HYUNDAI ROBOTICS

WARNING

INSTALLATION SHOULD ONLY BE PERFORMED BY QUALIFIED INSTALLATION PERSONNEL AND MUST CONFORM TO ALL NATIONAL AND LOCAL CODES

HD
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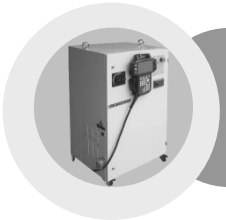
Hi5aDT230628FMEN2



Hi5a controller functional manual

Driving parts anomaly test

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1 Overview

1.1. Purpose of the function

The purpose of this function is to test the conditions of the driving parts of the robot such as motors and reducers and to identify any anomalies thereof by acquiring and interpreting data from the robot.
The concept of the test of the condition of the robot's driving parts is depicted in Figure 1 below:

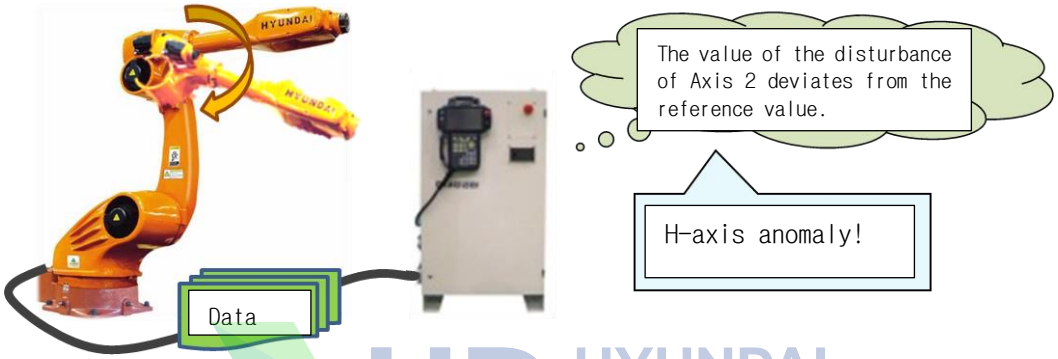


Figure 1.1 Conceptual diagram of driving parts anomaly test

1.2. Major specifications

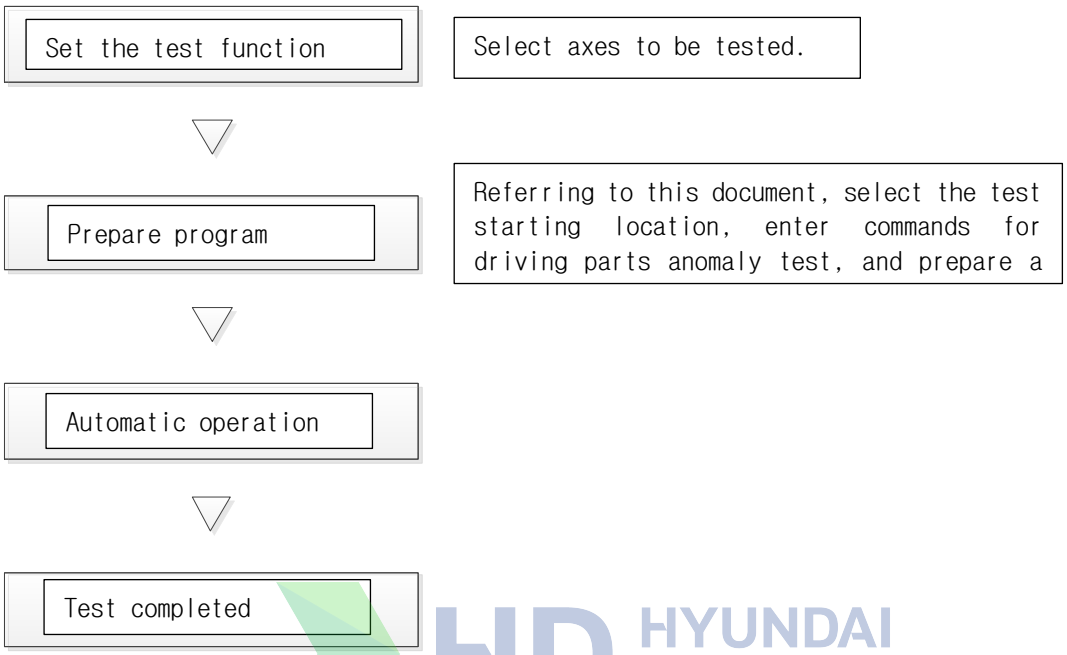
Item	Specification
Supported software version	Main/TP: V40.10-00 or later DSP: V6.23 or later
Specification of supported axis	Robot axes ※ Excluding additional axes

1.3. Limitations on the function

The following changes in the robot condition may lead to false detection.
Please **pay attention** to them.

1) Changes in tool load of the robot; and
2) Changes in the starting location of detection.

1.4. Operating sequence



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2 Instructions

2.1. Setting the function

Select robot axes to be tested.

By default, it is set that all the robot axes are tested.

As shown in the following figure, click [System] → [3. Robot parameters] → [12. System maintenance]. Then, you may check/uncheck check boxes for selecting/deselecting axes to be tested.

Reference value of 0 for item-specific test means that no reference value is specified.
In this case, the reference value will be set at the mean value of the results of 5 drives at the initial test.

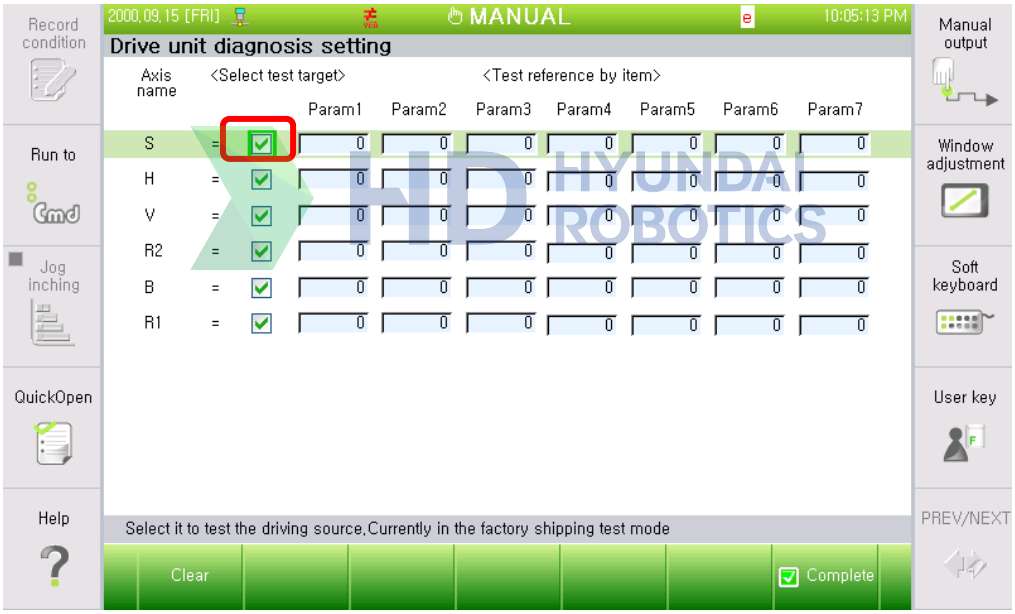

Figure 2.1 Window for setting driving parts anomaly test

2.2. Resetting the function

You may reset the reference value of test by clicking the [Clear] -> [Confirm] button at the bottom-left part of the window.

2.3. Programming

Prepare a job program to apply the function of driving parts anomaly test.

Programming instructions

(1) Write the step to start the test.
Set the **Accuracy at 0 (A=0)** for the step to start the test.
(2) Next to the step to start the test, **insert the command for driving parts anomaly test**.
※ Refer to the following example of programming:

Command for driving parts anomaly test (DrvTest).

This is the command for starting the robot's operation for driving parts anomaly test.

You can prepare a test program easily by selecting and adding [Enter command] → [DrvTest.ACT] to the job program.

Example of programming

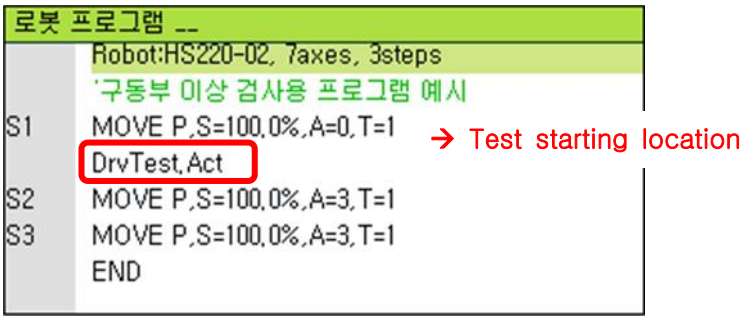

Figure 2.2 Example of programming for driving parts anomaly test

2.4. Test result - Monitoring

After executing the function, you can view the result on the monitoring window.

You can view the result by clicking [Service] → [1. Monitoring] → [17. System fault diagnostic data] → [2. Driving parts anomaly test data].

'Pass' will be displayed when the test criteria are met, 'Fail' will be displayed when the test criteria are not met, and '-' will be displayed when reference values are set due to non-implementation of test or lack of reference values.

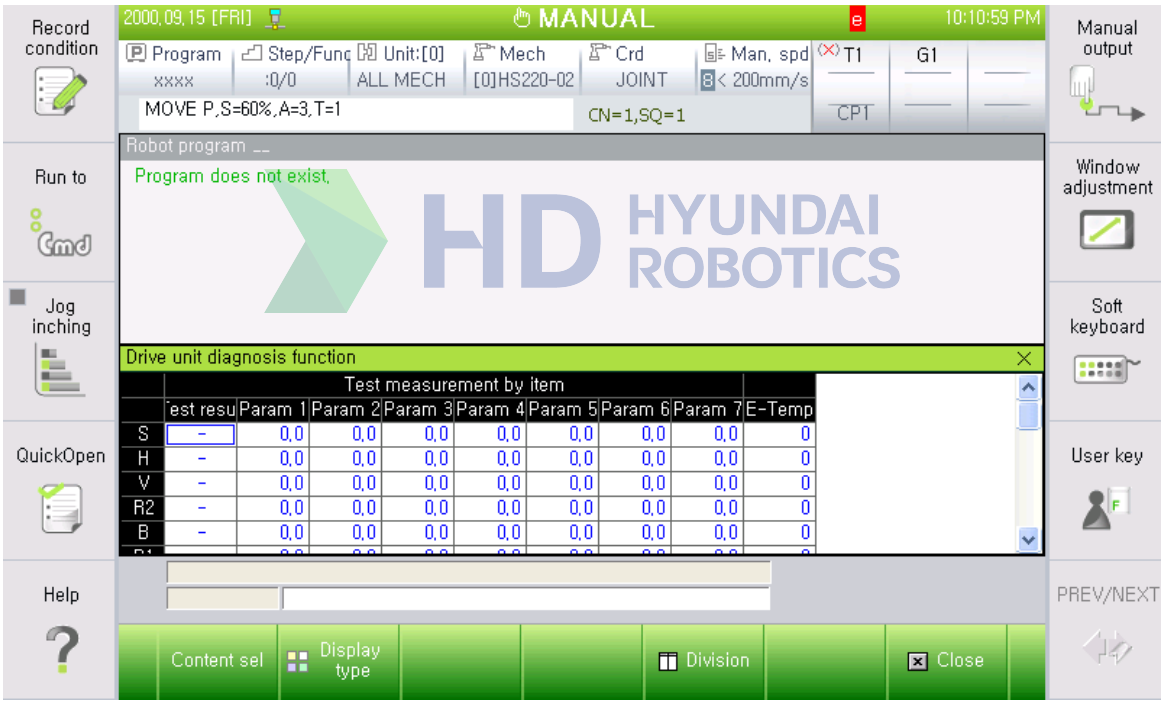

Figure 2.3 Window for monitoring the result of driving parts anomaly test

2.5. Test result - Warning issuance and instructions for action

After the function is conducted, if the test result does not meet the reference values, the following warnings will be issued:

[W21021: Anomaly has been detected at the driving parts of (% axis).]

When a warning is issued, take actions in the following sequence:

1) Check whether the tool data are incorrect. Check whether the data match the utilized tool after normal completion of load estimation.
2) Check whether the tool, tool number and test starting location have been changed from ones used at the setting of reference values.
3) When no problem is found in the checking of 1) and 2), check the reducer and the motor.
4) When any problem is found in the checking of 1) and 2), and when no problem is found in the checking of 3), reset the test reference values and set them again.

2.6. Test result - History graph

* This function is available only in V40.20-00 or later.

Clicking [F1: Service] → [7: System diagnosis] → [4: System fault diagnosis history graph] will display the following window for driving parts diagnosis history graph:

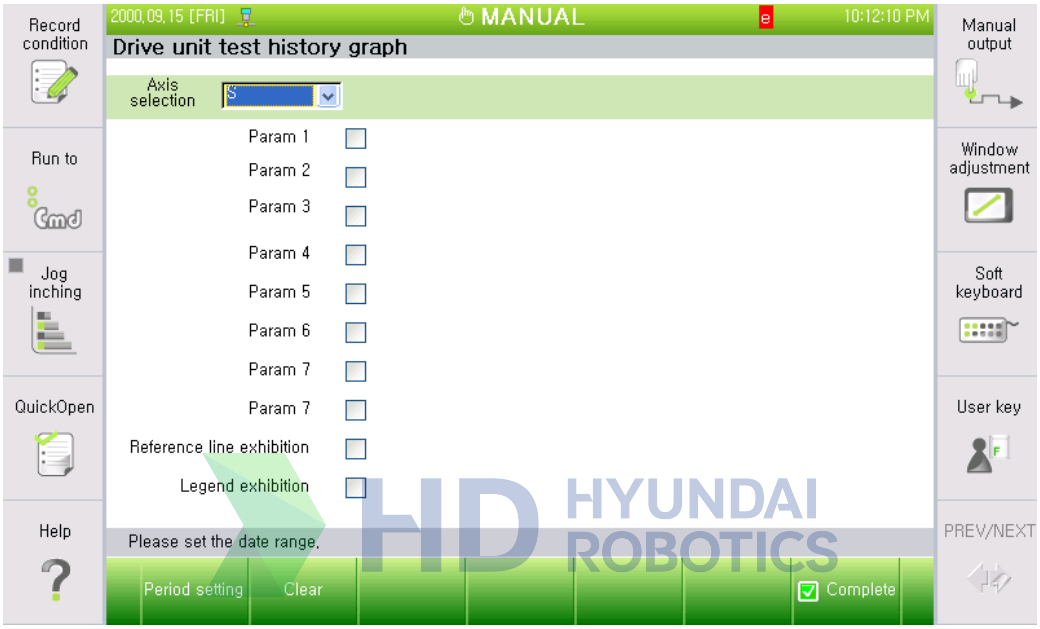

Figure 2.4 Initial window for driving parts diagnosis history graph

The graph will be displayed when you set the query period on the window.

Clicking [F1] or the period setting button will prompt the following popup window, in which you can set the period to be queried:

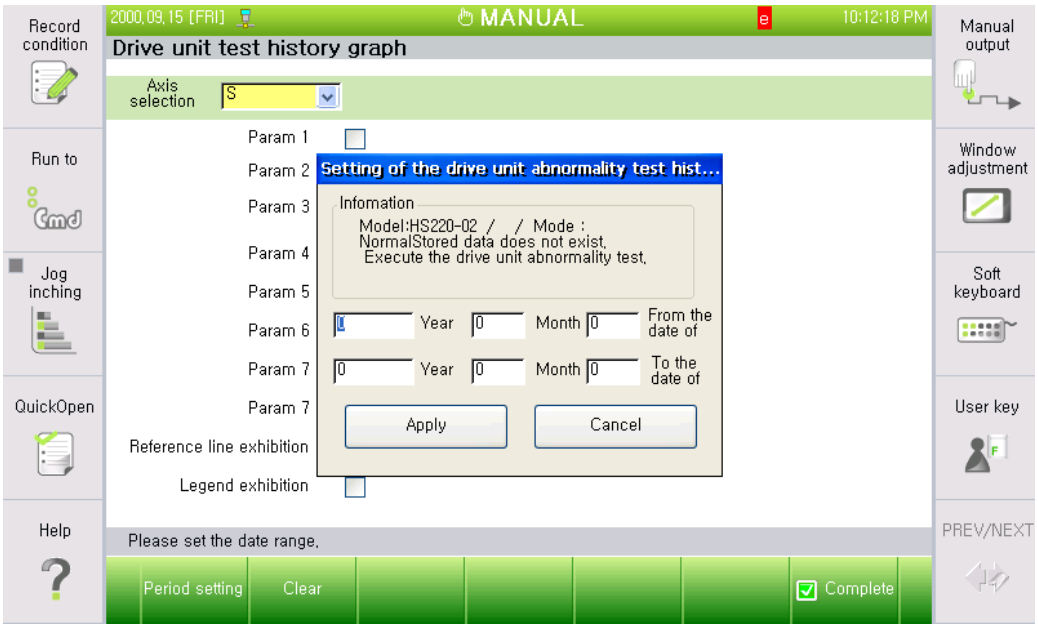

Figure 2.5 Popup display window for period setting

By default, the popup window automatically displays the first and the last dates of the saved data. Modifying the start and the end dates to be queried, and clicking the [Apply] button will call the data of the specified period as shown in the following figure, and the guiding message at the bottom will display the information on the current graph.

※ On the driving parts diagnosis history graph, by default, the columns between 'Disturbance dispersion' and 'Encoder temperature' are deselected.

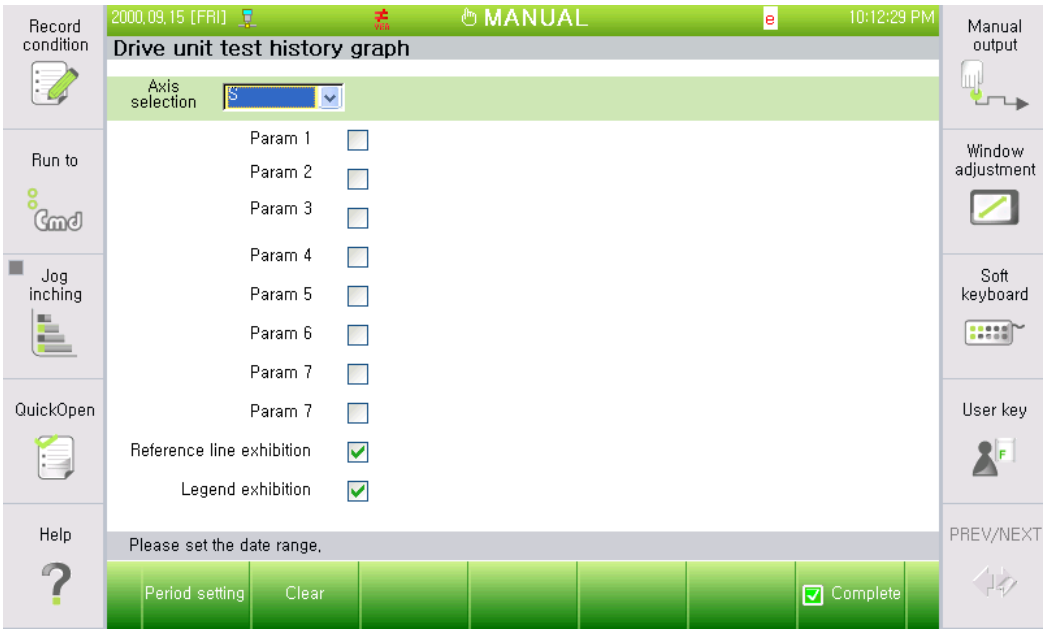

Figure 2.6 Initial window of the driving parts diagnosis history graph with successful period setting

The displayed graph will be changed depending on the axis selection on the left of the graph, and on the selection of 'Disturbance dispersion' and 'Legend display'. As shown in the following figure, you can adjust the graph as desired.

※ In the driving parts diagnosis, data matching the conditions of selected axes and checkboxes may not exist depending on test setting.

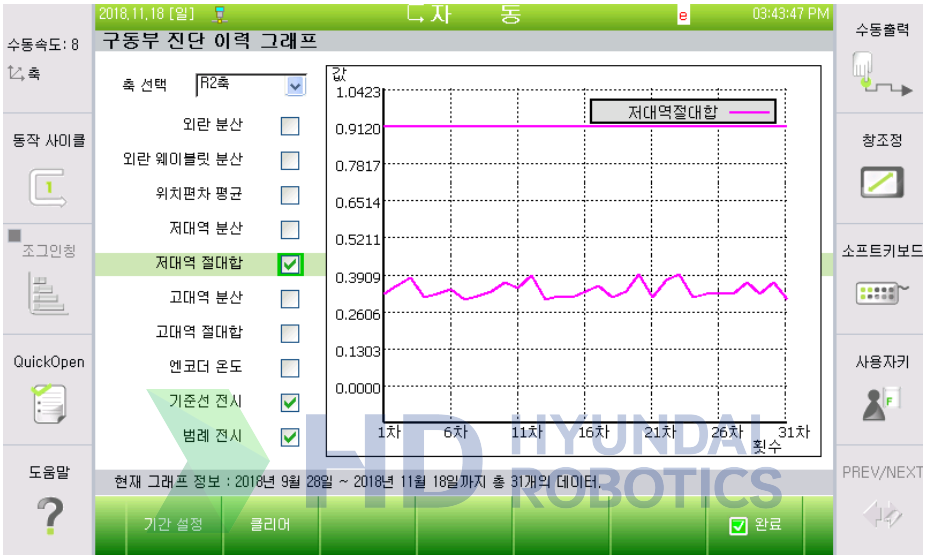

Figure 2.7 Example of graph window for the selection of axis R2 with low-band absolute sum

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