Complex Rehab Power Wheelchair Electronics
Comparison Matrix

The purpose of this document is to serve as a reference of key features between various power wheelchair electronic systems. Sometimes a relatively specific feature is needed by an individual and can drive product selection. Other features may not be used if the evaluating team is not aware of both the feature and the clinical benefit.

	Invacare LiNX (Dynamic)	**Curtiss-Wright / PG Drives Technology R-net - Permobil**	**Curtiss-Wright / PG Drive Technology R-net - Quickie**	**Quantum Q-Logic 3 (Curtis Instruments)**
Power Wheelchair Bases supported *Some electronics work on more than one manufacturer's power wheelchair*	TDX SP2 Aviva FX New RWD pending Some systems still using MK6i	All Permobil bases *R-net is also available on other manufacturer's bases, however Permobil has added additional features*	Quickie power bases *R-net is also available on other manufacturer's bases including ROVI*	All Quantum Rehab bases Rival RWD (pending)
Tracking technology *This technology increases driving efficiency by reducing required joystick movements/switch activations and time to move between locations*	G-Trac™ (Gyro Module) -can be enabled or disabled in each individual drive profiles -standard on FWD only, optional on other bases	ESP (gyro technology) F series – standard M series, M300 HD – optional Koala, K300 PS Jr., M300 PS Jr. – optional K450 – custom option Can be enabled or disabled	SureTrac Available on Q700 Series (optional)	-Accu-Trac Technology (tachometer) optional on all bases, except the 4Front -Can be enabled or disabled -4Front has caster sensor technology instead, providing a similar function and preventing spinouts. Cannot disable, standard.
Software Updates *Allows for updates to software*	-Yes -Save file on device you are programming with (Windows, iOS). Emails and publications will announce available upgrades. May be prompted in certain situations (i.e. new joystick added to old system). -System firmware can be updated from the P&D tool -P&D software updates through Apple store (iOS) or Dynamic controls website (Windows).	Limited -No regular software updates currently. *-Omni 2 has multiple firmware versions due to some compatibility issues. Older display or interface modules may require both Display and Interface to be replaced.*	Limited -No regular software updates currently. *-Omni 2 has multiple firmware versions due to some compatibility issues. Older display or interface modules may require both Display and Interface to be replaced.*	Yes -ECON-W (programming station), when connected to internet, automatically downloads updates to computer.
Initial system set-up *How does the system recognize the driving method?*	ASL, SNP, all LiNX drive controls (except compact remote joystick) product is automatically recognized. -Others require programming.	Plug and Play: modules and power seating recognized and programmed automatically if driving method is ordered with the PWC. -If driving method is changed in the field, driving method must be programmed.	Plug and Play, modules and actuators recognized and programmed automatically if driving method is ordered with the PWC. -If driving method is changed in the field, driving method must be programmed.	Plug in driver control and choose driving method on programmer.
Factory Reset *Resets all settings to factory default*	Yes	Yes	Yes	Yes

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Programming				
Separate handheld programmer *(wired or plug-in)*	No	No Explorer Mini and some joysticks on M1 require R-Net PP1A programmer. Other bases - No	No	Yes Programmer compatible with NE (non-expandable), NE+, and Q-Logic electronics. Help key to describe parameter functions. Internal 64mb memory & SD card available for additional memory storage.
Handheld programmer revision independent *does not require independent software updates*	N/A	N/A	N/A	No -Upgrades available on PrideService.com, HHP plugs into computer via USB cable -HHP will also update from PWC firmware when plugged into PWC.
Program through enhanced display or joystick *using manual buttons on display or joystick*	Yes User Menu allows for limited changes including: brightness, change from left to right-handed orientation, BT connections.	Yes On Board Programming (OBP) Requires Dongle	Yes On Board Programming Dongle **not** required.	Limited Can change time, background color
User can program through driving method *Typically, options are limited for safety reasons*	Yes User Menu -can enable screen lock and glove mode (more sensitive), swipe or tap -can change date and time, brightness, language, left or right-handed -can pair to Bluetooth	Yes Through PJSM/CJSM or OMNI2 User Menu provides access to clock, distance, backlight, Bluetooth, IR setup, Sleep, volumes, momentary screens, display speed, diagnostics	Yes Through PJSM/CJSM or OMNI2 User Menu provides access to clock, distance, backlight, Bluetooth, IR setup, Sleep, volumes, momentary screens, display speed, diagnostics	Yes Consumer can change clock, trip odometer, language, backlight and reminders. These options can be restricted, as well.
Can program through computer or tablet	Yes Bluetooth provides wireless connection	Yes PC Programming Tool through dongle - required to change text and for some mouse features and more advanced programming such as Assignable Buttons (Windows computer or tablet)	Yes PC Programming Tool through dongle – required to change text and for some mouse features and more advanced programming such as Assignable Buttons (Windows computer or tablet)	Yes -ECON-W (Windows) & ECON-I (iPad) can be downloaded for full programming -These can be downloaded by User for limited programming (i.e. IR set-up, photos)

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Remote Programming *Programming can be viewed and changed by someone offsite*	No Can email file, Tech support can modify file and send it back MyLiNX – App to monitor, etc. (liability concerns)	No	No	Yes Interactive Assist can be used to program remotely *if a professional present who has programming rights.*
Memory backup *Can programming be saved?*	Yes On device used to program	Yes Through computer	Yes Through computer	Yes -Through computer or handheld programmer. Programs (CPF file) can be shared between PWCs with SD card or through USB plug-in. -SD Card built into joystick and display stores factory settings or changes made (under cover).
Can do "real time" programming *Can driving parameters be changed without system restart?*	Yes Saves automatically on wireless programming	Yes -Must go back to Drive to try changes -Saves automatically	Yes -Must go back to Drive to try changes -Saves automatically	Yes -Driving parameters only -Significant changes require Program Mode for safety
Diagnostics *Can the electronics diagnose system errors?*	Yes -real time, date coded, all errors stored -User can view battery voltage and date / time stamped error codes to report to RTS prior to service calls on MPJ joystick - Live diagnostics window: Joystick throw, Motor info, battery voltage, speed pot information.	Yes -Each module has its own error log. -Faults recorded sequentially for ease of use when diagnosing intermittent faults -PC shows detailed list -Automatic diagnostics run at each start-up, error code will be displayed if there is an issue detected -Permobil Connect (Fleet management is dealer side) Dealer portal can see error codes **remotely**. -User can have MyPermobil App on phone that includes error codes	Yes -Each module has its own error log. -Faults recorded sequentially for ease of use when diagnosing intermittent faults -PC shows detailed list	Yes -Through computer and handheld programmer - includes descriptions and error code help screens. Time and Date Stamp on fault codes. Help key will aid in diagnostics by providing possible causes of fault as well as steps to correct the error. Can also view charging history. -Interactive Assist (App on phone) uses Bluetooth and internet connection to access Diagnostic information remotely

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Monitoring *Can system functions be monitored?*	-MyLiNX App and in programming Can't monitor how often tilt is used, etc. -Can look at average daily drive time, how many hours turned on, and fault log.	-Voltage, currents, inhibits etc. with PC -MyPermobil App available that includes battery status, power wheelchair distance traveled, and seating activity tracking.	-Voltage, currents, inhibits etc. with both PC and DTT -System Tests allow live monitoring -Also, some seating monitoring available with Remote Seating App on Sedeo Ergo Models. Download App to phone or tablet (Android and iOS compatible)	Through computer and handheld programmer: 100+ items available to monitor including seat position, actuator run time, multiple motor parameters, switch and button status, odometer
Number of Drives/Profiles *Each driving program contains unique driving parameters and other features*	Up to 42 functions Supports numerous profiles	8 (8^{th} is Attendant Control by default)	8 (8^{th} is Attendant Control by default)	-4 drive profiles per Driving Method, in addition to power seating profile and Auxiliary profile -Attendant Control has 2 drive profiles and power seating profile
Preset programs *System includes sets of pre-programmed driving parameters to choose from and modify*	Some preset programs (Indoor, Outdoor, Ramps and Curbs, etc.) by profile	Single program of factory settings for each driving method type.	Single program of factory settings for each driving method type.	Single program of factory settings for each driving method type.
Torque *Increased power to overcome resistance, even at low speeds*	No Adaptive load compensation monitors how the user drives and adjusts the system accordingly.	Yes Programmable per profile -Intuitive – if obstacle encountered, additional torque is automatically provided	Yes Programmable, per profile	Internal setting, not programmable Intuitive torque, more at lower speeds
Power *Percentage of power available during driving*	Yes	Yes, Programmable per profile	Yes Programmable per profile	Yes Programmable per profile
Sensitivity *how quickly the chair responds to joystick movement*	-Tremor dampening -Turn transition (formerly Traction) adjusts available speed for turns -Turn Boost at Max Speed helps boosts turn acceleration in proportion to speed (100-300), more responsive into turns (even if Max speed is only 20%)	-"Tremor dampening" in each profile -Also separate "Acceleration" parameters for Forward, Reverse and Turn at minimum and maximum speeds in each profile which provide a similar effect	"Tremor dampening" in each profile -Also separate "Acceleration" parameters for Forward, Reverse and Turn at minimum and maximum speeds in each profile which provide a similar effect	-Tremor Suppression is global -Soft start for Forward and turns delays response to smooth start in conjunction with acceleration -Shaping settings – how much speed carries into a turn Velocity Turn reactivity – increases reactivity to turn commands at higher speeds (decrease if too sensitive)

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Switch Turn *Decreases or increases turn diameter with switch driving methods*	Yes -Switched driving parameters available to program, constant speed trigger, Veer at low speed, Veer at high speed, High speed reference.	No	No	Yes Additional compensation for caster placement when turn initiated
Initial travel (distance) of the joystick is ignored *Often used when goal post handle on joystick*	Yes Neutral Window deadband	Yes Deadband, programmable	Yes Deadband, programmable	Yes Center Deadband, programmable
Latch *Movement of the PWC continues until a command is received to stop* *Commonly used with sip 'n puff*	Yes Forward and Reverse Step and Cruise latch (1 step up, 3 step up, 5 step up, 3 step up/down, 5 step up/down, Cruise)	Yes Forward and Reverse Step Latch: puff each time to increase speed Cruise Latch: hold puff to increase speed	Yes Forward and Reverse Step Latch: puff each time to increase speed Cruise Latch: hold puff to increase speed	Yes Forward and Reverse 1 step: 1 speed with Forward 3 step: 1st Forward command 33% of programmed speed, 2nd command 66%, 3rd command 100% Cruise: Forward command increases speed as long as pressure sustained
No Drive Mode *allows Driver to enter a Mode or Drive in which the chair will not drive*	Go to function where you can't drive. Can set-up profile that only does seating and Aux. for example	Yes, In desired Profile, turn Mode 1 off so user cannot drive User can still access power seating, aux. functions, but not drive. Return to User menu to access another Profile to drive	Yes In desired Profile, turn Mode 1 off so client cannot drive User can still access power seating, aux. functions, but not drive. Return to User menu to access another Profile to drive	Can go to Seat Profile to access power seating without driving Can go to Sleep to prevent driving
Standby option *PWC enters Standby Mode after a programmable amount of time elapses without driving method input. Specific directional input determines mode of operation*	Yes Standby Select: (programmable time) allows driver control to select next operating mode after chair enters Stand By using directional command (Driving, Actuators, ECU, Mouse, IR, Drive Select). Standby can be disabled in ECU and Mouse/IR mode, Mode switch returns to Drive mode.	Yes Adjustable time or via mode switch Can enter all modes and profiles from Standby, programmable directional commands can be changed via PC programming. A direction can be programmed to not select.	Yes Adjustable time or via mode switch Can enter all modes and profiles from Standby, programmable directional commands can be changed via PC programming. A direction can be programmed to not select.	Yes Standby Select Menu screen appears after timeout, allows navigation to drive, seat, or settings

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Sleep Mode *PWC enters a Sleep Mode after a programmable amount of time elapses without driving method input. Wake up command returns to last mode of operation*	Yes User settings, turn on or off, duration (1 minute minimum). Can use input device or separate switch to wake up.	Yes Programmable up to 30 minutes, turn off by setting to 0. Factory default is 30. If no input for a set amount of time, PWC goes to Sleep/Power off. Wake up by Power switch.	Yes programmable up to 30 minutes, turn off by setting to 0. Factory Default is 0. If no input for a set amount of time, PWC goes to Sleep/Power off. Wake up by Power switch.	Yes Programmable (1-240 min). Wake up by an input command on any driving method except Head Array. On Head Array, Left Right Left combination wakes PWC. Can program switch activation to wake.
Program which Drive Profile to start in at Power On	Yes Program last drive used or a specific drive profile or function	Yes Goes to last Profile used or a specific profile	Yes -Goes to last Profile used or a specific profile -Power-up 'Mode' programmable on some JSMs with display or on Omni	Yes Program to last drive profile used or specific drive profile
Locking feature to prevent any external access to chair	Yes From User Menu. Unlock by cycling power Programming, can disable touch screen	Yes With key, series of inputs through driving method, or both. Use of locking feature not required.	Yes With key, button sequence, or both. Use of locking feature not required.	Yes System Lock. Locked by holding the power lever in the on position until the controller turns off. Unlocked by pushing power lever once to power on, then move joystick fully forward until beep heard. Move joystick fully reverse until beep heard. Release joystick. -Non-joystick: separate switch programmed to Enter Lock
Joystick				
Joystick: display	Yes Color Touchscreen	Yes Color, except LED joystick	Yes Color, except LED joystick	Yes Color LCD screen
Joystick: buttons or toggle switches	Basic LED – power button Color display joystick – 2 buttons at top, power button, optional toggle kit (also programmable) to go on sides	Toggles LED Joystick - buttons	Buttons, Toggles and / or speed pot optional	-Buttons, side mounted dial (speed) and toggle (on/off, profile) -Toggle controls power & moves through drive profiles, seating, & aux. menus -Home button displays options including Drive Mode, Seat Mode, Settings, & Aux

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Joystick: shortcut buttons *To directly control specific features*	Yes Can program 2 buttons, toggles, all but Power. Programmable to control any function (Profiles, power seating function, phone (force to function), lights)	Yes - Profile/Power toggle and speed toggle of PJSM/CJSM can be change from left <> right side of joystick (dip switches on joystick) in field -PJSM and CJSM have 4 buttons (softkeys), each programmable for up to 2 functions (short and long holds) which can be different in each mode -Mode port, horn and speed potentiometer programmable to other functions via Assignable Buttons	Yes - Profile, mode, 4 buttons (soft keys), horn, power -Standard joystick: mode, profile, horn, speed -Profile button can be reassigned to provide access to both profiles or speed -All buttons and the mode jack except Power button or power jack can be re-programmed thru Assignable Buttons in PC programming to operate functions such as power seating, Bluetooth, IR, etc.	Yes 2 (Labeled I and II) 1 for drive profile 1 1 for seat profile programmable to be custom functions (same as what switch jacks are programmed to)
Joystick: speed dial	Yes 200 series joystick – mechanical speed pot dial Rem400 digital on screen (swipe or tap) Toggle – can program for speed	Yes Toggle, can be programmed for: -Momentary or Latch -Step size (percent of speed increase with each activation of toggle) -Speed step rate -Speed wrap (forward movement of toggle will wrap back to low speed) -Speed wrap beep	Yes Optional	Yes Can be programmed for: -Limited: high and low limits -Continuous: no limits -Continuous forward: only forward movement of dial is required to change speed, will cycle through -Continuous rearward: only reverse movement of dial is required to change speed, will cycle through
Joystick: switch ports	-REM200 – none SP2 -Aviva FX multiple. -Pending on SP2 (using separate box) REM400 - 2 Two: 1 = power on/off – can program to do other functions (use button or toggle on joystick for power) 2 = Default short long commands for Profiles and Mode	Two: Power and Drive Profile / Mode Mode Port: Program any option under assignable buttons via PC Programming, can use splitter on Mode port, up to 2 functions each switch (short and long holds) for four programmable functions total. -Can program required activation	Two: Power and Drive Profile / Mode Mode Port: Program any option under assignable buttons via PC Programming, can use splitter on Mode port, up to 2 functions each switch (short and long holds) for four programmable functions total. -Can program required activation	-1 = Remote power on/off Can be programmed to be Power, Mode, Emergency Stop, Toggle (F/R), Mode Shortcut (Jumps from 1st programmed Drive Profile to Auxiliary Profile to Seating Profile), Sleep, Home, or Enter Lock Jack commands – program short command, long command, double command to allow up to 3

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	Fully programmable except for power, any function Stereo (two choice) switch port.	times (default 1 second – less is short hold, more is long hold)	times (default 1 second – less is short hold, more is long hold)	functions with splitter cable. Emergency stop is active only when PWC is moving. -2 = mode port Same options as port 1, except power. Can also assign a custom function, i.e. tilt, mouse click.
Mode switch sequence: joystick	Can program sequence and number of functions. Profiles (1 button), other Functions (1 button) or swipe or tap screen	Drive Profiles, Power Seating, Aux., Drive Profiles.	-Drive Profiles, Power Seating, Bluetooth, Drive Profiles. -Sequence programmable -If mode button programmed as Profile/Mode (such as LED joystick – no profile button), will also allow access to Driving Profiles.	Active Drive Profiles, Aux., Seating. Can customize sequence.
Switch Joystick: Can program the same joystick to be proportional or switched	Yes Discrete Proportional setting	No	No	Yes, if joystick is deflected more than 50% it will act as switched joystick when programmed
Joystick: swap axes *Assign any direction to any quadrant*	Yes	Yes	Yes	Yes Swap F/Rev Swap L/R
Joystick: can use with only 3 directions	Yes 3 quadrant Per function Program button or switch to toggle direction or use auto toggle	No Could accomplish through any alternative proportional joystick and Omni display, 3 axes proportional	No Could accomplish through any alternative proportional joystick and Omni display, 3 axes proportional	Yes -3-Direction Profile, using Left, Right and Reverse -F/Rev toggle accomplished by quick movement into Reverse or Mode switch -Double hit to left changes Drive Profile
Joystick Throw	Yes Global (all 4 quadrants) *pending: shaping adjustment	Yes	Yes	Yes
Joystick: compact/remote joystick *Reduced size for alternative placements*	Yes Compact Remote Power and seating Uses a drive profile	Yes Compact Joystick & Compact Lite Joystick with Omni display	Yes Compatible with Compact Joysticks when used with Omni display	Yes Stand Alone joystick (must use with display) Power and Mode buttons 3 Drive & Seating Functions

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Mini Proportional Joystick *Reduced force and travel*	Compatible with a variety of available mini proportional joysticks	Compatible with a variety of available mini proportional joysticks	Compatible with a variety of available mini proportional joysticks	Compatible with a variety of available mini proportional joysticks
Separate switch for power seating: with joystick	Yes Can also use switch plugged into joystick Options include 10-way or four button switches. Fully programmable.	Yes -can program mode/profile port to control power seating -or via ICS Alternative Switch Box. Attach up to 8 custom programmable ability switches (additional cost).	Yes -can program mode/profile port to control power seating (1-2) -Control+5 available with 'through drive seating' -	Yes
Enhanced Display				
General	LCD, color, backlit, touchscreen, can change brightness	Omni2 LCD, full color, backlit	Omni2 LCD, full color, backlit	Color, can customize language, background, measurement system, brightness day and night. Sensor adjusts automatically.
Languages supported	English French, Dutch, Netherlands, Italian, Spanish, Svenska, on programming software only	English	English French, Spanish	English, German, Spanish, Italian, French
Customize text wording	Yes, with programming	Yes, through computer	Yes, through computer	Yes, through computer Can choose from available labels
Change font size *For users with low vision*	No	No	Programmable option of large 'momentary' screens when changing speed or profile. Highlighted "User Menu" items are enlarged	No
Icons/Graphics *Does the display include icons for users who cannot read text?*	Yes some combined with text	Yes -Power seating, Bluetooth mode icons -User Menu and Infrared text only	Yes -some areas allow for an Icon instead of Text or both.	Yes drive profiles can be assigned as preset text, icons, or colors and shapes. Choose Label to be Text and Icon or Color and Shape or Number. Icon based home screen.
Display required for alternative driving method *Is display required for connection of driving method?*	No: for ASL driving methods -joystick display required (REM 400) Yes: for non-ASL drive methods	Yes	Yes	No -SCIM module can be used with expandable hand control (less costly)

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Buttons on Display *To provide direct control of specific features by User or Caregiver*	2 buttons on display, can program these for short and long presses, anything but Power. Default functions (mode) and Profile. Separate button for Power.	Omni 2 Power, Profile, Settings, Mode, Navigation	Omni 2 Power, Profile, Settings, Mode, Navigation	Power, Mode and Directional Arrows
Switch Jacks on Display *To provide alternative control of specific features by User*	Two: 1 = power on/off but can program for something else can use short and long and splitter 2 = fully programmable except for Power, short and long, and can use splitter	-Switch jacks are on Omni 2 Interface Box, which connects to Display -2 User Ports (switch jacks), 1 Power -By default, 2nd user port is mode and long hold to sleep (quick activation of switch turns chair back on) -With Head Array short hold toggles F/R, medium hold is Mode, long hold is Sleep. Switch hold duration is programmable.	-Switch jacks are on Omni 2 Interface Box, which connects to Display -2 User Ports (switch jacks), 1 Power -It is possible to make one of the 2 User switch jacks assignable with PC programming to operate a different function/option, including horn	-1 = Remote power on/off Can be programmed to be Power, Mode, Emergency Stop, Toggle (F/R), Mode Shortcut (Jumps from 1st programmed Drive Profile to Auxiliary Profile to Seating Profile), Sleep, Home, or Enter Lock Jack commands – program short command, long command, double command to allow up to 3 functions with splitter cable. Emergency stop is active only when PWC is moving. -2 = mode port Same options as port 1, except power. Can also assign a custom function, i.e. tilt, mouse click.
Shortcut Menu on Display	User Menu	Mode selection enters User Menu Can be programmed to Sequence to move through options with repeated Mode selections (Drive, Seating, etc.) -User menu order is customizable through programming	-Mode selection enters User Menu or can be programmed to Sequence to move through options with repeated Mode selections (Drive, Reverse, etc.). -User menu is customizable thru programming.	Home Screen shows what is available. Can remove some icons if not needed or if distracting.
Horn *It is important that the User can access a Horn without pressing a button*	Yes	Yes	Yes	Yes Can adjust volume -In Aux on display, can get to horn

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Other	Clock, speed display, battery level, can customize Profile names, etc. **Horn** and lights can be accessed through driving method. Cannot change volume of horn	Clock, speed display Mode name and profile name text programmable	Clock, speed display Mode name and profile name text programmable	Can download digital photos to display or hand control – saved in photo album (can also be used for simple communication) Clock, MPH, Battery %, Trip Odometer, Odometer Can simplify some display screens, if needed
Alternative Driving Methods Specifics				
Component required for alternative driving method connection	ASL driving methods can be ordered with LiNX connector Other driving methods – IN500 input module (9 pin, 1 mono port, sip ‘n puff)	Omni 2 Display and Interface Box, 2 ports	Omni 2 Display and Interface Box, 2 ports	Enhanced Display (9 pin) SCIM (Specialty Control Interface Module) 9 pin -Sip ‘n Puff requires Sip ‘n Puff Module
Number of alt. driving methods that can be connected simultaneously *For users who use more than one driving method*	3 - 6 i.e 9 pin into IN500, joystick, sip ‘n puff, ASL scanner	2 2 9 pin ports on the Omni display 1 9 pin port on the IOM (Input Output Module) System can support up to 2 Omnis with 2 access methods each	2 2 9 pin ports on the Omni display 1 9 pin port on the IOM (Input Output Module) System can support up to 2 Omnis with 2 access methods each	Up to 4 driver controls (1 Joystick, 1 Attendant Control, Sip ‘n Puff, single switch scanning) and 2 Driving methods (1 in display and 1 in SCIM)
Transfer of control between driving methods	-Choose Drive Profile or Function with desired driving method assigned. -All could be in one profile. -By button, scan method, or swipe or tap screen	-Choose Profile programmed with that driving method -“Allow Grab”: hit mode switch on desired driving method	Choose Profile programmed with that access method “Allow Grab”: hit mode switch on desired access method	-Home screen or Aux menu, choose Change Input Device, right command, choose device. -Can program to start with joystick if turned on or Alt. control if Display turned on -or Last device used turns on at start-up -Input Device selection screen – if you activate a command on driving method, it is active (can choose directional command)

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Head Array *Access to Reverse Options*	1. Switch: 3 quadrant manual toggle or auto toggle Manual toggle – switch Auto toggle – changes between each contact 2. Can program so that 1st Function is Forward and 2nd Function Reverse	-*Mode switch:* toggles F/Rev Or -*Rear Pad:* first activation toggles direction, second activation drives -'Switch Medium' mode switch activation time to access user menu -'Switch Long' mode switch activation time to access Sleep -2 axis option for seating actuator control under Omni Port Controls menu (choose L/R or R/L)	*Mode switch:* toggles F/Rev Or *Rear Pad:* first activation toggles direction, second activation drives 'Switch Medium' mode switch activation time to access user menu 'Switch Long' mode switch activation time to access Sleep 2 axis option for seating actuator control under Omni Port Controls menu (choose L/R or R/L)	*Mode switch:* 1st activation chooses Reverse, double tap can be mode Or *Rear Pad:* 1st activation toggles direction, 2nd activation drives
Sip 'n puff	4 pressure IN500 required Pressure programmable in all 4 quadrants to match user's abilities -Visual feedback during programming of calibration -Can change Veers – veer at low speed, veer at high speed -Turn transition (see above in programming)	-4 pressure (programmable thresholds) -Built into Omni2 Interface Box -Programmable 'ramp up', 'ramp down' time to allow client to build pressure before signal is accepted -Calibrate via on board programming	-4 pressure (programmable thresholds) -Built into Omni2 Interface Box -Programmable 'ramp up', 'ramp down' time to allow client to build pressure before signal is accepted -On Board Programming allows calibration of 4 options (soft/hard sip & puff)	2 or 4 pressure option -2 pressure: 2 puffs = Forward, 1 puff = Right, 2 sips = Reverse, 1 sip = Left -Separate sip 'n puff module required -Can adjust Sampling Delay to allow consumer to "ramp up" to allow client to build pressure before signal is accepted -Visual and audible pressure meter on client's display screen.
Switch Arrays	Supports single, 3, 4 and 5 switch access Can do 2 switch access using ASL 2 switch fiberoptic array	-Supports single, 3, 4 and 5 switch access	-Supports single, 2, 3, 4 and 5 switch access -2 switch drive option available using Switch It Cool Cube. Uses Link feature.	Supports single, 2, 3, 4 and 5 switch access <u>2 switch:</u> 1st switch – double click and hold is Forward, single activation is Left. Double click and release is Mode. 2nd switch – double click and hold is Reverse, single activation is Right <u>3 switch:</u> L Double hit accesses actuators

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Single switch scanning	Requires ASL external scanner New pending, includes diagonals	-4 directions on display -Can scan all chair functions -Programmable scanning speed for drive and menus -Cannot use to control built-in Bluetooth functions	4 directions on display Can scan all chair functions Programmable speed for drive and menus	4 direction scan – clockwise, counter-clockwise 8 direction scan – clockwise, counter-clockwise 2 step scanner – Step 1: scans F, veer L, veer R, step 2. Step 2: opens other directions (hold down for Reverse) Scanning options can also be customized
Alternative Driving Method Power, Mode and Navigation				
Mode switch functioning *The Mode switch can be used for a variety of functions*	No dedicated Mode switches Profiles and Functions instead Plug switch in, short hold Profiles, long hold Functions. Can put all Functions in one Profile. Switches can be programmed for any available feature.	-Mode switch activation takes user to User's Menu on display or can activate Sequence -Mode switch can act as Emergency Stop during Latch driving. -Mode switch, long hold, activates Sleep	-Mode switch activation takes user to User's Menu on display or can activate Sequence -Mode switch can act as Emergency Stop during Latch driving. -Mode switch, long hold, activates Sleep	-Mode switch activation sequence: Profiles, Auxiliary, Seating. Can be programmed in different sequence. -Can program Mode port to be Mode Command, Mode shortcut, Toggle, Sleep, Home, Enter Lock, or Emergency Stop. -Can use short, long or double commands to control up to 3 functions with a splitter.
Display function navigation: manual *Manual navigation of functions using directional commands*	-Hit switch to go directly to a function. -Hit switch to go to User Menu (program) -Menu Select – after preprogrammed amount of time, enters User Menu. Use directional switches to move through options. Left moves up and down list, Right selects (can customize)	Manual scroll: Forward command moves up displayed list, Reverse moves down, Right selects. If menu item is 'entry' (i.e. seating), Left will select. If menu item is 'select' (i.e. drive profile), Left will lower (i.e. profile number) and Right will increase. Wraps back to bottom of list. Order of menu programmable.	Manual scroll: Forward command moves up displayed list, Reverse moves down (can Invert Forward and Reverse), Right selects, Left selects highlighted option. Order of menu programmable. If using Head Array, Forward moves up the list and loops	Manual scroll: i.e. in Aux Menu. Forward command moves up displayed list, Reverse moves down, Right selects, Left moves back a level. Forward will wrap back to bottom of list. Holding down the Forward or Reverse command will continue scan automatically after a programmed amount of time (auto repeat)
Display function navigation: scanning *Automatic navigation of function using directional commands*	-Hit switch to go to User Menu (program) -Menu Scan: after preprogrammed time, auto scan through User Menu, per profile.	Auto scroll: adjustable speed. Right selects and Left moves back a level.	Auto scroll: adjustable speed. Right or Left Selects highlighted menu option.	Auto change: adjustable speed. Right selects and Left moves back a level.

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Display function navigation: auditory scanning (speech) *Auditory feedback to assist user in function navigation*	No No auditory feedback currently	No Auditory feedback to indicate Profile, operating Mode or selection on User Menu (beeps can be turned on/off)	No Auditory feedback to indicate Profile, operating Mode or selection on User Menu (beeps can be turned on/off)	No Different tones for each drive profile, seat, and auxiliary. Beeps for each direction. Auditory feedback available for screen/mode changes whether through manual operation or in scanning modes
Infrared Transmission ***IR Transmission, while still available, is becoming outdated and is generally being replaced with consumer electronics.***				
IR signal output *IR signals are transmitted to control devices in the environment*	No (pending) Sensor on joystick, not functional	Yes, standard on Omni, Omni 2 display and PJSM/CJSM joysticks	Yes, standard on CJSM 2, Omni, & Omni 2	Yes, built-in Enhanced Display (standard) or IR blaster on bottom on joystick (optional) Back of Display, multidirectional
Preset codes *System has stored IR codes which can be accessed*	No	Yes IR Configurator – upload new files	Yes Loaded via PC Programming	No
Learning *System can learn IR codes from device remotes*	No	Yes	Yes	Up to 288 (depending on size of code), macros (up to 3 commands)
Macros *System can send a series of IR commands*	No	No	No	Yes
Module control *Allows IR signals to control electrical outlets and light switches* *No IR transmitters are available currently. Other methods of control are recommended.*				
Telephone *IR telephones are available but are expensive. Other phone options are recommended.*				
Bluetooth Mouse Emulation and Switch Access ***Provides mouse emulation on computers, tablets, smartphones, and speech generating devices (as compatible)***				
Bluetooth Switch Access				
Bluetooth feature used to send switch signal(s) to paired device	Yes, with an iOS device Connections can be used to allow the driving method to act as a switch(es)	iDevice portion of Bluetooth is Switch Control for **iOS devices** Short, Medium, and Long holds for each switch executes different commands	No	Assistive Switch Control Connections can be used to allow the driving method to act as a switch(es) with an iOS device.

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Mouse emulation	Yes -set-up Function Card -Can change cursor speed -Standard on joysticks and display	Yes -PJSM, CJSM joysticks and Omni 2 display each come standard with ability to control up to 2 mouse emulation devices and 2 iOS devices -Controls Windows, Android, and iOS devices -Additional Bluetooth modules (mouse and iDevice) available to be used with LED, Omni, or if need to control more than four devices	Yes -Included (standard) in CJSM2 and OMNI2. -Each control up to 2 Windows/Android devices as well as 2 iOS devices. -Additional Bluetooth modules available to be used with LED, CJSM1 and Original OMNI. -External modules can either Control computer, Windows, and Android, and iOS devices, depending on which module is used.	Yes -Built into enhanced display and expandable hand control (standard) -Mouse Connections (under Bluetooth operations) is used to pair the driving method with the desired device -Proportional driving method provides proportional control -Assistive Touch on Apple Products acts like mouse cursor (new 11/2019). Pair through PWC as Mouse, then on Device, set up Assistive Touch.
Mouse emulation Clicks	-Switches for Left and Right Clicks (single, dual, toggle) -no Drag -Can touch joystick screen 1 – Mouse direction: up, down, left, right 2 – Mouse clicks: left, middle, or right click 3 – Mouse scroll: up, down, scroll mode Switch Control: space, enter, esc, tab, up, down, left, right	<u>Joystick</u> - 3 options: 1 – Nudges. Default option. Quick Left is left click, quick Right is right click, quick Forward is scroll up, quick Reverse scroll down. 2 – Soft keys. 4 blue buttons around joystick screen, default mouse clicks in Bluetooth mode. 3 – Mode switch, can program via assignable buttons for clicks <u>Display – 2 options:</u> 1 – Nudges. Default option. Quick Left is left click, quick Right is right click, quick Forward is scroll up, quick Reverse scroll down. 2 – use separate Bluetooth module (still available) if external switch required for clicking	<u>Joystick</u> -can use Speed up and Speed down buttons for L/R clicks in Mouse Mode <u>Joystick or Display</u> -any quick hit (nudge) of a directional command can be programmed to L or R click or Scroll up or down (requires PC). -Additional features can be programmed via Assignable Buttons including right and left click, and double click. or -Use dwell software	Mouse Click options: -External switches through Power or Mode jacks -Mode Hold (when in Mouse Profile, acts as mouse clicks) -Dwell (after time, screen on input device to Mouse Clicks) -can program shortcut keys on joystick, iAccess unit. -Many more options.

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Interfacing ***Allows Driving Method to send a signal to an external assistive technology device***				
Component required for interfacing	Output module (1 9 pin), can use splitter, and cable 4 is standard	IOM: Input/Output Module and interfacing cable Both ports can be used as output	IOM: Input/Output Module and cable -Module can be set as either an INPUT or an OUTPUT module. Internal dial (inside case) determines which the module will function as. Default output. -More than 1 module can be added to a chair. -Programming required to enable port.	ECM Module (10 switch outputs available). Also programmable through the iAccess Module within the Q-Logic 3 system.
Attendant Control				
Attendant Control features	Attendant control, preprogrammed, Driving, seating, user preferences Can choose who has priority (Attendant or User)	-Uses Profile 8 as standard -Can be programmed to any Drive Profile(s) -Programmable 'grab' option to allow either the caregiver or the user to regain control -If 'allow grab' is off, the user cannot make their driving method active -Can access all user modes, seating, mouse, etc. or programmable to specific modes (includes Mode button) -May also use PJSM (no charge) or CJSM as attendant control	-Uses Profile 8 as standard -Can be programmed to any profile(s) -Programmable 'grab' option to allow either the caregiver or the user to regain control. -If 'allow grab' is off, the user cannot make their driving method active -Can access all user modes, seating, mouse, etc. or programmable to specific modes (includes Mode button) -Sunrise also offers the option to select a CJSM1 as the attendant control in place of the traditional attendant. This gives caregiver the option to easily access modes and multiple profiles if needed as well as the ability to turn chair off and on from the attendant position.	Power & mode button Doesn't use up a driving profile If Attendant Control is on, driving method will not operate. 2 Drive profiles & 1 seat profile, programmable

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Power Seating				
General comments		ICS Intelligent Control System used for Power Seating, separate electronics	Thrudrive seating allows control through assignable buttons or dedicated switches via PC Programming	Proportional control allows proportional speed control
Latch feature	Can latch functions Can preprogram actuator latched operation motion time (up to 60 seconds)	Yes, through drive input, assignable button, or softkey Drive input device – all actuators or none latched. Assignable button or softkey – can latch individual actuators	Yes, for all actuator functions, per profile Thru drive and/or assignable button	Yes
How many power seat functions can be controlled?	6, up to 42 total functions	6 actuators, 16 axes	-ISM or CXSM up to 6 actuators -Up to 12 seating axes	5
Programmable combination of movements	Motion Concepts has programmable options (not through Invacare)	-Up to 16 axes of seat motion using up to 6 power seating actuators, singly or in multiple combinations. -Tilt (anterior and posterior), Recline, ELRs, seat elevate, stand, power articulating footrest -Memory seating and Independent Repositioning Mode programmable	Up to 12 axes are available, including up to 6 Memory Seating Axes that are adjustable in field.	-Can combine recline and elevating legrests -Combined functions such as tilt/recline and powered foot platform and others
Programmable Speed, Acceleration, Deceleration	Yes Proportional control (default), if desired	No Proportional driving method provides proportional speed	No Joystick – proportional speed	Yes
Drive Inhibit (slows speed past programmed actuator angle)	Yes, by angle For elevate is preset Motion – can request set in field	Yes, by angle Seat elevate is by millimeters	Yes, creep	Yes Only with iLevel seat elevation
Drive Lock out (prohibits driving past programmed actuator angle)	Yes Can turn on or off or choose angle	Yes, by angle Certain combinations of movements on certain models/configurations will result in auto lock-out	Yes for some options/chair configurations	Yes Set drive lock out point
Limit movement (programs start and stop point/angle of actuator movement)	Yes Motion limits can be programmed on Recline	Yes Set min. and max. movement	Yes For some options/chair configurations	Yes On Tilt and Recline, can set stop at either end or limit by angle

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Pressure Relief Signal	No	Virtual Seating Coach Records/tracks weight shift data Provides reminder through App on Smartphone Clinician must be involved with set-up	Available on SEDEO ERGO and SEDEO UP: Remote Seating App and PRAR – Pressure Relief Alert & Recording (records how often message went out and how many times user complied and how long)	Can program individualized reminder for pressure relief. Can program for set time or as an interval. Will repeat to programmable frequency until confirmed. Optional audible alert.
Other				
USB Charger	Dual USB charger mounted to seat rail (optional, no charge) Motion – connected to joystick (optional $195)	Omni2 Interface Box includes USB charger Joystick – optional USB charging port, plugs in line, $212	Standard on Control+5 units as well as OMNI 2 interface box.	-Free on Stretta, 4Front, Edge 3 -USB adaptor for charger port available for USB charging $175 -Pending joystick will have USB charger standard
Other comments	My LiNX App -Can be downloaded at no charge from the apple store and google play store. The app provides the link for transferring data from a LiNX chair to the MyLink cloud. Information includes Battery info, fault codes, easy contact with the provider, health of the chair.			User Reminder feature- programmable time or interval with customized wording programmed in PC programmer (weight shifts, take meds, etc.) Maintenance Reminder feature - programmed by days or miles. Can be individualized with PC programmer to input company name / number or other text.