In-Circuit Emulator MN101CB6

Product Name	Product Number			Note
ICE	PX-ICE101C/D	PX-ICE101C/E PX-ICE101C/E-PLUS	PX-ICE101C/E-Lite	In-Circuit Emulator Specification -> PX-ICE101C/D -> PX-ICE101C/E-PLUS -> PX-ICE101C/E-Lite
Probe set	No set	PX-PRB101CB6-Y00*	---	For other product type supported by this board, refer to the instruction.
Connector board	PRB-CN101-M	PRB-CN5-101(2)	---	
MBB board	PRB-MBB101CB6-M			
Adapter board	PRB-ADP101-32-M			
Dummy target board	PRB-DMY101CB6-M			
ICE CONNECTOR	PRB-FAD-32BK			Product of TOKYO ELETECH CORPORATION Instruction
Interface	PX-IFC-PCC-6		---	Compliant with PCMCIA Ver2.1/JEIDA Ver4.2
	PX-IFC-PCI-6		---	Compliant with PCI2.1 of PCI-SIG standard. When using the Low profile the PCI with small-footprint PC's, replace the bracket by provided one.
	---		USB20C10B	Compliant with USB1.1/2.0
Debugger	PX-SDX101C00-0P0*		---	PanaX Series Debugger
	PX-DBF101C00-0P0*			Debug Factory® Builder
C Compiler/Assembler	PX-ICC101C00-0P0*			

			
PX-ICE101C/D	PX-ICE101C/E	PX-ICE101C/E-Lite	PX-PRB101CB6-Y00*
			
PRB-FAD-32BK	PX-IFC-PCC-6	PC-IFC-PCI-6	USB20C10B

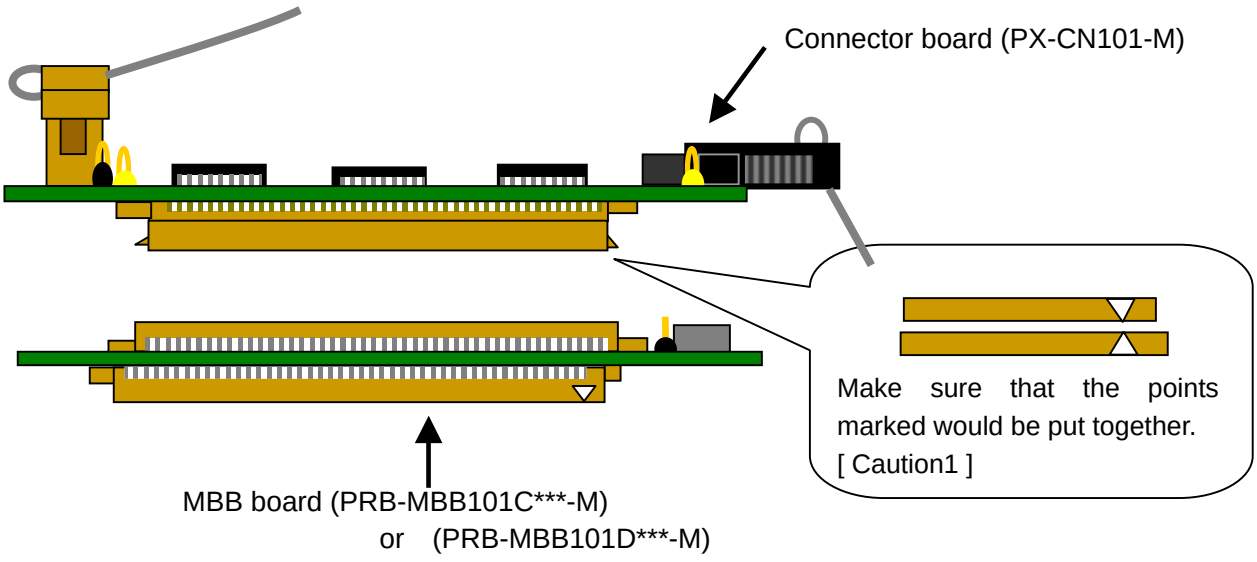
PX-CN101-M

This board can be used for PX-ICE101C/E. Please refer to following.
MN101C series (product No.PRB-MBB101C***-M)
MN101E series (product No.PRB-MBB101E***-M)
(Please visit our website for the latest information on the product.)
http://www.semicon.panasonic.co.jp/e-micom/index.html

Figure1.PX-CN101-M Layout

< How to connect >

Figure2.Connecting a PX-CN101-M to a MBB board



[Caution1]
Connect CNC of PX-CN101-M to CNC of PRB-MBB101***-M, and
CND of PX-CN101-M to CND of PRB-MBB101***-M.
When connecting the boards, make sure that they are connected without tilt.
If you put pressure on one side of the board, that may cause any damage to the pins.

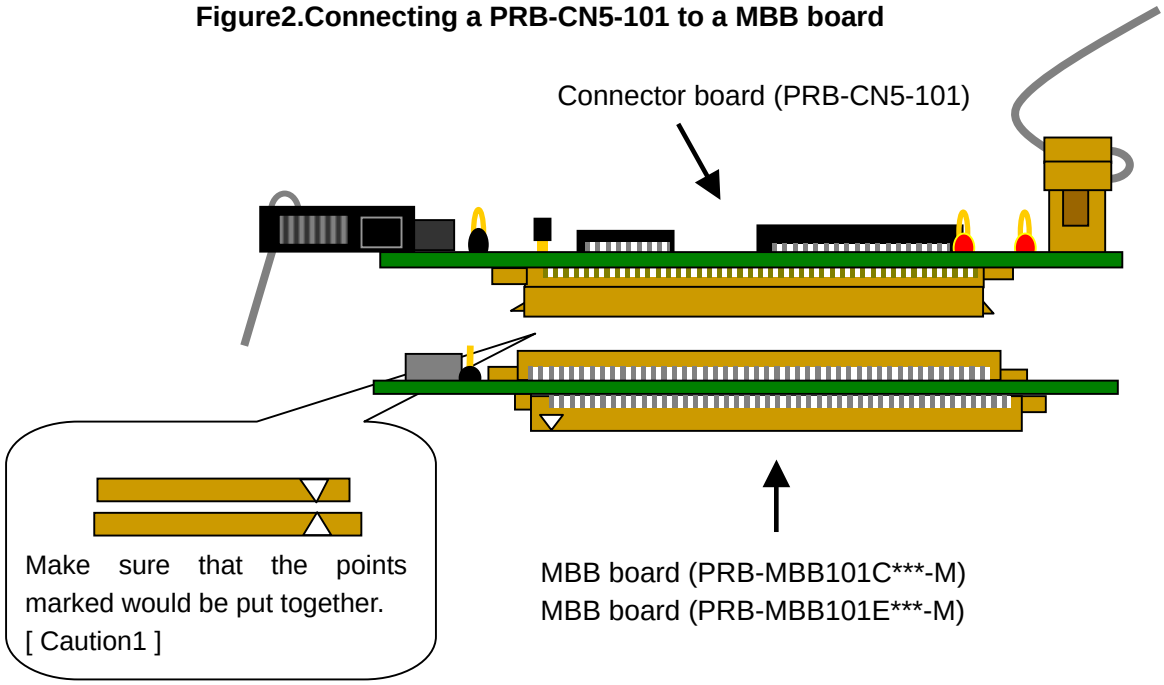
PRB-CN5-101

This board can be used for PX-ICE101C/E. Please refer to following.
MN101C series (product No.PRB-MBB101C***-M)
MN101E series (product No.PRB-MBB101E***-M)
(Please visit our website for the latest information on the product.)
http://www.semicon.panasonic.co.jp/micom/

Figure1.PRB-CN5-101 Layout

< How to connect >

Figure2.Connecting a PRB-CN5-101 to a MBB board



[Caution1]
Connect CNC of PRB-CN5-101 to CNC of (PRB-MBB101C***-M), (PRB-MBB101E***-M) and CND of PX-CN101-M to CND of (PRB-MBB101C***-M), (PRB-MBB101E***-M).
When connecting the boards, make sure that they are connected without tilt.
If you put pressure on one side of the board, that may cause any damage to the pins.

PRB-MBB101CB6-M Probe Switches

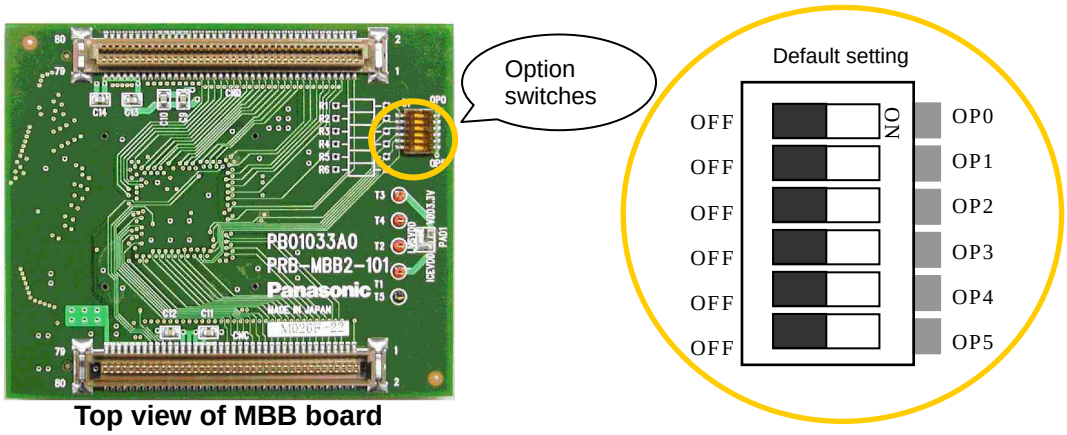
- This probe must be used with the following boards.

  - Connector board: PRB-CN5-101(2) or PX-CN101-M
  - MBB board: PRB-MBB101CB6-M
  - Adapter board: PRB-ADP101-32-M
  - Dummy target: PRB-DMY101CB6-M

    The dummy target should be connected when ICE is operated independently, the adapter board should be connected at connection to the target.

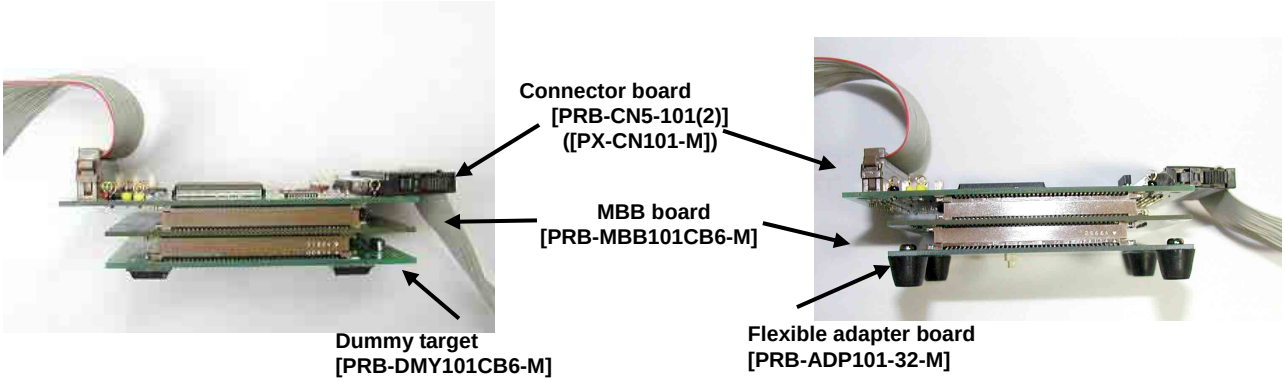
- This probe is mounted the switches for mask option.
- The option switches are not available.

Figure1. Layout of option switches



Top view of MBB board

Figure2. Composition with PRB-MBB101CB6-M



- When ICE is operated independently.

- At connection to the target

PRB-ADP101-32-M

When connected to the target, use this board with MBB board.
This board can be used with the following boards.
(The product type is subject to change without prior notice. The latest information should be confirmed on our web site.)

- PRB-MBB101CD0-M

  Improper matching may cause any damage to the ICE.

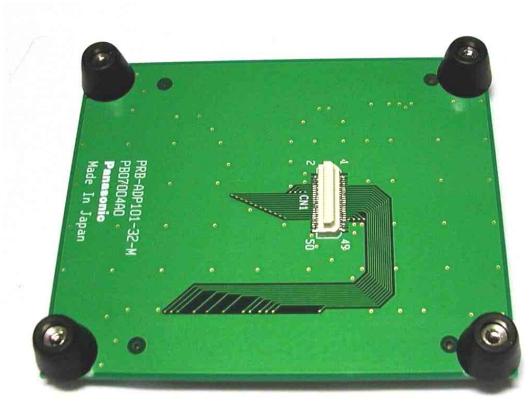
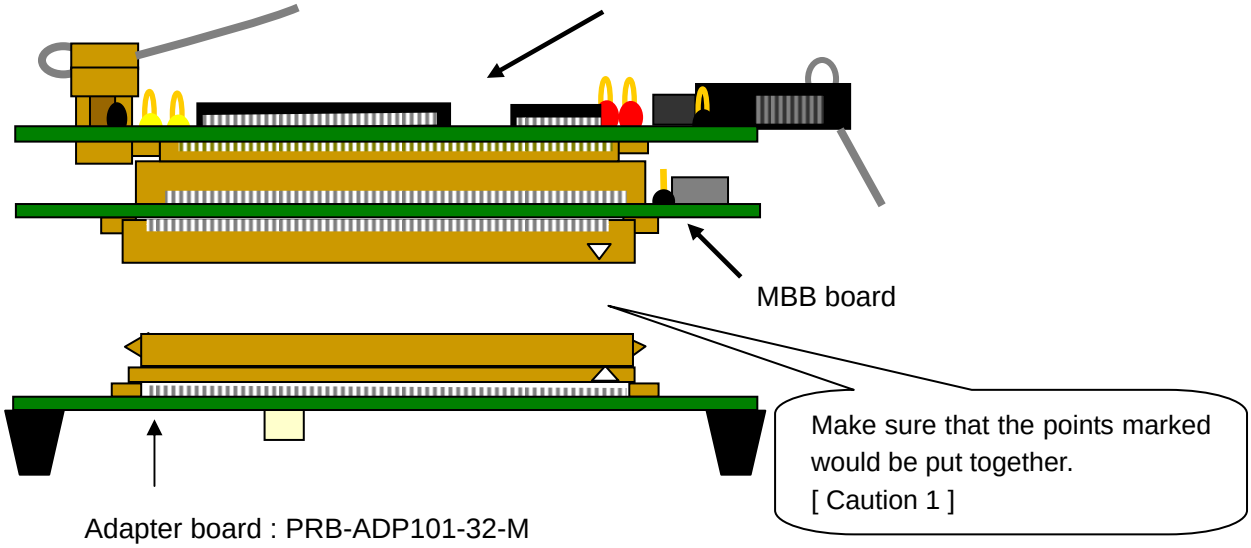


Figure 1.Adapter Board Layout

< How to connect >

Connector board : PRB-CN5-101(2) or PX-CN101-M
The connector board, which can be used by the kind changes.



[Caution1]
Connect CNE of MBB board to CNE of PRB-ADP101-32-M, and
CNF of MBB board to CNF of PRB-ADP101-32-M.
When connecting the boards, make sure that they are connected without tilt.
If you put pressure on one side of the board, that may cause any damage to the pins.

PRB-DMY101CB6-M

Dummy target boards differ depending upon the models. This board can be used for only MN101CB6.
When unconnected to the target, use this board with the PRB-MBB101CB6-M.
Improper matching may cause any damage to the ICE.

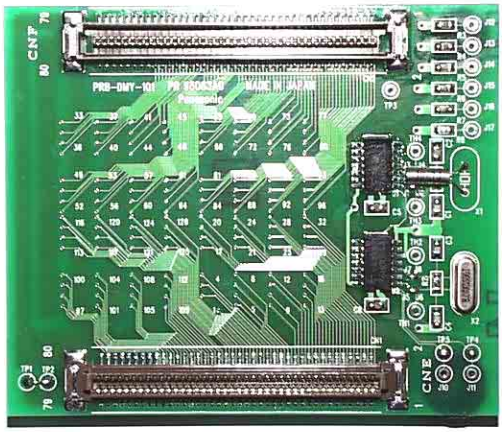
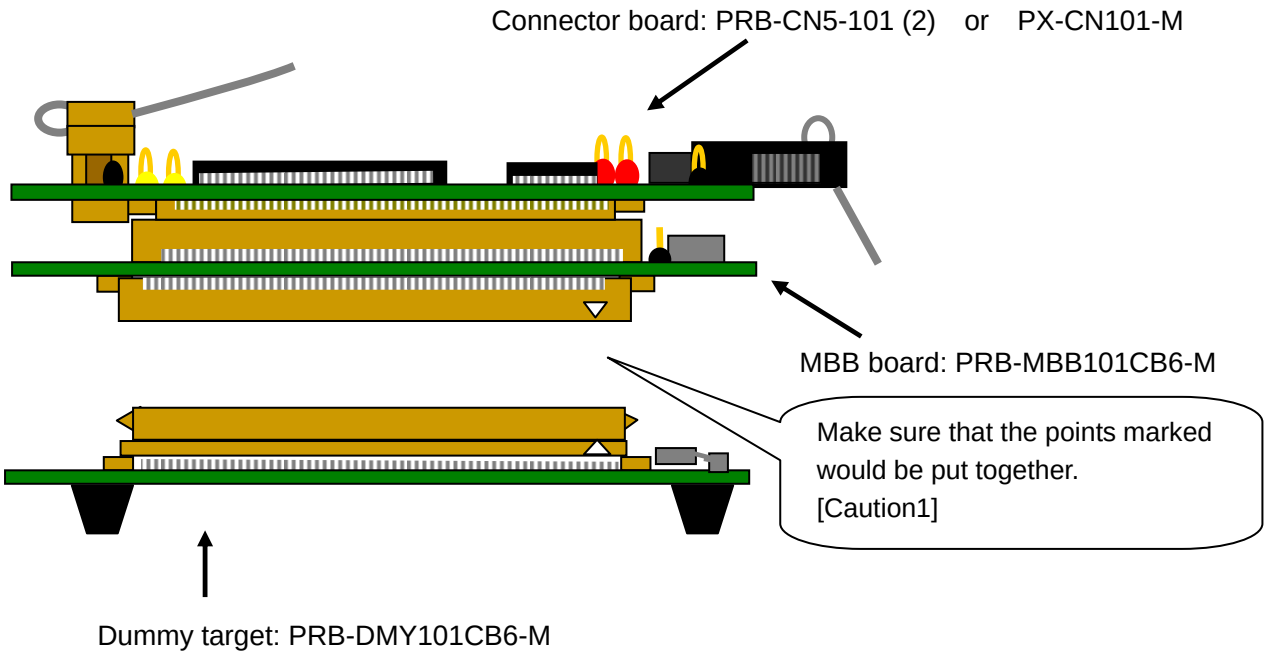


Figure 1.PRB-DMY101CB6-M Layout

< How to connect >



[Caution1]
Connect CNE of PRB-MBB101CB6-M to CNE of PRB-DMY101CB6-M, and
CNF of PRB-MBB101CB6-M to CNF of PRB-DMY101CB6-M.
When connecting the boards, make sure that they are connected without tilt.
If you put pressure on one side of the board, that may cause any damage to the pins.

1 In-circuit Emulator Specifications

1-1 Functional specifications

Item		Specifications
Devices	MN101CXX Series	
Memory size	Emulation memory	256 Kbytes (standard) 480 Kbytes (maximum)
Break function	ROM break	Maximum 4 events Condition: Area and pass count specification
	RAM break	Maximum 4 events Condition: Specifications of area and pass count, bit mask, read/write/ access, match/mismatch, AND condition
	Sequential break	2-level
	Trace break	
	RAM access break	
	External break	1-bit
Trace function	Trace memory size	511 steps (standard)
	Trace get data	ROM address, RAM address, RAM data, R/W
	Trace mode	Normal mode, ROM/RAM area mode, delayed trigger mode
Timer function	Measurement mode	Execution time measurement mode, maximum execution time measure-ment mode
	Time measurement resolution	100ns
Trigger output function	Trigger output	One
RAM monitor function	Sample memory	32 bytes
	Display mode	Dump list mode, bit map mode
Performance measurement	Profile measurement	Run ratio (%) display
Clock	OSCI	Emulator and target
	XI	Emulator and target

1-2 Electrical specifications

Parameter	Rating
Emulator and probe supply voltage	0.5 to 6.0V
EXT. BREAK input voltage	–0.3 to 5.5V
Trigger output voltage	–0.3 to 5.5V
Trigger output current	±10mA

1-3 Environmental specifications

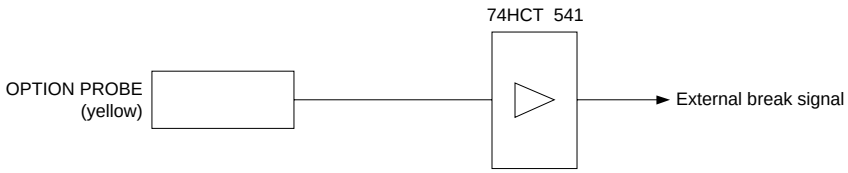
Parameter	Rating
Operating temperature Storage temperature	10°C to 30°C 0°C to 45°C
Operating humidity Storage humidity	20% to 80% 90% or less

1-4 External dimensions

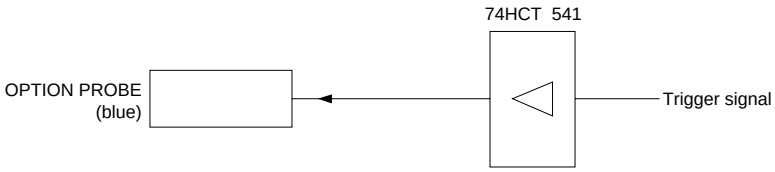
Length × width × height	130 × 100 × 40mm

1-5 Target interface

External break probe input (OPTION PROBE)



Trigger output (OPTION PROBE)



5.1 In-Circuit Emulator Specifications

5.1.1 Functional Specifications

Parameter		Specifications
Target device	MN101C/MN101E series	
Memory capacity	Emulation memory	1 MB (ROM, RAM)
Break functions	Execution address break	Up to 16 events Conditions: area specification, pass count specification
	Data access break	Up to 16 events Conditions:area specification, pass count specification, bit mask, read/write/access specification, match/not match specification
	AND break	One point
	Sequential break	9 levels
	Trace full break	Yes
	External break	8 bit (data comparison, mask enable)
Trace function	Trace memory capacity	32K frames
	Acquired trace data	Execution address, data address, data
	Trace modes	Normal mode, ROM/RAM area mode, delayed trigger mode, multi mode
Timer function	Measurement modes	Continuous measurement mode, partial one-shot mode, partial maximum mode, time watch mode
	Temporal resolution	50 ns
Trigger output function	Trigger output	8 bits (event output enable, RAM data output enable)
RAM monitor function	Sample memory	RAM area : regular monitoring ROM area : monitoring window display space
	Display mode	Bit display Byte display
Coverage function	CO coverage	ROM fetch or RAM access switching
Performance measurement function	Profile measurement	Displays execution time ratios (%)
Clock sources	OSC1	Target side only
	XI	Target side only

5.1.2 Electrical Characteristics

Parameter	Absolute maximum rating	Recommended operation voltage
Emulator supply voltage	-0.5 V to 6.0 V	4.8 V to 5.5 V
Probe supply voltage	Depends on the product type of microcomputer	Same as the left
External input pin input voltage	-0.5 V to 5.5 V	H: 2.0 V to 3.6 V L: -0.5 V to 0.8 V

Parameter	Rating
Trigger output voltage	H: Over 2.4 V L: Under 0.4 V
Trigger output current	± 24 mA

5.1.3 Environmental Specifications

Parameter		Rating
Temperature	Operating	10 to 30 °C
	Storage	0 to 45 °C
Humidity	Operating	20 to 80 %
	Storage	Under 90%

5.1.4 Dimensions

Length x Width x Height: 132 x 108 x 46 mm

1.4 Functional Specifications

Parameter		Specifications
Memory capacity	Emulation memory	1 MB (ROM, RAM)
Mapping	Measurement block	Switchable between emulation memory and external memory in bank (64KB)
Break functions	Software break	Up to 255 events
	Execution address break	Up to 2 events Conditions: area, pass count specification
	Data access break	Up to 2 events Conditions: area, data comparison <match/not match>, bit mask, access specification, pass count specification
	Sequential break	4 levels
	Trace full break	Yes
Trace function	Trace capacity	2K frames
	Acquired trace data	Execution address, data address, data, access status
	Trace modes	Normal mode, delayed trigger mode (Stop tracing after tracing for 1K frame after a trigger event occurs)
Timer function	Measurement mode	Execution time, Maximum execution time between events
	Resolution / Maximum measurement time	50ns/214s
Trigger output function		2 trigger pins (only pulse output)
Watch output function		All address spaces of the microcomputer (Note: The target software temporarily stops during accessing)

Oct 1, 2008
085-72E-630A0

Flexible Cable Adapter User's Manual

Software & Solutions Development Center
Corporate System LSI Division
Semiconductor Company
Panasonic Corporation

Introduction

- Composition of Flexible Cable Adapter
  There are two composition types by microcomputer's packages.
  Type 1. Socket cover (for emulator connection) is soldered to the EXB adapter.
  Type 2. EXB adapter and socket cover (for emulator connection) are independent.

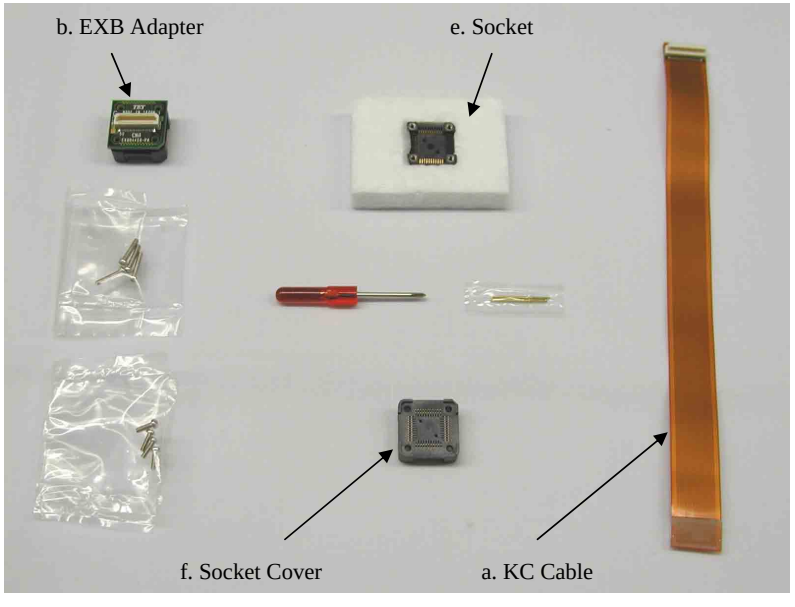
- Contents confirmation
  Please check the package components with Composition Examples and Composition Table.

- Connection
  When connecting to the emulator, please refer to Connection Example 1.
  When inserting the microcomputer, please refer to Connection Example 2.

- Detailed Socket information
  For more information about Socket (Technical drawings, Foot patterns, Cautions, Technical Information etc.), please visit the following website: Tokyo Eletech Corporation
  http://www.tetc.co.jp/e_index.htm

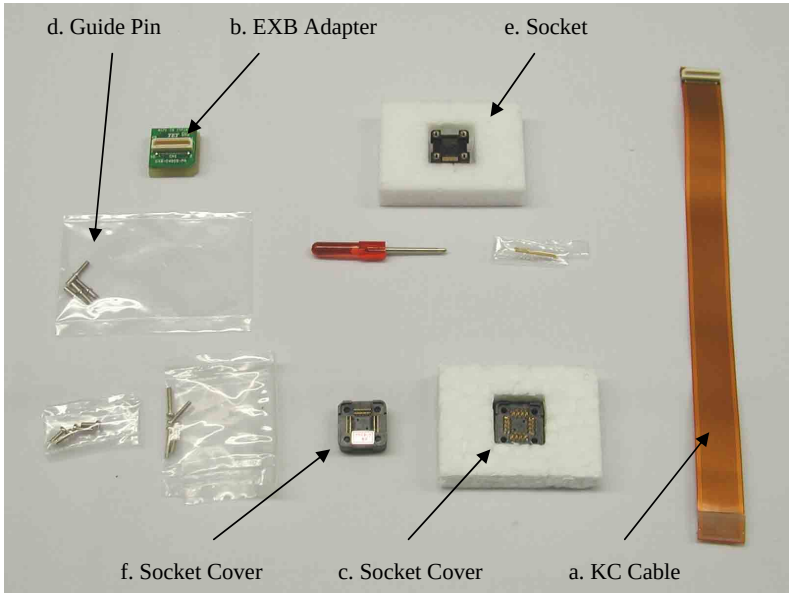
Composition Examples

Type 1



long screws : for b.EXB Adapter
short screws : for f. Socket Cover

Type 2



long screws : not use
short screws : for f. Socket Cover

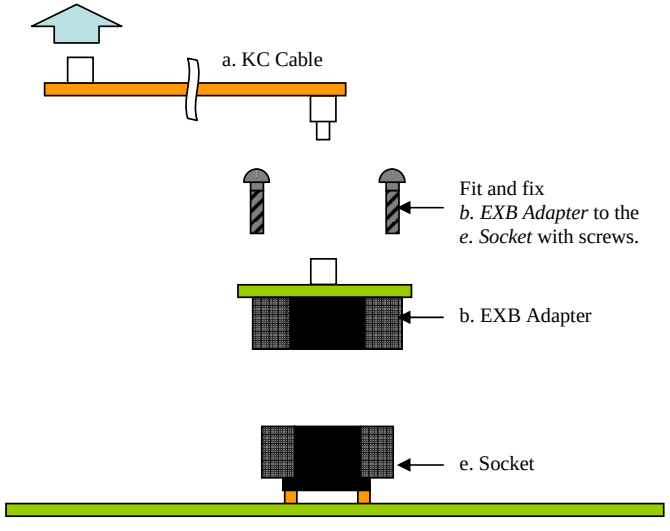
For more information about Socket (Technical drawings, Foot patterns, Cautions, Technical Information etc.), please visit the following website: http://www.tetc.co.jp/e_index.htm

Connection Example 1

When connecting to emulator

Type 1

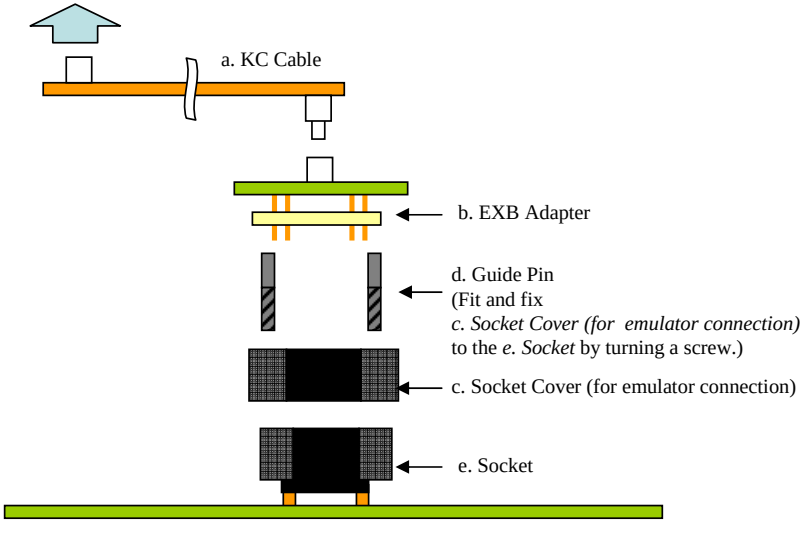
Connect to emulator



* Socket Cover is soldered to *b. EXB adapter.*

Type 2

Connect to emulator



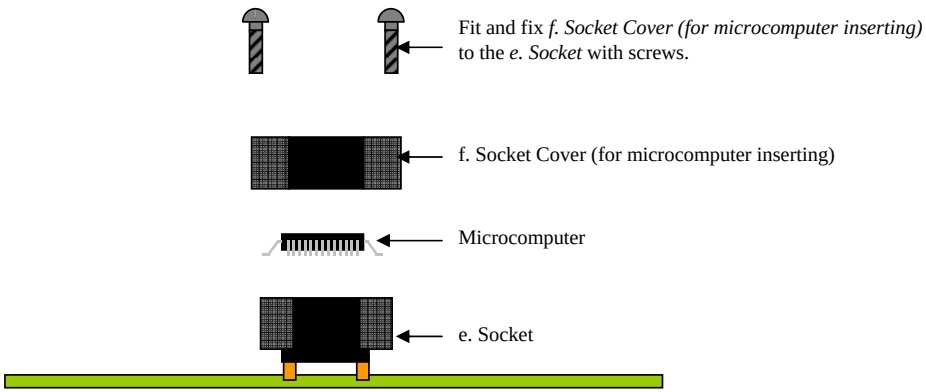
* *b. EXB Adapter* and *c. Socket Cover* are independent.

Please use *f. Socket Cover (for microcomputer inserting)* when inserting the microcomputer.
For connection when inserting the microcomputer, please refer to the following page.

Connection Example 2

When inserting microcomputer

Type 1, Type 2



For more information about Socket (Technical drawings, Foot patterns, Cautions, Technical Information etc.), please visit the following website: http://www.tetc.co.jp/e_index.htm
For emulator connection, please refer to the previous page.

Composition Table

Model Name	Target Package	a. KC Cable	EXB Sets					Composition Types
			b. EXB Adapter	c. Socket Cover (for emulator connection)	d. Guide Pin	e. Socket	f. Socket Cover (for microcomputer inserting)	
PRB-FAD-32BK	SSOP032-P-0300	KC200-50N (n=1)	PRB-EXB-32BK					Type 2
			EXB-32BK-PA	YSPACK32BK	YSGUIDE-S	NSPACK32BK	HSPACK32BK	
PRB-FAD-044SA	QFP044-P-1010	KC200-50N (n=1)	PRB-EXB-044SA					Type 1
			EXB-044SA-PA	-------	-------	NQPACK044SA	HQPACK044SA	
PRB-FAD-048SD	LQFP048-P2-0707	KC200-50N (n=1)	PRB-EXB-048SD					Type 2
			EXB-048SD-PA	YQPACK048SD	YQGUIDE-S	NQPACK048SD	HQPACK048SD	
PRB-FAD-064SA160	LQFP064-P-1414	KC200-50N (n=2)	PRB-EXB-064SA160					Type 1
			EXB-064SA-PA	-------	-------	NQPACK064SA160	HQPACK064SA160	
PRB-FAD-064SD	TQFP064-P-1010	KC200-50N (n=2)	PRB-EXB-064SD					Type 2
			EXB-064SD-PA	YQPACK064SD	YQGUIDE-S	NQPACK064SD-ND	HQPACK064SD	
PRB-FAD-080SB160	LQFP080-P-1414	KC200-50N (n=2)	PRB-EXB-080SB160					Type 1
			EXB-080SB-PA	-------	-------	NQPACK080SB	HQPACK080SB160	
PRB-FAD-100SB	QFP100-P-1818	KC200-80N (n=2)	PRB-EXB-100SB					Type 1
			EXB-100SB-PA	-------	-------	NQPACK100SB	HQPACK100SB	
PRB-FAD-100SD	LQFP100-P-1414	KC200-80N (n=2)	PRB-EXB-100SD					Type 2
			EXB-100SD-PA	YQPACK100SD	YQGUIDE-S	NQPACK100SD-ND	HQPACK100SD	
PRB-FAD-112SB	LQFP112-P-2020	KC200-80N (n=2)	PRB-EXB-112SB					Type 1
			EXB-112SB-PA	-------	-------	NQPACK112SB	HQPACK112SB	
PRB-FAD-128SD	LQFP128-P-1818	KC200-80N (n=2)	PRB-EXB-128SD					Type 2
			EXB-128SD-PA	YQPACK128SD	YQGUIDE-S	NQPACK128SD	HQPACK128SD	

For more information about Socket (Technical drawings, Foot patterns, Cautions, Technical Information etc.), please visit the following website: http://www.tetc.co.jp/e_index.htm
For composition example and connection example, please refer to the appropriate composition type.