SYSMAC
CXONE-AL_C-V4/
CXONE-AL_D-V4

Face Plate Auto-Builder for NS (Ver. 3.1)

OPERATION MANUAL

OMRON

CXONE-AL☐☐C-V4/
CXONE-AL☐☐D-V4
Face Plate Auto-Builder for NS
(Ver. 3.1)
Operation Manual

Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

⚠ **DANGER**   Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Additionally, there may be severe property damage.

⚠ **WARNING**   Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

⚠ **Caution**   Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

OMRON Product References

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated "Wd" in documentation in this sense.

The abbreviation "PLC" means Programmable Controller. "PC" is used, however, in some Programming Device displays to mean Programmable Controller.

Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

Note   Indicates information of particular interest for efficient and convenient operation of the product.

1,2,3...   1.   Indicates lists of one sort or another, such as procedures, checklists, etc.

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About this Manual:

This manual describes the installation and operation of the CXONE-AL☐☐C-V4/CXONE-AL☐☐D-V4 Face Plate Auto-Builder for NS. The Face Plate Auto-Builder for NS is a software package used to automatically build project files for the CS1W-LC001 Loop Control Unit, the CS1W-LCB01 and CS1W-LCB05 Loop Control Boards, CS1D-CPU☐☐P Process-control CPU Units, and CJ1W-CPU☐☐P Loop Control CPU Units used with NS-series Programmable Terminals. These files are based on the tag files created using CX-Process Tool.

The project files that are created are configured using the Face Plate Screens for the Loop Control Unit.

Please read this manual carefully and be sure you understand the information provided before attempting to install and operate the Face Plate Auto-Builder for NS. Please read the following manuals carefully and be sure you understand the information provided before setting up the Loop Control Unit/Board and NS-series PT System

Manuals Related to the Loop Control Unit/Board

Product	Manual name	Cat. No.	Contents
CXONE-AL☐☐C-V4/ CXONE-AL☐☐D-V4 Face Plate Auto-Builder for NS	Face Plate Auto-Builder for NS Operation Manual	W418 (this manual)	Installation and operation procedure for Face Plate Auto-Builder for NS.
WS02-LCTC1-EV3 CX-Process Tool	CX-Process Tool Operation Manual	W372	Installation and operation procedures for the CX-Process Tool.
CXONE-AL☐☐C-V4/ CXONE-AL☐☐D-V4 CX-One FA Integrated Tool Package	CX-One Setup Manual	W463	Provides an outline of the CX-One FA Integrated Tool Package and the installation procedure. Refer to this manual when installing software contained in the CX-One FA Integrated Tool Package.
WS02-LCTC1-E CX-Process Monitor	CX-Process Monitor Operation Manual	W373	Installation and operation procedures for the CX-Process Monitor.
WS02-LCMC1-E CX-Process Monitor Plus	CX-Process Monitor Plus Operation Manual	W428	Installation and operation procedures for the CX-Process Monitor Plus.
CS1W-LC001 Loop Control Unit	Loop Control Unit Operation Manual	W374	Installation and operation procedures for the Loop Control Unit (except for function blocks).
CS1W-LCB01/05 CS1D-CPU☐☐P Loop Control Boards	Loop Control Board Operation Manual	W406	Installation and operation procedures for the Loop Control Boards (except for function blocks).
CS1W-LC001 Loop Control Unit	Loop Control Unit Function Block Reference Manual	W375	Detailed information on function blocks for Loop Control Units.
CS1W-LCB01/05 CS1D-CPU☐☐P Loop Control Boards	Loop Control Board Function Block Reference Manual	W407	Detailed information on function blocks for Loop Control Boards

Manuals Related to the NS-series PT

Product	Manual name	Cat. No.	Contents
WS02-NSFC1-E Face Plate Auto-Builder for NS	Face Plate Auto-Builder for NS Operation Manual	W418 (this manual)	Installation and operation procedure for Face Plate Auto-Builder for NS.
WS02-LCTC1-EV3 CX-Process Tool	CX-Process Tool Operation Manual	W372	Installation and operation procedures for the CX-Process Tool.
WS02-LCTC1-E CX-Process Monitor	CX-Process Monitor Operation Manual	W373	Installation and operation procedures for the CX-Process Monitor.
WS02-LCMC1-E CX-Process Monitor Plus	CX-Process Monitor Plus Operation Manual	W428	Installation and operation procedures for the CX-Process Monitor Plus.
NS-CXDC1-V2 CX-Designer Ver. 2.0	CX-Designer User's Manual	V088	Operating procedures for the CX-Designer.
NS12-series, NS10-series, NS8-series, NS5-series PT	NS-series PT Setup Manual	V083	Setup procedures for NS-series PTs.
NS12-series, NS10-series, NS8-series, NS5-series PT	NS-series PT Programming Manual	V073	Descriptions of NS-series PT functions.

Read and Understand this Manual

Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

PRECAUTIONS

The information contained in this section is important for the safe and reliable application of the Face Plate Auto-Builder for NS. You must read this section and understand the information contained before attempting to set up or operate the Face Plate Auto-Builder for NS and PLC system.

1 Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent) and instrumentation systems.

- Personnel in charge of installing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of managing FA systems and facilities.

2 General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.

Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, petrochemical plants, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.

Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

This manual provides information for using the Face Plate Auto-Builder for NS. Be sure to read this manual before attempting to use the Face Plate Auto-Builder for NS and keep this manual close at hand for reference during operation.

⚠ **WARNING** It is extremely important that a PLC and all PLC Units/Boards be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. Your must consult with your OMRON representative before applying a PLC System to the above-mentioned applications.

3 Safety Precautions

⚠ **Caution** When updating the CSV tag file generated by the CX-Process Tool Software to use with the Face Plate Auto-Builder for NS, be sure to confirm that the data is consistent with the program in the Loop Control Board/Unit. If the output project is not confirmed, unexpected operation may result.

4 Application Precautions

Observe the following points when using the Face Plate Auto-Builder for NS.

⚠ **Caution** Confirm operation of any user programs that you develop before running the programs.

⚠ **Caution** Confirm the operation of screen data and host programs before using the programs for actual applications.

SECTION 1
Overview

1-1 Features of the Face Plate Auto-Builder for NS

The Face Plate Auto-Builder for NS is a software package that automatically builds project files for NS-series Programmable Terminals that are used for monitoring and tuning CS1W-LC001 Loop Control Units, CS1W-LCB01, CS1W-LCB05 Loop Control Boards, CS1D-CPU☐☐P Process-control CPU Units, and CJ1W-CPU☐☐P Loop Control CPU Units.

Based on a CSV tag file created using the CX-Process Tool, the software automatically builds a NS-series project file configured with Face Plate Screens for the Loop Control Unit/Board and Process-control CPU Units.

1-1-1 Features

- By simply specifying the tag file created using the CX-Process Tool, the software automatically builds a project file for an OMRON NS-series Programmable Terminal. The project file is configured with Face Plate Screens of the Loop Control Unit/Board and Process-control CPU Units.

- When using a Loop Control Unit/Board and Process-control CPU Unit containing NS system version 4 or later, up to 100 loops of function block (e.g., PID Control) monitoring and tuning can be performed on an NS-series Programmable Terminal. With any other NS system version, up to 32 loops of function block monitoring and tuning can be performed.

- Face Plate Screens can be built for the following function blocks of Loop Control Unit or Board.

    2-position ON/OFF (Block Model 001)

    3-position ON/OFF (Block Model 002)

    Basic PID (Block Model 011)

    Advanced PID (Block Model 012)

    Indication and Operation (Block Model 032)

    Indicator (Block Model 034)

    Segment Program 2 (Block Model 157)

    Segment Program 3 (Block Model 158)

    Indication and Setting (Block Model 031)

    Ratio Setting (Block Model 033)

    High/Low Alarm (Block Model 111)

    Timer (Block Model 205)

    Counter (Block Model 208)

    ON/OFF Valve Manipulator (Block Model 221)

    Motor Manipulator (Block Model 222)

    Reversible Motor Manipulator (Block Model 223)

    Motor Opening Manipulator (Block Model 224)

    Blended PID (Block Model 013)

    Batch Flowrate Capture (Block Model 014)

1-2 System Requirements

The following hardware and software is required to install and operate the Face Plate Auto-Builder for NS.

1-2-1 Computer

■ **Computer**

IBM PC/AT or compatible

■ **CPU**

Intel CPU (Core, Pentium, or Celeron family)

For Windows Vista: 1 GHz min.

For any other OS: 333 MHz min. required, 1 GHz min. recommended

■ **Memory**

For Windows Vista: 1 GB min.

For any other OS: 256 MB min. required, 512 MB min. recommended

1-2-2 OS

Windows XP Professional (Service Pack 3) (see note), Windows Vista (Ultimate or Business), or Windows 7 is required.

Note: The 64-bit versions are not supported.

1-3 Application Environment

The Face Plate Auto-Builder for NS uses tag files created with the following software.

CX-Process Tool

■ **Using a Loop Control Board**

CX-Process Tool Ver. 3.0 or later

■ **Using a Loop Control Unit**

CX-Process Tool Ver. 2.0 or later

Projects built with the Face Plate Auto-Builder for NS are used with the following hardware and software.

Loop Control Unit, Loop Control Board, Loop Control CPU Unit, or Process-control CPU Unit

CS1W-LC001 Ver. 2.0 or later

CS1W-LCB01/05 Ver. 1.0 or later

CJ1G-CPU☐☐P Ver. 2.0 or later

CS1D-CPU☐☐P Ver. 1.0 or later

Note 1. CX-Process Tool Ver. 3.2 or later must be used to output any EM banks other than bank 0 to the area allocated for the Loop Control Board's HMI.

2. Backup cannot be performed during operation with versions of the CS1W-LCB01/05 Loop Control Boards earlier than version 1.5 or CS1W-LC001 Loop Control Units. With other Units/Boards, data can be backed up during operation from the detail setting screens for the Segment Program 2 face plate that is built.

NS-Designer NS-Designer Ver. 2.0 or later

CX-Designer　　　　　　　CX-Designer Ver. 1.0 or later

NS-series PT (Programmable Terminals)　　　　The following models of NS-series PT, Ver. 2.0 or later:

　　　　NS12-TS00☐/TS01☐/-V1/-V2

　　　　NS10-TV00☐/TV01☐/-V1/-V2

　　　　NS8-TV00☐/TV01☐/-V1/-V2

　　　　NS7-SV00☐/SV01☐

1-3-1　Connection Methods

The project files built with the Face Plate Auto-Builder for NS can be used with the following connection methods between the NS-series PT and PLC.

Communications port	Supported communications methods
Serial port A	1:1 NT Link 1:N NT Links
Serial port B	1:1 NT Link 1:N NT Links
Ethernet	FINS communications
Controller Link	FINS communications

Note　Other connection combinations not listed here may cause malfunctions.

1-4　Upgrades Made for Version 2.0

The functional changes made between version 1.1 and version 2.0 of the Face Plate Auto-Builder for NS are described in this section.

Maximum Number of Loops Increased from 32 to 100　　Accompanying upgrades to the NS-series PT system software, the number of loops that can be used for monitoring and tuning on the NS-series PT has been increased from 32 to 100 with Face Plate Auto-Builder for NS Ver. 2.0.

Note　Set the NS-series project system to version 4 or later.

System Version Setting for NS Project To Build　　The output version of the project data after building can be specified.

NS8 Support　　Project data can be built for the NS8.

EM Multi-bank Support　　With CS-Process Ver. 3.2 or later, EM banks 0 to C can be specified for output to the Loop Control Board's HMI. (Previously only bank 0 was supported.) With version 2.0, function block data using EM banks 0 to C created with CX-Process Ver. 3.2 can be converted to NS-series projects.

Multi-node Support (Up to 32 Nodes)　　An NS-series project file that monitors more than one Loop Control Unit/ Board from single NS-series PT can be built from and CS-Process project using multiple nodes.

Automatic Building of Segment Program 2 Detail Setting Screens　　When a Segment Program 2 function block is used, detail setting screens to set Segment Program 2 parameters (time width-output setting screen and weight width setting screen) are automatically generated.

1-5   Upgrades Made for Version 3.0

The functional changes made between version 2.0 and version 3.0 of the Face Plate Auto-Builder for NS are described in this section.

Additional Support for Function Blocks

Face plates can be built for the following function blocks in addition to the function blocks supported for version 2.0.

- Indication and Setting (Block Model 031)
- Ratio Setting (Block Model 033)
- High/Low Alarm (Block Model 111)
- Timer (Block Model 205)
- Counter (Block Model 208)
- ON/OFF Valve Manipulator (Block Model 221)
- Motor Manipulator (Block Model 222)
- Reversible Motor Manipulator (Block Model 223)
- Motor Opening Manipulator (Block Model 224)
- Blended PID (Block Model 013)
- Batch Flowrate Capture (Block Model 014)

Automatic Comments for Unit and Scaling Settings

Comments are automatically entered for automatically allocated unit and scaling settings when a project is generated. This prevents mistakes in editing automatically allocated unit and scaling settings when editing projects.

1-6   Upgrades Made for Version 3.1

The functional changes made between version 3.0 and version 3.1 of the Face Plate Auto-Builder for NS are described in this section.

Additional Support for Function Block

Face plates can be built for the following function block in addition to the function blocks supported for version 3.0.

- Segment Program 3 (Block Model 158)

Output in NS System Version 6.6 and NS-Runtime Version 1.0 Formats

Projects can be output in NS System version 6.6 and NS-Runtime version 1.0.

SECTION 2
Setup

2-1   Installation Method

Install the Face Plate Auto-Builder for NS from the installer of CX-One. Refer to the included CX-One Setup Manual (W463) for details.

2-1-1   Installation Precautions

- Before installing the Face Plate Auto-Builder for NS, close all Windows programs.
- Do not install on a compressed drive. If a file on a compressed drive is corrupted, it cannot be recovered.
- Do not cancel installation during setup. Doing so may result in some files already copied remaining in the installation directory.
- Do not turn OFF the power or reset the personal computer during installation. Doing so may damage data in the computer.
- If Windows 2000 is used, be user to use Service Pack 4 or later. To check the Service Pack version number, from the Start Menu select ***Settings - Control Panel - System***. The System Properties Window will appear. Click the **General** Tab. The Service Pack version is displayed under *System*. If the Service Pack version is not displayed, it is not installed. Refer to the Microsoft Website for details on compatibility.
- For Windows login users, log in as the administrator or user with administrative authority. A filter preventing unauthorized users is provided and will cause an access error to occur.
- After installation, Windows must be restarted. Use the Installation Wizard Dialog Box to restart, if required.

2-1-2   Installing the Face Plate Auto-Builder for NS

Step 1: Execute the following setup wizard program from the CD.

<CD-ROM drive> \Face Plate Auto-Builder for NS\DISK1\SETUP.EXE.
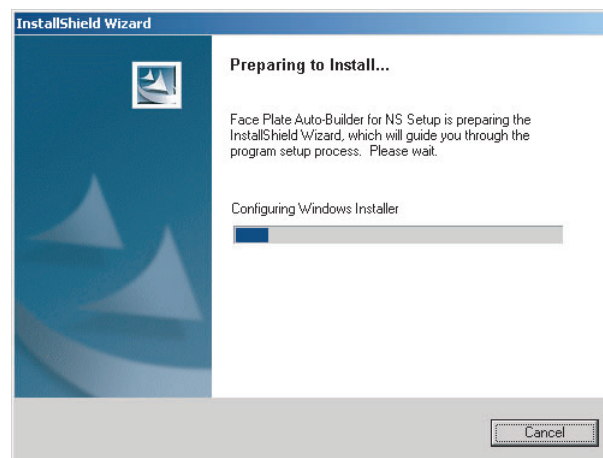
Step 2: Start installation of the Face Plate Auto-Builder for NS by clicking the **Next** Button.
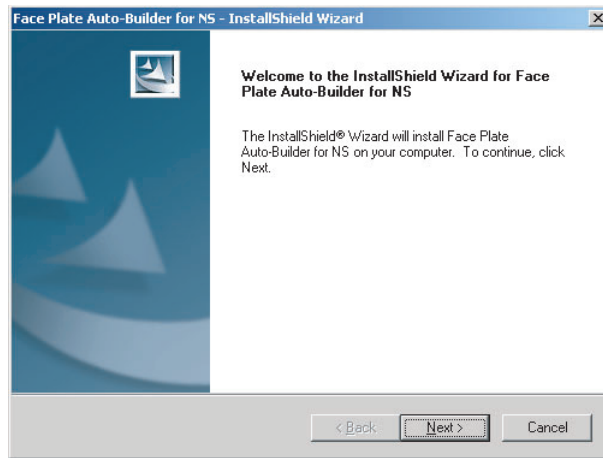
Step 3: Read the License Agreement thoroughly. If you agree with the terms, select ***I accept the terms of the license agreement,*** and click the **Next** Button to proceed.
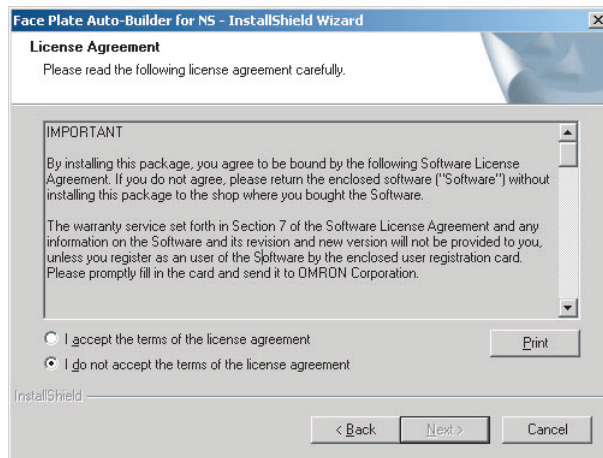
Step 4: Specify the drive and directory in which the program files will be installed.

The default setting is C: \Program Files\OMRON\CX-One\FP Auto-Builder. To change the directory, click the **Browse** Button, and select the directory.

Check the installation directory and then click the **Next** Button.
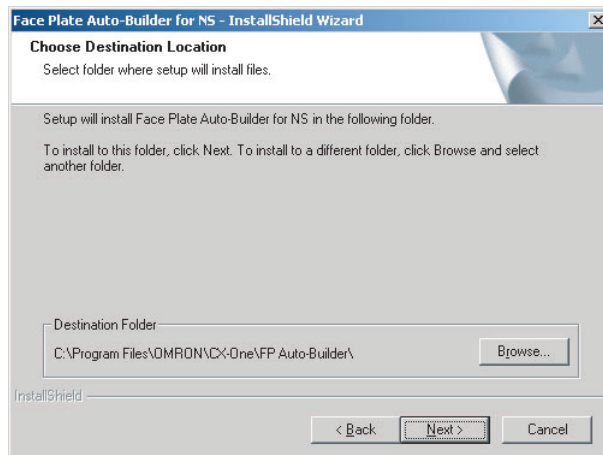
Step 5: Select the program folder.

Specify the location for the new shortcut to be added to the program folder under the Start Menu. Check the setting and select the **Next** Button.
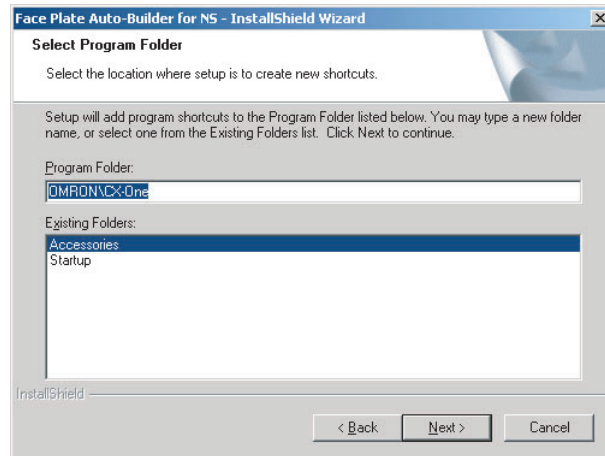
Step 6: Preparations for executing the installation have been completed.
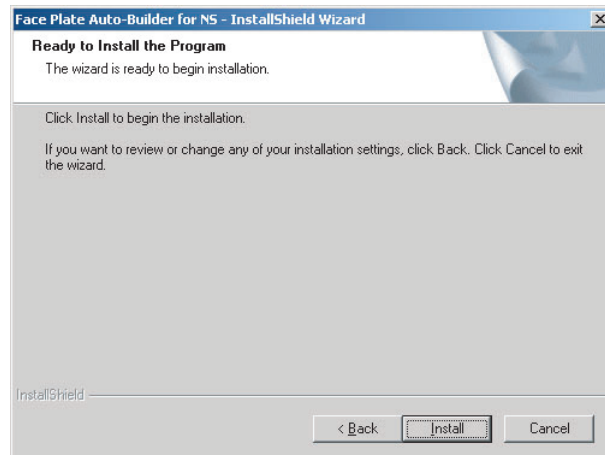
Click the **Install** Button.

Installation will start from the install program.To check or change installation details, click the **Back** Button. To cancel installation, click the **Cancel** Button.

Step 7: The following dialog box will be displayed when installation has been completed. Click the **Finish** Button.
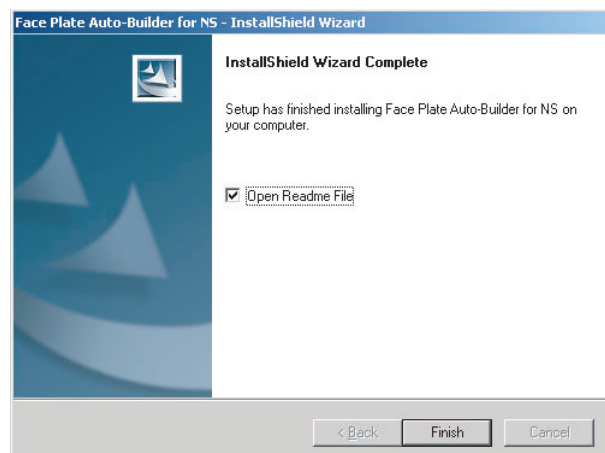
2-2   Uninstalling the Face Plate Auto-Builder for NS

Step 1: Select ***Add/Remove Programs*** from the Control Panel.

Select ***Face Plate Auto-Builder for NS*** from the list of applications, and click the **Change/Remove** Button.
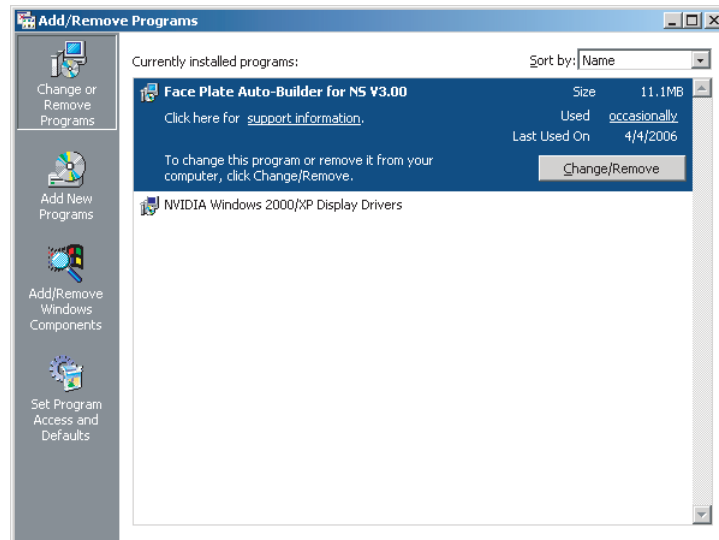
Step 2: Click the **OK** Button. The Face Plate Auto-Builder for NS will be uninstalled.
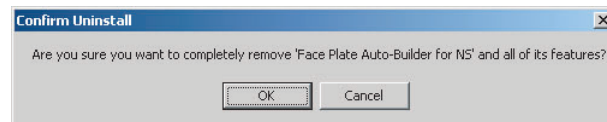
Step 3: When the uninstall process has been completed, the following screen will be displayed. Click the **Finish** Button.
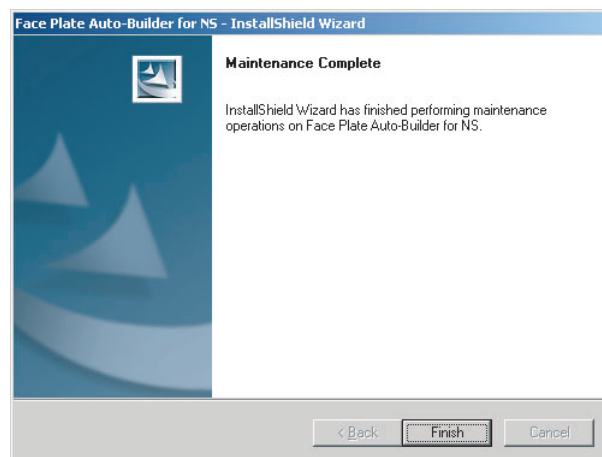
SECTION 3
Basic Operation Flow

3-1 Basic Operation Flow

This section describes the operation flow through execution of the project that has been created using the Face Plate Auto-Builder for NS.

The following settings must be set from CX-Process Tool before executing Face Plate Auto-Builder for NS.

Compile CSV Tag Files Using CX-Process Tool

(Refer to the *CX-Process Tool Operation Manual* (W372).)

Use the CX-Process Tool to compile (create) a CSV tag file for the Loop Control Unit/Board.

1. Use the CX-Process Tool to create a program for the Loop Control Unit/Board. Register and connect each function block, and register the Send/Receive All Blocks block (for Loop Control Units only).

2. Set a CSV tag for each function block.

3. After setting the CSV tags, create the CSV tag file.

Note: Supported by CX-Process Tool Ver. 2.0 or later only.

Automatically Build NS Project Using Face Plate Auto-Builder for NS
(Refer to *Section 4 Basic Operations*.)

Specify the CSV tag file compiled using the CX-Process Tool to enable the NS Face Plate Screen Project to be automatically built.

Note: Specify a new project for the project to be built automatically. If an existing project is specified, the communications settings, numeric unit and scale settings, and data log settings will be changed to the default values when a new project is created.

Read Project and Transfer to the NS-series PT Using CX-Designer

Using as a New Project
Load the project file created by Face Plate Auto-Builder for NS to the CX-Designer.
Loading Face Plates into an Existing Project
Refer to *4-2 Merging Projects.*

Edit screens or create new screens, as required.
(Automatically built project files can be used as is.)

Set the initial settings for communications between the NS-series PT and PLC in the CX-Designer System Settings.

After confirming project details, transfer the project file to the NS-series PT.

Start Operation of Loop Control Unit/Board + NS-series PT System
After connecting the Loop Control Unit/Board (CS series) and NS-series PT, check operations, and then start operating the system.

SECTION 4
Operations

4-1   Basic Operation

Step 1: Start the Face Plate Auto-Builder for NS

Start the Face Plate Auto-Builder for NS by selecting ***Programs\OMRON\CX-One/Face Plate Auto-Builder for NS\Face Plate Auto-Builder for NS*** from the Windows Start Menu. The following parameter setting screen will be displayed, when the Face Plate Auto-Builder for NS starts.

Step 2: Make the Required Settings

CSV Tag File

Set the folder location and file name of the CSV tag file from which the project will be built. Click the **Browse (1)** Button to display a dialog box for selecting the CSV tag file.

Project Name

Set the name of the CX-Designer project file to be created (up to 38 characters).

Output Folder

Set the folder that will output the CX-Designer project file. Click the **Browse (2)** Button to display a dialog box for selecting the folder that will output the project.

■ Build Conditions

PT Model/Project Version

Select the model of the NS-series PT and the system version.

Model	Project version (system version)	Number of changeable function blocks
NS7	NS System Version 2	32
NS8	NS System Version 4 or Version 6.6	100 (See note.)
NS10	NS System Version 2	32
	NS System Version 4 or Version 6.6	100 (See note.)
NS12 (Default)	NS System Version 2	32
	NS System Version 4 or Version 6.6	100 (See note.)
NS-Runtime	NS System Version 6.6	100 (See note.)

Note   A maximum of 85 Segment Program 3 blocks can be created. Conversion will not be possible if there are more than 85 Segment Program 3 blocks registered in the CSV tag file.

<u>Enable for Making Detail Setting Screen of Segment Program 2 (Project Version 4 or Later)</u>

If this option is selected and a Segment Program 2 function block is used, detail setting screens (time width-output setting screen and wait width setting screen) to set the Segment Program 2 parameters will be built automatically.

Note The capacity of the NS-series PT may be exceeded if a large quantity of screens are generated automatically. An error will occur when transferring the project if the capacity is exceeded. If this occurs, delete the detail setting screens and wait screens. When deleting detail setting screens and wait screens, always delete the parts from the screen first and then delete the screens using the screen maintenance function. (It will not be possible to delete the screens using the screen maintenance function if there are parts remaining on the screens.) *Tool - Resource Report* can be used from the CX-Designer to see if the capacity has been exceeded.

<u>Screen Number Offset</u>

Set the first screen number in the NS-series PT.

Project version	Version 2	Version 4	Version 6.6
Range	0 to 3799	0 to 3599	0 to 3599
Default	0		

Starting from the specified screen number offset, screen numbers are assigned to the Control Screens (up to 25 screens) and Tuning Screens (up to 100 screens) in that order.

<u>Unit Number Offset</u>

Set the first number allocated from the Unit and Scale No. data in the NS-series PT.

Project version	Version 2	Version 4	Version 6.6
Range	12 to 800	12 to 700	12 to 700
Default	12		

Unit and Scale No. data items for the NS-series PT Numeral Display and Input objects are created automatically by the Face Plate Auto-Builder for NS from the scaling upper/lower limit and unit characters.

If version 2 is selected, up to 69 Unit and Scale No. data items will be created from the first number tag set here. If version 4 or version 6.6 is selected, up to 207 Unit and Scale No. data items will be created (when using Segment Program 3, up to 632 Unit and Scale No. data items will be created). (See note.) Refer to the following illustration for details.

Note   The number of data items shown here will be created when the maximum of 85 Segment Program 3 blocks are registered in addition to 15 other blocks, making a total of 100 blocks.

Allocation of Unit and Scaling Settings

The NS System uses the first 11.

Five are always allocated.

Start of unit and scaling settings to be set (default: 12)

One is allocated for each registered function block (PV scaling settings).

These 100 are allocated regardless of the number of registered function blocks

One is allocated for each registered function block (DV scaling settings).

These 100 are allocated regardless of the number of registered function blocks

The total number of freely set values for bank data registered for Segment Program 3 (only in version 6.6 and NS-Runtime).

Two allocated for Segment Program 2. Numbers 999 and 1000 are always allocated regardless of the start number setting. (Applies only when the detailed setting screen of Segment Program 2 is used.)

Refer to *5-4 Engineering Units* for details on unit and scale settings.

Comments are automatically entered for unit and scaling settings automatically allocated by the Face Plate Auto-Builder for NS. Unit and scaling settings for which comments have been automatically entered are automatically generated by the Face Plate Auto-Builder for NS; do not change the settings when constructing screens.

No.	Comment	Unit Name	Zoom to	Offset
6		g	1	0
7		kg	1	0
8		cc	1	0
9		ml	1	0
10		l	1	0
11		C	1	0
12	NSFP		0.01	0
13	NSFP		0.1	0
14	NSFP		0.001	0
15	NSFP		0.0001	0
16	NSFP		1	0
17	NSFP		0.01	0
18	NSFP		0.01	0

Go to fixed scale   Clear   OK   Cancel   Help

Data Log Number Offset

Specify the first number allocated to the data log group in the NS-series PT. The maximum value of the data log used by the Face Plate Auto-Builder for NS is 100 for NS system version 4 and higher and 32 for other versions.

Message ID Number Offset

Specify the first number allocated for confirmation messages in the NS-series PT. There are two confirmation messages used by the Face Plate Auto-Builder for NS. These two messages are automatically created when a project is generated.

■ Button

Build

Click this button to start automatic screen building.

Quit

Click this button to exit the Face Plate Auto-Builder for NS.

Version

Click this button to display the Version Information Dialog Box for the Face Plate Auto-Builder for NS.

Step 3: Register Host Names

When all settings have been completed in step 2, click the **Build** Button. The following dialog box will be displayed.
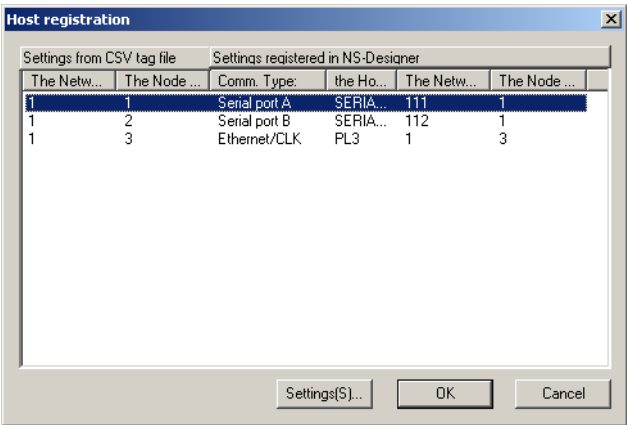
This window is used to make the host settings to create an NS-series project file from a CX-Process project that uses multiple nodes. With the NS-series PT, nodes are registered as hosts. Host settings are described next.

1,2,3...   1.   Select the host to be set in the Host Registration Dialog Box and click the **Settings** Button. The following dialog box will be displayed.
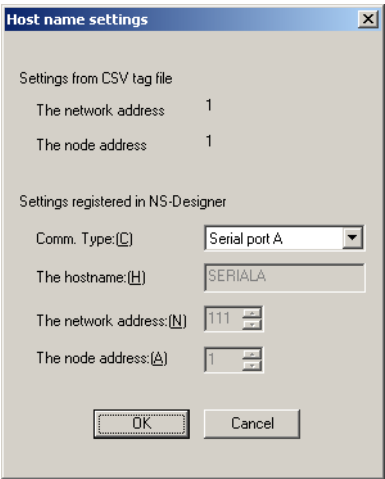
2. Set the required items. The settings and display is described in the following table.

Item		Meaning
CSV tag file settings	Network address	Displays the network address given in the CSV tag file.
	Node address	Displays the node address given in the CSV tag file.
Settings registered in CX-Designer	Communications connection method	Set the node (host) connection method.
		Any of the following three methods can be set: Serial port A, serial port B, Ethernet/CLK
		Example: If the node is connected to serial port A, select Serial port A.
		Note: The host name, network address, and node address cannot be set if serial port A or serial B is selected.
		• Serial Port A Settings Host name: SERIALA Network address: 111 Node address: 1
		• Serial port B Settings Host name: SERIALB Network address: 112 Node address: 1
		Note: When Ethernet/CLK is selected, the PLC type registered in the CX-Designer will always be SYSMAC-CS1.
	Host name	Set the host name.
		• The host name must be all-caps.
		• The host name can be up to 16 characters long.
		• The same host name can be used only once.
		• The host name, network address, and node address cannot be set if serial port A or serial B is selected as the communications connection method.
	Network address	Set the network address of the node (host) as viewed from the NS-series PT.
		The network address will be 111 or 112 if serial port A or serial B is selected as the communications connection method.
	Node address	Set the node address of the node (host) as viewed from the NS-series PT.
		The node address will be 1 if serial port A or serial B is selected as the communications connection method.

Step 4: Load the Project File

Use CX-Designer to read the automatically built project files.

Use CX-Designer to edit the project files as required.

Step 5: Transfer the Settings to the NS-series PT

Transfer the settings from CX-Designer to the NS-series PT (or save the settings to a Memory Card and install the Memory Card in the NS-series PT).

Start the system, and perform monitoring/tuning of the Loop Control Unit/Board from the NS-series PT.

Note An error message saying that the file is too large and to check the product data (0088) may be displayed when transferring a project from the CX-Designer to the NS-series PT. If this message appears, clear the selection of

the *Transfer with the symbol table* Option in the *Send Options* of the CX-Designer, and then resend the project.

4-2 Merging Projects

4-2-1 Merge Using the CX-Designer

Use the CX-Designer with the following procedure to merge an NS project output using the Face Plate Auto-Builder for NS with an existing NS project.

Individually Copying Screens

Selected screens can be copied. Screens can be copied from a project output using Face Plate Auto-Builder for NS to an existing project by starting two copies of the CX-Designer. Screens cannot be copied, however, if the system version of the project copy destination is older than that of the project copy source.

1,2,3...
1. Select the screen to be copied from the Project Workspace and press the **Ctrl**+**C** Keys. Alternatively, right-click and select **Copy** from the pop-up menu. Click the screens while pressing the **Shift** Key or **Ctrl** Key to select multiple screens at the same time.

2. Select the category in which to paste in the Project Workspace.

3. Press the **Ctrl** + **V** Keys. Alternatively, right-click and select **Paste** from the pop-up menu.

4. Specify the number of the first screen after pasting, then click the **OK** Button.
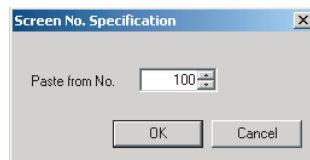
5. If the *Reuse screen with sheet* option has been set, specify the number of the first sheet after pasting, and then click the **OK** Button. (This operation is necessary only if the *Reuse screen* with sheet option has been set.)
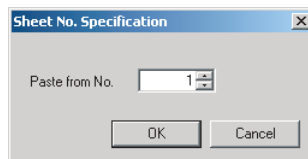
The screen will not be copied if the number of sheets after copying exceeds ten.

Once copying has completed, a file in the format of **projectname.txt** will be created in the folder where the project file (i.e., ipp file) is saved. The screen numbers before copying and after copying can be checked.

Pasting Parts, Such As Face Plates, into Separate Projects

Copied or cut parts can be pasted to separate projects. Common settings that the part references are also copied at the same time. (Refer to the note below regarding common settings.) Parts cannot be copied, however, if the system version of the project copy destination is older than that of the project copy source.

1,2,3...   1. Start two copies of the CX-Designer, and then open the copy source project in one and the copy destination project in the other.

2. Copy or cut the part in the copy source CX-Designer project.

3. Paste the part into the copy destination CX-Designer project.

4. Alternatively, drag the part from the copy source CX-Designer project to the copy destination CX-Designer project.

5. If multiple hosts are registered to the project at the reuse destination, select an appropriate host after copying for the communications addresses used with the parts.
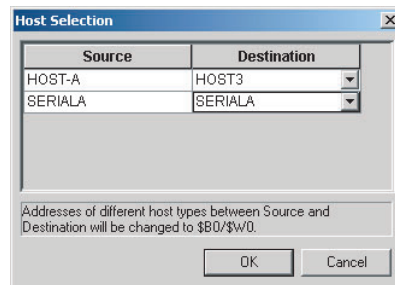
Note   Common Settings
The following settings, which are referred to by function parts, are also copied to the project of the copy destination.

- Alarm/event settings (alarm/event indication, alarm/event summary and log)
- Data log settings (data log graph)
- Data block settings (data block tables)
- Unit and scale settings (unit-set value settings, inputs, and thumb rotary switches)
- Dialog box settings (function parts for which specifying a confirmation message has been set)

These settings will be added with numbers changed to not overlap settings already at the copy source. Unused communications addresses at the copy destination will be added to the symbol tables.

Note   1. Switch from the face plate on the Control Screen to the relevant Tuning Screen by using the Command Button. The number of the screen switched to may deviate depending on the method of screen copying.

2. When copying individual screens and parts, unit and scale settings except for comments will be regarded as identical unit and scale settings if the settings are identical, and the allocation of unit and scale numbers will change. To change the scaling information of function blocks, change the scaling settings using the CX-Process Tool, and copy after again outputting the project with Face Plate Auto Builder for NS.

4-2-2   Merging Using the NS Project Merge Tool

The following settings are required for the Face Plate Auto-Builder for NS, when merging the built project with other projects using the NS Project Merging Tool.

For details on merging projects, refer to the *NS Project Merging Tool Operation Manual*.

The NS Project Merge Tool is provided with the CX Designer.

Execute the "Setup.exe" file in \Utility\English\ProjectMergeTool\disk1 on the CDROM to install it.

When merging projects, make the following settings when building the project on the Face Plate Auto-Builder for NS so that the same resources are not used by both projects. Confirm the build conditions in *4.1 Basic Operation* for details on settings.

- First screen number
- First unit number
- First data log number
- First confirmation message number

Note Observe the following precaution when merging projects with the NS Project Merge Tool.

- The NS Project Merge Tool does not support version 6.6 projects. Follow the procedure described in *4-2-1 Merge Using the CX-Designer* to merge version 6.6 projects.
- The SMART Active Parts will not function if a project (called project A) that was output with the *Enable for Making Detail Setting Screen of Segment Program 2* option selected is merged with a project (called project B) in which SMART Active Parts were pasted.

Use the following procedure to successfully merge projects like these.

1,2,3...   1. Delete all of the SMART Active Parts from project B.
2. Save project B.
3. Merge the two projects with project A as the base project and project B as the merge project.
4. Paste the SMART Active Parts into the merged project.

SECTION 5
Basic Specifications of Created Screens

5-1 Created Screens

The Face Plate Auto-Builder for NS creates two types of screens: Control Screens and Tuning Screens.

Control Screens

Control Screens display a row of multiple face plates.

Control Screens are created from the beginning of the CSV tag file for up to 100 loops for system version 4 or later and for up to 32 loops for other system versions.

For NS12 PTs, six face plates are created in a single screen, and for NS10, NS8, and NS7 PTs, four face plates are created in a single screen.

The following screen is a Control Screen when using an NS12 PT.
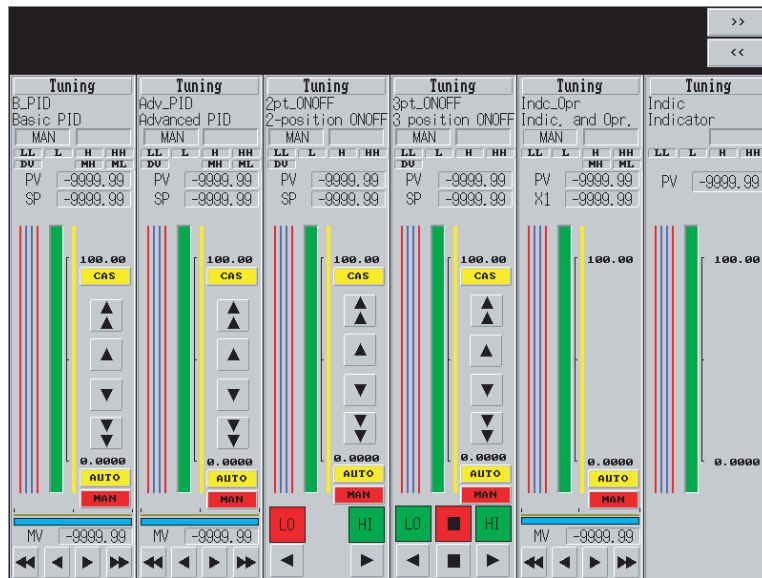
Click the >> Button in the top right corner of the screen to move to the next Control Screen page, and click the << Button to move to the previous page.

Tuning Screens

Tuning Screens are adjustment screens for individual tag names (i.e., function blocks) and are configured from the parameter settings, such as face plate, realtime trend, and alarms.

Click the **Tuning** Button at the top of each face plate arranged in a row in the Control Screens to move to the Tuning Screen of the corresponding tag name (function block).

The following Tuning Screen is an example of when an NS12 PT is used.

Click the **Back** Button in the top right corner of the Tuning Screen to return to the Control Screen.
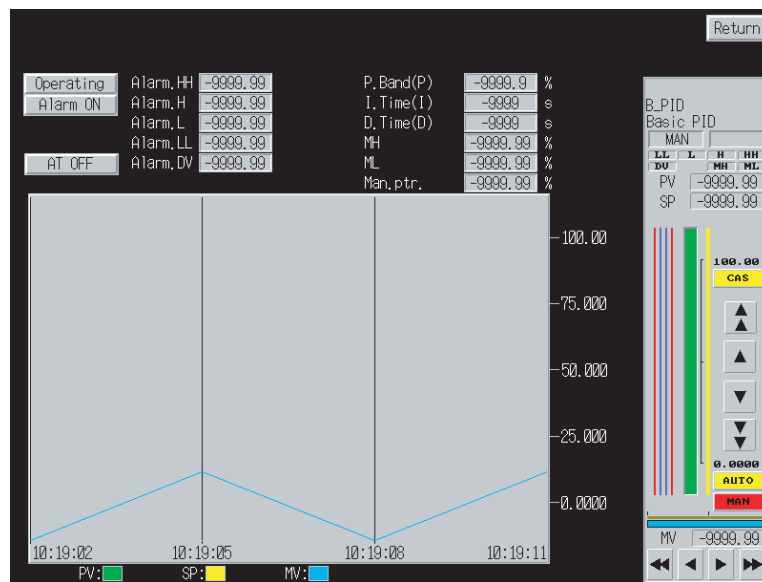
Screen Building Order (Screen Number Order)

Control Screens are built first, followed by Tuning Screens, as shown in the following table. Building starts from the screen number specified as the screen number offset, and continues in sequence without skipping any screen numbers. (The screen number offset can be specified between 0 and 3,799 (System Version 2), 0 and 3,599 (System Version 4 or later). The default is 0.)

Screen	Details
A Control Screens (up to 8 screens)	Up to 100 face plates for system version 4 or later and up to 32 face plates for other system versions are built for the function blocks to be converted that are detected when searched from the beginning of the CSV tag file.
	The function blocks detected first are built with the smaller numbers at the left of the screen, and are arranged in order to the right. Six face plates are created for NS12 PTs and four face plates are created for the NS10 and NS7 PTs, after which building is shifted to the next screen.
	The Control Screens are built for all the function blocks.
B Tuning Screens (up to 32 screens)	Up to 100 face plates for system version 4 or later and up to 32 face plates for other system versions are built sequentially for the function blocks to be converted that are detected when searched from the beginning of the CSV tag file. The Tuning Screens are built for all the function blocks.

Note In the screens built using the Face Plate Auto-Builder for NS, the face plates (in both Control Screens and Tuning Screens) are built in groups. Parts other than face plates are not grouped.

5-2　Screen Titles

Screen titles are assigned to each screen that is built, as shown in the following table.

Screen	Screen title assignment method
Control Screens	Control Screen *<Sequential number from 1>* Example: Control Screen 1, Control Screen 2, etc.
Tuning Screens	Tuning Screen - *<Tag No.>* 　　　　　　　　　　　　Tag No. Example: Tuning Screen– ⏜TIC0000.

5-3　Tuning Screen Realtime Trends

Up to 100 Tuning Screens for system version 4 or later and up to 32 Tuning Screens for other system versions can be built using the Face Plate Auto-Builder for NS. The NS-series data log is also generated for creating a real-time trend graph for the Tuning Screens. Up to 100 data logs for system version 4 or later and up to 32 data logs for other system versions are used and data logs are created from the following details, according to the order the face plates are built.

- Data log setting group name: Group (number) (Example: Group 1, Group 2, etc.)
- Data collection cycle: 1 s
- Log count: 533 records
- Log period: Logging is performed while data log object is displayed only. (It is cleared when screens are switched.)
- Log address: (Refer to information on individual function blocks for details on logging the SP, MV, and PV for the tag ITEM.)

Note　The NS project file built with the Face Plate Auto-Builder for NS create building results after returning the communications settings, unit and scale setting, and data log settings to the default values for creating new projects. Specify a new project name in the name for the project file being built.

5-4　Engineering Units

Values such as the SP and PV for Basic PID must be scaled to engineering units.

In the following explanations, places where engineering units are indicated must be scaled as defined in this section.

With the data in tag ITEMs for engineering units, such as PV and SP for Basic PID, the value stored and used in the PLC or in communications for the scaling lower limit (0%) is 0, and for the scaling upper limit (100%) is 10,000 (e.g., 5,000 for scaling of 50%, −1,500 for −15%, etc.).

When the value of a tag ITEM for an engineering unit is displayed or set on the PT screen, the value must be displayed or set as the actual amount (engineering unit value) after scaling.

Scaling is performed by referencing the CSV tag file's scaling upper limit, scaling lower limit, decimal point position (scaling decimal point position), and unit characters.

In a CSV tag file, the scaling upper limit, scaling lower limit, and decimal point position are stored for every tag ITEM. The scaling upper limit, scaling lower limit, and decimal point position are, however, the default values registered by the user in for individual tag names (i.e., function blocks) from the CX-Process Tool. Therefore, for the same tag name (function block), the scaling upper limit, scaling lower limit, decimal point position, and unit characters are all the same for the tag ITEM, i.e., the engineering unit is the same.

For example, when the scaling upper limit value=500, scaling lower limit value=0, and decimal point position=1 the values in the PLC or communications are scaled to the values shown in the following table.

Value in PLC or communications	Scaled value
−1,000 (−10%)	−5.0
0 (0%)	0.0
5,000 (50%)	25.0
10,000 (100%)	50.0
11,000 (110%)	55.0

Scaling is based on the CSV tag file, according to the Integer Decimal setting and Unit and Scale No. data for NS-series Numeral Display and Input objects. The Integer Decimal is automatically set based on the decimal point position in the CSV tag file.

Unit and Scale No. data items are created based on the scaling upper/lower limit, and unit characters for tag names from the beginning of the CSV tag file. Up to 66 sets of these items can be created for system version 2.0 and up to 207 can be created for system version 4.0 (632 if Segment Program 3 blocks are set). When building, use the Unit Number Offset setting to specify which of the Unit and Scale No. data items will be allocated. (System version 2 setting range: 12 to 800, System version 4 setting range: 12 to 700, System version 6.6 setting range: 12 to 700 (upper limit changes if Segment Program 3 blocks are set).

When the Tag ITEMs are required to display with the engineering units, the units from the CSV tag file are used.

Note In NS project files built with the Face Plate Auto-Builder for NS, the following two Unit and Scale settings are always registered: 0.01 multiplier, 0 offset, and 0.1 multiplier, 0 offset.
Due to face plate design restrictions, when the decimal point position is 6 or higher, only 5 decimal places will be displayed.

5-5   Percent Data

Data such as the MV for Basic PID is referred to as percent data, and is displayed using a base of 0.00% to 100.00%.

and used in the PLC or communications are 0 for 0%, and 10,000 for 100% (e.g., the value for 50% is 5,000, and for −15% is −1,500).

When the values of tag ITEMs for percent data are displayed on the PT screen or receive a set value, the values are displayed using two decimal places and the percentage unit.

Value in device or communications	Display value
−1,000 (−10%)	−10.00%
0 (0%)	0.00%
5,000 (50%)	50.00%

Value in device or communications	Display value
10,000 (100%)	100.00%
11,000 (110%)	110.00%

Percent data is set by registering a setting in a Numeral Display and Input objects with the integer set to four digits and the decimal to two digits. The conversion rate/offset for the unit and scale setting is set to a multiplier of 0.01.

5-6 Read Address and Write Address

Even if the tag ITEM is the same for the read address that is read and displayed from the PLC to the NS-series PT and the write address that is written to the PLC from the NS-series PT, the addresses are different.

For example, the following table shows the addresses when Basic PID is used.

Tag ITEM	Read address	Write address
SP	Determined by the I/O memory area type, address, and bit position of SP in the CSV tag file.	Determined by the I/O memory area type, address, and bit position of SP_W in the CSV tag file, plus the offset (write data).
MV, R/L_SW, A/M_SW, P, I, D, HH_SP, H_SP, L_SP, LL_SP, etc.	Determined by the I/O memory area type, address, and bit position of each tag ITEM in the CSV tag file.	Determined by the I/O memory area type, address, and bit position of each tag ITEM in the CSV tag file, plus the offset (write data).

Note If any values in the receive area (i.e., I/O memory in the CPU Unit) have not changed, Receive All Blocks in the Loop Control Unit will not receive any data from the CPU Unit. Therefore, after changing the mode from MAN to AUTO and then back to MAN mode, such as for Basic PID, and 2-position ON/OFF, and after changes to the MV set values, the MV value change operation will not function unless there is a change between the current MAN and previous MAN mode in the MV write value (receive area value) from the NS-series PT. In this case, perform an operation to change the MV write value (receive area value) from the NS-series PT once, and then perform processing.

The following precaution is required for the Loop Control Unit.
When using an NS project file built with the Face Plate Auto-Builder for NS, the NS-series PT communicates with the Loop Control Unit via the memory of the CPU Unit, using the Send/Receive All Blocks block in the Loop Control Unit. Therefore, compared with accessing the Loop Control Unit using the CX-Process Tool or CX-Process Monitor software, the communications response is slower.

5-7 Work Memory

The Face Plate Auto-Builder for NS creates the following macros using the internal memory in the PT for purposes such as checking statuses of changed SP data and changed MV data.

PT memory	Application and places used
$B32760	Used to temporarily read tag ITEM R/L_SW.
	Used in the macro for the SP Change Button in the face plate.
	Used in the macro for the Numeral Display and Input object in the Change SP Data Screen.
$B32761	Used to temporarily read tag ITEM A/M_SW.
	Used in the macro for the MV Change Button in the face plate.
	Used in the macro for the Numeral Display and Input object in the Change MV Data Screen.
$B32762	Used to temporarily read tag ITEM CAS_SET.
	Used in the macro for the SP Change Button in the face plate.
	Used in the macro for the Numeral Display and Input object in the Change SP Data Screen.
$B32763	Used to temporarily read tag ITEM MV (2-position ON/OFF).
	Used in the macro for the MV Operation Button in the face plate.
$B32764	Used to temporarily read tag ITEM MVH (3-position ON/OFF).
	Used in the macro for the MV Operation Button in the face plate.
$B32765	Used to temporarily read tag ITEM MVL (3-position ON/OFF).
	Used in the macro for the MV Operation Button in the face plate.
$B32766	Used to temporarily read tag ITEM S1 (Segment Program 2).
	Used in the macro for the START/STOP Button in the face plate.
$B32767	Used to temporarily read tag ITEM S2 (Segment Program 2).
	Used in the macro for the CONT/PAUSE Button in the face plate.
$W2047	Used to write word data.
	Used for numeric settings such as those for SP, MV, alarm set values, and PID.
$B32712, $B32720, $B32728, $B32736, $B32744, $B32752	Used to calculate tag ITEMs Q1, Q2, PR, BM, BMU, SM, SMU, SP, and SPU (for 014 Batch Flowrate Capture). Used by the macro when loading face plate screens.
$W32681 to $W32686	Used to display tag ITEM SP (for 033 Ratio Setting). Used for the Numerical Display and display objects of the face plate.
$W32691 to $W32694	Used to calculate tag ITEMs SP and K1 (for 033 Ratio Setting). Used in the macro of the face plate Word Buttons.
$W32700	Used to display tag ITEMs Q1 and Q2 (for 013 Blended PID). Used for numerical input and display object of integrated values.
$W32706	Used to display tag ITEM B0 (for 014 Batch Flowrate Capture). Used for numerical input and display parts overshoot amounts.
$W32708	Used to display tag ITEM BP (for 014 Batch Flowrate Capture). Used for numerical input and display parts of pre-batch.
$W32710	Used to display tag ITEM B1 (014 Batch Flowrate Capture). Used for numerical input and display parts of flow speed limit amounts.

PT memory	Application and places used
$W32760 to $W32762	Used to calculate tag ITEMs Q1, Q2, PR, BM, BMU, SM, SMU, SP, and SPU (for 014 Batch Flowrate Capture). Used by the macro of the face plate Word Buttons.
$W32712 to $W32759	Used to display tag ITEMs Q1, Q2, PR, BM, BMU, SM, SMU, SP, and SPU. Used for the Numerical Display and input object of the face plate.
$W32764 to $W32767	Used to write tag ITEMs Q1, Q2, PR, BM, BMU, SM, SMU, SP, and SPU (for 014 Batch Flowrate Capture). Used in the macro for the Numeral Display and Input object of the face plate.

Note Do not use the above areas of the internal memory in the PT for any other purpose.

SECTION 6
Creation Screens

6-1　Basic PID (Block Model 011)

6-1-1　Face Plates

The following diagram shows a face plate for Basic PID built using the Face Plate Auto-Builder for NS in an 800×600 screen resolution.

The whole face is built using 580×133 dots.
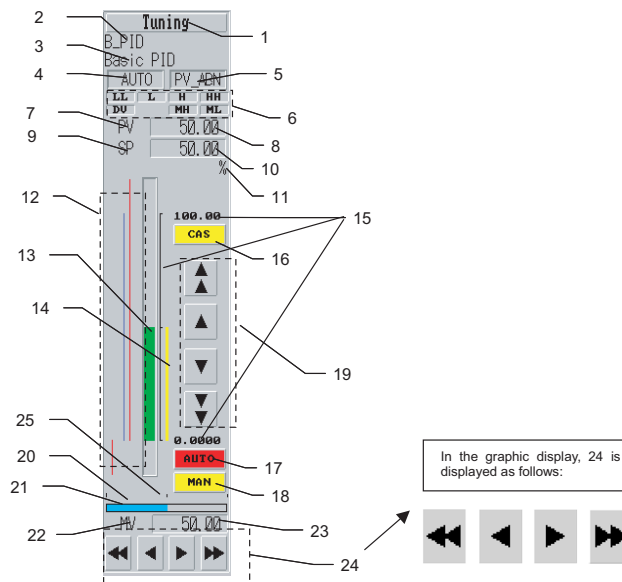
1: Tuning Screen Button

Touch this button to switch to the Tuning Screen for the corresponding tag name. This button is created as a Command Button.

The Tuning Screen Button is not provided in the face plates in the Tuning Screen.

2: Tag Name

The tag name in the CSV tag file is set as a label and displayed as a Text object (up to 16 characters).

3: Tag Comment

The tag comment in the CSV tag file is set as a label and displayed as a Text object (up to 16 characters).

4: Status Display 1

Either AUTO, MAN, or CAS status is displayed. The status character string displayed is determined by the combination of values for tag ITEMs R/L_SW and A/M_SW.

Display	R/L_SE (ITEM 026)	A/M_SW (ITEM 086)
MAN	0	0
(No characters displayed)	1	0
AUTO	0	1
CAS	1	1

These buttons are created as ON/OFF Buttons using a Select Shape of type 3 to switch the graphic displaying AUTO, MAN, and CAS characters.

Control Flag input is disabled.

5: Status Display 2

Either PV error indication or MV error indication status is displayed. The status character string displayed is determined by the combination of values for tag ITEMs PV_ABN and MV_ABN.

Display	R/L_SE (ITEM 026)	A/M_SW (ITEM 086)
(No characters displayed)	0	0
PV error indication	1	0
MV error indication	0	1
PV error indication	1	1

ON/OFF Buttons using a Select Shape of type 3 are used to switch the graphic displaying PV error indication and MV error indication characters.

Control Flag input is disabled.

6: Alarm Status Display

This field displays the status of alarms that have occurred. The Bit Lamp object is used to display normal operation in gray and alarm states in red.

Statuses such as LL (low/low alarm) are displayed in the rough font.

Refer to the following table of tag ITEMs for addresses.

Alarm type	Tag ITEM
LL (Low/low alarm)	LL (ITEM 016)
L (Low alarm)	L (ITEM 015)
H (High alarm)	H (ITEM 014)
HH (High/high alarm)	HH (ITEM 013)
DV (Deviation alarm)	DVA (ITEM 042)
MH (High MV limit)	MHA (ITEM 078)
ML (Low MV limit)	MLA (ITEM 079)

7: PV

The fixed string "PV" is displayed as a Text object.

8: PV Numerical Value Display

A Numeral Display and Input object is used to display the value of tag ITEM PV (ITEM 007) in engineering units.

A Control Flag is set to disable input.

9: SP

The fixed text "SP" is displayed as a Text object.

10: SP Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM SP (ITEM 029) in engineering units. Touch this field to display a ten-key pad below it.

Writing is performed for tag ITEM SP_W (ITEM 023) using the Before Writing Numeral/String macro condition.

```
$W2047=GETNUMVAL () ;
WRITECMEM ([SP_W],$W2047,1) ;
```

The upper and lower limit values are set with engineering units equivalent to -15% and 115%. When the ten-key pad is displayed, the tag ITEMs R/L_SW

and CAS_SET are referenced and if R/L_SW is 1 and CAS_SET is 1, a message is displayed indicating that the SP cannot be set, and input is disabled.

		R/L_SW (ITEM 26)	
		0 (Local)	**1 (Remote)**
CAS_SET (ITEM 24) **(Set point setting mode)**	**0 (Local only)**	SP input enabled	SP input enabled
	1 (Remote/local)	SP input enabled	SP input enabled

This condition is active when the following macro is set with the Before Inputting Numeral/String macro condition.

READCMEM ($B32760,[R/L_SW],1) ;
READCMEM ($B32762,[CAS_SET],1) ;

if (($B32760==1) && ($B32762==1))
MSGBOX ("Cannot set.","SP change",0) ;
RETURN (1) ;
endif;

11: Unit

The unit (engineering unit) is displayed as a Text object (up to 8 standard characters).

12: Alarm Setting

The alarm set values are displayed as a Bar graph. The set values for HH, H, L, and LL alarms are displayed from right to left.

The set value for each alarm is displayed in alignment with the PV bar display on the right, with the top value as 115% and the bottom value as −15%.

Alarm type	Alarm setting tag ITEM
LL (Low/low alarm)	LL_SP (ITEM 011)
L (Low alarm)	L_SP (ITEM 010)
H (High alarm)	H_SP (ITEM 009)
HH (High/high alarm)	HH_SP (ITEM 008)

- LL and HH are displayed in red, and L and H are displayed in light blue (color code 219).
- The maximum value displayed is 11500 (115%) and the minimum value displayed is −1500 (−15%).
- The zero point is specified to be displayed.

13: PV Bar Display

The tag ITEM PV (ITEM 007) is displayed using a Level Meter object. The meter color is green, the maximum value displayed is 11500 (115%), and the minimum value displayed is −1500 (−15%). The bar is set to display the zero point.

14: SP Bar Display

The tag ITEM SP (ITEM 029) is displayed using a Level Meter object. The meter color is yellow, the maximum value displayed is 11500 (115%), and the minimum value displayed is −1500 (−15%). The bar is set to display the zero point.

15: Bar Scale Display

The PV bar and SP bar displays include fixed marks in the graphic indicating 0%, 50%, and 100%. The numerical values for 0% and 100% are displayed with engineering units using Text objects in the rough font.

16: Switch to CAS Button

This button switches operation to Remote and Auto (CAS) mode. Values are displayed in red during Remote and Auto mode.

This button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	R/L_SW (ITEM 026)	A/M_SW (ITEM 086)
Yellow	0 (Local)	0 (Manual)
	1 (Remote)	0 (Manual)
	0 (Local)	1 (Auto)
Red	1 (Remote)	1 (Auto)

The label displays "CAS" in the rough font.

By setting a Touch OFF Timing macro as shown below, the display will switch to CAS (Remote and Auto) mode when touched.

```
$B32760=1;
$B32761=1;
WRITECMEM ([R/L_SW],$B32760,1) ;
WRITECMEM ([A/M_SW],$B32761,1) ;
```

A Control Flag is used to reference the tag ITEM CAS_SET (ITEM 024) and if the value is 1, the object is set for no display and to disable input.

17: Switch to AUTO Button

This button is set as a momentary ON/OFF Button using a Simple Rectangle (Type 3), and the display color is determined according to the following table.

Display color	R/L_SW (ITEM 026)	A/M_SW (ITEM 086)
Yellow	0 (Local)	0 (Manual)
	1 (Remote)	0 (Manual)
	0 (Local)	1 (Auto)
Red	1 (Remote)	1 (Auto)

The label displays "AUTO" in the rough font.

By setting a Touch OFF Timing macro as shown below, the display will switch to Auto mode when touched.

```
$B32760=0;
$B32761=1;
WRITECMEM ([R/L_SW],$B32760,1) ;
WRITECMEM ([A/M_SW],$B32761,1) ;
```

This button is always displayed, without setting a Control Flag to disable the display and input, which is different from the Switch to CAS Button.

18: Switch to MAN Button

The Switch to MAN Button is displayed in red while in Manual mode.

This button is set as a momentary ON/OFF Button using a Simple Rectangle (Type 3), and the display color is determined according to the following table.

Display color	R/L_SW (ITEM 026)	A/M_SW (ITEM 086)
Yellow	0 (Local)	0 (Manual)
	1 (Remote)	0 (Manual)
	0 (Local)	1 (Auto)
Red	1 (Remote)	1 (Auto)

The label displays "MAN" in the rough font.

By setting a Touch OFF Timing macro as shown below, operation will switch to Manual mode when touched.

```
$B32760=0;
$B32761=0;
WRITECMEM ([R/L_SW],$B32760,1) ;
WRITECMEM ([A/M_SW],$B32761,1) ;
```

This button is always displayed, without setting a Control Flag to disable the display and input, which is different from the Switch to CAS Button.

19: Up/Down Buttons to Change SP

These buttons increase or decrease the value for tag ITEM SP_W (ITEM 023). These buttons are created as Word Buttons and are set to increase or decrease the value.

Button	Increment
▲▲	100 (1%)
▲	10 (0.1%)
▼	−10 (−0.1%)
▼▼	−100 (−1%)

A Select Shape graphic is used for the Button face display.

The upper and lower limits of the data range are −15% to 115%. These buttons are not set to loop back when the upper or lower limit is exceeded.

When increasing or decreasing the SP value, the tag ITEMs R/L_SW and CAS_SET are referenced, and if the value of both R/L_SW and CAS_SET is 1, a message is displayed indicating that the SP value cannot be set, and input is disabled.

		R/L_SW (ITEM 026)	
		0 (Local)	1 (Remote)
CAS_SET (ITEM 024) (Set point setting mode)	0 (Local only)	SP input enabled	SP input enabled
	1 (Remote/local)	SP input enabled	SP input disabled

This function is set using the following macro as a Touch OFF Timing macro for Word Buttons.

READCMEM ($B32760,[R/L_SW],1) ;
READCMEM ($B32762,[CAS_SET],1) ;

if (($B32760==1) && ($B32762==1))
MSGBOX ("Cannot set.","SP change",0) ;
RETURN (1) ;
endif;

20: MV Index Position

The value for tag ITEM MV_IDX (ITEM 098) is displayed as a Level Meter object. The leftmost side is 0%, the rightmost side is 100%, and the color of the bar is brown.

21: MV Bar Display

The value for tag ITEM MV (ITEM 089) is displayed as a Level Meter object. The leftmost side is 0%, the rightmost side is 100%, and the color of the bar is blue (color code 209).

22: MV

The fixed string "MV" is displayed as a Text object.

23: MV Numeral Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM MV (ITEM 089) as percent data. When touched, a ten-key pad is displayed under this field.

Writing is performed for tag ITEM MV (ITEM 089) using the Before Writing Numeral/String macro condition, as follows:

$W2047=GETNUMVAL () ;
WRITECMEM ([MV],$W2047,1) ;

The upper and lower limits of the data range are ±320.00%.

When the ten-key pad is displayed, the tag ITEM A/M_SW (ITEM 086) is referenced, and if the value is 1, a message is displayed indicating that the MV cannot be set, and input is disabled.

This function is set using the following macro as a Touch ON Timing macro for Word Buttons.

READCMEM ($B32761,[A/M_SW],1) ;

if ($B32761==1)
MSGBOX ("Cannot set.","MV change",0) ;
endif

24: Up/Down Buttons to Change MV

These Buttons are used to increase or decrease the value of tag ITEM MV (ITEM 089).

The increment is set to 0, and actual increase or decrease of the value is performed from the macro.

Button	Increment
◄◄	100 (1%)
◄	10 (0.1%)
►	−10 (−0.1%)
►►	−100 (−1%)

A Select Shape graphic is used for the Button display.

The upper and lower limits of the data range are ±320.00%. These buttons are not set to loop back when the upper or lower limit is exceeded.

When increasing or decreasing the MV value, the tag ITEM A/M_SW (ITEM 086) is referenced. If the value is 1, a message is displayed indicating that the MV value cannot be set, and input is disabled.

This function is set using the following macro as a Touch OFF Timing macro for Word Buttons.

```
READCMEM ($B32761,[A/M_SW],1) ;


if ($B32761==1)
MSGBOX ("Cannot set.","MV change",0) ;
RETURN (1) ;


READCMEM ($W2047,[MV],1) ;
$W2047=$W2047+10; *1*1: +10 is the increment/decrement for each button.
IF ($W2047 > 32000)
 $W2047 = 32000;
ENDIF
IF ($W2047 < -32000)
 $W2047 = -32000;
ENDIF
WRITECMENE ([MV],$W2047,1) ;
endif
```

25: MV Bar Scale Display

The MV bar display and MV index position include fixed marks in the graphic indicating 0%, 50%, and 100%.

The following diagram shows a face plate for Basic PID built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
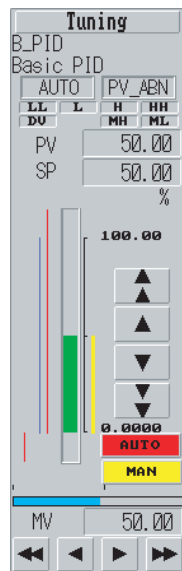
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-1-2   Tuning Screens

The following screen is a Tuning Screen for Basic PID built using the Face Plate Auto-Builder for NS in an 800×600 screen resolution.
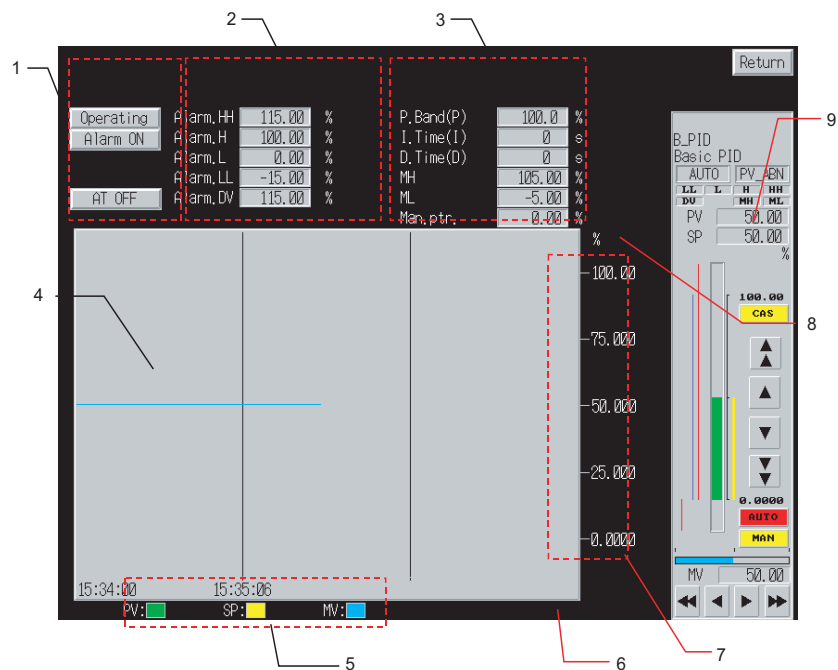
1: Status

This button is used to switch between the statuses for Stop Block Operation Command (tag ITEM MT_ST (ITEM 000)), Alarm Stop Switch (tag ITEM AOF (ITEM 017)), and AT Command/AT Executing (tag ITEM AT (ITEM 035)).

Each button is built as an alternate ON/OFF Button, and using an Alternate Simple Rectangle (Type 2), as shown in the following table.

Button	Tag ITEM	Color (OFF)	Color (ON)	Label (OFF)	Label (ON)	Write confirmation message
Stop block operation command	MT_ST (ITEM 000)	Gray	Yellow	Operating	Operation stopped	Yes "OK?"
Alarm stop switch	AOF (ITEM 017)	Gray	Yellow	Alarm ON	Alarm disabled	Yes "OK?"
AT command/ AT executing	AT (ITEM 035)	Gray	Yellow	AT OFF	AT ON	Yes "The MV will change is AT is executed/stopped. OK?"

The read address is set as the display address and the write address is set as write address 1.

2: Alarm Set Values

The alarm set values are displayed and set with engineering units. The following table shows the tag ITEMs used for setting alarm set values.

Alarm type	Alarm set value tag ITEM
LL (Low/low alarm)	LL_SP (ITEM 011)
L (Low alarm)	L_SP (ITEM 010)
H (High alarm)	H_SP (ITEM 009)
HH (High/high alarm)	HH_SP (ITEM 008)
DV (Deviation alarm)	DVA_SP (ITEM 041)

Numeral Display and Input objects are used to create these fields, and a ten-key pad is displayed when a field is touched. The following table shows the upper and lower limits of the setting ranges.

Alarm type	Upper limit	Lower limit
LL (Low/low alarm)	–15% in the corresponding engineering units	115% in the corresponding engineering units
L (Low alarm)	–15% in the corresponding engineering units	115% in the corresponding engineering units
H (High alarm)	–15% in the corresponding engineering units	115% in the corresponding engineering units
HH (High/high alarm)	–15% in the corresponding engineering units	115% in the corresponding engineering units
DV (Deviation alarm)	0% in the corresponding engineering units	115% in the corresponding engineering units

The engineering unit displayed for the unit as a Text object.

Data is written to the write address of each tag ITEM using the Before Writing Numeral/String macro.

$W2047=GETNUMVAL () ;

WRITECMEM ([LL_SP/L_SP/H_SP/HH_SP],$W2047,1) ;

3: Parameter Settings

These fields are used to display and set each parameter. The following table shows the tag ITEMs used to set these parameters.

Parameter	Tag ITEM
P (Proportional band)	P (ITEM 054)
I (Integral time)	I (ITEM 055)
D (Differential time)	D (ITEM 056)
MH (High MV limit)	MH_LMT (ITEM 076)
ML (Low MV limit)	ML_LMT (ITEM 077)
MV index position	MV_IDX (ITEM 098)

Numeral Display and Input objects are used to create these fields, and a ten-key pad is displayed when a field is touched. The following table shows the upper and lower limits of the setting ranges.

Parameter	Upper limit	Lower limit
P (Proportional band)	0.1	999.9
I (Integral time)	0	9999
D (Differential time)	0	9999
MH (High MV limit)	−320.00	320.00
ML (Low MV limit)	−320.00	320.00
MV index position	−15.00	115.00

The following table shows the units that are displayed. These units are fixed.

Parameter	Unit
P (Proportional band)	%
I (Integral time)	S
D (Differential time)	S
MH (High MV limit)	%
ML (Low MV limit)	%
MV index position	%

The following values are used in communications between the PLC and NS-series PT.

Parameter	Values used in PLC device/communications
P (Proportional band)	1 to 9999 (10 x display value)
I (Integral time)	0 to 9999 (same as display value)
D (Differential time)	0 to 9999 (same as display value)
MH (High MV limit)	Percent data
ML (Low MV limit)	Percent data
MV index position	Percent data

Data is written to the write address of each tag ITEM using a Before Writing Numeral/String macro, as follows:

$W2047=GETNUMVAL () ;

WRITECMEM ([P/I/D/MH_LMT/ML_LMT/MV_IDX],$W2047,1) ;

Decimal Point Position of I (Integral Time) and D (Differential Time):

The decimal point position of I and D changes according to the decimal point position in the CSV tag file. The decimal point position is changed by changing the scale setting number. When the value of the decimal point position for the CSV tag file is 0, the scale setting number is set to not be changed, and when the value is 1, the scale setting is set to a factor of 0.1.

4: Realtime Trend Graph

The tag ITEMs PV (ITEM 007), SP (ITEM 029), and MV (ITEM 089) are displayed in graph format. Each tag ITEM is depicted by a line in the graph according to the following table.

Tag ITEM	Color	Minimum value	Maximum value	Line style	Marker	Step display
PV	Green	−1500	11500	Solid line	None	Not used.
SP	Yellow	−1500	11500	Solid line	None	Not used.
MV	Blue (color code 229)	−1500	11500	Solid line	None	Not used.

5: Realtime Trend Graph Legend

The line color of each tag ITEM is indicated using a Text object and a Rectangle (PV: Green; SP: Yellow; MV: Light blue).

6: Switch to Control Screen Button

Touch this button to switch to the Control Screen that includes the tag name of the Tuning Screen. This button is created as a Command Button.

7: Realtime Trend Graph Scale

Fixed marks on the vertical axis of the realtime trend graph indicate the gradations equivalent to 0%, 25%, 50%, 75%, and 100%. The value for each mark is displayed in engineering units using a Text object.

8: Unit

The unit character string for the engineering unit is displayed as a Text object.

9: Face Plate Control

The contents is the same as that provided in the explanations in *6.1Basic PID (Block Model 011)* except that there is no Tuning Screen Button.

The following screen is a Tuning Screen for Basic PID built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
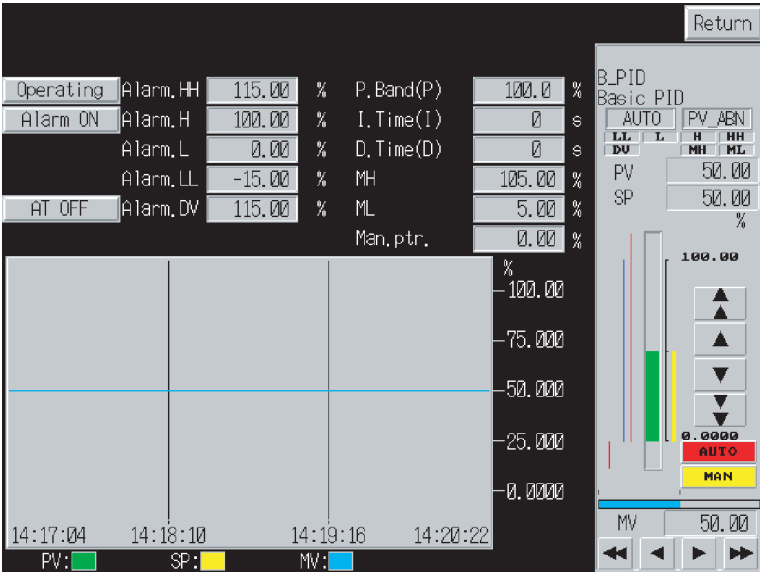
The unit display for the alarm set values is restricted to a maximum of four characters.

6-2   Advanced PID (Block Model 012)

This section describes only the differences between the Advanced PID and Basic PID (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011).*

6-2-1   Face Plates

The face plates are exactly the same as for Basic PID (Block Model 011).

6-2-2   Tuning Screens

The Tuning Screens are almost the same as for *Basic PID (Block Model 011)* except for the addition of a manual reset parameter setting.
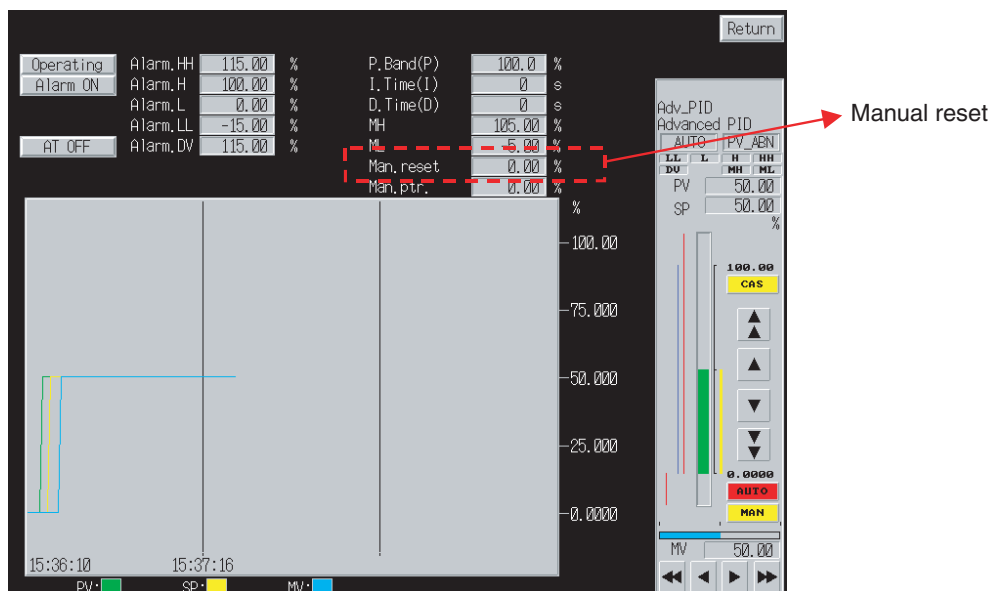
The details of the manual reset parameter are as follows:

Parameter	Alarm set value tag ITEM
Man. reset	MRT (ITEM 057)

A Numeral Display and Input is used to create this field, and a ten-key pad is displayed when the field is touched. The following table shows the upper and lower limits of the setting range.

Parameter	Upper limit	Lower limit
Man. reset	−320.00	320.00

The following table shows the unit display, which is fixed.

Parameter	Unit
Man. reset	%

The following values are used in communications between the PLC and NS-series PT.

Parameter	Values used in PLC device/communications
Man. reset	Percent data

Data is written to the write address of tag ITEM MRT using the Before Writing Numeral/String macro, as follows:

$W2047=GETNUMVAL () ;
WRITECMEM ([MRT],$W2047,1) ;

The Tuning Screen for Advanced PID built with the Face Plate Auto-Builder for NS in a 640×480 screen resolution is almost the same as for Basic PID, except for the addition of a manual reset parameter setting.
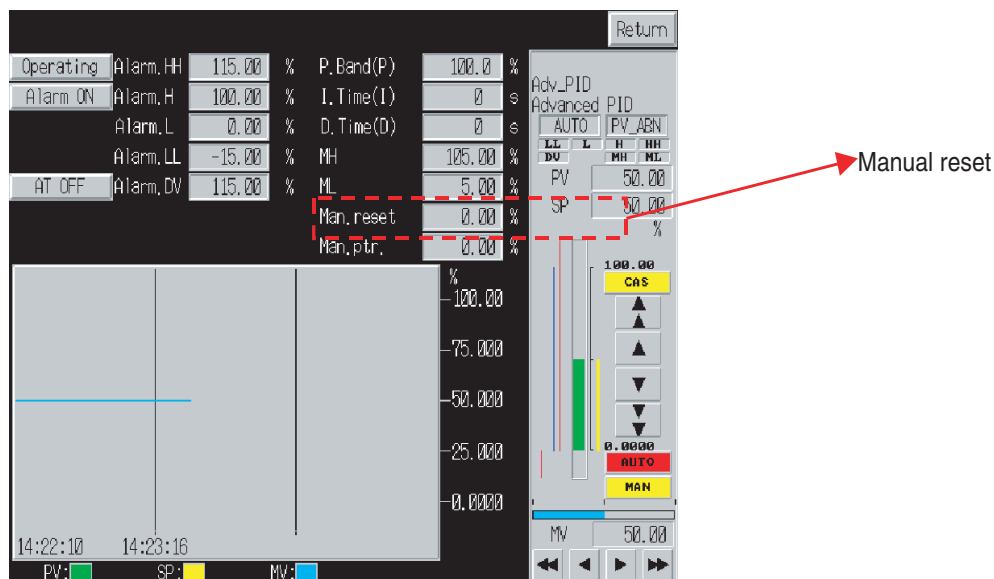
6-3 Two-position ON/OFF (Block Model 001)

This section describes only the differences between the 2-position ON/OFF and Basic PID (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-3-1 Face Plates

The face plates are almost the same as for Basic PID (Block Model 011) except that MV has two positions.
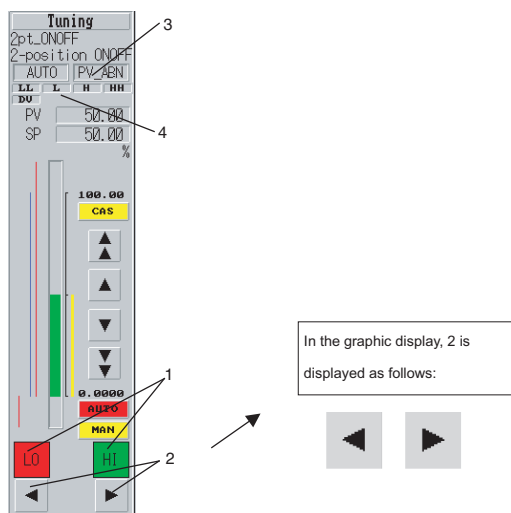
1: MV Status Display

The status is displayed according to the contact information of tag ITEM MV (ITEM 093), as shown in the following table.

Lamp	Color
LO	Red: MV (ITEM 093) is OFF. Green: MV (ITEM 093) is ON.
HI	Red: MV (ITEM 093) is ON. Green: MV (ITEM 093) is OFF.

These objects are created as rectangular Bit Lamp objects.

2: Switch to MV Buttons

These buttons switch the Contact information of tag ITEM MV (ITEM 093).

Button	Operation
◀	Turns OFF MV (ITEM 093).
▶	Turns ON MV (ITEM 093).

These buttons are created as momentary ON/OFF Buttons, using a Select Shape of type 1, and with no write address set. (Macros are used to write data.)

The button surface is displayed according to the Select Shape graphic.

When the button is touched, the tag ITEM A/M_SW (ITEM 086) is referenced, and if the value is 1, a message is displayed indicating that setting is not possible, and setting is disabled.

This function is set using the following macro as a Touch OFF Timing macro for ON/OFF Buttons.

```
READCMEM($B32761,[A/M_SW],1);

if($B32761==1)
MSGBOX("Cannot set.","Change MV.",0);
RETURN(1);
else
$B32763=0;
WRITECMEM([MV],$B32763,1);
endif
```

◀ for 0.

▶ for 1.

3: Status Display 2

The MV error indication (tag ITEM MV_ABN) is not provided with 2-position ON/OFF, so the PV error status is only displayed. The status character string displayed is determined by the value of tag ITEM PV_ABN.

Display	PV_ABN (ITEM 019)
(No characters displayed)	0
PV error indication	1

This field is created as an ON/OFF Button using a Select Shape of type 2 to switch to display of PV error indication characters. Control Flag input is disabled.

4: Alarm Status Display

MH and ML are not provided with 2-position ON/OFF. The other settings are the same as for Basic PID.

The following diagram is a face plate for 2-position ON/OFF built with the Face Plate Auto-Builder for NS in a 640×480 screen resolution. The whole face is built using 458×142 dots.
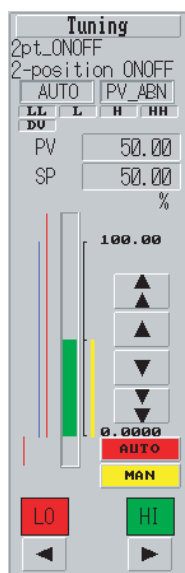
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-3-2 Tuning Screens

The Tuning Screens for 2-position ON/OFF are almost the same as for Basic PID (Block Model 011), except for the following differences.

1. A setting field for each parameter is not provided.

2. AT is not supported.

3. MV is not included in the realtime trend graph.

4. The face plate is for 2-position ON/OFF.

The following screen is a Tuning Screen for 2-position ON/OFF built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

A setting field for each parameter is not provided, so up to eight characters can be displayed for the unit character string for 2-position ON/OFF, instead of the four characters for Basic PID.

6-4   Three-position ON/OFF (Block Model 002)

This section describes only the differences between the 3-position ON/OFF and Basic PID (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-4-1   Face Plates

The face plates are almost the same as for Basic PID (Block Model 011) except that the format of MV has three positions.
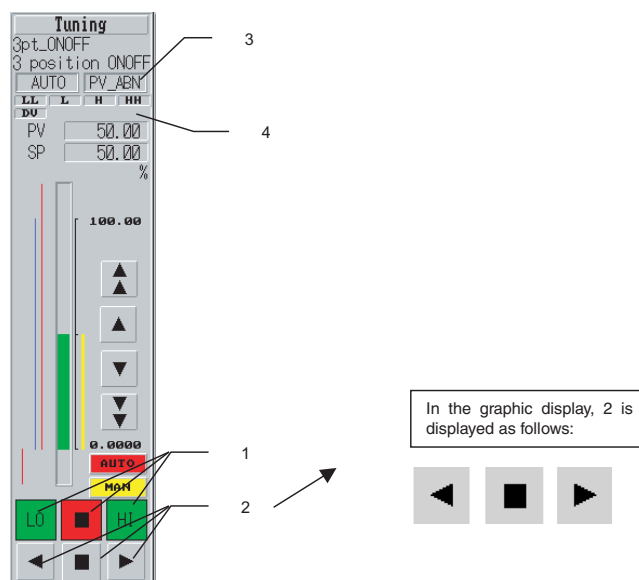
In the graphic display, 2 is displayed as follows:

1: MV Status Display

The status is displayed according to the contact information of tag ITEM MVH (ITEM 093) and MVL (ITEM 095), as shown in the following table.

Lamp	Color
LO	Red: MVH (ITEM 093) is OFF and MVL (ITEM 095) is ON. Green: Other combinations
■	Red: MVH (ITEM 093) is OFF and MVL (ITEM 095) is OFF. Green: Other combinations
HI	Red: MVH (ITEM 093) is ON and MVL (ITEM 095) is OFF. Green: Other combinations

These lamps are built as ON/OFF Buttons using Simple Rectangles (Type 3). A Control Flag is set to disable input.

2: Switch to MV Buttons

These buttons switch the contact information of tag ITEM MV (ITEM 093).

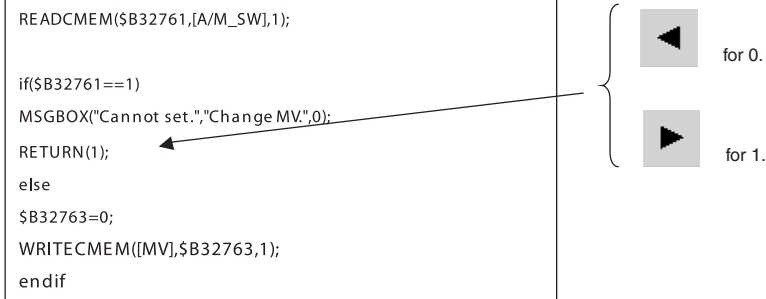| Button	Operation
◀	Turns OFF MVH (ITEM 093) and turns ON MVL (ITEM 095).
■	Turns OFF MVH (ITEM 093) and turns OFF MVL (ITEM 095).
▶	Turns ON MVH (ITEM 093) and turns OFF MVL (ITEM 095).

These buttons are created as momentary ON/OFF Buttons using a Select Shape of type 1, and with no write address set. (Macros are used to write data.)

The button is displayed as a Select Shape graphic.

When the buttons are touched, tag ITEM A/M_SW (ITEM 086) is referenced, and when the value is 1, a message is displayed indicating that the value cannot be set, and setting is disabled.

This function is set using the following macro as a Touch OFF Timing macro for ON/OFF Buttons.

```
READCMEM($B32761,[A/M_SW],1);

if($B32761==1)
MSGBOX("Cannot set.","MV change.",0);
RETURN(1);
else
$B32764=0;
$B32765=0;
WRITECMEM([MVH],$B32764,1);
WRITECMEM([MVL],$B32765,1);
endif
```

When this button is pressed, $B32764=0 and $B32765=1.

When this button is pressed, $B32764=0 and $B32765=0.

When this button is pressed, $B32764=1 and $B32765=0.

Note When the Switch to MV Button for 3-position ON/OFF is operated, the MV status display may fluctuate temporarily due to the macro execution order and execution time. The MV status display will eventually stabilize.

3: Status Display 2

The MV error indication (tag ITEM MV_ABN) is not provided with 3-position ON/OFF, so the PV error status is displayed only.

The status character string displayed is determined according to the value of tag ITEM PV_ABN.

Display	PV_ABN (ITEM 019)
(No characters displayed.)	0
PV error indication	1

This field is created as an ON/OFF Button using a Select Shape of type 1 and switches to display PV error indication characters. Control Flag input is disabled.

4: Alarm Status Display

MH and ML are not provided with 3-position ON/OFF. The other settings are the same as for Basic PID.

The following diagram shows a face plate for 3-position ON/OFF built with the Face Plate Auto-Builder for NS in a 640×480 screen resolution. The whole face is built using 458×142 dots.
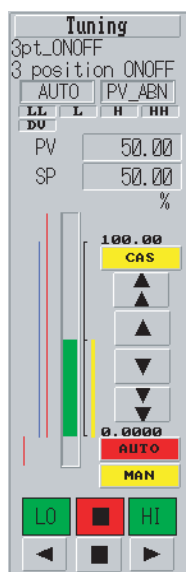
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.
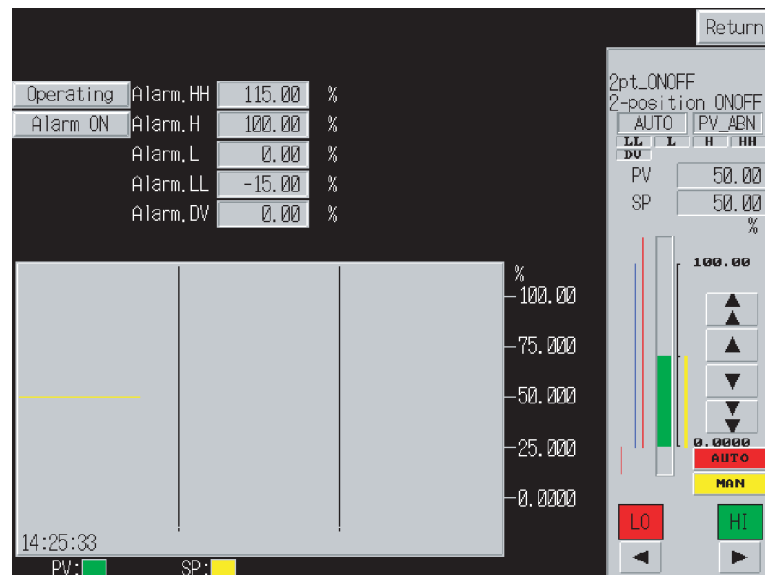
6-4-2   Tuning Screens

The Tuning Screens for 3-position ON/OFF are almost the same as for Basic PID (Block Model 011), except for the following differences.

1.   A setting field for each parameter is not provided.

2.   AT is not supported.

3.   MV is not included in the realtime trend graph.

4.   MV is not included in the realtime trend graph.

5.   4.The face plate is for 3-position ON/OFF.

The following screen is a Tuning Screen for 3-position ON/OFF built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
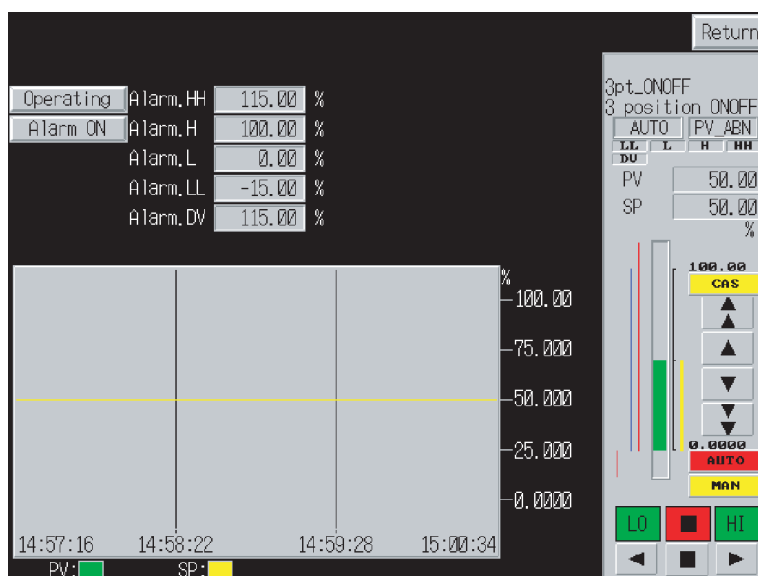
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

A setting field for each parameter is not provided, so up to eight characters can be displayed for the unit character string for 3-position ON/OFF, instead of the four characters for Basic PID.

6-5   Indication and Operation (Block Model 032)

This section describes only the differences between the Indication and Setting and Basic PID (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-5-1   Face Plates

The face plates are almost the same as for Basic PID (Block Model 011), except for the following aspects.

- The SP is X1 (Auto input) and read-only (no SP Change Button provided).
- A deviation alarm (DV) is not provided.
- Remote mode is not supported.

The actual graphic display is shown below.
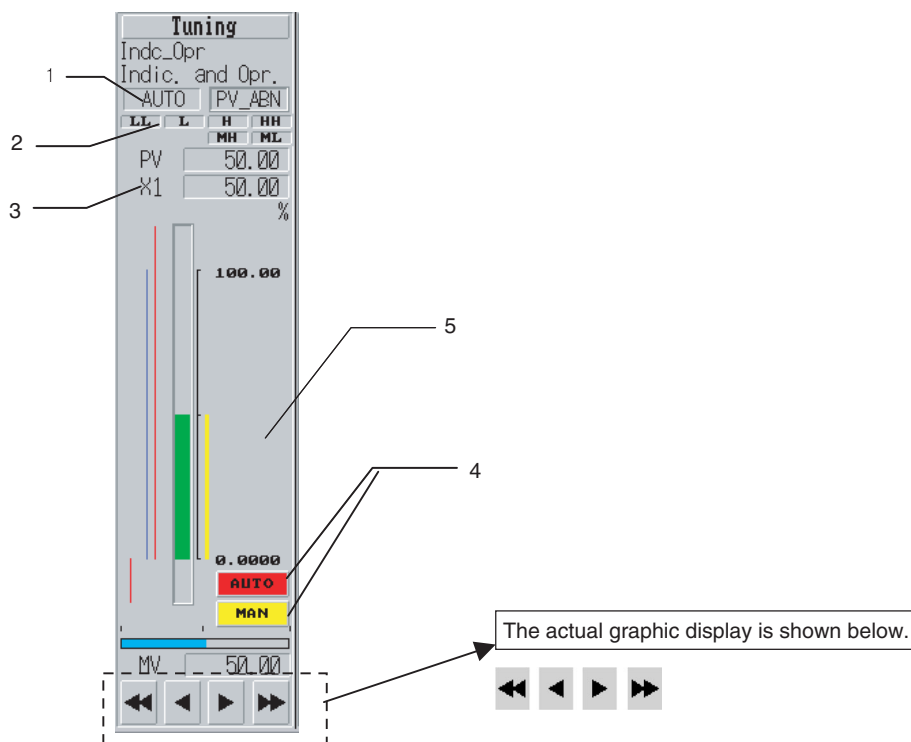
1: Status Display

Either AUTO or MAN is displayed. CAS (Remote and Auto) mode is not supported, which is different from Basic PID.

The status character string displayed is determined by the value of tag ITEM A/M_SW. (R/L_SW is not referenced, which is different from Basic PID.)

Display	A/M_SW (ITEM 086)
MAN	0
AUTO	1

This field is created as an ON/OFF Button using a Select Shape of type 2 and switches to display AUTO/MAN characters. Control Flag input is disabled.

2: Alarm Status Display

Indication and Setting does not provide a deviation alarm, so there is no display.

3: Auto Input

The fixed characters "X1" are displayed as a Text object. The numeral display field is display-only. (A Control Flag is set to disable input.)

The numeral display for X1 uses an engineering unit.

4: Switch to AUTO Button

This button switches operation to Auto mode and is displayed in red during Auto mode.

The button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 2), and the display color is determined according to the following table.

(R/L_SW is not referenced, which is different from Basic PID.)

Display color	A/M_SW (ITEM 086)
Yellow	0
Red	1

The label displays "AUTO" in the rough font.

By setting the following Touch OFF Timing macro, operation will switch to Auto mode when touched.

$B32761=1;
WRITECMEM ([A/M_SW],$B32761,1) ;

This button is always displayed, without setting a Control Flag to disable the display and input.

5: Switch to MAN Button

This button switches operation to manual mode and is displayed in red during manual mode. The button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 2), and the display color is determined according to the following table.

(The R/L_SW is not referenced, which is different from Basic PID.)

Red color	A/M_SW (ITEM 086)
Red	0
Yellow	1

The label displays "MAN" in the rough font.

By setting the following Touch OFF Timing macro, operation switches to manual mode when touched.

$B32761=0;
WRITECMEM ([A/M_SW],$B32761,1) ;

This button is always displayed, without setting a Control Flag to disable the display and input.

6: SP Change Button and Switch to CAS Button

Indication and Setting does not provide an SP Change Button or Switch to CAS Button.

The following diagram shows an Indication and Setting face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

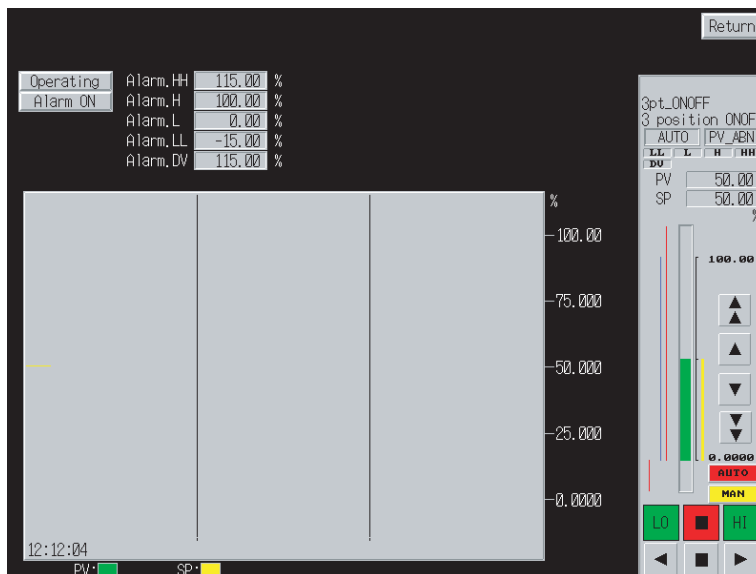The whole face is built using 458×142 dots.
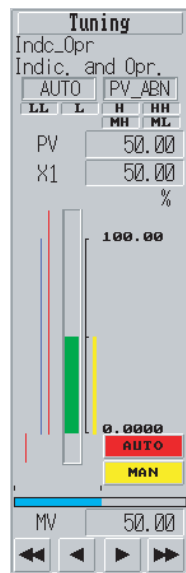
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-5-2   Tuning Screens

The Tuning Screens for Indication and Setting are almost the same as for Basic PID (Block Model 011), except that it does not provide PID or AT.
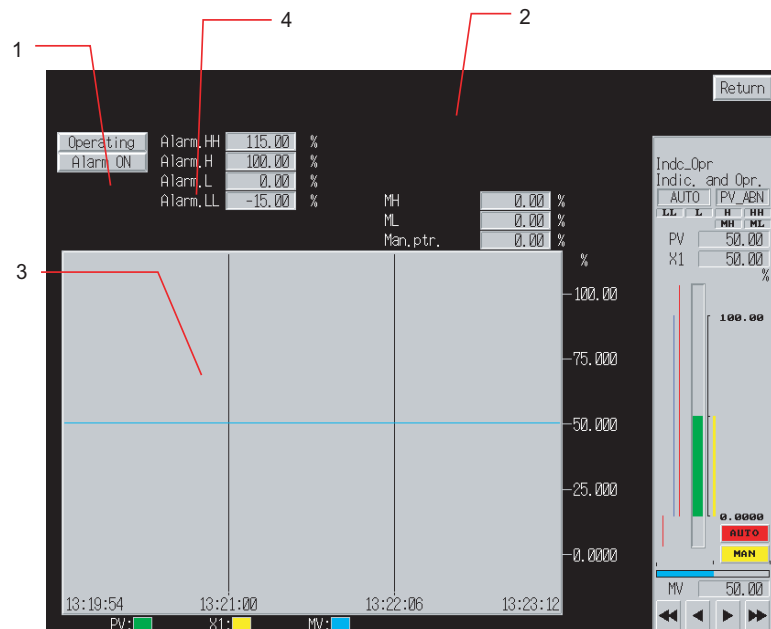
1: AT

Indication and Setting does not provide an AT Button.

2: PID

Indication and Setting does not provide PID parameter settings.

3: Realtime Trend

Indication and Setting displays the tag ITEM X1 (ITEM 084) as a graph, and not SP.

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<u>**4: Alarm Settings**</u>

The Indication and Setting does not provide a deviation alarm setting.

The following screen is a Tuning Screen for the Indication and Setting face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
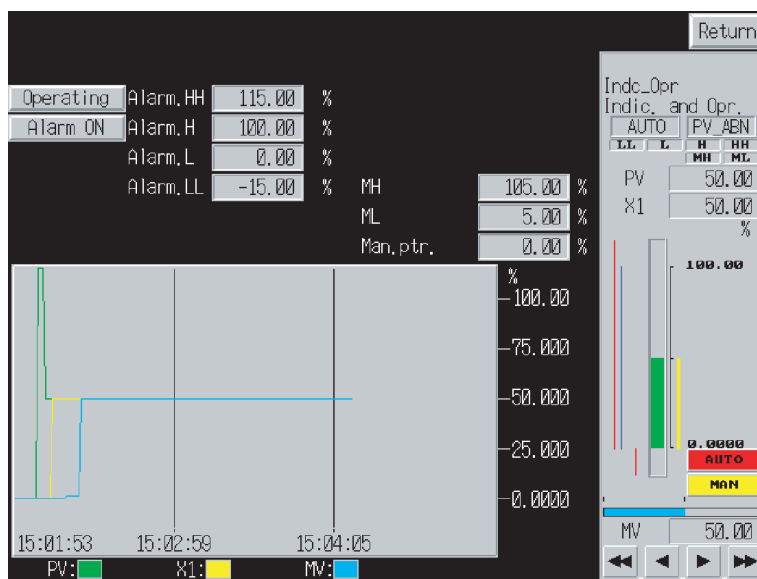
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

# 6-6   Indicator (Block Model 034)

This section describes only the differences between the Indicator and Basic PID (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-6-1   Face Plates

The face plates are almost the same as for Basic PID (Block Model 011), except that the Indicator does not provide functions related to SP and MV, and it is used as a PV Indicator Operator Interface.
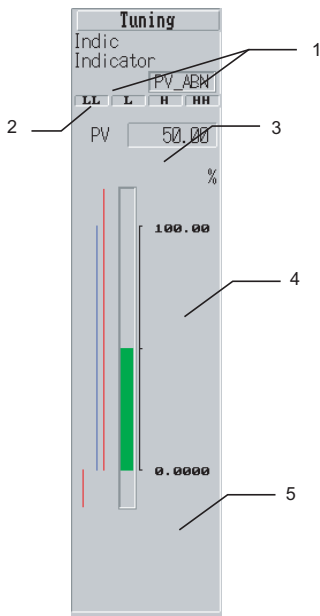
1: Status Display

Indicator does not display the AUTO, MAN, and CAS status.

The PV error indication status is displayed. The status character string displayed is determined by referencing the value of tag ITEM PV_ABN.

Display	PV_ABN (ITEM 019)
(No characters displayed.)	0
PV error indication	1

These buttons are ON/OFF Buttons using a Select Shape of type 1 and switch to display the PV error indication characters. Control Flag input is disabled.

Indicator does not display an MV error indication.

2: Alarm Display

Indicator does not use the DV, MH, or ML alarms.

3: SP

Indicator does not provide an SP.

4: Switch to CAS/MAN/AUTO Button, SP Bar Display, and SP Change Button

The Indicator does not provide a Switch to CAS/MAN/AUTO Button, SP bar display, or Change SP Button.

5: MV and MV Index Position

The Indicator does not provide an MV or MV index position.

The following diagram shows face plate for the Indicator built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
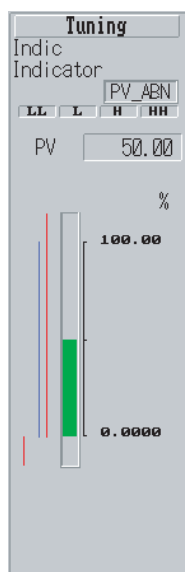
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-6-2 Tuning Screens

The Tuning Screens for Indicator are almost the same as for Basic PID (Block Model 011), except that it does not provide SP or MV functions, and is used as a PV Indicator Operator Interface.
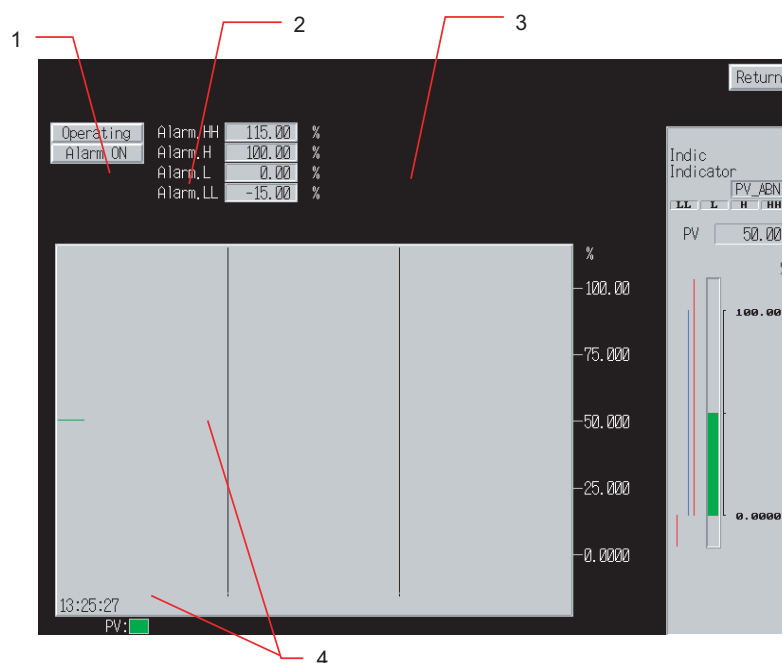
1: AT

The Indicator does not provide an AT Button.

2: DV

The Indicator does not provide a deviation alarm setting.

3: Parameters

The Indicator does not provide parameter settings.

4: Realtime trend

The Indicator displays a graph for PV only.

The following screen is a Tuning Screen for the Indicator face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
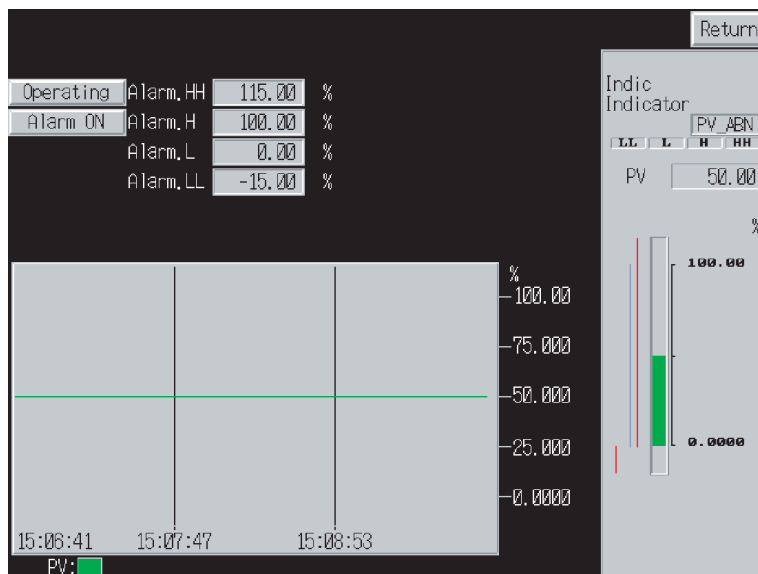
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

Indicator does not provide a setting field for each parameter, so up to eight characters can be displayed for the unit character string, instead of the four for Basic PID.

6-7   Segment Program 2 (Block Model 157)

This section describes only the differences between the Segment Program 2 and Basic PID (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-7-1 Face Plates
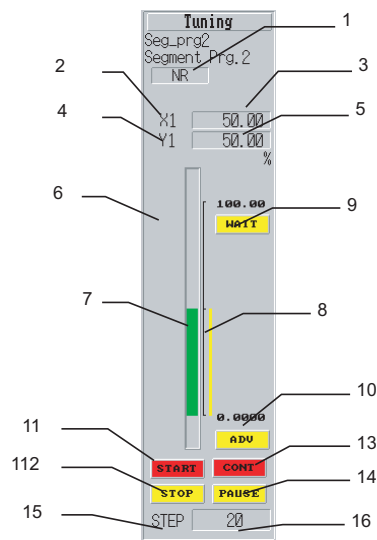
1: Status Display and Alarm Display

Segment Program 2 does not provide an alarm display. The X1 input error (tag ITEM U1 (ITEM 015: X1 input error)) is displayed as the status display.

Display	U1 (ITEM 015)
NR	1
(No characters displayed.)	0

These fields are created as ON/OFF Buttons with a Select Shape of type 1 and are used to switch to the PV error indication characters. Control Flag input is disabled.

2: X1 Display

The fixed string "X1" is displayed as a Text object.

3: X1 Numeral Display

A Numeral Display and Input object is used to display in engineering units the value for tag ITEM X1 (ITEM 007: Reference input). A Control Flag is set to disable input.

4: Y1 Display

The fixed string "Y1" is displayed as a Text object.

5: Y1 Numeral Display

A Numeral Display and Input object is used to display in engineering units the value for tag ITEM Y1 (ITEM 008: Program input). A Control Flag is set to disable input.

6: Alarm Setting

Segment Program 2 does not provide a bar graph for the alarm settings.

7: X1 Bar Display

A Level Meter object is used to display tag ITEM X1 (ITEM 007: Reference input). The meter color is green, maximum value is 11500 (115%), and minimum value is −1500 (−15%). The bar is set to display the zero point.

8: Y1 Bar Display

A Level Meter object is used to display tag ITEM Y1 (ITEM 008: Program output). The meter color is yellow, maximum value is 11500 (115%), and minimum value is −1500 (−15%). The bar is set to display the zero point.

9: WAIT Button

When touched, 1 is set in the write address for tag ITEM S3 (ITEM 017). When tag ITEM U10 (ITEM 019), Waiting, is 0, the button is yellow, and when the value is 1, the button is displayed in red.

The button is built using a momentary ON/OFF Button with a Simple Rectangle (Type 2). The write address for tag ITEM S3 (ITEM 017) is set as the write address, and the read address for tag ITEM U10 (ITEM 019) is set as display address 1. The label displays "WAIT" in the rough font.

10: ADV Button

When touched, 1 is set in the write address for tag ITEM S4 (ITEM 018) step command. Tag ITEM S4 (ITEM 018) is displayed in yellow when the value is 0, and in red when the value is 1.

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address for tag ITEM S4 (ITEM 018) is set as the write address, and the read address for tag ITEM S4 (ITEM 018) is set as display address 1. The label displays "ADV" in the rough font.

11: START Button

When touched, 1 is set in the write address for tag ITEM S1 ITEM013, Run/stop command. Tag ITEM S1 (ITEM 013) is referenced and the color is displayed according to the following table.

S1 (ITEM 013) value	Color
0	Yellow
1	Red

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 013) is set as display address 1. The label displays "START" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S1 (ITEM 013).

```
$B32766=1;
WRITECMEM ([S1],$B32766,1) ;
```

12: STOP Button

When touched, 0 is set in the write address for tag ITEM S1 (ITEM 013), Run/stop command. Tag ITEM S1 (ITEM 013) is referenced and the color is displayed according to the following table.

S1 (ITEM 013) value	Color
0	Red
1	Yellow

The button is built as a momentary ON/OFF Button with a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 013) is set as display address 1. The label displays "STOP" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S1 (ITEM 013).

$B32766=0;
WRITECMEM ([S1],$B32766,1) ;

13: CONT Button

When touched, 0 is set in the write address for tag ITEM S2 (ITEM 014: Hold switch). Tag ITEM S2 (ITEM 014) is referenced and the color is displayed according to the following table.

S2 (ITEM 014) value	Color
0	Red
1	Yellow

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 (ITEM 014) is set as display address 1. The label displays "CONT" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S2 (ITEM 014).

$B32767=0;
WRITECMEM ([S2],$B32767,1) ;

A Control Flag is used to reference tag ITEM S1 (ITEM 013), Run/stop command. If the value is 0, no display/input disabled is set.

14: PAUSE Button

When touched, 1 is set in the write address for tag ITEM S2 (ITEM 014), Hold switch. Tag ITEM S2 (ITEM 014) is referenced and the color is displayed according to the following table.

S2 (ITEM 014) value	Color
0	Yellow
1	Red

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 (ITEM 014) is set as display address 1. The label displays "PAUSE" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S2 (ITEM 014).

$B32767=1;
WRITECMEM ([S2],$B32767,1) ;

A Control Flag is used to reference tag ITEM S1 (ITEM 013: Run/stop command). If the value is 0, no display/input disabled is set.

15: STEP Display

The fixed string "STEP" is displayed as a Text object.

16: STEP Numeral Display

A Numeral Display and Input object is used to display the value for tag ITEM Y3 (ITEM 011: Step output). A Control Flag is set to disable input.

Tag ITEM Y3 (ITEM 011) uses values 1 to 30 from the PLC device/communications, but the PLC or communications values are displayed with 2 integer digits and 0 digits below the decimal point, without scaling the values on the display.

Other Settings

Segment Program 2 does not provide an MV display, MV index position, SP Change Button, or MV Change Button.

The following diagram shows the face plate for Segment Program 2 built with the Face Plate Auto-Builder for NS in a 640×480 screen resolution. The whole face is built using 458×142 dots.
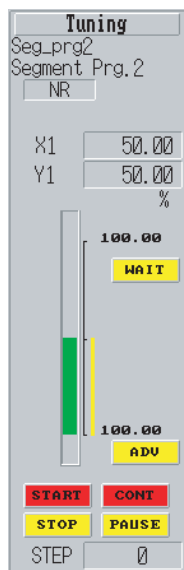
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-7-2   Tuning Screens
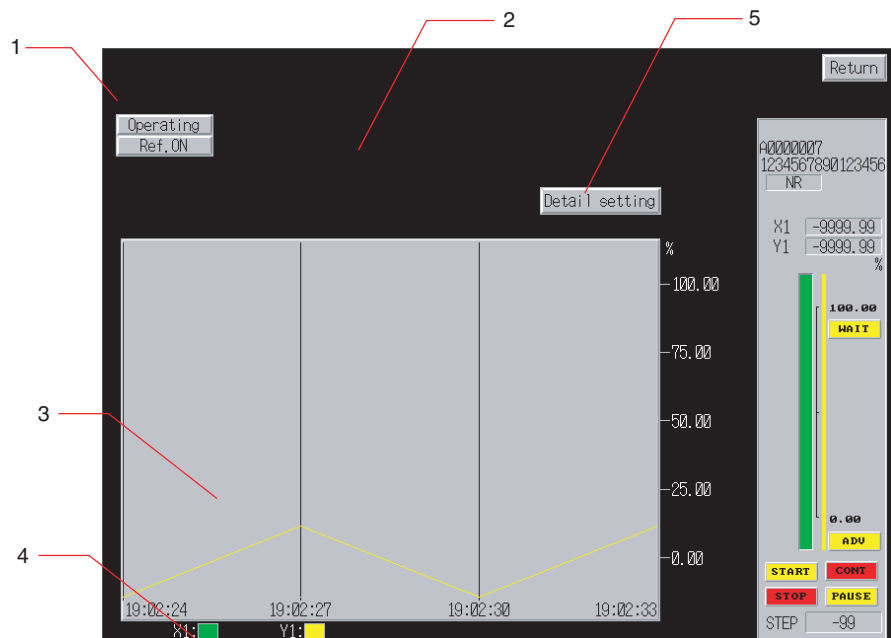
1: Status Display

This button switches the status between the status of the Stop block operation command (tag ITEM MT_ST (ITEM 000)) and Disable Reference Input Switch (tag ITEM S5 (ITEM 020)).

These buttons are built as alternate ON/OFF Buttons using Simple Rectangles (Type 2), according to the information in the following table.

Button	Tag ITEM	OFF color	ON color	OFF label	ON label	Write confirmation message
Stop block operation command	MT_ST (ITEM 000)	Gray	Yellow	Operating	Suspended	Yes "OK?"
Disable reference input	S5 (ITEM 020)	Gray	Yellow	Ref. ON	Ref. OFF	Yes "OK?"

The read address is set in the display address and the write address is set in write address 1.

2: Alarm Setting/Parameters

Segment Program 2 does not provide alarm settings or parameter settings.

3: Realtime Trend Graph

Tag ITEM X1 (ITEM 007) and tag ITEM Y1 (ITEM 008) are displayed as graphs.

Each tag ITEM is drawn using the following graph lines.

Tag ITEM	Color	Minimum value	Maximum value	Line type	Marker	Step display
X1	Green	−1500	11500	Solid line	None	Not used.
Y1	Yellow	−1500	11500	Solid line	None	Not used.

4: Realtime Trend Graph Legend

The realtime trend graph line color is indicated using a Text object and a Rectangle. (X1: Green Y1: Yellow)

5: Detail Setting

This button opens the Detail Setting Screen for Segment Program 2. This button is created only when the *Enable for Making Detail Setting Screen of Segment Program 2* option is selected in the build conditions.

The following screen is the Tuning Screen for Segment Program 2 built using Face Plate Auto-Builder for NS in a 640×480 screen resolution.
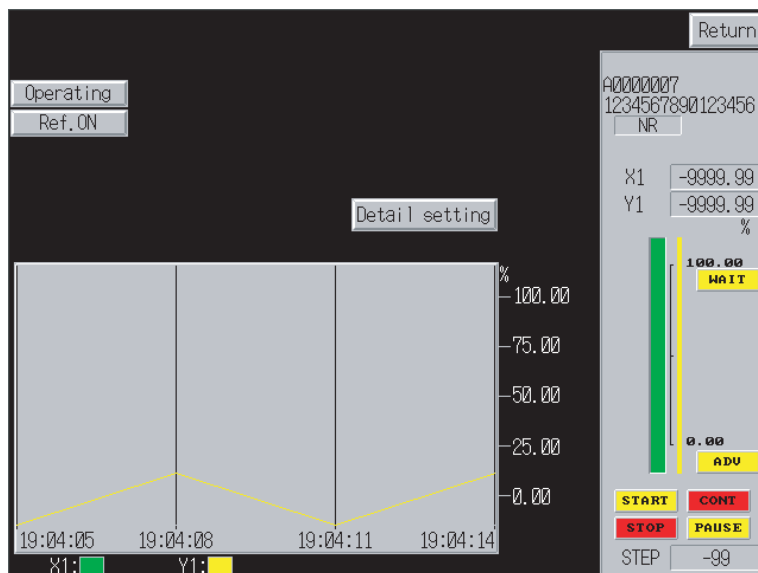
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-7-3   Detail Setting Screens

Detail Setting Screens are created only when the Enable for making detail setting screen of Segment Program 2 option is selected under the build conditions. For details, refer to *Enable for Making Detail Setting Screen of Segment Program 2 (Project Version 4 or Later)* on page 17.

■ **Time Width-Output Value Setting Screen**

1: Time Width, Output Value, and Unit

The time width, output value, and unit are set for each step.

The unit is selected from a drop-down list. The time width and output value are input from the ten-key pad. The time width and output value field will automatically open for ten-key pad when clicked.

2: Read Button

This button reads the setting and current values for reference input values, output values, and steps for the Segment Program 2 function blocks set in the Loop Control Board/Unit.

Any settings made on the screen will be discarded if the Read Button is clicked before clicking the Write Button.

3: Write Button

The button writes the settings made on the screen to the Loop Control Board/Unit.

Note Be sure to check the affect on the controlled system of any changes to be made before actually writing them to the Loop Control Board/Unit.

4: Backup Button

This button backs up data during operation. This is performed to back up changed settings to the flash memory in the Loop Control Board.

The backup during operation function backs up the function blocks in the RAM in the Loop Control Board to the flash memory in the Loop Control Board. A CS1W-LCB01/05 Loop Control Board Ver. 1.5 or later or a CS1D-CPU□□P Process-control CPU Unit is required to back up data during operation.

5: Scale Buttons

These buttons are used to change the scale of the output value axis (i.e., Scale on the Time Width-Output Value Setting Screen). Either a 0 to 100.0 (Scale 1) or a -300.0 to 300.0 (Scale 2) can be selected.

6: Wait Setting Button

This button displays the Wait Width Setting Screen for Segment Program 2.

7: Return Button

This button displays the Tuning Screen for Segment Program 2.

■ **Wait Width Setting Screen**
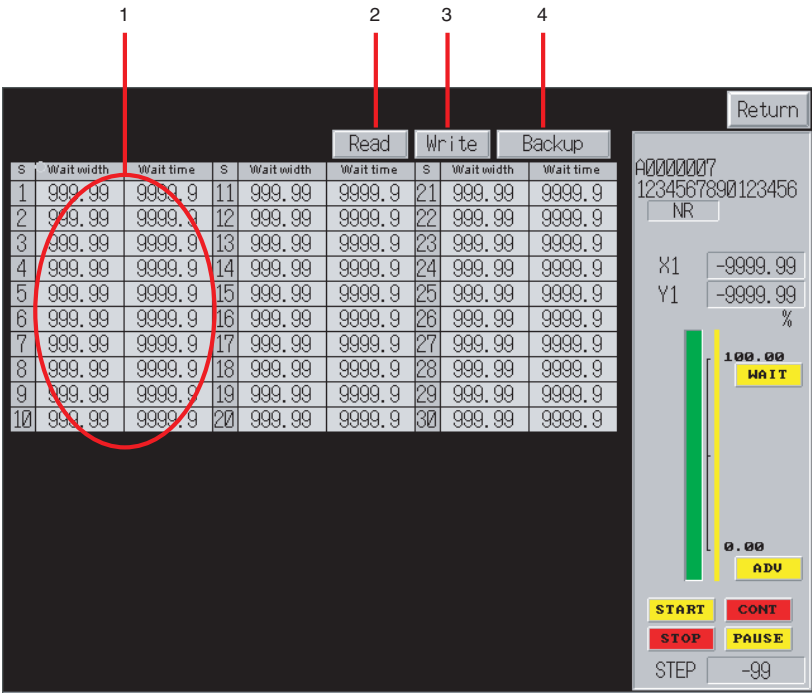
1: Wait Width and Wait Time

The wait width and maximum wait time are input for each step. The ten-key pad is used, just as it was for the Time Width-Output Value Setting Screen.

2: Read Button, 3: Write Button, and 4: Backup Button

The functions of these buttons are the same as those on the Time Width-Output Value Setting Screen.

6-8 Indication and Setting (Block Model 031)

This section describes only the differences between the Indication and Setting Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-8-1 Face Plates

The face place for the Indication and Setting Block is almost the same as the one for the Basic PID Block (Block Model 011), except that the Indication and Setting Block face plate does not have the MV-related functions and the SP can be switched between LOCAL and CAS.
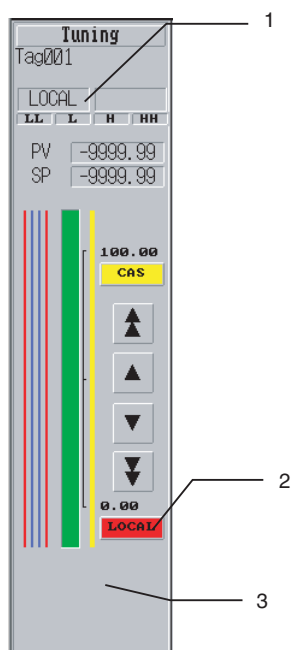
1: Status Display

Either CAS or LOCAL status is displayed. The value of tag ITEM R/L_SW determines the status character string display.

Display	R/L_SW (026)
LOCAL	0
CSS	1

This button is created as an ON/OFF Button using a Simple Rectangle (Type 1) to switch the label ON/OFF.

Control Flag input is disabled.

2: LOCAL Button

The LOCAL Button is displayed in red while in Local mode.

This button is set as a momentary ON/OFF Button using a Simple Rectangle (Type 1), and the background color is determined according to the following table.

Display color	R/L_SW (026)
Red	0
Yellow	1

The label displays "LOCAL" in the rough font.

By setting a Touch OFF Timing macro as shown below, operation will switch to Local mode when touched.

```
$B32760=0;
WRITECMEM ([R/L_SW],$B32760,1);
```

This button is always displayed, without setting a Control Flag to disable the display and input, which is different from the Switch to CAS Button.

3: MV Display, MV Change Button, and MV Index Position

The Indication and Setting face plate does not provide an MV display, MV Change Button, or MV index position.

The following diagram shows an Indication and Setting face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
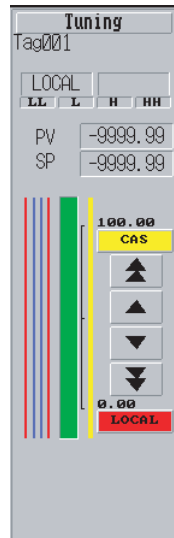
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-8-2 Tuning Screens

The Tuning Screen for the Indication and Setting Block is almost the same as the one for the Basic PID Block (Block Model 011), except this screen does not have the MV-related functions and the SP can be switched between LOCAL and CAS.

1: AT

The Indication and Setting Block does not provide an AT Button.

2: DV

The Indication and Setting Block does not provide a deviation alarm setting.

3: Parameters

The Indication and Setting Block does not provide parameter settings.

4: Realtime trend

The Indication and Setting Block displays a graph for PV only.

The following screen is a Tuning Screen for an Indication and Setting face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
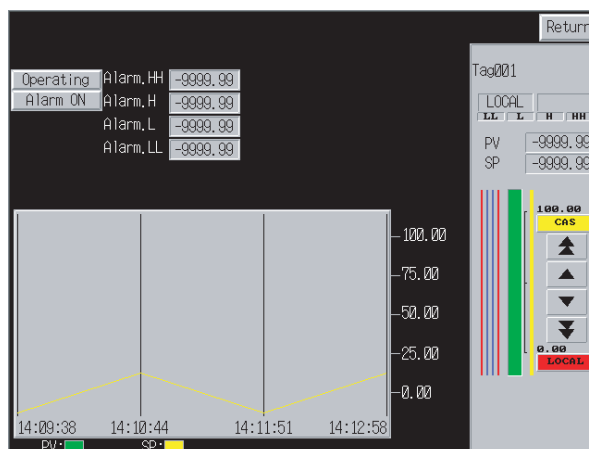
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-9   Ratio Setting (Block Model 033)

This section describes only the differences between the Ratio Setting Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-9-1   Face Plates

The Ratio Setting Block is used to set the ratio and bias and has PV-indicating and ratio-setting functions.
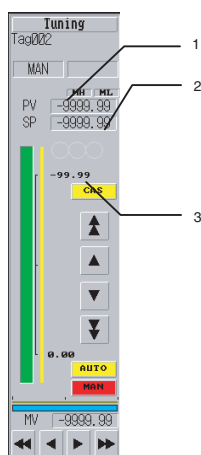
1: Alarm Status Display

Unlike the Basic PID Block, this block does not output any of the high/low PV alarms or the MV output's deviation alarm.

2: SP Numerical Value Display and Input

This field sets the Ratio Setting SP. Settings from 0 to 1 represent 0.00% to 100.00% and the value multiplied by the K1 ratio (−10.00 to 10.00) can be set and displayed.

Touch this field to display a ten-key pad below it.

Writing is performed for tag ITEM SP_W (ITEM 023) using the Before Writing Numeral/String macro condition. The calculation given above is reversed and the result (percent data) is written.

- Unit scale setting: Multiplier fixed at 0.01 and offset fixed at 0
- Input upper/lower limits: Upper limit fixed at 1,000 and lower limit fixed at −1,000
- Macro: The Before Writing Numeral/String macro is set as follows:

$W2047=GETNUMVAL();

READCMEM($W32691, [K1(054)], 1);

$W32694 = ($W2000/($W32691/1000))*100;

WRITECMEM([SP_W(023)],$W32694,1);

RETURN(1);

When the ten-key pad is displayed, the tag ITEMs R/L_SW and CAS_SET are referenced and if R/L_SW is 1 and CAS_SET is 1, a message is displayed indicating that the SP cannot be set, and input is disabled. (The operation of this error message is the same in the Basic PID Block (Block Model 011).)

3: SP Setting Scale

The upper limit of the scale displays the ITEM K1 value from the SP Numerical Value Display and Input Field.

- Unit scale setting: Multiplier fixed at 0.001 and offset fixed
- Display: The display is decimal, one-word signed INT, and displayed with a precision of 1/100 (□□.□□) in the rough font. A Control Flag is set to disable input without displaying a surrounding box.
- Communications address: Set K1 (054).

The lower limit of the scale fixes the label at 0.00 is displayed in the rough font.

The following diagram shows a Ratio Setting face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
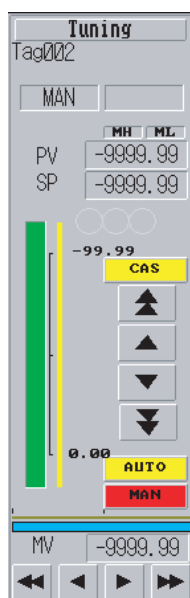
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-9-2   Tuning Screen

The parameters required to operate the Ratio Setting Block can be set on this tuning screen.
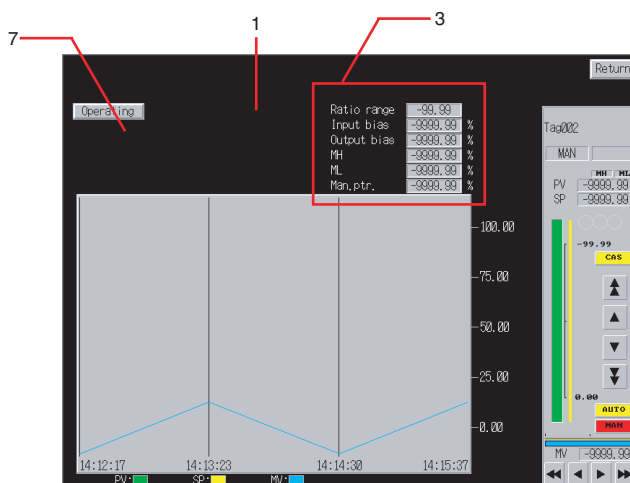
1: AT

The Ratio Setting Block does not provide an AT Button.

2: Alarm Setting

The Ratio Setting Block does not provide alarm settings.

3: Parameter Settings

These fields are used to display and set each parameter.

Parameter	Tag ITEM
Ratio range	K1 (054)
Input bias	A1 (055)
Output bias	B1 (056)
MH (High MV limit)	MH_LMT(ITEM076)

Parameter	Tag ITEM
ML (Low MV limit)	ML_LMT(ITEM077)
MV index position	MV_IDX(098)

Numeral Display and Input objects are used to create these fields, and a ten-key pad is displayed when a field is touched.

The following table shows the upper and lower limits of the setting ranges.

Parameter	Lower limit	Upper limit
Ratio range	−10.000	10.000
Input bias	−320.00	320.00
Output bias	−320.00	320.00
MH (High MV limit)	−320.00	320.00
ML (Low MV limit)	−320.00	320.00
MV index position	−15.00	115.00

The following table shows the units that are displayed. These units are fixed.

Parameter	Unit
Ratio range	None
Input bias	%
Output bias	%
MH (High MV limit)	%
ML (Low MV limit)	%
MV index position	%

The following values are used in communications with the PLC.

Parameter	Values used in PLC device/communications
Ratio range	−10,000 to 10,000 (Displayed value × 1,000)
Input bias	Percent data
Output bias	Percent data
MH (High MV limit)	Percent data
ML (Low MV limit)	Percent data
MV index position	Percent data

Data is written to the write address of each tag ITEM using a Before Writing Numeral/String macro, as follows:

$W2047=GETNUMVAL();
WRITECMEM([K1/A1/B1/MH_LMT/ML_LMT/MV_IDX],$W2047,1);

The following screen is a Tuning Screen for a Ratio Setting face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
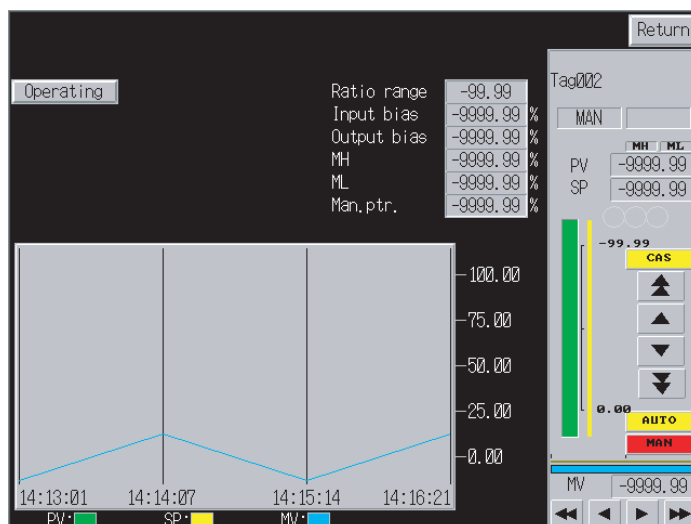
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-10 High/Low Alarm (Block Model 111)

This section describes only the differences between the High/Low Alarm Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-10-1 Face Plates

The High/Low Alarm Block indicates when the PV input (X1) has exceeded the high alarm or low alarm setting.
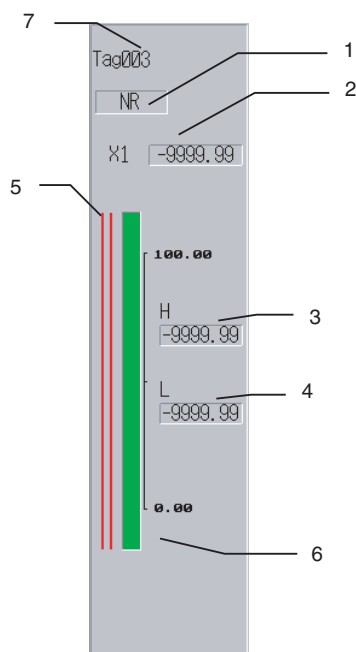
1: Status Display

Displays the alarm status. The values of tag ITEMs U1 and U2 determine which status character string is displayed.

Display	U1: High alarm output (012)	U2: Low alarm output (013)
NR	0	0
L	0	1
H	1	0
H	1	1

These buttons are created as ON/OFF Buttons using a Select Shape of type 3 to switch the graphic displaying the NR, H, or L characters.

Control Flag input is disabled.

2: Input Value

The fixed characters "X1" are displayed as a Text object. The numeral display field is display-only. (A Control Flag is set to disable input.)

The numeral display for X1 uses an engineering unit.

3: H (High Alarm SV) Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM A1 (ITEM 009) in engineering units. Touch this field to display a ten-key pad below it.

Data is written to the write address of tag ITEM A1 (ITEM 009) using the Before Writing Numeral/String macro.

```
$W2047=GETNUMVAL();
WRITECMEM([A1],$W2047,1);
RETURN(1);
```

The upper and lower limit values are equivalent to –320% and 320% with engineering units.

4: L (Low Alarm SV) Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM A2 (ITEM 010) in engineering units. Touch this field to display a ten-key pad below it.

Data is written to the write address of tag ITEM A2 (ITEM 010) using the Before Writing Numeral/String macro.

```
$W2047=GETNUMVAL();
WRITECMEM([A2],$W2047,1);
RETURN(1);
```

The upper and lower limit values are equivalent to –320% and 320% with engineering units.

5: Alarm Setting

The alarm set values are displayed as a Bar graph. The set values for the H and L alarms are displayed from right to left.

The set value for each alarm is displayed along with the X1 bar display on the right side of the face plate, with the top value as 115% and the bottom value as −15%.

Alarm type	Alarm setting tag ITEM
L (Low alarm)	A2 (010)
H (High alarm)	A1 (009)

- The alarm settings are displayed in red.
- The maximum value displayed is 11500 (115%) and the minimum value displayed is −1500 (−15%).
- The zero point is specified to be displayed.

6: MV Display, MV Change Button, and MV Index Position

The High/Low Alarm face plate does not provide an MV display, MV Change Button, or MV index position.

7: Tuning Screen Button

The High/Low Alarm face plate does not provide a Tuning Screen Button.

The following diagram shows a High/Low Alarm face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
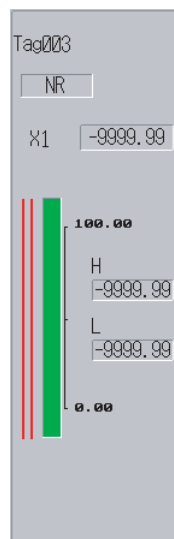
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-11 Timer (Block Model 205)

This section describes only the differences between the Timer Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-11-1 Face Plates

The Timer indicates when a preset time has elapsed. A prediction SV can be set for early notification.
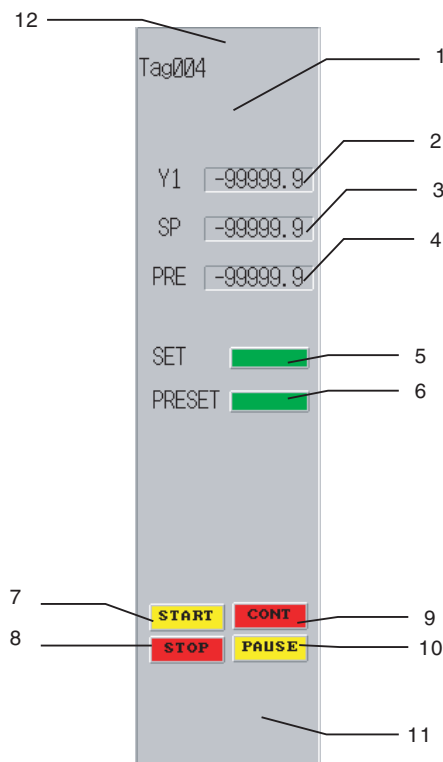
1: Status Display

The Timer face plate does not provide a status display.

2: Y1 Value Display

A Numeral Display and Input object is used to display the value of tag ITEM Y1 (ITEM 009).

A Control Flag is set to disable input.

3: SP Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM SP (ITEM 007). Touch this field to display a ten-key pad below it.

Data is written to the write address of tag ITEM SP (ITEM 007) using the Before Writing Numeral/String macro.

```
$W2047=GETNUMVAL();
WRITECMEM([SP_W],$W2047,1);
RETURN(1);
```

The upper and lower limits are 0.0 to 3200.0.

4: PRS Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM PRS (ITEM 008). Touch this field to display a ten-key pad below it.

Data is written to the write address of tag ITEM PRS (ITEM 008) using the Before Writing Numeral/String macro.

```
$W2047=GETNUMVAL();
WRITECMEM([PRS],$W2047,1);
RETURN(1);
```

The upper and lower limits are 0.0 to 3200.0.

5: SET Bit Lamp Display

A Bit Lamp indicates when the SV has been reached, as shown in the following table.

Display color	U1 (013)
Green	0
Red	1

6: PRSET Bit Lamp Display

A Bit Lamp indicates when the prediction value has been reached, as shown in the following table.

Display color	U2 (014)
Green	0
Red	1

7: START Button

When this button is touched, the write address of tag ITEM S1 (ITEM 011) is set to 1. The value of tag ITEM S1 (ITEM 011) is referenced to set the display color, as shown in the following table.

Display color	S1 (011)
Yellow	0
Red	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 011) is set as display address 1. The label displays "START" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S1 (ITEM 011).

```
$B32766=1;
WRITECMEM([S1],$B32766,1);
```

8: STOP Button

When this button is touched, the write address of tag ITEM S1 (ITEM 011) is set to 0. The value of tag ITEM S1 (ITEM 011) is referenced to set the display color, as shown in the following table.

Display color	S1 (011)
Red	0
Yellow	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 011) is set as display address 1. The label displays "STOP" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S1 (ITEM 011).

$B32766=0;
WRITECMEM([S1],$B32766,1);

9: CONT Button

When this button is touched, the write address of tag ITEM S2 (ITEM 012) is set to 0. The value of tag ITEM S2 (ITEM 012) is referenced to set the display color, as shown in the following table.

Display color	S2 (012)
Red	0
Yellow	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 (ITEM 012) is set as display address 1. The label displays "CONT" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S2 (ITEM 012).

$B32766=0;
WRITECMEM([S2],$B32766,1);

10: PAUSE Button

When this button is touched, the write address of tag ITEM S2 (ITEM 012) is set to 1. The value of tag ITEM S2 (ITEM 012) is referenced to set the display color, as shown in the following table.

Display color	S2 (012)
Yellow	0
Red	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 (ITEM 012) is set as display address 1. The label displays "PAUSE" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S2 (ITEM 012).

$B32766=1;
WRITECMEM([S2],$B32766,1);

11: MV Display, MV Change Button, and MV Index Position

The Timer face plate does not provide an MV display, MV Change Button, or MV index position.

12: Tuning Screen Button

The Timer face plate does not provide a Tuning Screen Button.

The following diagram shows a Timer face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.

The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-12 Counter (Block Model 208)

This section describes only the differences between the Counter Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-12-1 Face Plates

The Counter counts ON/OFF transitions of a contact input and indicates when the count exceeds the preset count SV. A prediction SV can be set for early notification.
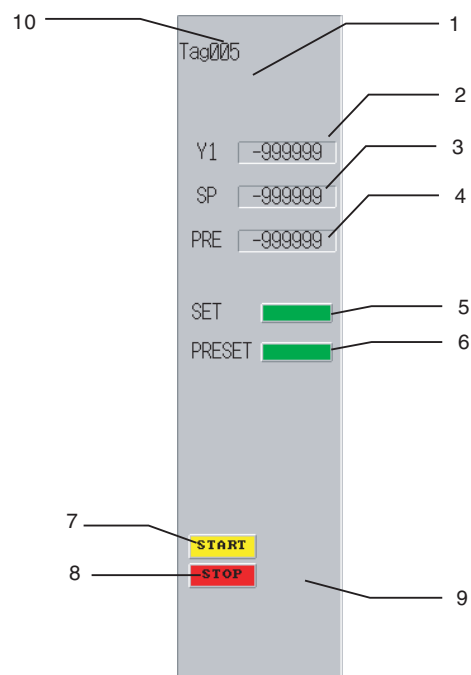
1: Status Display

The Counter face plate does not provide a status display.

2: Y1 Value Display

A Numeral Display and Input object is used to display the value of tag ITEM Y1 (ITEM 009).

A Control Flag is set to disable input.

3: SP Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM SP (ITEM 007). Touch this field to display a ten-key pad below it.

Data is written to the write address of tag ITEM SP (ITEM 007) using the Before Writing Numeral/String macro.

```
$W2047=GETNUMVAL();
WRITECMEM([SP_W],$W2047,1);
RETURN(1);
```

The upper and lower limits are 0 to 9,999.

4: PRS Numerical Value Display and Input

A Numeral Display and Input object is used to display the value of tag ITEM PRS (ITEM 008). Touch this field to display a ten-key pad below it.

Data is written to the write address of tag ITEM PRS (ITEM 008) using the Before Writing Numeral/String macro.

$W2047=GETNUMVAL();
WRITECMEM([PRS],$W2047,1);
RETURN(1);

The upper and lower limits are 0 to 9,999.

5: SET Bit Lamp Display

A Bit Lamp indicates when the SV has been reached, as shown in the following table.

Display color	U1 (012)
Green	0
Red	1

6: PRSET Bit Lamp Display

A Bit Lamp indicates when the prediction value has been reached, as shown in the following table.

Display color	U2 (013)
Green	0
Red	1

7: START Button

When this button is touched, the write address of tag ITEM S1 (ITEM 010) is set to 1. The value of tag ITEM S1 (ITEM 010) is referenced to set the display color, as shown in the following table.

Display color	S1 (010)
Yellow	0
Red	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 010) is set as display address 1. The label displays "START" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S1 (ITEM 010).

$B32766=1;
WRITECMEM([S1],$B32766,1);

8: STOP Button

When this button is touched, the write address of tag ITEM S1 (ITEM 010) is set to 0. The value of tag ITEM S1 (ITEM 010) is referenced to set the display color, as shown in the following table.

Display color	S1 (010)
Red	0
Yellow	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 010) is set as display address 1. The label displays "STOP" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S1 (ITEM 010).

$B32766=0;
WRITECMEM([S1],$B32766,1);

9: MV Display, MV Change Button, and MV Index Position

The Counter face plate does not provide an MV display, MV Change Button, or MV index position.

10: Tuning Screen Button

The Counter face plate does not provide a Tuning Screen Button.

The following diagram shows a Counter face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.


The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-13 ON/OFF Valve Manipulator (Block Model 221)

This section describes only the differences between the ON/OFF Valve Manipulator Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-13-1 Face Plates

The ON/OFF Valve Manipulator Block can operate and monitor an ON/OFF valve equipped with limit switches to detect the valve's fully open/fully closed conditions.
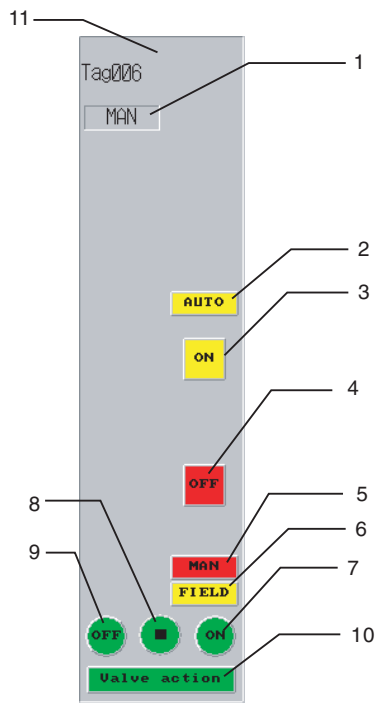
1: Status Display

Either AUTO or MAN status is displayed. The value of tag ITEM S1 determines which status character string is displayed.

Display	S1: A/M Switch Input (086)
MAN	0
AUTO	1

This button is created as an ON/OFF Button using a Simple Rectangle (Type 1) to switch the ON/OFF labels.

Control Flag input is disabled.

2: Switch to AUTO Button

This button switches operation to Auto mode and is displayed in red during Auto mode.

The button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 2), and the display color is determined according to the following table.

Display color	S1: A/M Switch Input (086)
Yellow	0
Red	1

The label displays "AUTO" in the rough font.

By setting the following Touch OFF Timing macro, operation will switch to Auto mode when touched.

```
$B32760=1;
WRITECMEM([R/L_SW],$B32760,1);
```

3: ON Operation Button

This button turns the valve ON manually and is enabled only when manual mode is selected.

This button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	S1: A/M Switch Input (086)	S3: MAN Input (013)
Yellow	0	0
Red	0	1
Yellow	1	0
Yellow	1	1

The label displays "ON" in the rough font.

By setting the following Touch OFF Timing macro, operation will turn the valve ON when touched. When the button is touched, tag ITEM S1 is referenced and if S1 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

Likewise, if tag ITEM S4 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

```
READCMEM($B32760,[S1],1);


if($B32760==1)
MSGBOX("Could not set.","ON Operation",0);
RETURN(1);
endif;


READCMEM($B32760,[S4],1);


if($B32760==1)
MSGBOX("Could not set.","ON Operation");
RETURN(1);
endif;


$B32761=1;
WRITECMEM([S3],$B32761,1);
```

4: OFF Operation Button

This button turns the valve OFF manually and is enabled only when manual mode is selected.

This button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	S1: A/M Switch Input (086)	S3: MAN Input (013)
Yellow	0	0
Red	0	1
Yellow	1	0
Yellow	1	1

The label displays "OFF" in the rough font.

By setting the following Touch OFF Timing macro, operation will turn the valve OFF when touched. When the button is touched, tag ITEM S1 is referenced and if S1 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

Likewise, if tag ITEM S4 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

READCMEM($B32760,[S1],1);

if($B32760==1)
MSGBOX("Could not set.","OFF Operation",0);
RETURN(1);
endif;

READCMEM($B32760,[S4],1);

if($B32760==1)
MSGBOX("Could not set.","OFF Operation",0);
RETURN(1);
endif;

$B32761=1;
WRITECMEM([S3],$B32761,1);

5: MAN Button

This button switches operation to manual mode and is displayed in red during manual mode. The button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 2), and the display color is determined according to the following table.

Display color	S1: A/M Switch Input (086)
Red	0
Yellow	1

The label displays "MAN" in the rough font.

By setting the following Touch OFF Timing macro, operation switches to manual mode when touched.

```
$B32760=0;
WRITECMEM([R/L_SW],$B32760,1);
```

6: FIELD Selection Display

A Bit Lamp indicates the control site and the lamp is red when control is onsite (in the field).

Display color	S4: Control Site Input (085)
Yellow	0
Red	1

7: Open Limit Switch Input Display (ON Display)

A lamp indicates the status of the open limit switch input and the lamp is red when the open input is ON.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	S5: Open limit switch input (015)
Green	0
Red	1

The label displays "ON" in the rough font.

8: Valve Open Midway Display

A lamp indicates when the valve is open midway and the lamp i s red when the valve is partially open.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	U3: Valve open midway (023)
Green	0
Red	1

A Select Shape graphic is used for the Button face display.

9: Closed Limit Switch Input Display (ON Display)

A lamp indicates the status of the closed limit switch input and the lamp is red when the closed input is ON.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	S6: Closed limit switch input (016)
Green	0
Red	1

The label displays "ON" in the rough font.

10: Valve Action Time Error Display

A lamp indicates an error when the corresponding limit switch does not go ON within the specified time after a fully open or fully close operation. The lamp is red when an error occurred.

The bit lamp is set as a rectangular single-line lamp with the following display colors.

Display color	U2: Valve Action Time Error (022)
Green	0
Red	1

The label displays "Valve action" in the Standard font.

11: Tuning Screen Button

The ON/OFF Valve Manipulator face plate does not provide a Tuning Screen Button.

The following diagram shows an ON/OFF Valve Manipulator face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
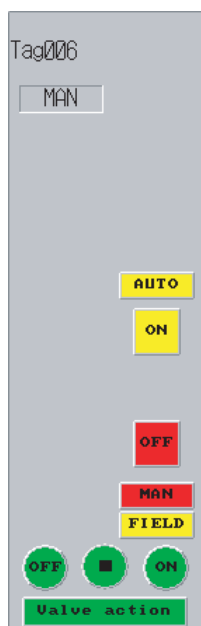
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-14 Motor Manipulator (Block Model 222)

This section describes only the differences between the Motor Manipulator Block and the ON/OFF Valve Manipulator Block (Block Model 221). For details on the areas not covered here, refer to *6-13 ON/OFF Valve Manipulator (Block Model 221)*.

6-14-1 Face Plates

This block operates and monitors a motor. Overcurrents can be monitored using an input from a CT and operating errors can be monitored using an answer input.
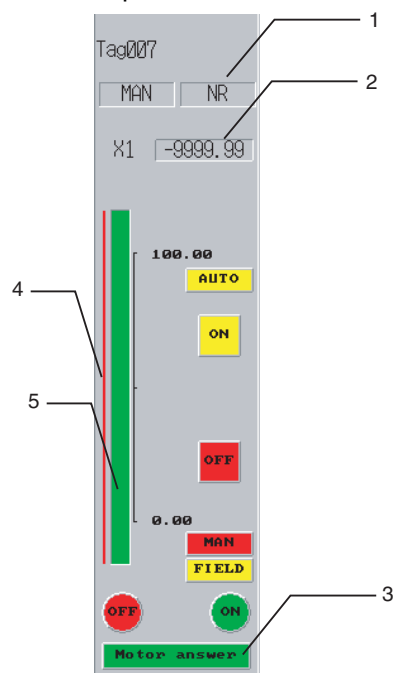
1: Status Display

Indicates a CT input high-limit error. The value of tag ITEM H determines the status character string display.

Display	H: CT input high-limit alarm output (036)
NR	0
H	1

This button is created as an ON/OFF Button using a Simple Rectangle (Type 1) to switch the label ON/OFF. Control Flag input is disabled.

2: CT Input Display

A Numeral Display and Input object is used to display the value of tag ITEM X1 (ITEM 032) in engineering units. Control Flag input is disabled.

3: Motor Answer Error Display

A lamp indicates an error when the answer contact input remains OFF for longer than the specified answer check time while the motor's operation ON command is ON. The lamp is red when an error occurred.

The bit lamp is set as a rectangular single-line lamp with the following display colors.

| Display color	U2: Motor answer error (022)
Green	0
Red	1

The label displays "Motor answer" in the rough font.

4: CT Input High Alarm SV Display

Displays the CT input high alarm SV in a bar graph. The alarm SVs are displayed along with the CT input bar at the right side of the face plate, with a maximum value of 115% and a minimum value of −15%.

Alarm type	Alarm SV Tag ITEM
H (High alarm)	H_SP: CT input high alarm SV (033)

- The alarm settings are displayed in red.
- The maximum value displayed is 11500 (115%) and the minimum value displayed is −1500 (−15%).
- The zero point is specified to be displayed.

5: CT Input Bar

A Level Meter object is used to display tag ITEM X1 (ITEM 032). The meter color is green, maximum value is 11500 (115%), and minimum value is −1500 (−15%). The bar is set to display the zero point.

The following diagram shows a Motor Manipulator face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
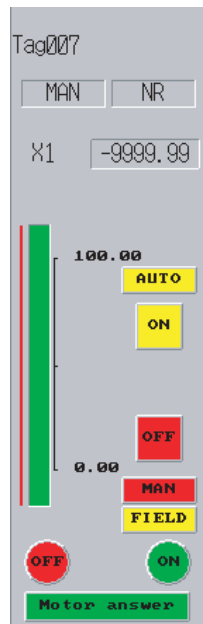
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-15 Reversible Motor Manipulator (Block Model 223)

This section describes only the differences between the Reversible Motor Manipulator Block and Motor Manipulator Block (Block Model 222). For details on the areas not covered here, refer to *6-14 Motor Manipulator (Block Model 222)*.

6-15-1 Face Plates

This block operates and monitors a reversible motor. Overcurrents can be monitored using an input from a CT and operating errors can be monitored using an answer input.
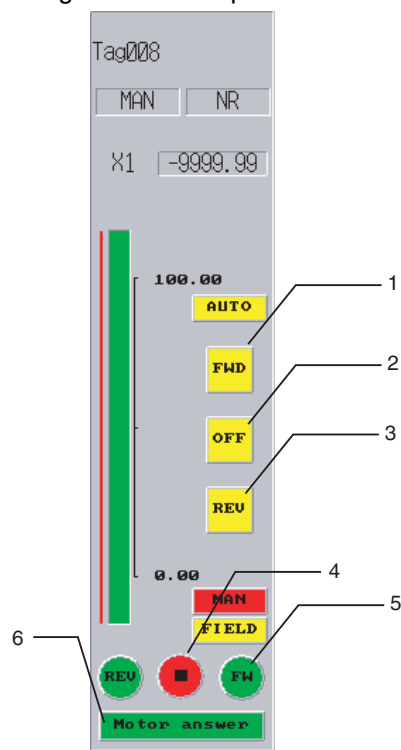
1: FWD Operation Button

This manipulation command button manually drives the motor in the forward direction and is enabled only when manual mode is selected.

This button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	S1: A/M Switch Input (086)	S4: MAN-FWD (014)
Yellow	0	0
Red	0	1
Yellow	1	0
Yellow	1	1

The label displays "FWD" in the rough font.

By setting the following Touch OFF Timing macro, the forward rotation command is sent when touched. When the button is touched, tag ITEM S1 is referenced and if S1 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

Likewise, if tag ITEM S7 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

When the forward rotation command is actually sent, tag ITEM S6 is turned OFF and then tag ITEM S4 is turned ON.

READCMEM($B32760,[S1],1);

```
if($B32760==1)
MSGBOX("Could not set.","FWD operation",0);
RETURN(1);
endif;


READCMEM($B32760,[S7],1);


if($B32760==1)
MSGBOX("Could not set.","FWD operation",0);
RETURN(1);
endif;


$B32761=0;
WRITECMEM([S6],$B32761,1);


$B32761=1;
WRITECMEM([S4],$B32761,1);
```

2: Stop Operation Button

This button manually stops the motor and is enabled only when manual mode is selected.

This button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	S4: MAN-FWD (014)	S6: MAN-REV (016)
Red	0	0
Yellow	0	1
Yellow	1	0
Yellow	1	1

The label displays "OFF" in the rough font.

By setting the following Touch OFF Timing macro, the forward operation and reverse operation commands are turned OFF when touched.

```
$B32760=0;
$B32761=0;
WRITECMEM([S4],$B32760,1);
WRITECMEM([S6],$B32761,1);
```

When the button is touched, tag ITEM S1 is referenced and if S1 = 1, the button input is prohibited. To display a fixed yellow button, a momentary ON/OFF Button is created using a Simple Rectangle (Type 2) and placed over the "OFF" button described above. This overlapping button is displayed/hidden according to the status of tag ITEM S1.

The overlapping button's settings are as follows:

Display color	S1: A/M switch input (086)
Red	0
Yellow	1

The label displays "OFF" in the rough font.

By setting the following Touch OFF Timing macro when tag ITEM S1 = 1, the message "Could not set." will be displayed and the setting will not be accepted if the button is touched when tag ITEM S1 = 1.

MSGBOX("Could not set.","OFF operation",0);

RETURN(1);

endif;

Set tag ITEM S1 as an indirect specification for the control flag input enable and display/hide settings for this overlapping object.

The button input is also prohibited when S7 = 1, just like S1. To display a fixed yellow button, a momentary ON/OFF Button is created using a Simple Rectangle (Type 2) and placed over the "OFF" button described above. This overlapping button is displayed/hidden according to the status of tag ITEM S7.

The overlapping button's settings are as follows:

Display color	S7: Control Site Input (085)
Red	0
Yellow	1

The label displays "OFF" in the rough font.

By setting the following Touch OFF Timing macro when tag ITEM S7 = 1, the message "Could not set." will be displayed and the setting will not be accepted if the button is touched when tag ITEM S7 = 1.

MSGBOX("Could not set.","OFF operation",0);

RETURN(1);

endif;

Set tag ITEM S7 as an indirect specification for the control flag input enable and display/hide settings for this overlapping object.

3: REV Operation Button

This manipulation command button manually drives the motor in the reverse direction and is enabled only when manual mode is selected.

This button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	S1: A/M Switch Input (086)	S6: MAN-REV (016)
Yellow	0	0
Red	0	1

Display color	S1: A/M Switch Input (086)	S6: MAN-REV (016)
Yellow	1	0
Yellow	1	1

The label displays "REV" in the rough font.

By setting the following Touch OFF Timing macro, the reverse rotation command is sent when touched. When the button is touched, tag ITEM S1 is referenced and if S1 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

Likewise, if tag ITEM S7 = 1, the message "Could not set." will be displayed and the setting will not be accepted.

When the reverse rotation command is actually sent, tag ITEM S6 is turned OFF and then tag ITEM S4 is turned ON.

```
READCMEM($B32760,[S1],1);


if($B32760==1)
MSGBOX("Could not set.","REV Operation",0);
RETURN(1);
endif;


READCMEM($B32760,[S7],1);


if($B32760==1)
MSGBOX("Could not set.","REV Operation",0);
RETURN(1);
endif;


$B32761=0;
WRITECMEM([S4],$B32761,1);


$B32761=1;
WRITECMEM([S6],$B32761,1);
```

4: FWD Answer Input Display

A lamp indicates the status of the FWD answer input and the lamp is red when the input is ON.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	S8: FWD answer input (018)
Green	0
Red	1

The label displays "FWD" in the rough font.

5: Stopped Display

A lamp indicates when both the REV input and FWD input are OFF. The lamp is red when both inputs are OFF.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	S8: FWD answer input (018)	S9: REV answer input (019)
Red	0	0
Green	0	1
Green	1	0
Green	1	1

A Select Shape graphic is used for the Button face display.

6: REV Answer Input Display

A lamp indicates the status of the REV answer input and the lamp is red when the input is ON.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	S9: REV answer input (019)
Green	0
Red	1

The label displays "REV" in the rough font.

The following diagram shows a Reversible Motor Manipulator face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
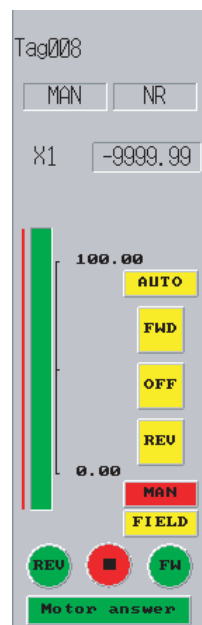
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-16 Motor Opening Manipulator (Block Model 224)

This section describes only the differences between the Motor Opening Manipulator Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-16-1 Face Plates

This function block operates an electric position-proportional motor using a target opening value and open/close command inputs. Combine this function block with other Control blocks (such as the PID block) to achieve position-proportional control of electric motors.
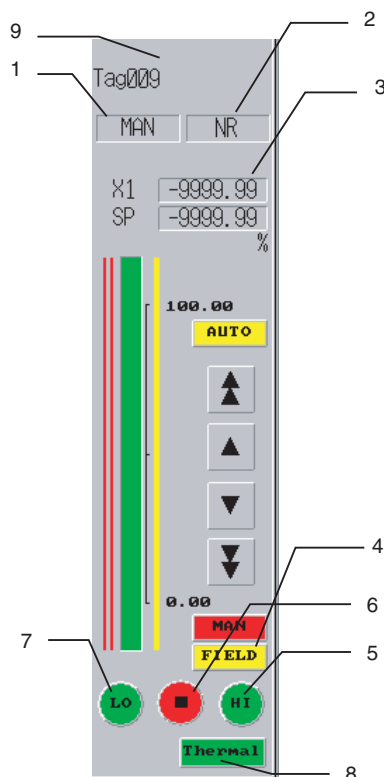
1: Status Display 1

Displays either AUTO or MAN status. The value of tag ITEM S1 determines the status character string display.

Display	S1: A/M switch input (086)
MAN	0
AUTO	1

This button is created as an ON/OFF Button using a Simple Rectangle (Type 1) to switch the label ON/OFF.

Control Flag input is disabled.

2: Status Display 2

Displays alarms for out-of-range motor opening input values. The values of tag ITEMs H and L determine which status character string is displayed.

Display	H: Opening input high alarm output (036)	L: Opening input low alarm output (037)
NR	0	0
L	0	1
H	1	0
H	1	1

This button is created as an ON/OFF Button using a Select Shape of type 3 to switch the graphic displaying the NR, H, or L characters. Control Flag input is disabled.

3: CT Input Display

A Numeral Display and Input object is used to display the value of tag ITEM X1 (ITEM 032) in engineering units. Control Flag input is disabled.

4: FIELD Selection Display

A Bit Lamp indicates the control site and the lamp is red when control is onsite (in the field).

Display color	S4: Control Site Input (085)
Yellow	0
Red	1

The label displays "FIELD" in the rough font.

5: Open Output Display

A lamp indicates the status of the open manipulation output and the lamp is red when the output is ON.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	U1: Open manipulation output (021)
Green	0
Red	1

The label displays "HI" in the rough font.

6: Stopped Output Display

A lamp indicates when both the close manipulation output and open manipulation output are OFF. The lamp is red when both outputs are OFF.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	U1: Open manipulation output (021)	U2: Close manipulation output (022)
Red	0	0
Green	0	1
Green	1	0
Green	1	1

A Select Shape graphic is used for the Button face display.

7: Close Manipulation Output Display

A lamp indicates the status of the close manipulation output and the lamp is red when the output is ON.

The bit lamp is set as a round single-line lamp with the following display colors.

Display color	U2: Close manipulation output (022)
Green	0
Red	1

The label displays "LO" in the rough font.

8: Thermal Relay Display

This lamp indicates when both the thermal relay open input and thermal relay close input are OFF. The lamp is red when both inputs are OFF.

This lamp is created as a momentary ON/OFF Button using a Simple Rectangle (Type 3) and the display color is determined according to the following table.

Display color	S3: Thermal relay open input (019)	S4: Thermal relay close input (020)
Red	0	0
Green	0	1
Green	1	0
Green	1	1

The label displays "Thermal" in the rough font.

9: Tuning Screen Button

The Motor Opening Manipulator face plate does not provide a Tuning Screen Button.

The following diagram shows a High/Low Alarm face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
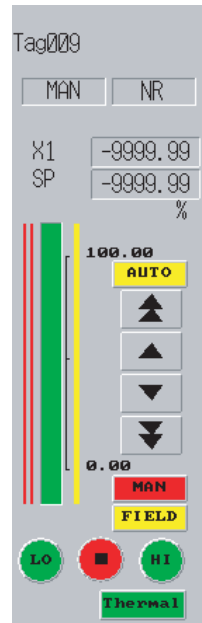
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-17 Blended PID (Block Model 013)

This section describes only the differences between the Blended PID Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-17-1 Face Plates

This function block performs PID control on the cumulative value (cumulative deviation) between the accumulated value PV and accumulated value Remote Set Point. Ratio control of flowrate accumulated values is possible because this function block is provided with a ratio to accumulated Remote Set Point function.
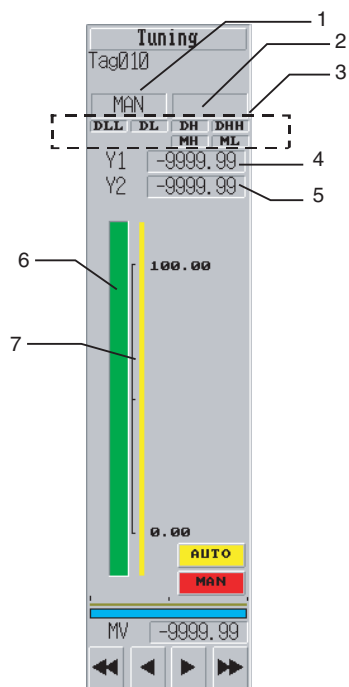
1: Status Display 1

Either AUTO or MAN status is displayed. The value of tag ITEM A/M_SW determines which status character string is displayed.

Display	A/M_SW (086)
MAN	0
AUTO	1

This button is created as an ON/OFF Button using a Simple Rectangle (Type 2) to switch the ON/OFF labels. Control Flag input is disabled.

2: Status Display 2

The MV error indication status is displayed. The value of tag ITEM MV_ABN determines which status character string is displayed.

Display	MV_ABN (091)
(No characters displayed)	0
MV error	1

This button is created as an ON/OFF Button using a Simple Rectangle (Type 2) to switch the ON/OFF labels. Control Flag input is disabled.

3: Alarm Status Display

This field displays the status of alarms that have occurred. The Bit Lamp object is used to display a normal status in gray and an alarm status in red.

The text of each alarm is displayed in the rough font. The following table shows the tag ITEM for each alarm.

Alarm type	Referenced tag ITEM
DLL (Deviation low/low alarm)	DLL (036)
DL (Deviation low alarm)	DL (037)
DH (Deviation high alarm)	DH (038)
DHH (Deviation high/high alarm)	DHH (039)
MH (High MV limit)	MHA (078)
ML (Low MV limit)	MLA (079)

4: Y1 Value Display

A Numeral Display and Input object is used to display the value of tag ITEM Y1 in engineering units. Control Flag input is disabled.

5: Y2 Value Display

A Numeral Display and Input object is used to display the value of tag ITEM Y2 in engineering units. Control Flag input is disabled.

6: Y1 Bar Display

Displays tag ITEM Y1 using a Level Meter object. The meter color is green, the maximum value displayed is 11500 (115%), and the minimum value displayed is −1500 (−15%). The bar is set to display the zero point.

7: Y2 Bar Display

Displays tag ITEM Y2 using a Level Meter object. The meter color is green, the maximum value displayed is 11500 (115%), and the minimum value displayed is −1500 (−15%). The bar is set to display the zero point.

The following diagram shows a Reversible Motor Manipulator face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
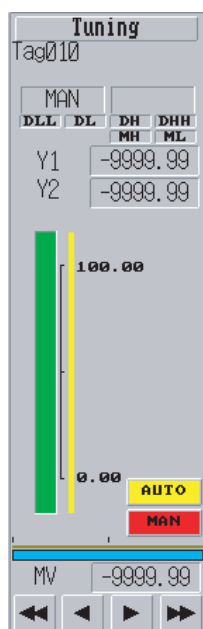
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-17-2 Tuning Screens

This section describes only the differences between the tuning screens in the Blended PID Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1-2 Tuning Screens*.

1: Parameter Settings

These fields are used to display and set each parameter for blended PID control.

Parameter	Referenced tag ITEM
Cumulative deviation output	DEV_Q (044)
Ratio	K1 (027)
Accumulated value	Rightmost 4 digits: Q1 (012) Leftmost 4 digits: Q2 (013) (The addresses set in the object are working addresses.)
Proportional band	P (054)
Integral time	I (055)
Differential time	D (056)
MH (High MV limit)	MH_LMT (076)
ML (Low MV limit)	ML_LMT (077)
MV index position	MV_IDX (098)

Numeral Display and Input objects are used to create these fields, and a ten-key pad is displayed when a field is touched.

The following table shows the upper and lower limits of the setting ranges.

Parameter	Lower limit	Upper limit
Cumulative deviation output	–32000	32,000
Ratio	0	3.2000
Accumulated value	(Cannot be input.)	(Cannot be input.)
Proportional band	0.1	999.9
Integral time	0	9999

Parameter	Lower limit	Upper limit
Differential time	0	9999
MH (High MV limit)	−320.00	320.00
ML (Low MV limit)	−320.00	320.00
MV index position	−15.00	115.00

The following table shows the units that are displayed. These units are fixed.

Parameter	Unit
Cumulative deviation output	%
Ratio	%
Accumulated value	Same units as Q1
Proportional band	%
Integral time	s
Differential time	s
MH (High MV limit)	%
ML (Low MV limit)	%
MV index position	%

The following values are used in communications with the PLC.

Parameter	Values used in PLC device/communications
Cumulative deviation output	−32,000 to 32,000 (same as displayed value)
Ratio	0 to 32,000 (10,000 × displayed value)
Accumulated value	Q1 and Q2 both 0 to 9999 (same as displayed value)
Proportional band	1 to 9999 (10 × displayed value)
Integral time	0 to 9999 (same as displayed value)
Differential time	0 to 9999 (same as displayed value)
MH (High MV limit)	Percent data
ML (Low MV limit)	Percent data
MV index position	Percent data

Data is written to the write address of each tag ITEM using a Before Writing Numeral/String macro, as follows:

```
$W2047=GETNUMVAL();
WRITECMEM([DEV_Q,K1/P/I/D/MH_LMT/ML_LMT/MV_IDX],$W2047,1);
```

2: Realtime Trend Graph

Tag ITEMs Y1, Y2, and MV are displayed in graph format. The following table shows the characteristics of each tag ITEM's line.

Tag ITEM	Color	Minimum value	Maximum value	Line style	Markers	Step display
Y1 (016)	Green	−1500	11500	Solid	None	Not used.
Y2 (029)	Yellow	−1500	11500	Solid	None	Not used.
MV (089)	Blue (Color code 229)	−1500	11500	Solid	None	Not used.

The following screen is a Tuning Screen for a Blended PID face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
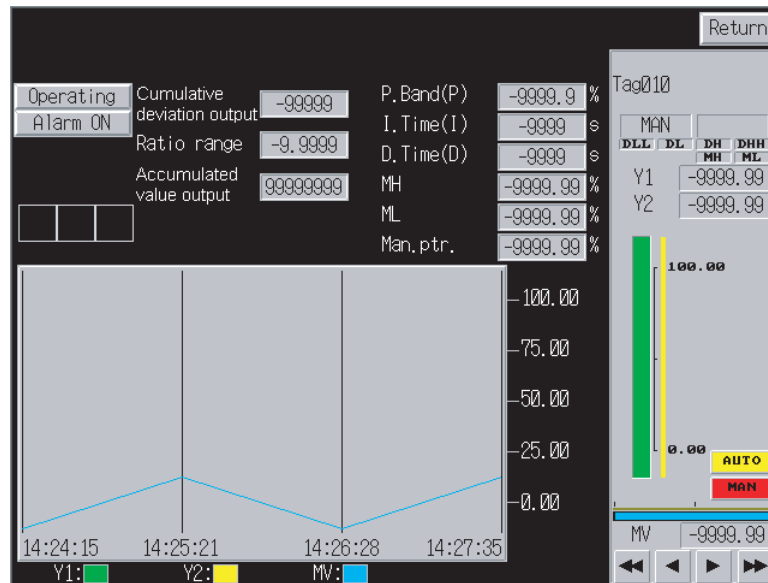
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-18 Batch Flowrate Capture (Block Model 014)

This section describes only the differences between the Batch Flowrate Capture Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1 Basic PID (Block Model 011)*.

6-18-1 Face Plates

This function block is used to open a valve at a fixed flowrate until a fixed batch accumulated value is reached in a tank or other batch flowrate destination.
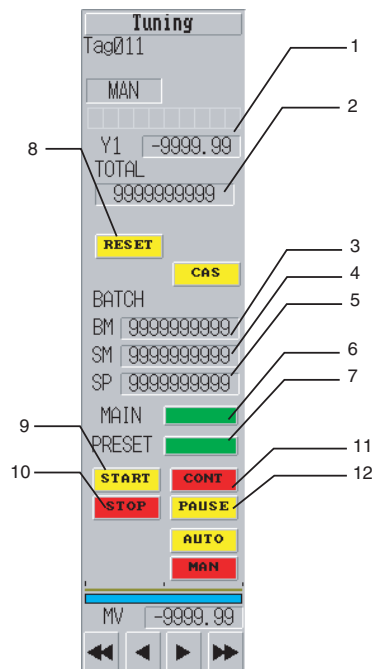
1: Y1 Value Display

A Numeral Display and Input object is used to display the value of tag ITEM Y1 in engineering units. Control Flag input is disabled.

2: TOTAL Value Display

A Numeral Display and Input object is used to display the total value, which is calculated by multiplying the accumulated value (rightmost 4 digits in Q1 and leftmost 4 digits in Q2) and tag ITEM PR. The address set in the communications address is a working address.

The storage format is UDINT, which has 10 integer digits and no digits below the decimal point. The units and scaling are set to "none" during conversion.

Control Flag input is disabled.

3: BM Value Display

A Numeral Display and Input object is used to display the preset quantity (BM), which is calculated by multiplying the preset value (rightmost 4 digits in BM and leftmost 4 digits in BMU) and tag ITEM PR. The address set in the communications address is a working address.

The storage format is UDINT, which has 10 integer digits and no digits below the decimal point. The units and scaling are set to "none" during conversion.

Control Flag input is disabled.

4: SM Value Display

A Numeral Display and Input object is used to display the batch accumulated value (SM), which is calculated by multiplying the batch accumulated value (rightmost 4 digits in SM and leftmost 4 digits in SMU) and tag ITEM PR. The address set in the communications address is a working address.

The storage format is UDINT, which has 10 integer digits and no digits below the decimal point. The units and scaling are set to "none" during conversion.

Control Flag input is disabled.

5: SP Value Display

A Numeral Display and Input object is used to display the set point (SP), which is calculated by multiplying the batch accumulated value (rightmost 4 digits in SP and leftmost 4 digits in SPU) and tag ITEM PR. The address set in the communications address is a working address.

The storage format is UDINT, which has 10 integer digits and no digits below the decimal point. The units and scaling are set to "none" during conversion.

Control Flag input is disabled.

Touch this field to display a ten-key pad below it. Tag ITEMs SP_W (rightmost 4 digits) and SPU_W (leftmost 4 digits) are written using the Before Writing Numeral/String macro condition.

```
$W32764L=GETNUMVAL();
$W32766=BCD(W32764L%10000);
$W32767=BCD(W32764L/10000);
WRITECMEM([SP_W],$W32766,1);
WRITECMEM([SPU_W],$W32767,1);
```

RETURN(1);

6: Main Batch Output Display

The status of the main batch output is displayed with a bit lamp, as shown in the following table.

Display color	U1 (038)
Green	0
Red	1

7: Pre-batch Output Display

The status of the pre-batch output is displayed with a bit lamp, as shown in the following table.

Display color	U2 (039)
Green	0
Red	1

8: RESET Button

The accumulation counter RESET button is red while the counter is being reset.

The button is created as a momentary ON/OFF Button using a Simple Rectangle (Type 2), and the display color is determined according to the following table.

Display color	S3 (014)
Yellow	0
Red	1

The label displays "RESET" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the reset operation is executed.

```
READCMEM($B32759,[S3],1);
if($B32759==1);
 $B32759=0;
else;
 $B32759=1;
endif;
WRITECMEM([S3],$B32759,1);
```

9: START Button

This button executes the run command. When touched, 1 is set in the write address for tag ITEM S1, Run/stop command. The value of tag ITEM S1 is referenced to set the display color, as shown in the following table.

Display color	S1 (036)
Yellow	0
Red	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 is set as display address 1. The label displays "START" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S1.

$B32766=1;
WRITECMEM([S1],$B32766,1);

10: STOP Button

This button disables the run command. When this button is touched, the write address of tag ITEM S1 is set to 0. The value of tag ITEM S1 is referenced to set the display color, as shown in the following table.

Display color	S1 (036)
Red	0
Yellow	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 is set as display address 1. The label displays "STOP" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S1.

$B32766=0;
WRITECMEM([S1],$B32766,1);

11: CONT Button

This button disables the interrupt (pause) command. When this button is touched, the write address of tag ITEM S2 is set to 0. The value of tag ITEM S2 is referenced to set the display color, as shown in the following table.

Display color	S2 (037)
Red	0
Yellow	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 is set as display address 1. The label displays "CONT" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S2.

$B32766=0;
WRITECMEM([S2],$B32766,1);

12: PAUSE Button

This button specifies the interrupt (pause) command. When this button is touched, the write address of tag ITEM S2 is set to 1. The value of tag ITEM S2 is referenced to set the display color, as shown in the following table.

| Display color	S2 (037)
Yellow	0
Red	1

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 is set as display address 1. The label displays "PAUSE" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S2.

$B32766=1;
WRITECMEM([S2],$B32766,1

The following diagram shows a Batch Flowrate Capture Block face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.

The whole face is built using 458×142 dots.
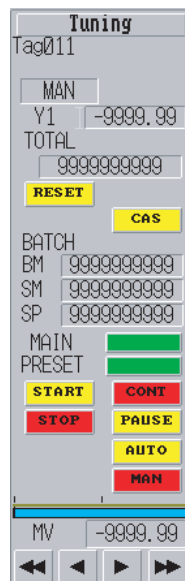
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-18-2 Tuning Screens

This section describes only the differences between the tuning screens in the Batch Flowrate Capture Block and Basic PID Block (Block Model 011). For details on the areas not covered here, refer to *6-1-2 Tuning Screens*.
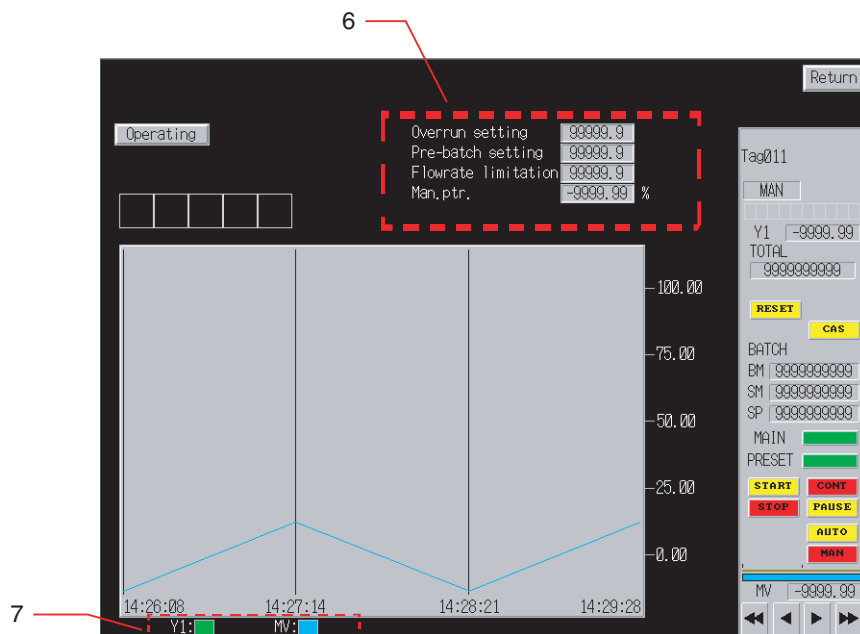
1: Parameter Settings

These fields are used to display and set each parameter for Batch Flowrate Capture processing.

Parameter	Referenced tag ITEM
Overrun setting	B0 (032) (The setting address is a working address.)
Pre-batch setting	BP (033) (The setting address is a working address.)
Flowrate limitation	B1 (034) (The setting address is a working address.)
MV index position	MV_IDX (098)

Numeral Display and Input objects are used to create these fields, and a ten-key pad is displayed when a field is touched.

The following table shows the upper and lower limits of the setting ranges.

Parameter	Lower limit	Upper limit
Overrun setting	0	9999
Pre-batch setting	0	9999
Flowrate limitation	0	9999
MV index position	−15.00	115.0

The following table shows the units that are displayed. These units are fixed.

Parameter	Unit
Overrun setting	None
Pre-batch setting	None
Flowrate limitation	None
MV index position	%

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The following values are used in communications with the PLC.

Parameter	Values used in PLC device/ communications
Overrun setting	0 to 9999 (Display ÷ Value of PR)
Pre-batch setting	0 to 9999 (Display ÷ Value of PR)
Flowrate limitation	0 to 9999 (Display ÷ Value of PR)
MV index position	Percent data

The overrun, pre-batch, and flowrate limitation settings are set as follows:

- Storage format: UDINT
- Characters displayed: 5 integer digits and 1 tenths digit
- Units and scaling: Set to ×0.001 during conversion.

Data is written to the write address of each tag ITEM using a Before Writing Numeral/String macro, as follows:

- Macro for the overrun, pre-batch, and flowrate limitation settings:
  ```
  $W2047=BCD(GETNUMVAL()/1000);
  WRITECMEM([B0/BP/B1],$W2047,1);
  RETURN(1);
  ```

- Macro for the MV index position:
  ```
  $W2047=GETNUMVAL();
  WRITECMEM([MV_IDX],$W2047,1);
  RETURN(1);
  ```

2: Realtime Trend Graph

Tag ITEMs Y1 and MV are displayed in graph format. The following table shows the characteristics of each tag ITEM's line.

Tag ITEM	Color	Minimum value	Maximum value	Line style	Markers	Step display
Y1 (016)	Green	−1500	11500	Solid	None	Not used.
MV (089)	Blue (Color code 229)	−1500	11500	Solid	None	Not used.

The following screen is a Tuning Screen for a Batch Flowrate Capture Block face plate built using the Face Plate Auto-Builder for NS in a 640×480 screen resolution.
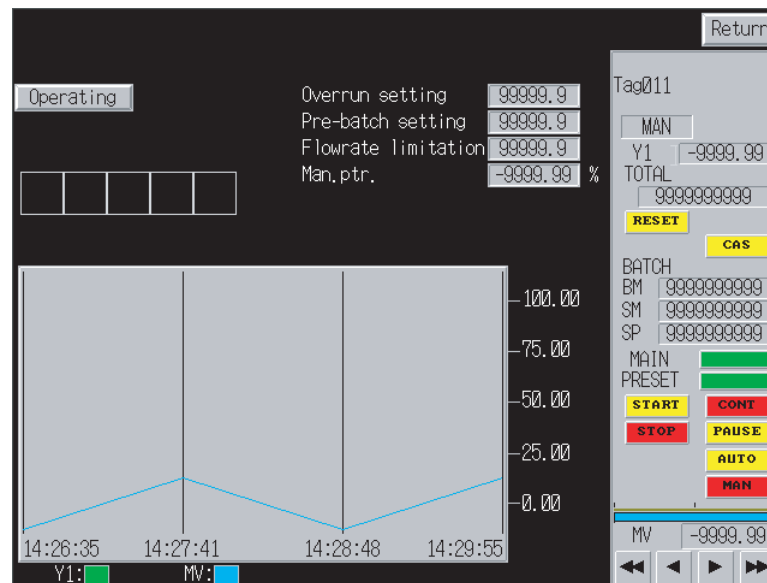
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-19 Segment Program 3 (Block Model 158)

This section describes only the differences between the Segment Program 3 (Block Model 158) block and the Basic PID (Block Model 011) block. For information not covered here, refer to *6-1 Basic PID (Block Model 011)*.

For details on Segment Program 3 operating specifications and functions, refer to the *Loop Control Unit Function Block Reference Manual* (Cat. No. W375). For details on setting scaling for function blocks, refer to the *CX-Process Tool Software Operation Manual (Cat. No. W372)*.

6-19-1 Face Plate
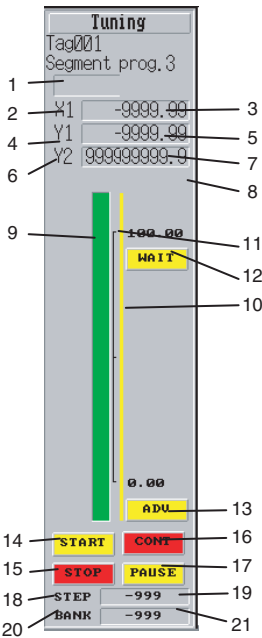
1: Status Display, Alarm Status Display

There is no Alarm Status Display in Segment Program 3. The Status Display indicates the status of X1 input errors (Tag ITEM U1 (ITEM 015)).

Display	U1 (ITEM 015)
NR	1
(No characters displayed)	0

These buttons are created as ON/OFF Buttons using a Select Shape of type 1 to switch the graphic displaying PV error characters. Control Flag input is disabled.

2: X1 Display

The fixed text "X1" is displayed as a label.

3: X1 Numerical Value Display

A Numerical Display and Input object is used to display the value of tag ITEM X1 (ITEM 007). The reference input value is displayed in engineering units. A Control Flag is set to disable input.

4: Y1 Display

The fixed text "Y1" is displayed as a label.

5: Y1 Numerical Value Display

A Numerical Display and Input object is used to display the value of tag ITEM Y1 (ITEM 008). The program output value is displayed in engineering units. A Control Flag is set to disable input.

6: Y2 Display

The fixed text "Y2" is displayed as a label.

7: Y2 Numerical Value Display

A Numerical Display and Input object is used to display the value of tag ITEM Y2L (ITEM 009) (elapsed time output (low byte)) as the low byte, and the value of tag ITEM Y2H (ITEM 010) (elapsed time output (high byte)) as the high byte, with the values divided by 10. A Control Flag is set to disable input.

8: Unit Display

The unit (engineering units) is displayed (up to 8 single-byte characters).

9: X1 Bar

Tag ITEM X1 (ITEM 007) displays the reference input value using a Level Meter object. The meter color is green, the maximum value displayed is 11500 (115%), and the minimum value displayed is –1500 (–15%). The bar is set to display the zero point.

10: Y1 Bar

Tag ITEM Y1 (ITEM 008) displays the program output value using a Level Meter object. The meter color is yellow, the maximum value displayed is 11500 (115%), and the minimum value displayed is –1500 (–15%). The bar is set to display the zero point.

11: Y1 Bar Gradation Display

The X1 bar and Y1 bar are incremented with 0%, 50%, and 100% slits in a fixed graphic display.

12: WAIT Button

When touched, 1 is set in the write address for tag ITEM S3 (ITEM 017: Move to next wait command).

When tag ITEM U10 (ITEM 019: Waiting) is 0, the button is yellow, and when the value is 1, the button is red. The button is built using a momentary ON/OFF Button with a Simple Rectangle (Type 2). The write address for tag ITEM S3 (ITEM 017) is set as the write address, and the read address for tag ITEM U10 (ITEM 019) is set as display address 1 while waiting. The label displays "WAIT" in the rough font.

13: ADV Button

When touched, 1 is set in the write address for tag ITEM S4 (ITEM 018: Step command). Tag ITEM S4 (ITEM 018) is displayed in yellow when the value is 0, and in red when the value is 1.

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address for tag ITEM S4 (ITEM 018) is set as the write address, and the read address for tag ITEM S4 (ITEM 018) is set as display address 1. The label displays "ADV" in the rough font.

14: START Button

When touched, 1 is set in the write address for tag ITEM S1 (ITEM 013: Run/ stop command). Tag ITEM S1 (ITEM 013) is referenced and the color is displayed according to the following table.

S1 (ITEM 013) value	Color
0	Yellow
1	Red

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 013) is set as display address 1. The label displays "START" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S1 (ITEM 013).

$B32766=1;

WRITECMEM ([S1],$B32766,1) ;

15: STOP Button

When touched, 0 is set in the write address for tag ITEM S1 (ITEM 013: Run/ stop command). Tag ITEM S1 (ITEM 013) is referenced and the color is displayed according to the following table.

S1 (ITEM 013) value	Color
0	Red
1	Yellow

The button is built as a momentary ON/OFF Button with a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S1 (ITEM 013) is set as display address 1. The label displays "STOP" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S1 (ITEM 013).

$B32766=0;

WRITECMEM ([S1],$B32766,1) ;

16: CONT Button

When touched, 0 is set in the write address for tag ITEM S2 (ITEM 014: Hold switch). Tag ITEM S2 (ITEM 014) is referenced and the color is displayed according to the following table.

S2 (ITEM 014) value	Color
0	Red
1	Yellow

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 (ITEM 014) is set as display address 1. The label displays "CONT" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 0 is written to the write address of tag ITEM S2 (ITEM 014).

$B32767=0;

WRITECMEM ([S2],$B32767,1) ;

A Control Flag is used to reference tag ITEM S1 (ITEM 013), Run/stop command. If the value is 0, no display/input disabled is set.

17: PAUSE Button

When touched, 1 is set in the write address for tag ITEM S2 (ITEM 014), Hold switch. Tag ITEM S2 (ITEM 014) is referenced and the color is displayed according to the following table.

S2 (ITEM 014) value	Color
0	Yellow
1	Red

The button is built as a momentary ON/OFF Button using a Simple Rectangle (Type 2). The write address is not set, and the read address for tag ITEM S2 (ITEM 014) is set as display address 1. The label displays "PAUSE" in the rough font.

The following macro is set as a Touch OFF Timing macro, and when touched, the fixed value 1 is written to the write address of tag ITEM S2 (ITEM 014).

$B32767=1;

WRITECMEM ([S2],$B32767,1) ;

A Control Flag is used to reference tag ITEM S1 (ITEM 013: Run/stop command). If the value is 0, no display/input disabled is set.

18: STEP Display

The fixed text "STEP" is displayed as a label.

19: STEP Numerical Display

A Numeral Display and Input object is used to display the value for tag ITEM Y3 (ITEM 011: Step output). A Control Flag is set to disable input.

Tag ITEM Y3 (ITEM 011) uses values 0 to 100 from the PLC device/communications, but the PLC or communications values are displayed with 2 integer digits and 0 digits below the decimal point, without scaling the values on the display.

20: BANK Display

The fixed text "BANK" is displayed as a label.

21: BANK Numerical Display

A Numeral Display and Input object is used to display the value for tag ITEM C_BNK3 (ITEM 025: Selecting bank number). A Control Flag is set to disable input.

Other Settings

Segment Program 3 does not provide an MV display, MV index position, SP Change Button, or MV Change Button.

The following diagram shows the face plate for Segment Program 3 built with the Face Plate Auto-Builder for NS in a 640×480 screen resolution. The whole face is built using 458×142 dots.
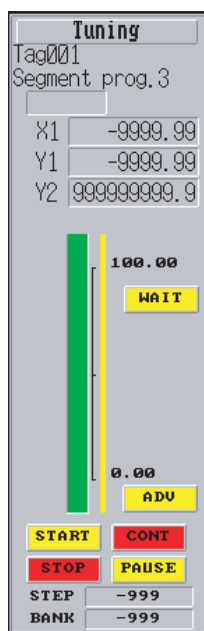
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-19-2 Tuning Screens
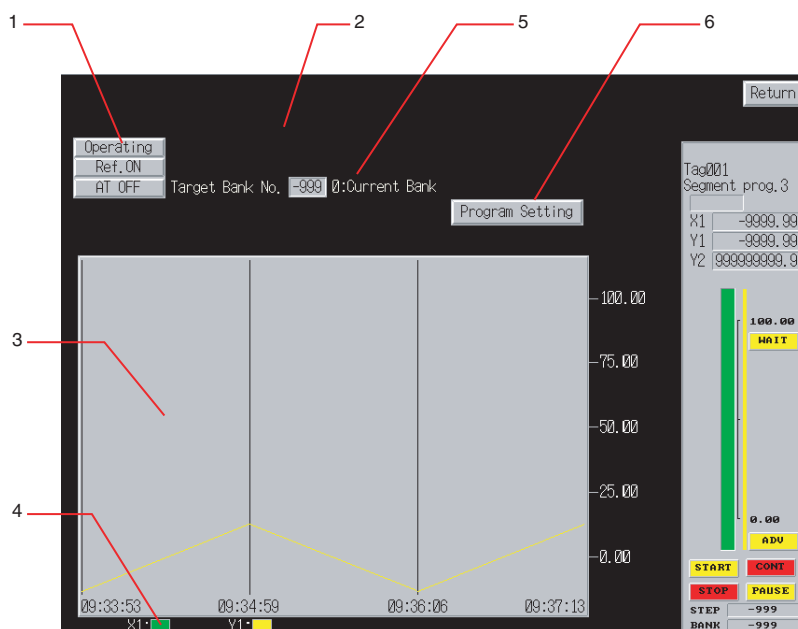
1: Status Display

These button are used to switch between the status of the Stop block operation command (tag ITEM MT_ST (ITEM 000)) and Disable Reference Input Switch (tag ITEM S5 (ITEM 020)). These buttons are built as alternate ON/OFF Buttons using Simple Rectangles (Type 2), according to the information in the following table.

Button	Tag ITEM	OFF color	ON color	OFF label	ON label	Write confirmation message
Stop block operation command	MT_ST (ITEM 000)	Gray	Yellow	Operating	Suspended	Yes "OK?"
Disable reference input	S5 (ITEM 020)	Gray	Yellow	Ref. ON	Ref. OFF	Yes "OK?"
AT command/AT executing	AT(026)	Gray	Yellow	AT	AT	Yes "Executing or stopping the AT command will change the MV. OK?"

The read address is set in the display address and the write address is set in write address 1.

2: Alarm Setting/Parameters

Segment Program 3 does not provide alarm settings or parameter settings.

3: Realtime Trend Graph

Tag ITEM X1 (ITEM 007) and tag ITEM Y1 (ITEM 008) are displayed as graphs. Each tag ITEM is drawn using the following graph lines.

| Tag ITEM	Color	Minimum value	Maximum value	Line type	Marker	Step display
X1	Green	−1500	11500	Solid line	None	Not used.
Y1	Yellow	−1500	11500	Solid line	None	Not used.

4: Realtime Trend Graph Legend

The realtime trend graph line color is indicated using a label and a Rectangle.

(X1: Green Y1: Yellow)

5: AT Command

The AT command for the PID block designated by ITEM 032 is executed, and the result is written in the AT result reflection bank number designated by ITEM 027: AT_PIDNO. The bank number is set in the storage destination bank number. When the bank number is "0," the current bank (the bank number designated in the execution step) is selected.

6: Program Setting

This button opens the Program Setting Screen for Segment Program 3. The following screen is the Tuning Screen for Segment Program 3 built using Face Plate Auto-Builder for NS in 640×480 screen resolution.
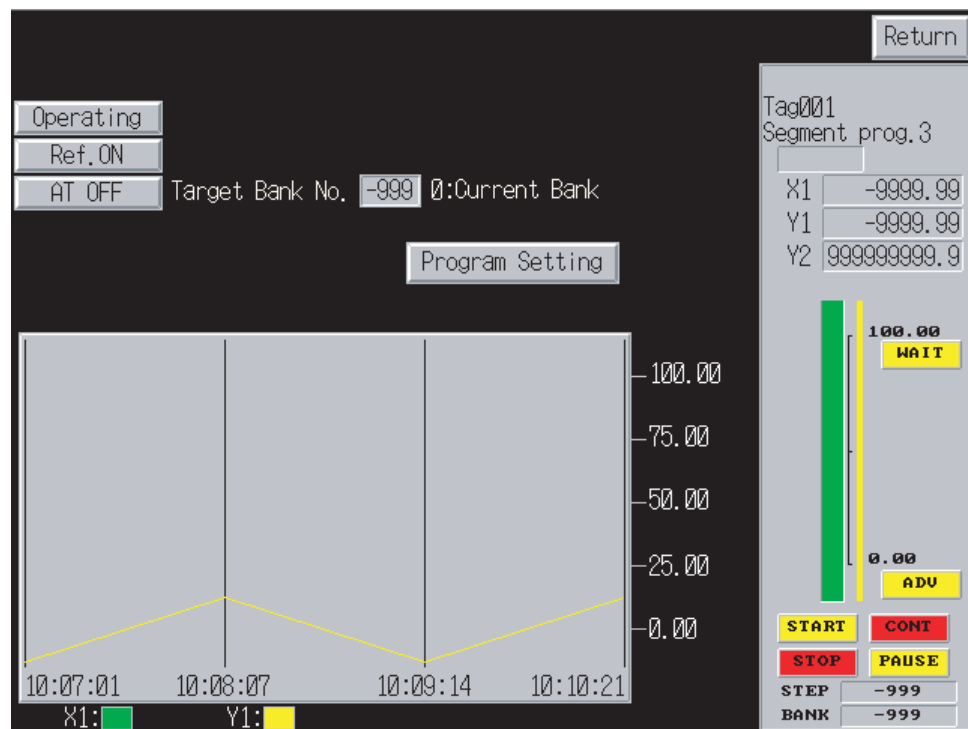
The display and operation of each object in the face plate is the same as the version for 800×600 screen resolution.

6-19-3 Program Setting Screens

■ Step Data Setting Screen
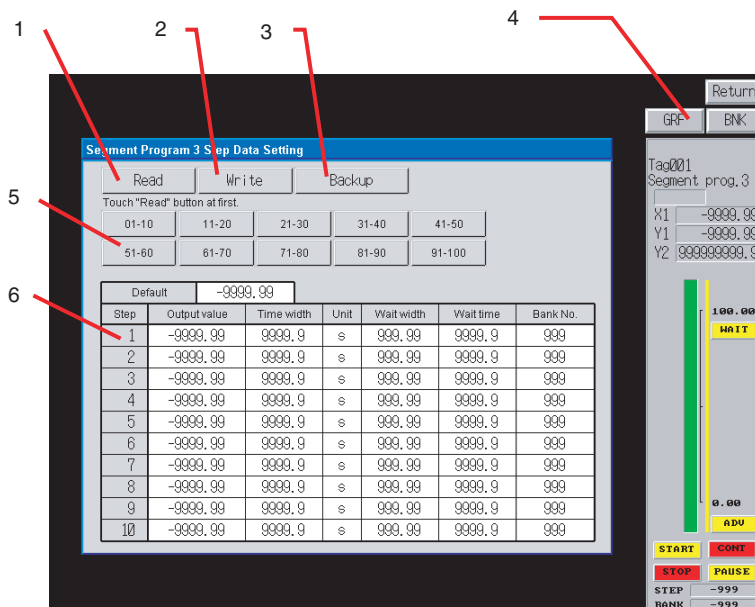
1: Read Button

This button reads the step data from the Loop Control Board/Unit. The steps displayed on the screen indicate the range of steps that can be read.
Any settings made on the screen will be discarded if the Read Button is clicked before clicking the Write Button.

2: Write Button

This button writes the step data settings to the Loop Control Board/Unit. The steps displayed on the screen indicate the range of steps that can be written.

3: Backup Button

This button backs up data during operation. This is performed to back up changed settings to the flash memory in the Loop Control Board.

The backup during operation function backs up the function blocks in the RAM in the Loop Control Board to the flash memory in the Loop Control Board.

4: GRF and BNK Buttons

GRF Button: Opens the Step Data Graph Display Screen.

BNK Button: Opens the Bank Data Setting Screen.

5: Step Display Switching Buttons

Up to 10 steps can be displayed on each Step Data Setting Screen. These buttons display a different group of 10 steps.

01-10: Displays steps 1 to 10

11-20: Displays steps 11 to 20

21-30: Displays steps 21 to 30

31-40: Displays steps 31 to 40

41-50: Displays steps 41 to 50

51-60: Displays steps 51 to 60

61-70: Displays steps 61 to 70

71-80: Displays steps 71 to 80

81-90: Displays steps 81 to 90

91-100: Displays steps 91 to 100

6: Step Data Display and Setting Buttons

These buttons are used to display and set step data.

Default: B0 Value and the Output Value, Time Width, Unit, Bank No., Wait Width, and Wait Time, are displayed, and can be set, for each step.

Note Carefully consider the effects that changes will have on equipment before writing any settings.

■ Bank Data Setting Screen
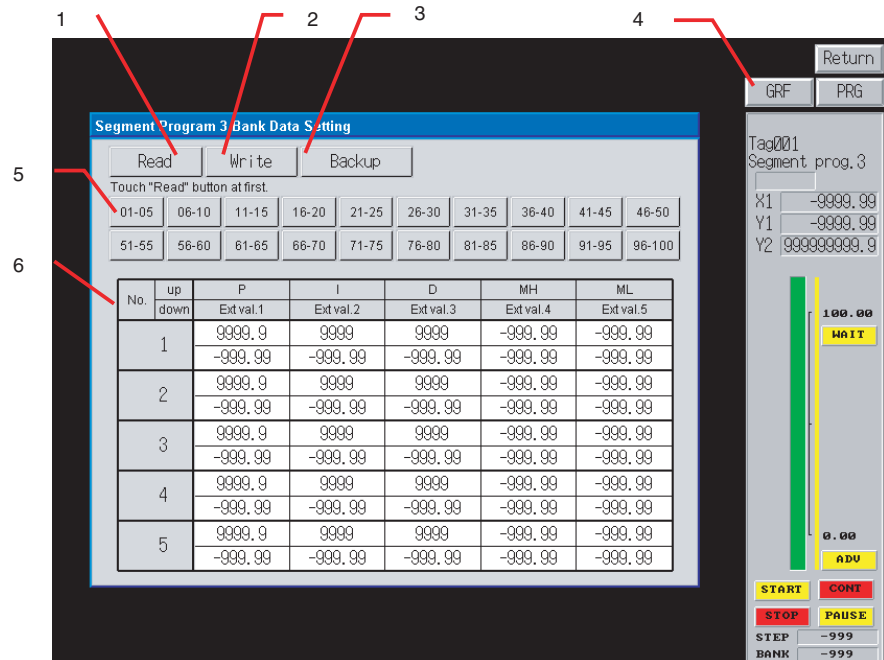
1: Read Button

This button reads the bank data from the Loop Control Board/Unit. The number of banks displayed on the screen indicate the range of banks that can be read. Any settings made on the screen will be discarded if the Read Button is clicked before clicking the Write Button.

2: Write Button

This button writes the bank data settings to the Loop Control Board/Unit. The number of banks displayed on the screen indicate the range of banks that can be written.

3: Backup Button

This button backs up data during operation. This is performed to back up changed settings to the flash memory in the Loop Control Board. The backup during operation function backs up the function blocks in the RAM in the Loop Control Board to the flash memory in the Loop Control Board.

4: GRF and PRG Buttons

GRF Button: Opens the Step Data Graph Display Screen.

PRG Button: Opens the Step Data Setting Screen.

5: Bank Display Switching Buttons

Up to 5 banks can be displayed on each Bank Data Setting Screen. These buttons display a different group of 5 banks.

01-05: Displays banks 1 to 5	06-10: Displays banks 6 to 10
11-15: Displays banks 11 to 15	16-20: Displays banks 16 to 20
21-25: Displays banks 21 to 25	26-30: Displays banks 26 to 30
31-35: Displays banks 31 to 35	36-40: Displays banks 36 to 40
41-45: Displays banks 41 to 45	46-50: Displays banks 46 to 50
51-55: Displays banks 51 to 55	56-60: Displays banks 56 to 60
61-65: Displays banks 61 to 65	66-70: Displays banks 66 to 70
71-75: Displays banks 71 to 75	76-80: Displays banks 76 to 80
81-85: Displays banks 81 to 85	86-90: Displays banks 86 to 90
91-95: Displays banks 91 to 95	96-100: Displays banks 96 to 100

6: Bank Data Display and Setting Buttons

These buttons are used to display and set bank data. The P, I, D, MH, and ML parameters and the set values from 1 to 5 are displayed, and can be set, for each bank. The set values from 1 to 5 are input as engineering units according to scale data set in the destination function blocks.

Note Carefully consider the effects that changes will have on equipment before writing any settings.

■ **Step Data Graph Display Screen**
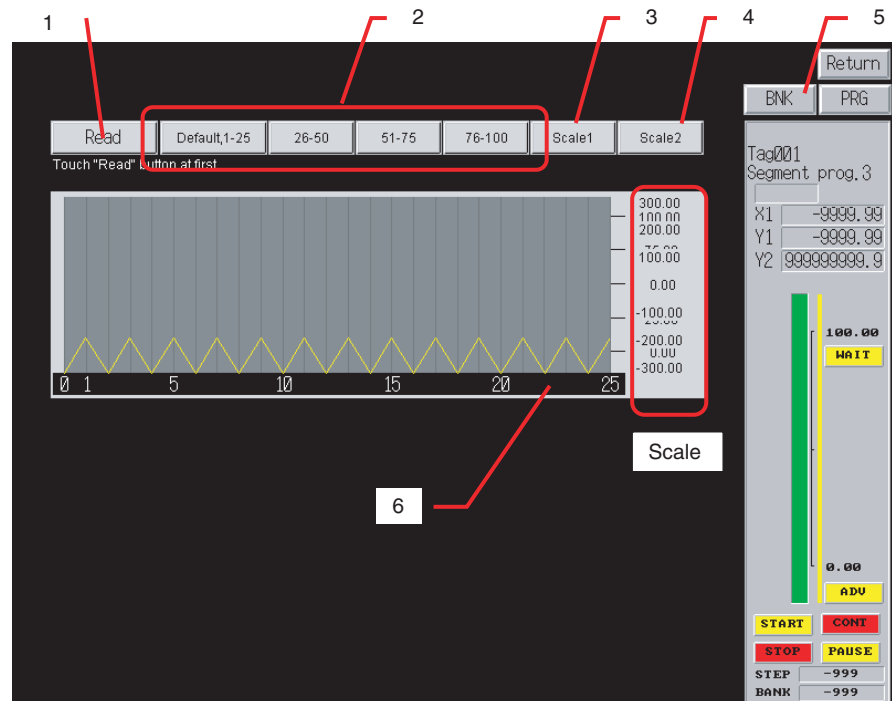
1: Read Button

This button reads the step data from the Loop Control Board/Unit and displays it in a graph.

2: Step Data Switching Buttons

These buttons display the step numbers to be displayed in a graph. Up to 25 steps can be displayed in each graph.

Default, 1-25: Displays Default B0 and Steps 1-25

26-50:   Displays steps 26 to 50

51-75:   Displays steps 51 to 75

76-100: Displays steps 76 to 100

3 and 4: Scale Buttons

These buttons are used to change the scale of the output value axis (i.e., scale on the Step Data Graph Display Screen). Using percentage data, either a −300.0 to 300.0 (Scale 1) or a 0 to 100.0 (Scale 2) can be selected. When using engineering units, the percentage data is converted to, and displayed in, engineering units based on Segment Program 3 scale data.

5: BNK and PRG Buttons

BNK Button: Opens the Bank Data Setting Screen.

PRG Button: Opens the Step Data Setting Screen.

6: Step Data Graph Display

Displays step data in a graph. The horizontal axis indicates time, and the vertical axis indicates the output value.

Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

Cat. No. W418-E1-07

Revision code

The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
01		Original production
02		Overall additions and revisions to change information on the Face Plate Auto-Builder for NS Ver. 2.0 and system version 4.0.
03		Revisions for NS Ver. 3.0.
04		Corrections made to errors on pages 5, 17, and 18.
05		Revisions for NS Ver. 3.1.
06		Revisions accompanying upgrade from CX-One version 3.2 to 4.03. Changes to text related to end of separate-unit sales.
07		System requirements for Face Plate Auto-Builder changed.