



KINOVA™ OLED Display

# User Guide

**KINOVA**  
Achieve Extraordinary

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## ABOUT THIS DOCUMENT

This guide contains information regarding the setup and comprehension of the Kinova OLED Display (PD 0505 0001).

## INSTRUCTIONAL ICONS

Throughout the manual, icons are used to draw the reader's attention. Each icon is explained below.



**Notice:** General important information and good practice



**Caution:** Safety measure that could lead to equipment damage if ignored



**Warning:** Safety measure that could lead to injury if ignored

Kinova assumes no liability of any kind if safety measures are not followed. Please read all the information concerning this product before using it.

This document is addressed to Kinova's authorized, certified partners, distributors and end users.

## SYMBOLS, DEFINITIONS AND ACRONYMS



Refer to accompanying documents



Compliance with WEEE<sup>1</sup> directive



Compliance with ROHS<sup>2</sup> directive



Type BF Applied Part device

<sup>1</sup> Waste electrical and electronic equipment

<sup>2</sup> Restriction of hazardous substances

## GENERAL INFORMATION

The Kinova OLED Display is an optional accessory that was designed to make the control of the robot more intuitive by providing users with a visual reference of the current modes and status of the robot.

The display was designed to be used with Kinova's Universal Interface. Using the display without the Universal Interface device may result in undesired behavior. The device connects to the universal interface using Kinova's standard circular connectors. The device communicates with the robot by using Kinova's proprietary CAN communication protocol.

## MARKING AND LABEL

Please note that these labels may slightly differ from the ones accompanying your device depending of your country. The following figure depicts the information on the label affixed on the back of the display module.



Figure 1 - KII Display Label

## DISPOSAL

### FOR PRIVATE HOUSEHOLDS

This WEEE symbol on the product(s) and / or accompanying documents means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge. Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product. Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point. Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

### FOR PROFESSIONAL USERS IN THE EUROPEAN UNION

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.

### FOR DISPOSAL IN COUNTRIES OUTSIDE OF THE EUROPEAN UNION

This symbol is only valid in the European Union (EU). If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

## DIMENSIONS

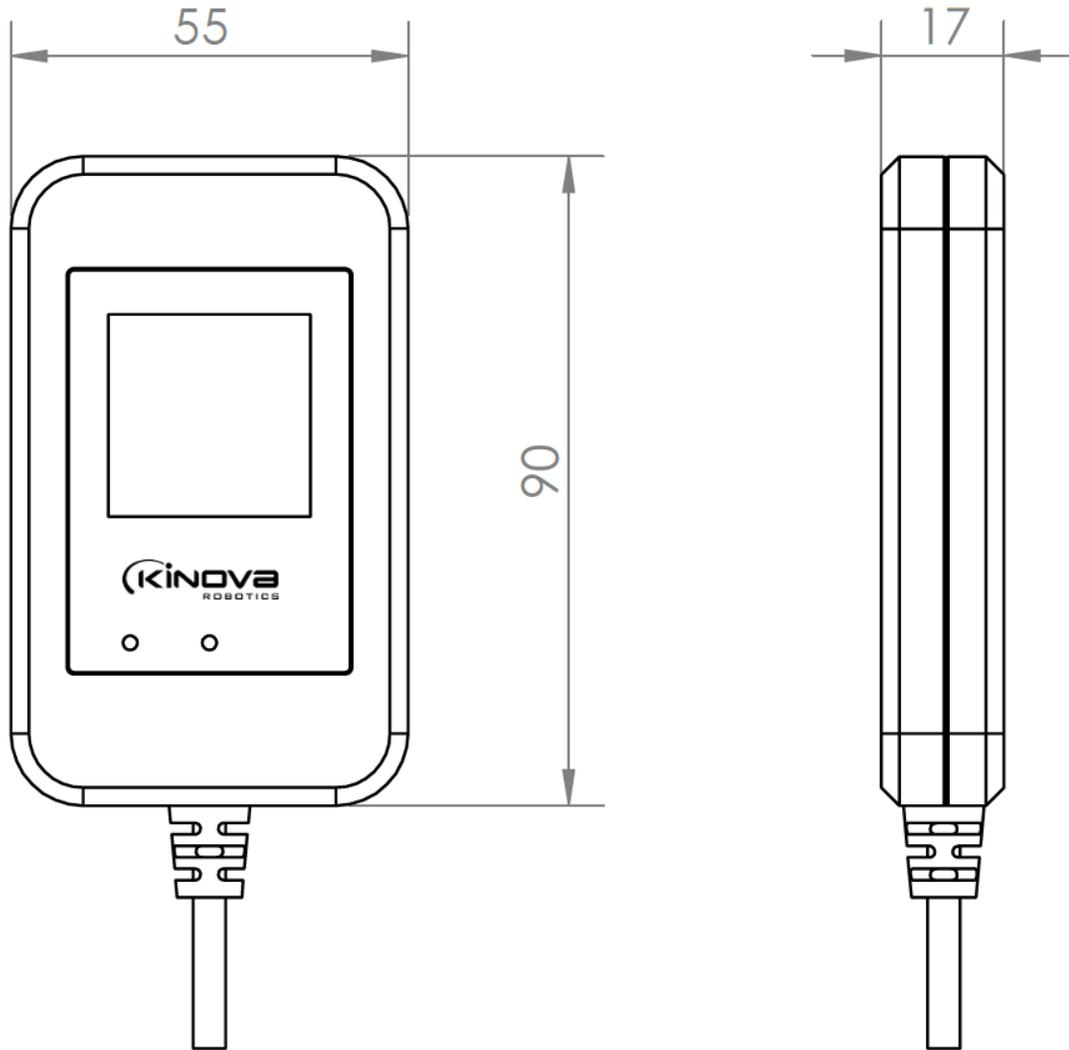


Figure 2 - Display Module Dimensions

 All dimensions are in mm.

## PARTS IDENTIFICATION

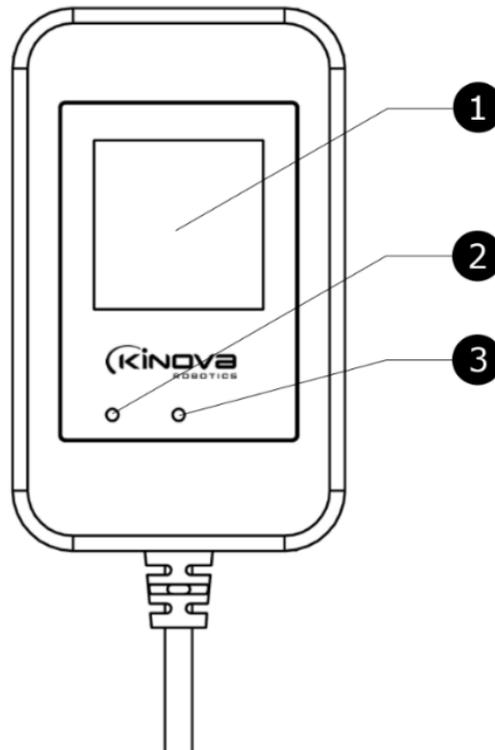


Figure 3 - Display Module Parts Identification

REFERENCE NUMBER	DESCRIPTION
1	<p><b>LCD SCREEN</b></p> <p>Color liquid crystal display screen used to display information on the robotic arm modes and status.</p>
2	<p><b>LED INDICATOR</b></p> <p>The blue LED indicator is used to give feedback on the display power and connection status at start up.</p> <ul style="list-style-type: none"> <li>• <b>Power Up sequence:</b> The indicator will blink</li> <li>• <b>Normal working mode:</b> The indicator should be on</li> <li>• <b>Stand-by mode:</b> The indicator is off</li> </ul>
3	<p><b>AMBIENT LIGHT SENSOR</b></p> <p>The ambient light sensor is used to sense environmental lighting conditions and adjusts the screen's brightness accordingly.</p>

## SPECIFICATIONS

ENVIRONMENT	General	<ul style="list-style-type: none"><li>- Ambient temperature from -20°C to 70°C</li><li>- Can be used under light rainfall for a limited period of time (IPX2).</li><li>- Can be used under normal atmospheric pressure conditions.</li></ul>
	Storage	<ul style="list-style-type: none"><li>- Ambient temperature from 0°C to 50°C</li><li>- Relative Humidity: max 55%</li></ul>
ELECTRICAL	Power Ratings	<ul style="list-style-type: none"><li>- Voltage: 24 VDC</li><li>- Current consumption: 0.09A Max (Fused 0.5A)</li></ul>

## WATER RESISTANCE

The display module is designed to support light rain. User should keep exposure to rain as minimal as possible.

- ⚠ Do not submerge device under water
- ⚠ Do not expose device to water with moving force
- ⚠ If the device is dropped, hit or endures any damage, the water resistance may be affected.

## INSTALLATION GUIDELINES

When installing the control system components, please follow the general guidelines detailed in this section.

### MOUNTING

The display comes equipped with industrial Velcro™ installed on the back of the device. Peel off the protective plastic and stick the Velcro™ to the desired surface. For optimal mounting, use the Kinova display holder (Part number: AM 1241 0001).

### POSITION

The display should be installed in a proper position so that the user can see the screen and feedback lights clearly from his normal position in the wheelchair.

- ⚠ Make sure that the device is not blocking the user's view of critical areas.
- ⚠ Make sure that the device or mounting system does not interfere with the wheelchair controls.

### CABLES

Cables should be mounted in a way to prevent damage to the cables or safety hazard for the user.

- 🚫 Make sure they do not interfere with motion of the wheelchair or any of its components and accessories.
- 🚫 Do not overtighten the tie wraps as this could result in cable damage.
- 🚫 Make sure there are no free hanging cables or big cable loops hanging outside the wheelchair's wheelbase to prevent any interference with the surrounding environments.
- ⚠ Route the cable in a way that it will not be subjected to pinch points. Be very careful around lift mechanism, hinges and pivot points. A cable that is not installed properly can result in a cable damage and electrical hazard.
- ⚠ Do not try to modify, cut or alter cable in any way.

## CONNECTION OF THE DISPLAY

The display uses a circular 8-pin connector type that must be connected to the right port depending on the product.

## INSTALLATION SAFETY PRECAUTIONS

- ❗ If you are having some difficulties when trying to connect the circular connector to the Universal Interface, do not try to apply more force. You may be using the wrong port. The Universal Interface uses multiple types of similar circular connectors, each with different pin configurations.
- ❗ Do not over tighten the connector. Screw the connector using two fingers and stop when you encounter some resistance.
- ❗ Always power-off the system before plugging / unplugging any connectors.

## USING THE UNIVERSAL INTERFACE V1 (PC 0000 0002)

When using a Universal Interface V1, connect the display to the Auxiliary port #1.

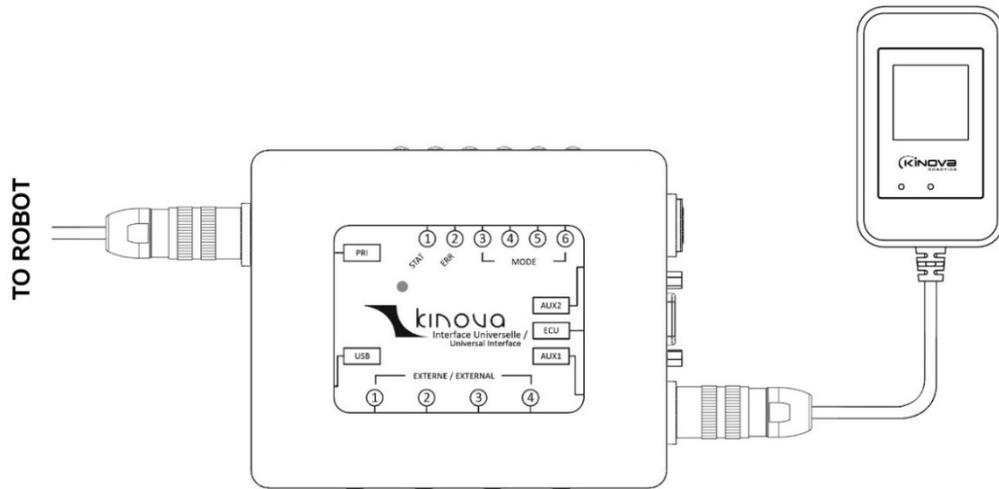


Figure 4 - Universal Interface V1 Connection

## USING THE UNIVERSAL INTERFACE V2 (PC 0000 0003)

When using a Universal Interface V2, connect the display to the “PASS” port.

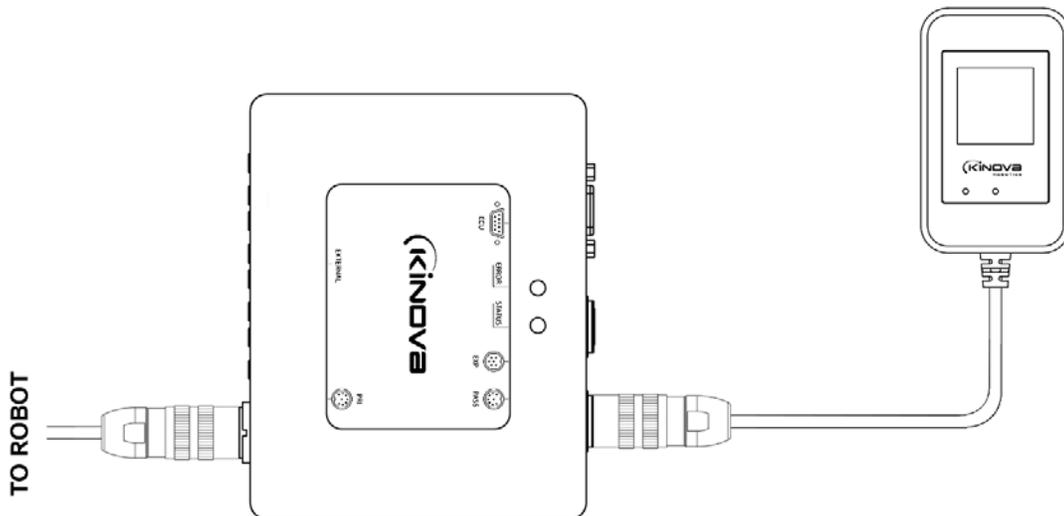


Figure 5 - Universal Interface V2 Connection

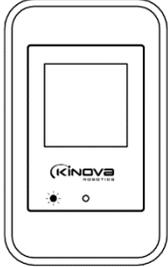
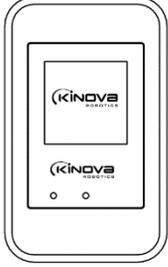
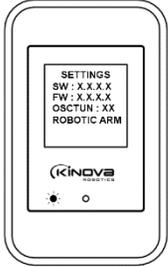
## USING THE DISPLAY

### PRECAUTIONS

- ❗ Always power-off the system before plugging / unplugging any connectors.
- ❗ Wait for the device to reach room temperature prior to using it.
- ❗ Do not immerse any part of the device in water or snow.

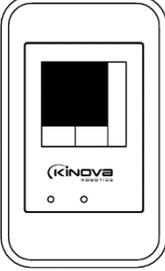
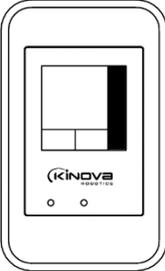
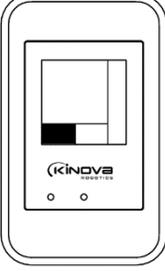
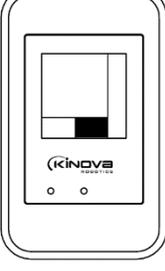
### POWER UP SEQUENCE

The display is powered by the robotic arm. When the arm is turned on, the display device should turn on automatically. When powered up, the following screen sequence can be observed.

STEP	DEVICE DISPLAY	DESCRIPTION
1		<b>Blank Screen</b> <ul style="list-style-type: none"> <li>• Blank Screen, no display four about 10 seconds</li> <li>• Blue indicator On</li> </ul>
2		<b>Kinova Logo</b> <ul style="list-style-type: none"> <li>• Kinova logo is displayed for about 5 seconds</li> <li>• Blue indicator OFF</li> </ul>
3		<b>Settings Screen</b> <ul style="list-style-type: none"> <li>• Settings information is displayed for up to 2 seconds.</li> <li>• Blue indicator blinking</li> <li>• In case of troubleshooting, the support technician may request the have the setting screen information. If you did not have time to note everything, you can see it again by rebooting the robot arm.</li> </ul>

## SCREEN SECTIONS

The following figure presents the different screen section and their purpose.

DEVICE DISPLAY	DESCRIPTION
	<p><b>Main Section</b></p> <ul style="list-style-type: none"> <li>• Display Possible movements in current mode</li> <li>• Display Active movements currently in progress</li> </ul>
	<p><b>Status Section</b></p> <ul style="list-style-type: none"> <li>• Display Different arm status information</li> </ul>
	<p><b>Mode Section</b></p> <ul style="list-style-type: none"> <li>• Display the current mode and index</li> </ul>
	<p><b>Function Section</b></p> <ul style="list-style-type: none"> <li>• Display functions details</li> <li>• Display Error and warning signals</li> </ul>

## STATUS SECTION

The status section regroups all icons that are related to the robot's movement status.

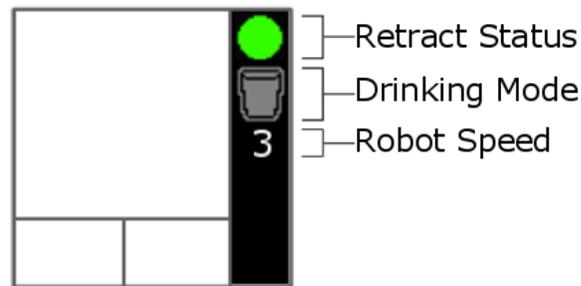


Figure 6 - Status Section Icons

### RETRACT STATUS ICON

The retract icon is used to communicate the state of the robot. The Retract icon is located at the top right corner of the display.

ICON	STATE	INFORMATION
 Steady Green	Ready	The arm is ready to use and can be controlled by the user
 Steady Orange	Retracted	The arm is in its RETRACTED (stored) position
 Blinking Orange	In Progress	The arm is between its HOME (ready) and RETRACTED (stored) position.  The user should press and hold the retract button to move the robot to the retracted or ready position

### DRINKING MODE ICON

The drinking mode is located below the Retracted status icon. The drinking mode is represented by a glass.

ICON	INFORMATION
 Greyed out glass	The drinking mode is available in the current mode but not currently active
 Colored glass	The drinking mode is currently active
No mug/glass	The drinking mode is unavailable and inactive

## ROBOT SPEED ICON

The speed icon is located below the drinking mode icon. The speed is represented by a number. A higher value number means the arm will move faster.

NUMBER	INFORMATION
1	Lowest speed
2	Low speed
3	High Speed
4	Highest speed

## MODE SECTION

The current mode is shown at the bottom left of the screen. It is used to communicate information about the currently active controller mapping.

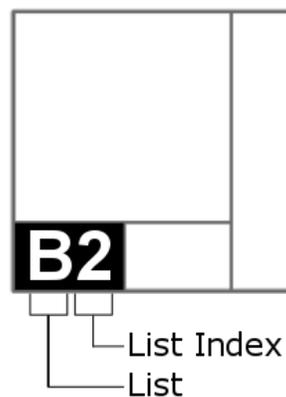


Figure 7 - Mode Section Details

## CURRENT MODE LIST

There are two lists available, "A" and "B".

## CURRENT MODE LIST INDEX

Each list can store up to 6 different controller mapping represented by numbers from 1 to 6

## FUNCTION SECTION

The function section is primarily used to display available advanced arm functionalities such as pre-recorded position, advanced pre-recorded positions and automatic orientation. Additionally, this section is also used to display errors and warnings.

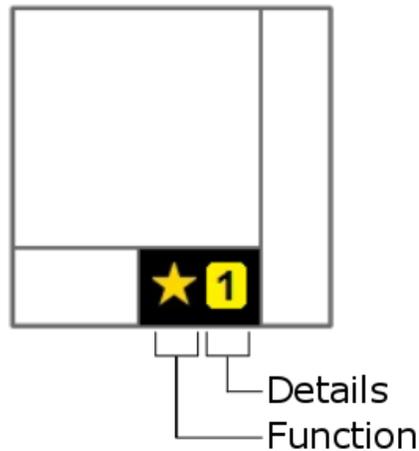


Figure 8 - Function Section Details

### AVAILABLE FUNCTION ICONS

When a special function or multiple special functions are available in the current mode, the following icons will be displayed on the left side of the function section

ICONS	INFORMATION
 Star with red circle	The current mode has both RECORD and Goto functions available in the current mode
 Star with S letter	Only standard Goto pre-defined positions are available in the current mode
 Star with A letter	Only advanced Goto pre-defined positions are available in the current mode
 Star with O letter	Only automatic orientations are available in the current mode
 Star with no letter	The current mode has more than one different types of functions available in the current mode but no RECORD

## ACTIVE FUNCTION ICONS

When a specific function is activated, the type and index will appear. After 5 seconds, the index will go blank and the function type will go back to the original “Available Function” icon for the current mode.

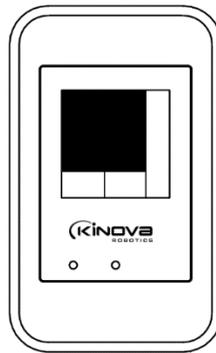
FUNCTION TYPE ICON	INDEX ICON	INFORMATION
 Standard Goto		Index of the running standard Goto
 Advanced Goto	 	Index of the running advanced Goto  The +/- icon indicates that an “add current position” command or a “clear advanced Goto” command has been sent.
 Automatic Orientation		Hand facing up
		Hand facing down
		Hand facing left
		Hand facing right
		Hand facing forward
		Hand facing backward

USE EXAMPLE		
STEP	ICON	DESCRIPTION
1		<p><b>Condition:</b></p> <ul style="list-style-type: none"> <li>No joystick command is sent</li> <li>One Standard Goto and one automatic orientation is present in the current mode</li> </ul> <p><b>Display:</b></p> <ul style="list-style-type: none"> <li>The display shows the empty star.</li> </ul>
2		<p><b>Condition:</b></p> <ul style="list-style-type: none"> <li>User pressed the button corresponding to the standard Goto 2</li> </ul> <p><b>Display:</b></p> <ul style="list-style-type: none"> <li>Icon changes to the star with an S inside</li> <li>No. 2 indicates executing the function Goto 2</li> </ul>
3		<p><b>Condition:</b></p> <ul style="list-style-type: none"> <li>User is still pressing the Goto 2 button</li> <li>More than five seconds have elapsed</li> </ul> <p><b>Display:</b></p> <ul style="list-style-type: none"> <li>Icon switches back to the empty star</li> <li>No. 2 is still there executing function Goto 2</li> </ul>

## OTHER ICONS

ICON	INFORMATION
 Orange Triangle	<p><b>Error</b></p> <ul style="list-style-type: none"> <li>When an error is detected, the orange triangle will override any Goto indicator until the error is cleared.</li> </ul> <p><b>Minor errors:</b></p> <ul style="list-style-type: none"> <li>Orange Triangle Icon</li> <li>Display beeps twice</li> <li>Main screen section not affected</li> </ul> <p><b>Major errors:</b></p> <ul style="list-style-type: none"> <li>Orange Triangle Icon</li> <li>The display beeps four times</li> <li>Main screen section displays red robot arm</li> </ul>

## MAIN SECTION



## GENERAL INFORMATION

The main screen is mainly used to communicate the robotic arm's available and active movement information.

*Available Movements and Active Movements*

- Available movements in the currently active mode are indicated by a green arrow representing the direction of the movement.
- Active Movements are represented by a yellow highlight around the currently active movement arrow.

MOVEMENT EXAMPLE	
Available	
Active	

*Arm laterality (Right Hand mode or Left Hand Mode)*

Depending if the arm is used as a left arm or a right arm, the drawing of the robot arm will be mirrored. Some direction arrows may also be mirrored.

LATERALITY EXAMPLE	
Right Hand	
Left Hand	

## MOVEMENTS DISPLAY

This section explains the available movement indicators. The screens showing possible movement may differ from your actual screen as available movements are dictated by the configuration of the robot's control mapping.

### *Translation movements*

TRANSLATION MOVEMENTS	ICONS
Left / Right	
Up / Down	
Forward / Backward	



Figure 9 - Translation Movements Icons

### *Orientation movements*

ORIENTATION MOVEMENTS	ICONS
Rotate Left / Right	
Rotate Up / Down	
Wrist rotate	



Figure 10 - Orientation Movements Icons

### Finger movements

The finger movements are a little bit different than other movements. When available, the fingers change color to orange. When the movement is activated, the arrows representing the movements will appear. The number of arrows represents the number of moving fingers.



Figure 11 - Available Finger Movements



Figure 12 - Active Finger Movements

### SLEEP MODE

To save energy and avoid unnecessary distraction, the display is programmed to go into Sleep Mode after 3 minutes of inactivity. The device will wake up if any button is pressed or any joystick movement is detected.

### MAJOR ERRORS

When entering Major Error mode, the display will beep 4 times to draw the user's attention and will display the Major Error screen. The major error window will go back to standard mode when the error is cleared.



Figure 13 - Major Error Display

### JOYSTICK AND COMMUNICATION ERROR

If there is an error with the controller or if the display module is unable to communicate with the robot, a joystick with an X will be displayed in the main section.



Figure 14 - Joystick Error Icon

### COMMUNICATION LOST ERROR

When the display module communication with the robot is interrupted, the reconnect icon will be displayed in the main section.



Figure 15 - Reconnect Icon

- ❗ Do not try to disconnect and reconnect the display module or the universal interface while the robot is powered on. Always power-off the system before plugging / unplugging any connectors.

## CONTACT SUPPORT

If you need help or have questions about this product, this guide or the information detailed in it, please contact a Kinova representative at [support@kinovarobotics.com](mailto:support@kinovarobotics.com)

We value your feedback!

## AUTHORIZED REPRESENTATIVE

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