

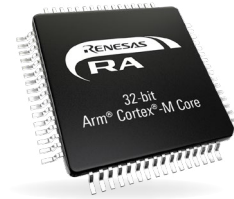


32-bit MCU with Arm® Cortex®-M Core

RENESAS RA FAMILY

Delivering the Ultimate Promise of IoT with Software Flexibility

The Renesas RA family of 32-bit MCUs are built on the Arm® Cortex®-M core architecture. Offering a wide range of performance and features, the Renesas RA family meets the scalability, power consumption and performance needs of nearly any embedded systems end-product.



Strong Security

- Leading-edge, integrated Renesas Security IP
- An extra layer of embedded hardware security providing tamper detection and resistance to side-channel attacks
- Integrated Arm v8-M TrustZone®



Arm Core

- Arm Cortex-M23 core for the most cost/power sensitive applications
- Arm Cortex-M4/M33 cores to deliver the best balance of performance and power
- Arm Cortex-M85 core with Helium™ technology for unprecedented performance



Flexible Software Solution

- Supported by an open and flexible ecosystem concept, the Flexible Software Package (FSP)
- Can be replaced and expanded by any other RTOS or middleware



Best-in-Class Peripheral IP

- Excellent HMI capacitive touch technology
- The industry's highest code flash memory capacity
- Wide range of connectivity solutions

Renesas RA Product Series

The five Renesas RA Family MCU series are based on 32-bit Arm Cortex-M cores. All five have been designed on common DNA, making these products feature- and pin-compatible. This allows easy scalability and code reuse from one device to another.

	Performance Range	Feature	Series Memory Ranges	ASSP Extensions
 RA8	Over 240 MHz 1.68-3.6V	Highest Performance, HMI, Connectivity, Security, Analog	Highest memory integration: up to 2MB Flash, 2MB SRAM	Motor/Inverter AI/ML, HMI
RA6	Up to 240 MHz 2.7-3.6V	Advanced Performance, Connectivity, Security	High memory integration: up to 2MB Flash, 640kB SRAM	Motor/Inverter AI/ML, HMI
RA4	Up to 100 MHz 1.6V-5.5V	Excellent Power, High Performance Mix Paired with Security	Medium memory integration: up to 1MB Flash, 128kB SRAM	Motor/Inverter Sensor, Wireless
RA2	Up to 64 MHz 1.6V-5.5V	Low Power	Medium memory integration: up to 512kB Flash, 48kB SRAM	Rich Analog
RA0	32 MHz 1.6V-5.5V	Optimized functionalities Ultra Low power	Small memory integration: up to 64kB Flash, 12kB SRAM	Sensor

RENESAS RA FAMILY

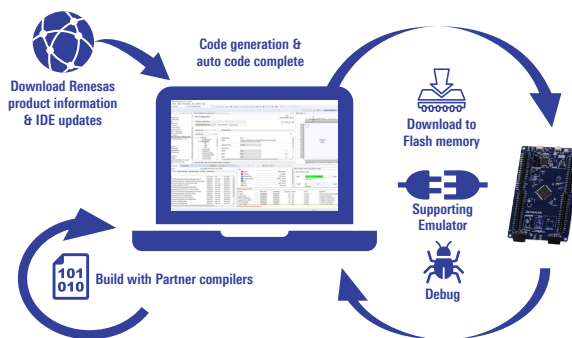
Target Markets and Benefits

<h3>Industrial Automation</h3> <ul style="list-style-type: none"> Long product life Temperature up to 105°C Industrial quality grade Strongest robustness 24-bit $\Sigma\Delta$ ADC for sensors 	<h3>Security</h3> <ul style="list-style-type: none"> Isolated crypto subsystem Symmetric/asymmetric hardware acceleration True Random Number Generator (TRNG) NIST-certified algorithms Key isolation and management 	<h3>Connectivity</h3> <ul style="list-style-type: none"> Large on-chip RAM suitable for stacks CAN/USB/Ethernet Large amount on serial interfaces QSPI interfaces Integrated crypto module
<h3>Building Automation</h3> <ul style="list-style-type: none"> High Flash/RAM ratio Wide range of connectivity Rich analog features Small packages 	<h3>Metering</h3> <ul style="list-style-type: none"> Scalable lineup Industrial quality grade Long product life Integrated crypto module 	<h3>White Goods</h3> <ul style="list-style-type: none"> Temperature up to 105°C Scalable lineup Motor control solutions Capacitive touch interface LCD control

Tools and Support

IDE	Renesas e ² studio	Keil MDK	IAR EWARM
Compiler	<ul style="list-style-type: none"> GCC LLVM Arm Compiler* IAR Arm Compiler* 	<ul style="list-style-type: none"> Arm Compiler* 	<ul style="list-style-type: none"> IAR Arm Compiler*
Debug Probe	<ul style="list-style-type: none"> Renesas E2/E2 Lite SEGGER J-Link 	<ul style="list-style-type: none"> SEGGER J-Link Keil ULINK / CMSIS-DAP** 	<ul style="list-style-type: none"> IAR I-jet SEGGER J-Link Renesas E2/E2 Lite CMSIS-DAP**
Production Programmer	<ul style="list-style-type: none"> Renesas PG-FP6 SEGGER J-Flash Partner solutions 		

* Compiler must be purchased and licensed directly from third party
 ** Limited support



Evaluation Kits

General-purpose Kits	Application-specific Kits	3rd Party/Partner Kits
MCU evaluation including on-board debugger (EK-RAxxx, FPB-RAxxx)	Motor, Voice, AI, Touch, Cloud, etc.	Access to partner's ecosystem and tools
Individual kits for several products of each Renesas RA series (EK-RAxxx)		

Learn more: renesas.com/ra/kits

For more information about the Renesas RA MCU family, visit: renesas.com/RA



renesas.com

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