Getting Started – Development Kit and Carrier Board

Development Kit Hardware

Components Included in the M6E-M_DEVKIT:

- The Micro module and carrier board
- Power/interface developer's board
- One USB cable
- One antenna
- One coax cable
- One 9V power supply
- International power adapter kit
- Sample tags
- The Quick Start Guide that details which documents and software to download to get up and running quickly, along with details on how to register for and contact support.

NOTE: The Micro module is mounted on a carrier board in the bottom-up "Flip Mount" orientation on the Development Kit.

Micro Module on Carrier Board
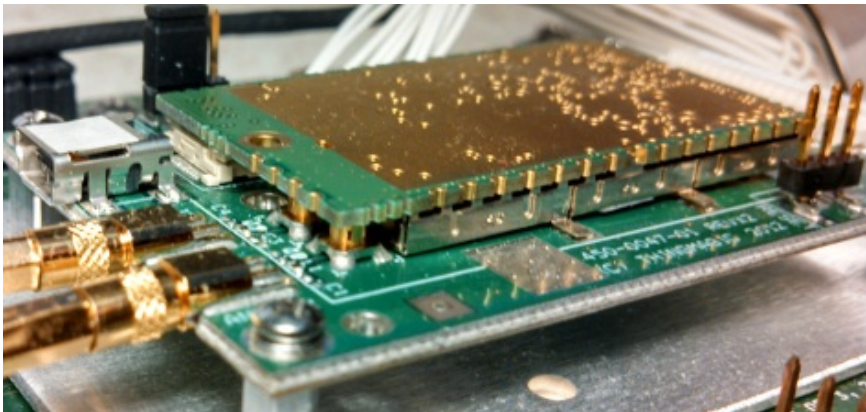
This mounting method allows for easy replacement of the module, but allows the module to overheat very quickly. If it is necessary to test the module in continuous reading mode, we recommend using a Micro Carrier Board, which has the carrier soldered down to a daughterboard and features an aluminum heat spreader beneath the board.

Connecting the Antenna

JADAK supplies one antenna that can read tags from 20' away with most of the provided tags. The antenna is monostatic. Use the following procedure to connect the antenna to the Development Kit.

1. Connect one end of the coax cable to the antenna.

2. Connect the other end of the cable to the antenna port 1 connector on the Development Kit.

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Powering Up and Connecting to a PC

After connecting the antenna you can power up the Development (Dev) Kit and establish a host connection.

1. Connect the USB cable (use only the black connector) from a PC to the developer's kit. There are two Development Kit USB Interfaces options.

2. Plug the power supply into the Development Kit's DC power input connector.

3. The LED next to the DC input jack, labeled DS1, should light up. If it doesn't light up check jumper J17 to make sure the jumper is connecting pins 2 and 3

4. Follow the steps based on the Development Kit USB Interfaces used and make note of the COM port or /dev device file, as appropriate for your operating system the USB interface is assigned.

5. To start reading tags start the Demo Application (Universal Reader Assistant).

⚠️ **Caution:** **While the module is powered up, do not touch components. Doing so may damage the Dev Kit and Micro module.**

Development Kit USB Interfaces

USB/RS232

The USB interface (connector labeled USB/RS232) closest to the power plug is to the RS232 interface of the Micro through an FTDI USB to serial converter. The drivers for it are available at http://www.ftdichip.com/Drivers/VCP.htm.

Follow the instructions in the installation guide appropriate for your operating system.

Native USB

To use the Micro native USB interface (connector labeled USB), if on Windows, a few installation steps are required for Windows to recognize the Micro and properly configure the communications protocol. In order to use the USB interface with Windows you must have the Micro-USBDriver.inf file. The installation steps are:

1. Plug in the USB cable to the Micro (Dev Kit) and PC.

2. Windows should report it has "Found New Hardware - Micro" and open the Hardware Installation Wizard.

3. Select the **Install** from a list or specific location (Advanced) option, click **Next**.

4. Select **Don't search...**, click **Next**, then **Next** again.

5. Click **Have Disk** and navigate to where the m6ultra.inf file is stored and select it, click **Open**, then **OK**.

6. "Micro" should now be shown under the Model list. Select it and click **Next,** then **Finished**.

NOTE: **The Micro driver file has not been Microsoft certified so compatibility warnings will be displayed. These can be ignored and clicked through.**

7. A COM port should now be assigned to the Micro. If you aren't sure what COM port is assigned you can find it using the Windows Device Manager:

a. Open the Device Manager (located in Control Panel | System).

b. Select the Hardware tab and click **Device Manager**.

c. Select View | Devices by Type | Ports (COM & LPT) The device appears as M6eMicro (COM#).

NOTE: **The carrier board can be used independently of the Dev Kit motherboard via the USB connector on the carrier board. If the carrier board is to be powered by the USB connector, a jumper (nearest the USB connector) must be installed that connects "VIN" to "+5USB" (these labels are silkscreened on the carrier board).**

NOTE: **For higher power applications (requiring higher Power Consumption than a USB port can provide), leave the jumper off, and connect power through the test point loops or through the dev kit.**

Development Kit Jumpers

J8

Jumpers to connect Micro I/O lines to dev kit.

J9

Header for alternate power supply. Make sure DC plug (J1) is not connected if using J9.

J10, J11

Jump pins OUT to GPIO# to connect Micro GPIO lines to output LEDs. Jump pins IN to GPIO# to connect Micro GPIO to corresponding input switches SW[3,4]GPIO#. Make sure GPIO lines are correspondingly configured as input or outputs (see Configuring GPIO Settings).

J13, J15

Not used.

J14

Can be used to connect GPIO lines to external circuits. If used jumpers should be removed from J10, J11.

J16

Jump pins 1 and 2 or 2 and 3 to reset dev kit power supply. Same as using switch SW1 except allows for control by external circuit.

J17

Jump pins 1 and 2 to use the 5V INPUT and GND inputs to provide power. Jump pins 2 and 3 to use the Development Kit's DC power jack and power brick power.

J19

The jumper at J19 that connects Shutdown to ground must be REMOVED. With this jumper removed, the module is always operational. The shutdown switch has no effect on the Micro. To put the Micro into shutdown mode is to reinstall the jumper at J19. See Micro Digital Connector Signal Definition for details on the Shutdown Line. AUTO_BOOT controls Reset Line.
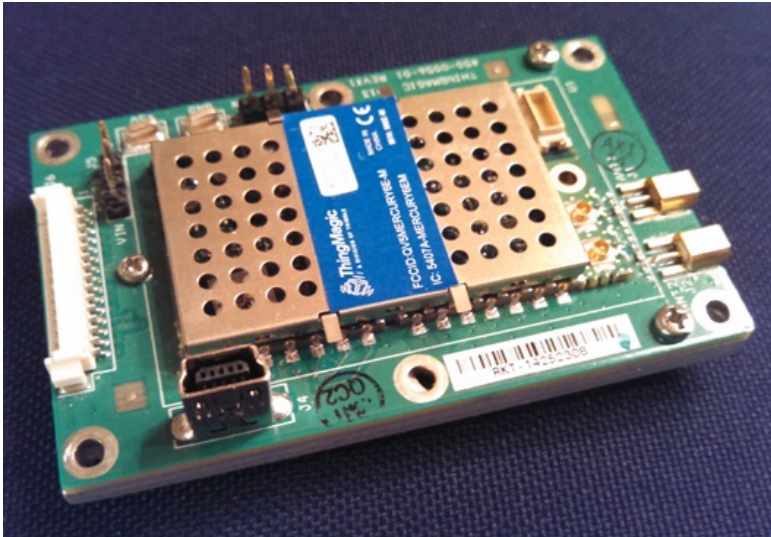
Development Kit Schematics

Available upon request from rfid-support@jadaktech.com.

Micro Carrier Board

If all the flexibility of the Development Kit is not needed or if the module in the Development Kit heats up too much during testing, we recommend purchasing a Micro Carrier Board.

Micro Carrier Board

This board can be mounted directly on top of the metal mounting plate of the Development Kit motherboard and the edge connector is pin-for-pin compatible with the M6e module and the "Flip Mount" daughterboard. This module may also be accessed independently of the Development Kit motherboard by inserting a USB connector into the on-board socket and adding a jumper between the "VIN" and "+5USB" pins on the jumper between the module and the white power/control connector.

Demo Application

A demo application which supports multi-protocol reading and writing is provided in the MercuryAPI SDK package. The executable for this example is included in the MercuryAPI SDK package under /cs/samples/ exe/Universal-Reader-Assistant.exe and is also available for direct download from the website.

NOTE: The Universal Reader Assistant included in the MercuryAPI SDK maybe an older revision than the one available for standalone download.

See the Readme.txt in /cs/samples/Universal-Reader-Assistant/Universal-ReaderAssistant for usage details.

See the MercuryAPI Programmers Guide for details on using the MercuryAPI.

Notice on Restricted Use of the Development Kit

The Mercury6e Developers Kit (Dev Kit) is intended for use solely by professional engineers for the purpose of evaluating the feasibility of applications.

The user's evaluation must be limited to use within a laboratory setting. This Dev Kit has not been certified for use by the FCC in accordance with Part 15 of the FCC regulations, ETSI, KCC or any other regulatory bodies and may not be sold or given for public use.

Distribution and sale of the Dev Kit is intended solely for use in future development of devices which may be subject to regional regulatory authorities governing radio emission. This Dev Kit may not be resold by users for any purpose. Accordingly, operation of the Dev Kit in the development of future devices is deemed within the discretion of the user and the user shall have all responsibility for any compliance with any regional regulatory authority governing radio emission of such development or use, including without limitation reducing electrical interference to legally acceptable levels. All products developed by user must be approved by the appropriate regional regulatory authority governing radio emission prior to marketing or sale of such products and user bears all responsibility for obtaining the prior appropriate regulatory approval, or approval as needed from any other authority governing radio emission.