RENESAS

The Core Difference in Your Design
RX Family Software Solutions

Free software from Renesas – Save time and costs in your embedded-system development project

Use our proven software solutions to jump-start your embedded design, freeing up more time to focus on your application code. We offer software libraries and hundreds of sample programs for the microcontrollers in our advanced RX family – code that has been thoroughly developed, debugged, and tested by application engineers. Documentation explains how the code works. See below for a sampling of some of our software solutions. For a complete list, go to: www.renesas.eu/support/software/index.jsp

Connectivity

To add Ethernet, USB, or CAN connectivity to your system design, just select an RX600-series MCU and download reliable code for the standard formats you need. If it comes to USB only, RX100 and RX200 would be providing excellent solutions.

Software	App Note	MCU Series		
		RX100	RX200	RX600
TCP/IP (HTTP, FTP, DNS, DHCP)	R20AN0051EJ0106			✔
LibUSB (simple comm. w/out class spec)	R01AN0492EJ0200			✔
USB HID (Device)	R01AN0401EJ0200			✔
USB HID (Host)	R01AN0399EJ0200			✔
USB MSC (Device)	R01AN0514EJ0200			✔
USB MSC (Host)	R01AN0513EJ0200			✔
USB CDC (Device)	R01AN0273EJ0200			✔
USB CDC (Host)	R01AN0275EJ0200			✔
CAN API	R01AN0339EU0203			✔
USB (Device/Host)	R01AN1670EJ0100	✔		
USB MSC (Host)	R01AN0624EJ0210	✔		
USB MSC (Device)	R01AN0710EJ0211	✔		
USB HID (Device)	R01AN0546EJ0211	✔		
USB HID (Host)	R01AN0664EJ0211	✔		
USB CDC (Host)	R01AN0643EJ0211	✔		
USB CDC (Device)	R01AN0555EJ0211	✔		

Graphics

RX600-series MCUs integrate an external DMA controller that enables cost-effective direct-drive graphics implementations. Use our GUI Builder and its accompanying Graphics Library to make your system design more effective by quickly developing a unique, fine-tuned graphical user interface.

Software	App Note	MCU Series		
		RX100	RX200	RX600
Graphics Library	*Contact Sales			✔
GUI Builder	*Contact Sales			✔
JPEG Decoder	*Contact Sales		✔	✔
Direct Drive LCD	R01AN0331EU0103			✔

Security

Security is an important design criterion for many types of embedded-system applications. You can protect your system against accidental and deliberate malfeasance by taking advantage of the encryption and decryption algorithms Renesas offers for RX100, RX200, and RX600 series MCUs.

Software	App Note	MCU Series		
		RX100	RX200	RX600
Security SHA-1 Hash	*Contact Sales	✔	✔	✔
DES Library	*Contact Sales	✔	✔	✔
AES Library (128/256)	*Contact Sales		✔	✔

DSP

If your system needs digital-signal-processing (DSP) capabilities to handle applications such as intelligent sensing, imaging, communications, and audio, take advantage of our RX DSP Library. It contains 36 kernels and 308 functions that support filter, transform, complex, statistical, and matrix operations. Download all the DSP code you need.

Software	App Note	MCU Series		
		RX100	RX200	RX600
DSP Library for GNU	R01AN1451ES0100		✔	✔
	R01AN1802ES0100	✔		
DSP Library for CCRX	R01AN1465ES0100		✔	✔
	R01AN1801ES0100	✔		
Image Filter Programs	R01AN0228EJ0100			✔
Colour Space Conversion	R01AN0225EJ0100			✔

Safety

For embedded-system applications where user safety is an important design objective, Renesas provides software that facilitates compliance with the IEC60730 class-B safety standards. The routines listed have been certified by VDE. They run on the MCUs in the RX600, RX200, and RX100 product groups.

Software	App Note	MCU Series		
		RX100	RX200	RX600
IEC60730 Self Test Code	R01AN0654EG0100			✔
IEC60730 Self Test Code	R01AN0950EG0102		✔	
IEC60730 Self Test Code	*Contact Sales	✔		

Motor Control

All RX family devices can be used for motor control. However, the MCUs in the RX62T, RX63T, RX210 and RX220 groups incorporate on-chip functions specifically for this type of application. Renesas offers proven control code supporting popular motor control techniques.

Software	App Note	MCU Series		
		RX100	RX200	RX600
Sinusoidal PWM	R01AN0253ET0100			✔
Single Shunt SVC	R01AN0901EU0100			✔
Single Shunt SVC w/PGA	R01AN0900EU0100			✔
Three Shunts SVC	R01AN0903EU0100			✔
Three Shunts SVC w/PGA	R01AN0902EU0100			✔
Position Control w/Encoder	R01AN0899EU0100			✔
Brushed DC w/IR compensation	R01AN0958EU0100			✔
120-deg Trapezoidal Sensorless	R01AN1192ET0100			✔
120-deg Trapezoidal w/Hall	R01AN1090ET0100			✔
180-deg Sinusoidal w/Hall	R01AN1107ET0100			✔
Space Vector Modulation	R01AN1193ET0100		✔	

File System

Keep your system organized by using file system software that brings structure to complex applications. Renesas offers popular file-system solutions for both RX200 and RX600 MCUs.

Software	App Note	MCU Series		
		RX100	RX200	RX600
File System FAT 12/16/32	*Contact Sales		✔	✔
MMC & SD Simplified	*Contact Sales		✔	✔
TFS File System	*Contact Sales		✔	✔

Drivers

The Renesas Peripheral Driver Generator (PDG) is a true timesaver for handling an important, yet mundane, system-design chore. This graphical tool, running on a PC, produces function calls into the Renesas Peripheral Driver Library (RPDL). You just configure your peripherals in PDG and output the code, then move ahead to tackle other design issues.

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Software	App Note	MCU Series		
		RX100	RX200	RX600
Using RPDL & PDG	R01AN0615EU0100		✔	✔
RX210 RPDL	R20AN0156EJ0101		✔	
RX610 RPDL	R20AN0161EJ0100			✔
RX621/RX62N RPDL	R20AN0163EJ0100			✔
RX630 RPDL	R20AN0182EJ0100			✔
RX631/RX63N RPDL	R20AN0187EJ0100			✔
RX62T/RX62G RPDL	R20AN0162EJ0101			✔
RX63T RPDL	R20AN0222EJ0100			✔

Sound/Audio

The hardware DSP functions built into the MCUs in the RX200 and RX600 series meet the design requirements of a variety of audio applications. Renesas software routines support audio decoders for ADPCM, MP3, and OGG Vorbis formats. The speaker compensation code can be used to improve fidelity when using low-cost speakers.

Software	App Note	MCU Series		
		RX100	RX200	RX600
ADPCM Encoder/Decoder	*Contact Sales		✔	✔
DTMF Tone Generation/Detection	*Contact Sales		✔	✔
MP3	*Contact Sales		✔	✔
OGG Vorbis	*Contact Sales		✔	✔
Speaker Compensation	*Contact Sales		✔	✔

Programming

If your end product requires a reflash capability, use the RX Simple Flash API to easily integrate reprogramming abilities into your application. Further, you can simplify your system design by eliminating external EEPROM if you select an RX200 or RX600 MCU. Those devices can execute our Virtual EEPROM code, making it possible to perform single-byte writes and erases into the robust 'Data Flash' area of the on-chip flash memory.

Software	App Note	MCU Series		
		RX100	RX200	RX600
Flash API	R01AN0823EU0101		✔	
Virtual EEPROM	R01AN1019EU0100		✔	
Flash API	R01AN0544EU0220			✔
Virtual EEPROM	R01AN0724EU0150			✔

RX Third-party Ecosystem Software

Prefer to go with a third-party commercial software vendor? No problem. The RX Family is supported by a large and growing ecosystem. This table lists third-party software, which is available to run on the RX Family platform supported by Renesas Alliance Partners. They have extensive experience with Renesas RX products. They provide hardware, software, tools and consulting services that help Renesas' customers to reduce their system cost and time to market. To learn more about Renesas Alliance Partner Network or to register as Alliance Partner, please follow the link: www.renesas.eu/alliance

Company	Software	Description	MCU Series		
			RX100	RX200	RX600
Altia	Deepscreen	Graphics			✔
CMX Systems	CMX-RTX	RTOS	✔	✔	✔
	CMX-FFS	File System		✔	✔
	TCP/IP	Ethernet			✔
	USB	Host and Device	✔		✔
Express Logic	ThreadX	RTOS	✔	✔	✔
	FileX	File System		✔	✔
	NetX	Ethernet			✔
	USBX	Host and Device	✔		✔
freeRTOS	freeRTOS	RTOS	✔	✔	✔
Micrium	µC/OS-II	Safety Critical RTOS		✔	✔
	µC/OS-III	General Purpose RTOS	✔	✔	✔
	µC/FS	File System		✔	✔
	µC/TCP-IP	Ethernet			✔
	µC/TCP-IP Extensions	DHCP, FTP, TFTP, HTTP, POP3, SMTP, TELNET			✔
	µC/USB-Device	PHDC, HID, MSC, CDC, ACM	✔		✔
	µC/USB-Host	HID, MSC, CDC, ACM, Printer			✔
	µC/CAN	CAN			✔
	µC/CANopen	CANopen			✔
	µC/Modbus	Modbus		✔	✔
	µC/GUI	Graphics			✔
	µC/Probe	Data Visualization		✔	✔
Segger	embOS	RTOS	✔	✔	✔
	emFile	File System		✔	✔
	embOS/IP	TCP/IP			✔
	emWin	Graphics			✔
	emUSB	Host and Device	✔		✔
	emLoad	Bootloader		✔	✔
iAnywhere	Bluetooth	Bluetooth Stack		✔	
Thesycon	USB	USB Stack			✔
HCC embedded	USB	USB Stack			✔
	TCP/IP	TCP/IP Stack			✔
	File System	File System			✔
TMG	Profinet	Profinet Stack			✔
port GmbH	CANopen	CANopen Stack			✔
	Profinet	Profinet Stack			✔
Wittenstein	OpenRTOS	Commercial FreeRTOS Stack	✔		✔
	TCP/IP	TCP/IP Stack			✔
Sciopta	Sciopta RTOS	RTOS		✔	✔
Sevenstax	TCP/IP-Ethernet	DHCP, PPP, TFTP, HTTP, POP3, SMTP, TELNET			✔

Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

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