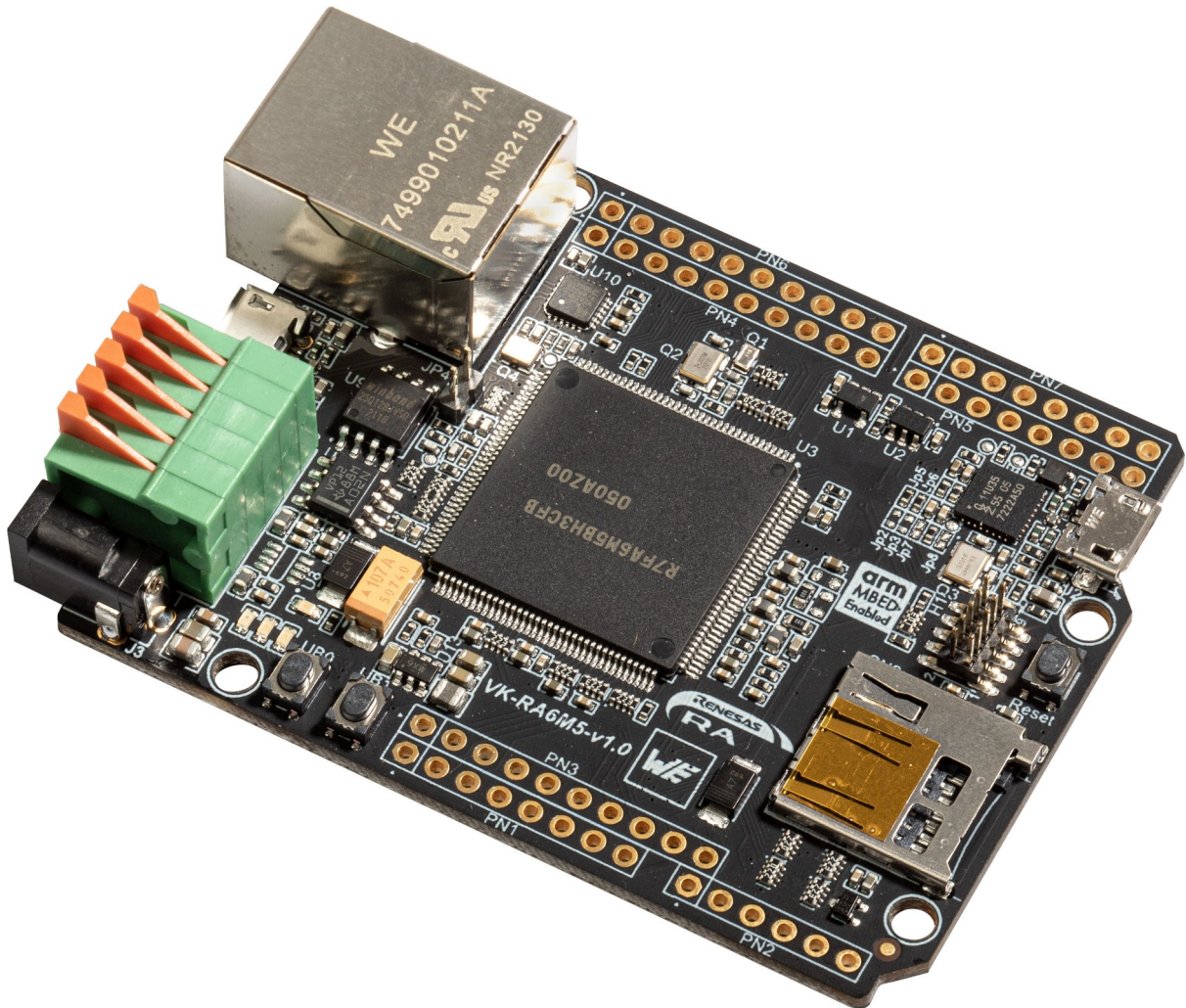


VK-RA6M5 FSP App Demo



VK-RA6M5 v1.0 Board



Developer's manual

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1. Introduction

[VK-RA6M5](#) is development board, based on **Renesas RA6M5 ARM Cortex-M33 MCU**. The main purpose of this application is demonstration of board's hardware capabilities and main components workability (such as: USB, Ethernet, SD Card, external Flash etc.)

2. Environment Setup

This demo is built with Renesas RA Flexible Software Package **3.7.0** and includes 3 projects, each of which setuped for **E²Studio**, **IAR** & **Keil**. Every project follows the folder structure below:

E²Studio (22.4.0)	IAR (9.20.1)	Keil uVision5 (5.32.0.0)
Demo	Demo	Demo
+ -- E2	+ -- IAR	+ -- U5
+ -- QSPI_MSD	+ -- QSPI_MSD	+ -- QSPI_MSD
+ ...	+ ...	+ ...
\ -- Debug	\ -- Debug	\ -- Objects
+ -- SDMMC_MSD	+ -- SDMMC_MSD	+ -- SDMMC_MSD
+ ...	+ ...	+ ...
\ -- Debug	\ -- Debug	\ -- Objects
\ -- Streamer	\ -- Streamer	\ -- Streamer
+ ...	+ ...	+ ...
\ -- Debug	\ -- Debug	\ -- Objects
+ - IAR	+ - E2	+ - E2
\ - U5	\ - U5	\ - IAR

If you just want to see what demo actually does and you are not interested in compile & debug, use the precompiled hex files (located in Demo\<<IDE>\<PRJ>\Debug (\Objects) \<PRJ>.hex)



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3. Build

Look the [Blinky](#) project for more details about how to compile, debug & use IDE with the FSP.

4. Demo Apps

Every application tests separate board's hardware periphery and all of them logs output on CN3 μ USB connector (CDC: 115200,1,N,8). You can redirect the log through the J-Link debugger (J-Link RTT Viewer), but have to comment the line № **33** in file `common_utils.h`:

```
(#include "SYSTEM_TTY/SYSTEM_TTY.h").
```

4.1 *QSPI MSD*

This project is port of `qspi_blockmedia_usb` example (part of the official [Renesas RA6M5 Example Project Bundle](#)). Its main goal is checking functionality of the onboard QSPI FLASH, USB ch:0 and its board connector CN1. When launched, this demo turns VK-RA6M5 board's flash in to a 16MB USB MSD flash drive.

4.2 *SDMMC MSD*

This project is port of `usb_pmsc` example (also part of the same [Bundle](#)) Its main goal is checking functionality of the sdhi controller and its holder connector CN5, USB ch:1 and its board connector CN2. When launched this demo turns VK-RA6M5 board in to μ SD card reader. As suggested in the FSP documentation, make sure SD card is inserted before launching the example, because the known limitation of the `r_usb_pmsc` module. The demo propose a partial workaround of the mentioned limitation by sensing the card in advance with `r_sdhi` driver and then opening the `r_usb_pmsc` module, but it is unreliable, (on slowly card insert) the limitation still happens and USB module is stuck (can not be opened neither closed).

4.3 *STREAMER*

This project is port of `ethernet` example (parts of [Bundle](#)). Its main goal is checking functionality of the ethernet controller and its board connector CN8. When launched, this demo turns VK-RA6M5 board in to standalone RTSP server and it counts on QSPI flash content on start up, so prior trying this example you **must have loaded** the content of `QSPI_disk` into the `QSPI drive` with the **QSPI MSD example**. The application expects to mount **FAT** file system from the QSPI and finding up to 256 `*.jpg` files, with names up to 8 symbols (files are read in order of their entry). After successful mount, the example waits plugging of Ethernet cable in to the RJ45 connector. When that



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happens, the board will wait, trying to take an IP from the DHCP server. After network is setuped, micro RTSP server will be started, waiting for clients. In case of a client, the red LED will light up (on AIR) and server will start broadcasting MJPEG stream with resolution 1280x720 @ app. 20 fps.

```
COM63 - PuTTY
*****
*   Renesas FSP Example Project for RTSP Sptream Demo   *
*   Example Project Version 1.0                       *
*   Flex Software Pack Version 3.7.0                  *
*****
Refer to VK RA6M5 Demo.pdf file for more details on Example Project and
FSP User's Manual for more information about RTSP Sptream
*****

Flash Setting up...

Mounting FAT Partition 0
Listing content in QSPI: /
Frame | File Name | File Size
-----|-----|-----
1      01.jpg   121419 bytes
2      02.jpg   121527 bytes
3      03.jpg   120411 bytes
4      .....
5      .....
58     58.jpg   120155 bytes

Network Setting up...

Connecting.....
Ethernet adapter for Renesas VK-RA6M5:
    Description . . . . . : Renesas VK-RA6M5 Ethernet
    Physical Address. . . . . : 00-11-22-33-44-55
    DHCP Enabled. . . . . : Yes
    IPv4 Address. . . . . : 192.168.2.120
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.2.254
    DNS Servers . . . . . : 192.168.2.8

Network Setup OK
running RTSP server
Creating TCP streamer
Created streamer width=1280, height=720
RTSP client started connection
Creating TCP streamer
Creating RTSP session
RTSP received OPTIONS
RTSP received DESCRIBE
RTSP received SETUP
RTSP received PLAY
RTSP received TEARDOWN
RTSP client closed connection
```

FSP system console log



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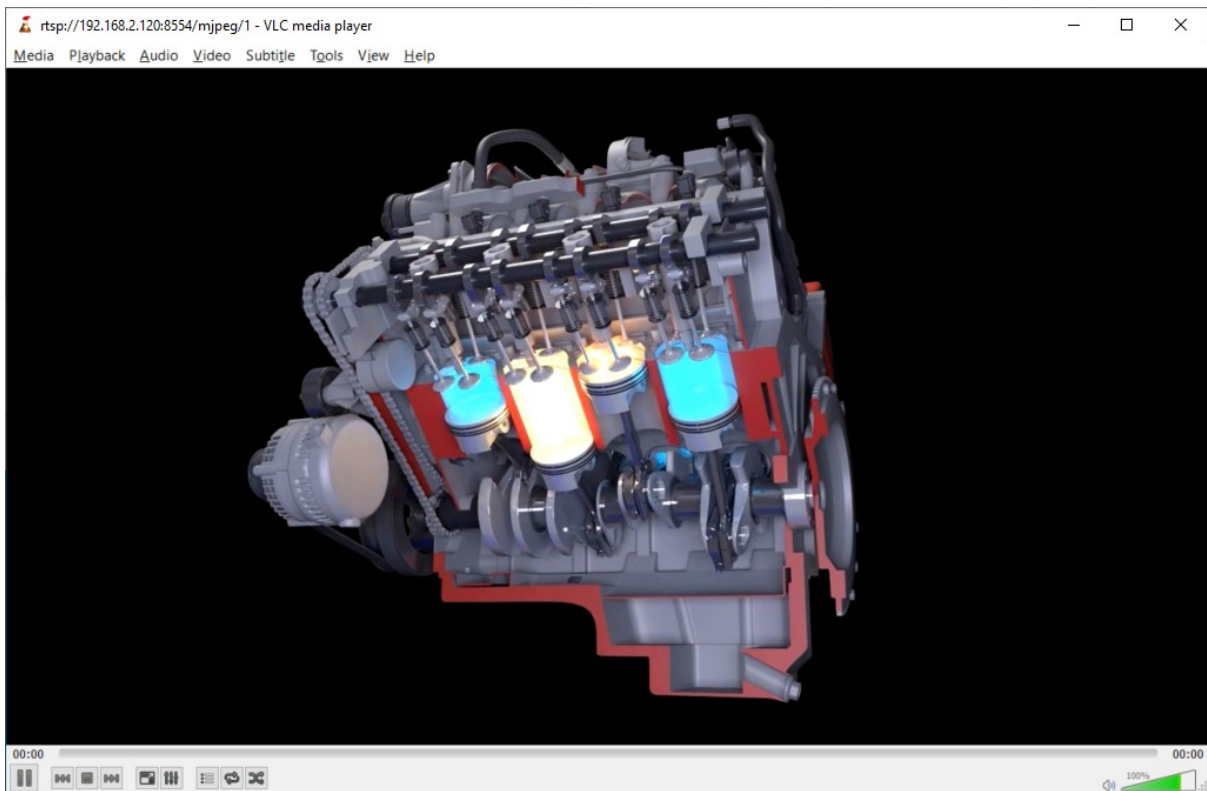
Here are some examples how to grab the stream from the RTSP server:

- Using VLC as a player:

Go to: "Media" → "Open Network Stream..."

for "URL" enter this: `rtsp://VK_RA6M5's_IP:8554/mjpeg/1`

Check "Show more options", in "Edit Options" add `:network-caching=0`, Press Play.



VLC Client stream

- Using FFplay as a player:

Open a CMD/BASH terminal

Insert `ffplay rtsp://VK_RA6M5's_IP:8554/mjpeg/1`, hit Enter



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FFplay Client Stream

You can use whatever player you want as long as it supports RTSP.



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Revision overview list

Revision number	Description changes
1.0	Initial

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