



CoMoveIT

FAQ – CoMoveIT Smart – Technical information

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CoMoveIT Smart Features and Functionality:

- **How does CoMoveIT Smart work?**

CoMoveIT Smart is equipped with **high-tech pressure sensors** that are built-in at maximum 5 locations (sensor pads) on the complete head-foot steering system. A maximum of 4 individual sensor pads can be used simultaneously when they are connected to the Electronic Control Unit (ECU), which is the heart of the highly advanced control system of this steering device. The sensor itself is a complex array of multiple sensor elements.

The **Electronic Control Unit (ECU)** captures the sensor signals at high rate, we can state that the system measures the use of each sensor every second. The signal that is captured represents the way the user is working with the pad at that very moment: pressure is very hard or soft, over the entire surface or just a part of it, continuous or interrupted. The built-in microprocessor memorizes a window of the measured signal during a limited time period. The command at that very moment is being sent to the wheelchair motor controller while it is processed through the **CoMoveIT algorithm**.

This leads to the most important and unique characteristics of the CoMoveIT Smart: the system auto-calibrates and adapts the wheelchair control to the way the user is driving the system.

In general, it can be stated that CoMoveIT applies a basic level of artificial intelligence. Although it doesn't build up and hold intelligence, the processing of the signals is done by a sophisticated software algorithm running on a microprocessor within the system.

Auto-calibrating. Good to note is that the microprocessor does not keep the memory when switched off, and thus restarts from the default start level every time, all over again. Since involuntary movements are hardly predictable and have no constant pattern over multiple days or even hours, the autocalibration after restarting is seen as one of the most valuable features. Having that characteristic as a standard way of working immediately eliminates the need for programming, adjusting or manual calibrating by users, therapists or technicians. That's why CoMoveIT refers to the Smart system as a 'plug & drive' and 'zero maintenance' system.

Adapting to the user & relaxed driving. We can state that the main characteristic is that the algorithm adapts to the user, even from the very first moment of driving the powered wheelchair. If the driver steers to the right for example but pushes the right sensor pad in a very interrupted way, the algorithm will still allow a fluent turn to the right. This provides a high level of control to the person driving the wheelchair, even with severe spasticity or high frequency of involuntary movements. The high level of control allows these users to easily combine forward/backward driving with turning at the same time at a speed which is nicely in pace with normal wheelchair driving. After a very short learning time, users go to intuitive and relaxed driving, which allows them to eliminate the "thinking how to drive" and concentrate on leisure, participation, etc.

- **What makes CoMoveIT Smart different than the other Specialty Input Devices?**

Conventional Specialty Input Devices (SID), such as buddy buttons, micro(pico)-button, or force sensors always require a constant certain force that needs to be applied by the user to trigger a driving control command. For example, a buddy button always requires an activation force of 10 grams or 50 grams, etc. This force might be suitable for some users for a certain period of time. However, due to the uncontrolled, involuntary characteristics of pathologies like CP, the force applied by the user varies from time to time and changes in an unpredictable manner. CoMoveIT Smart considers the force applied and the method of applying the force by the user and automatically adapts the control command activation.

- **What are the configurations of CoMoveIT Smart?**

H3+F

Configuration 1

- Right Head – Steer Right
- Left Head – Steer Left
- Back Head – Drive Forward/Reverse
- Right or Left Foot – User Switch (Select Forward or Reverse), Access User Menu

Configuration 2

- Right Head – Steer Right
- Left Head – Steer Left
- Back Head – User Switch (Select Forward or Reverse), Access User Menu
- Right or Left Foot – Drive Forward/Reverse

H3+FF

Configuration 1

- Right Head – Steer Right
- Left Head – Steer Left
- Right Foot – Drive Forward/Reverse
- Left Foot – User Switch (Select Forward or Reverse), Access User Menu

Configuration 2

- Right Head – Steer Right
- Left Head – Steer Left
- Right Foot – User Switch (Select Forward or Reverse), Access User Menu
- Left Foot – Drive Forward/Reverse

Same configurations are still possible as H3+F

Rnet-Programming: CoMoveIT Smart Rnet settings for four-sensor configuration.

Profile Management	Profile 1	Profile 2	Profile 3
Profile Name	CoMoveIT Smart IN	CoMoveIT Smart M	CoMoveIT Smart OUT
Profile Enable	Yes	Yes	Yes
Mode Enable	[1234 78]	[1234 78]	[234 78]
Input Device Type	Omni	Omni	Omni
Input Device Subtype	All	All	All
Seat Reversal Profile	No	No	No
Allow Grab	Yes	Yes	Yes

Omni	CoMoveIT Smart IN	CoMoveIT Smart M	CoMoveIT Smart OUT
Global			
Profiled			
Port	1	1	1
Ports			
SID	Port 1	Port 2	
SID	3-Axis Switch	Proportional	
Switches	Port 1	Port 2	
User Switch	Normally Open	Normally Open	
Switch Detect	Off	Off	
9-Way Detect	Off	Off	
Switch Long	4.00 s	1.00 s	
Switch Medium	1.25 s	1.00 s	
Switch Debounce	50 ms	50 ms	
Double Click	0.0 s	0.3 s	
User Switch Detect	Off	Off	
9-Way SID Switch Detect	Off	Off	
Controls	Port 1	Port 2	

Remarks

- It is not possible to utilize all 5 sensors of CoMoveIT Smart simultaneously. The maximum number of sensors that can be used simultaneously is four.
- Above we mention the most obvious configurations with a typical use of the right and left head pads to be used to steer left and right. Nevertheless, it is perfectly possible to allow steering with the feet as well by simply connecting the foot pads to the indicated connection on the ECU (LH and RH). Or even using a mix of head or foot pad to steer left and right. This can happen if a client has an asymmetrical fixed neck position and can't make the turn to one or the other side for example.
- Some systems in the field might still exist with only 2 sensors (left and right) in the head pad ("H2").

- What are the Configurations of CoMoveIT Smart for operation of Head Array Only?

H3

Configuration 1

- Right Head – Steer Right
- Left Head – Steer Left
- Back Head – Drive Forward/Reverse, Select Forward or Reverse
- Buddy button – Mandatory to access User Menu

	Slow	Medium	Fast
Port	1	1	1
Port 1	Port 2		
3-Axis Switch	Proportional		
Port 1	Port 2		
Normally Open	Normally Open		
Switch Detect	Off	Off	
9-Way Detect	Off	Off	
Switch Long	4.00 s	1.00 s	
Switch Medium	1.25 s	1.00 s	
Switch Debounce	50 ms	50 ms	
Double Click	0.0 s	0.3 s	
User Switch Detect	Off	Off	
9-Way SID Switch Detect	Off	Off	
Port 1	Port 2		
User Control	Menu	Menu	
Return To	Menu	Drive	
Timeout to Menu	0 s	0 s	
Menu Navigation	Normal	Normal	
Menu Scan Rate	0.00 s	0.00 s	
Auto-repeat	Off	Off	
Fwd / Rev Auto Toggle	On	Off	
Auto Toggle Time	2.00 s	2.00 s	
Axis Direction Toggle Time	0.25 s	0.25 s	
Actuator Selection	SID	SID	
Actuator Axes	Normal	Normal	
Port 1	Port 2		
Port 1	Port 2		

A direction change will occur if the back head pad of CoMoveIT Smart is operated and released. Further operation of the back head pad will result in driving in the newly selected direction. **Fwd / Rev Auto Toggle** must be set to **On**.

This sequence must be completed within a given time period, typically 2 seconds. However, the parameter, **Fwd/Rev Auto Toggle Time**, can be adjusted to give a different time period.

If the sequence is not completed within the time period, the selected direction will automatically revert to its previous state.

The User Switch (**buddy button or similar connected to U1 of Omni**) is used to enter the User Menu or sequence through the other functions on the wheelchair.

The above settings assume that a normally open User Switch is connected to Omni. If the User Switch is normally closed. Please configure it in **Ports-Switches-User Switch**.

Configuration 2

- Right Head – Steer Right
- Left Head – Steer Left
- Back Head – Drive Forward/Reverse,
- Buddy button – Select Forward or Reverse, Access User Menu

Omni			
Global			
Profiled	CoMoveIT Smart IN	CoMoveIT Smart M	CoMoveIT Smart OUT
Port	1	1	1
Ports			
SID	Port 1	Port 2	
SID	3-Axis Switch	Proportional	
Switches	Port 1	Port 2	
User Switch	Normally Open	Normally Open	
Switch Detect	Off	Off	
9-Way Detect	Off	Off	
Switch Long	4.00 s	1.00 s	
Switch Medium	1.25 s	1.00 s	
Switch Debounce	50 ms	50 ms	
Double Click	0.0 s	0.3 s	
User Switch Detect	Off	Off	
9-Way SID Switch Detect	Off	Off	
Controls	Port 1	Port 2	

In this configuration, you use CoMoveIT Smart Rnet settings for four-sensor configuration. However, instead of connecting a User Switch Sensor to CoMoveIT Smart, the User Switch (**buddy button or similar**) is connected to U1 of Omni.

A direction change will occur if the User Switch is pressed. Long press on the User Switch allows access to the User Menu.

• Omni User Menu Scan Function

It is possible to use the Scan Function to navigate in the User Menu. The Scan Function automatically highlights the sequence of the items of the User Menu.

The position of each item can be setup at will in the Rnet programming software in the **Omni** tab, section **Ports**, subsection **User Menu**.

Omni			Omni		
Global			Global		
Profiled	CoMoveIT Smart IN	CoMoveIT Smart M	Profiled	CoMoveIT Smart IN	CoMoveIT Smart M
Ports			Ports		
SID	Port 1	Port 2	SID	Port 1	Port 2
Switches	Port 1	Port 2	Switches	Port 1	Port 2
Controls	Port 1	Port 2	Controls	Port 1	Port 2
User Control	Menu	Menu	User Control	Menu	Menu
Return To	Menu	Drive	Return To	Menu	Drive
Timeout to Menu	0 s	0 s	Timeout to Menu	0 s	0 s
Menu Navigation	Normal	Normal	Menu Navigation	Normal	Normal
Menu Scan Rate	0.00 s	0.00 s	Menu Scan Rate	2.00 s	0.00 s
Auto-repeat	Off	Off	Auto-repeat	Off	Off
Fwd / Rev Auto Toggle	Off	Off	Fwd / Rev Auto Toggle	Off	Off
Auto Toggle Time	5.00 s	2.00 s	Auto Toggle Time	5.00 s	2.00 s
Axis Direction Toggle Time	0.25 s	0.25 s	Axis Direction Toggle Time	0.25 s	0.25 s
Actuator Selection	SID	SID	Actuator Selection	SID	SID
Actuator Axes	Normal	Normal	Actuator Axes	Normal	Normal
User Menu	Port 1	Port 2	User Menu	Port 1	Port 2

Menu Scan Rate: Adjustable Time from 0.25 s to 10.00 s, in steps of 0.25 s.

Menu Scan Rate: 0 s – Deactivated.

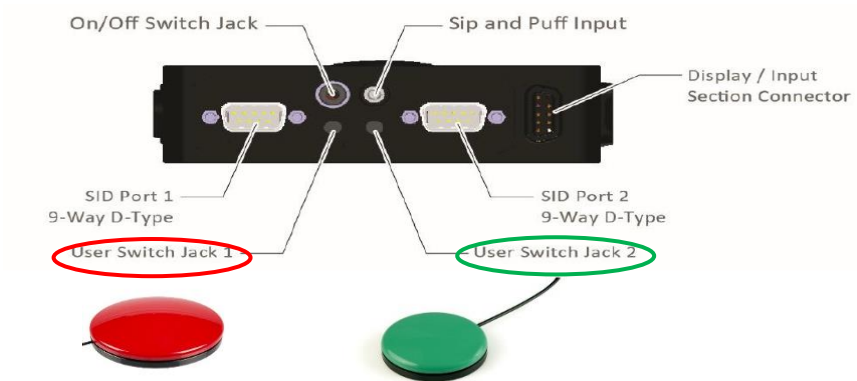
- **Buddy Button Usage**

A buddy button can be used to replace the User Switch sensor of CoMoveIT Smart.

Make sure that the User Button is connected on the appropriate port in Omni2 module.

If CoMoveIT Smart is connected in **SID Port 1** of Omni2, the User Button must be connected in **User Switch Jack 1 (U1)** of Omni2.

If CoMoveIT Smart is connected in **SID Port 2** of Omni2, the User Button must be connected in **User Switch Jack 2 (U2)** of Omni2.



Additionally, you must identify the type of your Buddy Button. A Buddy Button can be either “Normally Open” type or “Normally Closed Type”.

The type of the Buddy Button must be set accordingly in the Rnet programming software in the **Omni** tab, section **Switches**, setting **User Switch**.

	CoMoveIT Smart IN	CoMoveIT Smart L	CoMoveIT Smart M	CoMoveIT Smart H	Profile 5	Profile 6	Profile 7	Attendant
1	1	1	1	1				1

	Port 1	Port 2
3-Axis Switch	Switch	Switch
Port 1	Normally Open	Normally Closed
User Switch	Off	Off
Switch Detect	Off	Off
9-Way Detect	Off	Off
Switch Long	0.00 s	1.00 s
Switch Medium	1.25 s	1.00 s
Switch Debounce	50 ms	50 ms
Double Click	0.0 s	0.3 s
User Switch Detect	Off	Off
9-Way SID Switch Detect	Off	Off
Controls	Port 1	Port 2

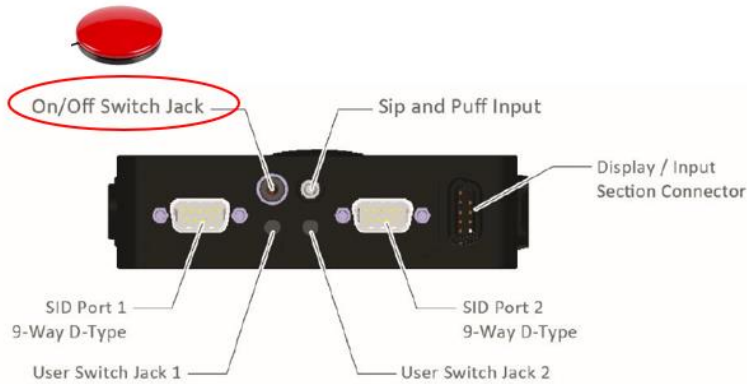
Remark

If the user switch is set up correctly as **Normally Open** or **Normally Closed**, and there is an error appearing on the Omni2 screen, ensure that **Switch Detect** and **User Switch Detect** are set to **Off**.

- **Switching ON/OFF**

To switch the device ON or OFF, connect a buddy button to the OMNI 2 module in the On/Off Switch Jack.

The buddy button is not Connected to the CoMoveIT Smart. The buddy button is connected to the OMNI 2 module.



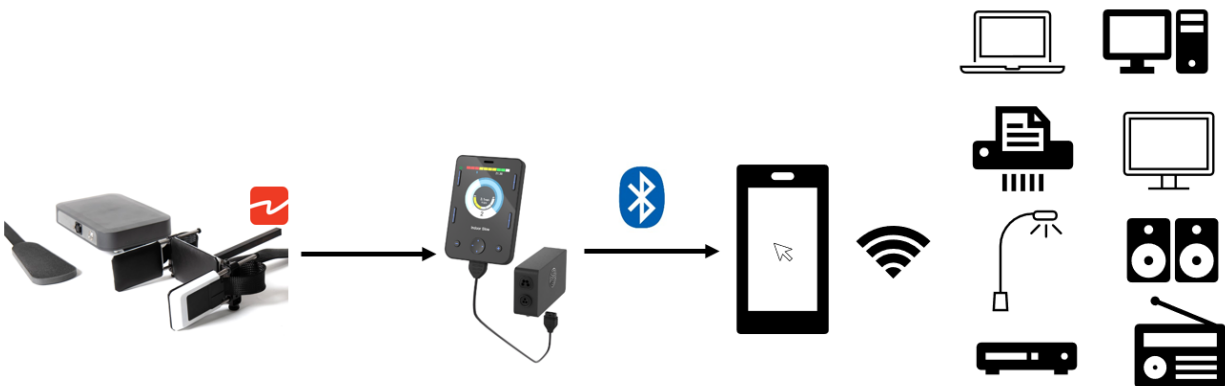
When the device is OFF, a press on the buddy button will switch the device ON.

When the device is ON, a press on the buddy button will switch the device OFF.

- **Control Multiple Peripherals from one Device**

An ideal way to control multiple peripherals from one device such as a smartphone or tablet is to download on your tablet the remote-control apps dedicated to your device. For example, smart TVs, smart lights, etc. have their own application.

Using CoMoveIT Smart to control your smartphone or tablet as indicated in Bluetooth Control for Android and Bluetooth Control for iOS allows you to have access to your peripheral devices.



Remark: Your smartphone or tablet must be connected to the same wifi network as your peripheral devices.

- **Control functions while Driving**

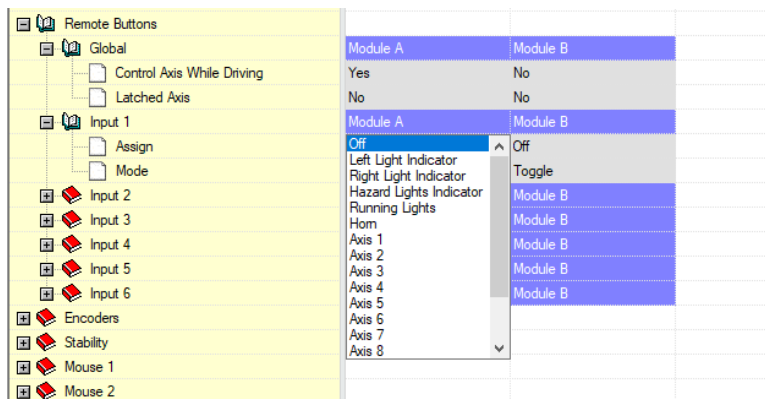
To control additional functions while driving you could use a Remote Button Interface (RBI) (that Permobil offers to give access to external switch/switches, but this may not be a cheap solution.

Part: Remote Button Interface Permobil 0049-7010A



The remote button interface is an interface to connect up to 6 switches to the R-Net bus. The functions are programmable per switch via the R-Net PC program. Maximum 2 Remote Button Interfaces can be connected to the R-Net bus system. This allows you to connect up to 12 switches.

For the programming of the Remote Button Interface. In the Rnet Programmer, go to “**Remote Buttons**” and assign the desired input to a function.



There is a pool of 13 possible functions that can be controlled while driving.

Left Light Indicator, Right Light Indicator, Hazard Light Indicator, Running Lights, Horn Axis 1 Axis 2 Axis3, Axis 4, Axis 5, Axis 6, Axis 7, Axis 8.

Caution: A maximum of 6 functions is possible per Remote Button Interface module. A maximum of 2 Remote Button Interface modules can be used. Consequently, a maximum of 12 functions while driving is possible.

Axis 1, Axis 2, Axis 3, etc. denote the actuator axis of the Curtiss Wright Intelligent seating module or the ICS on Permobil powered wheelchairs.

- Sleep function - How to easily go to sleep or rest mode?



Method A:

1. Long press on the User Switch sensor to access the User Menu.
2. Navigate through the User Menu using the forward/gas pedal sensor to highlight **Sleep**. Press right on the head array to enter.
3. The sleep symbol appears on screen for a few seconds.
4. The OMNI 2 switches OFF.



Method B:

1. Long press on the User Switch.

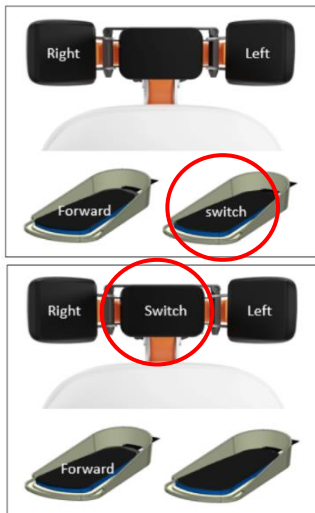
Omni	CoMoveIT Smart IN	CoMoveIT Smart M
Global		
Profiled		
Ports		
SID	Port 1	Port 2
Switches	Port 1	Port 2
User Switch	Normally Open	Normally Open
Switch Detect	Off	Off
9-Way Detect	Off	Off
Switch Long	0.00 s	1.00 s
Switch Medium	1.25 s	1.00 s
Switch Debounce	50 ms	50 ms
Double Click	0.0 s	0.3 s
User Switch Detect	Off	Off
9-Way SID Switch Detect	Off	Off

Omni	CoMoveIT Smart IN	CoMoveIT Smart M
Global		
Profiled		
Ports		
SID	Port 1	Port 2
Switches	Port 1	Port 2
User Switch	Normally Open	Normally Open
Switch Detect	Off	Off
9-Way Detect	Off	Off
Switch Long	3.00 s	1.00 s
Switch Medium	1.25 s	1.00 s
Switch Debounce	50 ms	50 ms
Double Click	0.0 s	0.3 s
User Switch Detect	Off	Off
9-Way SID Switch Detect	Off	Off

Switch Long Time: >Switch Medium and up to 5 s, with 0.25 s intervals.

Wake up from sleep.

1. Press on the User Switch sensor to wake up OMNI 2.
2. The OMNI 2 switches ON.



Installation and Configuration:

- **How to install CoMoveIT Smart on a powered wheelchair?**

Head Array installation: The head array of CoMoveIT Smart is installed on the back of the seat of the power wheelchair. The array can be installed on any mounting bracket that can accommodate a 15 x 15 mm tube. For several powered wheelchairs brands, there are specific mounting brackets.

Electronics Control Unit installation: The Electronics Control Unit (ECU) of CoMoveIT Smart, has four M6 nuts at the back of the device that is designed specifically for mounting, Due to the fact that every powered wheelchair is unique there is not any universal mounting bracket available. For several powered wheelchairs brands, there are specific mounting brackets.

Foot Pads installation: The foot pads of CoMoveIT Smart are installed on the footrests of the powered wheelchair using Velcro fasteners. Velcro fasteners allow each foot pad to be positioned according to the needs of each user.

Installation of the cables: The cables of the head and foot pads can be connected to the ECU. The connection in the ECU determines the function of the sensor pad that is being connected. The cables are protected with a flat hose, yet these still allow to strap the cables to frame parts close to the ECU if this is desired. The cables are at standard length and are not available at other lengths.

- **How to mount buddy buttons?**

You can mount the desired buddy button everywhere on the wheelchair either by positioning the buddy button itself or using one of the third-party mountings.

Indicative buddy button mounts: Environmental Controls Super Mount, AbleNet Mounting Plate for Assistive Technology, AbleNet Flex, Stealth Products ARMS260.

- **How to allow the attendant to take control when the patient is driving?**

When the patient is driving, the attendant can take control by pressing the “**PROFILE**” button on the attendant joystick. This activates the dedicated attendant Profile.

This is configured in the Rnet Programmer under **Profile Management**, in the dedicated attendant Profile. Set **Allow Grab** to “**Yes**”.

Profile Management	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Profile Name	Drive	CoMoveIT Smart L	CoMoveIT Smart H	SC Cruise No Assist	SC Cruise	Profile 6	No assist	Attendant
Profile Enable	Yes	Yes	Yes	No	No	No	No	Yes
Mode Enable	[12345678]	[12345678]	[12345678]	[1]	[12]	[1]	[1]	[12]
Input Device Type	JSM	Omni	Omni	Omni	Omni	Universal	Universal	Attendant
Input Device Subtype	All	All	All	All	All	All	All	All
Seat Reversal Profile	No	No	No	No	No	No	No	No
Allow Grab	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Under **Controls** tab, **Global** subtab, set **Change Profile while Driving** to “Yes”.

Controls	
Global	
Momentary Screens Enabled	Yes
Change Profile while Driving	Yes
Change Speed while Driving	Yes
Actuator Switches while Driving	Yes
Speed Adjust	Yes
Profile Button	Profiles
Actuator Endstop Beep	No
Sounder Volume	1
Horn Volume	Low
Start-Up Beep	No
Lock Function Enabled	Sequence
Reverse Driving Alarm	No
OBP Keycode Entry	No
Power-up Mode	Last used
External Profile Jack Detect	Off
External On/Off Jack Detect	Off

Caution: When the attendant is driving the powered wheelchair, the user presses the user switch sensor, e-stop is caused.

- **How to integrate an emergency stop?**

The emergency stop can be integrated into the charging ports of your powered wheelchair. The charging ports are available in the joystick and in the Omni2 module.

There are two types of emergency stops. The first type is the traditional emergency stop button, while the second type is the remote emergency stop.

In the case of the traditional emergency stop button, the button is connected to the charging port of your powered wheelchair, and it is operated by pressing on the button.

In the case of the remote-controlled emergency stop, the receiver is connected to the charging port of your powered wheelchair. The transmitter is portable and handheld. By pressing the button on your transmitter, an infrared signal activates the receiver leading to an emergency stop.

Caution: When operating a remote-controlled emergency stop, you must be with the operational range of the transmitter.

Indicative emergency stop devices: Sunrise Medical Switch IT Remote Stop Switch, Power2Go Safety Stop Wireless Remote Wheelchair Kill Switch Kit, ASL 504 Remote Emergency Stop Switch for Rnet.



- **Sensor “Hot Swapping”**

Sensor Hot Swapping is a convenient way to plug and assign the functionality of a sensor of CoMoveIT Smart, by connecting it to a dedicated port without the need of additional setup or programming.



Port Name	Operation
LH	Connect the force sensor array for left turn.
RH	Connect the force sensor array for right turn.
SW	Connect the force sensor array for user switch.
G	Connect the force sensor array for driving.

Connecting any sensor of CoMoveIT Smart in the LH port of the Electronics Control Unit automatically allows this sensor to control the left turn.

Connecting any sensor of CoMoveIT Smart in the RH port of the Electronics Control Unit automatically allows this sensor to control the right turn.

Connecting any sensor of CoMoveIT Smart in the G port of the Electronics Control Unit automatically allows this sensor to control the forward/reverse driving.

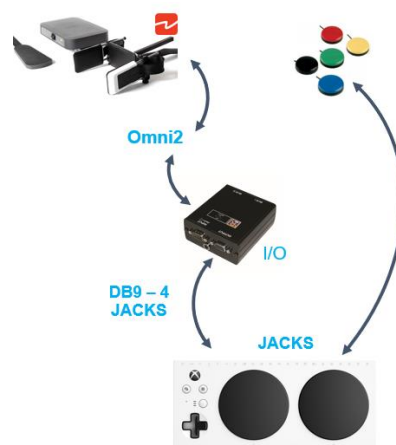
Connecting any sensor of CoMoveIT Smart in the SW port of the Electronics Control Unit automatically allows this sensor to control the User Switch function (select between forward/reverse, enter User Menu, Sleep).

Integration and Compatibility:

- How to set up CoMoveIT Smart for gaming?

Single-Player solution: The combination of CoMoveIT Smart and Xbox Adaptive allows you to control the Xbox gaming console using CoMoveIT Smart. Using CoMoveIT Smart you can control up to four functions of your Xbox gaming console. To control additional functions buddy buttons must be connected directly to the Xbox Adaptive.

You can interface CoMoveIT Smart with XBOX Adaptive using the Rnet Input/Output module.



Rnet Input/Output module set up for interfacing CoMoveIT Smart with Xbox Adaptive.

In the Rnet Programmer, under **Configuration** tab, create a Mode for the Rnet Input/Output module. It is recommended to give a distinctive name to the Mode (e.g. **Xbox Adaptive**). Set **Input** to “Raw” and select the **Output** number of the Input/Output module.

Configuration	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8
Mode Name	Drive	Seating	Bluetooth	IR Control	Bluetooth OMNI	Xbox Adaptive	IOM 3	Programming
Input	Drive	Seating	Raw	Raw	Raw	Raw	Raw	Programming
Intermediate	None	None	None	None	None	None	None	None
Output	Drive	Seating	Bluetooth	IR Control	Omni2 Bluetooth	Output 6	Output 5	Programming

Remark: Make sure that the internal output selector switch of the Rnet Input/Output module matches the Output number in the Configuration.

In the Rnet Programmer, under **Input Output Module** tab, select **Input Type** “Switch”. On the **Output Switching** select “Diagonal”.

Input Output Module	Input 1	Input 2	Input 3	Output 3	Output 4	Output 5	Output 6	Output 7
Input Module	Input 1	Input 2	Input 3					
Input Type	Switch	Proportional	Proportional					
Output Module	Output 3	Output 4	Output 5	Output 6	Output 7			
Output Switching	Diagonal	Diagonal	Diagonal	Diagonal	Diagonal	Diagonal	Diagonal	Diagonal
Hom Operation	Output	Output	Output	Output	Output	Output	Output	Output

You can access the Mode “Xbox Adaptive” via the User Menu of Omni2.

Remark: It is mandatory to use a DB9 to jack adaptor, such as Curtiss-Wright SA80956, to interface the I/O module with the Xbox Adaptive.

Co-Pilot solution: Copilot links two controllers so that you can assist the CoMoveIT Smart User while playing. In this case, the CoMoveIT Smart user plays through the Xbox Adaptive and the assistant uses the conventional Xbox controller.

- **Working with Speech Computers**

Solution 1 (Recommended): For people with complex movement disorders, it is recommended to use a speech computer controlled via an eye-tracker. This allows full control of the speech computer via the eye-tracker.

Indicative eye-tracker devices: EyeTech TM5 mini, Alea IntelliGaze, Tobii Dynavox PCEye 5, Tobii Dynavox PCEye Mini, Eyegaze Edge, Irisbond Hiru, Irisbond Duo, Seetech.

Solution 2: A combination of eye-tracker and CoMoveIT Smart can be used. For example, use of the eye-tracker for cursor control and CoMoveIT Smart via Omni2 Bluetooth for click and select. Another example, use of the eye-tracker for click and select and CoMoveIT Smart via Omni2 Bluetooth cursor control.

Caution: This solution requires Omni2 Bluetooth to be paired with the speech computer. Please see Bluetooth Control for Android and Bluetooth Control for iOS.

Solution 3: Full control with CoMoveIT Smart via Bluetooth. In this solution, the speech computer is controlled as a common smartphone or a tablet device. Please see Bluetooth Control for Android and Bluetooth Control for iOS.

- **Control Speech Computer Arm**

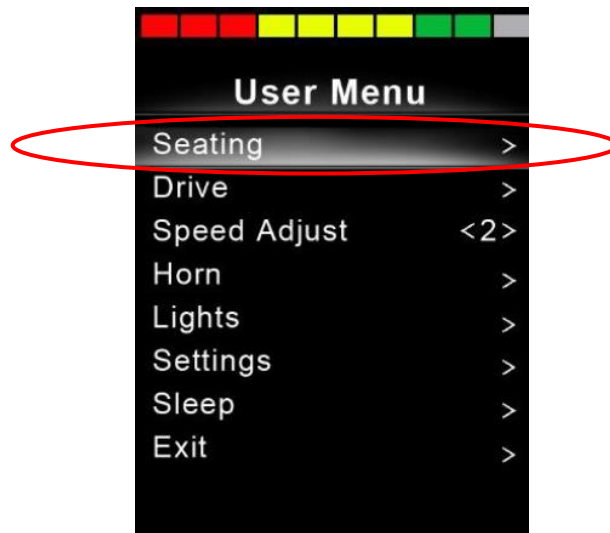
The actuator of the arm can be connected to the seating module of the wheelchair and can be controlled via CoMoveIT Smart by accessing the seating functions on the User Menu. The actuators of the arm must have a 24 Volts DC operational voltage. The principle of operation of the actuator must be the following: When a +24V DC voltage is applied, the actuator must be expanded or contracted. When a -24V DC voltage is applied, the actuator must be expanded or contracted. To avoid confusion, the following two scenarios are possible.

Scenario 1: On the application of a +24V DC voltage, the actuator is expanded, and on the application of a -24V DC voltage, the actuator is contracted.

Scenario 2: On the application of a +24V DC voltage, the actuator is contracted, and on the application of a -24V DC voltage, the actuator is expanded.

Are there any recommended actuators?

- 5) To control the motorized arm, access the User Menu on the Omni 2 Screen and select Seating.



- 6) Move the motorized arm up and down by pressing the sensor assigned as "Gas pedal" in CoMoveIT Smart was the driving direction is forward and backward respectively.

Remark:

For Permobil wheelchairs which are equipped with ICS, Permobil interface module is needed between the ICS module and the actuator. See Permobil Item: 316737 k450.

Warning:

Installing a motorized arm for the speech computers affects the center of mass of the wheelchair and might affect the stability of the wheelchair in inclined terrains.

- **Bluetooth Control for Windows-based Devices**

Solution 1 (Recommended): For people with complex movement disorders, it is recommended to control Windows-based computers via an eye-tracker. This allows full control of the Windows-based devices via the eye-tracker.

Indicative eye-tracker devices: EyeTech TM5 mini, Alea IntelliGaze, Tobii Dynavox PCEye 5, Tobii Dynavox PCEye Mini, Eyegaze Edge, Irisbond Hiru, Irisbond Duo, Seetech.

Solution 2: Full control with CoMoveIT Smart via Bluetooth. In this solution, the Windows-based device is fully controlled by CoMoveIT Smart via Bluetooth of Omni2.

Solution 2



Full Control

The following functions can be controlled using CoMoveIT Smart:

- CoMoveIT Smart Forward → Moves the cursor Up.
- CoMoveIT Smart Reverse → Moves the cursor Down.
- CoMoveIT Smart Right → Moves the cursor to the Right.
- CoMoveIT Smart Left → Moves the cursor to the Left.

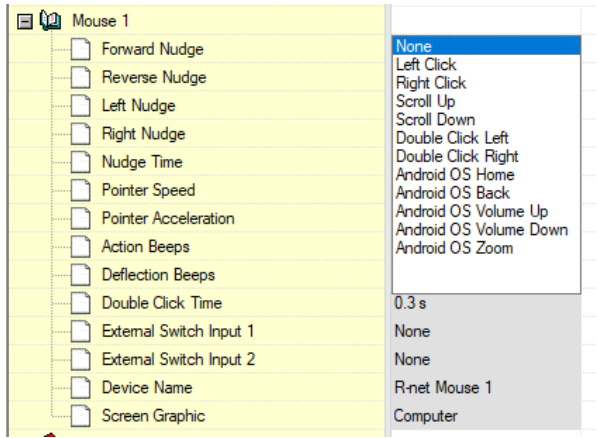
Additionally, nudge actions can be assigned to control functions. Nudge is the action of a single instant press on the sensors of CoMoveIT Smart. It is possible to program Forward, Reverse, Left, and Right Nudge. Each Nudge can be assigned to one of the following actions: Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right.

Below, there is a typical example of nudge setup:

- Forward Nudge on CoMoveIT Smart → Scroll Up
- Reverse Nudge on CoMoveIT Smart → Scroll Down
- Right Nudge on CoMoveIT Smart → Right Click
- Left Nudge on CoMoveIT Smart → Double Click Left

The Mouse function can be configured using the Rnet Programmer under **Mouse1** or **Mouse 2** Tab.

The **Nudge Time** is adjustable between 0 ms and 5000 ms, in steps of 20 ms. When the Nudge Time is set to **0**, the Nudge Function is disabled.



Remarks:

- The maximum number of control functions in this configuration is limited to eight (cursor up, cursor down, cursor left, cursor right, and four of the following functions: left click, right click, scroll up, scroll down, double click left, double click right Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom).
- The cursor can also be moved diagonally in all directions if the left or right sensor is pressed at the same time as the forward/reverse sensor in CoMoveIT Smart.
- For detailed description about Bluetooth operation in Windows – See Curtiss-Wright SK81935-02, Chapter 6, Paragraph 2.1

The cursor can also be moved diagonally in all directions if the left or right sensor is pressed at the same time as the forward/reverse sensor in CoMoveIT Smart.

Control Functions Summary

CoMoveIT Smart Input	Cursor Movement
Gas (when forward direction is enabled – green forward arrow in Omni2 Screen)	Cursor Up
Gas (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Cursor Down
Right	Cursor Right
Left	Cursor Left
Gas + Right (when forward direction is enabled – green forward arrow in Omni2 Screen)	Cursor diagonally up + right
Gas + Left (when forward direction is enabled – green forward arrow in Omni2 Screen)	Cursor diagonally up + left

Gas + Right (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Cursor diagonally down + right
Gas + Left (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Cursor diagonally down + left
Forward Nudge (when forward direction is enabled – green forward arrow in Omni2 Screen)	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right
Reverse Nudge (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right
Nudge Right	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right
Nudge Left	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right

Solution 3: Combination of CoMoveIT Smart and a Mouse Emulator

Solution 2 can be combined with the use of a Mouse Emulator. A **Mouse Emulator** is a device that is used to **interface** a **Buddy Button** with a **Computer**. CoMoveIT Smart can be used to control the functions as described in Solution 2. The mouse Emulator is used independently from CoMoveIT Smart in order to control the same Windows-based device. Buddy Buttons are connected to the Mouse Emulator and the Mouse Emulator is connected to the Windows-based device via USB or wireless depending on its type.



A Mouse Emulator can typically control the following functions: cursor up, cursor down, cursor left, cursor right, left click, right click, scroll up, scroll down, double click, middle mouse button and drag.

The functions controlled by CoMoveIT Smart and the functions controlled by the Mouse Emulator are dependent on the preferences of the user.

Below, you can see a configuration example:

- CoMoveIT Smart Forward → Moves the cursor Up.
- CoMoveIT Smart Reverse → Moves the cursor Down.
- CoMoveIT Smart Right → Moves the cursor to the Right.

- CoMoveIT Smart Left → Moves the cursor to the Left.
- Right Nudge on CoMoveIT Smart → Right Click
- Left Nudge on CoMoveIT Smart → Double Click Left
- Press Buddy Button 1 on Mouse Emulator → Left Click
- Press Buddy Button 2 on Mouse Emulator → Scroll Up
- Press Buddy Button 3 on Mouse Emulator → Scroll Down
- Press Buddy Button 4 on Mouse Emulator → Drag

Indicative Mouse Emulator devices: Shannon Electronics Mitch, Adaptive Switch Laboratories ASL 554, CSS Micro Systems Switch Mouse V2.

• Bluetooth Control for Android

Full control with CoMoveIT Smart via Bluetooth. The Android-based device is fully controlled by CoMoveIT Smart via the Bluetooth of Omni2. The operation of Android-Based devices is the same as Windows-based devices.



Full Control

The following functions can be controlled using CoMoveIT Smart:

- CoMoveIT Smart Forward → Moves the cursor Up.
- CoMoveIT Smart Reverse → Moves the cursor Down.
- CoMoveIT Smart Right → Moves the cursor to the Right.
- CoMoveIT Smart Left → Moves the cursor to the Left.

Additionally, nudge actions can be assigned to control functions. Nudge is the action of a single instant press on the sensors of CoMoveIT Smart. It is possible to program Forward, Reverse, Left, and Right Nudge. Each Nudge can be assigned to one of the following actions: Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right, Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom.

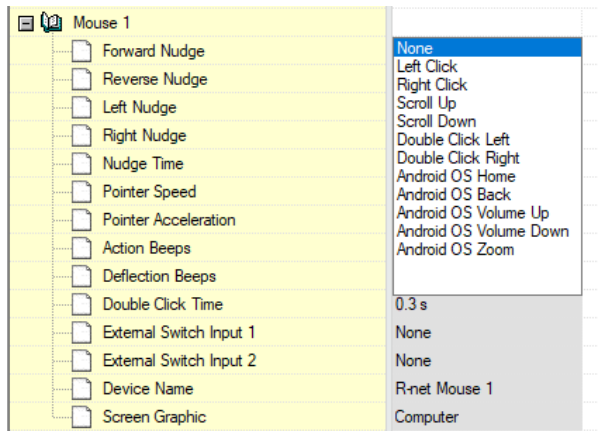
Below, there is a typical example of nudge setup:

- Forward Nudge on CoMoveIT Smart → Scroll Up
- Reverse Nudge on CoMoveIT Smart → Scroll Down
- Right Nudge on CoMoveIT Smart → Right Click

- Left Nudge on CoMoveIT Smart → Android OS Home

The Mouse function can be configured using the Rnet Programmer under **Mouse1** or **Mouse 2** Tab.

The **Nudge Time** is adjustable between 0 ms and 5000 ms, in steps of 20 ms. When the Nudge Time is set to **0**, the Nudge Function is disabled.



Remarks:

- The maximum number of control functions in this configuration is limited to eight (cursor up, cursor down, cursor left, cursor right, and four of the following functions: left click, right click, scroll up, scroll down, double click left, double click right, Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom).
- The cursor can also be moved diagonally in all directions if the left or right sensor is pressed at the same time as the forward/reverse sensor in CoMoveIT Smart.
- For detailed description about Bluetooth operation in Android – See Curtiss-Wright SK81935-02, Chapter 6, Paragraph 2.2

Control Functions Summary

CoMoveIT Smart Input	Cursor Movement
Gas (when forward direction is enabled – green forward arrow in Omni2 Screen)	Cursor Up
Gas (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Cursor Down
Right	Cursor Right
Left	Cursor Left

Gas + Right (when forward direction is enabled – green forward arrow in Omni2 Screen)	Cursor diagonally up + right
Gas + Left (when forward direction is enabled – green forward arrow in Omni2 Screen)	Cursor diagonally up + left
Gas + Right (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Cursor diagonally down + right
Gas + Left (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Cursor diagonally down + left
Forward Nudge (when forward direction is enabled – green forward arrow in Omni2 Screen)	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right, Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom
Reverse Nudge (when reverse direction is enabled – red backward arrow in Omni2 Screen)	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right, Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom
Nudge Right	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right, Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom
Nudge Left	Programmable via Rnet: None, Left Click, Right Click, Scroll Up, Scroll Down, Double Click Left, Double Click Right, Android OS Home, Android OS Back, Android OS Volume Up, Android OS Volume Down, Android OS Zoom

- **Bluetooth Control for iOS**

Full control with CoMoveIT Smart via Bluetooth. The iOS-based device is fully controlled by CoMoveIT Smart via the Bluetooth of Omni2.



Full Control

Certain CoMoveIT Smart commands via Omni2 can be assigned to iOS commands. The Omni2 commands are given below.

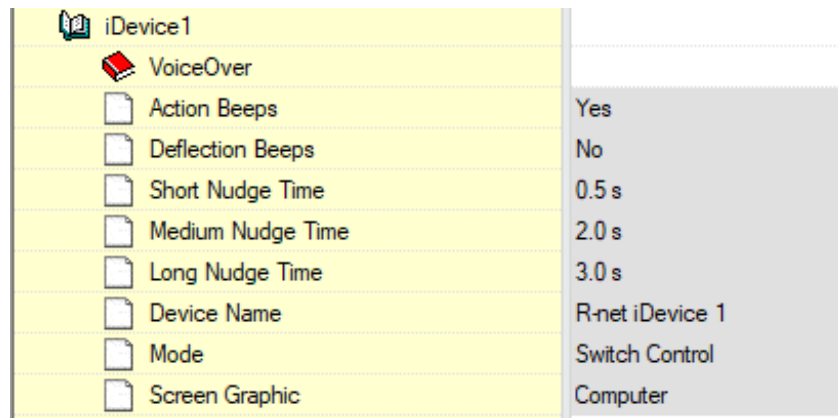
Time-related deflections (nudges) of the CoMoveIT Smart in each of the four directions:

- Forward Short
- Reverse Short

- Left Short
- Right Short
- Forward Medium
- Left Medium
- Right Medium
- Forward Long
- Reverse Long
- Left Long
- Right Long

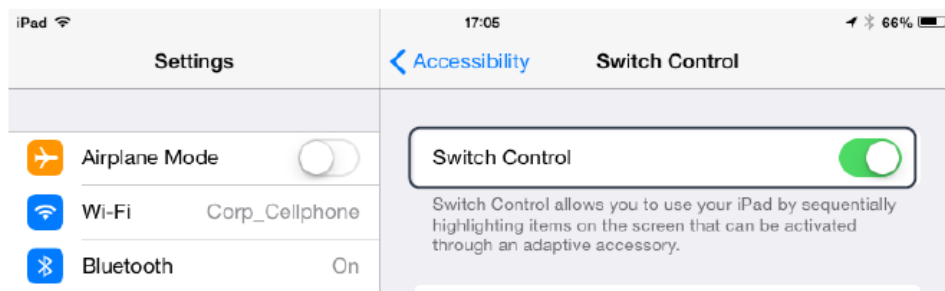
The iOS function can be configured using the Rnet Programmer under **iDevice1** or **iDevice2** Tab. Set the **Mode** to “**Switch Control**” and set the desired **Short Nudge Time, Medium Nudge Time, Long Nudge Time**.

The timings associated with the nudges are programmable. The Short Nudge Time can be adjusted between 0.1s and 2.0s, in steps of 0.1s. The Medium Nudge Time can be adjusted between 0.5s and 3.0s, in steps of 0.1s. The Large Nudge Time can be adjusted between 2.9s and 5.0s, in steps of 0.1s. Time is set to **0**, the Nudge Function is disabled.



There is a certain procedure on your iOS device to enable the Switch Control.

In your iOS device go to **Settings** menu, select **General > Accessibility**. Set **Switch Control** to On. Then select **Switches, External**, and select **Add New Switch**.



Switch Control operates by highlighting sections within the application window. Various commands are then used to navigate the sections and to select individual applications.

The functions that can be controlled on the iOS device are the following: Home Button, App Switcher, Select Item, Move To Next Item, Move To Previous Item, Stop Scanning, Resume Auto Scanning, Increase Volume, Decrease Volume.

SWITCHES	
Forward Long	Resume Auto Scanning >
Forward Medium	App Switcher >
Forward Short	Select Item >
Left Medium	Decrease Volume >
Left short	Move To Previous Item >
Reverse Long	Stop Scanning >
Reverse Medium	App Switcher >
Reverse Short	Home Button >
Right Medium	Increase Volume >
Right short	Move To Next Item >
Add New Switch...	>

One switch should be assigned to the Select Item action and another to the Move To Next Item action, to ensure Switch Control functions correctly.

Remarks:

- In order to use Switch control, make sure that Assistive Touch is disabled.
- Accessibility there are Auto Scanning and Auto Hide options. It is recommended that these options are turned off for the initial set up.
- For detailed description about Bluetooth operation in iOS – See Curtiss-Wright SK81935-02, Chapter 6, Paragraph 2.3.

• Peripheral Control Using Housemate

The combination of CoMoveIT Smart and Housemate allows you to control peripheral devices with just one press on the desired sensor of CoMoveIT Smart. For example, any function can be controlled by pressing on the right head pad of CoMoveIT Smart. A single press is enough to activate the HouseMate transmitter and trigger the HouseMate app on your smartphone or tablet.

The Housemate app scans through the list of your peripheral devices, and a simple press on CoMoveIT Smart allows you to control the desired device.

You can interface CoMoveIT Smart to HouseMate using the Rnet Input/Output module.



Rnet Input/Output module set up for interfacing CoMoveIT Smart with HouseMate.

In the Rnet Programmer, under **Configuration** tab, create a Mode for the Rnet Input/Output module. It is recommended to give a distinctive name to the Mode (e.g. **Housemate**). Set **Input** to “Raw” and select the **Output** number of the Input/Output module.

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Profile Management	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Configuration	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8
Mode Name	Drive	Seating	IR Control	Housemate	Mode 5	Mode 6	My Devices	Programming
Input	Drive	Seating	Drive	Raw	Seating	Seating	Raw	Programming
Intermediate	None	None	None	None	None	None	None	None
Output	Drive	Seating	IR Control	Output 6	Seating	Seating	Omni2 Bluetooth	Programming

Caution: Make sure that the internal output selector switch of the Rnet Input/Output module matches the Output number in the Configuration.

In the Rnet Programmer, under **Input Output Module** tab, select **Input Type “Switch”**. On the **Output Switching** select **“Four Way”**.

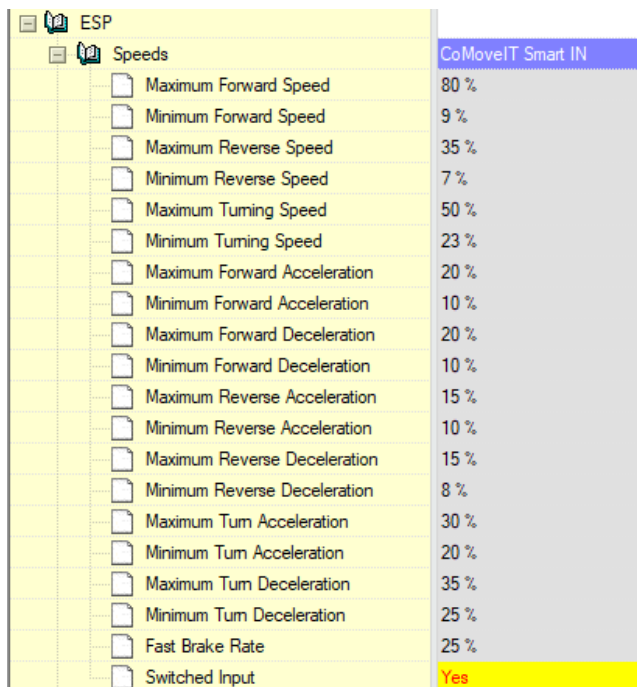
	Input 1	Input 2	Input 3		
Input Output Module	Input 1	Input 2	Input 3		
Input Module	Input 1	Input 2	Input 3		
Input Type	Switch	Switch	Switch		
Output Module	Output 3	Output 4	Output 5	Output 6	Output 7
Output Switching	Four-Way	Four-Way	Four-Way	Four-Way	Four-Way
Hom Operation	Output	Output	Output	Output	Output

You can access the Mode “Housemate” via the User Menu of Omni2.

Remark: It is mandatory to use a DB9 to jack adaptor, such as Curtiss-Wright SA80956, to interface the I/O module with the HouseMate.

- **Permobil ESP Configuration for Switched Input Device**

When using a CoMoveIT Smart with a Permobil wheelchair, please ensure that the speeds on each driving profile are set under **ESP** tab, **Speeds** section. Additionally, due to the fact that CoMoveIT Smart is digital (switched input) device, ensure that you set the **Switched Input** to “**Yes**”.



ESP		CoMoveIT Smart IN
Speeds		
<input type="checkbox"/> Maximum Forward Speed	80 %	
<input type="checkbox"/> Minimum Forward Speed	9 %	
<input type="checkbox"/> Maximum Reverse Speed	35 %	
<input type="checkbox"/> Minimum Reverse Speed	7 %	
<input type="checkbox"/> Maximum Turning Speed	50 %	
<input type="checkbox"/> Minimum Turning Speed	23 %	
<input type="checkbox"/> Maximum Forward Acceleration	20 %	
<input type="checkbox"/> Minimum Forward Acceleration	10 %	
<input type="checkbox"/> Maximum Forward Deceleration	20 %	
<input type="checkbox"/> Minimum Forward Deceleration	10 %	
<input type="checkbox"/> Maximum Reverse Acceleration	15 %	
<input type="checkbox"/> Minimum Reverse Acceleration	10 %	
<input type="checkbox"/> Maximum Reverse Deceleration	15 %	
<input type="checkbox"/> Minimum Reverse Deceleration	8 %	
<input type="checkbox"/> Maximum Turn Acceleration	30 %	
<input type="checkbox"/> Minimum Turn Acceleration	20 %	
<input type="checkbox"/> Maximum Turn Deceleration	35 %	
<input type="checkbox"/> Minimum Turn Deceleration	25 %	
<input type="checkbox"/> Fast Brake Rate	25 %	
<input type="checkbox"/> Switched Input	Yes	

- **How to control TVs and similar devices such as Radios, DVDs, Blu-ray Players, etc.?**

To control TV and similar devices please consult sections “**Control Multiple Peripherals from one Device**” and “**Peripheral Control Using Housemate**”. If none of these methods are suitable for you, then the traditional Infrared communication embedded in the Omni2 Module can be used with CoMoveIT Smart.

The Omni2 Display Section includes an IR transmitter and receiver that allows it to replicate commonly used IR devices, such as remote controls for TVs, DVDs, Cable/Satellite or environmental controls such as automatic door openers, and any other device that uses IR communication.

IR Mode is accessed via the User Menu on the Omni2 screen. Any function of your device’s remote control can be programmed on the IR Control of Omni2.

The IR Control Mode is set up using the Rnet Programmer software. In the Rnet Programmer, under **Configuration** tab, create a Mode for the IR Control. It is recommended to give a distinctive name to the Mode (e.g. **IR Control**). Set **Input** to “Raw” and select the **Output “IR Control”**.

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Profile Management								
Profile Name	CoMoveIT Smart IN	CoMoveIT Smart L	CoMoveIT Smart M	CoMoveIT Smart H	CoMoveIT Smart VH	Profile 6	Profile 7	Attendant
Profile Enable	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Mode Enable	[1234 7]	[1234 7]	[1234 7]	[1234 7]	[1234 7]	[]	[7]	[1234 78]
Input Device Type	Omni	Omni	Omni	Omni	Omni	Omni	Omni	JSM
Input Device Subtype	All	All	All	All	All	All	All	All
Seat Reversal Profile	No	No	No	No	No	No	No	No
Allow Grab	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Configuration								
Mode Name	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8
IR Mode	Drive	Seating	IR Control	Mitch	Mode 5	Mode 6	My Devices	Programming
Input	Drive	Seating	Raw	Drive	Seating	Seating	Raw	Programming
Intermediate	None	None	None	None	None	None	None	None
Output	Drive	Seating	Output 3	Output 3	Seating	Seating	Omni2 Bluetooth	Programming
Speeds	CoMoveIT Smart IN	CoMoveIT Smart L		CoMoveIT Smart H	CoMoveIT Smart VH	Profile 6	Profile 7	Attendant
Controls								
Latched	CoMoveIT Smart IN	CoMoveIT Smart L		CoMoveIT Smart H	CoMoveIT Smart VH	Profile 6	Profile 7	Attendant
Seating								
Battery								
General								
Motor								
Inhibits								
Lights								

Caution: This control method can only be used with devices that support Infrared (IR) control.



+ IR of Omni2

- Is CoMoveIT Smart compatible with Omni1 module?

Yes, CoMoveIT Smart is compatible with Omni1 module.

- Is CoMoveIT Smart compatible with Invacare LiNX module?

Currently, CoMoveIT Smart is not compatible with Invacare LiNX module.

- Is CoMoveIT Smart compatible with Quantum Q-Logic 3 module?

Yes, CoMoveIT Smart is compatible with Quantum Q-Logic 3 module.

- **Is CoMoveIT Smart compatible with Curtis Instruments X1 module?**

Yes, CoMoveIT Smart is compatible with Curtis Instruments X1 module.

- **How to integrate CoMoveIT Smart with Mo-vis Scoot control?**

You can use CoMoveIT Smart as the input control device for the patient, and Mo-vis Scoot as the input device for the attendant. For this configuration the Scoot control must be set up as **Attendant Input Device** type.

Hold S6 for > 2 seconds

Grab focus

Press long to grab control of the power chair. See *Scoot Control Installation Manual* for more information.

Using the Scoot Control as Attendant Input Device Type

Profile Management	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Profile Name	Drive	CoMoveIT Smart L	CoMoveIT Smart H	SC Cruise No Assist	SC Cruise	Profile 6	No assist	Scoot Control
Profile Enable	Yes	Yes	Yes	No	No	No	No	Yes
Mode Enable	[12345678]	[12345678]	[12345678]	[1]	[12]	[1]	[1]	[12345678]
Input Device Type	JSM	Omni	Omni	Omni	Omni	Universal	Universal	Attendant
Input Device Subtype	All	All	All	All	All	All	All	All
Seat Reversal Profile	No	No	No	No	No	No	No	No
Allow Grab	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

If the Scoot Control is set as **Attendant**, then the Scoot Control will always start up in the last used profile.

When you press S6 for more than 2 seconds, the **Attendant Profile** will grab the focus. You have **no access to the modes**.

When you press S6 again for longer than 2 seconds, you go back to the last used profile and **give the focus back** to the person in the wheelchair.

By default, the parameter **Controls > Global > Profile Button** is set to **Profiles/Modes** in R-net.

Controls	
Global	
Momentary Screens Enabled	Yes
Change Profile while Driving	Yes
Change Speed while Driving	Yes
Actuator Switches while Driving	No
Speed Adjust	Yes
Profile Button	Profiles / Modes
Actuator Endstop Beep	No
Sounder Volume	1
Horn Volume	Low
Start-Up Beep	No
Lock Function Enabled	Both
Reverse Driving Alarm	No
OBP Keycode Entry	No
Power-up Mode	Drive
External Profile Jack Detect	Off
External On/Off Jack Detect	Off

Caution: When you use the Scoot Control as Attendant Input Device Type, the attendant does not have direct access to the modes. For example, if the attendant wants to adjust the seating of the powered wheelchair, an external Curtiss-Wright CJS2 compatible Actuator Keyboard must be added.

- How to integrate/steer a Robotic arm like Kinova or Assistive Technologies?

Robotic arms are interfaced via the seating actuator module of the powered wheelchair. The robotic arms can be controlled via CoMoveIT Smart in the same way as the seating actuators of the powered wheelchair (tilt, lift, recline, etc.).

The robotic arm control mode is located in the User Menu of the Omni2 screen in the **Seating Mode**.

Caution: In robotic arms, such as Kinova Jaco, a buddy button must be connected on the interface of the arm to allow the selection of the axis movement of the arm.

- Controlling swing away arm for buddy buttons, etc.

The swing Away arm can be controlled in two ways: Using CoMoveIT Smart or using a buddy button.

Solution 1: The combination of CoMoveIT Smart and the swing away arm allows you to control the swing away arm with just one press on the desired sensor of CoMoveIT Smart. For example, the swing away arm can be controlled by pressing on the right head pad of CoMoveIT Smart. A single press is enough to activate the swing away arm.

You can interface CoMoveIT Smart to the swing away arm using the Rnet Input/Output module.



Rnet Input/Output module set up for interfacing CoMoveIT Smart with swing away arm.

In the Rnet Programmer, under **Configuration** tab, create a Mode for the Rnet Input/Output module. It is recommended to give a distinctive name to the Mode (e.g. **Swing Away Arm**). Set **Input** to “Raw” and select the **Output** number of the Input/Output module.

Configuration	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8
Mode Name	Drive	Seating	Bluetooth	IR Control	Bluetooth OMNI	Swing Away Arm	IOM 3	Programming
Input	Drive	Seating	Raw	Raw	Raw	Raw	Raw	Programming
Intermediate	None	None	None	None	None	None	None	None
Output	Drive	Seating	Bluetooth	IR Control	Omni2 Bluetooth	Output 4	Output 5	Programming

Caution: Make sure that the internal output selector switch of the Rnet Input/Output module matches the Output number in the Configuration.

In the Rnet Programmer, under **Input Output Module** tab, select **Input Type “Switch”**. On the **Output Switching** select **“Four Way”**.

Input Output Module	Input 1	Input 2	Input 3	Output 6	Output 7
Input Module	Input 1	Input 2	Input 3		
Input Type	Switch	Switch	Switch		
Output Module	Output 3	Output 4	Output 5	Output 6	Output 7
Output Switching	Four-Way	Four-Way	Four-Way	Four-Way	Four-Way
Hom Operation	Output	Output	Output	Output	Output

You can access the Mode “Swing Away Arm” via the User Menu of Omni2.

Caution: It is mandatory to use a DB9 to jack adaptor, such as Curtiss-Wright SA80956, to interface the I/O module with the Swing Away Arm.

Solution 2: Simply connect a buddy button to the Swing Away Arm to control it.

Customization and Control Options:

- Is CoMoveIT Smart available in various sizes?

CoMoveIT Smart head array and foot pads are only available in one size. Thanks to the multiple degrees of freedom of the head array, the size of the head array is adjustable and accommodates the needs of all end users, ranging from kids to adults.

In cases where a larger head array is needed, feel free to contact us. The foot pads of CoMoveIT Smart are also offered in one size. Thanks to Velcro attachment mechanism you can place the foot pads on the footrest of the wheelchair in your desired position.

- Change Name in User Menu Items (to make them recognizable)

In cases where the user is unable to read or understand the User Menu items, it is possible to change the name of the items in the User Menu to a name that the user is able to recognize. For example, Mode Name: Drive can be renamed to AAA or similar.

Profile Management	Profile 1	Profile 2	Profile 3
Configuration	Mode 1	Mode 2	Mode 3
Mode Name	Drive	Seating	Bluetooth
Input	Drive	Seating	Raw
Intermediate	None	None	None
Output	Drive	Seating	Omni2 Bluetooth

Profile Management	Profile 1	Profile 2	Profile 3
Configuration	Mode 1	Mode 2	Mode 3
Mode Name	AAA	BBB	ZZZ
Input	Drive	Seating	Raw
Intermediate	None	None	None
Output	Drive	Seating	Omni2 Bluetooth

The items will appear on the User Menu with their new names. In this example AAA = Drive, BBB = Seating, ZZZ = Bluetooth.

- Limit seating functions in the User Menu

It is possible to have the amount of seating functions (tilt, lift, recline, etc.) that the user wishes to control on the User Menu. For example, you can have just one seating function on the User Menu.

Below, there is an example of the settings when all the seating actuators are programed.

Seating						
ISM-8/CxSM						
Intelligent Seating Module						
Global						
Axis Setup	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
Axis Channels	[4]	[5]	[3]	[2]	[1]	[12]
Axis Display	[123]	[3 6]	[1]	[5]	[4]	[45]
Invert Axis Direction	Yes	Yes	Yes	Yes	Yes	Yes
Axis Name	Tilt	Lift	Recline	Left legrest	Right legrest	Both legrests
Channels	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6

In the picture below, you can see the settings when only one seating function is desired to be controlled (Only tilt control in this case).

Seating						
ISM-8/CxSM						
Intelligent Seating Module						
Global						
Axis Setup	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5	Axis 6
Axis Channels	[4]	[]	[]	[]	[]	[]
Axis Display	[123]	[]	[]	[]	[]	[]
Invert Axis Direction	Yes	Yes	Yes	Yes	Yes	Yes
Axis Name	Tilt	Lift	Recline	Left legrest	Right legrest	Both legrests
Channels	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6

Warning: This setting will prevent you from controlling the other seating functions from the joystick. This is due to the fact that seating functions are declared globally on the Rnet.

- **Change Items Colors in the User Menu.**

Unfortunately, it is not possible to change the colors of the User Menu itself, or the color of each object in the User Menu.

- **Icons instead of text in the User Menu**

Unfortunately, it is not possible to view icons instead of text in the User Menu.

- **Change the text font size in the User Menu**

Unfortunately, it is not possible to change the font size of the text in the User Menu.

- **How to change the sensitivity level of the sensors?**

It is not possible to change the sensitivity level of the sensors. The sensitivity is constantly changing based on the user inputs thanks to the adaptive algorithm of CoMoveIT.

Remark: There is always a minimum sensitivity value, below which the sensitivity cannot furtherly decreased.

- **Can I change the hierarchy of the Items in the Omni2 Menu?**

The hierarchy of the items in the User Menu can be changed to fulfill the needs of each user. The position of each item can be setup at will in the Rnet programming software in the **Omni** tab, section **Ports**, subsection **User Menu**.

The maximum number of items in the User Menu is 16.

The screenshot shows the 'Omni User Menu Edit' dialog box for Port 2. The dialog contains two main sections: 'User Menu Position' and 'Actual User Menu Display'.

User Menu Position	Type	Actual User Menu Display
1 Drive	Entry	Drive >
2 Drive	List	1: CoMoveIT Smart IN >
3 Seating	Entry	2: CoMoveIT Smart M >
4 Speed Adjust	-	4: CoMoveIT Smart IN >
5 Bluetooth	Entry	5: CoMoveIT Smart M >
6 IR Mode	Entry	6: CoMoveIT Smart OUT >
7 Settings	-	Seating >
8 Lights	-	Speed Adjust <1>
9 Horn	-	Bluetooth >
10 Sleep	-	IR Mode >
11 Exit	-	Settings >
12 Sleep	-	Lights >
13 Blank	Entry	Horn >
14 Blank	Entry	Sleep >
15 Blank	Entry	Exit >
16 Blank	Entry	Sleep >

Open topics

- Control functions while Driving (including the example of opening an elevator + what is needed on the side of the elevator)

In progress (with RTD).

- How to integrate CoMoveIT Smart with Uniscanner?

In progress (with RTD).

- How to configure a CoMoveIT Smart on a stand-up powered wheelchair?

In progress

See Inhibits in Vassilli wheelchair configuration.

Use left head press instead of foot press to control the stand-up seating.

To prevent driving from moving forward when the seat is up and the foot is pressed use speed limit in inhibit 80%.