# GX Configurator-SC Version 2

# **Operating Manual**

(Protocol FB support function))







# MELSOFT Integrated FA Software

SW2D5C-QSCU-E

# • SAFETY PRECAUTIONS •

(Always read these instructions before using this equipment.)

Before using this 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 instructions given in this manual are concerned with this product. For the safety instructions of the programmable controller system, please read the CPU module user's manual.

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



Note that the  $\triangle$  CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

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

# [Startup/Maintenance Precautions]

# 

• Before starting online operations such as a communication test, consider the operation of the connected device and fully ensure safety.

#### REVISIONS

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

Print Date	* Manual Number	Revision
Jan., 2003	SH (NA)-080393E-A	First printing
Jun., 2003	SH (NA)-080393E-B	Partial corrections
		Section 6.3, Section 7.1, Section 7.2.3, Section 7.4, Section 8.2.4, Section 8.3, Section 10.3
		Partial additions
		Section 9.2.1, Appendix 3
Feb., 2004	SH (NA)-080393E-C	Function additions
		Creating receive (specified length) packet, Module start I/O No. setting
		Partial corrections
		Section 1.1, Section 7.2.1, Section 7.2.3 to 7.2.4, Section 7.3.2, Section 7.4, Section 8.2.1, Appendix 1
		Partial additions
		Appendix 4 to 5
Sep., 2004	SH (NA)-080393E-D	Partial corrections
		Section 3.2, Section 6.2, Section 7.2.3, Section 7.2.4
		Partial additions
		Section 8.2.4, Section 9.3
Jul., 2005	SH (NA)-080393E-E	Partial corrections
		Section 6.3, Section 6.4, Section 8.2.4
Apr., 2006	SH (NA)-080393E-F	Partial corrections
		Section 7.2.3
Aug., 2006	SH (NA)-080393E-G	Partial corrections
		Section 8.2.4, Section 8.3, Appendix 5
Jan., 2008	SH (NA)-080393E-H	Partial corrections
		Generic Terms and Abbreviations Used in This Manual, Chapter 2
May, 2008	SH (NA)-080393E-I	Partial corrections
		Section 7.3

Japanese Manual Version SH-080377-J

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#### INTRODUCTION

Thank you for choosing the Mitsubishi MELSOFT series Integrated FA software. Read this manual and make sure you understand the functions and performance of MELSEC series sequencer thoroughly in advance to ensure correct use. Please make this manual available to the end user.

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#### About Manuals

The following lists the manuals relevant to this software package. These manuals are separately available if necessary.

#### Related Manuals

Manual Name	Manual Number (Model Code)
Q Corresponding Serial Communication Module User's Manual (Basics) Explains the outline, applicable system configuration, specifications, pre-operation procedure, basic data communication method with the other device, maintenance, inspection, and troubleshooting for use of the module. (Sold separately)	SH-080006 (13JL86)
Q Corresponding Serial Communication Module User's Manual (Application) Explains the specifications and usage of the module's special functions, the settings for use of the special functions, and the method of data communication with the other device. (Sold separately)	SH-080007 (13JL87)
Q Corresponding MELSEC Communication Protocol Reference Manual Explains how the other device performs read, write, etc. of PLC CPU data by making communication in the MC protocol using the serial communication module/Ethernet module. (Sold separately)	SH-080008 (13JF89)
GX Developer Version 8 Operating Manual (Startup) Explains the system configuration, installation method, and startup method of GX Developer. (Sold separately)	SH-080372E (13JU40)
GX Developer Version 8 Operating Manual Explains the program creation method, printout method, monitor method, debugging method, etc. using GX Developer. (Sold separately)	SH-080373E (13JU41)
GX Developer Version 8 Operating Manual (Function Block) Explains the function block creation method, printout method, etc. using GX Developer. (Sold separately)	SH-080376E (13JU46)

REMARK

The manuals are available separately in printed form as options. Please place an order with the manual number (model code) in the above table.

#### How to Use This Manual

The symbols used in this manual and their definitions and examples will be explained.

Symbol	Description	Example
[]	Menu name of the menu bar	[Project]
~~ >>	Tab name of the dialog box	< <main>&gt;</main>
	Item name of the dialog box	"Name"
	Command button of the dialog box	Setting Button



Purpose of the operation that is explained in the corresponding chapter, section or item.



BASIC OPERATION

Operation performed until the screen for actually achieving the purpose is displayed.



#### DISPLAY/SETTING SCREEN

Screen used to make setting and/or provide a display for the purpose.



#### **DISPLAY/SETTING DETAILS**

Explains the display/setting screen items.



Explains the especially noted items of the explanation, functions desired to be known, etc..

## REMARK

Gives information useful as the knowledge related to the explanation.

#### Generic Terms and Abbreviations Used in This Manual

In this manual, the following generic terms and abbreviations are used to represent the GX Configurator-SC software package and PLC CPU modules. The module/ package name is given when the target model name must be pointed out explicitly.

Generic Term/Abbreviation	Generic Term/Abbreviation						
CV Configuration CC	Generic product name of the model names SWnD5C-QSCU-E and SWnD5C-QSCU-						
GX Conligurator-SC	EA. (n means Version 2 or later.)						
Protocol FB support function	Means the protocol FB support function of GX Configurator-SC.						
Protocol FB	Abbreviation of the communication control function block.						
Q Series C24 module	Generic term of the serial communication module and modem interface module.						
Sorial communication module	eneric term of the QJ71C24, QJ71C24-R2, QJ71C24N, QJ71C24N-R2 and						
	QJ71C24N-R4.						
QJ71C24N module	Generic term of the QJ71C24N, QJ71C24N-R2 and QJ71C24N-R4.						
Device controller	Generic term of the external devices that communicate with the Q series C24 modules.						
Intelligent function module utility	Utility in GX Configurator-SC.						
Communication control program	Program for communication with the device controller.						
Module initialization FB	FB that performs the initial setting of the module among the protocol FBs.						
Send FB	FB that sends data to the device controller among the protocol FBs.						
Receive FB	FB that receives data from the device controller among the protocol FBs.						
I/O variable	Label used in an FB (FB variable).						
	Generic term for the following:						
	Microsoft <sup>®</sup> Windows Vista <sup>®</sup> Home Basic Operating System,						
Windows Vista®	Microsoft <sup>®</sup> Windows Vista <sup>®</sup> Home Premium Operating System,						
	Microsoft <sup>®</sup> Windows Vista <sup>®</sup> Business Operating System,						
	Microsoft <sup>®</sup> Windows Vista <sup>®</sup> Ultimate Operating System,						
	Microsoft <sup>®</sup> Windows Vista <sup>®</sup> Enterprise Operating System						
	Generic term for the following:						
Windows <sup>®</sup> XP	Microsoft <sup>®</sup> Windows <sup>®</sup> XP Professional Operating System,						
	Microsoft <sup>®</sup> Windows <sup>®</sup> XP Home Edition Operating System						
	Generic product name of the product model names SWnD5C-GPPW-E, SWnD5C-						
GX Developer	GPPW-EA, SWnD5C-GPPW-EV and SWnD5C-GPPW-EVA. (n means Version 8 or						
	later.)						
FB	Abbreviation of the function block.						
OCDU (O modo)	Generic term of the Q00(J)CPU, Q01CPU, Q02(H)CPU, Q06HCPU, Q12HCPU,						
	Q25HCPU, Q12PHCPU and Q25PHCPU.						

## 1 OVERVIEW

GX Configurator-SC Version 2 (hereafter abbreviated to GX Configurator-SC) is the software added into GX Developer for use.

Conventionally, to perform the communication processing of the serial communication module/modem interface module (hereafter abbreviated to the Q series C24 module) with a device controller, a wide variety of complicated sequence programs, e.g. device-specific message format creation and data communication, had to be created by the user in the nonprocedural protocol.

On this software, user-created communication control programs are available as function blocks (hereafter abbreviated to FBs). The user can create a communication control program easily by making use of these FBs.

Also, since the communication debugging functions necessary for system startup are provided, operations from communication control program creation to system startup-time debugging can be performed with this software only.



#### 1.1 Features

(1) Automatic creation of communication control program (function blocks)

Reduced work for creating sequence for communication control!!

Since data for various device controllers are available, the user merely needs to perform FB conversion to create a communication control function block (hereafter abbreviated to a protocol FB).

Protocol FB support function	1-	_ 🗆 🗙
Project Edit View Debug supp	iort function Window Help Incom	
(Unset project)     Packet information     Packet information     Packet information     Packet information     Packet from Variable     Read from Variable     Read from Variable     Read from Variable     Write to Variable Are     Operation Commanc     Operation Commanc     I Jear © System	Sequence information.(Write to Variable Area 11)  Name : Write to Variable Area 11  Title : Settings area 0(Read/write)  Control type  Send  Receive  Send  Receive  Packet selection  Project selection  Mite to Variable Area Response:1  Send  Write to Variable Area Response:1  Send  Control type  Control type Control type	Cancel
€ MELSOFT series GX Developer C:\d	Output protocol FB to GX Developer.	[],X
Project Edit End/Replace Conver	t View Online Diagnostics Tools Window Help	_ & ×
	「その時間には、新聞時間の間である」というのはません。 Aste protocol FB	<u> 1</u>
ERTestProject 557	drag and drop)	
自選 Function Block	B: I_REQ_RECV OUT_RES_CODE: S D2S ]	
● 쪱 R-E5ZN ■ 쪱 S-E5ZN		
	0 TIM.P	(112)
	v_c.w. 8	(101
	0_END_NG: B	(N22 )
	0_R_DATA_N0:I [D2 ]	
	.32)	[EIID ]
	025H Host station Ourwrite	

- (a) No requirement of packet construction specific to device controller The protocol FB support function has preset data for various data controllers. The user merely needs to select the device controller and its processing items to create a protocol FB automatically without being conscious of dedicated instruction.
- (b) Desired setting of data communication procedure When the user constructs any packet originally, setting can be made easily for each device controller.
- (2) Communication debugging support

Reduced debugging work for system startup!!

The debugging functions required for system startup for communication of the Q series C24 module with the device controller are available. Packet data on the line can be confirmed without any other tool being used.

Circuit trace-TraceFil	e15(	QJ7	1C2	4N)																													
Object module:																							Cla	se	]								
Send packet(HEX)		01	30	31			31	30	31	30	31		30	30				30	31	30	30	3	1 1	IF 45	1								
(ASCII)		S O H	0	1			1	0	1	0	1		0	0				0	1	0	0	1		S E									
Receive packet(HEX)					30	32									61	66	<b>F</b> 1	State	e Mor	nitor			-										_ [
(ASCII)					0	2									a	f		Objec	tmod	ule:		I/O Addr	ress((	00) Туре	(QJ71C2	4N) Ch	annel(Ci	41)	]	N	lonitor stop		Close
BS signal																	_	Signa	al  Er	ror inf	ormatio	n   Opera	tion s	etting sv	/itch								
																		Б	No	Signa	Idaecri	ntion		Ve	lua 🔺	1	No	Signal	lescription		Value		
ER signal																		- E		CH1 1	ransmi	ssion non	mal				Y00	CH1 Tr	nsmission	request	OFF		
																		Ľ	×00	comp	letion			U U	7		Y01	CH1 Re	ception dat	ta read	OFF		
DB signal																	-		×01	CH1 T	ransmi letion	ssion abr	norme	<sup>3</sup> 0	FF		×112	CHI M	tion vdo owitchin	areques	+ OFF	- 1	
Direnginar																	1			CH1 T	ransmi	ssion					YDE	CHI M	B dear reg	ig reques west	OFF	- 1	
CS signal															-1			2	×02 ×03	proce CH1 P	ssing Recepti	on data re	ad	0	-F		Y10	Moderr (standb	initialization y request)	n request	OFF		
												_	_					ľ		reque	st		nal				Y11	Connec	tion reques	at	OFF		
CD signal												-1-1							×04	detec	tion	un abrion	nau	0	=F		Y12	Moderr	disconnect	tion	OFF		
												-						2	×06	CH1 N	Aode si	vitching		0	FF		Y14	Notifica	tion-issued	request	OFF		
Reception error												992					3	2	×0E	CH1 E	RR. oc	currence		0	=F		Y17	Flash P	OM read re	quest	OFF		
																			×10	Mode	m initial	ization		0	-F		Y18	Flash P	.OM write re	quest	OFF		
																		5	211	Dialin	a			0	FF		Y19	Flash F	.OM system	n setting	OFF		
																		ŝ	×12	Conne	ection			ō	F			Suctors	juesi cotting date	mult			
•																		>	×13	Conne	ection a letion	bnormal		0	F	J		100 - 1					
Error Display																		>	×14	Mode comp	m disco lete	onnection		0	F		B	.Jz signa .TS	•	CD			
:Overrun error			т	'he p	rojec	tnam	ne for	mate	ching									>	×15	Notific comp	ation netion	ormal		0	=F		D	SR	•	CS	٠		
Parity error								×16	Notific comp	ation netion	Isma		0	F .		D	TB	•	RI														
:Framing error	Straming error     Transmission/receive packet details display     Transm																																
																	-															_	

Communication test			×															
Select communication test packet	毢 Circuit trace-TraceFile1:	5(QJ71C	24N)														_	
Select packet from inside the project	Object module:															[	Close	
0050500 4040 405050505030300004 05	Send packet(HEX)	01 30 S	31		31	30 3	1 30	31	30	30			30	31 3	0 30	31	1F U	45
02535334343435353535373739390135	(ASUI)	H		20 2	2						61						s	E
	(ASCII)			0 2	2						a	f						
Send Setting																		
	ER signal																	
	DR signal																	
	CS signal																	
	CD signal																	
	Heception error					_			22						_	_		d.
	•																	Þ
	Error Display		The pro	iectne	me for	natchir	na							t	0			
	:Parity error	ſ		,		-		_				•						
	:Framing error		Trans	missic	on/rece	ive pac	ket de	tails dis	pløy		т	ransmis	ssion/r	eceive	pack	ket list disp	olay	

(a) Circuit trace

The transmission/receive packet data and communication signal wire condition between the Q series C24 module and device controller can be traced.

1) Transmission/receive packet details display

The transmission/receive packet data obtained by circuit trace are displayed in detail on the basis of the packet information.

2) Transmission/receive packet list display

The transmission/receive packet data obtained by circuit trace are displayed separately in lists on a packet-by-packet basis.

(b) Communication test

Test transmission (any/set data) can be made from the Q series C24 module to the device controller.

By starting the circuit trace and the following state monitor simultaneously, the packet communication data on the line can be confirmed.

(c) State monitor

The error status, communication signal line condition, etc. of the Q series C24 module can be monitored.

(3) New functions of GX Configurator-SC

With upgrade from Version 2.03D (SW2D5C-QSCU) to Version 2.04E (SW2D5C-QSCU), following functions/setting items are newly added to GX Configurator-SC.

(a) Create receive (specified length) packet

The receive frame with fixed packet length, header and no end judgment data can be created.

(b) Module start I/O No. setting It is possible to set start I/O No. of the Q series C24 module to which FB programs are output.

# **2 OPERATING ENVIRONMENT**

This chapter explains the operating environment of the personal computer that uses the protocol FB support function.

Item		Peripheral device					
Installation (a	dd-in) target *1	Add-in to GX Developer Version 8 (English version) or later *2					
Computer		Windows <sup>®</sup> -based personal computer					
	CPU	Refer to the following table "Operating system and performance required for personal					
	Required memory	computer".					
Hard disk	For installation	65MB or more					
space <sup>*3</sup>	For operation	20MB or more					
Display		$_{300} imes$ 600 dots or more resolution $^{^{*4}}$					
Operating sy	stem	Microsoft® Windows® 95 Operating System (English version) Microsoft® Windows® 98 Operating System (English version) Microsoft® Windows® Millennium Edition Operating System (English version) Microsoft® Windows NT® Workstation Operating System Version 4.0 (English version) Microsoft® Windows® 2000 Professional Operating System (English version) Microsoft® Windows® XP Professional Operating System (English version) Microsoft® Windows® XP Professional Operating System (English version) Microsoft® Windows® XP Home Edition Operating System (English version) Microsoft® Windows Vista® Home Basic Operating System (English version) Microsoft® Windows Vista® Home Premium Operating System (English version) Microsoft® Windows Vista® Business Operating System (English version) Microsoft® Windows Vista® Business Operating System (English version) Microsoft® Windows Vista® Enterprise Operating System (English version)					

\*1: Install GX Configurator-SC in GX Developer Version 8 or higher in the same language. GX Developer (English version) and GX Configurator-SC (Japanese version) cannot be used in combination, and GX Developer (Japanese version) and GX Configurator-SC (English version) cannot be used in combination.

\*2: The protocol FB support function cannot be used if it is added into GX Developer Version 7 or earlier.

\*3: At least 15GB is required for Windows Vista $^{\scriptscriptstyle (\! R\!)}$  .

\*4: Resolution of 1024 × 768 dots or more is recommended for Windows Vista<sup>®</sup> .

### Operating system and performance required for personal computer

Operating system	Performance required for personal computer						
Operating system	CPU	Required memory					
Windows <sup>®</sup> 95 (Service Pack 1 or later)	Pentium <sup>®</sup> 133MHz or more	32MB or more					
Windows <sup>®</sup> 98	Pentium <sup>®</sup> 133MHz or more	32MB or more					
Windows® Me	Pentium <sup>®</sup> 150MHz or more	32MB or more					
Windows NT <sup>®</sup> 4.0 Workstation (Service Pack 3 or later)	Pentium <sup>®</sup> 133MHz or more	32MB or more					
Windows <sup>®</sup> 2000 Professional	Pentium <sup>®</sup> 133MHz or more	64MB or more					
Windows <sup>®</sup> XP Professional	Pentium <sup>®</sup> 300MHz or more	128MB or more					
Windows® XP Home Edition	Pentium <sup>®</sup> 300MHz or more	128MB or more					
Windows Vista <sup>®</sup> Home Basic	Pentium <sup>®</sup> 1GHz or more	1GB or more					
Windows Vista <sup>®</sup> Home Premium	Pentium <sup>®</sup> 1GHz or more	1GB or more					
Windows Vista <sup>®</sup> Business	Pentium <sup>®</sup> 1GHz or more	1GB or more					
Windows Vista <sup>®</sup> Ultimate	Pentium <sup>®</sup> 1GHz or more	1GB or more					
Windows Vista <sup>®</sup> Enterprise	Pentium <sup>®</sup> 1GHz or more	1GB or more					

- Point -----

The functions shown below are not available for  $\mathsf{Windows}^{\texttt{®}}$  XP and  $\mathsf{Windows}$   $\mathsf{Vista}^{\texttt{®}}$  .

If any of the following functions is attempted, this product may not operate normally. Start of application in Windows<sup>®</sup> compatible mode

Fast user switching

Remote desktop

Large fonts (Details setting of Display Properties)

Also, 64-bit version Windows® XP and Windows Vista® are not supported.

# **3 FUNCTION LIST**

This chapter explains the functions and menu of the protocol FB support function.

#### 3.1 Function List

The functions of the protocol FB support function are listed below.

Function	Function outline	Reference Section
Module setting	Make the initial setting of the module used with the protocol FB support function. Used at the time of protocol FB conversion.	7.1
Packet construction information setting	Set the packet construction elements (message format) of the device controller.	7.2.3
Packet data information setting	Set detailed data to the construction elements of the packet construction information to set the data for actual communication.	7.2.4
Sequence information setting	Set the communication processing control type (send, receive, communication) and the packet data that matches that type to set the information for creation of a protocol FB.	7.3
FB conversion of sequence information	Convert the specified sequence information into a protocol FB. The created protocol FB is inserted into the < <fb>&gt; tab of GX Developer.</fb>	7.4

#### (1) Protocol FB support function

### (2) Debugging support functions

Function	Function outline	Reference Section
Circuit trace	<ul> <li>Traces the transmission/receive packet data and communication signal wire condition.</li> <li>Transmission/receive packet details display The packet information is collated with the transmission/receive data obtained by circuit trace and the details of each packet are displayed.</li> <li>Transmission/receive packet list display The obtained transmission/receive packet data are displayed separately in lists on a packet-by-packet basis.</li> </ul>	9.2
	<ul> <li>Save/read of trace data Saves/reads the data obtained by circuit trace.</li> </ul>	9.2.5
Communication test	Performs a communication test on any packet data from the Q series C24 module to the device controller.	9.3
State monitor	Monitors the error status, communication signal wire, etc. of the Q series C24 module.	9.4

The following table shows the modules to which the protocol FB support functions can be applied and their function ranges.

Applicable module		Protocol FB	Debugging Support Function						
		support function	Circuit trace	Communication test	State monitor				
O sorios C24	QJ71C24, QJ71C24-R2	0	×	×	0				
Q series C24 modules	QJ71C24N, QJ71C24N-R2, QJ71C24N-R4	0	0	0	0				

#### Applicable modules and function ranges

## 3.2 Menu List

The following table indicates a menu list of GX Configurator-SC.

	Menu							
	New project	New project						
	Open project		Ctrl + O					
	Close project		_					
	Save		Ctrl + S					
Project	Save as		_					
	Delete project		_					
	Change module type		_					
	Print		Ctrl + P					
	Exit protocol FB support	_						
	Cut	Ctrl + X						
	Сору	Ctrl + C						
	Past	Ctrl + V						
	Module setting	_						
	j	New Packet information	_					
		Open Packet construction information						
		Open Packet data information	_					
	Packet information	Duplicate Packet information						
Edit		Rename Packet information						
		Delete Packet information						
		New Sequence information						
		Open Sequence information						
		Sequence information FB conversion	_					
	Sequence information	Duplicate Sequence information	_					
		Rename Sequence information						
		Delete Sequence information						
		Input and Output variable check	_					
	Toolbar	_						
	Guide toolbar		_					
View	Status bar							
	Project tree		_					
	Module selection		_					
		Circuit trace	_					
		Open circuit trace file	_					
Debugging support functions	Circuit trace	Save as circuit trace file	_					
		Circuit trace option	_					
	State monitor	State monitor						
	Cascade		_					
MP 1	Tile horizontally		_					
VVINDOW	Arrange icons		_					
	Close all windows	_						
Help	Product information	Product information						

# **4 SCREEN DISPLAY**

This chapter explains the screen display and names of the protocol FB support function.

#### 4.1 Screen Display

The protocol FB support function consists of the project tree area, which shows a data configuration, and the function screen area.

The basic screen display of the protocol FB support function is shown below.



The following table indicates the names and functions.

Name	Function					
Main menu	Select the menu item.					
Toolbar	Click the selected button to execute the function.					
Project tree	Project tree Manage various data of the system/user project.					
Function Screen	Module setting, packet construction information setting, packet data information setting, sequence information setting screens, etc. are available.					
Otatus har	Displays various statuses.					
Status daf	Move the cursor over any of the buttons to display its guidance.					

## 4.2 Toolbar

The toolbar consists of the tool buttons and guide tool buttons. When the cursor is moved over any of the buttons, the tool tip is displayed, and at the same time, its guidance is displayed on the status bar.

The toolbar can be displayed or hidden by choosing [View]  $\rightarrow$  [Toolbar]. The following table lists the tool buttons.

Tool Button	Tool Tip	Guidance
	New project	Create a new project.
ų,	Open project	Open the existing project.
	Save	Save the project over the old one.
ж	Cut	Cut the selected data.
	Сору	Copy the selected data.
i de	Paste	Past the selected data.
	Print	Print the project data.

The guide tool buttons display the protocol FB creating procedure in Step 1 to Step 5. A protocol FB can be created by making setting in order of Step 1 to Step 5. The following table lists the guide tool buttons.

Guide Tool Button	Tool Tip	Guidance				
Step	Open Module Setting	Open the module setting screen.				
Step 2	New Packet information	Create new packet information.				
Steg	Open packet data information	Open the packet data information.				
Step	New sequence information	Create new sequence information.				
Step	FB conversion of sequence information	Convert the sequence information to generate the user FB.				

## 4 SCREEN DISPLAY

## 4.3 Status Bar

The status bar displays status data.

The status bar can be displayed or hidden by choosing [View]  $\rightarrow$  [Status bar].

## DISPLAY/SETTING SCREEN

Header : ASCIICode : 1	QJ71C24N	CAP NUM SCRL
1)	2)	3) 4) 3)

# DISPLAY/SETTING DETAILS

No.	Display/Setting Details
1)	Displays the guidance and packet data information item setting information.
2)	Displays the model name of the Q series C24 module.
3)	Displays the Caps Lock status.
4)	Displays the Num Lock status.
5)	Displays the Scroll Lock status.

#### 4.4 Project Tree

The project tree consists of a system project tree and user project tree. Display screen switching is executed by clicking the tab.

The system project indicates the packet construction information, packet data information and sequence information for various device controllers entried at installation of GX Configurator-SC.

#### 4.4.1 System project tree



The system project tree displays the packet construction information, packet data information and sequence information of various device controllers already entered.



## BASIC OPERATION

1. Click the <<System>> tab in the project tree.

2. The system project tree is displayed.



#### **DISPLAY/SETTING SCREEN**



# 🔎 DISPLAY/SETTING DETAILS

No.	ltem	Display/Setting Details
1)	Device controller name	The entered device controller names are displayed.
2)	System packet information name	The system packet information names are displayed.
3)	System sequence information name	The system sequence information names are displayed.

#### 4.4.2 User project tree



The user project tree displays the packet information and sequence information of the project created by the user.



#### **BASIC OPERATION**

- 1. Click the <<User>> tab in the project tree.
- 2. The user project tree is displayed.



## DISPLAY/SETTING SCREEN



# DISPLAY/SETTING DETAILS

No.	Item Display/Setting Details					
1)	User project name	The project names set by the user are displayed.				
2)	User packet information	The user packet information names created by the user are displayed.				
3)	User sequence information name	The user sequence information names created by the user are displayed.				

## 5 START AND END OF PROTOCOL FB SUPPORT FUNCTION AND PROJECT CREATION

This chapter explains the methods for starting and ending the protocol FB support function and the functions required to create a project.

# REMARK

Unless otherwise specified, a "project" indicates the "project of the protocol FB support function".

5.1 Starting the Protocol FB Support Function



## PURPOSE

Start the protocol FB support function from GX Developer.



## BASIC OPERATION

1. Click the [Tools]  $\rightarrow$  [FB support function]  $\rightarrow$  [Protocol FB support function] menu. 2. The protocol FB support function starts.



## DISPLAY/SETTING SCREEN





• When creating a new project using GX Developer, select "Use label". If "Do not use label" is selected, only the debugging support functions can be used.

• The protocol FB support function can be used when the project file of GX

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## 5.2 Exiting the Protocol FB Support Function

h PURPOSE

End the protocol FB support function.



# BASIC OPERATION

Click the [Project]  $\rightarrow$  [Exit Protocol FB Support Function] menu.



## DISPLAY/SETTING SCREEN

Protocol FB support function							_ 🗆 ×
Project Edit View Debug support fu	nction .	Window	Help				
New project Ctr	1+N						
Open project Ctr	1+0						
Close project							
Save Ctr	1+S						
Save as							
Delete project							
Change module type							
Print Ctr	1+P						
1 SAMPLE							
2 TT2							
3 test							
4 C:\data\QFBP\SC\FB_TEST2							
Exit Protocol FB Support Function							
User System							
inds Protocol FB support function.				-	QJ71C24N	CAP NU	M SCRL

### 5.3 Creating a Project

The following indicates a project function list.

Function	Function outline
New project	Creates a new project.
Open project	Opens the existing project.
Close project	Closes the currently open project.
Save project	"Saves" or "Saves as" the currently edited project.
Delete project	Deletes the project.
Change module type	Changes the object module of the currently open project.



#### 5.3.1 Creating a new project



Create a new project of the protocol FB support function. The created project is inserted into the user project tree.

# BASIC OPERATION

- 1. Click the [Project]  $\rightarrow$  [New project] menu (
- 2. Select the "Module type" on the New project screen.
- 3. Set the "Project path".
- 4. Set the "Project name".
- 5. Set the "Title".
- 6. Click the OK button.
- 7. A new project is created.

### REMARK

"Project file name specification" can be done either before or after program creation.

# JISPLAY/SETTING SCREEN

Create new project		×
Module type	QJ71C24N	
Setup project name		
🔽 Setup project n	ame	
Project path	C:\MELSEC\QFBP\SC	Reference
Project name	TEST_PROGRAM	
Title	communication test	
	OK	Cancel

# 🔎 DISPLAY/SETTING DETAILS

Item	Display/Setting Details					
Module type	Select the module type to be used in the project.					
"Project name setting"	Checking the check button enables input to the following items.					
check button						
Reference button	Displays the project reference screen.					
	Set the path of the new project.					
Project path	The usable number of characters is within 150 characters including					
	those of the project name.					
	Set the name of the new project.					
Draiget name	The usable number of characters is within 32 characters.					
	(Note that the project name cannot be set if the number of					
	characters including that of the project path exceeds 150.)					
Title	Set the title of the new project.					

# REMARK

Refer to Appendix 2 for the restrictions on the names (such as the project name) to be set.

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### 5.3.2 Opening the project

PURPOSE

Read the existing project.



# BASIC OPERATION

- 1. Click the [Project]  $\rightarrow$  [Open project] menu (  $\supseteq$  ).
- 2. Click the project name.
- 3. Click the Open button.

#### 5.3.3 Closing the project



Close the open project file.



BASIC OPERATION

- 1. Click the [Project]  $\rightarrow$  [Close project] menu.
- 2. If the setting has been changed, the project save confirmation screen is displayed.
  - · Click the Yes button to save and close the project.
  - · Click the No button to close the project without saving it.

#### 5.3.4 Saving the project

PURPOSE

Save the currently edited project file.



#### BASIC OPERATION

- (1) Saving the project over the old one
  - 1. Click the [Project]  $\rightarrow$  [Save] menu (  $\square$  ).
  - 2. The currently edited project file is saved over the old one.
- (2) Saving the project with a name
  - 1. Click the [Project]  $\rightarrow$  [Save as] menu.
  - 2. Set the "Project path" and "Project name".
  - 3. Click the Save button.
  - 4. The currently edited project file is saved with a name.

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### 5.3.5 Deleting the project of the protocol FB support function



Delete the project file.



# BASIC OPERATION

- 1. Click the [Project]  $\rightarrow$  [Delete project] menu.
- 2. Specify the "Drive/Path" and "Project name" to be deleted.
- 3. Click the Delete button.
- 4. As the project deletion confirmation screen is displayed, click the Yes button.
- 5. The project is deleted.

#### 5.3.6 Changing the module type



Change the type of the preset Q series C24 module.



## BASIC OPERATION

- 1. Click the [Project]  $\rightarrow$  [Change module type] menu.
- 2. Select a new module type.
- 3. After the setting is completed, click the OK button. The module type is changed.

**DISPLAY/SETTING SCREEN** 

Change module type			×
Module type		OK	
QJ71C24N	•	Cancel	
QJ71C24N QJ71C24N-R2 QJ71C24N-R4 QJ71C24 QJ71C24 QJ71C24-R2			

DISPLAY/SETTING DETAILS

Item	Display/Setting Details					
	Select a new module type.					
	Any of the following modules can be selected.					
Module type	• QJ71C24N	• QJ71C24				
	• QJ71C24N-R2	• QJ71C24-R2				
	• QJ71C24N-R4					

## 5 START AND END OF PROTOCOL FB SUPPORT FUNCTION AND PROJECT CREATION

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When the module type is changed, the following data return to the default values. • Transmission speed of module information

# 6 PROTOCOL FB CREATION OPERATING PROCEDURE

#### 6.1 Protocol FB Construction Data

The protocol FB support function creates protocol FBs for communication with the device controller. Make the following settings to create protocol FBs.

- (1) Module setting
- (2) Creation of send/receive FBs

(This operation is not required when the system project is used.)

The following shows the purpose and entry procedure of each data.



control

Retransmission time

transmission method

Do not resend.

N

#### (2) Creation of send/receive FBs

To create send/receive FBs, it is required to set the packet construction information, packet data information and sequence information.

- (a) Packet construction information Entry the structure (header, fixed data, terminator, etc.) of the device controller to be communicated with.
- (b) Packet data information

Entry the data to be transmitted (actual message) into the packet construction information entered in (a).

(c) Sequence information

Entry the data to be transmitted. By performing the FB conversion of this sequence information, a protocol FB for communication of the entry data is created.

E.

The following shows the set data that comprise send and receive FBs.

			-					_	1 8	Sequence information FB
Packet construction information		No.	Header	Station No.	Command	Address	Data			Sequence information FB
(		1	@	01	RD	0100	1500		וב	Sequence information FB
Packet data		2	@	01	RD	0110	2000			
information		3	@	02	WR	0200	2500			
		4	@	02	WR	0210	3000			

#### 6.2 Communication Control Program Creating Procedure

This section explains the procedure for creating a communication control program using the protocol FB support function.

When the target device controller is in the system project, use the system project. Protocol FBs can be created easily.

When the target device controller is not in the system project, protocol FBs can be created by modifying the system project or creating a new project. The following flowchart indicates the creating procedure.



## 6.3 Operating Procedure for Use of System Project

The operating procedure for use of the system project will be explained using the actual screen as an example.

The Protocol FB support function	_ 🗆 ×
Project Edit View Debug support function Window	Help
and and and and	
III ⊂ OMRONESZY (Dial Loop Moduler Temperature C i ⊂ OMRONESK Djala Proceso Contaler) i ⊂ OMRONESK Djala Proceso Contaler) i ⊂ Yamatoke DMC10[Distributed Multi-chennel Control	
C User C System	Q371C24N
Ļ	Ļ

Starting the protocol FB support function selects the <<System project>> tab.

#### 1) Make module setting.

Kind	Item	CH1	CH2		End set
Mode switching	Data bit	7bit	7bit		
	Parity bit	No	No	1	Cance
	Odd/even parity	Odd	Odd		- Use cha
	Stop bit	1bit	1bit		
	Sum check code	No	No		IV LH
	Transmission speed	300bps	300bps		🔽 CH
Transmission control	DTR/DSR control	DTR/DSR	DTR/DSR		
	DC1/DC3 control	No control	No control		
	DC1 code	11h	11h		
	DC3 code	13h	13h		
	DC2/DC4 control	No control	No control		
	DC2 code	12h	12h		
	DC4 code	14h	14h		
Communication control	CD terminal check	No check	No check		
	Communication system	Full duplex	Full duplex		
Half duplex communication control	Simultaneous transmission priority/non-priority	0 (x100ms)	0 (x100ms)		
	Retransmission time transmission method	Do not resend.	Do not resend.	F	
Data communication time monitoring	No-reception monitoring time	0000h	0000h		
	Transmission monitoring time	1800 (x100ms)	1800 (x100ms)		
Transmitting area	Transmission buffer	0400h	0800h	-	

 $\bigcirc$ 

#### Operation:

Click  $\frac{\mathcal{R}}{2}$  or choose [Edit]  $\rightarrow$  [Module setting].

Make the initial setting of the Q series C24 module, and click the End set up button.

#### REMARK

Executing [FB conversion of sequence information] reflects the settings of the channel, which has been specified as "Channel" on the FB conversion check screen, in "Module initialization FB (INITSC)".

#### 2) Select the sequence information from the system project.



Operation:

Select the device controller to be communicated with from among the sequence information in the system project tree.
#### Convert into a protocol FB.

響 Sequence information.(RD Command2)	<u> </u>
Name : RD Command2	End set up
Title : Read continuous address data	Cancel
Control type	
C Send	
C Receive	
• Send/Beceive	
Packet selection	
Derivative later and Discon	
Project selection Yamataka:DMCTU	
No. Classification Packet name.	
1 Send RD Command:1	
3 -	
4 -	
5 -	
<u>با</u> لے	
Ť	
Drotocol EB support function	Y
Protocorr D support function	
Registration of a function block of sequence information	ation was completed.
OK	

#### Operation:

Click  $\leq$  or choose [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [FB conversion of sequence information].

Input the FB program name, etc. and click the OK button.

#### REMARK

This will create an FB program for the channel specified in "Channel".

The protocol FB and module initialization FB are inserted into the <<FB>> tab of GX Developer.

#### Inserted into GX Developer.



Point -

Precautions for creating multiple module initialization FBs

At the time of [FB conversion of sequence information], a module initialization FB is created under the FB program name of "INITSC". If the module initialization FB (INITSC) exists in a GX Developer's project, the new FB is overwritten to the existing one.

Therefore, when multiple module initialization FBs are needed for respective applications or channels, change the FB program name on GX Developer after [FB conversion of sequence information].

### 6.4 Operating Procedure for Use of User Project

When the system project does not have the target device controller, create a user program by reusing the system project or by creating all information such as packet information and sequence information.

This section explains the method of reusing the system project using the actual screen as an example.

Protocol FE	3 support function			_ 🗆 ×	Operation:
Project Edit	view Debug suppor	tiunction V	vinaow Heip		
New project	•••	Ctrl+N			Choose [Project] $\rightarrow$ [New project].
Close projec	t	Culto			
		Ctrl+S			
					A new user project is created.
Delete proje	ct				
Change mod	dule type				
Print		Ctrl+P			
1 test 2 C:\data\QF	=BP\SC\FB_TEST2				
Exit Protoco	FB Support Function				
		_			
💷 User 💻	System				
) Make	≂ e module s	ettina.			
) Make	e module s	etting.	-	<u> </u>	Operation:
) Make	e module se	etting.	CH2	X	Operation:
) Make	e module se g Dete bit Dete bit		CH2 7bit	End setup Cancel	Operation: Click $\stackrel{\text{Step}}{\longrightarrow}$ or choose [Edit] $\rightarrow$
) Make Module settin Kind	e module se g Dato bit Party bit Odd/even parity	CH1 CH1 7bi Odd	CH2 7bit No Odd	End setup      Cencel      Iss channel	Operation: Click Step or choose [Edit] →
) Make Module settin Kind Mode change	e module su g Data bit Party bit Odd/zeven party Stop bit Stop bit	CHI CHI No Odd Ibit	CH2 7bit No Odd 1bit	End setup Cencel Use channel F CH1	Operation: Click औ or choose [Edit] → [Module setting].
) Make Module settin Kind Mode change	e module se g lem Data bi Pany bit Odd/even panty Stop bit Sum check code Transmission speed	CHI CHI No Odd Ibit No 300bps	CH2 7bit No Odd 1bit No 300bps	L Cancel Cencel □Use channel □ CH2	Operation: Click $^{\text{Set}}$ or choose [Edit] $\rightarrow$ [Module setting].
) Make Module settin Kind Mode change	e module so g Det bit Penty bit Odd/zeven panty Stop bit Som check code Theremain speed DTH/DSR control DPC/ID/2 readu	CH1 75h No Odd 1bh No 300bps DTR/DSR	CH2 7bit No Odd 1bit No 300bps DTR/DSR	Land setup Cancel Use channel I⊄ CH1 I⊄ CH2	Operation: Click
) Make Module settin Kind Mode change	e module se g lem Data bit Data bit Odd/even panty Stop bit Stop bit Stop bit Stop control DTF/DSR control DCT.pCG2 control DC1 code	CH1 Zbit No Odd 1bit No 300bps DTR/DSR No control 11h	CH2 7bit No Odd 1bit No 300bps DTF/DSR No control 11h	End setup      Cencel      Use channel      F CH1      F CH2	Operation: Click ﷺ or choose [Edit] → [Module setting]. Make the initial setting of the Q series
) Make Module settin Kind Mode change	e module se g lata bit Party bit Odd/even parity Stop bit Stop bit Stop bit Stop bit Stop bit Otr/DC3 control DC1 code DC3 code DC3 code	CH1 CH1 CH1 CH1 CH1 CH1 No Odd Dtr/OSR No control DTR/OSR No control 13h No control	CH2 7bit No Odd 1bit No 300bps DTF/DSF No control 11h 11h	End set up Cancel Use channel VCH VCH VCH2	Operation: Click औ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the
) Make Module settin Kind Mode change Transmission control	e module so g Data bit Perity bit Odd/even parity Stop bit Stop bit Stop bit Stop bit Stop bit Stor check code Trensmission speed DTR/DSR control DC1/DC3 code DC3 code DC3 code DC2 code DC2 code	CHI 2017 2	CH2 7bit No Odd 1bit No 300bps DTR/DSR No No control 11h 13h No control 12h	End setup Cencel Use channel F CH1 F CH2	Operation: Click $\xrightarrow{\text{Set}}$ or choose [Edit] $\rightarrow$ [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button
) Make Module settin Kind Mode change Transmission control	e module so g Det bit Penty bit Odd/even panty Stop bit Sorp bit Stop bit Stop bit Stop bit Stop bit Dit code DC1/DC3 control DC1/DC3 control DC1/DC3 control DC3 code DC3 code DC3 code DC2/DC4 control DC2/DC4 control DC2/DC4 control DC2/DC4 control	CHI 760 No CHI 760 No 000ps DTR/DSR No control 11h 13h No control 12h 14h	CH2 7bit No Odd 1bit No 200bp8 DTR/DSR No control 11h 13h No control 12h 14h	Cancel  Cancel  Cancel  Concel  Conce	Operation: Click $\stackrel{\text{rest}}{\longrightarrow}$ or choose [Edit] $\rightarrow$ [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
) Make Module settin Kind Mode change	e module se g bit Penty bit Data bit Data bit Stop bit Stop bit Stop bit Stop bit Stop control DC1 code DC2/DC4 control DC2/DC4 control DC4 code CC4 code	CHI 783 Ne Odd 1bt No 0dd No 0dd Nd ND ND ND ND ND ND ND ND ND ND ND ND ND	CH2 7bit No Odd 1bit No 200bps DTF/DSP No control 11h 13h No control 12h 14h Check Full dunlar	LIX End set up Cencel Use channel F CH1 F CH2	Operation: Click $\stackrel{\text{set}}{\longrightarrow}$ or choose [Edit] $\rightarrow$ [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
) Make Module settin Kind Mode change Transmission control	e module se g le module se g le m Deta bit Party bit Stop bit Stop bit Stop bit Stop bit Stop bit Stop bit Stop control DC1 Code DC2 Code DC2 Code DC2 Code DC2 Code CC1 termind check Controuicon system Simultaneous	CHI 288 No Odd 1bit No 300bps DTR/DSR No control 11h 12h No control 12h 13h No control 12h 13h No Check Fuil dyplex	CH2 7bit No Odd 1bit No 300bps DTP/05R No control 11h 13h No control 12h 14h Check Full duplex	End set up Cancel Use channel F CH1 F CH2	Operation: Click ∭ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
) Make Nodule settin Kind Mode change Transmission control Communication Half apples	e module so g Deta bit Perity bit Odd/aven parity Stop bit Odd/aven parity Stop bit Odd/aven parity Stop bit Dit/DC3 control DC1/DC3 control DC1/DC3 control DC1/DC3 control DC2 code DC2 code DC3 code DC3 code DC3 code DC3 code DC4 code DC4 code DC4 code DC4 code DC4 code DC4 code DC5 code DC4 code DC4 code DC5 code D	CHI 200 200 200 200 200 200 200 20	CH2 7bit No Odd 1bit No 300bps DTFr/0SP No control 11h 13h No control 12h 14h Check Full duplex 0 (x100ms)	L Cancel Cencel Use channel F CH1 F CH2	Operation: Click Strip or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button. REMARK
) Make Nodule settin Kind Mode change Transmission control Communication control	e module so g litem Data bit Penry bit Odd/even parity Stop bit Odd/even parity Stop bit Odd/even parity Stop bit Ddd/even parity Stop bit Ddd/core Ddd/Co	CHI 200 200 200 200 200 200 200 20	CH2 7bit No Odd 1bit No 200ps DTF/DSR No control 11h 13h No control 12h 13h Check Full duplex 0 (x100ms) Do not resend	L I X End setup Cencel Use channel I CHI I CHI I CHI	Operation: Click ﷺ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button. [REMARK] Executing IFB conversion of sequence
) Make Module settin Kind Mode chenge Transmission control Communication control Helf dupos control	e module se g Deta bit Penty bit Odd/even party Stop bit Odd/even party Stop bit Odd/even party Stop bit Odd/even party Stop bit Ddd/Color control DC1/DC3 control DC1/DC3 control DC2/DC4 control DC2 code DC2 code DC4 co	CHI 200 200 200 200 200 200 200 20	CH2           7bit           No           Odd           1bit           No           300bps           DTF/DSR           No control           11h           No           12h           14h           Check           Full duplex           0 (x100ms)           Do not resend.           0000h	Los channel ✓ Cencel Use channel ✓ CH1 ✓ CH2	Operation: Click ☞ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up] button. [REMARK] Executing [FB conversion of sequence information] reflects the settings of the
) Make Module settin Kind Mode change Transmission control Communication Communication Data communication	e module so e module so g lemme Date bit Penty bit Odd/zeven party Stop bit Stop bit Stop bit Stop bit Stop bit Stop bit DC//DC3 control DC//DC3 control DC//DC3 control DC//DC4 control DC2/DC4 control DC2/DC4 control DC2/DC4 control DC4 code DC4 code CC4	CHI 760 Odd 160 N0 Odd 160 N0 Odd 170 N0 Control 170 170 N0 Control 170 170 170 170 170 170 170 170 170 170	CH2           7bit           No           Odd           1bit           No           300bp8           DTR/DSR           No control           12h           13h           No control           12h           14h           Check           Full duplex           0 (x100ms)           Do not resend.           0000h	Cancel  Cancel  Concel  Conce	Operation: Click ∭ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
Module settin     Kind     Kind     Mode change     Transmission     control     Communication     control     Data     communication     time monitoring	e module so g here Date bit Perty bit Odd/zeven party Stop bit Sup check code Transmission speed DT/DGS control DC/DG3 control DC/DC3 control DC3 control DC3 control DC3 control CO3 c	CHI 786 Odd 1bit No Codd 1bit No Codd 1bit No Codd 1bit No Codd 1bit No Codd 1bit 1bit 1bit No Codd 1bit 1bit 1bit 1bit 1bit 1bit 1bit 1bit	CH2           7bit           No           Odd           1bit           No           300bp8           DTR/DSR           No control           11h           13h           No control           12h           14h           Check           Full duplex           0 (x100ms)           Do not resend.           50 (x100ms)           1800 (x100ms)	Cancel Cancel Concel Concel Concel Concel Concel Concel Concel Concel Concel Concel Concel Concel	Operation: Click ∭ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
Module settin     Kind     Kind     Mode change     Transmission     control     Communication     control     Halt duplex     communication     time monitoring	e module so g Date bit Penny bit Odd/seven panty Stop bit Odd/seven panty Stop bit Odd/seven panty Stop bit Odd/seven panty Stop bit Odd/seven panty Dit code DTR/DSF control DC1 code DC2/DC4 control DC2/DC4 control DC4 code C0 terminal check Communication system transmission method transmission method time Transmission subtire	CHI 786 786 786 786 786 786 786 786 786 786	CH2 7bit No Odd 1bit No 200bps DTF/DSP No control 11h 13h No control 12h 14h Check Full duplex 0 (x100ms) Do not resend. 0000h 50 (x100ms) 1800 (x100ms)	Cencel Cencel Cencel Cuse channel F CH1 F CH2	Operation: Click ∭ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
Modre certin     Kind     Kind     Kind     Kind     Communication     Communication     Control     Data     Communication     Data     Data     Communication	module set     m	CHI 788 0 dd 0 dd 1 bh No 0 dd 0 dd 1 bh No 0 dd 0 dd 0 dd 0 dd 0 dd 0 dd 0 dd 0 d	CH2           7bit           No           Odd           1bit           No control           11h           13h           No control           12h           14h           Check           Full duplex           0 (x100ms)           Do not resend.           0000h           50 (x100ms)           1800 (x100ms)	End setup      Cancel      Use channel      F CH1      F CH2      V	Operation: Click ∭ or choose [Edit] → [Module setting]. Make the initial setting of the Q series C24 module, and click the End set up button.
Mackeeeetiin     Kind     Kind     Kind     Kind     Kind     Control     Control     Control     Control     Communication     control     Data     communication     Ine monitoring	module se	CHI 783 No Odd 0dd 1bit No 0dd 0dd 1bit No 0dd 0dd 1bit No 0dd 0dd 1bit No 0dd 0dd 1bit No No 0dd 0dd 1bit No No 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CH2           7bit           No           Odd           1bit           No control           12h           10 (x100ms)           50 (x100ms)           1800 (x100ms)	End setup     Cencel     Vent     Cencel     F CH1     F CH2	Operation: Click ﷺ or choose [Edit] → [Module setting]. Make the initial setting of the Q serie C24 module, and click the End set up button.



#### 5) Duplicate the packet information from the system project.

Set the packet information name of the duplication destination.

6) Change the duplicated packet information into the user project.



Operation:

Choose [Edit] → [Packet information]

 $\rightarrow$  [Open packet data information].

The packet data information opens.



Set the packet data.

For details, refer to "7.2 Packet Information".

7) Create new sequence information.



Operation: Click ﷺ or choose [Edit] → [Sequence information] → [New sequence information].

New sequence information is created.

8) Set the packet data to the sequence information.



Double-click "Packet name".

The packet information screen opens.

### 6 PROTOCOL FB CREATION OPERATING PROCEDURE

MELSOFT

Packet Information selection X Projectname UserProject Selection Cancel	Select the packet information.
	Select the packet to create a protocol FB.
Packet data selection X	Operation:
Tride Concel	Select the packet data information.
N         DAMA[]         DIV         MAGRIDIN         Cascadard 100         Field         Field	The packet data selected here is created as a protocol FB.
Sequence information (R: DATA)     Report R: PLDATA     End setup     Control type     Gend     Reacrive     Cancel     Project selection     UseProject     Note Classification     Note Classification     Send     Operation Commends 1)	The packet data is set to the sequence information.

#### 9) Convert into a protocol FB.

FB conversion check			
FB program is generated from the following contents. Is it OK?			
FB program name R_DATA Cancel			
FB program title COMMAND			
Reservation D device D0			
Object sequence information			
Name : R_DATA			
Title :			
Channel			
CH1 C CH2 Communication setting check			
Project: UserProject			
No. Classification Packet name.			
1 Send Operation Commands:11			
$\sim$			
Protocol FB support function			
Registration of a function block of sequence information was completed			
Registeration of a new reserve of sequelice information was completed.			
ОК			

#### Inserted into GX Developer.



### Operation:

Click  $\$  or choose [Edit]  $\rightarrow$ [Sequence information]  $\rightarrow$  [FB conversion of sequence information].

Input the FB program name, etc. and click the OK button.

#### REMARK

This will create an FB program for the channel specified in "Channel".

The protocol FB and module initialization FB are inserted into the <<FB>> tab of GX Developer.



Precautions for creating multiple module initialization FBs

At the time of [FB conversion of sequence information], a module initialization FB is created under the FB program name of "INITSC". If the module initialization FB (INITSC) exists in a GX Developer's project, the new FB is overwritten to the existing one.

Therefore, when multiple module initialization FBs are needed for respective applications or channels, change the FB program name on GX Developer after [FB conversion of sequence information].

### 6.5 Operating Procedure for Utilization of Converted FB on GX Developer

The procedure for pasting the protocol FB to a sequence program to create a communication control program will be explained using the actual screen as an example.

MELSOFT series GX Developer C:\data\RS232C1 - [FBLD(Edit mode) INITSC Initial FB(SC) (159):				
Eroject Edit EndiReplace Convert View Online Diagnostics Tools Window Help			_	8 ×
Mana z C Berlanda Gobel variable - • 01ta				
	35 35 3	방踪	j. j.	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	(887	1,758	1	-
8월 RS232.1 호젤 Function Block	(*27	O_EMD		_
e 当 INITSC Initial FB(SC) 一班 Header Initial FB(SC)	er 0,010	NG		
一题 Body Intial FB(SC) ( N	{PSF	1,9,8		
B SR_DATA read comma	{esr	OLEMD	1	
	NET 0,1940.	,NG	1	
	коу нь	095 G164		
	ACV HIBBI	095		

#### 10) Module head I/O setting



The protocol FB is inserted into the <<FB>> tab.

The inserted FB names are the FB name specified in "FB conversion of sequence information" and INITSC (initialization FB).

#### Operation:

Choose [Project]  $\rightarrow$  [Function block]  $\rightarrow$  [FB Change module address].

The protocol FB has been created with the Q series C24 module installed on Slot 0. If it is not installed on Slot 0, change the module head I/O.

#### Operation:

Input the module head I/O where the Q series C24 module is installed.

The example assumes that the module is installed on Slot 1.

#### 11) Convert (compile) the protocol FB.

It changes the module start address of Function Block definition. (Device X/Y/DX/DY/U)

10

New module start address(HEX)



Operation:

Since the protocol FB has not yet been convert (not yet been compiled), convert (compile) it before use.



#### 12) Create a sequence program and paste the protocol FB.

Operation:

- (1) Put the sequence program in the edit condition.
- (2) Open the <<FB>> tab and drag the desired program FB to the sequence program.
- (3) Create the I/O area of the pasted protocol FB to complete the communication control program.

#### 13) Convert the sequence program.

	SyMILSOFT series 6X Developer Ht/sam	pleLD),ESEC - [LD(Edit m	ode) MAIN	747 Step]		_		5	-1012
	Droject Edit EndiReplace Convert 5	jew gnine Diagnostics	Look Window	Rep.					-1812
		<u> 0.0.0</u> 22	8 6 9 9	회 왜 된 돈	오오 모었	夏時期 田刻 3	코 코퍼 축	赵赵登	
2         0	상황학했으었 ㅠ	1.2 <u>5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5</u>	5 2.21	21년 12년 12년 12년 12년 12년 12년 12년 12년 12년					
и стание и					0:1_97A92	0_00:0		-011	
рани и проданции	Global variables     Forgram					00000		(HL	
Image (IP) (2000 MI)         Image (IP	Y Device connect     Parameter     Device nemory	245					-{asso	0.14	
Image (P)         Statem         Stat	- The Device Init			(910 )	2.11.27.01	0,888.0			
Image (P)         Statute         Open         Statute         Open         Notes				#2 BL023 →/	8:1_97AFE	0_00-0		-0413	
инан (Пр. 2004) марк					0.1,900,7000	00,00		0112	
Amount (P)         Solution						1,000,001,001	}		-
with m m         m         transform         transfo		412 HI		10 14			[307	82.9	,
main         main <td< td=""><td></td><td>41 ×1</td><td></td><td>n H</td><td>1:1_37.64</td><td>oqe:e_n_m</td><td>,</td><td></td><td></td></td<>		41 ×1		n H	1:1_37.64	oqe:e_n_m	,		
Annes [10] 2003.01         QUIM         Non standing         Non standing           Stady         QUIM         Non standing         Non standing		-			0-1_NEQ_82.0V	FTT_PARAT-2 (023			-
numo [Fi] Spattum         QUDN         Non example						042_062471-3 \$2-10			-
Auge [B]						177_8242-2-Q-45	)		-
Angeon         File         Operations         Operation         Operation         Operation         Operation         Description         Descrindion <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>(KL420</td> <td></td>								(KL420	
Ready Q129H Host station Overette PARM	Project FB Structure					0_00.0		-0111	
	Ready		Q129H	Host station			Ownete	MM	

The protocol FB is pasted to the sequence program.

Operation:

 $[Convert] \rightarrow [Convert/Compile].$ 

Since the sequence program has not yet been convert (not yet been compiled), convert (compile) it before use.

## 7 SETTING OF PROTOCOL FB DATA

### 7.1 Module Setting

PURPOSE

Set various parameters necessary for the initial setting of the Q series C24 module. The settings are reflected on the "Module initialization FB" and "Protocol FB" at the FB conversion of sequence information. Various parameters are as indicated below.

Mode change

- Data communication time monitoring
- Transmission control
- Transmitting area
   Data reception
- Communication control
   Half duplex communication control
   Reception area

BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Module setting] menu ( $\overset{\text{Step}}{1}$ ).
- 2. Set various parameters and used channels on the Module setting screen.
- 3. Click the End set up button.
- 4. The module information is set.

Module setting			$\checkmark$	
Kind	Item	CH1	CH2	End set up
	Data bit	7bit	7bit	Cancel
	Parity bit	No	No	
Mode switching	Odd/even parity	Odd	Odd	Use channel
mode smitching	Stop bit	1bit	1bit	
	Sum check code	No	No	
	Transmission speed	300bps	300bps	🛛 🔽 СН2
	DTR/DSR control	DTR/DSR	DTR/DSR	
	DC1/DC3 control	No control	No control	
<b>.</b>	DC1 code	11h	11h	
l ransmission	DC3 code	13h	13h	
control	DC2/DC4 control	No control	No control	
	DC2 code	12h	12h	
	DC4 code	14h	14h	
Communication	CD terminal check	No check	No check	
control	Communication system	Full duplex	Full duplex	
Half duplex communication	Simultaneous transmission priority/non-priority	0 (x100ms)	0 (x100ms)	
control	Retransmission time transmission method	Do not resend.	Do not resend.	
Data	No-reception monitoring time	0000h	0000h	
time monitoring	Transmission monitoring time	1800 (x100ms)	1800 (x100ms)	
Transmitting area	Transmission buffer memory head address	0400h	0800h	

	DISPLAY/SETTING	DETAILS
--	-----------------	---------

No	Item	Display/Setting Details
	Set the setting items of the module.	
1)	Modulo potting itomo	The input methods are as follows.
1)	1) Module setting items	· Decimal : 0 to 9
		Hexadecimal : 0 to 9, A to F, a to f
2)	Use channel	Set the used channels in the check boxes.



• The module can be initialized using either of the "module initialization FB" and "module initialization by intelligent function utility" (hereafter abbreviated to the "module initialization by utility"). Note the following points since the initialization timing differs.

"Module initialization FB"

Initializes the module when the module initialization FB is executed. Use this FB to initialize the module during program execution.

"Module initialization by utility"

Initializes the module when the CPU is reset.

Since matching with the protocol FB may be lost, do not use this FB when using the protocol FB.

• If the module is not initialized with the "module initialization FB", always make module setting.

### 7.2 Packet Information

Set the packet construction information (message format) and packet data (message) for communication with the device controller.

### 7.2.1 Creating new packet information

 $\cap$ 

|--|

Used to create new packet construction.

New packet construction cannot be created in the system project. Execute this function in the user project.



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Packet information]  $\rightarrow$  [New Packet information] menu ( $\overset{\text{seg}}{\longrightarrow}$ ).
- 2. The Create new packet information screen is displayed.
- 3. Set the "Name", "Title" and "Packet type", and click the OK button.

### **DISPLAY/SETTING SCREEN**

Create new I	Create new Packet information					
Name	Receive(specified le	ngth)packet		ОК		
Title	Example of setting1			Cancel		
Packet (	ype 🛛 O. Send packet	C Receive packet	Receive (specified lengt)	n) packet		

Item	Display/Setting Details		
	Set the name of packet information.		
Name	The number of usable characters is within 32.		
	For restrictions on name, refer to Appendix 2.		
	Set the title of packet information.		
Title	The number of usable characters is within 32.		
	For restrictions on name, refer to Appendix 2.		
	Select the packet type from the following.		
Packet type	Send packet/Receive packet/Receive (specified length) packet.		
	The packet type cannot be changed after packet information creation.		



### 7.2.2 Opening the packet construction information

# PURPOSE

Read the packet construction information already set. Used to change the contents of the packet construction information.

The packet construction information of the system project cannot be changed. When it is desired to reuse it, make a duplicate.

For details, refer to "7.2.5 Duplicating the packet information".



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Packet information]  $\rightarrow$  [Open Packet construction information] menu ( 🚟 ).
- 2. The Packet construction information screen is displayed.

### 7.2.3 Setting the packet construction information

PURPOSE

In the packet construction information, set each item of the packet construction (message format). The protocol FB support function sets the packet on the basis of this information.

The setting items are the item name, data classification, data type and data length.



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Packet information]  $\rightarrow$  [Open Packet construction information] menu ( 🚟 ).
- 2. The Packet construction information screen is displayed.
- 3. Click the Add or Insert button to display the Packet construction information setting screen.
- 4. After the setting of the Packet construction information setting screen is completed, click the Setting button.
- 5. The data are set to the Packet construction information screen.
- 6. Click the Close button on the Packet construction information screen.

(and	:	Receive(specified I	ength)packet		
Title	:	Example of setting1			
Packet ty	ре	[Receive (specified	length) packet]	Number of specified length data	2
Packet	construction	n information list			
No.	ltem	Data classification	Data type	Data length	Add
1	Header	Header	ASCIICode	1	
2	Number	Fixed data	ASCII	1	Insert
					Edit
					Delete
					One up
					One down

# DISPLAY/SETTING DETAILS

Item	Display/Setting Details
Name	The name of the packet information is displayed.
Title	The title of the packet information is displayed.
Packet type	The packet type of the packet information is displayed.
Number of specified length data	Displays the data length set in the packet construction information setting only when the packet type is Receive (specified length) packet.
Packet construction information list	The packet construction elements set in the packet construction information setting are displayed.
Add button	Adds the item of the packet construction. Displays the Packet construction information setting screen and sets the packet construction information. Data are inserted into the position one line lower than the cell containing the focus.
Insert button	Inserts the item of the packet construction. Displays the Packet construction information setting screen and sets the packet construction information. Data are inserted into the position one line higher than the cell containing the focus.
Edit button	Edits the item of the packet construction information already set.
Delete button	Deletes the specified item.
One up button	Moves the set packet construction information item one place up.
One down button	Moves the set packet construction information item one place down.

Packet construction information setting	×
Item name setting	Sotting
Name command	
	Cancel
Data classification selection	
C Header	
○ Terminator	
<ul> <li>Fixed data(Set numerical value fixation.)</li> </ul>	
C Input variable (Input variable of FB)	
O Output variable (Output variable of FB)	
Variable name	
C Error check code	
A header(Head frame) is included in the calculation range.	
Do not include the fixed data prior to error check code in calculation range.	
Data type selection	
ASCII(String)     ASCII Code     HEX	
Data length selection	
C 1 byte  Specification length	
C 2 byte Fixed length	
C 4 byte	

Item	Display/Setting Details				
Itom name actting	Set the name of the item to be added or changed.				
nem name setting	The usable number of characters is within 32 characters.				
	Select the data classification to be added or changed with the radio button.				
	<in case="" of="" packet="" receive="" send="" the=""></in>				
	(1) Header				
	(2) Terminator				
	(3) Fixed data				
	(4) I/O variable				
	Set the variable name corresponding to the I/O label of the protocol FB after FB				
	conversion (compile).				
	(5) Error check code				
	Set the error check code type and calculation range.				
	a) Error check code type				
	<ul> <li>Horizontal parity (2 bytes) ASCII</li> </ul>				
	Horizontal parity (1 byte) BIN *1				
Data classification selection	2's complement (2 bytes) ASCII				
	<ul> <li>SUM (1 byte) BIN</li> </ul>				
	SUM (2 bytes) BIN				
	• SUM (1 byte) ASCII				
	- SUM (2 bytes) ASCII				
	b) Calculation range * <sup>2</sup>				
	• A header (Head frame) is included in the calculation range.				
	Do not include the fixed data prior to error check code in calculation range.* <sup>3</sup>				
	In the case of Receive (specified length) packet>				
	(1) Header				
	(2) Fixed data				
	(3) Output variable				
	Set the variable name that corresponds to the protocol FB output label after FB				
	conversion (compile).				
	Select the data type of the item to be added or changed.				
Data type selection	Selection is disabled when the error check code is selected.				
	Select the data length of the item to be added or changed.				
	Selection is disabled when the error check code is selected.				
	• When ASCII (character string) or ASCII Code is selected in Data type selection, the				
	data length can be set to 1 to 50 bytes. However, when the input variable or output				
	variable is selected in Data type selection, the data length than can be set is 1 to 49				
Data length selection	bytes.				
	Check Fixed length to achieve the data length set in Specified length after selection of				
	the input variable or output variable. When it is not checked, the data length will be the				
	variable length within the range set in Specified length.				
	However, variable length setting is not available when Receive (specified length) backet				
	is selected.				

\*1: "Horizontal parity (1 byte) BIN" can be set when using the following module: QJ71C24, QJ71C24N-R2 or QJ71C24N-R4

\*2: The following table explains calculation ranges for the error check code in the basic packet structure. Note that "Do not include the fixed data prior to error check code in calculation range" can be set only when "SUM (2 bytes) ASCII" is set for the error check code.

$\setminus$	Calculation	range setting	
	A header (Head frame) is included in the calculation range	Do not include the fixed data prior to error check code in calculation range	Basic packet structure and error check code calculation range
1	Not checked	Not checked	Header I/O variable Fixed data Error check code Terminator
			Error check code calculation range
2	$\checkmark$		Header         I/O variable         Fixed data         Error check code         Terminator
2	Checked	Not checked	Error check code calculation range
		$\square$	Header         I/O variable         Fixed data         Error check code         Terminator
3	Not checked	Checked	
			Error check code calculation range Total bytes of 2 data are up to 78.
	$\square$	$\square$	Header         I/O variable         Fixed data         Error check code         Terminator
4	Checked	Checked Checked	Error check code calculation range Total bytes of 2 data are up to 78.

\*3: "Do not include the fixed data prior to error check code in calculation range" can be check-marked when using the following module (software version E or later):

QJ71C24, QJ71C24N-R2 or QJ71C24N-R4

When a module other than the above is used, messages will not be sent or received properly even if "Do not include the fixed data prior to error check code in calculation range" is checked.

Point
<ul> <li>Restrictions on the packet construction items at the time of packet construction information setting</li> <li>The maximum used items are 32 items.</li> <li>The number of items usable for input variables is up to 8 items.</li> <li>The number of items usable for output variables is up to 19 items. When multiple output variables are to be set, the output variable that can be set to a variable length is only the last output variable.</li> </ul>
• Restrictions on the packet construction when FB conversion is performed from sequence information
In the case of send packet> The maximum size of the send packet is 255 bytes. The number of registrations (number of bytes) of each item is within the following ranges. A = number of bytes of items other than the input variable × 3
B = number of items for input variables (label variables) $\times$ 30 The packet cannot be created if A + B exceeds 270.
<in case="" of="" packet="" receive="" the=""> The packet data requires the header, the error check code or terminator. When multiple output variables are to be set, the output variable that can be set to a variable length is only the last output variable. The maximum size of the receive packet is 255 bytes. The number of registrations (number of bytes) of each item is within the following ranges.</in>
<ul> <li>A = number of bytes of items other than the output variable × 3</li> <li>B = number of items for output variables (label variables) × 17</li> <li>The packet cannot be created if A + B exceeds 340.</li> <li>* Add all packet information set to the sequence information.</li> </ul>
<ul> <li>Restrictions on the order of packet construction information on a data classification basis</li> </ul>
<header> Always set the header at the beginning of the packet data. No other data can be inserted before the header.</header>
<terminator> Always set the terminator at the end of the packet data. No other data can be added after the terminator.</terminator>
<ul> <li><i o="" variable=""></i></li> <li>Set it between a header and error check code.</li> <li>For a receive packet, I/O variable cannot be set at the top or end of packet data.</li> </ul>
<ul> <li>For a receive (specified length) packet, I/O variable cannot be set at the top of packet data.</li> </ul>
<fixed data=""> Set it between a header and terminator.</fixed>
<error check="" code=""> When a terminator exists, set an error check code before the terminator. When setting an error check code at the end of packet data, set fixed data immediately before the error check code.</error>
<ul> <li>Restrictions on the variable name of the input variable/output variable</li> <li>Refer to Appendix 3 for details.</li> </ul>

### 7.2.4 Setting the packet data information

# PURPOSE

According to the packet construction information, set detailed data to the construction elements of the packet construction information to set the actually transmitted data.



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Packet information]  $\rightarrow$  [Open packet data information] menu  $\begin{pmatrix} \mathfrak{Step} \\ \mathfrak{Z} \end{pmatrix}$ .
- 2. The Packet data information screen is displayed.
- 3. Input a name into the [NAME] field of the packet data information list.
- 4. Set the detailed data of the construction elements set in the packet construction information.
  - · When the data type is "ASCII Code", the "ASCII Code input" dialog is displayed.
  - The grayed areas need not be set since the data of the input/output variables (input/output variables of FB) set in the packet construction information setting are inserted.
- 5. Click the Close button to entry the data.

Pack	<mark>ket da</mark> ta(Read from Variab	le Are	a Commano	l)			_			_ [
Nam	e : Read from Varia	ble Are	ea Command							Close
Inte	: Read continuou:	s addre	ess data							
Pack	.ettype: [Send packet]									
Pack	et data information list									
No.	[NAME]	STX	Node No	Sub-address	SID	MRC	SRC	Variable type	Read 🔺	
1	Settings area 0(Read-only)	STX	IN_ST_NO	"00"	"0"	"01"	"01"	"C0"	IN_F	
2	Settings area 0(Read/write)	STX	IN_ST_NO	"00"	"0"	"01"	"01"	"C1"	IN_F	
3	Settings area 1(Read/write)	SIX	IN_ST_NO	"00"	"0"	"01"	"01"	"C3"		
4			IN_ST_NO							
5			IN_ST_NO							
5			IN_ST_NO							
			IN_ST_NO							
0			IN_ST_NO							
9 10			IN ST NO							
11			IN_ST_NO							
12			IN_ST_NO							
13			IN ST NO							
14			IN ST NO							
15			IN ST NO						IN E	
16			IN ST NO						IN E	
17			IN ST NO						IN E	
18			IN ST NO						IN E	
19			IN ST NO						IN F	
20			IN ST NO						IN E	
21			IN ST NO						IN F	
22			IN_ST_NO						IN_F	
			IN ST NO							

# DISPLAY/SETTING DETAILS

Item	Display/Setting Details			
Name	The name set in the creation of new packet information is displayed.			
Title	The title set in the creation of new packet information is displayed.			
Packet type	The packet type set in the creation of new packet information is displayed.			
Packet data information list	Set the [NAME] field to differentiate between packet data.			
[NAME]	The usable number of characters is within 32 characters.			
	Set data on a construction element basis.			
Dealest data information list	Set these data according to the data of the packet construction information.			
Packet data mornation list	Up to 32 patterns of data can be set to one packet construction.			
	The item whose first line is blue is in the calculation range of the "error check code".			

### \_\_\_\_ DISPLAY/SETTING SCREEN



ltem	Display/Setting Details
ASCII Code input	Select the ASCII code from the list box. 33 different ASCII codes have been entered.
	• NUL (0x00) to US (0x1F) • DEL (0x7F)
Insert button	Inputs the selected ASCII code into the cursor position.
Delete button	Deletes the ASCII code in the cursor position.
< >> button	Moves the cursor position left to right in the already input ASCII code list.

### 7.2.5 Duplicating the packet information

# 

Duplicate the packet information. Use this function when reusing the already set packet information. When reusing the system project, execute this function after creating a user project. When this function is executed on the system project side, the packet information is inserted into the user project.

BASIC OPERATION

- Put the packet information to be duplicated in a selected condition, and click the [Edit] → [Packet information] → [Duplicate packet information] menu.
- 2. Set the "Reproduction name" and "Title" and click the OK button. The packet information is duplicated.



Duplicate Packet inform	nation	×
Target name	Read from Variable Area Command	OK
Reproduction name	Read from Variable Area Command2	Cancel
Title	Read continuous address data	

Item	Display/Setting Details
Target name	Displays the name of the target packet.
Denreduction nome	Set the name of the reproduction packet.
Reproduction name	The usable number of characters is within 32 characters.
<b>-</b>	Set the title.
litte	The usable number of characters is within 32 characters.

### 7.2.6 Renaming the packet information

Rename the packet information.



- 1. Click the [Edit]  $\rightarrow$  [Packet information]  $\rightarrow$  [Rename packet information] menu.
- 2. Set the "Changed name" and "Title" and click the OK button.

The packet information is renamed.



## 🔎 DISPLAY/SETTING DETAILS

Item	Display/Setting Details
Target name	Displays the target name.
Changed name	Set a new name. The usable number of characters is within 32 characters.
Title	Set the title. The usable number of characters is within 32 characters.

### 7.2.7 Deleting the packet information



Delete the packet information. When the packet information to be deleted is used in the sequence information, the data entered in the sequence information is deleted. Execute this function after changing the data of the sequence information.



### BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Packet information]  $\rightarrow$  [Delete packet information] menu.
- 2. A confirmation message is displayed before the deletion of the packet information is executed.

Click the Yes button to delete the packet information.

#### 7.3 Sequence Information

In the sequence information, set the communication processing control type (send, receive, send/receive) and the packet data that matches the control type to set the information for creating a protocol FB.

#### 7.3.1 Creating new sequence information

PURPOSE

Create new sequence information.

New sequence information cannot be created in the system project. Execute this function in the user project.



## BASIC OPERATION

- 1. Select "Sequence information" in the project tree, and click the [Edit]  $\rightarrow$ [Sequence information]  $\rightarrow$  [Create new sequence information] menu (
- 2. The New sequence information screen is displayed.
  - Set the "Name" and "Title" and click the OK button.
- 3. New sequence information is created.

÷	DISPLAY/SETTING SCREEN
---	------------------------

Create new sequence information					
Name	RD Command	ОК			
Title	RD	Cancel			

## DISPLAY/SETTING DETAILS

Item	Display/Setting Details
Neme	Set the name of the sequence information.
Name	The usable number of characters is within 32 characters.
<b>T</b> :41-	Set the title for the sequence information.
I ITIE	The usable number of characters is within 32 characters.

## REMARK

Refer to Appendix 2 for the restrictions on the set names, etc.

### 7.3.2 Setting the sequence information

# PURPOSE

In the sequence information, set the communication processing control type (send, receive, send/receive) and the packet data that matches the control type to set the information for creating a protocol FB.



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [Open sequence information] menu.
- 2. The Sequence information screen is displayed.
- 3. Set the "Control type", "Project selection" and "Classification".
- 4. Double-click the "Packet name" cell to display the Packet information selection screen.
- 5. Make setting and click the End set up button.
- 6. The settings are entried.

Name	: User	project	End set up
Fitle	: Exam	ple of setting	Cancel
Control	type		
O S	end		
@ P	eceive		
. e n			
O S Packet	end/Receive selection		
Packet	end/Receive selection ct selection	UserProject	
Packet Projec	end/Receive selection ct selection [ Classification	UserProject  Packet nar	ne.
C S Packet Projec	end/Receive selection ct selection [ Classification Receive	UserProject Packet nar Receive packet [1]	ne.
Packet No. 1 2	end/Receive selection ct selection Classification Receive seive (specified le	UserProject Packet nar Packet [1] Receive (specified length)packet [1]	ne.
Projes	end/Receive selection t selection Classification Receive seive (specified le	UserProject Packet nar Packet [1] Receive(specified length)packet [1]	ne.

# DISPLAY/SETTING DETAILS

Item	Display/Setting Details
Name	Displays the name set in the creation of the sequence information.
Title	Displays the title set in the creation of the sequence information.
Control type	Select the control type.
Project selection	Select the project for selection of the packet information.
Classification	Select the classification that can be set by making control type selection. Click the Classification cell and make selection from the combo box.
Packet name.	<ul> <li>After moving the focus to the specified cell, double-click.</li> <li>1) The Packet information selection screen is displayed. Select the packet information.</li> <li>2) The Packet data selection screen is displayed. Select the packet data.</li> </ul>

### DISPLAY/SETTING SCREEN

Packet information selection	×
Project name UserProject	Selection
Packet type [Receive packet]	Cancel
Packet information list	
Packet information name Title	
Receive Example of setting	

Item	Display/Setting Details
Packet information list	Displays the packet information that can be selected. After making selection with the cursor, click the Selection button.
Selection button	Displays the packet information selected with the cursor.
Selection Button	Displays the Packet data selection screen.
Cancel button	Cancels the setting and closes the screen.

Packet	data sele	ection				
Name	:	Rece	eive			Selection
Title		Evan	opla of satt	na		Cancel
THUE	·	E Adi	inple of sett	ng -		
Packe	et type	[Rec	eive packe	et]		
Packe	et data info	rmation lis	t			
No.	[NAME]	Header	Number	Sum check		
1	1	''1''	"1"	Horizontal parity(2byte)ASCII	_	
2				Horizontal parity(2byte)ASCII		
3				Horizontal parity(2byte)ASCII		
4				Horizontal parity(2byte)ASCII		
5				Horizontal parity(2byte)ASCII		
6				Horizontal parity(2byte)ASCII		
7				Horizontal parity(2byte)ASCII		
8				Horizontal parity(2byte)ASCII		
9				Horizontal parity(2byte)ASCII		
10				Horizontal parity(2byte)ASCII		
11				Horizontal parity(2byte)ASCII		
12				Horizontal parity(2byte)ASCII		
13				Horizontal parity(2byte)ASCII		
14				Horizontal parity(2byte)ASCII		
15				Horizontal parity(2byte)ASCII		
16				Horizontal parity(2byte)ASCII		
17				Horizontal parity(2byte)ASCII		
18				Horizontal parity(2byte)ASCII		
19				Horizontal parity(2byte)ASCII		
20				Horizontal parity(2byte)ASCII		
21				Horizontal parity(2byte)ASCII		
22				Horizontal parity(2byte)ASCII		
23				Horizontal parity(2byte)ASCII		
24				Horizontal parity(2byte)ASCII	▼	

Item	Display/Setting Details
Packet data information list	Displays the packet information that can be selected. After making selection with the cursor, click the Selection button. The item whose first line is blue is in the calculation range of the "error check code".
Selection button	Sets to the sequence information the packet data information selected with the cursor. Returns to the Sequence information screen.
Cancel button	Cancels the setting and closes the screen.

### 7.3.3 Duplicating the sequence information

# PURPOSE

Duplicate the sequence information. Use this function when reusing the already set sequence information. When reusing the system project, execute this function after creating a user project. When this function is executed on the system project side, the sequence information is inserted into the user project.



# BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [Duplicate sequence information] menu.
- 2. Set the "Reproduction name" and "Title" and click the OK button. The sequence information is duplicated.



### **DISPLAY/SETTING SCREEN**

Duplicate Sequence information				
Target name	Read from Variable Area 1	ОК		
Reproduction name	Read from Variable Area 2	Cancel		
Title	Settings area 0(Read-only)			



Item	Display/Setting Details
Target name	Displays the target name.
Denne dustien neme	Set the reproduction name.
Reproduction name	The usable number of characters is within 32 characters.
<b>T</b> :11-	Set the title.
Title	The usable number of characters is within 32 characters.

### 7.3.4 Renaming the sequence information

PURPOSE

Rename the sequence information.



- 1. Click the [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [Rename sequence information] menu.
- 2. Set the "Changed name" and "Title" and click the OK button. The sequence information is renamed.



#### DISPLAY/SETTING SCREEN

Change the sequence	e information	×
Target name	Read from Variable Area 5	OK
Changed name	Read from Variable Area 1	Cancel
Title	Settings area 0(Read-only)	

### Q

Item	Display/Setting Details
Target name	Displays the target name.
Changed name	Set a new name.
Changed hame	The usable number of characters is within 32 characters.
<b>T</b> :41 -	Set the title.
IITIE	The usable number of characters is within 32 characters.

### 7.3.5 Deleting the sequence information



Delete the sequence information.



# BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [Delete sequence information] menu.
- 2. A confirmation message is displayed before the deletion of the sequence information is executed.
  - Click the Yes button to delete the sequence information.

### 7.3.6 Confirming the I/O variables

# PURPOSE

Display a list of the input/output variables used in the packet information selected in the sequence information. The input/output variables displayed here are defined as the sequence FB variables of a protocol FB.



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [Input/Output variable] menu.
- 2. The Input/Output variable screen is displayed.
- 3. The data set in the packet construction information setting are displayed in the Input/Output variable list.



input/Output variable				
Name       Read from Variable Area 5         Title       Settings area 0(Read-only)         Input/Output variable list				
No.	Attribute	Valiable name	Data type	
1	Input	IN_ST_NO	Character sequence(2)	
2	Input	IN_READ_ADR	Character sequence(4)	
3	Input	IN_ELEM_NUM	Character sequence(4)	
4	Output	OUT_ST_NO	Character sequence(2)	
5	Output	OUT_EXE_RESULT	Character sequence(2)	
6	Output	OUT_RES_CODE	Character sequence(4)	
7	Output	OUT_READ_DATA	Character sequence(48)	

### 7.4 FB Conversion of Sequence Information

PURPOSE

Convert the sequence information into an FB program. There are three different FB program types: initialization FB, send FB\*<sup>1</sup> and receive FB\*<sup>2</sup>.

- \*1: Send FB: When Send or Send/Receive is selected as the control type in the sequence information
- \*2: Receive FB: When Receive or Send/Receive is selected as the control type in the sequence information



## BASIC OPERATION

- 1. Click the [Edit]  $\rightarrow$  [Sequence information]  $\rightarrow$  [FB conversion of sequence information] menu ( 33 ).
- 2. The FB conversion screen is displayed.
- 3. Set the "FB program name", "FB program title", "Reservation D device" and "Module start I/O No.".
- 4. Select the channel used for the target sequence information.
- 5. Click the Communication setting check button and confirm the data of the object module.
- 6. Click the OK button.
- 7. The protocol FB is created and inserted into the <<FB>> tab of GX Developer.

FB conversion check	×
FB program is generated from	the following contents. Is it OK?
FB program name	ETEXA Cancel
FB program title	Iser Project
Reservation D device	0
Module start I/O No.	(HEX)
C Object sequence information	n
Name : User Pr	sject
Title : Example	e of setting
Channel	
	Communication setting check
Project : UserPro	ject
No Classification	Packet name
1 Receive	Receive packet [ 1 ]
2 :eive (specified len	Receive(specified length)packet [ 1 ]
· · ·	

## DISPLAY/SETTING DETAILS

Item	Display/Setting Details	
FB program name	Set the name to the protocol FB. The name set here is used as the FB name. The usable number of characters is within 6 characters. The FBs are displayed on GX Developer as indicated below. • Send FB: S-***** • Receive FB: R-*****	
FB program title	Set the title to the protocol FB. The title set here is used as the FB title. The usable number of characters is within 32 characters.	
Reservation D device	Set the D device to be used in the protocol FB to be output. Since the specified D device (2 words) is used in the FB, it cannot be used in the sequence program. Make the settings within the following range : D0 to D12287	
Module start I/O No.	Set the head address of the module used in the FB program to be output.         The FB program will be generated depending on the head address set here.         The setting range varies with the PLC CPU used.         Therefore, make the settings within the following range.         Q00JCPU       : 0 to E0         Q00CPU/Q01CPU       : 0 to 3E0         Q02UCPU       : 0 to 7E0         Other QCPU (Q mode)       : 0 to FE0	
Channel	Specify the target channel of the sequence information (protocol FB).	
Communication setting check button	Displays the communication settings. The display data are the settings made on the Module setting screen.	
Classification	Displays the data of the sequence information.	
Packet name	Displays the data of the sequence information.	

1odule type Q	J71C24N		Close
Kind	Item	CH1	CH2
	Data bit	7bit	7bit
	Parity bit	No	No
Mada awitahing	Odd/even parity	Odd	Odd
Mode switching	Stop bit	1 bit	1bit
	Sum check code	No	No
	Transmission speed	300bps	300bps
	DTR/DSR control	DTR/DSR control	DTR/DSR control
	DC1/DC3 control	No control	No control
	DC1 code	11h	11h
Transmission control	DC3 code	13h	13h
	DC2/DC4 control	No control	No control
	DC2 code	12h	12h
	DC4 code	14h	14h
Communication control	CD terminal check	No check	No check
Communication control	Communication system	Full duplex	Full duplex
Half duplex	Simultaneous transmission priority/non-priority	0 (x100ms)	0 (x100ms)
communication control	Retransmission time transmission method	Do not resend.	Do not resend.
Data communication	No-reception monitoring time	0000h	0000h
time monitoring	Transmission monitoring time	1800 (x100ms)	1800 (x100ms)
Transmitting area	Transmission buffer memory head address	0400h	0800h
2	Transmission buffer memory length	0200h	0200h
Data ana shira	Received data count	01FFh	01FFh
Data reception	Receive complete code	0D0Ah	0D0Ah
Reception area	Receive buffer memory head address	0600h	0400h

### 8 HOW TO USE PROTOCOL FB

This chapter explains the procedure to use protocl FB with GX Developer.

### 8.1 Outline

The procedure to create and use protocol FBs is described below.

- 1) Convert the sequence information into a sequence FB.
- 2) Set the module head I/O No. of the protocol FB created by sequence FB conversion.
- 3) Convert (compile) the protocol FB whose module start I/O No. has been set.
- 4) Paste the protocol FB to the sequence program.
- 5) Create the I/O area of the pasted protocol FB.
- 6) Convert (compile) the sequence program.

The procedure of steps 1) to 6) will now be represented in a flowchart. The details of 1) to 6) will be explained in the next section.



### 8.2 How to Use Protocol FBs on GX Developer

When sequence information is converted into sequence information FBs, the following three different protocol FBs are inserted into GX Developer.

- 1) Module initialization FB: INITSC
- 2) Send FB: S-\*\*\*\*\*
- 3) Receive FB: R-\*\*\*\*\*

\*\*\*\*\* is the name of the protocol FB set at the time of sequence information FB conversion.

A communication control program can be created by creating the I/O areas of the protocol FBs inserted into GX Developer. The procedure will now be explained.

#### 8.2.1 Module start I/O No. setting

Since the created protocol FB has the module start I/O No. of 0, change the module start I/O No. according to the mounting position of the module.

PURPOSE

Set the module start I/O No. of the protocol FB.

### BASIC OPERATION

- 1. Open the target FB program on GX Developer.
- 2. Change to the write mode.
- 3. Click the [Project]  $\rightarrow$  [Function block]  $\rightarrow$  [Module start I/O No. setting] menu.
- 4. Input the new module start I/O No. on the Module start I/O No. setting screen.

Module start	address setting	×	
FB Name	S-R_DATA	ОК	
Earlier mod	lule start address(HEX)	Cancel	
New modul	e start address(HEX)		
It changes the module start address of Function Block definition. (Device X/Y/DX/DY/U)			
	Input module start I/O No.		
	Point		

With GX Configurator-SC Version 2.04E (SW2D5C-QSCU) or latter, the module start I/O No. can be set when sequence information are converted into FB program. For details of setting method, refer to Section 7.4.

8.2.2 Converting (compiling) the protocol FB whose module start I/O No. was set

# D PURPOSE

Convert (compile) the protocol FB, whose module start I/O No. was set, so that it can be used on GX Developer.



### <sup>)</sup> BASIC OPERATION

Click the [Convert]  $\rightarrow$  [Convert/Compile] menu of GX Developer. For details, refer to the "GX Developer Operating Manual (Function Block)".

8.2.3 Pasting the protocol FB to the sequence program



Paste the protocol FB to the sequence program for use in it.



### BASIC OPERATION

Switch from the <<Project>> tab to the <<FB>> tab of GX Developer, and drag and drop the protocol FB to be used onto the sequence program. For details, refer to the "GX Developer Operating Manual (Function Block)".



### 8.2.4 Creating the I/O areas of the pasted protocol FBs

There are the following two different I/O variable types for protocol FBs. Using these I/O variables, create a communication control program.

- 1) I/O variables created by the protocol FB support function
- 2) I/O variables used by the user in the sequence information



 For the I/O variables of the protocol FBs created from the system project, refer to "11 SEQUENCE INFORMATION AND LABEL VARIABLES OF SYSTEM PROJECT".

• The I/O variables used in the sequence information can be confirmed on the Input/Output variable screen. For details, refer to "7.3.6 Confirming the I/O variables".

How to use the I/O variables of the module initialization FB, send FB and receive FB will now be explained.

#### (1) Module initialization FB

The module initialization FB has the following I/O variables. Using these I/O variables, make the initial setting of the Q series C24 module.

No.	I/O variable	Description	Input/Output
1	I_START	FB execution request: Turn ON to start the module initialization processing.	Input
2	O_END	FB end notification: Turns ON at completion of the initialization processing. Also turns ON at abnormal completion.	Output
3	O_END_NG	FB abnormal end notification: Turns ON at abnormal completion only.	Output


The sequence program example that uses the module initialization FB is shown below.

Point
 The module initialization FB is the FB that initializes the module. Always execute it before using the send or receive FB.

- When the module is initialized directly by the sequence program, the module need not be initialized using the module initialization FB.
- (2) Send FB

The send FB has the following I/O variables. Data can be sent using these I/O variables and the input variables set in the sequence information.

No.	I/O variable	Description	Input/Output
1	I_START	FB execution request: Turn ON to start the FB.	Input
2	I_REQ_SEND	Send request: Turn ON to execute send.	Input
3	O_RUN	FB execution completion flag: Turns on at completion of send preparation. * <sup>1</sup>	Output
4	O_END	FB end notification: Turns ON at completion of send. Also turns ON at abnormal completion.	Output
5	O_END_NG	FB abnormal end notification: Turns ON at abnormal completion only.	Output
6	O_ERR_CD	Error code: The error code at abnormal completion is stored. For details of the error codes, refer to the "Q Corresponding Serial Communication Module User's Manual (Basics)".	Output

\*1: FB execution completion flag (O\_RUN) is an output variable for interlock. It is added from SW2D5C-QSCU-E, Version 2.14Q.



The sequence program example that uses the send FB and its timing chart are shown below.

### (3) Receive FB

The receive FB has the following I/O variables. Data can be received using these I/O variables and the output variables set in the sequence information.

No.	I/O variable	Description	Input/Output
1	I_START	FB execution request: Turn ON to start the FB.	Input
2	I_REQ_RECV	Receive request: Turn ON to enable receive.	Input
3	O_RUN	FB execution completion flag: Turns on at completion of receive preparation. * <sup>2</sup>	Output
4	O_END	FB end notification: Turns ON at completion of receive. Also turns ON at abnormal completion.	Output
5	O_END_NG	FB abnormal end notification: Turns ON at an abnormal end only. When it has turned ON, refer to the error code (O_ERR_CD).	Output
6	O_ERR_CD	<ul> <li>When O_END_NG is ON, either of the following error codes is stored.</li> <li>O_ERR_CD = 0]: Receive packet size error</li> <li>The received packet size is outside the range of the set packet construction size.</li> <li>O_ERR_CD ≠ 0]: Module detection error</li> <li>Refer to the "Q Corresponding Serial Communication Module User's Manual (Basics)".</li> </ul>	Output
7	O_R_DATA_NO	Receive data No.: When the receive packet entried on the Sequence information screen matches the receive data, that packet No. (1 to 4) is stored. On a mismatch, "0" is stored.	Output

\*2: FB execution completion flag (O\_RUN) is an output variable for interlock. It is added from SW2D5C-QSCU-E, Version 2.14Q.



- (1) When using the receive FB and send FB in the sequence program, create a program in which the input variable, I\_START of the receive FB turns on earlier than or at the same time as I\_START of the send FB.
- (2) When multiple send FBs exist, do not execute 2 or more send FBs concurrently.
   (Do not create a program in which more than one I\_START of send FBs will turn ON at the same time.)

Also, when multiple receive FBs exist, do not execute 2 or more receive FBs concurrently. (Do not create a program in which more than one I\_START of receive FBs will turn ON at the same time.)

Doing so will result in abnormal operation and only the processing based on the send/receive FB executed at the last will be executed.

(3) When executing receive FB and send FB concurrently, execute the send processing after FB execution completion flag (O\_RUN) of receive FB turns on. Executing the send processing before FB execution completion flag of receive FB turns on causes the error in the module. (Error code: 7FF5H)



The sequence program example that uses the receive FB and its timing chart are shown below.

\*3: Variables used when output variables are specified by the user in the packet construction information



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- Point

#### About echo data

Since a two-wire transmission path receives send data by itself, the first receive data must be ignored. This processing is not performed in the protocol FBs. Therefore, perform programming so that echo data is ignored in the sequence program.

Specifically, receive data can be ignored by turning ON Receive read completed (Yn1) on the first leading edge of Receive read request (Xn3) or Receive error detection (Xn4) of the Q series C214 module I/O signal.

However, when the packet construction of the send data differs from that of the receive data (head differs), no special measures are not required since the receive of the echo data can be ignored on the Q series C24 module side.

For details of Receive read request, Receive error detection and Receive read completed, refer to the "Q Corresponding Serial Communication Module User's Manual (Basics)".

### 8.2.5 Converting (compiling) the sequence program



Convert (compile) the sequence program, where protocol FBs have been pasted, to make it executable.



**BASIC OPERATION** 

Click the [Convert]  $\rightarrow$  [Convert/Compile] menu of GX Developer.

### 8.3 Sequence Program Example Using Protocol FBs

This section provides the program examples including protocol FBs and the timing charts by use of the following system configuration and devices.



#### Used device list

Device name		Device Description		Device name	Device	Description				
Input/	Innut	X3	CH1 read detection		X50	Initial start command				
output	input	X4	CH1 receive error detection	External input	X51	Send/receive FB start command				
of C24	Output	Y1	CH1 read completion		X52	Send request				
		D5	Send FB error code		MO	Initialization FB start				
		D6	Receive error code		M1	Initialization FB end				
		D7	Receive data No.		M2	Initialization FB abnormal end				
		D10	Module No.		M11	Send FB end				
		D12	Read address		M12	Send FB abnormal end				
Data roa	victor	D15	Number of elements	Internal rolay	M20	Receive request				
Data leg	lister	D30	Receive module No.	internal relay	M21	Receive FB end				
		D25	Receive parameter No./receive		M22	Receive FB abnormal end				
		035	end code		M1020	Receive FB execution completion				
		D40	Receive end code/receive		1011020	flag				
		D40	response code		M1001	Send FB execution completion				
		D45	Read data		IVI 102 I	flag				



 (2) When multiple send FBs exist, do not execute 2 or more send FBs concurrently.
 (Do not create a program in which more than one I\_START of send FBs will turn ON at the same time.)
 Also, when multiple receive FBs exist, do not execute 2 or more receive FBs

Also, when multiple receive FBs exist, do not execute 2 or more receive FBs concurrently. (Do not create a program in which more than one I\_START of receive FBs will turn ON at the same time.)

- Doing so will result in abnormal operation and only the processing based on the send/receive FB executed at the last will be executed.
- (3) When executing receive FB and send FB concurrently, execute the send processing after FB execution completion flag (O\_RUN) of receive FB turns on. Executing the send processing before FB execution completion flag of receive FB turns on causes the error in the module. (Error code: 7FF5H)

(1) When there is no echo data skip processing



(2) When there is echo data skip processing

Use the sequence information "variable area read information 3" of OMRON's .



Refer to Section 8.2.4 for details of the protocol FBs used in the above sequence program examples.



(3) Input/output timing of the send/receive FB

○: Send FB processing ●: Receive FB processing

## 9 DEBUGGING SUPPORT FUNCTIONS

The debugging support functions are designed to support the debugging of communication processing between the Q series C24 module and device controller. The following functions are available to ease system startup work.

- Circuit trace
- Communication test
- State monitor

The following outlines the debugging support functions.



Any packet data can be set and sent. Refer to Section 9.3 for details.

### 9.1 Module Selection

## PURPOSE

Select the Q series C24 module to be debugged.

Execute circuit trace, communication test and/or state monitor for the module selected here.



## BASIC OPERATION

- 1. Click the [Debugging support function]  $\rightarrow$  [Module selection] menu.
- 2. Select the I/O address and channel of the module to be debugged, and click the Setting button.
- 3. Clicking the OK button sets the module information.

### DISPLAY/SETTING SCREEN

The presences	connotatio			
I/O Address	00	Module type	QJ71C24N	Channel CH1
Module selectio Module list	n			tion
00 20	QJ71C24N QJ71C24N-R2	2	CH1 _	Update

Item	Display/ Setting Details
The present object module	Displays the information of the selected module.
Module list	Displays the list of the Q series C24 modules mounted on the same base.
Channel specification	Select the channel of the module.
Setting button	Sets the selected module and channel to the Object module.
Update button	Displays the latest module list.
OK button	Sets the data displayed in "The present object module" as the object module data.
Cancel button	Cancels the setting.

### 9.2 Circuit Trace

PURPOSE

Trace the communication data and communication control signals between the QJ71C24N, QJ71C24N-R2 or QJ71C24N-R4 module (hereafter abbreviated to the QJ71C24N module) and device controller.

## REMARK

The circuit trace function displays the data accumulated in the monitor buffer of the QJ71C24N module.

### 9.2.1 Starting the circuit trace



To trace the communication data and communication control signal statuses, store the trace data into the monitor buffer.



## BASIC OPERATION

- 1. Click the [Debugging support function]  $\rightarrow$  [Circuit trace]  $\rightarrow$  [Circuit trace] menu.
- 2. Click the Start button to start trace.
- 3. When the monitor buffer becomes full or the Stop button is clicked, the trace data are displayed.
- 4. Confirm the transmission and receive packets and communication control signals from the displayed trace result.



When the circuit trace or communication data monitoring function has already been executed, the following confirmation message is displayed. For details of the communication data monitoring function, refer to the "Q Corresponding Serial Communication Module User's Manual (Applications)".

	Protocol FB support function       It is already under the circuit trace (under transceiver monitoring execution). Do you stop?         *The data which has been accumulated is displayed when stopping.         Yes
Item	Display/setting
Yes button	The circuit trace is stopped and the data already accumulated are read and displayed.
No button	The dialog box closes. However, the trace is in the as-executed status.

				7.51	- (					,											L			
Send packet(HEX)	40	30	30	32	30	32	30	30	36	34	37	32	2A	0D										
(ASCII)	0	0	0	2	0	2	0	0	6	4	7	2	*	C R										
Receive packet(HEX)			+	+											40	30	30	32	30	32	30	44	30	34
(ASCII)															0	0	0	2	0	2	0	D	0	4
RS signal																								
ER signal																								
DR signal																								
CS signal																								
CD signal																								
Reception error																								
•																								
Error Display :Overrun error		Т	he pi	roject	nam	e for	mato	hing.									Sta	urt		Cor	nmur	nicati	on te:	st
:Parity error	:Parity error														•									

## DISPLAY/SETTING SCREEN

Circuit trace screen	
----------------------	--

Item	Display/Setting Details
Object module	Displays the information of the module for which circuit trace will be performed.
T	Send data and receive data are displayed, respectively.
Transmission / receive packets	As the data display format, the ASCII code or hexadecimal can be selected.
	The RS, ER, DR, CS and CD signal statuses and receive error are displayed as described
	below.
	● RS, ER, DR, CS and CD signals
	All signals are displayed with blue lines
	When signal is ON:_
	When signal is OFF:
Communication control signals	When the obtained data does not have signal information, the signal is displayed in an
	OFF status.
	Receive error
	Three different errors of overrun error, parity error and framing error are displayed.
	Overrun error: ∭ (Green)
	Parity error : 💹 (Light blue)
	Framing error: 🚺 (Purple)
Start button	Starts trace.
Communication toot button	Sends the specified packet from the QJ71C24N module.
Communication test Dutton	For details, refer to "9.3 Communication Test".

Item	Display/Setting Details
Stop button	Stops trace. After a stop, the trace data accumulated in the monitor buffer are displayed.
The project name for matching	Select the project to be matched when the transmission/receive packet details display or transmission/receive packet list display is provided. For details, refer to "9.2.3 Transmission/receive packet list".
Transmission/receive packet list display button	Matches the packets displayed in Transmission and receive packets with the packet information of the currently open project and displays the details of the matched packets. For details, refer to "9.2.3 Transmission/receive packet list".
Transmission/receive packet details display button	Displays the list of packets displayed in Transmission and receive packets on a packet basis. For details, refer to "9.2.3 Transmission/receive packet list".
Close button	Closes the Circuit trace screen.

### 9.2.2 Circuit trace option

PURPOSE

Set the monitor buffer area starting address and size of the QJ71C24N module that will store the circuit trace data.

BASIC OPERATION

- 1. Click the [Debugging support function]  $\rightarrow$  [Circuit trace]  $\rightarrow$  [Circuit trace] menu to display the Circuit trace screen.
- 2. Click the [Debugging support function]  $\rightarrow$  [Circuit trace]  $\rightarrow$  [Circuit trace] menu to display the Circuit trace option screen.
- 3. Set the "Monitor buffer starting address" and "Monitor buffer size", and click the Write button.

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# DISPLAY/SETTING SCREEN

Circuit trace optic	n		×							
I/O Address	Module type	QJ71C24N	Channel CH1							
- Monitor data are	a specification (for Circ	uit trace)								
Monitor buffer	starting address(HEX)		Read							
Monitor buffer	size(HEX)		Write							
Close										

Item	Display/Setting Details
	Set the starting address of the monitor buffer area that will store the trace data.
	Input the setting in hexadecimal.
Monitor buffer starting address	● Input range
setting	CH1: 2600H to 32FDH
	CH2: 3300H to 3FFDH
	When the user-specified area is used, set any of C00H to 1AFDH to CH1 or CH2.
	Set the size of the monitor buffer area that will store the trace data.
	Input the setting in hexadecimal.
	● Input range
Monitor buffer size setting	CH1, CH2: 3 to 1A00 words
	<ul> <li>When the user-specified area is used, the valid range is the same.</li> </ul>
	<ul> <li>The value range changes depending on the setting of the "Monitor buffer starting</li> </ul>
	address".
Read button	Reads the monitor buffer starting address and size from the selected module.
	Writes the settings of the "Monitor buffer starting address" and Monitor buffer size" to the
	selected module.

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### 9.2.3 Transmission/receive packet list

# D PURPOSE

To analyze the transmission and receive packets obtained by circuit trace, display the list of transmission and receive packets.



- 1. Click the [Debugging support function] → [Circuit trace] → [Circuit trace] menu to display the Circuit trace screen.
- 2. Select the corresponding project of the device controller debugged in "Project name for matching".
- 3. Click the Transmit/receive packet list button on the Circuit trace screen.



8	Transmi	ission/	receive	packet	list

No	Type	Peckot dete Dete longth Nemo	
1	Sond		
$\vdash$	Senu	When the state of the state st	
2	Receive	@+U+U+I+2+8+U+U+U+U+U+U+U+V+B+*+CR 16 Reading parameters	_
•			
T	ransmission,	/receive packet details display Type • ASCII © HEX Close	

Ø

### DISPLAY/SETTING DETAILS

Item	Display/Setting Details
Classification	Displays whether the packet is a transmission packet or receive packet.
Packet data	Displays the transmission/receive packet data.
Data length	Displays the data length (byte) of the transmission/receive packet data.
	Displays the packet names of the packet construction information that
	■ Display
	1) When there is only one packet that matches:
Name	The packet name that matched is displayed.
	2) When there are more than one packet that matches:
	"Match with several packets" is displayed.
	3) When there are no packets that match:
	"No matching packets" is displayed.
Transmission/resource nearly details display button	Displays the details of the selected transmission/receive packet
	configuration.
Display form	Either "ASCII" or "HEX" can be selected as the display format.
Close button	Closes the Transmit/receive packet list screen.



- Packet data matching is performed in the following order.
- 1) The data length of the packet data is obtained (the variable area has the maximum data length), and whether the full data length is equal to the object packet data length or not is checked.
- 2) The object packet data is divided in terms of the data length of each item, and whether it is equal to the preset packet data or not is checked.
- The following communication data configurations cannot match.
- 1) The data is configured by error check codes only.
- 2) The data starts with an error check code.

### REMARK

With the click of the mouse right button, the display data of the Transmission/receive packet list display screen can be copied.

### 9.2.4 Opening the circuit trace data

(h	PURPOSE

Read and display the trace data saved in the personal computer.



BASIC OPERATION

Click the [Debugging support function]  $\rightarrow$  [Open circuit trace data] menu.

### 9.2.5 Saving the circuit trace data



Save the trace data obtained by circuit trace into the personal computer.



BASIC OPERATION

Click the [Debugging support function]  $\rightarrow$  [Save circuit trace] menu.

### 9.3 Communication Test

Send any data or preset data from the QJ71C24N module to the device controller to confirm the operation. The communication data result of the communication test can be confirmed on the Circuit trace screen.

The packet data to be sent can be created either by inputting send data directly or by selecting the packet data entered in the project.

Before performing the communication test, set "0" to the following items on the tested channel in "CH<sup>III</sup> Non procedure system setting" of the intelligent function module utility.\*1

If any other than "0" is set, the communication test will not be performed normally.

Output head pointer designation

Point

- Output count designation
- \*1: The setting can be written into the buffer memory from the sequence program. Write "0" into the following 2 areas in the buffer memory.
  - Output head pointer designation (buffer memory address 184 (B8H), 344 (158H))
  - Output count designation (buffer memory address 185 (В9н), 345 (159н))

### 9.3.1 Communication test after direct input



Send any data to the device controller.



### BASIC OPERATION

- 1. Click the [Debugging support function] → [Circuit trace] → [Circuit trace] menu to display the Circuit trace screen.
- 2. Click the Communication test button on the Circuit trace screen to display the Communication test screen.
- 3. Input data directly to the combo box of the Communication test screen in hexadecimal.
- 4. Click the Send button.

## J DISPLAY/SETTING SCREEN

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## 🔎 DISPLAY/SETTING DETAILS

ltem	Display/Setting Details
Select packet from inside the project button	Displays the Packet data selection screen.
Send data	Displays the packet data to be sent.
Send button	Sends the input packet data.
Setting button	Displays the Communication test setting screen. (Refer to Section 9.3.3.)
Close button	Closes the Communication test screen.

### 9.3.2 Communication test after selection of packet data

PURPOSE

Select the packet data entered in the project and send them to the device controller.



### BASIC OPERATION

- 1. Click the [Debugging support function]  $\rightarrow$  [Circuit trace]  $\rightarrow$  [Circuit trace] menu to display the Circuit trace screen.
- 2. Click the Communication test button on the Circuit trace screen.
- 3. Click the Select packet from inside the project button on the Communication test screen to display the Packet data selection screen.
- 4. After selecting the project from the Packet data selection screen, select the packet to be sent, and click the OK button. The Communication test data input screen is displayed.
- 5. Input data from the Communication test data input screen, and click the OK button.
- 6. Click the Send button on the Communication test screen.



DISPLAY/SETTING DETAILS

Item	Display/Setting Details
Project name	Select the project name.
Packet information list	Displays the packet information.
OK button	Selects the send packet and closes the screen.

## DISPLAY/SETTING SCREEN

Project name	OMRON:E5Z	N				OK
Name	Read Setting	Read Setting Data Command				
Cancel						
Comment						
Comment						
Comment Packet details	information.					
Comment Packet details	information.	Address	Bit position	No. of elements	FTX	BCC

Item	Display/Setting Details
Project name	Displays the selected project name.
Packet details information	Set the packet details information.
OK button	Determines the setting and closes the screen.

### 9.3.3 Transmission monitoring time designation

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Set the transmission monitoring time to the QJ71C24N module. If receive is not completed within the set time, a send or receive error occurs.

## BASIC OPERATION

- 1. Click the [Debugging support function] → [Circuit trace] → [Circuit trace] menu to display the Circuit trace screen.
- 2. Click the Setting button on the Communication test screen. The Communication test setting screen is displayed.
  - The currently set transmission monitoring time is displayed.
- 3. Input the transmission monitoring time from the Communication test setting screen, click the Write button, and then click the Close button.

### DISPLAY/SETTING SCREEN

Communication test	setting	×
Transmission monit	oring time desi	ignation
1800	(x100ms)	Write
	Close	

Item	Display/Setting Details
	The displayed time is the transmission monitoring time set to the module.
Transmission monitoring time	Input the transmission monitoring time in units of 100ms.
	The setting range is 0 to 3000 ( $ imes$ 100ms).
Write button	Sets the specified transmission monitoring time to the module.
Close button	Closes the screen.

### 9.4 State Monitor

D PURPOSE

Monitor the signals, communication error information and operation setting switches of the Q series C24 module.

# BASIC OPERATION

- 1. Click the [Debugging support function]  $\rightarrow$  [State monitor] menu.
- 2. Click the Monitor start button.
- 3. Click the <<Signal>> tab and confirm the signal statuses.
- 4. Click the <<Error information>> tab and confirm the error information.
- 5. Click the <<Operation setting switch>> tab and confirm the operation setting switch setting statuses.

### DISPLAY/SETTING SCREEN

#### <<Signal>> tab

Signal Error information Operation setting switch	No. Signal description Value	1
No. Signal description Value  Xnn CH1 Transmission normal OFF	No. Signal description Value	
X00 CH1 Transmission normal OFF		
completion	Y00 CH1 Transmission request OFF	
X01 CH1 Transmission abnormal OFF	Y01 Completion OFF	
X02 CH1 Transmission OFF	Y0E CH1 ERR.clear request OFF	
X03 CH1 Reception data read OFF	Y10 Modern initialization request OFF (standby request)	
X04 CH1 Reception abnormal OFF	Y11 Connection request OFF Y12 Modem disconnection OFF	
X06 CH1 Mode switching OFF	V14 Natification issued request	
X0E CH1 ERR. occurrence OFF	V17 Elech ROM read request OFF	
×10 Modem initialization OFF	Y18 Flash ROM write request OFF	
X11 Dialing OFF	Y19 Hash ROM system setting OFF	
X12 Connection OFF	System setting default	
X13 Connection abnormal OFF		
X14 Modern disconnection OFF	RS-232 signal	
×15 Notification normal OFF		
×16 Notification normal OFF	DTR • RI	
V17 Elash DOM road completion OEE		

## DISPLAY/SETTING DETAILS

< <signal>&gt; tab</signal>	
-----------------------------	--

Item	Display/Setting Details
X signal state monitor	Displays the ON/OFF statuses of the X signals.
Y signal state monitor	Displays the ON/OFF statuses of the Y signals.
RS-232 signal monitor	Displays the ON/OFF statuses of the RS-232 control signals.

For details, refer to the user's manual of the target Q series C24 module.

## \_\_\_ DISPLAY/SETTING SCREEN

#### <<Error information>> tab

Object module:       I/O Address(00) Type(QJ71C24N) Channel(CH1)       Monitoring       Monitor stop       Close         Signal       Error information       Operation setting switch       Switch setting, mode switching error       Communications error status       Switch setting, mode switching error       CH1 ERR,       CH1 Communication protocol setting No.       CH1 Communication rate setting         SIO       CH1 Communication rate setting       CH1 Communication rate setting       CH1 Communication rate setting	:e
Signal       Error information       Operation setting switch         Communications error status       Switch setting, mode switching error         CH1 ERR.       CH1 Communication protocol setting No.         SD WAIT       CH1 Communication rate setting	
Communications error status     Switch setting, mode switching error       CH1 ERR.     CH1 Communication protocol setting No.       SD WAIT     CH1 Communication rate setting	
CH1 ERR. CH1 Communication protocol setting No. SD WAIT SIO CH1 Communication rate setting	
SIO CH1 Communication rate setting	
PRO. CH1 Setting change prohibit time mode switching	
P/S Setting station No.	
NAK. Linked operation setting	
Communication result	
Data transmission result 0	
Data reception 0 0	
Errorreset	



#### <<Error information>> tab

Item	Display/Setting Details	
Communication error status	Displays the communication error status.	
Switch setting, mode selection error	Displays the switch setting and/or mode selection error status.	
Communication result	Displays the error status of the communication result.	
Error reset button	Resets the error information when XnE on CH1 or XnF on CH2 is ON. Masked in any other cases.	

For details, refer to the user's manual of the target Q series C24 module.

_	DISPLAY/SETTING SCREEN

## <<Operation setting switch>> tab

State Monitor			
Object module:	I/O Addre	ss(00) Type(QJ71C24N) Channel(CH1)	Monitor stop Close
Signal   Error inform	nation Operati	on setting switch	
_Switch setti	ng status for the	operation	-Mode switch
Operation	setting	Independent	GX Developer connection
Data bit		8 bit	
Parity bit		Yes	
Odd/ever	n parity	Odd	Station switch
Stop bit		1 bit	0
Sum chec	k code	Yes	0
Write duri	ng RUN	Allowed	
Setting mo	odification	Allowed	
Communi	cation rate	19200bps	

DISPLAY/SETTING DETAILS

<<Operation setting switch>> tab

Item	Display/ Setting Details	
Operation setting switch	Displays the operation switch setting statuses.	
Mode switch	Displays the communication protocol setting.	
Station switch	Displays the station number setting.	

For details, refer to the user's manual of the target Q series C24 module.

### **10 PRINT**

#### 10.1 Start

Print the system project, user project or trace data.

BASIC OPERATION

Click the [Project]  $\rightarrow$  [Print] menu ( 🛃 ).

[Setting details of each tab]

< <main>&gt;</main>	Select the item to be printed from among the module
	information, project data and trace data.
< <project data="">&gt;</project>	Select the details printing option when the project data is
	selected as the print item.
< <trace data="">&gt;</trace>	Select the details printing option when the trace data is
	selected as the print item.

[Setting details of each tab]

Except the header and footer, the printed data are the same as those of each function screen.



(1) Main screen

C Module inform	ation		
🔽 Project data	UserProject	•	
🗖 Trace data			Reference

Item	Display/Setting Details		
	Select the item to be printed with the check button.		
	Module information: The data set in the module setting are printed.		
Drint itom	Project data: The information of the specified project is printed. Set the print item on the		
	Project screen.		
	Trace data: The saved trace data are printed. Set the print item on the Trace screen.		
	Select the project data to be printed from the pull-down list.		
Draigat data	The projects displayed in the pull-down list are the currently open user project and the		
	system project. (Unopened projects are not the targets.)		
Traca data	Specify the file name of the trace data to be printed.		
	Click the Reference button and select the trace data file.		
Reference button	Select the file name of the trace data to be printed.		
	Click this button to display the dialog.		
Printer setting button	Displays the Windows-standard printer setting dialog.		
Print button	Executes printing.		
Printer preview button	Displays the print preview.		
Close button	Closes the Print dialog.		



## (2) Project data screen

Print				×	
Main F	Project data Trace data				
Project na	ame UserProject m				
⊂ All € Iter	n selection				
	-Item specification				*1
	<ul> <li>Packet construction information</li> </ul>				
	Packet data				
	Sequence information				
Pri	nter setting Print	Print previe	w Clos	e	

\*1: When "Project data" has not been selected in the <<Main>> tab, this area is dimmed.

Item	Display/Setting Details					
Project name	Displays the project name specified as the project data in the < <main>&gt;tab.</main>					
Print item Select All items or Item selection.						
14	When Item selection has been selected, select which item will be printed with the check					
Item specification	button.					



### (3) Trace data screen

Print		×
Main Project data Trace data		
Trace data file E5EK7-Pala.FBT Print item C All item		
Item selection		
- Item specification	Transmission/receive packet list	*2
Circuit trace	<ul> <li>BIN display</li> </ul>	
✓ Transmission/receive packet list	C ASCII display	
Printer setting Print	Print preview Close	

\*2: When "Trace data" has not been selected in the <<Main>> tab, this area is dimmed.

Item	Display/Setting Details								
Trace data file	Displays the file name specifie	ed as the trace data in the < <main>&gt;tab.</main>							
Print item	Select All items or Item select	ion.							
Item specification	When Item selection has been button. Circuit trace: Transmit/receive packet list:	n selected, select which item will be printed with the check The circuit trace image is printed. The transmit/receive packet list is printed.							
Transmission/receive packet list	When printing the transmit/receive packets, specify either the BIN or ASCII print format. Valid only when "Transmit/receive packet list" is selected.								

### Error dialog

Displayed dialog								
Protoc	ol FB support function Printing data is abnorma Packet information does	I. The following causes are though.						
	Packet information data Sequence information d Transmission/receive pa	is not set up. oes not exist. cket data does not exist.						
Error cause		Corrective	e action					
<ul> <li>After "Project data" was selected, the</li> </ul>	e Print/Print preview	<ul> <li>Deselect the project data or creation</li> </ul>	eate packet information.					
button was clicked with no packet in	formation existing.							
When the packet construction inform	nation is selected, the	<ul> <li>Deselect the packet construction</li> </ul>	on information or create					
packet construction information exist	ts but the construction	packet construction information	n items.					
information items do not exist.								
When the packet construction inform	nation is selected, there	<ul> <li>Deselect the packet data inform</li> </ul>	mation or create packet data					
are no contents of packet data inform	nation.	information.						
• When the sequence information is s	elected, sequence	Deselect the sequence information or create sequence						
information does not exist.		information.						
The selected trace data file does not	have	Deselect the transmission/receive packet list or create						
transmission/receive packet data.		transmission/receive packet da	ata.					

## 10.2 Operations Common to Screens

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$\bigcirc$	PURPOSE

Display the print preview.

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BASIC OPERATION

Click the Print preview button in the Print dialog.



### DISPLAY/SETTING SCREEN

暨 Print preview		
Print Close		
<u>× i</u> 1/33 <b>▶ N Q ▼</b>		
	[Yamatake:DMC10 ] Comment [Distributed Multi-channel Controller]	2002-12-19 13:17
	[RD Command ] [Read continuous address data ]	
	No. Item Data classificati 1 STX Header	ion Data type ASCIIC de
	2         Station address         Input(IN ST N           3         Sub address         Freed data           4         Driver Decide         Freed data	0) ASCII ASCII
	4 Device ID code Procedianta 5 Command Fixed data 6 Start data word address Input(IN READ A	ASCII ASCII ADR) ASCII
	7         Number of data items         Input(N_DATA_L           8         ETX         Fixed data           9         Ebedra um         2% complement	EN) ASCII ASCIICode * ASCII
	a)         Creats and         2.5 With premer           10         Terminator         Terminator	ASCIICode
	1,83	[Packet construction information]

	ltem	Display/Setting Details
н	Page scrolling (first page)	Jumps to the first page.
•	Page scrolling (previous page)	Scrolls to the previous page.
	Page	Displays the previewed page.
	Page scrolling (next page)	Scrolls to the next page.
H	Page scrolling (last page)	Jumps to the last page.
Q,	Enlarge/reduce	Displays the enlarged/reduced preview screen.
•	Display switching	Switches to the whole page, page width, 2 pages, thumbnail, 150%, 100%, 75%, 50% or 25%.
Print	Print button	Clicking the Print button ends the print preview and displays the Windows- standard print dialog.
Close	Close button	Closes the print preview and displays the Print dialog.

## 10.3 Print Examples

Image: Bar in the second se	Image:	<text><text></text></text>	<text><text></text></text>	<text><text></text></text>	Project name or system name of system project is printed.								
Image: Comment [DMRON: TYPE ES2N       Image: Comment [DMRON: TYPE ES2N]       Image: Commen	Image: Comment (DMRON: TYPE ESCN 1       2000-06221         Model sname (DJ71024N       1         Image: Comment (DMRON: TYPE ESCN 1       Print date (DMRON: TYPE ESCN 1)         Image: Comment (DMRON: TYPE ESCN 1)       1         Image: Comment (DMRON: TYPE ESCN 1)       Print date (DMRON: TYPE ESCN 1)         Image: Comment (DMRON: TYPE ESCN 1)       Print date (DMRON: TYPE ESCN 1)         Image: Comment (DMRON: TYPE ESCN 1)       Print date (DMRON: TYPE ESCN 1)         Image: Comment (DMRON: TYPE ESCN 1)       Print date (DMRON: TYPE ESCN 1)         Image: Comment (DMRON: TYPE ESCN 1)       Print date (DMRON: TYPE ESCN 1)         Image: Comment (DMRON: Type Escn 1)       Print date (DMRON: Type Escn 1)         Image: Comment (DMRON: Tree Escn 1)       Print date (DMRON: Type Escn 1)         Image: Comment (DMRON: Tree Escn 1)       Print date (DMRON: Tree Escn 1)         Image: Communication control       DC control 1       DC control 1         Image: Communication control 1       DC terminal check 1       Drend 1         Image: Communication control 1       DC terminal check 1       Drend 1         Image: Communication control 1       DC terminal check 1       Drend 1         Image: Communication 1       State (CMRON: 2)       Drend 1         Image: Communication 1       State (CMRON: 2)       Drend 1	Image:	Image:	Image:									
Material (2023)       I	Autom (20129) 1 <u>Kink Intervie Dit Intervie Dit Kink Kink Intervie Dit Kink Kink Intervie Dit Kink Kink Intervie Dit Ki</u>	<text></text>	<text></text>	<text></text>	[E5ZN ]	Comment [OMRON:TYPE E52	N 1		2003-05-22 1				
Autom       Example       Autom       CH1       CH2	<text></text>	<text></text>	<text></text>	<text></text>					$\square$				
Module name     (0.971624H)     I       Kind     Letem     CH1     CH1     CH2       Mode switching     Data bit     Parify bit     Yes     No       Odd/even parify     Even     Odd     Odd       Size bit     Size bit     1bit       Sun check code     Yes     No       Transmission control     DTR/D SR control     DC control     DTR/D SR control       DC16 Code     FFh     11h       DC2 Code     FFh     11h       DC2 Code     FFh     14h       DC3 code     FFh     14h       DC3 code     FFh     14h       DC4 code     FFh     14h       Communication control     Co teoridal check     Check       Control     Resend.     Do cotrolon       Data communication fime transmission method     Resend.     Do cotrolon       Data communication filme     No reserve     Oddoh       Transmission buffer memory head address     1AFFh     0800h       Data communication filme memory head address     1AFFh     0800h       Data receerion <td>Induces     Data bit     Item     CH1     Zhit     Zhit       Mode switching     Data bit     Bit     Zhit     Zhit     Ch2       Data bit     Data bit     Bit     Zhit     Zhit     Ch2       Tansmission control     DTR/D SR control     DC control     DC control     No       Tansmission control     DTR/D SR control     DC control     No control       DC1 code     FFh     1th       DC2 code     &lt;</td> <td>Indua ma (2012)         Image: Characterization of the state of</td> <td>Addresser         But         Image         But         <th< td=""><td>Auduram         (D/T 1024)         Imm         Chi T         Chi T</td><td></td><td></td><td></td><td></td><td>Print dat</td></th<></td>	Induces     Data bit     Item     CH1     Zhit     Zhit       Mode switching     Data bit     Bit     Zhit     Zhit     Ch2       Data bit     Data bit     Bit     Zhit     Zhit     Ch2       Tansmission control     DTR/D SR control     DC control     DC control     No       Tansmission control     DTR/D SR control     DC control     No control       DC1 code     FFh     1th       DC2 code     <	Indua ma (2012)         Image: Characterization of the state of	Addresser         But         Image         But         But <th< td=""><td>Auduram         (D/T 1024)         Imm         Chi T         Chi T</td><td></td><td></td><td></td><td></td><td>Print dat</td></th<>	Auduram         (D/T 1024)         Imm         Chi T					Print dat				
Kind         Item         CH1         CH2           Mode switching         Data bit         Parity bit         Yes         No           Odd/even parity         Even         Odd         Stop bit         2bit         1bit           Stop bit         2bit         1bit         Stop bit         2bit         1bit           Stop bit         2bit         1bit         Stop bit         300bps         300bps           Transmission control         DTR/D SR control         D Control         DTR/D SR control         D Control         DTR/D SR control           DC1 code         FFh         1th         1bit	Kind         Hem         CH1         CH2           Mode switching         D ata bit         Partly bit         Yes         No           Oddewarp parky         Even         Odd         Start         Start           Sum check code         Yes         No         Odd           Transmission control         D Fib SR control         D Control         D TRP SR control           D C10 C2 control         D Control         C Control         No control           D C2 code         FFh         11h         D           D C2 code         FFh         12h         No           D C2 code         FFh         12h         D           D C2 code         FFh         14h         D           D C4 code         Refarsmission method         Resend         No econtrol           D runnication system         Gardal communication         Full duplex         Communication <td>Kind         Data Ma         Bate         CH1         CH2           Mode switching         Data Ma         Bate         Take         Bate         Concern partly         Concern partly<td>Kind         Data N         Herm         CH1         TH2           Mode switching         Data N         Pairk NH         Yes         No           Objective aparty         Even         Odd         Data         No           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe         Dobbe           Construction         Ch10D SR control         Construction         No control         Dobbe         Dobbe</td><td>Kind         Date bit         Parks 54         Ver         Odd           Addesses park         Even         Odd         Oddsves park         Even         Odd           Stop 58         &lt;</td><td>Module name [QJ71C24N</td><td>1</td><td></td><td></td><td></td></td>	Kind         Data Ma         Bate         CH1         CH2           Mode switching         Data Ma         Bate         Take         Bate         Concern partly         Concern partly <td>Kind         Data N         Herm         CH1         TH2           Mode switching         Data N         Pairk NH         Yes         No           Objective aparty         Even         Odd         Data         No           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe         Dobbe           Construction         Ch10D SR control         Construction         No control         Dobbe         Dobbe</td> <td>Kind         Date bit         Parks 54         Ver         Odd           Addesses park         Even         Odd         Oddsves park         Even         Odd           Stop 58         &lt;</td> <td>Module name [QJ71C24N</td> <td>1</td> <td></td> <td></td> <td></td>	Kind         Data N         Herm         CH1         TH2           Mode switching         Data N         Pairk NH         Yes         No           Objective aparty         Even         Odd         Data         No           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe           Taras mission parad         Dobbe         Dobbe         Dobbe         Dobbe         Dobbe           Construction         Ch10D SR control         Construction         No control         Dobbe	Kind         Date bit         Parks 54         Ver         Odd           Addesses park         Even         Odd         Oddsves park         Even         Odd           Stop 58         <	Module name [QJ71C24N	1							
Mode switching         Data bit Parity bit         Sbit         7bit Yes         No           Oddeven parity         Even         Odd           Step bit         2bit         1bit           Sum check code         Yes         No           Transmission control         DTRD SR control         Dottol         DTRD SR control           DC10C3 control         Control MC         DTRD SR control         DC10C3 control           DC10C3 control         Control MC         Control MC         No control           DC20C4 control         Control MC         Control MC         No control           DC4 code         FFh         1th         DC2 code           DC4 code         FFh         1dh         Control MC           DC4 code         Check         No check         Control MC           Control         Control MC         Check         No check           Communication control         Simultaneous transmission priority/non-priority         255 (c100me)         0 (c100me)           Data communication filme         0FADh         D000h         Transmission monitoring time         3000 (c100ms)           Data communication filme         OFADh         0000h         140 fuplex         Full duplex           Transmission buffer memory leng	Mode switching         Data Bt         Bbit         7bit           Partly bit         Yes         No           Stop bit         2bit         1bit           Stop bit         2bit         1bit           Stop bit         2bit         1bit           Transmission control         D TR/D SR control         D C control         D TR/D SR control           D C Control         D C Control         D C Control         D TR/D SR control           D C Co de         FFh         1h         1h           D C C do de         FFh         1h         1h           D C do de         FFh         1h         1h           D C do de         FFh         1h         1h           D at communication met mark sin priority/non-priority         256 (x00ms)         0 (x00ms)           Retarms is in method         Retarms is in method         Retend.         D on ot resend. <td>Data bit         Data bit         Paint         Paint           Paint bit Hit         Yes         No           Stop bit         2014         10H           Stop bit         2014         10H           Stop bit         2000         Yes         No           Transmission pased         300bps         300bps         300bps           Transmission pased         00Cbrs         00Dps         300bps           DTRO SR control         Control         Control         DTRO SR control           DC1 code         FFh         11M         DC1 code           DC2 code         FFh         13N         DC2 code           DC2 code         FFh         14M         Communication           Communication control         Control Ind         Code code         FFh         14M           DC2 code         FFh         14M         Stop Stop Stop Stop Stop Stop Stop Stop</td> <td>Data bit         Data bit         Point         Point           Part kritt         Yee         No           Step bit         2014         1.bit           Step bit         2000         No           Transmission soled         300bp2         300bp3           Transmission soled         0.Control         0.Control           DTRDS Roottol         Control         0.TRDS Roottol           DC10 C3 control         Control         Control           DC10 C3 control         Control         No control           DC20 C4 control         Control         No control           DC4 control         Control         Roottol           DC4 control         Control         Roottol           DC4 control         Control         Roottol           DC4 control         Control         Roottol           DC4 control         Control         Control           Roottol         Control         Control           DC4 control         Control         Control           Roottol         Control         Control           DC4 control         Control         Control           DC4 control         Control         Control           DC4 contonthiton train transmissin tha</td> <td>Mode switching         Data bit         Data bit         Part bit         Ven         Odd           Oddoves parfin         Even         Odd         Odd         Sep Bit         Station         Yea         No           Sum Shack code         Yea         No         Odd         Station         Yea         No           Transmission speed         3006es         3006es         3006es         Station         Diffic Site Control         Di</td> <td>Kind</td> <td>Item</td> <td>CH1</td> <td>C H2</td> <td>plinte</td>	Data bit         Data bit         Paint         Paint           Paint bit Hit         Yes         No           Stop bit         2014         10H           Stop bit         2014         10H           Stop bit         2000         Yes         No           Transmission pased         300bps         300bps         300bps           Transmission pased         00Cbrs         00Dps         300bps           DTRO SR control         Control         Control         DTRO SR control           DC1 code         FFh         11M         DC1 code           DC2 code         FFh         13N         DC2 code           DC2 code         FFh         14M         Communication           Communication control         Control Ind         Code code         FFh         14M           DC2 code         FFh         14M         Stop Stop Stop Stop Stop Stop Stop Stop	Data bit         Data bit         Point         Point           Part kritt         Yee         No           Step bit         2014         1.bit           Step bit         2000         No           Transmission soled         300bp2         300bp3           Transmission soled         0.Control         0.Control           DTRDS Roottol         Control         0.TRDS Roottol           DC10 C3 control         Control         Control           DC10 C3 control         Control         No control           DC20 C4 control         Control         No control           DC4 control         Control         Roottol           DC4 control         Control         Roottol           DC4 control         Control         Roottol           DC4 control         Control         Roottol           DC4 control         Control         Control           Roottol         Control         Control           DC4 control         Control         Control           Roottol         Control         Control           DC4 control         Control         Control           DC4 control         Control         Control           DC4 contonthiton train transmissin tha	Mode switching         Data bit         Data bit         Part bit         Ven         Odd           Oddoves parfin         Even         Odd         Odd         Sep Bit         Station         Yea         No           Sum Shack code         Yea         No         Odd         Station         Yea         No           Transmission speed         3006es         3006es         3006es         Station         Diffic Site Control         Di	Kind	Item	CH1	C H2	plinte				
Parity bit         Yes         No           Oddeven parity         Even         Odd           Stop bit         2bit         1bit           Sum check code         Yes         No           Transmission control         DTRD SR control         DC control         DTRD SR control           DC10 code         FFh         1th         1th           DC2 code         FFh         1th           DC2 code         FFh         1th           DC2 code         FFh         1th           DC4 code         FFh         1th           DC2 code         FFh         1th           DC4 code         FFh         1th           Communication control         Controll         Controlled         No control           DC4 code         FFh         1th         1th           Communication control         Communication system         Fall duplex communication communication           communication time         Simultaneous transmission priority/non-priority         255 (c100ms)         0 (ct00ms)           control         Retargetion monitoring time         3000 (ct00ms)         1800 (ct00ms)         1800 (ct00ms)           Trans mission monitoring time         3000 (ct00ms)         1800 (ct00ms)         1800 (ct	Partic bit         Yes         No           Step bit         2bit         1bit           Step bit         2bit         1bit           Transmission control         DTR/D'SR control         DC control         DTR/D'SR control           DC10/D C3 code         FFh         1th         1bit           DC1 code         FFh         1th           DC2 code         Communication         communication           Trans mission priorth/non-priorithy         255 (cHOURs)         OcHORs)           Data communication         m	Park bit         Yes         No           Step bit         2bit         1bit           Step bit         2bit         1bit           Step bit         2bit         1bit           Transmission costed         DCBS costed         DCBC           DC10C3 costed         Control         No control           DC20C4 costed         FPh         1h           DC20C4 costed         FPh         1c           Communication steff         Communication         Communication           Communication         Smutaneous transmission prior/ty/non-prior ty         226 Conform()         OO (CMOne)           Transmission buffer memory length         Communication         Communication         Communication           Transmission buffer memory length         CPG0h         CO00h	Participation         Year         No           Oddeworparty         Even         Oddeworparty           Sino thek code         Year         No           Transmission central         Diffee control         Doffee control         Diffee control           Diffee control         Control         Throb Recentral         Diffee control           Diffee control         Control         Throb Recentral           Diffee control         Simultaneous transmission method         Recentral           Diffee control         Retare control control         Add option           Diffee control         Retare control control         Retare control control           Diffee control         Retare control control         Add option </td <td>Parks bit         Yes         No           Gridewn parky         Even         O di           Swn thad code         Yes         No           Taxer mission seried         DODos         DODos           DTROS Control         C androld         DTROS Rostral           DC 10 C S control         C androld         No control           DC 10 C S control         C androld         No control           DC 2 control         C androld         No control           D 2 control         C androld         No control           D 2 control         C androld         No control           C annunciation and the d         C androld         No control           D 2 control         Sonutarsout transmission for transmission memory haid addres         147 fn           D 2 control         Sonutarsout transmission bit memory langth         O Control           D 2 control         Sonutarsout transmission bit memony langth         O</td> <td>Mode switching</td> <td>Data bit</td> <td>8bit</td> <td>7bit</td> <td></td>	Parks bit         Yes         No           Gridewn parky         Even         O di           Swn thad code         Yes         No           Taxer mission seried         DODos         DODos           DTROS Control         C androld         DTROS Rostral           DC 10 C S control         C androld         No control           DC 10 C S control         C androld         No control           DC 2 control         C androld         No control           D 2 control         C androld         No control           D 2 control         C androld         No control           C annunciation and the d         C androld         No control           D 2 control         Sonutarsout transmission for transmission memory haid addres         147 fn           D 2 control         Sonutarsout transmission bit memory langth         O Control           D 2 control         Sonutarsout transmission bit memony langth         O	Mode switching	Data bit	8bit	7bit					
Dddeven partyEvenO ddStop bit2bit1bitSup bit2bit1bitSup bit300bps300bpsTransmission controlDTK/DS RootrolDC controlDC10 C3 controlC controledNo controlDC3 codeFFh13hDC20 C4 controlC ontroledNo controlDC4 codeFFh14hDC4 codeFFh14hCommunication controlCD terminal checkCheckCommunication systemCheckNo controlControlCD terminal checkCheckControlCommunication system255 (x100ms)ControlSimultaneous transmission priority/non-priority255 (x100ms)ControlNo reception monitoring time0F ADhMonteorition buffer memory head address14FFh0800hTransmission buffer memory head address14FFh00DAhReceive buffer memory length0F 00h0200hReceive buffer memory length0F 00h0200hReceive buffer memory length0F 00h0200h	Even         D dd/even           Jum check code         Yes         No           Transmission control         D TR/D SR control         D C control         D TR/D SR control           D C10 C2 sontrol         D C not colled         No control         D C20 C4 control         D TR/D SR control           D C20 C4 control         D C40 C2 sontrol         C control C40         No control         D C20 C4 control         D C40 C2 control         D C40 C2 control         D C40	Image:	Bob bit         Store         Codewin party         Even         Code           Tank mission presed         3000bit         3000bit         3000bit           Tank mission presed         3000bit         DC costol         DTRDSR control           DC costol         DTRDSR control         DC costol         DTRDSR control           DC costol         DTRDSR control         C control         DTRDSR control           DC costol         DTRDSR control         C control         C control           DC costol         DTRDSR control         C control         C control           DC code         FFN         17h         Transmission           DC code         FFN         17h         Transmission           DC code         Communication         Communication         Communication           Station         Rel drammaris in priority         255 (coloner)         0 / colonity           DC communication         Simultaneous transmission in retransmission         0 / A0h         0 / colonity           Data communication         Simultaneous transmission in retransmission         0 / A0h         0 / colonity           Data communication         Simultaneous transmission in retransmission         0 / A0h         0 / colonity           Data communication inter         Re	Book         Description         Description           Transmission control         Dedexion barls         2 better         10 better           Transmission control         Defection         C control         C control           Defection control         C control         C control         C control           C control         C control         C control         C control           Defection control         <		Parity bit	Yes	No					
Joby On         John         Dot           Transmission speed         300bps         300bps           Transmission control         D TR/D SR control         D C control         D TR/D SR control           D C10/C 3 control         D C control         D TR/D SR control         D C control           D C10/C 3 control         D C control         D TR/D SR control         D C control           D C10/C 3 control         D C control         No control         D C control           D C20/C 4 control         C ontrolled         No control           D C20/C 4 control         C ontrolled         No control           D C20/C 4 control         C ontrolled         No control           D C4 code         FFh         13h           D C20/C 4 control         C ontrolled         No control           D C4 code         C fFh         14h           Communication control         D D terminal check         C normunication           Communication system         Half duplex communication         Full duplex           communication film         Simultaneous transmission method         R esend.         D on ot resend.           D ata communication film         No-reception monitoring film         OFADh         O00Oh           Transmission buffer memory lends <t< td=""><td>Sum Atack codeYearNotTransmission speed300bps300bpsTransmission controlDC1/bC3 controlDC7/bO SR controlDC1 codeFFh11hDC2 codeFFh13hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hCommunication controlCD terminal checkCheckControlidion systemHalf duplexcommunicationControlidion systemSimultaneous transmission methodReend.Data communication timeNo reception monitoring time0FAOhTransmission buffer memory head address14FFh04hData receptionReceived data count01FFhReceived data count01FFh01FFhReceive buffer memory head address14FFh0DAhReceive buffer memory head address14FFh0A0DhReceive buffer memory length0F00h0200hReceive buffer memory length0F00h0200hReceive buffer memory length0F00h020h</td><td>Sum hask code         Yes         No           Trans mission soft         DTADS Residu         DC00         DC00</td><td>Sum thack sofe         Yes         He           Tare mission period         DDDs/D         DDDs/D           Tare mission period         DC Costrol         DTR/DS R control           DC 10 CS androl         Created M         He costrol           DC 20 C4 control         Created M         Created M           Communication strote Marco Briot Marco Briot Me control         Costrol M         Commonication Strote Marco Briot Me control           Tara mission notifer memory head address         LAFFN         D0000h           Taramission buffer memory length         OF 00h         D200h           Tara mission buffer memory length         OF 00h         D200h           Taramission buffer memory length         OF 00h         D00Ah</td><td>Sum thek code         Yes         He           Tare mission exerted         DDDD         DDDD           DTRD SR control         DC 605 R control         DC 605 R control           DC 1 code         FFh         11h           DC 20 D4 control    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codeFFh11hDC2 codeFFh13hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hDC2 codeFFh14hCommunication controlCD terminal checkCheckControlidion systemHalf duplexcommunicationControlidion systemSimultaneous transmission methodReend.Data communication timeNo reception monitoring time0FAOhTransmission buffer memory head address14FFh04hData receptionReceived data count01FFhReceived data count01FFh01FFhReceive buffer memory head address14FFh0DAhReceive buffer memory head address14FFh0A0DhReceive buffer memory length0F00h0200hReceive buffer memory length0F00h0200hReceive buffer memory length0F00h020h	Sum hask code         Yes         No           Trans mission soft         DTADS Residu         DC00	Sum thack sofe         Yes         He           Tare mission period         DDDs/D         DDDs/D           Tare mission period         DC Costrol         DTR/DS R control           DC 10 CS androl         Created M         He costrol           DC 20 C4 control    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Do not resend.           D ata communication time         OFAD         000h         Transmission time transmission method         Resend.         Do not resend.           D ata communication time         Transmission buffer memory head address         1AFFh         0800 (r100ms)           Transmission buffer memory length         OFO0h         0200h         Transmission buffer memory length         0F00h           D ata reception         Receive b	Transmission control         DTMP SR control         DC control         DTMP SR control           DC10/DC3 control         C control of DTMP SR control         DC10/DC3 control         C control of DTMP SR control           DC10/DC3 control         C control of DTMP SR control         DC10/DC3 control         C control of DTMP SR control           DC2 code         FFh         11h         DC3 code         FFh         12h           DC2 code         FFh         12h         DC3 code         FFh         12h           DC3 code         FFh         12h         DC3 code         FGF         FGF <td>Transmission control         Transmission control         Of TRO SR control         Octor control         Of TRO SR control           DC10/C3 control         Controlled         Ne control         Ne control           DC2 code         FFh         1h           DC2 code         FFh         1h           DC2 code         FFh         1h           DC2 code         FFh         1ch           Transmission form monitoring transmitransming transmission form monitoring transmitransmission form</td> <td>Tara mission control         DTAras mission control         DC control         DC control         DTARD SR control           D C10 C2 control         C control         C control         DTARD SR control           D C10 C2 control         C control         C control         DTARD SR control           D C10 C2 control         C control         C control         DTARD SR control           D C2 code         FFh         13h         DTARD SR control           D C2 code         FFh         14h         Control         DC control           D C2 code         FFh         14h         Control         Control           D C2 code         FFh         14h         Control         Control           C communication surfame         Control         Control         Control           C control         Control         Control         Control           C control<td></td><td>Sum check code</td><td>Yes</td><td>No</td><td></td></td>	Transmission control         Transmission control         Of TRO SR control         Octor control         Of TRO SR control           DC10/C3 control         Controlled         Ne control         Ne control           DC2 code         FFh         1h           DC2 code         FFh         1h           DC2 code         FFh         1h           DC2 code         FFh         1ch           Transmission form monitoring transmitransming transmission form monitoring transmitransmission form	Tara mission control         DTAras mission control         DC control         DC control         DTARD SR control           D C10 C2 control         C control         C control         DTARD SR control           D C10 C2 control         C control         C control         DTARD SR control           D C10 C2 control         C control         C control         DTARD SR control           D C2 code         FFh         13h         DTARD SR control           D C2 code         FFh         14h         Control         DC control           D C2 code         FFh         14h         Control         Control           D C2 code         FFh         14h         Control         Control           C communication surfame         Control         Control         Control           C control         Control         Control         Control           C control <td></td> <td>Sum check code</td> <td>Yes</td> <td>No</td> <td></td>		Sum check code	Yes	No					
Transmission controlD TR/D SR controlD TR/D SR controlD C10/D C3 controlC ontrolledNo controlD C1 codeFFh11hD C3 odeFFh13hD C2/D C4 controlC ontrolledNo controlD C4 codeFFh12hD C4 codeFFh14hC ommunication controlCD terminal checkCheckC ommunication controlC D terminal checkCheckC ommunication controlSimultaneous transmission priority/non-priority255 (x100ms)ControlR eta ansmission fine transmission methodR esend.D on tor seend.No reception monitoring timeOFADh0000hTransmission buffer memory lengthTrans mission buffer memory lengthOFODh0200h0200hD ata reception areaReceive data count01FFh01FFhReceive buffer memory lengthOFODh0200h020h	Transmission control         DTR/D SR control         D TR/D SR control           DC10 C3 control         Controlled         No control           DC1 code         FFh         11h           DC3 code         FFh         13h           DC20 C4 control         Controlled         No control           DC2 code         FFh         14h           Communication control         C0 terminal check         Check         No control           Communication control         C0 terminal check         Check         No check           Communication control         Simultaneous transmission priority/non-priority         255 (x100ms)         0 (x100ms)           Ret ansmission time transmission method         Ret and         Do not resend.         Do not resend.           D ata communication time         No-reception monitoring time         3000 (x100ms)         1800 (x100ms)           Transmission buffer memory length         OFAD         0200h         200h           D ata reception         Received data count         01FFh         01FFh           Receive duffer memory length         OFOD         0200h         200h           D ata reception area         Receive duffer memory length         0F00h         0200h           Receive buffer memory length         0F00h         <	Transmission control         D TRD SR control         Control M         No control           DC10 c3 control         Control M         No control         Decontrol           DC20 C4 control         Control M         No control         Decontrol           DC3 code         FPh         13h         Decontrol           DC4 code         FPh         12h         Decontrol           DC4 code         FPh         12h         Decontrol           DC4 code         FPh         12h         Decontrol           DC4 code         Communication control         Communication control         Communication control         Communication control           D da communication the mark sich priority/non-priority         255 (r00ms)         0 c100ms)         Control           D da communication the mark sich priority/non-priority         255 (r00ms)         0 c100ms)         Transmission bytem memory head address         14FFh         0 000h           D da communication the mark menory head address         14FFh         0 000h         D data reception         D control         D control           D ada reception         Receive data control         OFFh         0 000h         D control           D ada reception         Receive data control         0 FFh         0 000h         D control      <	Transmission control         DTRD SR control         DC control         DC moled         N = control           DC 10 code         FFh         15h         15h           DC 20 code         Smutaneous transmics in point phono-ptortpi         225 (ch00ms)         0 (ch00ms)           Pata coaption monitoring time         000 (ch00ms)         1500 (ch00ms)         1500 (ch00ms)           Transmission buffer memory lead address         14FFh         060h         1500 (ch00ms)           Transmission buffer memory lead address         14FFh         040h         1500 (ch00ms)           D at receition         Receive data count         15FFh         040h         1500 (ch0	Tata mission control     D TRO S control     C control     D TRO S R control       D C 1 ocid     FFh     1 1h       D C 20 C 4 control     C orb old     N control       D C 20 C 4 control     C orb old     N control       D C 20 C 4 control     C orb old     N control       D C 20 C 4 control     C Orb old     N control       D C 20 C 4 control     C Orb old     N control       D C 20 cold     FFh     14h       D 21 control     Statu     Communication       R 21 control     R 22h     Control     000h       T 21 control     R 22h     Statu     000h       T 21 control     T 22h     Statu     000h       T 21 control     R 22h     O T 20h     000h       T 21 control     T 22h     T 22h     T 22h       T 21 control     T 22h     T 22h     T 22h       T 21 control		Transmission speed	300bps	300bps					
DC10 CS control         Controled         No control           DC1 code         FFh         11h           DC3 code         FFh         13h           DC20 code         FFh         12h           DC20 code         FFh         12h           DC4 code         FFh         14h           Communication control         CD terminal check         Check         No control           Communication control         CD terminal check         Check         No check           Communication control         CD terminal check         Check         No check           Communication system         Half duplex communication         communication         communication           Retarsmission priority/non-priority         225 (x100ms)         0 (x100ms)           Transmission mentoring time         0500 (x100ms)         1800 (x100ms)           Transmission brifer memory head address         14FFh         0800h           Transmission brifer memory length         0F00h         0200h           Data reception         Receive data count         04FFh         0400h           Receive omplete code         FFFh         0A00h         200h           Receive buffer memory length         0F00h         0200h         200h <td>DC10 CS control         Controled         No control           DC1 code         FFh         11h           DC2 code         FFh         13h           DC2 code         FFh         12h           DC2 code         FFh         14h           DC2 code         FFh         14h           Communication control         CD terminal check         Check         No control           Communication control         CD terminal check         Check         No check           Communication system         Half duplex communication         communication         communication           No transmission method         Resend.         Do tersend.         Do chOms)           Pata communication fime         No-reception monitoring time         3000 (chOms)         1800 (chOms)           Transmission buffer memory length         OFODh         020h         1800 (chOms)           Transmission buffer memory length         OFODh         020h         1800 (chOms)           Data count         Receive data count         OHFFh         01FFh         1800 (chOms)           Transmission buffer memory length         OFODh         020h         1800 (chOms)         1800 (chOms)           Receive outfer memory length         OFODh         020h         1800 (chOms)</td> <td>DC16 CS control         Control elid         No control           DC3 code         FFh         15h           DC2 CC 4 control         Control elid         No control           DC2 code         FFh         17h           DC3 code         FFh         17h           Communication control         DC terminal constraints in prior hynon-prior hy         265 (rh00ns)         0 ch10dex)           Transmitting area         Transmitting memory head address         1AFFh         0800h           Transmitting area         Transmitting memory head address         1AFFh         0400h           Pata reception         Receive data count         01FFh         017Fh           Receive data count         PFFFh         0400h         020h           Pata reception area         Receive data count         01FFh         0400h           Receive buffer memory length         0F00h         0200h         000Ah</td> <td>DC10/C3 control         Cut olded         No control           DC3 code         FFh         17h           DC4 control         Control cled         No control           DC4 code         FFh         17h           Communication system         Half dupks: communication         Control cled           Communication system         DC400         DC400000         DC400000           Data communication         Simultaneous transmission prior fly         225 Cr000m2         DC4000m2           Data communication firm         No costodio monitoring time         DFA0h         D000h           Data communication firm         No costodio monitoring time         DFA0h         D000h           Data communication firm         No costoring time         DFA0h         D000h           Data communication firm         No costoring time         DFA0h         D000h           Data costoring area         Transmission buffer memory lead address         14Fh         De30h           Tans mission buffer memory lead address         14Fh         DA0h         Receive buffer memor</td> <td>DC10c3 control         Control eled         No control           DC3 code         FFh         13h           DC4 code         FFh         13h           DC3 code         Communication         Communication           Communication         Smutaneous transmission prior method         Reend         Do code           Data communication         Tatas mission burder memory lead dotes         14Fh         Oc00h           Tatas mission burder memory lead dotes         14Fh         Oc00h         Oc00h           Data coeption         Receive dote code         FFFh         Do4h           Receiptio</td> <td>Transmission control</td> <td>D TR/D SR control</td> <td>DC control</td> <td>D TR/D SR control</td> <td></td>	DC10 CS control         Controled         No control           DC1 code         FFh         11h           DC2 code         FFh         13h           DC2 code         FFh         12h           DC2 code         FFh         14h           DC2 code         FFh         14h           Communication control         CD terminal check         Check         No control           Communication control         CD terminal check         Check         No check           Communication system         Half duplex communication         communication         communication           No transmission method         Resend.         Do tersend.         Do chOms)           Pata communication fime         No-reception monitoring time         3000 (chOms)         1800 (chOms)           Transmission buffer memory length         OFODh         020h         1800 (chOms)           Transmission buffer memory length         OFODh         020h         1800 (chOms)           Data count         Receive data count         OHFFh         01FFh         1800 (chOms)           Transmission buffer memory length         OFODh         020h         1800 (chOms)         1800 (chOms)           Receive outfer memory length         OFODh         020h         1800 (chOms)	DC16 CS control         Control elid         No control           DC3 code         FFh         15h           DC2 CC 4 control         Control elid         No control           DC2 code         FFh         17h           DC3 code         FFh         17h           Communication control         DC terminal constraints in prior hynon-prior hy         265 (rh00ns)         0 ch10dex)           Transmitting area         Transmitting memory head address         1AFFh         0800h           Transmitting area         Transmitting memory head address         1AFFh         0400h           Pata reception         Receive data count         01FFh         017Fh           Receive data count         PFFFh         0400h         020h           Pata reception area         Receive data count         01FFh         0400h           Receive buffer memory length         0F00h         0200h         000Ah	DC10/C3 control         Cut olded         No control           DC3 code         FFh         17h           DC4 control         Control cled         No control           DC4 code         FFh         17h           Communication system         Half dupks: communication         Control cled           Communication system         DC400         DC400000         DC400000           Data communication         Simultaneous transmission prior fly         225 Cr000m2         DC4000m2           Data communication firm         No costodio monitoring time         DFA0h         D000h           Data communication firm         No costodio monitoring time         DFA0h         D000h           Data communication firm         No costoring time         DFA0h         D000h           Data communication firm         No costoring time         DFA0h         D000h           Data costoring area         Transmission buffer memory lead address         14Fh         De30h           Tans mission buffer memory lead address         14Fh         DA0h         Receive buffer memor	DC10c3 control         Control eled         No control           DC3 code         FFh         13h           DC4 code         FFh         13h           DC3 code         Communication         Communication           Communication         Smutaneous transmission prior method         Reend         Do code           Data communication         Tatas mission burder memory lead dotes         14Fh         Oc00h           Tatas mission burder memory lead dotes         14Fh         Oc00h         Oc00h           Data coeption         Receive dote code         FFFh         Do4h           Receiptio	Transmission control	D TR/D SR control	DC control	D TR/D SR control					
DC3 code         Prin         Tim           DC3 code         FFh         13h           DC2DC4 control         Controlled         Ne control           DC2 code         FFh         12h           DC4 code         FFh         14h           Communication control         C0 terminal check         Check         No check           Communication control         C0 terminal check         Check         No check           Communication communication         Simultaneous transmission priority/non-priority         255 (x100ms)         0 (x100ms)           Nore ception monitoring time         OFA0h         0000h         000h           Transmission time transmission priority/non-priority         255 (x100ms)         0 (x100ms)           Transmission monitoring time         0FA0h         0000h           Transmission buffer memory lead address         1AFFh         0800h           Transmission buffer memory lead address         1AFFh         080h           Transmission buffer memory lead address         1AFFh         0A00h           Data reception         Receive data count         01FFh         0DAh           Receive buffer memory lead address         1AFFh         0DAh           Receive buffer memory length         0F00h         020h <td>bit code         Prin         Tim           DC3 code         FFh         13h           DC2DC4 control         Controlled         Ne control           DC2 code         FFh         12h           DC4 code         FFh         14h           Communication control         C0 terminal check         Check         No sheck           Communication control         C0 terminal check         Check         No sheck           Communication simultaneous transmission priority/non-priority         255 (ch00ms)         O (ch00ms)           Retainsmission time transmission method         Resend.         Do not resend.           Data communication time         No-reception monitoring time         3000 (ch00ms)         1800 (ch00ms)           Transmission buffer memory length         OFOD         0200h         Transmission buffer memory length         0FOD           Data reception         Received data count         01FFh         04DAh         Receive complete code           Reception area         Receive buffer memory length         0FOD         02DAh           Receive buffer memory length         0FOD         02DAh         20DAh</td> <td>DC 1000         PT         Tim           DC2 3 code         FPh         13h           DC2 C - do cotol         Control - Contr</td> <td>DCL Soute         PTH         110           DC2 Goole         PFh         130           DC2 Cole         PFh         12A           DC2 Cole         PFh         12A           DC4 cole         PFh         14A           DC4 cole         PFh         14A           DC4 cole         PFh         14A           DC4 cole         PFh         14A           Communication control         Chemmal check         Check         No check           Communication control         Chemmal check         Check         No check           All dyplex communication         Simultaneous transmision method         Reiend.         On of transmision fire           Recentration monitoring time         Simultaneous transmision method         Reiend.         On of transmision fire           Transmision methoding time         Simultaneous transmision method         Reiend.         Do do (ChOms)           Transmision methoding time         Simultaneous transmision methoding method         Simultaneous transmision methoding method         Simultaneous transmision methoding methodic science           Transmitting area         Transmision methoding method science         Simultaneous transmision methoding methodic science         Simultaneous transmision methoding methodic science           Transmitting area</td> <td>LC1:00ad       Fri       10         LC2:00ad       Fri       10         LC2:00ad       Controli       Controli       Controli         LC2:00ad       Fri       12         LC2:00ad       Fri       13         LC2:00ad       Fri       14         LC2:00ad       Fri       14     <td></td><td>D C1/D C3 control</td><td>Controlled</td><td>No control</td><td></td></td>	bit code         Prin         Tim           DC3 code         FFh         13h           DC2DC4 control         Controlled         Ne control           DC2 code         FFh         12h           DC4 code         FFh         14h           Communication control         C0 terminal check         Check         No sheck           Communication control         C0 terminal check         Check         No sheck           Communication simultaneous transmission priority/non-priority         255 (ch00ms)         O (ch00ms)           Retainsmission time transmission method         Resend.         Do not resend.           Data communication time         No-reception monitoring time         3000 (ch00ms)         1800 (ch00ms)           Transmission buffer memory length         OFOD         0200h         Transmission buffer memory length         0FOD           Data reception         Received data count         01FFh         04DAh         Receive complete code           Reception area         Receive buffer memory length         0FOD         02DAh           Receive buffer memory length         0FOD         02DAh         20DAh	DC 1000         PT         Tim           DC2 3 code         FPh         13h           DC2 C - do cotol         Control - Contr	DCL Soute         PTH         110           DC2 Goole         PFh         130           DC2 Cole         PFh         12A           DC2 Cole         PFh         12A           DC4 cole         PFh         14A           DC4 cole         PFh         14A           DC4 cole         PFh         14A           DC4 cole         PFh         14A           Communication control         Chemmal check         Check         No check           Communication control         Chemmal check         Check         No check           All dyplex communication         Simultaneous transmision method         Reiend.         On of transmision fire           Recentration monitoring time         Simultaneous transmision method         Reiend.         On of transmision fire           Transmision methoding time         Simultaneous transmision method         Reiend.         Do do (ChOms)           Transmision methoding time         Simultaneous transmision methoding method         Simultaneous transmision methoding method         Simultaneous transmision methoding methodic science           Transmitting area         Transmision methoding method science         Simultaneous transmision methoding methodic science         Simultaneous transmision methoding methodic science           Transmitting area	LC1:00ad       Fri       10         LC2:00ad       Fri       10         LC2:00ad       Controli       Controli       Controli         LC2:00ad       Fri       12         LC2:00ad       Fri       13         LC2:00ad       Fri       14         LC2:00ad       Fri       14 <td></td> <td>D C1/D C3 control</td> <td>Controlled</td> <td>No control</td> <td></td>		D C1/D C3 control	Controlled	No control					
DC2/DC4 control         Controlled         No control           DC2 code         FFh         12h           DC4 code         FFh         14h           Communication control         CD terminal check         Check         No check           Communication control         CD terminal check         Check         No check           Communication control         Simultaneous transmission priority/non-priority         255 (x100ms)         0 (x100ms)           No reception monitoring time         No reception monitoring time         0FADh         0000h           Data communication film         Transmission buffer memory head address         1AFFh         0800h           Transmitting area         Transmission buffer memory length         0FODh         0200h           Tass mission buffer memory length         0FODh         0200h         0ADh           Data conception         Received data count         01FFh         01FFh           Receive buffer memory length         0FODh         0200h         0ADh	DC2DC4 control         Controlled         No control           DC2 code         FFh         12h           DC4 code         FFh         14h           Communication control         CD terminal check         Check         No check           Communication control         CD terminal check         Check         No check           Communication communication         Simultaneous transmission priority/non-priority         255 (x100ms)         0 (x100ms)           Att duplex communication film         No recerption monitoring time         0FADh         0000h           Data communication film         No recerption monitoring time         0FADh         0000h           Transmission buffer memory head address         1AFFh         0800h           Transmission buffer memory length         0FODh         0200h           Data complete remory length         0FODh         0200h           Data reception         Received data count         01FFh         01FFh           Receive omplete code         FFFFh         0DOAh         Receive buffer memory length         0FODh         020h	UC20EC4 control         Control         Print         12h           DC4 code         FFh         12h         12c         12c <td>Display         Display         Control         Construit           Display         Display         Fin         120           Communication control         Display         Fin         140           Alf display communication         Binutlaneous transmission method         Reserved         Display           Pails communication time         Simultaneous transmission method         Reserved         Display           Pails communication time         Transmission buffer memory head address         14FFh         0800h           Transmission buffer memory head address         14FFh         0400h         Display           Data reception area         Receive data control         0FFFh         040Ah           Reception area         Receive data data         0F00h         0200h           Data reception area         Receive data data         0F00h         0200h</td> <td>DC2D-C4 cottol         Control         Print           DC4 code         FFh         12h           Communication control         CD terminal check         Check         Feb           Communication control         CD terminal check         Check         Feb           All displace communication         Simultaneous transmission prior the control         Reserved         Communication           Hat displace communication         Reserved         De for transmission frame transmission method         Reserved         De for transmission frame transmission method           Data communication file         No control         Reserved         De for transmission frame transmission frame transmission frame transmission frame transmission frame method         Reserved         De for transmission frame transmission frame transmission frame method         Reserved         De for transmission</td> <td></td> <td>DC3 code</td> <td>FFh</td> <td>13h</td> <td></td>	Display         Display         Control         Construit           Display         Display         Fin         120           Communication control         Display         Fin         140           Alf display communication         Binutlaneous transmission method         Reserved         Display           Pails communication time         Simultaneous transmission method         Reserved         Display           Pails communication time         Transmission buffer memory head address         14FFh         0800h           Transmission buffer memory head address         14FFh         0400h         Display           Data reception area         Receive data control         0FFFh         040Ah           Reception area         Receive data data         0F00h         0200h           Data reception area         Receive data data         0F00h         0200h	DC2D-C4 cottol         Control         Print           DC4 code         FFh         12h           Communication control         CD terminal check         Check         Feb           Communication control         CD terminal check         Check         Feb           All displace communication         Simultaneous transmission prior the control         Reserved         Communication           Hat displace communication         Reserved         De for transmission frame transmission method         Reserved         De for transmission frame transmission method           Data communication file         No control         Reserved         De for transmission frame transmission frame transmission frame transmission frame transmission frame method         Reserved         De for transmission frame transmission frame transmission frame method         Reserved         De for transmission		DC3 code	FFh	13h					
DC2 code         FFh         12h           DC4 code         FFh         12h           Communication control         CD terminal check         Check         No check           Communication system         Half duplex communication         communication           Half duplex communication         Simultaneous transmission priority/non-priority         255 (x100ms)         O (x100ms)           Retansmission time transmission method         Resend.         Do not resend.           Data communication         Transmission buffer memory head address         1AFFh         0800h           Transmission buffer memory length         0F00h         02200h         Received data count           Received data count         01FFh         01FFh         Receive buffer memory length           Receive buffer memory length         0F00h         0200h         Receive buffer memory length           Receive data count         01FFh         01FFh         Receive buffer memory length         0F00h           Receive buffer memory length         0F00h         0200h         220h         220h	DC2 code         FFh         12h           DC4 code         FFh         12h           Communication control         CD terminal check         Check         No check           Communication control         Simultaneous transmission prioritly/non-prioritly         255 (x100ms)         O (x100ms)           Retarnsmission time transmission method         Resend.         Do not resend.           Data communication time monofing time         OF ADh         0000h           Transmission buffer memory head address         1AFFh         0800h           Transmission buffer memory length         OF 00h         02200h           Data reception area         Received data count         01FFh           Receive buffer memory length         0F 00h         0200h           Data reception area         Receive buffer memory length         0F 00h         0200h           Receive buffer memory length         0F 00h         0200h         0ADh	DC2 code         FFh         12h           Communication control         CD terminal check         Check         No check           Communication control         CD terminal check         Check         No check           Half duplex communication         Simultaneour transmiss in prior/thr/non-prior/thr         226 (cr00ms)         D (ch00ms)           Data communication film         No -teception monitoring time         OF ADh         D onto travend, monitoring time           Data communication film         No -teception monitoring time         OF ADh         D colon)           Transmission buffer memory length         Of OODn         0000h           Transmission buffer memory length         Of OOD (ch00ms)         1900 (ch00ms)           Tansmission buffer memory length         Of OOD (ch00ms)         000h           Tansmission buffer memory length         Of OOD (ch00ms)         000h           Data reception area         Receive data count         01FFh         01FFh           Receive buffer memory length         OF OOh         020h         200h	DC2 acid         FFh         12h           DC4 acid         FFh         14h           Communication control         CD terminal deal         Check         No hock           Communication control         CD terminal deal         Check         No hock           Haif displex communication         Simultaneous tracem is no pirohe/non-piorhy         265 (r00ms)         0 (r00ms)           April displex communication         Ret animation time transmission method         Ret animation time transmission method         Ret animation         0 (r00ms)           Data communication time         Transmission buffer memory head address         1.0FTh         0000h           Transmission buffer memory head address         1.0FTh         0.020h           Transmission buffer memory head address         1.0FTh         0.01FTh           Transmission buffer memory head address         1.4FTh         0.00Ah           Transmission buffer memory head address         1.4FTh         0.00Ah           Receive buffer memory head address         1.4FTh         0.00Ah           Receive buffer memory head         0FTDh         0.01TFh           Receive buffer memory head         0F00h         0.200h	DC2 ook         FFh         1h           DC armunication control         CD terminal check         Check         No beck           Allaf doglex communication         Smuthaneouz transmission priorfly/non-priorfly         26 C+000m2)         0 C+000m2)           Data communication         Feb and transmission brain transmission priorfly/non-priorfly         26 C+000m2)         0 C+000m2)           Data communication         Feb and transmission brain transmission priorfly         26 C+000m2)         0 C+000m2)           Transmission brain transmission brain transmission priorfly         26 C+000m2)         1400 C+000m2)         1400 C+000m2)           Transmission brain transmain		D C2/D C 4 control	Controlled	No control					
D C4 codeFFh14hC ommunication controlCD terminal checkCheckNo checkC ommunication systemHalf duplex communicationFull duplex communicationHalf duplex communicationSimultaneous transmission priority/non-priority 265 (x100ms)0 (x100ms)Data communication time monitoringNo reception monitoring time Transmission monitoring time0P A0h0000hTransmitting area Transmission buffer memory length0F 00h0200hD ata reception R eceive duta count01FFh01FFhR eceive buffer memory length0F 00h0200hR eceive buffer memory length0F 00h0200h	D C4 codeFFh14hC ommunication controlCD terminal checkCheckNo checkC ommunication systemHalf duplex communicationFull duplex communicationHalf duptex communicationSimultaneous transmission priority/non-priority/ 265 (x100ms)0 (x100ms)Data communication time 	D C4 cods         FFh         14h           C ommunication control         C berninal check         No check         No check           Half duplex communication         Simultaneous transmiss in prior byten prior by         255 (x00m;)         0 (x100m;)           D dat sommunication         Rein armission futer transmission method         R escal.         D of x100m;)           D dat sommunication film         Transmission buffer memory head address         1AFFh         0000h           Transmission buffer memory head address         1AFFh         0000h         0200h           Transmission buffer memory head address         1AFFh         0000h         0200h           D at acception         Receive data count         0FFFh         0Fhh         Receive data count           Receive ount         Receive buffer memory head address         1AFFh         0000h         Receive data count           Receive ount         Receive data count         0FFFh         0F00h         2200h         Receive data count	D C4 sode         FFh         14h           C ommunication control         CD terminal dead         Chead         No head           Half digits communication         Simultaneous trasmission priority/non-priority         226 (st00ms)         0 (-100ms)           Pata indigits communication         Reframesion methoding time         Reframesion methoding time         0 Pata           Pata indigits communication         Transmission motifying time         3000 (st00ms)         1930 (st00ms)           Transmission buffer memory head address         14FTh         0 Dada         0 pata incerption           Reference         Reception         Receive data count         0FTFh         0 Dada           Pata incerption         Receive buffer memory head address         14FTh         0 Dada           Reception         Receive buffer memory head address         14FTh         0 Dada           Reception area         Receive buffer memory head address         0F00h         0200h           Data incerption         Receive buffer memory head address         0F00h         0200h	D C4 code         FFh         14h           C ommunication control         C bermani albade         Chead         No head           Half digbles communication         Simultaneous traummission priorthyhon-priorthy         225 (x00mx)         0 (x100mx)           D also communication filt         Resentantission method         Resend         00 on to resend           D also communication filt         No needd         Resend         00 on to resend           Trans mission mothering time         07 A0h         0000 (x100mx)           Trans mission mothering time         000 (x100mx)         000 (x100mx)           Trans mission huffer memory head addless         14FFh         000 (x100mx)           D also ception         Reserve dual a sound         01FFh         01FFh           D also ception         Reserve dual a sound         01FFh         0200h           D also ception         Reserve complete code         FFFH         0200h           D also ception area         Reserve complete code         FFFH         0200h           D also ception         Reserve complete code         FFFH         0200h           D also ception area         Reserve complete code         FFFH         0200h		DC2 code	FFh	12h					
Communication         C D terminal ortext         C D communication         No check           C ommunication         C ommunication system         Half duplex, oommunication         Full duplex, oommunication           Half duplex, communication         Simultaneous transmission priority/non-priority         255 (CIOms)         0 (x100ms)           Data communication time monitoring time         DFA0h         0000h         0000h           Transmission monitoring time         0FA0h         0000h         1800 (x100ms)           Transmission buffer memory length         0F00h         0200h         1800 (x100ms)           Data reception area         Receive buffer memory length         0F00h         0200h           Receive buffer memory length         0F00h         0200h         0A00h           Receive buffer memory length         0F00h         0200h         220h	Communication         C D terminal ortext         C D terminal ortext         C D terminal ortext           C ommunication         C ommunication system         Half duplex oommunication         Full duplex oommunication           Natif duplex communication         Simultaneous transmission priority/non-priority         255 (VDOms)         0 (x100ms)           D ata communication time monitoring time         D FA0h         0000h         0000h           Transmission monitoring time         3000 (x100ms)         1800 (x100ms)           Transmission buffer memory length         0F00h         0200h           D ata coeption         Received data count         01FFh         01FFh           D ata coeption area         Receive outfer memory length         0F00h         0200h           D ata reception         Receive data count         01FFh         01FFh           Receive buffer memory length         0F00h         0200h         0A0h           Receive buffer memory length         0F00h         0200h         020h	Communication Settem         Communication system         Link of Communication           Pair duplex communication         Simultaneous transmission prioritiv/non-prioritiv         255 (cMOms)         0 (cMOms)           Communication Teme         Proceeding monitority time         0FAD         0000h           Transmission buffer memory head address         1AFFh         0800h         1           Transmission buffer memory head address         1AFFh         0800h         1           Data reception         Receive data count         01FFh         01FFh         020h           Data reception         Receive data count         01FFh         000h         1           Receive data count         01FFh         000h         1         1           Receive obtrier memory head address         1AFFh         0A00h         1           Receive obtrier memory head address         1AFFh         000h         1           Receive obtrier memory head address         1AFFh         0A00h         1           Receive obtrier memory head address         1AFFh         0A00h         1           Receive buffer memory head         0F00h         0200h         1	Communication voltation         Communication         Communication           Half duplex communication         Simultaneous transmission method         Ree and         Do not reend.           Data communication         Retaremission time transmission method         Ree and.         Do not reend.           Data communication         Retaremission time transmission method         Ree and.         Do not reend.           Data communication         Retaremission buffer memory head address         (AFFh)         0000(h)           Transmission buffer memory head address         (AFFh)         0000(h)         000(h)           Data reception         Reeelve complete code         FFFFh         0DAhh           Reeelve complete code         FFFFh         0DAhh         0Ahh           Reeelve complete code         FFFFh         0DAhh         0Ahh           Reeelve complete code         FFFFh         0DAhh         0Ahh           Reeelve complete code         FFFFh         0DAhh         2DAh           Reeelve buffer memory head address         1AFFh         0AdOh         2DAhh           Reeelve buffer memory length         0F00h         0200h         2DAh	Description         C-Verminual centos         LAR de uplex: communicadion         Full depicx i communicadion           Half depicx communication         Retarminision time transmission method         Retarminision         0.6100m(s)           D ata communication         Transmission time transmission method         Retarminision time transmission method         Retarminision         0.0000h(s)           Transmission time mony head address         1.4FFh         0.0000h(s)         0.0000h(s)           Transmission time mony head address         1.4FFh         0.000h(s)         0.000h(s)           D ata reception         Receive duta contri         0.1FFh         0.000h(s)           Receive buffer memory lead address         1.4FFh         0.020h(s)           Receive buffer memory lead address         1.6FFh         0.020h(s)	Communication	DC4 code	FFh	14h	_				
Half duplex communication         Full duplex communication         Full duplex communication           Half duplex communication         Simultaneous transmission priority/non-priority         255 (x100ms)         0 (x100ms)           Data communication time         Resend.         Do not resend.         Do do the resend.           Data communication time         Nor-coeption monitoring time         0FA0h         0000h           monitoring         Transmission monitoring time         3000 (x100ms)         1800 (x100ms)           Transmission buffer memory head address         1AFFh         0800h           Transmission buffer memory length         0F00h         0200h           Data reception         Received data count         01FFh         01FFh           Receive complete code         FFFh         0D0Ah           Receive buffer memory head address         1AFFh         0200h           Receive buffer memory head address         1AFFh         020Ah           Receive buffer memory length         0F00h         0200h	Half duplex communication         Full duplex communication           Half duplex communication         Simultaneous transmission priority/non-priority         255 (x100ms)         0 (x100ms)           Control         Retransmission time transmission method         Resend.         Do not resend.           Data communication time         No-reception monitoring time         0FA0h         0000h           Transmission monitoring time         3000 (x100ms)         1800 (x100ms)           Transmission buffer memory lead address         1AFFh         0800h           Transmission buffer memory length         0F00h         0200h           Data reception         Receive data count         01FFh         01FFh           Receive complete code         FFFh         0D0Ah           Receive buffer memory length         0F00h         0200h	Construction     Construction     Construction       Hair duplex communication     Simultaneous transmission prior/bu/non-prior/by     255 (cHOOms)     0 (cHOOms)       Data communication     No -re ception monitoring time     0 F ADh     0 cont of second.       Data communication fim     No -re ception monitoring time     0 F ADh     0000h       Transmission noinforing time     0 F ADh     0 2000h       Transmission on buffer memory head address     1 AFFh     0 800(h)       Data reception     Receive data count     0 FFFh     0 TFh       Deta reception     Receive data count     0 FFFh     0 DAh       Reception area     Receive data count     0 FODh     0 200h       Reception area     Receive buffer memory head address     1 AFFh     0 ADOh       Reception area     Receive buffer memory head address     1 AFFh     0 DOh	Internation         Internation         One optication           Half duptx communication         Simultaneous transmission nointer argents in the transmission monitoring time         D 26 (x00 ms)         D 0 (x00 ms)           Data communication time         No-reception monitoring time         D FADh         D ordor (x00 ms)           Transmission monitoring time         D FADh         D 000h         1000 (x100 ms)           Transmission buffer memory length         D FDOh         0200h         1000 (x100 ms)           Transmission buffer memory length         D FDOh         0200h         1000 (x100 ms)           D ata reception         Received data count         0 HFFh         0 HFFh         0 Dohn           Q ata reception area         Receive buffer memory length         0 FOOh         0 200h         200h           Receive count         Reference memory length         0 FOOh         0 200h         200h	Valuation         Valuation         Valuation         Valuation           Number of the second transmiss in prior Nyhon-prior Ny         256 (x100ms)         0 (x100ms)           D als communication film         Transmission films transmission method         Resend         0 on for reand.           D als communication film         Transmission films transmission method         0 on for reand.         0 on for reand.           Transmission films         Transmission films transmission films transmission method         0 exercise         14FFh         0000h           Transmission films         Transmission films transmission films         0 of tof films         0 of tof films         0 of tof films           Transmission films         Transmission films         1 of films         0 of tof films         0 of tof films           Transmission films         Transmission films         0 of tof films         0 of tof films         0 of tof films           D als reception         Reserve duffer memory lead address         14FFh         0 doth         0 doth           D als reception area         Receive buffer memory lead         0 fo toh         0 doth         0 doth	Communication control	Communication system	Lineok Halfdunley	Full dupley					
Haif duplex communication control         Simultaneous transmission priority/non-priority         256 (x100ms)         0 (x100ms)           Data communication time mon8oring         Non-ceception monitoring time         0 FA0h         0000h           Transmission monitoring time         3000 (x100ms)         1800 (x100ms)           Transmission buffer memory head address         1 AFFh         0 800h           Transmission buffer memory length         0 F00h         0 200h           D ata reception         Receive data count         0 1FFh         0 1FFh           Receive omplete code         FFFh         0 00Ah           Receive buffer memory head address         1 AFFh         0 A0Dh	Half duplex communication control         Simultaneous transmission priority/non-priority         256 (x100 ms)         0 (x100 ms)           Data communication time monforing         Non-ceception monitoring time         0 FA0h         0000h           Transmission monitoring time         3000 (x100 ms)         1800 (x100 ms)           Transmitting area         Transmission buffer memory lead address         1 AFFh         0 800h           Data complexity         Received data count         0 F00h         0 200h           Data reception area         Receive data count         0 1FFh         0 00Ah           Reception area         Receive buffer memory lead address         1 AFFh         0 00Ah           Receive buffer memory lead address         1 AFFh         0 DOAh	Half diplex communication     Simultaneous transmission priorfw/non-priorfw/     255 (r100ms)     0 (r100ms)       Data communication time     No reception     Re damsmission time transmission method     Reend.     Dotto       Trans milling area     Transmission bring fime     3000 (r100ms)     4600 (r100ms)       Transmission bring firme     3000 (r100ms)     4600 (r100ms)       Transmission bring firme     3000 (r100ms)     4600 (r100ms)       Data reception     Receive data count     0F00h     0200h       Data reception     Receive complete code     FFFFh     000Ah       Receive complete code     FFFFh     00Ah     Receive data count       Receive buffer memory head address     1AFFh     0A00h       Receive buffer memory length     0F00h     0200h	Hald upples communication         Simultaneous transmission method         Reserved         Do not resend.           Data scommunication time monitorinal         No-reception monitorina time.         OF ADN.         0000h.           Transmission buffer memory length         OF ODN.         0200h.         0200h.           Data reception         Receive data count         OF FFF.         0100Ah.           Data reception         Receive data count         OF FFF.         000Ah.           Receive data count         OF ODh.         0200h.         020h.           Reception area         Receive data count         OF FFF.         00DAh.           Receive data count         OF ODh.         0200h.         020h.           Reception area         Receive data count         OF ODh.         0200h.	Half upbe: communication       Simultaneous transmission motivity       256 (x00ms)       0 (x00ms)         Data communication fime       No 4 expetion monitoring time       0 FADh       0000h         Transmission buffer memory head address       1 AFFh       0 800h         Transmission buffer memory head address       1 AFFh       0 800h         Transmission buffer memory head address       1 AFFh       0 800h         Transmission buffer memory head address       1 AFFh       0 900h         Data reception       Receive data count       0 FDh       0 FDh         Reception area       Receive onde       FFFh       0 000h         Reception area       Receive onder memory length       0 F00h       0 200h		Communication system	communication	communication					
Control         Reframmission time transmission method         Reserved.         Do not resend.           Data communication time         Noreception monitoring time         OF ADh         0000h           Transmission monitoring time         3000 (x100ms)         1800 (x100ms)           Transmission buffer memory head address         1AFF h         0800h           Data communication time         0F 00h         0200h           Data reception         Received data count         01FFh         01FFh           Received out code         FFFF h         0D 0Ah         Receive complete code           Receive buffer memory length         0F 00h         0200h         Receive buffer memory length	Control         Retransmission fine transmission method         Reend.         De not resend.           Data communication time monitoring         Nor-reception monitoring time         0FADh         000Dh           Trans mission monitoring time         3000 (x100ms)         1800 (x100ms)           Trans mission buffer memory head address         1AFFh         080Dh           Data communication time         Transmission buffer memory length         0FODh         020Dh           Data reception         Receive data count         01FFh         01FFh           Receive complete code         FFFFh         0D0Ah           Receive buffer memory length         0F00h         020Dh	Joint Communication time         Ret anomission time transmission method         Ret end.         Do not reend.           Data communication time         Not-coeption monitoring time         3000 (x400ms)         1800 (x400ms)           Trans mission buffer memory head address         14FPh         0800h         0           Data reception         Received data count         01FFh         0100h         0200h           Data reception area         Receive omplete code         FFFFh         0000h         0           Receive complete code         FFFFh         0000h         0200h         0         0           Receive complete code         FFFFh         0000h         0200h         0 <td< td=""><td>Jointo         Retractings ion mention time         OF Add         Oo not retend.           In information         Trace explore monitoring time         3000 (x100 me)         18000 (x100 me)           Trace mission buffer memory length         0F 00h         0200h         1000 (x100 me)           Data exception         Receive data count         01F Fh         010 (x100 me)           Data exception         Receive onglete code         FFF Fh         000 h           Data receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h</td><td>UNUM       Retraction time tracting in method       Retraction       Do not retred.         Data communication time.       Tract mission time memory head address       3000 (x100ms)       1000 (x100ms)         Tract mission buffer memory head address       1AFFh       000h       200h         Data reception       Receive data count       01FFh       01FFh       00h         Data reception       Receive data count       01FFh       000h       200h         Receive data count       01FFh       000h       200h       200h         Receive data count       01FFh       000h       200h       200h         Receive data count       01FFh       000h       200h       200h         Receive buffer memory head address       1AFFh       0A00h       200h</td><td>Half duplex communication</td><td>Simultaneous transmission priority/non-priority</td><td>255 (×100ms)</td><td>0 (×100 ms)</td><td></td></td<>	Jointo         Retractings ion mention time         OF Add         Oo not retend.           In information         Trace explore monitoring time         3000 (x100 me)         18000 (x100 me)           Trace mission buffer memory length         0F 00h         0200h         1000 (x100 me)           Data exception         Receive data count         01F Fh         010 (x100 me)           Data exception         Receive onglete code         FFF Fh         000 h           Data receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h           Receive onglete code         FFFF h         000 h         100 h	UNUM       Retraction time tracting in method       Retraction       Do not retred.         Data communication time.       Tract mission time memory head address       3000 (x100ms)       1000 (x100ms)         Tract mission buffer memory head address       1AFFh       000h       200h         Data reception       Receive data count       01FFh       01FFh       00h         Data reception       Receive data count       01FFh       000h       200h         Receive data count       01FFh       000h       200h       200h         Receive data count       01FFh       000h       200h       200h         Receive data count       01FFh       000h       200h       200h         Receive buffer memory head address       1AFFh       0A00h       200h	Half duplex communication	Simultaneous transmission priority/non-priority	255 (×100ms)	0 (×100 ms)					
D ata communication time monitoring     Transmission buffer memory length     0000 (c100ms)     0000 (c100ms)       Transmission buffer memory length     0700h     0200h       D ata reception     Received data count Receive complete code     01FFh     01FFh       Receive buffer memory length     0F00h     0200h       Receive buffer memory head address     1AFFh     0A00h       Receive buffer memory length     0F00h     0200h	Data communication time         OF Add (V00ms)         00000 (V00ms)           Transmission buffer memory lead address         1AFFh         0800h           Transmission buffer memory length         0F00h         0200h           Data reception         Received data count         01FFh         01FFh           Received data count         01FFh         0D0Ah         0000h           Received data count         01FFh         01AFFh         0A00h           Receive data count         01FFh         01AFFh         0A00h           Receive data count         01FFh         01AFFh         0A00h           Receive buffer memory length         0F00h         0200h         0200h	b all communication im       in e1 decipion monitoring time       0000 (<000 ms)	Data       Control       Transmission       Data       Colo       Data         Data       reception       Received data       Colo       Colo       Data         Data       reception       Received data       Colo       Financial       Colo         Data       reception       Received data       Colo       Financial       Colo         Data       reception       Received data       Colo       Financial       Colo       Colo         Data       reception       Received data       Colo       Financial       Colo       Colo <td< td=""><td>Data reception     Receive buffer memory head address     1.4FFh     0.000h       Data reception     Receive complete code     FFFFh     0.000h       Data reception area     Receive buffer memory head address     1.4FFh     0.000h       Receive complete code     FFFFh     0.000h     0.000h       Receive complete code     FFFFh     0.000h     0.000h       Receive buffer memory head address     1.4FFh     0.000h     0.000h       Receive complete code     FFFFh     0.000h     0.000h       Receive buffer memory head address     1.4FFh     0.000h     0.000h       Receive buffer memory head address     1.4FFh     0.000h     0.000h</td><td></td><td>Retransmission time transmission method</td><td>Resend.</td><td>Do not resend.</td><td></td></td<>	Data reception     Receive buffer memory head address     1.4FFh     0.000h       Data reception     Receive complete code     FFFFh     0.000h       Data reception area     Receive buffer memory head address     1.4FFh     0.000h       Receive complete code     FFFFh     0.000h     0.000h       Receive complete code     FFFFh     0.000h     0.000h       Receive buffer memory head address     1.4FFh     0.000h     0.000h       Receive complete code     FFFFh     0.000h     0.000h       Receive buffer memory head address     1.4FFh     0.000h     0.000h       Receive buffer memory head address     1.4FFh     0.000h     0.000h		Retransmission time transmission method	Resend.	Do not resend.					
Transmitting area       Transmission buffer memory length       0F00h       0220h         D ata reception       Received data count       01FFh       01FFh         Receive complete code       FFFFh       0D0Ah         Receive buffer memory length       0F00h       0220h         Receive complete code       FFFFh       0D0Ah         Receive buffer memory length       0F00h       0200h         Receive buffer memory length       0F00h       0200h	Transmitting area       Transmission buffer memory length       0F00h       0200h         D ata reception       Received data count       01FFh       01FFh         Receive complete code       FFFh       0D0Ah         Receive buffer memory length       0F00h       0200h         Receive buffer memory head address       1AFFh       0A00h         Receive buffer memory length       0F00h       0200h	Transmitting area       Transmission buffer memory length       0FO0h       0200h         Data reception       Received out sount       01FFh       01FFh         Receive complete code       FFFFh       0D0Ah         Receive buffer memory length       0FO0h       0200h	Tansmitting area       Tansmission buffer memory head address       1AFFh       0600h         Data reception       Received data count       01FFh       01FFh         Reception area       Receive buffer memory head address       1AFFh       0000h         Reception area       Receive buffer memory head address       1AFFh       0000h         Reception area       Receive buffer memory head address       1AFFh       0A00h         Reception area       Receive buffer memory head address       0F00h       0200h	Transmission buffer memory length       OP Ooh       0200h         Data reception       Received data count       01FFh       01FFh         Reception area       Receive duffer memory length       0F OOh       0200h         Reception area       Receive duffer memory length       0F OOh       0200h         Reception area       Receive buffer memory length       0F OOh       0200h         Reception area       Receive buffer memory length       0F OOh       0200h	monitoring	No-reception monitoring time Transmission monitoring time	3000 (x100 ms)	1800 (x100 ms)					
Transmission buffer memory length     OPOh     0200h       D ata reception     Received data count     01FFh     01FFh       Receive buffer memory length     0FFFh     0DOAh       Receive buffer memory length     0F00h     0200h	Transmission buffer memory length     OP 00h     0200h       D ata reception     Received data count     01FFh     01ODah       Receive buffer memory length     0F00h     0200h       Receive buffer memory length     0F00h     0200h	Data reception         Received data count         OFON         O200h           Receive data count         01FFh         01FFh         01FFh           Receive buffer memory head address         14FFh         0A00h           Receive buffer memory length         0F00h         0200h	Data reception       Received data count       01FFh       01FFh         Receive complete code       FFFFh       0.00Ah         Receive buffer memory haid address       1.4FFh       0.400h         Receive buffer memory length       0F00h       0200h	Transmision buffer memory length       0F OOh       0200h         Data reception       Receive complete code       FFFFh       0D0Ah         Receive buffer memory length       0F OOh       0200h         Receive buffer memory length       0F OOh       0200h	Transmitting area	Transmission buffer memory head address	1AFFh	0800h					
Data reception         Received data count         01FFh         01FFh           Receive complete code         FFFh         0D0Ah           Receive buffer memory head address         1AFFh         0A00h           Receive buffer memory length         0F00h         0200h	Data reception     Received data count     01FFh     01FFh       Receive complete code     FFFFh     0D0Ah       Receive buffer memory head address     1AFFh     0A00h       Receive buffer memory length     0F00h     0200h	Data reception       Receive data count       01FFh       01FFh         Receive buffer memory head address       1AFFh       0.000h         Reception area       Receive buffer memory length       0F00h       0200h	Data reception       Receive data count       01FFh       01Fh         Receive buffer memory head address       14FFh       0A00h         Receive buffer memory length       0F00h       0200h	Data reception       Received complete code       FFFFh       0D0Ah         Receive buffer memory length       0F00h       0200h		Transmission buffer memory length	OFOOh	0200h					
Receiption area         Receive buffer memory head address         1AFFh         0A00h           Receive buffer memory length         0F00h         0200h	Receiption area         Receive buffer memory head address         1AFFh         0A00h           Receive buffer memory length         0F00h         0200h	Reception area         Receive buffer memory length         OF00h         O200h           Receive buffer memory length         OF00h         0200h	Reception area         Receive buffer memory head address         IPPPP         UDUAN           Reception area         Receive buffer memory length         0F00h         0200h	Reception area         If referse conjuster coole         If referse         Udunt           Reception area         Receive buffer memory length         0F00h         0200h	D ata reception	Received data count	01FFh	01FFh					
Receive buffer memory length 0F00h 0200h	Receive buffer memory length 0F00h 0200h	Receive buffer memory length 0F00h 0200h	Receive buffer memory length         DF 00h         D200h	Internet         Internet         Internet           Receive buffer memory length         0F00h         0200h	Reception area	Receive complete code	14556	04005					
					neception area	Receive buffer memory length	OFOOh	0200h					

## (2) Trace data (horizontal)

	(Trace data file name is printed)	
[TraceFile15.FBT		2002-12-19 13:14

#### 🛞 : Overrun error 🎆 : Parity error 📕 : Framing error

Send pack et(HEX)	01	30	31			31	30	31	30	31		30	30				30	31	30	30		31	1F	45	37
(ASCII)	o H	0	1			1	0	1	0	1		0	0				0	1	0	0		1	U S	E	7
Receive pack et(HEX)				30	32									61	66										
(ASCI)				0	2									а	f										
												_	_			_	_								
RSsignal	 																								
ER signal	 																								
DR signal	 															-1	-1								
CSsignal	 													-1			-1								
CD signal	 										-1	-1									-1	-1			
Reception error											111														



### 11 SEQUENCE INFORMATION AND LABEL VARIABLES OF SYSTEM PROJECT

This chapter explains the sequence information compatible with the third party commands supported by the system project and the I/O variables after FB conversion of sequence information.

### 11.1 System Project Classified by Supported Device Controllers

The system project defines the supported device controller-compatible communication frames (packet construction information, packet data information) and their transmission procedures (sequence information). In the sequence information, the data compatible with the commands of the supported models have been set. Also, the label variables necessary for achieving various commands in FBs have been set. When a communication control program is created on the GX Developer side, the values that match the application and purpose must be set to the label variables. The next section gives the supported model list, the tables that indicate correspondences between the supported model commands and sequence information, and the label variable lists.

The following denotes how to use the lists in the next section.

	Function name 1:1 correspondence
1) Variable area read	
Command	Sequence Information
Setting area 0 (read only)	Variable area read 1 [Setting area 0 (read only)]
Setting area 0 (accessible)	Variable area read 2 [Setting area 0 (accessible)]
Setting area 1 (accessible)	Variable area read 3 [Setting area 1 (accessible)]

List of the I/O variables used with the function.

All sequence information in the function uses the same I/O variables.

\				
$\backslash$	Variable Area Read Command		Variable Area Read Response	
$\backslash$	Input variables	Datatype (Data length)	Output bariables	Datatype (Data length)
/	ModuleNo. IN_ST_NO	Character string (2)	Module No. OUT_ST_NO	Character string (2)
			End code OUT_EXE_RESULT	Character string (2)
	Read address IN_READ_ADR	Character string (2)	Response code OUT_RES_CODE	Character string (4)
	Number of elements IN_ELEM_NUM	Character string (2) (MAX Value: 6)	Data read OUT_READ_DATA 1 element: 8 bytes	Character string (48) Number of elements×8 bytes

### 11.2 Supported Device Controller List

The following table lists the supported device controllers.

Maker	Classification	Model name
	Modular temperature controller	In-panel NEO (Model E5ZN)
	Digital controller	Thermack K (Model E5 🗌 K-AA201 🗌 )
OMRON		Thermack K (Model E5 🗌 K-AA202 🗌 )
		Thermack K (Model E5 🗌 K-AA203 🗌 )
YAMATAKE	Modular controller	DMC10

### 11.2.1 OMRON make

#### (1) Model E5ZN series

1) Variable area read

- Command correspondence list

Command	Sequence Information	
Setting area 0 (read only)	Variable area read 1 [Setting area 0 (read only)]	
Setting area 0 (accessible)	Variable area read 2 [Setting area 0 (accessible)]	
Setting area 1 (accessible)	Variable area read 3 [Setting area 1 (accessible)]	

Label variable list

Variable Area Read Command		Variable Area Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No.	Character string (2)	Module No. OUT_ST_NO	Character string (2)
IN_ST_NO		End code OUT_EXE_RESULT	Character string (2)
Read address IN_READ_ADR	Character string (4)	Response code OUT_RES_CODE	Character string (4)
Number of elements IN_ELEM_NUM	Character string (4) (MAX Value: 6)	Data read OUT_READ_DATA 1 element: 8 bytes	Character string (48) Number of elements×8 bytes
#### 2) Variable area write

Command correspondence list

Command	Sequence Information	
Setting area 0 (accessible)	Variable area write 1 [Setting area 0 (accessible)]	
Setting area 1 (accessible)	Variable area write 2 [Setting area 1 (accessible)]	

Label variable list

Variable Area Write Command		Variable Area Write Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No. IN_ST_NO	Character string (2)	Module No. OUT_ST_NO	Character string (2)
Write address IN_RED_ADR	Character string (4)	End code OUT_EXE_RESULT	Character string (2)
Number of elements IN_ELEM_NUM	Character string (4) (MAX Value: 6)	December and a	
Write data IN_WRITE_DATA	Character string (48) Number of	OUT_RES_CODE	Character string (4)
1 element: 8 bytes	elements×8 bytes		

#### 3) Operation commands

Command correspondence list

Command	Sequence Information	
Communication write prohibited	Operation command 1 [Communication write prohibited]	
Communication write allowed	Operation command 2 [Communication write allowed]	
CH1 run	Operation command 3 [CH1 run]	
CH1 stop	Operation command 4 [CH1 stop]	
CH2 run	Operation command 5 [CH2 run]	
CH2 stop	Operation command 6 [CH2 stop]	
CH1 target value 0 selection	Operation command 7 [CH1 target value 0 selection]	
CH1 target value 1 selection	Operation command 8 [CH1 target value 1 selection]	
CH2 target value 0 selection	Operation command 9 [CH2 target value 0 selection]	
CH3 target value 1 selection	Operation command 10 [CH3 target value 1 selection]	
CH1 AT stop	Operation command 11 [CH1 AT stop]	
CH1 AT execution	Operation command 12 [CH1 AT execution]	
CH2 AT stop	Operation command 13 [CH2 AT stop]	
CH2 AT execution	Operation command 14 [CH2 AT execution]	

Command	Sequence Information	
Write mode backup	Operation command 15 [Write mode backup]	
Write mode RAM	Operation command 16 [Write mode RAM]	
RAM data storage	Operation command 17 [RAM data storage]	
Soft reset	Operation command 18 [Soft reset]	
Setting area 1 shift	Operation command 19 [Setting area 1 shift]	
Protection level shift	Operation command 20 [Protection level shift]	
CH1 auto	Operation command 21 [CH1 auto]	
CH1 manual	Operation command 22 [CH1 manual]	
CH2 auto	Operation command 23 [CH2 auto]	
CH2 manual	Operation command 24 [CH2 manual]	
PV hold value	Operation command 25 [PV hold value]	
Set value initialization	Operation command 26 [Set value initialization]	

Label variable list

Operation Command		Operation Command Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
		Module No. OUT_ST_NO	Character string (2)
Module No. IN_ST_NO Character string (2)	End code OUT_EXE_RESULT	Character string (2)	
		Response code OUT_RES_CODE	Character string (4)

#### 4) Monitor value read

Command correspondence list

Command	Sequence Information	
CH1 present value	Monitor value read 1 [CH1 present value]	
CH1 status	Monitor value read 2 [CH1 status]	
CH1 inside target value	Monitor value read 3 [CH1 inside target value]	
CH1 heater current value monitor	Monitor value read 4 [CH1 heater current value monitor]	
CH1 manipulated value monitor (Heating)	Monitor value read 5 [CH1 manipulated value monitor (heating)]	
CH1 manipulated value monitor (Cooling)	Monitor value read 6 [CH1 manipulated value monitor (cooling)]	
CH1 PV hold value	Monitor value read 7 [CH1 PV hold value]	
CH2 present value	Monitor value read 8 [CH2 present value]	
CH2 status	Monitor value read 9 [CH2 status]	
CH2 inside target value	Monitor value read 10 [CH2 inside target value]	

#### 11 SEQUENCE INFORMATION AND LABEL VARIABLES OF SYSTEM PROJECT

Command	Sequence Information	
CH2 heater current value monitor	Monitor value read 11 [CH2 heater current value monitor]	
CH2 manipulated value monitor (Heating)	Monitor value read 12 [CH2 manipulated value monitor (heating)]	
CH2 manipulated value monitor (Cooling)	Monitor value read 13 [CH2 manipulated value monitor (cooling)]	
CH2 PV hold value	Monitor value read 14 [CH2 PV hold value]	

#### - Label variable list

Monitor Value Read Command		Monitor Value Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
	Module No. IN_ST_NO Character string (2)	Module No. OUT_ST_NO	Character string (2)
Module No. IN_ST_NO		End code OUT_EXE_RESULT	Character string (2)
		Response code OUT_RES_CODE	Character string (4)
		Monitor Value OUT_MONITOR_DATA	Character string (8)

#### 5) Set data read commands

Command correspondence list

Command	Sequence Information
CH1 setting area 0	Set data read 1 [CH1 setting area 0]
CH1 setting area 1	Set data read 1 [CH1 setting area 1]
CH2 setting area 0	Set data read 1 [CH2 setting area 0]
CH2 setting area 1	Set data read 1 [CH2 setting area 1]

- Label variable list

Set Data Read Command		Set Data Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No.	Character string (2)	Module No. OUT_ST_NO	Character string (2)
IN_S1_NO		End code OUT_EXE_RESULT	Character string (2)
Address IN_READ_ADR	Character string (4)	Response code OUT_RES_CODE	Character string (4)
		Set data OUT_SET_DATA	Character string (8)

#### 6) Protection level

Command correspondence list

Command	Sequence Information
CH1 operation/adjustment	Protection level setting 1 [CH1 operation/adjustment]
CH1 initial/communication	Protection level setting 2 [CH1 initial/communication]
CH1 setting change	Protection level setting 3 [CH1 setting change]
CH2 operation/adjustment	Protection level setting 4 [CH2 operation/adjustment]
CH2 initial time/communication	Protection level setting 5 [CH2 initial time/communication]
CH2 setting change	Protection level setting 6 [CH2 setting change]

Label variable list

Protection Level Command		Protection Level Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No.	Character string (2)	Module No. OUT_ST_NO	Character string (2)
Protection level set		End code OUT_EXE_RESULT	Character string (2)
data IN_PROT_LEVEL	Character string (8)	Response code OUT_RES_CODE	Character string (4)

#### 7) Set data write

Command correspondence list

Command	Sequence Information
CH1 setting area 0	Set data write 1 [CH1 setting area 0]
CH1 setting area 1	Set data write 2 [CH1 setting area 1]
CH2 setting area 0	Set data write 3 [CH2 setting area 0]
CH2 setting area 1	Set data write 4 [CH2 setting area 1]

- Label variable list

Set Data Write Command		Set Data Write Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No. IN_ST_NO	Character string (2)	Module No. OUT_ST_NO	Character string (2)
Address IN_READ_ADR	Character string (4)	End code OUT_EXE_RESULT	Character string (2)
IN_ELEM_NUM	(MAX Value :6)		
Set data IN_WRITE_DATA	Character string (48) Number of	Response code OUT_RES_CODE	Character string (4)
1 element: 8 bytes	elements×8 bytes		

#### 8) Others

Command correspondence list

Command	Sequence Information
Body attribute read	Body attribute read [Format and communication buffer size]
Controller status read	Controller status [Operating condition read]
Echo back test	Echo back test

|--|

Body Attribute Read Command		Body Attribute Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
		Module No. OUT_ST_NO	Character string (2)
Module No. IN_ST_NO Character stri		End code OUT_EXE_RESULT	Character string (2)
	Character string (2)	Response code OUT_RES_CODE	Character string (4)
		Format OUT_ATTRIBUTE	Character string (2)
		Buffer size OUT_BUFF_SIZE	Character string (2)

#### - Label variable list

Controller Status Read Command		Controller Status Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
		Module No. OUT_ST_NO	Character string (2)
		End code OUT_EXE_RESULT	Character string (2)
Module No. IN_ST_NO	Response code OUT_RES_CODE	Character string (4)	
		Operating condition (status) OUT_OPE_STATUS	Character string (2)
		Related information OUT_INFORMATION	Character string (2)

- Label variable list

Echo Back Test Command		Echo Back Test Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No.		Module No. OUT_ST_NO	Character string (2)
IN_ST_NO		End code OUT_EXE_RESULT	Character string (2)
Test data	Character string (23)	Response code OUT_RES_CODE	Character string (4)
IN-TEST_DATA (0 to 23 bytes)	Test data OUT_TEST_DATA	Character string (23) (0 to 23 bytes)	

### (2) Model E5 $\Box$ K series

1) Parameter read

Command correspondence list

Command	Sequence Information	
Present value monitor	Parameter read 1 [Present value monitor]	
Lamp target value monitor	Parameter read 2 [Lamp target value monitor]	
Manipulated value (heating) monitor	Parameter read 3 [Manipulated value (heating) monitor]	
Manipulated value (cooling) monitor	Parameter read 4 [Manipulated value (cooling) monitor]	
Remote SP monitor	Parameter read 5 [Remote SP monitor]	
Valve opening monitor	Parameter read 6 [Valve opening monitor]	
Target value	Parameter read 7 [Target value]	
Target value 0	Parameter read 8 [Target value 0]	
Target value 1	Parameter read 9 [Target value 1]	
Target value 2	Parameter read 10 [Target value 2]	
Target value 3	Parameter read 11 [Target value 3]	
Alarm value 1	Parameter read 12 [Alarm value 1]	
Alarm value 2	Parameter read 13 [Alarm value 2]	
Alarm value 3	Parameter read 14 [Alarm value 3]	
Proportional band	Parameter read 15 [Proportional band]	
Integral time	Parameter read 16 [Integral time]	
Derivative time	Parameter read 17 [Derivative time]	
Cooling coefficient	Parameter read 18 [Cooling coefficient]	
Dead band	Parameter read 19 [Dead band]	
Position-proportional dead band	Parameter read 20 [Position-proportional dead band]	
Manual reset value	Parameter read 21 [Manual reset value]	
Adjustment sensitivity (heating)	Parameter read 22 [Adjustment sensitivity (heating)]	
Adjustment sensitivity (cooling)	Parameter read 23 [Adjustment sensitivity (cooling)]	
Control period (heating)	Parameter read 24 [Control period (heating)]	
Control period (cooling)	Parameter read 25 [Control period (cooling)]	
Heater current value monitor	Parameter read 26 [Heater current value monitor]	
Heater off detection	Parameter read 27 [Heater off detection]	
SP lamp time unit	Parameter read 28 [SP lamp time unit]	
SP lamp set value	Parameter read 29 [SP lamp set value]	
LBA detection time	Parameter read 30 [LBA detection time]	
Stop-time manipulated value	Parameter read 31 [Stop-time manipulated value]	
Error-time manipulated value	Parameter read 32 [Error-time manipulated value]	
Manipulated value upper limit value	Parameter read 33 [Manipulated value upper limit value]	
Manipulated value lower limit value	Parameter read 34 [Manipulated value lower limit value]	
Operation change ratio limit value	Parameter read 35 [Operation change ratio limit value]	

#### 11 SEQUENCE INFORMATION AND LABEL VARIABLES OF SYSTEM PROJECT

Command	Sequence Information
Input digital filter	Parameter read 36 [Input digital filter]
Switching hysteresis	Parameter read 37 [Switching hysteresis]
Alarm 1 hysteresis	Parameter read 38 [Alarm 1 hysteresis]
Alarm 2 hysteresis	Parameter read 39 [Alarm 2 hysteresis]
Alarm 3 hysteresis	Parameter read 40 [Alarm 3 hysteresis]
Upper limit temperature input	Parameter read 41 [Upper limit temperature input
compensation value	compensation value]
Lower limit temperature input	Parameter read 42 [Lower limit temperature input
compensation value	compensation value]
Input classification	Parameter read 43 [Input classification]
Scaling upper limit value	Parameter read 44 [Scaling upper limit value]
Scaling lower limit value	Parameter read 45 [Scaling lower limit value]
Decimal point position	Parameter read 46 [Decimal point position]
Temperature unit	Parameter read 47 [Temperature unit]
Control output 1 assignment	Parameter read 48 [Control output 1 assignment]
Control output 2 assignment	Parameter read 49 [Control output 2 assignment]
Auxiliary output 1 assignment	Parameter read 50 [Auxiliary output 1 assignment]
Auxiliary output 2 assignment	Parameter read 51 [Auxiliary output 2 assignment]
Alarm 1 classification	Parameter read 52 [Alarm 1 classification]
Alarm 1 non-excitation	Parameter read 53 [Alarm 1 non-excitation]
Alarm 2 classification	Parameter read 54 [Alarm 2 classification]
Alarm 2 non-excitation	Parameter read 55 [Alarm 2 non-excitation]
Alarm 3 classification	Parameter read 56 [Alarm 3 classification]
Alarm 3 non-excitation	Parameter read 57 [Alarm 3 non-excitation]
Forward/reverse action	Parameter read 58 [Forward/reverse action]
Target upper limit value	Parameter read 59 [Target upper limit value]
Target lower limit value	Parameter read 60 [Target lower limit value]
PID ON/OFF	Parameter read 61 [PID ON/OFF]
ST	Parameter read 62 [ST]
ST settling band width	Parameter read 63 [ST settling band width]
α	Parameter read 64 [ $\alpha$ ]
At calculation gain	Parameter read 65 [At calculation gain]
Standby sequence restart	Parameter read 66 [Standby sequence restart]
Display automatic return time	Parameter read 67 [Display automatic return time]
AT hysteresis	Parameter read 68 [AT hysteresis]
LBA detection width	Parameter read 69 [LBA detection width]
Heater off latch	Parameter read 70 [Heater off latch]
Travel time	Parameter read 71 [Travel time]
PV dead band	Parameter read 72 [PV dead band]
Remote SP valid	Parameter read 73 [Remote SP valid]
Remote SP upper limit value	Parameter read 74 [Remote SP upper limit value]
Remote SP lower limit value	Parameter read 75 [Remote SP lower limit value]
SP tracking	Parameter read 76 [SP tracking]

Label	variable	list
-0.001	1 an la bio	

Parameter Read Command		Parameter Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No. IN_ST_NO Character string (2)	Module No. OUT_ST_NO	Character string (2)	
	Character string (2)	Parameter No. OUT_PARAM	Character string (2)
		End code OUT_EXE_RESULT	Character string (2)
		Read data OUT_READ	Character string (4)

2) Parameter write

Command correspondence list

Command	Sequence Information
Target value	Parameter write 1 [Target value]
Target value 0	Parameter write 2 [Target value 0]
Target value 1	Parameter write 3 [Target value 1]
Target value 2	Parameter write 4 [Target value 2]
Target value 3	Parameter write 5 [Target value 3]
Alarm value 1	Parameter write 6 [Alarm value 1]
Alarm value 2	Parameter write 7 [Alarm value 2]
Alarm value 3	Parameter write 8 [Alarm value 3]
Proportional band	Parameter write 9 [Proportional band]
Integral time	Parameter write 10 [Integral time]
Derivative time	Parameter write 11 [Derivative time]
Cooling coefficient	Parameter write 12 [Cooling coefficient]
Dead band	Parameter write 13 [Dead band]
Desition and entire all dead band	Parameter write 14 [Position-proportional dead
	band]
Manual reset value	Parameter write 15 [Manual reset value]
A divistment consitivity (besting)	Parameter write 16 [Adjustment sensitivity
	(heating)]
Adjustment sensitivity (cooling)	Parameter write 17 [Adjustment sensitivity (cooling)]
Control period (heating)	Parameter write 18 [Control period (heating)]
Control period (cooling)	Parameter write 19 [Control period (cooling)]
Heater off detection	Parameter write 20 [Heater off detection]
SP lamp time unit	Parameter write 21 [SP lamp time unit]
SP lamp set value	Parameter write 22 [SP lamp set value]
LBA detection time	Parameter write 23 [LBA detection time]
Stop-time manipulated value	Parameter write 24 [Stop-time manipulated value]
Error-time manipulated value	Parameter write 25 [Error-time manipulated value]

#### 11 SEQUENCE INFORMATION AND LABEL VARIABLES OF SYSTEM PROJECT

Command	Sequence Information
	Parameter write 26 [Manipulated value upper limit
Manipulated value upper limit value	value]
	Parameter write 27 [Manipulated value lower limit
Manipulated value lower limit value	value]
	Parameter write 28 [Operation change ratio limit
Operation change ratio limit value	value]
Input digital filter	Parameter write 29 [Input digital filter]
Switching hysteresis	Parameter write 30 [Switching hysteresis]
Alarm 1 hysteresis	Parameter write 31 [Alarm 1 hysteresis]
Alarm 2 hysteresis	Parameter write 32 [Alarm 2 hysteresis]
Alarm 3 hysteresis	Parameter write 33 [Alarm 3 hysteresis]
Upper limit temperature input	Parameter write 34 [Upper limit temperature input
compensation value	compensation value]
Lower limit temperature input	Parameter write 35 [Lower limit temperature input
compensation value	compensation value]
Input classification	Parameter write 36 [Input classification]
Scaling upper limit value	Parameter write 37 [Scaling upper limit value]
Scaling lower limit value	Parameter write 38 [Scaling lower limit value]
Decimal point position	Parameter write 39 [Decimal point position]
Temperature unit	Parameter write 40 [Temperature unit]
Control output 1 assignment	Parameter write 41 [Control output 1 assignment]
Control output 2 assignment	Parameter write 42 [Control output 2 assignment]
Auxiliary output 1 assignment	Parameter write 43 [Auxiliary output 1 assignment]
Auxiliary output 2 assignment	Parameter write 44 [Auxiliary output 2 assignment]
Alarm 1 classification	Parameter write 45 [Alarm 1 classification]
Alarm 1 non-excitation	Parameter write 46 [Alarm 1 non-excitation]
Alarm 2 classification	Parameter write 47 [Alarm 2 classification]
Alarm 2 non-excitation	Parameter write 48 [Alarm 2 non-excitation]
Alarm 3 classification	Parameter write 49 [Alarm 3 classification]
Alarm 3 non-excitation	Parameter write 50 [Alarm 3 non-excitation]
Forward/reverse action	Parameter write 51 [Forward/reverse action]
Target upper limit value	Parameter write 52 [Target upper limit value]
Target lower limit value	Parameter write 53 [Target lower limit value]
PID ON/OFF	Parameter write 54 [PID ON/OFF]
ST	Parameter write 55 [ST]
ST settling band width	Parameter write 56 [ST settling band width]
α	Parameter write 57 [ $\alpha$ ]
At calculation gain	Parameter write 58 [At calculation gain]
Standby sequence restart	Parameter write 59 [Standby sequence restart]
Display automatic return time	Parameter write 60 [Display automatic return time]
AT hysteresis	Parameter write 61 [AT hysteresis]
LBA detection width	Parameter write 62 [LBA detection width]
Heater off latch	Parameter write 63 [Heater off latch]
Travel time	Parameter write 64 [Travel time]

#### 11 SEQUENCE INFORMATION AND LABEL VARIABLES OF SYSTEM PROJECT

Command	Sequence Information
PV dead band	Parameter write 65 [PV dead band]
Remote SP valid	Parameter write 66 [Remote SP valid]
Remote SP upper limit value	Parameter write 67 [Remote SP upper limit value]
Remote SP lower limit value Parameter write 68 [Remote SP lower limit v	
SP tracking	Parameter write 69 [SP tracking]

#### Label variable list

Parameter Write Command		Parameter Write Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No.	Character string (2)	Module No. OUT_ST_NO	Character string (2)
		Parameter No. OUT PARAM	Character string (2)
Write data IN_WRITE_DATA	Character string (4)	End code OUT_EXE_RESULT	Character string (2)
		Write data OUT_WRITE_DATA	Character string (4)

#### 3) Special commands

Command correspondence list

Command	Sequence Information
Run/stop	Special command 1 [Run/stop]
Remote/local	Special command 2 [Remote/local]
RAM write mode	Special command 3 [RAM write mode]
RAM data storage	Special command 4 [RAM data storage]
T execution/stop Special command 5 [AT execution/stop]	
SP mode	Special command 6 [SP mode]
Setting level 1 shift	Special command 7 [Setting level 1 shift]
Soft reset	Special command 8 [Soft reset]
Status	Special command 9 [Status]

- Label variable list

Special Command		Special Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Module No.	Character string	Module No. OUT_ST_NO	Character string (2)
IN_ST_NO (2)	(2)	Parameter No.	Character string
Command code IN_COMMAND_CODE	Character string (4)	End code OUT_EXE_RESULT	Character string (2)
		Command code OUT_COMMAND_CODE	Character string (4)

#### 11.2.2 YAMATAKE make

#### (1) DMC10 series

Command correspondence list

Command	Sequence Information
Fixed-length continuous data read command (RD command)	Fixed-length continuous data read [RD command]
Fixed-length continuous data write command (WD command)	Fixed-length continuous data write [WD command]
Fixed-length random data read command (RU command)	Fixed-length random data read [RU command]
Fixed-length random data write command (WU command)	Fixed-length random data write [WU command]

#### · Label variable list

Fixed-length Continuous Data Read Command		Data Read Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Device address IN_ST_NO	Character string (2)	Device address OUT_ST_NO	Character string (2)
Head data Word address IN_READ_ADR	Character string (4)	End code OUT_RESULT_CODE	Character string (2)
Number of data IN_DATA_LEN	Character string (4) (MAX: 12 data)	Read data OUT_READ_DATA 1 data: 4 bytes	Character string (48) Number of data×4 bytes

#### · Label variable list

Fixed-length Continuous Data Write Command		Data Write Response	
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Device address IN_ST_ADR	Character string (2)	Device address OUT_ST_NO	Character string (2)
Head data Word address IN_WRITE_ADR	Character string (4)	End code	
Write data IN_WRITE_DATA	Character string (48) (MAX: 12 data) 1 data: 4 bytes	OUT_RESULT_CODE	Character string (2)

<sup>·</sup> Label variable list

Fixed-length Rando	m Read Command	Data Read	Response
Input variables	Data type (Data length)	Output variables	Data type (Data length)
Device address	Character string (2)	Device address OUT_ST_NO	Character string (2)
IN_ST_NO	Character string (48)	End code OUT_RESULT_CODE	Character string (2)
Data address IN_READ_ADR	(MAX: 12 data) Number of data≻4 bytes	Read data OUT_READ_DATA	Character string (48) Number of data≻4 bytes

· Label variable list

Fixed-length Random	Data Write Command	Data Write F	Response
Input variables	Data type	Output variables	Data type
Device address IN_ST_NO	Character string (2)	Device address OUT_ST_NO	Character string (2)
Write data IN_WRITE_DATA	Character string (48) MAX: 12 data Number of data×4 bytes	End code OUT_RESULT_CODE	Character string (2)

### APPENDICES

Appendix 1 Help Function

The help function displays the product information.



Click the [Help]  $\rightarrow$  [Product information] menu.

Product information	×
Protocol FB support function 2.00A	
COPYRIGHT(C) 2003 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED	
This product is licensed to:	
Name: MITSUBISHI	
Company name: MITSUBISHI ELECTRIC CORPORATION	
<warning></warning>	
This product is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program or any portion of it may result in severe civil and criminal penalties,and will be prosecuted to the maximum extension possible under the law.	
OK	

Name	Description
Version	Displays the version of the protocol FB support function. <sup>*1</sup>
Name Displays the name set at the time of installation.	
Company name	Displays the company name set at the time of installation.

\*1: Since the version is the product information of the protocol FB support function, it does not match the version of GX Configurator-SC.

#### Appendix 2 Project Name Specifications

The following table indicates the restrictions on the set names (such as the project name).

Item	Display/setting
Project name	Maximum number of characters: 32 characters (If the project name is created within 32 characters, setting is disabled when the total number of characters including those of the project path exceeds 150 characters.) The space after the project name is deleted automatically. A "." (period) cannot be used at the end of the project name. Special characters <sup>*1</sup> and words <sup>*2</sup> cannot be used.
Project comment	Maximum number of characters: 32 characters
Project path	Maximum number of characters: Within 150 characters including those of the project name Path: The project name already existing in the path cannot be specified. The space after the project name is deleted automatically. Special characters <sup>*1</sup> and words <sup>*2</sup> cannot be used.
Packet information name	Maximum number of characters: 32 characters The same name cannot be set within the same project. (Case independent.) The spaces before and after the name are deleted automatically.
Sequence information	Maximum number of characters: 32 characters The same name cannot be set within the same project. (Case independent.) The spaces before and after the information are deleted automatically.

\*1: Special characters The following characters cannot be used. / : ; \* ? " < > | ,

\*2: Special words The following words cannot be used. COM1 to COM9 LPT1 to LPT9 AUX PRN CON NUL CLOCK\$

#### Appendix 3 Character Strings That Cannot Be Used as Input Variables and Output Variables

When the protocol FB support function is used, the following character strings cannot be used as input and output variables.

The following character strings are used by the protocol FB function in the system. The following character strings are set as labels when FBs are created with the protocol FB function and read to GX Developer.

[Unusable character strings]

I\_REQ\_RECV, I\_REQ\_SEND, I\_START, O\_END, O\_ERR\_CD, O\_END\_NG, O\_R\_DATA\_NO, V\_COMP, V\_CTRL\_DATA, V\_LEN\_MAX, V\_P1, V\_P2, V\_R\_RESULT, V\_RUN, V\_S\_RESULT, V\_WK\_B\_DATA, V\_WK\_DATA, V\_WK\_RECV, V\_WK\_LEN, V\_WK\_RECV\_B, V\_WK\_R\_O\_LEN, V\_WK\_SEND, V\_WK\_W\_LEN, V\_WK\_PTR, V\_LEN\_IDATA, V\_PLEN, V\_PLEN\_END, V\_FOR\_COUNT, V\_DUMMY, V\_I\_RESULT

×

OK

Cancel

#### Appendix 4 Packet setting example

This section provides the GX Configurator-SC setting screens that correspond to packet examples when sending/receiving data between Q series C24 module and other node.

#### (1) Send packet setting example



Name

Title

7 bytes

Send packet

Example of setting

Create new Packet information

Create new Packet information screen

Packet construction information screen



#### Packet data screen

- uck	ee aaca(sene	pucket)							4
Name	:	Send pac	ket					Close	_
Title		Example o	of setting						
Packs	at tune	[Send pac	-ketl						
1 0010	× 900	[oond pdd	and 1						
Packe	st data informati	on list							
No.	[NAME]	Header	Number	Data1	Data2	Terminator	<b>A</b>		
1	Send packet	ACK	"1"	IN_DATA_1	IN_DATA_2	00			
2		]		IN_DATA_1	IN_DATA_2				
3				IN_DATA_1	IN_DATA_2				
4				IN_DATA_1	IN_DATA_2				
5				IN_DATA_1	IN_DATA_2				
6				IN_DATA_1	IN_DATA_2				
7				IN DATA 1	IN DATA 2				
8				IN_DATA_1	IN_DATA_2				
9				IN DATA 1	IN DATA 2				
10				IN DATA 1	IN DATA 2				
11				IN DATA 1	IN DATA 2				
12				IN_DATA_1	IN_DATA_2				
13				IN DATA 1	IN DATA 2				
14				IN DATA 1	IN DATA 2				
15				IN DATA 1	IN DATA 2				
		1						1.0	

#### (2) Receive packet setting example



C

Create new Packet information screen

eate new Pack	et information			×
Name	Receive packet			OK
Title	Example of setting			Cancel
Packet type	C Send packet	Receive packet	C Receive (specified length	n) packet

Packet construction information screen

Packe	et construction	n information(Receive pa	icket)		
Name	: R	eceive packet			
ale.		userale of eatting			
ide		kample of setting			
acket	t type [F	leceive packet]			
Packe	et construction in	formation list			
Ne	o. Item	Data classification	Data type	Data length	Add
1	Header	Header	ASCIICode	1	
2	2 Number	Fixed data	ASCII	1	Insert
3	3 Measuremer	nts1 Output(OUT_MEAS_1)	ASCII	2	
4	Measuremer	nts2 Output(OUT_MEAS_2)	ASCII	2	E dit
5	5 Terminato	r Terminater	HEX	1	
					Delete
					One up
					One down
-					
					Close

Packet	data	screen
1 00100	autu	0010011







#### (4) Receive (specified length) packet setting example (Variable data)

#### Appendix 5 Newly added functions

- (1) Newly added functions
  - (a) Added functions in Version 2.04E

With upgrade from Version 2.03D (SW2D5C-QSCU) to Version 2.04E (SW2D5C-QSCU), following functions/setting items are newly added to GX Configurator-SC.

Function/Setting item	Details	Reference section
Create receive (specified length) packet	The receive frame with fixed packet length, header and no end judgment data can be created.	Section 7.2
Module start I/O No. setting	With this new function, module start I/O No. can be set at the time of FB program conversion, whereas module start I/O No. was set using GX Developer after FB program is generated.	Section 7.4

-	_ Point -			
W th	tith GX Configurator-	SC, packet construction structures in the second structure s	ction information ca as shown below.	n be set according to
	Receive method <sup>*1</sup>	Header (Head frame)	Any data section	Terminator (Final frame)
	Mothod 0	0	0	0
		0	-	0
	Mothod 1	0	0	-
		0	-	-
*1	: The following outling Method 0: Method 1 frame or	○: Settin es the receive methor for receiving data of and final frame.	ig available - : S od 0, 1. Variable length usin	Setting not available g either/both of head

Method 1: Method for receiving data of fixed length using head frame. For details, refer to the Q corresponding communication module user's manual (application).

#### (b) Added functions in Version 2.14Q

With upgrade from Version 2.13P (SW2D5C-QSCU) to Version 2.14Q (SW2D5C-QSCU), following functions are newly added to GX Configurator-SC.

Function	Details	Reference section
Output variable is added to send FB	Output variable (O_RUN) for interlock which prevents the send execution before completing the send preparation is added.	Section 8.2.4
Output variable is added to receive FB	Output variable (O_RUN) for interlock which prevents the send execution before completing the receive preparation is added.	Section 8.2.4

(2) Checking the GX Configurator-SC software version
 Check the version within the GX Developer product information.
 ([Help] → [Product information])

	Product information
	Programming and Maintenance tool GX Developer Version 8.12N (SW8D5C-GPPW-E)
	COPYRIGHT(C) 2002 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED
	This Product is licensed to:
	Name: MITSUBISHI
	Company: MITSUBISHI ELECTRIC CORPORATION
The GX Configurator-SC version	ProductID
is displayed in this section.	List of version information on Add-in software
	(IGX Configurator-SC Version2.04E(SW2D5C-QSCU-E)) COPYRIGHTIC:/2003 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED
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# MEMO


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# GX Configurator-SC Version 2

Operating Manual (Protocol FB support function)

MODEL GXCON-SC-O-FB-E

13JU46

MODEL CODE

SH(NA)-080393E-I(0805)MEE

## MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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