General Specifications

Model LHS5420, LHM5150
Test Function

CENTUM VP

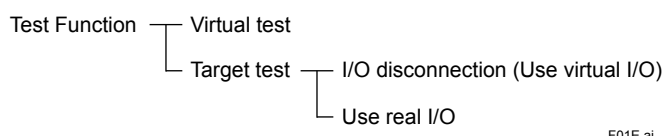## GS 33K10D50-50E

[Release 5]

■ GENERAL

This GS covers the specifications of the Test Function running on a Human Interface Station (HIS).

LHM5150 is the package for CENTUM VP Entry class that is for small systems. There is no difference between LHM5150 and LHS5420 in functions.

■ FUNCTION SPECIFICATIONS

With the Test Function, the user can perform a virtual test without a Field Control Station (FCS) and a target test using an FCS. To check FCS operation, Operation and Monitoring Function is used. The following shows the configuration of the Test Function.

```
Test Function ─┬─ Virtual test
               │
               └─ Target test ─┬─ I/O disconnection (Use virtual I/O)
                               │
                               └─ Use real I/O
```
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Safety Control Station(SCS) can be also tested when ProSafe-RS and CENTUM VP are integrated.

Virtual test

A virtual test uses an FCS simulator instead of a real FCS. An FCS simulator simulates the functions and actions of FCS on a PC.

Target test

A target test uses a real FCS, but without field wiring. It uses I/O singles by software. Neither I/O cards nor devices for virtual I/O are required.

Function List

Virtual test and target test execute different functions. The table below lists the virtual test and target test functions.

Test Item	Test Method		Description
	Virtual Test	Target Test	
Test function main window	X	X	Test function main window. The test functions can be called from this window. This window displays the sub-window, menu bar, and tool bar of each function.
I/O Disconnect/Connect (*1)	–	X	Disconnects or connects the actual FCS process I/O in individual process I/O units. When a virtual test is performed, I/O is always isolated.
Global switch disconnection/connection function	X	X	Disconnects or connects communication (scan transmission) related to the global switch. This function disconnects or connects transmissions of data sent from the test target station to another station, or transmission of data received by the test target station from another station. Disconnection of transmission from another station allows the global switch value to be changed to a desired value on the test target station.
Wiring function (*2)	X	X	Simulates test target station I/O.
Test target station operation and monitoring function	X	X	Also changes and displays the actual status (run, stop, pause) of the test target station.
Step execution	X	X	Executes a control function the specified number of times, then temporarily stops the test target station.
Change Scan Period Magnification	X	X	The scan period of the test station can be changed to a multiple of the basic scan period.

X: Available   –: Not Available

*1: Since Advanced Process Control Station (APCS) does not have process I/O and communication I/O for connection, so that the "I/O Disconnection" task is not available.

*2: Since APCS does not have process I/O and communication I/O for connection, so that wiring the I/O is not available. Wiring function is not supported for Generic Subsystem Gateway (GSGW).

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Test Item	Test Method		Description
	Virtual Test	Target Test	
Breakpoint function	X	X	Sets the break conditions at the function block of the test target station and temporarily stops the test target station when that condition is established.
One-shot execution function	X	X	Function block one-short execution and message one-shot output functions. The function block one-shot execution function executes the blocks on the test target station that can be executed at oneshot. The message one-shot output function generates messages on the test target station.
Profiler function	X	X	Profiler function consists of CPU Usage Rate Display, All Function Block Completed Profile Data and Log File Function, monitoring the operation status of test target FCS/FCS simulator control function. However, CPU Usage Rate Display and All Function Block Display are enabled only for target testing. For virtual testing, those function are meaningless.
Snapshot function	X	X	Used to store or download the function block tuning parameters, annunciator status, common switch status, process I/O status and wiring status.
I/O Error Test (*3)	X	X	Writes the data status from HIS to the function blocks connected to the process I/Os, thus to force the function blocks change into an abnormal status such as IOP.
FOUNDATION fieldbus Faceplate Block Test (*4)	X	X	Simulates FOUNDATION fieldbus faceplate block alarm signal, block mode change signal and input output signals. Thus the fieldbus control loops with FOUNDATION fieldbus faceplate blocks can be tested with connecting the physical fieldbus devices.
Virtual Access to Other Station Data	X	–	During virtual test, using FCS simulator or HIS to simulate communicating to with the FCSs not covered by the Test Function.
Change FCS for Testing	X	X	Changes to a different FCS for testing. The test can be continued to perform on another FCS without stopping Test Function.
Simulation function	X	–	Consists of an FCS simulator and other station data access simulation functions. It is a tool for testing user software without using an actual FCS. Simulation function is automatically started when virtual test starts.

X: Available   –: Not Available
*3:   The I/O error test for APCS can be applied to global switches (%GS) only.
*4:   Each function included in the test function for FOUNDATION fieldbus faceplate block enables only the occurrence of events instead of simulating real operation of fieldbus function block. Therefore, an additional test must be done for the FCS connected with actual fieldbus devices.

■ APPLICATION CAPACITIES
In virtual test environment, the maximum number of FCS/SCS simulators can be run in a single PC is 8.

■ OPERATING ENVIRONMENT
The Test Function runs on a general-purpose IBM PC/AT-compatible PC which meets the following requirements:
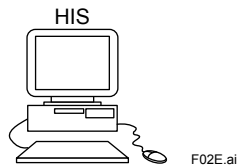
Hardware Requirements
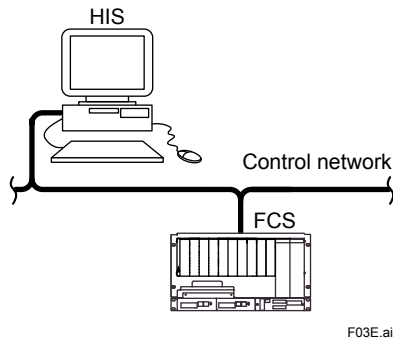Refer to operating environment of LHS5100 Standard Builder Function.

Software Requirements
• Model LHS1100 Standard Operation and Monitoring Function (If LHS5420 is used)
• Model LHS5100 Standard Builder Function (If LHS5420 is used)
• Model LHM1101 Standard Operation and Monitoring Function (If LHM5150 is used)
• Model LHM5100 Standard Builder Function (If LHM5150 is used)

To perform the virtual testing, optional software package licenses and Node Expansion Package license for FCS or SCS are required in accordance with the number of FCS defined in the CENTUM VP project or number of SCS defined in the ProSafe-RS project. If the virtual testing environment is separated from the target environment with the real FCS or SCS, the FCS or SCS licenses are required also in the virtual testing environment.

Example of System Configuration for Virtual Test

Example of System Configuration for Target Test

■ MODEL AND SUFFIX CODES

		Description
Model	LHS5420	Test Function [Media model: LHSKM50-V11]
Suffix Codes	-V	Software license
	1	Always 1
	1	English version

		Description
Model	LHM5150	Test Function (for CENTUM VP Entry Class) [Media model: LHSKM50-V11]
Suffix Codes	-V	Software license
	1	Always 1
	1	English version

■ ORDERING INFORMATION
Specify model and suffix codes.

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