For all speeds higher than High Speed Reference, amount of veer applied is the same as that set by Veer at High Speed.
		Enable Sleep Timeout : Determines whether system goes to sleep after a period without user activity.
©	Sleep Settings	Sleep Timeout Duration : Sets amount of time without user activity before system goes to sleep, if sleep is enabled.
		Enable User Input Wakeup : Determines whether deflecting joystick can wake system from sleep.

Lock Settings	Enable Lock : Determines whether system can be locked by pressing power button for four seconds.
	Cycle Profiles : User profile menu either cycles or stops at each end. Parameter determines, if profile menu can cycle around when stepping through it.
User Function Navigation	Profile Change uses last used function : Sets behavior of system to enter last used function of profile when particular profile is changed into.
	Attendant/Occupant priority: Selection for setting system user change restrictions. ¹
	Startup Function : Sets default user function on startup as either first user function of first profile or last used user function.
User Function Navigation See 10.10 Enable Indirect Navigation, page 101 for more information.	
Control Input/Output Settings	Activation Time: Sets maximum time between two button presses to be recognized as double press and minimum time to detect long button press. ²
Display Settings	User Clock Display Mode : Sets the display mode to the user clock to either 12 hour or 24 hour format.
	User Clock Offset Hours: Adjusts the display clock hour value to the time zone.
	User Clock Offset Minutes : Adjusts the display clock minutes value to the time zone.
	Language: Sets the language for text information on the display.
	Digital Speed Slider Interactivity : Sets whether the touch screen speed slider is able to be used in a system where it has the priority.
	Automatic Power Off: Enables the LiNX system to power down itself after 12 hours of user inactivity. Parameter is equivalent to pressing a power button.
Energy Use Settings	Low Power Mode Duration : Sets the time which the LiNX system will remain in low power mode after power off. Low power mode is used to monitor battery charging, allow for joystick wakeup from sleep, and to apply electronic braking to actuators.
	User Function Navigation User Function Navigation Control Input/Output Settings Display Settings

Risk of injury or damage

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



1

CAUTION!

Risk of injury or damage

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

A restricted user is an occupant or attendant that is prevented from being 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 user-in-charge at any time by pressing power button. However, for safety and other reasons, it may be appropriate to restrict the attendant or occupant from becoming user-in-charge after power-up. If restricted, any request to be user-in-charge is denied.

To restrict a user, set this parameter to:

- No Priority: Default
- Occupant Priority: to restrict attendant.
- Attendant Priority: to restrict occupant.
- No Change Allowed: to restrict attendant and occupant.
- 2 Parameter is used to distinguish between a single button press, a double-press and a long button press.



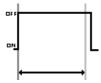
If duration time is less than Activation Time, input is detected as single press.



If duration of two button presses is greater than Activation Time, input is detected as two single presses.



If duration of two button presses is less than Activation Time, input is detected as double-press.



If duration of single button press is greater than Activation Time, input is detected as long press.

6 Suggested programming procedure



CAUTION! Risk of injury or damage

- Perform following procedure in a large open environment, preferably outdoors. Make sure wheelchair cannot crash into other people or objects.
- Be prepared for unexpected wheelchair movement in event of a faulty installation.
- If wheelchair becomes uncontrollable, perform an emergency stop by turning LiNX system off.

The following outlines a suggested programming procedure for setting up the LiNX system. It is not prescriptive and should be used as a guideline only.

The following chapters show the preferred order in which to program the parameters, what effects the parameters have on the wheelchair and also how the various parameters interact with each other.

- 1. Power-up test
- 2. Check motor orientation
- 3. Set load compensation
- 4. Adjust speed settings
- 5. Adjust acceleration settings

The programming procedure is suitable for LiNX systems with or without a LiNX Gyro module fitted.

 For gyro-based systems, perform steps 1–3 without the gyro connected and then steps 4 and 5 with gyro connected.

6.1 Step 1 – Power-up test

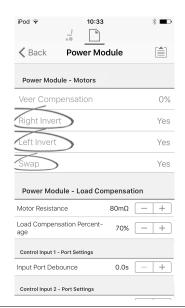
Before programming, ensure that the system powers up successfully. Press and release the power button on the remote module. The status indicator should light green.

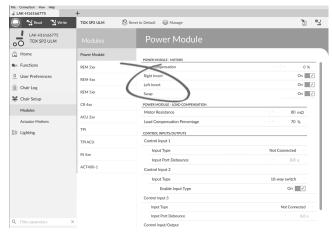
 $\begin{tabular}{ll} $ \label{eq:linear} \begin{tabular}{ll} $ \begin{tabular}{ll} $ If the battery cable or loom has not been correctly connected, the status indicator does not turn on. \end{tabular}$

If the status indicator flashes red, check the motors and park brakes as they may not have been connected properly. For more information about error codes, refer to the user manual of the remote.

6.2 Step 2 – Check motor orientation

Step 2 ensures that the motors are configured correctly. 1.





$\texttt{Open Chair Setup} \rightarrow \texttt{Modules} \rightarrow \texttt{Power Module}.$

Check for Motor Inversion

To detect motor inversion, deflect joystick slightly forwards.

- If wheelchair moves backwards instead of forwards, toggle both Left Invert and Right Invert parameters.
- If wheelchair turns on the spot, only one motor is inverted. To begin with, just toggle Left Invert parameter and deflect joystick forwards again. If wheelchair moves backwards, wheelchair now has both motors inverted. Toggle Left Invert and Right Invert parameters to fix this issue.

Before continuing, make sure that wheelchair moves correctly forwards and backwards.

Check for Motor Swap

To detect motor swap, deflect joystick to left. If wheelchair moves right, toggle **Swap** parameter.

Before continuing, make sure that wheelchair moves correctly forwards, backwards, left and right.

6.3 Step 3 – Set load compensation

Load compensation relies on accurate motor resistance values to work effectively. The motor resistance values can

be calculated manually, from observation, or automatically with Adaptive Load Compensation (ALC).

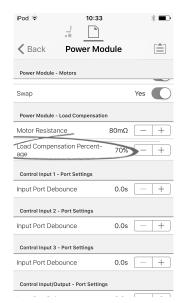
 $\begin{tabular}{ll} \hline $$ Invacare recommends adding the motor resistance values automatically, using Adaptive Load Compensation. Adaptive Load Compensation is a process that learns the resistance value of each motor automatically, individually and with $$m\Omega$ accuracy. Because a separate and accurate resistance value is applied to each motor, the wheelchair's drive performance is significantly improved. $$$

Adaptive Load Compensation is enabled by default, so the Motor Resistance parameter value is not used.

For more information about ALC Calibration application with iOS tool, refer to 6.3.1 Calibrating Adaptive Load Compensation (iOS tool), page 57.

For more information about ALC Calibration application with PC tool, refer to 6.3.2 Calibrating Adaptive Load Compensation (PC tool), page 58.

After learning the motor resistance values with ALC Calibration application, drive the wheelchair and observe its performance over various surfaces and at different speeds.



🔵 🔧 Read 🛛 🎇 Write	TDX SP2 ULM	🙁 Reset to Default 🛛 😂 Manage	2
LAK-H16166775 TDX SP2 ULM	Modules	Power Module	
Home	Power Module	POWER MODULE - MOTORS	
Functions	REM 2xx	Veer Compensation	- + 0%
 User Preferences 	REM 4xx	Right Invert	On 📝
Chair Log		Left Invert	On 📝
Chair Setup	REM 5xx	Swap	On 📝
	CR 4xx	POWER MODULE - LOAD COMPENSATION	
Modules	ACU 2xx	Motor Resistance	- + 68 mΩ
Actuator Motions	ACO 2XX	Load Compensation Percentage	- + 70 %
Lighting	TPI	CONTROL INPUTS/OUTPUTS	
	TPLACU	Control Input 1	
		Input Type	Not Connected
	IN 5xx	Input Port Debounce	- + 0.0 s
	ACT400-1	Control Input 2	
		Input Port Debounce	- + 0.0 s
		Control Input 3	
		Input Type	Not Connected

Open Chair Setup -> Modules -> Power Module.

If the wheelchair does not perform as desired, the effect of the adaptive load compensation can be adjusted using the **Load Compensation Percentage** parameter:

- reduce value of this parameter if wheelchair drives more aggressively than anticipated.
- increase value of this parameter if wheelchair drives more sluggish than anticipated.
- $\frac{1}{2}$ Load Compensation Percentage is only applied
- when Adaptive Load Comp Enabled is set to on.

6.3.1 Calibrating Adaptive Load Compensation (iOS tool)

- If the electronics or the motors have been changed, you need to calibrate the Adaptive Load Compensation (ALC).
- 1. From Home screen click on Chair Setup.
- 2. Click on Power Module.

	iPod ♀ 12:59			
	▲ Back Power Module			
	Power Module - Motors			
	• Veer Compensa- tion 0% - +			
	Right Invert No			
	Left Invert No			
	Swap Yes			
	Power Module - Load Compensation			
	• Motor Resis- tance 135m Ω - +			
	Go to ALC Calibration			
	Control Inputs/Outputs 1 - Port Settings			
Click on Co	Output Port Mode Disabled			
Click on Go To ALC Calibration.				
	iPod 중 12:13 ⅔ 🗰 ≁			
	Power Module Adaptive Load Comp			
	Motor 1			
	Finished			
	153mΩ			
	Motor 2			
	Finished			
	156mΩ			
	Start Tuning			
	Drive the chair until both the left and right motor compensation			

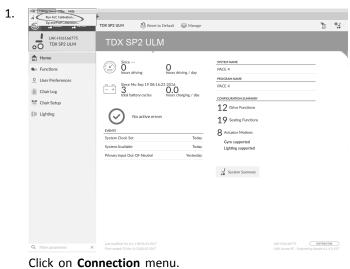
Tap on Start Tuning.

5.

6. Follow instructions on the screen.

6.3.2 Calibrating Adaptive Load Compensation (PC tool)

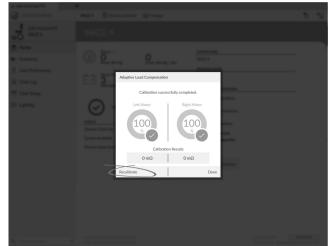
 $\underbrace{\mathring{l}}_{\underline{l}} \quad \mbox{ If the electronics or the motors have been changed, you need to calibrate the Adaptive Load Compensation (ALC). }$



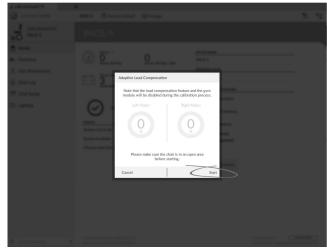
Select **Run ALC Calibration**.

2.

3.



Click on Recalibrate.



Click on Start.



Drive chair until both left and right motor compensation processes have been completed.



Click on Done.

6.4 Step 4 – Adjust Speed Settings

The following parameters must be set for each drive function.

iPod 08:09	* 🖚
K Back D1	
General	
Drive Function Name	D1
Enable Drive Function	Yes
Function User Input Profile	e User Input
Navigation Timeout Enabled	No
Forward	
Max Forward Speed	30%
Min Forward Speed	20%
Forward Acceleration	70%
Forward Deceleration	60%

Fig. 6-1

🔵 😽 Read 🛛 🎇 Write	🐿 🕫 🗋 🗙	TDX SP2 ULM 😵 Reset to Default 😂 Manage	Ì.
LAK-H16166775 TDX SP2 ULM		REM400 Slow	
Home	Drive REM216	GENERAL	
Functions		Drive Function Name	REM400 Stor
User Preferences	REM216 Drive	Enable Drive Function	On
Chair Log		Function User Input	Profile User Input (RE
	 Seating REM216 	Navigation Timeout Enabled	Off ×
Chair Setup	REM216 Seating	FORWARD	
Lighting		Max Forward Speed	- + 30 %
	Drive REM400	Min Forward Speed	- + 20 %
	REM400 Slow	Forward Acceleration	- + 80 %
		Forward Deceleration	100 %
	REM400 Slower	REVERSE	
	REM400 Medium	Max Reverse Speed	- + 30 %
	REM400 East	Min Reverse Speed	- + 28 %
	here of the second seco	Reverse Acceleration	100 %
	REM400 Faster	Reverse Deceleration	100 %
		TURN	
	 Seating REM400 	Tum Boost at Max Speed	- + 200 %
	REM400 Tilt	Max Turn Speed	- + 50 %
	REM400 Recline	Min Turn Speed	- + 40 %
	NEWFOO NOCIDE	Turn Acceleration	- 100 %
	REM400 LH Leg	Turn Deceleration	- 100 %
Filter parameters	× PEM400 PH Let	STARLITY	

1. Open **Functions** -> open desired drive function.

Adjust forward speed

Top speed of wheelchair can be reduced if desired. Set speed dial or slider to maximum and deflect joystick forward. Adjust **Max Forward Speed** parameter until forward speed seems like comfortable value.

Adjust reverse speed

There is nothing physically preventing motors from driving at same speed in reverse as forward. Set speed dial or slider to maximum and deflect joystick in reverse. Adjust **Max Reverse Speed** parameter to set how fast wheelchair drives in reverse for comfortable and safe ride. Default is 50 % of maximum forward speed.

Adjust minimum drive speeds

Set speed dial or slider to minimum and deflect joystick fully forward. Adjust **Min Forward speed** until desired minimum forward speed is reached.

Set speed dial or slider to minimum and deflect joystick fully in reverse. Adjust **Min Reverse speed** until desired minimum reversing speed is reached.

Adjust turn speed

Set speed dial or slider to maximum and deflect joystick either left or right to turn wheelchair on spot. Wait until wheelchair reaches a steady turning speed. Adjust **Max Turn Speed** parameter until turn speed seems like a comfortable maximum.

Set speed dial or slider to minimum position to adjust **Min Turn Speed**.

Adjust veer compensation

If wheelchair's motors do not perform exactly the same as each other, wheelchair does not drive in a straight line. To compensate differences between motors, adjust **Veer Compensation** parameter.

1		
L	•	

iPod ᅙ	10:33		* 🔳
🗸 Back	Power Mc	dule	
Power Module	Motors		
Veer Compens	ation	0%	- +
Right Invert			Yes 💽
Left Invert			Yes 💽
Swap			Yes
Power Module - I	Load Compensatio	on	
Motor Resistan	се	80mΩ	- +
Load Compens age	ation Percent-	70%	- +
Control Input 1 -	Port Settings		
Input Port Deb	ounce	0.0s	- +
Control Input 2 -	Port Settings		
	ounce	0.0s	- +

🧋 LAK-H16166775	+			
🔵 😪 Read 🛛 🎇 Write	TDX SP2 ULM	😓 Reset to Default 🛛 😂 Manage		1 0 0
LAK-H16166775 TDX SP2 ULM	Modules	Power Module		
Home	Power Module	POWER MODULE - DRIVING		
Functions	REM 2xx	Veer Compensation	- +	0 %
0 User Preferences	REM 4xx	Right Invert		On 🗸
Chair Log		Left Invert		On 🗸
Chair Setup	REM 5xx	Swap		On 🗸
	CR 4xx	POWER MODULE - SWITCHED DRIVING		
Modules	ACU 2xx	Constant Speed Trigger		10 %
Actuator Motions	ACU 2xx	Veer at low speed		15.00 °
Lighting	TPI	Veer at High Speed		2.50 °
	TPLACU	High Speed Reference		50 %
		POWER MODULE - LOAD COMPENSATION		

Fig. 6-4

Open Chair Setup \rightarrow Modules \rightarrow Power Module.

6.5 Step 5 – Adjust acceleration settings

The following parameters must be set for each drive function.

iPod	08:09	* 📼
🗸 Back	D1	
General		
Drive Functio Name	'n	D1
Enable Drive	Function	Yes
Function Use	r Input Profile	User Input
Navigation Ti	meout Enabled	No
Forward		
Max Forward	Speed	30%
Min Forward	Speed	20%
Forward Acc	eleration	70%
Forward Dec	eleration	60%

🔵 🐈 Read 🥰 Write	🐝 🖺 X	TDX SP2 ULM SReset to Default Manage	2
LAK-H16166775 TDX SP2 ULM		REM400 Slow	
j Home	Drive REM216	GENERAL	
Functions	CONVERENTIZIO	GENERAL Drive Function Name	REM400 Slow
User Preferences	REM216 Drive	Enable Drive Function	On 🗸
Chair Log		Function User Input	Profile User Input (RE
-	Seating REM216	Navigation Timeout Enabled	Off ×
Chair Setup	REM216 Seating	FORWARD	
Lighting		Max Forward Speed	- + 30 %
	C Drive REM400	Min Forward Speed	20 %
	REM400 Slow	Forward Acceleration	- + 80 %
		Forward Deceleration	= 100 %
	REM400 Slower	REVERSE	
	REM400 Medium	Max Reverse Speed	- + 30 %
	REM400 Fast	Min Reverse Speed	- + 28 %
		Reverse Acceleration	100 %
	REM400 Faster	Reverse Deceleration	100 %
		TURN	
	Seating REM400	Turn Boost at Max Speed	- + 200 %
	REM400 Tilt	Max Turn Speed	- + 50 %
	REM400 Recline	Min Turn Speed	- + 40 %
	NEWFOOD NACHINE	Turn Acceleration	- 100 %
	REM400 LH Leg	Tum Deceleration	- 100 %

1. Open **Functions** -> open desired drive function.

Adjust forward acceleration

Set speed dial or slider to maximum and deflect joystick fully forward. Wait until wheelchair reaches steady

forwards speed. Adjust **Forward Acceleration** parameter if wheelchair gets up to steady speed too quickly or slowly. Repeat until acceleration feels comfortable and safe.

Adjust forward deceleration

To set deceleration rate in forward direction, release joystick once wheelchair has reached steady forward speed. Adjust **Forward Deceleration** parameter if wheelchair slows down too quickly or slowly. Repeat until deceleration feels comfortable and safe.

Adjust reverse acceleration

Set speed dial or slider to maximum and deflect joystick fully in reverse. Wait until wheelchair reaches steady reverse speed. Adjust **Reverse Acceleration** parameter if wheelchair gets up to steady speed too quickly or slowly. Repeat until acceleration feels comfortable and safe.

Adjust reverse deceleration

To set deceleration rate in reverse direction, release joystick once wheelchair has reached steady reverse speed. Adjust **Reverse Deceleration** parameter if wheelchair slows down too quickly or slowly. Repeat until deceleration feels comfortable and safe.

Adjust turn acceleration

Set speed dial or slider to maximum and deflect joystick either left or right to turn wheelchair on spot. Wait until wheelchair reaches steady turning speed. Adjust **Turn Acceleration** parameter if wheelchair gets up to steady turning speed too quickly or slowly. Repeat until acceleration feels comfortable and safe.

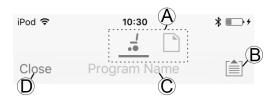
Adjust turn deceleration

To set deceleration rate when turning, release joystick once wheelchair has reached steady turning speed. Adjust **Turn Deceleration** parameter if wheelchair slows down too quickly or slowly. Repeat until deceleration feels comfortable and safe.

7 Using the LiNX Access iOS tool

7.1 Navigation bar

The navigation bar is located at the top of each screen. The content of the navigation bar changes depending on the screen you are viewing.

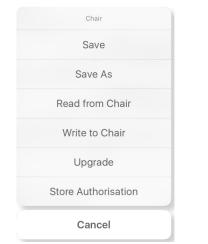


- Ontext switch (switch between connection and file context mode)
 Ontext mode
 Ontext mode
 Ontext mode
 Ontext mode
 Ontext mode
 Ontext
 Ontext
- B Application menu button (edit button)
- © Program name / screen name
- $\ensuremath{\mathbb{D}}$ Close / navigate to previous screen

7.1.1 Application menu

The content of the application menu changes depending in which context mode you are working with: **Connection context** or **File context**.

Connection context



To work on a connected wheelchair, select **Connection context**. If you are not connected to a LiNX system the **Connect to device** screen is displayed. Otherwise, the last screen that you were working with, is displayed.

The following options are available in connection context:

- Save save the configuration as a LiNX configuration file (.lci)
- Save As save the configuration as a LiNX configuration file (.lci) with a different name
- Read from Chair read the configuration from the connected LiNX system
- Write to Chair write the configuration to the connected LiNX system
- **Upgrade** go to firmware upgrade mode
- Store authorization store an Access Level Certificate

File context

Chair	
Save	
Save As	
Write to Chair	
Cancel	

To work on a saved file, select **File context**. If you do not have a file open, the **Load from file** screen is displayed. Otherwise, the last screen that you were working on is displayed.

The following options are available in file context:

- Save save the configuration as a LiNX configuration file (.lci)
- Save As save the configuration as a LiNX configuration file (.lci) with a different name
- Write to Chair write the configuration to the connected LiNX system

Selecting context mode



Click on the context switch at any time to toggle between **Connection context** and **File context**. The selected context displays a colored bar beneath the context switch icon.

7.1.2 Changing Program Name

By default, the program name and system name are composed of the wheelchair configuration. See 12 Structure of Program Names, page 113

The program name can be changed to a more familiar name.

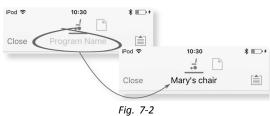


Fig. 7-1 Example of a standard program name. Marked areas and callouts correspond to the rules for program naming.

The program name in the picture was generated using the rules for program naming valid up to July 2018. It is for a Center Wheel drive TDX SP2 with a DLX-PM120AL, 8 km/h, seat lifter with powered tilt and CoG shift, REM1XX or REM2XX remote and LED light. The revision of the file is 00.

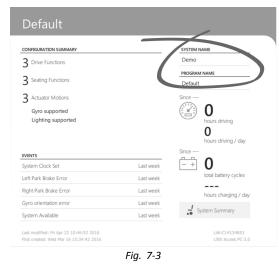
- $\begin{tabular}{ll} \widehat{l} & The new program name is saved depending on the mode you are working in. \end{tabular}$
 - If you are working in Connection context and Live edit mode, changes are automatically written to the wheelchair.
 - If you are working in Connection context and Bulk edit mode, click on Write button to save changes.
 - If you are working in **File context**, click on **Save** button to save changes.

iOS Tool



- 1. Click on **Program Name** in the navigation bar a keyboard is displayed.
- 2. Edit program name.
- 3. Click Return.

PC Tool



- 1. From Home screen click on Program Name text box.
- 2. Edit program name.

7.2 Home screen

iPod ≎	11:13	*∎⊃
Close	R03F10A1A00L-00	
	😂 Chair Configs	
	🐉 Restore to Default Config	
	R03F10A1A00L-00	
	Program Name	
	R03F06A3A00L-00	
	System Name	
(No active errors 0 hours since last event	>
Ü	Live Diagnostics	>
	System Summary	>
DRIV	E FUNCTIONS	
Brat		

The **Home** screen is the first screen you see after connecting to a wheelchair or opening a configuration file. From the **Home** screen you can access the following programming and information screens:

- Chair configurations
- Active errors / Chair Log
- Live diagnostics (only in Connection context mode)
- System Summary
- Drive functions
- Seating functions
- User preferences
- Chair setup

7.3 Connection context actions



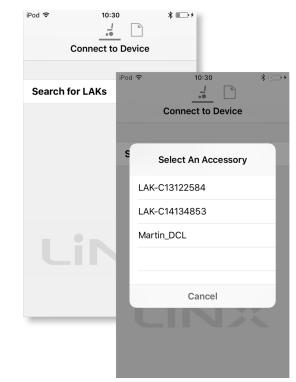
The following tasks are only relevant for the **Connection context** mode. For tasks related to the **File context** mode, refer to 7.4 *File context actions, page 66*.

7.3.1 Connect to device screen

The **Connect to device** screen is displayed when you are in **Connection context** before connecting to a LiNX system. From this screen you can search for and connect to a LiNX Access Key (LAK).

Connecting the LiNX Access iOS tool with a wheelchair

- 1. Power up LiNX wheelchair system.
- 2. Insert LiNX Access Key into the remote module.
- 3. Open LiNX Access iOS tool application.
- 4. Select Connection context mode.



Click on **Search for LAKs** and select one from dialogue box **Select an Accessory**.

6. A **Warning** screen is displayed. Read the warning and click on **I** Agree button to continue.

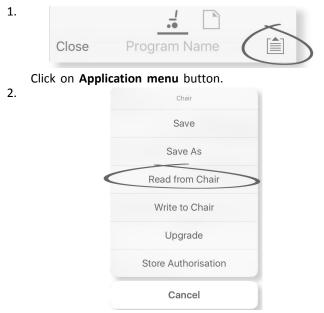
Disconnecting

5.



Click on Close button.

7.3.2 Reading a program from the wheelchair



Select Read from Chair.

7.3.3 Restoring Default Wheelchair Configurations

The factory set-up for the power module provides one wheelchair configuration. If you order a power module as a spare part, it is provided with up to eight wheelchair configurations. Select the one you need.

- 1. Click on **Chair Configs** at the top of **Home** Screen. **Chair config** screen is displayed.
- 2. Click on named wheelchair configuration. A **Warning** screen is displayed.
- 3. Click on Yes to proceed with the selection.
- 4. Click on **Back** to return to**Home** screen.
 - $\overset{\circ}{\mathbb{I}}$ When a new wheelchair configuration is selected,
 - the system automatically power cycles before the wheelchair configuration becomes active.

7.3.4 Converting Configuration Files

Using older configuration files on wheelchairs can result in missing features which were introduced in later revisions of firmware, such as Switch Control. In most cases, converting these configuration files allows you to update user's configuration to latest release to enable all features.

- $\begin{tabular}{ll} $ In case configuration file is on current revision or incompatible, menu entry is shown greyed out. \end{tabular}$
- 1. Connect with wheelchair.
- 2. Open Application menu.
- 3.

iPod 🗢 Close	11:10	* = Default 1
	Design Dept D	efault 1
	Program Na	ame
	Design Dept D	Default
	Save	
	Save A	S
	Convert Confi	guration
	Write to C	
	Cance	
_	ounoo	

Fig. 7-4

Tap on entry **Convert Configuration** and follow screen prompts.

7.3.5 Modifying a Program

To modify a program, first select a parameter from one of the parameter sections listed on the **Home** screen:

- Drive functions
- Seating functions
- User preferences
- Chair setup

Parameters can be modified numerically or graphically, refer to 10 Modifying wheelchair configuration with PC tool, page 93.

Parameters can be modified in live edit mode or in bulk edit mode.

Live Edit Mode

- When in live edit mode, changes to parameters will take immediate effect, changing the performance of the wheelchair immediately.
- There is no function to undo a change in live edit mode, so make sure, you save a copy of the existing program so that you can restore settings if you need to.



Certain parameters can be updated in live edit mode. These are identified by a circular icon in front of the parameter name.

Live edit mode allows certain parameters to be written to the controller immediately. This is useful for speeding up the process of setting up or testing various applications and scenarios.

Bulk Edit Mode

Forward			
Max Forwa	70%		
Only acces	Unlock		
Low	Default	High	
35%	100%	100%	
Sets the maximum forward speed of the wheelchair.			
	Fia. 7-6		

Certain parameters can only be edited in bulk edit mode. These are identified by a colored background. To edit these parameters, bulk edit mode must be unlocked before proceeding.

In bulk edit mode, parameters are not written to the controller immediately. They are written to the controller, when you select **Write to Chair**, refer to 7.3.6 Writing a program to the wheelchair, page 64.

By default, live edit mode is enabled every time the system is powered up, including after a power cycle. The application remains in live edit mode until bulk edit mode is unlocked. At this point the application changes to bulk edit mode while live edit mode is disabled. The application remains in bulk edit mode until the system is power-cycled.

7.3.6 Writing a program to the wheelchair

 $\label{eq:linear} \overset{\circ}{\underline{\mathbb{I}}} \qquad \mbox{This feature is only available when a wheelchair is connected.}$

iPod 穼	10:30 * · · · ·
Close	
	Chair
	Save
	Save As
	Read from Chair
<	Write to Chair
	Upgrade
	Store Authorisation
	Cancel

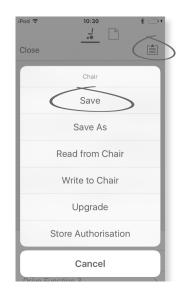
- 1. Click on Application menu button.
- 2. Select Write to Chair.

After writing to the wheelchair, the LiNX Access tool cycles the system's power and automatically reconnects to the system.

The **Application menu** dialogue in this picture shows all available options, when you are in **Connection context**. In **File context** the selection is more limited.

7.3.7 Saving programs

Using Save



- 1. Click on Application menu button.
- 2. Select Save.



When using **Connection context mode**, a **Save As** menu opens up automatically. Enter a file name or the program prompts the current program name with "-1" if already existing.

- After saving the program, the LiNX Access tool displays a message with the file's name and that saving was successful.
- 5. Click on **Dismiss** to remove the message and continue.
- All files are saved with a .lci extension. If the Program name has been set, then the file is saved with the Program Name. If not, the file is saved with a date /time stamp as follows:

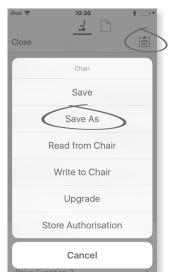
YYYYMMDD-HHMMSS.lci (YYYY is year, MM is month, DD is day, HH is hour, MM is minute, SS is second). Subsequent saves will retain the last saved file name and overwrite previously saved files. To save a file without overwriting an existing file, us Save As, refer to .

The **Application menu** dialogue in this picture shows all available options, when you are in **Connection context**. In **File context** the selection is more limited.

Using Save As

3.

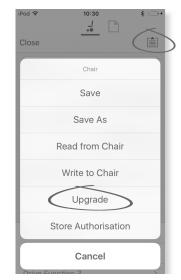
To save a program as file with a different name.



- 1. Click on Application menu button.
- Select Save As. After saving the program, the LiNX Access tool displays a message with the file's name and that saving was successful.
- 3. Click on **Dismiss** to remove the message and continue.

- All files are saved with a .lci extension. If the file has not been saved before, and if the program name has been set, then the file is saved with the program name. If the file has been saved before with the program name, then the file is saved with a numerical value appended to the program name. If the program name has been set, then the file is saved with the program name. If not, the file is saved with the program name. If not, the file is saved with a date / time stamp as follows: YYYYMMDD-HHMMSS.lci (YYYY is year, MM is month, DD is day, HH is hour, MM is minute, SS is second).
- The **Application menu** dialogue in this picture shows all available options, when you are in **Connection context**. In **File context** the selection is more limited.

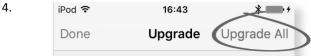
7.3.8 Upgrading firmware



- 1. Click on Application menu button.
- Click on Upgrade. The screen displays Entering Firmware Upgrade Mode – please wait.... If the connected modules are up to date, the screen displays FIRMWARE UP TO DATE with a list of the connected modules and their respective versions. If one or more modules need upgrading, these is displayed under NEW FIRMWARE AVAILABLE.



If no modules require upgrading, click **Done** button to finish.



If one or more modules require upgrading, click on single module to upgrade it or click on **Upgrade All** button.

During a module upgrade, a progress bar is displayed. Once the upgrade has completed, its status is displayed (succeeded or failed) to the side of the module name.

5. Click **Done** button to finish.

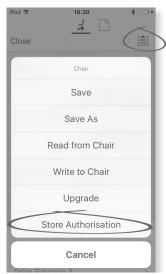
7.3.9 Storing the LAK certificate

The Access Level Certificate determines how you view and edit offline programs (.lci files) when in the File context mode. The Access Level Certificate is taken from a connected LiNX Access Key and provides the levels to your stored files.

To edit your files with a distributor's access level, you will need to store an **Access Level Certificate** from a distributor-level LiNX Access Key.

If you do not store your **Access Level Certificate** from your LiNX Access Key, you have read-only access to your stored files and you are not able to edit them.

Storing the certificate



- 1. Connect to LiNX system.
- 2. Click on Application menu button.
- 3. Select **Store Authorisation** option. A message is displayed showing how many authorizations remain and if you want to continue. LiNX Access Keys only permit three **Store Authorisation** operations.
- 4. Click on **Store option** to continue or **Don't store** to cancel the action.
- If the LiNX Access iOS tool application is removed from your iOS device, the Access Level Certificate is lost.

7.4 File context actions



The following tasks are only relevant when in the **File context** mode. For tasks related to the **Connection context** mode, refer to 7.3 *Connection context actions, page 62*.

7.4.1 Load from file screen

iPod 🗢	10::	30]	* • +	
	Load Fro	om File	Edit	
		iPod 🗢	10:30	\$ ■>+
			Load From File	Edit
		Indoor -	- home-1.lci 6, 10:10	>
		Indoor 15/03/201	- home-2.lci 6, 10:10	>
		Indoor 15/03/201	- home.lci 6, 10:09	>
		Indoor. 15/03/201		>
		ads.lci	6, 10:07	>

The **Load from file** screen is displayed when you are in **File context** before opening a file. If LiNX configuration files (.lci) exist on your device, then they are displayed. From this screen you can:

- View the available configuration files
- Open a configuration file for editing
- E-mail a configuration file
- Delete a configuration file

7.4.2 Writing Bundle Files

Bundle files can be written to a connected chair. Bundle files can include wheelchair configurations and/or firmware files.

^{iPod} 奈 Done C12H10A	10:58	* • + A cb
Programs		B
C12H10A9B01X- C12H10A9B01X-04	04	0
Power Module F	irmware	C
DLX-PM120-B DLX-PM120AL-A DLX-PM120AL-A DLX-PM60-B DLX-PM60AL-A DLX-PM60AL-B DLX-PM75-B DLX-PM75AL-A DLX-PM75AL-A	App ID 23	3 : 4.3.4 ()
Remote Module	Firmware	
DLX-ACU200-A	App ID 46	6 : 4.3.2 🕓
DLX-CR400-A	App ID 52 Fig. 7-7	2 : 4.3.2 🕓

1. Connect wheelchair.

- 2. Select File connection screen.
- 3. Choose bundle file from list displayed in Load From File screen.
- 4.
- Ensure to select the correct configuration. A wrong configuration can lead to unexpected behaviour and failures. For more information about the rules for program naming, see 12 Structure of Program Names, page 113

Select preferred configuration from section ^B.

- 5. Check included firmware versions of components in section © and below.
- 6. Write bundle file to wheelchair. Click button (A) and wait until overlay Writing Bundle disappears.
- 7. Click button Done to return to File connection screen.

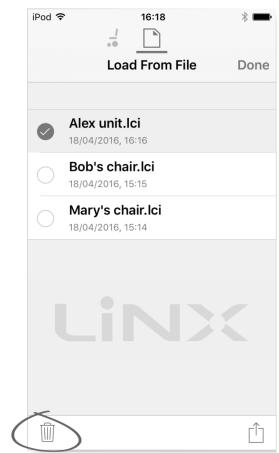
7.4.3 Opening files

iPod 🗢 10:30	⊁ □
Load From File	Edit
Indoor - home-1.lci 15/03/2016, 10:10	>
Indoor - home-2.lci 15/03/2016, 10:10	>
Indoor - home.lci 15/03/2016, 10:09	>
Indoor.lci 15/03/2016, 10:22	>
ads.lci 15/03/2016, 10:07	>

- 1. Select File connection screen.
- 2. Choose file from the list displayed in the Load From File screen.

For information about saving files and writing to a wheelchair refer to 9.5.4 Save a program as a file, page 89 and 7.3.6 Writing a program to the wheelchair, page 64.

7.4.4 Deleting files



1. Select Edit from Load from File screen.

2. Select one or more files from the file list.

- 3. Click on trash can icon at the bottom of the screen.
- 4. Click on **Done** to finish.

7.4.5 E-mailing files

1.	iP	od 穼	10:30	* 💷 +
			_/ `	
			Load From File	Edit
2.			from Load From File scree or more files from file list.	
3.		iPod 🧟	• 16:18 • •	*
			Load From File	Done
			Alex unit.lci	
			18/04/2016, 16:16	
		\bigcirc	Bob's chair.lci 18/04/2016, 15:15	
		\bigcirc	Mary's chair.lci 18/04/2016, 15:14	
				\sim
	Click		nail hutton	

Click on E-mail button.

iPod 🜩	12:11 Load From File Done
	AirDrop . Tap to turn on Wi-Fi and Bluetooth to share with AirDrop.
Mail	Add to Notes Import with LiNX Access
Add To iCloud Drive	More
C 0	Cancel

The iOS Share Sheet opens up. Select desired option.

iPod 🗢 16:19 🕴 🛲

5.

4.

Cancel	New Message	Send
To:		
Cc/Bcc:		
Subject:		
Alex unit.lci		
Sent from	my iPod	

If you choose your mail client, selected program files are added as attachments to e-mail. Complete e-mail and click on **Send**.

6. Click on **Done** to finish.

8 Modifying wheelchair configuration with iOS tool

8.1 Profile And Function Actions

In bulk edit mode:

- profiles can be added and deleted,
- functions can be added, deleted, duplicated and moved.
- A system always includes a REM2xx Drive Function profile and a REM2xx Seating Function profile. These cannot be moved or deleted.

Screen Overview

1.

2.

en Overview					
	iPod 후		:20	*	
	Close	_	CE 4	[
		System Summa	ry		>
		Fund	ctions	Ed	it
		Drive REM21	6	REM 2xx	>
	ARRIVAL	REM216 Driv	/e	REM 2xx	>
		Seating REM	216	REM 2xx	>
	ŕ	REM216 Sea	iting	REM 2xx	>
		Drive REM40	0	(REM 4xx)	>
	A ^{CENT}	REM400 Slo	w	(REM 4xx)	>
	\bigcirc	Nead		💘 Wri	te
Tap Edit in fu	unctio	ons title b	oar.		
	iPod ᅙ	1′	1:21	*	
	Cance	Func	ctions	D	one
		<i>≰</i> ™ REM40	0 Slow(RE)	
	•	REM40	0 Fast	RE	
	•	REM40	0 Medi	umR	
	+B	Add Function			
	+ C	Add Profile			
		Connectivity		REM 4xx	
	•	Mouse	Mover(RE	
	PC	REM 4xx		Dele	ete
	Ð	Add Function			
	Ð	Add Profile			
		Seating REM	400	REM 4xx	

Select desired profile or function action.

- A Delete function or profile
- B Add function
- © Add profile
- 3. Tap Done to return to Home screen.

Add Profile

1. Tap on icon ©.

iPod	13:26	* ■⊃
Cancel	Title	
Name		Name
Please select U	Jser Input	
REM 2xx		
REM 4xx		
CR 4xx		
TPI		
IN 5xx		

Enter profile name.

- Select **User Input**. 2. Add function to profile.
- Tap **Done** to return to **Home** screen.

 $\underbrace{\overset{\circ}{\mathbb{I}}}_{\text{Invertion}} \text{ User Navigation Error is displayed as long as no function is added to the new profile.}$

Add new Function

- 1. Tap on icon [®].
- 2.

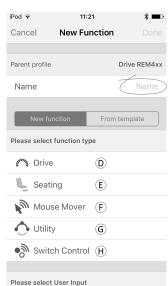


Fig. 8-1

Enter function name.

- 3. Select function type.
 - Tap on icon D to add drive function.
 - Tap on icon E to add seating function.
 - Tap on icon \bigcirc to add mouse mover function.
 - Tap on icon \mathbb{G} to add utility function. Tap on icon \mathbb{H} to add switch control function.

Ancel New Function			
Seating			
a? -			
2			
Mouse Mover	\checkmark		
🔿 Utility			
Switch Control			
ease select User Input			
Follow Profile			
REM 4xx			
CR 4xx			
ГРІ			
IN 5xx			

Select User Input. Tap Done.

5. Tap Done to return to Home screen.

For more information about modifying the drive parameters, see 8.3 *Modifying drive parameters graphically, page 72*.

For more information about modifying the seating parameters, see *8.8 Modifying Seating Parameters, page 74*.

For more information about setting up a mouse mover or switch control, see user manual of remote.

Add new Function From Template

- 1. Tap on icon ^B.
- 2. Enter function name.
- 3.
- Enter function fidil



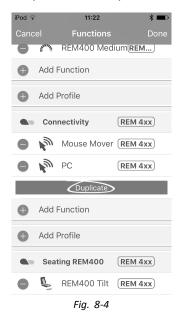
Fig. 8-3

Tap **From template**. Select desired template. Tap **Done**.

Duplicate Function

1. Tap on function you want to duplicate.

2.





duplicated function appears directly under original function.

Move Function

1.

Functions can be reordered by dragging and dropping inside a profile or between profiles.

1:24 Add Profile Drive REM400 REM 4x REM400 SlowRE... 100 REM400 Fast RE... Search . REM400 Medium Add Function 0 Add Profile • Connectivity REM 4xx Jan 1 Mouse Mover RE... 1 PC REM 4xx Fig. 8-5

Tap and hold function you want to move. Function moves slightly up and to the right.

2. Drag function to required position in same or another profile.

Delete Function or Profile

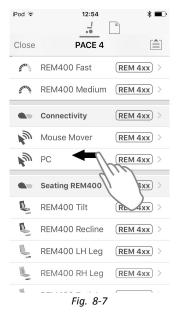
 $\underbrace{\mathring{l}}_{\underline{l}} \qquad \text{A profile cannot be deleted until its functions are deleted.}$

- 1. Select function or profile you want to delete.
- 2. Tap on icon A.
- 3.
- 11:21 * 🔳 od a REM400 SlowRE... 8 $\mathbf{f}^{(1)} \in$ REM400 Fast RE... ART. REM400 Medium ATTER Add Function Add Profile æ Connectivity REM 4xx Mouse Mover RE... 8 Delete PC REM 4xx Add Function C Add Profile Seating REM400 REM 4xx Fig. 8-6

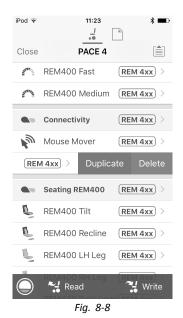
Confirm action with tapping **Delete** button that appears next to function or profile.

Delete or Duplicate Function (Quick Access)

- 1. Select function you want to delete or duplicate from **Home** screen.
- 2.

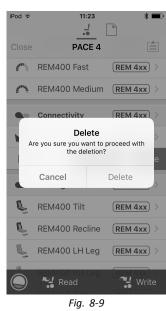


Tap and pull function to left.



Tap Duplicate or Delete.

4.



Confirm, if you want to delete function. Otherwise, click **Cancel**

8.2 Modifying function and profile names

Function names

2.

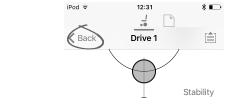
iPod 🗟 14	l:35	D iPod ♀ 14:38 * ■⊃
K Back Dri	ve 1	K Back Tilt
		General
\langle	Stability	Input Mode Eorward/Reverse V
	Stability	Seating Function Tilt
General		Enable Seating Function Yes
Drive Function Name	Drive 1	Invert Seating Function No
Forward		Axis
Max Forward Speed	40% - +	Motion Tilt 🍾 🗸
Min Forward Speed	10% - +	Operation Proportional V
Eonward Accelera-		Speed 100% - +
O 🚼 Read	80% 🔧 Write	

1. Open Drive or Seating function. Tap on field with function name.

iPo	od 🗢	12:31	* 🕞
<	Back	Drive 1	
		\bigcirc	Stability
G	eneral		
-	rive Function lame		Drive 1
0	only accessible	in Bulk Moc	le Unlock
	lame for the current ndoor Slow	Drive User Fun	ction. e.g.
Fo	orward		
٥	Max Forward Speed	40%	- +
0	Min Forward	10%	- +]

Unlock **Bulk Mode** before modifying the name.

Enter new name.
 4. iPod ♀





Profile names

1.

iPod 🗢	08:26		* 📖
✓ PACE 4	Profile		
General			
Profile Name		\leq	Profile
Enable Profile		Yes	
Profile User Inp	out REM	4xx se	ries 🗸
Enable Functio	n Wrap	No	0
Enable Menu S	can	No	\bigcirc

\bigcirc	🛀 Read	<u>ب</u> و ••	Write
 _	<i>c</i>		-

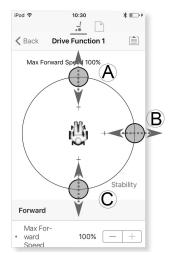
Open profile. Tap on field with function name.

- 2. Enter new name.
- 3. Tap on Back.

8.3 Modifying drive parameters graphically

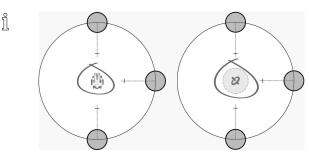
A number of drive parameters can be edited graphically only with the iOS Access Tool. The speed graph is shown at the top of the parameter list. All other graphs are accessed from this screen, as detailed in the following sections.

Editing speed settings



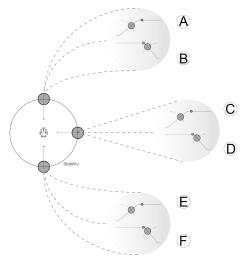
The Speed graph allows you to adjust:

- Maximum Forward Speed A
- Maximum Turn Speed B
- Maximum Reverse Speed ©
- 1. Tap and drag the colored circles inwards or outwards to decrease or increase parameter values.
 - $\underbrace{\overset{\circ}{\amalg}}_{\text{II}} \quad \mbox{The exact value for each parameter is shown at the top of the screen when adjusting the parameter and it is also displayed in the parameter list.$



If a gyro module is enabled, the graphic in the center of the graph changes from a person in a wheelchair to a gyroscope to indicate that the parameter being changed are gyro-specific.

Editing acceleration / deceleration settings



The acceleration / deceleration parameters are only accessible through the Speed graph screen. To edit one of the acceleration or deceleration settings, press and hold one of the colored circles in the Speed graph screen.

- Press and hold the Max Forward Speed circle to be taken to the Forward acceleration (A) / deceleration (B) screen.
- Press and hold the **Max Turn Speed** circle to be taken to the Turn acceleration © / deceleration © screen.
- Press and hold the Max Reverse Speed circle to be taken to the Reverse acceleration (E) / deceleration (E) screen.

For each acceleration / deceleration parameter, the acceleration value can be modified with the upper graph, the deceleration value can be modified with the lower graph.

1. Press and drag the colored circles to decrease or increase the parameter values. All changes to the acceleration / deceleration values are displayed at the top of the screen.

8.4 Modifying drive parameters numerically

All drive parameters can be edited numerically.

- 1. Select a parameter to edit.
- 2. Click on the parameter's name to open the parameter's details. Default, minimum and maximum values will be displayed, as well as the parameter's summary.
- 3. There are different ways to modify the parameters:



- a. Increment and decrement the parameter with the plus (+) and minus (-) buttons (A). Click these buttons to change the value in discrete steps or click and hold the buttons to change the value more quickly.
- b. Set the parameter value by clicking on the Low, Default or High buttons (B).
- When you edit a parameter's value, its background color will change to indicate that it has changed from its previous value. Once the value is written to the controller (or file), the background will revert to white.
- When in live edit mode, it might be difficult to see the parameter background changing since the live edit operation can take place very rapidly.

8.5 Modifying Lighting Parameters

When installing lighting system, replacing power module or resetting default configuration from power module it can be necessary to adjust lighting settings. In some configurations lighting functions are disabled by default and need manual activation.

iPod 🗟	08:33	* 💷 +
✓ PACE 4	Drive REM400	
Turn Indicat	ors	
Enable Tu	rn Indicators (A)	Yes
Turn In • Auto-C Time		- +
Position		
Enable Po	sition Lights 🔘	Yes

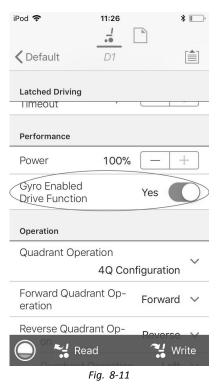
- 1. From Home screen click on Lighting.
- 2. Edit parameters according following table.

	Parameter	Description	Values
A	Enable Turn Indicators	Allows system to use turn indicators	No / Yes
B	Turn Indicator Auto-Cancel Time	Sets length of time a turn indicator will be on before being automatically turned off	0 s 30 s
©	Enable Position Lights	Allows system to use position lights	No / Yes

8.6 Modifying Gyro Support in Drive Functions

By default, Gyro support is enabled in drive functions. The following instructions show you how to disable the Gyro support for drive functions or to hide the Gyro symbol on screen if no Gyro is installed on wheelchair.

- 1. From Home screen open desired drive function.
- 2.



Set **Gyro Enabled Drive Function** to **Yes**, to provide enhanced stability control for this drive function. Otherwise, set to **No** to disable gyro support for this function.

8.7 Programming Toggle Switches

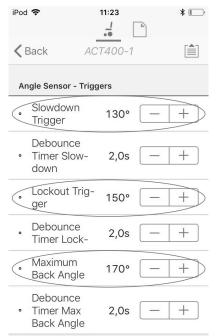
At the moment the programming is reserved for the PC tool.

Please use the PC tool instead.

8.8 Modifying Seating Parameters

Trigger Angles

Angle sensor-triggers allow you to modify factory default angle triggers of wheelchair to accommodate specific user needs.



Control Input 1 - Port Settings Fig. 8-12

Parameter	Description
Slowdown Trigger	Sets the angle sensor's trigger angle to slow down the driving speed
Lockout Trigger	Sets the angle sensor's trigger angle to lock out drive
Maximum Back Angle	Sets the angle sensor's trigger angle to stop further movement of the backrest.

- 1. From Home screen click on Chair Setup.
- Click on Modules and select your type of actuator module, for example ACT400–1.
- 3. Set parameters to user's needs.

Seating Motion

iPod 奈 .↓ ≮ Back	14:19	
Modules	Motion	
Tilt	•	- >
Recline	4	۲ >
Elevate	Q	_ >
Left Leg	ę	, >
Right Leg	ę	- >
Both Legs	ē	~ >

Fig. 8-13

- 1. From Home screen click on Chair Setup.
- 2. Click on Motion.
- 3. Select seating motion you want to change.

Changing Motion Name

1.

iPod 🗟	12:57		* ■
🗸 Back	Tilt		
Identification			
Motion Name			Tilt
Motion Icon		Tilt	•_ ~
Behaviour			
F	ig. 8-1	4	

Tap on field Motion Name.

- 2. Unlock **Bulk Mode** before modifying name.
- 3. Tap on Back.

Seating Function

a.

This parameter sets how the joystick operates a motion. The joystick can control the motion as a switch or as a proportional controller. There are four switch-type modes and one proportional-type mode.

- 1. From Home screen open desired seating function.
 - * iPod 😨 09:31 ... ✓ PACE 4 REM400 Tilt General Input Mode Four Quadrant 🗸 Forward/Reverse Left/Right Four Quadrant Default Forward/Reverse Configuration of the joystick for this seating function, e.g. proportional. Seating Function REM400 Tilt Name Enable Seating Function Yes Nead 🛂 Write Fig. 8-15

Input Mode: Configuration of user input for this seating function.

- Forward/Reverse: Moving joystick forward or reverse to control motion.
- Left/Right: Moving joystick left or right to control motion.
- Four Quadrant: Using all four joystick quadrants to control motions.

iPod ᅙ	09:31 * → +
✓ PACE 4 REA	M400 Tilt
Forward Quadrant	Parameters
Motion	Tilt 🍾 🗸
Operating Mode	Proportional 🗸
Speed	100% - +
Reverse Quadrant I	Parameters
Motion	Tilt 🍾 🗸
Motion Operating Mode	Tilt 🍾 🗸 Proportional 🗸
	und Q
Operating Mode	Proportional ✓ 100% _ +

If **Four Quadrant** is selected, all quadrant parameters can be edited individually.

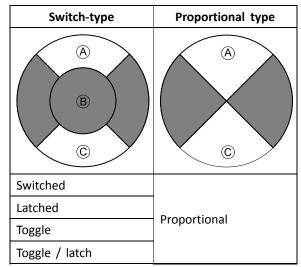
*	09:32	* • +
General Forward Qua	drant Parameters	
Motion	Tilt	~ ~
	No N	lotion
	Tilt	L 0
	Recline	4
	Elevate	0 <u> </u>
	Left Leg	
	Right Leg	°
	Both Legs	2
	LNX	2
0 %	Readile and Legs	W rite
	Fig. 8-16	

Motion: If the joystick is used to control a motion, then select the motion from the list of available motions.

If the joystick is not used to control a motion, then select **No Motion** from the list.

c. Operating Mode:

b.



Choose one of the switch-type modes to operate the motion at a fixed speed. The motion is activated when the joystick is deflected past the **Joystick Switch Threshold** (B) into either the forward (A) or backward (C) quadrants. Refer to 8.10 Joystick Switch Threshold, page 77 how to modify the **Joystick Switch Threshold**.

Choose the proportional-type mode to operate the motion at a speed that is proportional to the joystick's position. The motion is activated when the joystick is deflected out of neutral into either the forward (A) or backward (C) quadrants. If the joystick is not used to control this motion, then set this parameter to Not Used.

Operation	Purpose
Switched	Activates the motion in the extend / retract direction for the duration that the joystick is deflected forwards / backwards and its position is greater than Joystick Switch Threshold. The motion is deactivated when it reaches its end-of-travel or when the joystick's position is less than the Joystick Switch Threshold.
Latched	Activates and latches the motion in the extend /retract direction when the joystick is momentarily deflected forwards / backwards across the Joystick Switch Threshold. The motion is deactivated when the motion reaches its end-of-travel or the joystick is deflected again across the Joystick Switch Threshold.
Toggle	Activates the motion in one direction (extend or retract) for the duration that the joystick's position is greater than Joystick Switch Threshold. The motion is deactivated when it reaches its end-of-travel or when the joystick's position is less than Joystick Switch Threshold. The direction of the motion toggles between extend and retract for each new activation.

Operation	Purpose
Toggle / latched	Activates and latches the motion in one direction (extend or retract) by momentarily deflecting the joystick across the Joystick Switch Threshold. The motion is deactivated when the motion reached its end-of-travel or the joystick is deflected again across the Joystick Switch Threshold.
Proportional	Deflecting the joystick forwards /backwards activates the motion in the extend / retract direction for the duration that the joystick is deflected. The motion is deactivated when it reaches its end-of-travel or when the joystick is returned to the neutral position. The speed of this motion is controlled by the amount of deflection from the neutral position and
	neutral position and scaled further by using the Speed parameter.

d. **Speed:** For the switch-type operations (Switched, Latched, Toggle, Toggle / latched), this parameter applies the speed of the motion when the joystick crosses the **Joystick Switch Threshold**. For the proportional operation, this parameter sets the maximum speed at which the motion will travel when the joystick is deflected to 100 % of its travel. For all other positions of joystick deflection the applied speed will be scaled down accordingly.

8.9 Modifying Attendant Parameters

Attendant profiles allow an attendant to control drive functions and seating functions of wheelchair. Currently two User Inputs are available, Attendant Control Unit (DLX-ACU200) and Intuitive Dual Control (Invacare IDC).

Attendant Control Unit (DLX-ACU200)

Input allows programming drive functions and seating functions. Parameters of functions are identical to primary remotes. See *8.3 Modifying drive parameters graphically, page 72, 8.4 Modifying drive parameters numerically, page 73* and *8.8 Modifying Seating Parameters, page 74*.

Intuitive Dual Control (Invacare IDC)

Input allows programming maximum one drive function.

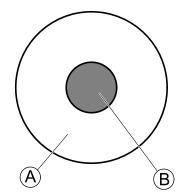
Add New Attendant Function

- Definition of the second secon
- 1. Open Functions.
- 2. Select profile **Attendant** from list. Otherwise, both user inputs are not available.
- 3. Add new function. See 8.1 Profile And Function Actions, page 69.
- 4. Modify other parameters.

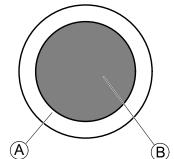
8.10 Joystick Switch Threshold

Sets the percentage of joystick movement required to activate an output when the joystick is operating as a switched input device.

When the joystick is used as a switched input device, this parameter specifies how far the joystick has to be pushed before its state changes (OFF (B) to ON (A)) and activates an output. The **Joystick Switch Threshold** value is a percentage of the joystick's full travel and should be set according to the user's needs. For example:



for users that have difficulty moving the joystick , set Joystick Switch Threshold to a low value, such as 40 % or less,



for users that lack fine motor control or are subject to hand tremors, set **Joystick Switch Threshold** to a high value, such as 80 %, to avoid unintentional switching.

- 1. From Home screen click on Chair Setup.
- 2. Click on Modules.

3. Click on Remote.

Δ

in on nen			
	iPod ≎	10:37	* 🖚
	K Back R	emote	
	Joystick		
	Neutral Window	10% (- +
	Joystick Throw	90% (- +
	Joystick Switch Threshold	40% (- +
	Tremor dampenir	ig 35% (- +

Set the desired percentage.

Tremor dampening

Use this parameter to reduce the effect of hand tremors on the joystick. Low values are suitable for users with low frequency (slow) tremors. Higher values will suit users with higher frequency (fast) tremors. Setting the parameter value to 0 % results in no tremor dampening.

8.11 Adjust quadrant operation

This parameter sets the drive function's user input to operate in 3-quadrant (3Q)or 4-quadrant (4Q) mode. Typically, the 4Q mode is chosen with joystick-based inputs or arrays, that provide 4 quadrants, for example, a Sip and Puff array. The 3Q mode is chosen for user inputs that provide 3 quadrants, for example, a head array.

1. From Home screen open desired drive function.



The options are:

- 4Q Operation
- 3Q Forward Only
- 3Q Reverse Only
- 3Q Manual Toggle
- 3Q Automatic Toggle

4Q Operation

When **4Q Operation** is selected, each quadrant is assigned a unique direction from forward, reverse, left and right, this is the default mode. To change these default directions, the quadrants can be reassigned with a different direction by setting the following parameters:

- Forward Quadrant Operation
- Reverse Quadrant Operation

• Left Quadrant Operation

• Right Quadrant Operation

It is not necessary that all quadrants are assigned unique directions. If required, one or more quadrants can share the same direction. For example, **Forward Quadrant Operation** and **Reverse Quadrant Operation** can both be set to **Forward**. For more information about adjusting the drive direction, refer to *8.11.1 Adjust drive directions, page 78*.

3Q - Forward Only

When **3Q** - Forward Only is selected, the user input can drive the wheelchair forward, left and right.

If required, each quadrant can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Forward Only** mode.

3Q - Reverse Only

When **3Q** - **Reverse Only** is selected, the user input can drive the wheelchair reverse, left and right.

If required, each quadrant can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Reverse Only** mode.

3Q - Manual Toggle

When **3Q** - **Manual Toggle** is selected, the user input can drive the wheelchair forward, reverse, left and right. The forward and reverse directions are controlled by the user toggling an external switch.

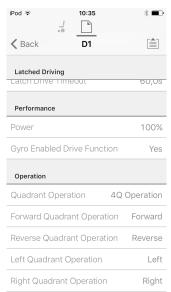
If required, each quadrant can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Manual Toggle** mode.

3Q - Automatic Toggle

When **3Q** - Automatic Toggle is selected, the user input can drive the wheelchair forward, reverse, left and right. The forward and reverse directions are controlled by the user toggling the forward quadrant.

If required, each quadrant input can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Automatic Toggle** mode.

8.11.1 Adjust drive directions



Forward Quadrant Operation

This parameter sets the direction that the wheelchair moves when the forward quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's forward quadrant is selected.

Reverse Quadrant Operation

This parameter sets the direction that the wheelchair moves when the reverse quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's reverse quadrant is selected.

This parameter is not available when **Quadrant Operation** is set to any of the 3Q modes.

Left Quadrant Operation

This parameter sets the direction that the wheelchair moves when the left quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's left quadrant is selected.

Right Quadrant Operation

This parameter sets the direction that the wheelchair moves when the right quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left

2.

- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's right quadrant is selected.

8.12 Enable indirect navigation

For the iOS tool, there is only **Menu Scan** with **Navigation Timeout** available at the moment.

- $\overset{\circ}{\underline{\mathbb{I}}} \qquad \text{Steps 1 and 2 must be made in each desired profile and function.}$
- 1. From Home screen open desired profile.

		-
iPod 🗢 08	:33	\$ ■> +
<pre>〈 PACE 4 Drive R</pre>	EM400	
General		
Profile Name	Drive REN	1400
Enable Profile	Yes	
Profile User Input	REM 4xx serie	es 🗸
Enable Function Wra	ap Yes (
Enable Menu Scan	Yes (

😪 Read 🛛 😤 Write

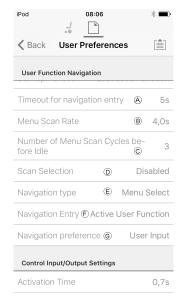
Set Enable Menu Scan to Yes.

- 3. From Home screen open desired function.
- 4. Set Navigation Timeout to Yes.
- 5. From Home screen open User Preferences.
- 6. iPod ♀ 08:35 ¥ 🛄 f

User Function Navigation	ı
Number of Menu Scan Cycles before Idle	3 - +
Scan Selection	Disabled 🚿
Navigation type	Menu Scan 🚿
	Menu Scan
	Menu Select
Defa Menu S	
Selects the type of navigation select).	on (menu scan or menu

Set Navigation type to Menu Scan.

Other parameters



Timeout for navigation entry: Sets inactivity time A required before system enters navigation mode, for navigation mode with Navigation Timeout only. Menu Scan Rate: Sets rate at which menu scan **B** iterates through menu, for Menu Scan only. C Number of Menu Scan Cycles before Idle: Number of times menu is iterated through before going to idle, assuming no user selection, for Menu Scan only. D Scan Selection: Configures which quadrants of Primary input can be used to make selections, for Menu Scan only. Navigation type: Selects type of navigation. (E) F Navigation Entry: Sets entry point to menu. G Navigation preference: Selects whether navigation using touch interface has preference over navigation using user input. If user input is selected, display highlights current selection.

8.13 Installing / Setting up alternative inputs

There are different types of alternative inputs, that interface differently to the system. Connect the components to the particular inputs, see table below.

Component	Input
Sip and Puff breath tube kit	Input Module IN5xx
Sip and Puff Head Array	Input Module IN5xx
Pediatric Compact Joystick	Input Module IN5xx
Head Array	ТРІ
Chin control	ТРІ
Compact Single Switch Joystick	ТРІ
Four Switch Proximity Array	ТРІ
Remote Stop Switch	Power Module

To install a Remote Stop Switch, just connect to the Power Module using the interface cable and the 4-way connector using the Bus cable, see wiring diagram *3.8 Wiring Diagrams, page 17*. Programming is not necessary.

Programming

2.

1. Add new profile or add user function to existing profile. For more information about adding profiles and functions, refer to 8.1 Profile And Function Actions, page 69.

iPod 🗟	11:21	* 🖦
Cancel	New Function	
New Tu	ncuon	template
Please select	t function type	
Drive	e	
🥾 Seat	ing	
Mou 🔊	se Mover	
Please select	t User Input	
Follow Pre	ofile	
REM 4xx		
CR 4xx		
TPI		
IN 5xx		

Set **User Input** to **TPI** or to **IN 5xx**, depending on component input.

- $\overset{\circ}{\underline{\mathbb{I}}} \qquad \text{Same procedure for drive, seating and connectivity functions.}$
- From Home screen open Chair Setup -> Modules -> IN 5xx or TPI, depending on component input.

4.

iPod	13:29		* ■⊃
🗸 Back	IN 5x	x	
User Input - C	Configuratio	n	
User Input C ration	onfigu-	Sip and P	uff 🗸
	Propor	tional Joyst	ick
Discre	ete Propor	tional Joyst	ick
		Switch	nes
	Switch	ed Head Ar	ray
	Swit	ched Joyst	ick
		Sip and P	uff
Pro	Defau oportional		
Selects the ope	ration of the	user input for t	nis
0 4	Read	<u>~1</u>	Write

Set **User Input Configuration** to desired component. Options are:

- Proportional Joystick: Pediatric Compact Joystick, Chin Control, Compact Single Switch Joystick
- Discrete Proportional Joystick: not used
- Switches: Four Switch Proximity Array, Sip and Puff Head Array
- Switched Head Array: Head Array
- Switched Joystick: not used
- Sip and Puff: Sip and Puff
- 5. Depending on component, modify other parameters. For switched inputs, such as Sip and Puff, parameters are found under **User Preferences**, refer to *5.2.1 Overview User Preferences, page 52*.
 - For more information about installing a Sip and Puff, refer to 8.15 Sip and Puff installation, page 82.

8.14 Installing / Setting up Alternative Outputs

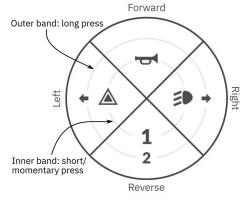


Fig. 8-17 Activation quadrants and bands

The utility function card allows the user to control lighting functions or external outputs using the output module DLX-OUT500. Switches are represented on a utility function card with icons located on two circular activation bands, short/momentary press and long press, within four quadrants (see 8-17 Activation quadrants and bands, page 80). The activation time to distinguish between short press and long press can be changed in user preferences, see 5.2.1 Overview User Preferences, page 52.

The quadrant and the position of the icons on the bands show the user how to select and operate the switches with their user input.

The following instruction shows you how to program the first control output of DLX-OUT500 using a short/momentary press forwards as an example.

- 1. Open Functions.
- Add new utility function or open existing utility function. See *8.1 Profile And Function Actions, page 69*.
 3.

iPod 후	08:33		* 💼 +
✓ PACE 4	Utility		
General			
Allow Multiple	e Quad-	Yes	\bigcirc
Forward Momen	tary/Short P	ress	\supset
Output		Non	e V
Activation Mo	de	Non	e v
Display Icon		Non	e V
Forward Long P	ress		
Output		Non	e ∨
Activation Mo	de	Non	e 🗸
Contact Icon	ead		e Write

Fig. 8-18

Scroll to section about your desired input command, like Forward Momentary/Short Press.

4.

aru womentary/short Press.					
iPod ᅙ	08:33	* 💷 +			
✓ PACE 4	Utility				
Forward Mome	ntary/Short Press				
Output	1	None 🗸			
	l	None			
	Position L	ights			
	Left Indi	cator			
Right Indicator					
Hazard Lights					
	REM400	Horn			
	REM500	Horn			
	OUT500-1 Out	put 1			
	OUT500-1 Out	put 2			
Q 🛀 R	OUT500-1 Out Read OUT500-1 Out	out 3 Write			
	Fig. 8-19				

Assign output OUT500–1 Output 1 to parameter Output.

iPod 후	08:33	*	· • • • •
PACE 4	Utility		
Forward Momer	ntary/Short	Press	
Activation Mo	ode	None	V
		None	
		Momentary	
		Latch ON	
		Latch OFF	
		Toggle	
	Default None		
Sets the activation inner.	n mode for Fo	orward Quadran	t
Display Icon		None	\sim
Q 24 R	ead ress	~: w	rite

5.

Fig. 8-20

Set parameter Activation Mode to desired value. Following modes are available from list:

None	—
Momentary	Activate an output as long as switch is selected. When choosing this mode it is not possible to configure second band for this direction.
Latch ON	Activate an output and remain activated when switch is deselected.
Latch OFF	Deactivate an output and remain deactivated when switch is deselected.
Toggle	Change current output state and remain this new state when switch is deselected.

iPod 후	08:33	* 💷 +
< PACE 4	Utility	
Forward Mon	nentary/Short Press	i
Display Ico	n	None 🗸
		None
	Position Light	s 🌮
	Left Turn Signa	al 🗲
	Right Turn Signa	al 🜩
	Hazard Light	s 🛦
	Hor	n 🕁
	Forward Arrow	~ †
ي.	Read ^{rerse} Arro	🔧 Write
	Fig. 8-21	

Set parameter Display Icon to desired value. Select a display icon from list of available icons.

- 7. Modify parameters for other commands.
- 8. Scroll to section General.
- 9.

section Gene	ral.		
iPod ᅙ	08:33	a a	* 💼 +
✓ PACE 4	Utility		
General			
Utility Functic Name	on		Utility
Enable Utility	Function	Yes	
Function Use	r Input Profile U	Jser In	put
Navigation Tir abled	meout En-	Yes	
Allow Multiple	e Quad-	Yes	\bigcirc
Forward Momen	itary/Short Pr	ess	
Output		N	one 🗸
	ead	~	Write
ramatar Allow	Multiple	0	drants to

Set parameter Allow Multiple Quadrants to On to allow switching two outputs simultaneously. *Fig. 8-22*

8.15 Sip and Puff installation

A Sip and Puff module is included in the input module.

A Sip and Puff module provides the user with the ability to activate four digital inputs with their breath via a tube depending on pressure level, hard or soft, and direction, sip or puff. These inputs can be used to control driving or seating actions.

1. Add user function for Sip and Puff module. For more information about adding profiles and functions, refer to 8.1 Profile And Function Actions, page 69.

iPod 🗢	11:21	* 🖦
Cancel	New Function	
	re	
🥾 Sea	ting	
Moi 🦓	use Mover	\checkmark
ᄉ Utili	ity	
• Swi	tch Control	
Please selec	ct User Input	
Follow P	rofile	
REM 4xx		
CR 4xx		
TPI		
IN 5xx		

Set User Input to IN 5xx.

2.

 \mathring{l} Same procedure for drive, seating and connectivity functions.

Open Chair Setup → Modules → IN 5xx. IPod 13:29 * ●

iPod	13:29	*	
< Back	IN 5xx	[
User Input - Co	nfiguration		
User Input Co ration	nfigu-	Sip and Puff	\sim
	Proportio	nal Joystick	
Discrete	e Proportio	nal Joystick	
		Switches	
	Switched	Head Array	
	Switch	ned Joystick	
	S	Sip and Puff	
Prop	Default ortional Jo	ystick	
Selects the operat	ion of the use	r input for this	
A	ead	🔧 Wri	te

Set User Input Configuration to Sip and Puff.

- 5. Calibrate Sip and Puff module, refer to 8.15.1 Sip and Puff calibration, page 82.
- 6. Open **User Preferences** to adjust veer behavior for switched inputs. For more information refer to 5.2.1 *Overview User Preferences, page 52*.

8.15.1 Sip and Puff calibration

 $\overset{\circ}{\mathbb{I}} \quad \begin{array}{l} \mbox{Primary input operations, such as driving, are} \\ \mbox{disabled when using the calibration tool. This is} \\ \mbox{for safety reasons to prevent unintended operation} \\ \mbox{when calibrating.} \end{array}$

There are three pressure zones for each pressure direction (sip and puff):

• Neutral zone,

- soft zone and
- hard zone.

1.

The Sip and Puff module's response to a sip or puff input, depends on which zone the pressure falls within: hard or soft. Pressures within the neutral zone are ignored.

Since all users have different capabilities, the Sip and Puff module can be calibrated to change the size and position of these zones. The zones need to be set so that a user can control the wheelchair comfortably and consistently. A Sip and Puff calibration tool is used to determine the pressure thresholds that define the zones. These thresholds are:

- Minimum limit for soft puff,
- minimum limit for hard puff,
- minimum limit for soft sip and
- minimum limit for hard sip.

To calibrate the Sip and Puff module, you have to record pressure measurements from a series of pressure samples performed by the user and adjust the four pressure thresholds accordingly.

iPod 훅	11:34	*=
K Back	IN 5xx	
User Input - Cor	nfiguration	
User Input Cor	nfiguration	Sip and Puff
User Input - Sip	and Puff Setu	2
Sip and Puff R	amp Time	200ms
Go to Sip	And Puff Ca	alibration
Jack Socket Tip	- Port Setting	5
Input Port D	^{0e-} 0,0s	- +
Jack Socket Rin	g - Port Settin	gs
Input Port D	^{)e-} 0,0s	- +

From Home screen open Chair Setup -> Modules -> IN 5xx.

2. Tap on Go to Sip And Puff Calibration.

iPod 후 11:19 * iPod 🗟 11:19 * 🔳 Sip & Puff Calibration Don Sip & Puff Calibration Done Puff Test Sip Test Sip / O Peak Neutral C 5 A G D θ 50 50 Ē Ð (K) B**O** Soft Puff

A	Neutral zone for sip input
₿	Pressure level
©	Threshold slider to adjust minimum limit for soft sip
D	Soft zone for sip input
E	Threshold slider to adjust minimum limit for hard sip
Ð	Hard zone for sip input
G	Hard zone for puff input
\mathbb{H}	Threshold slider to adjust minimum limit for hard puff
()	Soft zone for puff input
1	Threshold slider to adjust minimum limit for soft puff
ĸ	Neutral zone for puff input

4. If **Sip** tab is open, user performs hard sip and soft sip in no specific order.

If **Puff** tap is open, user performs hard puffs and soft puffs in no specific order.

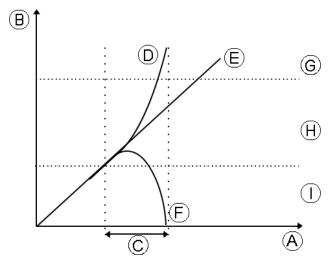
For each sip and puff, a pressure level (B) is recorded on calibration tool. Based on these recorded levels, you determine best level at which to set each pressure threshold.

- 5. Drag corresponding Threshold sliders.
 - For soft sip, drag threshold slider C to position just above user's soft sip. Any subsequent pressure above threshold slider C is in neutral zone A and is ignored. Pressure below threshold slider C and threshold slider E is in soft zone D and determined as soft sip.
 - For hard sip, drag threshold slider to position just above user's hard sip. Pressure above threshold slider is not considered as hard sip. Pressure below threshold slider is in hard zone
 F and determined as hard sip.
 - For soft puff, drag threshold slider ① to position just below user's soft puff. Any subsequent pressure below threshold slider ① is in neutral zone 𝔅 and is ignored. Pressure above threshold slider ① and below threshold slider ⊕ is in soft zone ① and determined a soft puff.
 - For hard puff, drag threshold slider (B) to position just below user's hard puff. Pressure below threshold slider (B) is not considered as hard puff. Pressure above threshold slider (B) is in hard zone (G) and determined as hard puff.

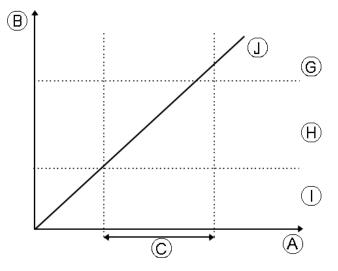
Sip and Puff Ramp Time

The **Sip and Puff Ramp Time** defines the amount of time that a pressure input must remain in the soft zone before it is registered as a soft sip or puff. Consequently, it also provides:

- Time for a user to cross from the neutral zone to the hard zone and
- a filter for any noise (unintentionally pressures) at the zone boundaries.



The ramp time \bigcirc begins at the point where the pressure input \bigcirc , \boxdot or \bigcirc crosses into soft zone \bigcirc — either from neutral zone \bigcirc , when pressure is increasing, or from hard zone \bigcirc , when pressure decreases. A pressure input \bigcirc that reaches the hard zone before ramp time expires, is registered as a hard sip or puff. A pressure input \bigcirc within soft zone at the end of ramp time is registered as a soft sip or puff. Pressure inputs \bigcirc that fall away into neutral zone before ramp time expires are not registered as an input.



When setting **Sip and Puff Ramp Time**, consideration should be given to users, who cannot produce a hard sip or puff within the ramp time. If ramp time is set too low, a user may not be able to reach the hard zone G in time and a soft sip or puff is registered instead of the intended hard sip or puff. For users who need more time to reach hard zone, the ramp time C needs to be extended, so the pressure input O is registered as a hard sip or puff.

 From Home screen open Chair Setup -> Modules -> IN 5xx.

iPod 🗟	11:34	* 📼					
	<u>-</u> [b.					
🗙 Back	IN 5xx						
User Input - Configuration							
User Input C	Configuration	Sip and Puff					
User Input - Sip and Puff Setup							
Sip and Puff Ramp Time 200ms							
Go to Sip And Puff Calibration							
Jack Socket	Гір - Port Setting	js					
Input Por bounce	t De- 0,0s	- +					
Jack Socket Ring - Port Settings							
Input Por bounce	t De- 0,0s	- +					



9 Using the LiNX Access PC tool

1.

9.1 Installing the software

Double-click on the LiNX Access PC tool installation software and follow the on-screen instructions.

Step 1

Select the language to use during installation.

-	

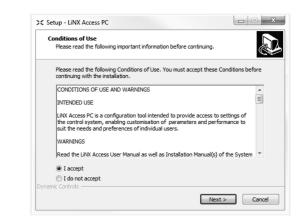
Select Setup Language					
Select the language to use during the installation:					
	English 💌				
	OK Cancel				

Select your choice of language from drop-down box. 2. Click **OK** to continue.

Step 2

Before proceeding, make sure that you read and fully understand the Conditions of Use and Warnings presented in the dialogue.





Select I accept option.

2. Click Next button.

Step 3

For your convenience, the application can be saved to an alternative folder instead of the suggested folder.

If the suggested folder is suitable, click **Next** to continue with the set up.

If you want to change the folder:

Select De	stination Location		
Where s	hould LiNX Access PC be installed?		0
I.	Setup will install LiNX Access PC into	the following folder.	
To conti	nue, dick Next. If you would like to se	elect a different folder, di	ck Browse.
C:\Proc	ram Files (x86)\Dynamic Controls\LiN	X Access PC V3	Browse
	72.0 MB of free disk space is required	ł.	
Dynamic Contro	s ۲		
		< Back Next >	> Can

Click on Browse button and select different folder.

2. Click Next to continue.

Step 4

1.

The application's shortcut can be saved to an alternative folder also, instead of the suggested folder.

If the suggested folder is appropriate, click **Next** to continue with the set up.

If you want to change the folder:

	art Menu Folder should Setup place the prog	gram's shortcuts?	
	Setup will create the prog	ram's shortcuts in the follow	wing Start Menu folder
To cont	inue, dick Next. If you wou	ld like to select a different f	folder, click Browse.
Dynam	ic Controls		Browse
Dynamic Contro	ls		
		< Back	Next > 0

Click on Browse button and select different folder.

2. Click **Next** to continue.

Step 5

By default, a desktop icon will be added for the LiNX access PC tool and the wheelchair program files (*.lci) will be associated with the LiNX Access PC tool.

1.	> Setup - LiNX Access PC
	Select Additional Tasks Which additional tasks should be performed?
	Select the additional tasks you would like Setup to perform while installing LINX Access PC, then $\operatorname{click}Next$
	Additional icons:
	✓ Create a desktop icon for LiNX Access PC
	Other tasks:
	Associate wheelchair program files ('.ld') with LiNX Access PC
	Dynamic Controls
	<pre>Concel</pre> Cancel Cancel

Check / uncheck as appropriate.

2. Click Install.

Step 6



Click Finish to complete the installation.

9.1.1 Using Bluetooth on a computer

You need a Bluetooth connection to communicate between the LiNX Access PC tool and a LiNX system. You can use a computer's built-in Bluetooth adaptor (usually found on laptops) or an external USB Bluetooth adaptor.

Using built-in Bluetooth adaptor

Switch on the built-in Bluetooth adaptor (refer to computer's manual for help on this).

Using an USB Bluetooth adaptor

Plug in the external USB Bluetooth adaptor into a spare USB port. The Windows operating system detects and installs the appropriate drivers for the adaptor. Do not install any drivers that may have been provided with the adaptor.

9.2 Layout overview

 \check{I} Layout may change whether connected or not.

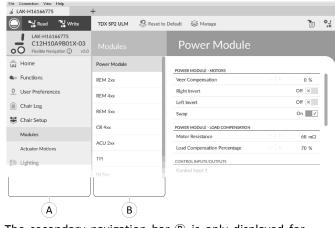
Home screen



- (A) Menu bar
- B Connection tab

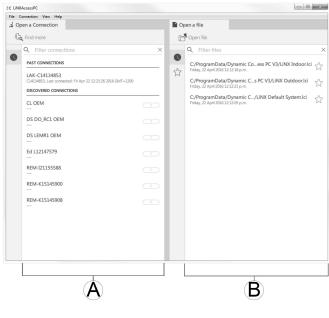
- © File tabs
- D Tool bar
- (E) Main content header
- (F) Main content
- G Filter parameters box
- (H) Primary navigation side bar
- ① Tab context

Secondary navigation side bar



The secondary navigation bar (B) is only displayed for certain primary navigation bar selections (A) and provides a means to drill down further through the features, functions and parameters.

Opening



- $\textcircled{\sc A}$ Open a connection
- B Open a file

System information

	Since		SYSTEM NAME
	0		Demonstration
U	hours driving	hours driving / day	PROGRAM NAME
			Default System
	Since		CONFIGURATION SUMMARY
- +	0		6 Drive Functions
	total battery cycles	hours charging / day	2 Seating Functions
			2 Mouse Mover Functions
EVENTS		<u> </u>	2 Utility Functions
System	Clock Set	This month	2 Actuator Motions
Primary	Input Out-Of-Neutral	This month	Gyro supported
System	Available	This month	Lighting supported
Joystick	Error	This month	
			System Summary

A	Driving / battery information	Displays time statistics for driving and battery use.
๎฿	Events	Displays overview of events.
©	File information	Displays time stamps for when the configuration was created and last modified.
D	System name and program name	Displays the system and program name.
E	Configuration summary	Overview of modules, features and functions for the connected system.
F	System summary	Click to view version information about the modules in the connected system.
G	LiNX Access information	Displays LiNX Access Key and application details.

9.3 Concepts

The LiNX Access PC tool provides many tools and features to simplify configuring and programming LiNX modules and systems.

Two important concepts are:

- context modes
- editing modes

Context modes

	en a Connection			pen a file
	Find more		Ľ	Open file
	Q Filter connections	×	0	Q Filter files
	PAST CONNECTIONS		-	C:/ProgramData/Dynamic Coess PC V3/LiNX Indoor. Friday, 22 April 2016 12:12:18 p.m.
	LAK-C14134853 C14134853, Last connected: Fri Apr 22 12:23:26 2016 GMT+1200 DISCOVERED CONNECTIONS		☆	C:/ProgramData/Dynamic Cs PC V3/LiNX Outdoor.lci Friday, 22 April 2016 12:12:21 p.m.
	CL OEM	7		C:/ProgramData/Dynamic C/LINX Default System.lci Friday, 22 April 2016 12:12:05 p.m.
	DS DO_RC1 OEM			
	DS LEMR1 OEM			
	Ed L12147579			
	REM-I21155588			
	REM-K15145900			
	REM-K15145908			
l	Ţ			

The context modes allow you to work with configuration files both online (that is with a connected system) and offline (that is with files stored on your computer) simultaneously. There are two context modes:

- **Connection context** (A). The PC tool interacts with a connected system. From the Open a connection tab, you can connect to a wheelchair through a LiNX Access Key.
- File context (B). The PC tool interacts with stored files on your computer. From the Open a file tab, you can access a file stored on your computer.
- $\underbrace{\overset{\circ}{\fbox}}_{\text{connection tab is always found on the left side of the application's screen. You can only have one connection tab open at any time. }$

File tabs are always placed to the right of the application's screen. The application allows multiple file tabs to be open at any time.

Editing modes

The LiNX Access PC tool offers two parameter editing modes that define when parameters are written to the wheelchair. These modes are:

- Live edit (connection context only).
- Bulk edit.

For more information about the editing modes, refer to 7.3.5 Modifying a Program, page 63.

9.4 Checking and getting the latest version

The LiNX Access PC tool automatically checks for updated software and firmware. This operation requires an Internet connection and is only performed in a 24 hour period. If application updates are available, a notification is displayed asking if you want to download the updates. Click on **Yes** button to continue. After the application updates have been downloaded, a notification is displayed, asking if you want to install the updates. Click on **Yes** button to continue.

To manually check for updates, you can either:

 check the Dynamic Controls website at www.dynamiccontrols.com or from the main menu on the LiNX Access PC tool, click on Help and then on Check for updates.

To view which version you have installed, click on Help on the menu bar and then click on About.

An Internet connection is required when checking Ĭ for updates. If an Internet connection is unavailable, the following message is displayed:

Failed to check for updates. The software was unable to connect to the Internet. Check that your network settings are correct and try again.

If your computer uses a proxy server to connect to the Internet, then you need to configure your Internet settings.

Configuring Internet settings

Click on Help and select Internet Settings. 1.

2. Internet Settings Proxy Enabled \checkmark Proxy Address User Name Password Close Enable proxy settings by clicking on Proxy Enabled

switch.

- Add following details (you may need to consult your 3. IT department for this information):
 - Proxy address and port
 - User name
 - Password
- Click on Close button. 4.

9.5 **Connection context actions**



The following tasks are only relevant for the Connection context mode. For tasks related to the File context mode, refer to 7.4 File context actions, page 66.

Connecting/Disconnecting the LiNX 9.5.1 Access PC tool

Connecting to a wheelchair

- Power up LiNX system. 1
- Insert LiNX Access Key into remote module. 2.

- Open LiNX Access PC tool application. 3.
- From the **Open a connection** tab: 4.
 - a. Select LiNX Access Key from list under PAST **CONNECTIONS**, or
 - b. click Find more button (top left) to force application to search for more LiNX Access Keys, or
 - c. if list is too long to read, enter LiNX Access Key into Filter connections text box to locate LiNX Access Key in list.

After selecting a LiNX Access Key, the LiNX Access PC tool connects to the wheelchair and reads its configurations.

Disconnecting from a wheelchair



To disconnect from a connected wheelchair, click the Disconnect icon on the right-hand side of the tool bar.

9.5.2 Write a program to a wheelchair

There is no need to write a program to a wheelchair if you are in connection context and working in live edit mode, because all parameter changes are written to the wheelchair instantly.



If you are working in bulk edit mode, you can write to the wheelchair by clicking on the Write button in the tool bar.

After clicking Write, the LiNX Access PC tool will perform the following tasks:

- Write the program to wheelchair.
- Power cycle wheelchair.
- Read program from wheelchair.
- Read diagnostic information from wheelchair.

After the Write operation, the LiNX Access PC tool reverts to live edit mode.

9.5.3 Read a program from a wheelchair

The configuration program is automatically read from a wheelchair system when you connect to it. However, you can manually read the configuration program from the connected wheelchair by placing the LiNX Access PC tool in bulk edit mode or file context mode.

To read configuration from bulk edit mode

Change to bulk edit mode by unlocking bulk edit 1. parameter.

2.



Click on Read (from wheelchair) icon in tool bar.

To read a configuration from file context

- Open file by clicking on New file tab (+) and selecting 1. existing file.
- Click on Read (from wheelchair) icon in tool bar. 2.

9.5.4 Save a program as a file

1	
Ŧ	•

File	Connection	View Help
	Open File Import Firmwa	Ctrl+O are
	Save Save As Export CSV	Ctrl+S
	Authorise Con	nputer
	Write Bundle F	ile
	Quit	

Click on **Save to file** button or click on **File** in menu bar and select either **Save** or **Save As...** from menu.

- 2. Save File As dialogue opens.
- 3. Select appropriate folder.
- 4. Enter name into File name box.
- 5. Click on **Save** button to finish. The file is saved with .lci extension.

Remove a file from the file list

1.		Q	Filter file	2S	\times
	C	C·/	ProgramD	Data/Dynamic Coess PC V3/LiNX Indoor.lci	Δ.
	52		dnesday, 1	Open file	W
	00		Users/as dnesday, 181	Remove from list American Remove from list Remove from li	\overleftrightarrow

Right-click on file in **Open file** dialogue and select **Remove from list**.

9.5.5 Storing the LAK certificate

To edit files offline, you need to authorize your computer by storing the LiNX Access Key (LAK) certificate.

The LAK certificate determines how you view and edit offline programs (.lci files) and is taken from a connected LiNX Access Key to provide one of two levels of access, that are:

- Distributor and
- Read-only.

To edit your files with a Distributor's access level, you need to store an LAK certificate from a LiNX Access Key.

If you do not store you LAK certificate from your LiNX Access Key, you have read-only access to your stored files and therefore you are not able to edit them.

To store LAK certificate:

- 1. Connect to LiNX system.
- 2. Click on **File** menu.

File	Connection	View	Help
	Open File Import Firmwa	Ct	rl+0
	Save Save As Export CSV	C	trl+S
	Authorise Con Write Bundle F		6
	Quit		

Select **Authorise Computer** option. A message is displayed telling you how many authorizations remain (you can only perform this operation three times) and asks if you want to continue.

- 4. Click on Authorise button to continue.
- 5. A message is displayed when the authorization is complete. Click on **OK** button to finish.

9.5.6 Upgrading Firmware

9.5.7 Restoring Default Wheelchair Configurations

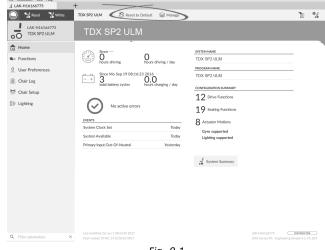


Fig. 9-1

Loading stored Wheelchair Configurations

😂 Manage

1. Click Manage to open wheelchair configuration list.

2.

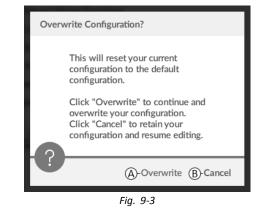


Fig. 9-2

Click on icon (A) behind desired wheelchair configuration.

3.

2.



A message is displayed warning you, that current configuration will be overwritten. Click **Overwrite** (A) to finish operation. Otherwise, click **Cancel** (B) to abort operation.

Loading Default Wheelchair Configuration

🕺 Reset to Default

To reset the connected wheelchair configuration to the selected default wheelchair configuration:

1. Click on Reset to Default button on the tool bar.

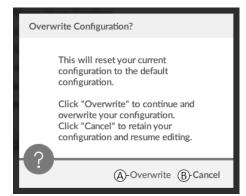


Fig. 9-4

A message is displayed warning you, that current configuration will be overwritten. Click **Overwrite** ((A)) to finish operation. Otherwise,

click **Cancel** (**B**) to abort operation.

 $\underbrace{\overset{\circ}{]}}_{l} \qquad \mbox{Default chair configuration means last connected configuration.}$

If chair configurations are not supported by wheelchair, such as in LiNX LE systems, **Reset to Default** and **Manage** are not displayed.

9.5.8 Loading Default Configurations

- 1. Open LiNX Access tool.
- 2.

🔵 🔧 Read 🔧 Write		A B et to Default Anage	3	•
LAK-H16166775 TDX SP2 ULM	Modules	ACT400-1		
Home	Power Module	ANGLE SENSOR - TRIGGERS		
So Functions				
		Fig. 0 F		

Fig. 9-5

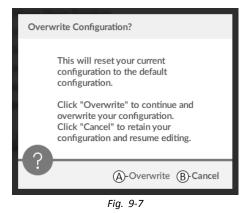
Click either on button Reset To Default (B) or Manage (B) in tool bar.



Fig. 9-6

If chosen **Manage**, you will see a list with default configurations stored on power module. Click on icon (A) behind the preferred configuration. Otherwise, click button (B) to abort.

4.



A message box appears. Confirm the reset by clicking on button **Overwrite** (A). Otherwise, click on button **Cancel** (B) to abort.

5. Modify parameters, especially lighting functions (see 10.3.1 Modifying Lighting Parameters, page 94) and gyro status (see 10.3.2 Modifying Gyro Support in Drive Functions, page 95).

9.5.9 Converting Configuration Files

Using older configuration files on wheelchairs can result in missing features which were introduced in later revisions of firmware, such as Switch Control. In most cases, converting these configuration files allows you to update user's configuration to latest release to enable all features.

 $\underbrace{\overset{\circ}{\amalg}}_{1} \quad \text{In case configuration file is on current revision or incompatible, menu entry is shown greyed out.}$

- 1. Connect with wheelchair.
- 2. Click on File in menu bar.
- 3.

File Connection View Help			
Open File Ctrl+O Import Firmware	+		
Save Obi+S	🐀 🐴 🗋 🗡	Default 😵 Reset to Default	Se Manage 👔 📍
Save As Egge 4 CSV Convet Configuration 01.		D1	
Authorise Computer Write Bundle File	REM2XX D	GENERAL	
Quit		Drive Function Name	D1
0 User Preferences	D1	Enable Drive Function	On 🔽
🖹 Chair Log	La manage	Function User Input	REM 2xx series
	REM2XX S	Navigation Timeout Enabled	011 ×
Chair Setup	51	FORWARD	
ED Lighting		Max Forward Speed	30 %
	INC REM400 D	Min Forward Speed	

Fig. 9-8

Select entry **Convert Configuration** and follow screen prompts.

9.6 File context actions



The following tasks are only relevant when in the **File context** mode. For tasks related to the **Connection context** mode, refer to *9.5 Connection context actions, page 88*.

9.6.1 Open/Close a file

If the LiNX Access PC tool is not open

- 1. Open LiNX Access PC tool.
- 2. From **Open a file** tab:
 - a. select file from list, or
 - b. click **Open file** button (top left) to open the **Open file** dialogue, or
 - c. if list is too long to read, enter file name into Filter files text box to locate file in list.
- 3. Select file.

If the LiNX Access PC tool is already open

- 1. Click on New file tab (+).
- 2. From this tab:
 - a. select file from list, or
 - b. click **Open file** button (top left) to open the **Open file** dialogue, or
 - c. enter file name into **Filter files** text box to locate file in list.
- 3. Select file.

Open via File menu

- 1. Click on File menu.
- 2. Select **Open file** to open the **Open file** dialogue.
- 3. Select file.

After selecting a file, the LiNX Access PC tool opens the file under its own tab. The tab is named with the file name.

Close a file



Close a file using the **Close file** button, located on the right-hand side of the tool bar. If you attempt to close a file with changes pending, a dialogue opens with the options to:

• Save — save the changes before closing

- $\ensuremath{\text{Discard}}$ discard the changes and close the file .
- **Cancel** cancel the file close action ٠

For information about modifying parameters, refer to 10 Modifying wheelchair configuration with PC tool, page 93. For information about saving files, refer to 9.5.4 Save a program as a file, page 89. For information about reading a program, refer to 9.5.3 Read a program from a wheelchair, page 88 and for information about writing a program to a wheelchair, refer to 9.5.2 Write a program to a wheelchair, page 88.

9.6.2 Remove a file from list

	Q Filter files	5		\times
• ~	C:/ProgramD Wednesday, 1	ata/Dynamic Co…e Open file	ss PC V3/LiNX Indoor.lci	\overleftrightarrow
\sim	C:/Users/as Wednesday, 18 N	Remove from list av 2016 10:12:47 a.m.	i i	\overleftrightarrow

Right-click on a file in the open file dialogue and select Remove from list.

9.6.3 Writing bundle files to a chair

Bundle files can be written to a connected chair. Bundle files can include wheelchair configurations and/or firmware files.

are	~	-		2
Ctrl+S				<u>گ</u>
mputer	TDX SP2 ULN	YI		
File	Since	0	SYSTEM NAME	
	hours driving	hours driving / day		
ferences				
g	total battery cycles	0.0 hours charging / day		
tup				
	No active error	5	19 Seating Functions	
	EVENTS		8 Actuator Motions	
			- Gyro supported	
			Lighting supported	
	Primary Input Out-Of-Neutral	Yesterday		
			- System Summary	
			••	
	Last modified: Do Jun 1 08:54:35 2017			LAK-H16166775 DISTRIBUTOR
	npoter Fike	TDX SP2 ULN Server S	TDX SP2 ULM TDX SP2 ULM TOX S	Image: State

Select Write Bundle File.

2.

$\leftarrow \rightarrow \cdot \uparrow \square \ll LiN$	IX_Access_0.03 03 Production Bundl	es > Kite > 10	✓ ♂ Search 1	0)
Organize 👻 New folde	r				(
∦ Quick access	Name	Date modified	Туре	Size	
	R01E10A0A00X-01	13.10.2016 21:43	LCB File	1.845 KB	
🐔 OneDrive - Invacai	R01F10A1A00L-02	13.10.2016 21:43	LCB File	1.845 KB	
SharePoint	R01F10A1A00T-02	13.10.2016 21:43	LCB File	1.845 KB	
Product Lifecycle	R01F10A2A00L-02	13.10.2016 21:43	LCB File	1.845 KB	
• ·	R01F10A2A00T-02	13.10.2016 21:43	LCB File	1.845 KB	
I This PC	R01F10A3A00L-02	13.10.2016 21:43	LCB File	1.844 KB	
Desktop	R01F10A3A00T-02	13.10.2016 21:43	LCB File	1.844 KB	
Documents	R01F10A4A00L-01	13.10.2016 21:43	LCB File	1.845 KB	
🖶 Downloads 🗸	R01F10A4A00T-01	13.10.2016 21:43	LCB File	1.845 KB	
File <u>n</u> a	ime:		× tch		,

Select desired bundle file and click Open.

3.	File Connection View Help		
5.			12
	di Nama		
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		↓ Writing program	
		Management the	

Bundle file is written to chair.

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On 🗸

Off ×

10 Modifying wheelchair configuration with PC tool

10.1 Profile and Function Actions

In bulk edit mode:

- profiles can be added and deleted,
- functions can be added, deleted, duplicated and moved.

LAK-H16166775	A B C D Functions	> TDX SP2 ULM	~	2
i Home		-		
Functions	Drive REM216	GENERAL Drive Function Name	Q	EM400 Slow
User Preferences	REM216 Drive	Enable Drive Function	K	On W
Chair Log		Function User Input	Profile User Inpu	.t (RE
-	Seating REM216	Navigation Timeout Enabled		Off ×
Chair Setup	REM216 Seating	FORWARD		
Lighting		Max Forward Speed	- +	30 %
	C Drive REM400	Min Forward Speed		20 %
	REM400 Slow	Forward Acceleration		80 %
		Forward Deceleration		100 %
	REM400 Slower	REVERSE		
	REM400 Medium	Max Reverse Speed		30 %
	REM400 Fast	Min Reverse Speed		28 %
	10.11001001	Reverse Acceleration		100 %
	REM400 Faster	Reverse Deceleration		100 %
		TURN		
	 Seating REM400 	Turn Boost at Max Speed		200 %
	REM400 Tilt	Max Turn Speed		50 %
	REM400 Recline	Min Turn Speed		40 %
	REMHOU RECLINE	Turn Acceleration		100 %
	REM400 LH Leg	Tum Deceleration		100 %

Fig. 10-1

- (A) New Profile
- New Function
- © Duplicate Function
- D Delete Profile or Function
- A system always includes a REM2xx Drive Function profile and a REM2xx Seating Function profile. These cannot be moved or deleted.
- 1. Open Functions.
- 2. Select desired profile or function action in the toolbar.

D

Add new Profile

1.

Click on icon A.

New profile is displayed in Functions.

- 2. Change name of profile, see 10.2 Modifying function and profile names, page 94.
- 3. Add at least one function. See Add User Function, page 93.
- $\underbrace{\mathring{l}}_{\underline{l}} \qquad \text{New profile is displayed as invalid as long as no function is added to the profile.}$

Add User Function

[°] When creating a new function all parameters will be set to their default values and will require modification. It might be easier to duplicate an already existing function and move it to current profile.

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°**!-**

🗛 Fun

Usei

1.

2.

3.

Click on icon ^B.

Connection	+ ^	
🗧 Read 🛛 🍹 Write	@ ∞ (?"§\ □ ×	TDX SP2 ULM 🕺 Reset to
LAK-H16166775 TDX SP2 ULM	Funt Street	D1
1e	REN CATE	GENERAL
tions	1	Drive Function Name
Preferences	D1 V O	Enable Drive Function
r Log	RENANS	Function User Input
	S REMANNS	Marchaeller Theorem Deabled

Fig. 10-2

0.0%

lcon	Action
E	Add new drive function
Ē	Add new seating function
G	Add new mouse mover function
θ	Add new utility function
0	Add new switch control function

Click on icon to add desired function. Dialog box is displayed.

ዋጫ New Drive Function					
Profile	Profile				
Name	Drive				
Please select a 'User Input'					
Profile User Input					
REM 2xx series					
REM 4xx series					
Compact Remote					

Input Module

Create Cancel

Fig. 10-3

- Enter a function name.
- 4. Select User Input from list.
- 5. Click Create to proceed. Otherwise, click Cancel.

For more information about modifying drive parameters, see 10.3 Modifying drive parameters, page 94.

For more information about modifying seating parameters, see 10.5 Modifying Seating Parameters, page 95.

For more information about setting up mouse mover, see user manual of remote.

Duplicate Function

1. Select function you want to duplicate.

2.

Select function you want to duplicate

Click on icon ©. duplicated function appears directly under original function.

3. Edit function as required.

Move Function

Functions can be reordered by dragging and dropping inside a profile or between profiles.

File Connection View Help			
a LAK-H16166775	+		
🔘 🙀 Read 🖓 Write	940 9"1 🗋 🗙	TDX SP2 ULM Reset to Default SManag	· 10
LAK-H16166775 TDX SP2 ULM	Functions	REM400 Slow	
Home	Drive REM216	GENERAL	
See Functions		Drive Function Name	REM400 Slow
0 User Preferences	REM216 Drive	Enable Drive Function	On 📝
🗎 Chair Log		Function User Input	Profile User Input (RE
	Seating REM216	Navigation Timeout Enabled	Off ×
😁 Chair Setup	REM216 Seating	FORWARD	
E Lighting		Max Forward Speed	- + 30 %
	Drive REM400	Min Forward Speed	- + 20 %
	REM400 Slow	Forward Acceleration	- + 80 %
		Forward Deceleration	100 %
	REM400 Slower	REVERSE	
	REM400 Medium	Max Reverse Speed	- + 30 %
	REM400 Fast	Min Reverse Speed	28 %
	NLIPPOV Past	Reverse Acceleration	100 %
	REM400 Faster	Reverse Deceleration	100 %
		TURN	
	C Profile	Turn Boost at Max Speed	- + 200 %
	Drive	Max Turn Speed	- + 50 %
	Castler	Min Turn Speed	- + 40 %
	Seating	Turn Acceleration	100 %
	Seating REM400	Tum Deceleration	100 %
Q Filter parameters ×	C Seating REM400	STABILITY	

Fig. 10-4

Click and hold function you want to move. Function moves slightly up and to the right and a dashed box appears beneath it.

2. Drag function to required position in same or another profile.

Delete Function of Profile

- $\label{eq:linear} \overset{\circ}{\underline{\mathbb{I}}} \qquad \mbox{A function is deleted immediately when the delete button is clicked.}$
- $\begin{tabular}{ll} $\widehat{\underline{l}}$ & A profile cannot be deleted until its functions are deleted. \end{tabular}$

х

1. Select function or profile you want to delete.

h	
,	

Click on icon D.

10.2 Modifying function and profile names

Only changing Drive Function Name displayed. Changing Seating Function Name, Mouse Mover Function Name or Profile Name works the same way.

🔵 🖼 Read 🛛 🎇 Write	940 971 🗋 🗙	TDX SP2 ULM 🔅 Reset to Default 😂 Manage	2
LAK-H16166775 TDX SP2 ULM		REM400 Slow	
Home	Drive REM216	GENERAL	
 Functions 	CONVERENTIZIO	Drive Function Name	SEM400 Slow
User Preferences	REM216 Drive	Enable Drive Function	On
		Function User Input	Profile User Input (RE
Chair Log	Seating REM216	Navigation Timeout Enabled	Off ×
Chair Setup	REM216 Seating	-	
Lighting	TREFFIC TO DEDUNG	FORWARD Max Forward Speed	- + 30 %
	C Drive REM400	Min Forward Speed	- + 20 %
		Forward Acceleration	- + 80 %
	REM400 Slow	Forward Deceleration	
	REM400 Slower	REVERSE	- 100 %
	REM400 Medium	Max Reverse Speed	- + 30 %
		Min Reverse Speed	28 %
	REM400 Fast	Reverse Acceleration	100 %
	REM400 Faster	Reverse Deceleration	100 %
		TURN	
	Profile	Turn Boost at Max Speed	200 %
	Drive	Max Turn Speed	- + 50 %
	Seating	Min Turn Speed	- + 40 %
	Search	Turn Acceleration	100 %

Click on function name.

1.

2. Enter new function name.

10.3 Modifying drive parameters

- 1. Select a parameter to edit.
- 2. Click on the parameter's name to open the parameter's details. Default, minimum and maximum values will be displayed, as well as the parameter's summary.
- 3. There are different ways to modify the parameters:

			_A	B
Min Forward Speed			- +	10 %
C Min 0%	Default	10%	Max	98%
Sets the maximum for dial is at minimum.	ward speed	of the v	wheelchair v	vhen speed

- a. Increment and decrement the parameter with the plus (+) and minus (-) buttons (A). Click these buttons to change the value in discrete steps or click and hold the buttons to change the value more quickly.
- b. Double-click on the value (B) and change it directly via the keyboard press **Enter** to set the value.
- c. Set the parameter value by clicking on the ${\rm Min}, {\rm Default}$ or ${\rm Max}$ buttons ${\rm \bigcirc}.$
- ^o When you edit a parameter's value, its background color will change to indicate that it has changed from its previous value. Once the value is written to the controller (or file), the background will revert to white.
- When in live edit mode, it might be difficult to see the parameter background changing since the live edit operation can take place very rapidly.

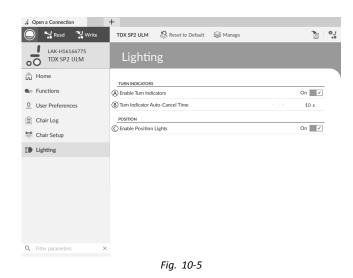
Drop-down list

Park Brake Voltage	24V Park Brake
	24V Park Brake
ACTUATOR 1 - ELECTRICAL	12V Park Brake

Click on the drop-down list to select an option.

10.3.1 Modifying Lighting Parameters

When installing lighting system, replacing power module or resetting default configuration from power module it can be necessary to adjust lighting settings. In some configurations lighting functions are disabled by default and need manual activation.



- 1. If necessary, reset wheelchair configuration. See 9.5.8 Loading Default Configurations, page 90.
- 2. Open Lighting.
- 3. Edit parameters according following table.

	Parameter	Description	Values
A	Enable Turn Indicators	Allows system to use turn indicators	Off / On
₿	Turn Indicator Auto-Cancel Time	Sets length of time a turn indicator will be on before being automatically turned off	0 s 30 s
©	Enable Position Lights	Allows system to use position lights	Off / On

10.3.2 Modifying Gyro Support in Drive Functions

By default, Gyro support is enabled in drive functions. The following instructions show you how to disable the Gyro support for drive functions or to hide Gyro symbol on screen if no Gyro is installed on wheelchair.

- 1. Open **Functions** \rightarrow open desired drive function.
- 2.

. Open a Connection	+				
🔵 🔧 Read 🛛 🕻 Write	🐿 🔊 🗋 X	TDX SP2 ULM			0
LAK-H16166775 TDX SP2 ULM		D1			
Home					
Functions	REM2XX D	Max Turn Speed		50 %	
	D1	Min Turn Speed		40 %	
User Preferences		Turn Acceleration		70 %	
🗎 Chair Log	REM2XX S	Turn Deceleration		100 %	
👺 Chair Setup	51	STABILITY			
Lighting	51 ●© REM400 D	Turn Transition		65 %	
Up Lighting		LATCHED DRIVING			
	S REMADU D	Latch Driving		Off	
	D1	Latch Driving in Reverse		Off ×	
	D2	Latch Drive Timeout		60.0 s	
		PERFORMANCE			. 1
	D3	Power		100 %	
		Gyro Enabled Drive Function		On 🗸	
	CONNECTIVITY	Default Off			
	Utility Card	Sets whether signals from the gyro module are used wheelchair in this drive function.	to provide enhanced stability control	I for the	1
	Mouse Maver	OPERATION			1

Fig. 10-6

Set **Gyro Enabled Drive Function** to **On**, to provide enhanced stability control for this drive function. Otherwise, set to **Off** to disable gyro support for this function.

10.4 Programming Toggle Switches

- $\begin{tabular}{ll} $\widehat{\begin{tabular}{ll} 0 \\ \hline \end{tabular}} \end{tabular} \end{t$
- Left Toggle Forward and Right Toggle are reserved to their default actions (see user manual of DLX-REM400). It is not possible to change these settings.

🔵 🖼 Read 🛛 📆 Write	TDX SP2 ULM 🛛 😓 Reset to	Default 😂 Manage	1
LAK-H16166775 TDX SP2 ULM Flexible Navigation (1)	Modules	REM 4xx	
Home	Power Module	Input Port Debounce	0.0 s
 Functions 	REM 2xx	Left Toggle Forward	
0 User Preferences	REM 4xx	Input Port Debounce	- + 0.0 s
🖹 Chair Log	REM 5xx	Left Toggle Backward	Button
Chair Setup	CR 4xx	Default Not Connected	Short + Long Press button V Not Connected
Modules	ACU 2xx	Sets the type of switch conne Enable Input Type	Button Momentary button
Actuator Motions	TPI	Fail-safe mode	Short + Long Press button
Lighting	IN 5xx	Short Press	[no assignment]
	114 3.0	Long Press	[no assignment]
	ACT400-1	Input Port Debounce	- + 0.0 s
	ASL Switched	Right Toggle Forward	
	ASL Proportional	Input Port Debounce	0.0 s
		Right Toggle Backward	
	IDC	Input Port Debounce	0.0 s
		Multipurpose Button I	
		Input Type	Momentary button

- 1. Open Chair Setup \rightarrow Modules \rightarrow REM 4xx.
- Set Input Type of input Left Toggle Backward to desired value.
 Options are:
 - Not Connected
 - Momentary button
 - Short + Long Press button
- 3. Assign desired action to Short Press and Long Press, or Momentary.
 - For information about the other parameters such as Input Port Debounce, see 10.11 Programming external switches, page 102

10.5 Modifying Seating Parameters

Trigger Angles

Angle sensor-triggers allow you to modify factory default angle triggers of wheelchair to accommodate specific user needs.

Open a Connection	+		
🔵 🔧 Read 🛛 🍕 Write	TDX SP2 ULM 🐰 Resi	et to Default 🛛 😂 Manage	
LAK-H16166775 TDX SP2 ULM		ACT400-1	
Home	Power Module	ANGLE SENSOR - TRIGGERS	
Functions	REM 2xx	Slowdown Trigger	- + 130 °
User Preferences	REM 4xx	Debounce Timer Slowdown	- + 2.0 s
Chair Log		Lockout Trigger	- + 150 °
Chair Setup	REM 5xx	Debounce Timer Lockout	- + 2.0 s
	CR 4xx	Maximum Back Angle	- + 170 °
Modules	ACU 2xx	Debounce Timer Max Back Angle	- + 2.0 s
Actuator Motions	ALU 2XX	CONTROL INPUTS/OUTPUTS	
Lighting	TPI	Control Input 1	
	IN 5xx	Input Port Debounce	- + 0.0 s
		Control Input 2	
	ACT400-1	Input Type	Not Connected
	IDC	Input Port Debounce	- + 0.0 s
		Control Input 3	
		Input Port Debounce	- + 0.0 s

Fig. 10-8

Parameter	Description
Slowdown Trigger	Sets the angle sensor's trigger angle to slow down the driving speed
Lockout Trigger	Sets the angle sensor's trigger angle to lock out drive
Maximum Back Angle	Sets the angle sensor's trigger angle to stop further movement of the backrest.

- Open Chair Setup \rightarrow Modules. Select your type of 1. actuator module, for example ACT400-1.
- 2. Set parameters to user's needs.

Seating Motion

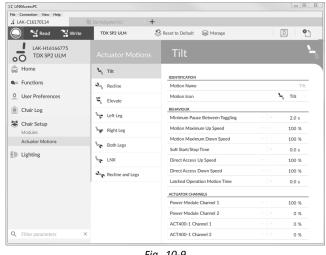


Fig. 10-9

Open Chair Setup \rightarrow Actuator Motions \rightarrow select 1. seating motion you want to change.

Changing Motion Name

🔘 🐕 Read 🛛 🎇 Write	TDX SP2 ULM 🛛 😓 Res	et to Default 🛛 😂 Manage		2
LAK-H16166775 TDX SP2 ULM	Actuator Motions	Tilt		
Home	S, Tit	IDENTIFICATION		
Sea Functions	Ang Recline	Motion Name	\sim	_
O User Preferences	S Elevate	Motion Icon	۲,	Tilt
🗎 Chair Log		BEHAVIOUR		
-	°age Left Leg	Minimum Pause Between Toggling		2.0
😸 Chair Setup	Ser Right Leg	Motion Maximum Up Speed		100
Modules		Motion Maximum Down Speed		100
Actuator Motions	Both Legs	Soft Start/Stop Time		0.0
Lighting	Se LNX	Direct Access Up Speed		100
	Recline and Legs	Direct Access Down Speed		100
		Latched Operation Motion Time		0.0
		ACTUATOR CHANNELS		
		Power Module Channel 1		100
		Power Module Channel 2		C
		ACT400-1 Channel 1		C
		ACT400-1 Channel 2		0
		ACT400-1 Channel 3		0
		ACT400-1 Channel 4		0

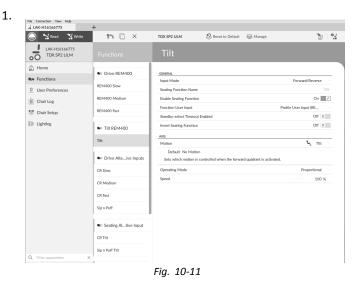
Fig. 10-10

- Click on Motion Name.
- 2. Enter new motion name.

Seating Function

Q Filter parameters

This parameter sets how the joystick operates a motion. The joystick can control the motion as a switch or as a proportional controller. There are four switch-type modes and one proportional-type mode.



Click on Functions.

2. Click on seating function you want to edit.



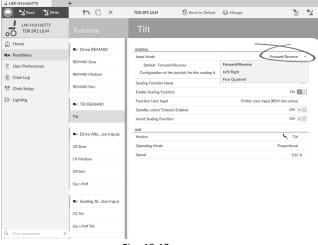


Fig. 10-12

Input Mode: Configuration of user input for this seating function.

- Forward/Reverse: Moving joystick forward or reverse to control motion.
- Left/Right: Moving joystick left or right to • control motion.
- Four Quadrant: Using all four joystick . quadrants to control motions.

1 LAK-H16166775	+			
🔵 🖼 Read 🛛 🎇 Write	10 N	TDX SP2 ULM 😕 Reset	to Default 😂 Manage	<u>ب</u> ه الآ
00 LAK-H16166775 TDX SP2 ULM	Functions	Tilt		
Home La	C Drive REM400	Configuration of the joystick for this	seating function, e.g. proportion	
So Functions	REM400 Slow	Seating Function Name		REM400 Tilt
0 User Preferences	REMINUU SIDW	Enable Seating Function		On 🖉 🗸
🗎 Chair Log	REM400 Medium	Function User Input		Profile User Input (RE
Chair Setup	REM400 Fast	Navigation Timeout Enabled		Off ×
		Invest Seating Function		Off ×
E Lighting	C Tilt REM400	FORWARD QUADRANT PARAMETERS		
	Tilt	Motion		∖ , πit
	Int	Operating Mode		Proportional
	C Drive Alteive Inputs	Spand REVERSE QUADRANT PARAMETERS		100 %
	CR Slow	Motion		S Titt 🗸
		Operating Mode		Proportional
	CR Medium	Sneed		100 %
	CR Fast	LEFT QUADRANT PARAMETERS		
	Sip n Puff	Motion		No Motion
		Operating Mode		Not Used
	Seating Altive Input	Speed		- + 0 %
	CR Tilt	RIGHT QUADRANT PARAMETERS		No Motion
	Sip n Puff Tilt	Operating Mode		Not Used
Q Filter parameters	×	Speed		- + 0%

If Four Quadrant is selected, all quadrant parameters can be edited individually.

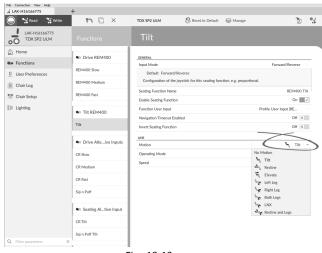
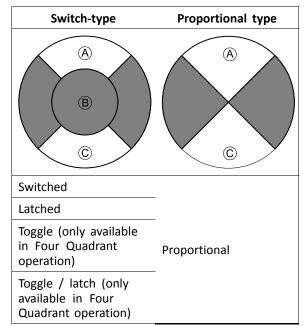


Fig. 10-13

Motion: If the joystick is used to control a motion, then select the motion from the list of available motions.

If the joystick is not used to control a motion, then select ${\bf No}~{\bf Motion}$ from the list.

c. Operating Mode:



Choose one of the switch-type modes to operate the motion at a fixed speed. The motion is activated when the joystick is deflected past the **Joystick Switch Threshold** (B) into either the forward (A) or backward (C) quadrants. See 8.10 Joystick Switch Threshold, page 77 how to modify the **Joystick Switch Threshold**.

Choose the proportional-type mode to operate the motion at a speed that is proportional to the joystick's position. The motion is activated when the joystick is deflected out of neutral into either the forward (a) or backward (c) quadrants. If the joystick is not used to control this motion, then set this parameter to Not Used.

Operation	Purpose
Switched	Activates the motion in the extend / retract direction for the duration that the joystick is deflected forwards / backwards and its position is greater than Joystick Switch Threshold. The motion is deactivated when it reaches its end-of-travel or when the joystick's position is less than the Joystick Switch Threshold.
Latched	Activates and latches the motion in the extend /retract direction when the joystick is momentarily deflected forwards / backwards across the Joystick Switch Threshold. The motion is deactivated when the motion reaches its end-of-travel or the joystick is deflected again across the Joystick Switch Threshold.
Toggle	Activates the motion in one direction (extend or retract) for the duration that the joystick's position is greater than Joystick Switch Threshold. The motion is deactivated when it reaches its end-of-travel or when the joystick's position is less than Joystick Switch Threshold. The direction of the motion toggles between extend and retract for each new activation.
Toggle / latched	Activates and latches the motion in one direction (extend or retract) by momentarily deflecting the joystick across the Joystick Switch Threshold. The motion is deactivated when the motion reached its end-of-travel or the joystick is deflected again across the Joystick Switch Threshold.

Operation	Purpose
Proportional	Deflecting the joystick forwards /backwards activates the motion in the extend / retract direction for the duration that the joystick is deflected. The motion is deactivated when it reaches its end-of-travel or when the joystick is returned to the neutral position. The speed of this motion is controlled by the amount of deflection from the neutral position and scaled further by using the Speed parameter.
Not Used	No operation.

d. Speed: For the switch-type operations (Switched, Latched, Toggle, Toggle / latched), this parameter applies the speed of the motion when the joystick crosses the Joystick Switch Threshold.
For the proportional operation, this parameter sets the maximum speed at which the motion will travel when the joystick is deflected to 100 % of its travel. For all other positions of joystick deflection the applied speed will be scaled down accordingly.

10.6 Modifying Attendant Parameters

Attendant profiles allow an attendant to control drive functions and seating functions of wheelchair. Currently two User Inputs are available, Attendant Control Unit (DLX-ACU200) and Intuitive Dual Control (Invacare IDC).

Attendant Control Unit (DLX-ACU200)

Input allows programming drive functions and seating functions. Parameters of functions are identical to primary remotes. See 10.3 Modifying drive parameters, page 94 and 10.5 Modifying Seating Parameters, page 95.

Intuitive Dual Control (Invacare IDC)

Input allows programming maximum one drive function.

Add New Attendant Function

- [°] Tool allows you to add all function types to Attendant profile. In case of an invalid function, like Switch Control, you will get error prompt with further instructions to solve error.
- When creating a new function all parameters will be set to their default values and will require modification. It might be easier to duplicate an already existing function and move it to current profile.

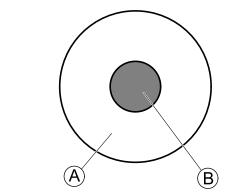
1. Open Functions.

- 2. Select profile **Attendant** from list. Otherwise, both user inputs are not available.
- 3. Add new function or duplicate existing function. See *10.1 Profile and Function Actions, page 93.*
- 4. Modify other parameters.

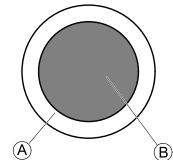
10.7 Joystick Switch Threshold

Sets the percentage of joystick movement required to activate an output when the joystick is operating as a switched input device.

When the joystick is used as a switched input device, this parameter specifies how far the joystick has to be pushed before its state changes (OFF B to ON A) and activates an output. The **Joystick Switch Threshold** value is a percentage of the joystick's full travel and should be set according to the user's needs. For example:



for users that have difficulty moving the joystick , set **Joystick Switch Threshold** to a low value, such as 40 % or less,



for users that lack fine motor control or are subject to hand tremors, set **Joystick Switch Threshold** to a high value, such as 80 %, to avoid unintentional switching.

9" 🗋 🗡	TDX SP2 ULM 🕺 Reset to Default	Se Manage
	Tilt	
Power Module	DISPLAY SETTINGS - CONEICI IPATION	
REM 2xx	Display Brightness	100 9
REM 4xx	Enable auto brightness	Off X
	Enable Tap-Only Mode	Off ×
REM 5xx	Enable Glove Mode	Off x
CR 4xx	Display handedness	Right Handed
	Tap Zone	- + 20
ACU 2xx	USER INPUT - CONFIGURATION	
TPI	User Input Configuration	Proportional Joystick
TPLACU	Neutral Window	
-	loystick Throw	- + 90 9
IN 5xx	Joystick Switch Threshold	- + 40 9
GYR 100	Min 15% Default 40% Max 100%	
	Sets the percentage of joystick movement required	to activate an output or activate stepped drive.
ACT400-1	Tremor dampening	- + 35 9
	Joystick Rotation Angle	- + 0*
	Swap Joystick Axis	No swap
	CONTROL INPUTS/OUTPUTS	
	Left Jack Socket (J1) Tip	
	Input Type	Button Short + Long Press button
	Enable Input Type	On
	Power Module REM 2xx REM 4xx REM 5xx CR 4xx ACU 2xx TPi TPi ACU N 5xx	Functions Tilt Power Module Display Bingthers REM 20x Display Bingthers REM 20x Enable Clove Model REM 50x Enable Clove Model REM 50x Enable Clove Model CR 40x Display Instructors TP User type: Controlwatton TP User type: Controlwatton TP User type: Controlwatton TP User type: Controlwatton TPACU Notifier Tope: Notifier Tope: Display Instructors ACT400-1 Ten or ampering Supplay Instructs Advise: Gover Controlwattors Mail: 100X Ender Structs Advise: Gover Controlwattors Mail: 100X ACT400-1 Tencor ampering Supplay Instructs Advise: Gover Controlwattors Mail: 100X Ender Structs Advise: Gover Controlwattors Instructs Advise: Gover Controlwattors User Structs Advise: Gover Controlwattors Instructs Advise: Gover Controlwattors

Click on Chair Setup.

2. Click on Modules.

1

- 3. Click on remote you want to edit.
- 4. Set the desired percentage.

Tremor dampening

🔵 🔧 Read 🛛 🎇 Write	17 🗋 🗙	TDX SP2 ULM 😵 Reset to D	Default 😂 Manage	1
LAK-H16166775 TDX SP2 ULM		Tilt		
Home	Power Module	DISPLAY SETTINGS - CONFIGURATION		
Functions	REM 2xx	Display Brightness		100 %
User Preferences	REM 4xx	Enable auto brightness		Off ×
Chair Log	REM 4XX	Enable Tap-Only Mode		Off ×
🖇 Chair Setup	REM 5xx	Enable Glove Mode		Off ×
	CR 4xx	Display handedness		Right Handed
Modules	ACU 2xx	Tap Zone		20
Actuator Motions	AC0 200	USER INPUT - CONFIGURATION		
Lighting	TPI	User Input Configuration	Pro	oportional Joystick
	TPLACU	Neutral Window		+ 15 %
	IN 5xx	Joystick Throw		90 %
	IN 5xx	loystick Switch Threshold		40 %
	GYR 100	Tremor dampening	-	- + 35 %
	ACT400-1	Min 0% Default 0% Max 10 Sets the amount of tremor that is damper		ient.
		Joystick Rotation Angle		- + 0 •
		Swap Joystick Axis		No swap
		CONTROL INPUTS/OUTPUTS		
		Left Jack Socket (J1) Tip		
		Input Type	Short	Button t + Long Press button
		Enable Input Type		On 🗸

Use this parameter to reduce the effect of hand tremors on the joystick. Low values are suitable for users with low frequency (slow) tremors. Higher values will suit users with higher frequency (fast) tremors. Setting the parameter value to 0 % results in no tremor dampening.

10.8 Setting up a system for latched driving

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

Connect the external stop switch to a control input. Invacare recommends to connect the external stop switch to the input module. The external stop switch should be a single pole, normally-open switch. Mostly latched driving is used in combination with a Sip and Puff array, where the lip switch serves as external stop switch.

Configure external stop switch parameters

Configure following parameters to set up the external stop switch.

 Open Chair Setup -> Modules -> desired input to which external stop switch is connected.
 In Control Setup -> +

🔵 🐕 Read 🛛 🐕 Write	TDX SP2 ULM 🛛 😕	Reset to Default 🛛 😂 Manage	2
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	
Home	Power Module	authorization care	ine singe
Functions	REM 2xx	CONTROL INPUTS/OUTPUTS	
User Preferences	REM 4xx	Left Jack Socket (J1) Tip Input Type	Button Short + Long Press button
Chair Log	REM 5xx	Enable Input Type	On 📝
Chair Setup	NEW JAA	Fail-safe mode	Off X
Modules	CR 4xx	Short Press	Profile and Function Navigation Next Function
	ACU 2xx	Long Press	Profile and Function Navigation Next Profile
Actuator Motions	TPI	Input Port Debounce	0.0 s
Lighting		Left Jack Socket (J1) Ring	
	TPI ACU	Input Type	Not Connected
	IN 5xx	Input Port Debounce	- + 0.0 s
	ACT400-1	Right Jack Socket (J2) Tip	Button
	AC1400-1	Input Type	Momentary button
		Enable Input Type	On 🗸
		Fail-safe mode	Off X
		Momentary (1)	[no assignment]
		Default [no assignment]	
		Sets the action for the switch when pressed.	
		Stop driving and seating	Off ×
		Input Port Debounce	- + 0.0 s
Filter parameters	×	Right Jack Socket (J2) Ring	

Set **Input Type** to desired input, for example, **Momentary**.

3.

File Connection View Help	1		
LAK-H16166775	+ TDX SP2 ULM 😕 Rese	t to Default 🔗 Manage	<u>ب</u> ه ا
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	
LaJ Home	Power Module	auth tol tory and	. to strop
Sea Functions	REM 2xx	CONTROLINPUTS/OUTPUTS	
0 User Preferences	REM 4xx	Input Type	Button Short + Long Press button
🗎 Chair Log	REM 5xx	Enable Input Type	On 🔽
😸 Chair Setup	CR 4xx	Fail-safe mode	Off X Profile and Function Navigation
Modules		Short Press Long Press	Next Function Profile and Function Navigation
Actuator Motions	ACU 2xx	Input Port Debounce	Next Profile 0.0 s
ED Lighting	TPI	Left Jack Socket (J1) Ring	
	TPI ACU	Input Type	Not Connected
	IN 5xx	Input Port Debounce Right Jack Socket (J2) Tip	- + 0.0 s
	ACT400-1	Input Type	Button Momentary button
		Enable Input Type	On 🔽
		Eail.safermode	Off X
		Momentary ③ Default [no assignment] Sets the action for the switch when pressed.	(no assignment)
		Stop driving and seating	On 2
Q Filter parameters X		Right Jack Socket (J2) Ring	0.05

Click on information icon next to **Momentary**. Enable **Stop driving and seating**.

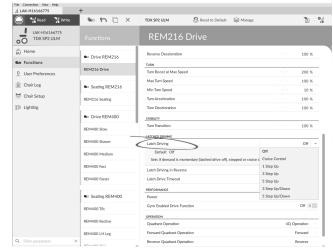
 $\underline{\mathring{l}}$ You do not need to assign a function to the switch.

Configure latch drive parameters

The following parameters can be set individually for each drive function.

2.

1. Open **Functions** -> open desired drive function.



Set type of latched driving with **Latch Driving**. For more information about types of latched driving, refer to user manual of remote.

3.	File Connection View Help	+						
	🔘 🖼 Read 🖼 Write	🎭 🐏 🗋 🗙	TDX SP2 ULM	🕄 Reset to Default	😂 Manage		2	°.
	LAK-H16166775 TDX SP2 ULM	Functions	REM216 [Drive				
	tru Home	Drive REM216	Reverse Deceleration				100 %	
	So Functions	S Drive REM216	TURN					
	O User Preferences	REM216 Drive	Turn Boost at Max Speed	I		- +	200 %	_
			Max Turn Speed				100 %	
	Chair Log	Seating REM216	Min Turn Speed				10 %	
	😁 Chair Setup	REM216 Seating	Tum Acceleration				100 %	
	E Ughting		Tum Deceleration				100 %	
		C Drive REM400	STABILITY					
		REM400 Slow	Tum Transition				100 %	
		REM400 Slower	LATCHED DRIVING				Off	- 1
		REM400 Medium	Latch Driving Latch Driving in Reverse				Off ×	1
		REM400 East	Latch Drive Timeout				300.0 s	
		REMMOUTASL	PERFORMANCE					- 1
		REM400 Faster	Power				100 %	- I.
			Gyro Enabled Drive Func	tion			Off ×	11.
		 Seating REM400 	OPERATION					- 1
		REM400 Tilt	Quadrant Operation			4Q (Operation	<u> </u>
		REM400 Recline	Forward Quadrant Opera	tion			Forward	<u> </u>
		REM400 Recline	Reverse Quadrant Operat	tion			Reverse	<u> </u>
		REM400 LH Leg	Left Quadrant Operation				Left	· .
	Q. Filter parameters X	-	Reverse Quadrant Operat	tion			Reverse	

Set Latch Driving in Reverse parameter to On, to allow latched driving in reverse.

 Set maximum time that driving is latched without input from user with Latch Drive Timeout parameter.

10.9 Adjust quadrant operation

This parameter sets the drive function's user input to operate in 3-quadrant (3Q)or 4-quadrant (4Q) mode. Typically, the 4Q mode is chosen with joystick-based inputs or arrays, that provide 4 quadrants, for example, a Sip and Puff array. The 3Q mode is chosen for user inputs that provide 3 quadrants, for example, a head array.

File Connection View Help			
a LAK-H16166775	+		
🔘 😪 Read 🛛 💥 Write	🐿 🖓 🗋 🗡	TDX SP2 ULM 🖉 Reset to Default	≧ Manage 👔 🕴 🔮
LAK-H16166775 TDX SP2 ULM	Functions	Drive REM400	
Home	Crive REM216	Reverse Deceleration	100 %
So Functions	REM216 Drive	TURN Turn Boost at Max Speed	- + 200 %
0 User Preferences		· · · · · · · · · · · · · · · · · · ·	
🚊 Chair Log	Seating REM216	Max Turn Speed	- + 50 %
😁 Chair Setup		Min Turn Speed	- + 40 %
E Lighting	REM216 Seating	Turn Deceleration	100 /0
Ellin Filling		lum Deceleration	100 %
	Drive REM400	STABILITY	
	REM400 Slow	Turn Transition	- + 65 %
		LATCHED DRIVING	1
	REM400 Slower	Latch Driving	Off
	REM400 Medium	Latch Driving in Reverse	Off ×
	REM400 Fast	Latch Drive Timeout	- + 60.0 s
	REMHOUTAN	PERFORMANCE	
	REM400 Faster	Power	- + 100 %
		Gyro Enabled Drive Function	On 📝
	Seating REM400	OPERATION	
	REM400 Tilt	Quadrant Operation	4Q Operation ~
		Forward Quadrant Operation	4Q Operation
	REM400 Recline	Reverse Quadrant Operation	3Q - Forward Only
	REM400 LH Leg	Left Quadrant Operation	3Q - Reverse Only 3Q - Manual Toggle
Q Filter parameters	X DEM400 PULLET	Right Quadrant Operation	3Q - Automatic Toggle

The options are:

- 4Q Operation
- 3Q Forward Only
- 3Q Reverse Only
- 3Q Manual Toggle
- 3Q Automatic Toggle

4Q Operation

When **4Q Operation** is selected, each quadrant is assigned a unique direction from forward, reverse, left and right, this is the default mode. To change these default directions, the quadrants can be reassigned with a different direction by setting the following parameters:

- Forward Quadrant Operation
- Reverse Quadrant Operation
- Left Quadrant Operation
- Right Quadrant Operation

It is not necessary that all quadrants are assigned unique directions. If required, one or more quadrants can share the same direction. For example, **Forward Quadrant Operation** and **Reverse Quadrant Operation** can both be set to **Forward**. For more information about adjusting the drive direction, refer to *10.9.1 Adjust drive directions, page 101*

3Q - Forward Only

When **3Q** - Forward Only is selected, the user input can drive the wheelchair forward, left and right.

If required, each quadrant can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Forward Only** mode.

3Q - Reverse Only

When **3Q** - **Reverse Only** is selected, the user input can drive the wheelchair reverse, left and right.

If required, each quadrant can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Reverse Only** mode.

3Q - Manual Toggle

When **3Q** - **Manual Toggle** is selected, the user input can drive the wheelchair forward, reverse, left and right. The forward and reverse directions are controlled by the user toggling an external switch.

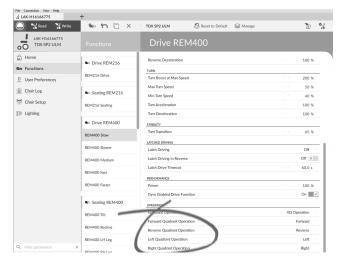
If required, each quadrant can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Manual Toggle** mode.

3Q - Automatic Toggle

When **3Q** - **Automatic Toggle** is selected, the user input can drive the wheelchair forward, reverse, left and right. The forward and reverse directions are controlled by the user toggling the forward quadrant.

If required, each quadrant input can be reassigned with a different direction. Note that the **Reverse Quadrant Operation** parameter is not applicable in **3Q** - **Automatic Toggle** mode.

10.9.1 Adjust drive directions



Forward Quadrant Operation

This parameter sets the direction that the wheelchair moves when the forward quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's forward quadrant is selected.

Reverse Quadrant Operation

This parameter sets the direction that the wheelchair moves when the reverse quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's reverse quadrant is selected.

This parameter is not available when quadrant operation is set to any of the 3Q modes.

Left Quadrant Operation

This parameter sets the direction that the wheelchair moves when the left quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's left quadrant is selected.

Right Quadrant Operation

This parameter sets the direction that the wheelchair moves when the right quadrant of the user input is selected. Options available are:

- Forward
- Reverse
- Left
- Right
- Ignored

If **Ignored** is selected, the wheelchair does not move in any direction when the input's right quadrant is selected.

10.10 Enable Indirect Navigation

Depending on which type of indirect navigation should be activated for user, different main parameters must be enabled.

Types of indirect navigation are:

- Menu Select
- Menu Scan

Parameter	Menu Scan	Menu Select
Navigation Type	Menu Scan	Menu Select
Enable Menu Scan	On	Off
Navigation Timeout Enabled	On / Off	On / Off

Enabling Menu Scan / Menu Select

1. Open User Preferences.

2.

C 😪 Read 🔥 Write •• 🗅 🗙 TDX SP2 ULM S. Reset to Default Se Mana 76 O.I 00 LAK-H16166775 TDX SP2 ULM Home Sleep Timeout Duratio Bunction Enable Joystick Wakeu On 🗸 User Pre LOCK SETTINGS Enable Lock On 🗸 Chair Log USER FUNCTION NAVIGATION 😁 Chair Setu On 🗸 D Lighting Profile Change uses last On 🗸 Restricted user price Startup Function on in 1st Profile Menu Scan Rate 4.0 s Number of Menu Scan Cycl can Selection Navigation type Default Menu S Selects the type of Menu Select Menu Se Navigation Entry First Profile User Inpu (TROL INPUT/ 12 Hour Fig. 10-14

Tig. 10-14

Set parameter **Navigation type** according to above table.

3. Open **Functions** \rightarrow desired profile.

4.

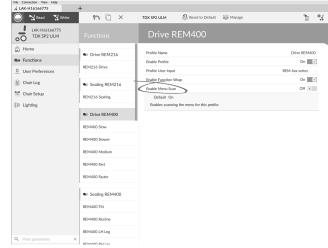


Fig. 10-15

Set Parameter **Enable Menu Scan** according to above table.

- 5. Open desired function within this profile.
- 6.

🔵 🔧 Read 🛛 🎖 Write	🎭 🖓 🗋 🗙	TDX SP2 ULM 🕴 Reset to Default 😂 Manage		2
LAK-H16166775 TDX SP2 ULM	Functions	REM400 Slow		
Home	Drive REM216	GENERAL		
 Functions 		Drive Function Name	R	EM400 Slow
User Preferences	REM216 Drive	Enable Drive Function		On 🗸
Chair Log	Seating REM216	Parties Veriliput	Profile User Inpu	rt (RE
Chair Setup	Seating REM210	Navigation Timeout Enabled		Off ×
6 Chair Setup	REM216 Seating	FORWARD		
Lighting	_	Max Forward Speed		30 %
	C Drive REM400	Min Forward Speed		20 %
	REM400 Slow	Forward Acceleration		80 %
		Forward Deceleration		100 %
	REM400 Slower	REVERSE		
	REM400 Medium	Max Reverse Speed		30 %
	REM400 Fast	Min Reverse Speed		28 %
	NLIPPOU Fast	Reverse Acceleration		100 %
	REM400 Faster	Reverse Deceleration		100 %
		TURN		
	Seating REM400	Turn Boost at Max Speed		200 %
	REM400 Tilt	Max Turn Speed		50 %
	REM400 Recline	Min Turn Speed		40 %
	REMINOURSCHIRE	Turn Acceleration		100 %
	REM400 LH Leg	Tum Deceleration		100 %

Fig. 10-16

Set parameter **Navigation Timeout Enabled** to Off or On.

7. If **Navigation Timeout Enabled** is set to Off, program an external switch to enter navigation mode. See 10.11 Programming external switches, page 102

Other Parameters in User Preferences

🔵 🐕 Read 🛛 🎇 Write	🐿 🖓 📋 🗙 TDX SP2	ULM	Reset to Default	😂 Manage		1	¢
LAK-H16166775 TDX SP2 ULM	User Preferences						
Home	Sleep Timeout Duration					5 min	
Functions	Enable Joystick Wakeup					On V	
User Preferences	LOCK SETTINGS					0.1	
Chair Log	Enable Lock					On 🗾 🗸	1
Chair Setup	USER FUNCTION NAVIGATION						
	Cycle Profiles					On 🗸	1
Lighting	Profile Change uses last used function					On 🗸	1
	Restricted user priority				No Re	striction	
	Startup Function				1st Function in 1st	it Profile	
	Timeout for navigation entry	A)				30 s	
	Menu Scan Rate	B				4.0 s	
	Number of Menu Scan Cycles before Idle	C				3	
		D			Any 0	Quadrant	
		E)			Mer	u Select	
	Navigation Entry	E)			Fin	t Profile	
	Navigation preference	G)			U	ser Input	
	CONTROL INPUT/OUTPUT SETTINGS						
	Activation Time					0.7 s	
	DISPLAY SETTINGS						_
	User clock display mode					12 Hour	
Filter parameters ×	User clock offset hours					0 h	

A	Timeout for navigation entry : Sets inactivity time required before system enters navigation mode, for navigation mode with Navigation Timeout only.
₿	Menu Scan Rate: Sets rate at which menu scan iterates through menu, for Menu Scan only.
©	Number of Menu Scan Cycles before Idle : Number of times menu is iterated through before going to idle, assuming no user selection, for Menu Scan only.
D	Scan Selection: Configures which quadrants of Primary input can be used to make selections, for Menu Scan only.
Œ	Navigation type: Selects type of navigation.
Ð	Navigation Entry: Sets entry point to menu.
G	Navigation preference : Selects whether navigation using touch interface has preference over navigation using user input. If user input is selected, display highlights current selection.

10.11 Programming external switches

There are a lot of possibilities to connect external switches to the system, for example, jack sockets.

- Lt is exemplary described how to program external switches which are connected to the jack sockets of the DLX-REM400 and DLX-REM500. Left Jack Socket (J1) Tip is reserved to Power Up / Power Down the wheelchair. It is not possible to change this setting.
- Choose the Input you like to edit, for example Left Jack Socket (J1) Ring.
 2.



FIG. 10-1

Choose an **Input Type**. Options are:

- Not Connected
- 10–way switch
- 17-way switch
- **Resistor Bands** (usable in combination with Function keys)
- Momentary button
- Short + Long Press button

Select if **Stop driving and seating** should be enabled or not by moving slider. For more information about this parameter, see 10.8 Setting up a system for latched driving, page 99.

File Connection View Help LAK-H16166775	+		
🔘 😪 Read 🛛 🎇 Write	🐝 🖭 🗌 🗙	TDX SP2 ULM Seset to Default Se Manage	1
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	
al Home	Power Module	Input Port Debounce	
So Functions	-	Left Jack Socket (J1) Ring	- + 0
	REM 2xx	Input Type	No swap
0 User Preferences	REM 4xx	Input Port Debounce	
E Chair Log	REM 5xx	Right Jack Socket (J2) Tip	Switch
😸 Chair Setup		Input Type	10-way switch
Modules	CR 4xx	Enable Input Type	On
Actuator Motions	ACU 2xx	Fail-safe mode Band 1	Actuator Motions
	TPI	Default [no assignment]	Tik
Lighting	TPLACU	Sets the action for the switch when activated with res	istance band 1.
		Stop driving and seating	Off ×
	IN 5xx		
	GYR 100	Actuator Operation Mode	Extend
	ACT400-1	Band 2	Extend
		Band 3	Latched Extend
		Band 4	Latched Retract
		Band 5	Toggle
		Band 6	Latched Toggle
		Band 7 Band 8	[no assignment]
		Band 9	[no assignment]
Q Filter parameters X			[no assignment]

If actuator motion is assigned to parameter, **Actuator Operation Mode** must be selected. The options are:

- Extend
- Retract
- Latched Extend
- Latched Retract
- Toggle
- Latched Toggle

C 😪 Read 🔥 Write	Sac 9"1		TDX SP2 ULM	😓 Reset to Default	😂 Manage	
LAK-H16166775 TDX SP2 ULM			REM 4>	x		
Home Home	Power Module		Input Port Deb	ounce		- + 0.0 s
So Functions	REM 2xx		Left Jack Socket (J1) Ring		
0 User Preferences			Input Type			Not Connected
🗎 Chair Log	REM 4xx		Input Port Deb	ounce		- + 0.0 s
	REM 5xx		Right Jack Socket (J	12) Tip		
Chair Setup	CR 4xx		Input Type			[no assignment]
Modules			Enable Inp	ut Type		Driving Toggle Driving Direction
Actuator Motions	ACU 2xx		Fail-safe r	node		Actuator Motions
Lighting	TPI		Band 1	\rightarrow		Tilt
	TPLACU		Band 2			Recline
	IN 5xx		Band 3			Elevate Left Leg
	IN 5xx		Band 4			Right Leg
	GYR 100		Band 5			Both Legs
	ACT400-1		Band 6 Band 7			LNX
			Band 7 Band 8			Recline and Legs Profile and Function Navigation
			Band 9			Next Function
			Band 10			Previous Function
			Input Port Deb	ouoce		Next Profile
			Left Jack Socket (J2			Previous Profile Toggle Navigation Menu
			Input Type			Menu Scan Selection
Q Filter parameters X			Input Port Deb	ounce		Lighting
						Toggle Lighting Output
_			Fig. 10	18		
	1	3	5	7	9	
	2	4	6	8	(10)	
_	Fig. 10)-19 Ba	ands on	10–way-	switch	
If 10–way selected, as						
10 or Band						

File Connection View Help , LAK-H16166775 +

File Connection View Help	+		
🔘 🐕 Read 😤 Write	🐿 🗠 🗋 🗙	TDX SP2 ULM 🛛 🖉 Reset to Default 😂 Manage	2
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	
Home	Power Module	Input Port Debounce	
So Functions	REM 2xx	Left Jack Socket (J1) Ring	- + 0 °
	REM 2XX	Input Type	No swap
	REM 4xx	Input Port Debounce	
🗎 Chair Log	REM 5xx	Right Jack Socket (J2) Tip	
😸 Chair Setup		Input Type	Switch 10-way switch
Modules	CR 4xx	Enable Input Type	On 🗸
Actuator Motions	ACU 2xx	Fall-safe mode	Off ×
		Band 1	Actuator Motions Tilt
E Lighting	TPI	Default [no assignment]	
	TPLACU	Sets the action for the switch when activated with res	istance band 1.
	IN 5xx	Stop driving and seating	Off ×
	GYR 100	Actuator Operation Mode	Extend
	ACT400-1	Band 2	Extend
	ACINO.1	Band 3	Retract
		Band 4	Latched Extend
		Band 5	Toggle
		Band 6	Latched Toggle
		Band 7	[no assignment]
		Band 8	[no assignment]
0	×	Band 9	[no assignment]
Q Filter parameters	^	Band 10	[no assignment]

Open parameter by clicking on parameter name.

4.

🔵 😽 Read 🛛 💥 Write	🎭 🐴 🗋 🗙	TDX SP2 ULM Seset to Default Manage	1
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	
Home	Power Module	Enable Input Type	On 🗸
Functions	REM 2xx	Fail-safe mode	Off ×
User Preferences	REM 4xx	Short Press	Profile and Function Navigation Next Function Profile and Function Navigation
Chair Log	REM 5xx	Long Press Input Port Debounce	Next Profile
Chair Setup		Left Jack Socket (J1) Ring	[no assignment]
Modules	CR 4xx	Input Type	Driving
Actuator Motions	ACU 2xx	Input Port Debounce	Toggle Driving Direction Actuator Motions
Lighting	трі	Right Jack Socket (J2) Tip	Tilt
	TPLACU	Input Type	Recline
	IN 5xx	Enable Input Type	Elevate Left Leg
		Fall-safe mode	Right Leg
	GYR 100	Input Port Debounce	Both Legs LNX
	ACT400-1	Right Jack Socket (J2) Ring	Recline and Legs
		Input Type	Profile and Function Navigation
		Input Port Debounce	Next Function Previous Function
		Multipurpose Button A	Next Profile
		Multipurpose Button B	Previous Profile
		Input Type Short Press	Toggle Navigation Menu Menu Scan Selection
Filter parameters X		Long Press	Lighting Toggle Lighting Output

Fig. 10-22

If **Momentary button** is selected, assign desired action to button.

- a. Open parameter by clicking on parameter name. Select if **Stop driving and seating** should be enabled or not by moving slider. For more information about this parameter, see 10.8 Setting up a system for latched driving, page 99.
- b. If actuator motion is assigned to parameter, **Actuator Operation Mode** must be selected.

5.

LAK-H16166775	+ % % \ X	TDX SP2 ULM Reset to Default Manage	3
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	B
Home	Power Module		
In Functions	REM 2xx	CONTROL INPUTS/OUTPUTS Left Jack Socket (J1) Tip	
User Preferences	REM 4xx	Input Port Debounce	0.0 s
Chair Log		Left Jack Socket (J1) Ring	
🕏 Chair Setup	REM 5xx	Input Type	Not Connected [no assignment]
Modules	CR 4xx	Input Port Debounce	Driving
Actuator Motions	ACU 2xx	Right Jack Socket (J2) Tip	Toggle Driving Direction
	TPI	Input Type Enable Input Type	Actuator Motions
Lighting		Fail-safe mode	Recline
	TPLACU	Short Press	Elevate
	IN 5xx	Long Press	Left Leg Right Leg
	GYR 100	Input Port Debounce	Both Legs
	ACT400-1	Right Jack Socket (J2) Ring	LNX
		Input Type	Recline and Legs Profile and Function Navigation
		Input Port Debounce	Next Function
		Multipurpose Button I	Previous Function
		Momentary	Next Profile Previous Profile
		Multipurpose Button II	Toggle Navigation Menu
		Input Type	Menu Scan Selection
λ Filter parameters >	<	Momentary	Lighting Toggle Lighting Output

Fig. 10-23

If Short + Long Press button is selected, assign desired action to Short Press and Long Press.

- a. If actuator motion is assigned to parameter, Actuator Operation Mode must be selected.
- ال If the external switch should be used to enter indirect navigation, assign Toggle Navigation Menu action to parameter.

Other parameters

A

2.

🔵 🐕 Read 🧏 Write	🐝 🐏 🗋 🗙	TDX SP2 ULM SReset to Default Scharage	1
LAK-H16166775 TDX SP2 ULM		REM 4xx	
Home	Power Module	Swap Joystick Axis	No swap
Functions	REM 2xx	CONTROL INPUTS/OUTPUTS	
User Preferences	REM 4xx	Left Jack Socket (J1) Tip	
Chair Log	KEM 9XX	Input Port Debounce	- + 0.0 s
-	REM 5xx	Left Jack Socket (J1) Ring	
\$ Chair Setup	CR 4xx	Input Type	Not Connected
Modules		Input Port Debounce	- + 0.0 s
Actuator Motions	ACU 2xx	Right Jack Socket (J2) Tip	
Lighting	TPI	Input Type	Short + Long Press button
	TPLACU	Enable Input Type (A) Fail-safe mode (B)	On V
	IN 5xx	Short Press	Next Function
		Long Press	Next Profile
	GYR 100	Input Port Debounce	0.0 s
	ACT400-1	Right Jack Socket (J2) Ring	
		Input Type	Not Connected
		Input Port Debounce	- + 0.0 s
		Multipurpose Button I	
		Input Type	Momentary button
		Momentary	Next Profile
		Multipurpose Button II	
Filter parameters	<	Input Type	Momentary button

Enable Input Type: When set, Input Type is enabled.

- (B) Fail-safe mode: When turned on, external switch must not be removed from input, otherwise wheelchair does not drive.
- © **Input Port Debounce**: This parameter determines when to response to input. If input signal is present for a duration less than time set by parameter, controller does not response to it.
 - input Port Debounce can be useful when, for example, the controller needs to ignore spurious signals such as those generated by a ball switch when driving over rough terrain.

10.12 Programming multipurpose buttons

Programming the multipurpose buttons is similar to programming external switches.

1. Open Chair Setup -> Modules -> REM 4xx or REM 5xx.

🔵 🔧 Read 🛛 🕻 Writ	e TDX SP2 ULM	😵 Reset to Default 🛛 😂 Manage	٦٤ (
LAK-H16166775 TDX SP2 ULM		REM 4xx	
Home	Power Module	writings awy assess a treat	the array
Functions	REM 2xx	CONTROL INPUTS/OUTPUTS	
0 User Preferences	REM 4xx	Input Port Debounce	- + 0.0 s
🖹 Chair Log	REM 5xx	Left Jack Socket (J1) Ring	
😸 Chair Setup		Input Type	Not Connected
Modules	CR 4xx	Input Port Debounce	- + 0.0 s
Actuator Motions	ACU 2xx	Right Jack Socket (J2) Tip	
	TPI	Input Type	Short + Long Press button
Lighting		Enable Input Type	On 📝
	TPLACU	Fail-safe mode	Off ×
	IN 5xx	Short Press	Next Function
	ACT400-1	Long Press	Next Profile
	AC1400-1	Input Port Debounce	- 0.0 s
		Right Jack Socket (J2) Ring	
	Input Type	Not Connected	
		Input Bort Debounce	- + 0.0 s
		Multipurpose Button I	
		Input Type	Momentary button
		Momentary	Not Connected
		Multipurpose Button II	Button Momentary button
		Input Type	Short + Long Press button
Q Filter parameters	×	Momentary	Next Function

Choose Input Type. The options are:

- Not Connected
- Momentary button
- Short + Long Press button

🔵 🔧 Read 🛛 🔧 Write	TDX SP2 ULM	Reset to Default Search Manage	2
LAK-H16166775 TDX SP2 ULM		REM 4xx	
Home	Power Module	CONTROL INPUTS/OUTPUTS	
Supervision Functions	REM 2xx	Left Jack Socket (J1) Tip Input Port Debounce	- + 0.0 s
0 User Preferences	REM 4xx	Left Jack Socket (J1) Ring	0.0 s
🖹 Chair Log	REM 5xx	Input Type	Not Connected
😸 Chair Setup	NEM DAX	Input Port Debounce	(no assignment)
Modules	CR 4xx	Right Jack Socket (J2) Tip	[no assignment]
	ACU 2xx	Input Type	Toggle Driving Direction
Actuator Motions	TPI	Enable Input Type	Actuator Motions
E Lighting	IPI	Fail-safe mode	Tilt
	TPI ACU	Short Press	Recline Elevate
	IN 5xx	Long Press	Left Leg
		Input Port Debounce	Right Leg
	ACT400-1	Right Jack Socket (J2) Ring	Both Legs
		Input Type	LNX
		Input Port Debounce	Recline and Legs Profile and Function Navigation
		Multipurpose Button I	Next Function
		Input Type	Previous Function
		Short Press	Next Profile
		Long Press	Previous Profile
		Multipurpose Button II	Toggle Navigation Menu Menu Scan Selection
		Input Type	Liehtine

If Short + Long Press button is selected, assign desired action to Short Press and Long Press.

File Connection View Help LAK-H16166775	+		
🔘 😪 Read 😤 Write	TDX SP2 ULM 🛛 😓 Res	et to Default 🛛 😂 Manage	2
LAK-H16166775 TDX SP2 ULM	Modules	REM 4xx	
Home	Power Module	KEYL MARK JULKER (24) PHILS	
Supervision Functions	REM 2m	Input Type	Not Connected
0 User Preferences		Input Port Debounce	- + 0.0 s
_	REM 4xx	Right Jack Socket (J2) Tip	
🖹 Chair Log	REM 5xx	Input Type	Short + Long Press button
😸 Chair Setup	CR 4xx	Enable Input Type	On 🗸
Modules	CR 400	Fail-safe mode	Off ×
Actuator Motions	ACU 2xx	Short Press	Next Function
E Lighting	TPI	Long Press	Next Profile
Ellin riRunu8	TPLACU	Input Port Debounce	0.0 s
	TPIACO	Right Jack Socket (J2) Ring	
	IN 5xx	Input Type	Not Connected
	ACT400-1	Input Port Debounce	- + 0.0 s
		Multipurpose Button I	Button
		Short Press	Short + Long Press button Actuator Motions Tilt
		Default [no assignment] Sets the action for the switch when pressed.	1 IR
		Actuator Operation Mode	Extend
		Long Press	Retract
		Multipurpose Button II	Latched Extend
		Input Type	Latched Retract Toggle
Q Filter parameters	<	Momentary	Latched Toggle

If actuator motion is assigned to parameter, **Actuator Operation Mode** must be selected. The options are:

• Extend

- Retract
- Latched Extend
- Latched Retract
- Toggle
- Latched Toggle

- 4. If **Momentary button** is selected, assign desired action to button.
 - a. If actuator motion is assigned to parameter, Actuator Operation Mode must be selected.

10.13 Installing / Setting up alternative inputs

There are different types of alternative inputs, that interface differently to the system. Connect the components to the particular inputs, see table below.

Component	Input
Sip and Puff	Input Module IN5xx
Sip and Puff Head Array	Input Module IN5xx
Pediatric Compact Joystick	Input Module IN5xx
Head Array	ТРІ
Chin control	ТРІ
Compact Single Switch Joystick	ТРІ
Four Switch Proximity Array	ТРІ
Remote Stop Switch	Power Module

To install a Remote Stop Switch, just connect to the Power Module using the interface cable and to the 4-way connector using the Bus cable, see wiring diagram 3.8 Wiring Diagrams, page 17. Programming is not necessary.

Programming

- 1. Open Functions.
- 2. Add new profile or add user function to existing profile. For more information about adding profiles and functions, refer to 10.1 Profile and Function Actions, page 93.



	NO IN DI X		
THE PERSON NOT			
	· Des REALING		
	· losing https://		
	_	- Caral	
	New	Drive Function	
	Drive	Function Name Drive	
		tion User Input	
	Million Part	Profile User Input	
	Rest Contract, Name	REM 2xx series REM 4xx series	
		Compast Remote	
	· Correctivity	Third Party	
		Input Module	
	· losts Italia		

Set Function User Input to Input Module or to Third Party, depending on component input.

- Same procedure for drive, seating and connectivity functions.
- 4. Open Chair Setup -> Modules -> IN 5xx or TPI, depending on component input.

LAK-H16166775	+		
🔵 🐕 Read 🛛 🕻 Write	TDX SP2 ULM	S Reset to Default S Manage	2
LAK-H16166775 TDX SP2 ULM	Modules	ТРІ	
Home	Power Module	USER INPUT - CONFIGURATION	
Supervisions	REM 2xx	User Input Configuration	Proportional Joystick ~
0 User Preferences	REM 4xx	Neutral Window	Proportional Joystick Discrete Proportional Joystick
🗎 Chair Log		Joystick Throw	Discrete Proportional Joystick Switches
🐱 Chair Setup	REM 5xx	Joystick Switch Threshold	Switched Head Array
Modules	CR 4xx	Tremor dampening Joystick Rotation Angle	Switched Joystick Sip and Puff
Actuator Motions	ACU 2xx	Swap Joystick Axis	Sip and Putt
ED Lighting	TPI	CONTROL INPUTS/OUTPUTS	
	TPLACU	Control Input 4	
		Input Type	Not Connected
	IN 5xx	Input Port Debounce	- + 0.0 s
	GYR 100	Control Input/Output 6	
	ACT400-1	Input Type	Not Connected
		Input Port Debounce	+ 0.0 s
		Control Input/Output 8	
		Input Port Debounce	- + 0.0 s
		Control Input/Output 10	
		Input Type	Not Connected
		Input Port Debounce	- + 0.0 s
		Control Input/Output 12	

Set **User Input Configuration** to desired component. Options are:

- Proportional Joystick: Pediatric Compact Joystick, Chin Control, Compact Single Switch Joystick
- Discrete Proportional Joystick: not used
- Switches: Four Switch Proximity Array , Sip and Puff Head Array
- Switched Head Array: Head Array
- Switched Joystick: not used
- Sip and Puff: Sip and Puff

5.

- 6. Depending on component, modify other parameters. For switched inputs, such as Sip and Puff, parameters are found under **User Preferences**, refer to 5.2.1 *Overview User Preferences, page 52*.
 - For more information about installing a Sip and Puff, refer to 10.15 Sip and Puff installation, page 107.

10.14 Installing / Setting up Alternative Outputs

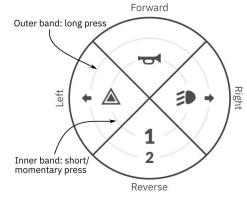


Fig. 10-25 Activation quadrants and bands

The utility function card allows the user to control lighting functions or external outputs using the output module DLX-OUT500. Switches are represented on a utility function card with icons located on two circular activation bands, short/momentary press and long press, within four quadrants (see 10-25 Activation quadrants and bands, page10¢). The activation time to distinguish between short press and long press can be changed in user preferences, see 5.2.1 Overview User Preferences, page 52.

The quadrant and the position of the icons on the bands show the user how to select and operate the switches with their user input. The following instruction shows you how to program the first control output of DLX-OUT500 using a short/momentary press forwards as an example.

- 1. Open Functions.
- 2. Add new utility function or open existing utility function. See *10.1 Profile and Function Actions, page 93*.
- 3. Scroll to section about your desired input command, like Forward Momentary/Short Press.
- 4.

🔵 🔧 Read 🛛 🎇 Write	🎭 📬 🗋 🗙	TDX SP2 ULM 🕺 Reset	to Default 🛛 😂 Manage
LAK-H16166775 C12H10A9B01X-03 Flexible Navigation () v5.0		Utility	
Home		натідаціон тіпісоці спаліси	~~ <u> </u>
Functions	REM2XX D	Allow Multiple Quadrants	Off ×
	D1	FORWARD MOMENTARY/SHORT I	RESS
User Preferences		Output	OUT500-1 Output 1
Chair Log	REM2XX S	Activation Mode	None
5 Chair Setup	51	Display Icon	Position Lights
Core Features	21	FORWARD LONG PRESS	Right Indicator
	C Utility	Output	Hazard Lights
Drive Limits	a ounty	Default None	REM400 Hom
Gyro Limits	Mouse Mover	Sets the output for Forwa	100011011
Lighting	Utility	Display Icon	OUT500-1 Output 1
		REVERSE MOMENTARY/SHORT P	OUT500-1 Output 2 OUT500-1 Output 3
	C REM400 D	Output	OUT500-1 Output 4
		Display Icon (1)	OUT500-1 Output 5
	D1	REVERSE LONG PRESS	OUT500-1 Output 6
	D2	Output	OUT500-1 Output 7
	D3	Display Icon	OUT500-1 Output 8
		LEFT MOMENTARY/SHORT PRESS	
	REM400 S	Output	Hazard Lights

Fig. 10-26

Assign output OUT500–1 Output 1 to parameter Output.

5.

🔵 🖼 Read 🛛 🚼 Write	🎭 📬 🗋 🗙	TDX SP2 ULM 🖉 Reset to Default 😂 Manage	
LAK-H16166775 C12H10A9B01X-03 Flexible Navigation () v:		Utility	
Home		Trangation Timeoux Enaucu	-
So Functions	CREM2XX D	Allow Multiple Quadrants Off X	
0 User Preferences	D1	FORWARD MOMENTARY/SHORT PRESS	_
_		Output OUT500-1 Output 1	
Chair Log	CREM2XX S	Activation Mode Momentary	>
😁 Chair Setup	51	Display Icon None Momentary	
Core Features	-	EORWARD LONG PRESS	
	Cutility	Output Latch ON	
() Drive Limits	=• Otmey	Default None Toggle	
Ø Gyro Limits	Mouse Mover	Sets the output for Forward Quadrant Long Press.	
Lighting	Utility	Display Icon None	
		REVERSE MOMENTARY/SHORT PRESS	
	REM400 D	Output None	v
	D1	Display Icon None	
	DI	REVERSE LONG PRESS	
	D2	Output None	v
	D3	Display Icon None	
		LEFT MOMENTARY/SHORT PRESS	

Fig. 10-27

Set parameter Activation Mode to desired value. Following modes are available from list:

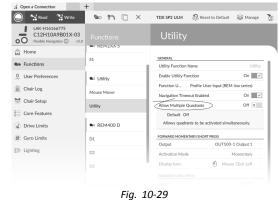
None	—
Momentary	Activate an output as long as switch is selected. When choosing this mode it is not possible to configure second band for this direction.
Latch ON	Activate an output and remain activated when switch is deselected.
Latch OFF	Deactivate an output and remain deactivated when switch is deselected.
Toggle	Change current output state and remain this new state when switch is deselected.



Set parameter Display Icon to desired value. Select a display icon from list of available icons.

- 7. Modify parameters for the other commands.
- 8. Scroll to section General.
- 9.

6.



Set parameter Allow Multiple Quadrants to On to allow switching two outputs simultaneously.

10.15 Sip and Puff installation

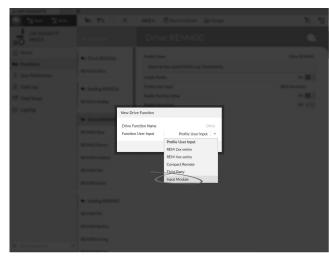
A Sip and Puff module is included in the input module.

A Sip and Puff module provides the user with the ability to activate four digital inputs with their breath via a tube depending on pressure level, hard or soft, and direction, sip or puff. These inputs can be used to control driving or seating actions.

- 1. Open Functions.
- 2. Add user function for Sip and Puff module. For more information about adding profiles and functions, refer to 10.1 Profile and Function Actions, page 93.

3.

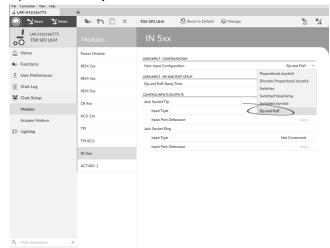
5.



Set Function User Input to Input Module.

 $\begin{tabular}{ll} $\widehat{\]}$ Same procedure for drive, seating and connectivity functions. \end{tabular}$

4. Open Chair Setup -> Modules -> IN 5xx.



Set User Input Configuration to Sip and Puff.

- 6. Calibrate Sip and Puff module, refer to *10.15.1 Sip and Puff calibration, page 108*
- 7. Open **User Preferences** to adjust veer behavior for switched inputs. For more information refer to 5.2.1 *Overview User Preferences, page 52*.

10.15.1 Sip and Puff calibration

Primary input operations, such as driving, are disabled when using the calibration tool. This is for safety reasons to prevent unintended operation when calibrating.

There are three pressure zones for each pressure direction (sip and puff):

- Neutral zone,
- soft zone and
- hard zone.

The Sip and Puff module's response to a sip or puff input, depends on which zone the pressure falls within: hard or soft. Pressures within the neutral zone are ignored.

Since all users have different capabilities, the Sip and Puff module can be calibrated to change the size and position of these zones. The zones need to be set so that a user can control the wheelchair comfortably and consistently. A Sip and Puff calibration tool is used to determine the pressure thresholds that define the zones. These thresholds are:

- Minimum limit for soft puff,
- minimum limit for hard puff,
- minimum limit for soft sip and
- minimum limit for hard sip.

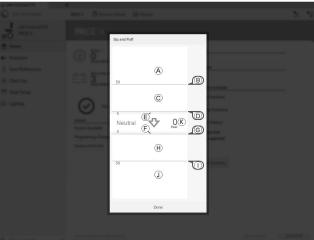
1.

To calibrate the Sip and Puff module, you have to record pressure measurements from a series of pressure samples performed by the user and adjust the four pressure thresholds accordingly.

🔵 🐄 Read 🛛 🕻 Write	🐝 🖤 🗋 🗙	TDX SP2 ULM 🔅 Reset to Default 😂 Manage	2
LAK-H16166775 TDX SP2 ULM	Func d.	REM400 Slow	
Home			
So Functions	C Drive REM216	GENERAL Drive Function Name	REM400 Slov
User Preferences	REM216 Drive	Enable Drive Function	On U
_		Function User Input	Profile User Input (RE
Chair Log	Seating REM216	Navigation Timeout Enabled	Off ×
😁 Chair Setup	REM216 Seating	FORWARD	
Lighting	-	FORWARD Max Forward Speed	- + 30 %
	C Drive REM400	Min Forward Speed	- + 20 %
	REM400 Slow	Forward Acceleration	- + 80 %
	12.1100 0.011	Forward Deceleration	- 100 %
	REM400 Slower	REVIRSE	
	REM400 Medium	Max Reverse Speed	- + 30 %
	REM400 Fast	Min Reverse Speed	- + 28 %
	NL/MMOV Fast	Reverse Acceleration	100 %
	REM400 Faster	Reverse Deceleration	100 %
		TURN	
	 Seating REM400 	Tum Boost at Max Speed	200 %
	REM400 Tilt	Max Turn Speed	- + 50 %
	REM400 Recline	Min Turn Speed	- + 40 %
	PLANES WELLINE	Tum Acceleration	- 100 %
Q Filter parameters	REM400 LH Leg	Turn Deceleration	100 %

Open Connection in menu bar.

Select Sip and Puff Calibration.
 Joint Calibration



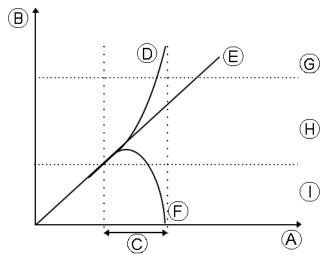
Ø	Hard zone for puff input
₿	Threshold slider to adjust minimum limit for hard puff
©	Soft zone for puff input
D	Threshold slider to adjust minimum limit for soft puff
Œ	Neutral zone for puff input
F	Neutral zone for sip input
G	Threshold slider to adjust minimum limit for soft sip
(\boldsymbol{H})	Soft zone for sip input
1	Threshold slider to adjust minimum limit for hard sip
(I)	Hard zone for sip input

- 4. User performs hard puff, soft puff, hard sip and soft sip in no specific order. For each sip and puff, a pressure level (R) is recorded on calibration tool. Based on these recorded levels, you determine best level at which to set each pressure threshold.
- 5. Drag corresponding Threshold sliders.
 - For soft puff, drag threshold slider D to position just below user's soft puff. Any subsequent pressure below threshold slider D is in neutral zone E and is ignored. Pressure above threshold slider D and below threshold slider B is in soft zone C and determined a soft puff.
 - For hard puff, drag threshold slider [®] to position just below user's hard puff. Pressure below threshold slider [®] is not considered as hard puff. Pressure above threshold slider [®] is in hard zone [®] and determined as hard puff.
 - For soft sip, drag threshold slider G to position just above user's soft sip. Any subsequent pressure above threshold slider G is in neutral zone F and is ignored. Pressure below threshold slider G and threshold slider 1 is in soft zone H and determined as soft sip.
 - For hard sip, drag threshold slider ① to position just above user's hard sip. Pressure above threshold slider ① is not considered as hard sip. Pressure below threshold slider ① is in hard zone ① and determined as hard sip.

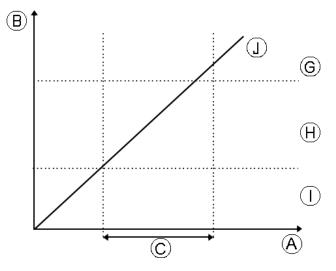
Sip and Puff Ramp Time

The **Sip and Puff Ramp Time** defines the amount of time that a pressure input must remain in the soft zone before it is registered as a soft sip or puff. Consequently, it also provides:

- Time for a user to cross from the neutral zone to the hard zone and
- a filter for any noise (unintentionally pressures) at the zone boundaries.



The ramp time \bigcirc begins at the point where the pressure input \bigcirc , \boxdot or \bigcirc crosses into soft zone \bigcirc — either from neutral zone \bigcirc , when pressure is increasing, or from hard zone \bigcirc , when pressure decreases. A pressure input \bigcirc that reaches the hard zone before ramp time expires, is registered as a hard sip or puff. A pressure input \bigcirc within soft zone at the end of ramp time is registered as a soft sip or puff. Pressure inputs \bigcirc that fall away into neutral zone before ramp time expires are not registered as an input.



When setting **Sip and Puff Ramp Time**, consideration should be given to users, who cannot produce a hard sip or puff within the ramp time. If ramp time is set too low, a user may not be able to reach the hard zone G in time and a soft sip or puff is registered instead of the intended hard sip or puff. For users who need more time to reach hard zone, the ramp time C needs to be extended, so the pressure input D is registered as a hard sip or puff.

- 1. Open Chair Setup -> Modules -> IN 5xx.
- 2. Adjust Sip and Puff Ramp Time.

11 Diagnostics

- Diagnostic options:
- System Summary
- Active Errors
- Event LogChair Statistics
- Real-time diagnostics

11.1 Viewing System Summary



Click on the System Summary button to view the System Summary screen.

The **System Summary** screen displays details of the system's connected modules, such as:

- Connected modules
- Module software version
- Module serial number
- Access Level of LiNX Access Key

Click on Back or Close button, to exit the System Summary.

11.2 Viewing Active Errors

iC	S tool		PC too	ł
iPod ᅙ	13:28	* 🗆	Events 88 events recorded	🖸 Reset Log
K Back	Chair Log			1
Chair Log	Statistics		ACTIVE EVENTS	FC: 6
			Right Park Brake Error DLX-PM75AL-A	FC: 6
ACTIVE ERRORS			Check right park brake is released. If not,	, check the loom.
Left Park Brake	Error	FC:5	Left Park Brake Error	FC: 5
DLX-PM75AL-A	LITOI	P0.5	DLX-PM75AL-A	
Dert Hill One H			Gyro orientation error	FC: 7
EVENT LOG			DLX-GYR100-A	
Left Park Brake	Error	FC:5	TODAY	
DLX-PM75AL-A			Left Park Brake Error	FC: 5
11 Nov 2016, 13:30:	06		DLX-PM75AL-A	
Programming C	hanged		Thu May 5 10:01:14 2016	
DLX-PM75AL-A				
11 Nov 2016, 11:43:	29			
System Availabl	e			
DLX-PM75AL-A	Pow	ered Up		
11 Nov 2016, 11:14:5	51			
Programming C	hanged			

Click on the **Active Errors** button to view which errors, if any, are current. Each entry in this log displays the error, its flash code (e.g. FC5) and the component where the error is. Click on the error entry to reveal an error description with more helpful information about the error.

Click on Back or Close button to exit Active Errors.

11.3 Viewing Chair Statistics

Go to **Chair Log** to view a comprehensive list of current system statistics. The chair statistics are divided into the following sections:

- Battery usage
- Drive statistics

iOS tool		PC	tool		
iPod 중 14:18 ■	DE UNMORENTC File Connection New Help di LAGCLI2147583*	+			- 0 ×
	NOT COMMECTED	R01H0A3A00L42 🔅 Reset to Default	Se Manage		10 °4
K Back Chair Log	R01H10A3A00L-02	Chair Log			
Chair Log Statistics	tione Sections	Events directo counted 9. Fiber events	O Resettop	Statistics	1
	Liser Professores	- 100 Hold		BATTORY 65468	Oileat
		No active errors		hading battery wage sine int Aug 3 1440/4206 Battery Changing Time	2 days 1858.45
BATTERY USAGE	Chair Log	0		Number of Charge Cycles	1 1001
	😸 Chair Setup	1000		Band Lindicator Time	0 decs 000000
Battery Charging Time	38 All Parameters	Seten Available		Rand 2 Indicator Time	0 days 00.0325
0 secs		DAPREDE-A	Powersd Up	Band 3 Indicator Time	0 days, 0130.15
		Sectors Event		Band 4 Indicator Time	0 days 05.43.47
Number of Charge Cycles		DUX-PHI20K-A PUNE 11 13 13 00 200		Rand 5 Indicator Time	4 days, 105122
0				Average Battery Vohage	24.00 V
0		System Clock Set DLX-PMIDDK-A		Last Charge Timestamp	Fr Okt 210833.24 2016
		W Nov 11 18 16 29 2016		Number of High Battery Events	0
Band 1 Indicator Time	0	System Available D X Part208-A	Program Up	Number of Low Battery Events	28
0 secs		FC Nav 11 12:54.34 2016		Number of Deep Discharge Warnings	3
		VETUGAR		ORWI ITATITICI	Official
Band 2 Indicator Time	0	System Available		Taoley and ratios and MiAug 2 Hold N 2015	
0 secs		DLN-PME204L-A Dio New 30 10 59 79 2016		Average Motor Current	13.56 A
0 3003		Actuator Added	FC 2	Maximum Left Motor Current	9653 A
Band 3 Indicator Time		DUX-ACT405-A Do Nov 32 1839/78 2016	Powered Up	Maximum Left Motor Current Time	0 days, 00:00:01
	Q, Recipitanetes >	Programming Changed		Maximum Right Motor Current	97.41.A
0 secs		- opening congre			
Band 4 Indicator Time					
	-				

Reading battery usage

To view more information about a battery statistic, click on a statistic and a helpful description is displayed in the local help panel.

The available statistics are detailed in the following table.

Battery usage statistics	Details
Battery Charging Time	The time that the batteries have been charged for.
Number of Charge Cycles	The number of times the batteries have been charged.
Band 1 Indicator Time	The total time the LiNX system is operated with the state of charge between 0 and 20%.
Band 2 Indicator Time	The total time the LiNX system is operated with a state of charge between 20 and 40%.
Band 3 Indicator Time	The total time the LiNX system is operated with a state of charge between 40 and 60%.
Band 4 Indicator Time	The total time the LiNX system is operated with a state of charge between 60 and 80%.
Band 5 Indicator Time	The total time the LiNX system is operated with a state of charge between 80 and 100%.
Average Battery Voltage	The average battery voltage over the last 31 days.
Last Charge Timestamp	The date and time when the batteries were last put on charge.
Number of High Battery Events	The number of high battery warnings.
Number of Low Battery Events	The number of low battery warnings.
Number of Deep Discharge Warnings	The number of deep discharge warnings.
Battery Usage Last Reset	Date when these statistics were last reset.

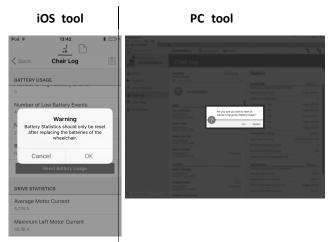
Resetting battery usage

1.

i	OS tool		PC t	ool		
iPod 🗟	13:22 *	DE UNMorentC File Connection New Hole				- a ×
		A LAK LIZH7987	+ 800080300-02 - 22 instruction	ut Sa Varias		10 %
				or Strange		8 3
K Back	Chair Log	R01H10A3A00L-02	Chair Log			
		ta Home	Events	O Reset Log	Statistics	
BATTERY US	SAGE	Se Functions	All events recorded Q, Ther events	×		
1 1 01		9. User Preferences	-		METER USAGE Tracking hattery associates Million 3 Million 2011	Olevet
	e Timestamp	_	No active errors		Battery Charging Time	2 days, 1858-45
26 Oct 2016,	14:11:04	Chair Log	U		Number of Charge Cycles	
		😸 Chair Setup	1000		Band Tindicator Time	0 days 00.00.00
Number of	High Battery Events	38 All Parameters	System Available		Rand 2 Indicator Time	0 days, 00:0325
0	5 ,		01X-PM20AL-A Pr Nex TI 155517 2016	Powered Up	Band 3 Indicator Time	0 days, 013025
0			Sutem Event		Band 4 Indicator Time	0.68y5.0543.47
hi unde en ef	Leve Dettern Friende		DLX-PM2DAL-A Pr New TETRITION 2016		Rand 5 Indicator Time	4 days, 105122
	Low Battery Events				Average Battery Voltage	24.00 V
41			System Clock Set		Last Orange Timestamp	Fr Okt.210833.24.2016
		-	N Nov T 183629.2216		Number of High Eattery Events	0
Number of	Deep Discharge Warnings		System Available	Property Lin	Number of Low Battery Events	28
2			N Nov 11 12:54:34 2216		Number of Deep Discharge Warnings	1
~			Y85788049		0101100000	Official
Detter	age Last Reset		System Analable		Tading drive statistics show Milling 2 Hold 16 2016	0.000
	age Last Reset		DUX-PM22AL-A Do Net 10 10 1979 2016		Average Motor Carrent	13.56 A
Never Reset			Actuator Added	FC 2	Maimun Left Motor Current	96.53 A
			OLX-ACT400-A Do Net 10 18:1979 2019	Pewared Up	Maximum Left Motor Current Time	0 days, 00:00:01
	Reset Battery Usage	Q, Fiter parameters	Programming Changed		Maimum Right Mator Current	57.41 A
	Reset Dattery Osage		Programming Changed			
DRIVE STAT						
Average Mo	otor Current					
6.774 A						

Click on Reset Battery Usage button.

2.



Click on **OK** or **Yes** to continue.

Reading drive statistics

To view more information about a drive statistic, click on the statistic and a description is displayed in the local help panel.

The available statistics are detailed in the following table.

Drive statistic	Details
Average Motor Current	The average current drawn across all motors while driving.
Maximum Left Motor Current	The peak measured motor current.
Maximum Left Motor Current Time	Time spent drawing the "Maximum Drive Current Draw".
Maximum Right Motor Current	The peak measured motor current.
Maximum Right Motor Current Time	Time spent drawing the Maximum Drive Current Draw".
Powered Up Time	The total time that the wheelchair controller is powered up.
Drive Time	The total time that the wheelchair has been driven.

Drive statistic	Details
Average Drive Time	Average drive time.
Time Near Maximum Current	The duration the current was within 20% of maximum threshold.
Drive Statistics Last Reset	Date when these statistics were last reset.

Resetting drive statistics

1.

iOS tool		PC to	loc		
Pod ≎ 13:34 * ≮ Back Chair Log	St UROLower's Vew Hep d LacL12H358P wor Connecto lost Connecto LacL12H358 Districtional Accel.co	REPERSION OF STREET	😝 Manage		
DRIVE STATISTICS	Home Anne Functions	Events Revents Revents Revents	Orienting ×	Statistics	Officient
73,74 A Maximum Right Motor Current Time	User Preferences Chair Log Chair Setup	No active errors		Todag temay sage into M Aug 3 Holi 9 200 Battery Charging Time Number of Charge Cycles Band Lindcator Time	2 days, 18584
2,1 s Powered Up Time	3/K Al Parameters	System Anallable COXPATISTALA IF Nov TELESTERION System Event	Parvered Up	Band 2 Indicator Time Band 3 Indicator Time Band 4 Indicator Time	0 days, 00.052 0 days, 01307 0 days, 05424
1 day, 12 hrs, 41 min Drive Time		CX PRESSA A R Nov 11 125555 2016 System Clock Set DX PRESSA A R Nov 11 12422 2016		Band 5 Indicator Time Average Battery Voltage Last Charge Timestamp	4 days, 10513 24.00 Pr Okt.2108.33.24 207
1 hr, 51 min, 7 secs		System Available DCX MITERIA A IP Nor 11 105404 2016	Parented Up	Number of High Battery Events Number of Low Rattery Events Number of Deep Discharge Warnings	,
Average Drive time 3 min, 49 secs		VESTIBAT System Analishie OccHMIDIALA Do Nan 10 101079 2016		Devis Stantasti Tooling the assists area Milkig 3 H40 162 Areage Motor Current Maimum Left Mator Current	0.000 8.55 96.00
Time Near Maximum Current 13 secs	Q, Responses X	Actuator Added OXACTABLA Do Nor 10 103879 2016 Programming Changed	FC 2 Pervened Up	Maanum Lett Motor Current Maaimum Lett Motor Current Time Maaimum Right Motor Current	9633 0 days, 0000 97,41
Drive Statistics Last Reset 16 Jun 2016, 14:55:01					

Click on Reset Drive Statistics button.

2.



Click on OK or Yes to continue.

Click on Back or Close button to exit the Chair Statistics

11.4 Viewing Live Diagnostics



Fig. 11-1

The Live Diagnostics are only available when the LiNX Access iOS tool is connected to a wheelchair. The parameters (see *Parameter list, page 112*) on the Live Diagnostics screen are split into two categories:

- Drive, and
- Actuators.

Parameter list

Drive

Speed Demand (%)

Turn Demand (%)

Left Motor

- Voltage (V)
- Current (A)
- Resistance (mΩ)

Right Motor

- Voltage (V)
- Current (A)
- Resistance (mΩ)

Battery Voltage (V)

Speed Dial (%)

Actuators

Sensor Angle (°)

- 1. Click Live Diagnostics button.
- 2. Click desired category to view real-time graphs and data.
- 3. Click Back button twice to exit Live Diagnostics.

11.5 Clearing the event log

This feature is only available when a wheelchair is in **Connection context** mode.

PC tool



To clear the event log, click on the **Reset Log** button at the top of the logs.

12 Structure of Program Names

By default, the file name, program name and system name are composed of the wheelchair configuration. The program name can be changed to a more familiar name.

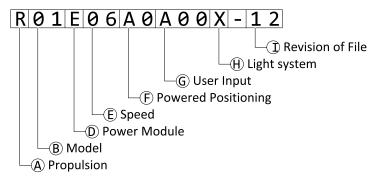


Fig. 12-1 Example of a Kite program name (2 pole motor, drive only) using naming format up to July 2018

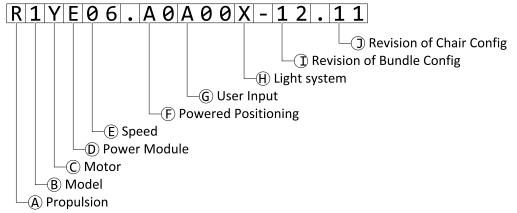


Fig. 12-2 Example of a Kite program name (2 pole motor, drive only) using naming format as of August 2018

A	Propulsion
B	Model
©	Motor
D	Power Module
E	Speed
Ē	Powered Positioning
G	User Input
θ	Light System
0	Revision of Bundle Configuration or File
D	Revision of Chair Configuration

12.1 Where-Used Matrices

		Motor							
Model	Inline	Inline 2 pole		4 pole		4 pole	4 pole DuraWatt		
	(Z)	LS (Y)	HS (X)	LS (W)	HS (V)	HD (U)	LS (T)	HS (S)	UHS (R)
Kite	-	х	x	x	x	-	-	-	х
TDX SP2	-	-	-	x	x	-	х	x	х
Bora/Spectra XTR	-	x	x	x	x	-	-	-	-
Fox	х	-	-	-	-	-	-	-	-
Storm ⁴ , Storm ⁴ X-plore	-	-	-	x	x	-	-	-	х
Storm ⁴ Max	-	-	-	-	-	x	-	-	-

Motor		Type of LiNX	Speed						
	MOLOI	power module	03	06	08	10	12		
Z	Inline motor	DLX–PM60	х	х	x	-	-		
Y	2 pole (low speed)	DLX–PM75 / DLX–PM75AL	х	х	-	-	-		
х	2 pole (high speed)		-	-	х	х	-		
W	4 pole legacy (low speed)	DLX–PM120 / DLX-PM120AL	х	х	-	-	-		
V	4 pole legacy (high speed)		-	-	х	х	-		
U	4 pole legacy (HD)		-	х	-	-	-		
Т	DuraWatt (low speed)		-	х	-	-	-		
S	DuraWatt (high speed)		-	-	х	х	-		
R	DuraWatt (Ultra high speed)		-	-	-	х ³	x		

	Powered Positioning							
Model	Standard / Modulite seat	Max seat	Recaro seat	Ultra Low Maxx seat				
Kite	х	х	-	-				
TDX SP2	x	x	-	x				
Bora/Spectra XTR	x	x	-	-				
Fox	x	-	-	-				
Storm ⁴ , Storm ⁴ X-plore	x	-	x	-				
Storm ⁴ Max	x	х	-	-				

12.2 Naming Format

^{3.} France only

	Up to July 2018	As of August 2018
A	R = Rear wheel drive	
	C = Centre wheel drive	
	F = Front wheel drive	
๎฿	01 = Kite	1 = Kite
	02 = TDX SP2 - legacy motors	2 = TDX SP2
	12 = TDX SP2 - DuraWatt motors	3 = Bora/Spectra XTR
	03 = Bora/Spectra XTR	4 = Fox
	04 = Fox	5 = Storm ⁴ , Storm ⁴ X-plore, Storm ⁴ Max
	05 = Storm ⁴ , Storm ⁴ X-plore	
	06 = Storm ⁴ Max	
©	Not used. Included in [®] .	Z = Inline motor
		Y = 2 pole (low speed)
		X = 2 pole (high speed)
		W = 4 pole legacy (low speed)
		V = 4 pole legacy (high speed)
		U = 4 pole legacy (HD)
		T = DuraWatt (low speed)
		S = DuraWatt (high speed)
		R = DuraWatt (ultra high speed)
D	A = not used	
	B = not used	
	C = DLX-PM60	
	D = not used	
	E = DLX-PM75	
	F = DLX-PM75AL	
	G = DLX-PM120	
	H = DLX-PM120AL	
®	03	
	06	
	08	
	10	
	12	
Ð	A1 = Powered "fixed pivot" tilt (20°)	Drive only
	A2 = Powered tilt (30°), CoG shift	$A0 = w/o \text{ actuators}^4$
	A3 = Seat lifter & powered tilt (300 mm, 30°), CoG shift	Standard seat / Modulite seat
	A4 = Powered tilt (12°)	A1 = Powered "fixed pivot" tilt (20°)
	A5 = Seat lifter & powered tilt (300 mm, 28°), CoG shift	A2 = Powered tilt (30°), CoG shift
	A6 = Column lifter & "fixed pivot" tilt (250 mm, 25°)	A3 = Lifter & tilt (300 mm, 30°), CoG shift
		A4 = Column lifter & "fixed pivot" tilt (250 mm, 25°)

4. If light system is equipped: use profile A1, B1 or C1 (according to seat)

	Up to July 2018	As of August 2018
F	A7 = Recaro with "fixed pivot" tilt (25°)	Max seat
	A8 = Recaro with column lifter & "fixed pivot" tilt (250 mm,	B1 = Powered "fixed pivot" tilt 25°
	25°)	B2 = Lifter & tilt (300 mm, 28°), CoG shift
	A9 = Ultra Low Maxx with tilt (50°), CoG shift	Recaro seat
	B0 = Ultra Low Maxx with lifter & tilt (300 mm, 45°), CoG shift	C1 = Powered "fixed pivot" tilt (25°)
		C2 = Column lifter & "fixed pivot" tilt (250 mm, 25°)
		Ultra Low Maxx seat
		D1 = Powered tilt (50°), CoG shift + LNX
		D2 = Lifter & tilt (300 mm, 45°), CoG shift + LNX
		D3 = Powered tilt (50°), CoG shift + ADP
		D4 = Lifter & tilt (300 mm, 45°), CoG shift + ADP
		D5 = Powered tilt (50°), CoG shift + Pivot Plus
		D6 = Lifter & tilt (300 mm, 45°), CoG shift + Pivot Plus
G	A00 = DLX-REM1XX/DLX-REM2XX + DLX-REM050	A00 = DLX-REM1XX/DLX-REM2XX + DLX-REM050 ⁵
	A01 = DLX-REM2XX + LNX	
	A02 = DLX-REM2XX + ADP	
	A03 = DLX-REM2XX + Pivot Plus	
	A04 = DLX-REM2XX/400 + ACU200	A04 = DLX-REM2XX/400 + ACU200
	B01 = DLX-REM400 + 4Q-P + LNX	
	B02 = DLX-REM400 + 4Q-P + ADP	B02 = DLX-REM400 + 4Q-P
	B03 = DLX-REM400 + 4Q-P + Pivot Plus	
	C01 = DLX-REM400 + 3Q-D + LNX	C01 = DLX-REM400 + 3Q-D
	CO2 = DLX-REM400 + 3Q-D + ADP	
	CO3 = DLX-REM400 + 3Q-D + Pivot Plus	
	C04 = DLX-REM400 + 4Q-D + LNX	C04 = DLX-REM400 + 4Q-D
	C05 = DLX-REM400 + 4Q-D + ADP	
	C06 = DLX-REM400 + 4Q-D + Pivot Plus	
(\mathbf{H})	T = Traditional	
	L = LED	
	$X = w/o \text{ light}^{6,7}$	
0	Revision of file	Revision of bundle configuration
\bigcirc	Not used. Included in $$.	Revision of chair configuration

^{5.} Use only if DLX-REM1XX or DLX-REM050 are equipped to the wheelchair. Otherwise use profile A04.

^{6.} If only programs with activated light system are available: use profile LED instead.

^{7.} By default, Ultra Low Maxx programs are with deactivated light system. See 8.5 Modifying Lighting Parameters, page 73 and 10.3.1 Modifying Lighting Parameters, page 94 to activate light system.

Notes

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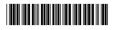


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Yes, you can.