

# RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RL*-A071A/E	Rev.	1.00
Title	Adding contents in the hardware user's manual RAM Guard Function		Information Category	Technical Notification		
Applicable Product	RAM capacities 1.5KB products in RL78/F12 R5F1096B, R5F109AB, R5F109BB, R5F109GB, R5F109LB	Lot No.	Reference Document	RL78/F12 User's Manual: Hardware Rev.1.11 (R01UH0231EJ0111)		
		All Lots				

## Corrections in the User's Manual: Hardware

Application Item	Applicable Page (R01UH0231EJ0111)	Contents
24.3.4 RAM Guard Function	p.947	Caution added

Adding contents are shown as **gray hatching**.

### 24.3.4 RAM Guard Function

#### 24.3.4 RAM Guard Function

The IEC 61508 standard requires safety to be guaranteed during operation and thus it is necessary to protect significant data stored in RAM when the CPU freezes.

The RAM guard function protects data in the specified space.

Setting this function disables writing to RAM in the specified space but enables reading normally.

**Caution: RAM guard function is not available on RAM capacities 1.5KB products**

**RAM capacities 1.5KB products: R5F1096B, R5F109AB, R5F109BB, R5F109GB and R5F109LB**

##### 24.3.4.1 Invalid memory access detection control register (IAWCTL)

This register is used to control the detection of invalid memory access and RAM/SFR guard.

The RAM guard function uses the GRAM1 and GRAM0 bits.

The IAWCTL register can be set by an 8-bit memory manipulation instruction.

Reset signal generation clears this register to 00H.

**Figure 24-8. Format of Invalid Memory Access Detection Control Register (IAWCTL)**

Address: F0078H After reset: 00H R/W

Symbol	7	6	5	4	3	2	1	0
IAWCTL	IAWEN	0	GRAM1	GRAM0	0	GPORT	GINT	GCSC

GRAM1	GRAM0	RAM guard space <sup>Note</sup>
0	0	Disabled. RAM can be written to.
0	1	The 128 bytes starting at the lower RAM address
1	0	The 256 bytes starting at the lower RAM address
1	1	The 512 bytes starting at the lower RAM address

**Note** The RAM start address differs depending on the size of the RAM provided with the product.

**RAM guard function is not available on RAM capacities 1.5KB products.**