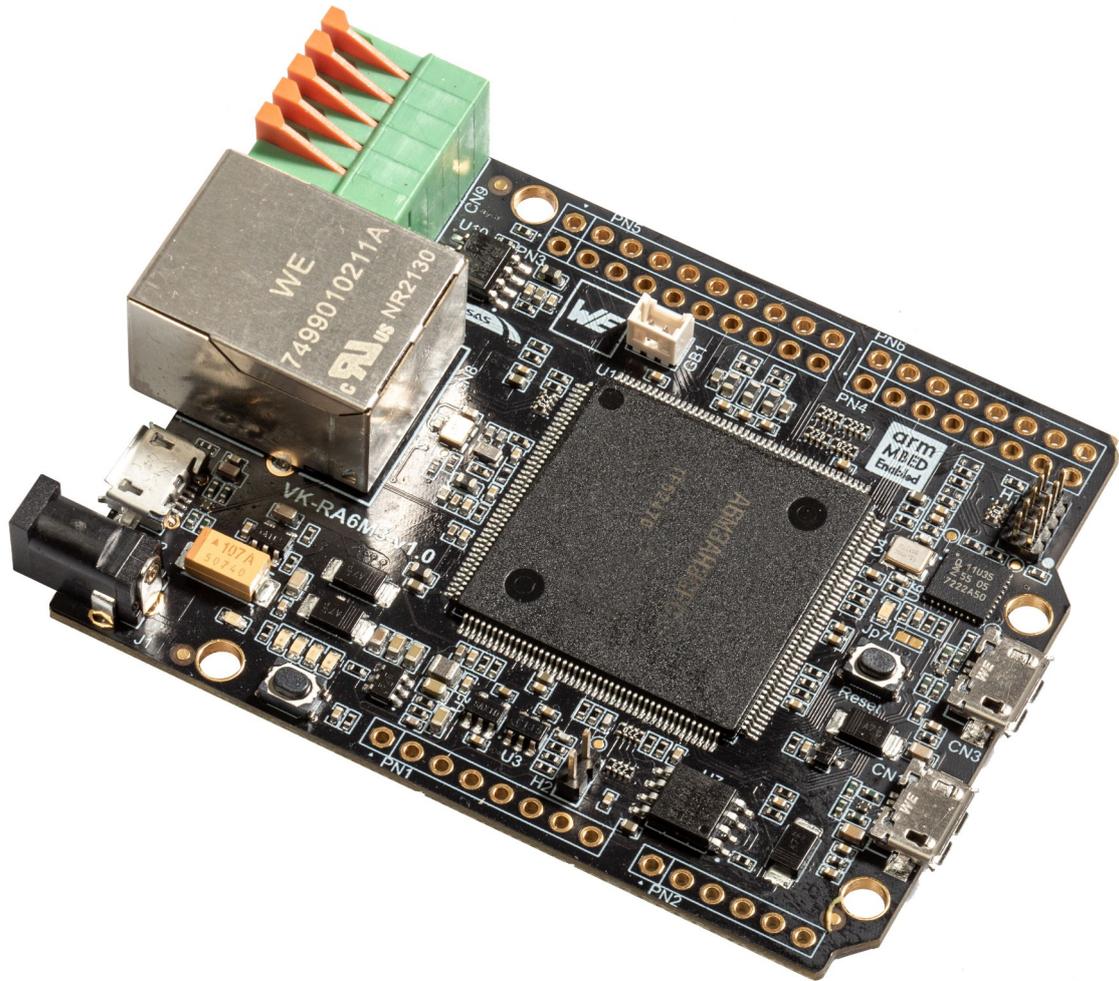


VK-RA6M3 FSP App Demo



VK-RA6M3 v1.0 Board



Developer's manual

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1. Introduction

[VK-RA6M3](#) is development board, based on **Renesas RA6M3 ARM Cortex-M4 MCU**. The main purpose of this application is demonstration of board's hardware capabilities and main components workability (such as: USB, Camera, LCD, Ethernet, SD Card, external Flash etc.)

2. Environment Setup

This demo is built with Renesas RA Flexible Software Package **3.7.0** and includes 4 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
+ -- LCD	+ -- LCD	+ -- LCD
+ ...	+ ...	+ ...
\ -- Debug	\ -- Debug	\ -- Objects
+ -- 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

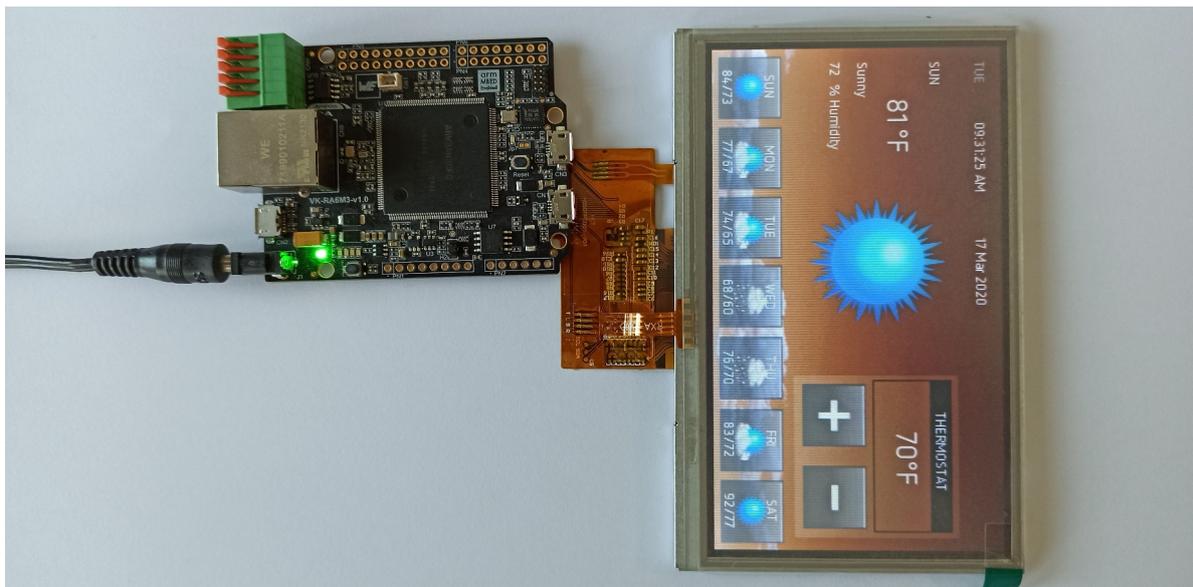
Look the [Blinky](#) project for more details about how to compile, debug & use IDE with the FSP.

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 *LCD*

This project is port of the official [Renesas fsp_graphics_app](#), and its main goal is checking functionality of the display controller and its connector CN7. The back light control is removed from the original app, because on this board, the brightness is set by hardware (with a resistor) and can't be changed programmably. The touch part is also removed, as at the time of porting, there was no available display with a capacitive touch (at least not with reasonable delivery times), but resistive touch ones only, and the board supports only capacitive ones. So when you launch this demo, you will see just the weather forecast wallpaper and that's it.



Weather Forecast wallpaper



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4.2 QSPI MSD

This project is port of **qspi_blockmedia_usb** example (part of the official [Renesas RA6M3 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-RA6M3 board's flash in to a 16MB USB MSD flash drive.

4.3 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-RA6M3 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).

4.4 STREAMER

This project is port of **iic_master**, **pdcc**, **jpeg_codec**, **ethernet** examples (parts of [Bundle](#)). Its main goal is checking functionality of the ethernet controller and its board connector CN8, pdcc engine and its board connector CN4. When launched, this demo turns VK-RA6M3 board in to standalone RTSP server and it counts on camera module OV7725 to be plugged in to the board on start up. The application waits plugging of Ethernet cable in to the RJ45 connector. When that 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 320x240.



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```
COM8 - PuTTY
*****
*   Renesas FSP Example Project for RTSP Sptream Demo   *
*   Example Project Version 1.0                       *
*   Flex Software Pack Version 3.7.0                  *
*****
Refer to VK_RA6M3 Demo.pdf file for more details on Example Project and
FSP User's Manual for more information about RTSP Sptream
*****

Network Setting up...

Connecting...
Ethernet adapter for Renesas VK-RA6M3:
    Description . . . . . : Renesas VK-RA6M3 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=320, height=240
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

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_RA6M3's_IP:8554/mjpeg/1`

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



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VLC Client stream

- Using FFplay as a player:

Open a CMD/BASH terminal

Insert `ffplay rtsp://VK_RA6M3's_IP:8554/mjpeg/1`, hit Enter



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

Vekatech Ltd.

63, Nestor Abadzhiev st.
4023 Plovdiv
Bulgaria
Tel.: +359 (0) 32 262362
info@vekatech.com

www.vekatech.com

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