



**OSCIUM**

iMSO-104 Manual



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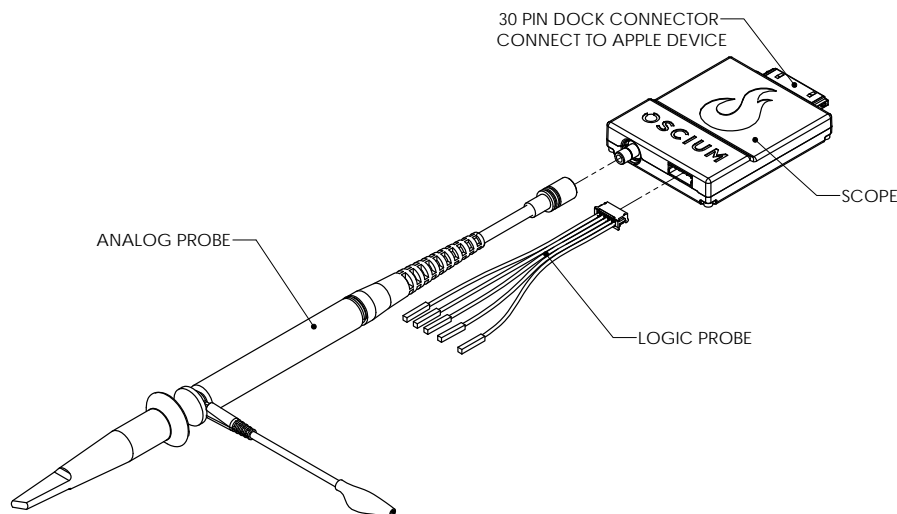
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## Section 1 – Getting Started

### 1.10 Quickstart Guide

# Quickstart Guide

## Oscium iMSO-104 Mixed Signal Oscilloscope



- 1) Download "iMSO" from the app store.
- 2) Connect the scope to the iPod Touch®, iPhone®, or iPad™ using the 30 pin dock connector.  
Note: Blue light indicates that scope is communicating with the application.
- 3) Connect Analog Probe and Logic Probe to the appropriate ports on the scope.
- 4) For more information, please visit the Oscium website.  
[www.oscium.com](http://www.oscium.com)

"Made for iPod", "Made for iPhone", and "Made for iPad" means that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

## 1.20 SAFETY

The maximum voltage limit for the analog probe in 1x mode is -8v / +13v, and the maximum voltage limit in 10x mode is -40V / +40V. The maximum voltage limit for the digital channels is -.0.5v to +7v.

Oscium is not held liable for usage outside of these limits.

## 1.30 Compatibility

### 1.31 Hardware

iMSO is the world's first mixed signal oscilloscope for iOS! At this time, it works on these specific Apple® devices:

iPod touch (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> generation)

iPhone 4

iPhone 3GS

iPhone 3G

iPhone

iPad 2

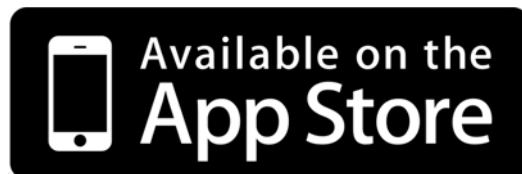
iPad



### 1.32 Software

iOS version 3.1.3 or newer is required for iMSO to operate.

iMSO is available for free to download in the App Store.



## Section 2 – How It Works

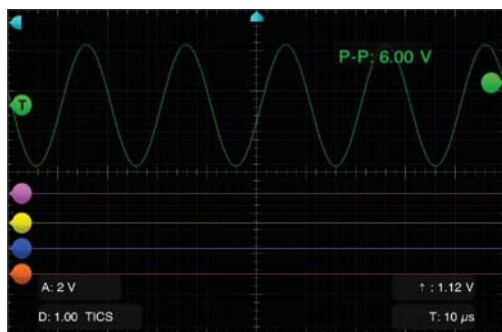
### 2.10 Menus

The manual describes how iMSO works on the iPad, iPhone and iPod touch.

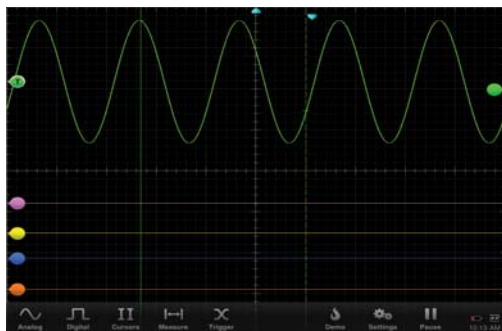
#### iPad | iPhone | iPod touch

Double clicking on the display will toggle between: the summary bar and the menu bar.

The Summary Bar





The Menu Bar



The menu bar has sub menus that can be selected by touching the appropriate word or icon. When hardware is not connected the following options exist in the menu bar:






When hardware is connected,  changes to .

## iPad | iPhone | iPod touch




### 2.20 Analog Channel

The green signal always represents the analog channel. Simply touch the green bubble on the left. Leave your finger on the bubble and move the channel position either up or down.


### 2.21 Analog Channel On / Off


Tap  on the menu bar. The channel can be turned either on or off at the top of the menu by tapping either  or .

### 2.22 Analog Channel 1x / 10x Probe









The analog probe has a sliding red lever  that allows the user to move between 1x and 10x modes. Once a mode is selected on the analog probe, chose the matching state by selecting either  or . The selected state will be gray and the unselected state will be translucent.

### 2.23 Analog Channel DC / AC Coupling







When current is flowing in the same direction all the same, tap .

When current is changing directions, tap . The selected state will be gray and the unselected state will be translucent.

### 2.24 Analog Channel Reference Wave

Touch  on the menu bar. Then, touch  to create a reference wave for the analog channel. When a wave has been captured,  will change to  and  will change to . Once the wave has been captured, it is saved and available for future use by pressing reference. The reference wave will appear as a white wave and  will appear to the far left of that wave. The outer color of this bubble will match the color of the wave that has been referenced. To clear the reference wave tap the word clear. .

### 2.25 FFT On/Off

Touch  on the menu bar. At the bottom of the menu, FFT appears. to turn FFT on, touch  and it will change to . The reference wace will appear as a red wave and  will appear to the far left of that wave. To turn FFT off, touch  and it will turn to  indicating FFT is deactivated

### 2.30 Digital Channel

The purple, yellow, blue and orange signals represent the four digital channels. Simply touch the far left bubble of the desired digital signal. Leave your finger on the bubble and move the channel position either up or down.

### 2.31 Digital Channel On / Off


Tap on  the menu bar. The following menu will appear:



## iPad | iPhone | iPod touch

Each channel can be turned either on or off by tapping either **ON** or **OFF**.

### 2.32 Digital Channel Reference Wave

Tap **REF** on the menu bar. Then, touch **GRAB** to create a reference wave for the desired digital channel. When a wave has been captured, Ref will change from **REF** to **REF** and capture will change from **GRAB** to **GRAB**. Once the wave has been captured, it is saved and available for future use by pressing **REF**. The reference wave will appear as a white wave and  will appear to the far left of that wave. The outer color of this bubble will match the color of the wave that has been referenced. To clear the reference wave tap **CLR**.

### 2.40 Cursors

#### 2.41 Cursors On / Off

Tap **Cursors** on the menu bar. Tap **ON** to activate cursors.

#### 2.42 Cursor Axis

Then, tap either the **HORIZONTAL** cursor or the **VERTICAL** cursor. Select which signal to view by tapping the bubble on the far left of that signal. For example, if D1 is selected, which is the purple signal, the cursors will change to purple. Then, if D2 is selected, the cursors will change to yellow to match the color of D2, which is yellow. After selecting the appropriate signal, double tap the interface until the summary screen appears. Metrics relating to the cursors appear in the center of the summary screen and in the color of the signal that is being viewed.

#### 2.43 Cursor Mode

There are two modes available on this device: **INDEPENDENT** and **TRACKING**. Upon activating cursors, two lines will appear. One is dotted and the other is solid. The solid line is active and can be moved by touching the line and while holding that line moving it either up or down. While in tracking mode both the solid and dotted lines will move together. In independent mode the solid line is the only line that can be moved. Additionally, dynamic metrics related to the solid line are available in the summary screen located at the bottom (and in the color of the selected channel). Tap on the dotted line and it will become a movable solid line, while the other line will change to dotted.

#### 2.44 Horizontal Cursors

Tap the **Cursors** icon from the menu bar. Tap **ON** to activate cursors.

Tap **HORIZONTAL** from the cursors menu and it will change from **HORIZONTAL** to **HORIZONTAL**. Tap **ON** and **OFF** to turn the horizontal cursors on and off respectively.

On the main screen, touch and swipe the desired cursor in the vertical direction and place where desired. The selected cursor will be displayed as a solid line and the un-selected cursor, a dashed line. The position of the selected cursor is indicated next to @V in the summary bar. The distance between the two cursors is indicated next to ΔV in the summary bar.

#### 2.45 Vertical Cursors

Tap the **Cursors** icon from the menu bar. Tap **ON** to activate cursors. Tap **VERTICAL** from the cursors menu. On the

## iPad | iPhone | iPod touch

main screen, touch and swipe the desired cursor in the horizontal direction and place where desired. The selected cursor will be displayed as a solid line and the un-selected cursor, a dashed line. The position of the selected cursor is indicated next to @t in the summary bar. The distance between the two cursors is indicated next to  $\Delta t$  in the summary bar. The voltage level at the point where the selected cursor crosses the waveform is indicated in the summary bar next to @V and the vertical difference between the crossing points of the two vertical cursors is indicated in the summary bar next to  $\Delta V$ . When using vertical cursors with the analog channel both @t,  $\Delta t$  and @V,  $\Delta V$  will be visible in the summary bar.

Verify that **VERTICAL** cursors are selected. To move cursors independently of one another, tap **INDEPENDENT**. To move cursors as a single unit with a fixed distance between them, tap **TRACKING**. The following options are available:

**BASE** **PHASE** **RATIO**.

1. If cursor data is to be displayed in Base, tap **BASE**. The options next to the word UNIT set the unit of time.

Time settings available in the Base option include: **s** **Hz**. The **s** option sets the unit of measure in seconds. The **Hz** option sets the unit of measure in hertz.

2. If cursor metrics are to be displayed in Phase, tap **PHASE**. The options next to the phrase 360° WITHIN sets the phase. The option of **5 DIVS** sets 360° within 5 divisions. The **CURSOR** option sets 360° between the two cursors.

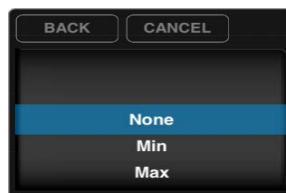
3. If cursor data is to be displayed as a ratio, tap **RATIO**. The options next to the phrase 100% WITHIN set the ratio. Ratio settings available next to 100% WITHIN include: **5 DIVS** **CURSOR**. The option of **5 DIVS** sets 100% within 5 divisions. Since there are 10 divisions in the horizontal time scale, this option effectively cuts the screen in half. The **CURSOR** option sets 100% between the two cursors.

## 2.46 FFT Units

Tap the **FFT** icon from the menu bar. The options next to the phrase FFT Units will set the voltage units. Voltage options available in the FFT Units option include **Volts** and **dBv**. By tapping the **Volts** option the voltage units will display as volts in the summary bar. Tapping the **dBv** option will change the voltage units to dBv.

## 2.50 Measurements

Tap **Measure** from the menu bar. Fifteen different measurements exist: Min, Max, Mean, Peak to Peak, RMS, Duty Cycle (+), Duty Cycle (-), Pulse Width (+), Pulse Width (-), Cycle Mean, Cycle RMS, Frequency, Period, Rise Time, and Fall Time. To scroll through the measurement options, tap **None**. Then, scroll through the pick wheel to choose the desired measurements. To activate the settings tap away from the menu or tap **BACK**.





Up to six measurements can be selected simultaneously. Measurements appear on the top right of the interface.

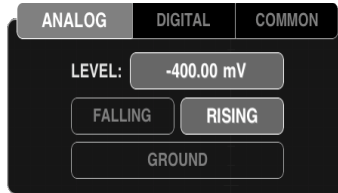
Min:656.87 mV  
Max:737.39 mV  
P-P:80.52 mV  
Mean:698.13 mV



## 2.60 Trigger

### 2.61 Analog Triggering

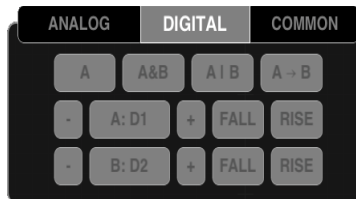
The trigger level is controlled with  located on the far right of the screen. Touch and drag the bubble either up or down. Moving the level up will increase the voltage level and moving it down will decrease the voltage level. The exact voltage level will appear just to the left of the bubble along with either an up arrow or a down arrow. An up arrow indicates that the trigger is on a rising edge; a down arrow indicates that the trigger is on a falling edge. It is also possible to change the trigger level in the advanced triggering menu. Tap . Then tap **ANALOG** and, when active, it will change to **ANALOG**.




To navigate to an exact trigger level tap on **-400.00 mV** next to the word LEVEL. The analog trigger level pick wheel should then appear.




To select the desired trigger level touch and drag in each of the four columns until the specific value is reached. To activate the settings tap away from the menu or tap **BACK**. When analog triggering has been enabled, then all the advanced options for digital triggering will be grayed out.



To reactivate the analog trigger, tap . If the analog triggering is grayed out, it is disabled. Then tap any of the options on the picture below and it will no longer be grayed out.



Analog triggering is always available in demo mode; it is not possible to deactivate until hardware is used. To trigger off of a rising edge, tap . If rising is already activated it will look like **RISING**, this means that falling is deactivated, because both falling and rising cannot be active at the same time. If it is deactivated it will look like **RISING**, and falling is activated. tap it once and it will activate to **RISING**. To trigger off a falling edge the same

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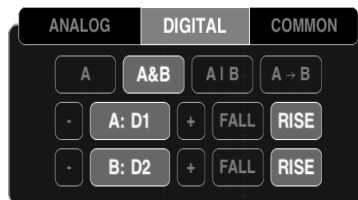
procedure should be followed. Falling should look like **FALLING** when activated and **FALLING** when deactivated. To recenter your trigger level, tap **GROUND** and your signal will be brought in line with CH A.

### 2.62 Digital Triggering

This feature is only available with hardware; it is not available in demo mode. When in demo mode all the digital triggering options are grayed out.



1. Tap **X** from the menu bar. Then tap **DIGITAL** at the top of the menu to view more advanced digital triggering options. All the options may be grayed out (because analog and digital triggering can't both be active at the same time). If analog is grayed out, digital is active and vice versa. To activate the desired trigger, tap one of the advanced triggering options.



Then, the option that is tapped will activate.

From the menu, select the desired triggering function from these options: single channel only **A**, simultaneous events on two channels **A&B**, a single event on one of two channels **A | B**, or concurrent events on two channels **A - B**.

2. Below the selected triggering functions tap **-** or **+** to select the digital channel from D1 to D4 to be used as channels A and B, respectively.

3. After locating the desired digital channel, tap **A: D4** and when activated, it will change to **A: D4**.

In the previous example, channel A is now D4. Now, the bubble that appears on the far left of D4 will have an A inside **A**. The A indicates that D4 is now A. Repeat the same process for B, when applicable.

4. To choose whether triggering occurs on a rising or falling edge, either select **FALL** for a falling edge or select **RISE** for a rising edge.



### 2.63 Auto vs Normal

Tap **X**. Then tap **COMMON**. Tap the desired mode, either AUTO or NORMAL. For example, if activating AUTO mode tap **AUTO** and it will change to **AUTO**. Repeat the process for NORMAL mode. The default setting is AUTO.

### 2.64 Delay

To set the trigger delay **◆** from the main screen, touch the screen and swipe horizontally to move the trigger point. The bottom portion **◆** will detach from the top to set the trigger position.


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To set the trigger delay from the trigger menu, tap  then select **COMMON** and press  located next to DELAY. A pick wheel will appear that allows you to set the delay time to the value shown in the readout.




To select the desired trigger delay touch and drag in each of the four columns until the specific value is reached. To activate the settings tap away from the menu or tap .







## 2.65 Holdoff

Tap  in the menu bar to enter the trigger menu.

Tap **COMMON**.






Tap  next to HOLDOFF to set the holdoff time. Setting the Holdoff value should be done in the same manner as the delay.

## 2.66 Single-Shot Waveform Capture

If the signal is active, the screen can be paused by tapping . Pause is located in the menu bar, on the far right side. If the signal is paused, the screen will resume real time measurements by tapping . In order to capture a single-shot wave form touch and hold  or  until it changes to . Then tap , it will then capture a single-shot waveform. Remember that in order to trigger off a specific event make sure that the **COMMON** setting is normal. If it is set to auto you will just get the next frame, not the next event.

## 2.70 Demo

### 2.71 Demo Functions

When no hardware is attached, iMSO will operate in Demo Mode. Demo Mode is illustrated in the bottom right corner by . When hardware is attached, Demo Mode is not available; iMSO will now be in Active Mode. Active Mode is illustrated in the bottom right corner by . While in Demo Mode, tap  to change the function that is being viewed. Although four different wave forms can be viewed on Channel A, only one waveform can be viewed at any time. To change the wave form being viewed, tap  then pick the desired waveform in the pick wheel. To activate the setting tap away from the menu or tap .

## iPad | iPhone | iPod touch






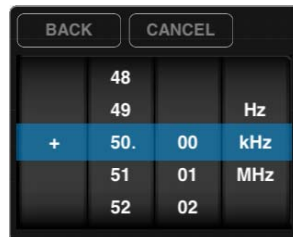
### 2.72 Demo Amplitude

Tap  from the menu bar on the right. To change the **AMPLITUDE:** of the signal, tap  located to the right of **AMPLITUDE:**. Enter the desired voltage using the pick wheel. To activate the setting tap away from the menu or tap .



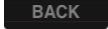


### 2.73 Demo Frequency



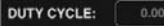


Tap  from the menu bar on the right. To change the **FREQUENCY:** of the signal, tap  located to the right of **FREQUENCY:**. The pick wheel pops up and it is now possible to modify the frequency by selecting the desired frequency. Frequencies can be entered in Hz, kHz, or MHz. To activate the settings tap away from the menu or tap .







### 2.74 Demo DC Offset



Tap  from the menu bar. To set the DC offset, tap  located to the right of **DC OFFSET:**. Then select the desired voltage offset from the pick wheel. To activate the settings tap away from the menu or tap .

### 2.75 Duty Cycle

In order to change the Duty Cycle, the demo mode must be set to . Once the demo mode is switched to square the Duty Cycle option will change from  to . To change the **DUTY CYCLE:** of the signal, tap . Enter the desired voltage using the pick wheel. To activate the setting tap away from the menu or tap .


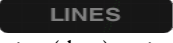

## 2.80 Settings

**iPhone/iPod Touch-** When hardware is connected,  disappears and is replaced by . Then all additional settings are unlocked. In order to change the settings while in demo mode, touch and hold  until it changes to .






**iPad-**  appears in the main menu bar. When hardware is connected  disappears. Then all additional settings are unlocked.

## 2.81 Grid Settings







### Lines vs. Dots

Tap . Then tap the desired selection, either  or . This setting affects the way that the signals are displayed; it will either be point by point (dots) or it will be represented with a line.







### Graticule

Tap . Then tap  or  to scroll through the various background display options. They include: Crosshairs, Major Tics, Minor Tics, Major Grid, Minor Grid, and finally Graticule. Once a selection is tapped it becomes active and changes from  to . Tapping graticule is a shortcut for tapping all of the above.




## 2.82 Alerts

Tap, . Three alerts are available. They are located on the third row from the top: ALERTS, ON STARTUP & ON DISCONNECT. Cycle through the options by tapping  or  next to the selection. Then tap the selection to activate it. To deactivate a specific alert, tap the alert and it will change from  to . Tapping  is a shortcut for tapping all of the above.

## 2.83 Persistence








Tap . Then tap and swipe the dot to the right of persist . For the advanced options relating to , tap . Digital persistence can either be turned off or on. To turn it on, tap . To turn digital persistence off, tap .

## 2.84 Sounds

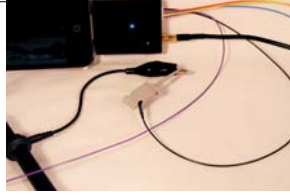
Sounds can be controlled either through hardware or software. The Apple device can control the sound (in the same way it always controls sound) by using the plus/minus volume controls on the side of the device. In the software, sounds are turned off by tapping . Then tap SOUNDS and it will either turn sounds on  or off .

## 2.85 Calibration

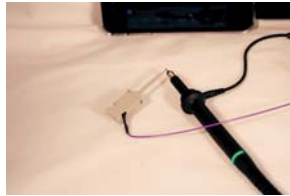
The iMSO is shipped fully calibrated. If, for any reason, the analog input ever slips out of calibration, the iMSO can easily be re-calibrated from a built in 3.3 V, 1 kHz reference signal.

Tap  from the menu bar. From the setting menu, tap  to enable the 3.3 V calibration signal. When the signal is activated  changes to . Next, select  on the menu bar and ensure  is selected. Ensure the  switch on the analog probe is switched to 1x. Connect the SMD grabber for GND (or the black wire) to the ground clip for the analog probe.


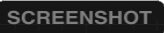
## iPad | iPhone | iPod touch





Remove the connector attachment from the analog probe. Then connect the SMD grabber for D1 (or the purple wire) to the tip of the analog probe.



### 2.86 Screenshot







Two options exist. First, a screenshot can be captured by simultaneously pressing both the home button and the power button on your Apple device. The screen will flash white while the picture is captured. When a picture is captured this way, everything visible on the LCD will be captured and available in photos. The second option is to tap  and then tap . The text SCREENSHOT will fade from black to gray and the display will briefly change to full screen mode. Although this is a very useful method, it may not always be the best way to take a screenshot. By simultaneously pressing the home and the power button, it is possible to take a picture of exactly what is on the screen. In some cases, this will be the best option.



### 2.87 Email

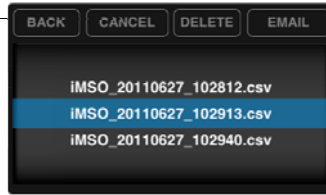
Tap . Then, tap . The email will consist of the image currently displayed on the screen. Although it is not possible to retrieve screenshots from this spot, the pictures are still available in photos where they can be emailed. The other option is to simultaneously press both the home button and the power button on your Apple device. The screen will flash white while the picture is captured. When a picture is captured this way, everything visible on the LCD will be captured and available in photos where they can be emailed.

### 2.88 Manage Data Log

This feature is only available with hardware; it is not available in demo mode. When in demo mode the data logging options for DATA LOG: START and STOP are grayed out.

Tap  from the menu bar. Then tap  from the data log option, .  will then change to  in order to indicate data is being logged. To stop data logging tap .

Tap . Then tap . A pick wheel will appear with all of the data that has been previously logged. To select precious data log tap away from the menu or tap .



## 2.89 Configuration Settings

### Reset Configurations

To reset the configuration, tap . Then tap, **RESET CONFIG**.

### Saving Configurations

Up to three configurations can be saved at a time. Tap . Then tap **SAVE** next to CONFIG 1, 2 or 3. **SAVE** will turn to **SAVE** and then back to **SAVE**, indicating the configuration has been successfully saved.

To upload a saved configuration tap **LOAD**. **LOAD** Will turn to **LOAD** and then back to **LOAD**, indicating the configuration has successfully been loaded.

## 2.90 Host Properties

From Demo Mode, tap from the bottom right corner of the menu screen to view host properties. When hardware is plugged in and product is in Active Mode, tap from the bottom right corner of the menu screen to view host properties.

Here is an example of host properties on an iPhone:



**iOS version 3.1.3 or newer  
is required for iMSO to operate.**

## Section 3 – Product Warranty & Accessories

### 3.10 Product Warranty



iMSO hardware comes with a full one year manufacturer's warranty. No warranty exists on probes and accessories.

### 3.20 Accessories

iMSO-104 comes with the following accessories: 1x / 10x analog probe, logic harness, five SMD grabbers, and one screwdriver.

#### 3.21 1x / 10x Analog Probe



The analog probe is capable of measuring signals up to 100MHz and can operate in either 1x or 10x mode. It is removable with an SMB connector.

#### 3.22 Logic Harness



The logic harness is has five colors: purple (D1), yellow (D2), blue (D3), orange (D4), and black (ground). The colors on the harness match up with the colors on the interface. If a user is color blind, the harness colors are labeled D1, D2, D3, D4, and GND on the back of the iMSO hardware

#### 3.23 SMD Grabbers



SMD grabbers have the Oscium flame custom built into the front.

#### 3.24 Screwdrivers



The screwdriver is custom made for iMSO and is used for calibrating the device.



## Section 4 – Performance Specifications

iMSO-104	iPad	1-3rd Gen iPod Touch/iPhone	4th Gen iPod Touch/iPhone
<b>Display</b>	9.7"	3.5"	3.5"
<b>Resolution</b>	1024x768	600x400	960x640
<b>Analog</b>	1 Channel, 8 bit	1 Channel, 8 bit	1 Channel, 8 bit
<b>Analog Probe</b>	100MHz, (1x & 10x selectable), removable with SMB	100MHz, (1x & 10x selectable), removable with SMB	100MHz, (1x & 10x selectable), removable with SMB
<b>Digital</b>	4	4	4
<b>Digital Probe</b>	4 bits, 1 Gnd, 0.100" connectors with removable SMD Grabbers	4 bits, 1 Gnd, 0.100" connectors with removable SMD Grabbers	4 bits, 1 Gnd, 0.100" connectors with removable SMD Grabbers
<b>Analog Bandwidth</b>	5MHz	5MHz	5MHz
<b>Max Sample Rate</b>	12MSPS	12MSPS	12MSPS
<b>Sample Depth</b>	240pts	240pts	240pts
<b>Horizontal Sensitivity</b>	2uS/div-1S/div	2uS/div-1S/div	2uS/div-1S/div
<b>Horizontal Position</b>	Adjustable	Adjustable	Adjustable
<b>Trigger Position</b>	Adjustable	Adjustable	Adjustable
<b>Vertical Sensitivity</b>	50mV/div to 2v/div (1x) 500mV/div to 20v/div (10x)	50mV/div to 2v/div (1x) 500mV/div to 20v/div (10x)	50mV/div to 2v/div (1x) 500mV/div to 20v/div (10x)
<b>Vertical Position</b>	Adjustable	Adjustable	Adjustable
<b>Max Digital Input Voltage</b>	-0.5v to +7v	-0.5v to +7v	-0.5v to +7v
<b>Max Input Voltage</b>	-8v to +13v (1x) -40v to +40v (10x)	-8v to +13v (1x) -40v to +40v (10x)	-8v to +13v (1x) -40v to +40v (10x)
<b>Coupling</b>	AC or DC	AC or DC	AC or DC
<b>Trigger Modes</b>	Auto/Normal/Single/Stop	Auto/Normal/Single/Stop	Auto/Normal/Single/Stop
<b>Trigger Types</b>	Analog, Digital (A, A&B, AIB, A->B)	Analog, Digital (A, A&B, AIB, A->B)	Analog, Digital (A, A&B, AIB, A->B)
<b>Live Measurements</b>	6	6	6
<b>Measurement Types</b>	Frequency	Frequency	Frequency
	Period	Period	Period
	Min	Min	Min
	Max	Max	Max
	Mean	Mean	Mean
	Peak to Peak	Peak to Peak	Peak to Peak
	RMS	RMS	RMS
	Positive Duty Cycle	Positive Duty Cycle	Positive Duty Cycle
	Negative Duty Cycle	Negative Duty Cycle	Negative Duty Cycle
	Positive Pulse Width	Positive Pulse Width	Positive Pulse Width
	Negative Pulse Width	Negative Pulse Width	Negative Pulse Width
	Cycle Mean	Cycle Mean	Cycle Mean
	Cycle RMS	Cycle RMS	Cycle RMS
	Rise Time, Fall Time	Rise Time, Fall Time	Rise Time, Fall Time
<b>Features</b>	Screen Capture -> Email	Screen Capture-> Email	Screen Capture-> Email
	Demo mode (Analog)	Demo Mode (Analog)	Demo Mode (Analog)
	Horizontal/Vertical Cursor Measurements	Horizontal/Vertical Cursor Measurements	Horizontal/Vertical Cursor Measurements
	Reference Capture	Reference Capture	Reference Capture
	Delay (always on) ~99.99s max	Delay (always on) ~99.99s max	Delay (always on) ~99.99s max
	Holdoff ~99.99s max	Holdoff ~99.99s max	Holdoff ~99.99s max
FFT & Data Logging	FFT & Data Logging	FFT & Data Logging	

## 4.11 Performance Optimization

Newer generations of Apple hardware will improve the Oscium customer experience. Animations will be faster and crisper. Multitasking can also affect performance. Turning off applications will improve performance. Double click the home button on your Apple device. All the applications listed in this menu are currently running on the device. Press and hold any icon. They will begin to shake and a minus sign will appear on the top left corner of the app. Tapping the minus sign will shut down the app; it will not delete it from your device. This will free up additional processing power on your device to maximize the user experience but it will only work on 3rd generation devices and newer.

## Section 5 – How to Contact Us

Please let us know your thoughts about our newest product, iMSO! The best way to reach us is at [www.oscium.com](http://www.oscium.com). Send us a technical question or just say hi. Product updates and new product releases will be available first on our twitter and facebook pages. Thank you for your interest in iMSO!