

# General Specifications

## FieldMate Validator



### GS 30A40B10-01EN

#### ■ OVERVIEW

FieldMate Validator (“FM-V”) is software used for loop (input/output) inspection during plant construction, etc. and is specifically designed for N-IO nodes of CENTUM VP/ProSafe-RS.

FM-V enables the startup work between N-IO nodes and field devices to be conducted without connecting Automation Design Suite (“AD Suite”), the engineering environment of CENTUM VP/ProSafe-RS, or a controller. During the startup work, N-IO nodes can be set, I/O operations of input/output modules (“IOM”) can be checked, and connections between the N-IO nodes and field devices can be checked, using the definition information of the application. In addition, the definition information can be modified on FM-V and the modified definition information can be fed back to the application.

FM-V reduces the workload of plant startup and renewal.

- Even during engineering, installing and wiring N-IO nodes and field devices in advance enables you to perform the startup work between N-IO nodes and field devices in the field using FM-V. In addition, since the application can be created in an engineering office, work can be concurrently carried out both in the field and in the engineering office.
- FM-V can be used on an N-IO node basis; by using multiple FM-Vs, startup work can be concurrently carried out in respective N-IO nodes.
- The work of the next process such as the acceptance test can be started, beginning with field control stations and safety control stations where FM-V work has been completed in sequence.

#### ● Main Functions

##### **Synchronization of engineering information:**

By importing and exporting the application’s definition information, the application and FM-V information can be synchronized.

##### **Validation of application definition information:**

Setting according to definition information, IOM functional inspection, and connection inspection between N-IO nodes and field devices can be made. In addition, definition information can be modified in the field.

##### **N-IO node status check:**

The self-check results of hardware, the results of comparison between the I/O definition set to IOM and installed hardware information, hardware installation condition, etc. can be checked.

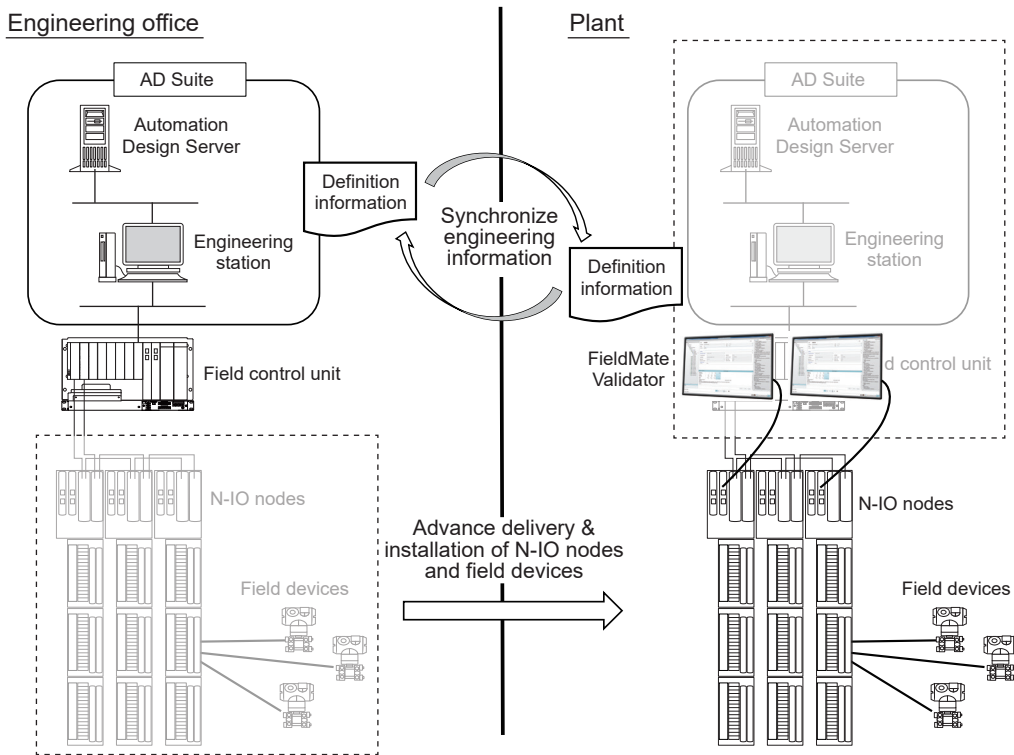
##### **High-speed inspection between N-IO nodes and field devices:**

For HART devices, the HART function enables connection and loop-accuracy inspection to be automatically made by just one person at high speed (64 units in 10 minutes or less).

##### **Conversion of inspection description into document form:**

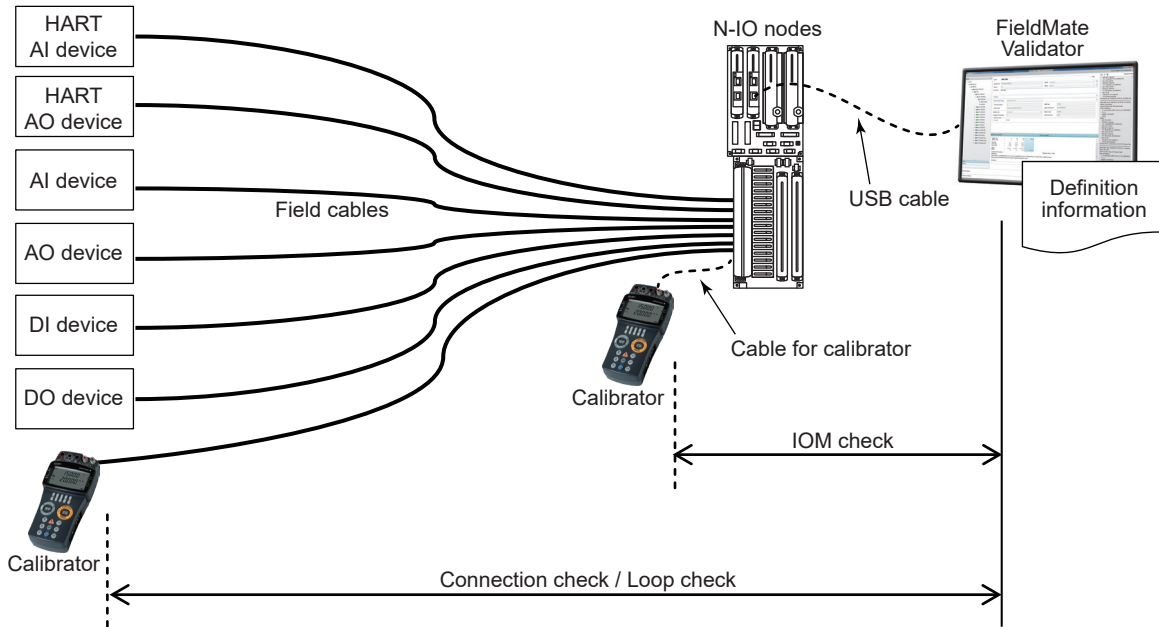
The description and results of the validation of definition information can be converted into document form.

● Schematic Diagram



F01E.ai

● Range of FM-V Inspection and Connection Example



F02E.ai

## ■ FUNCTIONAL DETAILS

### ● Synchronizing Engineering Information

The application's definition information can be captured from AD Suite (\*1) to FM-V; the startup work between N-IO nodes and field devices can be carried out in the field based on the definition information even if no engineering function is available. In addition, the definition information modified on FM-V and the pass/fail of inspection by FM-V can be fed back to AD Suite.

- \*1: Engineering is required using the following software.  
CENTUM VP: VP6E5210 Module-based Engineering Package  
ProSafe-RS: RS4E5210 I/O List Engineering Package

### Modification of channel information

If the channel information of definition information captured by FM-V has not yet been set or has been changed, it can be modified by capturing only the cable schedule (channel information) into FM-V.

### Information acquisition/management of connection devices

Device-specific information such as the device tags and device types of field devices connected to each channel of IOM can be acquired. This information can be used for maintenance or equipment management after operations because it is reflected in the definition information.

### ● IOM Startup and Definition Check/Modification

N-IO node numbers/IDs and the I/O definition of each channel of IOM can be set to hardware according to the definition information. In addition, the consistency between the set definition information and installed hardware can be checked on the status display. If the definition information needs to be modified, the definition can be modified on the spot.

### ● IOM Inspection

If IOM check is required, IOM accuracy, ON/OFF operations, and functions (such as detecting short-circuit or disconnection) can be checked and judged. Tasks can be created based on definition information with respect to P&ID tags.

Task	Target I/O type	Description (example)
<b>Task creation</b>		
IOM check	AI/AO	Tasks for checking accuracy at points such as 0%, 50%, or 100% and functions (such as detecting short-circuit or disconnection) can be created. The number of inspection points or patterns can be arbitrarily created.
	DI/DO	Tasks for checking operations such as ON/OFF and functions (such as detecting short-circuit or disconnection) can be created.
Manual check	AI/AO/DI/DO	If inspection cannot be made by an inspection function of FM-V, tasks can be created for user inspection use. Instructions concerning the inspection details, etc. can be described.
<b>Task implementation</b>		
IOM check	AI/DI	By entering simulated values into IOM with a calibrator (current, voltage, etc.) or switch (ON/OFF) according to an FM-V screen and loading IOM values into FM-V, FM-V can judge them automatically.
	AO/DO	Simulated values of current, voltage, etc. are output from IOM according to an FM-V screen. Thus, by checking those output values with a calibrator or LEDs and registering them in FM-V, FM-V can judge them automatically.
Manual check	AI/AO/DI/DO	Inspection can be conducted according to the description of instructions for user inspections, and the results (pass/fail) and user comments can be entered.

● **Inspection between N-IOs and Field Devices**

From the P&ID tags used in the application in the definition information, connection, loop accuracy, and ON/OFF operations between field devices via IOM's channel can be checked and judged. Tasks can be created based on the definition information with respect to each P&ID tag.

Task	Target I/O type	Description (example)
<b>Task creation</b>		
Connection check (HART device)	AI/AO	Tasks for checking device connection positions can be created for HART devices.
Loop check	AI/AO	Tasks for checking accuracy at points such as 0%, 50%, or 100% can be created. The number of inspection points and patterns can be arbitrarily created.
	DI/DO	Tasks for checking operations such as ON/OFF can be created.
<b>Task implementation</b>		
Connection check (HART device)	AI/AO	By changing an HART device's LCD with an HART command, it is possible to visually check whether the device to be inspected is connected to the correct position, and the results (pass/fail) can be entered.
Loop check	AI/AO (HART device)	By using an HART command, the accuracy of input/output to an HART device can be checked and judged automatically.
	AI/DI	By entering simulated values into IOM with a calibrator (current, voltage, etc.) or switch (ON/OFF) according to an FM-V screen and loading IOM values into FM-V, FM-V can judge them automatically.
	AO/DO	Simulated values of current, voltage etc. are output from IOM according to an FM-V screen. By checking such output values with a calibrator or LED and registering them in FM-V, FM-V can judge them automatically.

● **High-speed Loop Inspection**

In "loop check" of HART devices, the "Quick Loop Check" function enables only HART devices to be automatically selected and loop-checked on an N-IO's node or slot basis according to the inspection details of each P&ID tag. In addition, the device tag names in the definition information and the device tag names of the actually connected HART devices can be automatically compared to see if each HART device has been connected to the correct channel position.

For 64 HART devices under the N-IO nodes, these checks can be completed in 10 minutes or less.

● **Converting Inspection Description into Document Form**

Inspection summary reports, channel summary reports, and detailed reports can be output. These reports can be output in the format of a PDF or CSV file and can be managed together with other documents.

**Summary report:**

Displays the inspection results, date and time, etc. of each channel in a list.

**Channel summary report:**

Displays IOM information, channel information, field device information, results of each inspection, etc.

**Detailed report:**

Displays IOM information, channel information, field device information, details of each inspection result, etc.

● **N-IO Debugging Tool**

The N-IO debugging tool can be used for simple inspection of input/output values of IOM. The current values of input/output of each channel can be displayed on an IOM slot (16 channels or 32 channels) basis. In addition, for AO/DO, output values can be set.

● **Connection of FieldMate via N-IO Node**

FieldMate functions are available via an N-IO node with respect to field devices connected to N-IO nodes. However, FieldMate's Device Replacement Tool cannot be used via an N-IO node.

## ■ IOMS TO BE INSPECTED

Target	IOM models			Adaptor models		
N-IO nodes for CENTUM VP	A2MMM843			A2SMX801	A2SMX802	A2SAM105
				A2SAM505	A2SAP105	A2SAT105
				A2SDV105	A2SDV505	A2SDV506
	A2MDV843			A2SMX801	A2SMX802	A2SDV105
				A2SDV505	A2SDV506	
N-IO nodes for RIO system upgrade	A2MME041			A2SAM105	A2SAM505	A2SAP105
				A2SAT105		
	AAB841-SK□	AAI143-HM□	AAI543-HM□			
	AAT145-SM□	AAT145-SK□	AAR145-SM□			
	AAR145-SK□	AAV144-SM□	AAV144-SK□			
	ADV159-PM□	ADV159-PK□	ADV159-PY□			
	ADV169-PM□	ADV169-PK□	ADV559-PM□			
	ADV559-PK□	ADV559-PY□	ADV569-PM□			
	ADV569-PK□					
N-IO nodes for ProSafe-RS	S2MMM843	S2MDV843				

## ■ OTHERS

For the operating environment, models, suffix codes, etc., see FieldMate's General Specifications (GS 01R01A01-01E).

Precautions:

- The OS and OS languages of FM-V's operating environment are limited.
- When purchasing FM-V, always specify "VT" for FieldMate's option code. It is not possible to purchase only FM-V (option code "VT") or purchase it additionally.

## ■ RELATED WEB SITES

Introduction to FieldMate products:

<http://www.yokogawa.com/fieldmate/>

FieldMate/PRM/Device Files user site:

<https://partner.yokogawa.com/global/fieldmate/>

Note: To log in to the user site, the dedicated user ID and password used for signing up for membership are required. If you have not yet registered as a member, first sign up at:

<https://partner.yokogawa.com/global/ws/newMemberRegistration/>

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