

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®-M4 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.



48MHz, Arm® Cortex®-M4
256kB Flash, 32kB RAM
40-100pin, USB, CAN, Security
LCD Controller and Touch

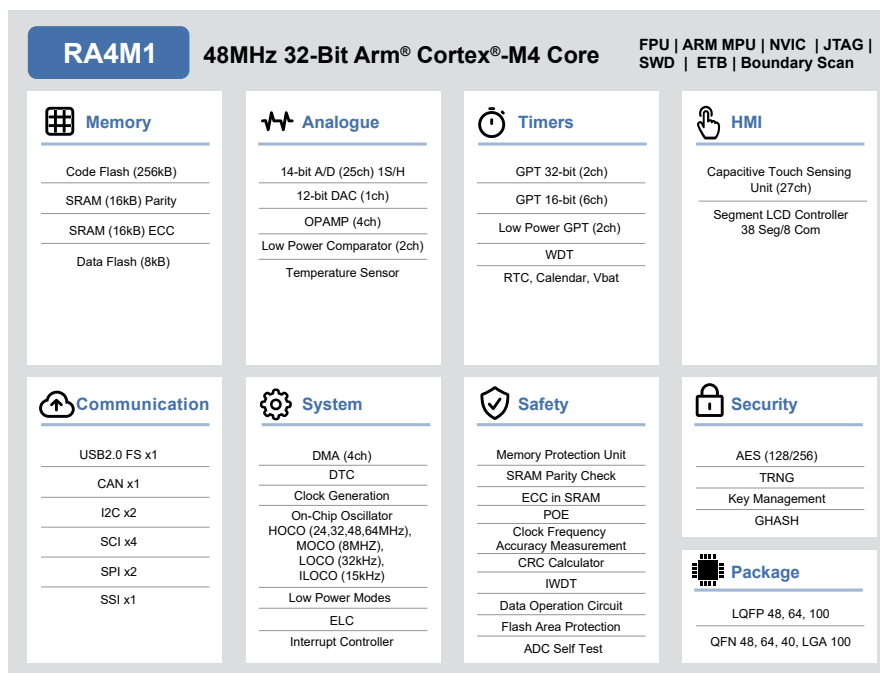
Target Applications

- 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®-M4
- 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



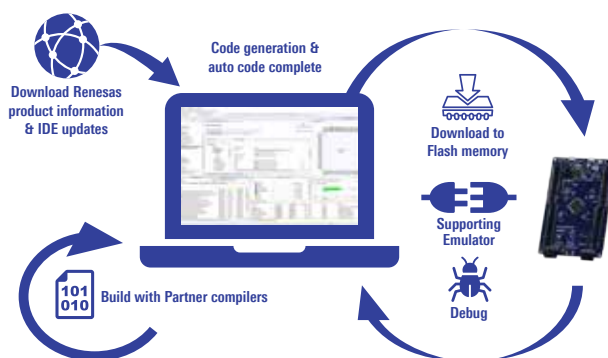
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Benefits

- 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

| IDE | Renesas e²studio | Keil MDK | IAR EWARM |
|------------|---|---|--|
| Compiler | <ul style="list-style-type: none"> ■ GCC ■ Arm Compiler | <ul style="list-style-type: none"> ■ Arm Compiler | <ul style="list-style-type: none"> ■ IAR Arm Compiler |
| Debugger | <ul style="list-style-type: none"> ■ Renesas E2/E2 Lite ■ SEGGER J-Link | <ul style="list-style-type: none"> ■ SEGGER J-Link | <ul style="list-style-type: none"> ■ IAR I-Jet ■ SEGGER J-Link |
| Programmer | <ul style="list-style-type: none"> ■ Renesas PG-FP6 ■ SEGGER J-Flash ■ 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

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