

DENSO ROBOT USER MANUAL (Additional information)

Enhanced Operating Panel (Version 2.32)

DENSO WAVE has updated main system software designed for DENSO robot series to Version 2.32.

This book is a supplement to the “TP Operating Panel Editor for RC7 Controller, Panel Designer User's Manual”. It describes newly added and updated functions. Use this supplement together with the “Panel Designer User's Manual”.

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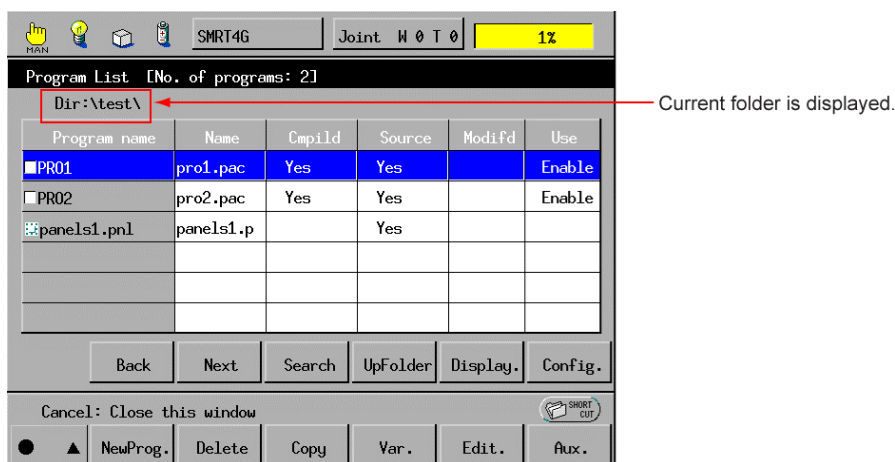
1. Panel Start Setting

The teach pendant provides the following setting for displaying operating panel screen software when the controller boots or pressing [F5 Panel].

New panel start setting

0:Panel start setting parameter	1:Start-Panel Path setting	Displaying operating panel screen software
0	-	When the controller boots, the panel does not display. And when pressing [F5 Panel], the panel described in the current folder* of the program list screen displays.
1	Necessary	When the controller boots, the panel specified by the "Start-Panel Pass setting" displays automatically. And also when pressing [F5 Panel], the panel described in the current folder of the program list screen displays.
2	Necessary	When the controller boots, the panel does not display. And when pressing [F5 Panel], the panel specified by the "Start-Panel Pass setting" displays.
3	Necessary	When the controller boots, the panel specified by the "Start-Panel Pass setting" displays automatically. And also when pressing [F5 Panel], the panel specified by the "Start-Panel Pass setting" displays.

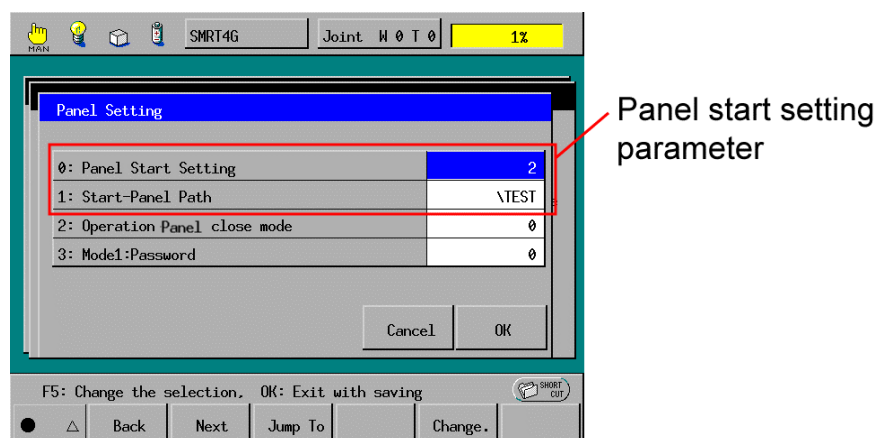
Tip: The screen below shows the "current folder of the program list screen".



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Setting method

Step 1 Press F6 (Set), F7 (Options.), and F9 (Panel) to display the following screen.



Step 2 Set the [0: Panel Start Setting] parameter by referring the table described on previous page. Select the parameter from 0 to 3.

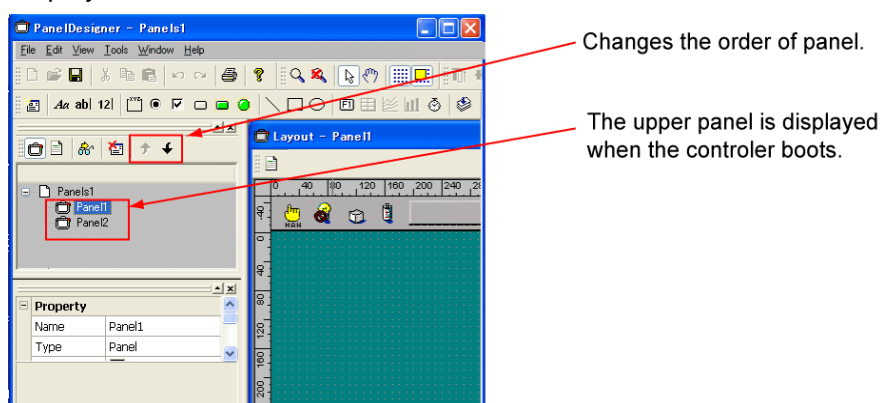
Step 3 If the [0: Panel Start Setting] parameter is 1,2 or 3, specify the [1: Start-Panel Path] parameter. The [Start-Panel Path] means the path used in.

Example: \ TEST

The path is delimited by “\”. If above example, displays the operating panel in the “TEST” folder.

If the [Start-Panel Path] is not specified, the path means the root (i.e.: top folder).

Note1: The [1: Start-Panel Path] can set the path only. If several panels are used, the upper panel at compiling is displayed first when the controller boots.



Note2: If restarting the panel, the last transferred panel displays when executing the “PAGE_CHANGE” command inside the [Start-Panel Path] (or inside the current folder of program list).

If restarting the panel, the panel specified the in the [Start-Panel Path] (or in the current folder of program list) displays when executing the “PAGE_CHANGE” command outside the [Start-Panel Path] (or outside the current folder of program list).

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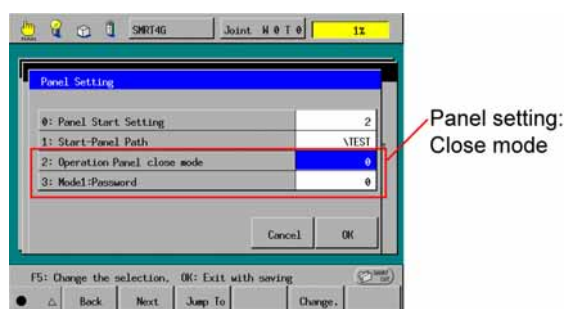
2. Panel Close Mode Setting

To close the operating panel and return to the teach-pendant-screen, set the panel close mode described in the table below.

Panel close mode	Operation to close the operating panel and return to the teach-pendant-screen
0: [SHIFT+CANCEL] (Default)	Hold down the “Shift key” and press the “Cancel key”.
1: [SHIFT+CANCEL + Password]	Hold down the “Shift key” and press the “Cancel key”, and input the “Password”. The “Password” is set by the “Mode1: Password] parameter setting described in Step 3.
2: [CANCEL]	Press the “Cancel key”.

Setting method

Step 1 Press F6 (Set), F7 (Options.), and F9 (Panel) to display the following screen.



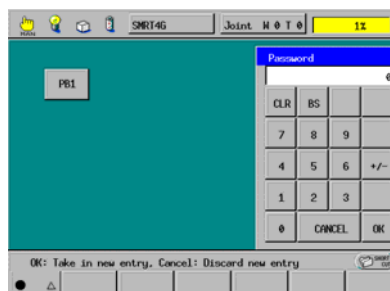
Step 2 Set the [2: Operation panel close mode] to close the panel by selecting 0, 1 or 2 described below.

- 0: [SHIFT + CANCEL]
- 1: [SHIFT + CANCEL + Password] (STEP 3 is necessary.)
- 2: [CANCEL]

Step 3 (1) If “1: [SHIFT+CANCEL+Password]” is selected, set the “Mode1: Password] parameter by specifying the password.

Note: The password can be specified as numeral from “-2147483648 to 2147483647.

(2) Hold down the “Shift key” and press the “Cancel key”, and the password input screen displays.



(3) Input the password and press [OK], and the operating panel closes.

Note: If you forget the password, input 273958314.

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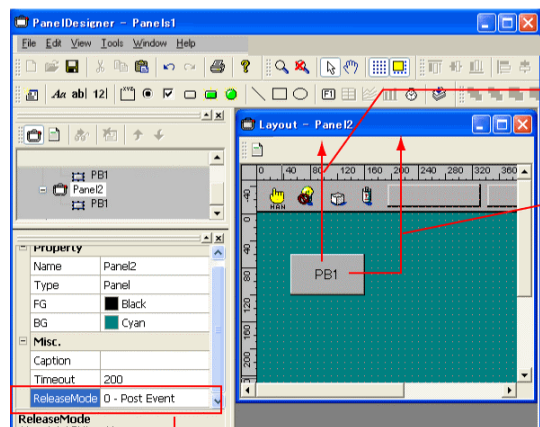
3. RELEASED event setting

3.1 Release-Mode

The “Release-Mode” was added to the property screen. The executable condition of “RELEASED” event can be set.

Selection of Property	Execution of “RELEASED” event	Remarks
0-PostEvent	Even if the finger is departed after it moves outside part area in pressed-part-state, the “RELEASED” event is executed.	Default in Version 2.32 or later
1-No Event	Only when the finger is departed from the pressed-part in the original position, the “RELEASED” event is executed.	Version 2.31 or before

“RELEASED” event setting



Selection of Property	Executable condition of "RELEASED" event
"1-no Event"	Only when the finger is departed from the pressed-part in the original position, the "RELEASED" event is executed.
"0-Post Event"	Even if the finger is departed after it moves outside of part area in pressed-part-state, the "RELEASED" event is executed.

Selection of Property

Note: The “Release-Mode” parameter is only one for one panel file. This parameter is applied for all parts with the “RELEASED” event in the panel.

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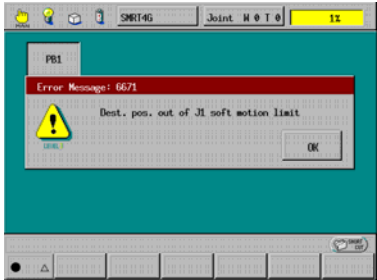
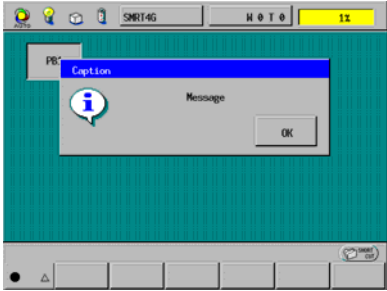
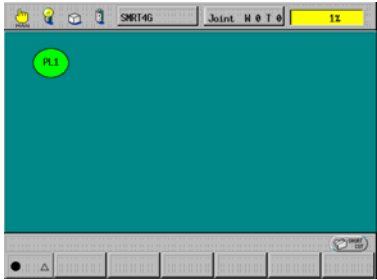
3.2 Notes on “RELEASED” event

When another screen appears on the current operating panel, the “RELEASED” event cannot be executed as described in the table below. (Example: Push button)

[1] Condition when the “RELEASED” event cannot be executed

The “RELEASED” event cannot be executed if following cases occur in the pushed-state button.

- (1) When an error occurs.
- (2) When the message appears by “Printmsg” command.
- (3) When the operating panel screen was changed by “Page_change”command using timer.

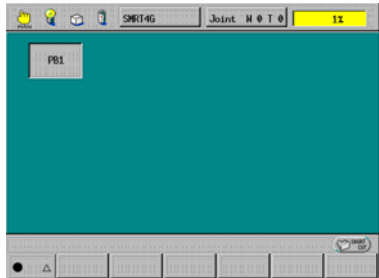
Pushed-state button	Condition when the “RELEASED” event cannot be executed.
	(1) When an error occurs. 
	(2) When the message appears by “Printmsg” command. 
	(3) When the operating panel screen was changed by “Page_change” command using timer. 

Note: If necessary in above cases, improve them as described on the next page.

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[2] Program example requiring improvement

If an error occurs, the program example shown in the table below requires improvement.

While pushing the button, I/O [128] is turned ON. (When the I/O [128] is turned ON, the external device runs.)	Program example
	<pre> DEF PB1_CLICKED() set IO[128] END DEF PB1_RELEASED() reset IO[128] END </pre>

[3] Improvement examples when an error occurs

[3]-1 Example 1

Enable the supervisory task and the supervisory task extension. (Refer to SETTING-UP MANUAL, Chapter 3, Sections 3.4.10 and 3.4.11.) When an error occurs, the I/O [128] turns OFF to the safety side using the supervisory task program below.

```

Program TSR1
  DEFINIT ERRCODE
  INITWAITERR                                'Initialize WAITERROR data.
  WHILE 1
    ERRCODE = WAITERROR                      'Waits for an error to occur.
    IF GETERRLVL(ERRCODE) > 1                'If the error level 2 or higher one occurs.
      RESET IO[128]                          'Turn OFF I/O[128] to the safety side.
      INITWAITERR                            'Initialize WAITERROR data.
    ENDIF
  WEND
END

```

[3]-2 Example 2

- a) Monitor the deadman switch (enable switch) state using the supervisory task.
- b) Add the following process:
 - Only when the deadman switch is pressed, the I/O [128] turns ON.
 - And when the deadman switch is released, the I/O [128] turns OFF.

Thus and so, even if an error occurs, the I/O [128] turns OFF to safety side by releasing the deadman switch.

[3]-3 Example 3

Change process as below.

- a) When pushing the button, the I/O [128] turns ON only some interval.
- b) When releasing the button, the I/O [128] does not change.

This is called "inching motion".

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4. Added "INITIALIZE" event

The "INITIALIZE" event was newly added for the "Panel". It can be used one for each panel when initializing the screen.

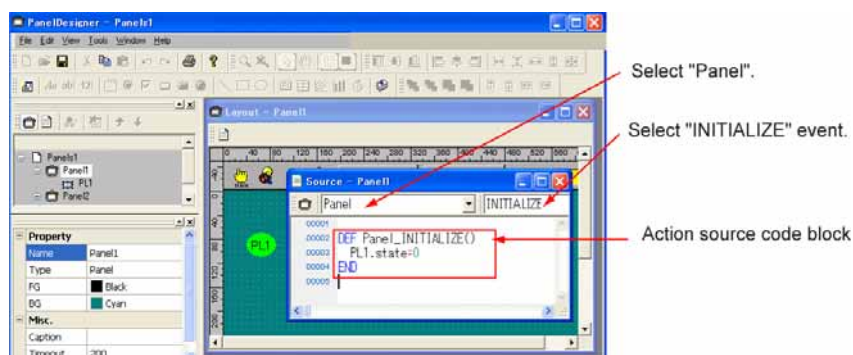
The "INITIALIZE" event will be called:

- (1) When pressing [F5 Panel], the panel displays.
- (2) When the controller boots, the panel displays automatically.
- (3) When using the "PAGE_CHANGE" command, the panel is changed.

Setting method

Step 1 If selecting the panel, the "INITIALIZE" event is selectable. When selecting the "INITIALIZE" event, an action source code block is automatically generated as below.

```
DEF Panel_INITIALIZE()
END
```



Step 2 Flesh out the skeleton with action source code.

Note: "Page_Change" command cannot be used for this source code.

5. Added "RELEASED" event for the Function Key

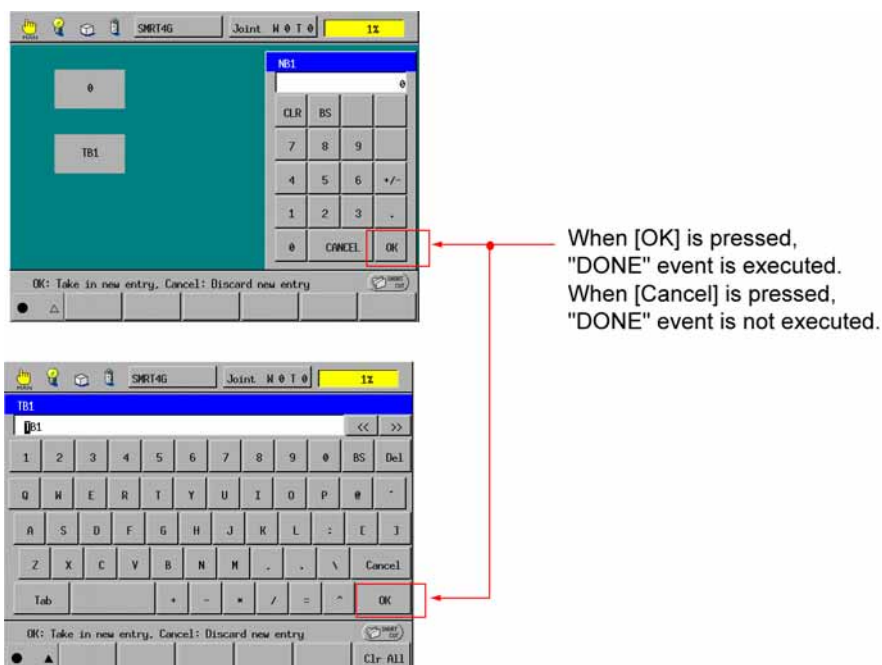
The "RELEASED" event was added for the function key of the operating panel. The function is same as other parts event.



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6. Added "DONE" event

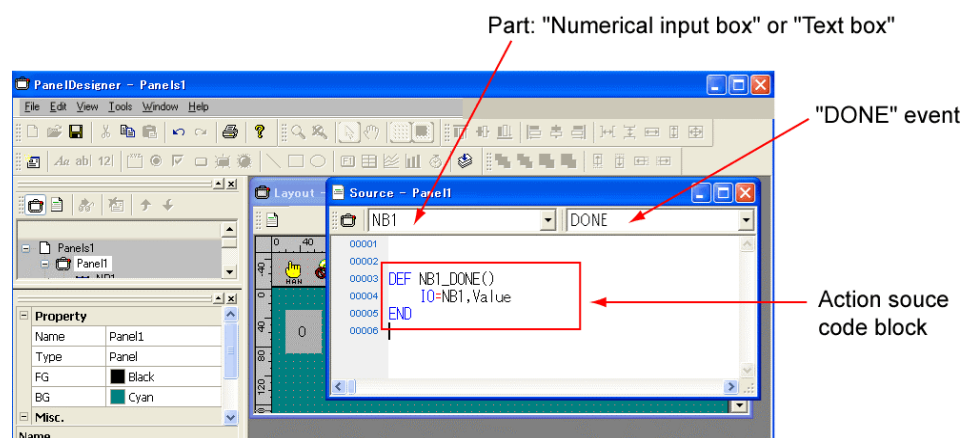
The "DONE" event was added to the "Numerical input box" and "Text box".
When pressing [OK] on the numerical input box or the text box, the "DONE" event is executed.



Setting method (Example: Numerical input box)

- Step 1** Select the "Numerical input box" and select the "DONE" event.
The action source code block in automatically generates as below.

```
DEF NB1_DONE()  
END
```



Example in the Action source code block: IO=NB1.Valve

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7. Added Operating Panel Control Commands

“DEADMANSTATE” and “SPRINTF\$” were added for the operating panel commands.

DEADMANSTATE (Statement)

Function

Obtains the current deadman switch status.
0: OFF, 1: ON

Format

DEADMANSTATE

Example

```
IO = DEADMANSTATE           'Assigns "Current deadman state" to IO.
```

SPRINTF\$ (Function)

Function

Converts an expression to a designated format and returns it as a character string.

Format

SPRINTF\$ (<Format>, <Expression>)

Example

```
S0 = SPRINTF$("% d",123)      'Assigns "123" to S0.
```

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8. Added Error Codes for Operating Panel

Error codes shown in the table below were added for the operating panel.

Code	Message	Level	Description	Remedy
52E7	Panel action timeout	3	The event (CLICKED, RELEASED, TIMER, REFRESH) could not be executed within specified time.	(1) Use the brief source code statements in the action source code block. (2) Lengthen the "Timeout" property of the panel. (Default: 200 ms)
52E8	Panel timer processing timeout	3	The panel has the longer timer than the periodic start cycle.	(1) Use the brief source code statements in the action source code block. (2) Lengthen the timer interval. (3) Reduce the number of the timer in the panel.

9. Added Reserved Words for Operating Panel

The list shown in the table below is for the operating panel reserved words. Newly added reserved words are with bold font.

Command names, the MOD operator, and other words are reserved--that is, have a pre-assigned function in processing the operating panel control language, so cannot be used and names for variables, panels, etc.

Operating Panel Reserved Word List

if, then, else, elseif, while, do, return, print, add_widget, msgbox, page_change, set, reset, run, kill, suspend, suspendall, killall, caption, fg, bg, timeout, defint, defsng, defdbl, defstr, defio, in, out, break, continue, var, def, pend, for, refresh, extern, begin, end, wend, next, endif, status, str\$, continuerun, io, i, f, d, s, sysstate, curoptmode, time\$, date\$, timer, select, case, is, to, **deadmanstate**, **sprintf**\$, **releasemode**, **pnlccver**, **chr**\$, **step**

