

eGalaxTouchManager User Guide

EXC31XX/EXC80H100/EXC80H84 Series

Controller Configuration Tool Suite



eGalax_eMPIA Technology Inc.

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1 Introduction

eGalaxTouchManager is a Windows application for fine tuning and optimizing performance of EETI EXC31XX projected capacitive touch^{*1} controller in touchscreen platforms. Tool provides the following features.

a. Controller Information Display

Displays EXC31XX controller information including firmware version and firmware serial number.

b. Touch System Surveillance

Reports anomalies detected by EXC31XX controller IC in processing of touch sensor data.

c. Touch Function Calibration

eGalaxTouchManager supports a complete set of calibration tasks including background value calibration and touch accuracy calibration.

d. Touch Operation Fast Configuration^{*2}

Tools supports fast tuning of EXC31XX controller's functional parameters, switching of operating frequency, system interference analysis and controller board re-configuration^{*3}.

Note 1: Projected Capacitive Touch, or PCAP.

Note 2: eGalaxTouchManager tool suite supports fast and efficient touch system tuning. When paired with EETI compliant touchscreen and system integration methodology, users can use this feature to fine tune and optimize touch signal integrity to quickly achieve stable and reliable touch function.

Note 3: Controller board re-configuration configures firmware parameters for normal touch operation.

This document serves as user's guide for eGalaxTouchManager tool suite. For further product related or technical questions, please contact touch solution vendor or EETI technical representative.

Web Site: www.eeti.com

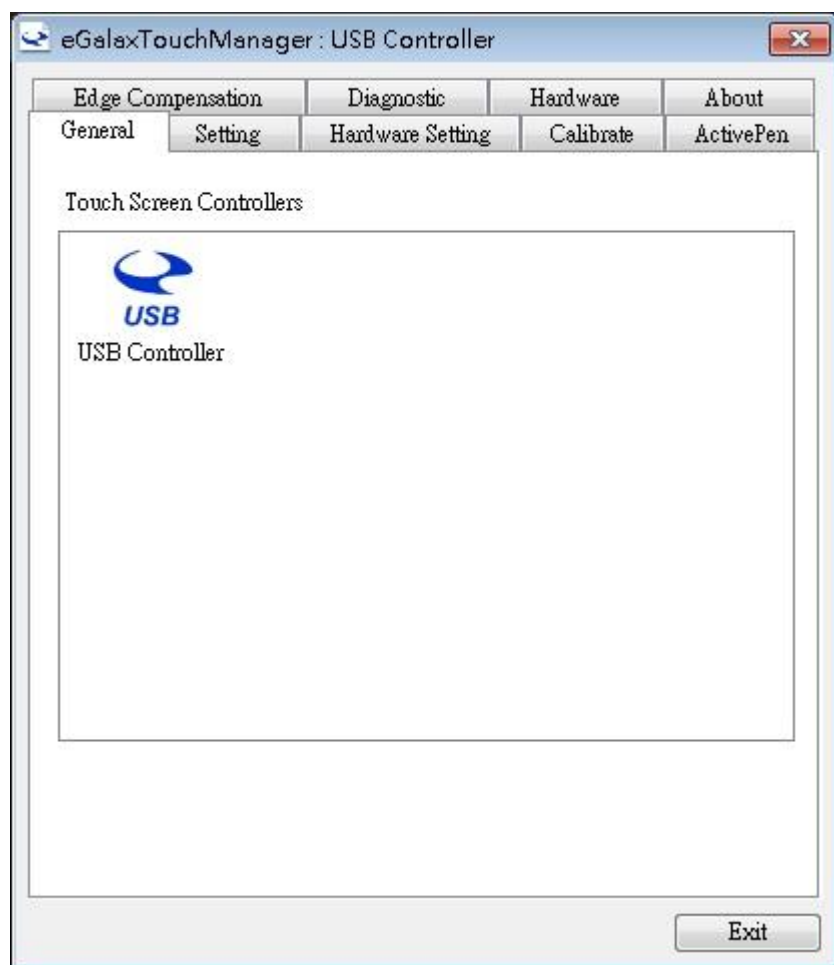
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FAE: touch_fae@eeti.com

2 eGalaxTouchManager Functional Description

2.1 General

This window displays all installed touch controller driver. User can select one for configuration.



2.2 Basic Settings

- a. After selecting controller, user can use this prompt to adjust beep sound related settings including mode, frequency and duration.
- b. When multiple displays are present, user can use this menu to associate touchscreen and display.

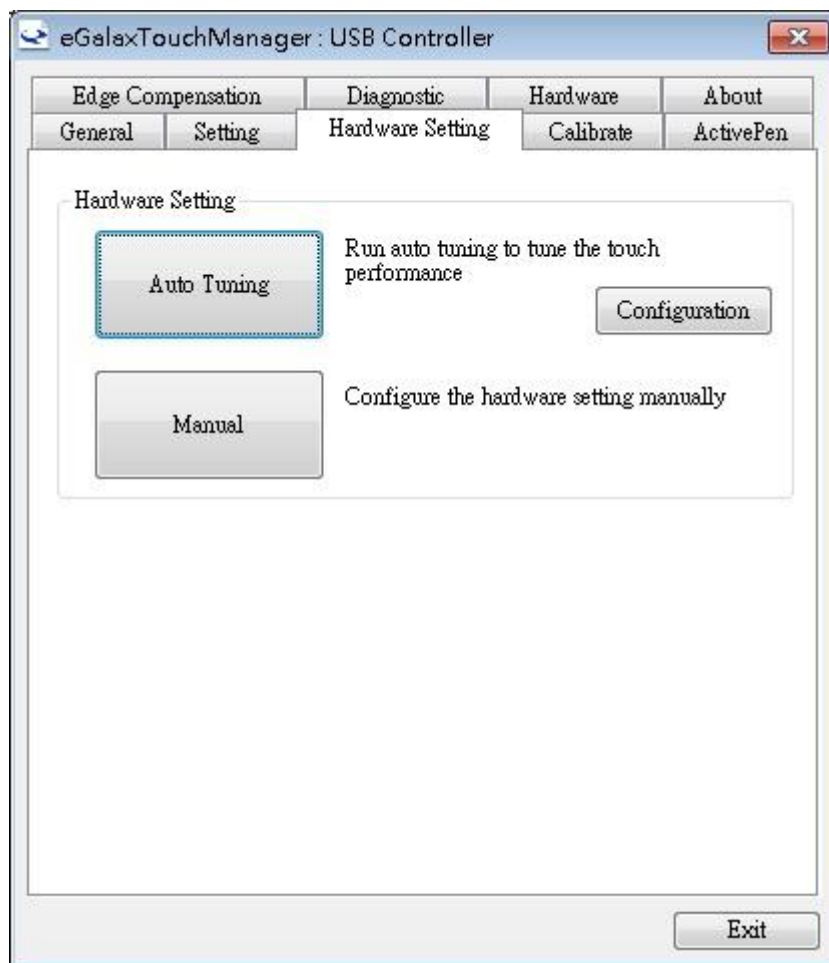


2.3 Hardware Setting

- a. There is performs hardware calibration including Auto Calibration and advanced Configuration of hardware. This feature is elaborated further in the next chapter. Hardware calibration cannot operate under older kernel versions. If firmware version is outdated, please contact touch solution vendor or EETI technical representative.

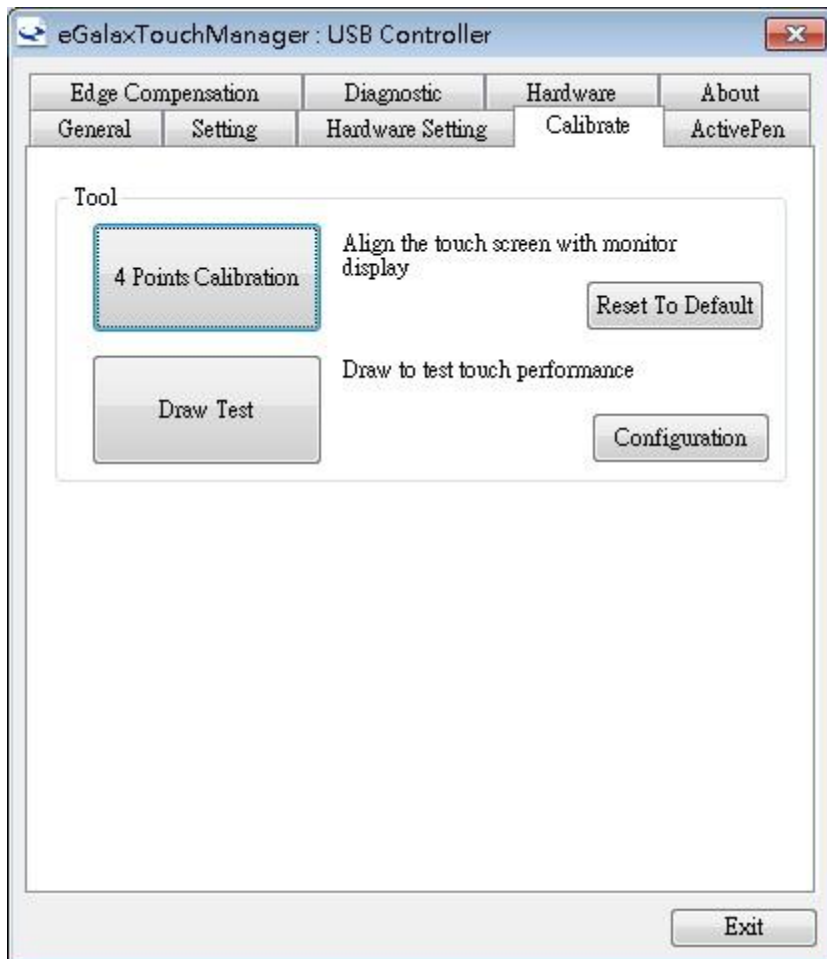
Controller Type	Kernel Version
EXC31XX Series	>v05_15
EXC80H100 Series	Supported
EXC80H84 Series	

- b. In this page, eGalaxTouchManager also supports the Auto fast calibration configuration setting. User can set the options



2.4 Calibration

- c. This page included a toolbox containing functions to correlate touchscreen and display positions and to perform draw test to validate touch function.
- d. In this page, eGalaxTouchManager also supports the Draw Test configuration setting. User can set the options



2.3.1 Draw Test Configurations

This menu allows user to select the Draw Test tool, the options as follow :

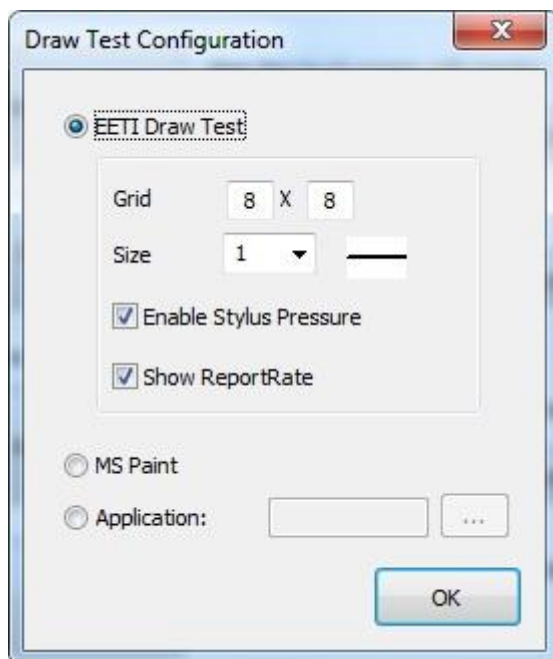
a. EETI Draw Test

User can adjust the Grid line of screen , draw line size , show report rate information and present the active pen pressure function.

b. MS Paint

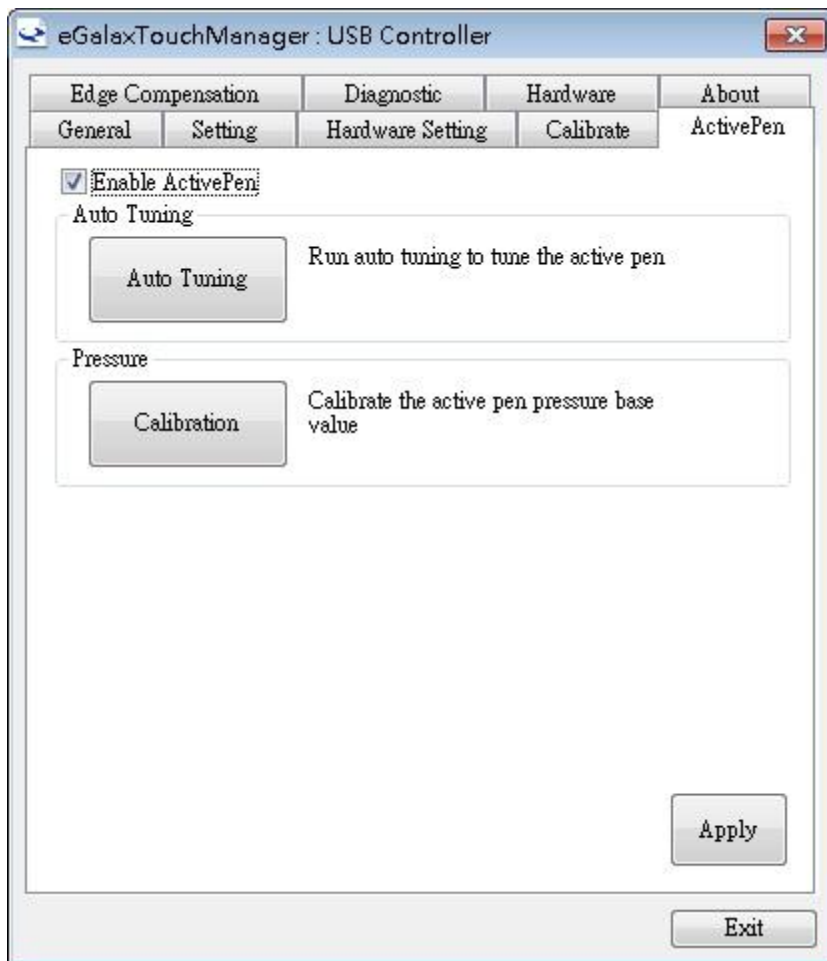
c. Application

User can select the specified application.



2.5 Active Pen

- a. The Active Pen setting page must be supported when the controller was support the active pen function.
- b. User can run the auto tuning to tune the active pen performance and calibrate the pressure base value for the active pen.
Please refer the 『ActivePen_Auto_Tuning_Quick_Guide_For_EXC80H84_Series.pdf』 for active pen auto tuning step by step.

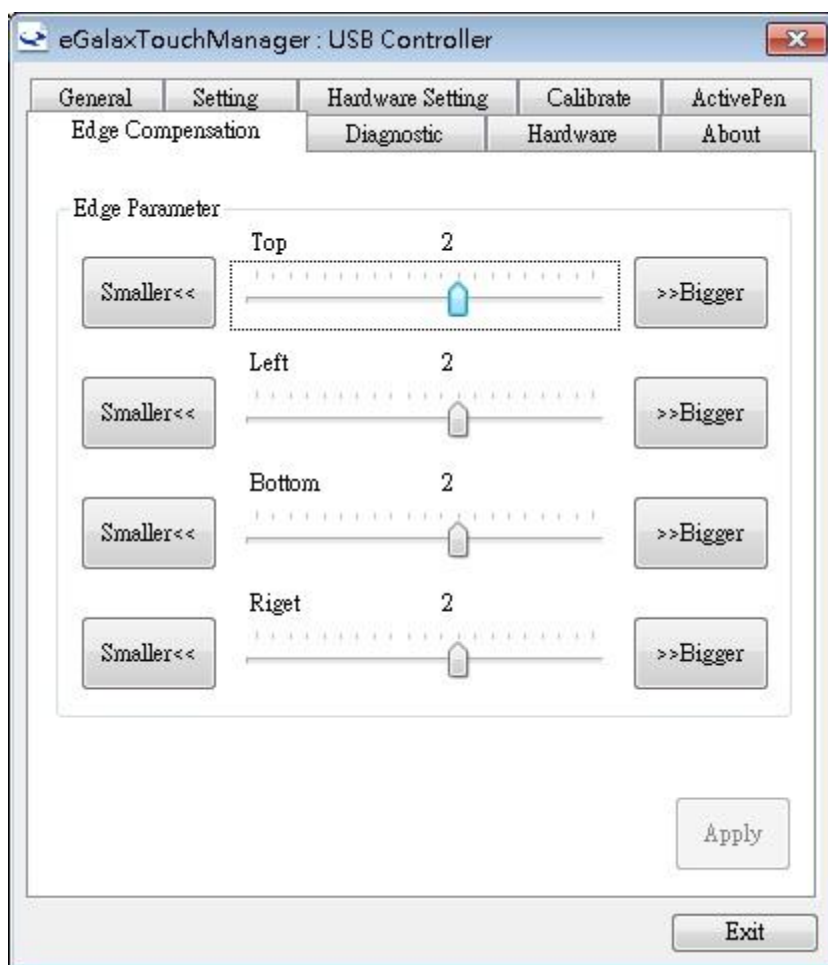


2.6 Edge Compensation

Edge compensation is performed on all four edges of the touchscreen to realize full range of touch coordinates.

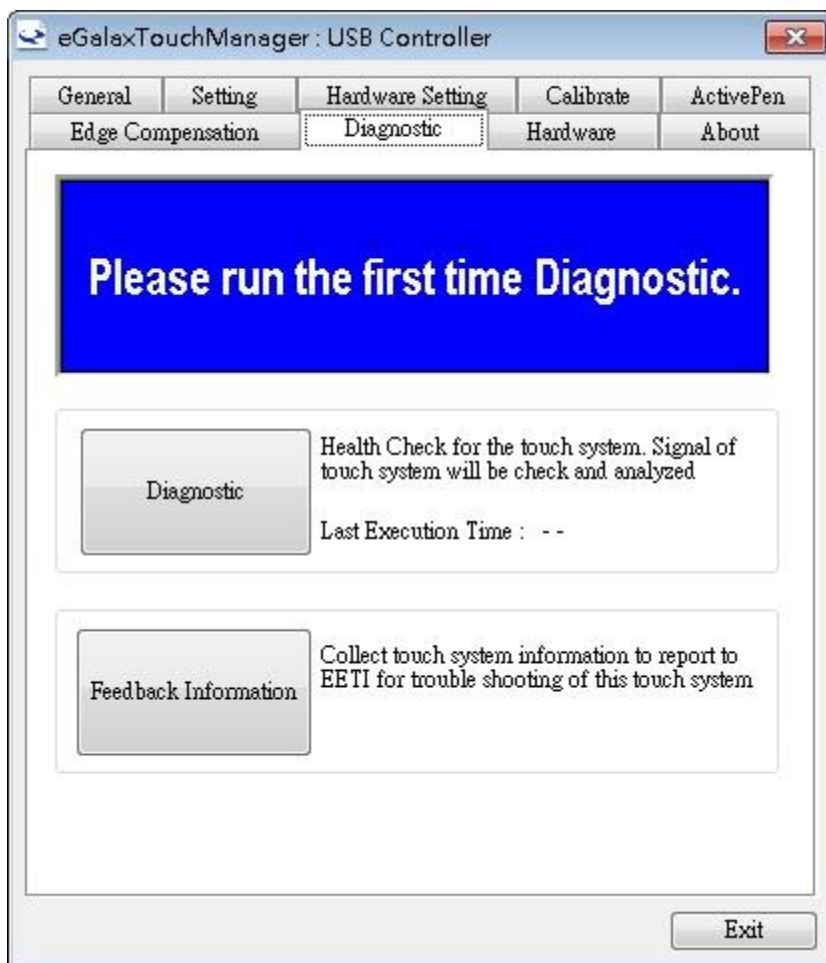
Edge compensation cannot be performed under older kernel versions. If firmware version is outdated, please contact touch solution vendor or EETI technical representative for assistance.

Controller Type	Kernel Version
EXC31XX Series	>v05_15
EXC80H100 Series	Supported
EXC80H84 Series	



2.7 Diagnostics and Analysis

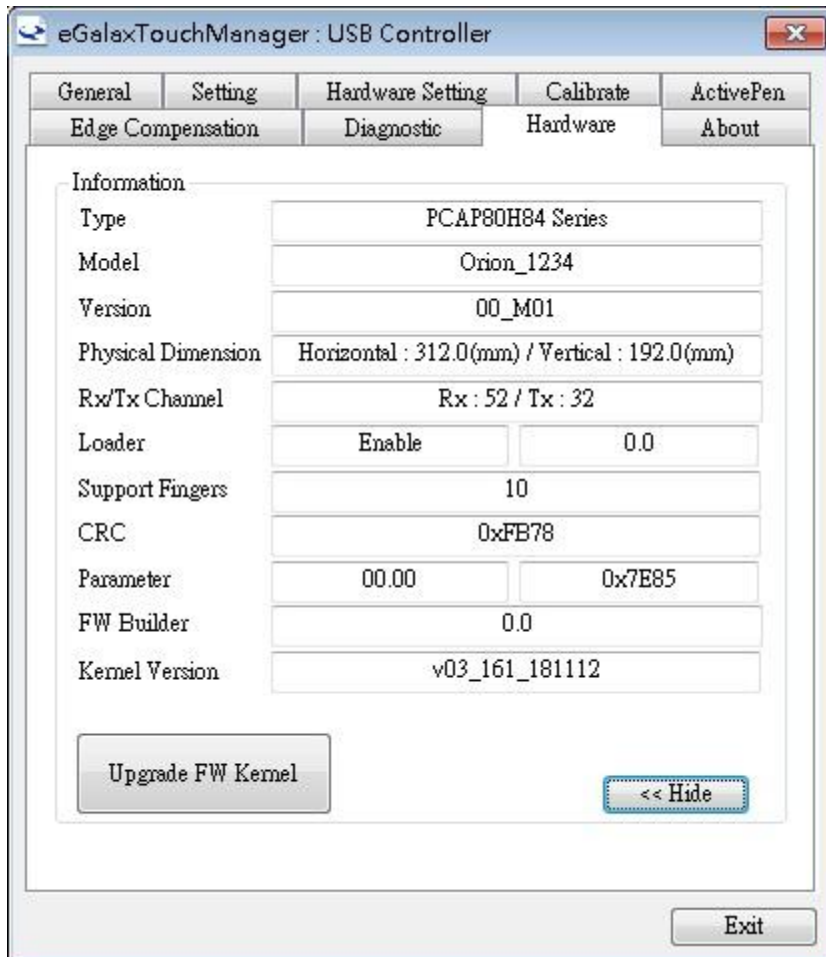
- a. When PCAP controller exhibits abnormal behavior, eGalaxTouchManager can run self diagnostics and analyze results to find cause for the anomaly and attempt to resolve the issue automatically. For example, abrupt changes in background values may cause abnormal touch operation. In this scenario, eGalaxTouchManager will rerun calibration under current system environment to optimize touch performance.
- b. If anomaly cannot be immediately resolved, or if additional assistance is required, user can click on “Information Feedback” to generate system report. eGalaxTouchManager will collect controller status information and compile a report for feedback. User can forward this report to touch solution vendor or EETI technical representative for further support and issue resolution.



2.8 Hardware Information

- This page displays detailed controller hardware information including firmware version and touch panel physical dimensions.
- User can update the controller firmware Kernel at this page.

After update controller firmware Kernel may cause touch system unstable and not guaranteed to operate normally. User can execute the 『Auto Calibration』 to complete full touch system tuning at the Calibration Page.



The screenshot shows the 'eGalaxTouchManager: USB Controller' window. It has a menu bar with 'General', 'Setting', 'Hardware Setting', 'Calibrate', 'ActivePen', 'Edge Compensation', 'Diagnostic', 'Hardware', and 'About'. The 'Hardware' tab is selected. The 'Information' section displays the following details:

Type	PCAP80H84 Series	
Model	Orion_1234	
Version	00_M01	
Physical Dimension	Horizontal : 312.0(mm) / Vertical : 192.0(mm)	
Rx/Tx Channel	Rx : 52 / Tx : 32	
Loader	Enable	0.0
Support Fingers	10	
CRC	0xFB78	
Parameter	00.00	0x7E85
FW Builder	0.0	
Kernel Version	v03_161_181112	

At the bottom of the information section, there is an 'Upgrade FW Kernel' button and a '<< Hide' button. An 'Exit' button is located at the bottom right of the window.

2.9 About

Displays eGalaxTouchManager version number and copyright information.



3 eGalaxTouchManager Auto Calibration

eGalaxTouchManager provides fast and convenient calibration and tuning. When paired with EETI compliant touchscreen and system integration methodology, user can utilize Auto Calibration to quickly achieve reliable touch function.

Fast Auto Calibration analyzes touchscreen signal and system environment automatically to find the optimal working configuration for the controller. User then makes adjustments to touch sensitivity and finishes touchscreen to display position correlation to complete full touch system tuning. There were difference auto tuning procedures with difference controller types. User can refer the auto tuning quick guide documents.

Controller Type	Auto Tuning Quick Guide
EXC31XX Series	Auto_Tuning_Quick_Guide_For_EXC31xx_Series.pdf
EXC80H100 Series	Auto_Tuning_Quick_Guide_For_EXC80H_Series.pdf
EXC80H84 Series	

3.1 Auto Calibration Procedures

a. Touchscreen Basic Info Analysis

After initiating Auto Calibration, eGalaxTouchManager will first perform touch system hardware scan.

b. System Environment Analysis

This step analyzes electrical characteristics of touch system, and next step requires user to press and hold on the flashing finger symbol on the screen. Please continue to hold until instructed otherwise.

c. Touchscreen Signal Analysis

This step collects data on touchscreen hardware signals for analysis.

d. Touch Signal Calibration

Check the touchscreen direction. Requires user to press and hold at the same time on the flashing symbol in different locations on the screen.

e. Touchscreen Sensitivity Adjustment

After completing hardware signal tuning, tool will proceed to adjust touchscreen sensitivity. Please follow the on-screen finger symbol and draw within the red line bounded rectangular region until data collection progress bar reaches 100%.

f. Accuracy Correction

At this point Auto Calibration has completed configuring the controller. The final step is to perform position correlation between touchscreen and the display, and complete it within the specified time.

g. Touch Performance Validation

After completing Fast Tune, user can perform hand draw test to verify touch functionality, and decide whether to retain the calibration setting.

3.2 Auto Fast Calibration Configurations

a. Auto detect touch panel

Self detection of touchscreen driving and sensing line designations. If result of self detection does not match actual touchscreen hardware topology, it can be disabled self detection in configuration setting and manually the actual driving and sensing line designations in IO Map window.

b. Check touch panel IO setting

Check the touch panel IO setting is correct. If the IO Setting does not match actual touchscreen hardware topology, it can be setting and manually the actual driving and sensing line designations in IO Map window.

c. Enable touch panel OPEN / SHORT test

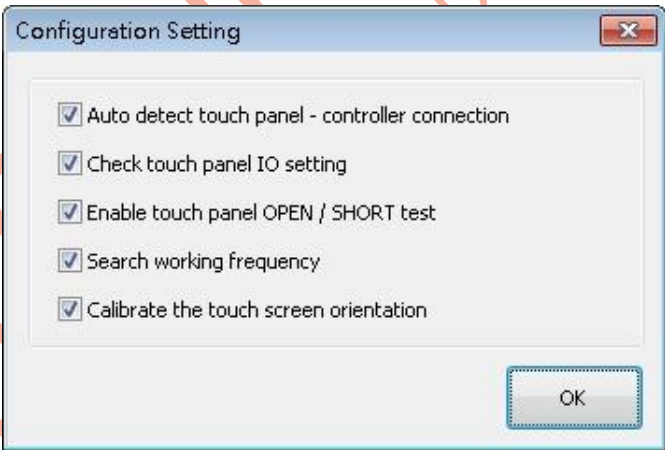
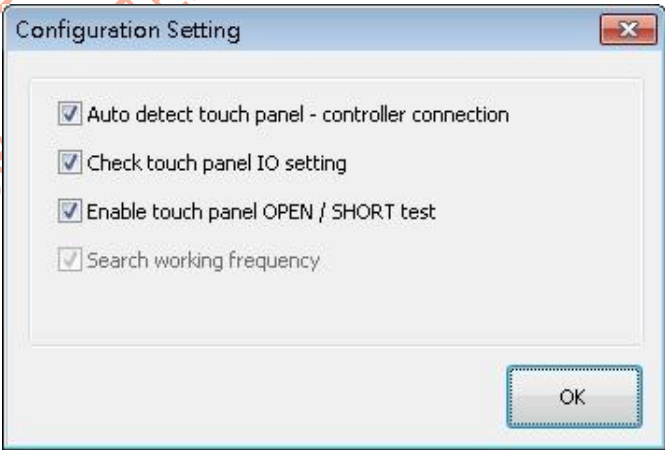
Check the touch panel OPEN or SHORT.

d. Search working frequency

During system environment , automatically search the working frequency which minimizes effects of background noise and system interference.

e. Align the touch screen

Perform position correlation between touchscreen and the display.

Controller Type	Configurations Setting
EXC31XX Series	
EXC80H100 Series	
EXC80H84 Series	

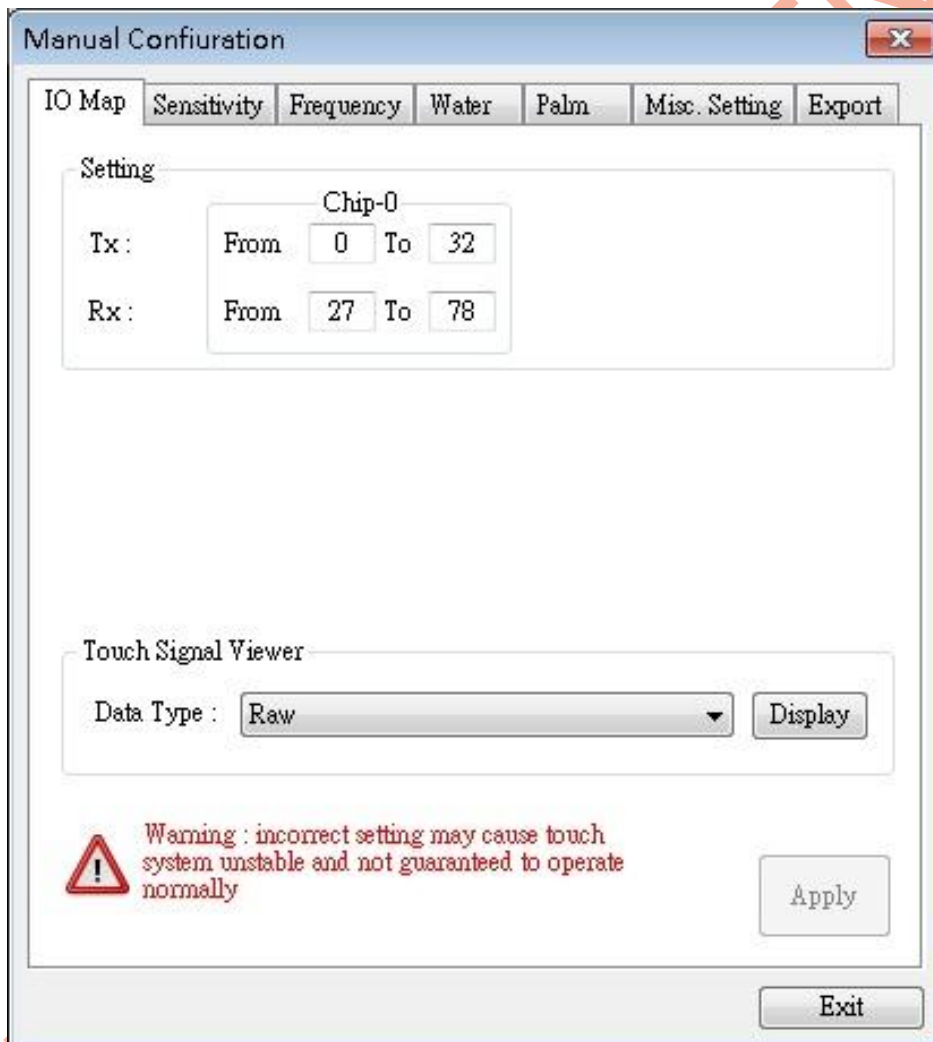
3.3 Manual Configuration

Apart from fast Auto Calibration, eGalaxTouchManager also supports advanced Manual Configuration. User can fine tune touch sensitivity and adjust working parameters manually.

Please advise that Manual Configuration requires knowledge into how the touchscreen operates. Incorrect setting may result in abnormal touch behavior. In this situation, please launch fast Auto Calibration to recover working controller configuration.

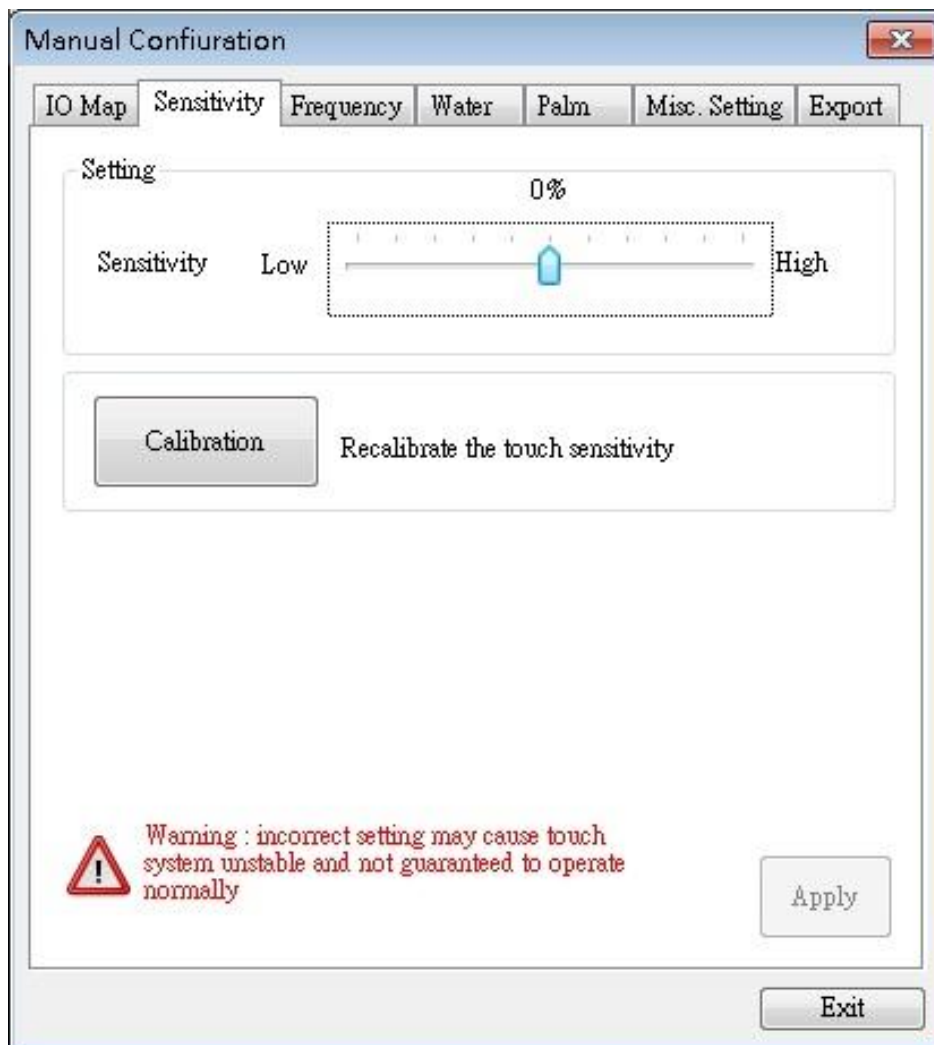
3.3.1 Touchscreen Line Configuration

- In Auto Calibration, eGalaxTouchManager by default enables self detection of touchscreen driving and sensing line designations. If result of self detection does not match actual touchscreen hardware topology, it can be disabled self detection in configuration setting and manually the actual driving and sensing line designations in this window.
- User can observed the real time signal of Touch System at the Touch Signal Viewer.



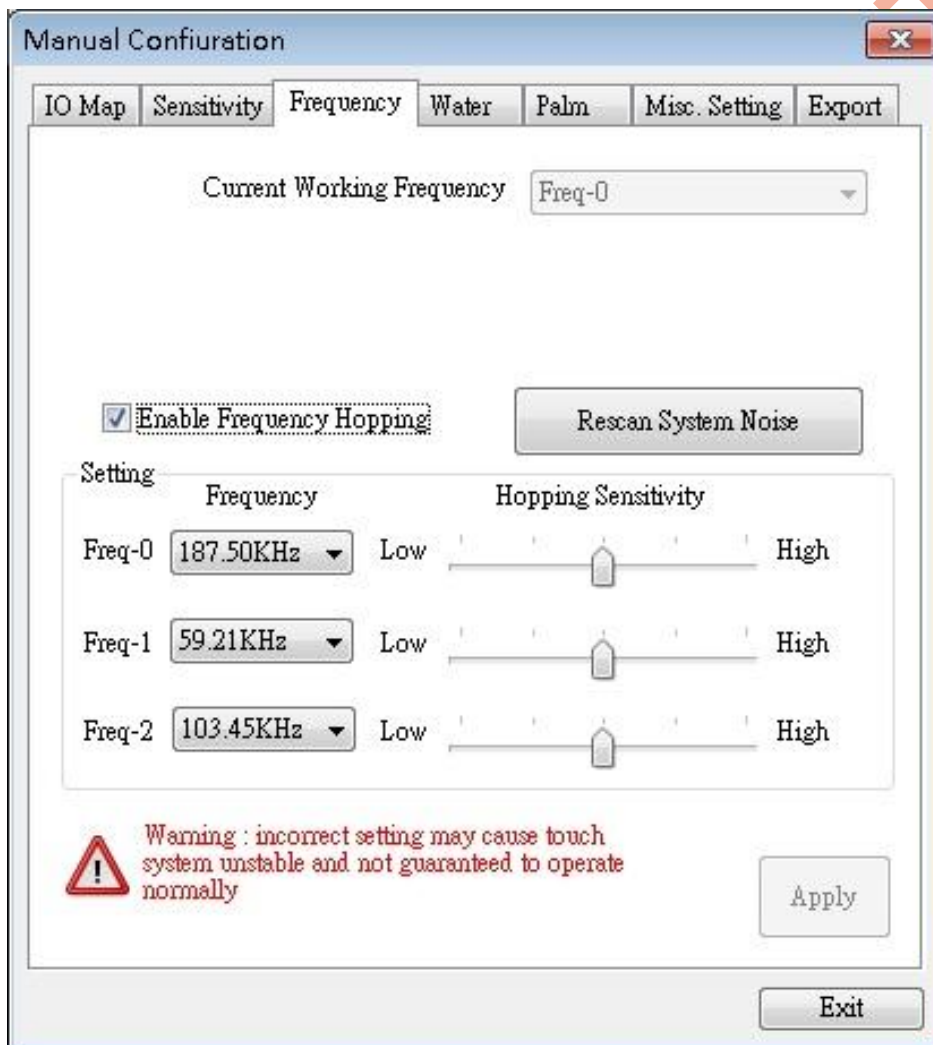
3.3.2 Sensitivity Adjustment

During touch sensitivity calibration, eGalaxTouchManager automatically selects a suitable working touch configuration. If user experiences insufficient sensitivity to touch or overly sensitive touch movement, a more suitable sensitivity level can be selected via this interface.



3.3.3 Operating Frequency and Environment Analysis

- This page lists 3 sets of supported operating frequencies and current operating frequency. User can change operating frequency in this menu.
- If a change in the environment results in current operating frequency being susceptible to background noise and impacts touch functionality, user can initiate System Environment Re-Scan. During System Environment Re-Scan, eGalaxTouchManager will find a frequency which minimizes effects of background noise and system interference. Alternatively, user can use Freq-0/1/2's pull-down menu to test and compare performance of each setting.
- By default Frequency-Hopping is disabled. If Frequency-Hopping is enabled, hop sensitivity of each frequency set can be individually adjusted.



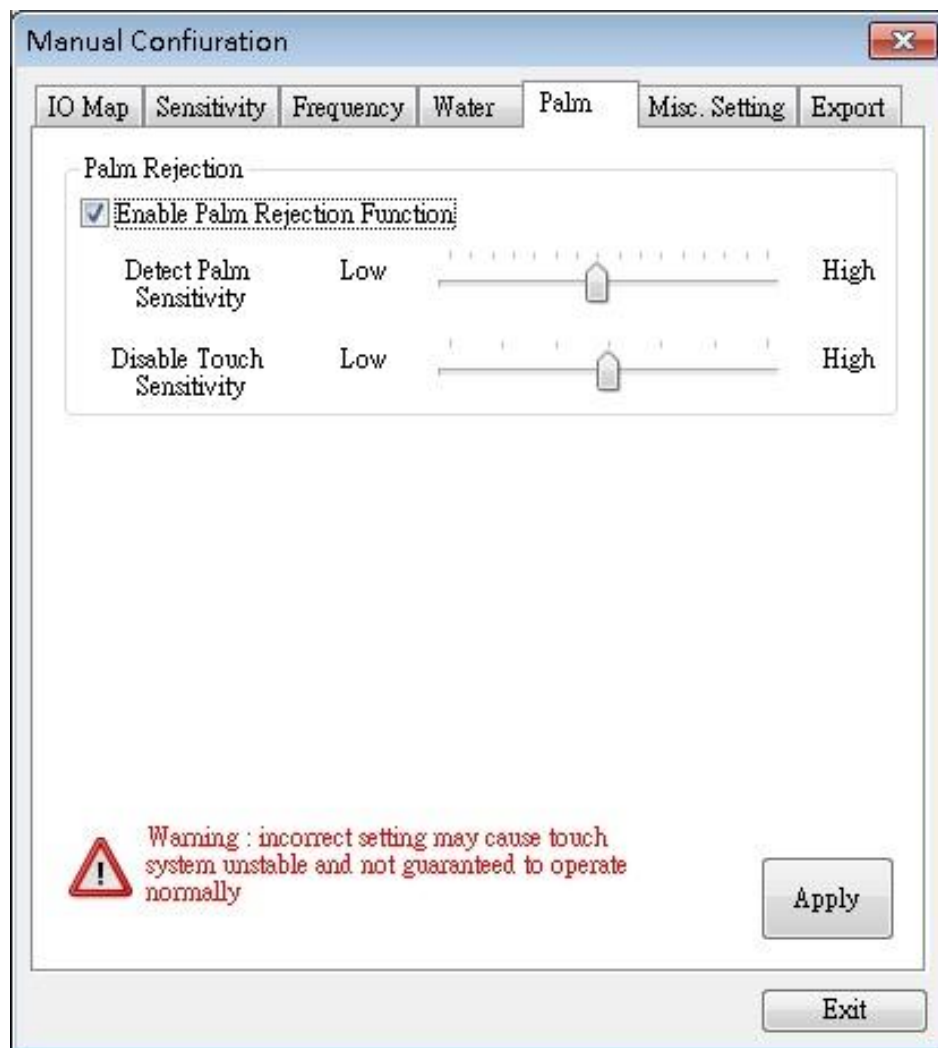
3.3.4 Water Resistance

- This menu allows user to Enable/Disable the Water Resistance function and adjust the sensitivities of Water Resistance.
- The Water Resistance is a customize function, if user need to support the water resistance setting page, please contact touch solution vendor or EETI technical representative for assistance.



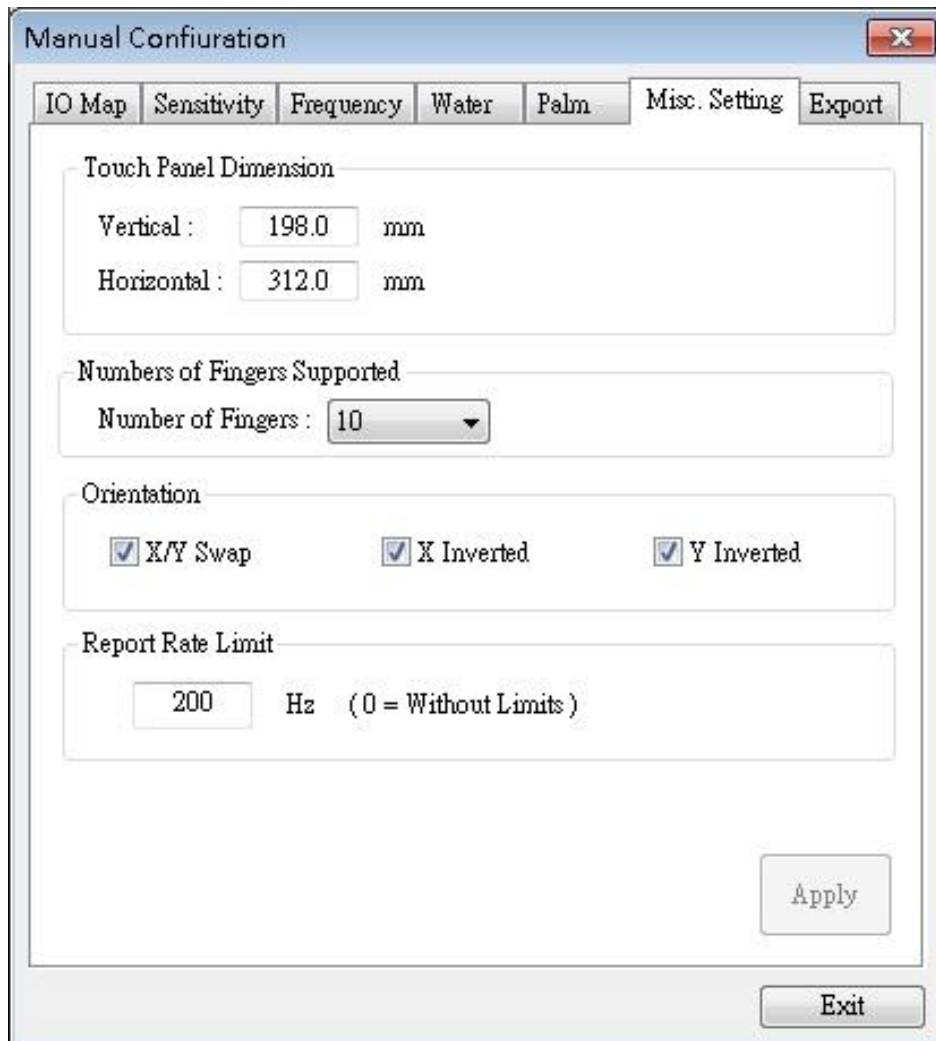
3.3.5 Palm Rejection

This menu allows user to Enable/Disable the Palm Rejection function and adjust the sensitivities of the Palm Reject.



3.3.6 Touch Parameter

This menu allows user to enter actual touch panel dimensions in millimeters (mm) , supported number of fingers and touch screen directionality and setting report rate limit.

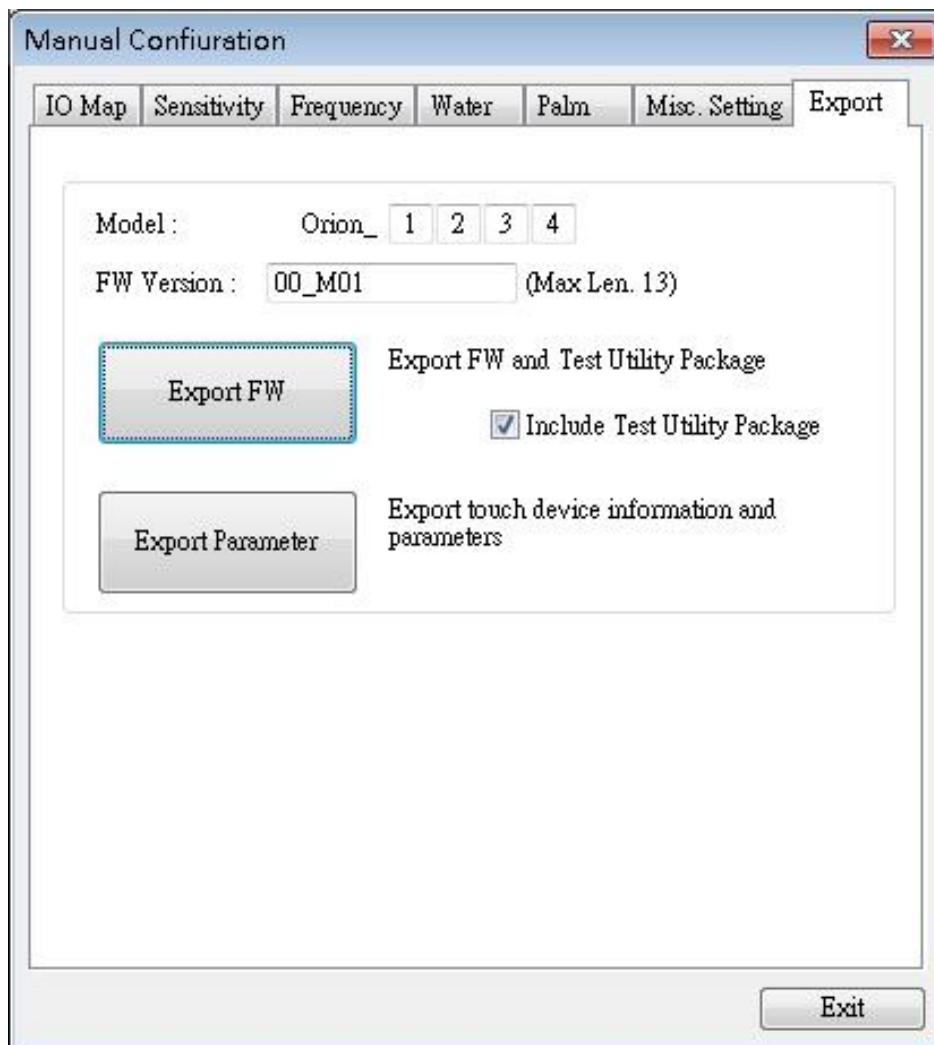


The image shows a 'Manual Configuration' window with several tabs: IO Map, Sensitivity, Frequency, Water, Palm, Misc. Setting, and Export. The 'Misc. Setting' tab is active. It contains four sections: 'Touch Panel Dimension' with input fields for Vertical (198.0 mm) and Horizontal (312.0 mm); 'Numbers of Fingers Supported' with a dropdown menu set to 10; 'Orientation' with three checked checkboxes: X/Y Swap, X Inverted, and Y Inverted; and 'Report Rate Limit' with an input field set to 200 Hz (0 = Without Limits). At the bottom right are 'Apply' and 'Exit' buttons. A large red watermark 'EETI RELEASE UNDER NDA' is visible across the image.

Section	Parameter	Value
Touch Panel Dimension	Vertical	198.0 mm
	Horizontal	312.0 mm
Numbers of Fingers Supported	Number of Fingers	10
Orientation	X/Y Swap	<input checked="" type="checkbox"/>
	X Inverted	<input checked="" type="checkbox"/>
	Y Inverted	<input checked="" type="checkbox"/>
Report Rate Limit	Report Rate	200 Hz (0 = Without Limits)

3.3.7 Export Firmware

- This menu allows user to export firmware setting and parameters form controller.
- User can set the Model and Firmware Version information for exported file , and offer export the Test Utility Package for selection.





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