

RA FAMILY

Industry-Leading Arm® Cortex®-M Family,
Delivering the Ultimate Promise of Security,
Connectivity and Intelligent IoT



INTRODUCING THE RA FAMILY

Delivering the Ultimate Promise of IoT with Software Flexibility



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Strong Security

- Secure Crypto Engine (SCE) IP
- An extra level of embedded hardware security providing tamper detection and resistance to side-channel attacks
- Integrated Arm v8-M TrustZone®



Arm Core

- Based on Arm's next-generation Cortex-M23/M33 processor cores and Cortex-M4 core



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



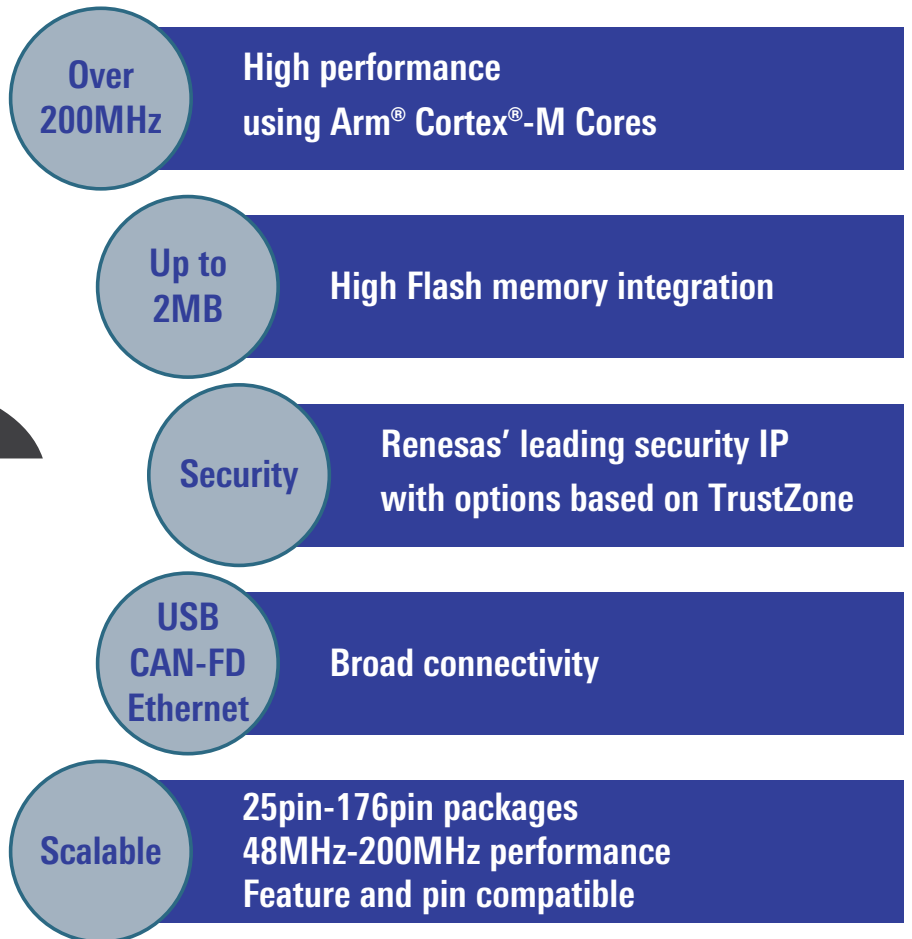
Best-in-Class Peripheral IP

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

What is the Renesas RA Family?

The flexible Renesas Advanced (RA) 32-bit MCUs are industry leading 32-bit MCUs with the Arm® Cortex®-M33, -M23 and -M4 processor cores and PSA Certified™ assurance. RA delivers key advantages compared to competitive Arm Cortex-M MCUs by providing stronger embedded security, superior CoreMark® performance, and ultra-low power operation. PSA Certified provides customers the confidence and assurance to quickly deploy secure IoT endpoint and edge devices, and smart factory equipment for Industry 4.0.

- Renesas Advanced: Innovative market-leading products based on Arm Cortex-M cores
- Ultimate promise of IoT security by further enhancing Renesas' popular Secure Crypto Engine (SCE) IP
- Best-in-class peripheral IP provided by Renesas
- Easy development of IoT edge applications using the new Flexible Software Package



RA Family Overview

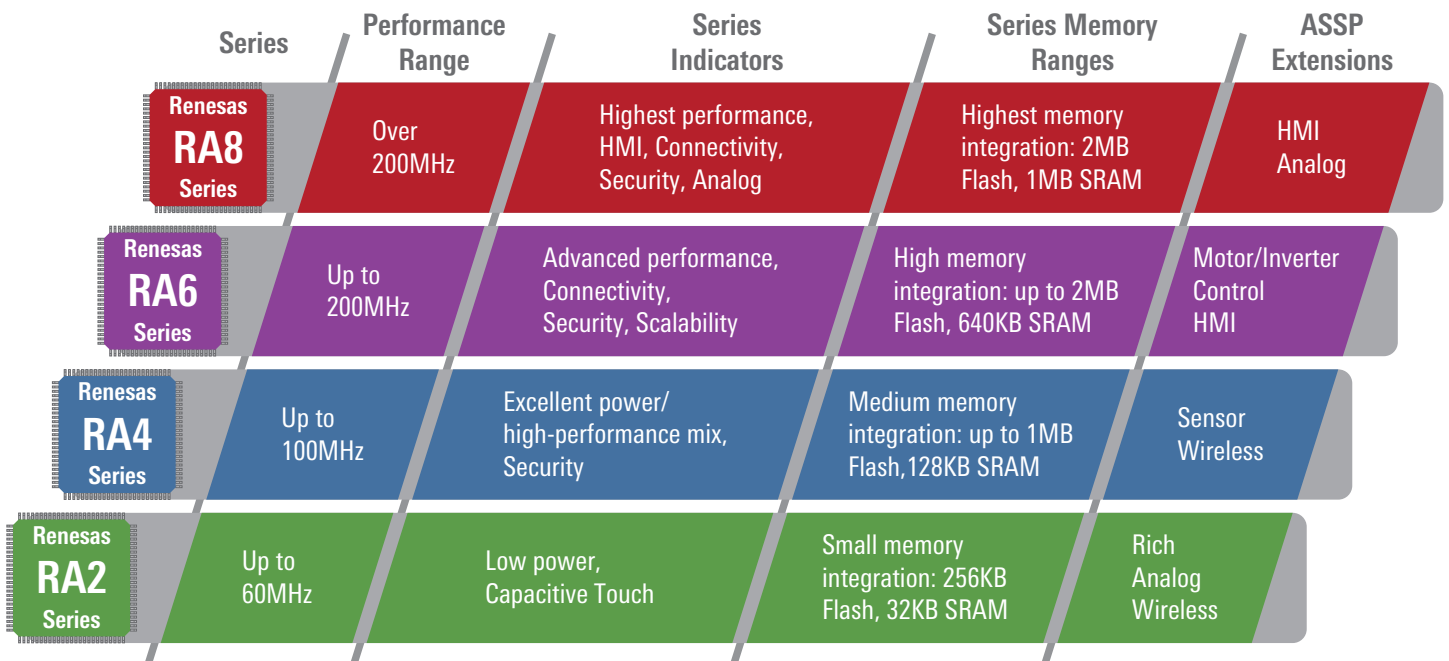
The Renesas RA Family lineup can be separated into four product series. Each of these series has a unique feature set, making it ideal for various applications and market needs.

The RA8 Series is the top-end product series, aiming for the highest integration and the highest performance. We position this category with over 200MHz single or dual core, with largest Flash and RAM integration to suit applications where performance really matters most.

The RA6 Series offers the widest integration of communication interfaces, with integrated Ethernet and TFT display drivers. Memory densities range from 256KB Flash to 2MB Flash. The RA6 Series offers up to 200MHz performance running on the Cortex-M4 or Cortex-M33 core with TrustZone. The RA6 Series supports full security integration, making these devices widely desired for security applications.

The RA4 Series bridges the needs of reasonably low power with the demand for connectivity. It offers up to 1MB Flash and a wide range of communication interfaces. The utilized core is the Cortex-M4 or Cortex-M33 with TrustZone and additional security IP integration. Memory densities range from 256KB Flash up to 1MB Flash. These devices provide a CPU frequency of up to 100MHz.

On the lower end is the RA2 Series, where the low power requirements of an application matters most for these device definitions. To achieve the best performance, special power-down modes are provided, making these devices well suited for battery-powered applications. The RA2 Series provides memory densities of up to 256KB embedded Flash and a wide single voltage supply range of 1.6 to 5.5V. These devices use the Cortex-M23 core at up to 48MHz.



Target Applications and Markets































The Renesas RA Family targets various application fields. Due to its scalability, the RA Family offers parts which cover many different applications and customer needs.

The feature set of the Renesas RA Family is well suited for industrial applications due to its long product life with the default 105° Celsius support. With dedicated analog feature integration like ADC, PGA, and comparators, combined with powerful and flexible timers, the RA Family is an ideal fit for motor control applications.

Features like connectivity peripherals, hardware-accelerated cryptography, and scalability makes the whole RA Family a perfect fit for a customer within the Connectivity as well as the Building Automation application area.

Customers with Electricity Metering applications will like the scalability and long product life of the RA Family, in addition to the on-chip Secure Crypto Engine.


The integrated Capacitive Touch interface, combined with the scalability of the RA Family, make the RA Family an ideal fit for white goods applications, enabling innovative HMI designs.

	Best Suitable Product Series	Application Examples
Industrial Automation 	  	<ul style="list-style-type: none"> Robotics Door Openers AC Drive AC Servo UPS Functional Safety
Building Automation 	  	<ul style="list-style-type: none"> Fire Panels HVAC Boiler Control Vending Machines Motion Detection Monitoring Systems
Metering 	 	<ul style="list-style-type: none"> Electricity Meters Automated Meter Reading Network Cards Flow Meters Power Meters
Home Appliance 	 	<ul style="list-style-type: none"> HVAC Air Cleaners Coffee Machines Vacuum Cleaners Cleaning Robots White Goods
Connectivity 	 	<ul style="list-style-type: none"> ASi5 / IO-Link Gateways Communication Gateways Data Concentrators Wired Ethernet Fleet Tracking
Security 	 	<ul style="list-style-type: none"> Fire Detectors Burglar Detection Panel Control Door Openers Monitoring Systems Access Control
Motor Control 		<ul style="list-style-type: none"> Brushless DC Motors Induction Motors Stepper Motors Magnetic Encoders Optical Encoders Hall Sensors
Low Power 	 	<ul style="list-style-type: none"> IO-Link Sensors Heat Cost Allocators Portable Audio Devices Smoke Detectors IoT Sensing Nodes Wearable Devices
HMI 	 	<ul style="list-style-type: none"> Voice Recognition Capacitive Touch Panels Printers Vending Machines Home Appliances Medical Equipment
Wireless 		<ul style="list-style-type: none"> Wearable Devices Healthcare Panel Control Gateway Units Door Openers Smart Home

RA2 Series

The RA2 Series is the RA Family's entry-level 32-bit MCU, offering excellent cost, performance, and ultra-low power consumption. It delivers up to 48MHz of CPU performance using an Arm® Cortex®-M23 core with up to 256KB of embedded flash memory and a wide single voltage supply range from 1.6V to 5.5V. With cutting-edge peripherals like high accuracy analog and capacitive touch sensing, the RA2 Series is ideal for system control or user interface applications such as healthcare devices, home appliances, office equipment, and measuring equipment.

RA2 Series Product Groups

Series	Group	Features
	RA2L1	48MHz, Cortex-M23, up to 256KB Flash, 32KB RAM, 48-100 pins, CAN, 32ch Capacitive Touch, Security
	RA2E1	48MHz, Cortex-M23, up to 128KB Flash, 16KB RAM, 25-64 pins, 30ch Capacitive Touch, Security
	RA2A1	48MHz, Cortex-M23, 256KB Flash, 32KB RAM, 32-64 pins, USB, CAN, 24-bit Sigma Delta ADC, 16-bit ADC, Security


RA2 Series Benefits

- Large product lineup is starting with 25pin up to 100pin and Flash memory size starting from 32KB up to 128KB, including some very small package options, including QFN, LGA, BGA and smallest WLCSP
- Ultra-low power consumption delivering an operating current of 64µA/MHz and software standby current of 250nA with less than 5µs fast wakeup
- On-chip analog components include a high accuracy 16-bit ADC, 24-bit sigma-delta ADC, fast response 12-bit DAC, rail-to-rail low-offset operational amplifiers, and high-speed/low-power comparators
- Reduced cost with on-chip peripheral functions, including high precision (1.0%) high-speed oscillator, temperature sensor, multiple power supply interface ports, analog elements and background operation data flash supporting 1 million erase/program cycles
- Enhanced capacitive touch sensing unit (CTSUS) with high sensitivity and high noise immunity that realizes intuitive, high-quality HMI designs
- Various communication I/F such as USB and CAN, which support IoT applications

RA4 Series

The RA4 Series bridges the need for reasonable low power with the demand for connectivity and performance. These MCUs deliver up to 100MHz of CPU performance using an Arm® Cortex®-M33 core or M4 core with up to 1MB of embedded flash memory. The series offers a wide set of peripherals, including USB, CAN, ADC, Bluetooth Low Energy 5.0, capacitive touch, segment LCD controller, and additional security IP integration, making it suitable for IoT, industrial equipment, home appliances, office equipment, healthcare products, and meters.

RA4 Series Product Groups

Series	Group	Features
	RA4M1	48MHz, Cortex-M4, 256KB Flash, 32KB RAM, 40-100 pins, USB, CAN, Security
	RA4M2	100MHz, Cortex-M33, up to 512KB Flash, 128KB RAM, 48-100 pins, USB, CAN, Advanced Security with TrustZone
	RA4M3	100MHz, Cortex-M33, up to 1MB Flash, 128KB RAM, 64-144 pins, USB, CAN, Advanced Security with TrustZone
	RA4W1	48MHz, Cortex-M4, 512KB Flash, 96KB RAM, QFN56, Bluetooth 5.0, USB, CAN, Security

RA4 Series Benefits

- Secure element functionality providing better performance, unlimited secure key storage, key management, and lower BOM cost
- High-performance and low power at the same time with 81µA/MHz while running the CoreMark algorithm from flash at 100MHz
- High-integration up to 512KB code flash memory with background operation and flash block SWAP operation for flexible and memory optimized firmware updates, 8KB data flash memory, and 128KB SRAM with Parity/ECC
- Rich connectivity with Bluetooth 5.0, USB 2.0 Full-Speed, CAN, SDHI, QSPI, and advanced analog

RA6 Series

The RA6 Series offers the widest integration of communication interfaces as well as the best performance level. These MCUs deliver up to 200MHz of CPU performance using an Arm® Cortex®-M4 or M33 core and a memory range from 256KB to 2MB Flash. The series offers Ethernet, USB Full Speed and High Speed, QSPI, OctaSPI, CAN/CAN FD, and TFT display driver integration. The embedded Secure Crypto Engine is full of features you can leverage in your higher-level solutions with secure element services. The RA6 Series addresses a broad range of applications for IoT endpoints such as white goods, meters, and other industrial and consumer applications.

RA6 Series Product Groups

Series	Group	Features
	RA6M1	120MHz, Cortex-M4, 512KB Flash, 256KB RAM, 64-100 pins, USB, CAN, Security
	RA6M2	120MHz, Cortex-M4, up to 1MB Flash, 384KB RAM, 100-145 pins, USB, CAN, Ethernet, Security
	RA6M3	120MHz, Cortex-M4, up to 2MB Flash, 640KB RAM, 100-176 pins, USB, CAN, Ethernet with IEEE 1588 PTP Control, TFT, Security
	RA6T1	120MHz, Cortex-M4, up to 512KB Flash, 64KB RAM, 64-100 pins, USB, CAN, ADC with S/H, Timer, PGA, High Speed Comparators
	RA6M4	200MHz, Cortex-M33, up to 1MB Flash, 256KB RAM, 64-144 pins, USB, CAN, Ethernet, OctaSPI, Advanced Security with TrustZone
	RA6M5	200MHz, Cortex-M33, up to 2MB Flash, 512KB RAM, 100-176 pins, USB, CAN FD, Ethernet, OctaSPI, Advanced Security with TrustZone

RA6 Series Benefits

- Secure element functionality providing better performance, unlimited secure key storage, key management, and lower BOM cost
- High-performance and low-power with 99µA/MHz while running the CoreMark algorithm from flash at 200MHz
- High-integration up to 2MB code flash memory with background operation, Dual-bank, and flash block SWAP operation for extremely flexible and memory optimized firmware updates, 8KB Data flash memory, and 512KB SRAM with Parity/ECC
- Rich connectivity with Ethernet MAC controller, CAN FD, USB 2.0 High-Speed and Full-Speed, SDHI, Quad and Octa SPI, and advanced analog with three sample and hold per ADC, PGA and high-speed comparators

Functional Safety Solution for Industrial Automation



In the industrial equipment field, the importance of “functional safety,” which aims to maintain safety even when malfunctions occur, is increasing recognized as a way to prevent the adverse effect of breakdowns and accidents on plant operation, the adverse effect of injuries to personnel on society, and the associated economic losses.

The European Union’s Machinery Directive requires that equipment meet functional safety standards.

In response to the need for functional safety certification in a range of industrial fields, Renesas provides an RA Functional Safety Library designed to reduce the burden on customers at the development and functional safety certification stages.

This RA Functional Safety Library consists of the Self-diagnostic library itself, a safety manual, and a user guide that includes IEC 61508 SIL3 certification document by TÜV Rheinland.

IEC 60730 Safety Classes Support **VDE**

The IEC/UL 60730 is the harmonized safety standard for household appliances.

It describes requirements for automatic controls including heating and air-conditioning applications. Renesas offers for the RA Family a self-test library to fulfill Class B requirements of the IEC 60730 standard, as this is most commonly used requirement.

The related Appendix H lists all the specific faults that must be tested and details the needs to place the equipment into a safe state for any single point failure.

In response to the need of designing IEC/UL 60730 certified applications, Renesas provides an RA Family IEC 60730 Self-Test Library designed to reduce the burden on customers developing their own solutions. The package comes with the sample code and the certification done by VDE.

Integrated Hardware-based Security

In the rapidly growing area of IoT and highly-connected devices, increasing consumer awareness and government legislation is forcing embedded device manufacturers to take the topic of security seriously. Already under the constraints of needing to create cost- and energy-efficient solutions, developers nowadays are required to design and implement security with limited additional time and budget.

The RA Family was designed with security in mind, with scalable hardware-based security features including:

- Isolated cryptographic operations with integrated Secure Crypto Engines
- Unlimited secure key storage
- Hardware-enforced isolation using Arm TrustZone technology

The Flexible Software Package provides integrated, easy-to-configure support for these features, and a collection of Application Projects enables you to easily incorporate them into your design.

The RA Family has achieved the following certifications, providing assurance of these security capabilities and giving you confidence in your product’s security.

- PSA Certified Level 1 and Level 2
- SESIP
- NIST CAVP

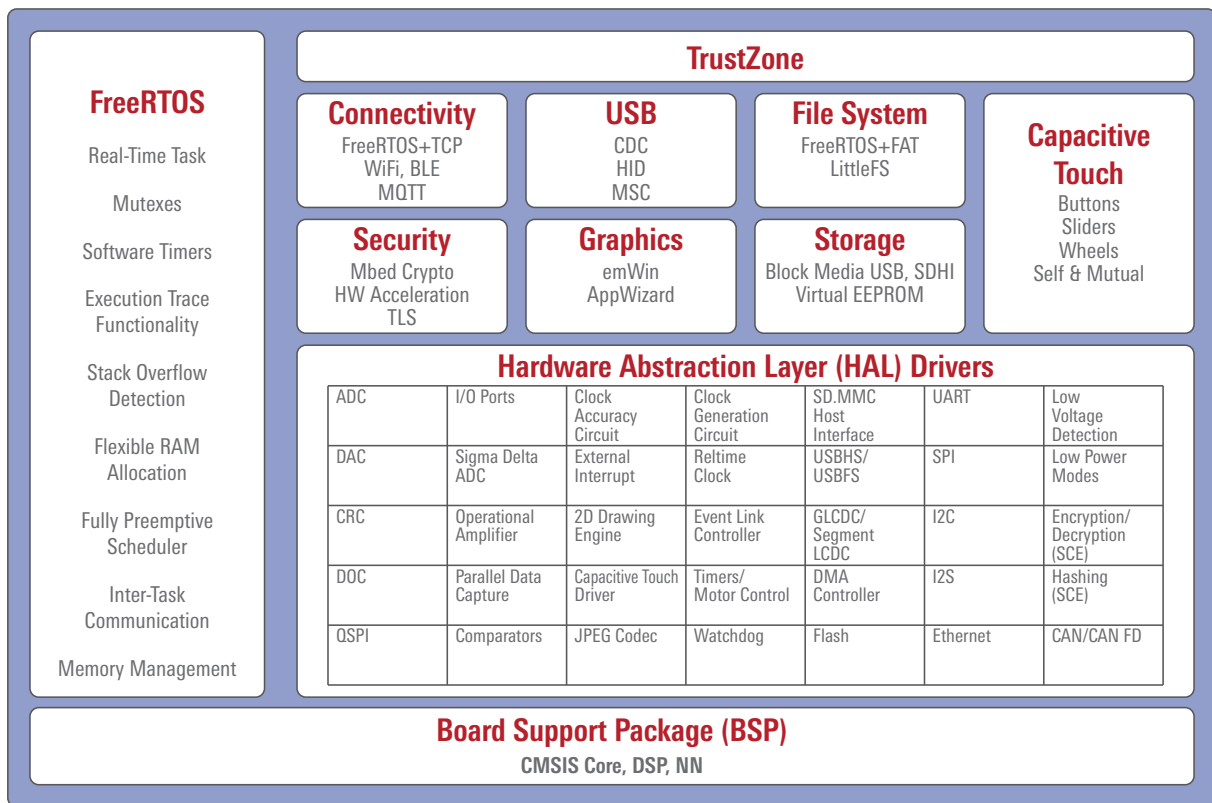


Flexible Software Package

Along with RA MCUs, we are introducing our next generation Arm software - the Flexible Software Package (FSP). The Flexible Software Package includes an openly available, royalty free RTOS (FreeRTOS), portable middleware stacks, HAL drivers, and additional software solutions from Arm ecosystem partners, all supported by a graphical configurator. The FSP is an excellent solution for customers who value a flexible open architecture solution where they can reuse their legacy code, but also optionally combine with valuable software examples from Renesas that will help speed implementation time of complex areas like connectivity and security.

The FSP's included RTOS, FreeRTOS, can be replaced and expanded by any other RTOS or middleware to meet the user's need.

The combination of the Flexible Software Package plus the wide choice of 3rd party solutions as part of the Arm ecosystem increases the range of choice for application development. This means that developers can choose the software model that best suits their needs while utilizing Renesas's excellent Arm-based silicon solutions.



Benefits

- Provides an easy-to-use, scalable, high-quality software for embedded system designs using the Renesas RA Family of Arm microcontrollers
- Includes best-in-class HAL drivers with high performance and low memory footprint
- Middleware stacks with FreeRTOS integration are included to ease the implementation of complex modules like communication and security
- The e² studio IDE provides support with intuitive configurators and intelligent code generation to make programming and debugging easier and faster
- Uses an open software ecosystem and provides flexibility in using bare-metal programming, included FreeRTOS, your preferred RTOS, legacy code, and third-party ecosystem solutions
- Integrated package with all required components for easy setup and starting development (single installer with e² studio, CMSIS packs, tool chain and Segger J-Link drivers)
- Complete source code available through GitHub

Development Environment

The RA family development environment offers flexibility in terms of different supported on-chip debuggers, IDEs, and compilers. Customers can use the Renesas e² studio, Keil MDK and IAR Embedded Workbench. All tools can use the RA configurators for FSP driver and middleware selection and configuration, in addition to pin mapping and clock tree configuration.

Overview

	Renesas e ² studio	IAR Systems Embedded Workbench for Arm	Keil Microcontroller Development Kit
Compilers	<ul style="list-style-type: none"> - GCC v9 or later - IAR v8.50 or later * - Arm v6.12 or later * 	<ul style="list-style-type: none"> - IAR v8.50 or later * 	<ul style="list-style-type: none"> - Arm v6.12 or later *
Debugger probes	<ul style="list-style-type: none"> - Renesas E2/E2 Lite - SEGGER J-Link 	<ul style="list-style-type: none"> - IAR I-Jet - SEGGER J-Link 	<ul style="list-style-type: none"> - SEGGER J-Link - Keil ULINK (limited support)
Smart Configurator	<ul style="list-style-type: none"> Built-in - BSP - Clock - Pin - Drivers - Interrupts 	<ul style="list-style-type: none"> Supplied as RASC - BSP - Clock - Pin - Drivers - Interrupts 	<ul style="list-style-type: none"> Supplied as RASC - BSP - Clock - Pin - Drivers - Interrupts
Application specific configurator	<ul style="list-style-type: none"> - QE for Capacitive Touch - QE for BLE - QE for AFE - Motor Control Workbench 	<ul style="list-style-type: none"> Under consideration 	<ul style="list-style-type: none"> Under consideration

*: Compiler needs to be purchased and licensed directly from third-party.

Benefits

The eclipse-based e² studio along with a GCC compiler and SEGGER J-Link debugger is the primary development solution for RA MCUs and Flexible Software Package (FSP). e² studio offers a complete development flow from initial project generators, graphical FSP configuration and comprehensive debugger options.

As the RA MCU family includes TrustZone-enabled devices, new configuration options ensure that a development engineer can concentrate on the application rather than the underlying technology.

Renesas recognizes that Arm based MCUs benefit from a wide ecosystem, so we have worked with Keil and IAR Systems to develop the RA Smart Configurator (RASC) that inherits all the FSP configurator options from e² studio to extend the rich development options into the MDK and EWARM IDEs. To complement the powerful SEGGER J-Link probes, RA MCUs have been ported to the Renesas E2 and E2 Lite debuggers.

Production programming options are available from Renesas (RFP and PG-FP6) in addition to numerous third-party solutions such as SEGGER Flasher. Please contact your preferred partner to request RA production device programming support.

Evaluation Kits

The RA MCU evaluation kits enable users to effortlessly evaluate the features of different RA MCU Groups and develop embedded systems applications using the Flexible Software Package (FSP) and e² studio IDE. You can utilize rich on-board features along with your choice of popular ecosystem add-ons to bring your big ideas to life.

Overview

Series	Group	Kit Name	MP Kit Orderable Part Number
RA6	RA6M5	EK-RA6M5	RTK7EKA6M5S00001BE
	RA6M4	EK-RA6M4	RTK7EKA6M4S00001BE
	RA6M3	EK-RA6M3	RTK7EKA6M3S00001BU
		EK-RA6M3G	RTK7EKA6M3S01001BU
	RA6T1	RA6T1 Motor RSSK	RTK0EMA170S00020BJ
	RA6M2	EK-RA6M2	RTK7EKA6M2S00001BU
		RA6M2 Touch RSSK	RTK0EG0021S01001BJ
RA6M1	EK-RA6M1	RTK7EKA6M1S00001BU	

Series	Group	Kit Name	MP Kit Orderable Part Number
RA4	RA4M3	EK-RA4M3	RTK7EKA4M3S00001BE
	RA4M2	EK-RA4M2	RTK7EKA4M2S00001BE
	RA4M1	EK-RA4M1	RTK7EKA4M1S00001BU
	RA4W1	EK-RA4W1	RTK7EKA4W1S00000BJ
RA2	RA2A1	EK-RA2A1	RTK7EKA2A1S00001BU
	RA2E1	EK-RA2E1	RTK7EKA2E1S00001BE
	RA2L1	EK-RA2L1	RTK7EKA2L1S00001BE
		RA2L1 Touch RSSK	RTK0EG0022S01001BJ

Key Features

Ecosystem and System Control Access

- USB Full Speed Host & Device
- Multiple Power Sources, 2A max. LDO Current
- Multiple Debug Modes (On-board, Out, In)
- Multiple User LEDs and Buttons
- Popular Ecosystem Expansion Connectors
- Boot Configuration

Special Feature Access

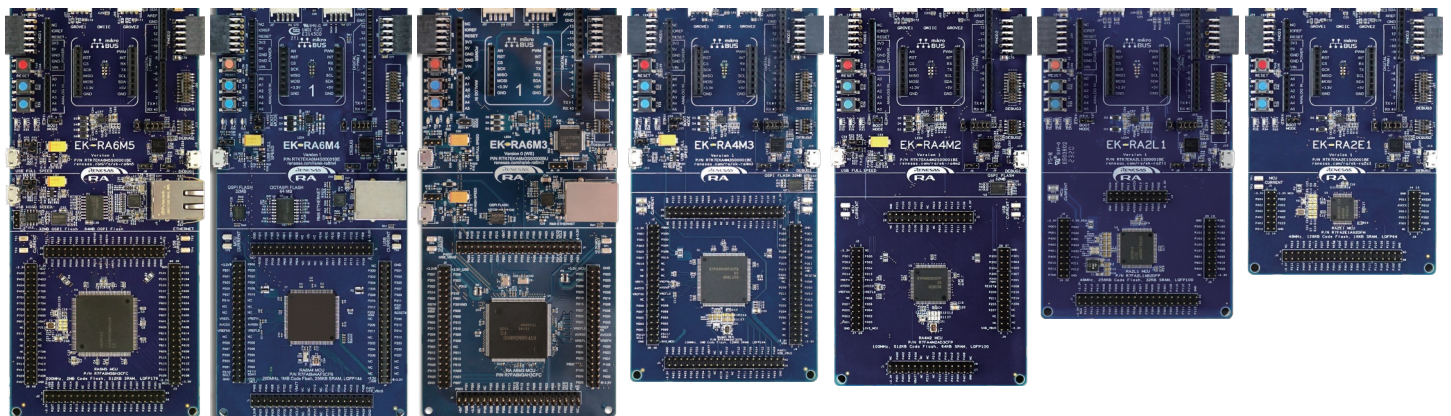
- Ethernet
- Octo-SPI and Quad-SPI
- CAN Flexible Data-rate (FD)
- USB High-Speed Host & Device

Native MCU Pin Access

- RA MCU
- Prototyping-Friendly Male Pin Headers
- MCU Current Consumption
- USB Current Consumption

Benefits

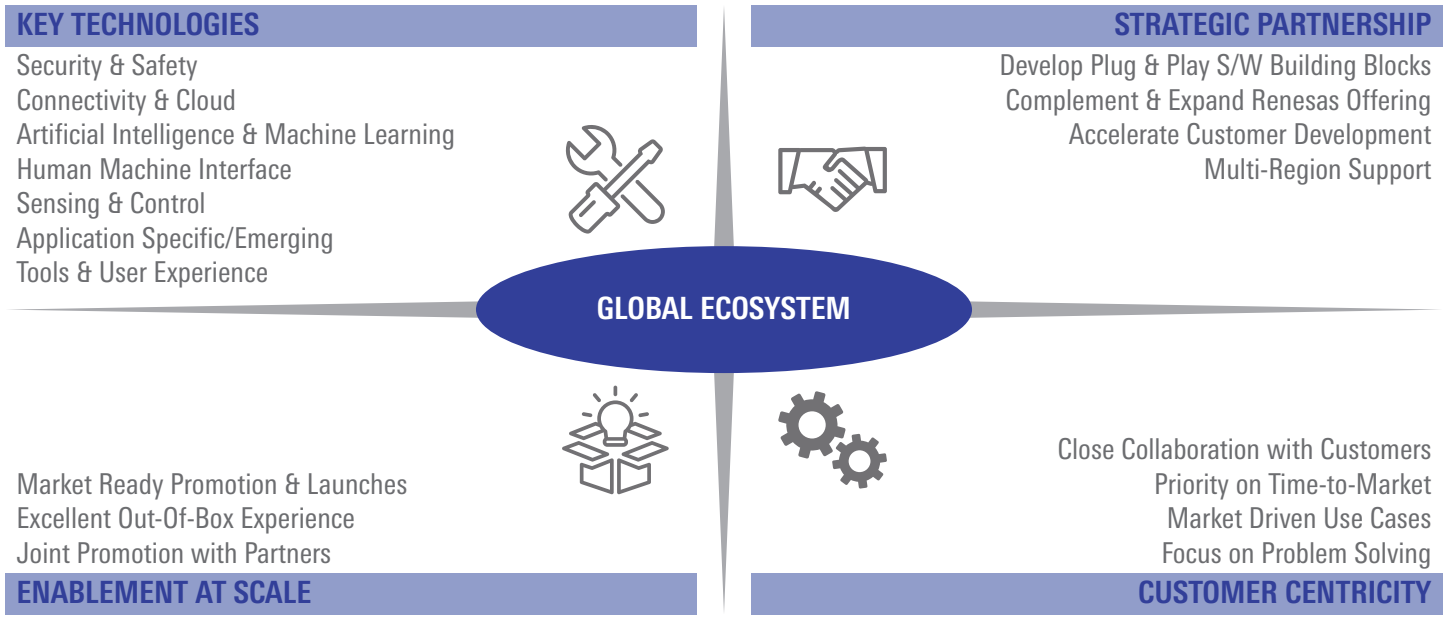
The kits are based on a novel architecture that provides an unparalleled combination of standardization and flexibility. The kit design helps users shorten the learning curve and up development, providing more time for differentiating innovation or taking products to market faster. The kits also feature multiple debugging modes that allow users to debug the RA microcontroller on the kit or their custom board. The kits are also compatible with popular ecosystems. The expansion ports allow users to conveniently enhance the functionality of the kits by simultaneously connecting several third-party add-ons to implement custom functionality necessary to put together a variety of sophisticated, real-world end-applications.



Examples of RA MCU Evaluation Kits

RA Partners

Renesas enables a comprehensive partner ecosystem to deliver an array of software and hardware building blocks that will work out-of-the-box with Renesas RA Family MCUs. The Renesas RA ecosystem will help accelerate development of IoT applications, including core technologies such as security, safety, connectivity, and HMI among others.



Partner Overview

The partner overview shown might not be complete since the partner network is extending almost daily. For best reference and latest data we recommend checking our webpage at: www.renesas.com/ra-partners

Security & Safety	Cypherbridge	SMARTAXIOM	SEGGER	Verify Security	Uttarakhand AI Corporation	8x5	eps
	wolfSSL	CEPHEUS	IAR SYSTEMS	SECURE THINGZ	Orchestrating a brighter world	NEC	
Connectivity & Cloud	reLoc	Microsoft Azure	silex technology	ALTOBEAM	one	Proassist	
	Alibaba Cloud	AliOS Things	pelion	clarinox	HUAWEI		
Artificial Intelligence (AI)	ignitarium Spark On.	Qeexo	one				
Human Machine Interface (HMI)	Algorithm Specialist	TMC	NEW FUSION	sensory	Cyberon	HGI	DSP CONCEPTS
	Aluminum Works, Inc.	FDI	Pachira	SEGGER	Qt	TES	TOSHIBA
	CapExt	TOUCH	文庫科技	CRIWARE	KDDI	KDDI Research	
Sensing & Control	BFG ENGINEERING	Desk Top Lab					
Application Specific/Emerging		NTXEmbedded	ORBSTAR	SEFIOUS	TATA ELXSI	GT&T	
	MBS	SW SYS	CS Lab	create software	pelion		
Tools & User Experience		SEGGER	CapExt	RTOS	DTS INSIGHT	AlphaProject	
	arm KEIL	MINATO	Flash Support Group	eForce	uQuest	IAR SYSTEMS	SECURE THINGZ
	percepio	GRAPE SYSTEMS	HOUBER	ASMIS	KMC		

	Analog					Communication											HMI				Security		Suggested Kits	
	High-Speed Analog Comparator (ch)	Low-Power Analog Comparator (ch)	PGA (ch)	OPAMP (ch)	Temp. Sensor (ch)	Ethernet	USBFS (ch)	CAN (ch)	CAN FD (ch)	SCI (ch)	SPI (ch)	I2C (ch)	SSI	QSPI	OSPI	SDHI	IrDA	Segment LCD	Graphic LCD	Capacitive Touch (ch)	ECC SRAM	Encryption		
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0	2	0	4	1	No	1	1	0	4	2	2	1	No	No	0	0	Yes	No	27	Yes				
0	2	0	3	1	No	1	1	0	4	2	2	0	No	No	0	0	Yes	No	24	Yes				
0	2	0	1	1	No	1	1	0	4	2	2	0	No	No	0	0	No	No	15	Yes				
0	1	0	0	1	No	1	1	0	4	1	2	0	No	No	0	0	No	No	10	Yes				
0	0	0	0	1	No	1	1	0	6	1	2	1	Yes	No	1	0	No	No	12	Yes				
0	0	0	0	1	No	1	1	0	6	1	2	0	Yes	No	0	0	No	No	7	Yes				
0	0	0	0	1	No	1	1	0	6	1	1	0	Yes	No	0	0	No	No	4	Yes				
0	0	0	0	1	No	1	1	0	6	1	2	1	Yes	No	1	0	No	No	12	Yes				
0	0	0	0	1	No	1	1	0	6	1	2	0	Yes	No	0	0	No	No	7	Yes				
0	0	0	0	1	No	1	1	0	6	1	1	0	Yes	No	0	0	No	No	4	Yes				
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0	0	0	0	1	No	1	1	0	6	1	1	0	Yes	No	0	0	No	No	4	Yes				
0	1	0	1	1	No	1	1	0	4	2	2	0	No	No	0	0	Yes	No	11	Yes	128-bit Unique ID TRNG AES(128/256) GHASH	EK-RA4W1		
0	0	0	0	1	No	1	2	0	6	1	2	1	Yes	No	1	0	No	No	20	Yes	128-bit Unique ID TRNG AES(128/192/256) ECC/RSA(4K)/DSA SHA224/SHA256 GHASH Tamper Detection Arm TrustZone	EK-RA4M3		
0	0	0	0	1	No	1	2	0	6	1	2	0	Yes	No	0	0	No	No	7	Yes				
0	0	0	0	1	No	1	2	0	6	1	2	1	Yes	No	1	0	No	No	20	Yes				
0	0	0	0	1	No	1	2	0	6	1	2	1	Yes	No	1	0	No	No	12	Yes				
0	0	0	0	1	No	1	2	0	6	1	2	0	Yes	No	0	0	No	No	7	Yes				
0	0	0	0	1	No	1	2	0	6	1	2	1	Yes	No	1	0	No	No	20	Yes				
6	0	6	0	1	No	1	2	0	7	2	2	1	Yes	No	2	1	No	No	12	Yes	128-bit Unique ID TRNG AES(128/192/256) 3DES/ARC4 ECC/RSA/DSA SHA1/SHA224/SHA256/MD5 GHASH	EK-RA6M1		
6	0	6	0	1	No	1	2	0	7	2	2	0	Yes	No	0	1	No	No	7	Yes				
6	0	6	0	1	No	1	2	0	7	2	2	1	Yes	No	2	1	No	No	12	Yes				
6	0	6	0	1	No	1	2	0	7	2	2	0	Yes	No	0	1	No	No	7	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	1	Yes	No	2	1	No	No	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	1	Yes	No	2	1	No	No	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	1	Yes	No	2	1	No	No	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	1	Yes	No	2	1	No	No	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	1	Yes	No	2	1	No	No	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	13	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	13	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	13	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	18	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	13	Yes				
6	0	6	0	1	Yes	1	2	0	10	2	3	2	Yes	No	2	1	No	Yes	12	Yes				
0	0	0	0	1	No	1	2	0	8	2	2	0	Yes	Yes	0	0	No	No	7	Yes	128-bit Unique ID TRNG AES(128/192/256) ECC/RSA(4K)/DSA SHA224/SHA256 GHASH Tamper Detection Arm TrustZone	EK-RA6M4		
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	7	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	0	Yes	Yes	0	0	No	No	7	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	7	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	7	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	7	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	7	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	12	Yes				
0	0	0	0	1	Yes	1	2	0	10	2	2	1	Yes	Yes	1	0	No	No	20	Yes				
6	0	0	0	1	No	0	1	0	7	2	2	0	No	No	0	1	No	No	0	No			128-bit Unique ID TRNG AES(128/192/256) 3DES/ARC4 ECC/RSA/DSA SHA1/SHA224/SHA256/MD5 GHASH	RTK0EMA170S00020BJ (RSSK Kit consist of RA6T1 CPU Card and inverter board)
6	0	0	0	1	No	0	1	0	7	2	2	0	No	No	0	1	No	No	0	No				
6	0	0	0	1	No	0	1	0	7	2	2	0	No	No	0	1	No	No	0	No				
6	0	0	0	1	No	0	1	0	7	2	2	0	No	No	0	1	No	No	0	No				

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(Rev.5.0-1 October 2020)

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