APT-9400
Flying Probe Tester

Extension Scanner Board (ESC-9000)

Operator's Guide

TAKAYA CORP.

20001110.001

Preface

The Extension Scanner Board (ESC-9000) is used with the Takaya Fixtureless tester ***APT-9400CE/CJ***.

The Extension Scanner Board is designed to extend the capabilities of the tester and reduce the overall test time.

Please read this manual thoroughly before using this option. Then keep this manual handy for answers to any questions you may have.

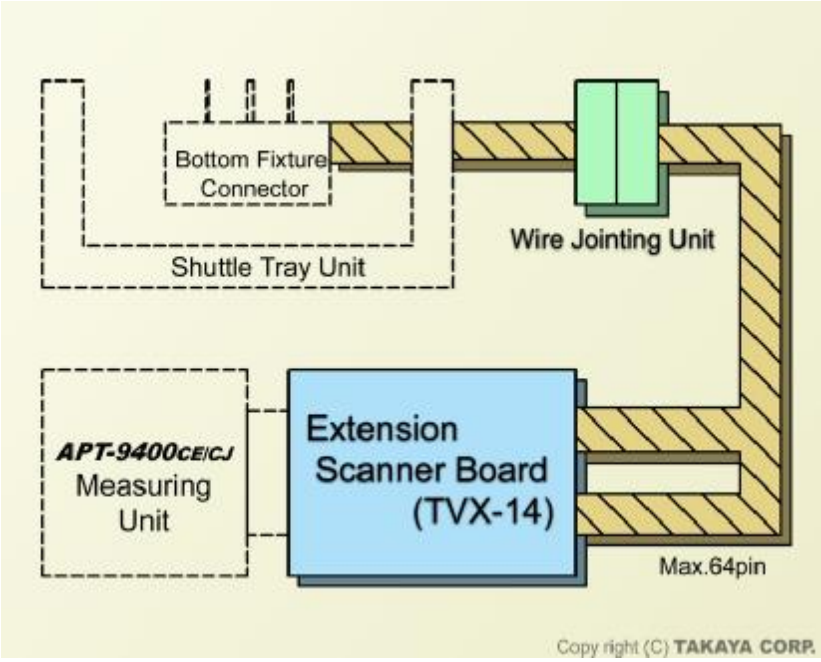
If you have any questions or thoughts you would like to share with us – we would like to hear from you.

NOTE:

The design of the product and software are under constant review and while every effort is made to keep this manual up to date, we reserve the rights to change specifications and equipment at any time without prior notice.

Outline

Through the use of the extension scanner board, the ***APT-9400CE/CJ*** is able to utilize up to 64 additional bottom side measurement probes (64 pins). In case of 4-wire Kelvin measurements, the maximum number of pins is limited to 32. Contacting the additional probes with the UUT is accomplished through the use of either a connector or with a bottom side probe jig (provided by the user). The combination measurement function can be utilized much more effectively with the additional probes than when using only the 4 independently moving probes. This will provide for a large reduction in overall test time.



System Configuration

1. HARDWARE

Extension Scanner Board: ESC-9000

- TVX-14 board (1) (slotted in the measurement rack)
- Connection cable HS-620 (2) (TVX-14 board to Wiring Jointing Unit)
- Connection cable HS-624 (2) (Shuttle Tray Unit ---)

Wire Jointing Unit: WJ-9000 (option)

It is necessary to use the Wire jointing Unit when connecting the measuring cable with the Shuttle Tray Unit.

2. SOFTWARE

The *APT-9400CE/CJ* system software (from V1.0-5k) corresponds to this option as standard.

Additional Functions

The Extension Scanner Board provides two new software functions.

1. Up to 64 bottom side pins can be input, edited, and/or released from within the edit windows.
2. Extension Scanner Board (TVX-14 board) self-diagnosis function is added.

Supplements

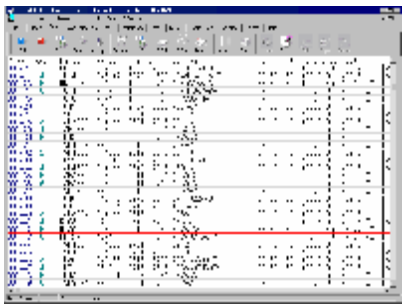
1) If a step that uses the Extension Scanner Board is substituted with one of the following types of tests, the step returns back to its original setup.
   - **q** Vision test
   - **q** IC special generation test
   - **q** IC Open test
   - **q** Digital transistor test
   - **q** FET test
   - **q** Pattern open check test
   - **q** Photo coupler test
   - **q** Kelvin measurement
   - **q** I/O test
2) If a test program that uses the Extension Scanner Board is converted into an APT-8400 file, all setup information for the Extension Scanner Board is automatically cleared.
3) If a test program that uses the Extension Scanner Board is loaded onto a tester with Takaya system software version 1.0-5j or earlier, all setup information for the Extension Scanner Board is automatically cleared.
4) The Extension Scanner Board can only be used with normal tests through the use of the standard *APT-9400CE/CJ* measurement unit. Do not use the Extension Scanner Board with any functional test application.
5) The Wire Joining Unit (option) is used to connect the Extension Scanner Board with the Shuttle Tray Unit. All wiring connections must be checked while the Shuttle Tray is in the test position.
6) The Extension Scanner Board allows for the use of up to 64 bottom probes (maximum). However, all cables from the Shuttle Tray Unit to the UUT, as well as their connections, are to be provided by the user.

The Step Edit function can be used to manage the Extension Scanner Board bottom side probes. You can change the data for a particular bottom side probe by simply searching for the bottom side probe number.

1. **Edit**

   Step Edit

   Step List



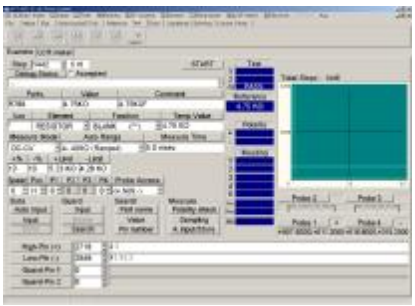
2) Test data evaluation menu (**Test à Review Step Data**)

   Step Data Review

   Step Data Test

   Evaluation of Reference Value

   Evaluation of Jump Steps

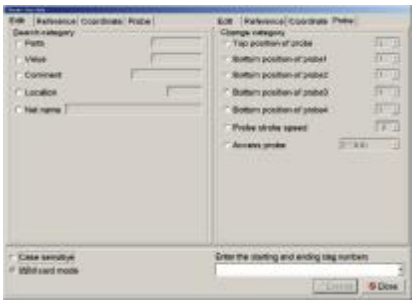


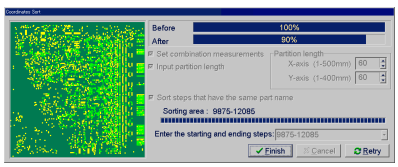
3) Other menu (**Tool**)

   Step Data Change

   Coordinates Sort

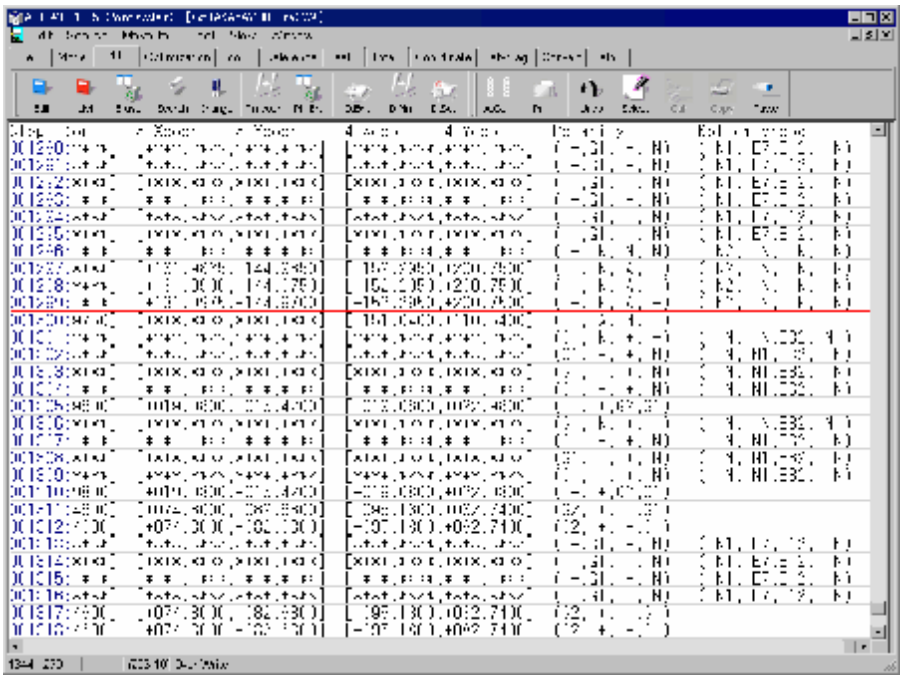
   Combination Set





Edit Function

When the Edit icon is selected, the steps that are using the Extension Scanner Board are displayed as shown in the window below (see “Bottom probe” column at the right side).

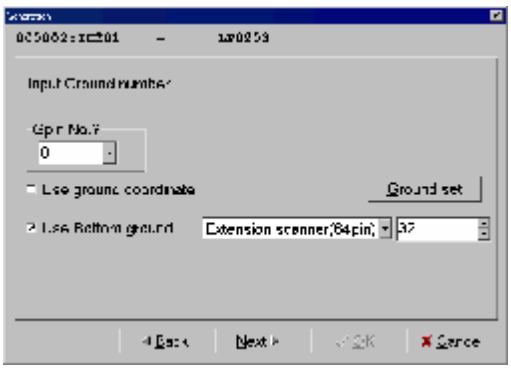


“Bottom probe” column

Standard underside probe (1 – 2) : N1, N2

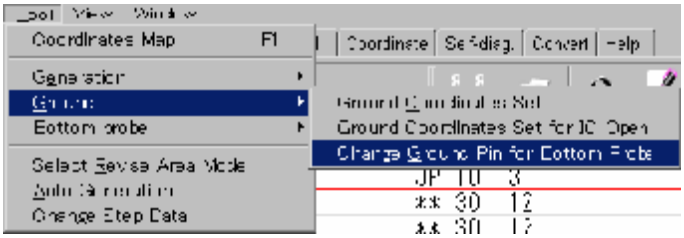
Extension Scanner Board (1 – 64) : E1 – E64

1) When test steps are automatically generated, the bottom side probes (E1-E64) are assigned to the ground pin.
When the ground pin number is input, for example, mark the check box titled ”Use Bottom ground”, and select “Extension Scanner(64pin)” then specify the pin number from the Extension Scanner Board.



（”Use ground coordinate” is displayed under Teaching system only.）

2) [**Tool**]→[**Ground**]

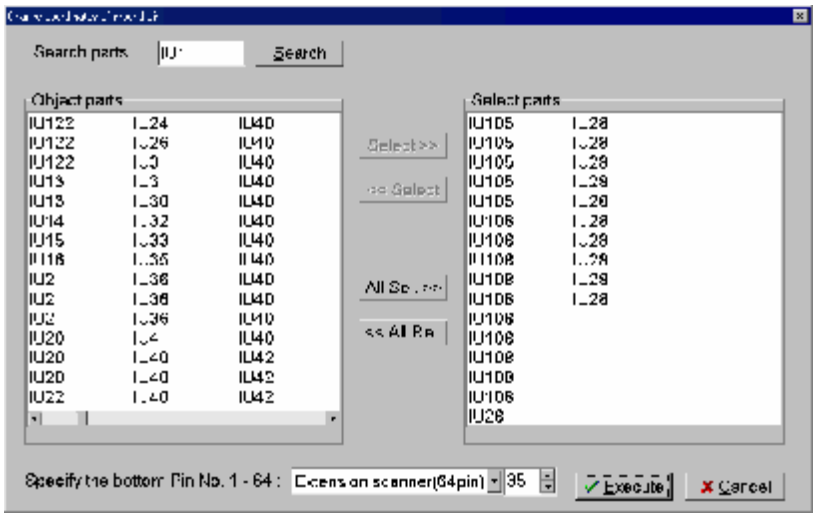


(**Ground Coordinates Set** is available only when using the Teaching System)

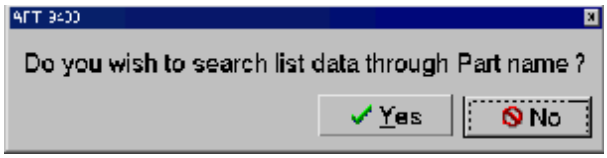
Change Ground Pin for Bottom Probe

In the following menu, the ground coordinates (pin number) can be switched between the standard bottom side probes and the bottom side probes that are managed by the Extension Scanner Board.

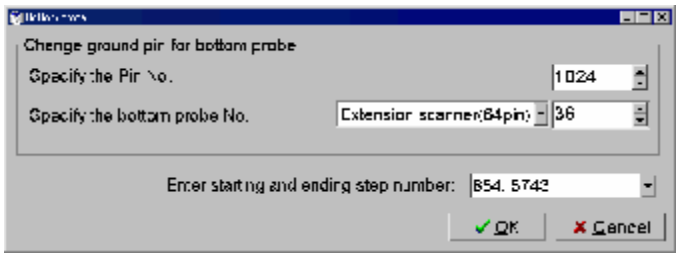
In the **Search Parts** box, input the name of the part that is currently using the ground pin that you want to change. Then click on the **Search** button. Next, select a part that is displayed in the left-hand window and move it to the right-hand window. Specify the bottom side probe number and click **Execute**.



The following window will appear if you are using the Point system. If you select **Yes**, the above window will be displayed. If you select **NO**, you can change the bottom probe assignment after selecting the appropriate pin number.



Specify the Pin number that you want to change. Specify the bottom probe number that you want to use. Enter starting and ending step numbers if necessary. Click **OK**.

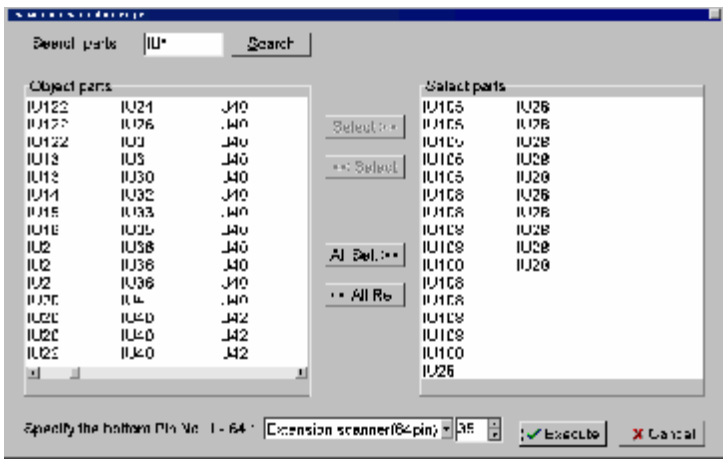


3) **Tool → Bottom probe**

Change Ground Pin for Bottom Probe

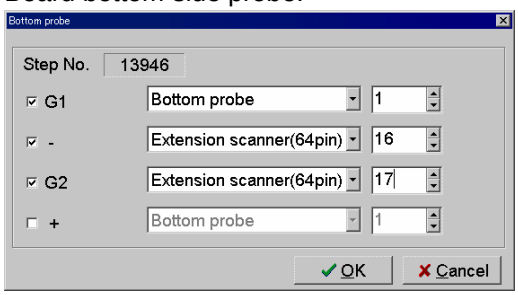
This function allows for easy transfer of the ground coordinates (pin number) to either the standard bottom side probes or the Extension Scanner Board bottom side probes.

In the **Search Parts** box, input the name of the part that is currently using the ground pin that you want to change. Then click on the **Search** button. Next, select a part that is displayed in the left-hand window and move it to the right-hand window. Specify the bottom side probe number and click **Execute**.



Set Bottom Probe

This function allows the topside probe that is used in any optional step data to be assigned to either the standard bottom side probe or the Extension Scanner Board bottom side probe.



Note:

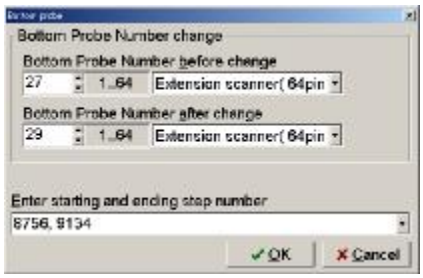
When the Kelvin measurement function is used with Extension Scanner Board bottom side probes, you cannot set +Sig and +Sens. Otherwise -Sig and -Sens together in the same block below :

Block-1 : 1-16 Block-2 : 17-32

Block-3 : 33-48 Block-4 : 49-64

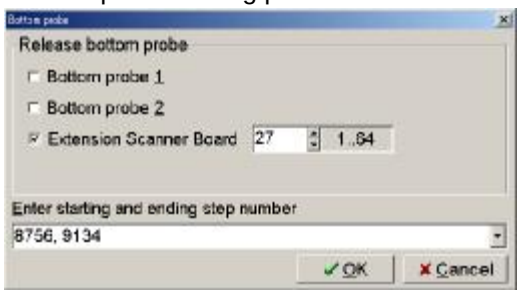
Change Bottom Probe

This function allows you to change either the standard bottom side probe or the Extension Scanner Board bottom side probe from one bottom side probe to another.



Clear Bottom Probe

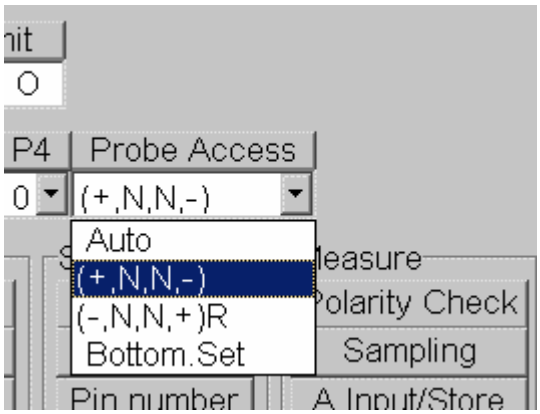
This function allows you to release either the standard bottom side probe or the Extension Scanner Board bottom side probe. The released step will be returned to the topside moving probes.



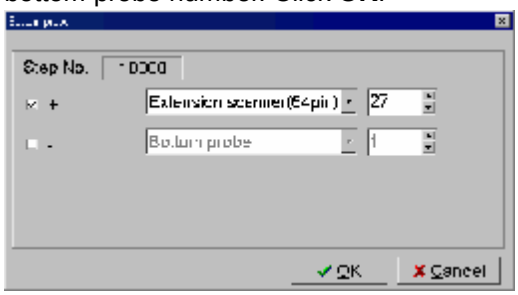
The **Bottom Set** function located in the **Probe Access** drop down window allows you to change the topside measuring probe to either the standard bottom side probe or the Extension Scanner Board bottom side probe.

Bottom Set

Select **Bottom Set**



Place a check in the appropriate polarity box (+ / - / G1 / G2 etc.). Specify the bottom probe number. Click **OK**.



Following the change, the probe access window is displayed as shown below:

Note:

When the Kelvin measurement function is used with Extension Scanner Board bottom side probes, you cannot set +Sig and +Sens. Otherwise -Sig and -Sens together in the same block below :

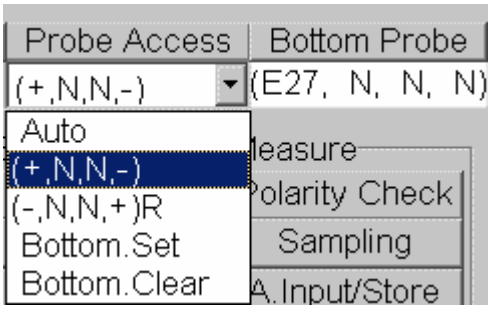
Block-1 : 1-16 Block-2 : 17-32

Block-3 : 33-48 Block-4 : 49-64

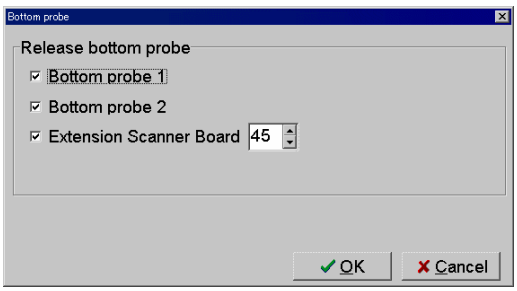
Also, it is not possible to set any terminal number used together with I/O command for the underside probe managed by the Extension Scanner Board.

Bottom Clear

The bottom clear function allows you to release either the standard bottom side probe or the Extension Scanner Board bottom side probe.



Place a check in the box for the probe that you want to release.



Other Menu

With the exception of the **List** menu and the **Evaluation** menu, the test steps that are assigned to the Extension Scanner Board bottom side probes are managed in the following manner.

1. Combination Set

Combination settings are available in the same manner as the standard bottom side probes.

2. Coordinates Sort

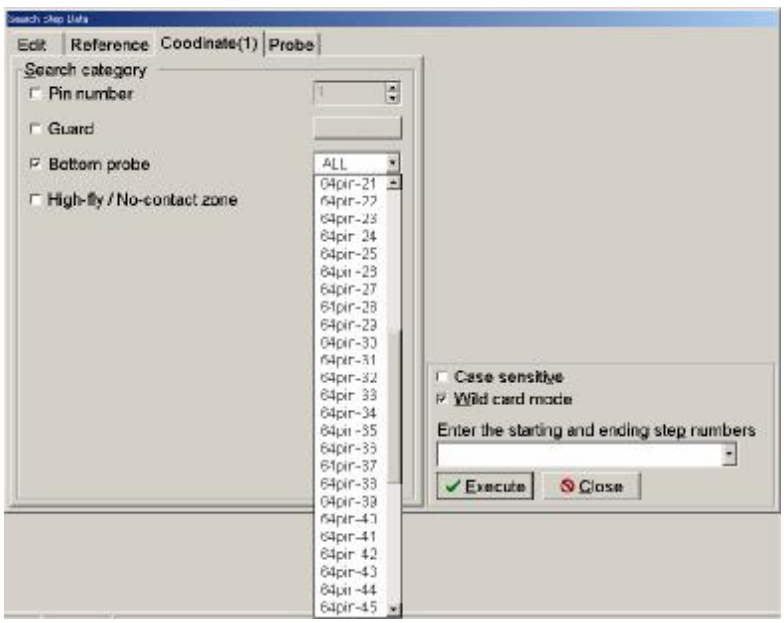
Following the use of the Coordinates Sort function, the test steps using the Extension Scanner Board bottom side probes are placed at the beginning of the test data. The same applies for the standard bottom side probe.

3. Group Addition

The Extension Scanner Board bottom side probes are not added when using the Group Addition function.

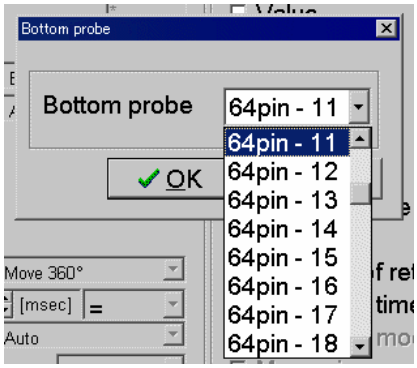
4. Search

Additional probe selections were added to the bottom probe **Search** category (i.e., 64pin-1).



5. Step Data Change

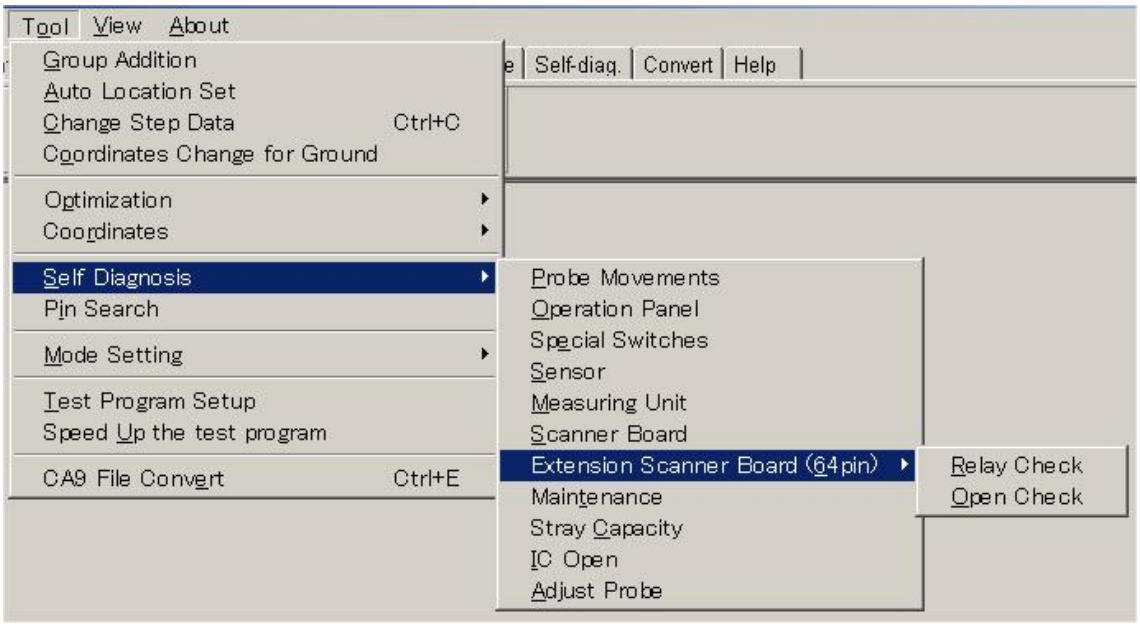
Additional probe selections were added to the bottom probe **Change** function (i.e., 64pin-1).



Self-diagnosis / Maintenance

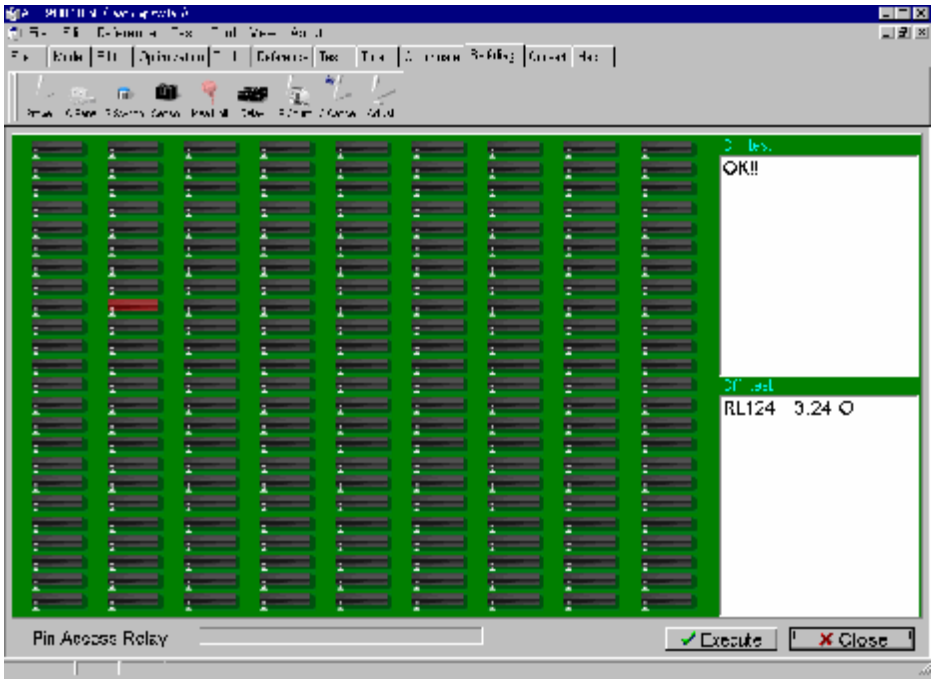
The Self-diagnosis function conducts a test of the Extension Scanner Board relays, as well as performing a wiring cable continuity check.

1. Relay Check
2. Open check (tests for short failure of wiring cables)
3. Pin search



Relay Check

Pressing **Execute** to test the Extension Scanner Board relays.

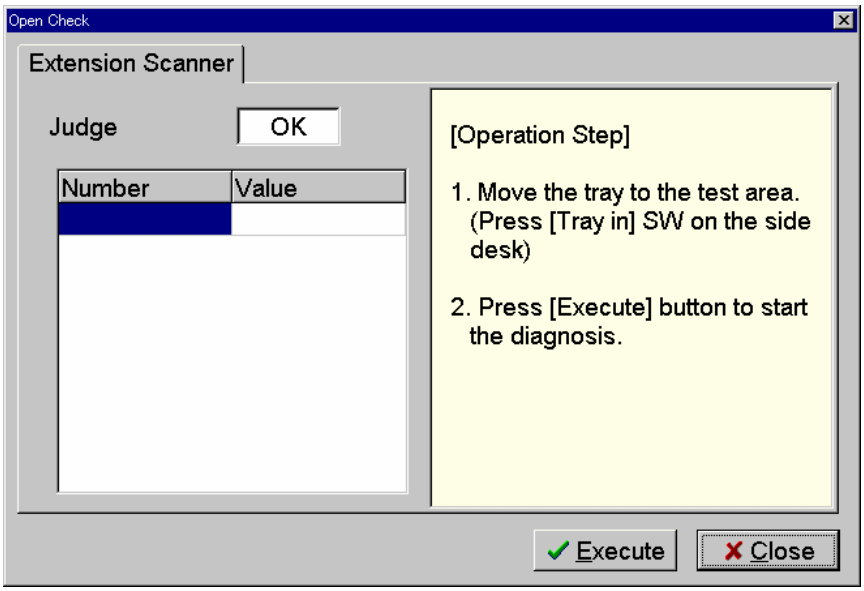


If a relays fails during the ON test, that relay is highlighted in blue and the failure information is displayed in the “On test” window.

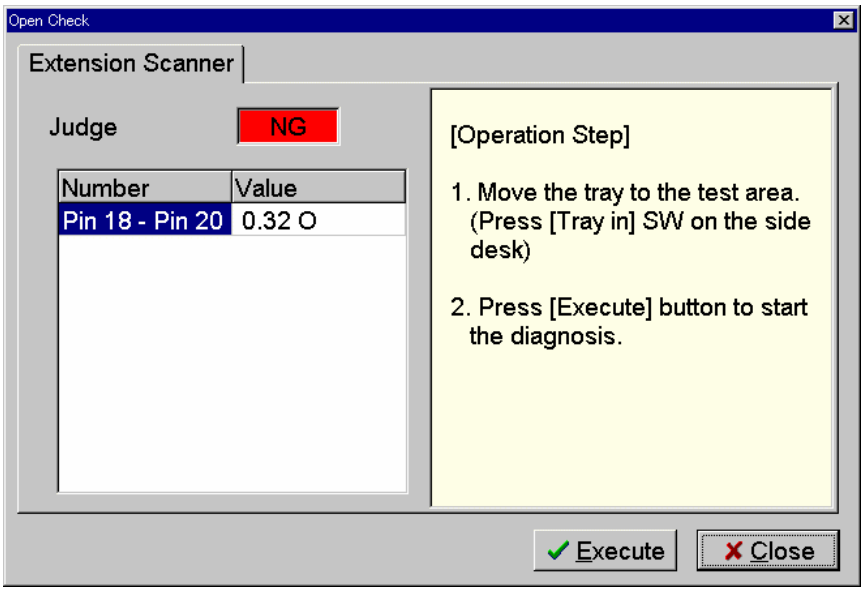
If a relays fails during the OFF test, that relay is highlighted in red and the failure information is displayed in the “Off test” window.

Open Check

The Open Check function tests for possible wiring cable “shorts” between the Extension Scanner Board and the Shuttle Tray Unit. This check must be performed after the Shuttle Tray Unit is moved into the test position.



Failures will be identified as shown below:



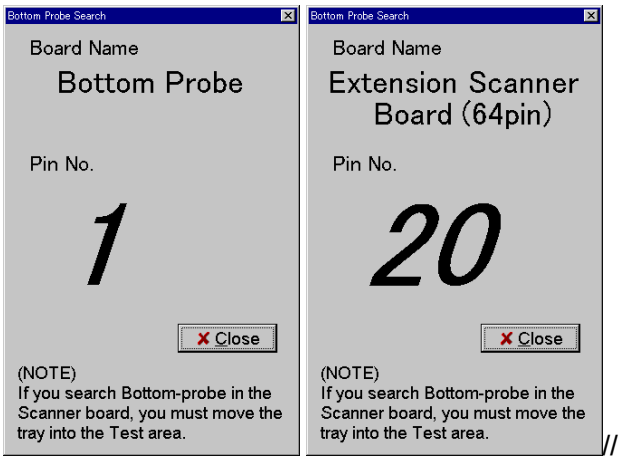
Note:

Prior to performing the Open check, be sure that all cables, connectors, and/or underside probe jigs are attached properly inside the Shuttle Tray Unit. Otherwise false failures are possible.

Pin Search

This function is used to identify the cable number inside the Shuttle Tray Unit. After moving the Shuttle Tray Unit into the test position, plug a tester lead cable into the tester terminal (+ pin) provided on the *APT-9400CE/CJ*, then connect the tester lead cable to the selected cable inside the *APT-9400CE/CJ*.

The cable number will be displayed as follows:



//

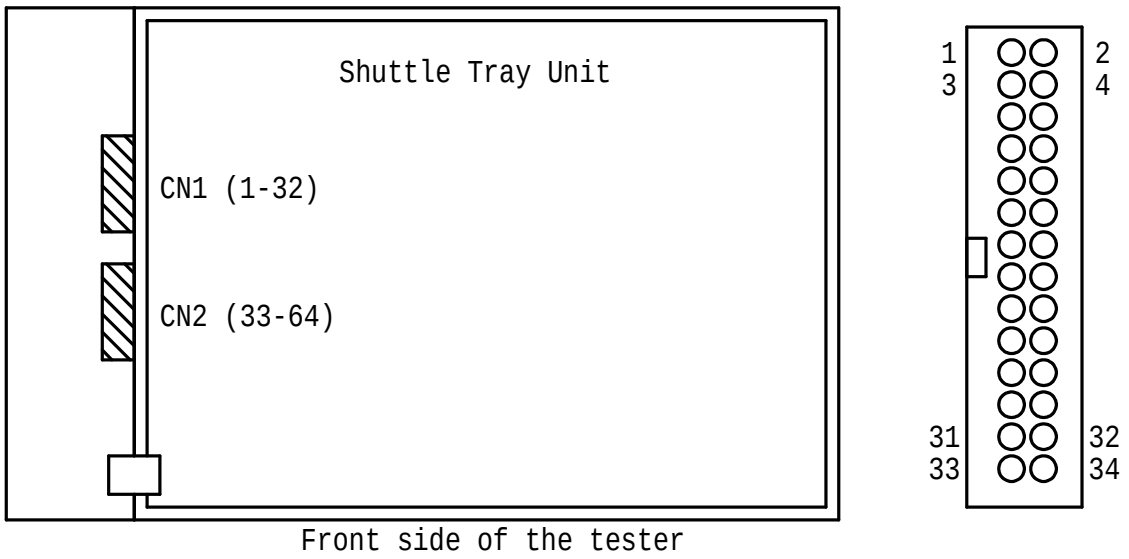
While performing this function, “Board name” identifies where the cable is connected and “Pin No.” identifies the individual pin.

Note:

Prior to performing a Pin search, you should perform the Open check test to verify that it passes. Otherwise you might receive inaccurate cable information.

The above window will close automatically if the pin number is displayed for more than one minute.

The Extension Scanner Board is connected to the Shuttle Tray Unit as follows.



Pin arrangement

CN1	Ex. Scanner Board	CN2	Ex. Scanner board
CN1-1	1	CN2-1	33
CN1-2	2	CN2-2	34
|	|	|	|
CN1-31	31	CN2-31	63
CN1-32	32	CN2-32	64
CN1-33	GND	CN2-33	GND
CN1-34	GND	CN2-34	GND

Extension Scanner Board Operation manual (Vol.2)

TAKAYA CORP.

Issued on: May 26, 2004
Made in Japan