

Release Note

This document describes the following items. Refer to the user's manual of the emulator for cautions on using QB-V850MINIL or QB-V850MINI.

- Restrictions not applicable to the target device but applicable to the emulator.
- Restrictions applicable to both the target device and emulator but correction is planned only for the emulator.
- Devices supported by QB-V850MINIL or QB-V850MINI

Refer to the following documents for the restrictions in the target device.

- User's manual of target device
- Restrictions notification document for target device

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1. Product Version

The product version is indicated “control code”. The “control code” is the second digit from the left in the 10-digit serial number printed on the sticker attached to the bottom side of QB-V850MINIL or QB-V850MINI (if it has not been upgraded). If the product has been upgraded, the control code can also be checked with the following methods while the debugger is running.

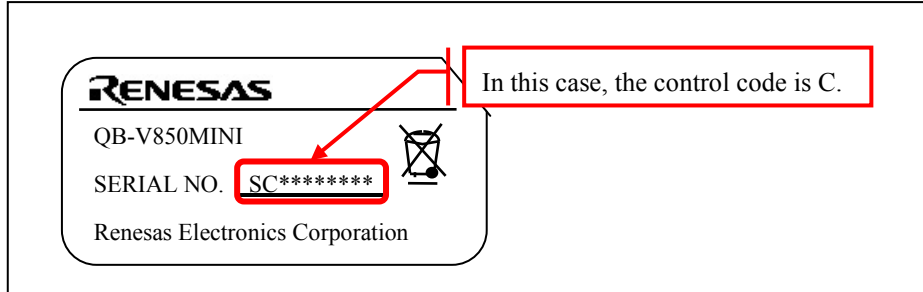


Figure 1-1. Checking the Control Code (Bottom side of QB-V850MINIL/QB-V850MINI)

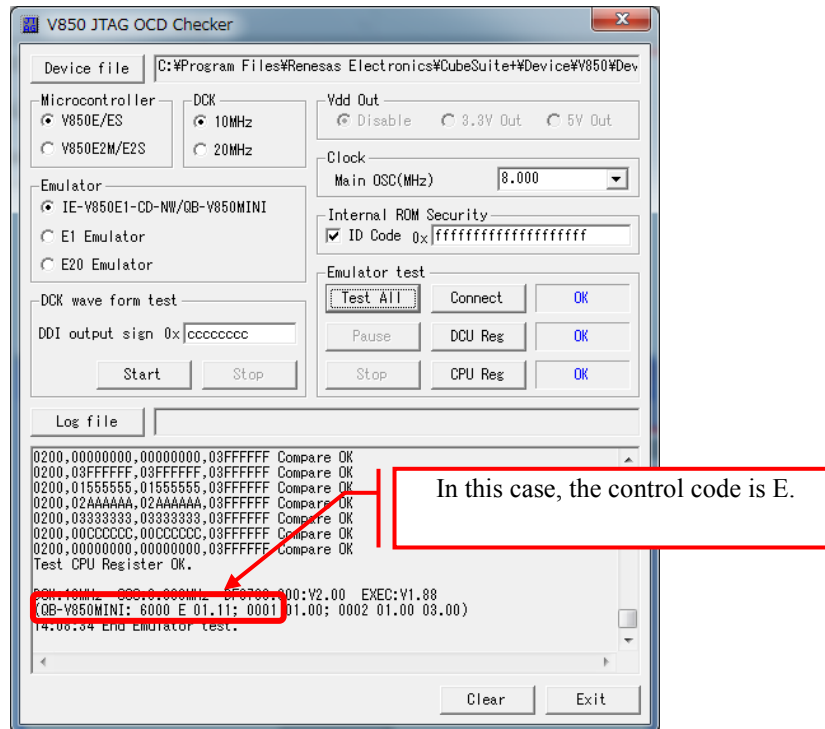


Figure 1-2. Checking the Control Code (Using V850 JTAG OCD Checker)

When using Green Hills Software (GHS)'s debugger MULTI® .
Execute the version command of 850eserv. "X" in "Control Code=X" is the control code.

```
MULTI> target version  
850eserv Version: 3.2346 (for MULTI V4.0.x)  
IE type=MINICUBE (RCU1)  
Executor Version=V850 G2 Executor V1.63 Copyright 2004  
Device File Format Version=V2.18  
Device File File Version=V1.00  
MINICUBE Control Code=A  
MINICUBE Firmware Version=V1.11  
Control Board Version=V1.00  
MINICUBE Board Version=V1.00 (FPGA Version=1.00)
```

In this case, the control code is A.

*: MULTI is a registered trademark of Green Hills Software, Inc. in the United States.

Figure 1-3. Checking the Control Code (Using debugger MULTI)

2. List of Restrictions and Added Specifications

No.	Restrictions or Changes/Additions to Specifications	Control Code			
		A	B	C	E
1	Restriction when performing emulation of V850ES/Kx2 with in-circuit method	Permanent restriction			
2	Bug related to heating due to defective parts being mounted	○	×	○	○
3	Addition of specification for supporting V850E2S or V850E2M microcontroller	-	-	-	○

×: Applicable, ○: Not applicable or already corrected -: Not relevant

Remark The permanent restriction means a restriction that is not planned for correction.

3. Details of Restrictions and Added Specifications

No. 1 Restriction when performing emulation of V850ES/Kx2 with in-circuit method

[Description]

When emulation of V850ES/KE2, V850ES/KF2, V850ES/KG2, or V850ES/KJ2 is performed with the in-circuit method using V850MINI self-check board or QB-V850ESKX1H-DA, the following operations differ from those of the device.

- The P00 pin outputs a low level during reset.
- The subclock cannot be selected as the count clock for timer H1. If the subclock is specified as the count clock for timer H1 using TMHMD1 register, the operation is not guaranteed.

[Workaround]

There is no workaround.

Please regard this item as a permanent restriction.

No. 2 Bug related to heating due to defective parts being mounted

[Description]

Due to defective parts being mounted on the main unit board, the product may break down even if it is used according to the specifications. If breaks down, the power LED (red) will not light and the main unit may generate heat. This heat poses no risk of fire, but may cause a burn injury if direct contact with the product is maintained for a long time.

[Workaround]

There is no workaround. This bug has been corrected in products with control code C and later.

If you have a product with control code B, do not use it, but be sure to upgrade it. Products with control code A do not require upgrading.

The control code is the second digit from the left in the 10-digit serial number printed on the sticker attached to the bottom side of QB-V850MINIL or QB-V850MINI. The control code can also be checked using the debugger, but check it from the serial number, without turning power on.

No. 3 Addition of specification for supporting V850E2S or V850E2M microcontroller

[Description]

V850E2S or V850E2M microcontroller is supported with control code E.

4. Supported Devices

The following describes the devices that are supported by QB-V850MINIL or QB-V850MINI, as of June 2013.

4.1 On-chip debugging

Microcontrollers supported by QB-V850MINIL or QB-V850MINI are listed in the following table.

Be sure to use the latest software tools such as debuggers.

CPU core	Supported devices
V850E1	V850E/IA3, V850E/IF3, V850E/IG3, V850E/IG4, V850E/IH4, V850E/IG4-H V850E/IH4-H, V850E/IA4, V850E/SJ3-H, V850E/SK3-H V850E/MA3, V850E/ME2, V850E/RS1, V850E/SV2 V850E/DJ3, V850E/DL3, V850E/PHJ1, V850E/PHO3, V850E/PHC3
V850ES	V850ES/FE2, V850ES/FF2, V850ES/FG2, V850ES/FJ2 V850ES/FE3, V850ES/FF3, V850ES/FG3, V850ES/FJ3, V850ES/FK3 V850ES/FE3-L, V850ES/FF3-L, V850ES/FG3-L V850ES/HE2, V850ES/HF2, V850ES/HG2, V850ES/HJ2 V850ES/HE3, V850ES/HF3, V850ES/HG3, V850ES/HJ3 V850ES/IK1, V850ES/IE2 V850ES/JG2, V850ES/JJ2, V850ES/JG3, V850ES/JJ3 V850ES/JC3-L, V850ES/JE3-L, V850ES/JF3-L, V850ES/JG3-L V850ES/JC3-H, V850ES/JE3-H, V850ES/JG3-H, V850ES/JH3-H, V850ES/JG3-U, V850ES/JH3-U V850ES/JH3-E, V850ES/JG3-E, V850ES/JJ3-E V850ES/KJ1, V850ES/KJ1+, V850ES/KE2, V850ES/KF2, V850ES/KG2, V850ES/KJ2 V850ES/SG2, V850ES/SJ2, V850ES/SG3, V850ES/SJ3 V850ES/SG2-H, V850ES/SJ2-H, V850ES/ST3
V850E2	V850E2/ME3
V850E2M	V850E2/DJ4, V850E2/DK4-H, V850E2/DN4-H, V850E2/DP4-H, V850E2/FK4, V850E2/FG4, V850E2/FJ4, V850E2/FL4, V850E2/FF4-M, V850E2/FK4-H, V850E2/FL4-H, V850E2/FK4-G, V850E2/PG4, V850E2/PJ4, V850E2/PG4- L, V850E2/PJ4-E, V850E2/PG4-S V850E2/MN4, V850E2/ML4, V850E2/SG4-H, V850E2/SJ4-H, V850E2/SK4-H
V850E2S	V850E2/FE4-L, V850E2/FF4-L, V850E2/FG4-L, V850E2/FJ4-L, V850E2/FF4-G V850E2/FG4-G

Remark If your target device is not listed in the above table, contact your local distributor.

4.2 On-chip debugging with in-circuit method

For the following devices, on-chip debugging with the in-circuit method is possible by using QB-V850MINIL or QB-V850MINI in combination with V850MINI self-check board or debug adapter (separately available). V850MINIL self-check board is not supported to this method.

Be sure to use the latest software tools such as debuggers and device files.

Supported Device	Debug Adapter
V850ES/KE1, V850ES/KF1 V850ES/KG1, V850ES/KJ1	QB-V850ESKX1-DA or V850MINI self-check board ^{Note 1}
V850ES/KE1+, V850ES/KF1+ V850ES/KG1+, V850ES/KJ1+	QB-V850ESKX1H-DA or V850MINI self-check board
V850ES/KE2, V850ES/KF2 V850ES/KG2, V850ES/KJ2	QB-V850ESKX1H-DA ^{Note 2} or V850MINI self-check board ^{Note 2}

- Notes**
1. Note that the P00 pin outputs a low level during reset. Should this cause a problem, the problem can be avoided by using the QB-V850ESKX1-DA (separately available).
 2. The following operations differ from those of the device.
 - The P00 pin outputs a low level during reset.
 - The subclock cannot be selected as the count clock for timer H1. If the subclock is specified as the count clock for timer H1 using TMHMD1 register, the operation is not guaranteed.

5. Function List

The following is indicated functions that QB-V850MINIL or QB-V850MINI can support, but whether each function is supported depending on the software tools used. Refer to user manual of software tools for detail. And refer to user manual of target device for information written in remark.

No.	Debug Function	Specifications	Remark
1	Debug monitor function	Available	
2	Forced break function	Available	
3	Hardware break function	Available	The number of points depends on target device.
4	Software break function	Available	The number of points depends on target device.
5	Step execution function	Available	
6	Security function	Available	The form of security ID depends on target device.
7	Time measurement function	Available	Whether this function is available depends on target device.
8	Real-time RAM monitor (RRM)	Available	Execution of program stops instantly. In case of V850ES, E1 and E2, this terms is a few micro seconds per 1 access. In case of V850E2S or V850E2M, this term is a few clocks per 1 access.
9	Direct memory modification (DMM)	Available	
10	Mask function	Available	The maskable terminals depend on target device
11	Trace function	Not available	

5.1 Functional Overview

(1) Debug monitor function

During debugging, a memory space for debugging, different from the user memory space, is used (background monitor format). The user program can be stopped and executed starting from any address. While execution of the user program is stopped, the user resources (such as memory and I/O) can be read/written, and the user program can be downloaded.

(2) Forced break function

Execution of the user program can be forcibly stopped.

(3) Hardware break function

The hardware break function is used to observe the CPU bus cycles and set a break for a specific fetch or access operation. For example, a break can be set by detecting a state where an address has been executed or a variable has been accessed.

(4) Software break function

The software break function is used to set a break when a specific address has been executed (fetched).

(5) Step execution function

The step execution function can be used to execute instructions one by one, in assemble instruction units. Only instructions to be executed purely in steps can be executed, because interrupts are not acknowledged during step execution.

Caution : Step execution to be performed at the C language level is performed by a debugger using the break function. In this case, interrupts are acknowledged in step execution. Consequently, if processing at the interrupt destination cannot be completed, step execution may not be completed. For handling such a case, see the manual of the debugger.

(6) Security function

ID code authentication function is provided in the microcontrollers with internal ROM/flash memory to prevent the memory contents from being read by an unauthorized person.

(7) Time measurement function

The execution time of the user program can be measured. The performance of measurement is as below.

When DCK is set to 10MHz, resolution is 200ns and max. measurement time is 7min.

When DCK is set to 20MHz, resolution is 100ns and max. measurement time is 3min. 30sec.

(8) Real-time RAM monitor (RRM)

RRM can be used to check RAM values during program execution. Execution of program stops instantly during access memory. In case of V850ES, E1 and E2, this terms is a few micro seconds per 1 access. In case of V850E2S or V850E2M, this term is a few clocks per 1 access.

(9) Direct memory modification (DMM)

DMM can be used to modify RAM values during program execution. Execution of program stops instantly during access memory. In case of V850ES, E1 and E2, this terms is a few micro seconds per 1 word access. In case of V850E2S or V850E2M, this term is a few clocks per 1 access.

(10) Mask function

Some terminal of a microcontroller can be mask such as _RESET terminal. The maskable terminal depends on target device.

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