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D00-00018-00 V.1.0 - TOUCH UHDK5-AA1 24x8 Array Accessory Guide





# ultrahaptics TOUCH UHDK5-AA1 24x8 Array Accessory Guide

## Overview

Ultrahaptics brings the sense of touch to mid-air gestures. For the first time, gesture recognition has haptic feedback, it is responsive and reactive. Ultrahaptics' core technology generates modulated ultrasound, using an array of ultrasonic transducers, to give users complete control of virtual buttons, sliders and dials. Proprietary algorithms control the projection and nature of the desired sensations, when and where they are needed.

The 24x8 Rectangular Accessory Array provides an alternative form factor to the default 14x14 Square Array provided as part of the TOUCH Development Kit (UHDK5).

With this new form factor, the technology can be integrated into a wider range of products.

The UHDK5-AA1 192-Transducer Array is used in conjunction with the control board included as part of the TOUCH Development Kit (UHDK5). Instructions are provided in this guide to connect the Rectangular Array board with the standard control board. These should be followed in conjunction with the 'Compliance, Health & Safety and Warranty' section.

## Characteristics

### Dimensions:

Leap Motion mounted to the top of the frame: 28.9cm x 15.9 cm x 2.9cm (length x width x depth).

Leap Motion mounted to the side of the frame: 33.4cm x 12.4cm x 2.9cm (length x width x depth).

Excluding the frame and Leap Motion cradle: 24.9cm x 8.4cm (length x width).

### Sensations:

All sensations available with the Square Array can be reproduced using the Rectangular Array. The benefits of using the Sensation Editor can still be enjoyed with the rectangular array: simple and intuitive, in-built sensations' library, customisable sensation properties, ease of integration.

### Easy Swap:

No adaptors are required as the connectors on the logic board have been positioned to align with the connectors on the

Transducer Array irrespective of the array form factor (square or rectangular).

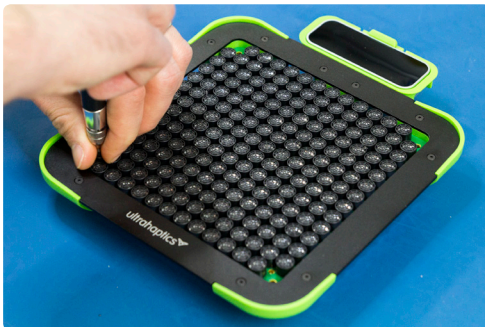
### What's included?

- Rectangular mounting frame (corner feet and Leap Motion cradle not included)
- 24x8 rectangular array (includes 192 transducers)

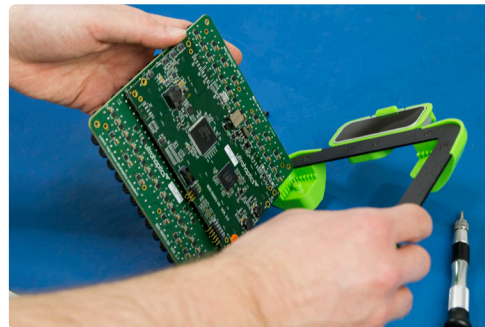
Instructions to swap the Square Array on UHDK5 to Rectangular Array

### Tools required: 1.5mm and 2mm Hex keys (provided)

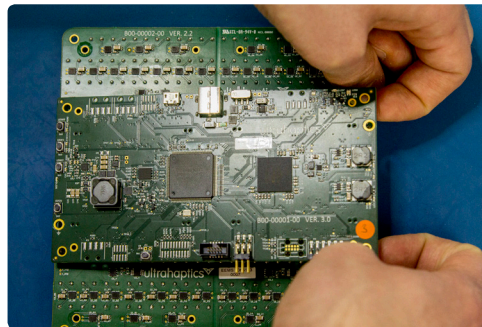
When handling the array, the user must take all necessary anti-static precautions (e.g. anti-static discharge wrist band with appropriate high resistance grounding) to prevent damage to the assembly.



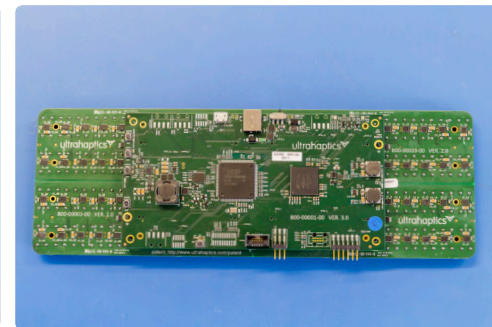
1. Using the 2mm Hex key, unscrew the Square Array from the square mounting frame.



2. Separate the electronics board from the mounting frame.



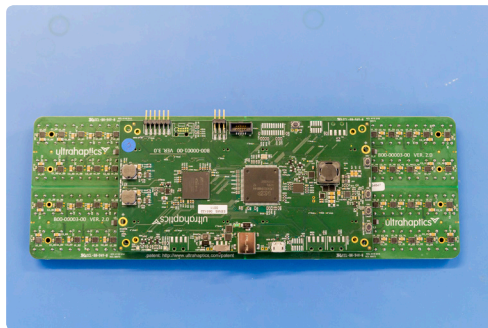
3. Position the UHDK5 with the transducers facing down on a flat surface. Place your fingers between the two boards and separate gently, working your way around until separated.



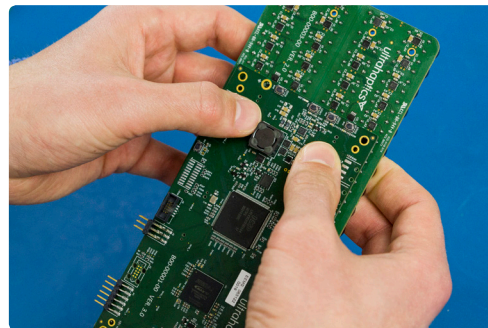
4. Position the control board onto the transducer array so that all four connectors are aligned.

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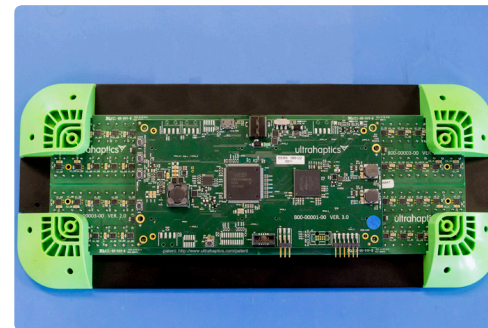
5. Either of the orientations shown in steps 4 and 5 are correct.



6. Apply pressure gently above each connector ensuring that the connections are secure.

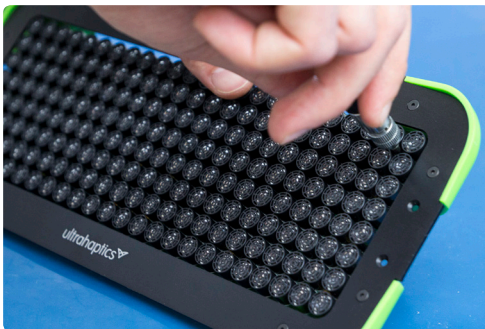


7. Unscrew all plastic parts from the square mounting frame. Using the 1.5mm Hex key, attach the corners to the rectangular frame. Leave the Leap Motion in its cradle and place aside for now.



8. Position the board in the cradle with the power connector directed toward the Leap Motion cradle mounting holes.

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9. Using the 2mm Hex key, reattach the electronics boards to the rectangular mounting frame.



10. Using the 1.5mm Hex key, screw the Leap Motion cradle to the rectangular mounting frame.

Store the Square Array in an antistatic bag with its frame for future use.

### Troubleshooting

The Leap Motion cradle can be positioned on the long or narrow side of the mounting frame. If the system exhibits erratic behaviour, it may be due to incorrect orientation of the controller board or incorrect alignment settings:

1. Ensure that the control board power connector is on the same side as the Leap Motion cradle mounting holes (long side).
2. The Ultrahaptics Demo Suite will detect the array type automatically, but assumes that the Leap Motion Controller is attached to the long side. When creating your application, you will need to select the appropriate alignment option by constructing an Alignment object with one of the available xml files. These are provided as part of the latest SDK, which can be downloaded at [developer.ultrahaptics.com](http://developer.ultrahaptics.com), and includes full documentation on the necessary steps.

### Contact us

For further information on Ultrahaptics and our current product range, please visit [www.ultrahaptics.com](http://www.ultrahaptics.com).

For further support please visit <http://developer.ultrahaptics.com>.

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## Compliance, Health & Safety and Warranty

### Warranty

The TOUCH UHDK5-AA1 24x8 Array Accessory has a 12-month warranty period. Notwithstanding the foregoing, Ultrahaptics shall not be liable for any defects that are caused by neglect, misuse or mistreatment by an entity other than Ultrahaptics, including violation of the following precautionary measures: Follow the Instructions to swap the Square Array on UHDK5 to Rectangular Array provided. Damage due to inappropriate handling is not covered by the warranty. It is not advisable to expose the TOUCH Development Kit with the 24x8 Array Accessory to direct sunlight. Do not exceed 40 °C ambient operating temperature. When developing sensations using the TOUCH Development Kit with the 24x8 Array Accessory, small focused interactions in response to user input have a much greater impact and should be preferred over constant output. The TOUCH Development Kit is not designed for long periods of output and such use should be limited to periods of 10 minutes

continuous output or less. The TOUCH Development Kit with the 24x8 Array Accessory uses semiconductor devices that can be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged.



If you experience a problem with your TOUCH Development Kit with the 24x8 Array Accessory, please contact our support team at [help@ultrahaptics.com](mailto:help@ultrahaptics.com), quoting your product name and serial number in the title. Should anything need to be serviced or replaced under warranty, return instructions will be provided along with a return merchandise authorization number (RMA) after you have contacted Ultrahaptics support. Valid warranty returns including both Product and outbound shipping are processed at no additional charge to the customer.

### Health and safety

We want you to enjoy using the Ultrahaptics TOUCH UHDK5-AA1 24x8 Array Accessory safely. Please read the information below

carefully and make sure anyone else using the kit does so before using it to reduce the risk of electric shock, injury or damage to the kit or other property.

### Before you start

Read this information and the user instructions in full. If you have a pacemaker, implantable cardioverter defibrillator (ICD) or other medical device installed or if you are pregnant, elderly or suffer from a heart condition, hearing problems or other serious medical condition which could be affected by ultrasound, please consult a doctor before using the TOUCH Development Kit (UHDK5) and UHDK5-AA1 24x8 Array Accessory.

### Instructions

Every time you use the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory: Make sure the rectangular TOUCH Development Kit is placed flat on a table, is in front of you and there is room to rest your elbow on the table during use. The Ultrahaptics technology is designed for short bursts of feedback. Continuous feedback from the Ultrahaptics system, or

any other vibratory feedback system, can lead to a temporary loss of sensitivity in the frequency range of the feedback. If this happens, take a 10 to 15-minute break. Each person is different, so take longer breaks if you need to. The haptic feedback is created by a region of high-intensity ultrasound. Do not target the feedback directly onto your ears or eyes. We recommend that you do not place your head directly above the TOUCH UHDK5-AA1 24x8 Array. We also recommend allowing for approximately 30cm between your head and the area of feedback generated by your hand.

### If you feel unwell

Stop using the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory if you feel any of the following symptoms: dizziness; disorientation; impaired balance; nausea; light-headedness; headaches; involuntary muscle twitches; discomfort or pain in the hand, arm or head; drowsiness; fatigue or any symptoms similar to motion sickness. Do not drive, operate machinery or engage in other demanding activities that have potentially serious consequences until you have fully recovered from any

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symptoms. Do not use the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory until all symptoms have completely subsided for several hours. See a doctor if you have serious and/or persistent symptoms or any concerns.

### **Repetitive strain injury**

Frequently repeating similar movements can make your hands, muscles, joints or other parts of your body hurt. If you experience discomfort, stop and rest for several hours before resuming use of the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory. If you continue to have any symptoms, please stop using the device and see a doctor.

### **Radio frequency interference**

The TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory can emit radio waves that may affect the operation of nearby electronics, such as cardiac pacemakers, defibrillators and other medical devices. Operate the device at a safe distance from medical devices and if you have a pacemaker or other implanted medical device, do not use the Ultrahaptics

TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory without first consulting your doctor or the manufacturer of your medical device.

### **Electric shock**

To reduce the risk of electric shock: Keep the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory and power supply away from water or moisture. Unplug the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory after use. Keep the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory and power adapter away from heat and fire. Do not modify or disassemble any of the components provided. Do not use the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory if any cable is damaged or any wires are exposed. Use only the power adapter provided with the TOUCH Development Kit.

### **Compliance**

All components used in the TOUCH Development Kit with UHDK5-AA1 24x8 Array Accessory have been confirmed as compliant with all legal requirements by their

manufacturers.

The TOUCH 24x8 Array Accessory (UHDK5-AA1) is a development device - it is not to be used as an "End Use" product.

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