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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "<u>Embedded -</u> <u>Microcontrollers</u>"

Details

Product Status	Active
Core Processor	H8SX
Core Size	32-Bit Single-Core
Speed	40MHz
Connectivity	CANbus, I ² C, SCI, SSU
Peripherals	DMA, Motor Control PWM, PWM, WDT
Number of I/O	95
Program Memory Size	384KB (384K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	16K x 8
Voltage - Supply (Vcc/Vdd)	4.5V ~ 5.5V
Data Converters	A/D 16x10b; D/A 2x8b
Oscillator Type	-
Operating Temperature	-20°C ~ 75°C (TA)
Mounting Type	Surface Mount
Package / Case	144-LQFP
Supplier Device Package	144-LFQFP (20x20)
Purchase URL	https://www.e-xfl.com/product-detail/renesas-electronics-america/df61543j40fpv

Address: Room A, 16/F, Full Win Commercial Centre, 573 Nathan Road, Mongkok, Hong Kong



(2) Examples of Cascaded Operation

Figure 9.18 illustrates the operation when counting upon TCNT_2 overflow/underflow has been set for TCNT_1, TGRA_1 and TGRA_2 have been designated as input capture registers, and the TIOC pin rising edge has been selected.

When a rising edge is input to the TIOCA1 and TIOCA2 pins simultaneously, the upper 16 bits of the 32-bit data are transferred to TGRA_1, and the lower 16 bits to TGRA_2.

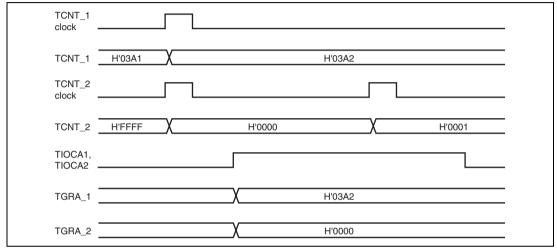
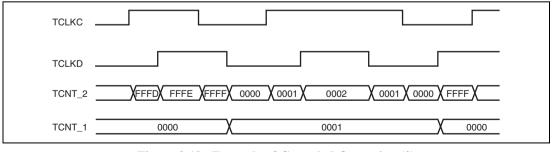


Figure 9.18 Example of Cascaded Operation (1)

Figure 9.19 illustrates the operation when counting upon TCNT_2 overflow/underflow has been set for TCNT_1, and phase counting mode has been designated for channel 2.

TCNT_1 is incremented by TCNT_2 overflow and decremented by TCNT_2 underflow.





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User MAT Information Inquiry (g)

The boot program will return the number of user MATs and their addresses.

Command H'25

Command, H'25, (one byte): Inquiry regarding user MAT information

Response

L125 Cine Number of erece

H'35	Size	Number of areas			
Start address area		ea	Last address area		
SUM					

- Response, H'35, (one byte): Response to the user MAT information inquiry .
- Size (one byte): The number of bytes that represents the number of areas, area-start address • and area-last address
- Number of areas (one byte): The number of consecutive user MAT areas When the user MAT areas are consecutive, the number of areas is H'01.
- Area-start address (four bytes): Start address of the area .
- Area-last address (four bytes): Last address of the area • There are as many groups of data representing the start and last addresses as there are areas.
- SUM (one byte): Checksum .

Erased Block Information Inquiry (h)

The boot program will return the number of erased blocks and their addresses.

H'26 Command

Command, H'26, (two bytes): Inquiry regarding erased block information

Response

	H'36	Size	Number of blocks
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П 30	Size	Number of blocks		
Block start address		Block last address		
CLIM				

SUM

- Response, H'36, (one byte): Response to the number of erased blocks and addresses .
- Size (two bytes): The number of bytes that represents the number of blocks, block-start ٠ addresses, and block-last addresses.
- Number of blocks (one byte): The number of erased blocks .
- Block start address (four bytes): Start address of a block ٠

	Pin Name	MCU Operating Mode		Hardware	Software Standby Mode	
Port Name			Reset	Standby Mode	OPE = 1	OPE = 0
PORTD	PD[0:7]	External extended mode (EXPE = 1) L	Hi-Z	Keep	Hi-Z
		ROM enabled extended mode	Hi-Z	Hi-Z	Кеер	[Address output] Hi-Z [Other than above] Keep
		Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Keep	
PORTE	PE[0:7]	External extended mode (EXPE = 1) L	Hi-Z	Keep	Hi-Z
		ROM enabled extended mode	Hi-Z	Hi-Z	Кеер	[Address output] Hi-Z [Other than above] Keep
		Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Keep	
PORTF	PF[0:7]	External extended mode (EXPE = 1) L/Hi-Z	Hi-Z	Кеер	[Address output] Hi-Z [Other than above] Keep
		Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Keep	
PORTH	PH[0:7]	Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Keep	
		External extended mode (EXPE = 1) Hi-Z	Hi-Z	Keep	
PORTI	PI[0:7]	Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Keep	
		External extended 8-bit bus mode	Hi-Z	Hi-Z	Keep	
		mode (EXPE = 1) 16-bit bus mode	Hi-Z	Hi-Z	Keep	
PORTJ	PJ[0:7]	Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Keep	
		External extended mode (EXPE = 1) Hi-Z	Hi-Z	Кеер	
PORTK	PK[0:7]	Single chip mode (EXPE = 0)	Hi-Z	Hi-Z	Кеер	
		External extended mode (EXPE = 1) Hi-Z	Hi-Z	Keep	

Legend:

Hi-Z: High impedance

H: High level

L: Low level

Keep: The input pin becomes high-impedance state and the output pin retains the state.

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OPE: Output port enable