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Invacare® MK6i™ Electronics

Field Reference Guide
Service Manual

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

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1 General

1.1 Symbols

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



DANGER!

– Danger indicates a imminently hazardous situation which, if not avoided, could result in death or serious injury.



WARNING!

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



CAUTION!

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

IMPORTANT

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



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

2 Safety

2.1 General Guidelines

The safety section contains important information for the safe operation and use of this product.

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

Continued use of the wheelchair with damaged parts could lead to the wheelchair malfunctioning, causing injury to the user and/or caregiver.
– Check all wheelchair components and carton for damage and test components before use. In case of damage or if the wheelchair is not working properly, contact a qualified technician or Invacare for repair.

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

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

DANGER!
Risk of Death, Serious Injury, or Damage
Use of incorrect or improper replacement (service) parts may cause death, serious injury, or damage.
– Replacement parts MUST match original Invacare parts.
– ALWAYS provide the wheelchair serial number to assist in ordering the correct replacement parts.

WARNING!
Risk of Serious Injury or Damage
Attaching hardware that is loosely secured could cause loss of stability resulting in serious injury or damage.
– After ANY adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely.

DANGER!
Risk of Death, Serious Injury, or Damage
Missing attaching hardware could cause instability resulting in death, serious injury or damage.
– Ensure all attaching hardware is present and tightened securely.

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

WARNING!
Risk of Serious Injury or Damage
Improperly connecting the motor leads to the controller may cause injury or damage.
WHEELCHAIRS WITH G-TRAC: Crossing the motor leads (for example: connecting the left motor lead into the right motor connector on the controller) may result in unintended movement.
– DO NOT cross the motor leads when connecting the motors to the controller - otherwise injury or damage may occur.

DANGER!
Risk of Death, Serious Injury, or Damage
Misuse of the wheelchair may cause component failure and/or the wheelchair to start smoking, sparking, or burning. Death, serious injury, or damage may occur due to fire.
– DO NOT use the wheelchair other than its intended purpose. If the wheelchair starts smoking, sparking, or burning, discontinue using the wheelchair and seek service IMMEDIATELY.

THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

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

2.2 Repair and Service Information — Dealers and/or Qualified Technicians

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

DANGER!
Risk of Death, Serious Injury, or Damage
Corroded electrical components due to water, liquid exposure, or incontinent users can result in death, serious injury, or damage.
- Minimize exposure of electrical components to water and/or liquids. Electrical components damaged by corrosion MUST be replaced immediately.
- Wheelchairs that are used by incontinent users and/or are frequently exposed to water/liquids may require replacement of electrical components more frequently.

WARNING!
Risk of Injury, Damage or Death
Improper installation or service may result in injury, damage or death.
- Transport ready packages are not retrofittable to existing models and are not field serviceable.
- DO NOT overtighten hardware.

3 Set Up

3.1 Set Up Safety Information

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

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

WARNING!
- DO NOT connect any medical devices such as ventilators, life support machines, etc. directly to the batteries used to power the wheelchair. This could cause unexpected failure of the device and the wheelchair.

WARNING!
Risk of Serious Injury or Damage
Moving the seating system from the factory setting may reduce driver control, wheelchair stability, traction and increase caster wear resulting in serious injury or damage.
– Move the seating system ONLY when necessary to fit the wheelchair to the user.
– If the seating system must be moved, ALWAYS inspect the wheelchair to ensure the front rigging DOES NOT interfere with the front casters.
– If the seating system must be moved, ALWAYS inspect to ensure the wheelchair DOES NOT easily tip forward or backward.

WARNING!
Risk of Injury, Damage or Death
Misuse of wheelchair may result in injury, damage or death.
– DO NOT operate wheelchair on roads, streets or other roadways.
– DO NOT operate wheelchair when vision is impaired by poor lighting such as unlit rooms, during the night or similar situations.
– ALWAYS be aware of motor vehicles and your surroundings.
– DO NOT operate the wheelchair under the influence of alcohol, medications or other substances that impair judgement or function.

WARNING!
Risk of Minor to Serious Injury
Pinch points can cause minor to serious injury.
– Be mindful of potential pinch points and use caution when using this product.

WARNING!
Risk of Serious Injury
Impacting objects in the surrounding environment can cause serious injury.
– When maneuvering the wheelchair around, ALWAYS have assured cleared distance with all objects in environment.

WARNING!
Risk of Serious Injury
Sharp edges can cause serious injury.
– Be mindful that some parts may have sharp edges. Use caution when encountering these sharp edges.

WARNING!
Risk of Serious Injury
Hot surfaces can cause severe burns.
– Be mindful of potential hot surfaces and avoid touching.

DANGER!
Risk of Death, Serious Injury, or Damage
Lighted cigarettes dropped onto an upholstered seating system can cause a fire resulting in death, serious injury, or damage.
Wheelchair occupants are at particular risk of death or serious injury from these fires and resulting fumes because they may not have the ability to move away from the wheelchair.
– DO NOT smoke while using this wheelchair.

WARNING!
Risk of Injury, Damage or Death
Loss of traction or stability on rough or unstable terrain may cause injury, damage or death.
– DO NOT operate the wheelchair on rough or unstable terrain. This would include but is not limited to areas of rock, mulch, mud, uneven pavement, roots and similar conditions.
– Be aware of your surroundings and conditions that might affect the ability to operate the wheelchair.

WARNING!
Risk of Injury, Damage or Death
Improper routing of cord(s) may cause a tripping, entanglement or strangulation hazard that may result in injury, damage or death.
– Ensure all cord(s) are routed and secured properly.
– Ensure there are no loops of excess cable extending away from the chair.
– Close supervision and attention is needed when operating the wheelchair near children, pets or people with physical/mental disabilities.

WARNING!
Risk of Injury, Damage or Death
Pinched or severed cord(s) may be a shock or fire hazard and may cause injury, damage or death.
– Ensure all cord(s) are routed and secured properly.
– Inspect cord(s) periodically for proper routing, pinching, chafing or other similar wear.
– Replace any damaged cords immediately.

WARNING!
Risk of Death, Serious Injury, or Damage
Improperly connected joystick could cause loss of power resulting in death, serious injury, or damage.
– Ensure the joystick is securely connected to controller.

DANGER!
Risk of Death, Serious Injury, or Damage
Malfunctioning joystick could cause unintended/erratic movement resulting in death, serious injury, or damage.
– If unintended/erratic movement occurs, stop using the wheelchair immediately and contact a qualified technician.

WARNING!
Risk of Injury or Damage
Improper mounting or maintenance of the Sip n' Puff control including the mouthpiece and breath tube may cause injury or damage.
Water inside the Sip n' Puff interface module may cause damage to the unit.
Excessive saliva residue in the mouthpiece/straw can reduce performance.
Blockages, a clogged saliva trap or air leaks in the system may cause Sip N' Puff not to function properly.
– Ensure moving parts of the wheelchair, including the operation of powered seating, DO NOT pinch or damage the Sip n' Puff tubing.
– Saliva trap MUST be installed to reduce risk of water or saliva entering the Sip n' Puff interface module.
– Occasionally flush the mouthpiece to remove saliva residue.
– The mouthpiece/straw MUST be completely dry before installation.
– If Sip n' Puff does not function properly, inspect system for blockages, clogged saliva trap or air leaks. As necessary, replace mouthpiece, breath tube and saliva trap.

Contact your Invacare dealer/provider for more information about maintaining and troubleshooting the Sip n' Puff system.

3.2 Components Not Installed at the Factory

SOME COMPONENTS INCLUDED WITH THIS PRODUCT ARE NOT INSTALLED AT THE FACTORY.

COMPONENTS NOT INSTALLED AT THE FACTORY MUST BE INSTALLED AND SET UP BY A QUALIFIED TECHNICIAN.

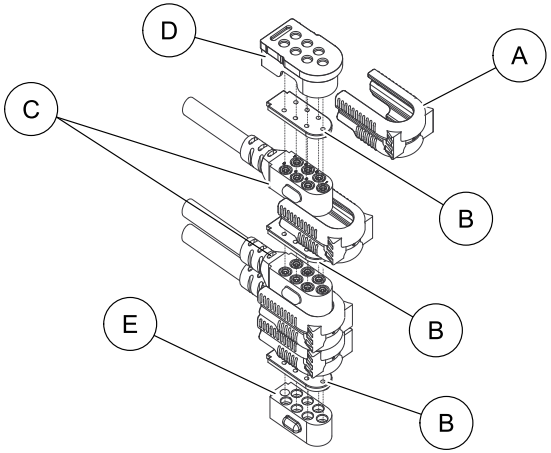
Refer to the user manual, all other manuals included with the product, the Power Wheelchair Wiring Guide (part number 1167603) and this manual for installation, set up and programming instructions.

For further assistance, please contact your Invacare dealer or Invacare customer service at www.invacare.com or 800–333–6900.

3.3 Disconnecting/Connecting the Connectors

The connector stack is located at the rear of the seat frame.

Refer to 4.3 Connectors, page 18.



3.3.1 Connecting the Connectors

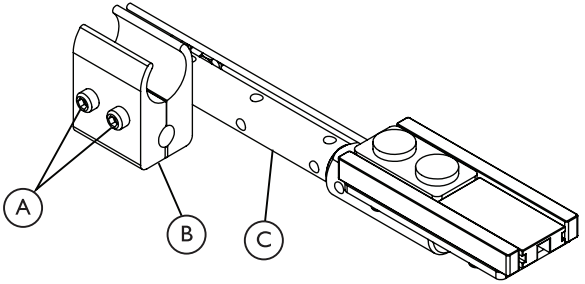
Ensure the gaskets Ⓑ are installed in the top connector cap and between network connectors Ⓒ.

1. Ensure the latch is pulled away from the network connector.
2. Connect the network connector to the other connectors.
3. Top Ⓓ and Bottom Ⓔ Connectors - Install connector caps onto the network connector.
4. Push the latch in to secure the network connectors and caps.
5. If necessary secure excess cable using tie-wraps.

3.3.2 Disconnecting the Connectors

1. Pull the latch Ⓐ away from the connector.
2. Disconnect the connector from the remaining connectors.

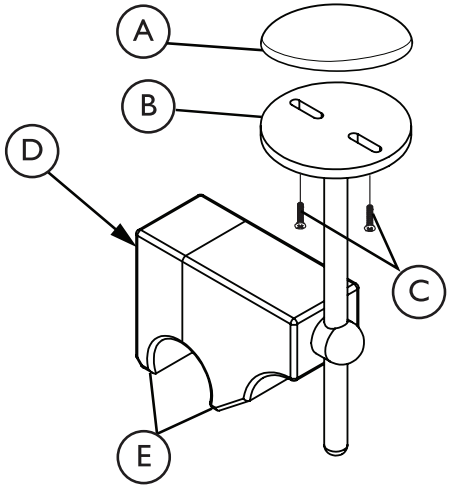
3.4 Installing Push Button Switch Armrest Mounting Hardware (PBMT)



Armrest mounting hardware shown with 2 button switch installed. 4 button switch also fits into mounting hardware.

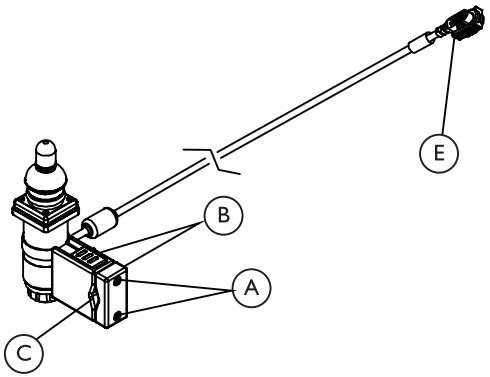
1. Remove the two nuts and screws Ⓐ securing the clamp Ⓑ to the support bar Ⓒ.
2. Secure the clamp to the armrest and the support bar with the two nuts and screws.
3. Secure the wire from the 2 or 4 button switch. Refer to the Power Wheelchair Wiring Guide (part number 1167603).

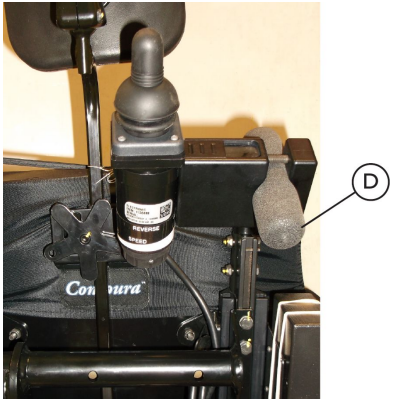
3.5 Installing the Egg Switch Mount (ASL611)



1. Secure the egg switch Ⓐ to the platform Ⓑ using two screws Ⓒ.
2. Loosen the screw Ⓓ (location shown) securing the mount Ⓔ together.
3. Place the mount onto a 7/8 inch tube.
4. Tighten the screw to secure the mount onto the tube.
5. Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

3.6 Mounting the Proportional Attendant Control (PACM6)





Refer to 7.2 Proportional Attendant Control (PACM6), page 30 for more information about the Proportional Attendant Control (PACM6).

1. Loosen the two screws Ⓐ securing the two sections of the mounting bracket Ⓑ.
2. Position the indentation Ⓒ in the mounting bracket sections around the tubing.

   The PACM6 is typically mounted to tubing on the back of the seat. Examples include the push handle of the back cane Ⓓ or on the spreader bar. It can be mounted in other locations as desired.

3. Tighten the two screws to secure the mounting bracket to the tubing.
4. Connect the PACM6 connector Ⓔ to the network connector stack (not shown) on the back of the seat. Refer to 3.3.2 Disconnecting the Connectors, page 14.
5. Secure the wiring. Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

4 MK6i Electronic Components

4.1 Joysticks

SPJ™ +



CMPJ™ +



- Two choices for standard joysticks—
  - Basic - SPJ+ (Non-expandable - 1 drive mode)
  - CMPJ+ (Color MPJ+ Expandable - 4 drive modes).
- A full array of alternative proportional and digital driver controls are also available.

4.2 Controllers



MK690 ACC shown

- Five controllers cover the entire current MK6i platform:
  - MK660 ACC - 2–Pole motors
  - MK690 and MK690 ACC - 4–Pole motors
  - MK6TT - TrueTrack motors
  - G-Trac™ for power wheelchairs with 2–Pole motors
  - G -Trac for power wheelchairs with 4–Pole motors
- MK6i Controllers allow changing from a non-expandable system, (one drive mode), to an expandable system (four drive modes), simply by removing the SPJ+ joystick, adding a necessary cable, and plugging in an CMPJ+ joystick or a MK6i Display.

4.3 Connectors



- Universal connectors make it easy to add or remove options, and eliminate the daisy chain.
- All MK6i options plug into the system using the same connector – in the same location.
- No more questioning the type of connector, or where to plug in.
- Locking securement tabs assure solid connections.
- Refer to 3.3 Disconnecting/Connecting the Connectors, page 13 for more information.

4.4 Smart Actuator



- An option on Formula™ CG Powered Tilt, Recline, and Power Center Mount
- Programmable up and down limits.
- "Automatic Positioning" (memory seating) pre-set powered seat positions.
- Positioning for pressure relief, safely driving inclines / declines, positioning for activities of daily living.

4.5 Professional Memory Card



- A New Professional Memory Card places the features of Laptop IVS into the palm of your hand.
- Allows saving Individual Drive profiles and multiple system profiles in one place.
- Create Libraries of ready to install custom profiles.
- View Help Library, advanced diagnostics and troubleshooting tips.
- Standard with all programmers. USB ready version comes with a card reader with a USB adapter.

4.6 Display (Full Size)



- Larger brighter LCD screen.
- Crisp Text and Icons for easy viewing, even in sunlight.
- Allows alternative controls to be used with an expandable electronic platform.
- View all four drives, all at once.
- View Standard programs names programmed into each drive.
- Insert a Memory Card and turn the Display into the programmer for that wheelchair.

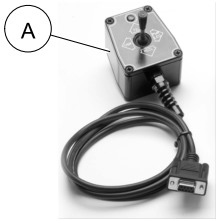
4.7 MK6i Programmer

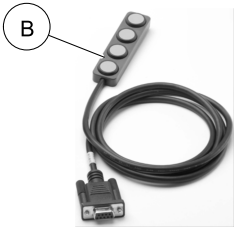


- Based on a MK$_5$™ foundation – same rules – similar keystrokes.
- View values for all four drives – all at once.
- Can still use a MK$_5$ programmer with access to EVERYTHING except "Help" screen.
- New Programmable features include:
  - Scanning modes.
  - Automatic Positioning.

4.8 Four Way Switch Box (4WSB)







- Present with ALL multiple actuator systems.
- Provides a 9 Pin Port for any separate 4 Quadrant switch to operate powered seating.
- No charge compatible switches include the 4 Way Toggle Ⓐ and the 4 Quadrant Push Buttons (QPB) Ⓑ.

4.9 Multiple Actuator Interface Box (S4WSB)



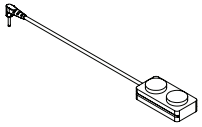
- Replaces above 4-way switch box when operating multiple actuators through the Driver control.
- Provides a 9 Pin port for any separate 4 Quadrant ATTENDANT switch to operate powered seating.
- Provides two Additional ports, “A” and “B” for accessory powered seating switches.
  - Port A - Cycles/selects through connected actuators.
  - Port B - Operates the selected actuator in an up/down control method.
- HCPCS code E2311

4.10 Quad Push Button (QPB)



- 4 Quadrant switch with a 9 Pin Port connector
- Plug into the Four Way Switch Box (4WSB) — Allows the wheelchair user to operate the powered seating
- Plug into the Multiple Actuator Interface Box (S4WSB) — Allows the attendant to operate the powered seating and the wheelchair user to operate the powered seating through the driver control.
- Mount with provided hook and loop strips or using armrest mounting hardware kit (PBMT). Refer to 3.4 Installing Push Button Switch Armrest Mounting Hardware (PBMT), page 14.
- Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

4.11 Dual Push Button (2PB)



- 2 Button accessory switch with a phono plug
- Connect to the MK6i Display or the CMPJ+.
- Mount with provided hook and loop strips or using armrest mounting hardware kit (PBMT). Refer to 3.4 Installing Push Button Switch Armrest Mounting Hardware (PBMT), page 14.
- Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

4.12 Egg Switch (EGSBLK)



- Accessory switch with a phono plug
- Connect to the MK6i Display, CMPJ+ or the Y Splitter cable (MPY).
- Mount with provided hook and loop strips or using egg switch mount (ASL 611). Refer to 3.5 Installing the Egg Switch Mount (ASL611), page 15.
- Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

4.13 Single Actuator Node (SANODE)



- Added to any Expandable system (4 drives) to allow operating a single actuator system through the Driver Control.
- Not compatible with the SPJ+ joysticks (Non-expandable systems).
- HCPCS code E2310

4.14 Auxilary Module 12 (AUX12M6)



- Provides two 9 pin ECU outputs with 4 switch closures each.
- Less than half the size of the original ECU boxes.

4.15 Auxiliary Module 34 (AUX34M6)



- Same as Auxiliary Module 12 with an additional mono port to add a 5th switch and allow 5 switch closures through the output.

4.16 "Y" Splitter Cable



- Allows adding a second switch to the Mode Port of the MK6i Driver Control Options.
- Switch functions are programmable (Calibrations menu).
- Not compatible with SPJ+ joysticks.
- Plug into the MK6i Display or CMPJ+ joystick.

> The Y cable plugs into the Left phono port.

- Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

4.17 24 Volt Auxiliary Power Source (A24VPS)



- Provides an accessory lead for devices requiring auxiliary power (e.g. electronic switches).
- 24V Nominal, 5 Amps Maximum
- Connect to connector stack on the back of the seat. Refer to 3.3 Disconnecting/Connecting the Connectors, page 13.

- Refer to the Power Wheelchair Wiring Guide, part number 1167603 for information regarding properly securing the wiring.

4.18 G-Trac Module



- G-Trac Description
  - G-Trac uses an electronic gyro module and special controller developed to enhance the tracking and control capabilities of the chair from very slow speeds to fast speeds. Side sloped terrain (even slightly), obstacles at only one wheel or encountered on one side ahead of the other (such as door thresholds), steps and curbs approached at an angle, and soft or rough uneven terrain all make it difficult for power chairs to stay on course without veering to one side or the other. These situations are especially challenging for drivers using head controls, switch controls, Sip-n-Puff systems and alternative joystick controls to negotiate. G-Trac makes it possible to drive a power chair in these environments in a more controlled and easier manner.
  - The G-Trac technology can be used with the standard 2–pole and 4–pole motors on many Invacare Powered Wheel Chairs, including the TDX® Spree, TDX SC, TDX SI, TDX SP, Power Tiger, Storm Torque SP, and Storm Ranger X G-Trac is an option on the order form, is available with expandable (4-drive) electronic systems, and is not available with the Gearless Brushless GB™ (GB) motors.
- G-Trac Installation
  - G-Trac can only be installed at the factory.

4.19 M610i Six Channel Controller Module



- Present on systems with 3 or more actuators.

4.20 Tipsy Module



- Provides seating position sensor connection.
- Used with the M610i

4.21 M99 Memory Seating Module



- Provides memory seating feature
- Used with the M610i

4.22 4 Push Button Switch Attendant Module



- Provides 4-Switch, 8 Switch, and 12 Switch Attendant Control Connections.
- 4 push button switch used with M6100i

4.23 8 Way Rocker Switch Attendant Module



- 8-way rocker switch used with the M610i

4.24 IR/Mouse Module



- The IR/MOUSE module enables the user to use the driver control to wirelessly operate infrared (IR) ready devices including televisions, radios, DVD players, Cable boxes, etc. as well as Radio Frequency (RF) wireless control of mouse movement and mouse clicks on a Personal Computer (PC).
- This is available on any expandable system.

4.25 Mouse Only Module



- The RF Mouse Only Module allows the driver control to wirelessly control mouse movement and mouse clicks on a personal computer.

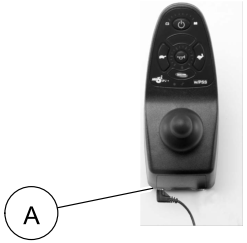
5 MK6i Joysticks

5.1 SPJ+ (Non-Expandable Systems)



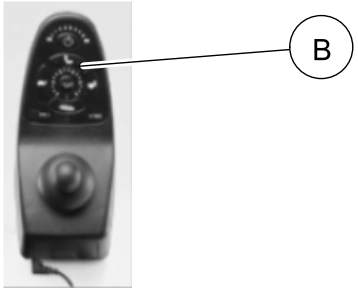
- Single drive
- Push buttons - On/Off, speed select and horn
- LED battery and speed indicators
- Charger port
- Quick disconnect cord

5.2 MK6i SPJ+ w/pss (for Powered Seating)



- All features of SPJ+
- Mono port Ⓐ for powered seating switch

5.3 MK6i SPJ+ w/ACC (with Actuator Control)



- All features of MK6i SPJ+ w/PSS
- Mode button Ⓑ to allow powered seating operation through the joystick
- HCPCS code E2310.

5.4 CMPJ+ (Standard Proportional Joystick)



- Color screen
- Speed control pot
- Large, backlit LCD display with icons to reflect programmed modes in each drive
- Memory card reader
- Charger port
- Built-in swivel mount
- Toggle On/Off and drive select
- Four programmable drives
- Built-in mode button
- Switch Ports: One for remote On/Off switch, One with two programmable functions available (drive select, mode switch or actuator control). To operate a switch plugged into the remote ON/OFF port, the joystick on/drive select switch must be in the “on” position for the joysticks with a monochrome display, and in the “off” position for joysticks with a color LCD display.

6 MK6i Displays

6.1 Display Features



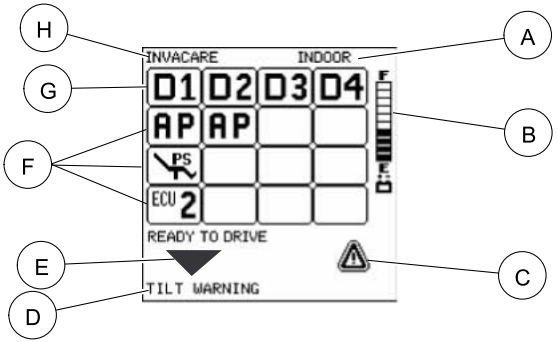
- The MK6i Display can have up to four alternative drive controls (plus an attendant over-ride control) active on the wheelchair.
- View all four drives at once.
- View all programmed modes available in each drive.
- View standard program name or custom name programmed for each drive.
- View system name. The system name is the name for all four drives.
- Choose Standard View or Enhanced view.
- Convert into a MK6i Programmer using the Invacare Memory Card.
- Two ports: Remote On/Off Switch Port Ⓐ and Mode/Actuator/Drive Select Switch Port Ⓑ

6.1.1 Display - Enhanced View



- Enhanced view shows one drive at a time with enlarged icons.
- Monochrome icons are used on the MK6i display.

6.1.2 Display-Standard View



ℹ See following table for description key.

ITEM	DESCRIPTION
A	Standard Program Assigned to Highlighted Drive
B	Battery Level
C	Status Icon
D	Message Status Area
E	Arrow Indicates Additional Modes Available
F	Additional Programmed Active Modes
G	Active Drive Mode
H	System Name

6.1.3 Display Status Icons

ICON	STATUS
	"Warning"
	Attendant Over-ride
	Charger Plugged in
	Drive Lockout Disabled
	Standby Mode Active

ICON	STATUS
	G-Trac On (See Note)
	G-Trac Off (See Note)

- When a chair is programmed with at least one drive using G-Trac and the controller and gyro installed, there are two status icons that are displayed. The first icon,  is displayed if the selected drive has G-TRAC turned on. If G-Trac is turned off in a drive, the displayed icon is 

6.1.4 Display Available Modes

ICON	MODE
	Drive Mode (1 through 4)
	Automatic Positioning
	Actuator Control Through Driver Control
	ECU Output activated (1 through 4)

ICON	MODE
	RIM Mode Activated
	Drive Select Mode Activated
	No Driving
	3-Speed Digital Driving Mode Activated
	Mouse Mode
	Mouse B
	Infra Red (IR) Mode
	Memory Seating
	

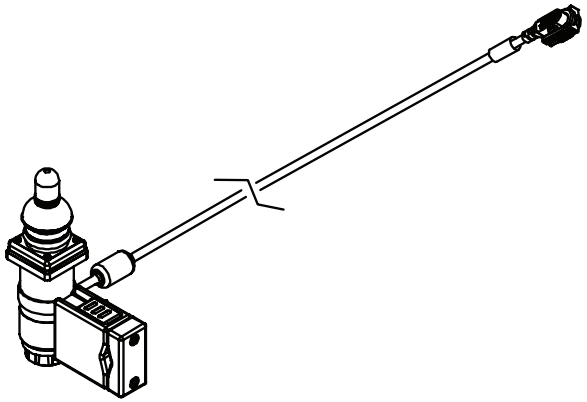
7 Proportional Alternative Controls

7.1 Compact Joystick (1558M6)



- A proportional 4 Quadrant (directional) driver control with a universal connector. Refer to 4.3 Connectors, page 18 for more information.
- The most versatile of proportional driver controls.
- Used for hand control, midline control or attendant control. Multiple aftermarket mounting options are available.
- Requires MK6i Display if used as a “stand alone” control.
- Connect to bank of connectors on the back of the seat. Refer to 3.3 Disconnecting/Connecting the Connectors, page 13 and the Invacare Power Wheelchair Wiring Guide, part number 1167603.

7.2 Proportional Attendant Control (PACM6)



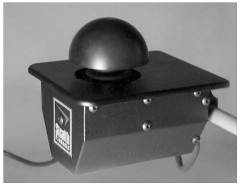
- A proportional attendant control with a universal connector. Refer to 4.3 Connectors, page 18 for more information.
- Plug and play.
- Connect to connector stack on the back of the seat. Refer to 3.3 Disconnecting/Connecting the Connectors, page 13 and the Invacare Power Wheelchair Wiring Guide, part number 1167603.
- Typically mounts to tubing, spreader bar or back cane handgrip. Refer to 3.6 Mounting the Proportional Attendant Control (PACM6), page 15 for mounting instructions.

7.3 ASL Micro Extremity



- A proportional 4 Quadrant control with Built in Mode switch (Activated by depressing the inductive).
- Minimal pressure required for activation.
- Mounting includes hand or chin mount.
- Requires MK6i Display if used as a "stand alone" control.

7.4 ASL Stealth Mushroom Joystick (ASLPSMJI)



- A proportional 4 Quadrant (directional) driver control.
- Modeled after a track ball design.
- Can be Traditional Side Mounted - Mid Line Mount - Recess mounted in a Lap Tray.
- Replaces traditional "Goal Post" adaptation for some SCI Hand Control users.

7.5 RIM Head Control (1500M6)



- 3 Quadrant Proportional Head Control.
- A Reset Switch Toggles the Forward command to Reverse (Can be bypassed under some circumstances).
- Permits proportional head driving requiring standard joystick force.

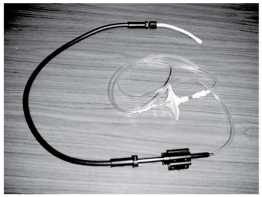
7.6 Peachtree (PHC-3)



- 3 Quadrant Proportional Head Control.
- Proportional forward/reverse - digital left/right.
- Reset switch built into occipital pad to access / change modes, toggle RIM from forward to reverse, etc.
- Access to ALL Programming Parameters - Drives – ECU functions.
- Forward Head movement operates Forward / Reverse quadrants.
- Lateral Head movement (tilt) operates Left / Right quadrants.

8 Digital Alternative Controls

8.1 Sip N' Puff Controls (SNPM6)



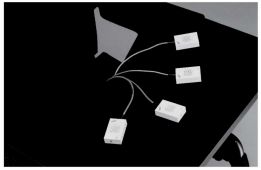
- 4 Quadrant Non-Proportional Driving. Intra-Oral Pressure - NOT Breath Control. Pressure requirements can be calibrated to user's abilities.
- Quadrants can be re-assigned from Factory Set directions (through axes selection). Factory Setting: Hard Puff = Forward, Soft Puff = Right, Hard Sip = Reverse, Soft Sip = Left.

8.2 ASL Head Array



- 3 Quadrant Driver Control (3 Proximity Switches: Occipital pad & Temporal Wings of the Head Rest).
- Size & Configuration options available.
- Mode switch (mechanical or electrical) used to toggle Rim functions Forward / Reverse.
- Choose from four standard reset switches: proximity, beam, egg and wobble; or add own custom.

8.3 ASL Proximity Switch Array



- Can be mounted into any orientation for a gross-movement, no-force switch system (Shown here with Driving Platform).

8.4 ASL SNP Head Array



- Combines the ASL switch head array (left and right directions) with Sip n' Puff (forward and reverse).
- Any Puff (hard or soft) = Forward Command, Any Sip = Reverse.
- Left & Right are digital commands (proximity switches) in the wings of the head rest.

8.5 ASL Stealth Ultra Head Array



- 3 Quadrant Digital Driver Control (3 Proximity Switches: Occipital pad & Temporal Wings of the Head Rest).
- Helps provide head support through the sub-occipital pad.
- Temporal pads are adjustable, & swing away for transfers.

8.6 ASL Fiber Optic Array



- Can be mounted into any orientation for a minimal-movement, no-force switch system.
- Options include 4 Quadrant & 3 Quadrant systems.

8.7 Tash® Mini Joystick



- 4 Quadrant Digital Joystick. Depressing the joystick downward accesses a fifth switch, used for reset.
- Used for Hand Control when there is reduced hand wrist movement / strength / endurance. Often used in a midline mount or can be used in a traditional side mount.
- Multiple aftermarket mounting options are available.

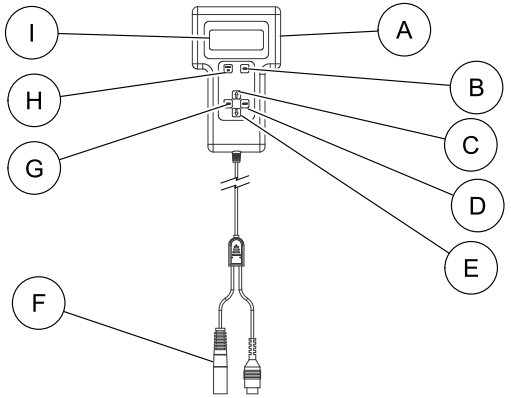
8.8 Single Switch Scanner



- A Single Switch Driving System, Scanning rate is adjustable.
- Can utilize any mechanical or electrical switch that has a 1/8" phono plug.
- The display scans each quadrant. When the quadrant led is turned on for the desired direction, the user holds the switch down and the wheelchair drives in that direction.

9 MK5 Programmer

9.1 Using the MK5™ Programmer with MK6i Electronics



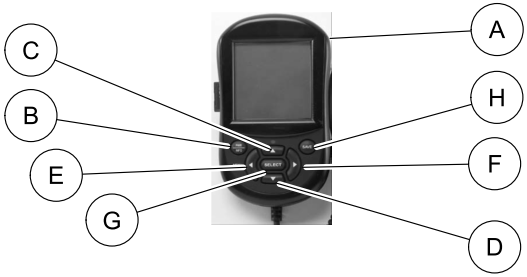
ITEM	DESCRIPTION		ITEM	DESCRIPTION
A	Remote Programmer		F	Plugs directly into drive control or display.
B	SAVE Key		G	MENU key
C	UP Key		H	POWER key
D	SELECT Key		I	LCD Display
E	DOWN Key			

The MK5 programmer allows access to ALL MK6 programming with the exception of the HELP key. The primary difference is that only one drive can be viewed at a time. Select ADVANCED MENU to see the full MK6 programming screens. Refer to 10.1 Using the MK6i Easy Remote Programmer , page 37 for more programming information.

	DRIVE 1-4	
	SPEED	_%
	RESPONSE	_%
>>	ADVANCED MENU	

10 MK6i Easy Remote Programmer

10.1 Using the MK6i Easy Remote Programmer



ITEM	DESCRIPTION
A	MK6i Programmer
B	POWER/INFO Key
C	UP Key
D	DOWN Key
E	LEFT Key
F	RIGHT Key
G	SELECT Key
H	SAVE Key

10.2 PWR/INFO Key

Use this key to:

- Turn the programmer On and Off. Hold the key down for more than two seconds.
- Display Help information (definitions for highlighted parameters and values). While the programmer is On, press and hold this key for 1 second then release. Press this key to dismiss the help information and return to programming.

The Professional Memory Card MUST be inserted into the programmer to access the Help information.

10.3 UP/DOWN Arrow Keys

Use these keys to:

- Scroll through menu options.
- Scroll through the Help information.
- Raise or lower selected performance values.

10.4 LEFT/RIGHT Arrow Keys

Use these keys to:

- Scroll along menu line items.
- Branch further in the menu structure.
- Return to the previous screen.

10.5 SELECT Key

Use this key to:

- Display adjustable values or selection choices when parameters are highlighted.
- Choose the new value or selection choice.
- Begin memory card transfer when prompted.

10.6 SAVE Key

The Save key MUST be pressed twice to save anything. The first press always confirms that you want to save or where you want to save, and the second press saves the values.

When an entire row is highlighted - All 4 drives are saved at once.

When only one value is highlighted - Only that drive is saved.

10.7 Selecting a Parameter

Use the Up/Down arrow keys to select the desired parameter to adjust.

Use the Right arrow key to open the desired parameter's menu, if ">>>" is displayed.

MK6i PROGRAMMING				
PARAMETER	D1	D2	D3	D4
SPEED	100	100	100	100
RESPONSE	100	100	100	100
PERFORMANCE ADJUSTMENT	>>>			
STANDARD PROGRAMS	>>>			
MEMORY CARD	>>>			
POWERED SEATING	>>>			
CALIBRATIONS	>>>			
DIAGNOSTICS	>>>			

Screen shown to the left is for reference only. Speed and Response values may differ.

10.8 Menu Descriptions

For descriptions of the parameters refer to the chart at the bottom of this page or these sections:

- Refer to MK6i Performance Adjustments.
- Refer to MK6i Standard Programs.
- Refer to Using the Memory Card.
- Refer to Powered Seating
- Refer to Calibration Menu
- Refer to User Settings Diagnostics
- Refer to Connected Devices

LCD Display	Performance Adjustment Description
SPEED **100%** Less More ||||||||||||||||||||||||||	Sets maximum overall speed. • A proportional 4 Quadrant (directional) driver control. • 100% means 100% of programmed performance adjustment settings. • Cannot be more than 100% of programmed values. • Changes affect all of the speed parameters (Forward, Turning and Reverse Speeds)

LCD Display	Performance Adjustment Description
RESPONSE **100%** Less More |||||||||||||	Sets overall response of the wheelchair to joystick commands. • 100% means 100% of programmed performance adjustment settings. • Response can be increased up to 200% for quicker response to commands. • Response can be lowered for softened or delayed response to commands. • Changes affect Accelerations, Braking, Decelerations and Tremor Dampening.

10.9 MK6i Programming Outline

PERFORMANCE ADJUSTMENT		STANDARD PROGRAMS	MEMORY CARD	POWERED SEATING	CALIBRATIONS		DIAGNOSTICS
NAME FWD SPEED FWD ACCEL FWD BRAKE REV SPEED REV ACCEL REV BRAKING TURN SPEED TURN ACCEL TURN DECEL TREMOR DAMP POWER LEVEL G-TRAC TORQUE TRACTION JOYSTICK THROW AXES SELECT INPUT TYPE COLOR THEME MOM/LATCH • DIGITAL 3 SPEED • LATCH TYPE • MOM REVERSE SLEEP MODE	STANDBY SELECT • STANDBY TIME • STANDBY IN ECU • STANDBY IN MOUSE RIM DRIVE SELECT • (ECU1–4) • (ASM1–2) MOUSE • MOUSE SETTINGS • MOUSE AXES *MOUSE B • MOUSE SETTINGS • MOUSE AXES NO DRIVING LIGHT CONTROL VIEW SCAN *NOTE: RF mouse only module: Mouse ONLY module for software version 2.2 or higher	ANALOG • INDR_AVG • MOD_OUTDR • SPEED_LVL • RAMPS_CURB • INDR_LRNR • VERY SLOW • MEC • 1500_RIM DIGITAL • 3SPD_DIG • ASL_INDR • ASL_OUTDR • SNP_LNR • VERY SLOW 1 SP SNP	DRIVE PRGM >>> • STORE TO CARD • READ FROM CARD SYSTEM>>> • STORE TO CARD • READ FROM CARD SEATING CONTROL>>> • STORE TO CARD • READ FROM CARD	LEGACY SYSTEMS DRIVE LOCKOUT ACT CONTROL STD PRG>>> ACTUATOR SELECTION • FWD • REV • LEFT • RIGHT SEATING ADJUST • TILT • RECLINE • CNTR LEGS • RIGHT LEG ADJUST • LEFT LEG ADJUST • LEFT AP PRGM • RIGHT AP PRGM FOR M610i MODULE SEATING SETUP SENSOR SETUP DRIVE LOCKOUT DRIVER CONTROL DVR STD PROGRAMS DVR CNTRL SETTING ATTD STD PRG ATTENDENT SETTING SEATING ADJUST MEMORY SEAT DIAGNOSTICS	NAME DRIVE CONFIG MOTOR BALANCE MOTOR CALIBRATE • ACC1 • ACC2 • TTJC ACTUATOR • ACC DCI MONO PORT 1 MONO PORT 2 DISPLAY ORIENT CONTRAST VIEW/SCAN • INIT TIME • REPEAT TIME 4W STD PRGM>>> 4-WAY SWITCH • HARD PUFF CAL • SOFT PUFF CAL • SOFT SIP CAL • HARD SIP CAL	SPEED POT MAX PACM6 ADJUST DIG ATT ADJUST TILT CAL BACK ANGLE RECLINE CAL CENTER LEG CAL START IN DRIVE ATT POWER OVERRIDE AUDIBLE IND PRS TIME IR SETTINGS ERASE ALL	JOYSTICK TILT RECLINE LEG ELEVATE FAULT LOG CLEAR FAULT LOG VERSION

11 MK6i Performance Adjustments

11.1 Performance Adjustment Enhancements in MK6i

Name

The name of any Standard Program saved to a drive will be displayed on the LCD screen of the MK6i Joystick or Display. Changes in performance adjustment values from standard will defer to a default name (e.g. Drive 1). Drive profiles can be re-named by selecting "NAME" under the Performance Adjustment menu.

Forward Braking/Reverse Braking

The Braking Adjust parameter of the MKIV and MK_5 Performance menu has been split into two separate parameters, one for Forward only and the other for Reverse.

Reverse Acceleration

The ability to adjust acceleration in reverse or how quickly the wheelchair achieves programmed reverse speed has been added.

Tremor Dampening

Tremor dampening was previously a Standard Program used for individuals with tremors or ataxic upper extremity/hand movements. By adding a Tremor Dampening adjustment parameter to the Performance menu, any Standard Drive Profile from very slow to faster can be easily adjusted to accommodate tremors.

Torque - Redefined

Torque values are now displayed in ohms, a more accurate way to display what is actually occurring when values are changed. Slight changes in values programmed can have significant effects on driving.

View Scan

Enables or disables scanning features to be active in a particular drive.

Traction

A reduction of speed when going into or coming out of turns. The higher the value the greater the reduction. Does not affect direct turning speed. Helpful to soften veer correction during latched driving modes.

Name Changes

Remote Select has been renamed DRIVE SELECT.

Standby Mode has been renamed SLEEP MODE.

Momentary Mode Select has been renamed DIGITAL 3 SPEED.

11.2 Using the MK_5 Programmer to Make Performance Adjustments

1. Select ADVANCED MENU.
2. Select PERFORMANCE ADJUST.
3. Select the desired drive for performance adjustments

	DRIVE 1
>	DRIVE 2
	DRIVE 3
	DRIVE 4
	PROP ATTENDANT
	DIG ATTENDANT

11.3 SPJ+ Performance Adjustments

There is only one drive that can have the following adjustments:

When programming the SPJ+ joystick with MK6 electronics, the handheld programmer will display “MK5”, this is normal.



FORWARD SPEED	REVERSE SPEED
TURNING SPEED	TREMOR DAMPENING
ACCELERATION FWD	TORQUE
ACCELERATION REV	DCI OPERATION
TURN ACCELERATION	DCI MONITORING
TURN DECELERATION	GYRO CONTROL
BRAKING FORWARD	ENABLE ACTUATORS
BRAKING REVERSE	

11.4 CMPJ+ / Display Performance Adjustments

CMPJ+



Display



Each drive can have the following adjustments:

NAME	TRACTION	RIM CONTROL
FWD SPEED	JSTK THROW	DRIVE SEL*
FWD ACCEL	AXES SEL	ECU1–4*
FWD BRAKE	INPUT TYPE	ASM1–2
REV SPEED	COLOR THEME	NO DRIVING
REV ACCEL	MOM/LATCH	MOUSE
REV BRAKE	LATCHED TYPE**	MOUSE SETTINGS
TURN SPEED	MOM REVERSE	MOUSE AXES
TURN ACCEL	3 SPEED DIGITAL	MOUSE B
TURN DECEL	SLEEP MODE**	MOUSE B SETTINGS
TREM DAMP	STBY SEL	MOUSE B AXES
POWER LEVL	STANDBY TIME	IR CONTROL
G-TRAC	STANDBY IN ECU	LIGHT CONTROL
TORQUE	STANDBY IN MOUSE	VIEW SCAN-DISPLAY ONLY

* Mode switch required unless STANDBY SEL is turned on.

** Mode switch ALWAYS required.

11.5 Performance Adjustment Definitions

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
NAME SPEED_LVL ^	Allows the name of a saved standard drive program to be changed. Sets a 10 character Name for each drive. This is displayed on various screens during normal operation. • Move the joystick left/right or use left/right HP keys to move the carat (^) to the desired letter to change. • Move the joystick up/down or use up/down HHP keys to change the letter. • Use underscore to separate names. DO NOT leave blank spaces.
FWD SPEED 80% LESS MORE |||||||||||||||||||||||||	Sets maximum forward speed. • Generally reduced for learning modes, indoor use, when precise maneuvering is required, or driving with digital controls. • Generally increased for outdoors, open level terrain, and “experienced” drivers.
FWD ACCEL 30% LESS MORE ||||||	Time taken to reach maximum forward speed. • Typically referred to as “Response” by the driver. • 100% = quickest acceleration. • Reduced to accommodate tremors or ataxia.
FWD BRAKE 35% LESS MORE ||||||||	Maximum braking force available to Stop or Slow the wheelchair. • 100% = maximum. • Affects only the forward quadrant. • Generally increased when quick response and precise maneuvering of the wheelchair is needed at lower speeds

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
REV SPEED 50% LESS MORE ||||||||||||	Sets the maximum reverse speed, independent of turning and forward speed. • Generally set at low levels.
REV ACCEL 30% LESS MORE |||||	Time taken to reach maximum Reverse speed. • Typically referred to as "Response" by the Driver. • 100% = quickest acceleration. • Reduced to accommodate tremors or ataxia.
REV BRAKE 35% LESS MORE |||||||	Maximum braking force available to Stop or Slow the wheelchair in Reverse. • Affects only the reverse quadrant. • Generally increased when quick response and precise maneuvering of the w/c is needed at lower speeds.
TURN SPEED 50% LESS MORE |||||||||||||	Sets Maximum Turning Speed – Independent of Forward Speed. • Generally kept near 15% - 25% for most driving profiles. • Fast Turning Speeds are generally not Recommended for safety. • Often set equal or nearly equal to forward speed with very slow driving.
TURN ACCEL 35% LESS MORE |||||||	How quickly the wheelchair reaches the programmed turning speed. • Also typically referred to as "Response" by the Driver. • Reduced to accommodate tremors or ataxia. • First suggested parameter to address if chair is too responsive to driver commands.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
TURN DECEL 35% LESS MORE |||||||	How quickly the wheelchair "brakes" out of a turn when returning joystick to neutral. • Turning Deceleration affects only the Left & Right Joystick Quadrants.
TREMOR DAMP 50% LESS MORE ||||||||||||||||||||	Accommodates Upper Extremity Tremors / Ataxia. • Previously a Standard Program – Now an Adjustment. • Higher levels = softer (delayed) response to joystick commands (accelerations & decelerations). • Lower levels = Increased or faster Response to joystick commands.
POWER LEVEL 50% LESS MORE ||||||||||||||||||||	Sets the Max power (current) available to the motors / drive wheels, or the point at which the wheelchair will stall at an obstacle or under a load. • Will not effect "normal" driving, only with inclines, obstacles, etc. • Generally set low with pediatrics, cognitive or visually impaired, and New Drivers. • Generally set high for switch drivers, rough terrain, indoors at slow speeds over thick carpeting, etc.
G-TRAC On OFF	• Each of the 4 drives can be programmed to use the G-Trac feature, or have G-Trac disabled in that drive. To accomplish, use a Hand Held Programmer and select the Performance Adjustments menu item. Scroll down to G-TRAC and set it for ON or OFF.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
TORQUE 36 LESS MORE |||||||	A function of Time & Power. How quickly programmed Power Level is reached. • ALL FOUR quadrants are affected by the programmed torque level. • High = immediate ramping up to programmed power level. Recommended for Slow Speeds, Switch drivers, rough terrains, curbs, significant obstacles. • Low = slower ramping up to programmed power level. Recommended for faster speeds, level terrains, new drivers - even at some slower speeds. • MK6i Torque levels are noted in Ohms. • Small changes to torque have a significant impact. • Recommendation is to change only in 4 Ohm increments to determine if needs are met.
DCI operation (SPJ+ ONLY) Off AFTERMARKET (OR “NORMALLY OPEN”) INVACARE (OR “NORMALLY CLOSED”)	Determines Drive Lock Out Function for systems utilizing any version of the SPJ+ Joystick OFF • Disables Drive Lock Out for tilt or recline systems (manual or power), • Recommended setting for chairs without tilt or recline seating systems NORMALLY OPEN/AFTERMARKET • Setting for some systems using aftermarket powered seating systems. Consult the aftermarket seating manufacturer for more information. NORMALLY CLOSED/INVACARE • Setting used for Invacare tilt or recline systems (manual or power).

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
DCI MONITORING (SPJ+ ONLY) IVC MANUAL SEATING (OR "CONTINUOUS") IVC POWER SEATING (OR "LATCHING")	Determines the method Drive Lock Out status is monitored by the controller. CONTINUOUS/IVC MANUAL SEATING • Status of the drive lockout switch is continuously monitored for change. • Use this setting for manual tilt or recline systems. • Recommended for some aftermarket powered seating systems. Consult the aftermarket seating manufacturer for more information. LATCHING/IVC POWER SEATING • Monitors the Drive Lockout Input switch ONLY during power up, and after actuator operation. • This setting is recommended for Invacare powered seating systems.
ACC 1 (2) (SPJ+ ONLY) OFF ON	Allows setting actuator to operate through the SPJ+ with ACC Joysticks when ACC is used on the TDX Spree Power Wheelchair with power tilt. ACC 1 = ELEVATE, ACC2 = TILT
TRACTION 30% LESS MORE |||||||	A reduction of the speed when going into and coming out of turns. • The higher the value, the greater the reduction in speed. • Set at 0% for the majority of wheelchair users. • Increasing values may be helpful to soften veer correction in "latched" driving mode, or to dampen veer correction speed for aggressive drivers.
JSTK THROW MOVE JOYSTICK TO: FORWARD_ REVERSE_ LEFT_ RIGHT_ AND THEN NEUTRAL_	Used to calibrate joystick throw. • Sets the point for reaching full speed in relation to joystick displacement. • Values DO NOT return to default settings unless Manually Re-Set. • Reduces joystick movement required to reach full speed.

LCD DISPLAY		PERFORMANCE ADJUSTMENT DESCRIPTION
AXES SEL		Assigns / Re-Assigns joystick commands to a desired direction. • Useful when changing "Joystick Operation" in relation to "Joystick Position". • Each of the four input axes can be redirected to any output axis, or turned off. • Settings DO NOT refer back to default unless manually re-set. • "Select" Key on Programmer cycles through output choices.
FORWARD	FORWARD	
REVERSE	REVERSE	
LEFT	LEFT	
RIGHT	RIGHT	
INPUT TYPE		Used to Add / Change Assigned driver control in one or more drives. • Choose desired driver control for each drive according to this list. • Only available when more than one Driver control is connected. • Only driver controls connected will be displayed. • Only systems with 4 drive modes may add additional driver controls. • Two driver controls of the same Input Type cannot be used on one chair. • To increase the combinations of driver controls allowed, the following changes were made from MK5 to MK6i: – MK5 SWITCH JOY has been divided into MK6i Digital - ASL Digital – MK5 1812 has been divided into MK6i Analog - MEC - Peachtree • ASL Mushroom and Magitek Controls use ANALOG.
MPJ	MK6i MPJ+, PSR+, PSF+	
COMP	COMPACT JOYSTICK	
MEC	MICRO EXTREMITY / MICRO MINI	
PEACHTREE ANALOG	PROPOR-TIONAL	
1500 CONTROL	INVACARE RIM	
SNP	SIP-N-PUFF	
DIGITAL	NON-PRO-PORTIONAL	
ASL DIG	ASL SYSTEMS ONLY	

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
COLOR THEME	Sets the background color. • Available with Color MPJ+ Joystick only. • Color Choices: BLUE, SILVER, WHITE, SALMON, PINK, BUCI.
MOM/LATCH > MOM LTCH	Determines the mode for FORWARD driving commands. • Momentary commands are only active while the command is being given. • Latched commands remain active after release of the driver control - until 2 reverse commands or emergency stop switch is activated. • Left & Right commands are ALWAYS momentary. (See "MOM/REVERSE"). • Available on proportional & digital controls on 4 drive systems. • Latched driving requires mode switch / emergency stop switch.
LATCHED TYPE >CRUISE CTL 1 SPD 3 SPD 3 SPD U/D 5 SPD 5 SPD U/D	Allows different speeds in Latched driving. Present if Latched mode is selected. • 1 SPEED = 1 Forward Speed. • 3 SPEEDS = 3 stepped Speeds (1/3 percentages of forward speed). • 5 SPEEDS = 5 stepped Speeds (1/5 set percentages of forward speed). • CRUISE CTL = Default = Cruise Control (set speed determined by driver). • Stepped latch will increase one step in speed with each successive forward command. A reverse command stops the wheelchair. Used to provide speed selections in latched modes without changing drives. • In 3 SPD U/D and 5 SPD U/D, each successive FORWARD command ramps up to the next step, each successive REVERSE command steps down one step. In U/D mode, a SUSTAINED REVERSE command STOPS the chair, as does activating the "Emergency Stop Switch". • In cruise control, speed will continuously ramp up as the forward command is sustained, and maintain the speed reached when releasing the forward command. Speed decreases in the same rate with a reverse command. Two reverse commands within one second (or an emergency stop switch) stops the wheelchair.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
MOM REVERSE > MOM LTCH	Allows Reverse to be set as either MOMENTARY or LATCHED. • Allows Reverse to be set as either MOMENTARY or LATCHED. • On sets reverse as momentary, Off sets reverse in Latched. • Helpful for some sip-n-puff users backing into spaces.
DIGITAL 3 SPEED > 3 SPEEDS 1 SPEED	Allows either 1 or 3 driving speeds for Digital Controls in Momentary Mode (Previously named "Momentary Mode Select") • 1 SPEED provides only one forward speed. • 3 SPEEDS provides 3 forward speeds, (1/3, 2/3, or full programmed speed), selected with a mode (re-set) switch prior to driving. • "3 SPEEDS" provides speed selections using digital driver controls - without changing drives. • Present only when digital driver control is selected under Input Type.
SLEEP MODE > ON OFF	Allows the Wheelchair to enter an "Inactive (resting) Mode" mode after a set period of time with no driver control activity. (Previously named StandBy Mode) • Used with drivers who cannot access the On/Off switch during periods of no activity. • When chair enters sleep mode, a mode switch (Reset) is required to return the wheelchair to operating mode. • Disappears from the menu if Standby Select is On.
STBY SEL > ON OFF	Sends the wheelchair into resting mode. Driver commands then SELECT next operating function – BYPASSING the "Reset Switch". Once in Standby mode: • FORWARD command ALWAYS returns the wheelchair back to Drive Mode. • RIGHT Command = Remote Drive Select Mode (if turned on). Subsequent Left command changes to next drive. • LEFT Command = ECU functions, then Powered Seating Functions (if turned on). • Disappears from the menu if Sleep Mode is On.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
STANDBY TIME 60 S LESS MORE |||||||||||||||	Sets the time before for a Wheelchair will enter into "STAND BY" (resting) Mode • Range is from 2 seconds to 120 seconds. • Present only when "Sleep Mode" or "Standby Select" is activated.
STANDBY IN ECU STANDBY IN MOUSE > ON OFF	• ON allows "Normal" Stand-By Function. • OFF eliminates Stand-By in ECU modes, but REQUIRES a Mode switch to exit ECU mode (Helpful during mouse emulation or Aux. Comm. operation through the driver control when Sleep Mode or Standby Select is also needed elsewhere, but they interfere). • Present only if Sleep Mode or Standby Select is On.
RIM CONTROL > ON OFF	Allows three commands (quadrants) to drive 4 directions. • Pressing a Mode switch (reset) changes the forward command to reverse driving. • Pressing the switch again toggles the command back to forward driving. • To eliminate the need for the mode switch: – Turn ON Standby Select • To activate "Reversing" without mode switch – Allow the chair to enter Standby Mode – A left command activates Reversing – A forward command returns to normal driving.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
DRIVE SELECT > ON OFF	Drive Select: Allows Left Driver Command to change drives (1, 2, 3, 4). • MUST be turned on in all drives to be accessed through the Driver Command. • Uses a Reset switch (or Standby Select) to enter & exit Remote Select (Drive Select) mode. • A LEFT driver command will advance to the next drive number activated. • Standby Select bypasses reset switch requirement to enter mode. – Right command activates Drive Select. – Left command advances drives. – After allowing the wheelchair to re-enter Standby Select Mode, Forward command returns to driving.
ECU 1 (2, 3, OR 4) > OFF MOM MOTOR LATCHED COMM	Sets performance settings for devices connected to an ECU Port. Each output (1, 2, 3, or 4) appears separately in the menu. (Requires COM12, or COM 34). • OFF Disables that output. (Recommended if no device is connected to it.). • MOM.MOTOR allows each driver command to operate in the momentary mode. • LATCHED places the driver commands in the latched mode, requiring an opposite direction command to turn off. (Suggested for pneumatic operation of Tilt / Recline when operating through a COM unit). • COMM allows immediate response of the relays – used with computers or communication devices. Also allows two relays to be closed at once (i.e., Forward & Right) for diagonal (veer) capability.
ASM 1 (2) > OFF MOM MOTOR LATCHED COMM	Auxiliary Seating Module: MOTION CONCEPTS HELIX BOX ONLY Replaces ECU12 / ECU34 when operating MC Seating through Driver Control. • OFF Disables that output (Recommended if no device is connected to it.). • MOM. MOTOR allows each driver command to operate in the momentary mode. • LATCHED places the driver commands in the latched mode.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
MOUSE >OFF MOM MOTOR LATCHED COMM	Activates Wireless Mouse Emulation through the Driver Control. • OFF Disable mouse control for that drive. • 3 Quadrant: – Forward toggles Mouse up/down. – Right toggles Mouse left/right. – Left = Mouse Click, Double Click, Latch • 4 Quadrant: Up - Down - Left - Right Mouse Control. ⓘ Proportional Mouse Speeds controlled through PC Control Panel Digital Mouse Speeds programmed in Calibrations Menu.
MOUSE SETTINGS >>>	Refer to MK6i Control/Mouse Emulation user manual and programming manual, p/n 1160891.
MOUSE AXES FORWARD > VERT REVERSE > R-CLK LEFT>L-CLK RIGHT>HORZ	Assigns/Re-assigns driver control commands to desired mouse function. Available ONLY when 3 quadrant mode is selected. • Assignments are separate from driving axes selections. • To allow “Right Click” as a choice for a mouse axis: – Must have a 4 Quadrant Control. – Choose “3 QUADRANT” in Mouse mode set-up – Reverse can then be set to “Right Click” if needed. • VERT= Mouse movement toggles between Up and Down • R-CLK = Mouse Right Click • HORZ = Mouse movement toggles between Left and Right • L-CLK = Mouse Left Click
MOUSE B	For MOUSE “B” adjustments refer to MOUSE, MOUSE SETTINGS AND MOUSE AXES • USB mouse associated with the RF Mouse Only Module for software versions 2.2 or higher.

LCD DISPLAY	PERFORMANCE ADJUSTMENT DESCRIPTION
IR >OFF 3 QUADRANT 4 QUADRANT	Activates Control of Infrared Devices Enabled from Calibrations menu. • OFF disables IR Control for that drive. • 3 Quadrant: – Forward command disabled (Head Array Users can use back pad as head rest) – Right = scrolls through Menu. – Left = Selects Icon. • 4 Quadrant: Left — Right scroll through icons, Forward Command Selects Icon.
NO DRIVING > ON OFF	Allows Driving to be turned off for that particular drive. • Eliminates driving to dedicate that drive to another activity. • Helpful when performing multiple activities through the driver control to reduce choices users need to make. • Can be used to eliminate access to drives (until user is ready to add functions / features).
LIGHT CONTROL > ON OFF	Allows lights to be turned on/off through the drive control in that drive.
VIEW/SCAN > ON OFF	Allows Scanning to be turned off or on for that particular drive. • Available on the MK6i Display only. • Scanning Modes (Row column, Sequential, Enhanced) are chosen in the “Calibrations” menu. • Particular drives to be scanned are chosen here. • When scanning in “Sequential” mode, it can be helpful to limit the number of drives scanned. • Any driver command will initiate scanning. • Any driver command will select highlighted icon. • Scanning will return to resting mode after 3 cycles.

12 MK6i Standard Programs

12.1 Standard Program Descriptions

STANDARD PROGRAM	TYPE	DESCRIPTION
INDOOR JOYSTICK AVE	Proportional	Average joystick user – an Indoor program **(FACTORY SETTING DRIVE 1)**
MODERATE OUTDOOR	Proportional	Medium speed for rougher terrain **(FACTORY SETTING DRIVE 2)**
SPEED/LEVEL TERRAIN	Proportional	High speed program for flat level surfaces **(FACTORY SETTING DRIVE 3)**
RAMPS & CURBS MODE	Proportional	Medium Speed with High Power & High Torque **(FACTORY SETTING DRIVE 4)**
INDOOR LEARNER	Proportional	Slow settings for Indoor learning
VERY SLOW DRIVING	Proportional	Slowest driving standard program
MEC	Proportional	A Program with Sensitivity & Acceleration settings already softened. Ideal for Micro extremity & Mini Proportional Joysticks
LEARNER 3 SPD MOM	Digital	A Momentary switch (non-proportional) program with 3 forward & 1 reverse speed
ASL INDOOR	Digital	A Momentary switch (non-proportional) program ideal for drivers new to ASL systems
ASL OUTDOOR	Digital	A Momentary switch program ideal for drivers experienced with ASL systems
LEARNER SIP & PUFF	Digital	A Learning Program for SIP N Puff in Momentary Mode
VERY SLOW 1SPD S&P	Digital	A Slow Program for SIP N Puff with 1 latched forward speed
LEARNER 1500 RIM	Digital	A Learning Program for the RIM Head Control

MK660 W/ACC (2-POLE MOTORS) STANDARD VALUES (RWD: POWER TIGER)													
	INDOOR JOYSTICK AVE.	MOD. OUTDOOR	SPEED LEVEL TERRAIN	RAMPS & CURB	VERY SLOW DRIVING	MEC	INDOOR LEARNER	ASL INDOOR	ASL OUTDOOR	SNP LEARNER	LEARNER 3 SPEED MOM	VERY SLOW 1 SPEED SNP	LEARNER 1500 RIM
FORWARD SPEED	45	75	95	50	15	25	30	20	40	30	30	15	30
FORWARD ACCEL	20	25	20	15	20	20	20	20	20	20	20	20	20
FORWARD BRAKING	50	50	50	60	50	50	50	50	50	50	50	50	50
REVERSE SPEED	30	30	30	25	15	12	12	12	12	12	12	12	12
REVERSE ACCEL	20	25	20	20	20	20	20	20	20	20	20	20	20
REVERSE BRAKING	55	55	55	60	55	50	50	50	50	55	50	50	50
TURN SPEED	12	20	20	15	15	15	15	15	15	15	15	15	15
TURN ACCEL	15	20	20	15	15	15	15	15	15	15	15	15	15
TURN BRAKING	40	45	45	60	40	40	40	40	40	40	40	40	40
TREMOR DAMP	35	35	35	35	35	35	35	35	35	35	35	35	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	144	144	144	156	144	144	144	144	144	144	144	144	144
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0

MK660 A/ACC (2-POLE MOTORS) STANDARD VALUES (CWD: TDX SPREE, TDX SC, PRONTO M71)													
	INDOOR JOYSTICK AVE.	MOD. OUTDOOR	SPEED LEVEL TERRAIN	RAMPS & CURB	VERY SLOW DRIVING	MEC	INDOOR LEARNER	ASL INDOOR	ASL OUTDOOR	SNP LEARNER	LEARNER 3 SPEED MOM	VERY SLOW 1 SPEED SNP	LEARNER 1500 RIM
FORWARD SPEED	45	75	95	50	15	30	30	20	35	35	35	20	30
FORWARD ACCEL	20	20	20	15	20	20	20	20	20	30	20	30	20
FORWARD BRAKING	50	50	50	50	50	50	50	50	50	50	50	50	50
REVERSE SPEED	35	35	45	25	15	25	20	15	20	15	20	15	20
REVERSE ACCEL	20	20	20	20	20	20	20	20	20	20	20	20	20
REVERSE BRAKING	45	55	55	45	55	50	50	50	50	55	50	55	50
TURN SPEED	15	20	20	12	12	15	15	15	12	15	12	15	15
TURN ACCEL	15	20	20	15	15	15	15	15	15	15	12	35	15
TURN BRAKING	35	45	45	25	35	35	35	35	35	35	35	35	35
TREMOR DAMP	35	35	35	35	35	35	35	35	35	35	35	35	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	144	144	144	156	144	144	144	144	144	144	144	144	144
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0

MK660 W/ACC AND SPJ+ JOYSTICK (2-POLE MOTORS) STANDARD VALUES				
	M51/M61 (2)	EURO-M61 (2)	PREE/SC/M71 (2)	RWD-2P (1)
FORWARD SPEED	95	95	95	95
FORWARD ACCEL	25	25	20	20
FORWARD BRAKING	50	80	50	55
REVERSE SPEED	40	40	35	35
REVERSE ACCEL	25	25	20	25
REVERSE BRAKING	55	55	55	55
TURN SPEED	25	25	20	20
TURN ACCEL	30	30	20	15
TURN BRAKING	30	30	45	35
TREMOR DAMP	35	35	35	35
POWER LEVEL	100	100	100	100
TORQUE (OHMS)	144	144	144	144
TRACTION	0	0	0	0

MK690 OR MK690ACC MOTORS STANDARD VALUES (RWD: STORM, TORQUE3, TORQUE SP, RANGER X)													
	INDOOR JOYSTICK AVE.	MOD. OUTDOOR	SPEED LEVEL TERRAIN	RAMPS & CURB	VERY SLOW DRIVING	MEC	INDOOR LEARNER	ASL INDOOR	ASL OUTDOOR	SNP LEARNER	LEARNER 3 SPEED MOM	VERY SLOW 1 SPEED SNP	LEARNER 1500 RIM
FORWARD SPEED	45	75	95	50	15	25	30	15	35	25	30	16	30
FORWARD ACCEL	20	20	20	15	20	15	20	20	20	20	20	20	20
FORWARD BRAKING	50	50	50	60	50	50	50	50	50	50	50	50	50
REVERSE SPEED	30	30	30	25	15	18	25	15	15	15	15	15	15
REVERSE ACCEL	20	25	20	20	20	15	20	20	20	20	20	20	20
REVERSE BRAKING	55	55	55	60	55	55	55	55	55	55	55	55	55
TURN SPEED	15	20	25	15	10	12	12	10	12	18	12	16	12
TURN ACCEL	15	20	20	15	15	15	15	20	15	50	15	25	15
TURN BRAKING	40	45	45	60	35	45	40	40	40	35	40	35	40
TREMOR DAMP	35	35	30	35	35	40	35	35	35	35	35	35	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	36	36	36	48	48	44	36	48	40	40	40	40	36
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0

MK690 OR MK690ACC MOTORS STANDARD VALUES (CWD: TDX SP, PRONTO M91)													
	INDOOR JOYSTICK AVE.	MOD. OUTDOOR	SPEED LEVEL TERRAIN	RAMPS & CURB	VERY SLOW DRIVING	MEC	INDOOR LEARNER	ASL INDOOR	ASL OUTDOOR	SNP LEARNER	LEARNER 3 SPEED MOM	VERY SLOW 1 SPEED SNP	LEARNER 1500 RIM
FORWARD SPEED	45	75	95	50	15	20	30	15	32	25	30	15	30
FORWARD ACCEL	20	20	20	10	20	10	20	25	20	25	20	25	20
FORWARD BRAKING	45	35	40	45	50	50	50	50	50	50	50	50	50
REVERSE SPEED	30	35	40	25	15	10	25	11	15	15	21	15	25
REVERSE ACCEL	20	20	20	20	20	15	20	20	20	20	50	20	20
REVERSE BRAKING	45	55	55	45	55	55	50	55	55	55	55	55	50
TURN SPEED	15	20	20	12	8	10	12	11	11	12	11	11	12
TURN ACCEL	15	20*	20*	15	15	10	15	15	12	15	12	15	15
TURN BRAKING	35	45	45	35	35	45	35	35	35	35	35	35	35
TREMOR DAMP	35	35	35	40	35	50	40	35	35	35	35	35	45
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	36	36	36	48	48	42	36	36	40	48	36	48	36
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0

On M91™ wheelchairs this value is 15.

2-POLE CWD TDX SI AND TDX SI HEAVY DUTY														
	Very Slow	Indoor Learner	Indoor Average	Mod Outdoor	Speed Level Terrain	Ramps and Curbs	Micro Proportional	Learner 1500 RIM	ASL Indoor	ASL Outdoor	SNP Learner	Very Slow 1 Sp SNP	Learner 3 Speed Digital	SPJ+
FORWARD SPEED	15	30	45	75	95	40	25	30	20	35	25	15	30	95
FORWARD ACCEL	20	20	20	20	20	15	15	20	20	20	20	20	20	20
FORWARD BRAKING	45	45	45	45	50	55	45	45	45	45	45	45	45	50
REVERSE SPEED	10	15	20	30	35	20	15	15	10	15	10	10	15	35
REVERSE ACCEL	20	20	20	20	20	20	20	20	20	20	20	20	20	20
REVERSE BRAKING	45	45	45	45	45	45	45	45	45	45	45	45	45	45
TURN SPEED	10	12	15	20	25	15	10	12	12	15	12	8	10	20
TURN ACCEL	10	12	15	20	20	15	12	12	10	12	15	15	15	20
Turn Decel	40	40	40	50	50	45	40	40	40	40	40	40	40	50
TREMOR DAMP	30	30	30	30	30	30	30	30	30	30	30	30	30	30
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	88	88	88	80	80	80	88	88	88	88	88	88	88	80
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MK690, MK690 W/ACC AND SPJ+ JOYSTICK STANDARD VALUES				
FORWARD SPEED	95	95	95	95
FORWARD ACCEL	20	20	20	20
FORWARD BRAKING	50	47	50	50
REVERSE SPEED	40	25	50	40
REVERSE ACCEL	20	15	20	20
REVERSE BRAKING	55	55	55	55
TURN SPEED	25	25	20	20
TURN ACCEL	15	15	25	20
TURN BRAKING	40	23	30	20
TREMOR DAMP	35	35	35	40
POWER LEVEL	100	100	100	100
TORQUE (OHMS)	32	32	32	36
TRACTION	0	0	0	0

MK6TT MOTORS STANDARD VALUES (RWD: STORM ARROW)													
	INDOOR JOYSTICK AVE	MOD. OUTDOOR	SPEED LEVEL TERRAIN	RAMPS & CURB	VERY SLOW DRIVING	MEC	INDOOR LEARNER	ASL INDOOR	ASL OUTDOOR	SNP LEARNER	LEARNER 3 SPEED MOM	VERY SLOW 1 SPEED SNP	LEARNER 1500 RIM
FORWARD SPEED	45	75	100	50	15	20	30	12	32	20	30	8	30
FORWARD ACCEL	20	20	20	10	12	12	12	10	10	10	10	10	12
FORWARD BRAKING	40	45	45	50	50	50	40	40	40	40	40	40	50
REVERSE SPEED	12	15	20	12	5	5	10	8	8	5	10	5	10
REVERSE ACCEL	20	20	20	20	15	15	15	20	20	20	20	20	15
REVERSE BRAKING	55	55	55	55	55	55	55	55	55	50	55	50	55
TURN SPEED	15	20	20	15	5	10	10	8	10	8	8	5	15
TURN ACCEL	20	20	20	20	20	15	15	10	10	15	20	15	15
TURN BRAKING	50	45	45	50	50	50	50	45	45	35	30	35	50
TREMOR DAMP	35	40	40	35	35	40	35	35	35	25	35	25	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	15	10	5	70	15	15	5	25	50	75	25	25	20
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0

MK6TT MOTORS STANDARD VALUES (CWD: TDX SR)													
	INDOOR JOYSTICK AVE	MOD. OUTDOOR	SPEED LEVEL TERRAIN	RAMPS & CURB	VERY SLOW DRIVING	MEC	INDOOR LEARNER	ASL INDOOR	ASL OUTDOOR	SNP LEARNER	LEARNER 3 SPEED MOM	VERY SLOW 1 SPEED SNP	LEARNER 1500 RIM
FORWARD SPEED	45	75	100	50	15	20	30	8	32	20	30	5	30
FORWARD ACCEL	20	20	20	10	12	12	12	15	10	15	10	15	10
FORWARD BRAKING	40	45	45	50	50	50	40	45	40	45	40	45	40
REVERSE SPEED	15	20	20	15	5	5	5	5	5	5	10	4	10
REVERSE ACCEL	20	20	20	20	15	15	15	20	20	20	20	20	20
REVERSE BRAKING	55	55	55	55	55	55	55	50	55	50	55	50	55
TURN SPEED	18	20	22	18	5	8	10	5	10	5	8	5	8
TURN ACCEL	20	20	20	20	20	15	15	15	15	15	20	15	15
TURN BRAKING	50	45	45	50	50	50	50	35	30	35	30	35	30
TREMOR DAMP	35	40	40	35	35	40	35	25	35	25	35	25	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	15	10	5	75	15	15	5	75	75	75	75	75	50
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0

2-POLE SSD MOTORS STANDARD VALUES (FWD: FDX)														
	indoor joy-stick ave.	mod. out-door	speed level terrain	ramps & curb	very slow driving	mec	indoor learner	ASL indoor	asl out-door	snp learner	Digital 3 speed	very slow 1 speed snp	learner 1500 rim	SPJ+
FORWARD SPEED	45	75	95	40	15	25	30	18	35	25	30	15	30	95
FORWARD ACCEL	20	20	20	15	20	15	20	20	20	20	20	20	20	20
FORWARD BRAKING	45	45	45	60	45	45	45	45	45	45	45	45	45	45
REVERSE SPEED	20	30	30	20	10	10	15	10	15	15	10	10	15	30
REVERSE ACCEL	20	20	20	20	20	20	20	20	20	20	20	20	20	20
REVERSE BRAKING	45	45	45	45	45	45	45	45	45	45	45	45	45	45
TURN SPEED	15	20	20	15	8	10	12	8	12	12	12	8	12	20
TURN ACCEL	15	20	20	15	10	12	12	10	12	10	15	10	12	20
TURN BRAKING	20	60	65	60	40	40	40	40	40	30	30	40	40	65
TREMOR DAMP	35	35	35	35	40	40	40	40	40	30	30	30	40	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	80	80	80	100	92	88	88	100	100	100	100	100	88	80
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4–POLE SSD MOTORS STANDARD VALUES (FWD: FDX)														
	indoor joy-stick ave.	mod. out-door	speed level terrain	ramps & curb	very slow driving	mec	indoor learner	ASL indoor	asl out-door	snp learner	Digital 3 speed	very slow 1 speed snp	learner 1500 rim	SPJ+
FORWARD SPEED	45	75	95	30	15	25	30	18	30	25	30	15	30	95
FORWARD ACCEL	20	20	20	15	20	15	20	25	25	30	30	30	20	20
FORWARD BRAKING	40	40	40	45	50	50	45	45	50	50	50	50	45	40
REVERSE SPEED	15	20	25	15	10	15	15	10	15	15	15	10	15	25
REVERSE ACCEL	20	20	20	20	20	10	20	20	20	20	20	20	20	20
REVERSE BRAKING	60	55	55	60	60	60	60	55	55	55	55	55	60	55
TURN SPEED	12	15	15	12	6	10	10	6	8	8	8	6	10	12
TURN ACCEL	15	20	20	15	15	10	15	20	20	15	20	15	15	20
TURN BRAKING	35	45	45	35	35	45	35	45	45	45	45	45	35	45
TREMOR DAMP	40	35	35	40	40	40	40	45	45	45	45	45	40	35
POWER LEVEL	100	100	100	100	100	100	100	100	100	100	100	100	100	100
TORQUE (OHMS)	36	36	36	48	48	40	40	40	40	44	44	44	40	36
TRACTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0

13 Using the Memory Card

13.1 Description

The memory card allows programming parameters to be transferred from the power wheelchair to files on the memory card, where the parameters can be stored or organized. These parameters can be transferred to other wheelchairs as long as the motors, drive configurations, and driver controls are the same. The entire profile (all drives at once) may be saved or transferred. The individual drive profiles (1 through 4) may also be saved or transferred.

13.2 Basic Memory Card

Features of the basic memory card:

- Standard on delivery with all power wheelchairs with rehab (expandable) driver controls.
- Only used to backup/restore programmed settings/adjustments for one wheelchair.
- Does not contain advanced diagnostics, help screens, software updates, or file structure.
- Not compatible with SPJ+ joysticks.

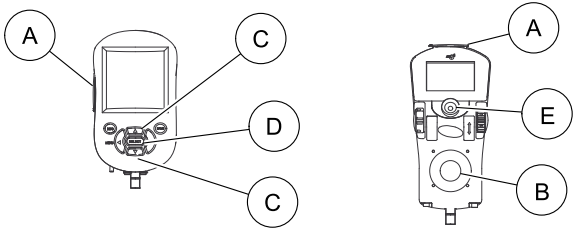
MK6i PROGRAMMING				
PARAMETER	**D1**	**D2**	**D3**	**D4**
SPEED	**100**	**100**	**100**	**100**
RESPONSE	**100**	**100**	**100**	**100**
PERFORMANCE ADJUST	**>>>**			
STANDARD PROGRAMS	**>>>**			
MEMORY CARD	**>>>**			
POWERED SEATING	**>>>**			
CALIBRATIONS	**>>>**			
DIAGNOSTICS	**>>>**			

13.3 Professional Memory Card

Features of the professional memory card:

- Standard with all MK6i programmers. Purchased “on chair”.
- Available with the USB card reader.
- Contains advanced diagnostics, help screens, software updates, and file storage/retrieval.
- Not compatible with SPJ+ joysticks.

13.4 Using the Basic Memory Card



	DESCRIPTION	
ITEM	**MK6i DISPLAY**	**CMPJ+ JOYSTICK**
A	CARD SLOT	CARD SLOT
B	N/A	JOYSTICK
C	UP/DOWN ARROWS	N/A
D	SELECT KEY	N/A
E	N/A	MODE BUTTON

The basic memory card is recommended for storing a backup copy of final programming settings. This card can be attached to the wheelchair or left with the user. If the display or driver control need exchanging, the memory card serves to restore the original settings. Additional backup copies of the program values can be saved to the professional memory card. For the basic memory card to restore final program settings, the file name (system name) on the card MUST match the system name of the MK6i Display or the MK6i Joystick.

To change the system name of the display or the joystick, refer to Calibration Menu Description on page 85.

To use the basic memory card:

1. Insert the basic memory card into the card slot Ⓐ of the MK6i display or CMPJ+ Joystick.
2. Turn the wheelchair On.
3. Use the joystick Ⓑ (forward/reverse) of CMPJ+ Joystick or up/down arrows Ⓒ of MK6i Display to select:
   - STORE TO CARD - Create a back up file.
   - READ FROM CARD - Restore programming settings.
4. Press one of the following to begin storing or reading:
   - Mk6i Display - Press the Select key Ⓓ.
   - CMPJ+ joysticks - Press the mode button Ⓔ.

13.5 Using the Professional Memory Card

13.5.1 Updating the Professional Memory Card

1. Go to www.invacare.com.
2. Log into the website.
3. Click Technical Zone.
4. Click Software Downloads under the Diagnostics heading.
5. Download the MK6i Software Update and save to your desktop.
6. Insert the MK6i professional memory card into a SD card reader and plug the card reader into the USB port of your computer.
7. Open the MK6i update folder.
8. Open the "MK6_ver X.X Update.exe" file.
9. Select (highlight) the drive location of the professional memory card when prompted.
10. Select "OK" and the card will automatically be updated.

13.5.2 Updating MK6i Software

1. Ensure the wheelchair is Off.
2. Insert the updated professional memory card into the card slot of the MK6i display or the CMPJ+ joystick.
3. Turn the wheelchair On.
4. The screen shows "Firmware X.X.X is Available." Perform one of the following:
   - MK6i Display - Press Save to begin the update process.
   - MK6i CMPJ+ Joystick - Press the Mode Switch to begin the update process.
5. The screen shows:
   - "Erasing" followed by a progress bar.
   - "Programming" followed by a progress bar.
6. After programming is complete, the screen shows one of the following:
   - MK6i Display - the first screen for using the Display as a programmer.
   - MK6i CMPJ+ Joystick - the first screen for Through the Joystick Programming.

13.5.3 Saving or Installing a Drive Program, a System or a Seating Profile

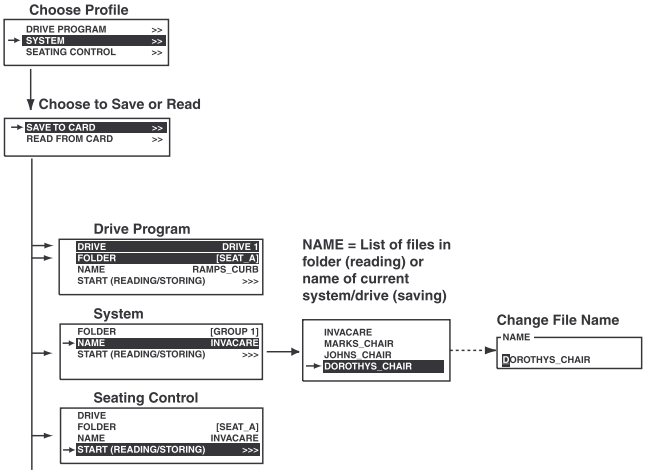
1. Insert the professional memory card into the MK6i display or driver control.
2. Turn the wheelchair on.
3. Select MEMORY CARD on the menu.
4. Select the desired profile:
   - DRIVE PROGRAM- An individual drive for performance adjustments only.
   - SYSTEM - All four drives for performance adjustments and powered seating.
   - SEATING CONTROL - An individual drive for powered seating programming.

5. Select the desired action:
   - SAVE - Transfers files to the memory card.
   - READ - Transfers files to the power wheelchair.
6. Perform one set of the following steps based on the selection from step 4:
   - SYSTEM is selected -

     a. Select FOLDER to display the selected folder from a list of folders to save to or read from.
     b. Press Select (display) or the mode button (joysticks) to select a folder.
     c. Select NAME to display/change the current system name (if saving) or to display a list of all system names in the folder (if reading).
     d. Press Select (display) or the mode button (joysticks) to select a system.
     e. Select START to begin the reading or saving process.

   - DRIVE PROGRAM or SEATING CONTROL is selected -

     a. Use the Select key (display) or the mode button (joysticks) to select the desired drive to save to or read from.
     b. Select FOLDER to display the selected folder from a list of folders to save to or read from.
     c. Press Select (display) or the mode button (joysticks) to select a folder.
     d. Select NAME to display the current drive or seating profile name (if saving) or to display a list of all drives or seating profile names in the folder (if reading).
     e. Press Select (display) or the mode button (joysticks) to select a system.
     f. Select START to begin the reading or saving process.



14 Powered Seating

14.1 Main Menu

MK6i PROGRAMMING				
PARAMETER	**D1**	**D2**	**D3**	**D4**
SPEED*	100	100	100	100
RESPONSE*	100	100	100	100
PERFORMANCE ADJUST	>>>			
STANDARD PROGRAMS	>>>			
MEMORY CARD	>>>			
POWERED SEATING	>>>			
CALIBRATIONS	>>>			
DIAGNOSTICS	>>>			

14.2 Powered Seating Menu (Legacy)

POWERED SEATING MENU				
	D1	**D2**	**D3**	**D4**
DRIVE LOCK OUT	ON	ON	ON	ON
ACT CONTROL	4SW	4SW	4SW	4SW
ACT CTL STD PRGM	NONE	NONE	NONE	NONE
ACTUATOR SELECT	>>>>			
SEATING ADJUST	>>>>			

14.2.1 Drive Lock Out

Allows choice for Drive Lock Out to be enabled or disabled in individual drives.

DRIVE LOCKOUT >ON OFF	• Select On to enable drive lockout for the selected drive. • Not available for SPJ+ joysticks. • To disable drive lockout on conventional single actuator systems, choose “OFF” under <ACC DCI> in the calibrations menu.

14.2.2 Actuator Control

An actuator control setting MUST be selected to operate powered seating through the driver control.

The actuator control menu determines the method for operation of actuators through a driver control that is accessed through a mode switch or stand-by select.

This menu appears only when there is a multiple actuator interface box or SANODE installed on the seating system.

ACTUATOR CONTROL OFF > 4-SWITCH LATCH. 4SW 4 SW-2 LEVELS 4SWL-2 LEVELS MOM.1SW	• OFF - disables driver control operation of the powered seating for that drive only. • 4 SW - Directions of driver command mirror Actuator Selection choices; Momentary mode. • LATCH 4 SW - Same as 4 SW, but in latched mode. First command initiates actuators, repeated command stops actuator. • 4 SW - 2 Levels - Recommended for head Controls in RIM mode. Dedicates left and right commands while turning off forward (occipital pad) command. – Mode Switch activates level 1, then level 2 ¨ Level 1 - Left driver command = Forward actuator selection, Right driver command = Reverse actuator selection. ¨ Level 2 - Left drive command = Left actuator selection, Right driver command = Right actuator selection. – Standby Select bypasses mode switch requirement and allows Left command (held down) to cycle through each level. ¨ Level 1 - Forward - Reverse actuator selections ¨ Level 2 - Left - Right actuator selections • MOM.1SW - Intended primarily for Head Control drivers operating with RIM. – Mode switch cycles through each actuator selection choice. Right command operates selected choice. – Standby Select allows left command (held down) to cycle through each actuator selection choice. Right command operates selected actuator (Momentary Mode).

ACTUATOR CONTROL (Continued) LATCH.1SW CAPS	• LATCH.1SW - Right command operates the actuators in a latched mode. The first command activates, repeated command releases. • CAPS (Cycling Actuators with Powered Seating) - displays only one actuator (large icon) on the display screen at a time. (Available only with color displays/joysticks) – 4 Quadrant Mode ¨ Left and Right driver control commands cycle through available actuators. ¨ Forward driver control command operates the actuator toward upright position. ¨ Reverse driver control command operates the actuator in the opposite direction. • 3 Quadrant Mode: – Left command cycles through available actuators. – Right command operates actuator in toggle (up/down) mode.

14.2.3 Actuator Control Standard Program

STD PRG	
NONE	T-ONLY
TRLE	TL
TRL	RL
TR	E-ONLY
TE	L-ONLY

- Allows Pre set Actuator Selection Choices assigned to specific joystick quadrants.
- Selections can be customized using the actuator selection.
- i.e. Tilt Only: Forward = Tilt UP, Reverse = Tilt DOWN, Left & Right = OFF, etc.
- To view pre-set assignments for quadrant directions of the different standard programs, Refer to 4w sTD pgM on page 93.

14.2.4 Actuator Selection

The actuator selection menu allows each quadrant (button) of the 4-way switch to be assigned to a specific actuator function. Operating the powered seating through the driver control will mirror actuator selection configured for that drive. An actuator selection MUST be made for at least one quadrant to operate the actuator through the driver control.

Select an individual quadrant in an individual drive by highlighting only that function or select the same quadrant for all drives by highlighting the entire row.

This is an example of the types of actuator functions that could be assigned to each direction in the Actuator Selection Menu:

Actuator Selection Menu		
>>	FWD	TILT U/D
	REV	RECLINE & LEGS U/D
	LT	ELEVATE UP
	RT	ELEVATE DOWN

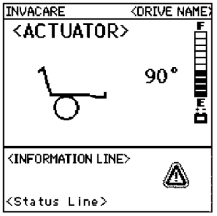
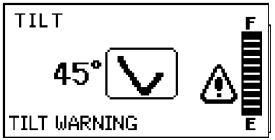
Actuator Functions

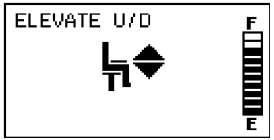
Each actuator function listed below has a choice for U/D (Up/Down), Up or Down and corresponding icons.

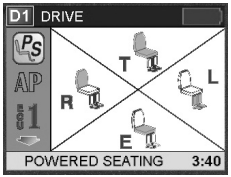
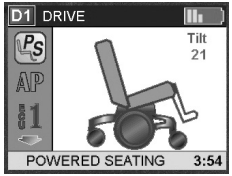
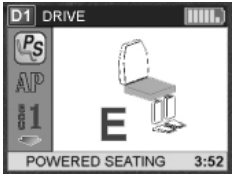
- TILT
- RECL
- LEGS
- ELEVATE
- RIGHT LEG
- LEFT LEG
- R&Lg (Recline & Legs)
- GENERIC (using the Controller actuator)

Display Icons

Tilt Operation 	Right Leg Operation 
Recline Operation 	Left Leg Operation 
Center Leg Operation 	Elevate Operation 

Example Screens: Actuator Operation - Monochrome Display and MPJ+ Joystick	
4 Switch Mode Through The Driver Control	
Smart Actuators	**Display** 
	MPJ+ 

Example Screens: Actuator Operation - Monochrome Display and MPJ+ Joystick		
Conventional Actuator	**Display**	
	MPJ+	

Example Screens: Actuator Operation - Color MPJ+ Joysticks	
4 Switch Mode Through The Driver Control	
Smart Actuators	
CAPS Mode	

14.2.5 Seating Adjust

The Seating Adjust menu allows the assignment of the maximum angles and the speed of the actuators. Automatic positioning programs are also set from this menu.

SEATING ADJUST	
TILT ADJUST	**>>>**
RECLINE ADJUST	**>>>**
LEGS ADJUST	**>>>**
RIGHT LEG ADJUST	**>>>**
LEFT LEG ADJUST	**>>>**
LEFT AP PROGRAM	**>>>**
RIGHT AP PROGRAM	**>>>**

Adjusting the Actuators

When adjusting Smart Actuators note the following:

- Only Tilt, Recline and Center Mount Legs are available with Smart Actuators.
- Only Smart Actuators allow programming Max Up or Down Angles.

ADJUSTMENT OPTIONS	
TILT ADJUST	**SPEED UP**
	SPEED DOWN
	MAX UP ANGLE (SMART ACTUATORS)
	MAX DOWN ANGLE (SMART ACTUATORS)
RECLINE ADJUST	**SPEED UP**
	SPEED DOWN
	MAX UP ANGLE (SMART ACTUATORS)
	MAX DOWN ANGLE (SMART ACTUATORS)
LEGS ADJUST	**SPEED UP**
	SPEED DOWN
	MAX UP ANGLE (SMART ACTUATORS)
	MAX DOWN ANGLE (SMART ACTUATORS ONLY)
RIGHT LEG ADJUST	**SPEED UP**
	SPEED DOWN
LEFT LEG ADJUST	**SPEED UP**
	SPEED DOWN

Automatic Positioning

The LEFT AP PROGRAM and RIGHT AP PROGRAM are used to set Automatic Positioning. Automatic Positioning is a program for a set of actuators to move to a desired position with a single driver command.

- Only Smart Actuators can be programmed in Automatic Positioning.
- Each program (sequence) can have up to 6 steps. There are two programs (sequences) available for Automatic Positioning settings:
  - Left AP Program - Sets the sequence for tilting and/or reclining back and is ALWAYS a left driver command
  - Right AP Program - Sets the sequence for returning to an upright sitting position and is ALWAYS a right driver command. The Right AP Program can be in a different sequence than the Left AP Program
- Different automatic positioning programs can be set for each drive.
- The actuator choices for AP Programs are:
  - NONE
  - TILT
  - RECLINE
  - LEG
  - RECLINE AND LEGS

1. Select POWERED SEATING > SEATING ADJUST > LEFT AP PROGRAM.
2. Highlight the desired drive or an entire row for the actuator and press Select.
3. Make the actuator selection from the choices on the list and press Select.
4. Highlight the desired drive or an entire row for the angle and press Select.
5. Press Select again to accept the warning shown on the screen.
6. Use the up and down arrow keys to operate the actuators

   This will place the seat in the desired position.

7. Press select when the seat is in the desired position.
8. Repeat steps 1-7 for additional actuators
9. Repeat steps 1-8 for the Right AP program to return the seat to the upright position.

MK6I PROGRAMMING					
PARAMETER		**D1**	**D2**	**D3**	**D4**
1.	**ACTUATOR**	**NONE**	**NONE**	**NONE**	**NONE**
1.	**ANGLE**	**0**	**0**	**0**	**NONE**
2.	**ACTUATOR**	**NONE**	**NONE**	**NONE**	**NONE**
2.	**ANGLE**	**0**	**0**	**0**	**NONE**
3.	**ACTUATOR**	**NONE**	**NONE**	**NONE**	**NONE**
3.	**ANGLE**	**0**	**0**	**0**	**NONE**
4.	**ACTUATOR**	**NONE**	**NONE**	**NONE**	**NONE**
4.	**ANGLE**	**0**	**0**	**0**	**NONE**
5.	**ACTUATOR**	**NONE**	**NONE**	**NONE**	**NONE**
5.	**ANGLE**	**0**	**0**	**0**	**NONE**
6.	**ACTUATOR**	**NONE**	**NONE**	**NONE**	**NONE**
6.	**ANGLE**	**0**	**0**	**0**	**NONE**

To remove automatic positioning from a drive, set Actuator 1 to "NONE" for the left and the right in the AP Program Menu.

14.3 Powered Seating Menu (M610i Module)

POWERED SEATING MENU				
	D1	D2	D3	D4
SEATING SETUP>>>		>>>>		
SENSOR SETUP>>>		>>>>		
DLO	ON	ON	ON	ON
DRIVER CONTROL	4SW	CAPS	4SW2LVL	None
DVR STD PROGRAMS	TRL	TRL	TR	None
DVR CONTROL SETTING	<<<<<<<	TREL	>>>>>>	
ATTENDANT STD PROGRAM	<<<<<<<	TREL	>>>>>>	
ATTENDANT SETTING		>>>>>>		
SEATING ADJUST		>>>>>>		
MEMORY SEATING		>>>>>>		
DIAGNOSTICS		>>>>>>		

14.3.1 Seating Setup

SEATING SETUP	
TILT	ON/OFF
RECLINE	ON/OFF
ELEVATE	ON/OFF
LEGS	OFF/CENTER/IND
CHANNEL 6	ON/OFF

Sets configuration of the powered seating system

- Select “ON” for each actuator in the system, “OFF” for all others.
- For Legs, choose either “OFF (no power legs), CENTER (Power Center Mount, or “IND” (individual Power Legs)
- Channel 6 is reserved for any special actuator added to the system (i.e., VSR, Power Chin Boom, etc...)

14.3.2 Sensor Setup

SENSOR SETUP
Home Position
Slow Down Angle
DLO Angle
Max Back Angle
SET DEFAULT
RESET

Sets the tipsy switch angle positions

- Use Up and Down arrows to move (TILT) to the HOME position, (or Slow Down, DLO, or Max Back), then press SELECT. Press right arrow to change actuators.
- HOME; 0° to XX°, the position within which Elevate UP will function.
- SLOW: Position at which driving speed is reduced to 20%
- DLO: Position for Drive Lock Out
- MAX BACK ANGLE: Sets the maximum back angle the system will travel
- SET DEFAULT: Choose "PRESET" in SET DEFAULT menu to return to factory default.
- RESET: Intended for future use. Factory Default Settings are:
  - Home 7.5°
  - Slow 15°
  - *DLO 30°
  - Max Back Angle 78° (168°)

*NOTE: 30° DLO (Default) is only for models using the M610i module for powered seating

Tipsy Operation

- The seating system must be in the must be in the "HOME" position (default = 0° — 7.5°) to allow elevate up.
- The system can elevate down in any seat position.

14.3.3 Drive Lock Out

DRIVE LOCKOUT	
DRIVE 1	ON
	OFF

Turns "DRIVE LOCK OUT" On or Off in each Drive

- Select All Drive or an individual drive and choose "ON" or "OFF"

14.3.4 Driver Control

Sets how the driver control will operated the actuators.

DRIVER CONTROL	
OFF > 4-SWITCH LATCH. 4SW 4 SW-2 LVL 4SWL-2 LVL MOM.1SW LATCH.1SW CAPS	• **OFF** Disables driver control operation of the powered seating for that drive only. • **4 SW** 4 Directions of driver command operate 4 Actuator Selection choices. • **LATCH 4 SW** Same as 4 SW, but in latched mode. Repeated command stops actuator. • **4 SW - 2 Levels** Recommended for Head Controls in RIM mode. Turns off forward (occipital pad) command FOR USE AS HEAD REST. – 1st Mode Switch = level 1, **Repeated mode switch** = then level 2 ¨ Level 1 - Left driver command = "Forward" actuator selection. Right driver command = "Reverse" actuator selection. ¨ Level 2 - Left drive command = "Left" actuator selection. Right driver command = "Right" actuator selection. • **4SWLatch — 2 Levels**- Latched Mode. Repeated command stops actuator. • **MOM.1SW** Intended primarily for Head Control drivers operating with RIM. – Mode switch cycles through each actuator selection choice. Right command operates choice. • **LATCH.1SW** Right command operates the actuators in a latched mode. The first command activates, repeated command releases. • **CAPS:** "**C**ycling **A**ctuators with **P**owered **S**eating" **(Color LCD Screens Only):** – **Driver Control Cycles Actuator Options** using **Left and Right commands:** – Forward command operates actuator Up (upright) – Reverse commands will operate actuator down (back)

14.3.5 Driver Standard Programs

DRIVER STD PROGRAMS		
NONE	TREL	TRL
TRRL	TR	TEL
TE	TL	RRL
RL	RRL	

Presets which actuator functions are assigned to specific driver control quadrants

- Choose the configuration of the system.
- Driver Control Quadrants will be pre-set
- See 14.3.13 8 Switch (8SW) Standard Program Actuator Assignments, page 85.

TREL	FWD	-TILT U/D
	REV	-RECL and LEG U/D
	LT	-ELEVATE U/D
	RT	-LEGREST U/D

14.3.6 Driver Control Setting

- Driver control settings allow customizing the actuator selection and function for each driving quadrant in each drive, 1 through 4.
- Select the desired quadrant in the desired drive, or select all four drives at once, then select the actuator function.

PARAM-ETER	D1	D2	D3	D4
Forward	Tilt U	OFF	Tilt U	Tilt U/D
Reverse	Tilt D	OFF	OFF	Leg U/d
Left	Leg U	OFF	OFF	OFF
Right	Leg D	OFF	OFF	OFF

Actuator Choices	
OFF	LEG U/D
TILT U/D	LEG UP
TILT DOWN	LEG DOWN
RECL U/D	RECL AND LEG U/D
RECLINE UP	RECL AND LEG UP
RECLINE DOWN	RECL AND LEG DOWN
ELEVATE U/D	LEFT LEG U/D
ELEVATE UP	LEFT LEG UP
ELEVATE DOWN	LEFT LEG DOWN
RIGHT LEG U/D	CHANNEL 6 U/D
RIGHT LEG UP	CHANNEL 6 UP
RIGHT LEG DOWN	CHANNEL 6 DOWN

14.3.7 Attendant Standard Program

ATTENDANT STD PROGRAM		
NONE	TREL	TRL
TRRL	TR	TEL
TE	TL	RRL
RL	RRL	

Sets Attendant switch Powered Seating Assignments

- System will recognize if a 4–way, 8 way rocker, or 12 way (4 way + 8way) switch attendant switch is plugged into the M610i and pre-assign specific actuator functions to specific switch assignments.
- Choose Powered Seating Configuration
- See pages 81–83 for switch assignments

14.3.8 Attendant Setting

ATTENDANT SETTING	
Switch 1	Tilt U
Switch 2	Tilt D
....	.....
Switch 12	R Leg D

14.3.9 Seating Adjust

SEATING ADJUST
TILT ADJUST
RECLINE ADJUST
LEGS ADJUST
ELEVATE ADJUST

Allows setting the speeds for actuator function in each direction

- Select the desired actuator, then the speed direction / profile to be changed.
- Use the Up and Down arrows to change the speed.

PARAM-ETER	D1	D2	D3	D4
SPEED UP	100	100	100	100
SPEED DOWN	100	100	100	100

14.3.10 Memory Seating

- The MEMORY SEATING menu provides the method to set up to 4 memory seating positions in each of the 4 Drive Profiles

14.3.11 Diagnostics

DIAGNOSTICS
HOME
DRIVE SLOW
DLO
BACK NORMAL
ELEVATED

ALLOWS ASSESSING TIPSY SENSOR SETTINGSS FOR SETTABLE POSTIIONS

- Use Up and Down arrrows to move actuator and assess determined position.
- Press right arrow to change actuators

14.3.12 Driver Control and 4 Switch (4SW) Standard Program Actuator Assignments

TREL	FWD	-TILT U/D
	REV	- RECL AND LEG U/D
	LT	- ELEVATE U/D
	RT	- LEGREST U/D

TE	FWD	-TILT UP
	REV	-TILT DOWN
	LT	- ELEVATE UP
	RT	- ELEVATE DOWN

TRRL	FWD	-TILT U/D
	REV	-RECL AND LEG U/D
	LT	- RECLINE UP/DOWN
	RT	- LEGS U/D

TRL	FWD	-TILT U/D
	REV	-RECL AND LEG U/D
	LT	- LEGREST UP
	RT	- LEGREST DOWN

TL	FWD	-TILT UP
	REV	-TILT DOWN
	LT	- LEGS UP
	RT	- LEGS DOWN

TEL	FWD	-TILT U/D
	REV	- ELEVATE U/D
	LT	- LEGS U/D
	RT	- OFF

TR	FWD	-TILT UP
	REV	-TILT DOWN
	LT	- RECLINE UP
	RT	-RECLINE DOWN

RL	FWD	-R AND LEGS UP
	REV	-R AND LEGS DOWN
	LT	-LEGS UP
	RT	-LEGS DOWN

RRL	FWD	-RECL AND U/D
	REV	-RECLINE U/D
	LT	- LEGS U/D
	RT	-OFF

14.3.13 8 Switch (8SW) Standard Program Actuator Assignments

TREL	1	TILT UP
	2	TILT DOWN
	3	RECL AND LEG UP
	4	RECL AND LEG DOWN
	5	ELEVATE UP
	6	ELEVATE DOWN
	7	LEGS UP
	8	LEGS DOWN

TR	1	TILT UP
	2	TILT DOWN
	3	RECLINE UP
	4	RECLINE DOWN
	5	OFF
	6	OFF
	7	OFF
	8	OFF

TL	1	TILT UP
	2	TILT DOWN
	3	LEGS UP
	4	LEGS DOWN
	5	OFF
	6	OFF
	7	OFF
	8	OFF



TRL	1	TILT UP
	2	TILT DOWN
	3	RECL AND LEG UP
	4	RECL AND LEG DOWN
	5	LEGS UP
	6	LEGS DOWN
	7	OFF
	8	OFF

TEL	1	TILT UP
	2	TILT DOWN
	3	ELEVATE UP
	4	ELEVATE DOWN
	5	LEGS UP
	6	LEGS DOWN
	7	OFF
	8	OFF

TE	1	TILT UP
	2	TILT DOWN
	3	ELEVATE UP
	4	ELEVATE DOWN
	5	OFF
	6	OFF
	7	OFF
	8	OFF

TRRL	1	TILT UP
	2	TILT DOWN
	3	RECL AND LEG UP
	4	RECL AND LEG DOWN
	5	RECLINE UP
	6	RECLINE DOWN
	7	LEGS UP
	8	LEGS DOWN



RRL	1	RECL AND LEG UP
	2	RECL AND LEG DOWN
	3	RECLINE UP
	4	RECLINE DOWN
	5	LEGS UP
	6	LEGS DOWN
	7	OFF
	8	OFF

RL	1	RECL AND LEG UP
	2	RECL AND LEG DOWN
	3	LEGREST UP
	4	LEGREST DOWN
	5	OFF
	6	OFF
	7	OFF
	8	OFF



15 Calibration Menu

15.1 About Calibrations

The Calibrations Menu appears on wheelchairs with CMPJ+, PSR, PSF, or MK6i Display.

All calibrations are global.

Any calibration saved to one drive, is automatically saved to all four drives.

15.2 Main Menu

Screen shown to the right is for reference only. Speed and Response values may differ.

MK6I PROGRAMMING				
PARAMETER	**D1**	**D2**	**D3**	**D4**
SPEED	100	100	100	100
RESPONSE	100	100	100	100
PERFORMANCE ADJUST	>>>			
STANDARD PROGRAMS	>>>			
MEMORY CARD	>>>			
POWERED SEATING	>>>			
CALIBRATIONS	>>>			
DIAGNOSTICS	>>>			

15.3 Calibration Menu

CALIBRATIONS	
SYSTEM NAME	**HARD PUFF CAL***
DRIVE CONFIG	**SOFT PUFF CAL***
MOTOR BALANCE	**HARD SIP CAL***
CALIBRATE MOTORS	**SOFT SIP CAL***
ACC 1	**SPEED POT MAX***
ACC 2	**PACM ADJUST***
TTJC ACTUATOR*	**DIG ATT ADJUST***
ACC DCI	**TILT CALIBRATE***
MONO PORT 1	**RECLINE CALIBRATE***
MONO PORT 2	**C. MOUNT LEGS CAL***
DISPLAY ORIENT*	**BACK ANGLE***
VIEW / SCAN* (MK6I DISPLAY ONLY)	**START IN DRIVE*** **ATT PWR OVERIDE**
INIT TIME*	**AUDIBLE IND**
REPEAT TIME*	**IR SETTINGS***
4W STD PGM*	**PRS TIME**
4 WAY SWITCH	**ERASE ALL**

15.4 Calibration Menu Description

CALIBRATION	LCD DISPLAY	DESCRIPTION
SYSTEM NAME	SYSTEM NAME INVACARE_	Create the Name for the System's Programming Settings • Name will be displayed on the Top Right corner of the MK6i Display. • Use the Programmer Left & Right Arrow keys to position the Insertion Point ("_"). • Use the Programmer Up and Down Arrow keys to change the letter / number • Blank Spaces Not allowed. Name will end at that point.
DRIVE CONFIG	DRIVE CONFIG >>4P CWD M91 & SP 2P RWD 2P CWD 4P RWD 4P RWD HD 4P CWD TDX 4P CWD HD GB RWD GB RWD	Switches motor outputs to match appropriate drive configuration. Select the configuration to match the wheelchair. • The wheelchair will not perform as designed without the correct drive confiuration selected and saved. • This setting MUST be changed and saved each time a CMPJ+, PSR, PSF or Display is added or replaced. GB RWD and GB CWD are available only on the TDX - SR. G-Trac controller supports 4P CWD M91 & SP, 4P RWD, 2P-CWD, 2P-RWD and TDX-SI

CALIBRATION	LCD DISPLAY	DESCRIPTION
MOTOR BALANCE	MOTOR BALANCE 32 LEFT RIGHT |||||||||||	Ensures that left and right motors operate equally. • Can be used to correct for slight veer (i.e. with some digital controls).
MOTOR CALIBRATION		Calibrates motors. • For Gearless Brushless GB™ motors only. • Raise / Support Drive wheels off the ground. • Follow Instructions on Programmer.

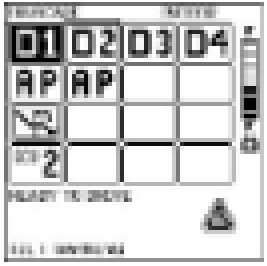
CALIBRATION	LCD DISPLAY	DESCRIPTION
ACC FUNCTION (ON ALL WHEELCHAIRS EXCEPT FDX)	>>OFF TILT RECLINE ELEVATE LEG FDX With Conventional Actuators ONLY - TILT actuator is assigned to ACC 1. TDX Spree ONLY - ELEVATE is assigned to ACC 1. TILT is assigned to ACC 2.	Sets which actuator operates directly through the controller, not through an additional actuator module. • Allows display icons, programming options and drive lockout settings to match the chair configuration (i.e., tilt only, tilt and recline, etc.) • Set according to this chart

ACC SETTINGS	CONVENTIONAL	SMART
No Actuators	OFF	OFF
Tilt Only	TILT	OFF
Tilt - In. Pwr Legs	TILT	OFF
Tilt - Center Mount Legs	LEG	OFF
Tilt and Elevate	ELEVATE	ELEVATE
Tilt, Elevate, Center Mount Legs	LEG	ELEVATE
Tilt, Elevate, Ind. Pwr Legs	ELEVATE	ELEVATE
Recline Only, Recline Ind. Pwr Legs	RECLINE	OFF
Recline - Center Mount Leg	LEG	OFF
Tilt Recline	OFF	OFF
Tilt Recline CM Leg	LEG	OFF
Tilt/Recline Ind. Pwr Legs	OFF	OFF
Tilt/Recline/ELEVATE	ELEV	ELEV
Tilt/Recline/ELEVATE PCMT	LEG	ELEV
Tilt/Rec/ELEV/Ind. Pwr Legs	ELEV	ELEV

CALIBRATION	LCD DISPLAY	DESCRIPTION
TTJC ACTUATOR	>>TILT RECLINE ELEVATE	Through the Joystick Control. • Only present with Multiple Actuators and the SANODE. • Allows choice of operating only one actuator through the joystick if multiple actuators are in the system.
ACC DCI	>>OFF INVACARE MANUAL (OR CONTINUOUS) INVACARE POWER (OR LATCHING)	Determines Tilt Switch Function for the Actuator assigned to the ACC Controller (conventional Actuators and ACC Controllers only) Allows turning Drive Lock out OFF on Single Actuator Systems or setting how the Controller monitors the Drive Lockout Switch (only when Actuator is operating through the ACC of the Controller) Standard settings are: • OFF: Standard for IVC Tilt and Recline combination systems, any system w/Power Center Mount Leg or Tilt w/Elevate and systems with smart actuators. Also allows disabling drive lockout for Conventional Single Actuator Systems • IVC Manual (Continuous): Drive Lockout switch status is continually monitored. Used with IVC Manual Tilt or Recline systems and some aftermarket Powered Seating Systems • IVC Power (Active): Formula CG Single Actuator powered seating systems

CALIBRATION	LCD DISPLAY	DESCRIPTION
MONO PORT 1	**MONO PORT 1** OFF >>DRIVE SELECT MODE SWITCH <ACTUATOR> UP/DOWN <ACTUATOR> UP <ACTUATOR> DOWN	Assigns the Function of the Left Mono Port on the MK6i Display & Multiple Drive Joysticks. • Drive Select allows the mono switch to change Drives 1 through 4. • Mode/Reset allows the Switch to function as a reset switch. • <Actuator> Up/Down allows the switch to operate the actuator (up/down mode) when one actuator is connected to the system. • Mono Port 1 is the default if not using a "Y" cable (splitter).
MONO PORT 2	**MONO PORT 2** OFF >>DRIVE SELECT MODE SWITCH <ACTUATOR> UP/DOWN <ACTUATOR> UP <ACTUATOR> DOWN	Allows a second switch function in the Right Mono Port of the MK6i Display & Multiple Drive Joysticks. • If a second function is selected, a "Y" Splitter cable –Stereo to two mono – is required to access the second switch port or else a stereo switch (2 PB, 2 WT) may be used.
DISPLAY ORIENT	DISPLAY ORIENT NORMAL INVERTED	Only available when CMPJ+, PSF or PSR is on the wheelchair. • Choose Normal for CMPJ+ or PSF. • Choose Inverted for PSR.

CALIBRATION	LCD DISPLAY	DESCRIPTION
VIEW/SCAN	STANDARD ENHANCED >>ROW/COLUMN SCAN ENHANCED SCAN	Selects view mode on MK6i Display. • When a scan mode is selected, only those drives with Auto Scan turned on in the performance adjustment menu will be active. • Each scan repeats 3 times.
		Standard View - All 4 Drives at once in grid format.
		Enhanced View - One drive only in expanded view

CALIBRATION	LCD DISPLAY		DESCRIPTION
VIEW/SCAN (CONTINUED).			Row/Column Scanning • After initiating the scan with a driver command, each column is highlighted, one at a time. • Any driver command selects the column when it is highlighted. • A second driver command highlights individual icons in that column, one at a time. • A third driver command selects individual icons, placing the wheelchair in that active mode.
			Enhanced Scan • After initiating the scan with a driver command, each drive configuration, with all active icons, is displayed on the LCD, one at a time. • Any driver command selects the block (a drive and its icons) when it is highlighted. • A second driver command highlights individual icons in that block, one at a time. • A third driver command selects individual icons, placing the wheelchair in that active mode.

CALIBRATION	LCD DISPLAY	DESCRIPTION
INIT TIME	**INIT TIME** **.4S** LESS MORE ||||||||	Used to determine when scanning starts after the chair becomes idle, for instance after the chair is not driving or seating feature is stopped. • After repeating the scan 3 times, the chair will enter a resting mode. • Any driver command will initiate the scan again.
REPEAT TIME	**REPEAT TIME** **.10S** LESS MORE ||||||||	Used to determine the amount of time the scanning screen will dwell on a highlighted item before moving to the next item.

CALIBRATION	LCD DISPLAY		DESCRIPTION
4W STD PGM	TREL TRL TR		The Standard Programs Menu allows the choice of preconfigured actuator selections (switch assignments) for operation of the 4-way toggle or Quad push buttons. • Selections can be customized using the 4 Way Switch Settings.
	STANDARD PROGRAM	**SWITCH DIRECTION**	**ACTION**
	TILT-RECLINE-ELEVATE-LEGS (TREL)	FORWARD	TILT UP/DOWN
		REVERSE	RECL & LEG UP/DOWN
		LEFT	ELEVATE UP/DOWN
		RIGHT	LEGREST UP/DOWN
	TILT-RECLINE-LEGS (TRL)	FORWARD	TILT UP/DOWN
		REVERSE	RECLINE UP/DOWN
		LEFT	LEGREST UP
		RIGHT	LEGREST DOWN
	TILT-RECLINE (TR)	FORWARD	TILT UP
		REVERSE	TILT DOWN
		LEFT	RECLINE UP
		RIGHT	RECLINE DOWN

CALIBRATION	LCD DISPLAY		DESCRIPTION
4W STD PGM (Continued)	TE T-ONLY TL		The Standard Programs Menu allows the choice of preconfigured actuator selections (switch assignments) for operation of the 4-way toggle or Quad push buttons. • Selections can be customized using the 4 Way Switch Settings.
	STANDARD PROGRAM	**SWITCH DIRECTION**	**ACTION**
	TILT-ELEVATE (TE)	FORWARD	TILT UP
		REVERSE	TILT DOWN
		LEFT	ELEVATE UP
		RIGHT	ELEVATE DOWN
	TILT ONLY (T-ONLY)	FORWARD	TILT UP
		REVERSE	TILT DOWN
		LEFT	OFF
		RIGHT	OFF
	TILT-LEG (TL)	FORWARD	TILT UP
		REVERSE	TILT DOWN
		LEFT	LEGREST UP
		RIGHT	LEGREST DOWN

CALIBRATION	LCD DISPLAY		DESCRIPTION
4W STD PGM (Continued)	RL e-ONLY L-ONLY		The Standard Programs Menu allows the choice of preconfigured actuator selections (switch assignments) for operation of the 4-way toggle or Quad push buttons. • Selections can be customized using the 4 Way Switch Settings.
	STANDARD PROGRAM	**SWITCH DIRECTION**	**ACTION**
	RECLINE & LEGS (RL)	FORWARD	RECLINE & LEGS UP
		REVERSE	RECLINE & LEGS DOWN
		LEFT	LEGS UP
		RIGHT	LEGS DOWN
	ELEVATE ONLY (E-ONLY)	FORWARD	ELEVATE UP
		REVERSE	ELEVATE DOWN
		LEFT	OFF
		RIGHT	OFF
	POWER LEGS ONLY (L-ONLY)	FORWARD	LEGS UP
		REVERSE	LEGS DOWN
		LEFT	OFF
		RIGHT	OFF

CALIBRATION	LCD DISPLAY		DESCRIPTION
4 WAY SWITCH	**4-WAY SWITCH** **FWD** **REV** **LT** **RT**	**-TILT U/D** **-RECL & LEGS U/D** **-ELEVATE UP** **-ELEVATE DOWN**	Allows customization of the operation of the 4 way switch to meet users needs. • Select switch quadrant (FWD, etc.) to view list of choices. • Each actuator function listed below has a choice for U/D (Up/Down), Up or Down and corresponding icons. – OFF – TILT – RECL – LEG – ELEVATE – RIGHT LEG – LEFT LEG – RECL & LEG

CALIBRATION	LCD DISPLAY	DESCRIPTION
HARD PUFF SOFT PUFF HARD SIP SOFT SIP	**HARD PUFF CAL.** **MIN .70 MAX** **S H** | |	Calibrates pressures required to activate hard / soft, puff & sip of commands. • Separate screens for each of the 4 pressures. • Select command to calibrate. Follow instructions below. Save on completion. • GOAL: Separate "S" & "H" values sufficiently for easy distinction between Hard & Soft commands – AND set values low enough to assure they can be consistently achieved. Values should be between .10 and 1.28. • In a Hard calibration mode, use the up/down arrows to raise and lower the H value which MUST be met as the user puffs/sips. • In a Soft calibration mode, use the up/down arrow keys to raise and lower the S value, which MUST be met as the user puffs/sips.

CALIBRATION	LCD DISPLAY	DESCRIPTION
HARD PUFF SOFT PUFF HARD SIP SOFT SIP (CONTINUED)		Instructions for Sip-n-Puff Calibration: 1. Puff into the Sip-N-Puff tubing and see how far the bars light up to right. 2. Use the up/down arrow keys to change the H value right or left to match the distance the bars moved. 3. Ask the user to puff hard again to check for consistency reaching the set level. 4. Once the user is consistent reaching the value being calibrated, use the Menu key to return to the menu and proceed to the next calibration (Soft Puff Calibration). 5. Repeat steps 1-3 for the Soft Puff Calibration, setting the value low enough for easy distinction between a soft and hard puff. 6. Repeat for Soft Sip calibration. 7. Repeat for Hard Sip Calibration. 8. Save changes. Additional Tips for Success • Teach the user to use their mouth muscles to create the pneumatic pressures, not their lungs or with exhaling. This helps teach that it is intra-oral pressure that makes Sip-n-Puff work, not lung capacity. • Eliminate excess pneumatic tubing on set-up of the system by mounting the interface box close to where the breath tube kit is mounted. The less volume of air the user has to move, the easier it is to activate. • Be certain to eliminate all possible leaks in the system with good connections - especially where the pneumatic straw is connected. • Teach the user to place the entire straw in their mouth to ensure a good seal
SPEED POT MAX	SPEED POT MAX 77	Sets the point on the speed pot (CMPJ+, PSR or PSF) at which max speed is attained. • Generally set to 77 for CMPJ+ and 255 for PSR or PSF

CALIBRATION	LCD DISPLAY	DESCRIPTION
TILT CALIBRATE RECLINE CALIBRATE CM LEGS CALIBRATE	**TILT CALIBRATE** MOVE DOWN >>> SET DOWN ANGLE __° MOVE UP >>> SET UP ANGLE __°	Calibrating Tilt, Recline or Center Mount Legs, requires a Pitch-Angle Gauge. • For Custom Actuators Only. 1. Select MOVE DOWN. 2. Use the down arrow key to tilt the system all the way. 3. Press the Select key. 4. Select SET DOWN ANGLE. 5. Measure the angle of the seat using the Pitch-Angle Gauge. 6. Use the arrow keys to set the SET DOWN ANGLE to the gauge measurement. 7. Repeat for MOVE UP and tilt the system all the way up.
BACK ANGLE	BACK ANGLE 95	The angle of the back relative to the seat. • The back angle plus the tilt angle determines the drive lockout angle. • A value between 85° and 105°, typically set at 95°. • Only displayed with smart actuators on tilt only systems.
START IN DRIVE	START IN DRIVE >>LAST USED DRIVE 1 DRIVE 2 DRIVE 3 DRIVE 4	Allows Setting the Drive Mode (1 through 4) the wheelchair powers up into. • RETURN TO LAST USED allows the wheelchair to power up into the drive it was in when last powered down. • DRIVE 1 allows the wheelchair to ALWAYS return to 1 when turned on.

CALIBRATION	LCD DISPLAY	DESCRIPTION
ATT PWR OVERRIDE	ATT PWR OVERRIDE	Allows Setting the Attendant Power Overide Mode. • ON, the wheelchiar can not be turned off unless the attendant control is also off. • OFF, the wheelchiar can be turned off regardless of the status of the attendant control.
PACM6 ADJUST	PACM6 ADJUST	Provides access for programming all driving Performance Adjustment Settings for the Proportional Attendant Control.
DIGITAL ATTENDANT CONTROL	DIGITAL ATTENDANT CONTROL	Provides access for programming all driving Performance Adjustment Settings for the Digital Attendant Control.

CALIBRATION	LCD DISPLAY	DESCRIPTION
AUDIBLE IND	**AUDIBLE IND** > OFF STD RIM	Available only on MK6i Display and Color MPJ+ Joystick only. Turns on auditory feedback (series of beeps to indicate the active mode). • OFF - No audible beeps. • STD - Audible beeps as follows: (no beeps when driving in reverse) – Drive Mode is Active: 2 short beeps – Remote Drive Select: 3 short beeps – Drive Level is advanced: – 1 short & 1 long = Drive 1 – 2 short & 1 long = Drive 2 – 3 short & 1 long = Drive 3 – 4 short & 1 long = Drive 4 – RIM Mode: 1 long beep – ECU: – 1 long beep = ECU ONE – 2 long beeps = ECU TWO – 3 long beeps = ECU THREE – 4 long beeps = ECU FOUR – Powered Seating: – 1 short beep = 4 switch mode or Automatic Positioning Mode – 1 long & 1 short beep = Level 1 - 4 switch/2 level – 1 long & 2 short beeps = Level 2 - 4 switch/2 level – Standby Select Mode (or Sleep Mode): – 1 very long beep • RIM = All STD beeps above, PLUS, continuous intermittent beeping when driving in reverse using RIM mode 4 long beeps = Pressure Relief Signal activated. (This occurs automatically, is not chosen when changing modes) • ASM1: 1 long beep • ASM2: 2 long beeps • IR mode: 1 long beep + 1 short beep + 1 long beep • Mouse Mode: 1 long beep + 2 short beeps + 1 long beep

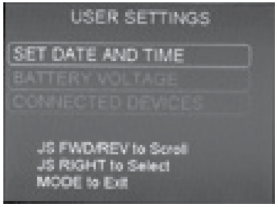
CALIBRATION	LCD DISPLAY	DESCRIPTION
PRS TIME	**PRS TIME** **30 M** **Less** **More** ||||||||	Pressure Relief Signal • Can be set from 0 to 60 minutes. • Requires a Mode Switch. • The PRS TIME menu sets a time for an audible warning (on Display only) that it is time to change positions. The Display will show PRESS RESET and the wheelchair will not operate until Reset is pressed.
ERASE ALL	**ERASE ALL**	ERASE ALL allows the CMPJ+/Display settings to be set to the factory default standard programs. There is a confirmation screen that appears and a reminder to **SET THE DRIVE CONFIGURATION** (in the Calibration Menu) after the Erase All completes. If drive configuration is not set, the display will indicate "Please Set Drive Configuration". To correct this condition, choose and save the appropriate Drive Configuration in the Calibrations menu.
IR SETTINGS >>>	Refer to Mk6i IR Control/Mouse Emulation User Manual and Programming Manual, part number 1160891.	

16 User Settings Diagnostics

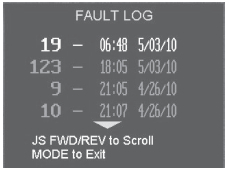
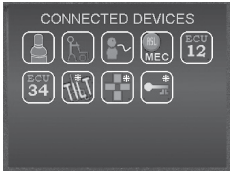
16.1 User Settings

Depress the mode button of the CMPJ+ joystick for 10 seconds and the User Settings screen will appear with four choices. Move the joystick forward or reverse to scroll through list. Move the joystick to the right to select a user setting.

User Settings



	**SET DATE AND TIME** - Sets the clock on the color CMPJ+ joystick. Adds date and time stamp to error codes. • Move the Joystick Up or Down to change the highlighted value (hour, minute, AM/PM, month, day, year) • Move the joystick Right or Left to select a value or the Set icon. • Highlight the Set icon and move the joystick forward to enter new date and time.

	**BATTERY VOLTAGE** - Displays current battery voltage. This is a diagnostic test a user can perform prior to a service call.
	**FAULT CODES** - Displays time and date stamped fault codes. This information can be helpful to a provider prior to making a service call.
	**CONNECTED DEVICES** - Displays device connections.

Sip n' Puff (Pneumatic) Controls

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

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

Contact your Invacare dealer/provider for more information about maintaining and troubleshooting the Sip n' Puff system.

16.2 Diagnostics Menu

>>	**JOYSTICK STATUS**
	FAULT LOG
	TILT ACTUATOR
	RECLINE ACTUATOR
	CM LEG ACTUATOR
	VERSION

Joystick Status

The JOYSTICK STATUS menu displays joystick throw settings for each quadrant when actively moving the joystick inductive.

DRIVE 1 INPUT			
FWD	**REV**	**LEFT**	**RIGHT**
0	**0**	**0**	**0**

Fault Log

A professional memory card is required in the MK6i Programmer to view error code and troubleshooting information. Fault codes in the Color MPJ+ Joystick are date and time stamped.

The FAULT LOG displays a history of error codes, including those intentionally caused during factory testing.

Highlighting the Error code and pressing the INFO key on the MK6i programmer will display Cause of Error code and troubleshooting steps to resolve the error.

FAULT LOG			
E32	E28	E09	E19
E04	E20	0	0

Clear Fault Log

A professional memory card is required in the MK6i Programmer to view error code and troubleshooting information.

Erases fault log list from view on the hand held programmer. Erased faults can still be viewed through MK6 IVS.

CLEAR FAULT LOG			
E32	E28	E09	E19

Tilt Actuator, Recline Actuator and CM Leg Actuator

The TILT ACTUATOR, RECLINE ACTUATOR AND CM LEG ACTUATOR menu displays information about the actuators and allows actuator movement.

- Smart actuators in the system will show position angle and amp draw.
- Conventional actuators connected to the ACC controller will not be displayed.
- Conventional actuators connected using an actuator module (e.g., TRAM (tilt recline actuator module) will show amp draw not position angle.
- POS - Displays the current position of the smart actuator.
- Pressing the Up or Down arrow keys on the programmer will move the actuator and display the position change and amp draw of the actuator.

USE ARROWS TO MOVE	
TILT	
POS=__°	AMPS=±0.0

Version

The VERSION menu displays the software version of all components recognized in the MK6i System.

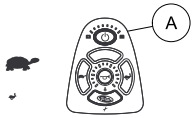
VERSION
TRAM 1.33
4WSB 1.33
MPJ+ 1.3.0

16.3 Diagnostics Codes

MK6i SPJ+, MK6i SPJ+ w/PSS or MK6i SPJ+ w/ACC Joysticks

The joystick information gauge and the Remote Programmer give indications of the type of fault or error detected by the control module. When a fault is detected, the wheelchair will stop and not drive. The lights on the information gauge display Ⓐ and/or service indicator light will flash. The number or type of flashes indicates the nature of an abnormal condition. An error code and a quick description of the fault will begin to scroll across the Remote Programmer display. If multiple faults are found, only the first fault encountered by the control module program will be displayed. Refer to the Power Wheelchair Service Manual for detailed troubleshooting and repair instructions. A table of the diagnostics codes and their causes follows

The fault log displays a four digit number. The first two digits are the diagnostic code and the remaining two digits are the sub code. Refer to the service manual for detailed descriptions.

INFORMATION GAUGE DISPLAY DIAGNOSTICS			
	DESCRIPTION	DEFINITION	COMMENTS
	All LEDs are off.	Power is off.	

INFORMATION GAUGE DISPLAY DIAGNOSTICS			
	All LEDs are on.	Power is on.	Fewer than three LEDs on implies reduced battery charge.
	Left Red LED is flashing.	Battery charge is low.	The batteries should be charged as soon as possible.
	Left to Right “chase” alternating with steady display.	Joystick is in programming, inhibit and/or charging mode.	The steady LEDs indicate the current state of the battery charge.
	All LEDs are flashing slowly.	Joystick has detected Out-of-Neutral-at-Power-Up mode.	Release the joystick back to Neutral.

SERVICE INDICATOR LIGHT DIAGNOSTICS			
NUMBER OF FLASHES	DIAGNOSTICS CODE*	ERROR CODE DESCRIPTION	POSSIBLE SOLUTION
1	E0100	User Fault	Release joystick to neutral and try again.
2	E0200	Battery Fault	Check the batteries and cable. Try charging the batteries. Batteries may require replacing.
3	E0300-E0308	Left Motor Fault	Check the left motor, connections and motor cable.
4	E0400-E0408	Right Motor Fault	Check the right motor, connections and motor cable.
5	E0500-E0504	Left Park Brake Fault	Check the left park brake connections and cable.
6	E0600-E0604	Right Park Brake Fault	Check the right park brake connections and cable.
7	E0700-E0702	Remote Fault	Check the communications bus, connections and wiring. Replace the remote.
8	E0800-E0812	Controller Fault	Check connections and wiring. Replace power module.
9	E0900-E0901	Communications Fault	Check connections and wiring. Replace Bus cable.

SERVICE INDICATOR LIGHT DIAGNOSTICS			
10	E1000	General Fault	Check all connections and wiring. Contact Invacare Technical Service.
11	E1100	Incompatible/incorrect Remote	Wrong type of remote connected. Ensure the branding of the joystick matches that of controller unit.

MK6i CMPJ+, MK6i Display, MK6i PSR and MK6i PSF

CMPJ+, DISPLAY, PSR AND PSF ERROR CODE GROUPS		
ERROR CODE	SECTION	DESCRIPTION
E01-E99	MK6 System	The MK6 CMPJ/Display generates these errors and encompasses features such as input devices, system integrity and device connections.
E100-E299	Controller	The Motor Controller generates these errors.
Wxx	Warnings	A warning condition is noted by a symbol. Text will display that clarifies the condition that may cause a feature to perform in an unexpected manner.

Icons display and text displays to represent different conditions.

A serious fault condition is noted by a STOP symbol on the display and a ✕ symbol on the CMPJ, PSR and PSF joysticks. In the following table, a stop sign is used to indicate a serious condition. When this symbol is displayed, a condition exists that will cause the wheelchair to not perform its expected function.

A warning condition is noted by a ⚠ symbol. Text will display that clarifies the condition that may cause a feature to perform in an unexpected manner.

ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E01 (FWD) E02 (REV) E03 (LFT) E04 (RGT)	JOYSTICK FAULT displays and the wheelchair does not drive.	The joystick or input device is sending a value outside of the reverse, forward, left or right limits.	Replace joystick or input device.
E09/E10	error code will not go away.	Bad motor connection. Bad brake coil.	Check all connections. Ohm out each brake coil. Normal reading is 48-80 Ohms. Swap out motor leads. Using a programmer, check for error codes. *WHEELCHAIRS WITH G-TRAC ONLY* *Before swapping motor leads for troubleshooting purposes, use the programer to turn off G-trac in all drives.*
E09 (LEFT)	LEFT PARK BRAKE FAULT displays and wheelchair does not drive.	Motor, Controller or other electrical device (Error code E9 or E10).	Ensure motor lock/levers are engaged before turning power on. Call Technical Services.
	Wheelchair will not drive with power on (E09 or E10).	Check motor locks.	Engage motor locks to drive wheelchair. Swap out motor leads. Using a programmer, check for error codes. *WHEELCHAIRS WITH G-TRAC ONLY* *Before swapping motor leads for troubleshooting purposes, use the programer to turn off G-trac in all drives.*

ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E10 (RIGHT)	RIGHT PARK BRAKE FAULT displays and wheelchair does not drive.	Motor, Controller or other electrical device (Error code E9 or E10).	Ensure motor lock/levers are engaged before turning power on. Call Technical Services.
	Wheelchair will not drive with power on (E09 or E10).	Check motor locks.	Engage motor locks to drive wheelchair. Swap out motor leads. Using a programmer, check for error codes. *WHEELCHAIRS WITH G-TRAC ONLY* *Before swapping motor leads for troubleshooting purposes, use the programer to turn off G-trac in all drives.*
E14	Battery Fault displays and the wheelchair does not drive.	The controller has determined the batteries need to be replaced.	Replace batteries.
E18	NEUTRAL TESTING displays.	The joystick neutral test has failed.	Release the joystick and try to get the joystick back into the center-most position.
E19	BAD JOYSTICK CAL VALUES displays and the wheelchair does not drive.	The joystick calibration values are outside of the expected range.	Recalibrate the joystick (joystick throw procedure).
E28	CHARGER PLUGGED IN displays.	Battery charger connected.	Unplug battery charger from the wheelchair if charging is complete.
E32	JOYSTICK TIMEOUT displays and the wheelchair does not drive	Joystick or input device is disconnected.	Turn off power, reconnect the joystick of input device and turn power on.

ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E41	CONTROLLER STARTUP FAULT displays and the wheelchair drives slowly.	The controller has determined a fault during a previous turn-off process.	Turn the wheelchair off and back on.
E102	GB GRNL FAULT	Unidentifiable Error	Call Technical Services.
E103	GB FAULT - CYCLE PWR	Possible Controller Failure	Turn chair off and then back on. If fault repeats, replace controller and recalibrate motors.
E104-E105	GB CTRL FAULT	Left Current Sensor Error	Replace controller and recalibrate motors.
E106-E107	GB CTRL FAULT	Right Current Sensor Error	Replace controller and recalibrate motors.
E108-E109	CURR CAL FAULT	Current Calibration Error	No action required - Factory Test Only
E110-E111	GB CTRL FAULT	Left (on CWD)/Right (on RWD) Current Sensor Error	Call Technical Services. Replace controller and recalibrate motors.
E112-E113	GB CTRL FAULT	Right (on RWD)/Left (on CWD) Current Sensor error	Call Technical Services Replace controller and recalibrate motors.
E114-E127	CURR CAL FAULT	Current Calibration Error	No action required - Factory Test Only
E128	M2 MOTOR FAULT	Left Motor (M2) (on RWD)/Right (on CWD) Over Current Fault	Check Left Motor (M2) (on RWD)/Right (on CWD) and Cabling.
E129	M1 MOTOR FAULT	Right Motor (M1) (on RWD)/Left (on CWD) Over Current Fault	Check Right Motor (M1) (on RWD)/Left (on CWD) and Cabling.

ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E130, E132	M2 MTR CAL	Left Motor (RWD)/Right Motor (CWD) - Too much drag/load	Recalibrate motor.
E131, E133	M1 MTR CAL	Right Motor (RWD)/Left Motor (CWD) - Too much drag/load	Recalibrate motor.
E134-E139	SW FAULT	Controller Software Fault	Replace the controller. Call Technical Service.
E140, E141	CTLR PWR FAULT	Check Joystick Cabling	Check all connections for physical damage. Check Joystick and Joystick Cabling.
E142	LOW BATTERY	Low battery	Recharge batteries. Replace batteries if not corrected after charging.
E143	HI BATT VOLTS	High Battery Fault	Check Battery Voltage. Call Technical Service.
E144	M2 MTR FAULT	Left Motor (on RWD)/Right Motor (on CWD) brake coil short circuit	Check Left Motor (M2) (on RWD)/Right Motor (on CWD) Cabling.
E145	M1 MTR FAULT	Right Motor (on RWD)/Left Motor (on CWD) brake coil short circuit	Check Left Motor (M2) (on RWD)/Right Motor (on CWD) Cabling.
E146-E150	GB CTRL FAULT	GB Controller Failure	Replace controller and recalibrate motors Call Technical Service

ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E151, E152	M2 MTR FAULT	Left Motor (on RWD)/Right Motor (on CWD) Hall Sensor Fault	Check Left Motor (M2) (on RWD)/Right Motor (on CWD) Cabling.
E153, E154	M1 MTR FAULT	Right Motor (on RWD)/Left Motor (on CWD) Hall Sensor Fault	Check Right Motor (M1) (on RWD)/Left Motor (on CWD) Cabling.
E155, E157	GB CTRL FAULT	Current Calibration Lost	Turn chair off and then back on. If error repeats, replace controller and recalibrate motors.
E156	MTR NOT CAL	Motors not calibrated	Recalibrate motors.
E158-E160	GB CTRL FAULT	Software error	Turn chair off and then back on. If error repeats, replace controller and recalibrate motors.
E161	GB CTRL FAULT	GB Controller Fault	Turn chair off and then back on. If error repeats, replace controller and recalibrate motors.
E162-E164	GB CTRL FAULT	Controller/Motor Short/Open	Check all connections.
E165-E171	GB CTRL FAULT	Direct Input Joystick Fault	Replace controller and recalibrate motors.
E172, E174	M2 SHORT/OPEN	Motor/Controller Short/Open - M2, Right Motor (on RWD)/Left Motor (on CWD)	Check all connections.
E173, E175	M1 SHORT/OPEN	Motor/Controller Short/Open - M1, Left Motor (on RWD)/Right Motor (on RWD)	Check all connections.
E176	OVERHEAT	Rollback - Battery	Allow controller to cool off w/power on.

ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E177	OVERHEAT	Rollback - M2	Allow controller to cool off w/power on. Possible bad M2 motor (Right Motor on RWD, Left Motor on CWD).
E178	OVERHEAT	Rollback - M1	Allow controller to cool off with power on. Possible bad M1 motor (Left Motor on RWD, Right Motor on CWD).
E180	SHORT TO FRAME	Voltage on frame	Check wiring for short to frame of chair. Replace controller and recalibrate motors. Replace motors.
E181-E183	GB CTRL FAULT	General type controller failure.	Replace controller and recalibrate motors.
E200	Controller not connected	Input device does not recognize the controller.	Turn chair off and then back on. If fault repeats, replace the cable from the Display or CMPJ+/PSF+/PSR+ to the controller. If fault repeats, replace Display or Joystick. If fault repeats, replace Controller.
E201	General controller fault	General controller fault	Turn chair off and then back on If fault repeats, replace controller.
E202	⚠ LEFT MOTOR FAULT displays and the wheelchair does not drive.	Displayed when a problem with the left motor is detected. Left on RWD - Right on CWD	Check motor lock engagement (clutch). Check motor connection plug. Verify left/right by switching motor plugs. If fault follows motor, replace motor. If fault does not follow motor, replace controller.

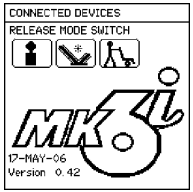
ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
E203	⚠ RIGHT MOTOR FAULT displays and the wheelchair does not drive.	Displayed when a problem with the right motor is detected. Right on RWD - Left on CWD	Check motor lock engagement (clutch). Check motor connection plug. Verify left/right by switching motor plugs. If fault follows motor, replace motor. If fault does not follow motor, replace controller.
E204	⚠ REMOTE FAULT displays and the wheelchair does not drive.	This is displayed when the controller determines an incorrect configuration.	Replace the controller.
E205	⚠ CONTROLLER FAULT displays and the chair does not drive.	This is displayed when the controller fails a power-up test.	Replace the controller.
E206	⚠ CONTROLLER WRONG REMOTE displays and the wheelchair does not drive.	This is displayed when he controller has determined an invalid configuration.	Check all connections and wiring.
E207	⚠ CONTROLLER SETUP FAULT displays and the wheelchair does not drive.	This is displayed when the controller module does not recognize the MK6 CMPJ+/Display as a valid device.	Replace the controller.
E208	⚠ G-TRAC FAULT is displayed	The G-Trac module or controller is not functioning correctly.	Replace the G-trac module and/or the controller. Please note that the chair will drive with this error displayed, however, the G-trac feature is disabled and the chair performs without the benefit of the G-Trac features.

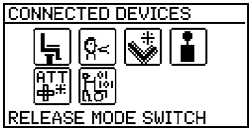
ERROR CODE	SYMPTOM	PROBABLE CAUSE	SOLUTIONS
(None)	⚠ DEACTIVE displays and the wheelchair will not drive.	If the wheelchair has a TIAM and RIAM, this message is displayed when the Tilt angle, the recline angle or the combined tilt and recline angle are greater than 20° from fully upright (beyond the drive lock-out angle of 20°). If the wheelchair has a TRAM or TIAM, this message is displayed when the tilt switch is open.	Return the system to upright position.
(None)	⚠ MAX BACK ANGLE displays.	The wheelchair back has reached the maximum programmed back angle on a wheelchair with a TIAM, RIAM or TRAM.	The wheelchair back will not go past the programmed maximum back angle. This is normal behavior.
(None)	⚠ CONTROLLER INHIBITED displays and the wheelchair does not drive.	The system is tilted or reclined beyond the drive lock-out angle of 20°. Incorrect ACC DCI setting in the calibration menu.	Return the system to the upright position.
(None)	⚠ SLOW DOWN is displayed and the wheelchair drives slowly.	The elevating seat is elevated.	Return elevating seat to the lowest position to drive at full speed.

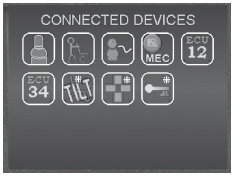
17 Connected Devices

17.1 Connected Devices

This screen is displayed if a Mode Select switch is depressed (held active) for 10 seconds. An icon representing all devices that are connected to the chair will be displayed.







DISPLAY ICON	MONOCHROME MPJ+ ICON	COLOR MPJ+/MINI-DISPLAY	CONNECTED DEVICE DESCRIPTION
			Intelligent Tilt Actuator
			Intelligent Recline Actuator
			Intelligent Center Leg Actuator

DISPLAY ICON	MONOCHROME MPJ+ ICON	COLOR MPJ+/MINI-DISPLAY	CONNECTED DEVICE DESCRIPTION
			Elevate Actuator
			Generic Tilt Actuator
			Generic Recline Actuator
			Generic Leg Actuators
			Generic Right Leg Actuator
			Generic Left Leg Actuator
			Intelligent CG Tilt
		 	Shark Power Module (SPM) Actuator

DISPLAY ICON	MONOCHROME MPJ+ ICON	COLOR MPJ+/MINI-DISPLAY	CONNECTED DEVICE DESCRIPTION
			SANODE or Single Actuator Control Interface
			4-way Switch Box
			Multiple Actuator Control Box
			RIM Control
		 	ECU 1/2 and ECU 3/4
			Proportional Attendant Control
			Compact Joystick
			Sip and Puff Control

DISPLAY ICON	MONOCHROME MPJ+ ICON	COLOR MPJ+/MINI-DISPLAY	CONNECTED DEVICE DESCRIPTION
			Digital Attendant Control
			Micro Extremity Control
			Peachtree Control
			ASL Digital Control
			Generic Analog Control
			This is displayed if the controller supports G-Trac
			Mouse Only
			Mouse B

DISPLAY ICON	MONOCHROME MPJ+ ICON	COLOR MPJ+/MINI-DISPLAY	CONNECTED DEVICE DESCRIPTION
			IR/Mouse
			Light Mode

18 Electromagnetic Compatibility (EMC) Information

18.1 Electromagnetic Interference (EMI) From Radio Wave Sources

Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy (EM) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two way radios, and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself, or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the interfering EM energy can be measured in volts per meter (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called its "immunity level." The higher the immunity level, the greater the protection. At this time, current technology is capable of achieving at least a 20 V/m immunity level, which would provide useful protection from the more common sources of radiated EMI.

There are a number of sources of relatively intense electromagnetic fields in the everyday environment. Some of these sources are obvious and easy to avoid. Others are not apparent and exposure is unavoidable. However, we believe that by following the warnings listed below, your risk to EMI will be minimized.

The sources of radiated EMI can be broadly classified into three types:

1. Hand-held Portable transceivers (transmitters/receivers with the antenna mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, “walkie talkie”, security, fire and police transceivers, cellular telephones, and other personal communication devices).

   Some cellular telephones and similar devices transmit signals while they are ON, even when not being used.

2. Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances and taxis. These usually have the antenna mounted on the outside of the vehicle.
3. Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.

Other types of handheld devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, cassette players, and small appliances, such as electric shavers and hair dryers, so far as we know, are not likely to cause EMI problems to your powered wheelchair.

18.2 Powered Wheelchair Electromagnetic Interference (EMI)

Because EM energy rapidly becomes more intense as one moves closer to the transmitting antenna (source), the EM fields from handheld radio wave sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of EM energy very close to the powered wheelchair's control system while using these devices. This can affect powered wheelchair movement and braking. Therefore, the warnings listed below are recommended to prevent possible interference with the control system of the powered wheelchair.

Electromagnetic interference (EMI) from sources such as radio and TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones can affect powered wheelchairs and motorized scooters.

FOLLOWING THE WARNINGS LISTED BELOW SHOULD REDUCE THE CHANCE OF UNINTENDED BRAKE RELEASE OR POWERED WHEELCHAIR MOVEMENT WHICH COULD RESULT IN SERIOUS INJURY.

WARNING!

- DO NOT operate handheld transceivers (transmitters receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered wheelchair is turned ON;
- Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
- If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;
- Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to EMI (Note: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair); and
- Report all incidents of unintended movement or brake release to Invacare and note whether there is a source of EMI nearby.

WARNING!

Important Information

- 20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);
- This device has been tested to a radiated immunity level of 20 volts per meter.
- The immunity level of the product is unknown.
- Modification of any kind to the electronics of this power wheelchair as manufactured by Invacare may adversely affect the EMI immunity levels.

18.3 Powered Wheelchair Electromagnetic Emissions

CAUTION!
Risk of Injury or Damage
EMC interference affecting other products may result in injury or damage.
To avoid impacting the operation and function of other products:
– Products not specified by Invacare that may be used on or near the wheelchair may be impacted by emissions from this product if they have a sensitivity level that is lower than the recognized standard and provided by this wheelchair. Refer to the manufacturer specifications for any electronic device BEFORE use near this product to determine its level of immunity and potential risk.

18.4 Wireless Coexistence

The RF mouse module outputs an RF signal of 2.5 GHz with output power of 2.5 mW. 2.5 mW of power generate a .3 V/m field @ 1 m and a .03 V/m field @ 10 m.

19 Warranty

19.1 Global Limited Warranty (Excluding Canada)

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser who purchases this product within any country excluding CANADA when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person. For products purchased in Canada, please refer to the Canada Limited Warranty.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants all electronics and electrical components (excluding batteries), motors, powered seating actuators and gearboxes to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component shall be repaired or replaced, at Invacare's option with refurbished or new parts. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Product repairs shall not extend this warranty - coverage for repaired product shall end when this limited warranty terminates. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

Limitations and Exclusions: The foregoing warranty shall not apply to serial numbered products if the serial number has been removed or defaced, products subject to negligence, accident, improper operation, maintenance or storage, commercial or institutional use, products modified without Invacare's express written consent (including, but not limited to, modification through the use of unauthorized parts or attachments); products damaged by reason of repairs made to any component without the specific consent of Invacare, or to a product damaged by circumstances beyond Invacare's control, and such evaluation will be solely determined by Invacare. The warranty shall not apply to problems arising from normal wear and tear or failure to adhere to the product instructions. A change in operating noise, particularly relative to motors and gearboxes does not constitute a failure or defect and will not be repaired; all devices will exhibit changes in operating noise due to aging.

The foregoing express warranty is exclusive and in lieu of any other warranties whatsoever, whether express or implied, including the implied warranties of merchantability and fitness for a particular purpose, and the sole remedy for violations of any warranty whatsoever, shall be limited to repair or replacement of the defective product pursuant to the terms contained herein. the application of any implied warranty whatsoever shall not extend beyond the

duration of the express warranty provided herein and Invacare shall not be liable for any consequential or incidental damages whatsoever; SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE.

THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.

19.2 Canada Limited Warranty

This warranty is extended only to the original purchaser who purchases this product within Canada when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants all electronics and electrical components (excluding batteries) to be free from defects in materials and workmanship for a period of two (2) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component shall be repaired or replaced, at Invacare's option with refurbished or new parts. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Product repairs shall not extend this warranty - coverage for repaired product shall end when this limited warranty terminates. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

Limitations and Exclusions: The foregoing warranty shall not apply to serial numbered products if the serial number has been removed or defaced, products subject to negligence, accident, improper operation, maintenance or storage, commercial or institutional use, products modified without Invacare's express written consent (including, but not limited to, modification through the use of unauthorized parts or attachments); products damaged by reason of repairs made to any component without the specific consent of Invacare, or to a product damaged by circumstances beyond Invacare's control, and such evaluation will be solely determined by Invacare. The warranty shall not apply to problems arising from normal wear and tear or failure to adhere to the product instructions. A change in operating noise, particularly relative to motors and gearboxes does not constitute a failure or defect and will not be repaired; all devices will exhibit changes in operating noise due to aging.

The foregoing express warranty is exclusive and in lieu of any other warranties whatsoever, whether express or implied, including the implied warranties of merchantability and fitness for a particular purpose, and the sole remedy for violations of any warranty whatsoever, shall be limited to repair or replacement of the defective product pursuant to the terms contained herein. the application of any implied warranty whatsoever shall not extend beyond the

duration of the express warranty provided herein and Invacare shall not be liable for any consequential or incidental damages whatsoever; SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE.

THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.

Notes

Notes