



# 32-BIT MCU FAMILY RENESAS RA4M1 GROUP

## 48MHz ARM Cortex M4 with LCD controller and Cap Touch for HMI

The Renesas RA4M1 group uses the high-performance Arm® Cortex®-M4F core and offers a Segment LCD Controller and a Capacitive Touch Sensing Unit input for intensive HMI designs. The RA4M1 is built on a highly efficient low power process and is supported by an open and flexible ecosystem concept—the Flexible Software Package (FSP), built on FreeRTOS—and is expandable to use other RTOSes and middleware. The RA4M1 is suitable for applications where a large amount of Capacitive Touch channels and a Segment LCD controller are required.



RA4M1

48MHz, Arm® Cortex®-M4F  
256kB Flash, 32kB RAM  
40-100pin, USB, CAN, Security  
LCD Controller and Touch

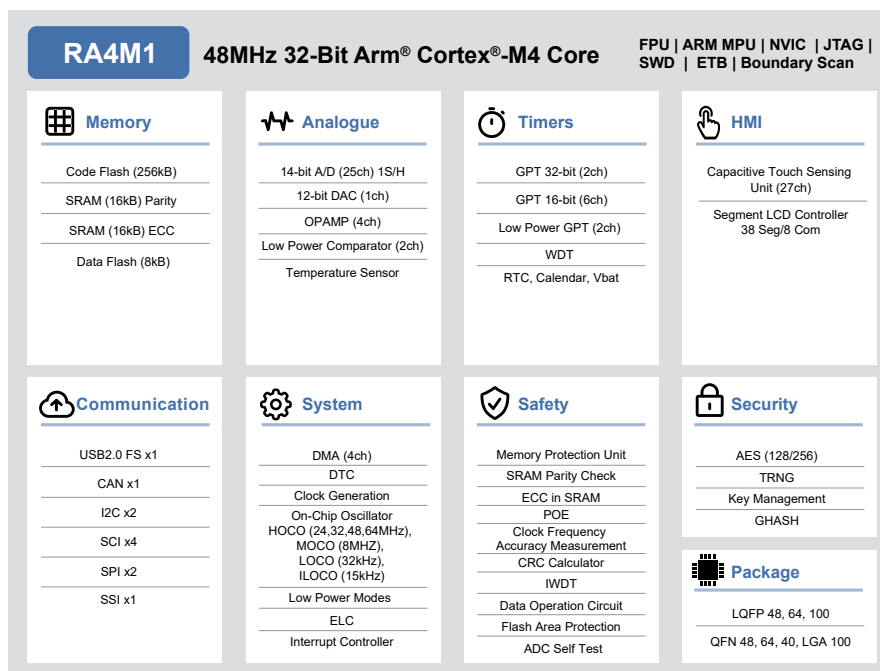
### Target Applications

- HMI with Seg/Com LCD display
- Security (Fire Detection, Burglar Detection, Panel Control)
- Industry (Door Openers, Panel Control)
- HVAC (Heating, Air Conditioning, Boiler Control)
- Home Appliance
- General Purpose

### Key Features

- 48MHz Arm® Cortex®-M4F
- 256kB Flash Memory and 32kB SRAM
- 8kB DataFlash to store data as in EEPROM
- Scalable from 40pin to 100pin Packages
- Segment LCD Controller
- 14-bit A/D Converter
- Capacitive Touch Sensing Unit
- USB2.0 Full Speed
- CAN 2.0B
- SCI (UART, Simple SPI, Simple I²C)
- SPI/ I²C Multimaster Interface

### Block Diagram



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## Benefits

- Integrated Crypto Module with AES cryptography accelerator and Key management support
- Segment LCD Controller (up to 38seg/4com; 34seg/8com) for HMI
- 27 channels of Capacitive Touch Sensing Unit input for intensive HMI designs

## Tools and Support

### Integrated Development Environment (IDE)

- Renesas e<sup>2</sup> studio
- Keil MDK

### Compiler

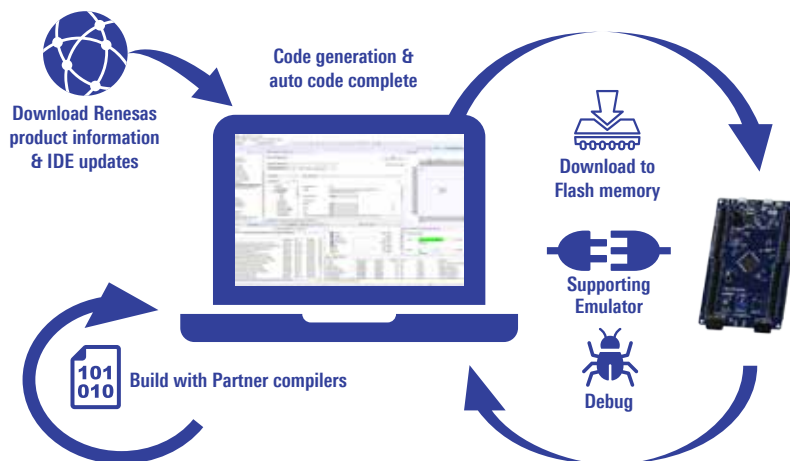
- GNU, Arm Compiler version 6

### Emulator

- Segger J-Link
- Renesas E2 emulator, E2 Lite emulator

### Flash Memory Programmer

- Renesas PG-FP6
- Third party solutions



## Evaluation Kit

- Full MCU evaluation including On-Chip debugger
  - Part name: **RTK7EKA4M1S00001BU**



Evaluation Kit: EK-RA4M1

## Ordering References

Part name	Flash	RAM	DataFlash	Operating Temperature	Package	Package Dimensions	Pin Pitch
R7FA4M1AB3CFP	256kB	32kB	8kB	-40/+105°C	LQFP 100pin	14x14mm body; (16x16mm)	0.5mm
R7FA4M1AB2CLJ	256kB	32kB	8kB	-40/+85°C	LGA 100pin	7x7mm body	0.65mm
R7FA4M1AB3CFM	256kB	32kB	8kB	-40/+105°C	LQFP 64pin	10x10mm body; (12x12mm)	0.5mm
R7FA4M1AB3CNB	256kB	32kB	8kB	-40/+105°C	QFN 64pin	8x8mm body	0.4mm
R7FA4M1AB3CFL	256kB	32kB	8kB	-40/+105°C	LQFP 48pin	7x7mm body; (9x9mm)	0.5mm
R7FA4M1AB3CNE	256kB	32kB	8kB	-40/+105°C	QFN 48pin	7x7mm body	0.5mm
R7FA4M1AB3CNF	256kB	32kB	8kB	-40/+105°C	QFN 40pin	6x6mm body	0.5mm

For more details, please visit [www.renesas.com/RA](http://www.renesas.com/RA)

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