MITSUBISHI



GRAPHIC OPERATION TERMINAL



GOT1000 Series MES Interface Function Manual





(Always read these precautions before using this product.)

Before using the product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with only this product.

In this manual, the safety precautions are ranked as "DANGER" and "CAUTION".



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the AUTION level may lead to serious consequences according to the circumstances.

Always follow the precautions of both levels as they are important for personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[Design precautions]

(!) DANGER

- Before performing the test operation, read this manual carefully to understand the operation procedure.
 - Incorrect output or malfunctions may cause an accident.
- When the security of the GOT and relevant information need to be protected against illegal access from an external device via the Internet, take measures at the user's discretion.
 - Failure to do so may cause the configured information to be read out illegally.

REVISION

 * The manual number is given on the bottom left of the back cover.

Print date	* Manual number	Revision			
Nov., 2006	SH(NA)-080654ENG-A				
Feb., 2007	SH(NA)-080654ENG-B	Compatible with GT Designer2 Version2.47Z			
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		Partial corrections			
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		DEFINITIONS AND DESCRIPTIONS OF TERMS, Section 2.1.1, 2.4.2, 3.1, 3.2, 5.3, 6.6.1, 6.8.1, 6.10.3, 6.10.4, 7.2, 8.2, Appendix 5, 6, INDEX			
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		6.8, 6.11.2, 7.8			
		Partial additions			
		Section 5.1.6, 5.1.9, 6.7.1 to 6.7.3, 6.7.5, 6.8.1, 6.8.2, 6.9.2, 7.5, 7.8.1, 7.8.2			
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		Additions
		Section 5.1.8, Section 6.8.3, Appendix 3
		Section 5.1.8 to 5.1.9 → Section 5.1.9 to 5.1.10,
		Appendix 4 to 5 \rightarrow Appendix 5 to 6
Oct., 2008	SH(NA)-080654ENG-H	
		Partial additions
		Section 1.1, 2.3, 2.5, 3.2, 3.3, 4.1, 5.1.10, 6.7.1, 6.7.6, 6.9.2, 6.11.2, 8.1, 8.1.1,
		8.2.1
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		Chapter 1, Section 2.2.1, 2.3, App.6

Japanese Manual Version SH-080625-J

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CAUTIONS FOR USE

Cautions on the system configuration

(1) GOTs that support the MES interface function GT16 and GT15 only support the function. By installing the option OS into a GOT from GT Designer2, the MES interface function can be used. For applicable models, refer to the following: Section 2.2 Connection between GOT and Controllers (2) Option function board that supports the MES interface function For the option function board that supports the MES interface function, refer to the following: Section 2.3 Required Equipment, Software and Option OS (3) Relational databases that support the MES interface function For the relational databases that support the MES interface function, refer to the following: Section 2.4.2 Server computer (SNTP server computer) (4) Connection type used for the MES interface function To utilize the MES interface function, the Ethernet connection is used. Install an Ethernet communication unit, and configure the Ethernet setting in Communication Settings of GT Designer2. For applicable Ethernet communication units, refer to the following: Section 2.3 Required Equipment, Software and Option OS For the Ethernet connection, refer to the following. GOT1000 Series Connection Manual

INTRODUCTION

Thank you for purchasing the Mitsubishi Graphic Operation Terminal (GOT).

Before using the GOT, please read this manual carefully to understand the features and performance for correct handling.

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ABOUT MANUALS

The following related mauals are available. Please obtain the manuals if necessary.

Manual name	Manual number (Model code)
GT16 User's Manual -Describes the GT16 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devicesDescribes the GT16 functions, including the utility. (Sold separately)	SH-080978ENG (1D7M88)
GT15 User's Manual -Describes the GT15 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devicesDescribes the GT15 functions, including the utility. (Sold separately)	SH-080528ENG (1D7M23)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes the GT Designer2 installation procedure, basic operations for drawing, and how to transfer data to the GOT1000 series. (Sold separately)*1	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 1/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 2/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 3/3 Describe the specifications and setting details of each object function used in the GOT1000 series. (Sold separately)*1	SH-080530ENG (1D7M25)
GOT1000 Series Connection Manual 1/3 GOT1000 Series Connection Manual 2/3 GOT1000 Series Connection Manual 3/3 Describe the system configurations available for the GOT1000 series and how to produce cables. (Sold separately)*1	SH-080532ENG (1D7M26)
GOT1000 Series Gateway Functions Manual Describes the gateway function specifications, system configurations, and setting method. (Sold separately)*1	SH-080545ENG (1D7M33)

^{*1} The manual data in PDF format are included in the product of GT Works2 or GT Designer2.

ABBREVIATIONS AND GENERIC TERMS

Abbreviations and generic terms used in this manual are as follows:

■ GOT

GT GT GT GT	T SoftGO T 1695	GT1695M-X GT1685M-S	Abbreviation of GT SoftGOT1000 Abbreviation of GT1695M-XTBA, GT1695M-XTBD Abbreviation of GT1685M-STBA, GT1685M-STBD Abbreviation of GT1695, GT1685 Abbreviation of GT1595-XTBA, GT1595-XTBD Abbreviation of GT1585V-STBA, GT1585V-STBD Abbreviation of GT1585-STBA, GT1585-STBD Abbreviation of GT1575V-STBA, GT1575-STBD Abbreviation of GT1575-STBA, GT1575-STBD		
GT GT GT	Γ1685 Γ16□□, (Γ1595 Γ1585	GT1685M-S GT16 GT1595-X GT1585V-S GT1585-S GT1575V-S GT1575-S GT1575-V	Abbreviation of GT1685M-STBA, GT1685M-STBD Abbreviation of GT1695, GT1685 Abbreviation of GT1595-XTBA, GT1595-XTBD Abbreviation of GT1585V-STBA, GT1585V-STBD Abbreviation of GT1585-STBA, GT1585-STBD Abbreviation of GT1575V-STBA, GT1575V-STBD		
GT GT	「16□□,(「1595 「1585	GT16 GT1595-X GT1585V-S GT1585-S GT1575V-S GT1575-S GT1575-V	Abbreviation of GT1695, GT1685 Abbreviation of GT1595-XTBA, GT1595-XTBD Abbreviation of GT1585V-STBA, GT1585V-STBD Abbreviation of GT1585-STBA, GT1585-STBD Abbreviation of GT1575V-STBA, GT1575V-STBD Abbreviation of GT1575-STBA, GT1575-STBD		
GT:	Γ1595 Γ1585	GT1595-X GT1585V-S GT1585-S GT1575V-S GT1575-S GT1575-V	Abbreviation of GT1595-XTBA, GT1595-XTBD Abbreviation of GT1585V-STBA, GT1585V-STBD Abbreviation of GT1585-STBA, GT1585-STBD Abbreviation of GT1575V-STBA, GT1575-STBD Abbreviation of GT1575-STBA, GT1575-STBD		
GT	Г1585	GT1585V-S GT1585-S GT1575V-S GT1575-S GT1575-V	Abbreviation of GT1585V-STBA, GT1585V-STBD Abbreviation of GT1585-STBA, GT1585-STBD Abbreviation of GT1575V-STBA, GT1575V-STBD Abbreviation of GT1575-STBA, GT1575-STBD		
		GT1585-S GT1575V-S GT1575-S GT1575-V	Abbreviation of GT1585-STBA, GT1585-STBD Abbreviation of GT1575V-STBA, GT1575V-STBD Abbreviation of GT1575-STBA, GT1575-STBD		
		GT1575V-S GT1575-S GT1575-V	Abbreviation of GT1575V-STBA, GT1575V-STBD Abbreviation of GT1575-STBA, GT1575-STBD		
GT	Г157□	GT1575-S GT1575-V	Abbreviation of GT1575-STBA, GT1575-STBD		
GT	Γ157□	GT1575-V			
GT	Γ157□		Abbreviation of GT1575-VTBA, GT1575-VTBD		
		GT1575-VN			
			Abbreviation of GT1575-VNBA, GT1575-VNBD		
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD		
OT	T450	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD		
GI	Г156□	GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD		
GOT1000 Series	GT155□	GT1555-V	Abbreviation of GT1555-VTBD		
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD		
		GT1550-Q	Abbreviation of GT1550-QLBD		
GT	GT15□□, GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□		
GT	GT1155-Q GT115□		Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD		
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD		
Hai	andy	GT1155HS-Q	Abbreviation of GT1155HS-QSBD		
GO	TC	GT1150HS-Q	Abbreviation of GT1150HS-QLBD		
GT	Γ11□□, 0	GT11	Abbreviation of GT115□, GT11 Handy GOT		
0.7	5405	GT1055-Q	Abbreviation of GT1055-QSBD		
GI	Γ105□	GT1050-Q	Abbreviation of GT1050-QBBD		
GT ⁻	Γ1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBDW, GT1030-LBDW2		
GT	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW		
GT	Γ10□□, 0	GT10	Abbreviation of GT105□, GT1030, GT1020		
GOT900 Series			Abbreviation of GOT-A900 series, GOT-F900 series		
GOT800 Series			Abbreviation of GOT-800 series		

■ Communication unit

Abbreviations and generic terms		D	escription	
Bus connection unit	GT15-QBUS, GT15-75QBUSL,	GT15-QBUS2, GT15-75QBUS2L,	GT15-ABUS, GT15-75ABUSL,	GT15-ABUS2, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P,	GT15-RS4-9S,	GT15-RS4-TE	
RS-422 conversion unit	GT15-RS2T4-9P,	GT15-RS2T4-25P		
Ethernet communication unit	GT15-J71E71-100			
MELSECNET/H communication unit	GT15-J71LP23-25,	GT15-J71BR13		
MELSECNET/10 communication unit	GT15-75J71LP23-Z ^{*1} ,	GT15-75J71BR13-Z	z*2 -	
CC-Link IE controller network communication unit	GT15-J71GP23-SX			
CC-Link communication unit	GT15-J61BT13,	GT15-75J61BT13-Z	*3	
Interface converter unit	GT15-75IF900			

- *1 A9GT-QJ71LP23 + GT15-75IF900 set
- *2 A9GT-QJ71BR13 + GT15-75IF900 set
- *3 A8GT-J61BT13 + GT15-75IF900 set

Option unit

Abbreviations and generic terms		Description			
Printer unit		GT15-PRN			
	Video input unit	GT16M-V4,	GT15V-75V4		
Video/RGB unit	RGB input unit	GT16M-R2,	GT15V-75R1		
Video/RGB utilit	Video/RGB input unit	GT16M-V4R1,	GT15V-75V4R1		
	RGB output unit	GT16M-ROUT,	GT15V-75ROUT		
Multimedia unit		GT16M-MMR			
CF card unit		GT15-CFCD			
CF card extension unit ^{*1}		GT15-CFEX-C08SET			
External I/O unit		GT15-DIO,	GT15-DIOR		
Sound output unit		GT15-SOUT			

^{*1} GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

Option

Abbreviations and generic terms			D	escription	
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-256MC	GT05-MEM-32MC,	GT05-MEM-64MC,	GT05-MEM-128MC,
Memory card ada	ptor	GT05-MEM-ADPC			
Option function bo	pard	GT16-MESB, GT15-QFNB32M,	GT15-FNB, GT15-QFNB48M,	GT15-QFNB, GT15-MESB48M,	GT15-QFNB16M, GT11-50FNB
Battery		GT15-BAT,	GT11-50BAT		
Protective Sheet		GT16-90PSCB, GT16-80PSCB, GT15-90PSCB, GT15-80PSCB, GT15-70PSCB, GT15-60PSCB, GT15-50PSCB, GT11-50PSCB, GT11-50PSCB, GT10-50PSCB, GT10-30PSCB, GT10-20PSCB,	GT16-90PSGB, GT16-80PSGB, GT15-90PSGB, GT15-80PSGB, GT15-70PSGB, GT15-60PSGB, GT15-50PSGB, GT11-50PSGB, GT10-50PSGB, GT10-30PSGB,	GT16-90PSCW, GT16-80PSCW, GT15-90PSCW, GT15-80PSCW, GT15-70PSCW, GT15-60PSCW, GT15-50PSCW, GT11-50PSCW, GT10-30PSCW, GT10-30PSCW,	GT16-90PSGW, GT16-80PSGW, GT15-90PSGW, GT15-80PSGW, GT15-70PSGW, GT15-60PSGW, GT15-50PSGW, GT11-50PSGW, GT10-30PSGW, GT10-20PSGW
Protective cover f	or oil	GT05-90PCO, GT05-50PCO	GT05-80PCO,	GT05-70PCO,	GT05-60PCO,
USB environment	al protection cover	GT16-UCOV,	GT15-UCOV,	GT11-50UCOV	
Stand		GT15-90STAND, GT05-50STAND	GT15-80STAND,	GT15-70STAND,	A9GT-50STAND,
Attachment		GT15-70ATT-98, GT15-60ATT-87,	GT15-70ATT-87, GT15-60ATT-77,	GT15-60ATT-97, GT15-50ATT-95W,	GT15-60ATT-96, GT15-50ATT-85
Backlight		GT16-90XLTT, GT15-70SLTT, GT15-60VLTN	GT16-80SLTT, GT15-70VLTT,	GT15-90XLTT, GT15-70VLTN,	GT15-80SLTT, GT15-60VLTT,
Multi-color display	/ board	GT15-XHNB,	GT15-VHNB		
Connector conver	rsion box	GT11H-CNB-37S			
Emergency stop s	sw guard cover	GT11H-50ESCOV			
Memory loader		GT10-LDR			
Memory board		GT10-50FMB			

Software

Abbreviations and generic terms	Description	
GT Works2 Version□	SW□D5C-GTWK2-E, SW□D5C-GTWK2-EV	
GT Designer2 Version□	SW□D5C-GTD2-E, SW□D5C-GTD2-EV	
GT Designer2	Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series	
GT Converter2	Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series	
GT Simulator2	Abbreviation of screen simulator GT Simulator 2 for GOT1000 / GOT900 series	
GT SoftGOT1000	Abbreviation of monitoring software GT SoftGOT1000	
GT SoftGOT2	Abbreviation of monitoring software GT SoftGOT2	
GX Developer	Abbreviation of SW□D5C-GPPW-E(-EV)/SW□D5F-GPPW-E type software package	
GX Simulator	Abbreviation of SWD5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)	
Document Converter	Abbreviation of document data conversion software Document Converter for GOT1000 series	
PX Developer	Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control	

■ License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

■ License key (for GT SoftGOT2)

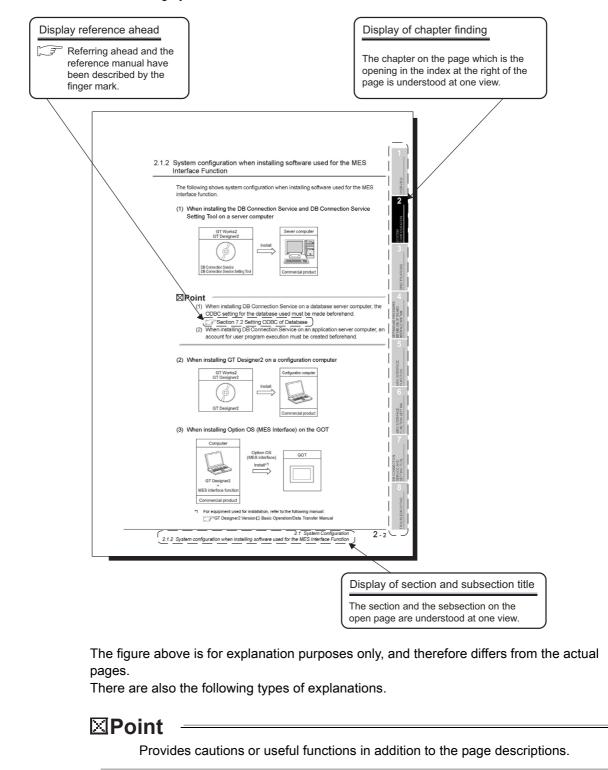
Abbreviations and generic terms	Description
License key	A9GTSOFT-LKEY-P (For DOS/V PC)
License key FD	SW5D5F-SGLKEY-J (For PC CPU module)

Others

Abbreviations and generic terms		Description	
OMRON PLC		Abbreviation of PLC manufactured by OMRON Corporation	
KEYENCE PLC		Abbreviation of PLC manufactured by KEYENCE CORPORATION	
KOYO EI PLC		Abbreviation of PLC manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.	
SHARP PLC		Abbreviation of PLC manufactured by Sharp Corporation	
JTEKT PLC		Abbreviation of PLC manufactured by JTEKT Corporation	
TOSHIBA PLC		Abbreviation of PLC manufactured by TOSHIBA CORPORATION	
TOSHIBA MAC	HINE PLC	Abbreviation of PLC manufactured by TOSHIBA MACHINE CO., LTD.	
HITACHI IES PI	_C	Abbreviation of PLC manufactured by Hitachi Industrial Equipment Systems Co., Ltd.	
HITACHI PLC		Abbreviation of PLC manufactured by Hitachi, Ltd.	
FUJI FA PLC		Abbreviation of PLC manufactured by Fuji Electric FA Components & Systems Co., Ltd.	
MATSUSHITA F	PLC	Abbreviation of PLC manufactured by Matsushita Electric Works, Ltd.	
YASKAWA PLC		Abbreviation of PLC manufactured by YASKAWA Electric Corporation	
YOKOGAWA PI	LC	Abbreviation of PLC manufactured by Yokogawa Electric Corporation	
ALLEN-BRADL	EY PLC	Abbreviation of Allen-Bradley PLC manufactured by Rockwell Automation, Inc.	
GE FANUC PLO		Abbreviation of PLC manufactured by GE Fanuc Automation Corporation	
LS IS PLC		Abbreviation of PLC manufactured by LS Industrial Systems Co., Ltd.	
SCHNEIDER P	LC	Abbreviation of PLC manufactured by Schneider Electric SA	
SIEMENS PLC		Abbreviation of PLC manufactured by Siemens AG	
	OMRON temperature controller	Abbreviation of temperature controller manufactured by OMRON Corporation	
	SHINKO indicating controller	Abbreviation of temperature controller manufactured by Shinko Technos Co., Ltd.	
CHINO controller		Abbreviation of temperature controller manufactured by CHINO CORPORATION	
Temperature controller	FUJI SYS temperature controller	Abbreviation of temperature controller manufactured by Fuji Electric Systems Co., Ltd.	
Controller	YAMATAKE temperature controller	Abbreviation of temperature controller manufactured by Yamatake Corporation	
	YOKOGAWA temperature controller	Abbreviation of temperature controller manufactured by Yokogawa Electric Corporation	
	RKC temperature controller	Abbreviation of temperature controller manufactured by RKC INSTRUMENT INC.	
PC CPU module	е	Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD	
GOT (server)		Abbreviation of GOTs that use the server function	
GOT (client)		Abbreviation of GOTs that use the client function	
Windows [®] font		Abbreviation of TrueType font and OpenType font available for Windows [®] (Differs from the True Type fonts settable with GT Designer2)	
Intelligent function module		Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit.	
MODBUS [®] /TCP		Generic term for the protocol designed to use MODBUS [®] protocol messages on a TCP/IP network.	

HOW TO READ THIS MANUAL

The following symbols are used in this manual.



Gives references related to the contents explained on the page, or useful informa-

A - 14

Remark

tion.

DEFINITIONS AND DESCRIPTIONS OF TERMS

The following table shows the definitions and descriptions of the terms used in this manual.

Term	Description	
Tag for Wonderware® Historian	Name for data unit in the data base Wonderware® Historian.	
Thotonan	Abbreviation for Manufacturing Execution System	
	The system that controls and monitors the plant status in real time to optimize production	
MES	activities	
5	This enables speed-up of the responses to production plans and status changes and efficient	
	production operation, optimizing the production activities.	
	Abbreviation for Open Database Connectivity	
ODBC	Standard specifications for software to access databases	
	Abbreviation for Simple Network Time Protocol	
SNTP	Protocol for synchronizing the time of computers via a TCP/IP network	
	Computer that provides time information to the GOT	
SNTP server computer	This can be shared with a server computer.	
201	Abbreviation for Structured Query Language	
SQL	Data manipulation language and used for relational database operations	
UTF-8	Method for converting character strings defined in Unicode into byte strings (Number strings)	
VMI	Abbreviation for eXtensible Markup Language	
XML	Markup language for describing documentation, data meanings, and structures	
Account	Represents the right to use a GOT or a server computer, or an ID necessary for its use.	
	The unit for processing defined in the job. The unit for processing includes [Communication	
	action] and [Transmit resource action] for communicating with a database, and [Operation	
	action] for operating tag component values.	
Action	[Communication action] is a processing unit for sending one SQL text (Select, Update, Insert,	
ACIIOII	MultiSelect).	
	[Transmit resource action] is the processing unit for sending each SQL text (Insert) for records	
	in one resource data collected in the GOT.	
	Up to 20 dyadic operations can be defined for [Operation action].	
	One of the server computers, which communicates by the MES interface function to run	
Application server computer	programs	
	A database computer can be shared as an application server computer.	
COMMIT	Processing that makes a permanent change to databases	
	Generic term for the services that a server computer to which the DB Connection Service is	
	installed can offer.	
Server service	There are database server service and application server service.	
	Database server service is a service for accessing a database.	
	Application server service is a service for linking with a program.	
Server computer	Generic term for database server computers and application server computers	
	This computer can be shared as an SNTP server computer.	
Job	A set of processings executed by a preset trigger	
	A personal computer that runs GT Designer2	
Configuration computer	This is used to install the option OS into a GOT, to configure the Communication Settings,	
<u> </u>	screens and MES interface function settings, and to download projects to the GOT.	
	This can be shared as a server computer.	

(To the next page)

Term	Description
101111	Standard time zone for each region of the world
Time zone	Each nation uses the time difference (within \pm 12 hours) from the time at the Greenwich
	Observatory in the United Kingdom (GMT) as the standard time. The region using the same
	time difference is called a time zone.
Time Zone	The standard time for Japan is 9 hours ahead of the GMT.
	· · · · · · · · · · · · · · · · · · ·
	Some nations adopt daylight-saving time in summer season in which clocks are set one hour ahead of the standard time.
	Generic term for components (Device data) making up a device tag (Tag)
Tag component	A set of data that contains the information on the GOT's internal devices, and the data type
(Component)	and devices required for access to the gateway devices
	Connection information necessary for accessing data using ODBC
Data source	With Windows®, a data source name is assigned to connection information for manegement.
	The database can be accessed via ODBC by specifying the data source name in the MES
Database (DD)	interface function.
Database (DB)	Data management method that follows relational data model logic
Or Deletional	One data is expressed as a collection of multiple items (Fields) and the data collection is
Relational	expressed as a table.
database (RDB)	Data can be easily merged and selected using key data.
Database computer	One of the server computers, on which the database communicating with the GOT is run
	when the MES interface function is used.
Table	Data management format managed with relational databases
	It is a two-dimensional table format composed of rows and columns. Variety of memory data that each controller internally contains.
Device	There are devices handled in units of bits and those handled in units of words.
	Data table that contains a set of information (Components) required to access the device data
Device tag (Tag)	in the GOT
	Unit that multiple databases related to each other can be correctly processed all at once.
	Processing managed as transaction is either correctly completed or canceled with the
Transaction	rollback. Each database is processed by the action, and each transaction is processed by the
	job with the MES interface function.
Trigger conditions	Startup conditions for job operation
ringger conditions	When too many trigger conditions (data transmission conditions) are met simultaneously, this
	function allows the system to buffer the data and the time that trigger conditions are met to the
	user area. The action (operation and transmission of the data) for the buffered data is
Trigger buffering	executed later.
	Even when the data transmission triggers are activated frequently, no triggers are missed so
	that all the jobs are executed.
	This function allows the system to temporarily store SQL texts that failed to be sent due to a
DB buffering	communication error in a CF card and to resend the texts upon recovery.
	A constant exchange of signals between the sending and receiving ends to achieve high
Handshake	reliability
	Corresponds to a column in a relational database and indicates a type of data (Record
Field	attribute).
Variable (Temporary Variable that can be used in the same job when temporarily storing values selected	
variable)	database or when writing operation values to a database or tag components.
Corresponds to a row in a relational database. One row (Record) stores the value of the cord of the co	
Record	columns (Fields).
Rollback Processing for canceling changes to a database	
	0 10 10 0 10 0 10 10 10 10 10 10 10 10 1

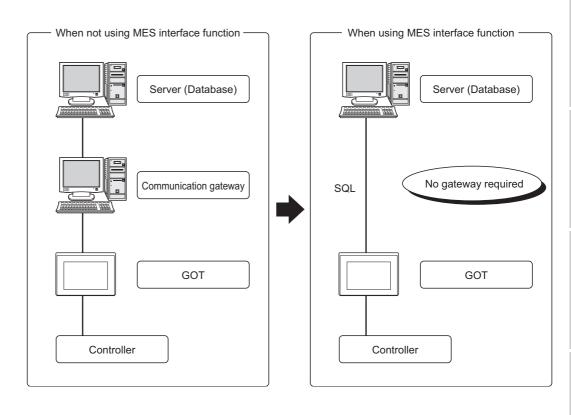
CHAPTER 1 OVERVIEW

The MES interface function allows SQL text transmission from a GOT to a database in the server computer connected via the Ethernet, enabling writing GOT's device values to the database and reading database values to set them to GOT's devices.

This direct communication with the server computer eliminates the need for gateway equipment, realizing reduction in the maintenance cost and improvement in reliability.

⊠Point

The MES interface function is available only for GT16 and GT15.



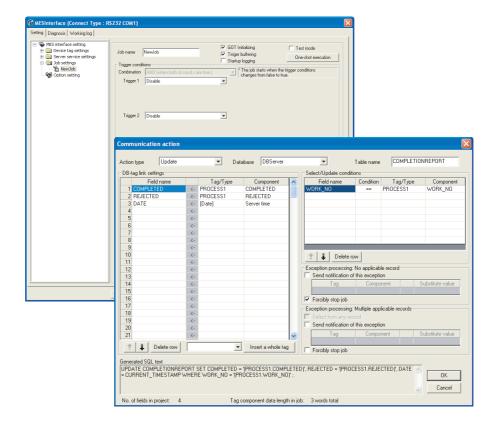
1.1 Features

This section explains the features of the MES interface function.

(1) Simple setting enables connection to the information system without programming.

Access to information system databases can be realized simply by making the necessary settings with the setting tool.

Since there is no need to create programs for generating SQL texts, the engineering costs for system construction and the work period can be reduced.

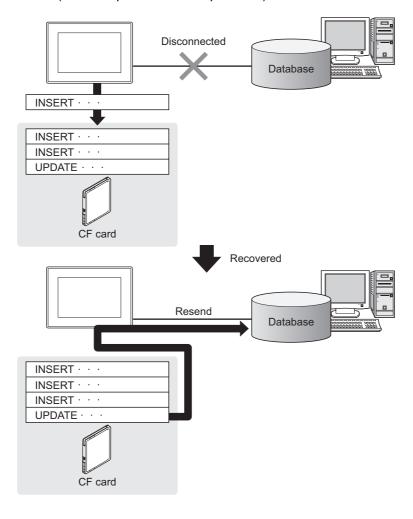


(2) Important data can be protected.

(a) Buffering of send data (SQL text) during a communication error

When an error occurs during communications with a database, the SQL texts failed to be sent can be buffered in the GOT.

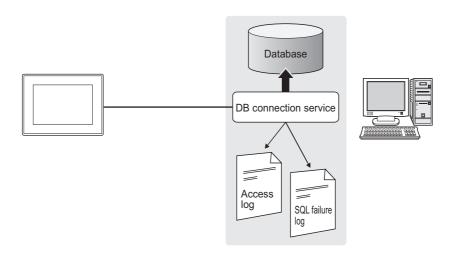
After recovery, the buffered SQL texts are automatically sent to the database. (Manual operation is also possible.)



(b) Obtaining logs in the event of access errors

After connection to a database, if a communication error occurs, the error details can be recorded as a log on the database side.

Analyzing the log is useful for data protection and error analysis.

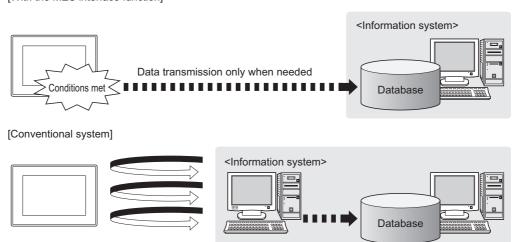


(3) The information system load can be reduced.

Data can be monitored on the GOT and when the conditions are met, the data can be sent to the information system.

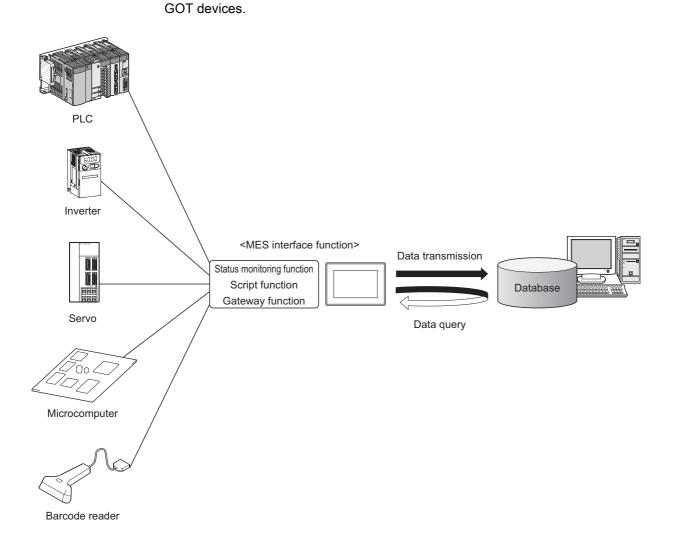
This can reduce the information system load, compared to the case of the conventional system that constantly samples and monitors data.

[With the MES interface function]



Constant sampling/monitoring from information system is required.

- (4) Access independent of the database table configuration is possible. Freely designed database tables can be used for access to databases. The MES interface function offers not only the high flexibility in designing a new system but also the capability of reconstructing the existing system without changing the database tables.
- (5) Various controller information can be stored and changed in the database. Controllers can be connected in a variety of topologies and their information can be stored into a database via GOT devices. Also, data read out from the database can be set to controllers as parameters via



(6) Other features

- (a) Reducing setting mistakes by use of tag namesTag names can be assigned to devices.Assigning recognizable tag names can reduce setting mistakes.
- (b) Obtaining the exact time by time synchronization By periodically obtaining the time from the SNTP server and updating the time of the GOT, the correct time can be ensured.
- (c) Supporting system construction
 The diagnostic function allows checking the operating status of the MES interface function (in real time, log).
 Modification of the job status and test operation of a project under design is also possible.

1.2 What is the MES Interface Function?

The items listed below are used with the MES interface function. For equipment required for the MES interface function, refer to the following: Section 2.3 Required Equipment, Software and Option OS

Item	Description	Reference section
Option OS (MES Interface)	The option OS that runs on a GOT to realize the MES interface function.	Chapter 5
MES interface function	This function allows the MES interface function setting in GT Designer2.	
setting		
DB Connection Service	Software that runs on the server computer and links databases with the GOT.	Chapter 7
DD Connection Service	Installed from the CD-ROM of GTWorks2/GT Designer2.	Chaptel 7
DB Connection Service Software that runs on the server computer and changes the settings of the DB		
	Connection Service.	
Setting Tool	Installed from the CD-ROM of GTWorks2/GT Designer2.	

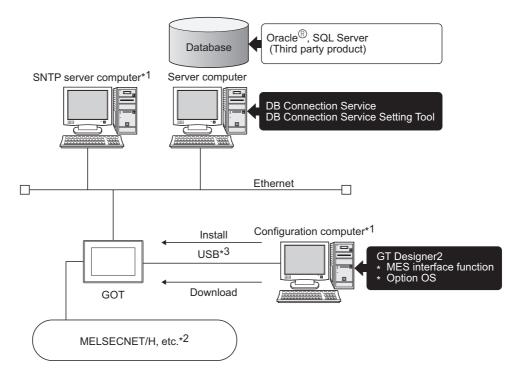
CHAPTER 2 SYSTEM CONFIGURATION

This chapter explains the system configuration available for the MES interface function.

2.1 System Configuration

2.1.1 Overall system configuration

This section shows the overall system configuration when using the MES interface function.



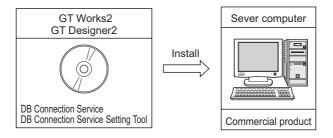
- *1 The SNTP server computer and configuration computer can be shared as the server computer.
- *2 For controllers available for the MES interface function, refer to the following manual. Grant Gran
- *3 RS-232 or Ethernet connection is also available.

 However, in Ethernet connection, the option OS cannot be installed.

2.1.2 System configuration when installing software used for the MES Interface Function

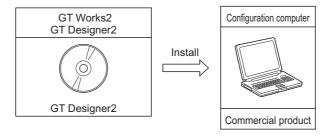
The following shows system configuration when installing software used for the MES interface function.

(1) When installing the DB Connection Service and DB Connection Service Setting Tool on a server computer

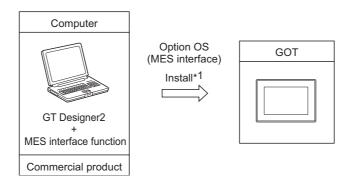


⊠Point

- (1) When installing DB Connection Service on a database server computer, the ODBC setting for the database used must be made beforehand.
 - Section 7.2 Setting ODBC of Database
- (2) When installing DB Connection Service on an application server computer, an account for user program execution must be created beforehand.
- (2) When installing GT Designer2 on a configuration computer



(3) When installing Option OS (MES Interface) on the GOT



2.2 Connection between GOT and Controllers

2.2.1 Connection type used for the MES Interface Function

The following table shows the GOT supporting the MES interface function and availability in each connection type.

For system configuration when using the MES interface function, refer to the following manual:

GOT1000 Series Connection Manual

 \bigcirc : Applicable \triangle : Partly restricted \times : Not applicable

Connection type		GT16/GT15
	Bus connection	0
	Direct CPU connection	0
	Computer link connection	0
	MELSECNET/H connection (PLC to PLC network)	0
Mitsubishi PLC*4 connection	MELSECNET/10 connection (PLC to PLC network)	Δ*1
	CC-Link IE controller network connection	0
	CC-Link connection (Intelligent device station)	△*2
	CC-Link connection (via G4)	0
	Ethernet connection*7	0
	Serial connection	0
Third party PLC connection	Ethernet connection*7	0
connection	MODBUS®/TCP connection	0
Microcomputer connection		0
Temperature controller connection		0
Inverter connection		O*3
Servo amplifier connection		O*3
Robot controller connection*5		0
	Direct CPU connection	0
CNC connection*6	MELSECNET/H connection (PLC to PLC network)	×
	MELSECNET/10 connection (PLC to PLC network)	Δ*1
	CC-Link connection (Intelligent device station)	Δ*2
	Ethernet connection*7	0

- *1 For the MELSECNET/10 connection, use the MELSECNET/H communication unit. The MELSECNET/10 communication unit cannot be used.
- *2 For the CC-Link connection, use the CC-Link communication unit (GT15-J61BT13). The CC-Link communication unit (GT15-75J61BR13-Z) cannot be used.
- *3 For the inverter or servo amplifier connection, use the status observation function or the script function to assign devices.

For how to assign devices, refer to the following:

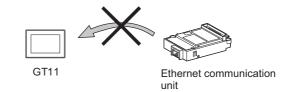
- Section 2.2.2 Precautions for inverter or servo amplifier connection
- *4 Including connection to the motion controller CPU (Q series and A series), CNC C70, and CRnQ-700
- *5 Applicable to the CRnD-700 only. For the CRnQ-700, refer to the above Mitsubishi PLC connection.
- *6 Applicable to the MELDAS C6/C64 only. For the CNC C70, refer to the above Mitsubishi PLC connection.
- *7 For connecting GT16 to a device supporting 10BASE(-T/2/5), configure the network that supports both 10Mbps and 100Mbps communication speeds by using a switching hub.

Remark

Connection type examples for the case where the MES interface function cannot be used

(Example 1) When using GT11

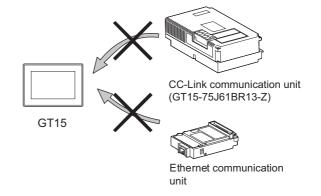
Because the Ethernet communication unit is not mountable, the MES interface function cannot be used.



(Example 2) When using GT15

Since the CC-Link communication unit (GT15-75J61BR13-Z) is not mountable concurrently together with the Ethernet communication unit, the MES interface function cannot be used.

To utilize both of them concurrently, use another type of the CC-Link communication unit (GT15-J61BT13).



2.2.2 Precautions for inverter or servo amplifier connection

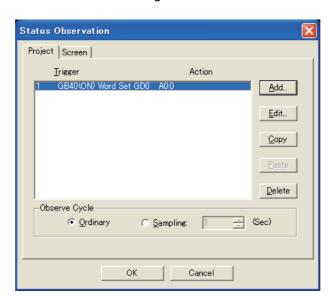
In the inverter or servo amplifier connection, the status observation function or the script function must be used for device assignment.

For the status observation function and the script function, refer to the following manual.

☐ GT Designer2 Version Screen Design Manual

The following are device assignment examples.

Example 1) Setting for assigning devices of the inverter [FREQROL 500/700 Series] to the GOT's internal devices using the status observation function



Example 2) Setting for assigning devices of the inverter [FREQROL 500/700 Series] to the GOT's internal devices using the status observation function

Setting item	Setting content	Remarks	
Trigger	ON Device GB40 Ordinary (GB40 is always ON.)		
		Assigns devices A0 to A15 of the inverter	
	[w:GD0]=[0-0:w:A0];	that has channel No. 1 and station No. 0 to	
		device GD0.	
		Assigns devices Pr 0 to Pr 15 of the inverter	
	[w:GD10]=[0-0:w:Pr0];	that has channel No. 1 and station No. 0 to	
Operation device		device GD 10.	
Operation device		Assigns devices PG0 to PG15 of the inverter	
	[w:GD20]=[0-0:w:PG0];	that has channel No.1 and station No.0 to	
		device GD20.	
		Assigns devices A0 to A15 of the inverter that	
	[w:GD31600]=[@3:0-16:w:A0];	has channel No.3 and station No.16 to device	
		GD31600.	

2.3 Required Equipment, Software and Option OS

(1) Required equipment and software

The following table lists the equipment and software required for use of the MES interface function.

(a) GT16

Application		Required equipment/software	Module name
Executing the MES interface function on the GOT		Option function board	GT16-MESB
Connecting the GOT to Ethernet		Built-in Ethernet interface	-
Connecting the GOT to controllers		GOT1000 Series Connection Manual	
	Setting the MES interface function	GT Designer2 Version2.90U or later (MES interface function)	-
Setting the MES interface function	DB buffering function, log output function, diagnostics function	CF card	GT15-MEM-128MC GT15-MEM-256MC Commercially available CF card (128MB to 2GB)*1

Some models have been concluded by Mitsubishi to be applicable.

For the applicable models, refer to "List of valid devices applicable for GOT1000 Series" (GOT-D-

The above TECHNICAL BULLETIN can be viewed at the Information site for Mitsubishi Electric Industrial Automation products, MELFANSweb.

(MELFANSweb site: http://www.MitsubishiElectric.co.jp/melfansweb)

For installation of the required equipment, refer to the following manual.

GT16 User's Manual

For connection of the required equipment, refer to the following manual.

GOT1000 Series Connection Manual

(b) GT15

Application		Required equipment/software	Module name
Executing the MES interface function on the GOT		Option function board	GT15-MESB48M
Connecting the GOT to Ethernet		Ethernet communication unit	GT15-J71E71-100
Connecting the GOT to controllers		GOT1000 Series Connection Manual	
	Setting the MES interface function	GT Designer2 Version2.43V or later (MES interface function)	-
Setting the MES interface function	DB buffering function, log output function, diagnostics function	CF card	GT15-MEM-128MC GT15-MEM-256MC Commercially available CF card (128MB to 2GB)*1

^{*1} Some models have been concluded by Mitsubishi to be applicable.

For the applicable models, refer to "List of valid devices applicable for GOT1000 Series" (GOT-D-001).

The above TECHNICAL BULLETIN can be viewed at the Information site for Mitsubishi Electric Industrial Automation products, MELFANSweb.

(MELFANSweb site: http://www.MitsubishiElectric.co.jp/melfansweb)

For installation of the required equipment, refer to the following manual.

GT15 User's Manual

For connection of the required equipment, refer to the following manual.

GOT1000 Series Connection Manual

(2) Required option OS

The following shows the option OS required for use of the MES interface function.

Application	OS name
MES interface function	MES Interface

For installation of the required option OS, refer to the following manual.

☐ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual (8. TRANSFERRING DATA)

2.4 Operating Environment

2.4.1 Configuration computer

The following is the operating environment for the configuration computer. Items other than the shown item for the MES interface function are identical to those for GT Designer2.

For the operating environment for GT Designer2, refer to the following manual.

☐ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual

ltem	Description	
Display	Resolution 1024 x 768 pixels or higher	

2.4.2 Server computer (SNTP server computer)

This section explains the operating environment for the server computer.

		explains the operating environment for the server computer.	
Item		Description	
Personal computer		A PC/AT-compatible computer on which the following operating systems can run	
		Microsoft® Windows®XP Professional Operating System (English version)*1*3*4	
		Microsoft® Windows®2000 Professional Operating System (English version)*2*3	
		Microsoft® Windows®Server 2003 Operating System (English version)*1*3*4	
OS		Microsoft® Windows®2000 Server Operating System (English version)*2*3	
		Microsoft® Windows Vista® Ultimate Operating System (English version)*1*3*4*10*11	
		Microsoft® Windows Vista® Enterprise Operating System (English version)*1*3*4*10*11	
		Microsoft® Windows Vista® Business Operating System (English version)*1*3*4*10*11	
Computer		A PC/AT-compatible computer on which the following operating systems can run	
	CPU	0 110 (1	
	Required memory	See "Performance required for personal computer and operating system to be used" below.	
Free hard disk space	_	64MB or more (After database installation)	
Disk drive		CD-ROM disk drive	
Display		A display where the above OS and after-mentioned databases can run	
Interface		Ethernet	
Required software		When using the DB interface function: Relational database (any of the following)	
		Oracle [®] 8i Standard Edition	
		Oracle® 9i Standard Edition	
		Oracle [®] 10g Standard Edition	
		Microsoft® SQL Server 2000 Standard Edition*5	
		Microsoft® SQL Server 2005 Standard Edition	
		Microsoft® SQL Server 2000 Desktop Engine(MSDE 2000)*5	
		• Microsoft® Access 2000*6*7	
		• Microsoft® Access 2003*6*7	
		Microsoft® Access 2007*5*6*12*13	
		Wonderware® Historian 9.0*8*9	
		When using the SNTP time synchronization function: SNTP server	
		(Equipped as a standard to Windows® 2000 Server, Windows® Server 2003)	
Others		The mouse, keyboard, and CD-ROM driver must be compatible with the above OS.	

- *1 Only the 32-bit OS is available.
- *2 When using Windows® 2000 Server or Windows® 2000 Professional, ServicePack2 or later is required.
- *3 To install or operate DB Connection Service or DB Connection Service Setting Tool, the administrator authority is required.
- *4 The following functions are not available.

If any of the following functions is used, this product many not operate normally.

- Application startup in Windows®compatibility mode
- User simple switching
- · Remote desktop
- Large Fonts (Detailed setting in the Display Properties)
- *5 Set [SQL Server and Windows] for the security authentication mode.
- *6 Up to 127 fields can be updated for a communication action.
- ^{*}7 Do not access the same file with multiple GOTs and MES interface modules simultaneously.
- *8 Only [Insert] can be used for the communication action.
- *9 The rollback cannot be used for inserting data to a database.
- *10 15GB or more of free space is required for using Windows Vista®.
- *11 A standard user or Administrator account is required for using Windows Vista®.
- *12 Memo-type fields in Rich Text Format cannot be used.
- *13 A field having multiple values cannot be used.

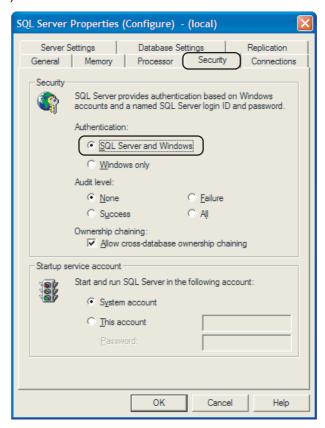
Performance required for personal computer and operating system to be used

Operating system	Performance required for personal computer		
Operating system	CPU	Required memory	
Windows®XP Professional	Intel Pentium®/Celeron®series		
Windows®2000 Professional	CPU with clock speed of at least 300 MHz	128 MB or more	
Windows®Server 2003	Intel Pentium®/Celeron®series		
Windows®2000 Server	CPU with clock speed of at least 550 MHz	256 MB or more	
Windows Vista®Ultimate	Intel Pentium®/Celeron®series		
Windows Vista®Enterprise	CPU with clock speed of at least	1GB or more	
Windows Vista®Business	1GHz		

⊠Point

How to set security authentication mode (SQL Server and Windows)

(1) For Microsoft® SQL Server 2000 and Microsoft® SQL Server 2005 Set the security authentication mode in the SQL Server Properties (Configure) screen.



(2) For Microsoft® SQL Server 2000 Desktop Engine (MSDE 2000) When installing MSDE2000, specify a command parameter. setup sapwd = "sa" SECURITYMODE=SQL (sa: Specify an arbitrary password.)

2.5 Cautions on System Configuration

(1) Relational databases that support the MES interface function For the relational databases that support the MES interface function, refer to the following:

Section 2.4.2 Server computer (SNTP server computer)

(2) Notes when CF card is used
Insert the memory card into the A drive of the GOT.
The CF card cannot be used in B drive.

CHAPTER 3 SPECIFICATIONS

This chapter explains the performance specifications, functions and devices of the MES interface function.

3.1 Performance Specifications

The following are the performance specifications of the MES interface function.

	lte	em	Specifications	Reference section			
	No. of connecte	ed databases	Up to 8 databases/project				
			Seven types				
			Oracle® 8i Standard Edition				
			Oracle® 9i Standard Edition				
			Oracle® 10g Standard Edition				
			Microsoft® SQL Server 2000 Standard Edition				
	No. of connecta	ible databases	Microsoft® SQL Server 2005 Standard Edition	Section 6.6.1			
			Microsoft® SQL Server 2000 Desktop Engine(MSDE 2000)				
			Microsoft® Access 2000				
			Microsoft® Access 2003				
			• Microsoft® Access 2007				
			Wonderware® Historian 9.0				
		Allowable number of	• Worlder ware (a) Fristorian 9.0				
	Job	settings	Up to 64 jobs/project	Section 6.7.1			
	UUD	Trigger buffering	Up to 128 tag components/tag	-			
	trigger conditions	No. of conditions can	Up to 2 conditions				
		be combined	(Combination can be selected either AND or OR)/job				
		Condition type	20 types (Time specification (6 types), Specified time period,	1			
DB			comparison between tag component values (6 types), comparison	Section 6.7.2			
interface			between tag component value and constant value (6 types), At				
			module startup) and Handshake operation				
		Validation interval	One second at the minimum				
		Allowable number of settings	Up to 10 actions/job	0			
		Communication action type	4 types (Select, Update, Insert, MultiSelect)	Section 6.8			
			Up to 8192 fields/project				
		No. of communication	• [DB-Tag link setting]: Up to 256 rows/communication action				
		action fields	• [Select/Update conditions]: Up to 8 rows/communication action				
			• [Select sort settings]: Maximum 8 rows/communication action	Section 6.8.1			
	Action	No. of records/data	Up to 40000 records/MultiSelect communication action				
		selectable for	Up to 45000 words/job				
		communication action					
		No. of operations possible for operation	(Up to 20 dyadic operations)/operation action				
		action	(op to 20 dyddio operations) operation detion	Section 6.8.2			
		Operators for operation	6 types (Addition, subtraction, multiplication, division, remainder,	- 33011011 3.3.2			
		action	character string combination)				
		No. of resource data	Maximum 8192 fields/project	Section 6.8.3			
		send action fields					

(To the next page)

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	Item		Specifications	Reference section	
		No. of tags	Up to 64 tags/project		
		No. of tag components	Up to 256 tag components/tag		
		140. Of tag components	Up to 4096 tag components/project		
			5 types (Signed single-precision integer type (16 bits), signed		
	Device tag	Data type	double-precision integer type (32 bits), single-precision floating point		
	Device tag		type (32 bits), bit type, character string type)	0 " 050	
		Character string length	Up to 32 characters	Section 6.5.3	
DB		No. of statistical	Up to 64 tag components		
interface		processings	Op to 64 tag components		
		g Statistical processing	6 types		
			(Average, maximum, minimum, moving average*1, moving		
			maximum*1, moving minimum*1)		
	Program	Allowable number of	(Once before execution of the initial action + once after execution of	Section 6.7.3	
	execution	settings	the final action)/job	Section 6.7.3	
	DB	Buffering capacity for	Maximum capacity: CF card capacity -32M bytes	0 " 000	
	buffering	communication errors*2	(16 Mbytes to 512 Mbytes)	Section 6.9.2	
Working	Log capacity for	MES interface function	Maximum capacity: 1 Mbyte (CF card)		
	execution		i waxiinani capacity. I wibyte (Or card)	Section 6.11	
log	Log capacity for job execution events		Maximum capacity: 2 Mbytes (CF card)		

- *1 [No. of samples] can be set up to 20.
- *2 How to estimate the buffering time from the buffering capacity is shown below.

 Buffering time = (Allowable No. of bufferings) ÷ (Frequency [times/hour]) [h]

 Allowable No. of bufferings = (Capacity to be used) ÷ (SQL text length + Overhead (4 bytes)

 SQL text length = Total field character length + 6 × No. of fields + Total data length + 20 [bytes]

[Calculation Example]

In the case of the capacity of 64 Mbytes, the field name of 16 characters, the data length of 32 characters, access to 256 fields by one action per job, and executing once per 30 seconds SQL text length = $(16 \times 256) + 6 \times 256 + (32 \times 256) = 13844$ [bytes] Allowable No. of bufferings = $(64 \times 1024 \times 1024) \div (13844 + 4) = 4846$ Buffering time = $4846 \div (60 \div 30 \times 60) = 40$ [h]

3.2 GOT Devices Available for the MES Interface Function

The following are GOT devices that can be set in the Device tag settings of the MES interface function.

Type	Description	Available setting range
GOT bit register	Bit register inside the GOT	GB64 to GB65535*1
GOT bit register	Can be used as a bit device.	GB04 to GB05535
GOT data register	Data register inside the GOT	GD0 to GD65535
OOT data register	Can be used as a word device.	GD0 t0 GD03333
GOT special	Special register inside the GOT	
register	Stores GOT's internal information, communication status, error information, etc.	GS0 to GS1023*2
register	Can be used as a word device.	
	Used when making interaction between the MES interface function and the gateway function.	
Gateway device	Virtual device for indirectly reading or writing the controller devices that are monitored by	1-1: EG0 to 239-64:
Cateway device	another GOT.	EG32767 ^{*3}
	Can be used as a word device.	

1 For GB0 to GB63, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

*2 Do not write any value to a write-prohibited GOT special register. Setting a value to the GOT special register may affect the GOT operation.

For the GOT special register, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

*3 Specify the gateway device in the following format. (Network No.) - (Station No.): EG (Device No.)

Network No.: 1 to 239

Station No.: 1 to 64 Device No.: 0 to 32767

⊠Point

The gateway function setting is required for use of the gateway devices. For the gateway setting, refer to the following manual.

GOT1000 Series Gateway Functions Manual (4.3 Connection Method)

3.3 Function List and Setting Item List

This section provides the lists of the functions and setting items that can be set for the MES interface function.

(1) MES interface function list

Function	Function Description						
DB interface function	Executes communication with the database in units of jobs.						
Tag function	Tag function Collects data in the internal devices or gateway devices of the GOT on the network in units of tags. Assigning a database field to a tag component allows reading or writing of a database value or device data that is specified by the tag component.						
Trigger monitoring function	Monitors values such as the time and tag values and, when the trigger condition changes from false to true (when the conditions are met), starts a job.	Section 5.1.4 Section 6.7.2					
Trigger buffering function	Allows the system to buffer the data and the time that trigger conditions are met to the user area of the GOT when too many trigger conditions (data transmission conditions) are met simultaneously. The action (operation and transmission of the data) for the buffered data is executed later. Even when the data transmission triggers are activated frequently, no triggers are missed so that all the jobs are executed.	Section 5.1.5 Section 6.7.1					
SQL text transmission (Communication action)	Automatically creates an SQL text and communicates with the database. The following three types of commands can be selected for the SQL text. • Select/MultiSelect • Update • Insert	Section 5.1.6 Section 6.8.1					
Arithmetic processing function (Operation action)	Allows operations of tag component values.	Section 5.1.7 Section 6.8.2					
Resource data send function (Resource data send action)	Sends the resource data collected in the GOT to the database. A SQL text (INSERT) is used for sending the resource data to the database.	Section 5.1.8 Section 6.8.3					
Program execution function	Executes programs in the application server computer before execution of the first action and after execution of the last one in a job.	Section 5.1.9 Section 6.7.3					
DB buffering function	Temporarily stores SQL texts into a CF card when they cannot be sent due to network disconnection or failure of the database server computer. After recovery, the buffered SQL texts are automatically sent to the database. (Manual operation is also possible.)	Section 5.1.10 Section 6.9.2 Section 6.10.4 Section 6.10.5					
SNTP time synchronization	Allows the time on the GOT to be synchronized with the time on the SNTP server	Section 5.2					
function							
Used to stop/restart the MES interface function, check job operations and configure the settings.		Section 6.10 Section 7.1					
DB server function	·						
ODBC connection function	Executes the operation requested by the DB interface function or returns a response.						
Connection setting function	Restricts IP addresses of GOTs that can be connected to the database.	Section 7.5					
Log output function	Outputs the execution status of DB Connection Service to the log.	Section 7.8					

(2) List of the MES interface setting items

Function	Description	Reference				
runction	Description	section				
Device tag settings	Configure the settings for the tag function.	Section 6.5				
Array setting	Configure this setting when writing multiple records extracted from a database to the	Section 6.5.2				
	same tag component.					
Component setting	Configure the settings for assigning GOT devices to tags.	Section 6.5.3				
Server service settings	Configure the settings for access to a server computer.	Section 6.6				
Job settings	Configure the settings for the DB interface function.	Section 6.7				
trigger conditions	Configure the settings for startup conditions of the job.	Section 6.7.2				
Trigger buffering	Set whether to utilize the trigger buffering function or not.	Section 6.7.1				
Communication action	Configure the settings for communications with a database.	Section 6.8.1				
Operation action	Configure the settings for operation of tag component values.	Section 6.8.2				
Resource data send action	Configure the settings for sending the resource data to the database.	Section 6.8.3				
program execution	program execution Configure the settings for the program execution function.					
DB buffering	Section 6.7.4					
One-shot execution	Section 6.7.6					
Option setting	Configure the SNTP time synchronization setting and the DB buffering function setting.					
SNTP time synchronization setting	Configure the settings for the SNTP time synchronization function.	Section 6.9.1				
DB buffering setting	Configure the settings for the DB buffering function.	Section 6.9.2				
diagnosis	Perform the remote diagnosis for the MES Interface function.	Section 6.10				
Status	The operation status of the option OS (MES Interface) can be checked.	Section 6.10.1				
Operation	The operation status of the MES Interface function can be checked.	Section 6.10.2				
Change Job Status	The job status can be changed.	Section 6.10.3				
Connection result of	Connection with the server computer set in [Server Service setting], which is made at the	Castina C 40 4				
previous job execution	time of the previous job execution, can be displayed.	Section 6.10.4				
DB buffering operation	The DB buffering can be operated.	Section 6.10.5				
MESI/F Log	Displays the working log of the MES Interface function.	Section 6.11				
MES Interface Execute Log	Displays the MES Interface function execution log.	Section 6.11.1				
Job Execute Log	Displays the job execution event log.	Section 6.11.2				

(3) List of setting items of DB Connection Service Setting Tool

Function	Description	Reference section		
Service port	Specify the number of the port where the DB Connection Service operates.			
DB access timeout	Set a timeout time (unit: seconds) used when no response may be returned after			
DB access timeout	requesting program execution or value writing/reading from the GOT to a database.			
ID address setting	Determine whether or not to restrict IP addresses of GOTs whose connection to DB	Section 7.5		
IP address setting	Connection Service is permitted.			
Output access log	Set whether or not to output the access log.	7		
Output SQL failed log Set whether or not to output the SQL failure log.				

3.4 GOT Internal Device (GS)

3.4.1 GOT internal device list

The list of the GOT internal devices (GS) used for the MES interface module is shown below.

⊠Point

- (1) For details of any other GOT internal devices (GS) than the shown areas used for the MES interface function, refer to the following manual.
 - GT Designer2 Version Screen Design Manual
- (2) Values stored in the GOT internal devices (GS) are cleared to 0 when the GOT is powered OFF and then ON or is reset.

GS	Application	Name	Initial value	Reference section
		SNTP time synchronization setting status		
265		1: [Synchronize with SNTP]	0	Continu 2.4.2
		0: [SNTP time synchronization setting not exist/failed]		Section 3.4.2
266 to 272		SNTP time query result	0	
273	MES interface	II 1899. J		
274	function	Use prohibited		-
275	area	Monitoring interval timeout count	0	
670		No. of trigger buffer data	0	Section 3.4.2
671		Trigger buffer overflow count		3600011 3.4.2
672 to 675		Trigger buffer overflow flag for a job	0	

3.4.2 MES Interface Function area

This section explains the details of the special registers used for the MES interface function.

- (1) SNTP time synchronization setting status (GS265)
 - (a) The setting status of the SNTP time synchronization setting is stored. For the SNTP time synchronization setting, refer to the following.
 - Section 6.9.1 Setting items in SNTP time synchronization setting
 - 0: [SNTP time synchronization setting not exist/failed]
 - 1: [Synchronize with SNTP]
 - (b) When the "Synchronize using SNTP" box is checked in the Option setting This area is set when the clock time information was obtained from the SNTP server computer.
 - If it could not be obtained from the SNTP server computer, this area is not set since the operation for selection of [Synchronize with PLC CPU time] is performed (The time is synchronized with the time of the PLC CPU).

(2) SNTP time query result (GS266 to GS272)

When the "Synchronize using SNTP" box is checked in in the Option setting, the time information obtained from the SNTP server is stored.

GS	Name	Description	Setting side
266	SNTP time query result (Year)	The four-digit year data is stored.	
267	SNTP time query result (Month)	The month data, 01 to 12, is stored.	
268	SNTP time query result (Day)	The day data, 01 to 31, is stored.	
269	SNTP time query result (Hour)	The hour data, 00 to 23, is stored.	
270	SNTP time query result (Minute)	The minute data, 00 to 59, is stored.	Set by the system
271	SNTP time query result (Second)	The second data, 00 to 59, is stored.	System
		The day-of-the-week data is stored.	
272	SNTP time query result (Day of	0: Sunday 1: Monday 2: Tuesday	
	the week)		
		6: Saturday	

(3) Monitoring interval timeout count (GS275)

The cumulative number of times that a monitoring interval timeout has occurred is stored.

If monitoring interval timeout occurs frequently, check the number of job settings and the trigger condition setting.

For the monitoring interval timeout, refer to the following:

Appendix 2 About Monitoring Interval Timeout

(4) No. of trigger buffer data (GS670)

The number of trigger buffer data is stored.

When many trigger buffer data is stored for a long time, the GOT becomes busy. As a result, some data may not be collected.

Check the number of job settings for which [Trigger buffering] is enabled and the trigger condition setting.

(5) Trigger buffer overflow count (GS671)

The cumulative number of times that a trigger buffer overflow has occurred is stored. The trigger buffer overflow means that 129th trigger data is discarded without being buffered when 128 trigger data is already buffered.

If trigger buffer overflow occurs frequently, check the number of job settings for which [Trigger buffering] is enabled and the trigger condition setting.

(6) Trigger buffer overflow flag for a job (GS672 to GS675)

The flag indicates the status of trigger buffer overflow for each job.

When a trigger buffer overflow occurs for a job, the internal device corresponding to the job turns ON.

The following table shows the internal devices that are corresponding to jobs 1 to 64.

Name		Job and internal device														
GS672	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15
Jobs 1 to 16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GS673	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15
Jobs 17 to 32	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
GS674	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15
Jobs 33 to 48	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
GS675	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15
Jobs 49 to 64	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64

CHAPTER 4 SETTINGS AND PROCEDURES BEFORE USE OF THE MES INTERFACE FUNCTION

This chapter explains the procedures and settings to be done before use of the MES interface function.

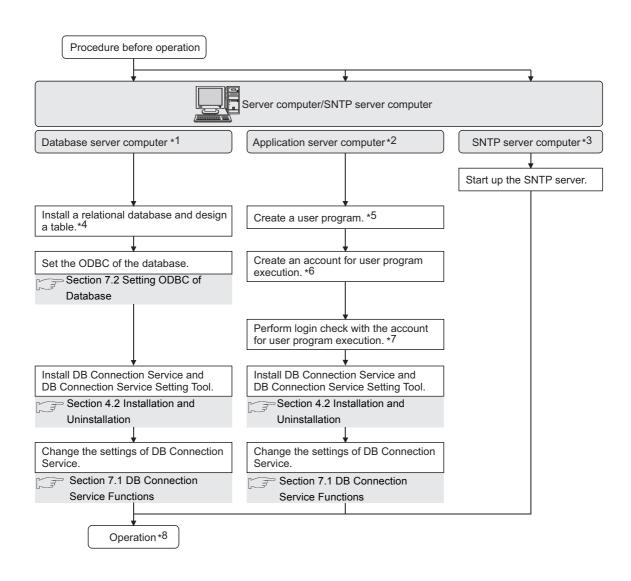
4.1 Settings and Procedures before Use of the MES Interface Function

The flowcharts for use of the MES interface function are shown here.

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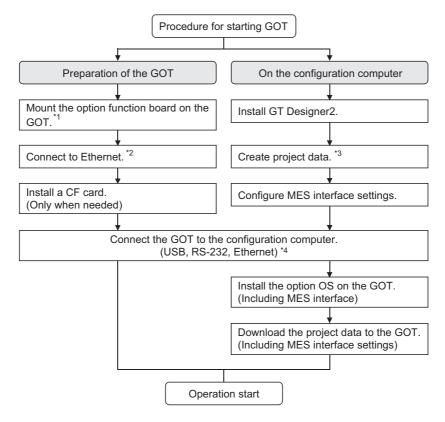
Start the server computer, and then the GOT.

(1) Starting the server computer



- *1 Be sure to make the settings to use the DB interface function.
 - Section 5.1 DB Interface Function
- *2 Make the settings when using the program execution function.
 - Section 5.1.9 Program execution function
- *3 Make the settings when using the time on the SNTP server computer with the SNTP time synchronization function.
 - Section 5.2 SNTP Time Synchronization Function
- *4 Restart the personal computer after installing the relational database.
 - Communication with GOT may fail if not restarted.
- *5 Create it only when necessary.
 - An existing program, a program included in OS, or a commercially available program can also be used
- *6 Always set a password for the account for user program execution.
 - Use of an account without password will result in execution failure by OS.
- *7 If the login is not confirmed, the program execution function may not operate properly. When installing DB Connection Service and DB Connection Service Setting Tool, log in using a user name with administrative right.
- *8 Do not log in the server computer using an account for user program execution during user program execution.
 - Doing so may cause incorrect operation of the program execution function.

(2) Starting the GOT



- For GT16, use the MES interface function board.
- For GT15, use the option function board with MES interface function.
- For GT16, use the built-in Ethernet interface.

For connecting GT16 to a device supporting 10BASE(-T/2/5), configure the network that supports both 10Mbps and 100Mbps communication speeds by using a switching hub.

For GT15, mount the Ethernet communication unit.

*3 Configure the Extend I/F Setting in Communication Settings of GT Designer2.

In the Extend I/F Setting, select any of the following and set an IP address.

- CH: * Driver: Ethernet download
- · CH: * Driver: Gateway
- CH: 1 Driver: Ethernet(MELSEC), Q17nNC, CRnD-700
- CH: 1 Driver: Ethernet(MELSEC), Q17nNC, CRnD-700,Gateway

When using the MES interface function only on the Ethernet, the GOT port No. setting in Communication Detail Settings is ignored.

*4 In Ethernet connection, the option OS cannot be installed. To install the option OS, use USB or RS-232 connection.

4.2 Installation and Uninstallation

For how to install and uninstall each execution software for the MES interface function on the operating environment, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual (2. INSTALLATION AND UNINSTALLATION)

CHAPTER 5 MES INTERFACE FUNCTION

The MES interface function can be used on the GOT by installing the option OS (MES Interface).

This chapter describes the MES interface function.

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The MES interface function settings are configured on the MES interface function setting screen of GT Designer2.

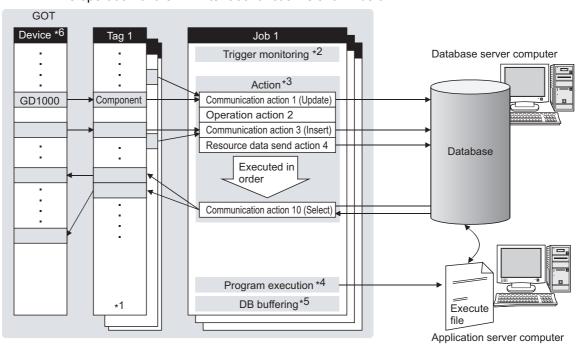
Chapter 6 MES INTERFACE FUNCTION SETTING

5.1 DB Interface Function

The DB interface function executes access to the database in units of jobs.

5.1.1 DB interface function operation

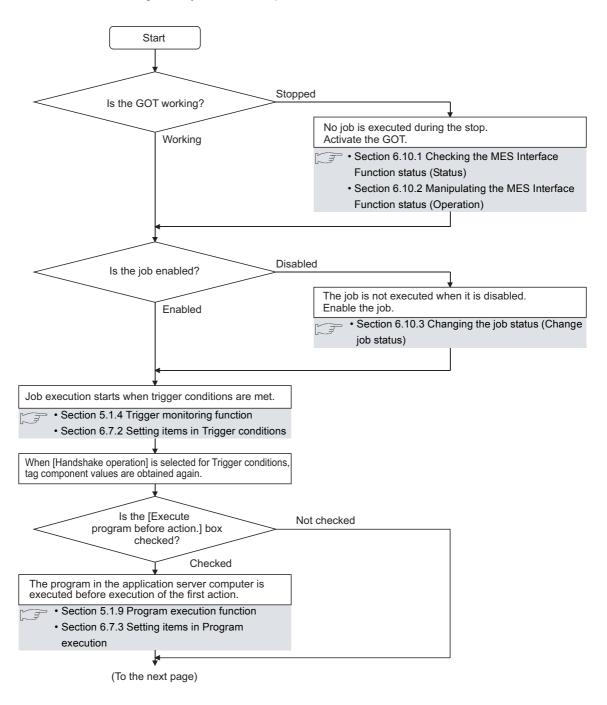
The operation of the DB interface function is shown below.

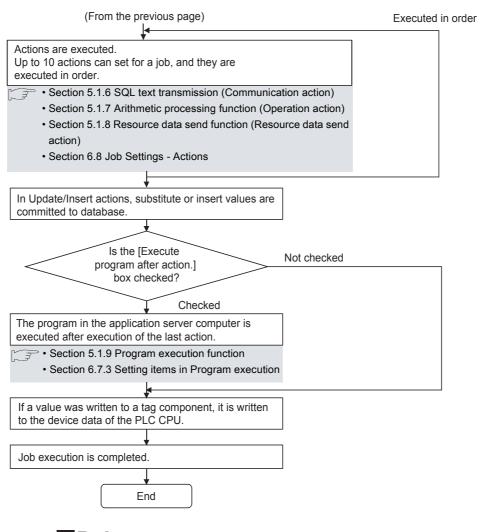


- *1 Collects tag data. Section 5.1.3 Tag function
- *2 Activates a job. Section 5.1.4 Trigger monitoring function
- *3 Accesses the database and performs arithmetic processing.
 - Section 5.1.6 SQL text transmission (Communication action)
 - Section 5.1.7 Arithmetic processing function (Operation action)
 - Section 5.1.8 Resource data send function (Resource data send action)
- *4 Executes programs. Section 5.1.9 Program execution function
- *5 Temporarily stores SQL texts that cannot be sent due to a communication error. Section 5.1.10 DB buffering function
- *6 For devices usable for the MES interface function, refer to the following.

 Section 3.2 GOT Devices Available for the MES Interface Function

The following is the job execution procedure.





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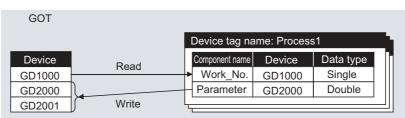
For the case where an error occurs during job execution, refer to the following: Section 5.3 (2) When an error occurs in job execution

5.1.3 Tag function

The tag function collects device data of the GOTs on the network in units of tags. Assigning a database field to a tag component allows reading or writing of a database value or device data that is specified by the tag component.

For the tag function setting, refer to the following:

Section 6.5 Device Tag Settings



5.1.4 Trigger monitoring function

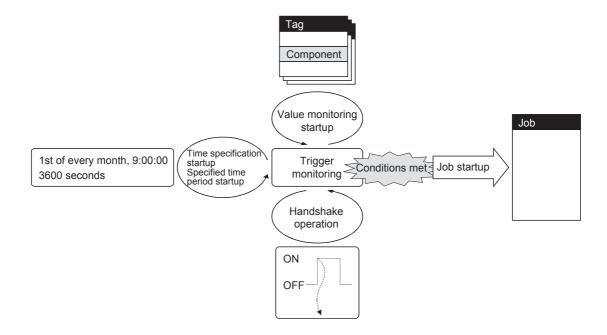
The trigger monitoring function monitors values such as the time and tag values and, when the trigger condition changes from false to true (when the condition is met), starts a job. The following setting options are available as conditions for start.

- [Time specification startup]: Starts the job at the specified time.
- [Specified time period startup]: Starts the job at the specified intervals (Unit: Seconds).
- [Value monitoring startup]:
 Compares the actual tag component value with the condition value (tag component value or constant value) at every sampling times, and starts the job when the condition is met.
- [Handshake operation]:
 Starts the job on request from the GOT.
 Completion of job execution can be reported to the GOT.
- [At GOT startup]: Starts the job only once when the GOT starts up.

Two kinds of conditions can be used in combination for starting a job.

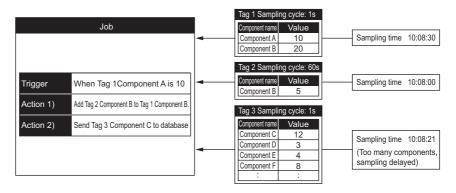
For the trigger monitoring function setting, refer to the following:

Section 6.7.2 Setting items in Trigger conditions



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In [Value monitoring startup], tag component values used for triggering monitoring and those used in the activated job are collected at different timings without synchronization.

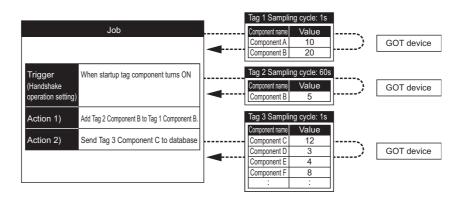


To synchronize collection of the above tag component values, perform either of the following (Plan 1) or (Plan 2).

(Plan 1)

Use [Handshake operation].

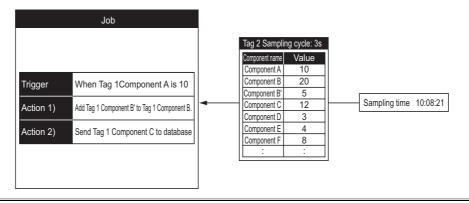
Section 6.7.2 (8) Handshake operation



(Plan 2)

Put the tag components used in a job into one tag.

Since the tag components collect the specified GOT device values during job execution, the execution time of the job is increased.



5.1.5 Trigger buffering function

When too many trigger conditions (data transmission conditions) are met simultaneously, the trigger buffering function allows the system to buffer the data and time trigger conditions are met to the user area of the GOT. The action (operation and transmission of the data) for the buffered data is executed later.

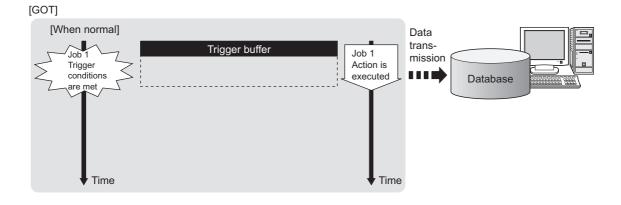
Even when the data transmission triggers are activated frequently, no triggers are missed so that all the jobs are executed.

Enable [Trigger buffering] in each job setting to utilize the trigger buffering function.

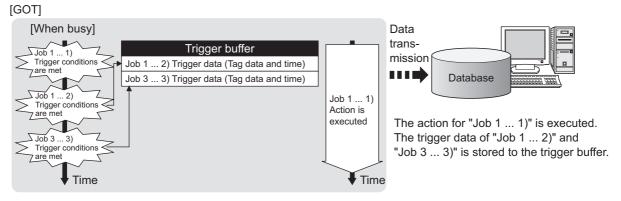
(1) Trigger buffering function

The following describes the behavior of a job for which [Trigger buffering] is enabled.

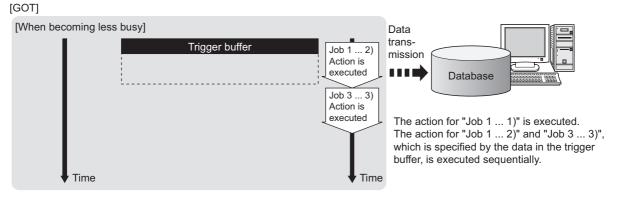
- (a) When normal (Interval that trigger conditions are met is longer than processing time of action)
 - When trigger conditions are met, the tag data and the time are stored in the trigger buffer.
 - The action, which is specified by the data stored in the trigger buffer, is executed immediately.



- (b) When busy (Interval that trigger conditions are met is shorter than processing time of action)
 - · Tag data and time that conditions are met are stored to the trigger buffer every time the conditions are met.
 - If an action cannot complete before another condition is met, up to 128 trigger data can be stored.



- · The numbers 1) to 3) correspond to the order of that trigger conditions are met.
- · In this example, the jobs 1 and 3 access the same database.
 - (c) When becoming less busy (Interval that trigger conditions are met is longer than processing time of action)
 - The action, which is specified by the data stored in the trigger buffer, is read and executed sequentially.
 - When the action for the trigger data in the trigger buffer completes, the trigger data is cleared, and another trigger data can be stored.



- · The numbers 1) to 3) correspond to the order of that trigger conditions are met.
- · In this example, the jobs 1 and 3 access the same database.

⊠Point

- (1) For job operation for which [Trigger buffering] is disabled, refer to the following:
 - Section 5.3 (1) Operation behavior of jobs
- (2) Whether the condition is changed from false to true is judged at collection of the tag.
 - Section 6.7.2 Setting items in Trigger conditions

(2) Maximum times of trigger buffering

(a) The trigger buffering function allows up to 128 trigger data (tag data and time) to be stored simultaneously.

A job can be stored for unlimited number of times.

(b) Check status of the trigger buffering in the following.

Number of jobs in the trigger buffer (GS670)

[MES Interface] - [Diagnostics] tab ([Section 6.10.6 Checking the trigger buffering (Trigger buffering status))

(c) If 128 conditions are already met and another condition is met, the trigger of the new condition is discarded.

Check the number of discards in the trigger buffer overflow (GS671).

(3) Clearing trigger buffer

Any of the following operation clears the trigger buffer.

- Power off the GOT.
- Reset the GOT (when changing the communication settings, etc.)
- Install the OS from GT Designer2
- · Download project data, etc.
- Stop the MES interface function operation by [MES Interface] [Diagnostics] (Section 6.10.2 Manipulating the MES Interface Function status (Operation))

5.1.6 SQL text transmission (Communication action)

The SQL text transmission function allows automatic creation of SQL texts, enabling communications with the database.

The following three types of commands can be selected for the SQL text.

- · Select/MultiSelect
- · Update
- Insert

For the SQL text transmission setting, refer to the following:

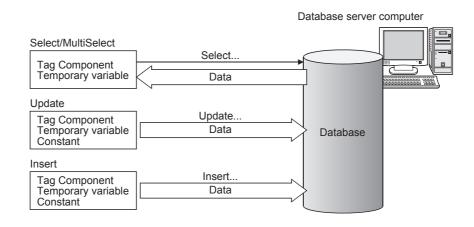
Section 6.8.1 Setting items in Communication action

(1) Select/MultiSelect

Select/MultiSelect is used to write a database value to a tag component value area or to store it in the temporary variable area by sending a SQL text to the database. When a value is stored in the temporary variable area, it can be used as a variable for other actions.

(2) Update and Insert

Update and Insert are used to add a tag component value or a temporary variable to an SQL text and write the value to the database.

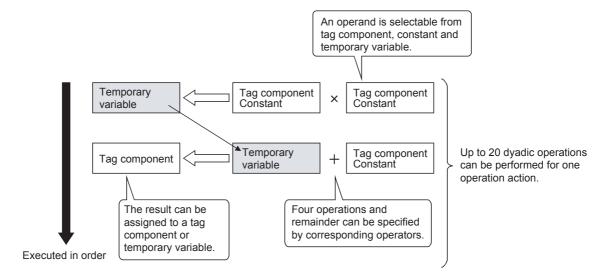


5.1.7 Arithmetic processing function (Operation action)

The arithmetic processing function performs operations for tag component values. In this function, up to 20 dyadic operations can be processed per operation action. By storing an operation result in the temporary variable area, complicated operations are also executable.

For the arithmetic processing function setting, refer to the following:

Section 6.8.2 Setting items in Operation action



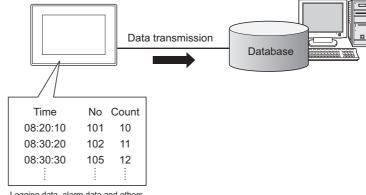
5.1.8 Resource data send function (Resource data send action)

The resource data send function allows the GOT to send resource data collected in a GOT buffering area and a CF card to a database.

Device values for controllers, alarm data for the GOT, and others can be stored to the database without any communication programs.

For the resource data send function settings, refer to the following.

Section 6.8.3 Setting items in Transmit resource action



Logging data, alarm data and others

(1) Resource data send function

(a) Available data to be sent

For using the resource data send function, set [Transmit resource action] in the action for [Job settings].

The following resource data can be sent to a database.

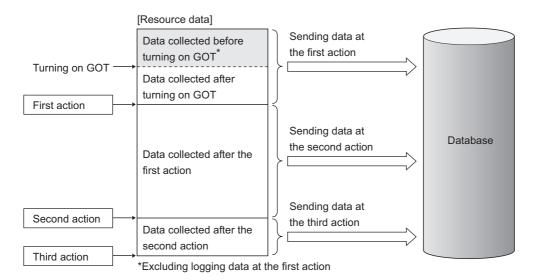
Reso	urce data	Description
Logging data		Logging data collected by the logging function
	Advanced user alarm	Alarm data collected by the advanced user alarm
Alarm data	Advanced user alaim	observation setting
Alaitii uala	Advanced system	Alarm data collected by the advanced system alarm
	alarm	observation setting
Operation log data		GOT operation history data collected by the operation
Operation log data		log function

(b) Resource data to be sent

Settings on the resource data send action for the collected resource data
 The GOT sends the resource data before and after turning on the GOT.

 Specifying the number of resource data and the time of collecting the data or
 others are available.

This setting allows the GOT to send resource data when the loads on the GOT and controllers are lower.



⊠Point

The GOT sends the resource data to the database only one time. The GOT does not send the sent data to the database on the subsequent actions. Unnecessary data is not stored to the database.

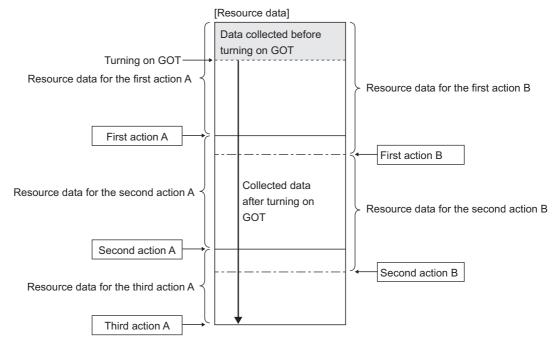
The GOT may send the sent data to the database in the following cases.

- When turning on the GOT
- When restarting the GOT (Downloading a project data or others)

Section 6.12 Precautions

TROUBLESHOOTING

2) Sending one resource data at the multiple resource data send actions When one resource data is sent at the multiple resource data send actions, the resource data is sent and stored to the database for each action.



Resource data for the action A is sent again when the action B is executed.

5.1.9 Program execution function

The program execution function is used for executing programs in the application server computer before execution of the first action and after execution of the last one in a job. For the program execution function setting, refer to the following:

Section 6.7.3 Setting items in Program execution

Programs that can be executed from [Command line] are applicable.

Since program execution is set on the application server computer as described below, more sophisticated data linkage can be realized.

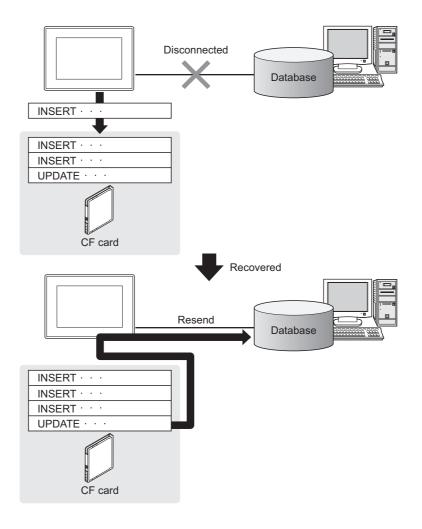
- (1) Before executing the first action of the job By executing programs before the first action of the job, data required for the job can be produced on the database in advance.
- (2) After executing the last action of the job By executing programs after the last action of the job, data written to the database by the job can be utilized for programs on the application server computer.

5.1.10 DB buffering function

(1) DB buffering function

The DB buffering function temporarily stores SQL texts into a CF card when they cannot be sent due to network disconnection or failure of the database server computer.

After recovery, the buffered SQL texts are automatically sent to the database. (Manual operation is also possible.)



⊠Point

- (1) To automatically send SQL texts after recovery, irrespective of transmission sequence, select the auto-resend processing.
 - This section (5)(c) Automatically resending data after recovery
- (2) To send SQL texts after recovery, without changing the transmission sequence, select the manual resend processing.
 - This section (5)(d) Manually resending data

(2) Factors for starting DB buffering

The DB buffering is conducted when SQL texts cannot be sent to the database by the following factors:

- Network disconnection
- · Failure of the database server computer
- · Failure of the database software

⊠Point

- (1) If an error occurs when the sent SQL text is executed on the database, by some reason such as its incorrectness or inconsistency with the database, buffering is not performed and an SQL failure log is output on the database server computer.
 - Section 7.1 DB Connection Service Functions
- (2) When SQL texts cannot be sent to the database due to network disconnection or failure of the database server computer, DB buffering is not performed until the connection timeout is detected (approx. 10 seconds).
 - This section (7) When SQL texts cannot be sent to the database Even if a trigger condition is met again during connection timeout detection, the corresponding job is not executed.
 - Section 5.3 (1) Operation behavior of jobs
- (3) If SQL texts cannot be sent to the database due to failure of database software, DB buffering is not performed until detection of DB access timeout.
 - This section (7) When SQL texts cannot be sent to the database Time for detecting DB access timeout is set to 30 seconds by default.
 - Section 7.5 (2) DB access timeout (required) (Range: 1 to 3600; Default: 30)

Even if a trigger condition is met again during detection of DB access timeout, the corresponding job is not executed.

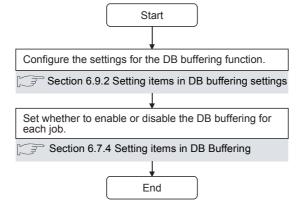
Section 5.3 (1) Operation behavior of jobs

(3) Jobs applicable to DB buffering

Jobs performing Update or Insert actions can be stored in the DB buffer.

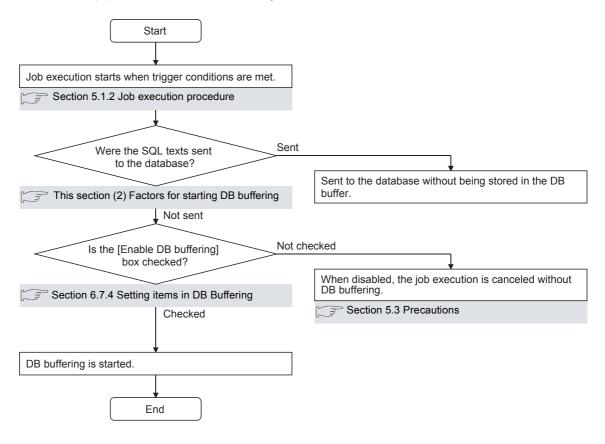
The DB buffering is not available for jobs performing Select/MultiSelect action.

(4) Setting the DB buffering



(5) DB buffering operation

(a) When no data are currently stored in the DB buffer



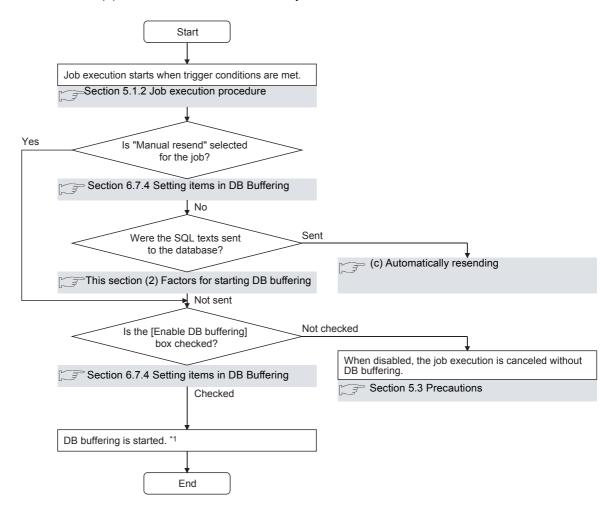
⊠Point

Check the DB buffer status (No. of bufferings, utilization) and prevent the full status of the DB buffer.

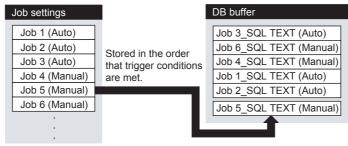
Section 6.7.4 Setting items in DB Buffering

· Section 6.10.5 Manipulating DB buffering (DB buffering operation)

(b) When some data are currently stored in the DB buffer



*1 When accumulated job data currently exist in the DB buffer.

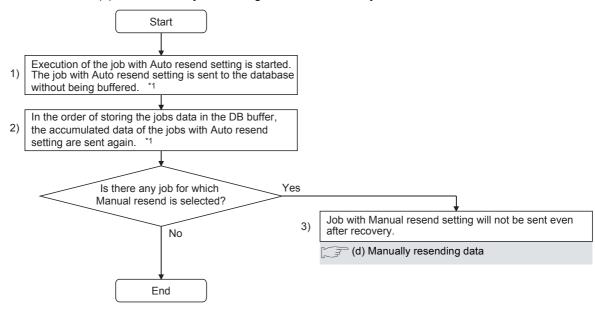


⊠Point

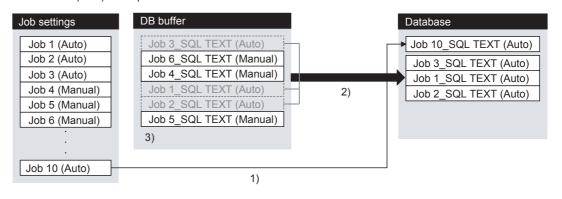
Check the DB buffer status (No. of bufferings, utilization) and prevent the full status of the DB buffer.

- Section 6.7.4 Setting items in DB Buffering
 - · Section 6.10.5 Manipulating DB buffering (DB buffering operation)

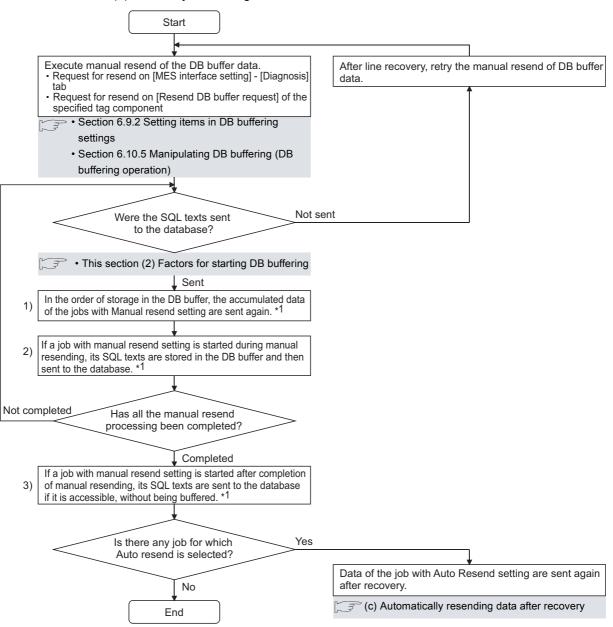
(c) Automatically resending data after recovery



*1 Automatically resends job data after recovery. The numbers 1) to 3) correspond to those shown in the above.

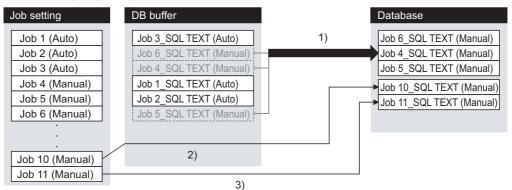


(d) Manually resending data



*1 Manually resending data

The numbers 1) to 3) correspond to those shown in the above.



⊠Point

If any of the jobs for which manual resend is selected exists in the DB buffer, it remains there after recovery until manual resend is executed.

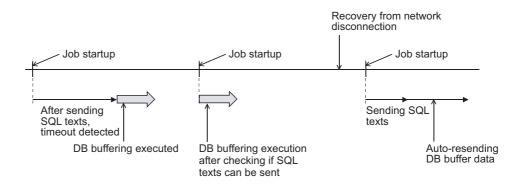
(6) Clearing the DB buffer

The DB buffer is cleared by the following:

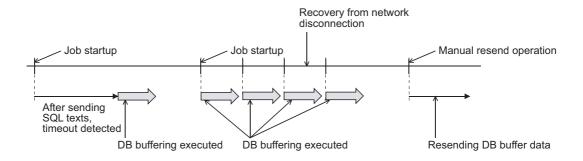
- · After downloading the project data, for which the MES interface function is set, to the GOT, powering OFF and ON or restarting the GOT
- Clear request from [MES interface setting screen] [Diagnosis tab].
 - Section 6.10.5 Manipulating DB buffering (DB buffering operation)
- · Clear request from [Clear DB buffer request] of the specified tag component Section 6.9.2 Setting items in DB buffering settings

(7) When SQL texts cannot be sent to the database

- (a) When auto-send is selected for the job
- If SQL texts cannot be sent to the database due to network disconnection or failure of the database server computer or database software, the system starts DB buffering after detection of a timeout.
- After DB buffering is started, whether SQL texts can be sent to the database or not is checked every time each job is activated.
- 3 When the system has not been recovered from network disconnection or failure of the database server computer or database software, DB buffering is executed after detection of the timeout.



- (b) When manual resend is selected for the job
- If SQL texts cannot be sent to the database due to network disconnection or failure of the database server computer or database software, the system starts DB buffering after detection of a timeout.
- 2 After started, DB buffering is performed without checking whether SQL texts can be sent to the database or not for each job activation.
- 3 The data stored in the DB buffer are resend when manual resend is executed.



(8) Precaution on the DB buffering

Do not remove the CF card from the GOT during DB buffering.

5.2 SNTP Time Synchronization Function

The SNTP time synchronization function allows the time on the GOT to be synchronized with the time on the SNTP server computer on the network.

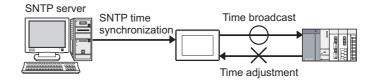
Time information is utilized for job start conditions or in send data to the database. For the SNTP time synchronization function setting, refer to the following.

Section 6.9.1 Setting items in SNTP time synchronization setting

⊠Point

For time synchronization with the SNTP server, pay attention to the following:

- When using the SNTP time synchronization function, do adjust the time in the time setting in Utility or in System Environment of GT Designer2.
 The SNTP time synchronization function does not work if the clock of the GOT is set to be adjusted to the clock data of external equipment.
- To write the clock time of the SNTP server to controllers, use [Broadcast]. This function can be used in combination with [Broadcast].



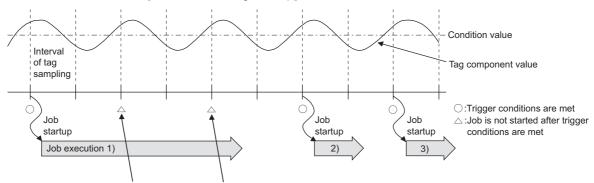
For [Adjust/Broadcast], refer to the following manual.

☐ GT Designer2 Version Screen Design Manual

5.3 Precautions

- (1) Operation behavior of jobs
 - (a) When a trigger condition for a job is met again during execution of the job
 - Jobs for which [Trigger buffering] is disabled
 A new job is not executed during execution of the previous job.
 (Example)

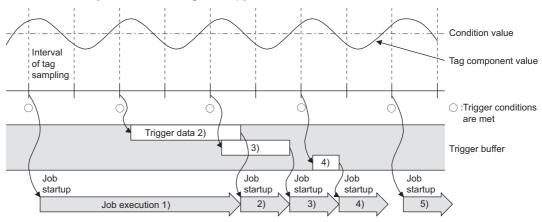
When a trigger condition for a job is met again during execution of the job set to [Value monitoring startup]



A new job is not executed during execution of the previous job.

Jobs for which [Trigger buffering] is enabled
 Trigger data is stored to the trigger buffer, and the job for the stored trigger data is executed after completion of the previous job.
 (Example)

When a trigger condition for a job is met again during execution of the job set to [Value monitoring startup]



- (b) When trigger conditions for multiple jobs are met concurrently
 - Up to three jobs can start their executions concurrently in the order in [Job settings].
 - After completion of these jobs, executions of the other jobs are started sequentially.

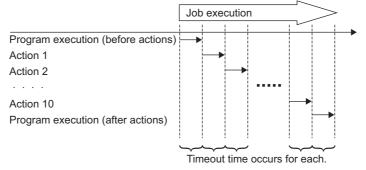
Note that, if a job uses the same item in [Server service settings] that is currently used for another job, the job is not executed until another job execution is completed.

(c) When actions are set for a job

When actions are set for a job, if a communication error occurs, a timeout time will be generated.

In the case of multiple action settings, timeout time is generated for each action. For the timeout time, refer to the following.

7.5 Setting Items of DB Connection Service Setting Tool



The time taken until completion of the job is obtained from the formula shown below.

No. of communications × Timeout time

No. of communications:Total number of set communication actions and program executions

Example) Time taken until completion of a job in the event of a communication error

No. of communications: 10 + 1 + 1 = 12

Time taken until job completion: $12 \times 30s = 360s$

ltem	Setting
Communication action	12
Program execution (before action)	1
Program execution (after action)	1
Timeout	30 seconds

(d) Monitoring interval timeout

Depending on the number of set jobs or the trigger condition setting, the monitoring interval timeout may be generated.

Appendix 2 About Monitoring Interval Timeout

- (2) When an error occurs in job execution
 - (a) The job execution is canceled when the error cause is the following:
 - Failure in device data writing due to network disconnection within the PLC system
 - · Failure in device data writing, or operation error
 - Failure in access to the database (Except jobs for which [Enable DB buffering] is selected)

Section 5.1.10 DB buffering function

(b) If a job execution is canceled, the operation processed before the error occurrence returns to the status before the job execution.



The following explains access to GOT device data and the database.

(1) GOT device data

Since all of data are written to the device data area in the GOT at a time upon completion of job execution, any change due to the error is not reflected in the device data of the GOT.

(2) Database

Rollback is executed assuming the time immediately before job activation as a commit point.

However, when the database is Wonderware[®] Historian, rollback is not executed.

When an error occurs during inserting data into a database, the data inserted into the database before occurring the error are reflected.

(c) When [Notify errors (job cancellation) that occur during job execution] has been selected, a value is assigned to the specified tag component.

Section 6.7.5 Notify errors (job cancellation) that occur during job execution

CHAPTER 6 MES INTERFACE FUNCTION SETTING

This chapter explains the setting of the MES interface function.

6.1 MES Interface Function Setting Screen

The MES interface function setting screen is a screen for configuring various settings required for the MES interface function.

In addition, the operation status of the MES interface function and the working log can be checked, and other operations such as stop/restart of the MES interface function can be also performed.

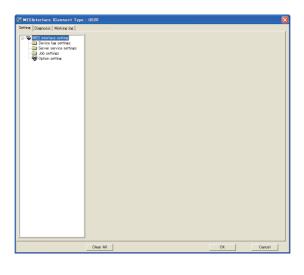
6.2 Displaying the MES Interface Function Setting Screen

1 Start GT Designer2.

For how to start GT Designer2, refer to the following manual.

☐ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual (2.4. Starting the Software)

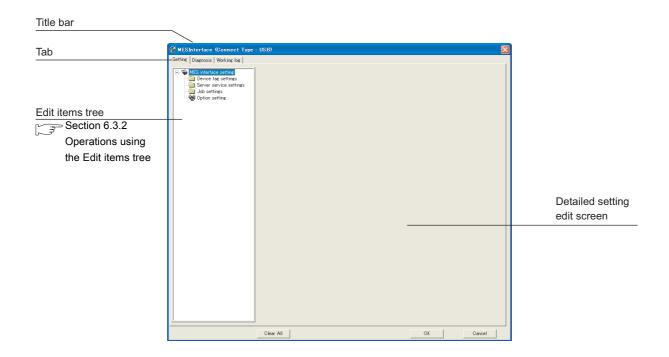
- 2 Perform the following:
 - Select [Common] → [MES Interface] from the menu.
- 3 The MES interface screen is displayed. Configure the settings referring to the following descriptions.



6.3 Screen Structure

This section explains the structure of the MES interface function setting screen.

6.3.1 Screen structure



Remark

(1) Display on the title bar

On the title bar, the status of connection to the GOT is displayed.

The connection status displays are shown below.

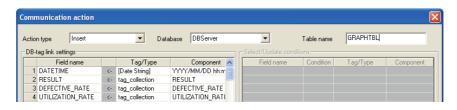
Connection type	Display	Remarks
RS232	(Connect Type RS232 COM1)	Displays the communication
N3232	(Connect Type R3232 COWT)	port.
USB	(Connect Type USB)	-
Ethernet	(Connect Type Ethernet 192.168.3.10)	Displays the IP address.

(2) Column width adjustment

The column width of the tables can be adjusted on the MES interface function setting screen.

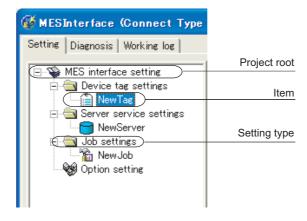
To adjust the width, drag the right boundary line of the column.

When only a part of a long item name is displayed, this adjustment is useful.



6.3.2 Operations using the Edit items tree

The Edit items tree shows overall MES interface function settings in a tree. This section explains the operations using the Edit items tree.



(1) Selecting an item

- When double-clicking the project root or each setting type, some items are displayed.
- 2 Selecting one of the items displays the corresponding edit screen on the detailed setting edit screen area.

(2) Adding an item

- Selecting an item or a setting type to be added and performing either of the following will add the item.
 - Select an item of the same type or a setting type, right-click the mouse, and choose [Add].
 - Double-click a setting type that contains no item.
- When the item is added properly, it is automatically selected and the edit screen is switched to the one for the added item.

⊠Point

Since the number of items that can be added is limited depending on the setting type, refer to the relevant section of each item.

(3) Deleting an item

Select an item to be deleted and right-click the mouse. Selecting [Delete] deletes the item.

⊠Point

For precautions on the item deletion, refer to the following.

Section 6.12 (2) When deleting an item

(4) Replicating an item

- Select an item to be copied, right-click it to display the menu. Selecting [Copy & Paste] replicates the item.
- 2 When the item is added properly, it is automatically selected and the edit screen is switched to the one for the added item.

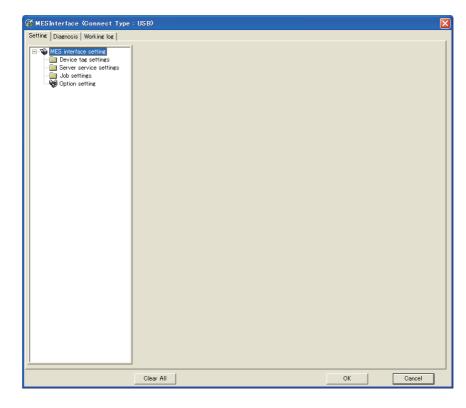
⊠Point

Since the number of items that can be added is limited depending on the setting type, refer to the relevant section of each item.

6.4 Setting

Configure the settings for the MES interface function.

- Click the "Setting" tab.
- The "Setting" sheet is displayed on the detailed setting edit screen. For each of the setting items, refer to the section shown below.



ltem	Description	Reference section
Device tag settings	Configure the settings for the tag function.	Section 6.6
Server service settings	Configure the settings for access to a server computer.	Section 6.7
Job settings	Configure the settings for the DB interface function.	Section 6.8
Option Setting	Configure the SNTP time synchronization setting and the DB buffering function setting.	Section 6.9

6.5 Device Tag Settings

Configure the settings for the tag function.

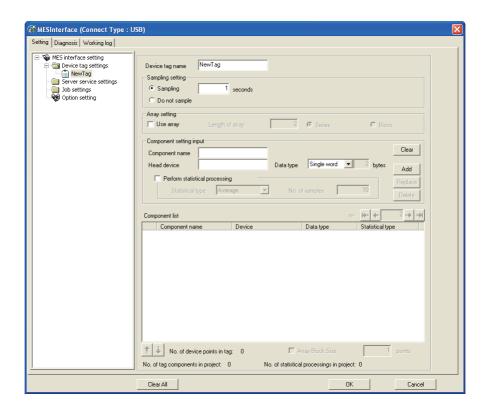
For the tag function, refer to the following:

Section 5.1.3 Tag function

Configured tags are used in [Job settings], etc.

- Double-clicking [Device tag settings] in the Edit items tree displays relevant items.
- Selecting one of the items displays the corresponding edit screen on the detailed setting edit screen area.

Make the setting referring to the following descriptions.

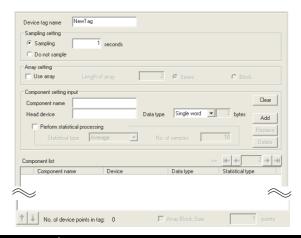


⊠Point

- (1) How to add, delete, or copy an item For addition, deletion or copying of items, refer to the following: Section 6.3.2 Operations using the Edit items tree
- (2) When an item is added or copied, a "New Tag" item is added.

6.5.1 Setting items in Device tag settings

Up to 64 items can be set in [Device tag settings] within one project.



Item	Description	
Device tag name	Enter a device tag name. (Up to 16 characters)	
Sampling setting	Set whether to periodically sample the tag or not.	
Sampling setting	Set a sampling interval to sample the tag.	
A	Set whether to use arrays for the tag or not.	
Array setting	Section 6.5.2 Setting items in Array setting	
Component autting input	Configure the tag component settings.	
Component setting input	Section 6.5.3 Setting items in Component setting	
Component list	Displays a list of the components that have been already set.	
Component list	Section 6.5.3 Setting items in Component setting	
Array block size	Make setting when changing the block size manually.	
No. of tag components in	Displays the number of all the tag components in the project.	
project	Displays the number of all the tag components in the project.	
No. of statistical	Displays the number of the components in the project, for which [Perform	
processings in project	statisticcal processing] is selected.	
No. of device points in tag	Displays the number of total device points used in [Device Tag setting].	

(1) Device tag name (Up to 16 characters)

Enter a device tag name.

Configured tags are used in [Job settings], etc.

For characters that can be used for device tag names, refer to the following:

Appendix 2 About Monitoring Interval Timeout

Note that using the name same as the one set in [Server service settings] is not allowed.

(2) Sampling setting

(a) When sampling is enabled

The tag is sampled in the specified interval.

When selecting [Sampling], also set a sampling interval in units of seconds. The setting range for the interval is 1 to 32767 seconds.

(b) When sampling is disabled

The tag is not sampled.

When [Do not sample] is selected, statistical processing cannot be performed for tag component values.

⊠Point

- (1) The GOT becomes less busy if [Do not sample] is selected for the following tags.
 - · Tags only for writing
 - Tags for sampling device values with the handshake operation. For the handshake operation, refer to the following:
 - Section 6.7.2 (8) Handshake operation
- (2) When [Do not sample] is selected, the setting items for reading tags cannot be selected for the tag. (Except cases that [Handshake operation] is set for the trigger conditions.)
 - Tag component values that are set in [Select/Update conditions] in [Select] of [Communication action]
- (3) When [Array setting] is set for the tag, [Do not sample] is fixed for the sampling setting.

6.5.2 Setting items in Array setting

An array is a data format, in which the specified number of data of the same data type are arranged sequentially.

The Array setting is set when writing multiple records extracted from a database to the same tag component.

Either of the following can be selected for device assignment to each tag component.

- Assigning consecutive devices to each tag component (series)
- Handling all tag components as a block and assigning the same kind of devices in a series of blocks (block)

Tags with array settings are used for [MultiSelect].

Section 6.8.1 Setting items in Communication action



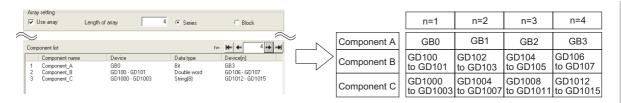
(1) Use array

When the [Use array] checkbox is checked, the tag is arranged as arrays.

⊠Point

- (1) When the array setting is set, device data are not collected.
- (2) The array setting is unavailable for the tags set for the actions in [Job settings].
- (2) Length of array (Range: 2 to 40000, Default: 2) Set the number of arrays for the tag.
- (3) Series/Block (Default: Series) Select a method for the array setting.
 - (a) Series

Devices of respective tag components are arranged consecutively. (Example)When [Length of array] is set to 4 with [series] setting Only the start device (device in n=1) need be set. Devices in and after n=2 are configured automatically.



(b) Block

Devices of all tag components are arranged as a block.

The size of the block can be changed in [array block size].

For [array block size], refer to the following.

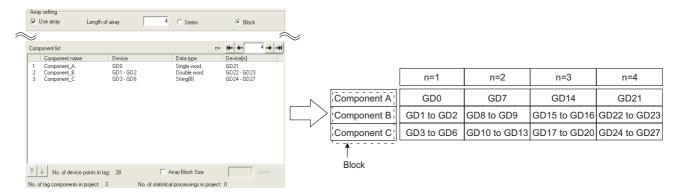
Section 6.5.3 Setting items in Component setting

Usually, the block size need not be changed because it is automatically adjusted to avoid device duplication.

(Example) When [Length of array] is set to 4 with [block] setting

Only the start device (device in n=1) need be set.

Devices in and after n=2 are configured automatically



⊠Point

When device types are different, [block] cannot be selected.

For the device types, refer to the following.

Section 3.2 GOT Devices Available for the MES Interface Function

6.5.3 Setting items in Component setting

Configure the settings for assigning GOT devices to tags.

Up to 256 components can be set for one tag.

Up to 4096 components can be set for one project.

(Adding a component)

- Set required items in [Component setting input], and click the Add button.
- The component is added in [Component list].

(Modifying a component)

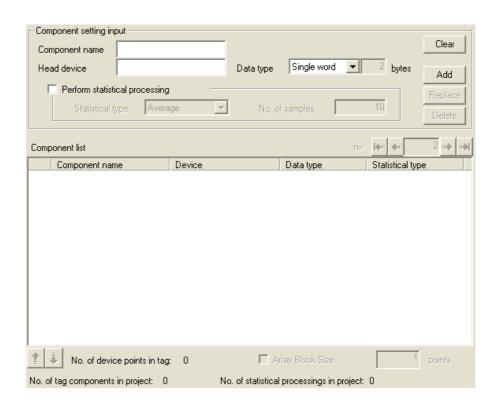
- When a component to be modified is selected in [Component list], its settings are displayed in [Component setting input].
- Modify the item settings in [Component setting input], and click the Replace button.

(Deleting a component)

• Select a component to be deleted in [Component list], and click the Delete button.

(Deleting the settings in [Component setting input])

• Clicking the Clear button deletes the settings in [Component setting input].



	Ιtε	em	Description
	Component name		Enter a component name. (Up to 16 characters)
	Head device		Set device name.
Component	Data type		Select the data type of the sampling data.
setting	Cha	aracter string	Set a character string length when [String] is selected for [Data type].(1 to 32
input	len	gth	characters)
	Per	form statistical	Set whether to perform statistical processing or not.
	processing		oct whether to perform statistical processing or not.
	Coı	mponent name	Displays a component name.
	Dev	/ice	Displays a device range used.
	Dat	a type	Displays a data type.
	Sta	tistical type	When [Perform statistical processing] is set, displays the type of statistical processing.
			When [Array setting] is set, displays the device range of array No.n.
	Dev	vice [n]	For a display example, refer to the following.
			Section 6.5.2 Setting items in Array setting
			Displays the array No. that is currently displayed in [Device [n]] of
	n (A	Arrray No.)	[Component List].
			If this is clicked, the device range of the first array is displayed in [Device [n]] of
		l< button	[Component List].
			When the device range of the first array is already displayed, this button cannot be
			clicked.
			If this is clicked, the device range of the previous array is displayed in [Device [n]] of
Component		< button	[Component List].
List		button	When the device range of the first array is already displayed, this button cannot be clicked.
2.00			If this is clicked, the device range of the next array is displayed in [Device [n]] of
			[Component List].
		> button	When the device range of the last array is already displayed, this button cannot be
			clicked.
			If this is clicked, the device range of the last array is displayed in [Device [n]] of
			[Component List].
		> button	When the device range of the last array is already displayed, this button cannot be
			clicked.
	↑button		Selecting a component in [Component List] and clicking the button reverses the
			order between the selected component and the one immediately above it.
	Ľ	buttori	
			The button cannot be clicked on the first component.
			Selecting a component in [Component List] and clicking the ↓ button reverses the
	T	button	order between the selected component and the one immediately below it.
			The button cannot be clicked on the last component.
Array block sizo			·
Array block size			Make setting when changing the block size manually.

⊠Point

The following are displayed on the status bar of [Device Tag setting].

- [No. of tag components in project]

 The total number of tag components in the project is displayed.
- [No. of statistical processings in project]

 The number of component settings in the project, for which [Perform statistical processing] is checked, is displayed.
- [No. of device points in tag]

 The total number of device points used in [Device tag settings] is displayed.

Up to 40000 device points can be set for a tag with [Array setting].

(1) Component name (Up to 16 characters)

Enter a component name.

For characters that can be used for component names, refer to the following:

Appendix 1.2 Characters applicable to item names, component names, variable names, etc.

(2) Device

- · Set a device type and an actual device number.
- · Bit specification is not allowed for word devices.
- · For accessible devices, refer to the following:

Section 3.2 GOT Devices Available for the MES Interface Function

(3) Data type

Select the data type of the sampling data (device data).

Item	Description	Selectable Device
Single word	Handles data as single word data (16-bit Integer type).	Word
Double word	Handles data as double word data (32-bit Integer type).	Word
Real number	Handles data as floating point data.	Word
Bit	Handles data as bit data (in units of bits (0/1)).	Bit
String*1	Handles data as character strings.	Word

- *1 When [Data type] is [String], device values are processed as follows:
 - When the device value is not an ASCII code or JIS code It is replaced with "." (period: 2EH).
 - When the device value is a model-dependent character
 The character code may be converted when an action is executed.

Appendix 1.2 Characters applicable to item names, component names, variable names, etc.

- When the device value is a termination character (NULL code: 00H)

 The character data following it are ignored. (The character string is regarded as terminated.)
- (4) Character string length (2 to 32 characters)
 - (a) Set a character string length when [String] is selected for [Data type].
 - (b) When [String] is selected, data are stored as follows:
 - When the value length is shorter than the character string length NULL codes (00H) are stored after the stored values.
 Example: "ABCD" is stored in the device of the tag component, whose character length is 8.

A B C D
41h|42h |43h |44h |00h |00h |00h |00h

- 2) When the value length is longer than the character string length The values whose quantity is equal to the character string length are stored. Example: "ABCD" is attempted to be stored in the device of the tag component, whose character length is 2. "AB"
- (c) Odd numbers are not allowed for the character string length setting. Set an even number for the character string length.

(5) Perform statistical processing

(a) Set whether to perform statistical processing or not.

Up to 64 components that have [Perform statistical processing] setting can be set in all projects. (Check [No. of statistical processings in project] on the status bar.) When the [Perform statistical processing] box is checked, statistical processing is performed for tag component values.

Statistically processed values can be used by specifying the tag component values, for which [Perform statistical processing] is selected, in [Job setting]. Note that this setting is not available when:

- [Do not sample] is selected in [Sampling setting].
- The data type of the tag component is [String].
- [Array setting] is set.
- (b) When [Perform statistical processing] is selected, set the following items.

Item	Description
Statistical type	Select a type of the statistical processing.
No. of samples	Specify the number of samples when [Moving average], [Moving
No. or samples	maximum], or [Moving minimum] is selected.

1) Statistical type

Select a type of the statistical processing.

Item	Description
Average*1	An average value after starting sampling
Maximum*1	The maximum value after starting sampling
Minimum*1	The minimum value after starting sampling
Moving average*2 *3	An average of the tag component values that are collected at sampling intervals for the number of times specified by [No. of samples] Since the processing range moves at each sampling, the latest value can be obtained.
Moving maximum*2*3	The maximum value in the tag component values that are collected at sampling intervals for the number of times specified by [No. of samples] Since the processing range moves at each sampling, the latest value can be obtained.
Moving minimum*2*3	The minimum value in the tag component values that are collected at sampling intervals for the number of times specified by [No. of samples] Since the processing range moves at each sampling, the latest value can be obtained.

- *1 If a statistical value of [Average], [Maximum], or [Minimum] is reset, a value obtained after resetting will be stored.
 - How to reset a statistical value of [Average], [Maximum], or [Minimum]
 Perform substitution of some value for the relevant tag component using [Operation action] of a job.

For operation actions, refer to the following:

Section 6.8.2 Setting items in Operation action

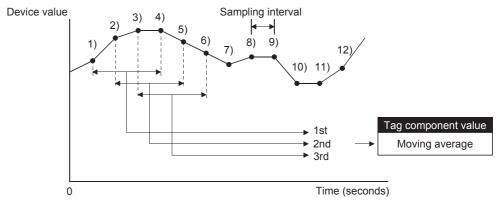
The statistical processing is reset and a value processed after the substitution is stored.

- *2 Statistical values of [Moving average], [Moving maximum], and [Moving minimum] cannot be reset.
- *3 When a tag component having [Moving average], [Moving maximum], or [Moving minimum] setting is specified in a job, the job is not activated until data are collected for the specified number of times after start of sampling.

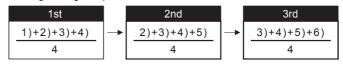
2) No. of samples (2 to 20)

Specify the number of samples when [Moving average], [Moving maximum], or [Moving minimum] is selected.

(Moving average when [No. of samples] is 4)



<Change in tag component values>



(6) n (Array No.)

When [Array setting] is set, the device range of array No.n, is displayed in [Device [n]] of [Component List].



To change the [Device [n]] display, use the following methods.

- Enter a value in the box.
- Change the value with the <u>▶</u>, <u>▶</u>, or <u>▶</u> button

(7) Array block size

When [block] is selected in [Array setting], [array block size] setting is available.



Usually, the block size need not be changed because the it is automatically adjusted to avoid duplication of components.

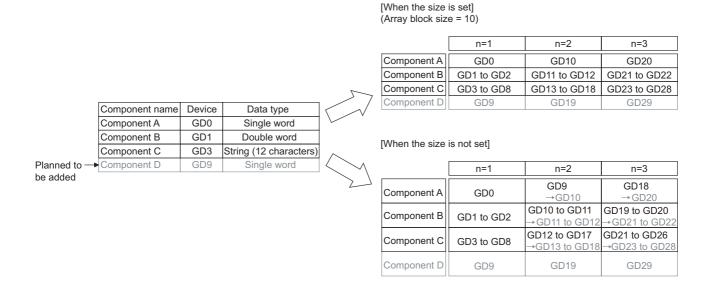
Change [array block size] when:

- Setting a desired number for the start device No. of each block.
- · Adding any component in the future.

The following example explains the cases where [array block size] is manually set and is not set.

(Example) When [Component D] is to be added in the future

- When 10 is set for [array block size], device numbers are not changed.
- When nothing is set for [array block size], device numbers in and after array No.2 are changed.



(8) Precautions on [Component setting]

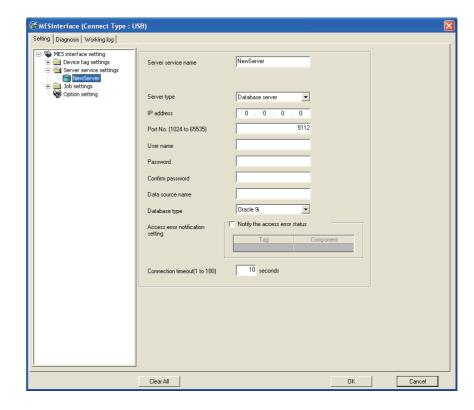
If a wrong device number is set for a component in [Component setting], an error will occur on another component that has the same access target CPU setting. Correct the device number in [Component setting].

6.6 Server Service Settings

Configure the settings for the access to a server computer. The set server service name is used in [Job setting].

- 1 Double-clicking [Server Service setting] in the Edit items tree displays relevant items.
- 2 Selecting one of the items displays the corresponding edit screen on the detailed setting edit screen area.

Make the setting referring to the following descriptions.

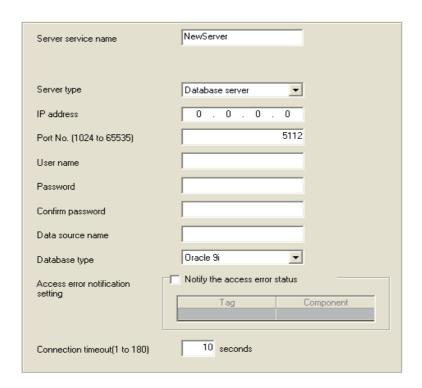


⊠Point

- (1) How to add, delete, or copy an item For addition, deletion or copying of items, refer to the following: Section 6.3.2 Operations using the Edit items tree
- (2) When an item is added or copied, a "NewServer" item is added.

6.6.1 Setting items in Server service settings

Up to 8 items can be set in [Server service settings] within one project.



Item	Description	
Sever service name	Enter a server service name. (Up to 16 characters)	
Server type	Select the server type of the server computer to be accessed.	
IP address	Enter a decimal IP address of the server computer where DB Connection	
ir address	Service is installed.	
Port No	Set a port number of the server computer.	
FUILINO.	(Range: 1024 to 65535, Default: 5112)	
User name	Set a user name used to access the server computer.	
Osei name	(Up to 30 characters)	
Password/Confirm	Set a password used to access the server computer.	
password	(Up to 30 characters)	
Data source name	Set the name of the ODBC data source to be accessed.	
Database type	Select the type of the database server.	
Access error notification	Set whether to enable or disable notification of the access error status.	
setting	Set whether to enable of disable notification of the access error status.	
	In case a connection error occurs on the network between the GOT and	
Connection timeout	the server computer, set a timeout time during which the GOT will detect	
Connection timeout	the error.	
	(Range: 1 to 180 seconds, Default: 10 seconds)	

(1) Server service name (Up to 16 characters)

Enter a server service name.

The set server service name is used in [Job setting].

For characters that can be used for server service names, refer to the following:

Appendix 1.2 Characters applicable to item names, component names, variable names, etc.

Note that using the name same as the one of the device tags set in [Device tag settings] is not allowed.

(2) Server type

(a) Select the server type of the server computer to be accessed.

Item	Description
Database server	Used in [Communication action] of [Job setting].
Application server	Used in [Program execution] of [Job setting].

(b) When [Database server] is selected, set the following items.

ltem		Description	
	Set the name of the ODBC data source to be accessed.		
	For characters that can be used for data source names, refer to		rce names, refer to the
Data source name	following:		
	Appendix 1.4 Characters applicable to field names, table		
	names, etc.		
	Select the type of the dat	abase server.	_
	Oracle 8i	Oracle 9i	Oracle 10g
Database type	• SQL Server 2000/2005	• MSDE2000	• Access2000
	• Access2003/2007	• Wonderware [®] H	istorian

(3) IP address

Enter a decimal IP address of the server computer where DB Connection Service is installed.

(4) Port No. (Range: 1024 to 65535, Default: 5112)

Set a port number of the server computer.

Set the same value in [Port No.] as the one set in [Service port] of DB Connection Service.

Section 7.5 Setting Items of DB Connection Service Setting Tool

(5) User name (Up to 30 characters)

Set a user name used to access the server computer.

For characters that can be used for user names, refer to the following:

Appendix 1.3 Characters applicable to character string constants, etc.

(a) When [Database server] is selected for [Server type] Set a user name that is required for ODBC access.

(b) When [Application server] is selected for [Server type]
Set the account user name used for the operating system (OS) of the application server computer.

(6) Password/Confirm password (Up to 30 characters)

Set a password used to access the server computer.

For characters that can be used for passwords, refer to the following:

Appendix 1.3 Characters applicable to character string constants, etc.

- (7) Access error notification setting
 - (a) [Notify the access error status.]Set whether to enable or disable notification of the access error status.If the [Notify the access error status.] box is checked, an error occurred in access to the server computer is reported to a tag component.
 - (b) When [Notify the access error status.] is selected, choose a tag component into whose device the access error status data is stored.

Tags that have a tag component with [Array setting] cannot be selected. Data are stored as follows depending on the data type.

Data type of tag component	Description	
Bit	OFF: Normal/Not accessed/Network line disconnected	
DIL	ON: Access error status	
String	"0": Normal/Not accessed/Network line disconnected	
Sung	"1": Access error status	
Other than the above	0: Normal/Not accessed/Network line disconnected	
Other than the above	1: Access error status	

(8) Connection timeout (Range: 1 to 180 seconds, Default: 10 seconds)
In case a connection error occurs on the network between the GOT and the server computer, set a timeout time during which the GOT will detect the error.
Usually, this setting is not needed.

In any of the following cases, adjust the connection timeout time if necessary.

- (a) Reduce the connection timeout time to:
 - Make the time elapsed from occurrence of a connection error to the start of DB buffering shorter.
 - Make the time elapsed from occurrence of a connection error to notification of an access error and job cancellation shorter.
- (b) Increase the connection timeout time when:
 - A connection timeout occurs in spite of normal network condition.

⊠Point

The relation of the values set for [Connection timeout] and [DB access timeout time] in [DB Connection Service Setting Tool] must be as follows:

• Connection timeout value ≤ DB access timeout value

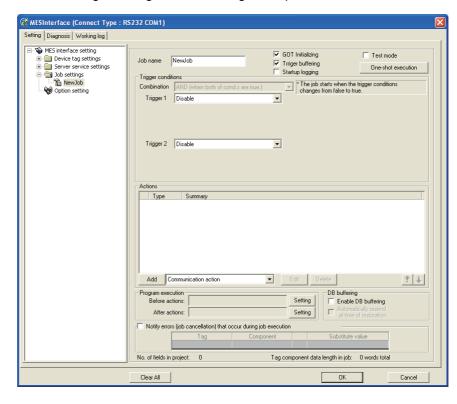
6.7 Job Settings

Configure the settings for the DB interface function. For the DB interface function, refer to the following:

Section 5.1 DB Interface Function

- 1 Double-clicking [Job settings] in the Edit items tree displays relevant items.
- 2 Selecting one of the items displays the corresponding edit screen on the detailed setting edit screen area.

Make the setting referring to the following descriptions.



⊠Point

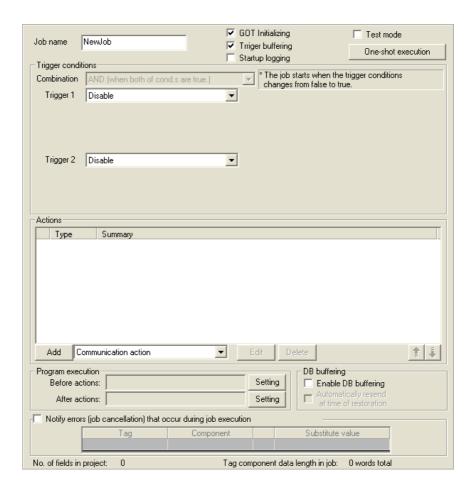
- (1) How to add, delete, or copy an item
 For addition, deletion or copying of items, refer to the following:

 Section 6.3.2 Operations using the Edit items tree
- (2) When an item is added or copied, a "New Job" item is added.

6.7.1 Setting items in Job settings

Up to 64 items can be set in [Job settings] within one project. For job operations, refer to the following:

Section 5.3 Precautions



Item	Description	
Job name	Enter a job name. (Up to 16 characters)	
GOT Initializing	Set whether to enable the job at startup of the GOT or not.	
Trigger buffering	Set whether to enable the trigger buffering or not.	
Startup logging	Set whether to output the startup history of the job to the log or not.	
Test mode	Set whether to operate the job in test mode or not.	
Trigger conditions	Configure the settings for startup conditions of the job.	
Trigger conditions	Section 6.7.2 Setting items in Trigger conditions	
Action	Configure the action settings.	
	Section 6.8 Job Settings - Actions	
Program execution	Configure the settings for the program execution function.	
	Section 6.7.3 Setting items in Program execution	
DP huffering	Configure the settings for the DB buffering function.	
DB buffering	Section 6.7.4 Setting items in DB Buffering	
Notify errors (job cancellation) that occur during job execution	Set whether to enable or disable notification of errors (job cancellation) that occur during job execution.	
	Section 6.7.5 Notify errors (job cancellation) that occur during job	
	execution	
No. of fields in project	Displays the total number of fields in the project.	
Tag component data length in job	Displays the total data length of the tag components in the job.	

(1) Job name (Up to 16 characters)

Enter a job name.

For characters that can be used for job names, refer to the following:

Appendix 1.2 Characters applicable to item names, component names, variable names, etc.

(2) GOT Initializing

- (a) Set whether to enable the job at startup of the GOT or not.
 If the [GOT Initializing] box is not checked, the job is disabled at startup of the GOT. (Even if trigger conditions are met, the job is not executed.)
- (b) When the GOT is ON, the enable/disable setting of the job can be changed in [Change Job Status] on the [Diagnosis] tab.
 - Section 6.10.3 Changing the job status (Change job status)

(3) Trigger buffering

- (a) Set whether to enable the trigger buffering function or not. For the trigger buffering function, refer to the following:

 Section 5.1.5 Trigger buffering function
- (b) Precautions for enabling [Trigger buffering]
 - [Handshake operation] cannot be selected for the trigger conditions.
 - A tag component cannot be selected for the substitution tag in [Operation action].
 - Tag component values cannot be set for [DB-tag link setting] in [Select] of [Communication action].
 - [Communication action] [MultiSelect] cannot be selected.
 - Up to 4096 words can be used for the total data length of tag components in one job. (The current data length is displayed on the status bar of [Job setting].)

⊠Point

The total data length of tag components in one job is the total data length of tag components set in [Communication action] and [Operation action]. In [Communication action], tag components are set in [Select/Update conditions] and [DB-tag link setting].

All tags in one job are treated as different tags even if there are the same tags.

(4) Startup logging

(a) Set whether to output the startup history of the job to the log or not.
If this function is enabled, the job startup timing can be checked during system start-up or tune-up.

When the [Startup logging] box is checked, the startup history of the job (date and time, job name, trigger conditions) is saved on a CF card.

The startup log can be confirmed in [Job Execute Log] on the [Working log] tab. Section 6.11.2 Job Execute Log

- (b) When the log capacity becomes full (Log capacity: 1MB \times 2) The first half of the data are deleted. The latest log is stored after the remaining data.
- (c) When this function is enabled, a processing time is required for saving or deleting the startup history of the job.

It is recommended to disable this function during system operation.

(5) Test mode

(a) Set whether to operate the job in test mode or not.

Up to 4 jobs can be set to [Test mode].

When the [Test mode] box is checked, the test mode is activated, and execution details of the job can be confirmed before operation.

Job execution can be confirmed in [Job Execute Log] on the [Working log] tab.

(b) When [Test mode] is selected

The following are performed in the test mode.

Operations other than the following are identical to the actual operations.

- Startup data are logged.
- Detailed data are logged.
- Data are not written to GOT devices.
- · No data are written to the database.

6.7.2 Setting items in Trigger conditions

Configure the settings for startup conditions of the job.

The job is activated when the trigger condition value is changed from false to true.

At the time of power-up, at restart of the MES interface function, or at the end of one-shot execution, all the conditions are initialized to false, and the job is started up when the initial condition is true.



Item	Description
Combination	Selects conjunction of Trigger 1 and 2.
Trigger 1	Selects Trigger 1.
Trigger 2	Selects Trigger 2.

(1) Combination

- (a) Selects a combination of [Trigger 1] and [Trigger 2].
 - OR (When either of them is true, the result is true.)
 - AND (When both of them are true, the result is true.)

When the combination result of [Trigger 1] and [Trigger 2] is changed from false to true, the job is activated.

(b) The following shows the timings at which the combination result of [Trigger 1] and [Trigger 2] is changed from false to true.

(In any other cases, because the combination result is not changed from false to true, the job is not activated.)

Combination	Trigger 1	Trigger 2	Combination result
	(Changed from false to true)	(Remained false)	
OR (When either of them is true, the result is true.)	False (Changed from false to true)	True False (Changed from false to true)	
	True False (Remained false)	True False (Changed from false to	
	(Remained faise)	true)	
	True False	True False	(Changed from false to true)
	(Changed from false to true)	(Remained true)	True False
AND (When both of them are true, the result is true.)	True Ö-	True False	
	(Changed from false to true)	(Changed from false to true)	
	True False	True False	
	(Remained true)	(Changed from false to true)	
	True False	True False	

(2) Trigger 1, Trigger 2 Select items for [Trigger 1] and [Trigger 2], referring to this section (3) and subsequent descriptions.

Item	Description	Trigger 1	Trigger 2
Disable	No trigger conditions		
	This section (3) Disable	0	0
	When the specified date, time and day of the		
	week match the actual date, time and day of		
Time energification startus	the week, the condition changes from false to		
Time specification startup	true, resulting in job startup.	0	0
	This section (4) Time specification		
	startup		
	The condition is alternated between true and		
	false in the specified cycles (unit: seconds),		
Specified time period	and when it changes from false to true, the job		
startup	is activated.	0	0
	This section (5) Specified time period		
	startup		
	The actual tag component value is compared		
	with the condition value (tag component value		
Value menitoring startus	or constant value) at every sampling times,		
Value monitoring startup	and the job is activated when the condition	0	0
	changes from false to true.		
	This section (6) Value monitoring startup		
GOT Initializing	The job is activated only once when the GOT		
	is started up.	0	0
	This section (7) GOT Initializing		
Handshake operation	The job is activated when [Handshake startup]		
	of the GOT turns ON.		
	Upon completion of the job execution,	0	×
	[Completion notification] of the GOT turns ON.		
	This section (8) Handshake operation		

O: Selectable, x: Not selectable

(3) Disable

- (a) When [Disable] is selected for [Trigger 1] or [Trigger 2] Another trigger is regarded as a trigger condition.
- (b) When [Disable] is selected for both [Trigger 1] and [Trigger 2]The job is not activated by trigger conditions.The job can be executed only by one-shot execution.

(4) Time specification startup

- (a) When the specified date, time and day of the week match the actual date, time and day of the week, the condition changes from false to true, resulting in job startup.
- (b) When [Time specification startup] is selected, the date, time, and day of the week must be set.



1) Year, Month, Day, Hour, and Minute Directly enter the date and time.

Matching with the actual date and time is not checked for any field that remains blank.

Item	Description
Year (4 digits)	0000 to 9999
Month	1 to 12
Day	1 to 31
Hour	0 to 23
Minute	0 to 59

2) Day:

Specify a day of the week.

Check the checkbox of the day to be specified.

If no box is checked, it means "every day".

(Example) The following shows that the job is to be activated at 17:30 on Monday through Friday.



(Example) The following shows that the job is to be activated at 9:00 on the 1st day of every month.



⊠Point

If [Startup logging] is selected, each job startup can be confirmed with the time to the second in the startup log.

The startup log can be checked on the [Working log] tab.

Section 6.11 Working Log

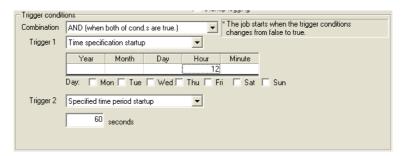
(5) Specified time period startup

- (a) The condition is alternated between true and false in the specified cycles (unit: seconds), and when it changes from false to true, the job is activated.
- (b) When [Specified time period startup] is selected, set the cycle. (Range: 1 to 32767 seconds)



(Example)

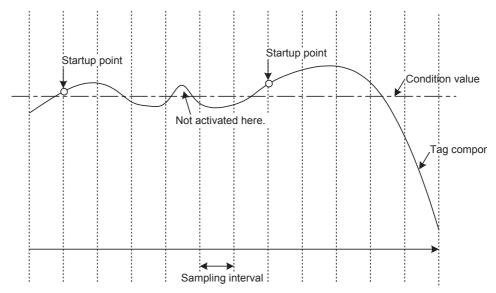
The following shows that the job is activated at 60-second intervals for an hour from 12:00 to 13:00 every day.



(6) Value monitoring startup

(a) The actual tag component value is compared with the condition value (tag component value or constant value) at every sampling times, and the job is activated when the condition changes from false to true.

Even if the trigger condition becomes true temporarily between samplings, the job is not activated unless it is true at time of sampling.



(b) When [Value monitoring startup] is selected, specify conditions for comparison.



1) Tag, Component

Select a tag component to be compared with.

Tags that have a tag component with [Array setting] cannot be selected.

2) Condition

Select a condition for comparison.

Item	Description
=	The tag component value is equal to the condition value.
≠	The tag component value is not equal to the condition value.
	The tag component value is equal to or greater than the condition
	value.
≧	(Not selectable when [Data type] of the tag component is [bit] or
	[String])
	The tag component value is greater than the condition value.
>	(Not selectable when [Data type] of the tag component is [bit] or
	[String])
	The tag component value is smaller than the condition value.
<	(Not selectable when [Data type] of the tag component is [bit] or
	[String])
	The tag component value is equal to or smaller than the condition
≦	value.
	(Not selectable when [Data type] of the tag component is [bit] or
	[String])

3) Tag/Type

Select a tag or constant that is used as a condition for comparison.

Tags that have a tag component with [Array setting] cannot be selected.

4) Component

Select or enter a component/constant value that is used as a condition for comparison.

(Example)

The following shows that the job is activated when the value of the tag component (Process 1, Temperature) reaches 45 or higher.



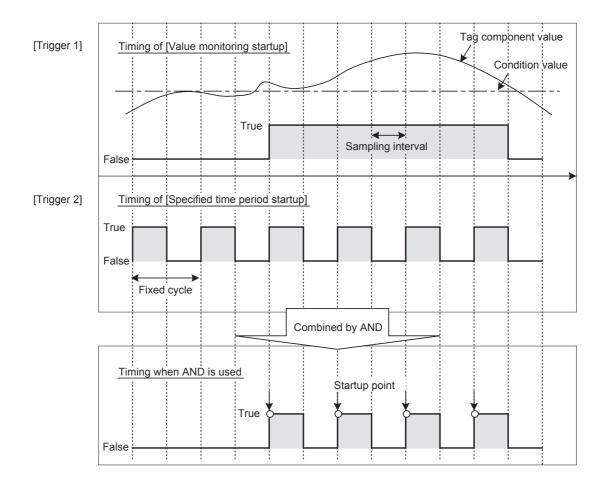
(Example)

To activate the job repeatedly while the condition of [Value monitoring startup] is met.

Make settings as follows:

Item	Description
Combination	AND (When both of them are true, the result is true.)
Trigger 1, Trigger 2	[Value monitoring startup], [Specified time period startup]

As the condition alternates between true and false as shown below, job startup can be repeated while the [Value monitoring startup] condition is met.



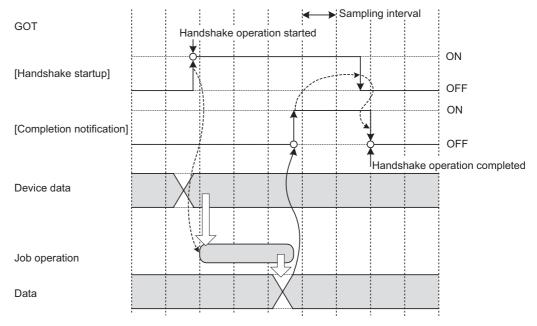
(7) GOT Initializing

The job is activated only once when the GOT is started up.

(8) Handshake operation

(a) The job is activated when [Handshake startup] of the GOT turns ON.
Upon completion of the job execution, [Completion notification] of the GOT turns ON.

[Handshake operation] is a startup method by which completion of job execution can be notified to a GOT.

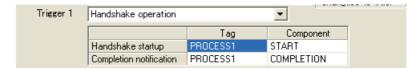


- When [Handshake startup] turns ON in the sequence program, the GOT collects tag component values used for the job and executes the job.
- 2 Upon completion of the job execution, [Completion notification] of the GOT is turned ON.*1
- 3 After confirming that [Completion notification] is ON, turn OFF [Handshake startup] of the GOT.
- When [Handshake startup] turns OFF, the GOT turns OFF [Completion notification], causing the handshake operation to be completed.
- 5 After confirming the completion of the handshake operation, the next job is executed.
 - *1 If an error occurs during job execution, [Completion notification] does not turn ON.

 To detect such an error, enable [Notify errors (job cancellation) that occur during job execution].

 Section 6.7.5 Notify errors (job cancellation) that occur during job execution

(b) [Handshake operation] is selectable only in [Trigger 1].When [Handshake operation] is selected, selection is not allowed for [Trigger 2].For selection of [Handshake operation], set the following items.



Item	Description
Handshake startup	Select a tag component used to request for job startup.
	(Selectable only when [Data type] of the tag component is [bit])
	Tags that have a tag component with [Array setting] cannot be
	selected.
Completion notification *1	Select a tag component that allows notification of execution
	completion of the job.
	(Selectable only when [Data type] of the tag component is [bit])
	Tags that have a tag component with [Array setting] cannot be
	selected.

^{*1} Do not specify the same [Completion notification] to multiple jobs.

6.7.3 Setting items in Program execution

Configure the settings for the program execution function. For the program execution function, refer to the following:

Section 5.1.9 Program execution function

- Click the Setting button of [Before actions] or [After actions].
 - Before actions:

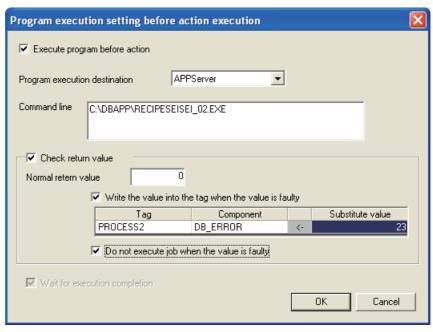
 Set a program to be performed before execution of the first action of the job.
 - After actions:
 Set a program to be performed after execution of the last action of the job.

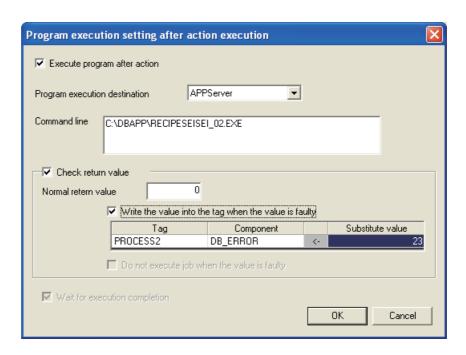


[Program execution setting (before action)] or [Program execution setting (after action)] is displayed.

Make the setting referring to the following descriptions.

After completing the setting, click the OK button.





ltem	Description
Execute program before	Set whether or not to enable program execution before or after execution
(after) action	of actions.
Program execution	Select an application server to be accessed.
destination	Select an application server to be accessed.
Command line	Enter a command line for the program that is executed on the application
	server computer. (Up to 127 characters)
Check return value	Set whether to check the return value or not.
Wait for execution	Set whether or not to wait for execution completion of the program before
completion	executing the next processing.

- (1) Execute program before action, or Execute program after action
 - (a) Set whether or not to enable program execution before or after execution of actions.
 - (b) When [Execute program before action] or [Execute program after action] is enabled, make the setting described in this section (2) and subsequent sections.
- (2) Program execution destination
 Select an application server to be accessed.
- (3) Command line (Up to 127 characters)

Enter a command line for the program that is executed on the application server computer. $^{\star 1^{\star}2}$

For characters that can be used for command lines, refer to the following:

Appendix 1.1 ASCII code table

- *1 Programs that need to be run with administrator privileges (by a user in Administrators group) are not executable.
- *2 To execute a program including any displays, place the application server computer into the logon status.

(4) Check return value

(a) Set whether to check the return value or not.

When the [Check return value] box is checked, the return value (End code) of the executed program is checked.

If no return value is returned within the [DB access timeout] time set in DB Connection Service Setting Tool, a timeout error is detected and the job execution is canceled.

For [DB access timeout], refer to the following:

Section 7.5 Setting Items of DB Connection Service Setting Tool

- (b) When [Check return value] is selected, set the following items.
 - 1) Normal return value (Default: 0) Set a normal return value.
 - 2) Write the value into the tag when the value is faulty. When the [Write the value into the tag when the value is faulty] box is checked, if the return value is not normal, a value is assigned to the specified tag component.

Set a tag component to which a value is assigned when this is selected.

- · Tag, Component Select a tag component to which a value is assigned. Tags that have a tag component with [Array setting] cannot be selected.
- · Substitute value Directly enter a substitute value.
- 3) Do not execute job when the value is faulty. ([Program execution setting (before action)] only) When the [Do not execute job when the value is faulty] box is checked, if the return value is faulty, the job execution is canceled.

(5) Wait for execution completion

If the [Wait for execution completion] box is checked, the next processing is executed after completion of the program execution.

When [Check return value] is selected, [Wait for execution completion] is always selected.

6.7.4 Setting items in DB Buffering

Set whether to utilize the DB buffering function or not. For the DB buffering function, refer to the following:

Section 5.1.10 DB buffering function



Item	Description
Enable DB buffering	Set whether to enable the DB buffering or not.
Automatically resend at time of restoration	Set whether or not to automatically resend data after recovery.
	When the [Automatically resend at time of restoration] box is checked,
	resend processing is automatically performed after recovery.
	When the [Automatically resend at time of restoration] box is not checked,
	resend processing is manually performed after recovery.

⊠Point

Before resending data, the GOT communicates with the database.

At this time, if an action for communicating with the same database is set for a job, a long time is required for execution of the job.

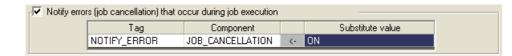
In the case of a large buffering size, it is advisable to resend the data manually while any job that is set to communicate with the database is not in execution, so that no problem will arise even if the MES interface function processing is affected.

6.7.5 Notify errors (job cancellation) that occur during job execution

Set whether to enable or disable notification of errors (job cancellation) that occur during job execution.

Job execution is canceled when access to the database fails or when type mismatch is found.

Section 5.2 SNTP Time Synchronization Function Section 6.12 Precautions



- (1) Notify errors (job cancellation) that occur during job execution
 - (a) Set whether to enable or disable notification of errors (job cancellation) that occur during job execution.

When [Notify errors (job cancellation) that occur during job execution] box is checked, if job execution is canceled, a value is assigned to the specified tag component.

- (b) When [Notify errors (job cancellation) that occur during job execution] has been selected, set a tag component to which a value is assigned.
 - Tag, Component
 Select a tag component to which a value is assigned.
 Tags that have a tag component with [Array setting] cannot be selected.
 - Substitute valueDirectly enter a substitute value.

6.7.6 One-shot execution

Execute a job as a one-shot task.

Doing so allows the user to check the execution result of the currently editing [Job setting].

(1) Procedure for one-shot execution

⊠Point

- In [One-shot execution], settings of [Startup logging] and [DB Buffering] are not executed.
- All of job operations running with the MES interface function are temporarily disabled during one-shot execution.
- Click the One-shot execution button with the [Job settings] edit screen displayed.
- Clicking the One-shot execution button performs one-shot job execution ignoring the trigger conditions.
- 3 Check the execution result shown in the [View details] dialog box, which is displayed after the execution.

For the display of the [View details] dialog box, refer to the following: Section 6.11.2 (3) Updating the Job Execute Log

Remark

A dialog box indicating the current processing status is displayed until completion of one-shot execution.

(2) Precautions for one-shot execution

(a) Precautions before one-shot execution

One-shot execution can be performed only when the MES interface function is active.

When the MES interface function is not active, check the status and restart the operation before starting one-shot execution.

For restart of the MES interface function, refer to the following:

Section 6.10.2 Manipulating the MES Interface Function status (Operation)

(b) Precautions during one-shot execution

Do not perform the following during one-shot execution.

• Do not disconnect the cable that is connected to the GOT during one-shot execution.

Doing so will cause the MES interface function to be inoperative.

• Do not remove the CF card from the GOT during one-shot execution. Doing so will cause the MES interface function to be inoperative.

If the MES interface function becomes inoperative, check the status and restart the operation on the Diagnosis tab.

For restart of the MES interface function, refer to the following:

Section 6.10.2 Manipulating the MES Interface Function status (Operation)

(c) Precautions after one-shot execution

One-shot execution results are not reflected in [Connection result of previous job execution].

6.8 Job Settings - Actions

The following shows types of actions.

Up to 10 actions can be set for one job.

- [Communication action]
 - For communicating the GOT with a database
- · [Operation action]
 - For operating tag component values
- [Transmit resource action]
 For sending the resource data to the database

(Adding an action)

- Select [Communication action], [Operation action], or [Transmit resource action] from the list box next to the Add button, and click the Add button.
- The Communication action dialog box, the Operation action dialog box, or the Transmit resource action dialog box is displayed.
 - Section 6.8.1 Setting items in Communication action
 - · Section 6.8.2 Setting items in Operation action
 - Section 6.8.3 Setting items in Transmit resource action

(Modifying an action)

- Select an action to be modified in [Action list], and click the Edit button.
- The Communication action dialog box, the Operation action dialog box, or the Transmit resource action dialog box is displayed.
 - Section 6.8.1 Setting items in Communication action
 - · Section 6.8.2 Setting items in Operation action
 - · Section 6.8.3 Setting items in Transmit resource action

(Deleting an action)

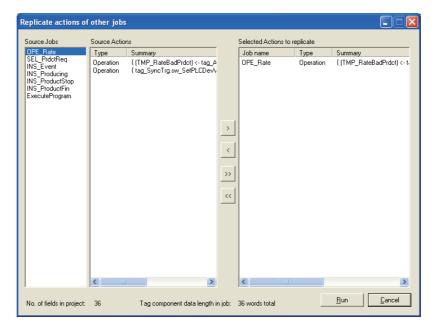
• Select an action to be deleted in [Action list], and click the Delete button.

(Copying an action)

Select an action to be copied in [Action list], choose [Replicate the selected action]
 from the list box next to the Add button, and click the Add button.

(Copying an action of another job within the project)

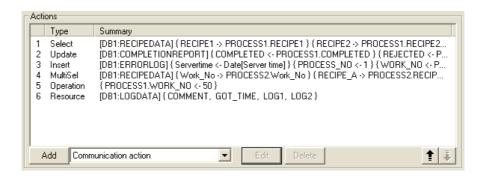
- Select [Replicate actions of other jobs] in the list box next to the Add button, and click the Add button.
- 2 The [Replicate actions] dialog box is displayed.



- 3 By repeating the following steps 4 to 6, set copy targets in [Selected Actions to replicate].
- 4 From [Source Jobs], select a job that includes a desired action.
- Actions of the job selected in are listed in [Source Actions]. Select an action to be copied. (Multiple selection is available.)
- 6 Clicking the > button displays the action(s) selected in 5 in [Selected Actions to replicate].

ltem	Description
> button	Puts the action(s) selected in [Source Actions] into [Selected Actions to replicate].
>> button	Puts all of the actions in [Source Actions] into [Selected Actions to replicate].
< button	Deletes the action(s) selected in [Selected Actions to replicate] from the box.
<< button	Deletes all of the actions in [Selected Actions to replicate] from the box.

Clicking the Run button executes copying.
Copied actions are located after existing actions.



Item	Description
Туре	The types of the existing actions are displayed.
Summary	Details of the existing actions are displayed.
† button	Selecting an action in [Action list] and clicking the the button reverses the order between the selected one and the one immediately above it. The button cannot be clicked on the first action.
↓ button	Selecting an action in [Action list] and clicking the button reverses the order between the selected one and the one immediately below it. The button cannot be clicked on the last action.

⊠Point

When more than one action are set, they are executed in order, starting from the top.

(1) Type

The types of the existing actions are displayed.

ltem	Description
Select	[Select] of [Communication action]
Update	[Update] of [Communication action]
Insert	[Insert] of [Communication action]
MultiSelect	[MultiSelect] of [Communication action]
Operation	[Operation action]
Resource	[Transmit resource action]

(2) Summary

Details of the existing actions are displayed.

(a) In the case of [Communication action]

Item	Description
	[Database: Table name]{DB-tag link setting No.1}{DB-tag link setting No.n}
Display format*1	 Select: {DB-tag link setting} = {Field name -> Tag component/Constant value} Update/Insert: {DB-tag link setting} = {Field name <- Tag component/Constant value}

(b) In the case of [Operation action]

Item	Description
	{Operation action No.1}{Operation action No.n}
Display format*1 *2	With substitution setting: {Operation action} = {Substitution tag component/Constant value <- Operation tag component/Constant value Operator Operation tag component/Constant value} Without substitution setting: {Operation action} = {Substitution tag component/Constant value}

(c) In the case of [Transmit resource action]

Item	Description
Display format	[Database: Table name]{Comment storing field name, Time storing field name, Field name No.1,, Field
	name No.n}

*1 Display format of the tag component/constant value

Item	Description
Tag component	Device tag name, component name
Numerical value	Numerical value
String	"Character string"
Date	GOT time: Date [GOT time]
	Server time: Date [Server time]
Date String	"Date [Date String]"
Variable	(Variable name)

*2 Display format of the operator

ltem	Description
+ (Addition)	+
- (Subtraction)	-
× (Multiplication)	x
÷ (Division)	÷
% (Remainder)	%

6.8.1 Setting items in Communication action

Configure the settings for communications with a database.

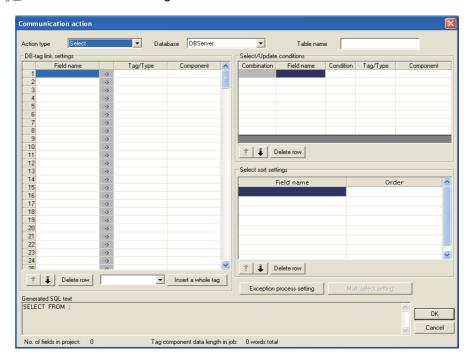
1 Performing the operation for adding or modifying an action displays the [Communication action] dialog box.

Make the setting referring to the following descriptions.

Clicking the OK button after setting adds or modifies the action.

For the operation for adding or modifying an action, refer to the following:

Section 6.8 Job Settings - Actions



ltem	Description
Action type	Select an action type.
Database	Select a database to be accessed.
Table name	Set a table name of the database to be accessed.
DB-tag link settings*1	Set assignments between field values and tag component values (or constant values).
Select/Update conditions*1	When [Select], [Update] or [MultiSelect] is selected for [Action type], set conditions for the records to be selected or updated.
Select sort settings*1	When [Select] or [MultiSelect] is selected for [Action type], set a condition for sorting selected records.
Exception process setting button	Set the processing to be performed in the following cases: No corresponding record exists when [Select], [Update], or [MultiSelect] is selected for [Action type]. Multiple corresponding records exist when [Select] or [Update] is selected for [Action type]. The number of records to be multi-selected is greater than the number of arrays set in [Array setting] of the tag when [MultiSelect] is selected for [Action type].
Multi select setting button	When [MultiSelect] is selected, detailed settings can be configured by clicking this.

(To the next page)

(From the previous page)

ltem	Description
Generated SQL text	Displays SQL text that is generated in the currently editing
Generated SQL text	[Communication action].
No. of fields in project	Displays the total number of fields in the project.
Tag component data length in job	Displays the total data length of the tag components in the job.
	Selecting a row and clicking the † button reverses the order between
† button	the selected row and the one immediately above it.
	The ↑ button cannot be clicked on the first row.
	Selecting a row and clicking the 🗼 button reverses the order between
↓ button	the selected row and the one immediately below it.
	The ↓ button cannot be clicked on the last row.
Delete row button	Selecting a row and clicking the Delete row button deletes the row.
	All of the tags set in [Device tag settings] are inserted into [Tag] and
	[Component].
	Select a row into which data are inserted and choose a tag in a list box
In a set a colo ala tana la ttana	next to the Insert a whole tag button. Clicking the
Insert a whole tag button	Insert a whole tag button inserts all of the tag components into
	contiguous rows starting from the selected one.
	The existing data set in the rows starting from the selected one are
	moved down.

^{*1} Up to 8192 fields can be set in [DB-tag link settings], [Select/Update conditions] and [Select sort settings] for each project.

(Check [No. of fields in project] in the lower left of the Communication action dialog box.)

Remark

(1) Entry of [Component]

When data are entered in [Component] by [Insert a whole tag] or with the [Field name] space blank, the data are copied to the [Field name] space. (Characters not allowed for [Field name] are not entered.)

Because of this, setting the same name to each of the field name and tag component name is useful.

(1) Action type

Select an action type.

Item	Description
Select *1	[Select] substitutes a field value of the record, whose conditions are
Select	met, for a substitute value (tag component value/variable).
11-1-1-*1 *2	[Update] substitutes a substitute value (tag component value/
Update *1 *2	variable) for a field value of the record whose conditions are met.
Incort	Generates a new value, and inserts an insert value (tag component
Insert	value/constant value/variable) into a field of the generated record.
MultiSelect*1	Substitutes field values of the records, whose conditions are met, for
	substitute values (tag component values).

- *1 Cannot be selected when the database is Wonderware ® Historian.
- *2 With Access 2000 or Access 2003, the following restrictions exist.
 - Up to 127 fields can be updated for a communication action.
 - Do not access the same file with multiple GOTs and MES interface modules simultaneously.

(2) Database

Select a database to be accessed.

(3) Table name (1 to 32 characters)

Set a table name of the database to be accessed.

For characters that can be used for table names, refer to the following:

Appendix 1.4 Characters applicable to field names, table names, etc.

(4) DB-tag link settings

Set assignments between field values and tag component values (or constant values).

Up to 256 rows can be set in [DB-tag link settings] for each communication action.

(a) When [Select] is selected for [Action type]

[Select] substitutes a field value of the record, whose conditions are met, for a substitute value (tag component value/variable).

Set conditions of the record to be selected in [Select/Update conditions].

This section (5) Select/Update conditions

Conditions for sorting the selected records are set in [Select sort settings].

This section (6) Select sort settings

1) Field name (1 to 32 characters)

Set a field name for the field value to be selected.

For characters that can be used for field names, refer to the following:

Appendix 1.4 Characters applicable to field names, table names, etc.

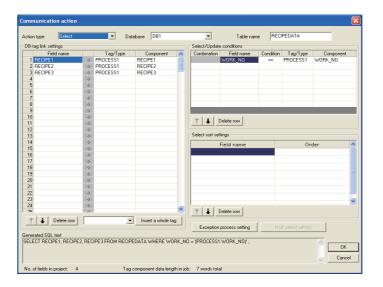
2) Tag

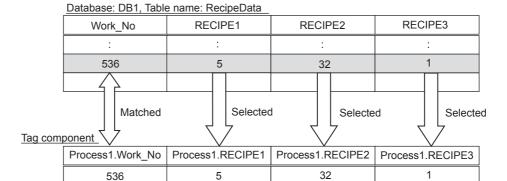
Select a tag or variable for which a value is substituted.

Tags that have a tag component with [Array setting] cannot be selected.

3) Component

Select or directly enter a component value or a variable of the substitution target.





(b) When [Update] is selected for [Action type]

[Update] substitutes a substitute value (tag component value/variable) for a field value of the record whose conditions are met.

Set conditions of the record to be updated in [Select/Update conditions].

This section (5) Select/Update conditions

1) Field name (1 to 32 characters)

Set a field name for the field value to be updated.

For characters that can be used for field names, refer to the following:

Appendix 1.4 Characters applicable to field names, table names, etc.

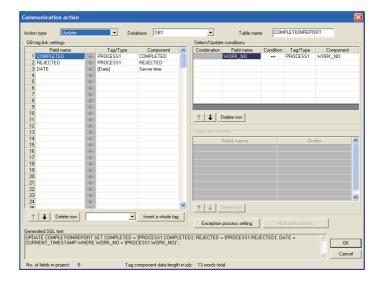
2) Tag

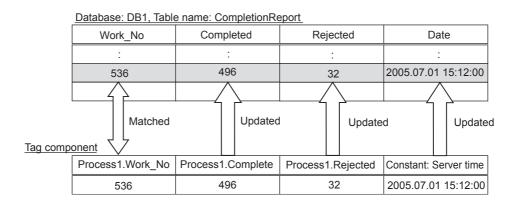
Select a tag, constant, or variable which is substituted.

Tags that have a tag component with [Array setting] cannot be selected.

3) Component

Select or directly enter a Component value or a variable that is to be substituted.





(c) When [Insert] is selected for [Action type]

[Insert] generates a new record, and inserts an insert value (tag component value/constant value/variable) into a field of the generated record.

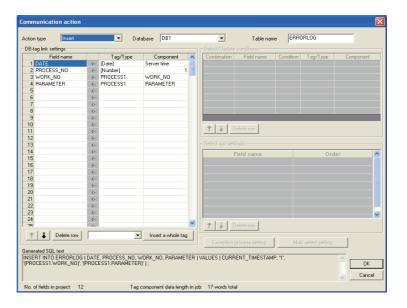
- 1) Field name (1 to 32 characters)
 - Set a field name for the field value to be inserted.
 - For characters that can be used for field names, refer to the following:
 - $\begin{tabular}{ll} \blacksquare Appendix 1.4 Characters applicable to field names, table names, etc. \end{tabular}$
- 2) Tag

Select a tag, constant, or variable which is substituted.

Tags that have a tag component with [Array setting] cannot be selected.

3) Component

Select or directly enter a Component value or a variable that is to be substituted.

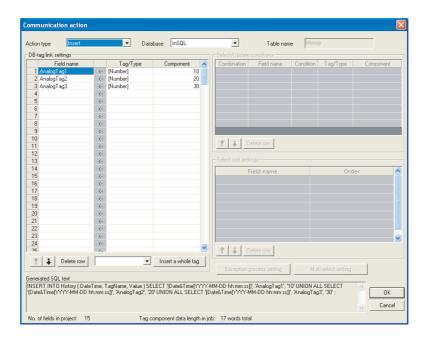


Database: DB1, Table name: ERRORLOG

	Date		Process	s No	Worl	c_No	Parar	neter
		:	:			:		:
	2005.07.0	01 15:12:00	1		50	36	8	3
Tag coi	mponent	Inserted		\square Inserted		Inserted		Inserted
	Constan	t: GOT time	Consta	nt: 1	Process1.	Work_No.	Process1.I	Parameter
	2005.07.0	01 15:12:00	1		50	36	8	3

- 4) When the database is Wonderware[®] Historian, the following is inserted as one record to the database by executing [Communication action].
 - Date and time when a communication action is executed
 - Tag name set for [Field name]
 - Tag component value or constant value set for [Component]

When multiple fields are set, the number of records to be inserted is equivalent to that of fields.



Database: InSQL Table name: History (fixed)

		Datatime	TagName	Value
Field name	Tag component Inserted			
AnalogTag1	Equipment1Analog1	2006-10-20 15:30:00	AnalogTag1	10
AnalogTag2	Equipment1Analog2	2006-10-20 15:30:00	AnalogTag2	20
AnalogTag3	Equipment1Analog3	2006-10-20 15:30:00	AnalogTag3	30

(d) When [MultiSelect] is selected for [Action type]

[MultiSelect] substitutes field values of the records, whose conditions are met, for substitute values (tag component values).

Conditions for the redords to be selected are set in [Select/Update conditions].

This section (5) Select/Update conditions

Conditions for sorting the selected records are set in [Select sort settings].

This section (6) Select sort settings

1) Field name (Up to 32 characters)

Set a field name for the field values to be multi-selected.

For characters that can be used for field names, refer to the following.

PAppendix 1.4 Characters applicable to field names, table names, etc.

2) Tag

Select a target tag.

Only the tags with [Array setting] can be selected.

 Component Select a target component.

⊠Point

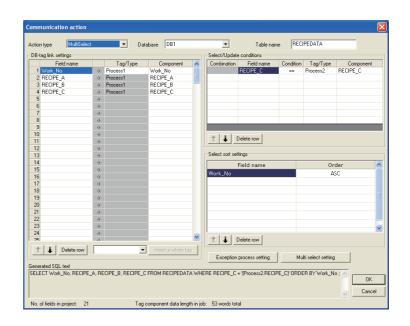
When [MultiSelect] is used in a job, the total of [Tag component data length in job] must be 45000 words or less.

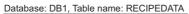
[Tag component data length in job] represents a total length of the tag component data set for the following:

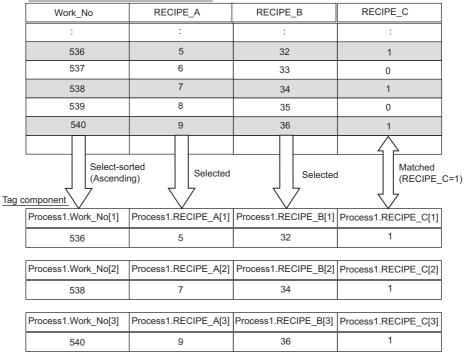
- [DB-tag link settings] in [Communication action]
- [Select/Update conditions] in [Communication action]
- [Operation action]

Even if the same tag component is set more than once in the same job, each setting is handled separately.

(The number of settings can be confirmed on the status bar of [Job setting], or in the [Communication action] or [Operation action] dialog box.)







(e) About tag components

Tag component values can be used as substitute/insert values for [Select], [Update], [Insert] or [MultiSelect], or as condition values of [Select/Update conditions].

The following table lists data types of tag components and those of assignable fields.

If the data type of a tag component does not match the one of its substitution target field, an error occurs, resulting in cancellation of job execution.

⊠Point

The data type of a tag component will change through operation processing of a job.

Section 6.12 (3) Type mismatch

		Data type of assignable fie	ld	
Data type of tag component	Oracle [®] 8i Oracle [®] 9i Oracle [®] 10g	SQL Server 2000/2005 MSDE 2000	Access 2000 Access 2003/2007	Wonderware® Historian
Bit type		bit	Yes/No type	Discrete Tag
(Numeric type: Integer) Single-precision type Double-precision type	NUMBER CHAR VARCHAR	int smallint tinyint float real char varchar text*1	Byte type Integer type Long integer type Single type Double type AutoNumber type Currency type Text type*1 *2 Memo type*1 *2	Analog Tag(Integer)
(Numeric type: Floating point) Floating-point type *3	NUMBER CHAR VARCHAR	float real char varchar text*1	Single type Double type Text type*1 *2 Memo type*1 *2	Analog Tag(Real)
Character string	CHAR VARCHAR	char varchar text*1	Text type *2 Memo type *2	String Tag

- Not available for [Select/Update conditions]
- Memo-type fields in Rich Text Format cannot be used. (For Microsoft® Access 2007)
- Values are assigned with precision of six decimal digits.

(f) About constants

Constants can be used as substitute/insert values for [Update] or [Insert], or as condition values of [Select/Update conditions].

The following table lists constant types and the data types of assignable fields. If the type of a constant does not match the data type of its substitution target field, an error occurs, resulting in cancellation of job execution.

		Data	type of assignable	e field	
Constant type	Values that can be entered in [Component]	Oracle $^{f R}$ 8i Oracle $^{f R}$ 9i Oracle $^{f R}$ 10g	SQL Server 2000/2005 MSDE 2000	Access 2000 Access 2003/ 2007	Wonderware [®] Historian
[Number]	Up to 16 characters • Signed decimal notation (Example: - 521.98) • Signed exponential notation (Example: - 5.2198E03)	NUMBER	bit *1 int *1 smallint *1 tinyint *1 float real	Yes/No type Byte type Integer type Long integer type Single type Double type AutoNumber type Currency type	Discrete Tag Analog Tag(Integer) Analog Tag(Real)
[String]	Up to 32 characters For characters that can be used for character strings, refer to the following: Appendix 1.3 Characters applicable to character string constants, etc.	CHAR VARCHAR	char varchar text *3	Text type *5 Memo type *5	String Tag
[Date] *2	When using the date and time of the database server: Select [Server time]. When using the date and time of the GOT: Select [GOT time].	DATE	datetime smalldatetime	Date/Time type	_*4
[Date String]	Up to 32 characters For characters that can be used for character strings, refer to the following: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	CHAR VARCHAR	char varchar text ^{*3}	Text type *5 Memo type *5	String Tag

- *1 Signed integer notation only
- *2 Clock precision:

When [GOT time] is selected: In units of seconds

When [Server time] is selected: Depends on the database server.

- *3 Not available for [Select/Update conditions]
- *4 With Wonderware $\[mathbb{R}\]$ Historian, only [GOT time] is assigned.
- *5 Memo-type fields in Rich Text Format cannot be used. (For Microsoft $^\circledR$ Access 2007)

Variables can be used as substitute/insert values for [Select], [Update] or [Insert], or as condition values of [Select/Update conditions]. The following table lists data types of variables and those of assignable fields.

If the type of a variable does not match the data type of its substitution target field, an error occurs, resulting in cancellation of job execution.

Up to 64 variables can be set for one job.

⊠Point

(g) About variables

- (1) A variable is valid only in a single job execution and is not held.
- (2) The initial variable value before substitution processing is the numerical value of zero.
- (3) The data type of a variable will change through operation processing of a job. Section 6.12 (3) Type mismatch

		Data	type of assignable	e field	
Data type of variable	Values (variable names) that can be entered in [Component]	Oracle $^{ extbf{M}}$ 8i Oracle $^{ extbf{M}}$ 9i Oracle $^{ extbf{M}}$ 10g	SQL Server 2000/2005 MSDE 2000	Access 2000 Access 2003/ 2007	Wonderware® Historian
(Numeric type: Integer) Single-precision type Double-precision type	Up to 16 characters. For characters that can be used for variables, refer to the following: Appendix 1.2 Characters applicable to item names, component names, variable names, etc.	NUMBER CHAR VARCHAR	bit int smallint tinyint float real char vachar text *1	Yes/No type Byte type Integer type Long integer type Single type Double type AutoNumber type Currency type Text type *1*2 Memo type *1*2	Analog Tag(Integer)
(Numeric type: Floating point) Floating-point type *3		NUMBER CHAR VARCHAR	float real char vachar text *1	Single type Double type Text type *1*2 Memo type *1*2	Analog Tag(Real)
Character string		CHAR VARCHAR	char vachar text *1	Text type ^{*2} Memo type ^{*2}	String Tag

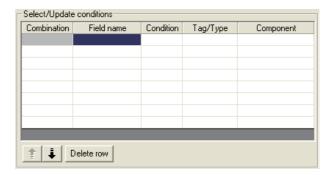
- *1 Not available for [Select/Update conditions]
- *2 Memo-type fields in Rich Text Format cannot be used. (For Microsoft® Access 2007)
- Values are assigned with precision of six decimal digits.

(5) Select/Update conditions

When [Select], [Update] or [MultiSelect] is selected for [Action type], set conditions for the records to be selected, updated or multi-selected.

When a field value of a record matches a condition value, the record is selected or updated.

Up to 8 rows can be set for one communication action in [Select/Update conditions].



⊠Point

Exception processing is executed when records that meet [Select/Update conditions] are in the following cases.

- Records to be selected/updated/multi-selected do not exist.
- · Multiple records exist for select/update.
- The number of records to be multi-selected is greater than the number of arrays set in [Array setting] of the tag.

For details of the exception processing, refer to the following.

This section (7) Exception processing setting

(a) Combine

Select a method by which conditions set in respective lines are combined. Select "AND" or "OR".

If "AND" and "OR" are combined, the database will process "AND" first and then "OR".

Item	Description
AND	The condition of the line just above the corresponding line and the condition of the corresponding line
OD	The condition of the line just above the corresponding line or the
OR	condition of the corresponding line

(b) Field name (1 to 32 characters)

Set a field name that is used for comparison.

For characters that can be used for field and table names, refer to the following: Appendix 1.4 Characters applicable to field names, table names, etc.

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(c) Condition

Select a condition for comparison.

Item	Description
=	The field value is equal to the condition value.
≠	The field value is not equal to the condition value.
≧	The field value is equal to or greater than the condition value.
>	The field value is greater than the condition value.
<	The field value is smaller than the condition value.
≦	The field value is equal to or smaller than the condition value.

(d) Tag

Select a tag or constant that is used as a condition for comparison. Tags that have a tag component with [Array setting] cannot be selected.

(e) Component

Select or directly enter a component/constant value that is used as a condition for comparison.

If [Variable] is selected for [Tag], select or directly enter a variable.

⊠Point

For tag components, constants or variables, refer to the following:

- · This section (4)(e) About tag components
 - · This section (4)(f) About constants
 - This section (4)(g) About variables

(6) Select sort settings

When [Select] or [MultiSelect] is selected in [Action type], set conditions for sorting the records to be selected/multi-selected.

If multiple sort conditions are set, the database will process the conditions in order, starting from the top.

In [Select sort settings], settings of up to eight lines are allowed for each communication action.



(a) Field name (Up to 32 characters)

Set a field name for records to be selected.

For characters that can be used for field names and table names, refer to the following.

Appendix 1.4 Characters applicable to field names, table names, etc.

(b) Order

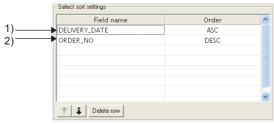
Set the order of sorting the selected records.

ltem	Description
Assending order	Sorts the records so that the specified fields are arranged in
Ascending order	ascending order.
Descending order	Sorts the records so that the specified fields are arranged in
Descending order	descending order.

Data base (before sorting)

ORDER_NO	PRODUCT_CODE	DELIVERY_DATE
200	707	2007-01-31
201	662	2007-01-10
202	666	2007-01-29
203	662	2007-01-31
204	707	2007-01-10
205	666	2007-01-29
206	707	2007-01-10
207	662	2007-01-29
208	662	2007-01-31

Sorting conditions in [Select sort settings]



Selected records [sorting results]

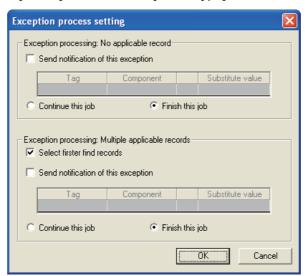
ORDER_NO	PRODUCT_CODE	DELIVERY_DATE	
206	707	2007-01-10	
2) 204	707	2007-01-10	
201	662	2007-01-10	
207	662	2007-01-29	
2) 205	666	2007-01-29	
202	666	2007-01-29	
208	662	1) 2007-01-31	
2) 203	662	2007-01-31	
200	707	2007-01-31	

- 1) First, selected records are sorted in ascending order of DELIVERY_DATE.
- 2) Then, records of the same DELIVERY_DATE are sorted in descending order of ORDER_NO.

(7) Exception processing setting

A click on the Exception process setting button displays the [Exception process setting] dialog box.

(Example) When [Select] is selected for [Action type]



(a) Exception processing: No applicable record

When [Select], [Update] or [MultiSelect] is selected for [Action type], set processing for the case where there is no record to be selected, updated or multiselected.



1) Send notification of this exception

When the [Send notification of this exception] box is checked, if there is no record to be selected, updated or multi-selected, assign a value to the specified tag component.

When [Send notification of this exception] is selected, set a tag component to which the value is assigned.

- Tag, Component
 Select a tag component to which a value is assigned.
 Tags that have a tag component with [Array setting] cannot be selected.
- Substitute value
 Directly enter a substitute value.

2) Continue this job

After execution of exception processing described in the above 1), the system continues executions of other actions.

3) Finish this job (Default: Finish this job)

After execution of exception processing described in the above 1), the job is forcibly terminated without executing remaining actions.

At this time, substitute/insert values before exception processing execution are committed, and they are written to relevant tag components.

⊠Point

- (1) When a job is forcibly terminated, an error occurred during job execution (job cancellation) is not notified.
 - Section 6.7.5 Notify errors (job cancellation) that occur during job execution
- (2) If [Enable DB buffering] is selected for a job, its exception processing setting is disabled.
 - Section 6.7.4 Setting items in DB Buffering
- (b) Exception processing: Multiple applicable records

When [Select] or [Update] is selected for [Action type], set processing for the case where there are multiple records to be selected or updated.



1) Select firster find records (Default: Checked)

When [Select] is selected for [Action type], checking the [Select firster find records] box allows extraction of the head record from multiple applicable records.

When this checkbox is not checked, the select/update processing is not performed.

⊠Point

When [Update] is selected for [Action type], if multiple records to be updated exist, all of them are updated.

2) Send notification of this exception

When the [Send notification of this exception] box is checked, if multiple records to be selected or updated exist, assign a value to the specified tag component.

When [Send notification of this exception] is selected, set a tag component to which the value is assigned.

- Tag, Component Select a tag component to which a value is assigned. Tags that have a tag component with [Array setting] cannot be selected.
- Substitute value Directly enter a substitute value.
- 3) Continue this job

After executions of exception processing described in the above 1) and 2), the system continues executions of other actions.

4) Finish this job (Default: Finish this job)

After execution of exception processing described in 1) and 2), the job is forcibly terminated without executing remaining actions.

At this time, substitute/insert values before exception processing execution are committed, and they are written to relevant tag components.

⊠Point

(1) When a job is forcibly terminated, an error occurred during job execution (job cancellation) is not notified.

Section 6.7.5 Notify errors (job cancellation) that occur during job execution

(2) If [Enable DB buffering] is selected for a job, its exception processing setting is disabled.

Section 6.7.4 Setting items in DB Buffering

(c) Exception processing: Applicable records overflow When [MultiSelect] is selected for [Action type], set processing for the case where the number of records to be selected is greater than the number of arrays set in [Array setting].



1) Select firster find records (Default: Checked)

When the [Select firster find records] checkbox is checked, if the number of records selected by [Select/Update conditions] is greater than the number of arrays set in [Array setting], records equivalent to the number of arrays are actually selected.

When this checkbox is not checked, the select processing is not performed.



If the [Select firster find records] checkbox is not checked, the following is performed.

- When [Notify the number of acquired records] is set in [Multi select setting], 0 is notified.
- When [Clear the unused tag components by zero] is set in [Multi select setting],
 0 is assigned.

This section (8) Multi select setting

2) Send notification of this exception

If the [Send notification of this exception] checkbox is checked, a value is assigned to the specified tag component when the number of records selected by [Select/Update conditions] is greater than the number of arrays set in [Array setting].

[Array setting] is less than the number of records selected by [Select/Update conditions].

When selecting this, set a tag component to which a value is assigned.

- Tag, Component Select a tag component to which a value is assigned.
 - Tags that have a tag component with [Array setting] cannot be selected.
- · Substitute value Directly enter a substitute value.
- 3) Continue this job

are updated.

After executions of exception processing described in the above 1) and 2), the system continues executions of other actions.

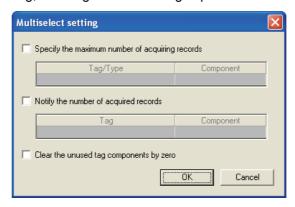
4) Finish this job (Default: Finish this job) After executions of exception processing described in the above 1) and 2), the system forcibly terminates the job without executing other actions. At this time, substitute/insert values before execution of the exception processing are committed to the database, and data written to tag component

⊠Point

- (1) When a job is forcibly terminated, an error occurred during job execution (job cancellation) is not notified.
 - Section 6.7.5 Notify errors (job cancellation) that occur during job execution
- (2) If [Enable DB buffering] is selected for a job, its exception processing setting is disabled.
 - Section 6.7.4 Setting items in DB Buffering

(8) Multi select setting

A click on the Multi select setting button displays the [Multi select setting] dialog box. Complete the setting, referring to the following explanation



(a) Specify the maximum number of acquiring records

If the [Specify the maximum number of acquiring records] checkbox is checked, records of up to the specified number are acquired.

The GOT acquires the records in the order that the records are extracted from the database.

When selecting this, set a tag for which a value is specified.

1) Tab/Type

Select a tag for which a value is specified.

Tags that have a tag component with [Array setting] cannot be selected.

2) Component

Select or directly enter a component or a constant value to be specified.

Item	Values available for Component
[Number]	Within the range of 1 to 40000
Device tag	Single- or double-precision type tag component

⊠Point

- (1) When the select sort settings are set, the GOT acquires the records in the set sorting orders.
- (2) An error occurs if the specified tag component value is 0 or less. Section 5.3 (2) When an error occurs in job execution

(b) Send notificcation of selected record number

When the [Notify the number of acquired records] checkbox is checked, the number of actually acquired records is notified to the specified tag component. When selecting this, set a tag component to which a value is notified.

Tag

Select a tag component to which a value is notified.

Tags that have a tag component with [Array setting] cannot be selected.

(c) Clear the unused tag components by zero

When the [Clear the unused tag components by zero] checkbox is checked, if the specified number of arrays of the tag component is less than the number of actually acquired records, zeros are assigned to other array areas.

(Example)

When the specified number of arrays of the tag component is "6" and the number of actually acquired records is "4":

Component name	Device	Data type			n=	=1	n=	=2	n=	=3	n=	=4	n=	5	n=6	
Component A	GB0	Bit		Component A	GB0	9	GB1	4	GB2	7	GB3	1	GB4	0	GB5	0 :
Component B	GD10	Double word	$ \rangle$	Component B	GD10	482	GD12	623	GD14	769	GD16	154	GD18	0	GD20	0 :
Component C	GD100	String (10 characters)	$\neg V$	Component C	GD100	Table	GD105	Data1	GD110	Data2	GD115	Data3	GD120	""	GD125	""
							Acqui	ired rec	cords					igned onents		for

(9) Generated SQL text

The SQL text generated by the currently editing [Communication action] is displayed. It indicates the display format of the tag component/constant value.

Note that data of Tag component, Date, Date String, and Variable are generated at job execution, and displayed in the format shown below. (It is different from the actual SQL text.)

Actions of [Select] and [MultiSelect] generate SQL texts with SELECT. With the SQL text, the user cannot identify which action is executed.

	ltem	Description						
Tag component		'(Device tag name, component name)'						
Numerical value		'Number'						
String		'String'						
		GOT time:						
	Oracle [®] 8i	TO_DATE('(Date and time [YYYYMMDDhhmmss])',						
		'YYYYMMDDHH24MISS')						
		Server time: sysdate						
		GOT time:						
	Oracle® 9i	TO_DATE('(Date and time [YYYYMMDDhhmmss])',						
	Oracle® 10g	'YYYYMMDDHH24MISS')						
Date	l crasio - rog	Server time: CURRENT_TIMESTAMP						
	SQL Server							
	2000/2005							
	MSDE2000	GOT time: '(Date and time [YYYY-MM-DD hh:mm:ss])'						
	Wonderware®	Server time: CURRENT_TIMESTAMP						
	Historian							
	Access 2000	GOT time: '(Date and time [YYYY-MM-DD hh:mm:ss])'						
		,						
	Access 2003/2007	Server time: NOW()						
Date String		'(Date[String])'						
Variable		'(Variable name)'						

6.8.2 Setting items in Operation action

Configure the settings for operation of tag component values. Up to 20 dyadic operations can be set for one operation action.

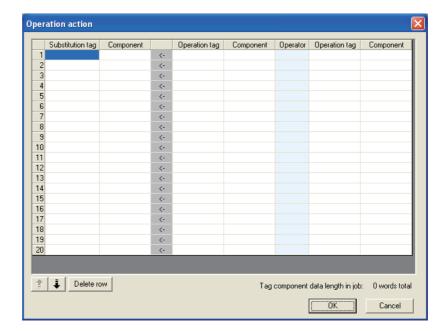
Performing the operation for adding or modifying an action displays the [Operation action] dialog box.

Make the setting referring to the following descriptions.

Clicking the OK button after setting adds or modifies the action.

For the operation for adding or modifying an action, refer to the following:

Section 6.8 Job Settings - Actions



Item	Description					
Cubatitution tog	Select a tag or variable to which a value is assigned.					
Substitution tag	Tags that have a tag component with [Array setting] cannot be selected.					
Component	Select or directly enter a component value or a variable of the substitution					
Component	target.					
Operation tag	Select a tag, constant, or variable which is computed.					
Operation tag	Tags that have a tag component with [Array setting] cannot be selected.					
Component	Select or directly enter a component/constant value or a variable that is to					
Сотронон	be computed.					
	Select an operator.					
Operator	[] (None), [+] (Addition), [-] (Subtraction), [x] (Multiplication), [÷]					
	(Division), [%] (Remainder)					
	Selecting a row and clicking the button reverses the order between the					
↑ button	selected row and the one immediately above it.					
	The button cannot be clicked on the first row.					
	Selecting a row and clicking the button reverses the order between the					
↓ button	selected row and the one immediately below it.					
	The ↓ button cannot be clicked on the last row.					
Delete row button	Selecting a row and clicking the Delete row button deletes the row.					
Tag component data length in job	Displays the total data length of the tag components in the job.					

⊠Point

Operation actions are executed in order, from the top to the bottom.

(1) About constants

Constants can be used for [Operation tag] - [Component] and not for [Operator]. The following shows the constant types and values that can be entered in the [Component] column.

Constant type	Values that can be entered in [Component]						
	Up to 16 characters						
[Number]	Signed decimal notation (Example: -521.98)						
	Signed exponential notation (Example: -5.2198E03)						
	Up to 32 characters						
[Ctring]	For characters that can be used for character strings, refer to the following:						
[String]	Appendix 1.3 Characters applicable to character string constants,						
	etc.						
	Up to 32 characters						
	For characters that can be used for character strings, refer to the following:						
	Appendix 1.3 Characters applicable to character string constants,						
	etc.						
	Specify the date and time of the GOT in the following format.						
	Year (4 digits): YYYY						
[Date String]	Year (2 digits): YY						
	Month (2 digits): MM						
	Day (2 digits): DD						
	Hour (2 digits): hh						
	Minute (2 digits): mm						
	Second (2 digits): ss						
	Example: "YYYY-MM-DD hh:mm:ss" → "2005-07-01 15:12:00"						

(2) About variables

Variables can be used for [Component] of [Substitution tag] or [Component] of [Operation tag].

By using a variable, a value computed in [Operation action] can be assigned to a database, or to a tag component (In the latter case, operation is performed based on a value extracted from the database).

The following table shows the variable types and values that can be entered in the [Component] column.

Up to 64 variables can be set for one job.

⊠Point

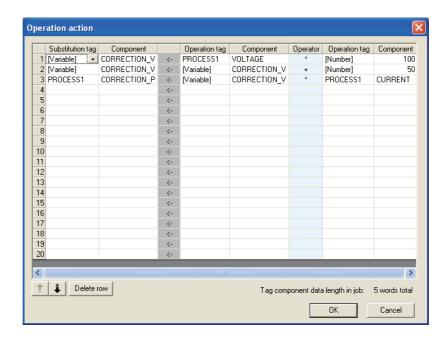
- (1) A variable is valid only in a single job execution and is not held.
- (2) The initial variable value before substitution processing is the numerical value of zero
- (3) The data type of a variable will change through operation processing of a job. Section 6.12 (3) Type mismatch

Variable type	Values (variable names) that can be entered in [Component]						
	Up to 16 characters						
D/	For characters that can be used for variables, refer to the following:						
[Variable]	Appendix 1.2 Characters applicable to item names, component						
	names, variable names, etc.						

(3) Setting example of [Operation action]

The following is a case in which correction power is calculated using a correction voltage and it is assigned to a tag component (Process 1.Correction power). The tag component value (Process 1.Correction power) obtained from the following [Operation action] is:

(Process 1.Voltage × 100 + 50) × Currrent



6.8.3 Setting items in Transmit resource action

Configure the settings for sending the resource data collected in a GOT to a database.

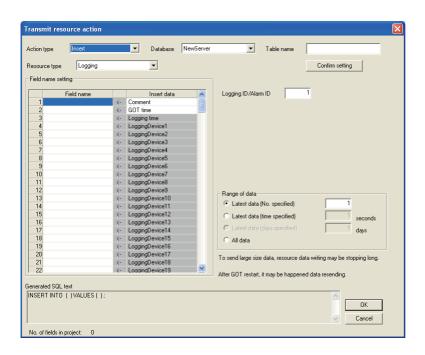
⊠Point

Before setting [Transmit resource action], configure the settings to collect the resource data (the logging setting, the advanced user alarm observation, the advanced system alarm observation, and the operation log setting).

For details, refer to the following manual.

☐ GT Designer2 Version ☐ Screen Design Manual

The settings for collecting the resource data must be matched to the settings for the resource data send action. When the settings are not matched, an error may occur at the job execution.



Item	Description			
Action type	Select an action type.			
Database	Select a database to be accessed.			
Table name	Select a table name of the database to be accessed.			
Resource type	Select a resource data type.			
Field name setting*1	Set the assignments between the resource data to be sent and the field			
rieid name setting	value for the database.			
	Clicking this button checks that the settings for collecting the resource			
	data are matched to the settings for the resource data send action.			
Confirm setting button	An error message is displayed when the settings are not matched.			
	For the displayed error message, refer to the following.			
	Section 6.12 Precautions			
Logging ID/Alarm ID	Set the logging ID for the logging setting or the alarm ID that is set on the			
Logging ID/Alami ID	advanced alarm observation.			
Operation log file	Clicking the Set operation log file name button displays the stored			
Operation log file	location for the operation log data to be sent.			

(To the next page)

(From the previous page)

	Item	Description	
	Range of data	Specify the number of resource data to be sent for each action.	
Ī	Generated SQL text	Displays the SQL text that is generated during editing the data for	
		[Transmit resource action].	

^{*1} Up to 8192 fields can be set in [Field name setting] for each project. (Check [No. of fields in project] in the lower left of the Communication action dialog box.)

(1) Action type

Select an action type.

The selectable action type is the insert only.

Item	Description
Insert	Generates a new record, and assigns a value (resource data) into a field.

(2) Database

Select a database to be accessed.

(3) Table name (1 to 32 characters)

Set a table name of the database to be accessed.

When the selected database is Wonderware[®] Historian, the table name is fixed to [History].

For characters that can be used for table names, refer to the following:

Appendix 1.4 Characters applicable to field names, table names, etc.

(4) Resource type

(Default: Logging)

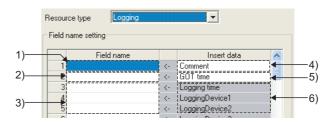
Select a resource data type.

ltem	Description				
Logging	Device values of a controller that are collected at any timing or in				
Logging	specified intervals.				
Advanced user alarm	Alarm data that are collected in specified intervals for the advanced user				
Advanced user alarm	alarm observation setting				
A disconded assets an elemen	Alarm data for controllers and a network that are collected by the				
Advanced system alarm	advanced system alarm observation setting				
Operation log	GOT operation history data collected by the operation log function				

(5) Field name setting

Set the assignments between the resource data to be sent and the field values for the database.

The resource data types vary according to [Resource type]. (Example) Screen for settings of sending logging data

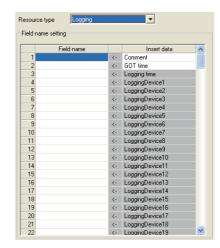


Item	Description			
	1) First row (comment)*1			
	A field name for sending a comment to the database can be set.			
*2*5	2) Second row (time)*1			
Field name*3*5	A field name that specifies a date and time for a resource data send			
(0 to 32 characters)	action can be set.			
	3) Third row or later (resource data)			
	A field name for sending the resource data to the database can be set. Input the field name for [Insert data] to be sent.			
	4) First row (0 to 32 characters, Default: Comment)*1*4			
	The comment to be inserted into the database can be set.			
	5) Second row (Default: GOT time)			
	The date and time for inserting the data to the database can be			
	selected from [GOT time] or [Server time].			
	6) Third row or later (resource data)			
Insert data*2	The list of resource data to be inserted to the database is displayed.			
insert data -	This section (5)(a) When selecting [Logging] for [Resource type]			
	This section (5)(b) When selecting [Advanced user alarm] for [Resource type]			
	This section (5)(c) When selecting [Advanced system alarm] for			
	[Resource type]			
	This section (5)(d) When selecting [Operation Log] for [Resource			
	type]			

- *1 When setting [Field name], fields for the stroring comment and the time data are created in the database. (The setting for the field name is not necessarily required.)
- *2 When [Field name] is not inputted, no resource data is sent.
- *3 For the types of data to be sent in the fields, refer to the following.
 - This section (5)(e) Data types
- *4 For characters that can be used for character strings, refer to the following:
 - Appendix 1.3 Characters applicable to character string constants, etc.
- *5 For characters that can be used for field and table names, refer to the following:
 - Appendix 1.4 Characters applicable to field names, table names, etc.

The following shows the resource data to be sent and the types of the data.

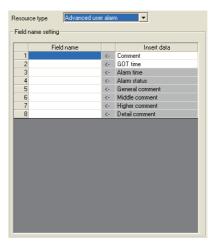
(a) When selecting [Logging] for [Resource type]



Insert data		Data type	
	Logging time	Date	
LoggingDevice (1 to 250)*1		Numeric type (Integer, floating point)	

The numbers of 1 to 250 correspond to the rows set for the number of the block number in the logging setting.

(b) When selecting [Advanced user alarm] for [Resource type]



Insert data	Data type		
Alarm time	Date		
Alarm status	Character string		
General comment ^{*1}	Character string		
Middle comment ^{*1}	Character string		
Higher comment ^{*1}	Character string		
Detail comment*1	Character string		

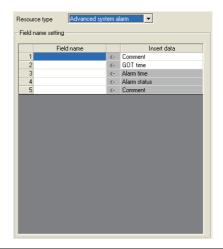
The first column data of the column number set in the comment group is sent.

⊠Point

Up to 512 of one-byte and two-byte characters can be set in a comment for the advanced user alarm.

Set the length of character string on the database more than that for the comment.

(c) When selecting [Advanced system alarm] for [Resource type]



Insert data	Data type	
Alarm time	Date	
Alarm status	Character string	
Comment	Character string	

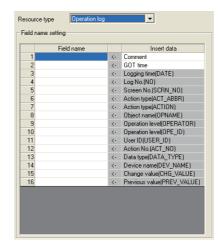
⊠Point

Up to 512 of one-byte and two-byte characters can be set in a comment for the advanced system alarm.

Set the length of character string on the database more than that for the comment.

6

(d) When selecting [Operation Log] for [Resource type]



Data type
Date
Numeric type (Integer)
Character string
Numeric type (Integer)
Numeric type (Integer)
Numeric type (Integer)
Character string
Character string
Character string
Character string

The data to be sent vary according to the operation log target.

For details of the collected data in the operation log, refer to the following manual.

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(e) Data types

The following table shows the data types of resource data and the data types of data to be sent in the field.

When the data type of the resource data does not match that of data to be sent in the field, an error occurs, resulting in the cancellation of the job execution.

	Data type of data to be sent in field			
Data type of resource data	Oracle [®] 8i Oracle [®] 9i Oracle [®] 10g	SQL Server 2000/2005 MSDE 2000	Access 2000 Access 2003/2007	Wonderware [®] Historian
Date	DATE	datetime smalldatetime	Date/Time type	String Tag
Character string	CHAR VARCHAR	char varchar text	Text type ^{*1} Memo type ^{*1}	String Tag*2
Numeric type	NUMBER CHAR VARCHAR	bit int smallint tinyint float real char varchar text	Yes/No type Byte type Integer type Long integer type Single type Double type AutoNumber type Currency type Text type*1 Memo type*1	Discrete Tag Analog Tag(Integer) Analog Tag(Real) String Tag

^{*1} Memo-type fields in Rich Text Format cannot be used. (For Microsoft® Access 2007)

(6) Logging ID/Alarm ID

When selecting [Logging] or [Advanced user alarm] for [Resource type], set the logging ID of logging data or the alarm ID for advanced user alarm data.



^{*2} With Wonderware $^{\circledR}$ Historian, only [GOT time] is sent.

(7) Operation log file

The GOT displays the operation log file when [Operation log] is selected for [Resource type] only.



Clicking the | Set operation log file name | button displays the stored location for the operation log file.

The GOT can send the displayed operation log file to the database.

Inputting the data directly to [Drive Name], [Folder Name], and [File Name] are not available.

⊠Point

When the operation log settings are changed after setting [Transmit resource action], click the Set operation log file name button to set the operation log file again.

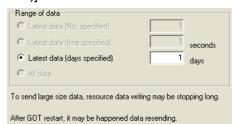
The settings for [Operation log file] are not automatically changed.

When the displayed data on [Operation log file] does not exist, an error occurs at the job execution.

(8) Range of data

Specify the maximum number of resource data to be sent for one resource data send action.

When [Operation Log] is selected for [Resource type], [Range of data] is fixed to [Latest data (days specified)].



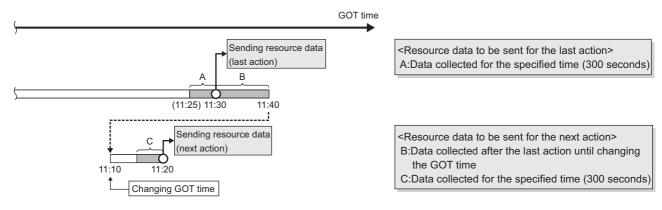
Item	Description
Latest data	Specify the maximum number of resource data collected in the GOT after the
(No. specified)	last action.
(No. specified)	(Range:1 to 99999, Default:1)
Latest data	Specify the time period from the job execution time to the specified time for
	sending the collected resource data.
(time specified)*1	(Range:1 to 99999, Default:1 (seconds))
	Specify the number of days including in the date at the job execution for sending
Latest data	the resource data. (This item cannot be specified for sending the logging data,
(days specified)*1	the advanced user alarm data, and the advanced system alarm data.)
	(Range:1 to 400, Default:1 (days))
All data	All the resource data collected in the GOT after the last action.

For details of *1, refer to the following.

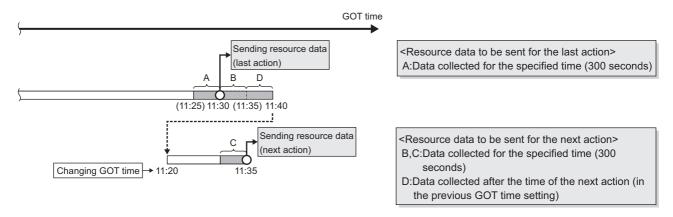
- *1 Resource data to be sent after changing the GOT time and date
 - When changing the GOT time, the resource data to be sent may differ from the resource data to be sent without changing the GOT time.

The following shows the resource data to be sent after changing the GOT time and date.

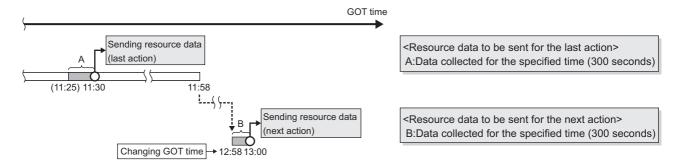
- (1) Logging data
 - (a) Executing the next action before the time of the last action
 - Example 1) Changing the time from 11:40 to 11:10, and executing the next action at 11:20 : Time specified (300 seconds)



(b) Executing the next action after the time of the last actionExample 1) Changing the time from 11:40 to 11:20, and executing the next action at 11:35: Time specified (300 seconds)



Example 2) Changing the time from 11:58 to 12:58, and executing the next action at 13:00 : Time specified (300 seconds)

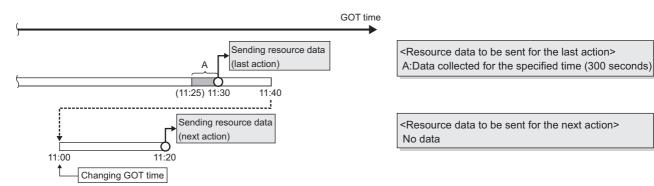


(2) Advanced user alarm data/advanced system alarm data

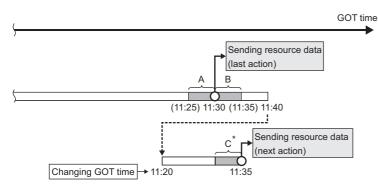
(a) Executing the next action before the time of the last action

(The GOT does not send all the data collected after the last acton.)

Example 1) Changing the time from 11:40 to 11:00, and executing the next action at 11:20 : Time specified (300 seconds)



(b) Executing the next action after the time of the last action Example 1) Changing the time from 11:40 to 11:20, and executing the next action at 11:35 : Time specified (300 seconds)



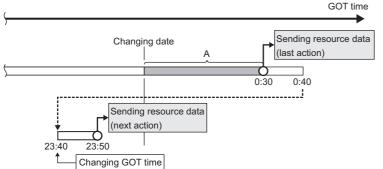
<Resource data to be sent for the last action> A:Data collected for the specified time (300 seconds)

<Resource data to be sent for the next action> Data collected for the specified time (300 seconds) B:Data collected before changing the GOT time C:Data collected after changing the GOT time

- *The data collected before the last action are not sent by the next action even though the data is collected within the specified time.
 - (3) Operation log data
 - (a) Executing the next action before the time of the last action (The GOT does not send all the data collected after the last acton.)

Example 1) Changing the time from 0:40 to 23:40 on the previous day, and executing the next action at 23:50

: Days specified (1 day)

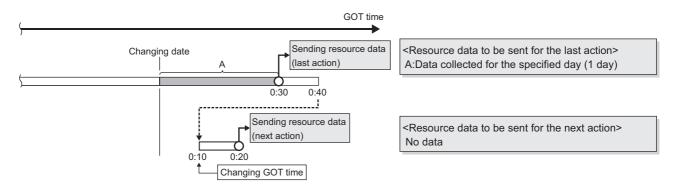


<Resource data to be sent for the last action> A:Data collected for the specified day (1 day)

<Resource data to be sent for the next action> No data

Example 2) Changing the time from 0:40 to 0:10 on the same day, and executing the next action at 0:20

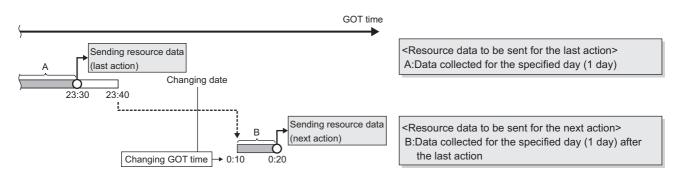
: Days specified (1 day)



(b) Executing the next action after the time of the last action

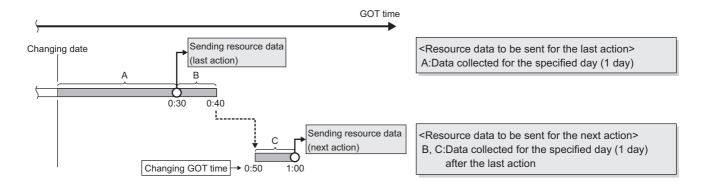
Example 1) Changing the time from 23:40 to 0:10 on the next day, and executing the next action at 0:20

: Days specified (1 day)



Example 2) Changing the time from 0:40 to 0:50 on the same day, and executing the next action at 1:00

: Days specified (1 day)



⊠Point

(1) The GOT sends the resource data only one time, regardless of the settings for [Range of data]. The GOT does not send the sent data to the database. The GOT may send the sent data when restarting the GOT for downloading the project data and others.

Section 6.12 Precautions

(2) When an action fails due to the communication error between the GOT and the server computer or others, the GOT sends the failed action data at the next action.

Remark

The time to complete the resource data send action (Reference value (seconds)) The following shows the resource data send time for the resource type, and the number of resource data (100, 500, 1000, 10000).

Under the following conditions, the values for sending data differ from the reference values in the following table.

- Loads on the GOT or loads on between the GOT and the server computer or others
- MES interface function setting

Pacauras type	Number of resource data			
Resource type	100	500	1000	10000
*1*2	7	31	59	582
Logging*1*2	(5)	(23)	(42)	(410)
Advanced user alarm*3	2	5	8	88
Advanced system alarm*3	2	5	8	-
Operation log*4	1	5	9	82

^{*1} The logging is collected by the buffer historical and the device points set to 250 points and a 100ms cycle for the logging setting.

- *2 When collecting data every 100ms cycle is canceled, the value is shown in the parentheses.
- *3 When sending the alarm comment with 512 one-byte characters.
- *4 When the numbers of insert fields are 7 to 13 by one action.

(9) Generated SQL text

The SQL (INSERT) text generated by the currently editing data for [Transmit resource action] is displayed.

The SQL text shows the display type for the resource data, the character string, and the date.

The GOT does not send the resource data without setting the field name for [Field name setting]. The data with no field name are not included in the SQL text.

The following table shows the display type for the generated resource data and the date at the job execution. (The display type differs from the actual data at the job execution.)

	Item	Description
Resource data ^{*1}		'Data name'
String		'String'
Date	Oracle [®] 8i Oracle [®] 9i Oracle [®] 10g	GOT time: TO_DATE('(Date and time[YYYYMMDDhhmmss])', 'YYYYMMDDHH24MISS') Server time: sysdate GOT time: TO_DATE('(Date and time[YYYYMMDDhhmmss])', 'YYYYMMDDHH24MISS') Server time: CURRENT_TIMESTAMP
	SQL Server 2000/2005 MSDE 2000 Wonderware® Historian Access 2000	GOT time: '(Date and time[YYYY-MM-DD hh:mm:ss])' Server time: CURRENT_TIMESTAMP GOT time: '(Date and time[YYYY-MM-DD hh:mm:ss])'
	Access 2003/2007	Server time: NOW()

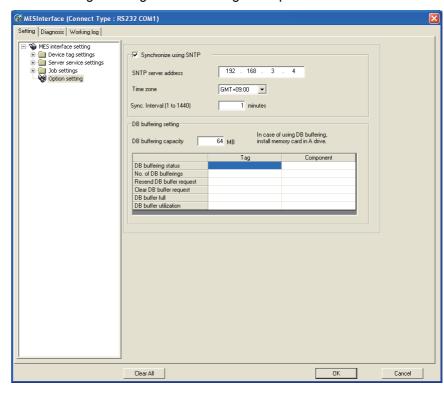
^{*1} For the data name, refer to the following.

This section (5) Field name setting

6.9 Option Setting

Configure the SNTP time synchronization setting and the DB buffering function setting.

- Click [Option setting] in the Edit items tree.
- 2 The "option setting" area is displayed on the detailed setting edit screen. Make the setting referring to the following descriptions.



6.9.1 Setting items in SNTP time synchronization setting

Configure the settings for the SNTP time synchronization function.

Time is obtained from the SNTP server computer on the network and used on the GOT.

⊠Point

To synchronize the time between the GOT and other devices on the network, using the time on the SNTP server computer is recommended.



(1) Synchronize using SNTP

(a) When the [Synchronize using SNTP] box is checked, the time is adjusted to the time of the SNTP server computer on the network.

The timing is as follows:

- · When powering ON the GOT from OFF
- · When resetting the GOT
- Once for every interval specified in Sync. Interval

⊠Point

When the GOT time is set to be synchronized with the clock time of another controller by GT Designer2 and GOT utility, even if the [Synchronize using SNTP] box is checked, the SNTP time synchronization is not performed.

To utilize the SNTP time synchronization, do not set the following:

- [Clock Setting] in [GOT setup] from [System Environment] (Selecting [Adjust] or [Adjust/Broadcast].)
- [Clock Setting] from [System Environment] (Checking the [Clock data GOT is matched to clock data External (Adjust)] box.)

Refer to the following manual.

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(b) When [Synchronize using SNTP] is selected, set the following items.

ltem	Description
SNTP server address	Enter the IP address of the SNTP server or NTP server in decimal
(required)	notation.
Time zone (required)	Select a time zone used for time synchronization.
Time zone (required)	Japan Standard Time (GMT+09:00) is selected by default.
Cyna Interval (required)	Set an interval used for time synchronization.
Sync. Interval (required)	Default is 1 minute.

- (2) When time information is not obtainable from the SNTP server computer When the GOT cannot obtain time information from the SNTP server computer due to failure of the network or time synchronization server, it behaves as follows:
 - (a) When time information is not obtained at the time of powering ON the GOT from OFF, or resetting the GOT
 - 1) Time synchronization is not performed. (Clock data of the GOT are used as they are.)
 - 2) An error is output to the MES interface Execute Log.
 - 3) Time query is executed to the SNTP server computer after the interval specified for Sync. Interval.
 - (b) When time information is not obtained once for each interval specified in Sync. Interval
 - 1) The GOT continues its operations based on the information that was successfully obtained by time query.
 - 2) If the previous time query was successful, an error is output to the MES interface Execute Log.
 - 3) Time query is executed to the SNTP server computer after the interval specified for Sync. Interval.

⊠Point

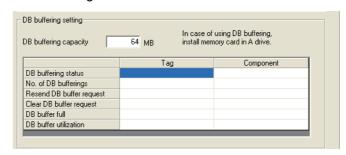
- (1) When time query to the SNTP server computer is executed successfully, it can be also confirmed by the error log.
 - When succeeded in initial time guery An error code is output to the MES interface Execute Log.
 - When failed in previous time guery and succeeded this time An error code is output to the MES interface Execute Log.
- (2) The MES interface Execute Log can be checked on the [Working log] tab. Section 6.11 Working Log
- (3) Precautions on the time synchronization function
 - (a) Synchronizing time with SNTP server computer When [Synchronize using SNTP] is selected, an SNTP server computer is

Note that the SNTP server computer must have the time synchronization server function.

6.9.2 Setting items in DB buffering settings

Configure the settings for the DB buffering function. For the DB buffering function, refer to the following:

Section 5.1.10 DB buffering function



(1) DB buffering capacity (Range: 16MB to 512MB, Default: 64MB) Set the capacity used for DB buffering out of the entire CF card capacity within the following range.

Maximum capacity = CF card capacity - 32M bytes

- (2) DB buffering status
 - (a) Select a tag component into whose device whether data are currently accumulated in the DB buffer or not is stored.Tags that have a tag component with [Array setting] cannot be selected.
 - (b) Data are stored as follows depending on the data type.

Description
OFF: Not accumulated
ON : One or more data accumulated
"0" : Not accumulated
"1" : One or more data accumulated
0 : Not accumulated
1 : One or more data accumulated

(3) No. of DB bufferings

- (a) Select a tag component into whose device whether data are currently accumulated in the DB buffer or not is stored.Tags that have a tag component with [Array setting] cannot be selected.
- (b) Data are stored as follows depending on the data type.

Data type of tag component	Description
Bit	OFF: Not accumulated
DIL	ON : One or more data accumulated
String	"0" : Not accumulated
Sung	1 or greater: Number of buffering data that are accumulated
Other than the above	0 : Not accumulated
Other than the above	1 or greater: Number of buffering data that are accumulated

(4) Resend DB buffer request

- (a) Select a tag component used to request for resend processing of the DB buffer. Tags that have a tag component with [Array setting] cannot be selected.
- (b) The following explains the operation of the resend processing using [Resend DB buffer request].

Data type of tag component	Description
	The resend processing of the DB buffer is performed when the specified tag component is ON.
	Normal: Turns OFF after completion of the resend processing. *1*2 Error:
	Outputs an error code to MES interface Execute Log, and turns OFF.
Bit	Resend DB buffer request Tag component value DB buffer resend processing Execute resend
	The resend processing of the DB buffer is performed when "1" is written to the specified tag component.
String	Normal: "0" is written after completion of the resend processing. *1*2 Error:
	Outputs an error to the MES interface Execute Log, and "0" is written.
	The resend processing of the DB buffer is performed when "1" is written to the specified tag component.
Other than the above	Normal: "0" is written after completion of the resend processing. *1*2 Error:
	Outputs an error to the MES interface Execute Log, and "0" is written.

- *1 Do not change the value of the specified tag component until the resend processing is completed. Even if the value changes, the resend processing is not interrupted.
- *2 To make another DB buffer resend request after completion of resend processing, wait for a sampling interval of the specified tag component or more, and then set the device as follows:
 - Bit type: ON
 - Character string type: "1"
 - Other than the above: 1

(5) Clear DB buffer request

- (a) Select a tag component used to request for clear processing of the DB buffer. Tags that have a tag component with [Array setting] cannot be selected.
- (b) The following explains the operation of the clear processing using [Clear DB buffer request].

Data type of tag component	Description
	The clear processing of the DB buffer is performed when the specified tag component is ON.
	Turns OFF after completion of the clear processing. *3*4
Bit	Clear DB buffer request Tag component value DB buffer clear processing Execute clear
String	The DB buffer is cleared when "1" is written to the specified tag component.
Other than the above (Including string)	"0" is written after completion of the clear processing. *3*4 The DB buffer is cleared when "1" is written to the specified tag component. "0" is written after completion of the clear processing. *3*4

- *3 Do not change the value of the specified tag component until the clear processing is completed. Even if the value changes, the clear processing is not interrupted.
- *4 To make another DB buffer clear request after completion of clear processing, wait for a sampling interval of the specified tag component or more, and then set the device as follows:
 - · Bit type: ON
 - Character string type: "1"
 - Other than the above: 1

(6) DB buffering full

(a) Select a tag component into whose device the status of whether the DB buffer is full or not is stored.

Tags that have a tag component with [Array setting] cannot be selected.

(b) Data are stored as follows depending on the data type.

Data type of tag component	Description
Bit	OFF: DB buffer is not full.
DIL	ON : DB buffer is full.
String	"0" : DB buffer is not full.
String	"1" : DB buffer is full.
Other than the above	0 : DB buffer is not full.
Other than the above	1 : DB buffer is full.

(c) When the DB buffer becomes full, buffering operation will be stopped. After buffering operation is stopped, even if a job for which DB buffering is enabled is activated, its SQL texts are discarded without being buffered. Execution of a job for which DB buffering is enabled is not canceled.

⊠Point

Check [DB buffer utilization] shown in this section (7) to prevent the "DB buffer full" status.

(7) DB buffer utilization

(a) Select a tag component into whose device the utilization of the DB buffer area (unit: %) is stored.

Tags that have a tag component with [Array setting] cannot be selected.

(b) Data are stored as follows depending on the data type.

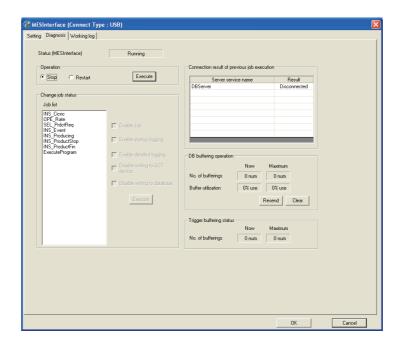
Data type of tag component	Description
Bit	OFF: Not accumulated
Dit	ON : One or more data accumulated
String	"0" : Not accumulated
String	Other than "0": Utilization of DB buffer area (Unit: %)
Other than the above	0 : Not accumulated
Other than the above	Other than 0: Utilization of DB buffer area (Unit: %)

6.10 Diagnosis

Perform the remote diagnosis for the MES interface function.

- 1 Click the [Diagnosis] tab.
- 2 The [Diagnosis] sheet is displayed.

 Operate it referring to the following descriptions.



6.10.1 Checking the MES Interface Function status (Status)

The operation status of the MES interface function can be checked.

The following explains the display of [Status].

The display of [Status] is updated every 3 seconds.

Status (MESInterface)	Running

Display	Description
Running	The MES interface function is working normally.
	The MES interface function is stopped.
Stopped	Even if trigger conditions are met, no job will be executed during stop of
	the function.
	The GOT is in process of powering from OFF to ON, or resetting.
Initializing	Even if trigger conditions are met, no job will be executed during
	initialization.
	The MES interface function is starting up after processing of the above
Starting	Initializing status.
	Even if trigger conditions are met, no job will be executed during startup.
Stopping	The MES interface function is being stopped.
Getting status	The MES interface function setting screen is attempting to acquire the
Getting status	status from the MES interface function.
Connection failed	The MES interface function setting screen failed to connect to the MES
Connection falled	interface function and could not acquire the status.
Error	The MES interface setting has not been done, or the MES interface
LIIUI	function is stopped due to an error.

6.10.2 Manipulating the MES Interface Function status (Operation)

The operation status of the MES interface function can be manipulated.



(1) Stop

Selecting the [Stop] radio button and clicking the Execute button stops the operation of the MES interface function.

⊠Point

If a job is in execution, the MES interface function will stop upon completion of the job.

For completion of a job in which a communication error has occurred, refer to the following:

Section 5.3 (c) When actions are set for a job

(2) Restart

Selecting the [Restart] radio button and clicking the Execute button restarts the operation of the stopped MES interface function.

6.10.3 Changing the job status (Change job status)

The job status can be changed.

⊠Point

The job status changed by this operation returns to the status set in [Job settings] by powering OFF and ON or resetting the GOT.



- 1 From [Job list], select the job whose status is to be changed.
- 2 Select a checkbox of the status to be changed.

Item	Description	
Enable job	Checked The job is enabled and thereby it is executed when the trigger conditions are met. Not checked	
	The job is disabled, and thereby it is not executed even if the trigger conditions are met.	
Enable startup logging *1	 Checked The startup logging is enabled, and thereby startup records are logged. Not checked The startup logging is disabled, and thereby startup records are not logged. 	
Enable detailed logging *2	 Checked The detailed logging is enabled, and thereby detailed records are logged. Not checked The detailed logging is disabled, and thereby detailed records are not logged. 	
Checked Writing to PLC devices is disabled. Not checked Writing to PLC devices is enabled.		
Disable writing to database	 Checked *3 Writing to the database is disabled. Not checked Writing to the database is enabled. 	

- *1 The startup log can be confirmed in [Job Execute Log] on the [Working log] tab.
 - Section 6.11.2 Job Execute Log
- *2 [Enable detailed logging] is selectable only when [Test mode] is selected in [Job settings].
 - Section 6.7.1 (5) Test mode

When [Enable detailed logging] is checked, [Enable startup logging] is also selected.

The detailed log can be confirmed in [Job Execute Log] on the [Working log] tab.

Section 6.11.2 Job Execute Log

- *3 When [Disable writing to database] is checked, the following processing are executed.
 - The SQL text is sent to a database, and then the rollback is executed at the last.
 Errors occur when the server service settings and the settings for the actions in [Job settings], including table names and field names, are incorrect.
 When an error occurs, check the settings.
 - With Wonderware $^{\circledR}$ Historian, the following SQL text is sent because the rollback cannot be used.

INSERT INTO History (Data Time, TagName, Value) SELECT TOP 0 NULL.

NULL. NULL:

Errors occur when the server service settings are incorrect.

When an error occurs, check the server service settings.

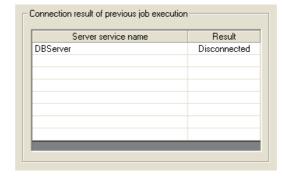
No error occurs even though the settings for the action in [Job settings] are incorrect.

3 Clicking the Execute button changes the job status.

6.10.4 Checking the connection of the previous job execution (Connection result of previous job execution)

Connection with the server computer set in [Server service settings], which is made at the time of the previous job execution, can be checked.

The following explains the display of [Connection result of previous job execution].



Displayed result	Description
Connected	Normally connected to the server computer at the time of the
Connected	previous job execution.
	Initial status (Not connected to the database server computer), or
Disconnected	normal connection could not be established at the previous job
	execution and thereby the line was disconnected.

⊠Point

- The display of the connection result is not changed until the next job is executed to communicate the database server computer.
- The result of the one-shot communication with the database server computer is not reflected.

6.10.5 Manipulating DB buffering (DB buffering operation)

Operate the DB buffering.

For the DB buffering function, refer to the following:

Section 5.1.10 DB buffering function



(1) Number of bufferings and Buffer utilization

This section explains checking the number of data buffered, the current buffer utilizations, and the highest buffer utilizations of the DB buffering function.

Dianley	Description	
Display	Current value	Highest value ^{*2}
No. of bufferings *1	Shows the current number of bufferings	Shows the number of bufferings (number
	(number of buffered jobs).	of buffered jobs) in the past.
D. W (22 (2 *1	Shows the current buffer utilization.	Shows the highest buffer utilization in the
Buffer utilization *1		past.

- *1 A value is not displayed when the value is being obtained or could not be obtained.
- *2 Any of the following operation clears the highest value.
 - · Power off the GOT.
 - · Reset the GOT (when changing the communication settings, etc.)
 - · Install the OS from GT Designer2
 - Download project data, etc.
 - Restart the MES interface function
 - · One-shot execution

Note that the highest value is not cleared if the MES interface function was stopped by the diagnostics function.

(2) Resending data stored in the DB buffer

Clicking the Resend button executes the resend processing of the SQL texts stored in the DB buffer, when manual resend is selected for the jobs of the SQL texts.

If resend processing fails, an error will be output to the MES interface Execute Log.

(3) Clearing the DB buffer

Clicking the Clear button clears all of the SQL texts that are stored in the DB buffer.

6.10.6 Checking the trigger buffering (Trigger buffering status)

This section explains checking the number of data buffered, the current buffer utilizations, and the highest buffer utilizations of the trigger buffering function.

For the trigger buffering function, refer to the following:

Section 5.1.5 Trigger buffering function



Diamless	Descr	ription
Display	Current value	Highest value ^{*2}
No. 2012 (Co. 2002 *1	Shows the current number of bufferings	Shows the number of bufferings
No. of bufferings *1	(number of buffered jobs).	(number of buffered jobs) in the past.

- *1 A value is not displayed when the value is being obtained or could not be obtained.
- *2 Any of the following operation clears the highest value.
 - · Power off the GOT.
 - Reset the GOT (when changing the communication settings, etc.)
 - · Install the OS from GT Designer2
 - · Download project data, etc.
 - · Restart the MES interface function
 - · One-shot execution

⊠Point

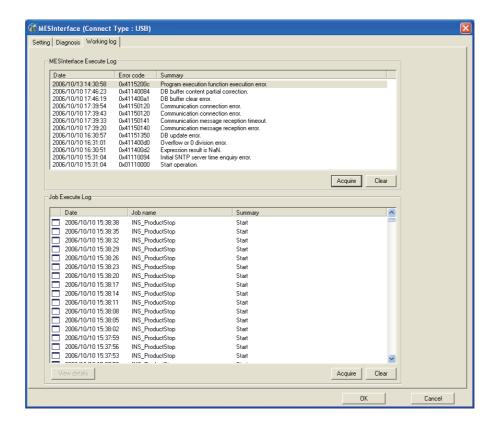
When a large number of data is buffered, check the number of job settings and the trigger condition setting.

6.11 Working Log

The operation log of the MES interface function can be checked. In [Working log], the MES interface Execute Log and the Job Execute Log of the GOT can be checked.

- Click the [Working log] tab.
- 2 The [Working log] sheet is displayed.
- 3 Click the Acquire button.
- 4 Log data are displayed.

 Operate this screen referring to the following descriptions.



6.11.1 MES Interface Execute Log

(1) The MES interface function execution log is displayed. Data displayed in the MES Interface Execute Log are shown below.

Item	Description
Date	Displays the date and time on which an error occurred.
	Displays an error code of the error occurred.
Error code	For error codes, refer to the following:
	Section 8.1 Error Handling and Recovery Method
Summary	Displays an error message.

- (2) Updating the MES interface Execute Log
- Clicking the Acquire button updates the MES interface Execute Log.
- (3) Clearing the MES interface Execute Log
- Clicking the Clear button clears the historical data in the MES interface Execute Log.

6.11.2 Job Execute Log

This area displays event log data of the jobs whose executions have been completed. There are two kinds of Job Execute Log data: [Startup log] and [Detailed log], by which the job startup history and job execution details can be checked respectively.

(1) Startup log

Startup log data of the jobs, each of which has [Startup logging] setting in [Job settings], are displayed.

Section 6.7.1 (4) Startup logging

The following explains the display of the Startup log.

(a) Icon

The completion status of the job is displayed as an icon in the Job Execute Log area.

The following explains the status of each icon.

lcon	Description
	The job was completed normally. (No detailed log)
	The job was completed normally. (With detailed log)
	Selecting the job and clicking the View details button displays the [View details] dialog box.
<u></u>	The job was canceled. (No detailed log)
	The job was canceled. (With detailed log)
=	Selecting the job and clicking the View details button displays the [View details] dialog box.

(b) Date

The date and time of job startup is displayed.

(c) Job name

Started jobs are displayed.

(d) Summary

Trigger instructions are displayed.

Display	Description
Start	Shows that any job other than handshake operation was activated.
Handshake start	Shows that job execution of handshake operation was activated.
Handshake end	Shows that job execution of handshake operation was completed.

(2) Detailed log

Detailed log data of the jobs, each of which has [Test mode] setting in [Job settings], are displayed.

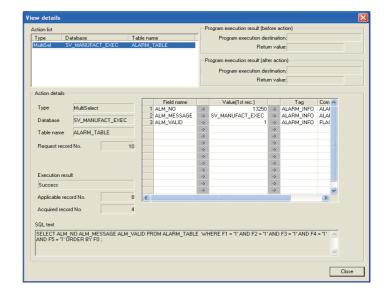
Section 6.7.1 (5) Test mode

⊠Point

Do not remove the CF card from the GOT during detailed log output.

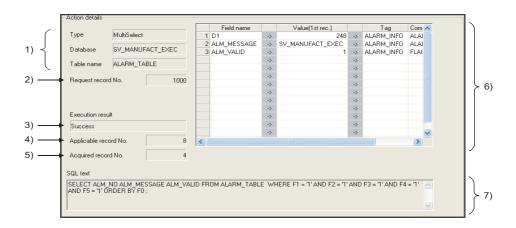
Selecting a job of or icon and clicking the View details button displays the [View details] dialog box.

The following explains the display of the [View details] dialog box.



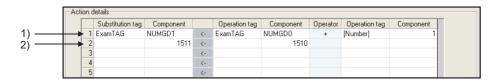
Item	Description
Action list	Displays a list of executed job actions.
Action list	Selecting an action displays its action details.
Program execution result	Displays a program execution result before execution of the first
(before action)	action.
Program execution result	Displays a program execution result after execution of the last action.
(after action)	Displays a program execution result after execution of the last action
Action details *1 *2 *3	Displays the action details.

*1 In the case of Communication action



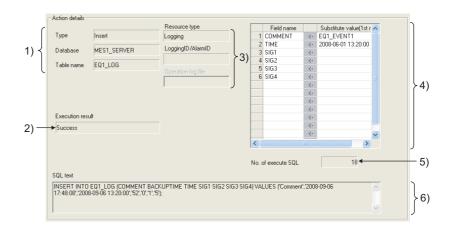
	Display	Description	
1)	Type, Database, Table	Displays data of [Action type], [Database], and [Table name], which	
	name	were set in [Communication action].	
2)		Displays the number of records specified for [Specify the maximum	
		number of acquiring records] in the Multi select setting screen for the	
	Request record No.	communication action.	
		When the number of records is not specified, [No specification] is	
		displayed.	
		Displays the execution result of the SQL text.	
		When succeeded	
3)	Execution result	[Success] is displayed.	
		When failed	
		[Failed] is displayed.	
	Applicable record No. (Insert records No.)	When [Select] or [MultiSelect] is selected for [Action type]	
		The number of records that meet the Select/Update conditions is	
		displayed.	
		When [Update] is selected for [Action type]	
		The number of updated records is displayed.	
		When [Insert] is selected for [Action type] ([Insert records No.] is displayed.)	
4)		The number of inserted records is displayed.	
		When the database is Wonderware ® Historian, the number of	
		inserted records is displayed as 0 with the following operations and settings.	
		Test mode One-shot execution	
		Settings without writing to the database	
	Acquired record No.	Displays the number of acquired records when [Select] or [MultiSelect]	
5)		is selected for [Action type].	
0)	DB-tag link settings	Displays data of [DB-tag link settings], which were set in	
6)		[Communication action].	
7)	SQL text	The SQL text executed in [Communication action] is displayed.	

*2 In the case of Operation action



	Display	Description
1)	Upper row	Displays the settings of [Operation action].
2)	Lower row	Displays values calculated in [Operation action].

3 In the case of Transmit resource action



	Display	Description
1)	Type, Database, Table	Displays data of [Action type], [Database], and [Table name], which
	name	were set in [Communication action].
		Displays the execution result of the SQL text.
		When succeeded
2)	Execution result	[Success] is displayed.
		When failed
		[Failed] is displayed.
	Pagauras type Lagging ID/	Displays the data of [Resource type], [Logging ID/Alarm ID], and
3)	Resource type, Logging ID/ Alarm ID, Operation log file	[Operation log file] (the stored location for the operation log file) set for
		[Transmit resource action].
		Displays the field name set on [Field name setting] in [Transmit
	Field name setting	resource action] and the substitute value.
		When the resource data to be sent exists
4)		Displays the substitute value sent the first.
		When the resource data to be sent does not exist. (all or part of the
		substitute value for the field)
		No data is inserted to [Value(1st rec.)].
		Displays the number of the SQL texts sent for [Transmit resource
	No. of execute SQL	action].
		Displays 0 in the following cases.
5)		When sending no resource data (substitute values for all the fields)
		When a communication error occurs between the GOT and the
		database
		When the SQL text cannot be sent to the database.
		Displays the SQL text executed for [Transmit resource action].
6)	SQL text	Displays no data when sending no resource data (all or part of
		substitute values for the field)

- (3) Updating the Job Execute Log
 - Clicking the Acquire button updates the Job Execute Log.
- (4) Clearing the Job Execute Log
 - Clicking the Clear button clears the Job Execute Log.

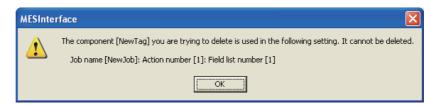
6.12 Precautions

Precautions for the MES interface function setting are described below.

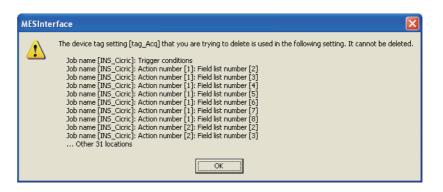
- (1) When adding, editing or deleting a MES interface setting Adding a new MES interface setting, or editing or deleting an existing one is performed on the MES interface function setting screen. To newly add, edit or delete a MES interface setting, have the MES interface function setting screen displayed on GT Designer2.
- (2) When deleting an item

Deleting an item such as [Device tag settings] is not allowed when the selected item is used for another item such as [Job settings].

As the error dialog box appears, identify the location, stop using it for another item, and then delete the item.



Up to ten locations of usage are displayed in the error dialog box. If the item is used in 11 other items or more, the dialog box is displayed as shown below.



(3) Type mismatch

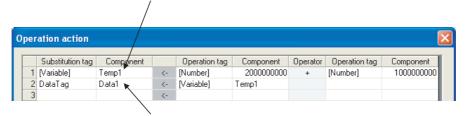
(a) Value substitution

A value is assigned to a tag component after the type of the source is converted into the type of the tag component.

A value is assigned to a variable after the type of the variable is converted into the type of the substitution source.

(Example) Type conversion of tag components and variables

Because the operation result is out of the range for the integer type, the variable Temp1 is the floating-point type.



A value is assigned after being converted to the type for the tag component. For example, when the tag component, Data1, is double-precision type data, the type of the variable, Temp1, is converted from floating-point to double-precision first, and then the converted value is assigned.

If a type that cannot be converted is assigned to a tag component, the job execution is canceled.

At this time, "Type conversion to tag component error" is displayed in the MES interface Execute Log.

(b) Operation of numerical values

There are two kinds of numerical values: Integer type and Floating-point type.

- Integer type: Represents the bit type, single-precision type, and double-precision type of tag components.
- Floating-point type: Represents the floating-point type of tag components.

The following table lists operation items and types of the results.

ltem	Operation result
Operation of floating-point type	Floating-point type in all cases
Addition, subtraction,	In the range from -2147483648 to 2147483647: Integer type
multiplication of Integer type	Exceeding the above range: Floating-point type
Division of Integer type	Divisible: Integer type
	Not divisible: Floating-point type
	When zero divide is executed, the job execution is canceled.
	At this time, "Zero divide error" is displayed in the MES interface
	Execute Log.

(c) Operation between character string type values

1) + operator

Combines character strings.

Example: "ABCDEFG" + "HIJ" → "ABCDEFGHIJ"

2) Other operators

When both of the operands can be converted to numerical values, the operation is performed using the numerical values.

Both or either of them cannot be converted to numerical values, the job execution is canceled.

At this time, "Operation error" is displayed in the MES interface Execute Log. Example: "312" \times "4" \to "1248"

"31AH" × "4" → Cancellation of job execution

3) Operation between a character string type value and a numerical type value Same as the case of the operation between character string type values

(4) Precautions resource data send action

(a) Checking resource data

The settings for collecting the resource data must be matched to the settings for the resource data send action. When the settings are not matched, an error may occur at the job execution.

When setting for the resource data send action, click the Confirm setting button, and then check that [No problem in the resource setting.] is displayed.

When the resource data send action setting differs from the setting for collecting

When the resource data send action setting differs from the setting for collecting the resource data, the following error message are displayed.

Resource type	Error message	Corrective action
Logging	Logging function setting does not exist.	Set [Logging Setting].
Logging	The logging ID is not	Set the logging ID in [Logging ID/Alarm ID] that is set
	available.	for [Logging Setting].
Advanced user	Advanced user alarm function setting does not exist.	Set [Advanced User Alarm Observation].
alalili	The alarm ID is not	Set the alarm ID in [Logging ID/Alarm ID] that is set
	available.	for [Advanced User Alarm Observation].
Advanced system	Advanced system alarm	Check [Use System Alarm] for [Advanced System
alarm	function is not available.	Alarm].
	Operation log function is not	Check [Use Operation Log Settings] for [Operation
Operation log	available.	Log Setting].
Operation log	The operation log file name	Click the Set operation log file name button to obtain
	is mismatch.	the stored file for the operation log setting.

(b) Conditions for sending the sent resource dataWhen restarting the GOT, the GOT may send the sent data.Multiple records are created in the database when the GOT sends the sent data.The following shows conditions for sending the sent resource data.

Resource type	Condition
Logging	No sent resource data is sent.
Advanced user alarm	When restarting the GOT, the sent resource data is stored in the alarm
	log file.
Advanced system alarm	When restarting the GOT, the sent resource data is stored in the alarm
	log file.
Operation log	When restarting the GOT, the sent resource data is stored in the
	operation log file.

- (c) Collecting no resource data when executing an action
 - When the data in the field set for [Field name setting] does not exist.
 The GOT sends the data of "" (Null) to the field.
 The following resource data shows the resource data types with no data depending on conditions.

Resource type	Insert data	Action execution
Logging	LoggingDevice	Sending no data
Advanced user alarm	Comments	Sending ""(Null) data
Advanced system	None	
alarm	Notice	-
Operation log	Object name(OPNAME), Operation	
	level(OPERATOR), Operation	
	level(OPE_ID), User ID(USER_ID), Action	
	No.(ACT_NO), Data type(DATA_TYPE),	Sending no data
	Device name(DEV_NAME), Change	
	value(CHG_VALUE), Previous	
	value(PREV_VALUE)	

⊠Point

Set "null-capable" in the fields for the database.

Without setting "null-capable", an error occurs at the job execution.

For the database setting, refer to the manual for the database to be used.

Collecting no resource data after the last action
 The action is succeeded without communicating the GOT with the database.
 (The MESInterface Execute Log is output.)

The access log is not output to the server computer.

CHAPTER 7 DB CONNECTION SERVICE AND SETTING **TOOL**

This chapter explains DB Connection Service and DB Connection Service Setting Tool.

7.1 DB Connection Service Functions

Installing DB Connection Service on the server computer allows to use the MES interface function of the GOT.

The following shows the functions of the DB Connection Service.

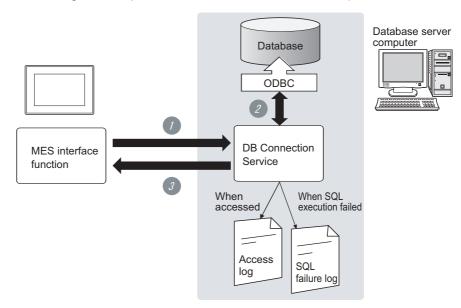
⊠Point

- (1) It is necessary to install DB Connection Service on all the database server computers and application server computers to be accessed from the GOT.
- (2) When using DB Connection Service on a database server computer, the ODBC setting for the database used must be made beforehand.
 - Section 7.2 Setting ODBC of Database
- (3) When using DB Connection Service on an application server computer, an account for user program execution must be created beforehand.
- (4) Changes to the DB Connection Service settings are made with DB Connection Service Setting Tool.
 - Section 7.5 Setting Items of DB Connection Service Setting Tool

(1) ODBC connection function

The OBDC connection function connects the GOT and the ODBC interface for database.

The following shows operation on the database server computer.

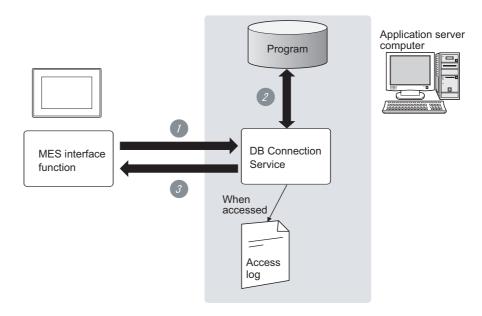


- Receives SQL texts from the GOT.
- Accesses the database via ODBC interface and executes the SQL text.
- 3 Sends the SQL text execution results to the GOT.

(2) Program execution function

The program execution function executes a program on an application server computer upon request from the GOT.

The following shows operation on the application server computer.



- Receives a program execution request from the GOT.
- 2 Executes programs on the application server computer.
- 3 Sends the program execution results to the GOT.
- (3) IP filter function (Section 7.5 (3) Limit IP addresses which permit to connect)

The IP filter function allows specification of the IP address of the GOT that can connect to the DB Connection Service, ensuring the security of the server computer. Batch specification using the mask bit length specification is possible. If the IP filter function is not used, any GOT can connect to DB Connection Service.

(4) Log output function

DB Connection Service outputs an access log and an SQL failure log.

(a) Access log (Section 7.5 (4) Output access log)

The communication contents between the GOT and DB Connection Service are output to the access log.

For access log specifications, refer to the following.

Section 7.8.1 Access log

(b) SQL failure log (Section 7.5 (5) Output SQL failed log)

If data cannot be updated/inserted normally due to an error such as no table at SQL text execution, the error information is output to the SQL failure log.

For SQL failure log specifications, refer to the following.

Section 7.8.2 SQL failure log

7.2 Setting ODBC of Database

When using DB Connection Service on a database server computer, the ODBC setting for the database used must be done beforehand.

For the ODBC setting, refer to the following.

Manuals and online help for the database software and operating system (OS) used

(1) When Oracle® 8i, 9i or 10g is used

(This section gives a setting example of using Oracle® 9i Standard Edition in Microsoft® Windows® XP Professional Operating System.) Set the following conditions.

- Data source name *1 : SAMPLEDS
- TNS Service Name *2 : SAMPLETNS
- OracleHome: OraHome92
- *1 Data source name can be set as desired.

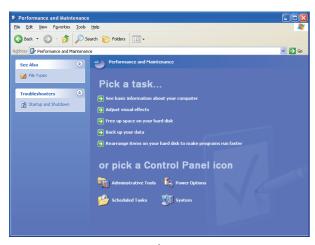
 For [Data source name] in [Server service settings], use the name set with this setting.
- *2 The TNS service name is the name for accessing an Oracle® database.

 The name is entered when installing Oracle® and creating a database instance.

 This can be checked with [Configuration and Migration Tools] [Net Manager] [Service naming] of

(Start)

Oracle®.

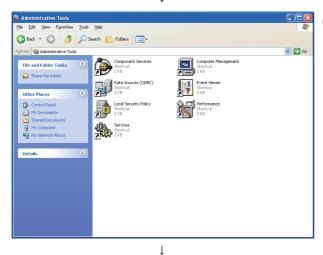


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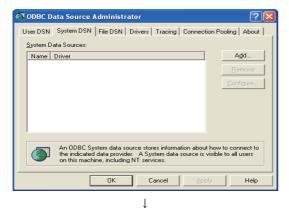
Clicking [Performance and Maintenance] in Control Panel displays the [Performance and Maintenance] dialog box.

To display Control Panel, select [Start] \rightarrow [Control Panel].

(From the previous page)



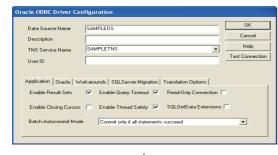
Double-clicking [Administrative Tools] displays the [Administrative Tools] dialog box.



3 Double-clicking [Data Sources (ODBC)] displays the [ODBC Data Source Administrator] dialog box. Select the [System DSN] tab, and click the Add button.



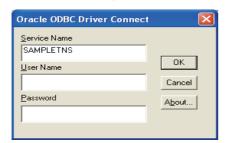
4 The [Create New Data Source] dialog box is displayed. Select [Oracle in OraHome92].



↓ (To the next page)

- In the displayed [Oracle ODBC Driver Configuration] dialog box, set the following.
 - [Data source name]: SAMPLEDS[TNS Service Name]: SAMPLETNS

(From the previous page)



6 Clicking the Connection test button displays the [Oracle ODBC Driver Connect] dialog box. Enter the user name and password, then click the OK button.



1

- If the connection is normal, the confirmation dialog box appears.
- 8 Click the OK button in the [Oracle ODBC Driver Configuration] dialog box.
- 9 Click the OK button in the [ODBC Data Source Administrator] dialog box.

(Completed)

1

(2) For Microsoft® SQL Server 2000, Microsoft® SQL Server 2005, MSDE 2000 and Wonderware® Historian 9.0

(The following shows a setting example using Microsoft® SQL Server 2000 with Microsoft® Windows® XP Professional Operating System.) Set the following conditions.

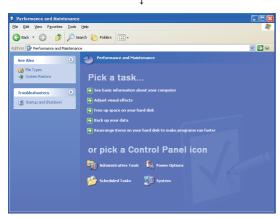
- Data source name*1: SAMPLEDS
- Server name^{*2}: SAMPLESRV
- *1 Data source name can be set as desired.

 For [Data source name] in [Server service settings], use the name set with this setting.
- *2 The server name is the name for accessing a Microsoft® SQL Server 2000 database.

 This name is entered when installing Microsoft® SQL Server 2000.

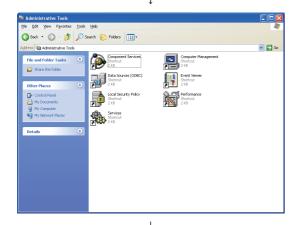
 This can be checked with the SQL Server service manager server.

(Start)



Clicking [Performance and Maintenance] on the Control Panel displays the [Performance and Maintenance] dialog box.

To display the Control Panel, select [Start] \rightarrow [Control Panel].



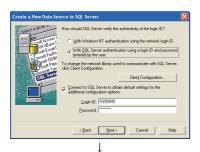
Clicking [Administrative Tools] displays [Administrative Tools] dialog box.

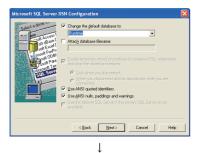


Obuble clicking [Data Sources (ODBC)] displays [ODBC Data Source Administrator] dialog box. Select the [System DSN] tab, then click the Add button.

(From the previous page)







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The [Create New Data Source] dialog box is displayed, then select [SQL Server].

- 5 The [Create a New Data Source to SQL Server] dialog box is displayed, then set the following.
 - [Data source name]: SAMPLEDS
 - [Server name]: SAMPLESRV
- 6 Select the [With SQL Server authentication using a login ID and password entered by the user.] radio button, then enter [Login ID] and [Password].

REMARKS

< Setting Wonderware® Historian >
Mark a check in [Change the default value to] and
select [Runtime].

(From the previous page)



In the [ODBC Microsoft SQL Server Setup] dialog box, click the [Test Data Source] button to check that the connection is normal.

- 8 Click the OK button in the [SQL Server ODBC Data Source Test] dialog box.
- Olick the OK button in the [ODBC Microsoft SQL Server Setup] dialog box.
- 10 Click the OK button in the [ODBC Data Source Administrator] dialog box.

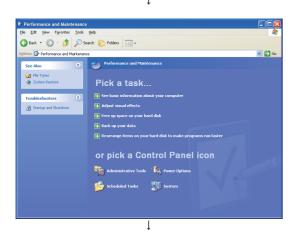
↓ (End) (3) For Microsoft® Access 2000, Microsoft® Access 2003, and Microsoft® Access 2007

(The following shows a setting example using Microsoft® Access 2003 with Microsoft® Windows® XP Professional Operating System.) Set the following conditions.

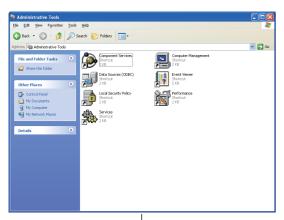
- Data source name*1: SAMPLEDS
- Database name*2: C \ mes \ sampledb.mdb
- *1 Data source name can be set as desired.

 For [Data source name] in [Server service settings], use the name set with this setting.
- *2 The database name is the name for accessing a Microsoft® Access 2003 database. Specify a database file path created with Microsoft® Access 2003.

(Start)



Clicking [Performance and Maintenance] on the Control Panel displays the [Performance and Maintenance] dialog box. To display the Control Panel, select [Start] → [Control Panel].



Clicking [Administrative Tools] displays [Administrative Tools] dialog box.



(To the next page)

ODBC Data Source Administrator dialog box.

Select the [System DSN] tab, then click the Add button.

(From the previous page)



 \downarrow



↓ (End)

- 4 The [Create New Data Source] dialog box is displayed, then select [Microsoft Access Driver(*.mdb)].
 - < When using Microsoft® Access 2007 > Select "Microsoft Access Driver(*.mdb. *accdb)".
- The [ODBC Microsoft Access Setup] dialog box is displayed. Set the following and click the [Database] selection button.
 - [Data source name]: SAMPLEDS
- 8 The [Select Database] dialog box is displayed. Select the following and click the OK button.
 - [Folder]: C \ mes
 - [Database Name]: sampledb.mdb
- 9 Click the OK button in the [ODBC Microsoft Access Setup] dialog box.
- 10 Click the OK button in the [ODBC Data Source Administrator] dialog box.

7.3 Starting DB Connection Service Setting Tool

For information on how to start DB Connection Service Setting Tool, refer to the following manual.

☐ GT Designer2 Version☐ Basic Operation/Data Transfer Manual (Section 2.4 Starting the Software)

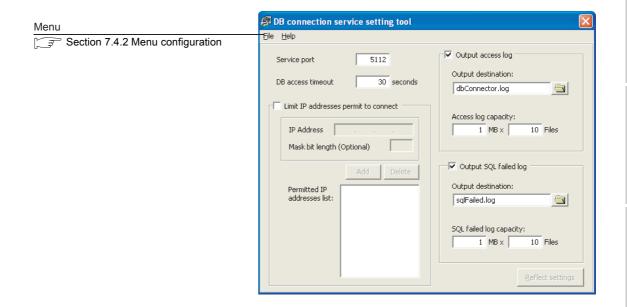
⊠Point

Only one DB Connection Service Setting Tool can be activated.

7.4 Screen Structure of DB Connection Service Setting Tool

This section explains the screen structure of DB Connection Service Setting Tool.

7.4.1 Screen structure



7.4.2 Menu configuration

This section shows each command provided on the menu bar.

(1) File



Item	Description	Reference section
Import	Imports an existing file.	Section 7.6
Export	Exports the DB Connection Service Setting Tool to a file.	Section 7.0
Exit	Exits the DB Connection Service Setting Tool.	-

(2) Help



ltem	Description	Reference section
Product information	Displays product information of the DB Connection Service Setting Tool.	Section 7.7
Connect to MELFANSweb	Displays the [Connect to MELFANSweb] screen.	Section 7.7

7.5 Setting Items of DB Connection Service Setting Tool

The following shows how to change the DB Connection Service settings.

- Set the following items and click the Reflect settings button.
- 2 After updating the settings, check for an error by selecting [Administrative Tools] [Event Viewer] in Windows®.

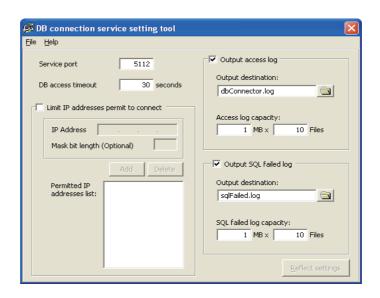
Section 8.1 (2) Error checking procedure

⊠Point

(1) Change the DB Connection Service settings while a job using the DB Connection Service is not operating.

The status is as follows:

- The GOT is powered OFF.
- The MES interface function operation is stopped by [MES interface setting] [Diagnosis] tab.
- Section 6.10.2 Manipulating the MES Interface Function status (Operation)
- (2) If any changed settings are entered with a job using DB Connection Service being operating, the execution of the connected job is canceled and a communication error occurs.
 - Also, for a job to which [Enable DB buffering] is selected, SQLtexts are buffered in the DB buffer.



ltem	Description
Service port (required)	Set the number of a port through which the DB Connection Service
	operates.
	Set a DB access timeout time (Unit: seconds) for writing/reading a
DB access timeout	database value from the GOT to the server computer, or for the case
	where no response is returned after request for program execution.
Limit IP addresses which	Specify whether or not to set IP addresses to which connection is to be
permit to connect	permitted.
Output access log	Set whether or not to output the access log.
Output SQL failed log	Set whether or not to output the SQL failure log.

(1) Service port (required) (Range: 1024 to 65535, Default: 5112) Set the number of a port through which the DB Connection Service operates. The specified port number is used for communications with the GOT. Set the same value in [Service port] as the one set in [Port No.] in [Server service settings] under [MES interface setting].

Section 6.6.1 Setting items in Server service settings

(2) DB access timeout (required) (Range: 1 to 3600; Default: 30) Set a DB access timeout time (Unit: seconds) for writing/reading a database value from the GOT to the server computer, or for the case where no response is returned after request for program execution. When a timeout occurs, the connection with the GOT is disconnected and job

When a timeout occurs, the connection with the GOT is disconnected and job execution is canceled.

⊠Point

Set a value to [DB access timeout] so that the relation with a value set in [Connection timeout] in [MES Interface Configuration Tool] is as follows:

- (3) Limit IP addresses which permit to connect
 - (a) Specify whether or not to set IP addresses to which connection is to be permitted. If the [limit IP addresses which permit to connect] box is checked, connection is permitted from only the GOT with the specified IP address. For IP addresses that are permitted to connect to DB Connection Service, at least one IP address setting is required and up to 64 addresses can be set. If the box is not checked, connection from any GOT will be permitted.
 - (b) When [limit IP addresses which permit to connect] is selected, set IP address(es).
 - Adding an IP address to permit its connection <Specifying individual IP addresses>
 - Set the following items and click the Add button.

ltem	Description
IP address	Set an IP address in decimal notation so that its connection will be permitted.
Mask bit length	(Blank)

2 The IP address is added to the [Permitted IP addresses list]. (Example) 192.168.0.64

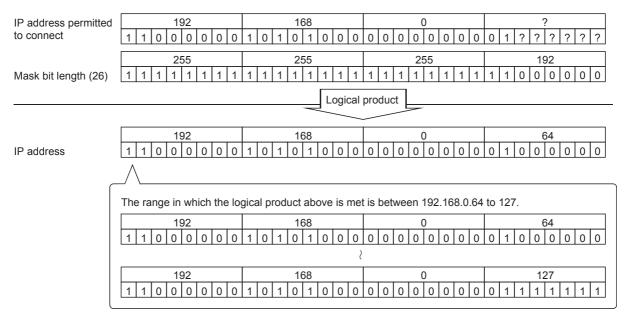
<Specifying IP addresses in a batch>

Set the following items and click the Add button.

Item	Description	
IP address	Set an IP address in decimal notation so that its connection will be permitted.	
Mask bit length	Set the effective bit length of the set IP address. (Range: 1 to 32)	

2 The IP address/mask bit length is added to the [Permitted IP addresses list]. (Example) 192.168.0.64/26

(Example) Specifying IP addresses in a batch If [192.168.0.64] is set for [IP address] and [26] for [Mask bit length], the IP addresses set for connection permission are [192.168.0.64] to [192.168.0.127], as the logical product is [192.168.0.64].



- 2) Deleting an IP address with connection permission
- Select the IP address to be deleted from [Permitted IP addresses list], then click the Delete button.
- (4) Output access log

(Default: Output)

- (a) Set whether or not to output the access log.
- (b) When [Output access log] is selected, set the following items.

Item	Description
Output destination	Set the output destination of the log file.
Access log capacity	Set the capacity for one access log file and the number of files.

1) Output destination (Default: "dbConnector.log")

Set the output destination of the log file.

If no output destination is set, the log is output to the install folder.

If a read-only file is specified, the log is not output and an [Access log output error] is output to [Event Viewer] of [Administrative Tools] in Windows®.

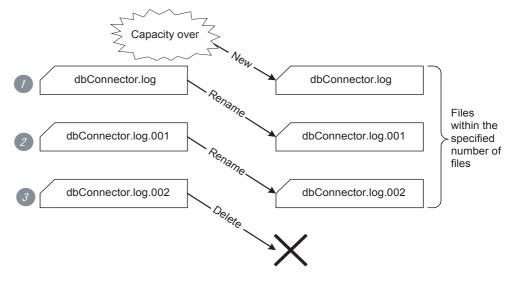
2) Access log capacity (Range: 1 to 10MB \times 2 to 100 files, Default: 1MB \times 10 files)

Set the capacity for one access log file and number of files.

If the log exceeds the capacity for one file, the data are copied to a file of the original name with a number attached and a new log file is created.

If the total number of files exceeds the set number of files, files are deleted in order from the oldest one.

(Example) When [Output destination] is set as [dbConnector.log] and [Access capacity] as [1MB \times 3 files]



- When [dbConnector.log] exceeds 1M byte, it is renamed as [dbConnector.log.001].
 A new [dbConnector.log] is created and logging resumes.
- 2 [dbConnector.log.001] is renamed as [dbConnector.log.002].
- 3 The total number of files exceeds 3 if [dbConnector.log.002] is renamed, therefore [dbConnector.log.002] is deleted.
- (5) Output SQL failed log (Default: Output)
 - (a) Set whether or not to output the SQL failure log.
 - (b) When [Output SQL failed log] is selected, set the following items.

Item	Description
Output destination	Set the output destination of the log file.
SQL failure log capacity	Set the capacity for one SQL failure log file and the number of files.

- Output destination (Default: "SQLFailed.log")
 Set the output destination of the log file.
 If no output destination is set, the log is output to the install folder.
 If a read-only file is specified, the log is not output and an [SQL failure log output error] is output to [Event Viewer] of [Administrative Tools] in Windows®.
- 2) SQL failure log capacity (Range: 1 to 10MB \times 2 to 100 files, Default: 1MB \times 10 files)

Set the capacity for one SQL failure log file and the number of files. If the log exceeds the capacity for one file, the data are copied to a file of the original name with a number attached and a new log file is created. If the total number of files exceeds the set number of files, files are deleted in order from the oldest one.

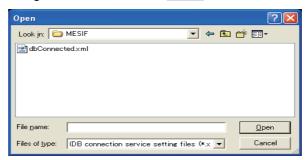
7.6 Importing/Exporting Files

Import/export files.

(1) Import

An existing file can be imported.

- Select [File] → [Import] from the menu.
- The [Open] dialog box is displayed.
 Set the following items, then click the Open button.

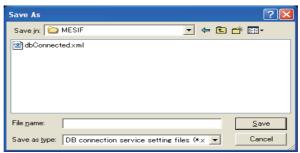


Item	Description
Look in	Select the location where the file is stored.
File name	Specify the name of the file to be imported.
Files of type	Select a type of the file to be imported.
	DB connection service setting files

(2) Export

DB Connection Service Setting Tool can be exported to a file.

- \bigcirc Select [File] \rightarrow [Export] from the menu.
- The [Save As] dialog box is displayed. Set the following items, then click the button.



Item	Description
Save in	Select the location where the file is to be saved.
File name	Specify the name of the file to be saved.
Files of type	Select a type of the file to be saved.
i lies of type	DB connection service setting files

7.7 Help

The product information of the DB Connection Service Setting Tool and the Connect to MELFANSweb screen can be displayed.

(1) Product information

- \bigcirc Select [Help] \rightarrow [Product information] from the menu.
- 2 The [Product information] dialog box of the DB Connection Service Setting Tool is displayed.



(2) Connect to MELFANSweb

- Select [Help] → [Connect to MELFANSweb] from the menu.
- 2 The [Connect to MELFANSweb] dialog box is displayed.



Clicking the OK displays the MELFANSweb page.

Online manuals and other information can be viewed on the website.

7.8 Output Log Specifications

The following shows the output log format for the access log and SQL failure log given in Section 7.8.1 and later.

[Date] [Error code] message Line feed

		ltem		Description
	First line			
		Year	1st to 4th bytes from the line head	Four-digit integer for year (Numbers)
		Year - Month delimiter	5th byte from the line head	"/" (Slash: 2Fн)
		Month	6th and 7th bytes from the line head	2-digit integer (01 to 12) (Numbers)
		Month - Day delimiter	8th byte from the line head	"/" (Slash: 2Fн)
		Day	9th and 10th bytes from the line head	2-digit integer (01 to 31) (Numbers)
		Day - Hour delimiter	11th byte from the line head	" " (Space: 20н)
	[Date]	Hour	12th and 13th bytes from the line head	2-digit integer (00 to 23) (Numbers)
		Hour - Minute delimiter	14th byte from the line head	":" (Colon: 3AH)
		Minute	15th and 16th bytes from the line head	2-digit integer (00 to 59) (Numbers)
		Minute - Second delimiter	17th byte from the line head	":" (Colon: 3Aн)
		Second	18th and 19th bytes from the line head	2-digit integer (00 to 59) (Numbers)
Output character		Second - Millisecond delimiter	20th byte from the line head	"." (Period: 2EH)
		Millisecond	21st to 23rd bytes from the line head	3-digit integer (000 to 999) (Numbers)
	Millisecor	nd - Error code delimiter	24th byte from the line head	" " (Space: 20н)
	[Error code]*1		25th to 34th bytes from the	Alphanumeric character of "0x"+8-
			line head	digithexadecimal
	Error cod	e - Message delimiter	35th byte from the line head	" " (Ѕрасе: 20н)
	Message		36th and later bytes from the line head	Compliant with the specifications of each log
	Line feed		End of line	CR + LF (0DH, 0AH)
	Second line (For database errors only)			
	Tab		Line head	TAB (09H)
	Database message header		2nd to 17th bytes from the line head	"Database Message "
	Database message header - Database message delimiter		18th byte from the line head	" " (Ѕрасе: 20н)
	Database message		19th and later bytes from the line head	Error messages that the database outputs
	Line feed		End of line	CR + LF (0DH, 0AH)

^{*1} For error codes, refer to the following:

Section 8.1 Error Handling and Recovery Method

7.8.1 Access log

The following explains the access log contents.

(1) Service start/end

(a) Start

Item	Description
Output log format	[Date] [Error code] Service Start
Example	2005/07/01 12:00:00.000 0x00000000 Service Start

(b) End

Item	Description
Output log format	[Date] [Error code] Service Stop
Example	2005/07/01 12:00:00.000 0x00000000 Service Stop

(2) Connection/disconnection from the GOT

(a) Connection

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:MIFWS Connected:[Source IP]:[Target data source]:
	[Connection ID]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:MIFWS Connected:192.168.3.3:DataSource:ID

(b) Disconnection

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:MIFWS Disconnected:[Source IP]:[Target data source]:[Connection ID]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:MIFWS Disconnected:192.168.3.3:DataSource:ID

(3) Connection/disconnection to a database

(a) Connection

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:DB Connect:[Target data source]: [Connection ID]:[Connection result*1]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:DB Connect:DataSource:ID:Success

^{*1} When succeeded: Success, when failed: Failed

(b) Disconnection

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:DB Disconnect:[Target data source]: [Connection ID]:[Disconnection result*1]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:DB Disconnect:DataSource:ID:Success

¹ When succeeded: Success, when failed: Failed

(4) SQL text reception/processing results

(a) SELECT

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:[Processing result*2]([No. of selected records])
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:SQL <select col="" from="" table;="">:Success(1)</select>

*2 When succeeded: Success ([No. of selected records]), when failed: Failed (Line feed) Database message

(b) UPDATE

Item	Description	
Output log format	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:[Processing result*3]([No. of updated records])	
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:SQL <update ";="" col="" set="" table="">:Success(1)</update>	

*3 When succeeded: Success ([No. of updated records]), when failed: Failed (Line feed) Database message

(c) INSERT

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:SQL<[SQL text]>:[Processing result*4]([No. of inserted records])
Evemple	2005/07/01 12:00:00.000 0x00000000 SID 0:SQL <insert (="" (")<="")="" col="" into="" table="" td="" values=""></insert>
Example	;>:Success(1)

*4 When succeeded: Success ([No. of inserted records]), when failed: Failed (Line feed) Database message

(d) COMMIT

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:COMMIT:[Processing result*5]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:COMMIT:Success

*5 When succeeded: Success, when failed: Failed (Line feed) Database message

(e) ROLLBACK

Item	Description
Output log format	[Date] [Error code] SID [Session ID]:ROLLBACK:[Processing result*6]
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:ROLLBACK:Success

*6 When succeeded: Success, when failed: Failed (Line feed) Database message

(f) GetNext (Request for next record)

ltem	Description	
Output log format	[Date] [Error code] SID [Session ID]:GetNext:[Processing result*1]	
Example	2005/07/01 12:00:00.000 0x00000000 SID 0:GetNext:Success	

^{*1} When succeeded: Success, when failed: Failed (Line feed) Database message

(5) Program execution reception/processing results

Item	Description	
Output log format	[Date] [Error code] SID ProgramExec:[Source IP]:<[Command line]>[Processing result*2]([Return value])	
Example	2005/07/01 12:00:00.000 0x00000000 ProgramExec:192.168.3.3: <hoge.exe>:Success(0)</hoge.exe>	

^{*2} When succeeded: Success ([Return value]), when failed: Failed only

7.8.2 SQL failure log

The following shows the SQL failure log contents.

Item	Description	
Output log format	[Date] [Error code] [Target data source]:[SQL text]	
Example	2005/07/01 12:00:00.000 0x00000000 DataSource:INSERT INTO TABLE (COL) VALUES (");	
	Database Message 0x00000388 [Oracle][ODBC][Ora]ORA-00904: "NUM" :invalid identifier	

CHAPTER 8 TROUBLESHOOTING

8.1 Error Handling and Recovery Method

This section describes how to check an error output when using the MES interface function.

(1) Error checking and restoration

The following lists the points to be checked when an error occurred, and corresponding recovery methods.

Error type	Check point	Recovery method
MES interface setting error	Check a warning dialog displayed when a setting out of the permitted range was made in the MES interface function setting.	When a value out of the permitted range has been entered in the MES interface function setting, disable the entry and return to the previous status.
MES interface function execution error	 Check the GOT for a system alarm. Check the MES interface Execute Log. Check the status information. Check the value of the tag component used for notification. 	 If any problem is found in the setting, reconfigure the MES interface setting and restart the GOT. For an error of the GOT or a controller, restore it to normal condition according to its specifications.
DB Connection Service setting error	Check a warning dialog displayed when a setting out of the permitted range was made in DB Connection Service Setting Tool.	When a value out of the permitted range has been entered in DB Connection Service Setting Tool, disable the entry and return to the previous status.
DB Connection Service execution error	Check Event Viewer of Windows®. Check the access log file. Check the SQL log file.	 If any problem is found in the setting, reconfigure the settings in DB Connection Service Setting Tool and restart DB Connection Service. If the server computer has a problem, resolve it and restart DB Connection Service.

⊠Point

If more than one error are displayed in the error log of [MESI/F Log] or by error dialog boxes, take corrective actions in chronological order.

(2) Error checking procedure
For error codes, refer to the following:

Section 8.2 Error Code List

Item	Checking procedure		
MES interface function execution	Shows how to check an error occurred in execution of the MES interface function.		
System alarm checking	For the system alarm checking procedure, refer to the following manual.		
procedure	GT Designer2 Version Screen Design Manual		
Working log checking	Connect the operating GOT to a configuration computer.		
procedure *1	Display the Working log sheet in the MES interface setting.		
procedure	Display the detailed log from the Working log sheet and check the data.		
Status checking	Connect the operating GOT to a configuration computer.		
procedure	Display the Diagnosis sheet in the MES interface setting and check the data.		
	Set a notification tag in the MES interface setting.		
	Add a setting for monitoring the tag value on the GOT screen.		
	On the GOT screen, check if an error or exception has occurred in the tag or not.		
	Notification tags can be set for the following four items:		
Notification tag component value	 [Job settings] - [Communication action] - [Exception process setting] - [Exception processing: No applicable record] 		
checking procedure	 [Job settings] - [Communication action] - [Exception process setting] - [Exception processing: Multiple applicable records] 		
	• [Job settings] - [Communication action] - [Exception process setting] - [Exception processing: Applicable records overflow]		
	• [Job settings] - [Notify errors (job cancellation) that occur during job execution]		
	• [Server service settings] - [Access error notification setting]		
DB Connection Service execution error	Shows how to check an error occurred in execution of DB Connection Service.		
	$ullet$ From the Windows igotimes start menu, select [Control Panel] - [Performance and Maintenance] -		
Windows® Event	[Administrative Tools] - [Event Viewer]. (Windows® XP)		
Viewer checking	Select the Application log to display the list.		
procedure	Click on [Source] (sorting the list by the source name), and check for "DB Connector."		
Access log checking	In DB Connection Service Setting Tool, select [Output access log].		
procedure	• Display the output file with Windows® Notepad.		
SQL log checking	In DB Connection Service Setting Tool, select [[Output SQL failed log].		
procedure	• Display the output file with Windows® Notepad.		

^{*1} A CF card is required.

8.1.1 MES Interface Function setting

This section explains troubleshooting information on the setting of the MES interface function.

(1) Common to all settings

Symptom	Checked item	Corrective action
	Is the GOT communicating with another GT Designer2?	 Check that no other GT Designer2 is running and communicating on the same personal computer. Check that GT Designer2 is not running and communicating on other personal computers.
	Is there any disconnection in the connection route?	Connect the cables properly.
GT Designer2 cannot communicate with	Is there any problem on the personal computer?	Replace it with another computer.
GOT.	Is the port number correct? (In RS-232 or Ethernet connection)	Check the port number setting.
	Is the GOT connected to the network? (When using Ethernet connection)	Issue the ping command from the personal computer to the GOT to confirm the network connection.
	Is the IP address setting correct? (When using Ethernet connection)	Correct the IP address setting.
	Is there a firewall and/or a proxy server in the connection route? (In Ethernet connection)	Ask your network administrator about the firewall and proxy server settings.
All the text is not displayed in a table. (The text display is truncated.)	Isn't the column width narrow?	Adjust the column width of the table. Section 6.3.1 Screen structure

(2) [Device tag settings] (SS Section 6.5 Device Tag Settings)

Symptom	Checked item	Corrective action
Unable to change or delete an item in [Device tag settings].	Is the selected item used in [Job settings]? Is the selected item used in [DB buffering setting] of [Option setting]? Is the selected item used in [Access error notification setting] of [Server service settings]?	 As the error dialog box appears, identify the location, stop using it for another item, and then delete the item. An item used for another item is unable to be deleted.
Unable to set or change [Device tag name].	Is the same name used for [Server service name] or another [Device tag name]?	 Because a unique name must be used for [Server service name] and [Device tag name], use a different name.

(3) [Job settings] (FSection 6.7 Job Settings)

Symptom	Checked item	Corrective action
Unable to set [DB buffering setting].	Is there any Select action set for the job?	 Do not use Select actions in the job where DB buffering is enabled. The DB buffering is not available for jobs performing Select actions.
Unable to set a new variable.	Are there 64 variables that were already defined in the job?	Delete any unnecessary variable settings of the job.Up to 64 variables can be set for one job.
Unable to select [Trigger 2] in [Trigger conditions].	Is [Handshake operation] selected for [Trigger 1]?	Select any other than [Handshake operation] for [Trigger 1]. When [Handshake operation] is selected, selection is not allowed for [Trigger 2].
Unable to set [Exception processing	Is the DB buffering enabled?	Disable the DB buffering.
setting] in [Communication action].	Is [Insert] set for [Action type]?	Set any other than [Insert] for [Action type].

(4) [Diagnosis] tab (Section 6.10 Diagnosis)

Symptom	Checked item	Corrective action
GT Designer2 cannot communicate with	Has Option OS (MES Interface) been	Install Option OS (MES Interface) on the
GOT.	installed?	GOT.

(5) [Working log] tab (Section 6.11 Working Log)

Symptom	Checked item	Corrective action
GT Designer2 cannot communicate with	Has Option OS (MES Interface) been	Install Option OS (MES Interface) on the
GOT.	installed?	GOT.
	Is there a CF card inserted?	Install a CF card.
No log is displayed.		Turn ON the CF card access switch.
No log is displayed.	Is the MES interface function operating?	On the Diagnosis tab, check the MES
		interface function status.
		Check if Adjust is enabled with the Utility
No execution result is displayed in spite of	Is the time adjust function of the GOT	function of the GOT.
SNTP time synchronization setting.	disabled?	Check if Adjust is enabled in GT
		Designer2.

8.1.2 When using DB Connection Service Setting Tool

This section explains troubleshooting information on the setting of DB Connection Service Setting Tool.

Chapter 7 DB CONNECTION SERVICE AND SETTING TOOL

Symptom	Checked item	Corrective action
Unable to start DB Connection Service Setting Tool.	Has DB Connection Service Setting Tool been already started?	Terminate the already started DB Connection Service Setting Tool. Only one DB Connection Service Setting Tool can be activated.
Unable to reflect the setting.	Was a user ID having the administrator authority used for the login?	Log in again with a user ID having the administrator authority.
Unable to save the setting.	Is there no permitted IP address?	Uncheck the [limit IP addresses which permit to connect] checkbox, or add an IP address for which connection is permitted.
[Access log output error] is recorded in	Is the file set in [Output destination] read- only?	Correct the file specification.
[Event Viewer] of [Administrative Tools] in Windows®	Is the access to the folder containing the file set in [Output destination] authorized?	Check the right of access to the folder.
windows.	Is the drive space of the server computer full?	Check the free space on the drive.
[SQL failure log output error] is recorded in	Is the file set in [Output destination] read- only?	Correct the file specification.
[Event Viewer] of [Administrative Tools] in	Is the access to the folder containing the file set in [Output destination] authorized?	Check the right of access to the folder.
Windows [®] .	Is the drive space of the server computer full?	Check the free space on the drive.

8.2 Error Code List

The error code list is shown below.

For the error output checking method, refer to the following.

Section 8.1 Error Handling and Recovery Method

8.2.1 Error log in the Working log

Error code	Error description and cause	Corrective action
0x41130001	Tag value collecting error	The device value cannot be collected. Check the device settings and the network configuration.
0x41140029	Setting read error	The set data are erroneous. Download them again.
0x4114002A		 In the case of one-shot job execution, the CF card may corrupted. Replace the CF card.
0x4114002B	DB connection service communication error	 Check the Ethernet connection. An Ethernet communication error has occurred. Check if [Server service settings] are correct. Section 6.6 Server Service Settings Check if the ODBC setting is correct. Section 7.2 Setting ODBC of Database
0x4114005F	Type conversion error	 The data cannot be converted to the specified type. Change the setting so that type conversion will be available in any case.
0x41140061	Tag write error	Failed to write data to the tag.Check if data can written to the device specified for the tag component.
0x41140065	Failed to perform the tag access.	Check if [Device tag settings] are correct. Section 6.5 Device Tag Settings
0x41140069	Tag value read error	Failed to read data from the tag. Check if [Device tag settings] are correct. Section 6.5 Device Tag Settings
0x41140077	Type conversion to tag component error	 The data could not be converted to the type specified for the tag component. Change the setting so that type conversion will be available in any case.
0x41140081		Data stored in the DB buffer are invalid.
0x41140083	DB buffer content error	• The CF card may be corrupted.
0x41140084	Partial correction of DB buffer content	 Replace the CF card. A part of invalid data in the DB buffer has been corrected. A part of the DB buffered data in the CF card may have been corrupted.
0x41140086	DB buffer clear error	Failed to clear the DB buffer.The CF card may be corrupted.Replace the CF card.

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Error code	Error description and cause	Corrective action
0x41140087	DB buffer file error	The DB buffer file is invalid.
		The CF card may be corrupted.
		• Replace the CF card.
	DB buffer content error	Data stored in the DB buffer are invalid.
0x41140089		The CF card may be corrupted.
0.41140000		• Replace the CF card.
	DB buffer full error	Because the DB buffer became full, the data
0x41140093		could not be stored in the DB buffer.
0,4114000		Ensure the CF card capacity.
	DB buffering error	Failed in file operation during DB buffering
0x41140099		operation.
0.41140099		Check the CF card, and if corrupted, replace it.
		Data in the DB buffer could not be read normally.
0x4114009F	DB buffer read error	•
		Check the CF card, and if corrupted, replace it.
0x411400A1	DB buffer clear error	• Failed to clear the DB buffer.
		Check the CF card, and if corrupted, replace it.
0x411400A3	DB buffer read error	Data in the DB buffer could not be read normally.
		Check the CF card, and if corrupted, replace it.
0x411400A5	DB buffer empty error	• The DB buffer is empty.
		Check the CF card, and if corrupted, replace it.
0x411400A6	DB buffer content error	Data stored in the DB buffer are invalid.
		Check the CF card, and if corrupted, replace it.
0x411400B2		Character strings could not be converted to
0x411400B6	Character string number conversion error	numerical values.
0x411400BA	Official Committee Committee Committee	Change the setting so that type conversion will
0x411400C0		be available in any case.
0x411400D0	Overflow or zero divide error	Division by zero was attempted.
0X411400D0		Change the setting to avoid division by zero.
	Operation error	Invalid operation was performed.
0x411400D2		Change the setting so that any invalid operation
		will not performed.
	Logging function is not running.	Check that the option OS for the logging function
0x411400D4		for installed on the GOT.
		Check that the logging setting is configured.
0.44440000	Invalid logging ID.	The logging ID is invalid.
0x411400D6		Set the logging ID for the logging setting.
	Advanced system alarm function is not available.	The advanced system alarm setting is invalid.
0x411400DC		Set the advanced system alarm observation
		setting.
0x411400E2	Invalid alarm ID.	The alarm ID is invalid.
		Set the alarm ID for the advanced user alarm
		observation setting.

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Error code	Error description and cause	Corrective action
		The maximum number of obtained records is
0 44440050	Lea P. Lance and the Control of the	invalid.
0x411400E8	Invalid max number of select record.	Set the tag component value specified as the
		maximum number of records 1 or more.
		Check that the option OS for the operation log
0 44440054		function is installed on the GOT.
0x411400EA	Operation log function is not running	Check that the operation log setting is
		configured.
0x411400EE	Unable to find the operation log file.	The MES interface function in the GOT cannot
0x411400F0	Unable to open the operation log file.	access the operation log file.
0 44440050	Hardela Construction than a construction for the	Check that the CF card including the operation
0x411400F2	Unable to acquire the operation log file.	log file is installed in the GOT.
		An error occurred in the Ethernet
		communication, and the communication failed to
		start.
		Check the Ethernet connection.
0x41150110	Communication start error	Check if [Server service settings] are correct.
		Section 6.6 Server Service Settings
		Check if the ODBC setting is correct.
		Section 7.2 Setting ODBC of Database
0.44450400	0	An Ethernet communication error has occurred.
0x41150120	Communication connection error	Check the Ethernet connection.
0x41150121	Communication connection timeout	Check if [Server service settings] are correct.
0x41150130	Message transmission error	• Check if the ODBC setting is correct.
0x41150131	Message transmission timeout	
0.41130131	iviessage transmission timeout	Section 7.2 Setting ODBC of Database
		An Ethernet communication error has occurred.
044450440	Manager and a series	Check the Ethernet connection.
0x41150140	Message reception error	Check if [Server Service setting] are correct.
		Section 6.6 Server Service Settings
		Check if the ODBC setting is correct.
	Message reception timeout	Section 7.2 Setting ODBC of Database
0x41150141		Check the error information of DB Connection
		Service (access log file).
		Section 7.8.1 Access log
0x41150160	DB transaction status error	
0x41150161	DB transaction start status error	Check the transaction status of the database.
		- Check the transaction status of the database.
0x41150162	DB transaction end status error	
		The connection to unsupported DB Connection
0x41150300	Unsupported DB Connection Service error	Service is failed.
		Check the version of DB Connection Service.
		The connection to DB Connection Service with
0x41150301	Unsupported communication timeout setting	unsupported communication timeout is failed.
		 Check the version of DB Connection Service.
		An Ethernet communication error has occurred.
		An Ethernet communication error has occurred. Check the Ethernet connection.
0×41454040	Database connection error	
0x41151010	Database connection error	Check the Ethernet connection.
0x41151010	Database connection error	Check the Ethernet connection. Check if [Server service settings] are correct.

(From the previous page)

Error code	Error description and cause	Corrective action
0x41151110	Message reception error	 An Ethernet communication error has occurred. Check the Ethernet connection. Check if [Server Service setting] are correct. Section 6.6 Server Service Settings
0x41151120	Received message data error	Check if the ODBC setting is correct. Section 7.2 Setting ODBC of Database Check the error information of DB Connection Service (access log file). Section 7.8.1 Access log
0x41151180	Waiting for DB access (program execution) completion timeout	No response is received from DB Connection Service. Check the server and the network.
0x41151320	SELECT execution error	
0x41151330	COMMIT execution error	
0x41151340	ROLLBACK execution error	Check the sent SQL text and database contents. Check if the table and field a triving a great server.
0x41151350	DB update error	Check if the table and field settings are correct. Section 6.8 Job Settings - Actions
0x41151410	SQL execution error	
0x41151420	ODBC connection error during SQL execution	
0x41152005		Check if the program specified with the program
0x41152006		execution function is executable with the specified account.
0x41152007	Specified program file not exist (Program execution function)	There is no execution file of the program that is specified for the program execution function. Check if the program specified with the program execution function is executable with the specified account.
0x41152008	Specified program file duplicated (Program execution function)	 There are more than one execution file of the program that is specified for the program execution function. Check if the program specified with the program execution function is executable with the specified account.
0x41152009 to 0x41152014	Execution error (Program execution function)	Check if the program specified with the program execution function is executable with the specified account.

8.2.2 DB Connection Service

The DB Connection Service outputs errors to the Windows®Event Log, access log, and SQL failure log.

For Windows Vista®, DB Connection Service Client also outputs errors to Windows® Event Log.

- (1) Event log of Windows®
 - (a) Event log output warning list of DB Connection Service (Source name: DBConnector)

Warning event ID	Error description and cause	Corrective action
		Configure the settings again with DB Connection
4	There is no setting file.	Service Setting Tool.
'	Start the service using the default setting.	Section 7.5 Setting Items of DB
		Connection Service Setting Tool

(b) Event log output warning list of DB Connection Service (Source name: DBConnector)

Error event ID	Error description and cause	Corrective action
1	Unable to start the service due to insufficient memory.	Add many many to the many all assessments
2	Unable to start the service due to insufficient resources.	Add more memory to the personal computer.
5	Failed to read the setting file. The service is stopped.	Refer to the actions of error codes 101 to 129. Actions are displayed with error codes 101 to 129.
6	Failed to initialize the log file. The service is stopped.	 Refer to the actions of error codes 401 to 403, and 501 to 503. Actions are displayed with error codes 401 to 403, and 501 to 503.
9	The server port has already been opened. The service is stopped.	Change the server port No. with DB Connection Service Setting Tool. Section 7.5 Setting Items of DB Connection Service Setting Tool
101	The computer ran out of memory while reading the setting file.	Terminate any unnecessary applications. Add more memory to the personal computer.
102	The setting file path is too long.	Reinstall the DB Connection Service to the directory whose path name is shorter.
103	The setting file name indicates the directory.	Deirestell the DD Composition Coming
104	The setting file could not be opened.	Reinstall the DB Connection Service.
105	Description of the setting file is not correct.	Terminate other applications, and make the setting again with DB Connection Service Setting Tool. Section 7.5 Setting Items of DB Connection Service Setting Tool

Error event ID	Error description and cause	Corrective action
108	The server port No. setting is not correct.	
109	The server port No. setting is out of range.	
110	The timeout time setting is not correct.	
111	The timeout time setting is out of range.	
	There are too many connection-permitted IP	
112	address settings.	
	Description of the connection-permitted IP address	
113	setting is not correct.	
	The mask bit length setting of the connection-	
114	permitted IP address is not correct.	
	The mask bit length setting of the connection-	
115	permitted IP address is out of range.	
116	The access log setting is not correct.	
	The setting of the access log file name is not	
117	correct.	
118	The access log file name is too long.	
	The maximum file size setting for the access log is	Configure the settings again with DB Connection
119	not correct.	Service Setting Tool.
	The maximum file size setting for the access log is	Section 7.5 Setting Items of DB
120	out of range.	Connection Service Setting Tool
404	The maximum number of access log files is not set	_
121	correctly.	
400	The maximum number of access log files is out of	
122	range.	
123	The SQL failure log setting is not correct.	
104	The setting of the SQL failure log file name is not	
124	correct.	
125	The SQL failure log file name is too long.	
126	The maximum file size setting for the SQL failure	
120	log is not correct.	
127	The maximum file size setting for the SQL failure	
121	log is out of range.	
128	The maximum number of SQL failure log files is not	
120	set correctly.	
129	The maximum number of SQL failure log files is out	
120	of range.	
401	The computer ran out of memory when initializing	
401	the access log file.	Terminate any unnecessary applications.
402	The computer ran out of resources when initializing	Add more memory to the personal computer.
702	the access log file.	
		Shorten the path to the access log file with DB
403	The full path name of the access log file is too long.	Connection Service Setting Tool.
403	The fall path hame of the access log life is too long.	Section 7.5 Setting Items of DB
		Connection Service Setting Tool

	Entered to the Control of the Contro	(i form the previous page)
Error event ID	Error description and cause	Corrective action
		If no directory exists for storing the access log
		file, create it.
		When the attribute of the access log file is set to
		read-only, cancel the setting.
		If read/write is disabled for the access log file,
404	The access log file could not be opened.	enable it in the security setting.
		When the access log file name represents a
		directory, rename or delete the directory.
		When the access log file has been open in
		another application, terminate the application.
		Check the disk device for any fault.
		When the disk space is full, ensure a free disk
		space.
405	The log could not be written to the access log file.	When the access log file has been open in
		another application, terminate the application.
		Check the disk device for any fault.
		When the attribute of the oldest access log file is
		set to read-only, cancel the setting.
		If read/write is disabled for the oldest access log
406	Failed to delete an old access log file.	file, enable it in the security setting.
100	Trained to delete all old decess log lile.	When the oldest access log file has been open in
		another application, terminate the application.
		Check the disk device for any fault.
		When the attributes of the new and old access
		log files are set to read-only, cancel the setting.
		If read/write is disabled for the new and old
		access log files, enable it in the security setting.
407	Failed to rename the access log file.	When the new and old access log files have
		_
		been open in another application, terminate the application.
		1
	The computer ran out of memory when initializing	Check the disk device for any fault.
501	the SQL failure log file.	Terminate any unnecessary applications.
	<u> </u>	Add more memory to the personal computer.
502	The computer ran out of resources when initializing	Add more memory to the personal computer.
	the SQL failure log file.	Shorten the path to the SQL failure log file with
	The full noth name of the SOL failure log file is too	DB Connection Service Setting Tool.
503	The full path name of the SQL failure log file is too long.	•
		Section 7.5 Setting Items of DB
		Connection Service Setting Tool
		If no directory exists for storing the SQL failure In a file are storing to the square storing the square storing to the squ
		log file, create it.
		When the attribute of the SQL failure log file is
		set to read-only, cancel the setting.
	T. 001 ()	If read/write is disabled for the SQL failure log
504	The SQL failure log file could not be opened.	file, enable it in the security setting.
		When the SQL failure log file name represents a
		directory, rename or delete the directory.
		1
		When the SQL failure log file has been open in
		1

Error event ID	Error description and cause	Corrective action
505	The log could not be written to the SQL failure log file.	When the disk space is full, ensure a free disk space. When the SQL failure log file has been open in another application, terminate the application. Check the disk device for any fault.
506	Failed to delete an old SQL failure log file.	When the attribute of the oldest SQL failure log file is set to read-only, cancel the setting. If read/write is disabled for the oldest SQL failure log file, enable it in the security setting. When the oldest SQL failure log file has been open in another application, terminate the application. Check the disk device for any fault.
507	Failed to rename the SQL failure log file.	 When the attributes of the new and old SQL failure log files are set to read-only, cancel the setting. If read/write is disabled for the new and old SQL failure log files, enable it in the security setting. When the new and old SQL failure log files have been open in another application, terminate the application. Check the disk device for any fault.

(c) Event log output error list of DB Connection Service Client (source name: DBCnctClient)

Error code	Error description and cause	Corrective action
50		
51	Unable to start DB Connection Service Client.	Terminate unnecessary applications.
52	Offiable to start DB Confidention Service Cheft.	Add more memory to the computer.
53		

(2) Access log of DB Connection Service

Error code	Error description and cause	Corrective action
0x20100001	(Service Not Start.) Failed to start the service due to insufficient memory.	Terminate any unnecessary applications.
0x20100002	(Service Not Start.) Failed to start the service due to insufficient resources.	Add more memory to the personal computer.
0x20100011	(Service Not Start.) Failed to start the service due to failure of the server port initialization.	If a firewall software has been installed, make the specified server port operational.
0x20100012	(Service Not Start.) Another application has opened the server port.	 Terminate the application that has opened the server port. Set another server port No. with DB Connection Service Setting Tool. Section 7.5 Setting Items of DB Connection Service Setting Tool
0x20200001	(Not Initialize a service for each client: [IP address]) Failed to initialize a service for each client due to insufficient memory.	Terminate any unnecessary applications. Add more memory to the personal computer.
0x20200002	(Deny network connection request from [IP address]) Rejected the connection request from the non-permitted IP address.	Using DB Connection Service Setting Tool, add the IP address to those with connection permission. Section 7.5 Setting Items of DB Connection Service Setting Tool
0x20300001	(SID [Session ID]: Request Receive Error: [IP address]) Failed to receive data due to insufficient memory.	Terminate any unnecessary applications. Add more memory to the personal computer.
0x20300010	(SID [Session ID]: Request Receive Error: [IP address]) Connection disconnected during request reception.	
0x20300011	(SID [Session ID]: Request Receive Error: [IP address]) Timed out during request reception.	Check if it is connected to the network. Check if the gateway and/or hub is operating.
0x20300012	(SID [Session ID]: Request Receive Error: [IP address]) Detected failure of the MES interface module while waiting for or receiving a request.	Check if the gateway and/or hub is operating. Check if the power of the GOT has not been turned off.
0x20300013	(SID [Session ID]: Request Receive Error: [IP address]) Receive I/O error	
0x20300014	(SID [Session ID]: Request Receive Error: [IP address]) Buffer overrun (Request length exceeded)	Check the source IP address setting.
0x20300015	(SID [Session ID]: Request Receive Error: [IP address]) Received an invalid request.	Confirm the version of the Option OS (MES Interface).

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Error code	Error description and cause	Corrective action
000040040	(SID [Session ID]: Response Transmit Error: [IP	
0x20310010	address])	
	Failed to transmit a response due to disconnection.	
0.00040044	(SID [Session ID]: Response Transmit Error: [IP	
0x20310011	address])	Check if it is connected to the network.
	Timed out during response transmission.	Check if the gateway and/or hub is operating.
	(SID [Session ID]: Response Transmit Error: [IP	Check if the power of the GOT has not been
0x20310012	address])	turned off.
	Detected failure of the MES interface module	
	during response transmission.	
0.00040040	(SID [Session ID]: Response Transmit Error: [IP	
0x20310013	address])	
	Send I/O error	
0v20400004	(SID [Session ID]: DB Connect: [Data source]:	
0x20400001	[User]: Failed)	
	Failed in DB connection due to insufficient memory.	Terminate any unnecessary applications.
	(SID [Session ID]: DB Connect: [Data source]:	Add more memory to the personal computer.
0x20400002	[User]: Failed) Failed in DB connection due to insufficient	
	resources.	
	(SID [Session ID]: DB Connect: [Data source]:	Check the source IP address setting.
0x20400010	[User]: Failed)	Confirm the version of the option OS (MES)
0.00400010	Invalid DB connection request	Interface).
	(SID [Session ID]: DB Connect: [Data source]:	menace).
0x20400020	[User]: Failed)	Terminate any unnecessary applications.
0.20+00020	Failed to create a DB handle.	Add more memory to the personal computer.
	Tailed to dioate a BB Hariato.	Set correct data source name, user name, and
		password in [Server service settings] of [MES
	(SID [Session ID]: DB Connect: [Data source]:	interface setting].
0x20400022	[User]: Failed)	Section 6.6 Server Service Settings
	Failed in DB connection.	Check if the personal computer is restarted after
		the database is installed. Restart the personal
		computer if not restarted.
	(SID [Session ID]: SQL<>: Failed)	•
	(SID [Session ID]: COMMIT: Failed)	
0.0000000	(SID [Session ID]: ROLLBACK: Failed)	
0x20600001	(SID [Session ID]: GetNext: Failed)	
	(SID [Session ID]: Reset: Failed)	
	Failed in SQL execution due to insufficient memory.	Tambia da carron de la companya de l
	(SID [Session ID]: SQL<>: Failed)	Terminate any unnecessary applications.
	(SID [Session ID]: COMMIT: Failed)	Add more memory to the personal computer.
	(SID [Session ID]: ROLLBACK: Failed)	
0x20600002	(SID [Session ID]: GetNext: Failed)	
	(SID [Session ID]: Reset: Failed)	
	Failed in SQL execution due to insufficient	
	resources.	

Error code	Error description and cause	Corrective action
0x20600010	(SID [Session ID]: SQL<>: Failed) (SID [Session ID]: COMMIT: Failed) (SID [Session ID]: ROLLBACK: Failed) (SID [Session ID]: GetNext: Failed) (SID [Session ID]: Reset: Failed) Invalid SQL execution request (SID [Session ID]: SQL<>: Failed)	Check the source IP address setting. Confirm the version of the option OS (MES)
0x20600020	(SID [Session ID]: COMMIT: Failed) (SID [Session ID]: ROLLBACK: Failed) (SID [Session ID]: GetNext: Failed) (SID [Session ID]: Reset: Failed) DB Connection Service does not support the SQL instruction to be executed.	Interface).
0x20600021	(SID [Session ID]: SQL<>: Failed) (SID [Session ID]: COMMIT: Failed) (SID [Session ID]: ROLLBACK: Failed) (SID [Session ID]: GetNext: Failed) (SID [Session ID]: Reset: Failed) Failed in preparation before SQL execution.	Correctly set a database type for [DB server setting], a table name in the job for the
0x20600022	(SID [Session ID]: SQL<>: Failed) (SID [Session ID]: COMMIT: Failed) (SID [Session ID]: ROLLBACK: Failed) (SID [Session ID]: GetNext: Failed) (SID [Session ID]: Reset: Failed) Failed to obtain the number of fields in the record that is to be obtained by the SQL execution.	communication action setting, or the resource data send action setting in [MES Interface]. Section 6.6 Server Service Settings
0x20600023	(SID [Session ID]: SQL<>: Failed) (SID [Session ID]: COMMIT: Failed) (SID [Session ID]: ROLLBACK: Failed) (SID [Session ID]: GetNext: Failed) (SID [Session ID]: Reset: Failed) Failed in SQL execution.	Correctly set a database type for [DB server setting], a table name, field names, Select/ Update conditions, and types of the data to be stored in the fields in the job for the communication action setting or the resource data send action setting in [MES Interface]. Section 6.6 Server Service Settings
0x20600025	(SID [Session ID]: SQL<>: Failed) (SID [Session ID]: COMMIT: Failed) (SID [Session ID]: ROLLBACK: Failed) (SID [Session ID]: GetNext: Failed) (SID [Session ID]: Reset: Failed) No record was updated or inserted by the SQL execution.	In [MES interface setting], set update conditions correctly for the Communication action setting of the Job settings. Section 6.8.1 Setting items in Communication action Check if the database has been filled with registered data.
0x2060002B	(SID [Session ID]: *** Transmitting Commit Success Response Failed. ***) Failed to transmit the COMMIT success response.	 Check if it is connected to the network. Check if the gateway and/or hub is operating. Check if the power of the GOT has not been turned off.
0x20700001	(ProgramExec: [IP address]: <>: Failed) Failed in remote execution due to insufficient memory. (ProgramExec: [IP address]: <>: Failed)	Terminate any unnecessary applications. Add more memory to the personal computer.
0x20700002	Failed in remote execution due to insufficient resources.	
0x20700010	(ProgramExec: [IP address]: <>: Failed) Invalid remote execution request	Check the source IP address setting. Confirm the version of the option OS (MES Interface).

		(1 Total tale previous page)
Error code	Error description and cause	Corrective action
0x20700020	(ProgramExec: [IP address]: <>: Failed) Failed to log on in remote execution.	 In [MES interface setting], set correct user name and password for the application server setting. Section 6.6 Server Service Settings Check if the user account is invalid or not by Administrative Tools of Windows[®]. Check if the setting is forcing the user to enter password at next logon by Administrative Tools of Windows[®]. Check if the user password is expired or not by Administrative Tools of Windows[®].
0x20700021	(ProgramExec: [IP address]: <>: Failed) Failed to load user profile during remote execution.	No user profile for Windows® has been created. Confirm that the user ID set for the application server setting of the MES interface setting can be used to log on Windows®, and reexecute.
0x20700023	(ProgramExec: [IP address]: <>: Failed) Failed to generate process during remote execution.	 Check if the application to be executed in remote execution exists or not. Check if the name of the application to be executed in remote execution is a directory. Make a proper security setting for the application to be executed in remote execution.
0x20700024	(ProgramExec: [IP address]: <>: Failed) Timeout or aborted of waiting to complete remote execution.	Set the longer time to the DB access timeout for DB Connection Service Setting Tool. Exit the application for the remote execution before logging off.
0x20800010	(SID [Session ID]: TCPOpen Request Error: [IP address]) Invalid TCPOpen request	Check the source IP address setting. Confirm the version of the option OS (MES Interface).

(3) SQL failure log of DB Connection Service

Error code	Error description and cause	Corrective action
0x20600001	Failed in SQL execution due to insufficient memory.	Terminate any unnecessary applications.
0x20600002	Failed in SQL execution due to insufficient resources.	Add more memory to the personal computer.
0x20600020	DB Connection Service does not support the SQL instruction to be executed.	 Check the source IP address setting. Confirm the version of the option OS (MES Interface).
0x20600021	Failed in preparation before SQL execution.	Correctly set a database type for [DB server setting], a table name in the job for the communication action setting, or the resource
0x20600022	Failed to obtain the number of fields in the record that is to be obtained by the SQL execution.	data send action setting in [MES Interface]. Section 6.6 Server Service Settings
0x20600023	Failed in SQL execution.	Correctly set a database type for [DB server setting], a table name, field names, Select/ Update conditions, and types of the data to be stored in the fields in the job for the communication action setting or the resource data send action setting in [MES Interface]. Section 6.6 Server Service Settings
0x20600025	No record was updated or inserted by the SQL execution.	In [MES interface setting], set update conditions correctly for the Communication action setting of the Job settings. Section 6.8.1 Setting items in Communication action Check if the database has been filled with registered data.
0x2060002B	(Data source name: *** Transmitting Commit Success Response Failed. ***) Failed to transmit the COMMIT success response.	 Check if it is connected to the network. Check if the gateway and/or hub is operating. Check if the power of the GOT has not been turned off.

APPENDICES

Appendix 1 Usable Characters and ASCII Code Tables by Setting Items

Appendix 1.1 ASCII code table

	2	3	4	5	6	7
0	(SP)	0	@	Р	,	р
1	!	1	Α	Q	а	q
2	[2	В	R	b	r
3	#	3	С	S	С	s
4	\$	4	D	Т	d	t
5	%	5	Е	U	е	u
6	&	6	F	V	f	٧
7	ı	7	G	W	g	w
8	(8	Н	Х	h	х
9)	9	I	Υ	i	у
Α	*	:	J	Z	j	z
В	+	;	K	[k	{
С	,	<	L	\	ı	- 1
D	-	II	М]	m	}
E		^	N	۸	n	~
F	1	?	0	_	0	

Appendix 1.2 Characters applicable to item names, component names, variable names, etc.

(1) ASCII characters

The shaded characters can be used. (However, neither a number nor an underscore (_) can be used as the first character.)

	2	3	4	5	6	7
0	(SP)	0	@	Р	`	р
1	!	1	Α	Q	а	q
2	[2	В	R	b	r
3	#	3	С	S	С	s
4	\$	4	D	Т	d	t
5	%	5	Е	U	е	u
6	&	6	F	V	f	V
7	Åe	7	G	W	g	w
8	(8	Н	Х	h	х
9)	9	_	Y	i	у
Α	*		J	Z	j	z
В	+	,	K	[k	{
С	,	'	L	\	- 1	
D	-	"	М]	m	}
Ε		>	N	٨	n	~
F	1	?	0	_	0	

(2) Reserved terms

The following words are reserved terms and therefore cannot be used.

	Reserved terms
Α	abstract
В	boolean, break, byte
С	case, catch, char, class, const, continue
D	DATETIME, debugger, default, delete, do, double
Е	else, enum, event, exit, export, extends
F	false, final, finally, float, for, function
G	goto
I	if, implements, import, in, include, Infinity, instanceof, in, interface, invoke
L	long
N	NaN, native, new, null
0	oneshot
Р	package, private, protected, public
R	return
S	short, static, super, switch, synchronized, SYSTEM
Т	this, throw, throws, trace, transient, true, try, typeof
U	undefined
V	var, void, volatile
W	while, with

Appendix 1.3 Characters applicable to character string constants, etc.

The shaded characters can be used.

	2	3	4	5	6	7
0	(SP)	0	@	Р	•	р
1	!	1	Α	Q	а	q
2	[2	В	R	b	r
3	#	3	С	S	С	S
4	\$	4	D	Т	d	t
5	%	5	Е	U	е	u
6	&	6	F	V	f	٧
7		7	G	W	g	W
8	(8	Н	Х	h	х
9)	9	I	Υ	i	у
Α	*	:	J	Z	j	Z
В	+	,	K	[k	{
С	,	<	L	١	I	I
D	-	=	М]	m	}
Ξ		>	N	٨	n	~
F	1	?	0	_	0	

Appendix 1.4 Characters applicable to field names, table names, etc.

The shaded characters can be used.

(However, a number cannot be used as the first character.)

	2	3	4	5	6	7
0	(SP)	0	@	Р	,	р
1	!	1	Α	Q	а	q
2	[2	В	R	b	r
3	#	3	С	S	С	S
4	\$	4	D	Т	d	t
5	%	5	Е	U	е	u
6	&	6	F	V	f	٧
7	í	7	G	W	g	W
8	(8	Н	Х	h	Х
9)	9	I	Y	1	у
Α	*	:	J	Z	j	Z
В	+	;	K	[k	{
С	,	<	L	/	ı	
D	-	=	М]	m	}
E		^	N	٨	n	~
F	1	?	0	_	0	

Appendix 2 About Monitoring Interval Timeout

Depending on the number of set jobs or the trigger condition setting, the monitoring interval timeout may be generated in the MES interface function.

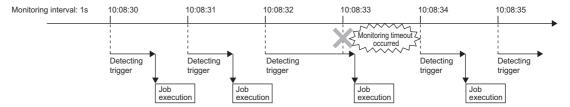
This section explains monitoring interval timeout.

⊠Point

Although up to 64 jobs can be registered and trigger conditions can be set to each of them, some adjustment in trigger condition settings is required depending on the number of the jobs.

(1) Monitoring interval timeout

The monitoring interval timeout means that the trigger detection time (the time provided for the trigger monitoring function to determine if the trigger conditions are met) becomes longer than the time limit of trigger occurrence (monitoring interval). When a monitoring interval timeout occurs, the job may not be executed even though set trigger conditions are met.



(2) Causes of monitoring interval timeout

A monitoring interval timeout occurs when the total jobs cannot be processed in a monitoring interval.

The monitoring interval includes the following sampling intervals.

- Sampling interval set for [Sampling setting] in [Device tag settings] when selecting [Value monitoring startup] or [Handshake operation] for [Trigger conditions] in [Job settings]
 - Section 6.5 Device Tag Settings
- Sampling interval set for [Trigger conditions] when selecting [Specified time period startup] for [Trigger conditions] in [Job settings]
- Section 6.7.2 Setting items in Trigger conditions

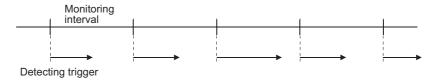
Remark

In the following cases, monitoring interval timeouts do not occur.

- When selecting [Time specification startup] or [GOT Initializing] for [Trigger conditions] in [Job settings]
- When the total jobs are processed in a monitoring interval

(Example 1)

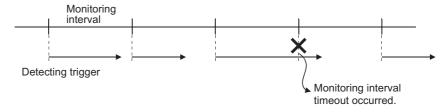
When the time for trigger detection is shorter than the monitoring interval Since processing for trigger detection is performed within each monitoring interval, no monitoring interval timeout occurs.



(Example 2)

When the time for trigger detection is longer than the monitoring interval Since processing for trigger detection cannot be completed within each monitoring interval, monitoring interval timeout occurs.

The processing for trigger detection is performed at the next timing after the monitoring interval.



⊠Point

If the monitoring interval timeout has occurred, set a monitoring interval longer than the processing time described in This section (4) in each of all jobs.

(3) How to check the monitoring interval timeout

The monitoring interval timeout can be checked in the Monitoring interval timeout count area (GS275).

For the Monitoring interval timeout count area, refer to the following.

Section 3.4.2 (3) Monitoring interval timeout count (GS275)

(4) Processing time for trigger detection

Total number of trigger conditions \times 100 (ms) can be assumed as a processing time for trigger detection.

Total number of trigger conditions is the total of those set for individual jobs.

Note that [Trigger 1] and [Trigger 2] are counted separately.

Also, [Handshake operation] must be counted as "2" for each.

(Example 3)

Processing time for trigger detection, which is required for [Job settings] shown below

Since the number of trigger conditions is 12, the assumed processing time for trigger detection is: $12 \times 100 = 1200$ (ms)

Setting a value of 1200ms or longer to the monitoring interval in all jobs can prevent occurrence of the monitoring interval timeout.

Job name	Trigger conditions [Trigger 1]	Trigger conditions [Trigger 2]
Job 1	[Value monitoring startup]	[Value monitoring startup]
Job 2	[Value monitoring startup]	[Value monitoring startup]
Job 3	[Handshake operation]	-
Job 4	[Specified time period startup]	-
Job 5	[Time specification startup]	-
Job 6	[Value monitoring startup]	[Value monitoring startup]
Job 7	[Handshake operation]	-

Appendix 3 Warning Messages in Windows Vista(R)

Appendix 3.1 Overview of warning messages

In Windows Vista[®], a User Account Control feature has been added. When installing/uninstalling GT Works2 or GT Designer2, or starting [DB Connection Service Setting Tool], a warning message is displayed.

Appendix 3.2 Methods for disabling warning messages

⊠Point

The User Account Control (UAC) is provided to protect the system from being destroyed (e.g. prevention of start-up of a program which will execute an unintended operation).

Before taking either of the methods described below, understand that the security function offered by UAC will be disabled and consider the risk.

The following two methods are available for preventing warning messages.

Disabling the User Account Control function
 The following shows a procedure for disabling the User Account Control function.



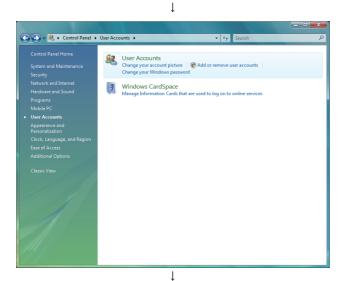
(To the next page)

Select [Start] - [Control Panel].

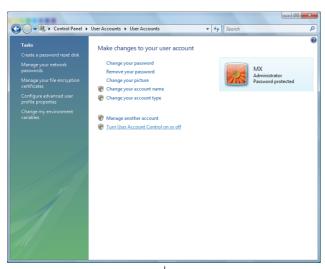
(From the previous page) \downarrow



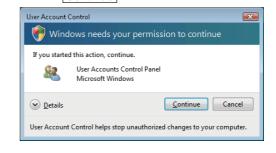
2 Select [User Accounts].



3 Select [User Accounts].



4 Select [Turn User Account Control on or off]. When User Account Control is enabled in Windows Vista®, the following screen appears. Click the Continue button.





Deselect [Turn on User Account Control (UAC) to make your computer more secure]. (2) Method for permitting programs without any warning message

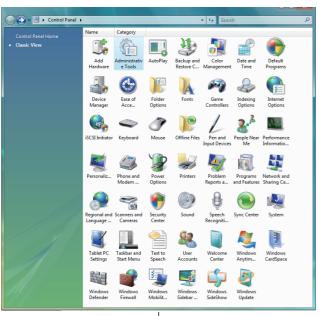
The following shows a procedure for permitting programs without any warning message.



1 Select [Start] - [Control Panel].

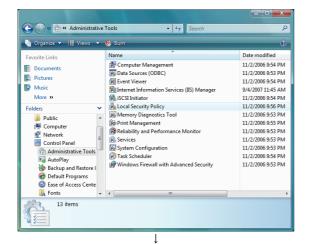


2 Select [Classic View].



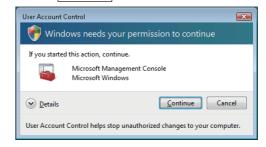
3 Select [Administrative Tools].

(From the previous page) \downarrow

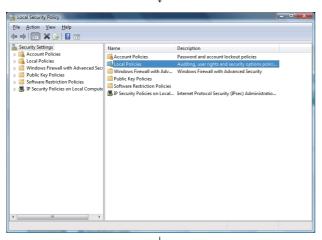


When User Account Control is enabled in Windows Vista®, the following screen appears.

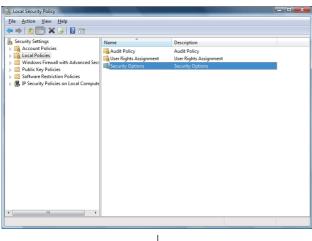
Click the Continue button.



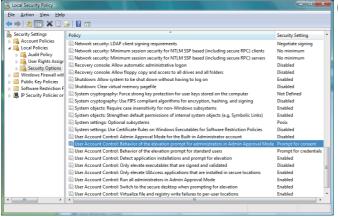
5 Select [Local Policies].



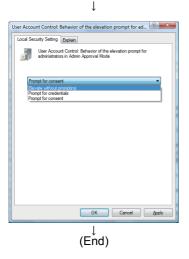
6 Select [Security Options].



(From the previous page) \downarrow



Select [User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode, Prompt for consent].



8 Select [Elevate without prompting] on the [Local Security Setting] tab, and click the OK button.

Appendix 4 Tables for Used Terms

In GT Designer2, some different terms are used for the same meaning on the MES interface function setting screen and other setting screens.

They are listed in the tables shown below.

(1) In the case of Device tag settings

MES interface function setting	Others
	Signed Decimal (Data length: 16 bits)
Single word	Signed BIN
	Signed BIN16
Double word	Signed Decimal (Data length: 32 bits)
Double word	Signed BIN32
Real number	Real
String	ASCII Display
bytes	Digits

(2) In the case of Job settings

MES interface function setting	Others		
Specified time period startup	Sampling		
Value menitoring startun	Rise		
Value monitoring startup	Fall		
=	==		
≠	!=		
<-	=		
Variable	temporary works		

Appendix 5 Application Example of MES Interface Function

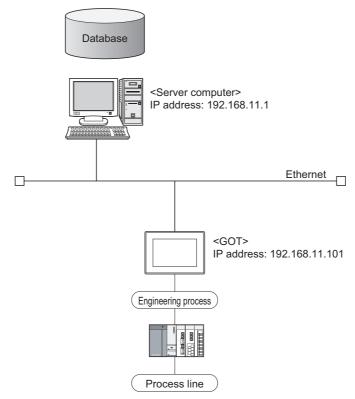
The following is an example of the system where the MES interface function is used. Example) A system where manufacturing information is collected in a GOT and managed in a database

In the company-wide integrated system in which parts acceptance, manufacturing processing, assembly, shipment, and inventory control are managed, information of the actual performance is managed in a database using the MES interface function. A process line control PLC handles information on process line (equipment) stop, running

A process line control PLC handles information on process line (equipment) stop, running time, down time, quantity of production, and the number of rejected products.

On the GOT, the status of each process line is displayed, allowing control by operators. By the MES interface function, the termination time of the process line, regularly-checked operation rate, and fraction defective information are managed.

The system configuration is illustrated below.



(1) Setup on the server computer (database)

The actual performance for every 5 seconds, and fraction defective and operation rate for every hour are managed using the database.

(a) Table setting

• Table name: PROCESS

• Field:

Name	Data type	Size	Scale	NULL	Default
DATETIME	CHAR	32		Possible	
PERFORMANCE	NUMBER	10	0	Possible	
REJECT	NUMBER	10	1	Possible	
WORKINGRATE	NUMBER	10	1	Possible	

· ODBC setting

ODBC data source name: PROCESS

Driver: OracleHome2

TNS service name: PROCESS

• DB Connection Service setting

Service port No.: 5112 Timeout: 10 seconds

(2) Setup on the configuration computer (GT Designer2)

(a) IP address setting

· Communication Settings

Extend I/F-1: 1 CH No.: *

Driver: Ethernet Download

· Detailed setting

IP address: 192.168.11.101 Ethernet Download: 5014 Default Gateway: 0.0.0.0 Subnet mask: 255.255.255.0

(b) Script

No.	Trigger	Operation	Remarks
		[w:GD540]=[w:D540];	M101: Operation stop flag
1	1 During M101=ON	[w:GD542]=[w:D542];	D540: Operation time
		[b:M101]=0;	D542: Accumulated down time
-	2 When M102 rises	[w:GD544]=[w:D544];	M102: Completion notification
2		[w:GD546]=[w:D546];	(The GOT collects PLC
Z	When who have	[b:GB102]=[b:M102];	information upon completion of
		[b:M102]=0;	the processing.)

(c) Screen design

For how to create the screens, refer to the following manual.

GT Designer2 Version Screen Design Manual

(d) MES interface setting

• Device tag settings

Device tag name	Sampling cycle	Component name	Data type	Device
		Operation time	Single word	GD540
	5 seconds	Accumulated down time	Single word	GD542
Normal sampling		Performance	Single word	GD544
		Rejected	Single word	GD546
		Fraction defective	Real number	GD548
		WorkingRate	Real number	GD550
Sync. trigger	5 seconds	Stop flag	Bit	GB101

• Server service settings

Service name	Туре	IP address/Port No.	
DBServer	Database server	192.168.11.1	

• Job settings

Job name	Trigger	Processing	Remarks
Startup	Startup	Initializing tags	
Ctatus same	Value monitoring	Inserting the time and performance	Calculation of the
Status report	GB102=ON	data into the database (DBServer)	operation rate
		Calculating fraction defective from the	
		actual performance and the number of	
		rejected products	 Temporary variables
	Specified time	Calculating the operation rate from the	F_DEFECT:
Regular report	period	operation time and the accumulated	Fraction defective
	1 hour	down time	OPERAT_R:
		Inserting the time, operation rate and	Operation rate
		fraction defective into the database	
		(DBServer)	

(3) Operation results

The operation results (database data) of the above system are as follows:

DATETIME	PERFORMANCE	REJECT	WORKINGRATE
2006/3/2 10:12:01	1		
2006/3/2 10:24:32	2		
2006/3/2 10:53:17	3		
2006/3/2 11:00:00		0	87.35
2006/3/2 11:05:42	4		
2006/3/2 11:17:31	5		
· ·	:	:	:

Appendix 6 List of Functions Added by MES Interface Function Version Upgrade

(1) Added function

The following describes the function added by the MES interface function.

Item	Description	GT Designer2 version	OS version	
To a function	Allows to not collect device data.	2.47Z	Option OS MES Interface [03.02.**]	
Tag function	Allows to set the array setting for tags.	2.73B	Option OS MES Interface [03.09.**]	
	$\sf Oracle^{\circledR}$ 8i, MSDE2000, Access2000, and Access2003 are added as available database.	2.47Z	Option OS MES Interface [03.02.**]	
SQL text transmission	Industrial SQL Server 9.0 and Microsoft [®] SQL Server 2005 are added as an applicable database.	2.58L	Option OS MES Interface [03.03.**]	
	Access 2007 is added as an applicable database.	2.82L	Option OS MES Interface [03.13.**]	
Trigger buffering function	Buffers the trigger activated during execution of a job, and execute the action with the buffered data.	2.47Z	Option OS MES Interface [03.02.**]	
Resource data send function	Sends the resource data collected in the GOT to the database.	2.82L	Option OS MES Interface [03.13.**]	
Applicable model	GT16, GT16-MESB	2.90U	Option OS MES Interface [04.02.**]	

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