OSCIUM

Manual
iMSO-204x

RevC_20191024

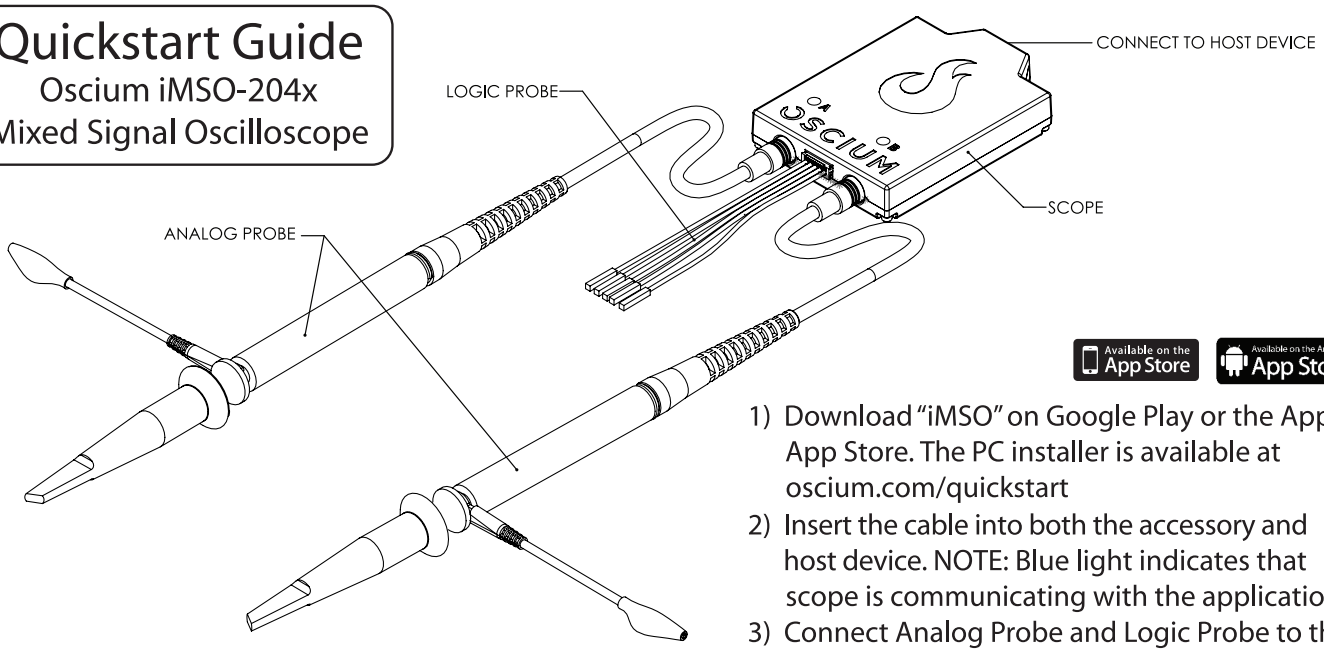
Manual Table of Contents

Section 1 – Getting Started
1.10 Quickstart Guide

iMSO-204x has universal platform support. It works with iOS, Android, PC, Mac.

The Quickstart Guide is available for reference below:

Quickstart Guide
Oscium iMSO-204x
Mixed Signal Oscilloscope



Available on the App Store Available on the Android App Store

1) Download "iMSO" on Google Play or the Apple App Store. The PC installer is available at oscium.com/quickstart
2) Insert the cable into both the accessory and host device. 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 at www.oscium.com/quickstart

WARNING
DO NOT APPLY MORE THAN +/-40V IN 10X MODE & MORE THAN -8V TO +13V IN 1X MODE

WARNING
DO NOT APPLY MORE THAN -0.5/+7V TO THE DIGITAL CHANNELS

Made for iPod iPhone iPad

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

Oscium's iMSO-204x has universal platform support; it works with iOS, Android, PC and Mac.

For iOS to work, the host device must have a lightning connector.
For Android to work, the host device needs to have USB OTG (On-The-Go).

Also, here are the details for the physical connector to the host:

Connector (to host)	Mini-B to Lightning, Mini-B to Micro-B
	Mini-B to USB A

1.32 Software

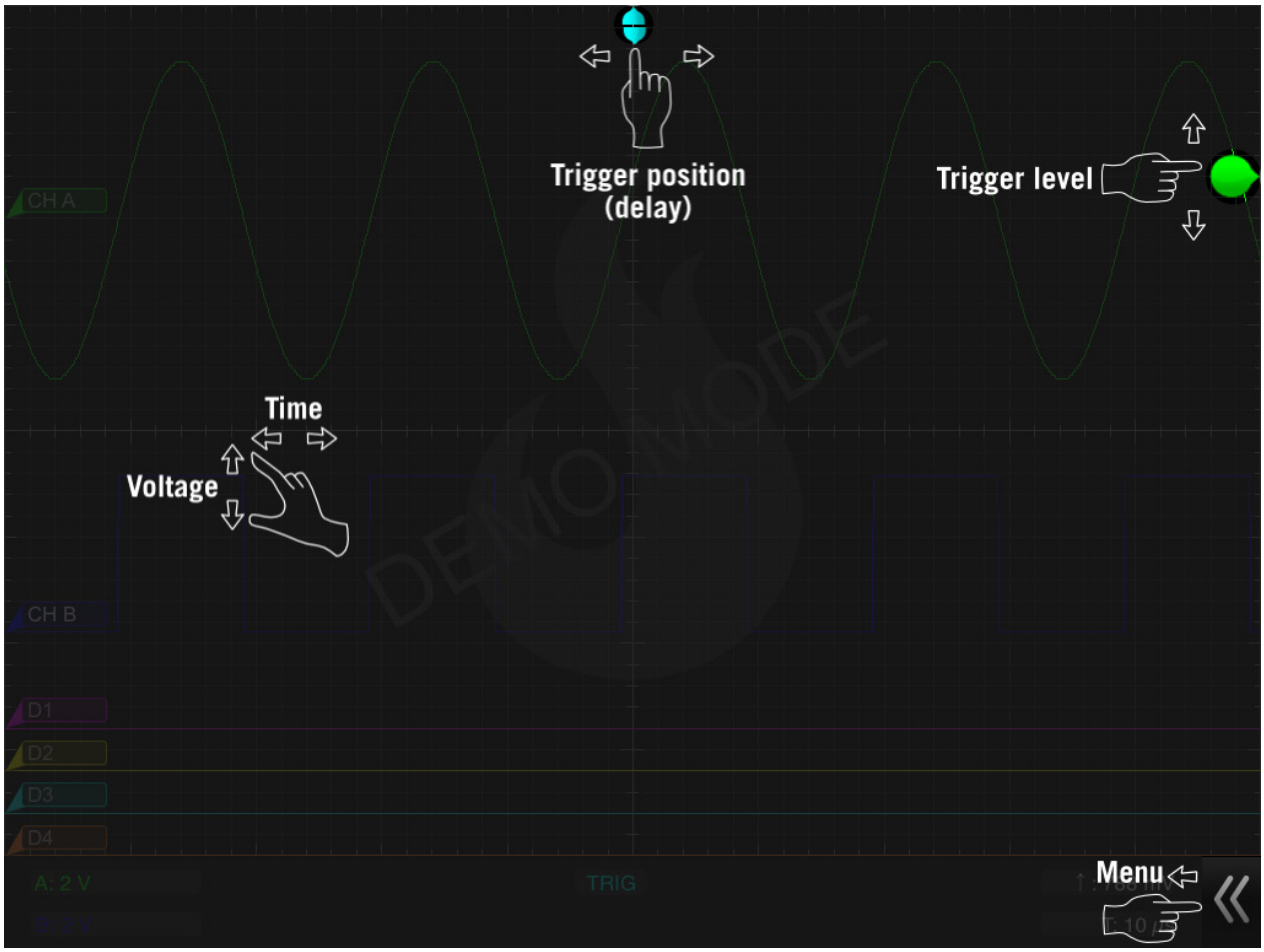
System Requirements (Software)	iOS version 7.0
	Android version 6.0
	Windows 7
	Mac OS 10.10 (Yosemite)

Download on the App Store | GET IT ON Google Play

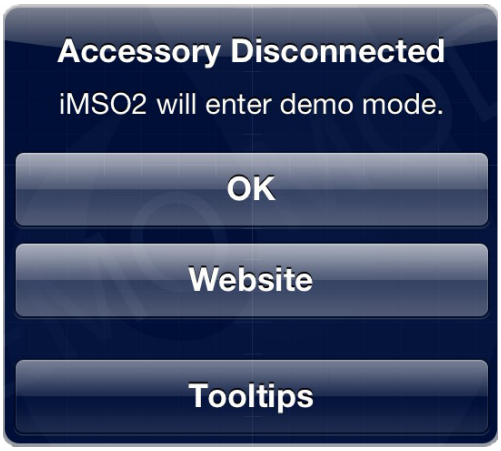
PC DOWNLOAD | MAC DOWNLOAD

1.40 Tool Tips

Although having a manual is nice (and if you're reading this, you probably agree), it is even better when there's help built into the app itself. Here is a screenshot of some of the tool tips we've built into the app (this picture is found on iOS 7 software and newer):



This tool tip is only available (1) when the demo app is first launched or (2) after hardware has been connected and is now disconnected. In both situations the same alert box appears:



Section 2 – How It Works

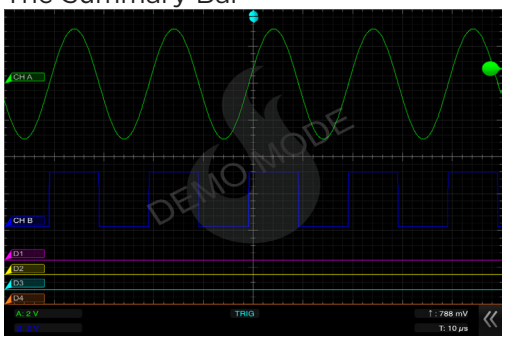
2.10 Menus

The manual describes how iMSO works on your host device.

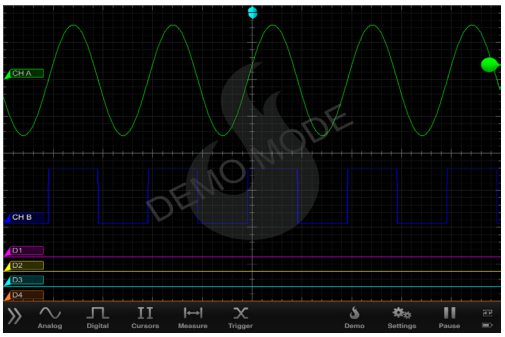
iOS, Android, PC or Mac Software

The menu bar can be hidden or revealed by sliding the arrows located in the bottom right corner of the app to the left. To uncover the summary bar simply slide the arrows (now located on the bottom left corner of the app) to the right.

The Summary Bar



The Menu Bar



The menu bar works this way as of the iOS 7 update. For users not on iOS 7, the menu bar can be hidden or revealed by sliding up (or down) on the word menu in the bottom middle of the screen.

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 on an iPhone or iPod touch, 

changes to 

. The demo mode icon disappears on the iPad when hardware is in use. In addition, Oscium has a single shot mode that is enabled by pressing and holding 

or 

. Upon holding one of those icons, it will change to 

.

2.20 Analog Channels

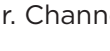
The two analog channels are represented by green and blue signals. Simply touch either the green 

or blue 

rectangle on the left. Leave your finger on the box and then move the channel position either up or down.

2.21 Analog Channels On / Off

Touch 

on the menu bar. Channels can be turned either on or off with a tap to 

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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 1x or 10x. The selected state will be gray and the unselected state will be translucent.

To enable 10x mode, the user must slide the red lever located on the physical probe. The 10x option located in software only changes the voltage scales in software; it does not actually divide the voltage. Please remember to slide the red lever on the physical probe for all 10x measurements.

2.23 Analog Channel DC / AC Coupling

When current is flowing in the same direction, touch DC.
When current is changing directions, touch AC. The selected state will be gray and the unselected state will be translucent.

2.24 Channel Labeling

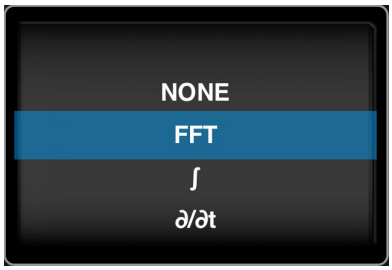
Touch Analog on the menu bar. Then, touch either CH A or CH B to the right of the word LABEL. A keyboard will appear. Enter the desired name using the keys on the keyboard. When finished touch away from the keyboard and the name will display next to the word LABEL in the analog menu. Your custom label will also appear next to that waveform.

2.25 Math On/Off

Touch Analog on the menu bar. At the bottom of the menu, MATH appears. to turn MATH on, touch ON and it will change to ON. The function will appear on the screen in red. To turn MATH off, touch OFF and it will turn to OFF indicating MATH is deactivated.

2.26 Math Functions

Touch Analog on the menu bar. Then, touch the box directly below the word MATH. A pick wheel will appear with the following options:



Use the pick wheel to select the desired setting. To activate the setting tap away from the menu. The appropriate symbol should then appear in the selection box: FFT, ∫ or ∂/∂t.

After identifying the appropriate symbol, the source needs to be selected. Simply touch the selection box (A + B) to the right of the previous FFT box. A pick wheel will appear. Once the desired source settings are selected, touch away from the menu. The appropriate sources for both A and B are displayed directly below this selection box.

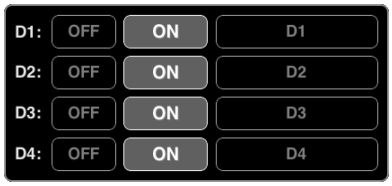
2.30 Digital Channels

The purple, yellow, blue and orange signals represent the four digital channels. Simply touch the far left rectangle D1 of the desired digital signal. Leave your finger on the rectangle and

move the channel position either up or down.

2.31 Digital Channels On / Off

Touch on Digital the menu bar. The following menu will appear:



Each channel can be turned either on or off by touching either ON or OFF

2.40 Cursors

2.41 Cursors On / Off

Touch Cursors on the menu bar. Touch ON to activate cursors.

2.42 Cursor Axis

Then, touch either the HORIZONTAL cursor or the VERTICAL cursor. Select which signal to view by touching 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, make sure the menu bar is pulled down so that 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

Touch the Cursors icon from the menu bar. Touch ON to activate cursors.
Touch HORIZONTAL from the cursors menu and it will change from HORIZONTAL to HORIZONTAL.
Touch 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

Touch the Cursors icon from the menu bar. Tap ON to activate cursors. Touch VERTICAL from the cursors menu. On the 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 Δt 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 ΔV. When using vertical cursors with the analog channel both @t, Δt and @V, ΔV will be visible in the summary bar.

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

1.If cursor data is to be displayed in Base, touch 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, touch 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, touch 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.

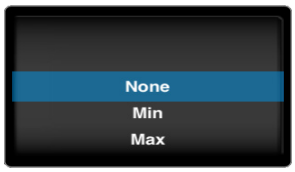
2.46 FFT Units

Touch the Cursors 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 touching the Volts option the voltage units will display as volts in the summary bar. Touching the dBv option will change the voltage units to dBv.

2.50 Measurements

Touch 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, touch None. Then, scroll through the pick wheel to choose the desired measurements. To activate the settings touch away from the menu.

iOS, Android, PC or Mac Oscilloscope



Up to six measurements can be selected for either CH A or CH B or a combination of both. Once selected, measurements appear on the top right of the interface.

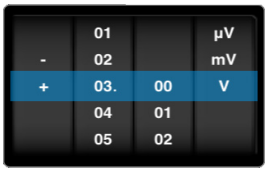
2.60 Trigger

2.61 Analog Triggering

The trigger level is controlled with the bubble located on the far right of the screen. If the bubble is green the triggered signal is CH A. If the bubble is blue, it is triggering on CH B. To change the trigger from CH A to CH B, touch Trigger. Then touch ANALOG. Then simply select the SOURCE to be triggered.

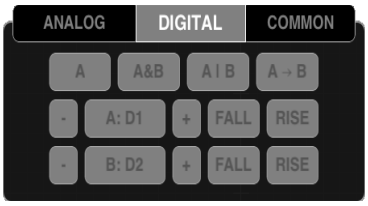
To change the voltage level, simply touch and drag the bubble either up or down. Moving the level up will increase the voltage level and moving it down will decrease the voltage level. The exact voltage level will appear just to the left of the bubble along with either an up arrow or a down arrow. An 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 Trigger. Then tap ANALOG and, when active, it will change to ANALOG.

To navigate to an exact trigger level touch 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 touch away from the menu. When analog triggering has been enabled, then all the advanced options for digital triggering will be grayed out.

iOS, Android, PC or Mac Oscilloscope



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

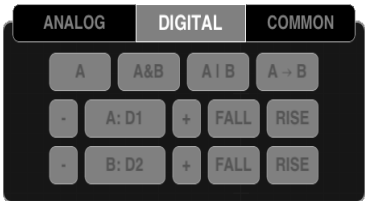
Analog triggering is always available in demo mode; it is not possible to deactivate until hardware is used.

To trigger off of a rising edge, touch Trigger. 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. Touch it once and it will activate to RISING. To trigger off a falling edge the same procedure should be followed. Falling should look like FALLING when activated and FALLING when deactivated.

To recenter your trigger level, touch GROUND and your signal will be brought in line with CH A.

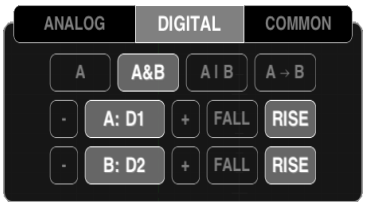
2.62 Digital Triggering

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. Touch Trigger from the menu bar. Then touch 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, touch one of the advanced triggering options.

iOS, Android, PC or Mac Oscilloscope



Then, the option that is touched 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 touch - 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, touch 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

Touch Trigger. Then touch COMMON. Touch the desired mode, either AUTO or NORMAL. For example, if activating AUTO mode touch 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.

To set the trigger delay from the trigger menu, touch Trigger then select COMMON and press 0.99 µs 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 BACK.

2.65 Holdoff

Touch Trigger in the menu bar to enter the trigger menu.

Touch COMMON. Touch 0.99 µs next to HOLDOFF to set the holdoff time. Setting the Holdoff value should be done in the same manner as the delay.

2.66 Analog vs Digital

Touch Trigger . Then touch COMMON. Touch the desired mode, either ANALOG or DIGITAL. For example, if activating ANALOG mode touch ANALOG and it will change to ANALOG. Repeat the process for DIGITAL mode. The default setting is ANALOG.

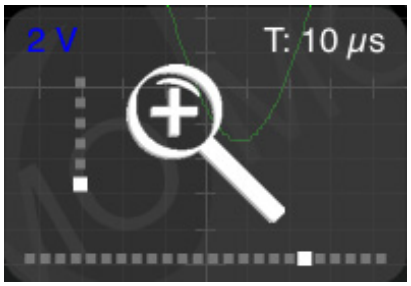
2.66 Single-Shot Waveform Capture

If the signal is active, the screen can be paused by touching Pause. 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 touching Play. In order to capture a single-shot wave form touch and hold Pause or Play until it changes to Single. Then touch Single, 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.

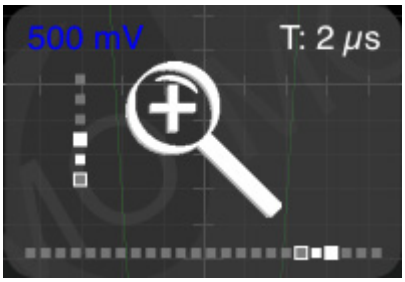
2.70 Pinch-to-Zoom

Zooming into a waveform is as easy as zooming into a picture on your smartphone. Both iMSO and iMSO provides instant feedback showing both the scale you're in & where you're headed.

Current Scale



Proposed Scale



The blue number in the top left corner shows your volts per division and the white number in the top right corner shows the timescale. Focus on the right image. The two solid dots show where you're headed and the white outlined dot shows your current scale.

On PC / MAC platforms, use the arrows for zooming (up / down / left / right).

2.80 Demo

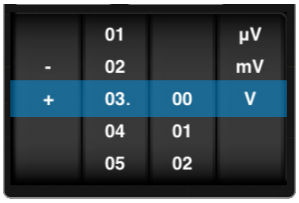
2.81 Demo Functions

When no hardware is attached, iMSO or 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, touch Demo to change the function that is being viewed. Although four different wave forms can be viewed on each analog channel, only one waveform can be viewed on each channel at any given time. To change the wave form being viewed, touch SINE then pick the desired waveform in the pick wheel. To activate the setting touch away from the menu.

iOS, Android, PC or Mac Oscilloscope

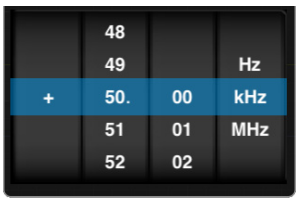
2.82 Demo Amplitude

Touch Demo from the menu bar on the right. To change the AMPLITUDE: of the signal touch 3.00 V located to the right of AMPLITUDE:. Enter the desired voltage using the pick wheel. To activate the setting tap away from the menu.



2.83 Demo Frequency

Touch Demo from the menu bar on the right. To change the FREQUENCY: of the signal, touch 50.00 kHz 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.



2.84 Demo DC Offset

Touch Demo from the menu bar. To set the DC offset, touch 3.00 V 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.

2.85 Duty Cycle

In order to change the Duty Cycle, the demo mode must be set to SQUARE. Once the demo mode is switched to square the Duty Cycle option will change from DUTY CYCLE: 0.50 to DUTY CYCLE: 0.00. To change the DUTY CYCLE: of the signal, touch 0.00. Enter the desired voltage using the pick wheel. To activate the setting tap away from the menu or tap BACK.

2.90 Settings

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

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

2.91 Grid Settings

iOS, Android, PC or Mac Oscilloscope

Lines vs. Dots

Touch  . Then touch the desired selection, either LINES or DOTS. 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

Touch  . Then touch < 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 GRATICULE to GRATICULE. Touching graticule is a shortcut for tapping all of the above.

2.92 Alerts

Touch  . 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, touch the alert and it will change from ON STARTUP to ON STARTUP. Touching ALERTS is a shortcut for tapping all of the above.

2.93 Persistence

Touch  . Then touch and swipe the dot to the right of persist 

. For the advanced options relating to DIG. PERSIST:, touch  . Digital persistence can either be turned off or on. To turn it on, tap ON. To turn digital persistence off, touch OFF.

2.94 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 touch SOUNDS and it will either turn sounds on SOUNDS or off SOUNDS.

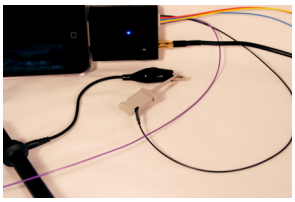
2.95 Compensation

The iMSO-204x is shipped fully calibrated and fully compensated. If, for any reason, the analog input ever needs to be re-compensated, a built-in 3.3 V, 1 kHz reference signal exists. Regardless of whether the function generator we provide is used or if an external input is used, the electrically isolated flathead screwdriver will help trim the signal. Here's how to use the built-in reference wave:

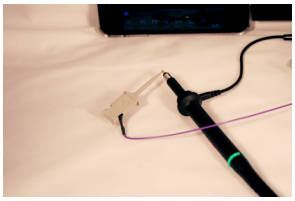
Touch  from the menu bar. From the setting menu, tap OUTPUT 1 kHz to enable the 3.3 V calibration signal. When the signal is activated OUTPUT 1 kHz changes to OUTPUT 1 kHz. Next, select 

on the menu bar and ensure 1x is selected. Insure 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.

iOS, Android, PC or Mac Oscilloscope



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.



2.96 Screenshot / Email

For screenshots, 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 touch  and then touch. The text SCREENSHOT will fade to 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.

For email, touch  . Then, touch  . 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 screen will be captured and available in photos where they can be emailed.

2.97 X/Y

It is possible to change the diplay mode to XY. Tap,  . Then, tap XY. This converts the oscilloscope from a volts vs. time display to a volts vs. volts display using two input channels.

2.98 Manage Data Log

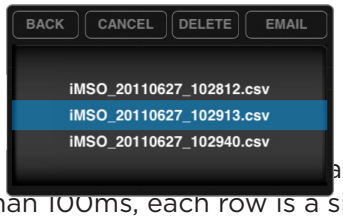
This feature is only available with hardware; it is not available in demo mode. When in demo mode the data logging options for DATA LOG: START and STOP are grayed out.

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

iOS, Android, PC or Mac Oscilloscope

Touch . Then touch MANAGE DATA LOG. 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.

When viewing the .csv data file:



Each column (excluding the first) is at is shown on the screen.
When the time scale is set to less than 100ms, each row is a single screen capture.
When the time scale is greater than or equal to 100ms, each row is a data point in time.

2.99 Configuration Settings

Reset Configurations

To reset the configuration, touch . Then touch RESET CONFIG.

Saving Configurations

Up to three configurations can be saved at a time. Touch . Then touch 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 touch LOAD. LOAD Will turn to LOAD and then back to LOAD, indicating the configuration has successfully been loaded.

Section 3 – Product Warranty & Accessories

3.10 Product Warranty

iMSO-204x hardware both come with a full one year manufacturer's warranty.
No warranty exists on probes and accessories.

3.20 Accessories

iMSO-204x come with the following accessories: 1x / 10x analog probe, logic harness, five SMD grabbers, and one screwdriver.

3.21 1x / 10x Analog Probes

The analog probe is capable of measuring signals up to 100 MHz (although our fastest scope is currently limited to 50 MSPS). This probe 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-204x hardware

3.23 SMD Grabbers

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

3.24 Screwdrivers

The electrically-isolated flathead screwdriver is custom made for iMSO-204x and is used for compensating the device.

Section 4 – Performance Specifications

iMSO-204x	
System Requirements (software)	iOS Version 7.0 & higher Android Version 4.0.3 & higher Windows 7 & higher Mac OS 10.10 (Yosemite) & higher
System Requirements (hardware)	iOS Lightning Devices (iPad, iPhone, iPod) Android Devices with USB OTG Windows or Mac with USB 2.0 & higher
Analog	2 Channel, 8 bit
Analog Probe	1x & 10x selectable, removable with SMB
Digital	4
Digital Probe	4 bits, 1 Gnd, 0.100" connectors with removable SMD Grabbers
Analog Bandwidth	5MHz
Max Sample Rate	50MSPS
Sample Depth	1000pts
Horizontal Sensitivity	200ns/div-10s/div
Trigger & Vertical Position	Adjustable
Vertical Sensitivity	50mV/div to 2v/div (1x); 500mV/div to 20v/div (10x)
Connector (to host)	Mini-B to Lightning, Mini-B to Micro-B, Mini-B to USB A
Max Digital Input Voltage	-0.5v to +7v
Max Input Voltage	-8v to +13v (1x); -40v to +40v (10x)
Coupling	AC or DC
Trigger Modes	Auto/Normal/Single/Stop
Trigger Types	Analog, Digital (A, A&B, A|B, A→B)
Live Measurements	6
Measurement Types	Frequency
	Period
	Min
	Max
	Mean
	Peak to Peak
	RMS
	Positive Duty Cycle
	Negative Duty Cycle
	Positive Pulse Width
	Negative Pulse Width
	Cycle Mean
	Cycle RMS
	Rise Time
	Fall Time
Features	Screen Capture → Email
	Demo mode (Analog)
	Horizontal/Vertical Cursor Measurements
	Reference Capture
	Delay (always on) / Holdoff ~99.99s max
	FFT, Data Logging, Advanced Math

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.

Section 5 – How to Contact Us

Thank you for your interest in Oscium's newest product: iMSO-204x! Please feel free to contact us if you have any questions, comments or feedback. The best way to reach us is by emailing support@oscium.com or by visiting us at 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 again for your interest in Oscium!