



# IQS229EV03 User guide

Single Channel Capacitive Proximity/Touch Controller for SAR Applications

## Introduction

The IQS229EV03 Evaluation kit features the IQS229EV01 module PCB. This kit enables the evaluation of the user interface as well as the effect of the 4 resistor strap options:

- 2x Inputs are used to set the activation threshold,
- 1x for the movement sensitivity and
- 1x for choosing a no-movement time-out timer.

While holding the kit with the one hand, bring the other closer to the “SENSING ELECTRODE”. The user will be able to get an idea of the movement response and activation threshold.

By placing the electrode on a static object, an “ACTIVATION” will be triggered, but it will automatically clear after a no-movement timeout.

By continually handling the device while in ACTIVATION, the trigger will always remain

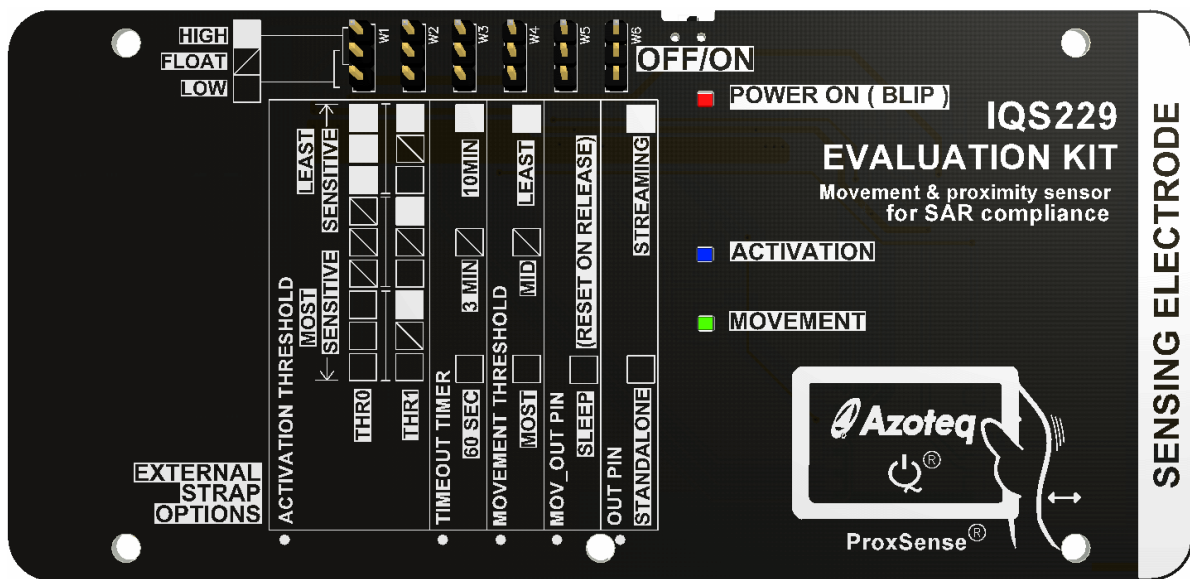


Figure 1 IQS229EV03 front view

The IQS229 will work in standalone mode (direct outputs) or streaming mode for evaluation with a GUI using an Azoteq USB streaming device (CT210).

The outputs may be interpreted as follows:

- “ACTIVATION” → normal crossing of the threshold
- “MOVEMENT” → a pulse for every movement detected.

## First time power-up

When powering up for the first time, be sure that the “STANDALONE” option is selected by fitting a jumper onto the middle and lower pins.

Switching the power should cause a blip on the “POWER ON” LED. This is done so that the evaluation kit may be left on for long periods without draining the battery.

active.

Next is to familiarize oneself with the “EXTERNAL STRAP OPTIONS” table on the front of the kit.

## External strap options

The external strap options are only read in

- power-on and
- reset events.

### Strap High/Low or Float

When no jumper is placed, a floating input is detected. Otherwise the input can be strapped high or low by placing a jumper.

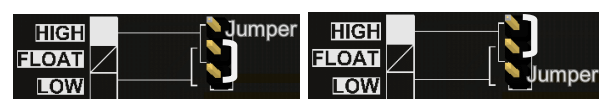


Figure 2 Strap LOW / Strap HIGH

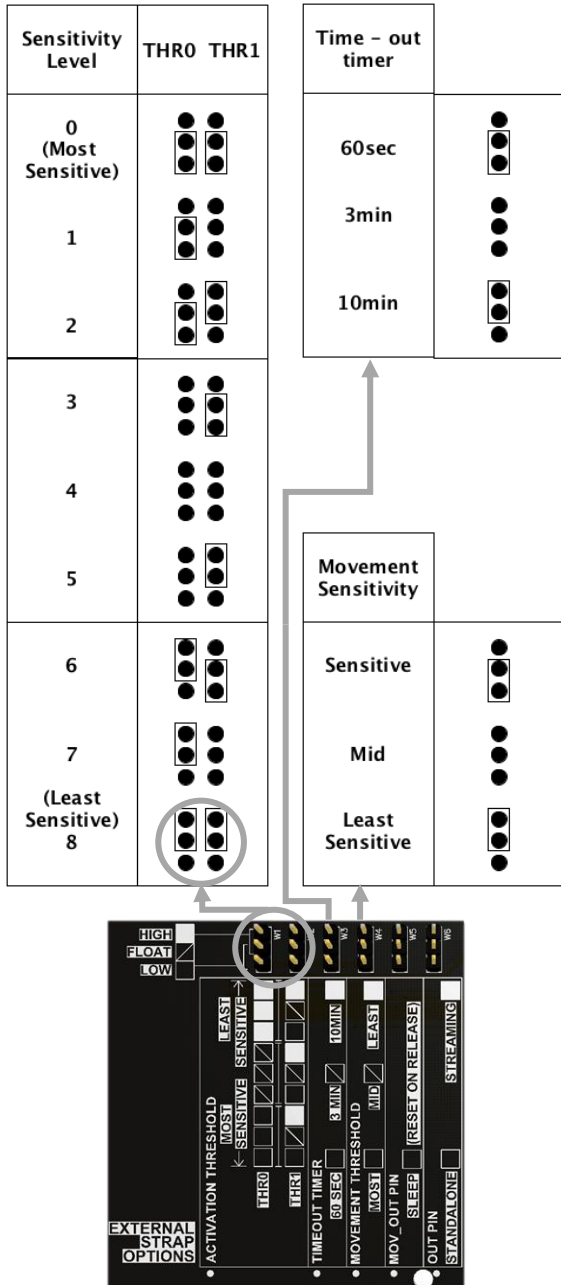


Figure 3 Strap options

The table on the front shows that **THR0** is used for COARSE threshold shifts and **THR1** is used for FINE threshold shifts.

The **TIMEOUT TIMER** will automatically clear the ACTIVATION if no movement is present for the selected timeout period.

The **MOVEMENT THRESHOLD** setting will change the sensor sensitivity to movement from most sensitive to least sensitive.

### Analyse through streaming

The IQS229EV03 can be analysed through a streaming protocol using a PC and the Azoteq CT210 USB interface device.

To stream data to a PC, the following steps are required:

- Plug cable in “STREAMING HEADER”
- Open the IQS229 GUI on the PC
- Strap the “OUT PIN” HIGH
- Set the ON/OFF switch to “OFF”
- Press “Start” in the GUI

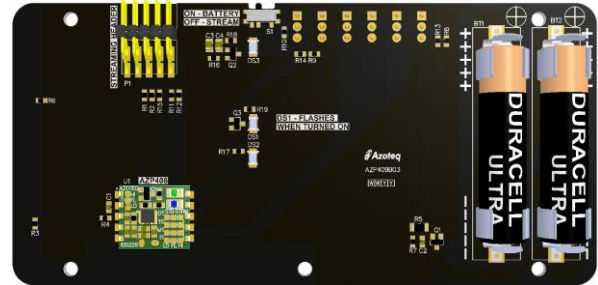


Figure 4 IQS229EV03 Rear view

### Output Pins Functionality

The IQS229 features 2x direct outputs. These can be used independently.

#### OUT pin

The OUT pin is active LOW with a pull-down strap for failure safe output. If configured for standalone mode, be sure not to pull this pin high with a LED during start-up. Buffering or an LED with a high forward voltage is recommended.

The OUT pin toggles at power-on or reset to indicate that the IC is working correctly.

See Figure 5 and Figure 6 for a comparison of a normal threshold release compared to a timeout threshold release. This effect may be interpreted by a master device in order to be aware of the type of release and to set custom timers.



Figure 5 Normal threshold release



Figure 6 Timer time-out release

#### MOV\_OUT pin

The MOV\_OUT pin doubles as a movement output and soft reset. By strapping this pin low the IC will go into sleep mode. When released, the IC will reset. When held low for <15ms the activation will clear and the IC will not reset. This is done by equalizing the reference and current measurement.



### Schematic and Assembly

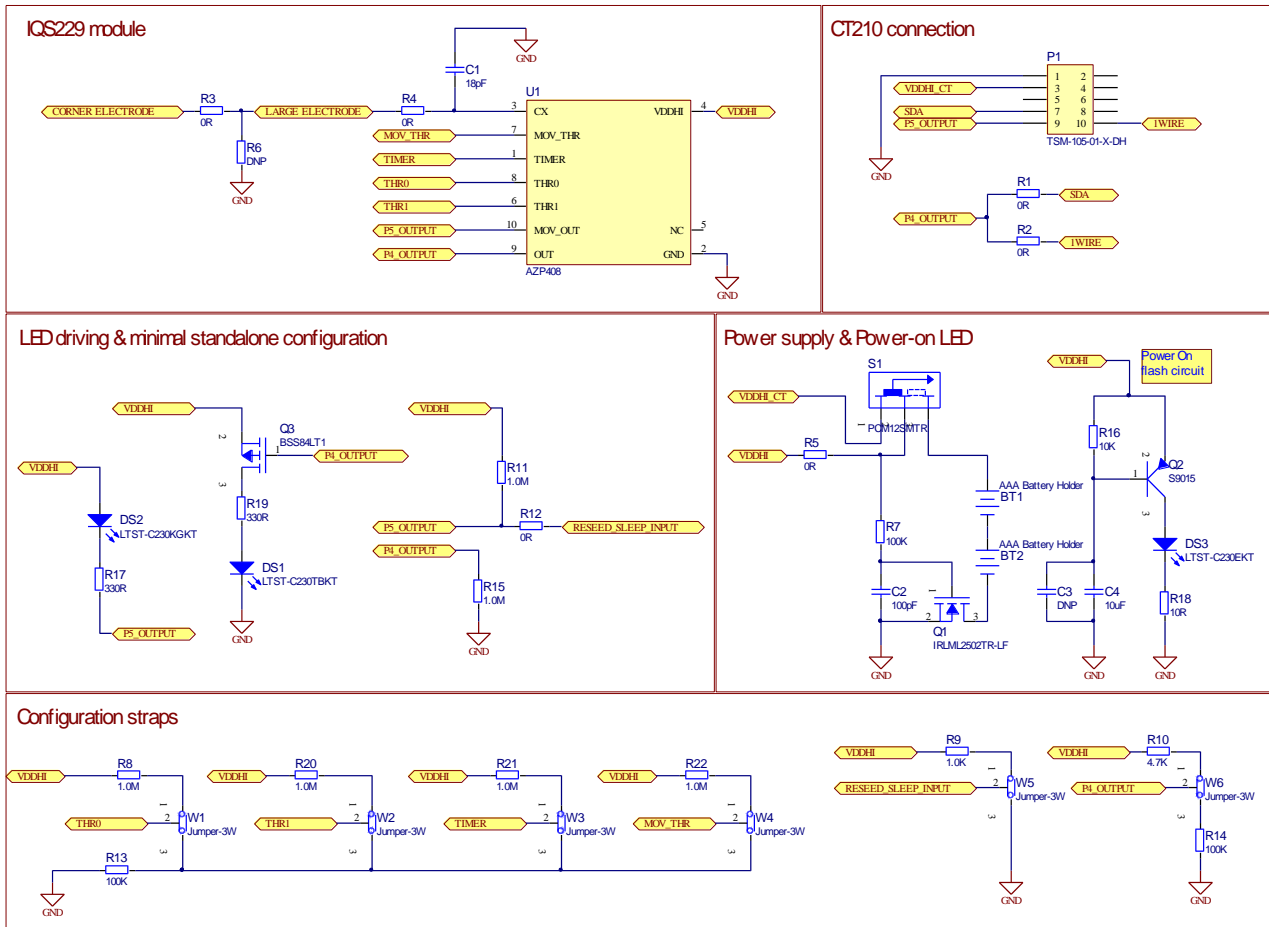


Figure 7 AZP409B03 schematic diagram

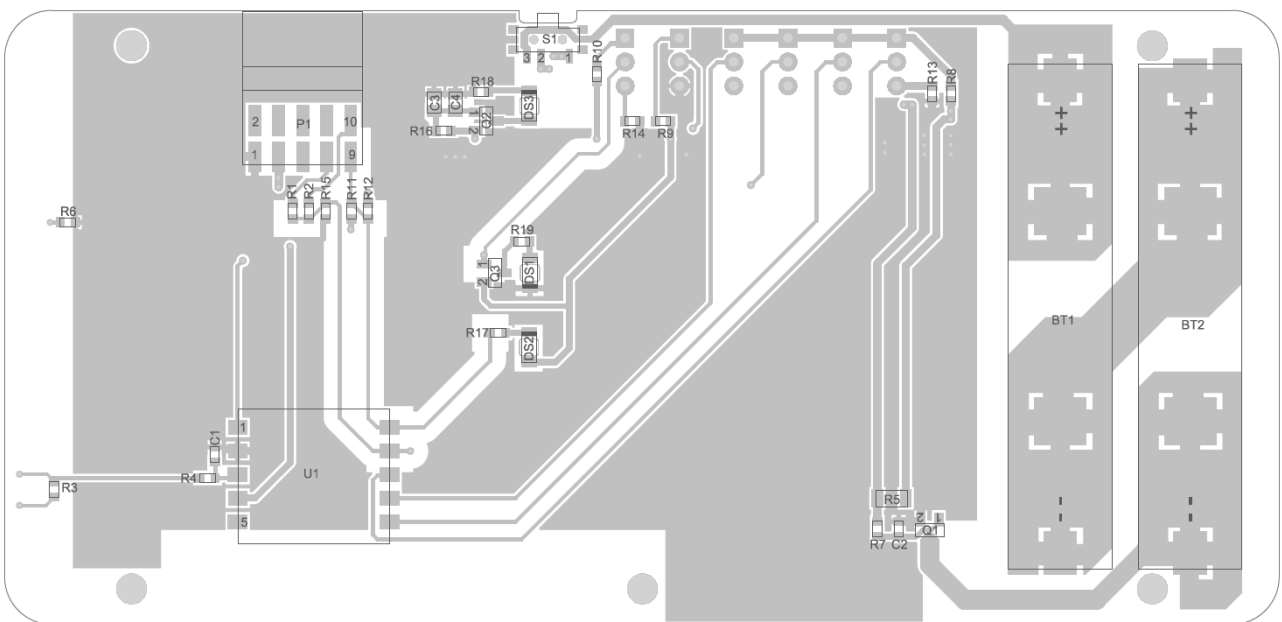


Figure 8 AZP409B03 Assembly

**Appendix A Contact Information**

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Please visit [www.azoteq.com](http://www.azoteq.com) for a list of distributors and worldwide representation.

The following patents relate to the device or usage of the device: US 6,249,089 B1, US 6,952,084 B2, US 6,984,900 B1, US 7,084,526 B2, US 7,084,531 B2, EP 1 120 018 B2, EP 1 206 168 B1, EP 1 308 913 B1, EP 1 530 178 A1, ZL 99 8 14357.X, AUS 761094, HK 104 14100A, US13/644,558, US13/873,418

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