

Programmable DC Power Supply Board (PDC-9000) Operator's Guide



Preface

The Programmable DC Power Supply Board (PDC-9000) is an option used together with the Takaya Fixtureless tester **APT-940*CE/CJ** to extend its capabilities.

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.

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<u>Outline</u>

With the PDC-9000 built-in the **APT-940****ceicJ*, you can apply the specified voltage (DC1.0V – 25.0V) on your PC boards, through the flying probes and/or bottom probes. Voltage and Current measurements can is made while power is applied to the PC boards.

System Configuration

The PDC-9000 consists of following items :

1. HARDWARE

Programmable DC Power Supply Board (TAKAYA TVX-13M)

2. SOFTWARE

The *APT-940*CE/CJ* system software (from V2.0-5) corresponds to this option as standard.

Additional Functions

With the PDC-9000 (TAKAYA TVX-13M) built-in the *APT-940*cE/cJ*, two additional functions are now available.

1. Apply Voltages

Using probes (including bottom probes), voltage can be applied to the UUT (DC1.0V - 25.0V).

2. Measure Current

Current can be measured while the voltage is applied to the UUT.

Applications

Examples of the types of tests that can be performed:

- 1. Relays (On/off test)
- 2. 3-terminal regulators (On test)
- 3. Small circuits (On test)

Specifications

Applied voltage	DC constant voltage: 1.0 – 25.0V (0.1V increments)
Max. Current	1A (current limit adjustable)
Current limit	7 ranges
	(5mA, 10mA, 25mA, 50mA, 100mA, 200mA, 500mA,1A)
Ammeter	4 ranges
	Range-1: 0.1 – 1.0mA
	Range-2: 1 – 10mA
	Range-3: 10 – 100mA
	Range-4: 100 – 1000mA

Software Settings

To use the PDC-9000, please set up the APT software properly as follows.

Option Mode		×
RS-232C Port No. Camera System Inline Application Signal Tower Setting Serial Number / Auto Data Loading Stamp Input/Output function of I/O step DDE Communication IC Open Menu Customize PCB extension support kit Vacuum unit	 ✓ Input/Output Function of I/O Step ✓ Jump all I/O steps following a failed step Failed step number to jump I/O step 1	
□ Workstation Mode	✓ <u>O</u> K X Can	cel

[Operating process]

- 1. Open the Option Mode window.
- 2. Select Input / Output function of I/O step menu.
- 3. Fill "Input / Output Function of I/O step" check box.
- 4. Click on [OK] button to close Option mode menu.
- NOTE: If "Jump all I/O steps following a failed step" check box was filled, the tester will not execute any I/O step following the fail step.

Available Functions

After set up Option mode properly, following functions become available:

- 1. Apply Voltage Function (IO/V command)
- 2. Power On Test Function (IO/P command)
- 3. Current Measurement Function (IO/C command)
- 4. Self-diagnosis for the PDC-9000

Function step (110 command))

Using I/O command (IO/V, IO/P, or IO/C), the PDC-9000 can apply DC constant voltage to the UUT. The I/O command step can generate by "I/O Command Generation" menu available on either Step Edit or Step list menu.

	This is I/O command to measure with internal measuring unit while applying voltage from Programmable DC Power Supply Board.
○ IO/C	

Notes When Using I/O Commands

- IO/P, IO/V and IO/C commands are to use for testing the PC board while applying the power voltage. So, if they were wrong used (ex. wrong location, polarity so on), it may heavily damage your PC boards or the measuring unit inside the APT-940*CE/CJ. Pay much attention to use this IO/W command under your responsibility.
- The IO command steps must follow the normal RCLD measurement steps. If the board was power up while there are some misplacement or short failure, it may possibly damage the board or the components.

Thus we prevent any I/O step following the fail step from its execution as described below.

□ when "Jump all I/O steps following a failed step" check box in Input/Output function of I/O step (Option mode) is filled, any I/O step following the fail step is not executed.

□ Using Group separation function, set up Group-1 for normal RCLD measurement steps and Group-2 for I/O command steps. And then, fill "Stop all testing" radio button (Master Mode > Failure Management > Stop testing when a group fail(s)). Under this condition, in case that Group-1 testing was judged fail, any I/O step in Group-2 is not executed.

- When the Point system is used with the IO/V and IO/C commands, the maximum pin numbers allowed is limited to 32,000.
- 4. If I/O command step (IO/P, IO/V or IO/C) is substituted with one of the following types of tests, the step returns back to its original setup.

Optical steps

- □ Combination test steps
- Special generation steps
- □ IC Open test steps
- Digital transistor steps
- FET steps
- Pattern open check test
- Opto coupler steps
- □ Kelvin measurement steps
- □ Zener steps
- Coordinates revision steps
- 5. I/O command steps cannot be used at Coordinates Sort function.
- 6. I/O command steps cannot be used at Parts Sort function.
- 7. I/O command steps cannot be used at Combination Measurements.
- 8. Once the I/O command step was released, other than "Parts", "Value" and "Comment" column are initialized and put back to the normal step.
- In case that the test program was converted to APT-8000 series (SD8/TA8/SW8 file save), their I/O command steps (IO/P, IO/V, or IO/C) are released. Other than "Parts", "Value" and "Comment" column are initialized and put back to the normal step.
- The reference value (Reference Current) for an IO/P command step cannot be input automatically during the Reference Value Input function. It must be setup in the Step Review menu.
- 11. The Data Average function does not average the voltage and/or current of the I/O command steps (IO/P, IO/V, or IO/C).
- 12. The Reference Value Generation function does not create the reference value for the I/O command steps (IO/P, IO/V, or IO/C).
- 13. Location name in the I/O command steps (IO/P, IO/V, or IO/C) is not changeable at Change step data function.
- 14. Location name in the I/O command steps (IO/P, IO/V, or IO/C) is not changeable at Group Addition function.
- 15. Location name in the I/O command steps (IO/P, IO/V, or IO/C) is not changeable at Auto Location Set function.

The IO/V command is used to apply DC voltage from the PDC-9000 to the UUT via two selected probes. And it can measure as a normal test step (RCLD) or a voltage using the other probes.

Any two of the four flying probes or the two bottom probes can be used to apply the voltage.

The IO/V command allows functional tests of relays, 3-terminal regulators, and other components on the UUT.

Supplements:

 If you would like to use the IO/V command with the bottom probes, the IO/V function must first be applied to the flying probes and then changed to the bottom side.

If a step is already setup to use the bottom probes, the bottom probe setting will be released automatically when it is changed to an IO/V command.

- 2. IO/V command can not be used with the guard function.
- 3. IO/V command is automatically input as "IO/V" in the "Loc." and "Aux." field.
- 4. The applied voltage is displayed in the "Volt" field of the Step Edit list.

CAUTION:

The IO/V command will apply voltage to the UUT.

If voltage is applied to the wrong location, if the wrong polarity is selected, or if the wrong voltage is used, the UUT, the component, and/or the measuring system of the tester may be seriously damaged. The user of this tester assumes all risks involved with using these commands.

IO/V Command Flowchart

- 1. Probe down
- 2. Apply the specified voltage
- 3. Wait for specified time
- 4. Measure
- 5. Remove the voltage
- 6. Probe up

IO/V Command Setup (Teaching system)

- 1. Open Step Edit menu.
- 2. Move the cursor to the step that you want to convert to an IO/V step.
- 3. Select: Tool \rightarrow IO Function \rightarrow IO Step

Note: If you use the **Use auxiliary reference point(s)** function, the following window will be displayed:



If it is not possible to convert the selected step, the following error message will be displayed:

This key could not use at Combination Measurements step. Please press any key !	Error window	
Please press any key !		This key could not use at Combination Measurements step.
✓QK		Please press any key !

4. The I/O Command Generation window appears:

	This is I/O command to measure with internal measuring unit while applying voltage from Programmable DC Power Supp Board.
0.10/0	

- 5. Click on IO/V radio button and then click on [Next] button..
- The X/Y coordinates input window will be displayed. Press the [TEST START] SW. Input the X/Y coordinates, then click on [Next] button.

1/U Command Generation		×	
Input the XY coordin	lates		
	X coor Y coor		
H-pin	+000.0000 +000.0000		
L-pin	+000.0000 +000.0000		
Voltage (+)	+000.0000 +000.0000		
Voltage (-)	+000.0000 +000.0000		
Press TART to begin set up.			
	⊴ <u>B</u> ack <u>N</u> ext ≻	X <u>C</u> ancel	

7. Input the **Wait** time (waiting time to start measuring), **Voltage** (applied voltage) and select the **Limit current**. Click on [OK] button.

I/O Command Generation		×
Other conditions	•	
Mait	0.5 ± 0.0.25.5[sec]	
a a cur	0.0 0.020.0[566]	
Voltago	12.0 1 0.0 25.00/	
voltage		
Limit current	100mA x	
Linic current		
	⊲ <u>B</u> ack ✓ <u>O</u> K <mark>×</mark> Can	cel

8. "IO/V" is now displayed in the "Aux." and "Loc." field.

000401: 2	D902	*
000402:	R280	39.
D00403:IO/V	R113	750
000404:		

IO/V Step Setup (Point system)

- 1. Open Step Edit menu.
- 2. Move the cursor to the step that you want to convert to an IO/V step.
- 3. Select: Tool \rightarrow IO Function \rightarrow IO Step

Note: If you use the **Use auxiliary reference point(s)** function, the following window will be displayed:



If it is not possible to convert the selected step, the following error message will be displayed:

See State and Second
This key could not use at Combination Measurements step.
Please press any key !
<u> </u>

4. The I/O Command Generation window appears:

 □ IO/O □ IO/I □ IO/T □ IO/M □ IO/M □ IO/P □ IO/C
--

- 5. Click on IO/V radio button and then click on [Next] button.
- 6. The Pin Number Input window will be displayed. Input the pin number in each field. Click on [Next] button.

0 Command Generation			Þ
Input the Pin Number			
Li ele			
H-pin	125		
L-pin	511 🛟		
Voltage (1)	E70 A		
Voltage (+)	5/3		
Voltage (-)	472 🛟		
		Coordinates	sinput
	(Deals		
	⊴ <u>B</u> ack	<u>N</u> ext ⊳	A Cancel

7. Input the **Wait** time (waiting time to start measuring), **Voltage** (applied voltage) and select the **Limit current**, then click on [OK] button.

I/O Command Generation		×
Other conditions		
		1
Wait	0.5 \$ 0.025.5[sec]	
Voltage	12.0 ‡ 0.025.0[V]	
Limit current	100mA -	
	⊲ <u>B</u> ack ✓ <u>O</u> K	X Cancel

8. "IO/V" is now displayed in the "Aux." and "Loc." field.

000401: 2	D902	*
000402:	R280	39.
D00403:IO/V	R113	750
000404:		

The IO/P command uses the PDC-9000 to apply DC voltage to the UUT via two bottom probes. The IO/P command allows multiple tests to be performed while the DC voltage is applied (Power on test).

The IO/P command can also be used to measure current. When using the Current Measurement Function (DC-IM), the current is measured after the voltage is applied to the UUT. If the current is above or below the specified tolerance, the tester immediately stops applying voltage.

Supplements:

- 1. The IO/P command is input as "IO/P" in the "Loc." and "Aux." field.
- 2. The following conditions will cause the tester to stop applying voltage:
 - □ Execute IO/P command with 0V
 - Testing finished or aborted
 - Current is out of tolerance
 - Use of the bottom probes
 - Execution of the IO/M, IO/T, IO/V, IO/C, or IO/U commands
- 3. If there is an IO/V step after an IO/P step, the IO/P command is stopped and the IO/V command is started automatically.
- 4. If a step is setup to use the bottom probes, the bottom probes are automatically released when the step is assigned the IO/P command.
- 5. The IO/P command cannot be used with the flying probes.
- 6. The applied voltage is listed in the "Volt" field of the Step Edit list.

CAUTION:

The IO/P Command will apply voltage to the UUT.

If voltage is applied to the wrong location, if the wrong polarity is selected, or if the wrong voltage is used, the UUT, the component, and/or the measuring system of the tester may be seriously damaged. The user of this tester assumes all risks involved with using these commands.

IO/P Command Flowchart

- 1. Apply the specified voltage
- 2. Wait for specified time
- 3. Measure the current (If "current check" is used)
- 4. Move to next step
- 5. Test finished or aborted
- 6. Stop applying the voltage

IO/P Step Setup

- 1. Open Step Edit menu.
- 2. Move the cursor to the step that you want to convert to an IO/P step.
- 3. Select: Tool \rightarrow IO Function \rightarrow IO Step

Note: If you use the **Use auxiliary reference point(s)** function, the following window will be displayed:

APT-9400		×		
Use board ref.point and aux.ref.point for alignment ?				
<u>✓ Y</u> es	<mark>\ N</mark> o	<mark>≭</mark> <u>C</u> ancel		

If it is not possible to convert the selected step, the following error message will be displayed:



4. The I/O Command Generation window appears:

1/O Command Select	[IC/P Step] This is I/O command to apply voltage from Programmable DC Power Supply Board continuously over plural steps.
	<u> </u>

- 5. Click on **IO/P** radio button and then click on [Next] button.
- 6. The Impressed Voltage Input window appears.

Input the **Voltage** and then click on [Next] button.

I/O Command Generation		×
Voltage	12.2 🔹 0.025.0[V]	
	<u>⊲ B</u> ack <u>N</u> ext ⊳ <mark>×</mark> ⊆	ancel

7. Select the **Bottom Probe Number** and then click on [Next] button.

1/0 Command Generation	×
Input the Bottom Pin Numb	per
Voltage (+) 1	12
Voltage (-) 2	1.2
☑ Current Check	
	<u>⊲ B</u> ack <u>N</u> ext ≻ <u>X C</u> ancel

NOTE: If the wrong polarity is input, the UUT can be damaged.

If you wish to use the Current Measurement function, fill **Current Check** check box.

8. Input the **Wait** time (waiting time to start the current measurement or move to next step) and select the **Limit current**. Click on [OK] button.

I/O Command Generation		×
Other conditions		
· · · · · · · · · · · · · · · · · · ·		1
) A (oit		
vvait	0.0 U 0.020.0[sec]	
Limit current	200mA -	
Linit ourient		
		-
	<u>B</u> ackOK X <u>C</u> ancel	

9. "IO/P" is now displayed in the "Aux." and "Loc." field.

000399: 4	R931	- 22
000400:10/V	R113	- 7!
000401:IO/P	*	*
000402: 1	ISH128	P-
000403: 2	D902	*
000404:	R280	- 39

The IO/C command is used to measure current. The PDC-9000 is used to apply DC voltage to the UUT via two selected probes.

The value of the measured current is used to judge the step.

This command can be used to measure the current consumption on the net or to verify over-current when there is a failure in the circuit on the UUT.

Supplements:

 If you would like to use the IO/C command with the bottom probes, the IO/C function must first be applied to the flying probes and then changed to the bottom side.

If a step is already setup to use the bottom probes, the bottom probe setting will be automatically released when it is changed to an IO/C command.

- 2. IO/C command cannot be used with the guard function.
- 3. IO/C command is automatically input as "IO/C" in the "Loc." and "Aux." field.
- 4. The applied voltage is displayed in the "Volt" field of the Step Edit list.

CAUTION:

The IO/C Command will apply voltage to the UUT.

If voltage is applied to the wrong location, if the wrong polarity is selected, or if the wrong voltage is used, the UUT, the component, and/or the measuring system of the tester may be seriously damaged. The user of this tester assumes all risks involved with using these commands.

IO/V Command Flowchart

- 1. Probe down
- 2. Apply the specified voltage
- 3. Wait for specified time
- 4. Measure the current
- 5. Judgement
- 6. Remove the voltage
- 7. Probe up

IO/C Step Setup (Teaching system)

- 1. Open Step Edit menu.
- 2. Move the cursor to the step that you want to convert to an IO/C step.
- 3. Select: Tool \rightarrow IO Function \rightarrow IO Step

Note: If you use **Use auxiliary reference point(s)** function, the following window will be displayed:



If it is not possible to convert the selected step, the following error message will be displayed:

Error window	
	This key could not use at Combination Measurements step.
	Please press any key !

4. The I/O Command Generation window appears:

	[IO/C Step] This is I/O command to measure current while applying voltage from Programmable DC Power Supply Board.
--	--

- 5. Click on **IO/C** radio button and then click on [Next] button.
- The X/Y coordinates input window will be displayed. Press the [TEST START] SW. Input the X/Y coordinates, then click on [Next] button.

ommand Generation		
Input the XY coo	ordinates	
	X coor Y coor	
Voltage (+)	+000.0000 +049.6000	
Voltage (-)	+007.6000 +054.8000	
	rer	
Press ST	ART to begin set up.	

7. Input **Wait** time (waiting time to start measuring), **Voltage** (applied voltage) and select the **Limit current**, then click on [OK] button.

I/O Command Generation		×
Other conditions		
)A(oit		
vvan	0.0 0.020.0[sec]	
Voltage	12.0 10.0.25.00/	
voltage		
Limit current	100mA -	
	<_BackOKX C_ancel	

8. "IO/C" is now displayed in the "Aux." and "Loc." field. 014301: 1 ID36 P3-4 DAL 014302: 2 014303:IO/C ID34 3Pin DAL 85. TP10 127 014304: ж * ж 014305:

IO/C Step Setup (Point system)

- 1. Open Step Edit menu.
- 2. Move the cursor to the step that you want to convert to an IO/C step.
- 3. Select: Tool \rightarrow IO Function \rightarrow IO Step

Remarks: If you use the **Use auxiliary reference point(s)** function, the following window will be displayed:

11 1 0400		
Use board ref.point and aux	.ref.point for	alignment ?
✓Yes	<u> </u>	<mark>≭</mark> <u>C</u> ancel

If it is not possible to convert the selected step, the following error message will be displayed:

Error window		
	This key could not use at Combination Measurements step.	
	Please press any key !	

4. The I/O Command Generation window appears:

 □ IO/M □ IO/V □ IO/P ○ □O/C
--

- 5. Click on **IO/C** radio button and then click on [Next] button.
- 6. The Pin Number Input window is displayed. Input the **Pin Number** in each field, then click on [Next] button.

I/O Command Generation		×
Input the Pin Number		
Voltage (+)	125	
Voltage (-)	993 🗘	
		Coordinates input
	⊲ <u>B</u> ack	<u>N</u> ext ≻ X <u>C</u> ancel

7. Input **Wait** time (waiting time to start measuring), **Voltage** (applied voltage) and select the **Limit current**, then click on [OK] button.

I/O Command Generation		×
Other conditions		
		1
147.11		
vvait	0.5 U.U25.5[sec]	
Voltage	12.0 U.U25.0[V]	
Limit current	100mA 🚬	
	<u>B</u> ackOKX <u>C</u> ai	ncel

8. "IO/C" is now displayed in the "Aux." and "Loc." field. 014301: 1 ID36 P3-4 DAL 014302: 2 014303:IO/C ID34 3Pin DAL 85. TP10 127 014304: ж * ж 014305:

We hereunder explain the I/O command step displayed on the step list.

1. "Aux." field

The "Aux." field will appear as shown in the image below:

😭 APT-9400	1.0-5k (#	Point sy:	stem) - [E¥TAKA)	'A¥tamata	ma.SW9]									
🚼 <u>E</u> dit S	earch	Move	e to <u>T</u>	<u>iool V</u> i	ew <u>W</u> ii	ndow										
File Mo	de Ed	lit 🛛 🔾	Optimizat	ion Too	I Refe	erence	Test	Total	Coordin	nate	Self-diag	g. Com	vert Hel	p		
_	-	1	24	ų	14	1	41		-20	6			n,		1	20
Edit	List	Erase	Search	Change	Pin coor.	Pin Er.	D.Edit	D.Pin	D.Se	t]	A.Gen.	Print	Undo	Sele	ect	Cu
Step :	Aux.	Par	ts	Valu	ie H-	pin	L-pin	Comm	nent				Loc	EL	F.	+,
000001:	10/C	_ I /0)-C	24V		125	993	Curr	ent	Mea	asurin	g	10/C	D	**	1(
000002:	10/٧	- I/C)-V	10V		110	211	Volt	age	App	oly		IO/V	*	**	10
000003:	IO/P	1/0)-P	12V		*	*	Powe	r On	Te	əst		IO/P	D	**	10
000004:																_

Clicking on the **Value field** of an I/O step will display the **Limit current** and **Wait time**.

2. "Volt" field

The "Volt" field will display the applied voltage for the I/O step.

Edit Search Move to, Tool View Window	
File Mode Edit Optimization Tool Reference Test Total Coordinate Self-diag. Convert Help	
🕒 🕒 🍡 🛸 🖳 🕂 🍡 🥔 🖊 🗫 💷 🚓 🧨	
Edit List Erase Search Change Pin coor. Pin Er. D.Edit D.Pin D.Set A.Gen. Print Undo Select	Cut
Step : Reference Test Mode Range Time Volt 1-Xcoor	1.
000001: 60.0 mA 58.0 mA DC-IM Range 3 0.0 msec 24.0V [+019.6800),+(
000002: 10.00 V 10.2 V DC-VV Range 3 1.0 msec 10.0V [+006.8000),+(
000003: 30.0 mA 31.0 mA DC-IM Range 3 1.0 msec 10.0V [****.****	्, *>
000004:	

3. "Polarity" field

The "Polarity" field will display the probe's polarity while the voltage is applied.



P+:	+ (High	pin)
-----	---------	------

- P-: (Low pin)
- N1 : Bottom Probe-1
- N2 : Bottom Ptobe-2

The I/O command step is displayed on Step Review menu as follows.

1. IO/V step

The voltage is applied via the two selected probes (P+, P-) and measured with the other two probes.



The following fields have been added to the Step Review window:

Voltage

Displays the applied voltage of 0.1 – 25.0V (adjustable in 0.1V increments)

🗆 Limit i

Displays the limit current of 5, 10, 25, 50, 100, 250, 500mA or 1A

□ Func. Wait

Displays the waiting time of 0 - 25.5s (adjustable in 0.1s increments)

Πi

Displays the measured current following the wait time.

Warning Function for the Limit Current Over

The "Limit Current Over" error is displayed whenever the measured current exceeds the limit current.

If the waiting time is not long enough, it is possible that an irregular current will be measured (current that flows through the circuit immediately after applying voltage).

It is recommended that you adjust the waiting time accordingly so that this type of irregular current is not measured.

2. IO/P step

Voltage is applied from the bottom probes during multiple test steps.

If the Current Measurement function is used, the current is then measured following the specified wait time. If the measured current is not within the specified tolerance, the applied voltage is removed and the test moves to the next step.

() APT-9400 10-5k (Point system) - [EXTAKAYANDFunction SW9] () A Target [O'Target [O'Target [O'Delector [E]]) agence [O'Descent [D'Descent [O'Descent [O'D	
File Mode Edit Optimization Tool Reference Test Total Coordinate Self-diag. Convert Help	LUISTORE ETG
DMode Review Test LOBester Review TMode Search	
Examine LCR meter	
Step 3 C Accepted START Test	Total Steps: 3
Parts Value Comment Reference 1 30.0 mA 2 IVO-P 12V Power_On_Test 30.0 mA 30 pASS 1000	
Loc Element Function Temp. Value Polarity IO/P DIODE BLANK (**) \$ 30.0 mA *	
Measure Mode Measure Range Measure Time Reading 600	
+% -% +Limit -Limit Voltage Limit i Func.Wait 2 10 10 33.0 mA 27.0 mA 10.0 V 50 mA 0.1 sec 3 4	
Speed Pos P1 P2 P3 P4 Probe Access Bottom Probe 5 0 0 H V 0 V 0 V 0	0.5 1.0
Data Guard Search Measure Min Auto Input Input Part name Polarity Chack Max	
Store Search Pin number A Input/Store	

If the measuring mode changes from "DC-IM" to "No-Use", this indicates that the Current Measurement function is not being used.

In that case, voltage will be applied and then the test will move to the next step.

The following fields have been added to the Step Review window.

Voltage

Displays the applied voltage of 0.1 - 25.0V (adjustable in 0.1V increments)

🗆 Limit i

Displays the limit current of 5, 10, 25, 50, 100, 250, 500mA or 1A

□ Func. Wait

Displays the waiting time of 0 - 25.5s (adjustable in 0.1s increments)

3. IO/C step

Voltage is applied and current is measured via two probes.

The test is judged a "fail" if the measured current is not within the specified tolerance.

APT-9400 1.0-5k. (Point system) - [EVITAKAYANDFunction.SW9]		- 10
e Mode Edit Optimization Tool Reference Test Total Coordinate Self-diag Convert Help	ense Lugstore Etc j	-19
Divide Review Test LCRmeter Revise TMode Search		
kamine LCR meter		
	T.1.1.01	
Step 1 C Accepted START Test	Total Steps: 3	
Parts Value Comment Reference 2	1	
O-C 24V Current_Measuring 60.0 mA Jg PASS 100.0		
Loc Element Function Temp.Value Polarity		
0/C DIODE BLANK (**) 60.0 mA *		
Measure Mode Measure Range Measure Time		-
DC-IM 100 mA (Range3) 0.0 msec Reading 50.0		
+% -% +Limit -Limit Voltage Limit Func Wait 2 60.0 mA		
0 10 66.0 mA 54.0 mA 24.0 V 100 m/ 0.5 sec 3 60.0 mA		
peed Pos P1 P2 P3 P4 Probe Access 5		0
0 • H • 0 • 0 • 0 • 0 • (P+,N,N,P-) • 6	0.0	0
Data Guard Search Measure Min 60.0 mA Probe 2	Probe 3	
Auto Input Part name Polarity Check Max 60.0 mA		1
Input Delete Value Sampling Av 60.0 mA Probe 1	P+ Probe 4	P-
Store Search Pin number A.Input/Store [+019.6800,+03	4.0000][+092.5400,+025.9	100
H-pin (High Pin) L-pin (Low Pin) G-P1 (Guard Pin1) G-P2 (Guard Pin	2)	
2802 #3342		

The following fields have been added to the Step Review window.

□ Voltage

Displays the applied voltage of 0.1 – 25.0V (adjustable in 0.1V increments)

🗆 Limit i

Displays the limit current of 5, 10, 25, 50, 100, 250, 500mA or 1A

Func. Wait

Displays the waiting time of 0 - 25.5s (adjustable in 0.1s increments)

Procedures during Testing

😭 APT-9400 1.0-5k (Point system) - [D¥WINNT¥Profiles¥tamaru¥デスクトップ¥Tamaru@Soti	ec¥IFM_Top_End¥IFM_Top_End.SW9]
🧊 Eile Edit Reference Test Tool ⊻iew About Aux	_ <u>-</u>
File Mode Edit Optimization Tool Reference Test Total Con	ordinate Self-diag. Convert Help
DMode Review Test LCRmeter Revise T.Mode Search	
Total	(à, 27 10, 2000 Pass Fail Judgement
I otal Passed Failed Fail%	14:16:16 G1 1 0 Pass
Dally I I 0 0.00	Output FAIL ALL
Aggregate 5 1 2 00.07	Printer Off Off
D:\WINNT\Profiles\tamaru\fffXfNfqfbfv\Tamaru@S	RS232C Off Off
Test Time 0 Sec STOP START	Disk Off Off
Stan	Condition
Sor Eail Eail count	Ser Fail Stop Off Auto Rotost
	Revise func. Off
Graphics	Message
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· ·	
	DACC
	PASS

When using the IO/P and IO/C Command, the following judgements are used during normal testing.

- When the measured current exceeds the +% tolerance The judgment is UP-NG
- When the measured current is less than the –% tolerance The judgment is LOW-NG
- When the measured current exceeds its limit current The judgment is L.OVER (limit over)

Supplements:

- 1. If there is an IO/P and/or IO/C step in the test program, the **Retest function** is automatically disabled.
- If the limit current (Limit i) value is less than "+% tolerance" value, and the measured current is within the +% tolerance, the test might be judged as L.OVER.

Please make sure that the limit current exceeds the +% tolerance.

The self-diagnosis function for the PDC-9000 is available in the following menu:

Tool View About Group Addition Auto Location Set Change Step Data Optimization	Ctrl+C	dinate Self-diag. Convert Help ▶
Coo <u>r</u> dinates		•
<u>Self Diagnosis</u> Pin Search <u>M</u> ode Setting <u>T</u> est Program Setup Speed <u>U</u> p the test program		 Probe Movements Operation Panel Special Switches Sensor Measuring Unit Scanner Board
Extension CA8 File Convert	Ctrl+@	Programmable <u>DC</u> voltage Probe Count Stray <u>C</u> apacity IC Open Adjust Probe Adjust Camera

 $\mathbf{Tool} \rightarrow \mathbf{Self} \ \mathbf{Diagnosis} \rightarrow \mathbf{Programmable} \ \mathbf{DC} \ \mathbf{voltage}$

Click on [Execute] button to begin the self-diagnosis.

Programmable DC Self T	ïest			X
Voltage	ОК	Mode	Value	Measure
Current	ОК			
Limit	ОК			
- Evocuto	Y Class			
		1		

TAKAYA CORP.

APT-940* Programmable DC Power Supply Board (VOL.2)