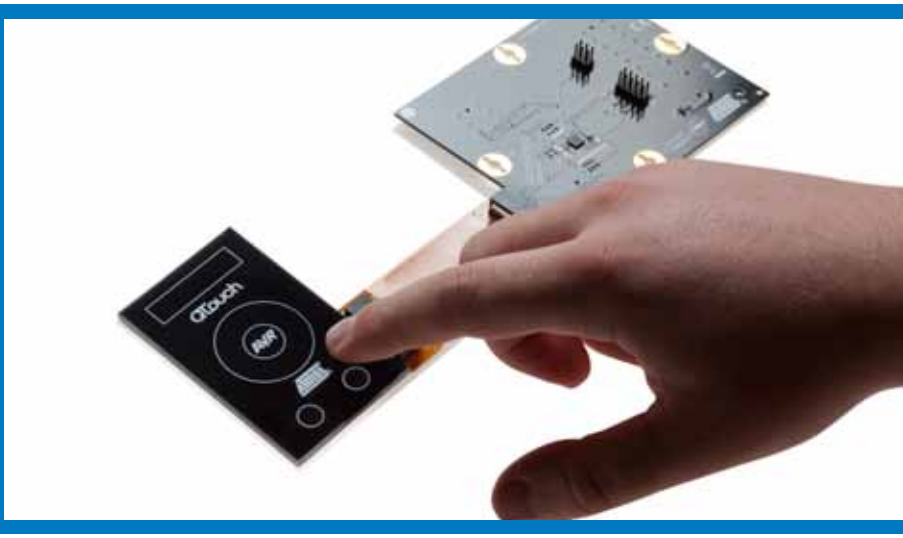
Atmel QT600 Quick Start Guide

Touch Solutions

Introduction

Looking to take your design to the next level? You have made the right choice in purchasing the Atmel® QT600 Development Kit. It allows you to demo Atmel button, slider and wheel technology and add additional modules/boards. The kit also to enables you to validate your own design/board while leveraging the best touch and microcontroller solutions available.



Download the latest software

To get started, visit http://www.atmel.com/qtouchsuite and download four pieces of software:

- Atmel QTouch Studio® (version 4.3 or later) - Visual Studio + .NET (version 3.5 or later)
- Atmel AVR® Studio (version 4.18 or later) AND ALL Service Packs (SPx)
- Atmel QTouch® Library (version 4.3 or later)
- GNU Compiler – Download at http://sourceforge.net/projects/winavr/files

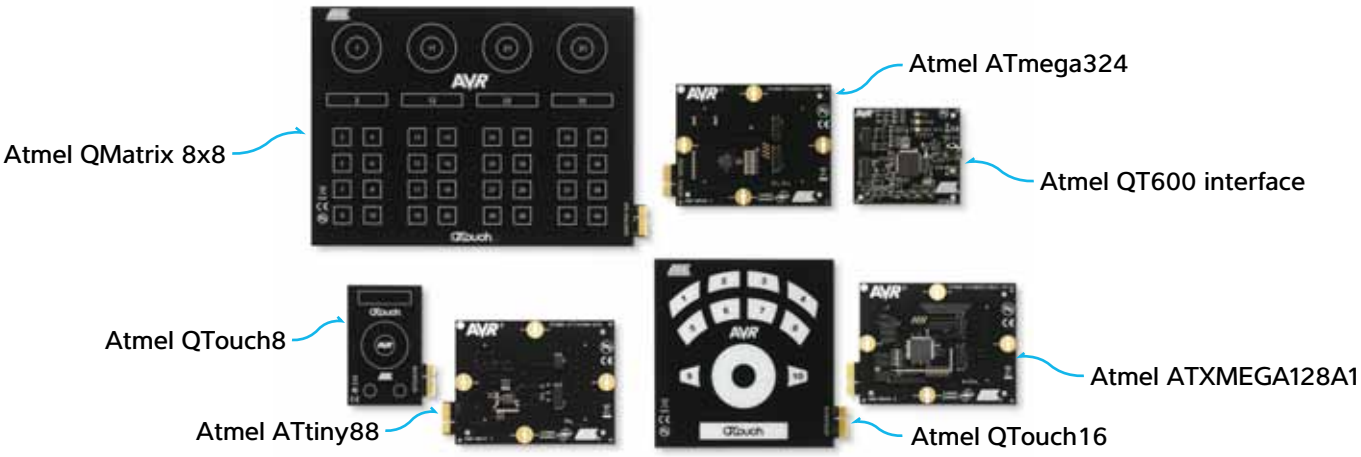
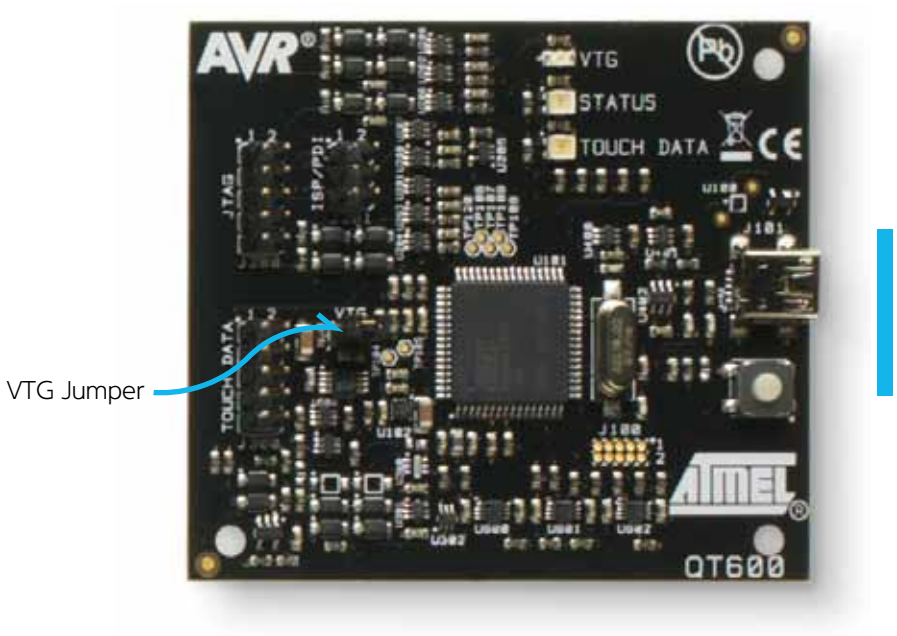


Figure 1 – The Atmel QT600 Evaluation Kit includes these microcontroller and sensor boards

The photo above shows three sets of boards (sensor board and corresponding microcontroller board):

- QTouch8 with the ATtiny88
- QTouch16 with either the ATXMEGA128A1 or the ATmega324
- QMatrix 8x8 with either the ATXMEGA128A1 or the ATmega324

*UC3L MCU board in 2011



Affix the rubber stoppers to QTouch8 (4), QTouch16 (4), QMatrix 8x8 (6), and the QT600 main controller board (4) leaving two spares.

Figure 2 – Close-up of the Atmel QT600 interface board and location of the VTG

Note: On the main QT600 control board, make sure the jumper is in place on the VTG. The board should be configured as above:

Connect the kit modules

1 QTouch8 with ATtiny88
Choose the QTouch8 and the ATtiny88:

1.1 Open the Atmel AVR Studio®

1.2 Select Open in Project Wizard window

1.3 Select **C:\Program Files\Atmel\Atmel_QTouch_Libaries_4.3\Generic_QTouch_Libraries\AVR_Tiny_Mega_XMega\QTouch\ example_projects\QT600_ATtiny88_gnu_qt8**

1.4 Connect the 6-conductor ribbon cable from the ISP header on the ATtiny88 board to the ISP/PDI header on the QT600 Interface board

1.5 Connect the flex cable from the QTouch8 board to the ATtiny88 board

1.6 Connect the USB cable between your PC and the QT600 Interface board (Three LEDs should light up—then hold the button down for five seconds until the 'Touch Data' LED turns off)

1.7 In AVR Studio, click the '**Con**' button on the top toolbar

1.8 Select QT600 as the Platform and USB as the Port, and then click **connect**

Program and run the demo

1.9 **Select Main tab**
- 1.9.1 Device and Signature Bytes = ATtiny88
- 1.9.2 Programming Mode and Target Settings = ISP Mode
  - 1.9.2.1 Settings ISP Freq = 200.0kHz (click Write)

1.10 **Select HW Settings tab**
- 1.10.1 VTarget = Target Voltage: 3.3V (click Write)

1.11 **Select Program tab**
- 1.11.1 Flash
  - 1.11.1.1 Input HEX File = C:\Program Files\Atmel\Atmel_QTouch_Libaries_4.3\Generic_QTouch_Libraries\AVR_Tiny_Mega_XMega\QTouch\example_projects\QT600_ATtiny88_gnu.hex
  - 1.11.1.2 Click Program (STATUS LED on Interface Board turns red during programming then back to green when programming is complete)

1.12 Disconnect the USB cable from PC

1.13 Remove the 6-conductor ribbon cable

1.14 Connect the 10-conductor ribbon cable between the TOUCH DATA headers on the ATtiny88 and interface boards

1.15 Reconnect the USB cable to PC

1.16 In Atmel® AVR Studio®, click on the 'QT' icon in the toolbar to launch Atmel QTouch Studio®

1.17 In QTouch Studio
- 1.17.1 Make sure that the Application Mode on the left side is set to **Analysis Mode**
- 1.17.2 Just below (under Touch Data Read Control), click **Start Reading**
- 1.17.3 QTouch Studio is now reading touch data from your QT600. You will see changes in the Virtual Kit View as you touch the sensor regions on the QTouch8 board.

Figure 3 – Atmel QTouch8 Sensor Board Displayed on CPU Monitor

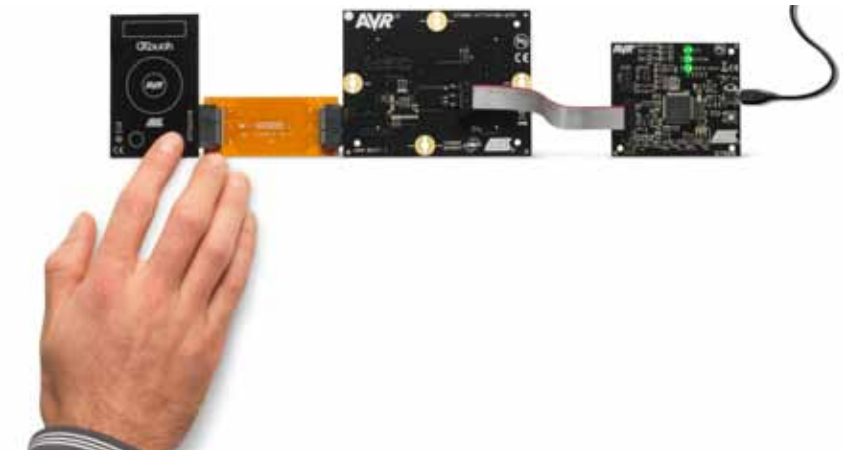


Figure 4 – Complete Set-up for the Atmel QTouch8 sensor board: The sensor board is connected to the ATtiny88, which in turn is connected to the interface board

Connect Kit Modules

2 QTouch16 with ATmega324 and QMatrix 8x8 with ATXMEGA128A1

2.1 By using the table below and following the same procedures as in step number 1 above, you can program and run both of these boards

Sensor Board / MCU Board	1.2) To Program	1.6.1) Main Lab - Device and Signature Bytes	1.61) Main Tab - Programming Mode and Target Settings	1.7) HW Setting tab	1.11) To Program and Run	1.8) Program Tab --> Flash Hex Files c:\Programs Files\Atmel_QTouch_Libaries_4.3\Generic_QTouch_Libraries\AVR_Tiny_Mega_XMega\
QTouch8 / ATtiny88	6-conductor ribbon cable into ISP pins	ATtiny88	ISP Mode (Settings = ISP Frequency = 200kHz)	VTarget = Target Voltage: 3.3V (click Write)	10-conductor ribbon cable into TOUCH DATA	QTouch\example_projects\QT600_ATtiny88_gnu.hex
ATouch16 / ATXMEGA128A1	10-conductor ribbon cable into JTAG pins	ATxmega128A1	JTAG Mode (Settings = 'Target device is not part of a JTAG daisy chain')	VTarget = Target Voltage: 3.3V (click Write)	10-conductor ribbon cable into TOUCH DATA	QTouch\example_projects\QT600_ATxmega128a1_qt16_gnu.hex
QMatrix 8x8 / ATmega324	10-conductor ribbon cable into JTAG pins	ATmega324PA	JTAG Mode (Settings = 'Target device is not part of a JTAG daisy chain')	VTarget = Target Voltage: 3.3V (click Write)	10-conductor ribbon cable into TOUCH DATA	QMatrix\example_projects\QT600_ATmega324_qm64_gnu.hex

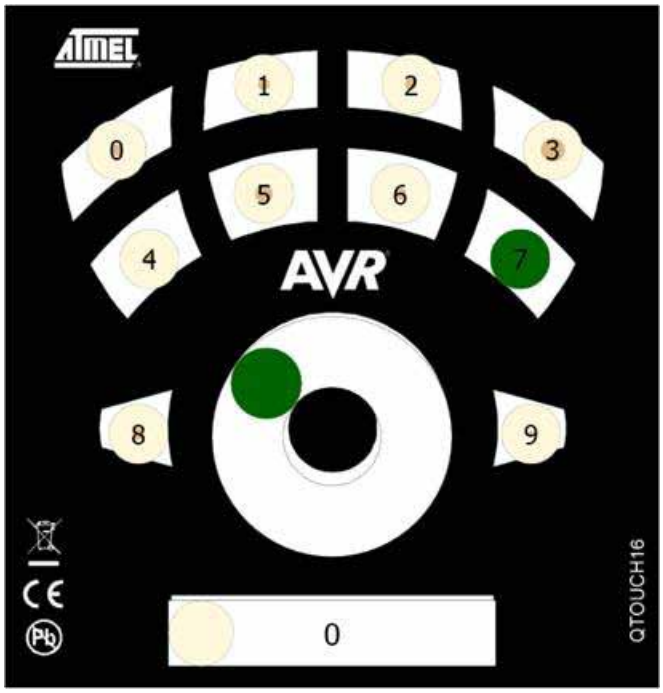


Figure 5 – Atmel® QTouch16 sensor board displayed on CPU monitor

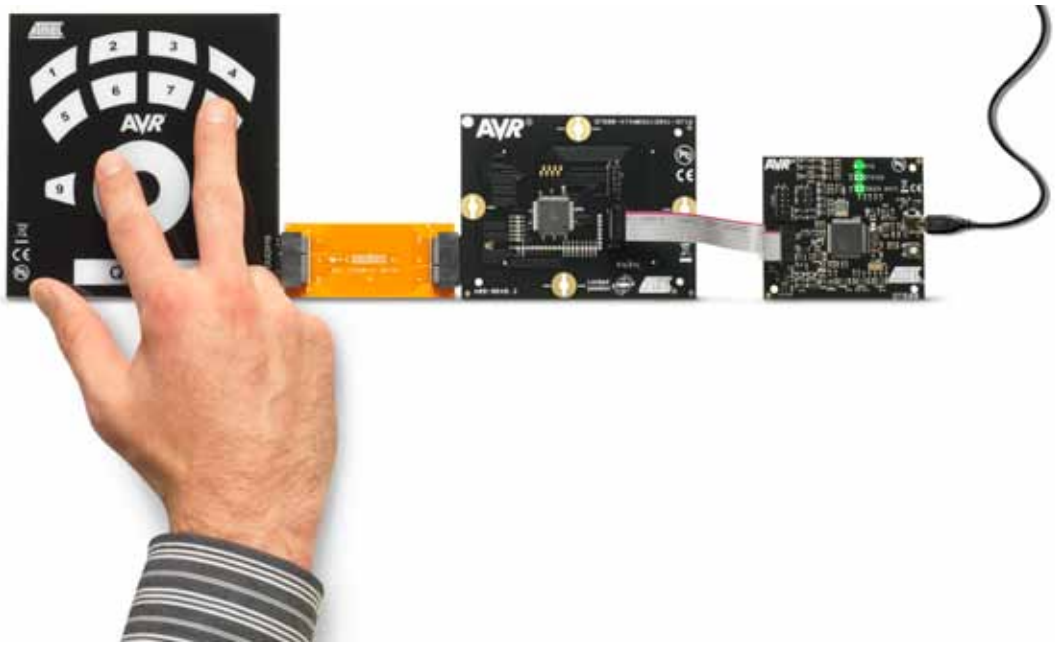


Figure 6 – Complete set-up for the Atmel QTouch16 sensor board: The sensor board is connected to the Atmel ATXMEGA128A1, which in turn is connected to the interface board

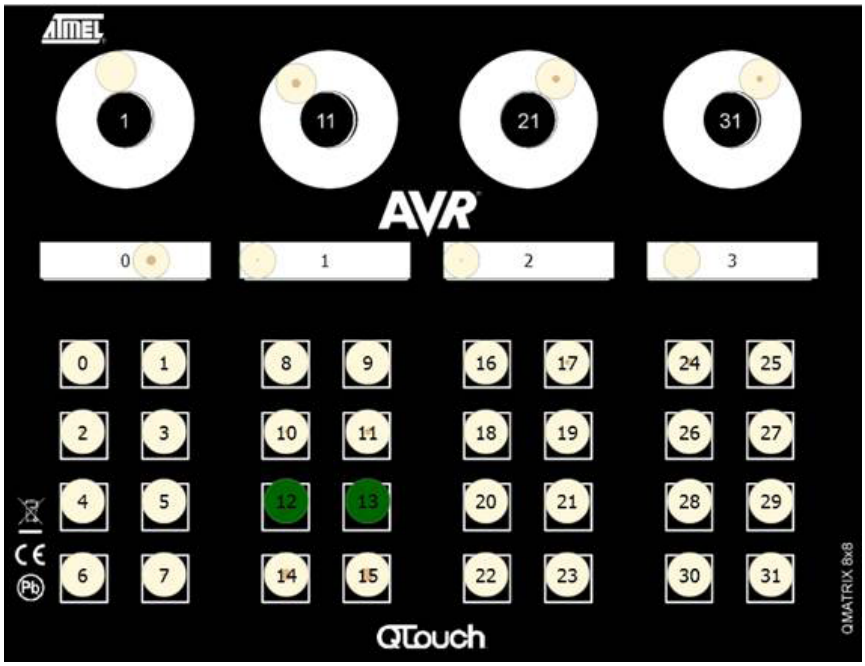


Figure 7 – Atmel QMatrix 8x8 sensor board displayed on CPU monitor

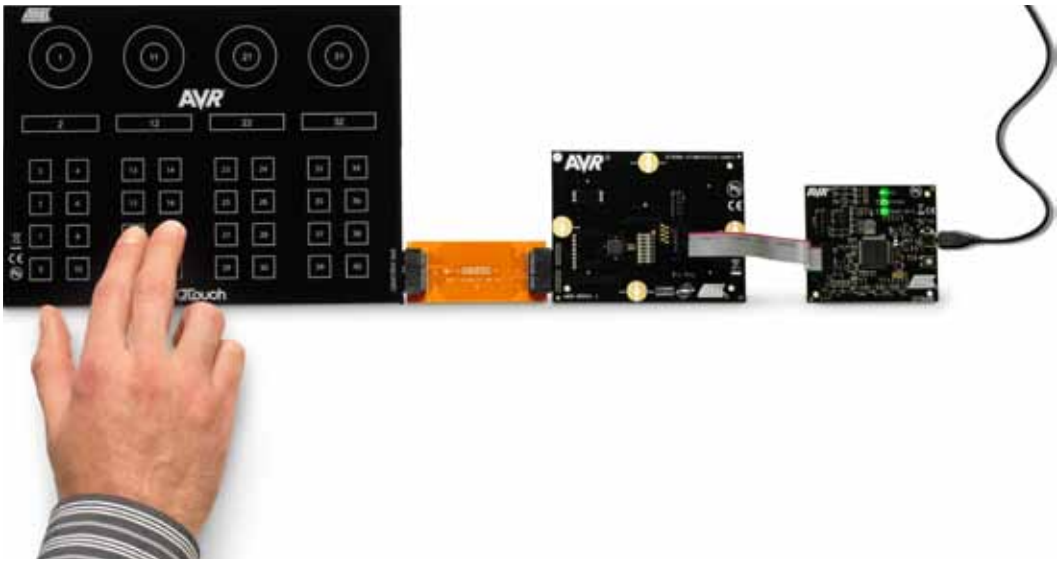


Figure 8 – Complete set-up for the Atmel® QMatrix 8x8 sensor board: The sensor board is connected to the Atmel ATmega324, which in turn is connected to the interface board

References

Atmel QTouch® Library User Guide - http://www.atmel.com/lib/pdf/Atmel_TLib3-1_CreateProjectV14_IAR+GCC.pdf
Atmel Touch Sensors Design Guide - http://www.atmel.com/dyn/resources/prod_documents/doc10620.pdf
Application Notes - http://www.atmel.com/dyn/products/app_notes.asp?family_id=697
Atmel® QT600 Application Note – Coming soon

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