ISMART
Inventek Systems Module ARduino Test

IoT Evaluation Board
User’s Manual

802.11a/b/g/n/ac + BT/BLE

ISMART EVB
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1 Definitions

eS-WiFi: embedded Serial Wi-Fi
- Inventek’s “modular” wireless product offering (Radio + MCU + Certified Antenna). These modules consist of 802.11a/b/g/n/ac Wi-Fi radios and combinations of these radios with BT/BLE.
- All eS-WiFi module options support the same footprint enabling customers to migrate across the entire eS-WiFi portfolio without requiring any changes to the customer’s original PCB design.
- eS-WiFi modules include antenna certifications for Chip, Etched, and u.fl antennas.

IWIN: Inventek Systems Wireless Interoperability Network:
- Inventek’s proprietary AT Command SW.
  - All associated collateral and documentation can be found at
    - https://www.inventeksys.com/iwin/getting-started-guide/
- Requires a Host processor to communicate to the eS-WiFi module serially.
- Video References:
  - Inventek Systems 802.11 b/g/n Serial to Wi-Fi & IWIN AT Introduction:
    - https://www.youtube.com/watch?v=Tq2-CYm-c8Q
  - Inventek Systems 802.11 b/g/n Serial to Wi-Fi & IWIN AT Command Set Tutorial:
    - https://www.youtube.com/watch?v=tkPOLaNAKHo
  - Inventek 802.11 b/g/n Serial to Wi-Fi Product Overview & AT Command Set Tutorial:
    - https://www.youtube.com/watch?v=Mzmi-0DcUu0

ISMART: Inventek Systems Module ARduino Test IoT Evaluation Board
- Arduino form factor/footprint, no Arduino driver support.
- No additional hardware is required other than a PC to use the ISMART evaluation board.
- Please Note: The three-way switch on the ISMART evaluation board must be in the position closest to the Wi-Fi module (Position 1, UART USB), and use a USB cable to plug the ISMART evaluation board into your PC.
2 Introduction

The Inventek ISMART (Inventek Systems Module Arduino Test) IoT evaluation board platform is a user-friendly Arduino form factor compliant evaluation board suited for all of your wireless application needs. Please note that there is no Arduino software provided for this IoT development board.

The ISMART IoT evaluation board enables customers to quickly launch IoT products based on Inventek’s eS-WiFi (embedded Serial Wi-Fi), portfolio of 802.11a/b/g/n/ac Wi-Fi radios and combinations of those radios with BT/BLE, a Host MCU and certified chip, etched or u.fl antenna options.

The ISMART IoT evaluation board is also supported by Inventek’s IWIN (Inventek Wireless Interoperability Network), firmware which provides customers a robust user friendly AT command set to simplify and accelerate IoT design and development. IWIN enables customers to quickly get a Wi-Fi connected application up and running.

The ISMART IoT evaluation board plugs directly onto any target Arduino compatible MCU/CPU/Sensor Development Board offering. The ISMART IoT evaluation board also supports complete HW & SW IoT platform projects for various MCU requirements. Examples of the ISMART IoT MCU Reference Design Projects include Infineon’s XMC4500 MCUs, ST Micro’s STM32F MCUs, Analog Devices’ Shark DSP and CUP360 MCUs, and Cypress PSoC MCUs. In addition, the ISMART IoT MCU Reference Design Projects also support third party Cloud applications such as AWS. For more information on complete ISMART IoT MCU Reference Design Projects, please visit:

- www.inventeksys.com
- AT Command Support
- IoT MCU Reference Designs

The ISMART IoT Evaluation Board User’s Manual provides a detailed hardware and software requirements overview as well as all required board connections.
2.1 ORDERING INFORMATION

<table>
<thead>
<tr>
<th>ISMART EVB</th>
<th>EVALUATION BOARD DESCRIPTION</th>
<th>eS-WiFi Module</th>
<th>ORDERING P/N</th>
<th>ORDERING P/N</th>
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<tr>
<td>ISMART43362</td>
<td>2.4G Wi-Fi, Cortex™ M3</td>
<td>ISM43362-M3G-L44</td>
<td>ISMART43362E-EVB</td>
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<td>2.4G Wi-Fi, Cortex™ R4</td>
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NOTE:

- All ISMART EVBs are configured for the UART interface option.
- For SPI support, please download the appropriate SPI FW update from Inventek’s website, www.inventeksys.com
- Please reference your target eS-WiFi module of choice Data Sheet for additional information.

2.2 ISMART IoT EVB Overview

NOTE:

- The L44/L54 footprint compatible option for Inventek’s eS-WiFi modules enables customers to migrate across Inventek’s portfolio as needed without requiring any changes to a customer’s original PCB layout, enabling maximum flexibility as future connectivity design requirements change.
- The ISMART IoT EVB is a 3.3V board not a 5V board (5V input & generates 3.3V IO)
- The ISMART Mini USB connects to the Dual Port FTDI (Backside of EVB)
- The ISMART UART Position Switch selects the required UART connection
  - Please reference Section 4, The ISMART – Arduino Pin Out Map for all details.
2.3 **ISMART IoT EVB Hardware Features**

- The **ISMART** EVB is a 3.3v board, not a 5v board. The **ISAFE** EVB takes 5v in but generates 3.3v IO.

- FCC/CE/IC Certification is included with all **eS-WiFi** options including Etched, Chip or u.fl antenna options.

- Configurable using Inventek **IWIN** AT Commands FW.

- Host interface: UART, SPI.

- Input Power: 5.0 V

- Dual Port FTDI for firmware development and testing.

- SPI Flash for Over The Air (OTA) updates

- All **eS-WiFi** module portfolio also support a standard L44/L54 package option to enable customers to migrate between **eS-WiFi** module options once in mass production without customers having to make any board layout changes to their original PCB.

- Please note that there is no Arduino software provided for the **ISMART** IoT development board.
3 System Requirements

3.1 ISMART EVB Configuration for UART interface option

The ISMART EVB communication is configured using a PC over USB for all evaluation and test purposes.

1. Set-Up:

   a. Download and install the eS-WiFi PC Demo:
      i. [https://www.inventeksys.com/iwin/demo-software/](https://www.inventeksys.com/iwin/demo-software/)

   b. Run eS-WiFi PC Demo and Install Drivers:
      i. Menu > Install Drivers

   c. Set the Power source for the ISMART EVB by placing a jumper on J17 from Pin 1 to Pin 2

   d. Set SW3 to Position 1, UART_USB (i.e.: Closest to eS-WiFi module)

   e. Connect PC to the ISMART EVB using the Mini USB connector

   f. Configure Serial Port:
      i. Setup > Serial Port > Configure/Open
      ii. In the Serial Port Config window:
         • Select Serial Port
         • Baud rate: 115,200
         • Parity None
         • Data Width 8
         • Stop Bits 1

   g. You are now ready to type IWIN AT Commands in to the Terminal window
      i. IWIN AT Commands Quick Reference Guide can be found at:
4 The ISAFE– Arduino Pin Out Map
5  ISAFE EVB Schematics

5.1  *USB Schematic*
5.2 FTDI Schematic
6 Temp Rating

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**NOTE:** Functionality is guaranteed, but specifications require derating at extreme temperatures

7 Revision Control

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<th>Evaluation Board</th>
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8 Contact Information

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