

ThingMagic (TM) Mercury API Quick Start Guide

Revision Table

Date	Version	Description
3/1/2024	C	Updated "3.1.1 Building TM API on windows" section for x64 configuration along with figure
5/12/2023	B	Updated BareMetal project section image under SDK organization with SAMD21 project and SW pre-requisites for the same
24/04/2023	A	First version

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1 Introduction

1.1 Objective

This document will familiarize you with the ThingMagic(TM) Mercury C API:

- How to get the SDK (Software Development Kit)
- How to run a sample codelet
- How to create a new sample which can read a tag

1.2 Software Pre-requisites

1) IDE

- Microsoft Visual Studio 2019 or 2022 for Windows Operating System.
- GCC v4.4.2 or later for Linux Operating System.
- The IDE depends on the processor used in BareMetal applications. For example, a BareMetal application with STM32 microcontroller is developed using Keil MicroVision IDE, a BareMetal application with Arduino is developed using Arduino IDE and a BareMetal application with SAMD21 microcontroller uses Microchip Studio IDE (or Atmel Studio).

2) Driver

- When a JADAK serial reader is connected to a host PC with the latest Operating System (Windows 8/8.1 or later), the Operating System will install the drivers automatically. We do not have to install manually.
- When a JADAK serial reader is connected to a host PC with older Operating Systems (Older than Windows 8), then the drivers must be installed manually. The Serial Reader uses FTDI USB (Universal Serial Bus) to serial converter, and its driver can be downloaded from <http://www.ftdichip.com/Drivers/VCP.htm>. Follow the instructions in the installation guide for installation - [Installation Guides - FTDI \(ftdichip.com\)](#).

2 Getting started with API

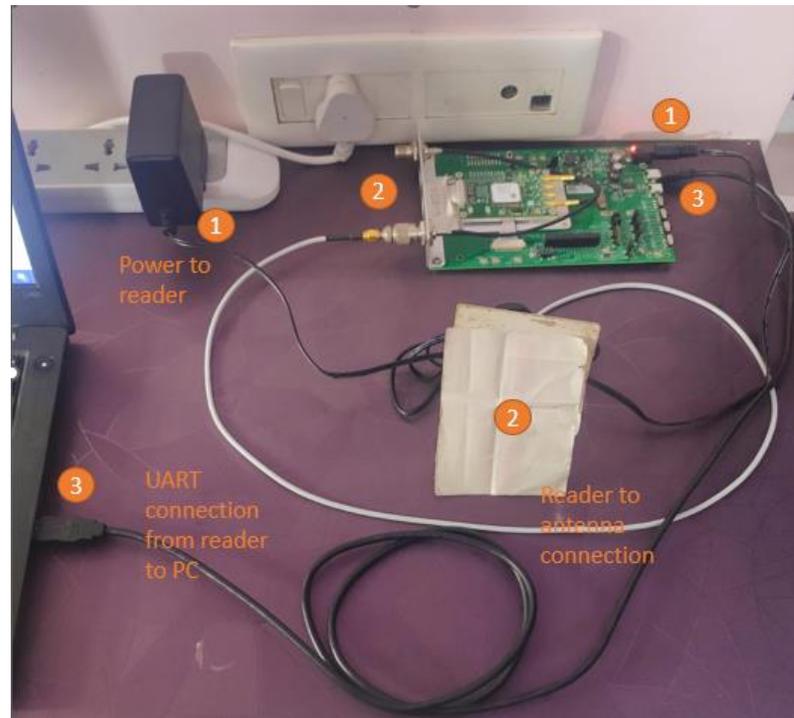
TM Mercury API provides support for connecting to JADAK's RFID readers, configuring them, and reading tags.

2.1 TM Reader

The TM M7e Pico (shown below) will be used for the demonstration.



The following image shows how to connect power adapter and antenna to reader, and UART (serial connection) cable to the host PC.



2.2 Download TM Mercury API software and Documentation

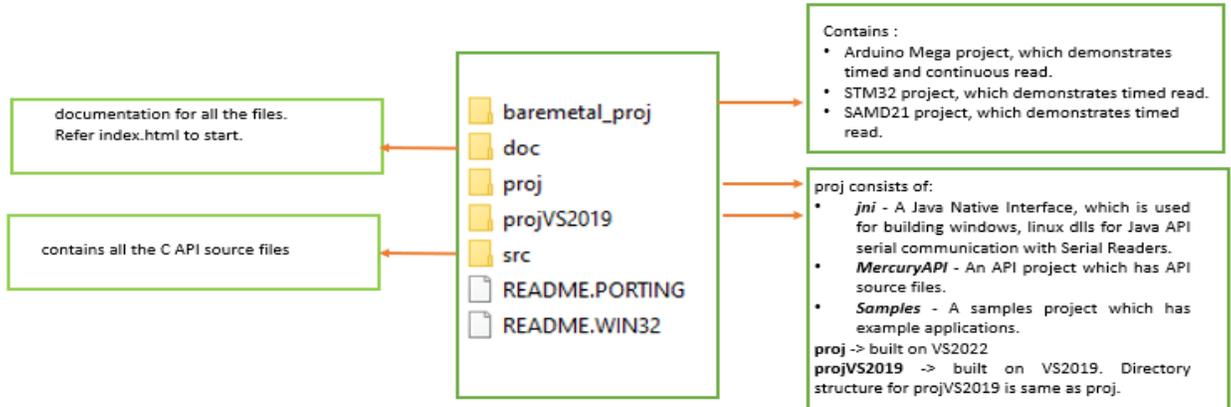
1. Download the Mercury API software (in the Documentation > APIs section) and the Mercury API programmer guide (in the Documentation > User Manuals section) from the JADAK website:

<https://www.jadatech.com/product/thingmagic-mercury-api/>

2. MercuryAPI SDK supports 3 programming languages C, C#, and Java. Unzip the mercuryapi-1.37.1.xx.zip.

2.3 SDK Organization

This guide references Mercury C API. Refer to the Mercury API programmer guide for C# and Java. After extracting API SDK on the PC, navigate to mercuryapi-1.37.x.xx\c\ folder. The brief description of C API SDK directory is shown below:



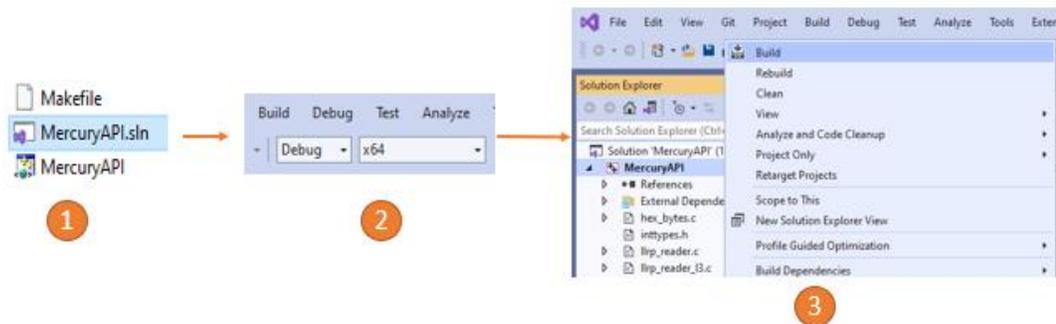
3 Building and Execution

The Mercury C API is designed to be ported and run on a wide variety of runtime environments, ranging from full host operating systems to BareMetal embedded platforms. Refer Section – 2.3, “SDK organization” for integrating and using Mercury C API on embedded microcontrollers like Arduino, STM32, etc. Please reach out to RFID Support (rfid-support@jadaktech.com) for any other information.

3.1 Building TM Mercury API

3.1.1 On Windows

Open the “MercuryAPI.sln” solution file present in “mercuryapi-1.37.x.xx\c\proj\MercuryAPI” from the Visual Studio. After Mercury API project shows up in the Visual Studio IDE, change build configuration from “Mixed Platforms” to “x64” as shown below, and then build project by using “Build” option.



3.1.2 On Linux

Navigate to “mercuryapi-1.37.x.xx\c\src\api” and run command “make”.

```
qvantel@qvantel:/media/sf_C_DRIVE/Users/apanchal/Desktop/Data/Build/mercuryapi-BILBO-1.37.1.xx/c/src/api$ make
SOURCE_DIR=lib PATCH_DIR=lib XML_DIR=lib sh lib/install_LTKC.sh NULL lib
Extracting LTKC_1_0_5.tar.gz to lib/ directory
patching file LTK/LTKC/Examples/Example-Makefile
patching file LTK/LTKC/Examples/Makefile
patching file LTK/LTKC/Library/Makefile
```

3.1.3 On BareMetal

For building Mercury API on BareMetal, please refer README.txt in BareMetal project directory or refer the BareMetal interface guide available at [ThingMagic® M7e UHF RAIN® RFID Module Series - Jadak - A Novanta Company \(jadaktech.com\)](http://jadaktech.com)

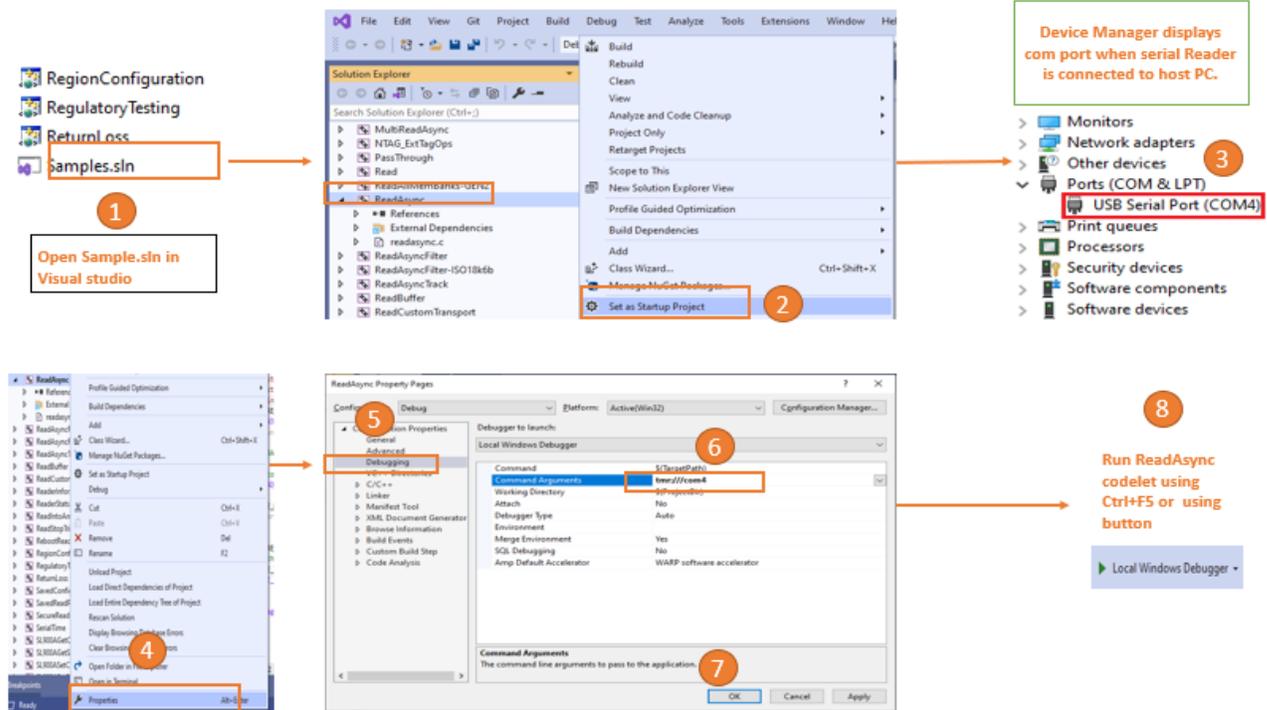
3.2 Building and Running the ReadAsync codelet

Codelets are a great way to familiarize yourself with the JADAK MercuryAPI - think of them as helper widgets that can assist in understanding how to communicate with Reader.

- Let us consider the ReadAsync codelet for demonstration. ReadAsync codelet performs continuous read for a duration of 5 Seconds and prints the tags found on the console window.

3.2.1 ReadAsync codelet on Windows

- Open “Samples.sln” (from the path mercuryapi-1.37.x.xx\c\proj\Samples). Select “ReadAsync” project in the project explorer, right click on it and choose “Set as Startup Project” option.
- Figure out the serial port (COM) number from “Device Manager” under “Ports (COM & LPT)” section. Let us consider COM4 as an example.
- Add the reader uri(“tmr:///com4”) in “Command Arguments” by right clicking on the <Project_Name> -> Properties ->Debugging -> Command Arguments.
- Run the ReadAsync codelet using Ctrl+F5.



A console window with the tag reads should be displayed as shown below.

```
Background read: Tag ID:ABCDABCDABCDABCDABCD ant:1 count:1 time:2023-5-4T17:20:48.417
Background read: Tag ID:ABCDABCDABCDABCDABCD ant:1 count:1 time:2023-5-4T17:20:48.456
Background read: Tag ID:112233445566778899AABBCC ant:1 count:1 time:2023-5-4T17:20:48.460
Background read: Tag ID:ABCDABCDABCDABCDABCD ant:1 count:1 time:2023-5-4T17:20:48.499
Background read: Tag ID:112233445566778899AABBCC ant:1 count:1 time:2023-5-4T17:20:48.503
Background read: Tag ID:ABCDABCDABCDABCDABCD ant:1 count:1 time:2023-5-4T17:20:48.543
```

- **Note:** If the build event results in an error “The application was unable to start correctly”, then copy “pthreadVC2.dll”(available in “mercuryapi-1.37.x.xx\c\src\arch\win64\lib” for 64-bit configuration or “mercuryapi-1.37.x.xx\c\src\arch\win32\lib” for 32-bit configuration) to “C:\Windows” before running a sample codelet in Visual Studio.

3.2.2 ReadAsync codelet on Linux

Run the code sample using command “. /readasync tmr:///dev/ttyUSB0 -ant 1”.

```
qvantel@qvantel:~/Documents/Manasa/API/mercuryapi-1.37.0.66/c/src/api$ ./readasync tmr:
///dev/ttyUSB0 --ant 1
Background read: Tag ID:E6BE2112DB6B18182305F204BFD031BF7CB7 ant:1 count:1 time:2023-05
-10T12:53:43.460012+0530
Background read: Tag ID:34337265 ant:1 count:1 time:2023-05-10T12:53:43.463015+0530
Background read: Tag ID:E6BE2112DB6B18182305F204BFD031BF7CB7 ant:1 count:1 time:2023-05
-10T12:53:43.503055+0530
Background read: Tag ID:34337265 ant:1 count:1 time:2023-05-10T12:53:43.506058+0530
Background read: Tag ID:34337265 ant:1 count:1 time:2023-05-10T12:53:43.544096+0530
Background read: Tag ID:E6BE2112DB6B18182305F204BFD031BF7CB7 ant:1 count:1 time:2023-05
-10T12:53:43.549101+0530
```

3.2.3 ReadAsync codelet on BareMetal

For building this code sample on BareMetal, please refer README.txt in BareMetal project directory or refer the BareMetal interface guide available at <https://www.iadaktech.com/resources/rfid-document-library/>