User's Manual

YVP Management Software ValveNavi

Manual Change No. 12-028

Please use the attached sheets for the pages listed below in the following manuals.

IM 21B04C50-01E (5th)

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2. INTRODUCTION TO ValveNavi

2.1 What is ValveNavi?

ValveNavi is a Windows software tool that makes it easy to configure, calibrate, and operate Foundation fieldbus pneumatic control valve positioners YVP110 with internal process control and limit switches. It fully supports the Foundation fieldbus specifications.

2.2 ValveNavi Specifications

Table 2.1 ValveNavi Specifications

Product name	YVP Management Software (R2.32.0, R2.32.2)
Compatible OS	Windows XP SP2, 3, Windows Vista SP1, 2, Windows 7 Language; English or Japanese
Interface Cards supported	National Instruments AT-FBUS, PCI-FBUS, PCMCIA-FBUS Interface card, or USB-8486
Application Interface Software	In case of R2.32.0 NI-FBUS 3.0 to 3.2 (for XP), NI-FBUS 3.2.1 (for Vista) In case of R2.32.2 NI-FBUS 4.0 (for XP, Vista, 7 32bit) NI-FBUS 4.0.1 (for XP, Vista, 7 32/64bit)
Connection	Direct connected to segment.
Positioners supported	Model YVP110-F
Blocks supported	Resource Block (RB) Transducer Block (TB) with Device Description AO, DI, OS PID (optional)
Companion Device	Model YVP110-F
Online Help	HTML help files viewed with browser
Configuration capability	Device tag, node address, block tag, Transduser Block (TB) parameters
Query capability	All block parameters
Trending	A polling method

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2.3 Combination of ValveNavi & YVP

The table in below shows the limitation of the functions according to the combination between each revision of YVP110 and ValveNavi.

Table 2.2 Supported Functions by Release Number

	Dev Rev	R1	R2.1	R2.2	R2.32.0 R2.32.2
Without software download functions	2	✔	✔	✔	✔
	3	*1	✔	✔	✔
	4, 5	*2	*2	*2	✔
With software download functions	1	N/A	✔	✔	✔
	2, 3	N/A	*2	*2	✔

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✔: Applicable
*1: Not applicable to link master and signature functions
*2: Not applicable to double acting actuator
N/A: Not applicable

3. INSTALLATION OF HARDWARE AND SOFTWARE

3.1 What you need to get started with ValveNavi

To begin using ValveNavi the following tools and software are needed.

- ValveNavi software on its installation CD-R
- A PC running Windows XP service pack 2, 3, Vista service pack 1, 2, or Windows 7 whose language is English or Japanese
- National Instruments AT-FBUS, PCI-FBUS, PCMCIA-FBUS interface card , or USB-8486 and NI-FBUS software
  In case of R2.32.0: NI-FBUS 3.0 to 3.2 (for XP), or NI-FBUS 3.2.1 (for Vista)
  In case of R2.32.2: NI-FBUS 4.0 (for XP, Vista, 7 32bit) or
  NI-FBUS 4.0.1 (for XP, Vista, 7 32/64bit)
- Instruction manuals for the NI-FBUS interface card and software
- The Model YVP110 positioner installed on a valve
- The Model YVP110 User's Manual
- A Foundation fieldbus power supply and power conditioner with terminators
- Additional fieldbus devices that will be installed on the bus segment (optional)

Before we can describe installation of ValveNavi software we must first describe the process for installing the Foundation fieldbus communications hardware and software. To help to reduce the need for terminology that used in digital communications, we will refer to an example reference process and Foundation fieldbus segment.

3.2 Reference Model Process

Throughout this manual we will use a simplified Fieldbus Reference Model Process. This is an example of a simple process (It is not a practical process) that illustrates many elements of Foundation fieldbus that are required in a successful installation.

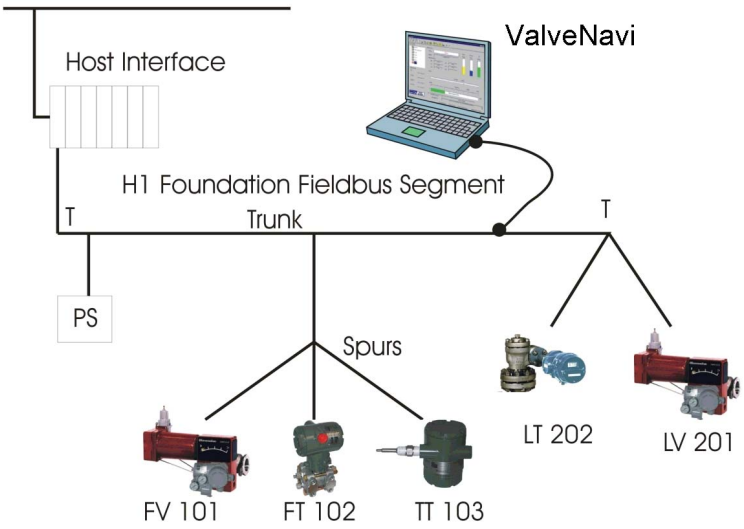

Figure 3.1 ValveNavi Reference Model Fieldbus Segment

This User's manual is intended to instruct the use of the ValveNavi software with a Yokogawa YVP valve positioner. ValveNavi may be used offline but is normally connected to a YVP positioner. Prior to using ValveNavi:

- The positioner must be correctly installed on a valve and connected to an air supply. See the YVP110 User's Manual(IM 21B04C01-01E).
- The PC running ValveNavi must have a National Instrument AT-FBUS, PCI-FBUS, PCMCIA-FBUS interface card, or USB-8486 installed and configured in the Windows registry. Carefully follow the installation instructions provided with the interface card.

WARNING

Improper setup can interfere with process control.

- NI-FBUS communications manager software must be setup and running.
- The positioner must be assigned a fieldbus node address and a device tag. It is recommended that this be performed while the device is connected as a single device to a test segment, not while connected to an operating control segment. This will require a different configuration of the interface card.
- The entire fieldbus segment must be configured, with all required function blocks soft-wired and scheduled.

Wiring practices for Foundation fieldbus differs significantly from 4 to 20 mA instrument wiring. Please Refer to the Foundation Fieldbus Application Guide 31.25 kbits/s Wiring and Installation, AG-140 Revision 1.0 or later. However, a few remarks regarding wiring of the devices are included here. The positioner must be installed properly on a segment before the ValveNavi software can be used.

3.3 Installing NI-FBUS

ValveNavi software interfaces to the fieldbus segment through an interface card that must be installed in the PC running ValveNavi. The card is supplied with NI-FBUS installation software. ValveNavi is designed to operate only with National Instruments NI-FBUS cards, which are AT-FBUS, PCI-FBUS, PCMCIA-FBUS, or USB-8486.

Prior to using ValveNavi, install the NI-FBUS card and its software in accordance with the instructions provided by National Instruments, Inc. Note that the instructions are different from depending on the type of interface card and OS.

Note that there are two NI configuration tools that serve separate purposes:

- NI-FBUS Interface Configuration Utility- This is used to install and set up interface boards. It provides access to IRQ and memory settings needed for Windows. It provides tools for importing DD's. It is described in the Getting Started manual supplied with the NI-FBUS interface card.
- NI-FBUS Fieldbus Configuration System- This is the tool for configuring the Foundation fieldbus network, including the devices, setting up the control strategy, and schedule. It is described in the NI-FBUS Configurator User Manual installed in the program online help. After opening the NI-FBUS Fieldbus Configuration System, click Help>>Online Help to open the manual in PDF format.

WARNING

Do not configure the interface as a Link Master when connecting to the segment with an existing host. Disruption of control may result.

3.3.1 Configure the NI-FBUS interface card safely for different tasks

The configuration of a portable PC for use with ValveNavi will vary depending on the immediate task. If ValveNavi will be used to maintain or configure a valve on an existing Foundation fieldbus segment, the PC running ValveNavi must configured carefully so it does not interfere with control communication. Two configurations are described in the following sections.

Table 3.1 Two configurations of the NI-FBUS Interface Card

To configure a positioner in the Foundation fieldbus segment with a host computer.	The NI-FBUS Interface card must be configured as a BASIC DEVICE at a Visitor address.
To configure a positioner in the segment without other host (Initial Setup, for example).	The NI-FBUS Interface card must be configured as a LINK MASTER DEVICE at a FIXED address (0×10 is recommended).

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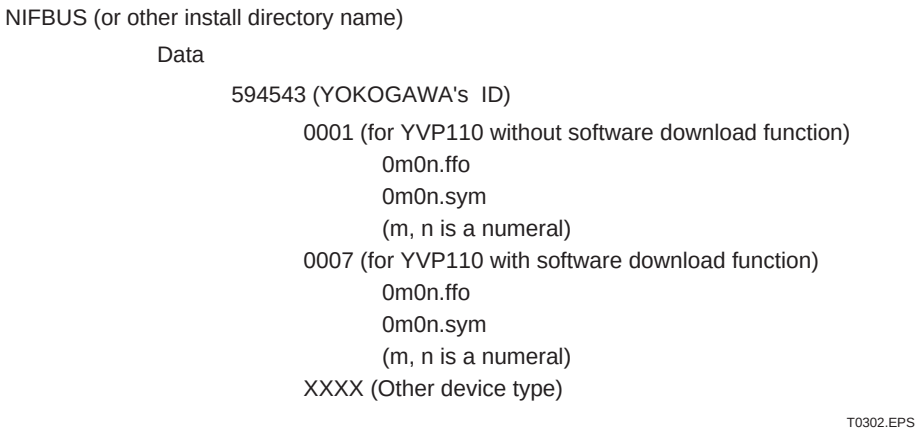
NOTE

A Visitor device will not start until connected to a running segment with an active LAS that can assign a node address to the visitor.

3.3.3 Location of DD files

After the DDs have been successfully installed, they will appear in the installation subdirectory of NI-FBUS. The form of the directory tree will be as shown below.



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4. ValveNavi ADMINISTRATION

In the previous chapter, we described the installation of the Foundation fieldbus communications software and hardware. In this chapter, we will describe the procedures for installing ValveNavi software.

The ValveNavi installation procedures outlined in this chapter assume a working knowledge of Microsoft Windows, the Yokogawa YVP positioner, and of Foundation fieldbus communications and function block technology. For further information about the YVP positioner, see YVP110 User's Manual (IM 21B04C01-01E).

4.1 Hardware and Software Requirements

ValveNavi runs on a standard IBM-compatible computer. To successfully install and run ValveNavi, the computer system must meet minimum hardware and software requirements. The following lists the minimum hardware and software requirements:

- OS: Windows XP SP2, 3, Windows Vista SP1, 2, Windows 7, Language; English or Japanese
- Pentium 166 MHz microprocessor or faster
- CD-ROM drive
- National Instruments NI-FBUS interface card and server software
- 500 MB of free hard disk space to install and run ValveNavi

4.2 Installing ValveNavi

ValveNavi is distributed on a CD-ROM for Windows.

1. Insert the ValveNavi installation CD-ROM into the CD-ROM drive.
2. Click Start > Run, then type x:setup (x is the letter of the CD-ROM drive.)
3. Follow the prompts on your screen to complete the installation process.

ValveNavi Administration and ValveNavi Help are also installed along with ValveNavi. After successful installation of ValveNavi software, the system administrator of ValveNavi should change the default logon and password and set up user accounts through the ValveNavi Administration program. Secure the ValveNavi CD-ROM in order to provide system security. Anyone with access to the setup disk could reload the software and thereby get access to YVP devices. For more details, see 4.6.

NOTE

In case of ValveNavi install folder (ex: C¥Program Files¥ValveNavi) is not writable, some functions can not be used.

8.4 Travel Calibration Wizard

The mechanical stops on some actuators may allow the valve to move beyond its rated travel. The next wizard allows adjustment of the valve travel to correspond to the travel indicator on the actuator. In the example shown the valve has been moved to 100% travel mark on the actuator by trial and error. The YVP positioner indicates that the position corresponding to 100% rated travel is 93.5% of the measured mechanical travel. If this is correct, select the span calibration and click Apply Calibration. Click yes to the confirmation dialog “Are you sure you want to apply travel calibration?” The same method can also be used to adjust the 0% position to correspond to the valve’s actual closed position. It may also be used to correct non-linear travel by adjusting the position at which the valve is 50% open.

NOTE

Perform the travel calibration in the order of 0% calibration, span calibration, and 50% calibration.

Figure 8.7 Travel Calibration Wizard

NOTE

Before running the Travel Calibration Wizard, check that the Tight shut Off and Full Open Features, and the Position Limits are disabled. Click next to see the Position Control limits Wizard (Figure 8.7), then click Back to return to Travel Calibration. If it is necessary to make changes, click next to Finish the Wizard and install the changes. Then, restart the Setup Wizard.

Initial Set Point (-10 to 110%): The base position for step test from which the set point will change by the amount of the step size. If the step test works as cyclical, resolution and dead band test, the value fixed at 50.

Dest. Set Point (-10 to 110%): The destination position. If it is in resolution patterns step test, the value should be over 50.

Step Size (0 for Single Step): The size of each step change. Used for multi step response test only. If the step size is 0, the multi-step test becomes the single step test in the range specified by the initial set point and the dest.set point. In pattern cyclically, the step size should be the range specified by the initial set point and the dest.set point if the step size is 0. In pattern resolution, the step size means the first step size (in the first cycle). In pattern resolution, the default value will be 5% if the step size is 0. In dead band test, the valid range is 0.1 to 2.0%.

Sampling rate (20 to 1000ms): Sampling rate of each step. The valid range is 20 to 1000ms.

Num of Samples (20 to 600): Sampling point of each step. The valid range is 20 to 600.

Init Start Position Error Limit (0.1 to 3%): The maximum error allowed between the actual position (FINAL_POSITION_VALUE) and the initial set point before starting the test. The valid range is 0.1% or more.

Init Start Position Time Limit (10 to 600sec): The maximum waiting time. If the actual position is not stabilizing within init start position error limit and within this time, “Not Stabilized” dialog box appears and step response test do not start. Change init start position error limit or this parameter, or performe the tuning.

2-way Selection (round trip): Selecting a round trip measurement Used for normal pattern test only. The values of the initial set point and the dest. set point determine the direction of the valve stem movement. When the value of the initial set point is more than that of the dest. set point, the valve steps down in one way trip, then steps up at return trip if 2-way selection specified.

Cycle: Number of cycles for cyclical response test.

Pause(s): Equal to Sampling rate * Number of Samples