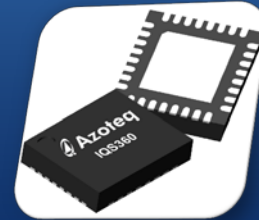# World Leader in Capacitive Proximity Sensing

## Azoteq Announces the IQS360 Capacitive Touch Controller for Keypads and Track-pads

### Azoteq's IQS360 offers a low cost capacitive touch solution for 12-key keypads and small track-pads

Azoteq announced on Feb 20th, 2014 the release to market of the IQS360. The IQS360 implements a 4 x 3 track-pad with a resolution of 768 x 512.

The IQS360 is also well suited for 12-key keypads that require backlighting and proximity wake-up.

The IQS360 offers 12 mutual-capacitance channels. Proximity wakeup allows very low power consumption until the user interacts with the product.

The IQS360 also has 8 PWM LED drivers to implement fade in/out backlights. The PWM dimming does not require any overhead from the host controller.

## Content

Azoteq enables next generation user interfaces for users to interact naturally with products through capacitive proximity and touch

# Available Options for OTP Programming

Azoteq has a wide variety of ICs to fit a designer's need for Capacitive Sensing. Different ICs have different ways to configure them.

Some ICs are configured via I²C (i.e. IQS333, IQS550, etc.), one via hardware pin configurations such as the IQS229, and some via OTP Settings (i.e. IQS227, IQS228, etc.).

This article outlines the available options for configuring the OTP settings of Azoteq's ProxSense devices. There are three options to configure settings for mass production:

- Order devices pre-programmed

- Using a third party to program devices

- Use an in circuit programmer during module assembly

### The IQS232

The IQS232 is an example of an IC that is configured via OTP programming.

# Ordering Preprogrammed Devices from Azoteq

It is possible to order preconfigured (preprogramed) devices directly from Azoteq. The will be an additional lead time for delivery of about 7 weak. The order will also be subject to a different minimum order quantity. For more details contact Azoteq on info@azoteq.com.

**Advantages**
- No extra cost
- No added time during assembly

**Disadvantages**
- Increased lead time
- Subject to MOQ

The IQS128 can be ordered preprogrammed

# Page 2 Continued

**Using 3rd Party Programmers**

There are currently two 3rd party programmers available that support Azoteq's capacitive sensor programming.
- Elnec
- Xeltek

**Elnec**

All of Azoteq's devices are supported by Elnec's 48 pin universal programmers:
- Beeprog2
- Beeprog2C
- And multi programmers based on BeeProg2

A list of required adapters for the supported list is shown in the table below.

| Azoteq Device | Programming Adaptor |
|---|---|
| IQS127D | DIL8/SOT23-6 ZIF-CS TP-2 |
| IQS128 | DIL8/SOT23-6 ZIF-CS TP-2 |
| IQS133 | DIL10/SSOP10 ZIF TP-1 |
| IQS213 | DIL10/SSOP10 ZIF TP-1 |
| IQS227AS | DIL8/SOT23-6 ZIF-CS TP-2 |
| IQS228AS | DIL8/SOT23-6 ZIF-CS TP-2 |
| IQS232 | DIL8W/SOIC8 ZIF 150mil TP-3 |
| IQS572 | DIL48/QFPN28-1 ZIF-CS STM8-2 |
| IQS525 | DIL48/QFPN28-1 ZIF-CS STM8-2 |
| IQS530 | DIL48/TSSOP20-1 ZIF STM8-3 |
| IQS550 | DIL48/QFPN28-1 ZIF-CS STM8-2 |

Table 1: Support List From Elnec

**Xeltek**

Azoteq's IQS5xx series is supported by Xeltek programmers. Support for the rest of Azoteq's portfolio (OTP based devices) from Xeltek will be available in the near future.

Advantages
- No minimum order quantities
- Normal lead times for delivery

Disadvantages
- Extra cost
- Handling risk for tube or reel replacement

**In circuit Programming**

Azoteq will assist in the design of the in circuit programming circuit and placement. The customer has the option to order a programming tool, or develop their own programmer.

For more details on a relevant programming interface, please contact info@azoteq.com.

During in circuit programming, care needs to be taken for overvoltage protection. For more details please refer to AZD057 - In Circuit Programming.

Advantages
- No extra cost
- Normal lead times for deliveries

Disadvantages
- Longer FT time during assembly
- Larger real estate on PCB
- Increased module component cost for over voltage protection

For more information, please email info@azoteq.com

# Page 1 Continued

"The IQS360 is the first capacitive controller targeted at small track-pads for applications such as remote controls and VoIP phones. With the integrated 8-channel PWM LED driver the IQS360 can be used to implement a complete user interface," said Kobus Marneweck, VP of Marketing.

**Features:**

- 12 Mutual Channel Capacitive Controller

- Track-pad with on chip XY coordinate calculation

- Configurable up to 4x3 elements

- 768 x 512 resolution

- Up to 50Hz report rate

- Absolute and Relative Tracking Data

- 1MHz or 2MHz Charge Transfer Frequency

- Advanced on-chip digital signal processing

- Automatic adjustment for optimal performance (ATI)

- User selectable Proximity and Touch thresholds

- Long proximity range

- Automatic drift compensation

- Fast I2C Interface

- Event mode or Streaming modes

- 8 PWM LED/ GPIOs drivers (5mA source/10mA sink)

- Low Power, suitable for battery applications

- Supply voltage: 1.8V to 3.6V

- $<3\mu$ A Active Sensing LP Mode

**Pricing and Availability**

The IQS360 will be priced at $0.43 in quantities of 1000. For orders of greater than 1M the IQS360 is priced at $0.30.

IQS360 samples and production are available from Mouser now.
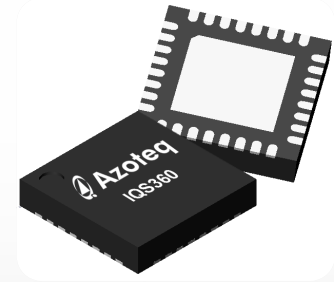
## IQS360 Applications

- Remote Controls
- VoIP phones
- Instrumentation
- Audio equipment
- White goods and appliances
- Office equipment, toys
- Medical and test equipment
- Blu-Ray, DVD players, TVs

# Azoteq Provides New Application Notes



Azoteq is committed to providing the best support for all of our products. One way that we support for our customers is by having informative Application Notes. We have uploaded new articles and they can be found on our website here.

Examples of new Application Notes available are:

- Standards based approach to EMC problems
- A guide for isolated digital communications
- Using capacitive sensing to reduce power in appliances
- Capacitive sensing techniques to meet SAR requirements
- A guide to prolonged detection using Capacitive Proximity Sensors
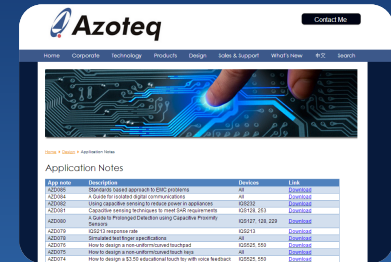
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