

# Microcomputer Technical Information

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<p style="text-align: center;">IECUBE Series In-Circuit Emulators for V850 Series  Support for Optional Functions</p>		Document No.	ZBG-CD-05-0048	1/2
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				Upgrade
				Document modification
			√	Other notification

## 1. Target products

Product	Control Code <sup>Note</sup>	Remark
QB-V850ESKX1H-***	C or later	*** is an arbitrary code.
QB-V850ESSX2-***	E or later	
QB-V850ESFX2-***	C or later	
QB-V850EIA4-***	C or later	

**Note** For the identification method for the control code, see the Operating Precautions supplied with the product.

## 2. Description

The following optional functions can now be added to the V850 Series in-circuit emulator IECUBE series. See the attachment for details on the optional functions.

- Memory emulation function
- Coverage measurement function
- TimeMachine™ function

## 3. How to add optional functions

The following two methods have been provided for implementing the optional functions. See the attachment for details.

- New purchase  
Purchase IECUBE with the corresponding option board mounted.
- System upgrade  
Have the option board mounted in your IECUBE.

#### 4. Optional functions support schedule

Support for the optional functions is scheduled to be available as follows.

New purchase: Orders will be accepted as of May 31, 2005

System upgrade for products already shipped: Available as of May 31, 2005

\* Note that this schedule is subject to change without notice. Consult an NEC Electronics sales representative when you purchasing the product.

#### 5. Delivery schedule for system upgrades

Products for which system upgrades are to be implemented will be returned to customers approximately two weeks after order reception. This may be delayed depending on the ordering status, so consult an NEC Electronics sales representative when submitting an application for a system upgrade.

#### 6. Document revision history

##### IECUBE Series In-Circuit Emulators for V850 Series Support for Optional Functions

Document Number	Issued on	Description
ZBG-CD-05-0048	May 20, 2005	Newly created. Introduction of optional functions

## Optional Functions for V850 Series In-Circuit Emulator IECUBE Series

The following optional functions can now be added to the V850 Series in-circuit emulator IECUBE series. This document explains the functional outline and specifications of the optional functions, and how to obtain them.

- Memory emulation function
- Coverage measurement function
- TimeMachine function

The following table lists optional functions that are available for each IECUBE product.

Product	Memory Emulation Function	Coverage Measurement Function	TimeMachine Function
QB-V850ESKX1H	√	√	√
QB-V850ESSX2	√	√	√
QB-V850ESFX2	√	√	√
QB-V850EIA4	×	√	√

√: Can be added, ×: Cannot be added

The support status of each optional function differs depending on the debugger used. The following table lists the support statuses as of May 2005. If you have any questions regarding the support status, consult an NEC Electronics sales representative or distributor.

Function	Support Status	
	ID850QB	MULTI™
Memory emulation function	Supported in V2.90, V3.10 and later	Supported in 850eserv V2.233 and later and earlier than V3.000, as well as in 850eserv V3.233
Coverage measurement function	Supported in V2.90, V3.10 and later	Support under consideration
TimeMachine function	Not supported	Supported in 850eserv2 V1.000 and later

## 1. Memory Emulation Function

This section explains the functional outline of the memory emulation function and differences in specifications that occur after the addition of this function.

### 1.1 Functional outline

Using the memory emulation function, IECUBE can be substituted for the external memory on the target system, so that programs and data can be allocated to IECUBE.

This function was designed for use in cases such as the following.

- Development of the target system is delayed, so program development for external spaces cannot be started.

Through memory substitution, program development can be started in advance.

- Writing to the flash memory on the target system takes too much time and thus development is inefficient.

Through memory substitution, the program development efficiency can be improved.

Refer to the user's manual for the debugger for details on use of the memory emulation function.

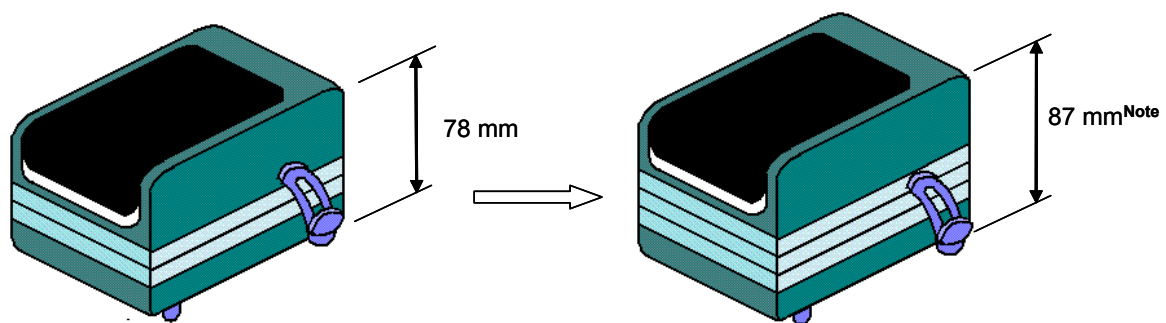
### 1.2 Differences from hardware specifications

After addition of the memory emulation function, a board is added to IECUBE, resulting in the following differences from the hardware specifications.

- External dimensions

The height increases by 9 mm.

The following figures are examples using the QB-V850ESKX1H.



**Note** When the rear spacer is adjusted to the lowest height (107 mm max.)

- Weight

The weight increases by approximately 70 g.

### 1.3 Differences from system specifications

Addition of the memory emulation function results in differences in system specifications.

Replace the “Emulation memory capacity” item in the system specification table that is described in the IECUBE user’s manual with the following description.

Item		Specifications
Emulation memory capacity	External memory	16 MB max. (Mapping possible in 1 MB units)

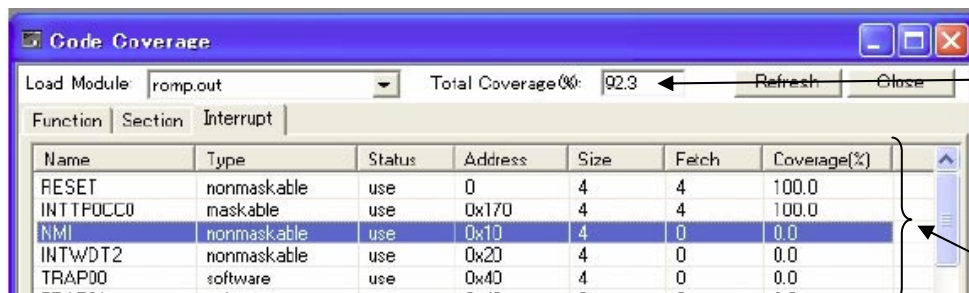
## 2. Coverage Measurement Function

This section explains the functional outline of the coverage measurement function and differences in specifications that occur after the addition of this function.

### 2.1 Functional outline

The coverage measurement function is used to measure the percentage of the executed code in a load module, section, or other such area. After the addition of this function, the Code Coverage window will be added and the Source and Assemble windows will be modified in the debugger ID850QB, as follows.

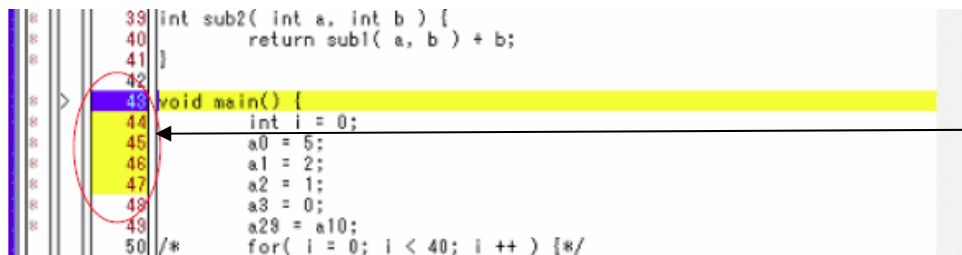
- Code Coverage window



Displays the coverage (%) of the executed code for total code in a load module.

Displays the coverage (%) of the executed code separately by functions, sections and vectors.

- Source window and Assemble window



The executed lines are highlighted.

Refer to the user's manual for the debugger for details on use of the coverage measurement function.

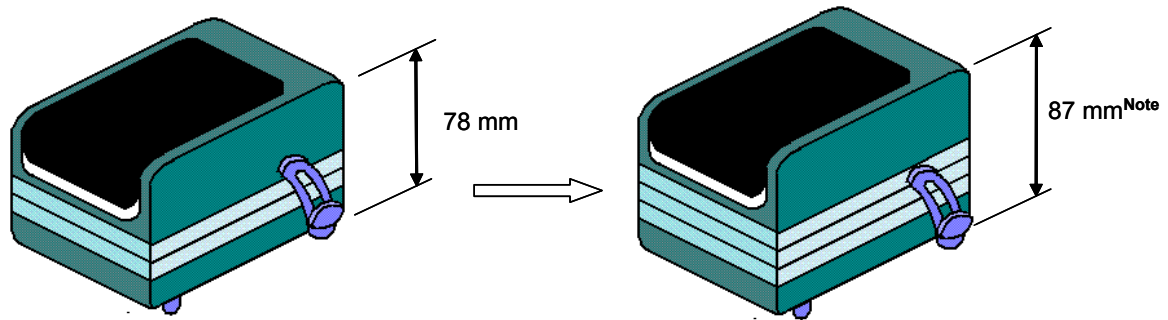
## 2.2 Differences from hardware specifications

After addition of the coverage measurement function, a board is added to IECUBE, resulting in the following differences from the hardware specifications.

- External dimensions

The height increases by 9 mm.

The following figures are examples using the QB-V850ESKX1H.



**Note** When the rear spacer is adjusted to the lowest height (107 mm max.)

- Weight

The weight increases by approximately 70 g.

## 2.3 Differences from system specifications

Addition of the coverage measurement function results in differences in system specifications.

Replace the item “Coverage function” in the system specification table that is described in the IECUBE user’s manual with the following description.

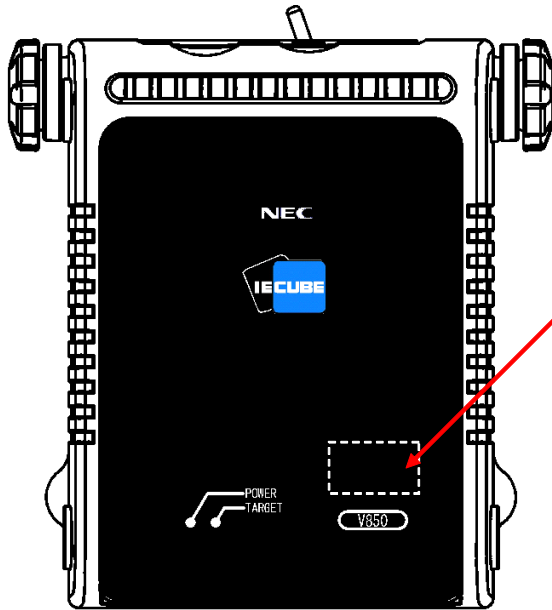
Item		Specifications
Coverage function		Detection of execution or pass
	Measured range	Internal ROM space + arbitrary 1 MB space

### 3. TimeMachine Function

This function is supported by the Green Hills Software™ (GHS) debugger. For details on the functional outline and specifications, consult a GHS tool distributor.

### 4. Changes to Top Side of Product Consequent to Addition of Optional Functions

After the addition of the optional functions, the following stickers will be attached to the top of IECUBE. The addition of the optional functions can be confirmed through the presence of these stickers.



IECUBE Top View

A sticker is attached to this position according to the function added, as follows.

For the memory emulation function:

MEM

For the coverage measuring function:

COV

For the TimeMachine function:

STP



## 5. How to Add Optional Functions

To add the optional functions, the option board corresponding to each function, as listed in the following, must be mounted.

Function	Option Board Required for Adding Function
Memory emulation function	Emulation memory board
Coverage measurement function	Coverage memory board <sup>Note 1</sup>
TimeMachine function	SuperTrace <sup>TM</sup> Probe board <sup>Notes 1, 2</sup>

**Notes** 1. Either the coverage memory board or the SuperTrace Probe board can be added, but not both.

2. To use the TimeMachine function, the SuperTrace Probe (Green Hills Software (GHS)) must be mounted in IECUBE, in addition to the SuperTrace Probe board.

The following two methods have been provided for mounting the option boards.

For more information on ordering, price and schedule, consult an NEC Electronics sales representative or distributor.

- New purchase

By adding one of the following suffixes at the end of the ordering code, you can purchase IECUBE with the corresponding option board mounted.

- M: Emulation memory board mounted
- C: Coverage memory board mounted
- S: SuperTrace Probe board mounted
- CM: Coverage memory board and emulation memory board mounted
- SM: SuperTrace Probe board and emulation memory board mounted

Part number examples: QB-V850ESKX1H-ZZZ-M

QB-V850ESKX1H-S100GC-CM

- System upgrade

Using this method, the option board can be mounted in your IECUBE.