

IQS7225A GUI Setup Guide

The purpose of this document is to guide the user in configuring the IQS7225A using the GUI PC software

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IQ Switch[®] ProxFusion[®] Series



1 Introduction

The purpose of this document is to describe the graphical user interface (GUI) layout available in the IQS7225A PC Software for device debugging and display purposes. The designer can configure the IC via the GUI software for a specific application and evaluate its performance in real time. Although configuration examples will be provided, this document is not intended to cover all applications. Instead, it aims to equip users with the knowledge needed for configuration, debugging, data logging, and header file export using the GUI software to address their unique applications. Furthermore, the scope of this document is limited to the configuration of the IQS7225A using the appropriate and latest Azoteq IQS7225A GUI PC Software. For guidelines on the hardware and electrode design, please refer to the appropriate application notes. For IC-specific information, operation, and memory map details, please refer to the IQS7225A Datasheet.

2 Getting Started

This section describes the process of initial device set-up prior to application-specific tuning.

2.1 Step 1: GUI Software Installation

Download and install the Azoteq IQS7225A GUI PC Software from the Azoteq website located under: *Design -> Software and Tools* page. Extract the downloaded zip file, follow the installation wizard procedure, and afterwards launch the software executable program. The following window should appear after successful installation and upon software execution:



Figure 2.1: Main Window of The Azoteq IQS7225A GUI



2.2 Step 2: Hardware Connections

Connect your PC to the Azoteq configuration debug and display tool CT210A using a standard USBmicro data cable. The device under test (DUT), being either an IQS7225A EV-kit or an application PCBA with the device and required passives mounted on, can be interfaced with a suitable 20-to-10 pin ribbon cable connection (or application-specific connections), as shown in the picture below.



Figure 2.2: Hardware Connection For Streaming And Testing

Connect the power supply (VDD), ground (GND), I²C (SDA and SCL), and the data-ready interrupt signal (RDY) from the application hardware to the corresponding pins on the CT210A USB dongle, as shown in the numbered and colour-coded pin-out table in Figure 2.3 below.

Table 2.1: CT210A Pin-out

IQS Pins	CT210A Pins
GND	Pin 1
VDD	Pin 3
SDA	Pin 7
SCL	Pin 9
RDY	Pin 10



Figure 2.3: CT210A Power, I²C And RDY Connections



2.3 Step 3: PC Connection Verification

After connecting the CT210A device to the computer using a USB port and micro-USB data cable, the GUI software will automatically install any necessary drivers. It will then verify its connection and firmware, displaying the CT210A's device ID and a 'Device Connected' message in the configuration tool manager section, as shown in the red block in Figure 2.4.

Azoteq IQS7225A v1.3									-	
Reset (i) About							IQS	7225	A 🦉 A	zoteq
DEVICE MANAGER			A	CK RESET	SET ATI ALL	RESEED ALL		*	EVE	NTS VIEW LOG
CT210A : 430146433341323005D52D3 ~	E	Bars	Channel Scope	Encoder Scope					ATI Active	ATI Error
STRATT STOP STREAMING STREAMING	1000			Bar (Chart			_	Prox Debounce	Device Reset
CT210A :		Legend							Globa	al halt
Connected	800	LTA						_	EVE	NTS
								_	Prox	Touch
	600							Prov		
								Touch	Deen	Touch
SETTINGS	400							- Deep louch	beep	louen
WRITE CHANGES READ SETTINGS									EVE	NTS
Q	200							_	ATI	Power
Power Mode & System Settings Apple Report Rates & Mode Timeouts									CH0 Trigger	CH1 Trigger
DITA Overwrite	-								CH2 Trigger	CH3 Trigger
Count & LTA Flitter Reseed Cycle 0 Data	0+							-	CH4 Trigger	CH5 Trigger
Cycle 1 Data Cycle 2 Data	Count:	0	0	0	0	0	0		ENCODE	R STATES
▷ Cycle 3 Data	LTA: Delta:	0	0	0	0	0	0			
Cycle 4 Data	Level:	ō	0	ō	0	0	0			
Cycle 5 Data Cycle Channel Selection								-	Coil A	Coil B
Button 0 Settings				ENCO	DER'OUTPUT					
 Prox Engine Stabilization Time Button 1 Settings 			Encoder Angle			Encoder	Lounter			
			0			0			Current Power Mode :	

Figure 2.4: CT210A Recognition And Connection

Note - If the connected CT210A device firmware is out of date, an 'Update available' button should automatically appear next to the device enumeration. Click this button to launch the appropriate CT firmware upgrade tool and update the firmware, as shown in Figure 2.5. IN the image displayed in Figure 2.5, the connected CT210A is already up-to-date with the latest firmware and does not require an update.

	🖉 Azoteq CT Firmware Upgrader	– 🗆 X
CONFIGURATION TOOL MANAGER		<i>Azotea</i>
CT210A : 511456103837425205D9FF3; V UPDATE	CURRENTLY CONNECTED:	Azoten - CT210A v1 0 27
	CONNENTER CONNECTED.	ALOUCH - CIETOA VI.O.E/
START STOP	AVAILABLE UPGRADE:	Azoteq - CT210A v1.0.27
	CONNECTED DEVICE: Azoteq - CT210A v1.0.27	^
LOGGING IMPORT H FILE EXPORT H FILE	0	
SETTINGS WRITE CHANGES READ SETTINGS USER SETTINGS	START UPGRADE LOAD CUSTOM DFU	

Figure 2.5: CT210A Firmware Upgrade



2.4 Step 4: Initiate DUT Communication (Streaming)

Click on 'START STREAMING' to initialise the serial connection to the DUT. Additional messages will appear and will provide the following information:

- > Power status
- > I²C address
- > Device version information
- > Settings and streaming confirmations or errors, as applicable



Figure 2.6: Message Dialogue Results From A Successful DUT Connection

If the messages mentioned above fail to appear, please ensure that the device is properly connected and that the DUT IQS part and version accuracy are verified.

2.5 Step 5: Acknowledge Reset

Click on the red text button 'ACK RESET' as shown below. After the 'Reset' event flag clears, the text 'ACK RESET' should change colour to black, indicating successful reset acknowledgement, and should remain so thereafter.



Figure 2.7: Default Device Setup Streaming From DUT After Power-on / Reset





2.6 Step 6: Device Configuration

The device may now be configured further by either loading the pre-configured settings (in a *.h* - header file format) or selecting the 'USER SETTINGS' button to open the pop-up window with settings organized in menu tabs. Refer to Section 4 for more detail.

Note - Only a single instance of the GUI software may run at any given moment, and therefore, only one device can be streamed at a time. Opening multiple instances of the GUI or other Azoteq PC software and tools may cause program and streaming malfunctions.

2.6.1 Configuring Using Pre-Configured H-File

If the device was previously configured and an associated .h-file was exported from the GUI, the file may now be imported into the GUI using the 'IMPORT H FILE' button. Additional information will be provided, to verify that the file was imported correctly:



Figure 2.8: Importing A Predefined Configuration

2.6.2 Configuring Using User Settings

As an alternative, when using the standard IQS7225A EV-kit hardware (AZP1277A1), one can simply open the "USER SETTINGS" window, navigate to the first tab named "EV-Kit Module", and click on the image button of the kit to apply the predefined configuration settings for the demo. Refer to Figure 2.9 and Section 4 for the configuration details.

Note - The pop-up user settings window can be used to configure all the IQS7225A device parameters.



a Settings	-		×			
EVKit Module						
EVKit Module						
General Settings						
Report Rates & Timeouts						
Cycle Settings 0 - 2						
Cycle Settings 3 - 5						
Cycle Channel Select	Inductive Sensing					
CH0 Button Settings						
CH1 Button Settings						
CH2 Button Settings						
CH3 Button Settings						
CH4 Button Settings						
CH5 Button Settings						
CH0 Sensor Settings						
CH1 Sensor Settings	C Read Transfer C					
CH2 Sensor Settings						
CH3 Sensor Settings	- Contraction of the Contraction					
CH4 Sensor Settings						
CH5 Sensor Settings	L-SENSING					
Encoder UI						
Multi-Level Inggers						
	WRITE CHANGES READ SETTINGS					
	No Changes To Write					

Figure 2.9: Importing The Predefined Demo Configuration

2.7 Step 7: Export Device Configuration

After configuring the DUT, you can export the new settings for safekeeping, sharing, or future use on the same or another device. The settings are exported as a *.h*-header file using the 'EXPORT H FILE' button. Take care to save the new settings file with an appropriate descriptive name and file location, as intended.







3 GUI Overview

The IQS7225A graphical user interface (GUI) software allows the user to test, configure, and export settings (as *.h*-files) for the IQS7225A IC. Figure 3.1 shows the main window components of the GUI, each numbered for reference in later descriptions.



Figure 3.1: Main Window Sections of The Azoteq IQS7225A GUI

The description of each numbered item in Figure 3.1 is provided below.

- (1) Configuration Tool Manager Allows for general configuration tool hardware recognition, control, and feedback in the GUI. The top drop-down box will display the available configuration tool (CT or DS) devices connected to the PC. If a valid selection is made, the 'START STREAM-ING' button may be used to initiate l²C communication and start a data 'stream' from the DUT. If the stream starts successfully, the button will change to 'PAUSE STREAMING', allowing you to temporarily pause l²C activity from the configuration tool and ignore any DUT RDY signals. To end the l²C communication, use the 'STOP STREAMING' BUTTON. The text box provides general information on the l²C connection, completed tasks, and error messages in case of any unsuccessful attempts or lost communications. The logging button may be used to capture or record sensor register data and export the streaming session's data to a *.csv*-file. The 'IMPORT H FILE' button allows the user to load a previously configured settings file (*.h*-file) to the DUT. The 'EXPORT H FILE' button will create, overwrite, and save a new *.h*-file using the current configuration settings present on the DUT.
- (2) **Settings Tree** All available device settings may be found here. The settings tree contains the same options as the 'USER SETTINGS' window but directly represents the memory map structure. The 'USER SETTINGS' interface is more user-friendly and logical, making it the recommened primary configuration portal. Except for some settings described later in this document, the settings tree should only be use with support of an Azoteq or distributor Field Application Engineer (FAE).



(3) System Commands Section - The 'ACK RESET' button will issue a reset acknowledgement command to the IC as confirmation of coming from a power-on or reset state (with default device settings populated). The 'SOFT RESET' button commands the DUT to perform a soft reboot. The 'ATI ALL' button commands the DUT to use its automatic tuning implementation (ATI) algorithm for sensor recalibration (please refer to the IQS7225A Datasheet for more information). The 'RESEED' button instructs the DUT to set its Long Term Average (LTA) filtered values to match its current count values.

Note - These operations apply globally to all channels and to the entire device.

(4) Bar, Channel Scope, and Encoder Scope - This area will visually display bar graphs of the sensor counts, LTA signals, and delta counts as configured for every channel. The current values for each channel are displayed in a decimal format below their respective channels. The results may be viewed on the bars by selecting the primary 'Bars' tab, or the same data stream can be plotted as lines over time on a secondary scope view by selecting the "Channel Scope" tab. The 'Counts' value represents the filtered input signal from the device's sensors. The 'LTA' is the long-term average of the counts and acts as a slow-adjusting baseline used as a reference to detect any quick deviation in Counts. The channel's Counts and LTA line plots can be selected or deselected for display to make the scope view less cluttered. The encoder angle and encoder counter can also be viewed as a line plot by selecting the "Encoder Scope" tab. To adjust the number of points on the x-axis, press 'RESET X AXIS' to apply or update the scope view. For scope navigational control explanations, please click on the 'HELP' button.



Figure 3.2: Scope View Of The IQS7225A GUI

(5) **Encoder Output** - If the encoder UI is configured for a given channel, then the encoder angle and encoder count of the configured channel will be represented graphically by the two sliding



visual elements together with a decimal value displayed underneath each sliding element. The encoder UI is required to be set up correctly to achieve the desired encoder angle and encoder count.

(6) Event Flags Section - This section provides a dashboard overview of various events that are triggered. Individual blocks light up for event occurrences or trigger activation states, and a text log of specific event selections can also be evaluated in the event log (timestamped text) terminal.

The various event flags are described as follows:

- > System flags 0
 - ATI active: Active when ATI routine execution is busy.
 - ATI error: Active when the ATI routine encountered an error on any of the channels.
 - **Prox debounce**: Active when a prox debounce occurs.
 - **Device Reset**: Active at power-on or when a reset has occurred (without acknowledgement through 'ACK RESET').
 - **Global halt**: Active when any channels' LTA value is halted by a prox, touch, or deep touch detection (requires global halt to be enabled).
- > System flags 1
 - **Prox event**: Active when any channel's prox state changes.
 - **Touch event**: Active when any channel's touch state changes.
 - **Deep touch event**: Active when any channel's deep touch state changes.
- > System flag 2
 - **ATI event**. Active when an ATI execution is initiated or completed.
 - Power event. Active when a power mode switch occurred.
 - CH0 trigger event. Active when channel 0 trigger event occurred.
 - CH1 trigger event. Active when channel 1 trigger event occurred.
 - CH2 trigger event. Active when channel 2 trigger event occurred.
 - CH3 trigger event. Active when channel 3 trigger event occurred.
 - CH4 trigger event. Active when channel 4 trigger event occurred.
 - CH5 trigger event. Active when channel 5 trigger event occurred.
- > Encoder status
 - Coil A event. Active when coil A is active.
 - Coil B event. Active when coil B is active.
- > Current power mode:
 - Shows the current power mode state in which the device is currently operating.

U.



4 Application Example

4.1 Mutual-Inductance Setup

This section will use the IQS7225A EV-kit hardware (AZP1277A1) as an example application. Figures 4.1 and 4.2 display the schematic and electrode layout of the IQS7225A EV-kit. The reader should load the predefined configuration settings as discussed in Section 2.6.1.



Figure 4.1: IQS7225A EV-kit Schematic Layout: IC With Passives









4.1.1 Step 1: General Settings

After loading the settings, Figures 4.3 and 4.4 show the enabled channels used and their Counts and LTA bars visible in the bar chart.

Note - The relation to the hardware layout.

<i>𝒜</i> Settings				-		×	
General Settings							
EVKit Module Power Mode Selection Interface Selection:							
General Settings	Normal Power Mode		I2C Streaming			~	
Report Rates & Timeouts	O Low Power Mode						
Cycle Settings 0 - 2	Halt Mode						
Cycle Settings 3 - 5	O Automatic Mode						
Cycle Channel Select	Enable ULP Mode		Number of ULP Conve	reione			
CH0 Button Settings				isions			
CH1 Button Settings			08				
CH2 Button Settings			0 16				
CH3 Button Settings			0.55				
CH4 Button Settings	Channel Enable						
CH5 Button Settings				45 11 1	d cur r		
CH0 Sensor Settings			CH3 Enable	4 Enable		nable	
CH1 Sensor Settings							
CH2 Sensor Settings							
CH3 Sensor Settings							
CH4 Sensor Settings	Event Mask 0						
CH5 Sensor Settings	Prox 🗹 Touch 🗹 Deep Touch 🗹 ATI 🗹 Power Mode						
Rotation UI							
Multi-Level Triggers							
	Event Mask 1						
	🗌 CH0 Trigger 🔄 CH1 Ti	rigger 🗌 CH2 Trigger	🗌 CH3 Trigger 🗌 CH	H4 Trigger	CH5	Trigger	
	I2C Window Timeout						
	10 ms						
	loms						
	WRITE C	HANGES READ SETTING	s				
	No Changes To Write						

Figure 4.3: Active channels In General Channel Settings Tab



Figure 4.4: Active Channels In The Inductive Coil And Slider Demo

The settings listed in the tab shown in Figure 4.3 can be described as shown below.

- > **Power mode selection**: Select between normal, low, ultra-low, halt, and automatic power modes.
- > Enable ULP mode: Enable or disable ULP mode.
- > **Channel enable**: Enable or disable one or more channels.
- > Interface selection: Select between I^2C streaming, I^2C events, and I^2C stream in touch.
- > **Event mask**: Enable or disable proximity, touch, deep touch, ATI, power, and trigger events.





- > I^2C window timeout: Set the required I^2C window timeout in milliseconds.
- > **Number of ULP conversions**: Set the required number of ULP conversions.

4.1.2 Step 2: Cycle Setup

The device uses cycles (or time slots) to perform the sensing on each channel. The IQS7225A is equipped with a dual ProxFusion[®] sensor engine design that can operate concurrently, necessitating synchronisation in sensing technology (or PXS mode) for each cycle. Channels 0 and 2 (utilising available receiver pins Rx0 - 3) are sensed by the first engine, while channels 1, 3, 4, and 5 (utilising available receiver pins Rx4 - 7) are sensed by the second engine. Figure 4.5 shows the distribution of channels across the two ProxFusion[®] sensor engines, which can both be used simultaneously for sensing.

				_		×
Cycle Channel Select						
EVKit Module General Settings	Cycle 0 Engine 0:		Cycle 0 Engine 1:			
Cycle Settings 0 - 2 Cycle Settings 3 - 5	Channel 0	۷.	None			~
CH0 Button Settings CH1 Button Settings CH2 Button Settings CH3 Button Settings	Cycle 1 Engine 0: None	v	Cycle 1 Engine 1: Channel 1			~
CH4 Button Settings CH5 Button Settings CH0 Sensor Settings CH1 Sensor Settings CH2 Sensor Settings	Cycle 2 Engine 0: Channel 2	Ŷ	Cycle 2 Engine 1: None			~
CH3 Sensor Settings CH4 Sensor Settings CH5 Sensor Settings Rotation UI Multi-Level Triggers	Cycle 3 Engine 0: None	¥	Cycle 3 Engine 1: Channel 3			~
	Cycle 4 Engine 0: None	¥	Cycle 4 Engine 1: Channel 4			¥
	Cycle 5 Engine 0:	~	Cycle 5 Engine 1: Channel 5			*
	WRITE CHANGE	ES READ SETTING	55			

Figure 4.5: Selected Channels for each ProxFusion® sensor engine

In this example, all cycles are configured in mutual-inductive mode. *Cycle 0* will sense channel 0, where the resonant tank connected to the circular coil (as shown in the EV-kit schematics) is driven by Tx0 and measured by Rx2. In the channel 0 Sensor Settings tab, Tx0 is designated as the transmitter and Rx2 as the receiver. *Cycles* 1, 2, 3, 4, and 5 will perform sensing on channels 1, 2, 3, 4, and 5, respectively. Table 4.1 below provides a full summary of the transmitter-receiver pin combinations of



the different channels.

Channels	Transmitter	Receiver
CH0	Tx0	Rx2
CH1	Tx9	Rx4
CH2	Tx3	Rx1
CH3	Tx8	Rx5
CH4	Tx11	Rx6
CH5	Tx10	Rx7

Table 4.1: Channel transmitter and receiver pins

As shown in Figures 4.6 and 4.7, all the cycles are configured to drive the selected TX pin at the device's FOSC frequency, while grounding the inactive or unused Rx pins. The cycles are also setup to transmit and receive at the standard 500kHz conversion frequency.

🗳 Settings	– 🗆 X						
	Cycle Settings 0 - 2						
EVKit Module	Cycle 0						
General Settings	Engine Mode Select: Tx-Rx Frequency (for Fosc = 18 / 14 MHz):						
Report Rates & Timeouts	Inductive V 0.50 / 0.38 MHz V						
Cycle Settings 0 - 2	Tx Select						
Cycle Settings 3 - 5							
Cycle Channel Select							
CH0 Button Settings							
CH1 Button Settings							
CH2 Button Settings							
CH3 Button Settings	UBias Enable 🗹 Fosc Ix Frequency 🗋 Dead Time Enable 🗹 VSS Inactive Pads						
CH4 Button Settings	Cycle 1						
CH5 Button Settings							
CH0 Sensor Settings	Engine Mode Select: Ix-Kx Frequency (for Fosc = 18 / 14 MHz):						
CH1 Sensor Settings	Inductive 0.50 / 0.58 MHz 1						
CH2 Sensor Settings	Tx Select						
CH3 Sensor Settings	□ Tx0 □ Tx1 □ Tx2 □ Tx3 □ Tx4 □ Tx5 □ Tx6 □ Tx7						
CH4 Sensor Settings							
CHO Sensor Settings							
Kotation UI							
Multi-Level Inggers	□ VBias Enable 🗹 Fosc Tx Frequency □ Dead Time Enable 🗹 VSS Inactive Pads						
	Cycle 2						
	Engine Mode Select: Tx-Rx Frequency (for Fosc = 18 / 14 MHz):						
	Inductive V 0.50 / 0.38 MHz V						
	Tx Select						
	□ Tx8 □ Tx9 □ Tx10 □ Tx11						
	□ VBias Enable 🗹 Fosc Tx Frequency □ Dead Time Enable 🗹 VSS Inactive Pads						
	WRITE CHANGES READ SETTINGS						
	No Changes To Write						

Figure 4.6: All Active Channels In Cycle Settings 0 - 2



🖉 Settings		- 🗆 ×					
Cycle Settings 3 - 5							
EVKit Module	Cycle 3						
General Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):					
Report Rates & Timeouts	Inductive Y	0.50 / 0.38 MHz					
Cycle Settings 0 - 2	Ty Select						
Cycle Settings 3 - 5							
Cycle Channel Select							
CH0 Button Settings							
CH1 Button Settings							
CH2 Button Settings							
CH3 Button Settings	□ VBias Enable	Time Enable 🔽 VSS Inactive Pads					
CH4 Button Settings	Cycle 4						
CH5 Button Settings		T. D. F					
CH0 Sensor Settings	Engine Mode Select:	IX-KX Frequency (for Fosc = 18 / 14 MHz):					
CH1 Sensor Settings	Inductive	0.30 / 0.36 MHZ					
CH2 Sensor Settings	Tx Select						
CH3 Sensor Settings	□ Tx0 □ Tx1 □ Tx2 □ Tx3 □ Tx4 □ Tx3	5 🗌 Tx6 🗌 Tx7					
CH4 Sensor Settings							
CHO Sensor Settings							
Multi-Level Triggers							
Mulu-Level Higgers	VBias Enable 🗹 Fosc Tx Frequency 🗌 Dead	Time Enable VSS Inactive Pads					
	Cycle 5						
	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):					
	Inductive Y	0.50 / 0.38 MHz *					
	Tx Select						
	Tx0 Tx1 Tx2 Tx3 Tx4 Tx3	5 🗌 Tx6 🗌 Tx7					
	□ Tx8 □ Tx9 ☑ Tx10 □ Tx11						
	□ VBias Enable 🔽 Fosc Tx Frequency □ Dead	Time Enable VSS Inactive Pads					
	WRITE CHANGES READ SETTINGS						
No Changes To Write							

Figure 4.7: All Active Channels In Cycle Settings 3 - 5



4.1.3 Step 3: Channel Setup

Next, set up the applicable channels. This example will focus on Channel 0, though each channel can be configured independently as needed.

It is important to select the correct Rx pins for each channel. For instance, as depicted in Figures 4.3 and 4.2, Channel 0 (CH0) uses Tx0 and Rx2. Therefore, under CH0 Settings, Rx2 should be selected as the receiver, as shown in Figure 4.8.

		– 🗆 X				
CH0 Sensor Settings						
EVKit Module						
General Settings	CRx Selection (EngineA / EngineB):	Mutual Bias Select:				
Report Rates & Timeouts	CRx2 / CRx6 ×	10µА ~				
Cycle Settings 0 - 2	↑					
Cycle Settings 3 - 5	1					
Cycle Channel Select						
CH0 Button Settings	CH0 Enable 🗌 Dual Direction Trigger Enabled	✓ Invert				
CH1 Button Settings						
CH2 Button Settings	Global Halt Vref 0v5 Enable Cc Size					
CH3 Button Settings						
CH4 Button Settings						
CH5 Button Settings						
CH0 Sensor Settings	CH0 ATI Band:	CH0 ATI Mode:				
CH1 Sensor Settings	1/8*Target v	Full v				
CH2 Sensor Settings	L					
CH3 Sensor Settings	CH0 ATI Base	CH0 ATI Target				
CH4 Sensor Settings	7	50 A				
CH5 Sensor Settings	112 counts	400 counts				
Rotation UI		400 COUNTS				
Multi-Level Triggers						
	CH0 Coarse Fractional Divider	CH0 Coarse Fractional Multiplier				
	16	1				
	CH0 Fine Fractional Divider					
	16					
	10 🗸					
	CH0 Compensation Value	CH0 Compensation Divider				
	405	14				
	490 🗸					
	WRITE CHANGES READ SETTING	s				
No Changes To Write						

Figure 4.8: Channel Sensor Settings

Other settings listed in the tab shown in Figure 4.8 above are sensor- and ATI-specific for the channel. Take note of the values and units displayed below each slider, as some settings are not directly translated into decimal units. Some sliding setting controls are in steps of a constant factor, percentage, or calculated from the *ATI target*.

Multiplier, divider, and compensation options are automatically selected and updated by the ATI algorithm, when set to *Full ATI*, which is recommended for most designs. These values may vary between devices and can even change during runtime to maintain optimal sensor sensitivity within the operational range, accounting for external and environmental influences.



4.1.4 Step 4: Button Setup

The configurable button settings as shown in Figure 4.9 below include blocking channel, proximity threshold, proximity enter and exit debounce, touch threshold and hysteresis, deep touch threshold and hysteresis, proximity event timeout, touch event timeout, deep touch event timeout, linearize counts, number of events, and beta filters.

		- 🗆 X			
CH0 Button Settings					
EVKit Module General Settings Report Rates & Timeouts	CH0 Blocking Channel: Channel 1 v	CH0 Prox Threshold			
Cycle Settings 0 - 2 Cycle Settings 3 - 5 Cycle Channel Select	CHO Prox Enter Debounce	CH0 Prox Exit Debounce			
CH0 Button Settings CH1 Button Settings CH2 Button Settings	CH0 Touch Threshold	CH0 Touch Hysteresis			
CH3 Button Settings CH4 Button Settings CH5 Button Settings	CH0 Deep Touch Threshold	CH0 Deep Touch Hysteresis			
CH0 Sensor Settings CH1 Sensor Settings CH2 Sensor Settings CH3 Sensor Settings	CH0 Prox Timeout	CH0 Touch and Deep Touch Timeout			
CH4 Sensor Settings CH5 Sensor Settings Rotation UI Multi-Level Triggers	Linearize Counts	Number of Events			
mana cever mggers	CH0 Normal Power Count Beta	CH0 Low Power Count Beta			
	CH0 Normal Power LTA Beta	CHO Low Power LTA Beta			
	CH0 Normal Power Fast LTA Beta	CHO Low Power Fast LTA Beta			
	CH0 Fast LTA Beta Bound				
WRITE CHANGES READ SETTINGS No Changes To Write Image: Changes To Write					

Figure 4.9: Button Settings

All the buttons have the same settings, except for the blocking channel settings, which apply only to Channel 0 and Channel 1 (the Rotation UI Channels). Again, take note of the displayed values and units below each slider, as not all settings are shown in decimal units. Some settings are presented in fixed steps or percentages. The threshold can be calculated as illustrated below.

Button touch threshold =
$$\frac{\text{threshold decimal setting}}{256} \times \text{LTA}$$
 (1)

The default beta parameter options have been selected to accommodate the most common and generic applications. They are intended to filter according to specific power mode operations, thereby ensuring minimal noise while maintaining substantial response without lagging outputs. The param-



eters should also be adjusted to modify LTA amounts for slowly varying counts and to utilise the fast LTA beta for rapidly responding to count behaviour contrary to normal activations. These defaults are the recommended values and serve as a good starting point.

4.1.5 Step 5: Report Rates And Power Mode Timeout Setup

The settings depicted in Figure 4.10 are global settings applicable to all channels, encompassing parameters such as ATI re-try delay, minimum ATI sampling period, power mode timeout, and power mode report rate. Take note of the displayed values and units below each slider, as not all settings are directly translated to decimal units. Some settings are presented in steps of a fixed constant or as percentages.

🖋 Settings			_		
	Report Rates	& Timeou	ıts		
EVKit Module General Settings Report Rates & Timeouts Cycle Settings 0 - 2 Cycle Settings 3 - 5 Cycle Channel Select CH0 Button Settings CH1 Button Settings CH2 Button Settings	Retry ATI Delay	2 💽 1 s	Minimum ATI Sample Period	0 文 0 ms	
CH3 Button Settings CH4 Button Settings CH5 Button Settings CH0 Sensor Settings CH1 Sensor Settings CH2 Sensor Settings CH3 Sensor Settings CH4 Sensor Settings	Normal Power Mode Timeout	5000 🗢 5000 ms	Normal Power Mode Report Ra	te 0 ➡ 0 ms	
CH5 Sensor Settings Rotation UI Multi-Level Triggers	Low Power Mode Timeout	5000 🗢 5000 ms	Low Power Mode Report Rate	60 🕏	
	Ultra Low Power Mode Timeout	10000 🗲 10000 ms	Ultra Low Power Mode Report I	Rate 500 🕏 500 ms	
WRITE CHANGES READ SETTINGS No Changes To Write					

Figure 4.10: Channel Report Rate and Power Mode Timeout Setup



IQ Switch[®] ProxFusion[®] Series



4.1.6 Encoder Setup

The IQS7225A allows for the configuration of two inductive coils to provide additional encoder outputs, such as:

- (a) Encoder angle
- (b) Encoder count

In this example, Channel 0 is connected to Coil A, and Channel 1 is connected to Coil B. Channels can be selected from the "Coil A Channel" and "Coil B Channel" drop-down lists. When selecting the reference channels, Coil \overline{A} and \overline{B} , it should be noted that values less than 5 indicate that the reference channel LTA will be used as the encoder channel LTA. For values greater than 5, the encoder channel LTA is calculated as 8 times the selected value.

Additional settings include the selection of the number of metal segments and the configuration of the enter and exit thresholds of Coil A and Coil B.

🧳 Settings		– 🗆 ×
	Rotation UI	
EVKit Module		
General Settings		
Report Rates & Timeouts	Wheel Metal Segments	
Cycle Settings 0 - 2		8 🗢
Cycle Settings 5 - 5		
CHO Putton Sottings		
CHU Button Settings		
CH2 Button Settings		C II & Changel D. Common Number 10 and a c
CH3 Button Settings	Coil A Channel:	Coll A Channel Reference Number if Value<0, Fixed Reference (LTA) = (value)*8 if value>5
CH4 Button Settings	Channel 0 ~	
CH5 Button Settings		50 🗢
CH0 Sensor Settings		
CH1 Sensor Settings		
CH2 Sensor Settings	Coil A Enter Threshold	Cail A Evit Thrashold
CH3 Sensor Settings		
CH4 Sensor Settings	100 😴	50 😴
CH5 Sensor Settings	100 counts	50 counts
Rotation UI		
Multi-Level Triggers		
	Coil B Channel: Channel 1 ~	Coil B Channel Reference Number if value<6, Fixed Reference (LTA) = (value)*8 if value>5
	Coil B Enter Threshold	Coil B Exit Threshold
	WRITE CHANGES READ SETTIN No Changes To Write	GS

Figure 4.11: Encoder Settings

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4.1.7 Multi-Level Trigger Setup

The IQS7225A provides multi-level trigger settings, allowing an adjustable number of trigger levels to be set for each channel. Trigger events are activated when there is a transition in the trigger levels of each channel. To configure multi-level triggers on a channel, both the maximum delta value and the desired number of trigger levels must be selected. The calculation for the channel output trigger level can be determined as illustrated below.

Channel output trigger level =
$$\frac{\text{Max delta}}{\text{number of trigger levels}}$$
 (2)

In this example, the channels are configured using the default maximum delta values of 1000 and 10 trigger levels, as shown in Figure 4.12.

				_		×
		Multi-Level	Triggers			
EVKit Module						
General Settings						
Report Rates & Timeouts	CH0 Max Delta			CH0 Number of Trigger Levels		
Cycle Settings 0 - 2		[1000 🗢	-	-	10 🗢
Cycle Settings 3 - 5						
Cycle Channel Select						
CH0 Button Settings						
CH1 Button Settings	CH1 Max Delta			CH1 Number of Trigger Levels		
CH2 Button Settings		I	1000 🗢	-	_	10 🗢
CH3 Button Settings						
CH4 Button Settings						
CH5 Button Settings						
CH0 Sensor Settings	CH2 Max Delta			CH2 Number of Trigger Levels		
CH1 Sensor Settings			1000			10
CH2 Sensor Settings			1000 💌	1		10 🕶
CH3 Sensor Settings						
CH4 Sensor Settings						
CH5 Sensor Settings	CH3 Max Delta			CH3 Number of Trigger Levels		
Rotation UI						
Multi-Level Triggers			1000 🗢			10 🗢
	CH4 Max Delta			CH4 Number of Trigger Levels		
			1000 🗢	-	-	10 🗢
	CH5 Max Delta			CH5 Number of Trigger Levels		
		I [1000 🗢		_	10 🗢
		L				
			READ SETTINGS			
				J		
		No Changes	Io Write			

Figure 4.12: Multi-Level Trigger Setup



4.2 Self-Capacitance Setup

Section 4.1 describes how to set up the EV-kit hardware for inductive sensing. In order to assist the users with a setup for self-capacitance sensing, this section was added and provides an example of a self-capacitive setup. The IQS7225A supports self-capacitive sensing on all active channels. In this example, the channels are configured for self-capacitive sensing, and note that self-capacitive channels require both the Tx and Rx pins to be the same.

The IQS7225A device uses Rx0 - Rx3 for ProxFusion[®] Engine A and Rx4 - Rx7 for ProxFusion[®] Engine B. The Tx-Rx combinations for the different channels are shown in Table 4.2.

Channels ¹	Transmitter	Receiver
CH0	Tx0	Rx0
CH1	Tx1	Rx1
CH2	Tx2	Rx2
CH3	Tx3	Rx3
CH4	Tx4	Rx4
CH5	Tx5	Rx5

		~ .				
lable 4	4.2:	Channel	transmitter	and	receiver	pins

4.2.1 Cycle Setup

In this example, each channel is linked to a different cycle, and the pin numbers are selected to match the channel number just for consistency. The self-capacitive cycle setup of all the channels is shown in Figures 4.13 and 4.14. The allocation of the different channels to the proximity engines is shown in Figure 4.15.

¹Please note that for self capacitive sensing, TxZ and RxZ are physically the same pin/electrode on the IC.



🖉 Settings		- 🗆 ×			
	Cycle Settings 0 - 2				
EVKit Module	Cycle 0				
General Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
Report Rates & Timeouts	Self Capacitance	0.50 / 0.38 MHz			
Cycle Settings 0 - 2	Ty Solost				
Cycle Settings 3 - 5					
Cycle Channel Select					
CH0 Button Settings	□ Tx8 □ Tx9 □ Tx10 □ Tx11				
CH1 Button Settings					
CH2 Button Settings					
CH3 Button Settings	VBias Enable 🗹 Dead Time Enable 🔽 VSS	Inactive Pads			
CH4 Button Settings	Cycle 1				
CH5 Button Settings	Engine Made Select	Ty By Frequency (for Force - 19 / 14 MHz)			
CHU Sensor Settings	Self Canacitance	0.50 / 0.38 MHz			
CHI Sensor Settings		0.507 0.50 MHz			
CH2 Sensor Settings	Tx Select Tx0 Tx1 Tx2 Tx3 Tx4 Tx5 Tx6 Tx7				
CHA Sensor Settings					
CH5 Sensor Settings					
Rotation UI					
Multi-Level Triggers					
	VBias Enable	Inactive Pads			
	Cycle 2				
	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
	Self Capacitance Y	0.50 / 0.38 MHz			
	Tx Select				
	□ Tx0 □ Tx1 ▼ Tx2 □ Tx3 □ Tx4 □ Tx	5 🗌 Tx6 🗌 Tx7			
	□ Tx8 □ Tx9 □ Tx10 □ Tx11				
	□ VBias Enable ☑ Dead Time Enable ☑ VSS Inactive Pads				
WRITE CHANGES READ SETTINGS					
No Changes To Write					

Figure 4.13: All Active Self-Capacitive Channels In Cycle Settings 0 - 2



🖉 Settings		– 🗆 X			
	Cycle Settings 3 - 5				
EVKit Module	Cycle 3				
General Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
Report Rates & Timeouts	Self Capacitance	0.50 / 0.38 MHz			
Cycle Settings 0 - 2	Tr: Select				
Cycle Settings 3 - 5					
Cycle Channel Select		.5Tx6Tx7			
CH0 Button Settings					
CH1 Button Settings					
CH2 Button Settings					
CH3 Button Settings	□ VBias Enable 🗹 Dead Time Enable ✔ VSS	Inactive Pads			
CH4 Button Settings	Cycle 4				
CH5 Button Settings	Cycle 4				
CH0 Sensor Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
CH1 Sensor Settings	Self Capacitance Y	0.50 / 0.38 MHz *			
CH2 Sensor Settings	Tx Select				
CH3 Sensor Settings	□ Tx0 □ Tx1 □ Tx2 □ Tx3 ✔ Tx4 □ Tx	-5 🗌 Tx6 🔲 Tx7			
CH4 Sensor Settings					
CH5 Sensor Settings	Tx8 Tx9 Tx10 Tx11				
Rotation UI					
Multi-Level Triggers	□ VBias Enable 🔽 Dead Time Enable 🗹 VSS	Inactive Pads			
	Cycle 5				
	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
	Self Capacitance Y	0.50 / 0.38 MHz *			
	Tx Select				
	□ Tx0 □ Tx1 □ Tx2 □ Tx3 □ Tx4 🗹 Tx	-5 □ Tx6 □ Tx7			
	□ Tx8 □ Tx9 □ Tx10 □ Tx11				
	□ VBias Enable 🗹 Dead Time Enable 🗹 VSS Inactive Pads				
	WRITE CHANGES READ SETTINGS				
No Changes To Write					

Figure 4.14: All Active Self-Capacitive Channels In Cycle Settings 3 - 5



Settings			_	×
	Cycle Channel	Select		
EVKit Module General Settings Report Rates & Timeouts Cycle Settings 0 - 2 Cycle Settings 3 - 5	Cycle 0 Engine 0: Channel 0	Cycle 0 Engine 1: Vone		Ŷ
Cycle Channel Select CH0 Button Settings CH1 Button Settings CH2 Button Settings CH3 Button Settings	Cycle 1 Engine 0: Channel 1	Cycle 1 Engine 1: Vone		Ŷ
CH4 Button Settings CH5 Button Settings CH0 Sensor Settings CH1 Sensor Settings CH2 Sensor Settings CH3 Sensor Settings	Cycle 2 Engine 0: Channel 2	Cycle 2 Engine 1: Vone		~
CH4 Sensor Settings CH5 Sensor Settings Rotation UI Multi-Level Triggers	Cycle 3 Engine 0: Channel 3	Cycle 3 Engine 1: V None		 ~
	Cycle 4 Engine 0: None	Cycle 4 Engine 1: V Channel 4		 Ŷ
	Cycle 5 Engine 0: None	Cycle 5 Engine 1: V Channel 5		Ŷ
	WRITE CHANGES REAL) SETTINGS		

Figure 4.15: Selected Self-Capacitive Channels for Each ProxFusion® Sensor Engine

4.2.2 Channel Setup

Next, the applicable channels need to be set up. For this, only Channel 0 will be shown in this example. Nonetheless, each channel can be configured independently as needed.

When configuring a channel in self-capacitive mode, you need to enable that electrode as a Rx and a Tx. So in this example for CH0, as seen in Figure 4.13, Tx0 must be enabled, and under CH0 Sensor Settings, Rx0 must be selected, as shown in Figure 4.16.



🖉 Settings		– 🗆 ×		
	CH0 Sensor Settings			
EVKit Module				
General Settings	CRx Selection (EngineA / EngineB):	Projected Bias Select:		
Report Rates & Timeouts	CRx0 / CRx4 Y	10µА ~		
Cycle Settings 0 - 2	1			
Cycle Settings 3 - 5				
Cycle Channel Select				
CH0 Button Settings	CH0 Enable 📋 Dual Direction Trigger Enabled	l Invert		
CH1 Button Settings				
CH2 Button Settings	Global Halt Vref 0v5 Enable Cs Size			
CH3 Button Settings				
CH4 Button Settings				
CH5 Button Settings				
CH0 Sensor Settings	CH0 ATI Band:	CH0 ATI Mode:		
CH1 Sensor Settings	1/8*Target v	Full Y		
CH2 Sensor Settings				
CH3 Sensor Settings	CH0 ATI Base	CH0 ATI Target		
CH4 Sensor Settings	7 🗢	32 🗢		
CHO Sensor Settings	112 counts	256 counts		
Kotation UI				
Multi-Level Inggers				
	CH0 Coarse Fractional Divider	CH0 Coarse Fractional Multiplier		
	16 🗢	5 🗢		
	CH0 Fine Fractional Divider			
	16 🗢			
	CH0 Compensation Value	CH0 Compensation Divider		
	0	0 🗢		
WRITE CHANGES READ SETTINGS				
No Changes To Write				

Figure 4.16: Self-Capacitive Channel Sensor Settings

Note - In addition to the settings described in Section 4.2, other settings that are needed for selfcapacitance sensing are already described in Section 4.1, such as the general settings shown in Figure 4.3, the button settings shown in Figure 4.9, the report rate and power mode timeout settings shown in Figure 4.10, and optionally, the multi-level trigger settings shown in Figure 4.12.



4.3 Mutual-Capacitance Setup

Section 4.1 described how to set up of the EV-kit hardware for inductive sensing, and Section 4.2 provided an example of a self-capacitive setup. To assist users with configuring mutual-capacitance sensing, this section has been added to illustrate a mutual-capacitive setup.

The IQS7225A supports mutual-capacitive sensing on all active channels. In this example, the channels are configured for mutual-capacitive sensing, noting that each channel requires unique Tx-Rx combinations. The IQS7225A device utilises Rx0 - Rx3 for ProxFusion[®] Engine A and Rx4 - Rx7 for ProxFusion[®] Engine B. Table 4.3 shows the Tx-Rx combinations for the different channels.

Channels	Transmitter	Receiver
CH0	Tx0	Rx1
CH1	Tx2	Rx3
CH2	Tx8	Rx4
CH3	Tx9	Rx5
CH4	Tx10	Rx6
CH5	Tx11	Rx7

Table 4.3: Channel transmitter and receiver pins

4.3.1 Cycle Setup

In this example, each channel is linked to a different cycle. The mutual-capacitive cycle setup of all the channels is shown in Figures 4.17 and 4.18.



🖉 Settings		- 🗆 ×			
Cycle Settings 0 - 2					
EVKit Module	Cycle 0				
General Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz).			
Report Rates & Timeouts	Mutual Capacitance	0.50 / 0.38 MHz			
Cycle Settings 0 - 2	Tr: Select				
Cycle Settings 3 - 5					
Cycle Channel Select		5Tx6Tx7			
CH0 Button Settings					
CH1 Button Settings					
CH2 Button Settings					
CH3 Button Settings	VBias Enable ✓ Dead Time Enable ✓ VSS	Inactive Pads			
CH4 Button Settings	Cycle 1				
CH5 Button Settings					
CH0 Sensor Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
CH1 Sensor Settings	Mutual Capacitance	0.30 / 0.38 MHz			
CH2 Sensor Settings	Tx Select				
CH3 Sensor Settings	□ Tx0 □ Tx1 Tx2 □ Tx3 □ Tx4 □ Tx	5 🗌 Tx6 🗌 Tx7			
CH4 Sensor Settings					
CH5 Sensor Settings					
Kotation UI					
Multi-Level Iriggers	🗌 VBias Enable 🗹 Dead Time Enable 🗹 VSS	Inactive Pads			
	Curle 2				
	Cycle 2				
	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
	Mutual Capacitance Y	0.50 / 0.38 MHz *			
	Tx Select				
	□ Tx0 □ Tx1 □ Tx2 □ Tx3 □ Tx4 □ Tx	5 🗌 Tx6 🔲 Tx7			
	▼ Tx8 □ Tx9 □ Tx10 □ Tx11				
	□ VBias Enable 🔽 Dead Time Enable 🗹 VSS Inactive Pads				
	WRITE CHANGES READ SETTINGS				
No Changes To Write					

Figure 4.17: All Active Mutual-Capacitive Channels In Cycle Settings 0 - 2



🗳 Settings		– 🗆 ×			
	Cycle Settings 3 - 5				
EVKit Module	Cycle 3				
General Settings	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
Report Rates & Timeouts	Mutual Capacitance Y	0.50 / 0.38 MHz			
Cycle Settings 0 - 2	Tx Select				
Cycle Settings 3 - 5					
Cycle Channel Select					
CH0 Button Settings	□ Tx8 🔽 Tx9 □ Tx10 □ Tx11				
CH1 Button Settings					
CH2 Button Settings		in a string Daniel			
CH3 Button Settings	UBias Enable VSS I	nactive Pads			
CH4 Button Settings	Cycle 4				
CHO Button Settings	Engine Mode Select:	Ty-Ry Frequency (for Fosc = 18 / 14 MHz).			
CHU Sensor Settings	Mutual Capacitance	0.50 / 0.38 MHz			
CH2 Sensor Settings	Ty Soloct				
CH3 Sensor Settings					
CH4 Sensor Settings					
CH5 Sensor Settings	□ Tx8 □ Tx9 🔽 Tx10 □ Tx11				
Rotation UI					
Multi-Level Triggers	VRias Enable V Dead Time Enable V/SS I	nactive Pade			
		Hactive Fada			
	Cycle 5				
	Engine Mode Select:	Tx-Rx Frequency (for Fosc = 18 / 14 MHz):			
	Mutual Capacitance Y	0.50 / 0.38 MHz			
	Tx Select				
	Tx0Tx1Tx2Tx3Tx4Tx5	5 🗌 Tx6 🗌 Tx7			
	□ Tx8 □ Tx9 □ Tx10 √ Tx11				
	□ VBias Enable ☑ Dead Time Enable ☑ VSS Inactive Pads				
WRITE CHANGES READ SETTINGS					

Figure 4.18: All Active Mutual-Capacitive Channels In Cycle Settings 3 - 5

The allocation of the different channels to the proximity engines is shown in Figure 4.19.



🖉 Settings				_	\times
	Cycle Cł	nannel Select			
EVKit Module General Settings Report Rates & Timeouts Cycle Settings 0 - 2 Cycle Settings 3 - 5	Cycle 0 Engine 0: Channel 0	×	Cycle 0 Engine 1: None		v
Cycle Channel Select CH0 Button Settings CH1 Button Settings CH2 Button Settings CH3 Button Settings	Cycle 1 Engine 0: Channel 1	۷	Cycle 1 Engine 1: None		 ¥
CH4 Button Settings CH5 Button Settings CH0 Sensor Settings CH1 Sensor Settings CH2 Sensor Settings CH3 Sensor Settings	Cycle 2 Engine 0: None	v	Cycle 2 Engine 1: Channel 2		¥
CH4 Sensor Settings CH5 Sensor Settings Rotation UI Multi-Level Triggers	Cycle 3 Engine 0: None	۷	Cycle 3 Engine 1: Channel 3		¥
	Cycle 4 Engine 0: None	۷	Cycle 4 Engine 1: Channel 4		 Ŷ
	Cycle 5 Engine 0: None	¥	Cycle 5 Engine 1: Channel 5		Ŷ
	WRITE CHANG	ES READ SETTING	55		

Figure 4.19: Selected Mutual-Capacitive Channels for Each ProxFusion® Sensor Engine

4.3.2 Channel Setup

Next, the applicable channels need to be set up. For this, only Channel 0 will be shown in this example. Nonetheless, each channel can be configured independently as needed.

It is important to select the correct Rx pins for each channel so that the Tx-Rx pairs are unique for each channel. Channel 0 uses Tx0, as seen in Figure 4.17, and Rx1 can be selected as the receiver under the CH0 Settings, as shown in Figure 4.20.



CH0 Sensor Settings										
	CH0 Sensor Settings									
EVKit Module										
General Settings CRx Selection (EngineA / EngineB): Mutual Bias Select:										
Report Rates & Timeouts CRx1 / CRx5 v 10µA	~									
Cycle Settings 0 - 2										
Cycle Settings 3 - 5										
Cycle Channel Select										
CH0 Button Settings 🗹 CH0 Enable 🗌 Dual Direction Trigger Enabled 🗹 Invert										
CH1 Button Settings										
CH2 Button Settings										
CH3 Button Settings										
CH4 Button Settings										
CH5 Button Settings										
CH0 Sensor Settings CH0 ATI Band: CH0 ATI Mode:										
CH1 Sensor Settings 1/8*Target Y Full	~									
CH2 Sensor Settings										
CH3 Sensor Settings CH0 ATL Pare										
CH4 Sensor Settings										
CH5 Sensor Settings	v									
Rotation UI 230 cou	its									
Multi-Level Triggers										
CH0 Coarse Fractional Divider CH0 Coarse Fractional Multiplier										
	v									
CH0 Fine Fractional Divider	CH0 Fine Fractional Divider									
18 💌										
CH0 Compensation Value CH0 Compensation Divider										
	•									
404 🔽	•									
WRITE CHANGES READ SETTINGS										
No Changes To Write										

Figure 4.20: Mutual-Capacitive Channel Sensor Settings

Note - In addition to the settings described in Section 4.3, other settings that are needed for mutualcapacitance sensing are already described in Section 4.1, such as the general settings shown in Figure 4.3, the button settings shown in Figure 4.9, the report rate and power mode timeout settings shown in Figure 4.10, and optionally, the multi-level trigger settings shown in Figure 4.12. IQ Switch[®] ProxFusion[®] Series



5 Conclusion

This document explains the layout, operation, and related settings of the IQS7225A's GUI PC software. This document uses the IQS7225A EV-kit hardware as an example to explain how to configure the device using its GUI and how to export the resulting settings as a C/C++ header file for use in an application.



6 Revision History

Release	Date	Comments
v0.1	February 2023	Initial document released
v1.0	March 2023	Improved EV-Kit graphics
v1.1	June 2024	Azoteq generic GUI images replaced with IQS7225A GUI images



Contact Information

	USA	Asia	South Africa
Physical Address	11940 Jollyville Suite 120-S Austin TX 78759 USA	Room 501A, Block A T-Share International Centre Taoyuan Road, Nanshan District Shenzhen, Guangdong, PRC	1 Bergsig Avenue Paarl 7646 South Africa
Postal Address	11940 Jollyville Suite 120-S Austin TX 78759 USA	Room 501A, Block A T-Share International Centre Taoyuan Road, Nanshan District Shenzhen, Guangdong, PRC	PO Box 3534 Paarl 7620 South Africa
Tel	+1 512 538 1995	+86 755 8303 5294 ext 808	+27 21 863 0033
Email	info@azoteq.com	info@azoteq.com	info@azoteq.com

Visit www.azoteq.com for a list of distributors and worldwide representation.

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