

Shibaura Machine Co., Ltd.

Robot Controller Sample Project File

For TS5000

VGA, WVGA Common Edition

Technical Guide Rev03

Revision History

Revision No.	Date	Description
00	2020-09-28	New Creation
01	2021-01-18	Added Robot Controller version up method Change of display revision [Ver-> Rev]
	2021-03-15	Modify support model
02	2021-03-25	Modify number of connectable devices
03	2021-10-07	5.4 Add supported robot controller version 5.5.4 Modify ethernet port number

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1 Overview

This Sample Project File is used for connection with Toshiba Machine's controllers TS5000.

The following functions are prepared when a SCARA robot is used more conveniently.

- Controller's status can be checked easily.
- Batch monitoring of the signal Interface relay status is available. Bit can be forcibly set/reset.
- The present location of the robot can be acquired to display it.
- The alarm being issued is displayed. Details of the alarm can be also displayed.
- Alarm history can be checked using the alarm history function of the Display unit.
- The instructions of "Alarm Reset", "Program Reset", "Signal Reset" and "Buzzer OFF" can be given to the controller.
- Device Monitor, I/O Monitor, Time Chart, Connection Device Data Transfer screens are prepared as the maintenance functions.

2 Notes

1. The intellectual property rights for the files provided by Schneider Electric Japan Holdings Ltd. belong to us.
2. Downloaded files and the data extracted from those files are no guarantees of our product specifications. Please be aware of this fact.
3. The liability for use of this service lies with the customer.
4. In any case, this is not intended as a warranty for any work for a system that makes use of the data on these screens.
5. For models that can operate in this sample project, please refer to the chapter "5.2. Target device with touch panel" in this manual.
6. Any modifications made to this service by a customer are entirely at the responsibility of the customer.
7. Please be aware that we cannot respond to any inquiries for the purpose of modifying these data.
8. The content and information in the data on these screens and documentation are subject to change without prior notification.

3 Restrictions

This screen data is taken from screenshots showing the representative features and functions of the GP4000/SP5000/ST6000 Series.

When using the sample project file, be sure to reference our product manual or the connection device manual, including the usage restrictions and safety precautions. In addition, please be aware that we are unable to accept responsibility for damage arising from reasons that cannot be attributable to us,

loss of customer opportunity or profit arising from the malfunction of our product, damage arising from special circumstances regardless of whether or not we had foreknowledge of those circumstances, secondary damage, compensation for accidents, damage to our products, or other business-related guarantees.

4 How to Use This Project File

When using this project file (henceforth known as “the file”), be sure to confirm the following details:

1) When using the file as-is

Confirm the communication settings.

When using this file as-is, transfer it in GP-Pro EX to a display console with a touch panel.

When connecting, refer to section “5. System configuration” of this Manual.

For communication settings, refer to “5.6 Communication Settings” of this Manual.

2) How to combine with other files

In GP-Pro EX, select [Project] → [Utilities] → [Copy from Another Project].

For further details, refer to “Startup to Shutdown” in our reference manual.

However, there are issues to be aware of, such as overlapping screen numbers, so also refer to sections 3) and later.

3) Screen numbers when combining

There may be times when things get overwritten, such as when there are duplicate screen numbers.

When combining the file with a file currently being created, be aware of the screen numbers.

Refer to “6.1 Screen List” for screen numbers that are being used by the file.

When combining with 2), it is possible to designate a copy destination screen number before starting to copy. Before combining, be sure to either designate a screen number when copying, or change the screen number in advance.

When changing a screen number, be sure to also change the screen number for the screen replacement switch.

Be aware that if no changes are made to the screen replacement destination screen number, unexpected operations may occur.

Refer to “6.2 Screen Transition” for details on screen transition.

4) Changing addresses

When changes are made to the address of a connection device that has been configured on the screen, it will not operate properly.

Do not make changes to these addresses.

5) Sampling settings when connecting files

This file uses the sampling function.

When sampling settings are configured in the file currently being created, check to ensure the settings are not duplicated. If the settings are duplicated, they may be overwritten.

This file uses "Block 1."

6) Dealing with each screen

The "Call Screen" function is used in this file. Therefore, do not delete the screen including the word "background" when checking the screen title from the screen list window.

5 Device Configuration

5.1 System Configuration

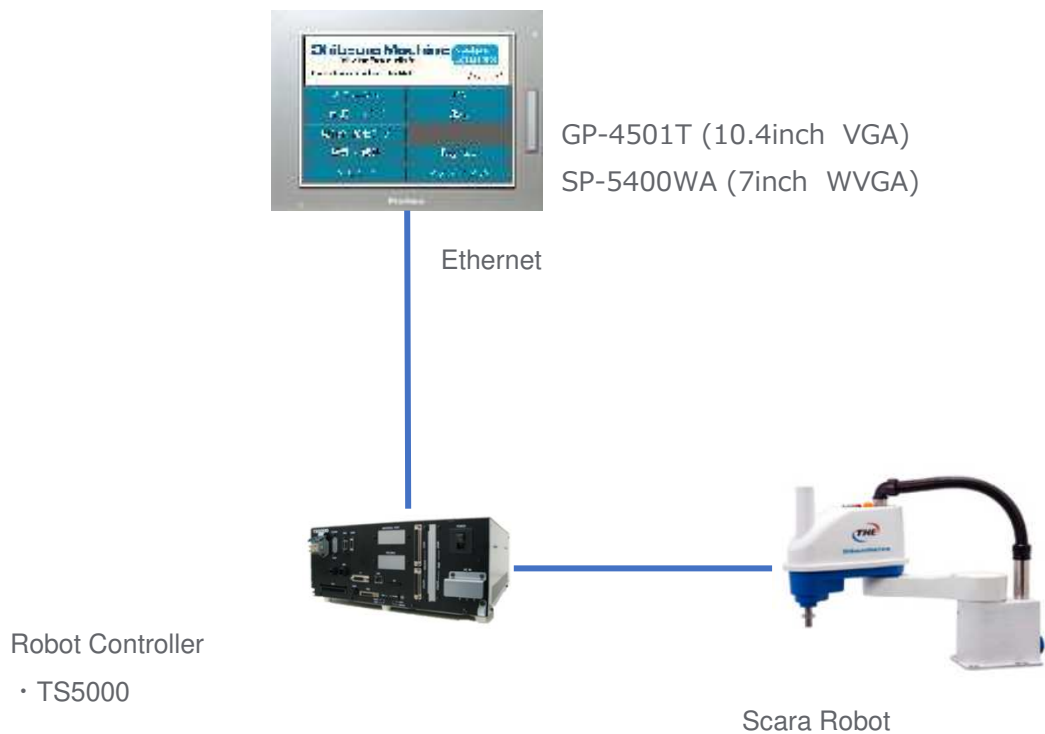


Figure 5-1 System Configuration

- The power supply specifications of GP and SP vary depending on the model.
For details on the system configuration, refer to the catalog and the hardware manual.
 - *To use the sample project file, it is necessary to incorporate a dedicated ladder logic program in the robot controller
 - * This sample project data is that corresponding to one controller.

5.2 Target Model

The model name described here refers to the model name selected in GP-Pro EX.

The table is created based on GP-Pro EX Ver4.09.

The sample project file is available for the models as shown below.

VGA: connection_gp4501_v_TSM-TS5000_ml_V100.prx

WVGA: connection_sp5400_wv_TSM-TS5000_ml_V100.prx

Table 5-1 Target Display Model with Touch Panel

Series	Model	Target		Note
		VGA	WVGA	
GP41** Series	GP-4104			
	GP-4105			
	GP-4106			
	GP-4107			
	GP-4114T			
	GP-4115T			
	GP-4115T3			
	GP-4116T			
GP-42** Series	GP-4201T			
	GP-4201TM (Modular Type)			
	GP-4201TW			
	GP-4203T			
GP-43** Series	GP-4301T			
	GP-4301TM (Modular Type)			
	GP-4301TW			
	GP-4303T			
	GP-4311HT	○		*1
GP-44** Series	GP-4401T	○		*1
	GP-4401WW			
GP-45** Series	GP-4501T (Analog Touch Panel)	○		
	GP-4501T (Matrix Touch Panel)	○		*1
	GP-4501TW	○		*1
	GP-4503T	○		*1
	GP-4521T	○		*1
	GP-4601T (Analog Touch Panel)	○		*2

GP-46** Series	GP-4601T (Matrix Touch Panel)	○		*2
	GP-4603T	○		*2
	GP-4621T	○		*2
GP-4G** Series	GP-4G01 VGA (640*480)	○		*1
	GP-4G01 SVGA (800*600)	○		*2
	GP-4G01 WVGA (800*480)		○	*1
GP-Rear Module Series	GP-4000M (Rear Modular Type)			
LT-42** Series	LT-4201TM (Modular Type DIO)			
	LT-4201TM (Modular Type Analog)			
LT-43** Series	LT-4301TM (Modular Type DIO)			
	LT-4301TM (Modular Type Analog)			
LT-Rear Module Series	LT-4000M (Rear Module DIO)			
	LT-4000M (Rear Module Analog)			
SP-5B00	SP-5400WA WVGA (800*480)		○	*1
	SP-5500TP VGA (640*480)	○		*1
	SP-5500TP SVGA (800*600)	○		*2
	SP-5500WA WXGA (1280*800)			
	SP-5600TA XGA (1024*768)			
	SP-5600TP VGA (640*480)	○		*1
	SP-5600TP SVGA (800*600)	○		*2
	SP-5600TP XGA (1024*768)			
	SP-5600WA WXGA (1280*800)			
	SP-5660TP VGA (640*480)	○		*1
	SP-5660TP SVGA (800*600)	○		*2
	SP-5660TP XGA (1024*768)			
	SP-5700TP VGA (640*480)	○		*1
	SP-5700TP SVGA (800*600)	○		*2
	SP-5700TP XGA (1024*768)			
	SP-5700WC FWXGA (1366*768)			
	SP-5800WC FWXGA (1366*768)			
	DC Power Supply Adapter SVGA (800*600)	○		
	DC Power Supply Adapter XGA (1024*768)			
SP-5B10	SP-5400WA WVGA (800*480)		○	
	SP-5500TP VGA (640*480)	○		
	SP-5500TP SVGA (800*600)	○		

	SP-5500WA WXGA (1280*800)			
	SP-5600TA XGA (1024*768)			
	SP-5600TP VGA (640*480)	○		*1
	SP-5600TP SVGA (800*600)	○		*2
	SP-5600TP XGA (1024*768)			
	SP-5600WA WXGA (1280*800)			
	SP-5660TP VGA (640*480)	○		*1
	SP-5660TP SVGA (800*600)	○		*2
	SP-5660TP XGA (1024*768)			
	SP-5700TP VGA (640*480)	○		*1
	SP-5700TP SVGA (800*600)	○		*2
	SP-5700TP XGA (1024*768)			
	SP-5700WC FWXGA (1366*768)			
	SP-5800WC FWXGA (1366*768)			
	DC Power Supply Adapter SVGA (800*600)	○		*2
	DC Power Supply Adapter XGA (1024*768)			
SP-5B40	SP-5400WA WVGA (800*480)		○	*1
	SP-5500TP SVGA (800*600)	○		*2
	SP-5500WA WXGA (1280*800)			
	SP-5600TA XGA (1024*768)			
	SP-5600TP SVGA (800*600)	○		*2
	SP-5600WA WXGA (1280*800)			
	SP-5660TP SVGA (800*600)	○		*2
	SP-5660TP XGA (1024*768)			
	SP-5700TP SVGA (800*600)	○		*2
	SP-5700TP XGA (1024*768)			
	DC Power Supply Adapter SVGA (800*600)	○		*2
	DC Power Supply Adapter XGA (1024*768)			
SP-5B41	SP-5400WA WVGA (800*480)		○	*1
	SP-5500TP SVGA (800*600)	○		*2
	SP-5500WA WXGA (1280*800)			
	SP-5600TA XGA (1024*768)			
	SP-5600TP SVGA (800*600)	○		*2
	SP-5600TP XGA (1024*768)			
	SP-5600WA WXGA (1280*800)			
	SP-5660TP SVGA (800*600)	○		*2
	SP-5660TP XGA (1024*768)			
	SP-5700TP SVGA (800*600)	○		*2

	SP-5700TP XGA (1024*768)			
	SP-5700WC FWXGA (1366*768)			
	SP-5800WC FWXGA (1366*768)			
	DC Power Supply Adapter SVGA (800*600)	○		*2
	DC Power Supply Adapter XGA (1024*768)			
	DC Power Supply Adapter HD720p (1280*720)			
	DC Power Supply Adapter WXGA (1280*800)			
	DC Power Supply Adapter SXGA (1280*1024)			
	DC Power Supply Adapter FWXGA (1360*768)			
	DC Power Supply Adapter FWXGA (1366*768)			
	DC Power Supply Adapter WXGA+ (1440*900)			
	DC Power Supply Adapter WXGA++ (1600*900)			
	DC Power Supply Adapter Full HD (1920*1080)			
SP-5B90	SP-5490WA WVGA (800*480)		○	*1
	SP-5690WA WXGA (1280*800)			
	SP-5790WA FWXGA (1366*768)			
ST-6000	ST-6200WA (480*272)			
	ST-6400WA WVGA (800*480)		○	*1
	ST-6500WA WSVGA (1024*600)			
	ST-6600WA WXGA (1280*800)			
	ST-6700WA FWXGA (1366*768)			

* The model with the “*1” mark can be used when “Change Display” is executed and connection device changed.

* The model with the “*2” mark can be used by changing the display of the project and converting the resolution, but change the layout, connected device settings, etc. as necessary.

* SD card or USB memory is required to use this project. SD card is required for Open Box (SP-5B40, SP-5B41)

5.3 Software

No	Manufacturer	Name	Series	Model	Remarks
1	Schneider Electric Holding Ltd.	GP-PRO EX		PFXEXEDV40	Ver4.00.000
2	Shibaura Machine Co., Ltd	Programming tool		TC-WORKS	

Table 5-2 Software

The sample project file is created using GP-Pro EX (Ver4.00.000).
If the version you use is lower than Ver4.00.000, update is required.

5.4 Connection Devices

No	Manufacturer	Name	Series	Model	Remarks
1	Shibaura Machine Co., Ltd.	Robot controller		TS5000	X8KCS-02H or higher*

* The supported version of the robot controller is X8KCS-02H or higher. If it is less than X8KCS-02H, please update.

Table 5-3 Connection Devices

5.5 Communication Setting

5.5.1 Communication Method

Item	Note
Ethernet (TCP)	TS5000

5.5.2 Number of connectable units

Unit
1

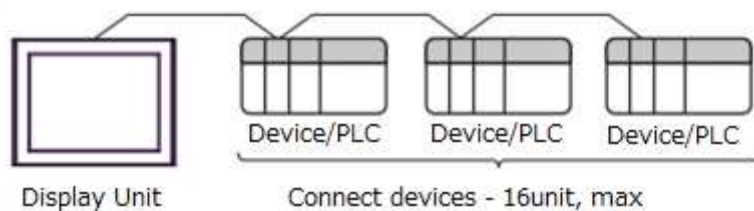
*Up to 16 devices can be connected. This sample project can only be connected to one unit.

Connection configuration

- 1:1 Connection configuration (This sample project)



- 1:n Connection configuration(connection device setting)



5.5.3 Target model

- TS5000 Series (Robot Controller)

5.5.4 Connection Setting

Item	Initial Value
Port No.	Robot Series:2100 (Fixed)
Time Out	3(sec)
Retry	0
Wait	0(ms)
IP Address	Robot : 192.168.0.124 (Setting changeable)

*For the Port No., the port number on the display unit is automatically assigned.

5.5.5 GP-Pro EX Communication Settings

Please set the IP address set in the robot controller to the IP address of individual device setting.
It is not necessary to change the IP address of the connected device No. that is not connected.

Device/PLC

[Add Device/PLC](#) [Delete Device/PLC](#)

Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer: SHIBAURA MACHINE CO., LTD. Series: TC/TS Series Ethernet Port: Ethernet (TCP)

Text Data Mode: 4 [Change](#)

Communication Settings

Port No.: 1024 ☒ Auto

Timeout: 3 (sec)

Retry: 0

Wait To Send: 0 (ms) [Default](#)

Device-Specific Settings

Allowable Number of Devices/PLCs: 16 [Add Device](#)

No. Device Name Settings

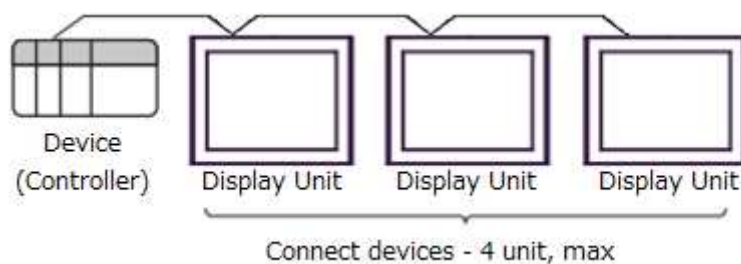
1 PLC1 [Add Indirect Device](#)

Series=TS5000 Series,IP Address=192.168.000.124,P

Item	Range	Initial
Port No.	1024	1024
Auto	ON-OFF	ON
Timeout	3	3
Retry	0	0
Wait to Send	0	0

5.5.6 Number of connectable display units

Unit
4



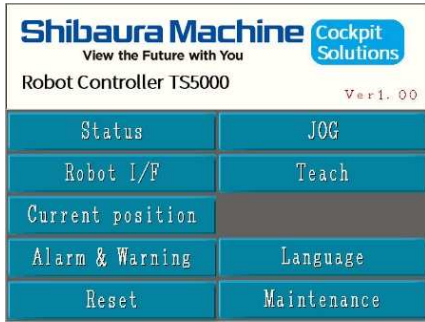
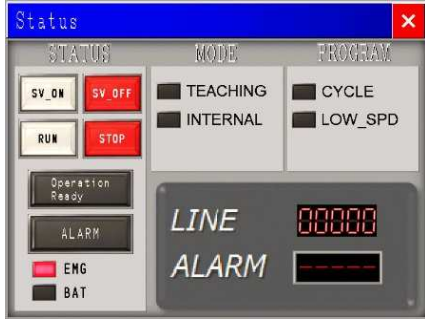
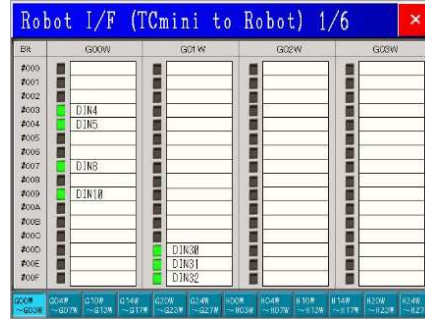
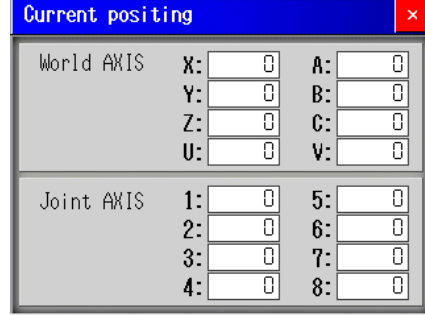
5.6 Notes on use [Open BOX (SP5B40, SP5B41)]

- Appropriate performance may not be obtained due to the load of concurrently executing programs and the memory usage.
- It is the customer's responsibility to perform sufficient operation verification in the usage environment.
- Set "Save device" to "SD" on the setting screen.
- In the "WinGP Settings" tab of "Main Unit Settings" of GP-Pro EX, set "Save to" in "History Data Save Settings" to "SRAM". Set "Display settings" as necessary.
- USB memory cannot be used with WinGP.
- If the light filter setting is enabled, disable the light filter setting before transferring the project file.
- For the functions specific to Open Box (SP-5B40) such as "Launcher" and "Light Filter", refer to "SP5000 Series Open Box Reference Manual".

6 Screen Configuration

6.1 Screen types

These sample parts provide the following 9 type of function

Screen Title	Screen Image	Function
Initial screen		- Sample Project initial screen
Status screen		- Status monitor of TS5000
Robot I/F screen		- Communication of signal part with robot (main)
Current position monitoring screen		- Monitor screen for the current position (SCARA and Vertical Articulated Robots)

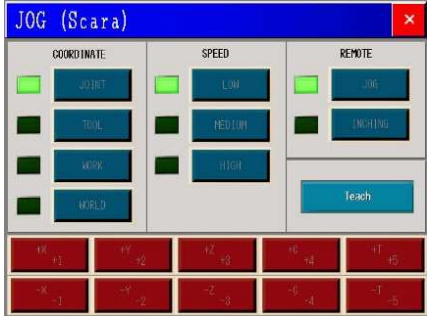
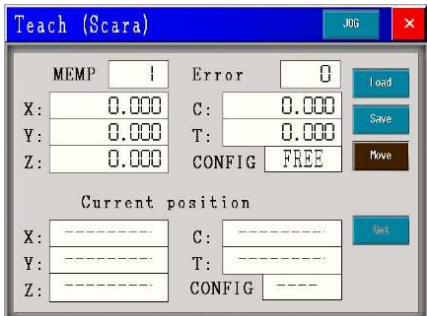

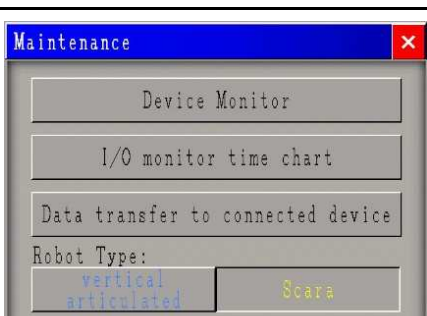
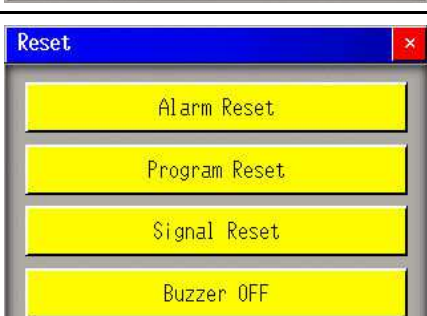
JOG screen		<ul style="list-style-type: none"> - JOG operation of Robot (SCARA and Vertical Articulated Robots)
Teach screen		<ul style="list-style-type: none"> - Teach operation of Robot (SCARA and Vertical Articulated Robots) - Reading/Writing P data from/to TS5000 - Loading the current position and setting arbitrary data
Alarm/Warning screen		<ul style="list-style-type: none"> - Monitoring an alarm and a warning which are being generated in TS5000 - Displaying the details of the alarm and the warning - Displaying the alarm/warning history which has been generated
Maintenance screen		<ul style="list-style-type: none"> - Device Monitor - I/O Monitor Time Chart - Device/PLC Data Transfer function - Robot Type
Reset screen		<ul style="list-style-type: none"> - Alarm Reset - Program Reset - Signal Reset - Buzzer OFF

Table 6-1 Screens

6.2 Screen Transition

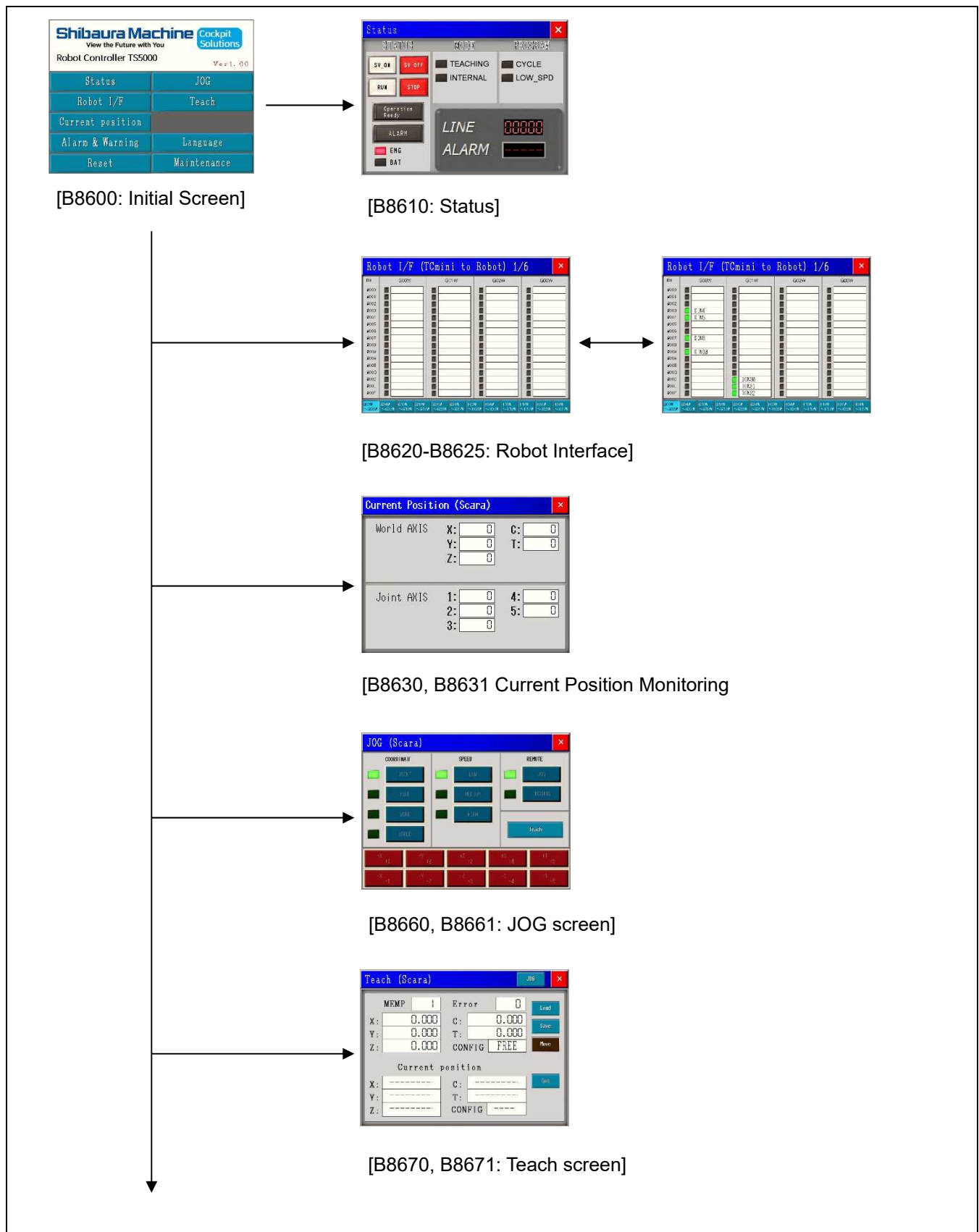


Figure 6-1 Screen Transition 1

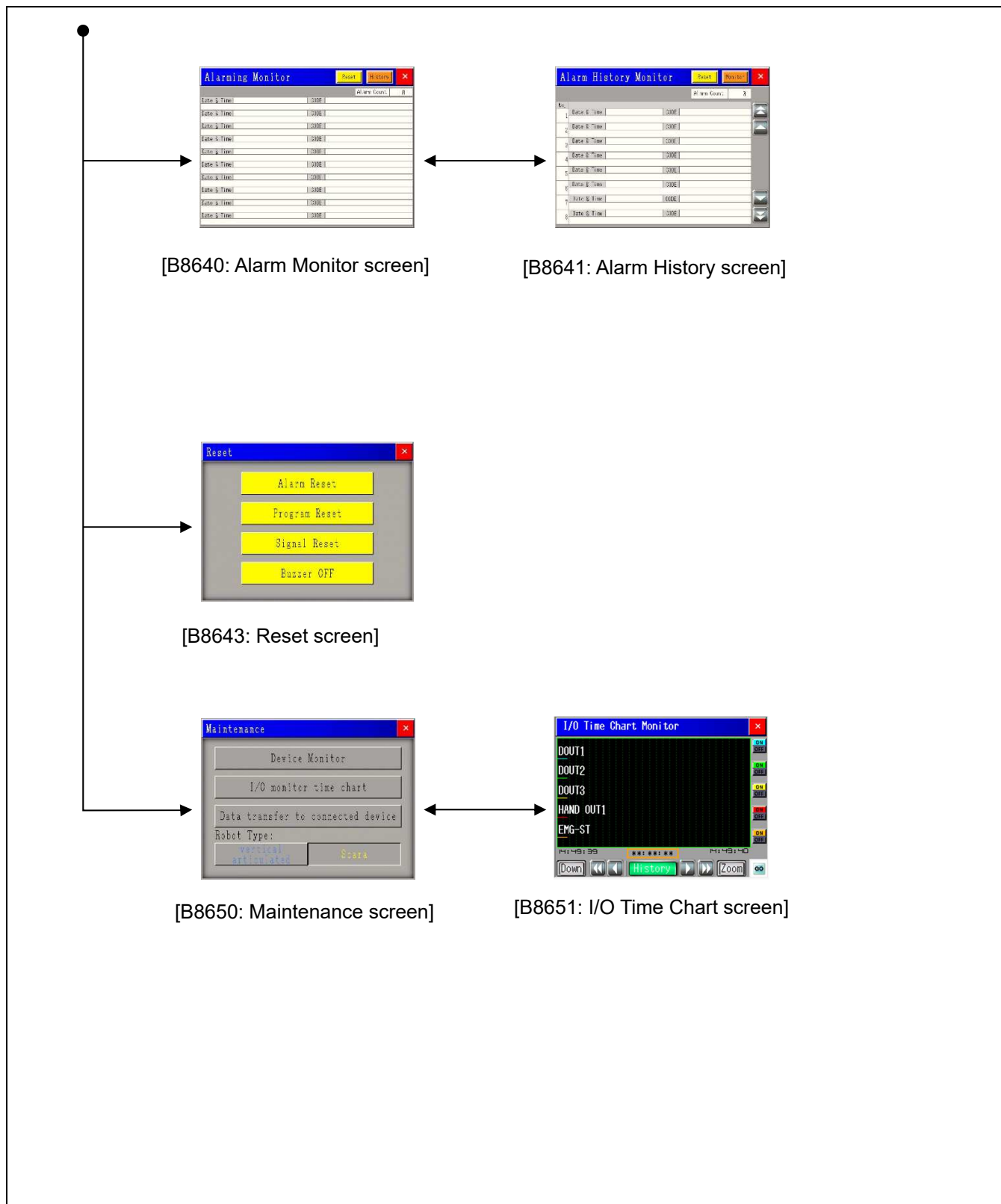


Figure 6-2 Screen Transition 2

7 Detailed screen explanation

7.1 Initial Screen (B8600)

7.1.1 Overview

The initial screen of the Sample Project File

7.1.2 Screen Image

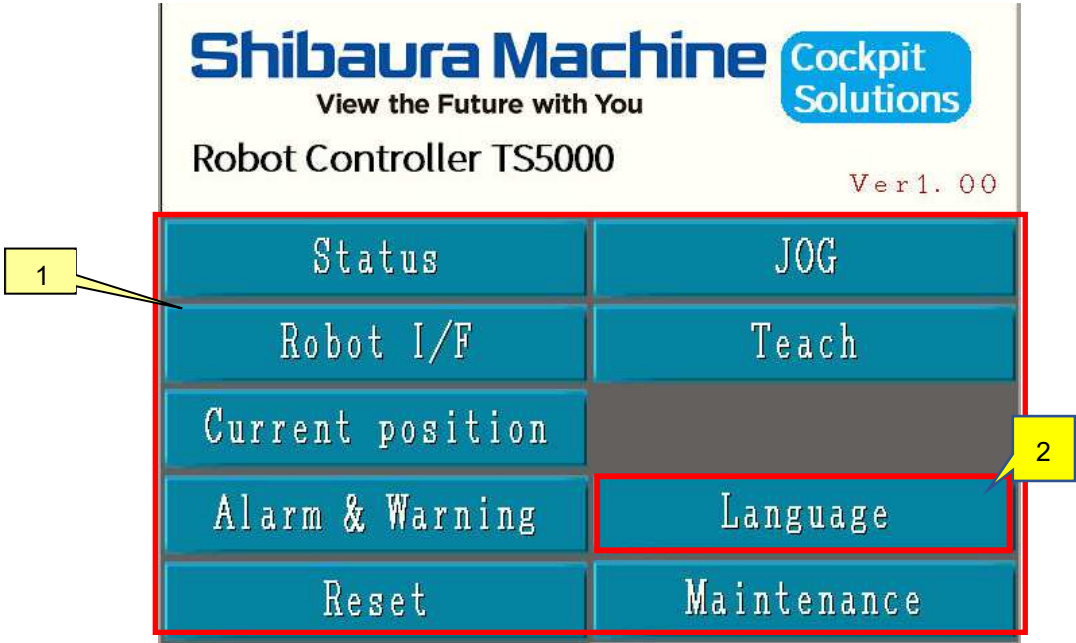


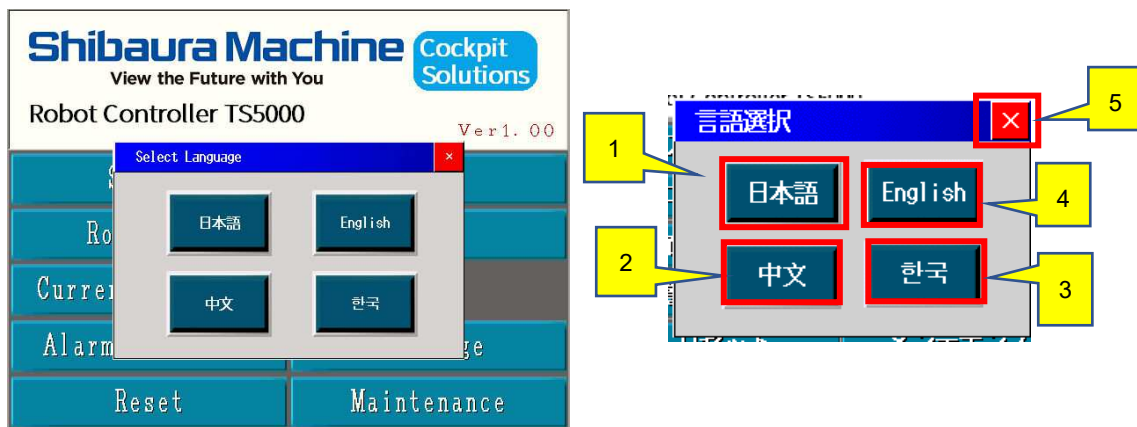
Figure 7-1 Initial Screen

No.	Item	Description
1	Switch	Switches the screen to each monitor screen.
2	Switch	Display language select window

Table 7-1 Initial Screen

7.1.1 Language Select Window (Select Language:W0200)

Switch display language.



No.	Item	Description
1	Switch	Switch to Japanese.
2	Switch	Switch to Chinese
3	Switch	Switch to English.
4	Switch	Switch to Korean.
5	Switch	Close this window.

7.2 Status Screen (B8610)

7.2.1 Overview

The status is monitored in this screen, and you can check and give instructions for servo ON/OFF and RUN/STOP.

7.2.2 Screen Image

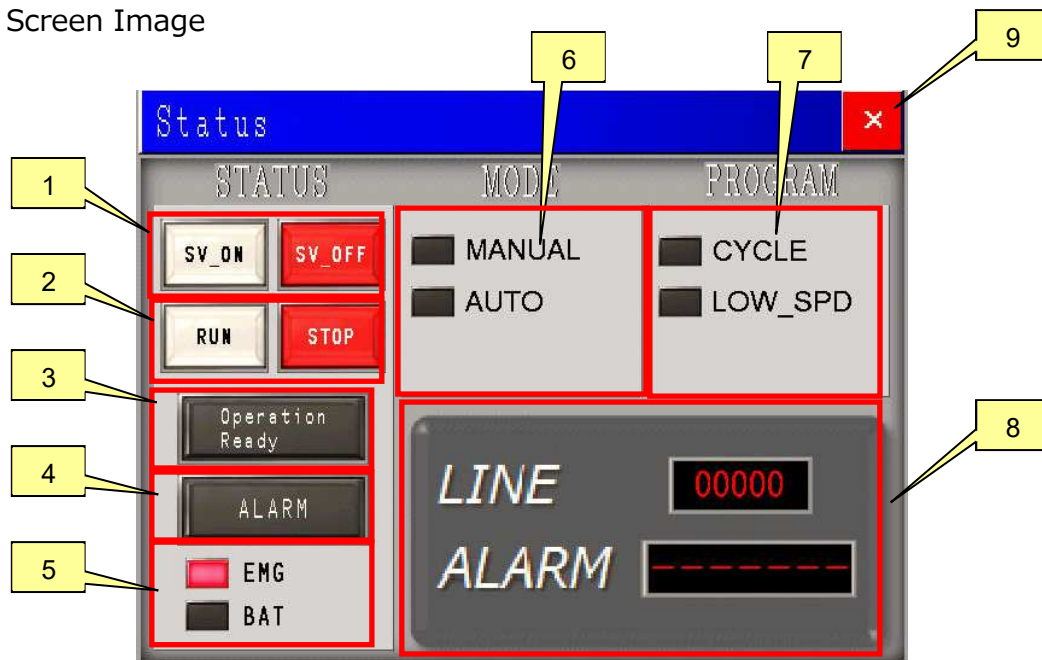


Figure 7-2 Status Screen

No.	Item	Description
1	Switch/Lamp	Gives an instruction for turning ON/OFF the servo and displays the state with lamp.
2	Switch/Lamp	Gives an instruction for running and stopping the program and displays the state with lamp.
3	Lamp	Lit when the controller is ready.
4	Lamp	Lit while an alarm is generated.
5	Lamp	EMG is lit during emergency stop. BAT is lit while the battery alarm is generated.
6	Lamp	The selected operation mode is lit.
7	Lamp	CYCLE is lit in the cycle operation mode. LOW_SPD is lit in the low speed mode.
8	Numeric Display	LINE: The number of program execution steps is displayed. ALARM: The alarm code being generated is displayed. The numerical values cannot be input directly.
9	Switch	Switches the screen to the initial screen.

Table 7-2 Status Screen

7.3 Robot I/F Screen (B8617-B8628)

7.3.1 Overview

The interface relay state of the signal exchanges is monitored in this screen.

7.3.2 Screen Image

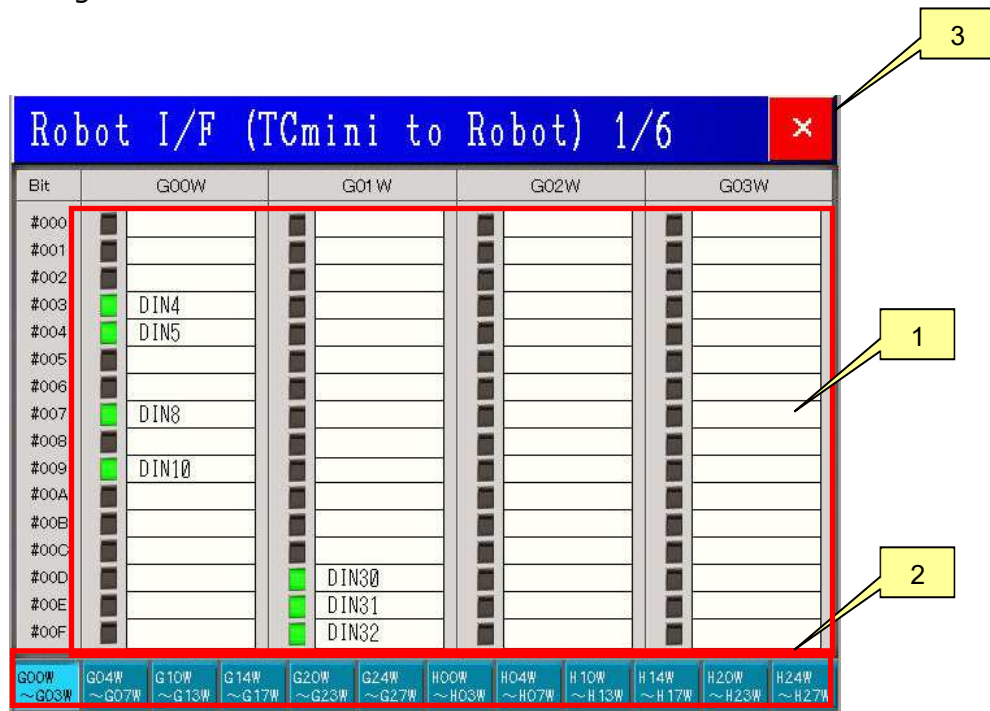


Figure 7-3 Robot Interface Screen

No.	Item	Description
1	Switch/Lamp	Lit when the bit of the address concerned is ON. Bit can be forcibly set with touch operation.
2	Switch	Changes the address to be monitored.
3	Switch	Switches the screen to the initial screen.

Table 7-3 Robot I/F Screen

7.4 Current Position Monitor Screen (B8630, B8631)

7.4.1 Overview

The current position of the robot is acquired.

The value is an integer of -32768 to 32767mm (deg), and the value below the decimal point is rounded down.

The screen corresponding to the robot type selected on the Maintenance screen is displayed.

7.4.2 Screen Image

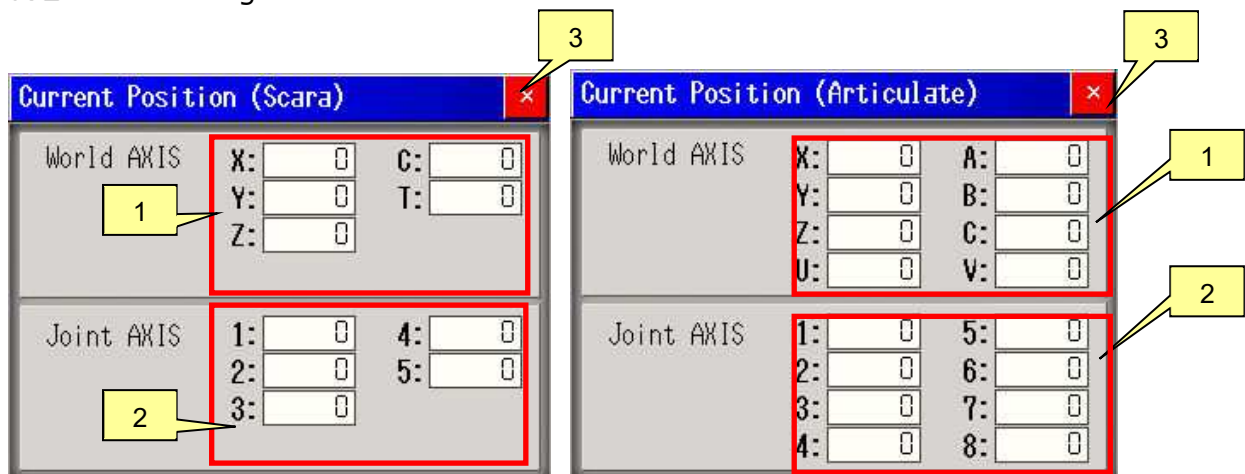


Figure 7-4 Current Value Monitor Screen (SCARA) Figure 7-5 Current Value Monitor Screen (Vertical Articulated)

No.	Item	Description
1	Numerical Display	Displays the current position in the World Axis system.
2	Numerical Display	Displays the current position in the Joint Axis system.
3	Switch	Switches the screen to the initial screen.

Table 7-4 Current Value Monitor Screen

7.5 JOG Screen (B8660, B8661)

7.5.1 Overview

The arm is operated in this screen.

The arm operates by touching each coordinate and axis in the JOG screen.

7.5.2 Screen Image

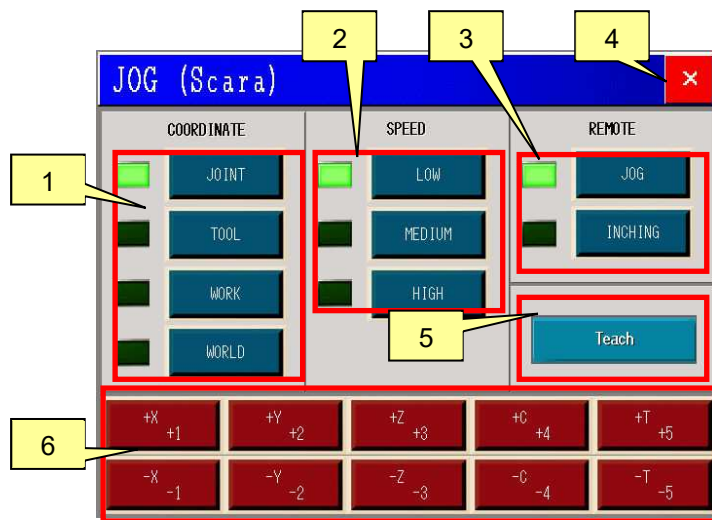


Figure 7-6 JOG Screen (SCARA)

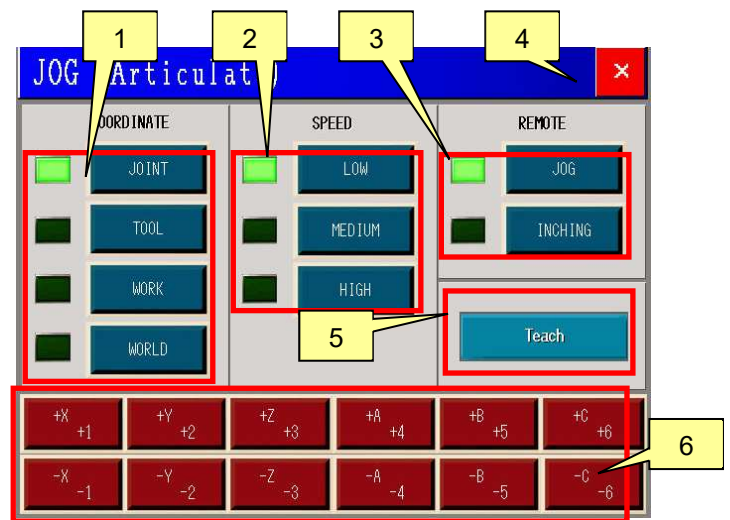


Figure 7-7 JOG Screen (Vertical Articulated)

No.	Item	Description
1	Switch/Lamp	Displays and selects the coordinate system to be operated.
2	Switch/Lamp	Displays and selects the speed of the arm.
3	Switch/Lamp	Displays and selects the operation when the [6] button is pressed.
4	Switch	Switches the screen to the initial screen.
5	Switch	Switches the screen to the Teach screen.
6	Switch	Operates the arm according to the axis and coordinates.

Table 7-5 JOG Screen

7.6 Teach Screen (B8670, B6871)

7.6.1 Overview

The teach point data is displayed in this screen.

The controller's teach points can be displayed and edited in this screen.

Moreover, the current position is acquired and set it as a teach point.

7.6.2 Screen Image

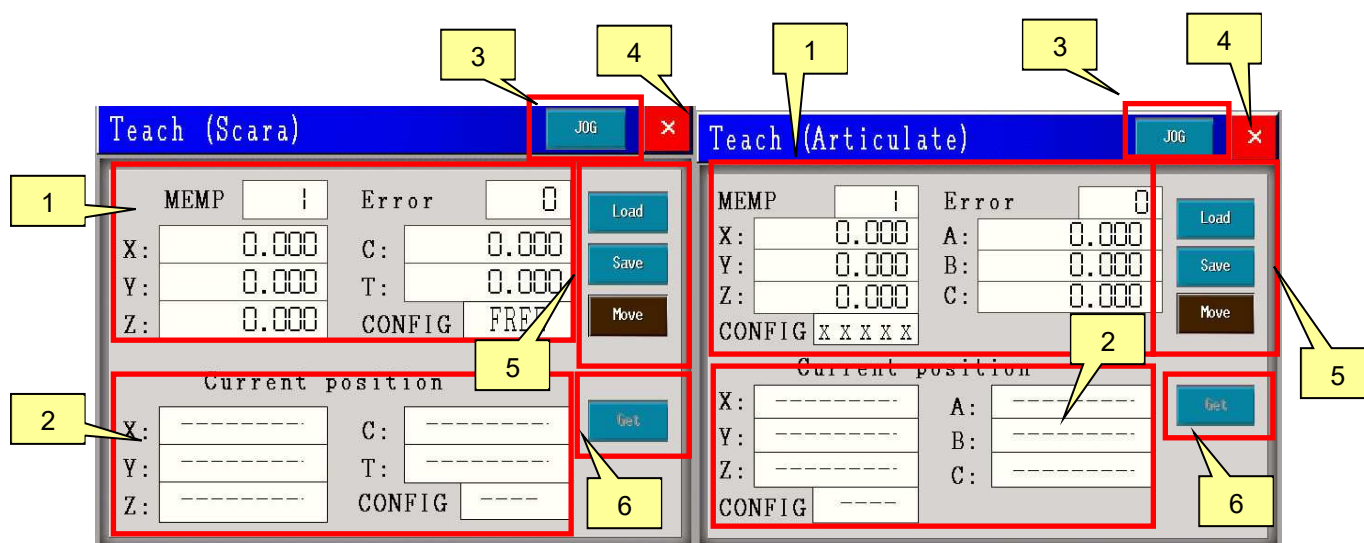


Figure 7-8 Teach Screen (SCARA)

Figure 7-9 Teach Screen (Vertical Articulated)

No.	Item	Description
1	Numerical Display	Displays the teach point. Numerical values can also be input.
2	Numerical Display	Displays the current position of the arm. Displays "----" while the teach point is read and written.
3	Switch	Switches the screen to the JOG screen.
4	Switch	Switches the screen to the initial screen.
5	Switch	Load: The value of "MEMP**" is loaded from the controller to be displayed in the [1] area. Save: The value of [1] is saved to the controller as the value of "MEMP**". Move: The controller will move the axis to the position of "MEMP**".
6	Switch	The displayed current position is loaded and displayed it in [1].

Table 7-6 Teach Screen

7.7 Alarm/Warning Screen (B8640)

7.7.1 Overview

Display the currently generated error. (Maximum, 10 errors)

7.7.2 Screen Image

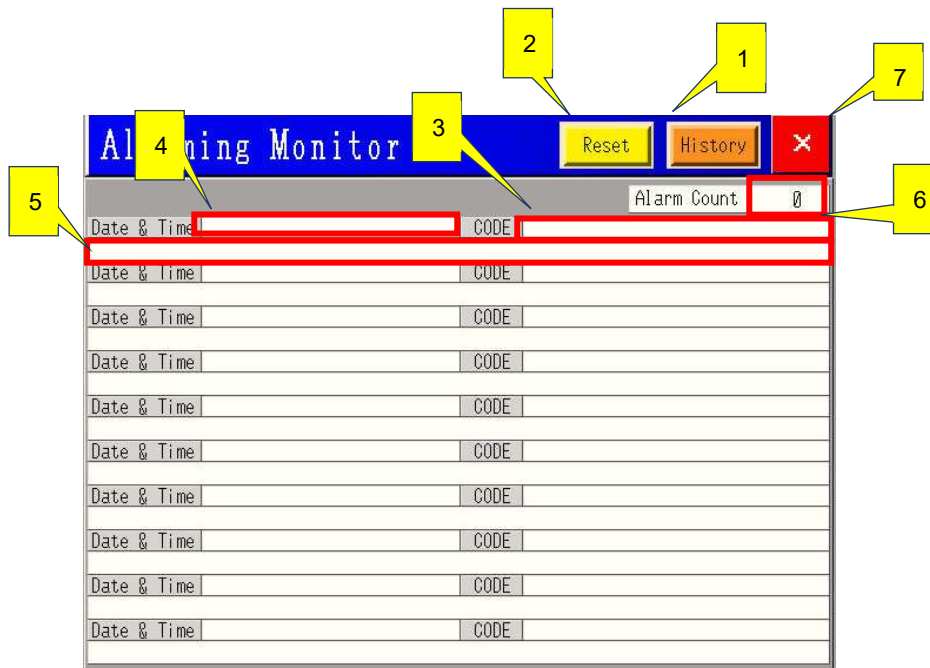


Figure 7-10 Alarm/Warning Monitor Screen

No.	Item	Description
1	Switch	Switches the screen to the alarm history screen.
2	Switch	Display the alarm reset confirmation window
3	Data Display	Display the alarm code
4	Data Display	Display the alarm message
5	Data Display	Displays the date and time of alarm occurred.
6	Numeric Display	Displays the alarm count of the alarm being generated.
7	Switch	Switches the screen to the initial screen.

Table 7-7 Alarm/Waring Monitor Scree

7.7.3 Alarm Reset Window(W0201)

Display the alarm reset confirmation window.

Press the reset button to clear the alarm currently occurring on the robot controller.

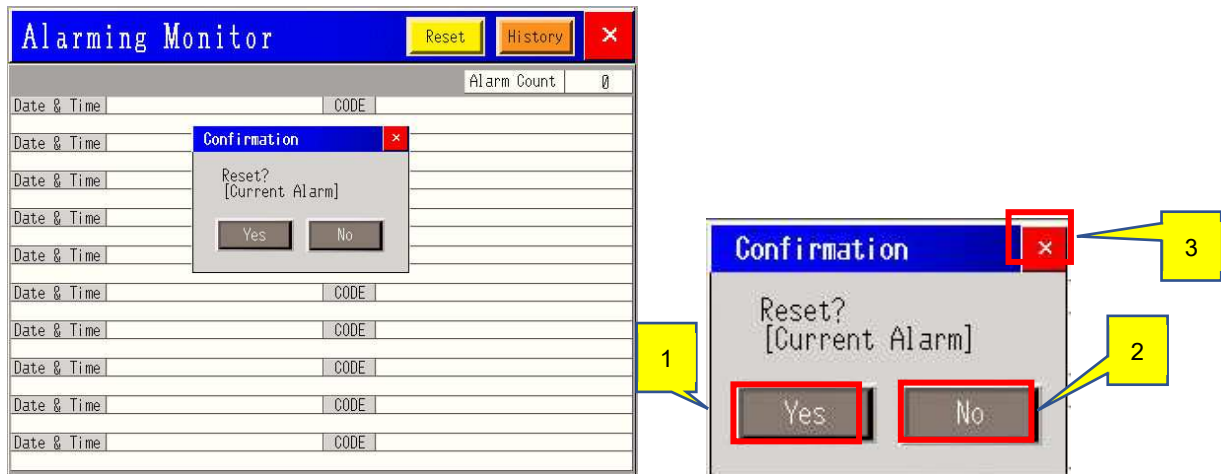


Figure 7-11 Alarm/Warning Monitor Screen and confirmation window

No.	Item	Description
1	Switch	Performs an alarm reset and close window. Clears the alarm currently occurring on the robot controller.
2	Switch	Close the window without alarm reset.
3	Switch	Close the window.

Table 7- 8 Alarm Reset window

7.8 Alarm History Monitor Screen (B8641)

7.8.1 Overview

Display the past error history (Maximum, 1024 errors)

7.8.2 Screen Image

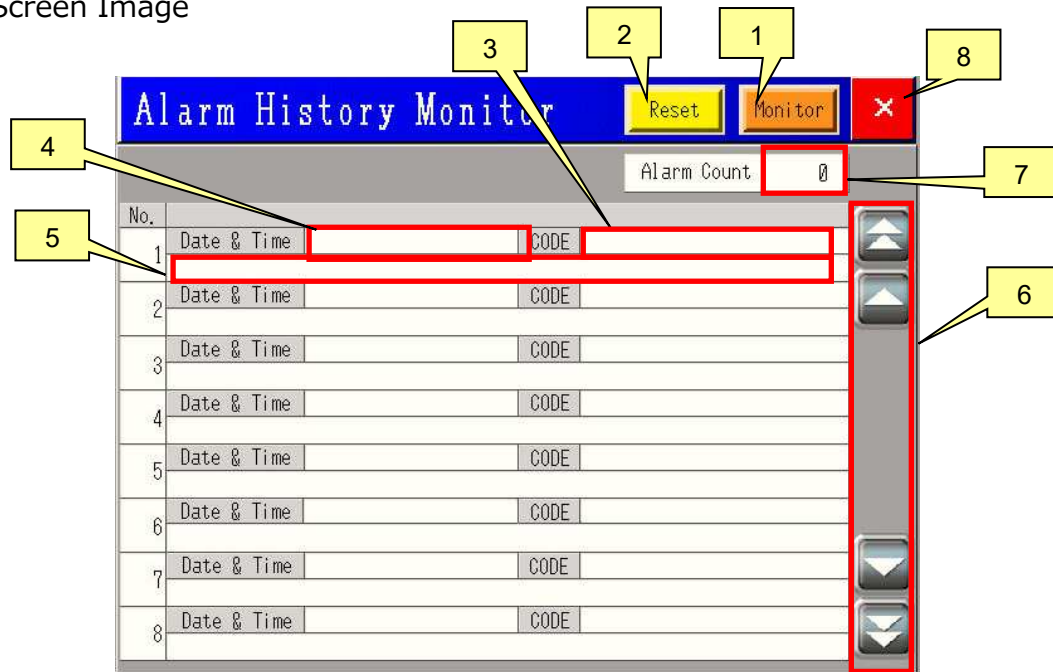


Figure 7-12 Alarm History Monitor Screen

No.	Item	Description
1	Switch	Switches the screen to the current alarm monitor screen.
2	Switch	Display the alarm history reset window
3	Data Display	Displays the code of alarm history being generated.
4	Data Display	Displays the date and time of alarm history occurred.
5	Data Display	Displays the message of alarm history being generated.
6	Switch	Scrolls to display the whole alarm history. (Max 1024)
7	Numeric Display	Displays the alarm count of the alarm history.
8	Switch	Switches the screen to the initial screen.

Table 7-9 Alarm History Monitor screen

Alarm history reset window(W0202)

Display the alarm history reset window.

Clears the alarm currently history on the robot controller.

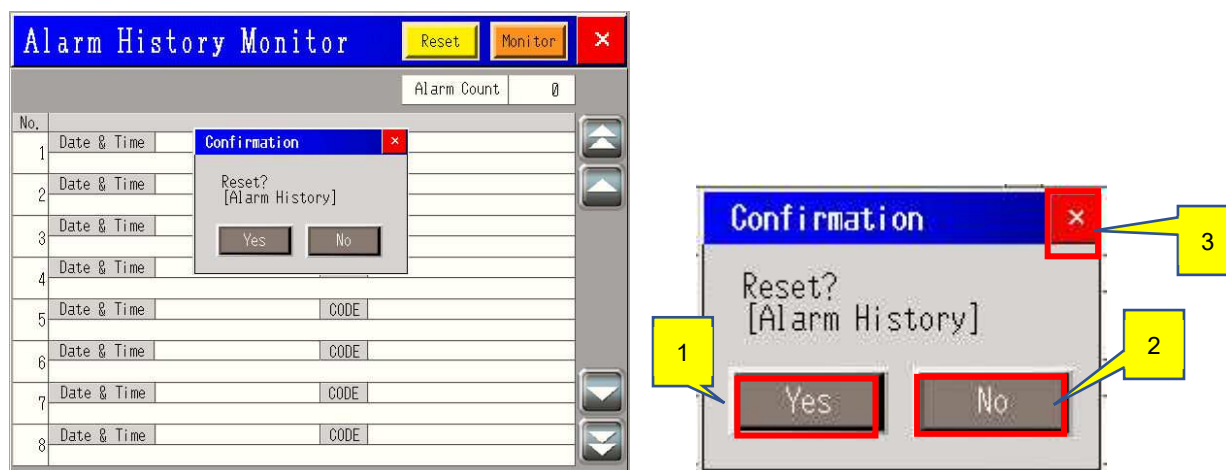


Figure 7-13 Alarm History Monitor Screen and alarm history reset window

No.	Item	Description
1	Switch	Performs an alarm history reset and close window. Clears the alarm history on the robot controller.
2	Switch	Close the window without alarm history reset.
3	Switch	Close the window.

Table 7- 10 Alarm History reset window

7.8.3 D-script

- ID00000 Scroll Up
Scroll alarm history to the next page.
- ID00001 Scroll Down
Scroll alarm history to the previous page.
- ID00002 TOP
Display the latest alarm history data.
- ID00003 Bottom
Display the first alarm history data.
- ID00004 Alarm number store
Store Alarm History number.
- ID00005 Setting
Settings when the alarm history screen is displayed.

7.9 Reset operation screen (B8643)

7.9.1 Overview

The instructions of "Alarm Reset", "Program Reset", and "Signal Reset" are output to the controller. Three switches of this screen are set to the momentary operation.

When time in which the switch is pressed is short, the controller may not receive each reset instruction.

7.9.2 Screen Image

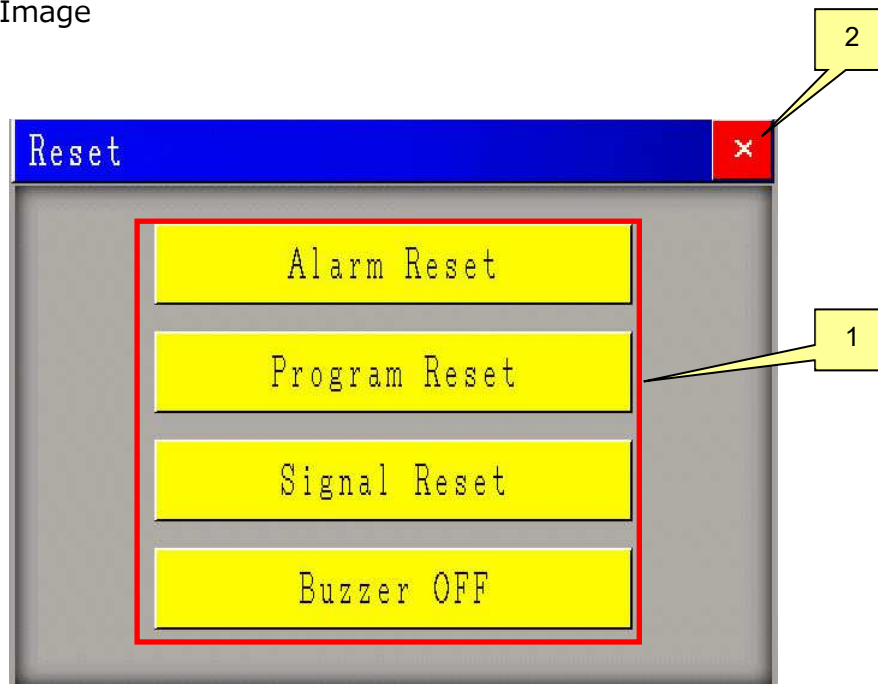


Figure 7-14 Reset Screen

No.	Item	Description
1	Switch	Outputs instructions of "Alarm Reset", "Program Reset", "Signal Reset" and "Buzzer OFF" to the controller.
2	Switch	Switches the screen to the alarm monitor screen.

Table 7-11 Reset Screen

7.1 0 Maintenance Screen (B8650)

7.1 0.1 Overview

The Maintenance Screen is used for selecting a maintenance function.

Currently, three functions ("Device Monitor", "I/O monitor time chart", and "Data transfer to connected device") are available.

7.1 0.2 Screen Image

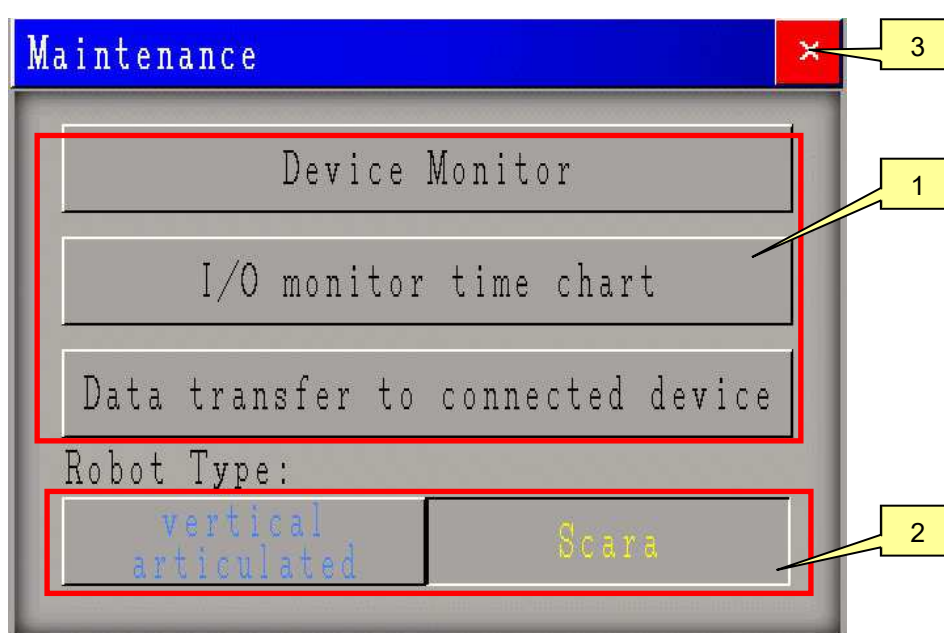


Figure 7-15 Maintenance Screen

No.	Item	Description
1	Switch	Switches the screen to each of the "Device Monitor", "I/O monitor time chart", and "Data transfer to connected device" screen.
2	Switch/Lamp	Switches the robot types. Default: "Scara"
3	Switch	Switches the screen to the initial screen.

Table 7-12 Maintenance Screen

* For the "Device Monitor" and "Data transfer to connected device" functions, the standard function of the connection driver (Toshiba Machine TC Series) is used.
Refer to the reference manual of GP-Pro EX for details.

7.1 1 I/O Time Chart Monitor Screen (B8651)

7.1 1.1 Overview

The I/O Time Chart Monitor screen displays the ON/OFF timing of each signal.

Note) The sampling time is 100ms. ON/OFF of less than 100ms cannot be acquired.

7.1 1.2 Screen Image

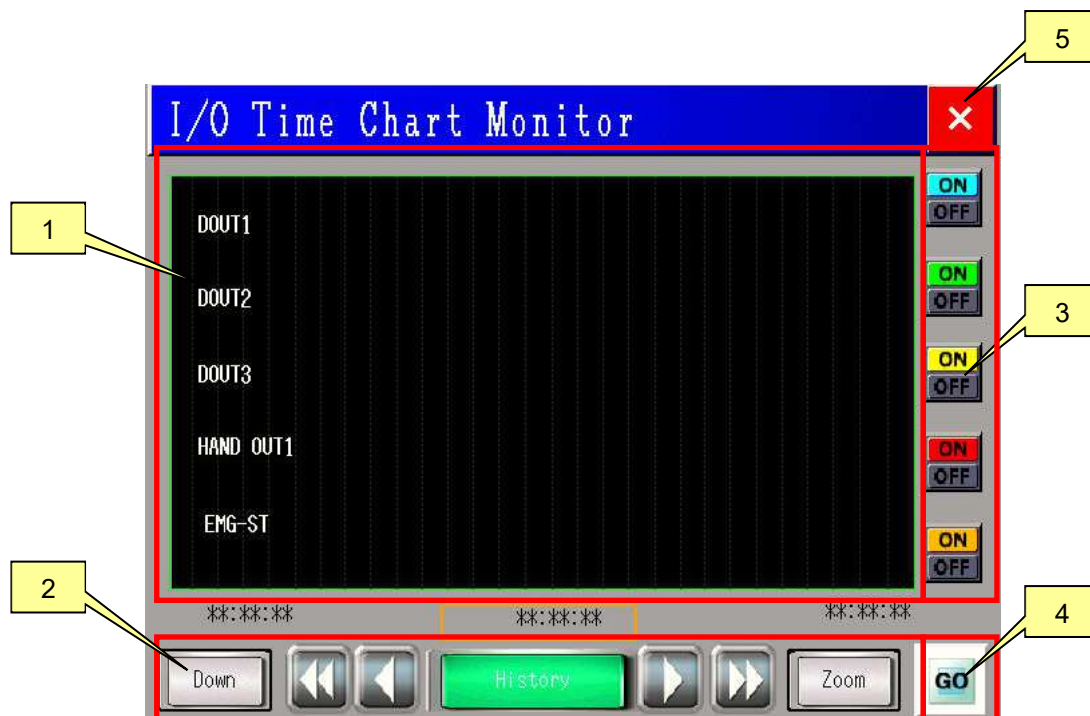


Figure 7-16 I/O Time Chart Monitor Screen

No.	Item	Description
1	Graph	Displays the ON/OFF status of each signal in the graph.
2	Switch	Changes the display of the data in the past. The history display button will be enabled when it is pressed for 1 or longer seconds.
3	Switch	Switches display/non-display of each channel.
4	Switch	Starts/Stops acquiring the data.
5	Switch	Switches the screen to the initial screen.

Table 7-13 I/O Time Chart Monitor Screen

7.1 1.3 Global D-Script (ID: 8100)

Bit data is converted to Word data in order to display the bit data in the graph.

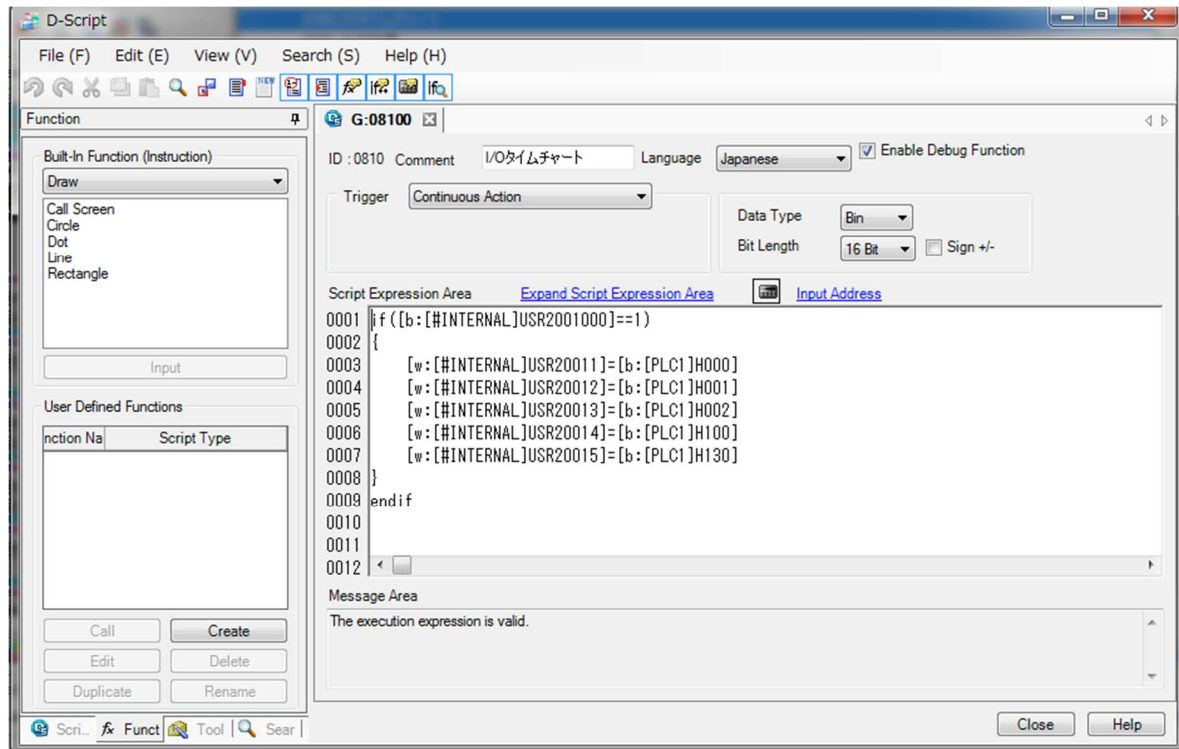


Figure 7-17 Global D-Script

7.1 1.4 Sampling Setting (Group 1)

Sampling is used to acquire the data.

Number	Address
1	#INTERNALJUSR20011
2	#INTERNALJUSR20012
3	#INTERNALJUSR20013
4	#INTERNALJUSR20014
5	#INTERNALJUSR20015

Figure 7-18 Address Setting

Condition

Execution Condition: Constant Cycle while Bit is ON

Sampling Permit Bit Address: #INTERNALJUSR2001000

Sampling Frequency

Frequency: Constant, 100 ms

Occurrences: 4000

☐ Data Full Bit Address

Data Clear Bit Address: #INTERNALJUSR2001001

[Extended](#)

☒ Retain Sampling Data (SRAM)

☒ Back Up Sampling Data

Save in: ☐ SD Card, ☒ USB Storage

Backup Count: 144, Maximum Historical Data: 576000

When Exceeding Backup Count: Overwrite oldest data

Status Address

Figure 7-19 Mode Setting

☒ Display/Save in CSV

☒ Basic Settings, ☐ Custom Settings

CSV

CSV Control Word Address

Save in: ☒ SD Card, ☐ USB Storage

CSV Date Format

Format

Date: yy/mm/dd, Time: hh:mm

Data Display: [Data Type](#)

☐ Add Total, Totals Format

Item Name Characters: 14

Display Color: 7, Background Color: 0

Blink: None

Condition for Reading Alarm Values

☒ Always, ☐ Bit Change

Trigger Bit Address

Search

☐ Refine Search / Sort

Status Address

	1	2	3	4	5	6	7
Item Name (Vertical)	Date	Time	Data1	Data2	Data3	Data4	
Item Name (Horizontal)	Date	Time	#INTJUSR20011	#INTJUSR20012	#INTJUSR20013	#INTJUSR20014	#INTJUSR20015
Show Data	yy/mm/dd	hh:mm	----	----	----	----	----

Figure 7-20 Display/Save in CSV

8 Address Map

8.1 List of Internal Addresses

➤ B: Bit device / W: Word device

Table 8-1: Address Map

Address	Type	Description
USR2000300	B	Current Alarm Monitor Scroll Up
USR2000301	B	Current Alarm Monitor Scroll Down
USR2000302	B	Alarm History Scroll Up
USR2000303	B	Alarm History Scroll Down
USR2000304	B	Alarm History Scroll Top
USR2000305	B	Alarm History Scroll Bottom
USR2001000	B	Sampling permission bit address
USR2001001	B	Data clear bit address
USR2001003	B	Start disabled when past data is displayed
USR20011	W	Channel No1
USR20012	W	Channel No2
USR20013	W	Channel No3
USR20014	W	Channel No4
USR20015	W	Channel No5
USR2001900	B	Channel No1 Graph display ON/OFF
USR2001901	B	Channel No2 Graph display ON/OFF
USR2001902	B	Channel No3 Graph display ON/OFF
USR2001903	B	Channel No4 Graph display ON/OFF
USR2001904	B	Channel No5 Graph display ON/OFF
USR20020	W	Cursor information storage address, Time data (Year)
USR20021	W	Cursor information storage address, Time data (Month, Day)
USR20022	W	Cursor information storage address, Time data (Hour, Minute)
USR20023	W	Cursor information storage address, Time data (Second)
USR20029	W	Cursor display status address
USR20050	W	Current alarm offset address
USR20100	W	Current alarm offset address
USR20600	W	Alarm History number display
USR21000	W	Alarm History store number
USR22000	W	Alarm History alarm code (ANH)
USR22100	W	Alarm History alarm date (ADH)
USR22200	W	Alarm History alarm time (ATH)
USR22300	W	Alarm History alarm message (AMH)
USR23000	W	Alarm History Alarm count
USR29999	W	For robot type recognition

9 Appendix

9.1 About TS5000 Version Up

Please update the version, following the procedure below.

If not, the following phenomenon will occur,

- Some language problems.
- Display incorrect value.

9.1.1 How to procedure

1. Unzip the update file.
2. Save the decompressed file directly under the SD card.
3. Set "0" for the rotary switch of TS5000 controller.
4. Insert the SD card into the TS5000 controller and turn on the power.
5. Wait until buzzer sounds.
6. Press the push switch until the buzzer stops sounding.
When it stops, release the push switch.
*The push switch is next to the 6 LEDs lined up.
7. When the buzzer sounds again, the update is complete.
8. When the buzzer sounds, turn off the power and remove the SD card.

9.2 Contact

Please contact us from the below,

SHIBAURA Machine CO., LTD Inquiry form

https://www.shibaura-machine.co.jp/form/en_inquiry.php?i=i10