

MELSEC Q Series

Programmable Controller

User's Manual

Q66DA-G, GX Configurator-DA (SW2D5C-QDAU-E)





(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 user's manual for the CPU module to use. In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".



Note that the $\underline{/!}$ 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 store this manual in a safe place and make it accessible when required. Always forward it to the end user.

[DESIGN PRECAUTION]

Do not write data into the "system area" of the buffer memory of intelligent function modules.
Also, do not use any "prohibited to use" signals as an output signal to an intelligent function
module from the programmable controller CPU.
Writing data into the "system area" or outputting a signal for "prohibited to use" may cause a
malfunction of the programmable controller system.

Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.

They should be installed 100mm(3.9inch) or more from each other.

Not doing so could result in noise that may cause malfunction.

At power ON/OFF, voltage or current may instantaneously be output from the output terminal of this module. In such case, wait until the analog output becomes stable to start controlling the external device.

[INSTALLATION PRECAUTIONS]



[WIRING PRECAUTIONS]

Always ground the FG terminal for the programmable controller.				
There is a risk of electric shock or malfunction.				
Tighten the terminal screws within the range of specified torque.				
If the terminal screws are loose, it may result in short circuits or malfunction.				
If the terminal screws are tightened too much, it may cause damage to the screw and/or the module, resulting in short circuits or malfunction.				
Be careful not to let foreign matter such as sawdust or wire chips get inside the module. They may cause fires, failure or malfunction				

[WIRING PRECAUTIONS]

The top surface of the module is covered with protective film to prevent foreign objects such as cable offcuts from entering the module when wiring.

Do not remove this film until the wiring is complete.

Before operating the system, be sure to remove the film to provide adequate ventilation.

[STARTING AND MAINTENANCE PRECAUTIONS]

Do not disassemble or modify the modules. Doing so could cause failure, malfunction injury or fire. • Be sure to shut off all phases of the external power supply used by the system before mounting or removing the module. Not doing so may cause failure or malfunction of the module. In the system where a CPU module supporting the online module change is used and on the MELSECNET/H remote I/O stations, modules can be replaced online (during energizing). However, there are some restrictions on replaceable modules and the replacement procedures are predetermined for each module. For details, refer to the chapter of the online module change in this manual. • Do not install/remove the module to/from the base unit more than 50 times after the first use of the product. (IEC 61131-2 compliant) Failure to do so may cause malfunctions. Do not touch the connector while the power is on. Doing so may cause malfunction. • Switch off all phases of the externally supplied power used in the system when cleaning the module or retightening the terminal or module fixing screws. Not doing so may cause failure or malfunction of the module. If the screws are loose, it may cause the module to fallout, short circuits, or malfunction. If the screws are tightened too much, it may cause damages to the screws and/or the module, resulting in the module falling out, short circuits or malfunction. Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the module.

Failure to do so may cause a failure or malfunctions of the module.

[DISPOSAL PRECAUTIONS]

• When disposing of this product, treat it as industrial waste.

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

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INTRODUCTION

Thank you for purchasing the MELSEC-Q series programmable controller.

Before using the equipment, please read this manual carefully to develop full familiarity with the functions and performance of the Q series programmable controller you have purchased, so as to ensure correct use.

Please forward a copy of this manual to the end user.

CONTENTS

- 1
- 5
- 6
- 6
10
10
10
11
12
•

1 OVERVIEW		1 - 1 to 1 - 2)
1.1	Features		1

2 :	SYST	EM CONFIGURATION	2 - 1 to 2 - 6
	2.1	Applicable Systems	2 - 1
	2.2	Precautions on System Configuration	2 - 4
	2.3	How to Check the Function Version and Software Version	2 - 5

3 SPECIFICATIONS

3 - 1 to 3 - 38

3.1 Per	formance Specifications	3 - 1
3.1.1	Performance specifications list	
3.1.2	I/O conversion characteristics	
3.1.3	Accuracy	
3.1.4	Conversion speed	
3.2 Fur	ction List	3 - 10
3.2.1	Analog output HOLD/CLEAR function	
3.2.2	Analog output test during programmable controller CPU STOP	
3.2.3	Warning output function	
3.2.4	Rate control function	
3.2.5	Scaling function	
3.3 I/O	Signals for the Programmable Controller CPU	3 - 21
3.3.1	List of I/O signals	
3.3.2	Details of I/O signals	
3.4 Buf	fer Memory	3 - 27

3.4.1	Buffer memory assignment	
3.4.2	D/A conversion enable/disable setting (Un\G0)	
3.4.3	CH digital values (Un\G1 to Un\G6)	
3.4.4	CH[]set value check codes (Un\G11 to Un\G16)	
3.4.5	Error codes (Un\G19)	
3.4.6	Setting range (Un\G20, Un\G21)	
3.4.7	Offset/gain setting mode and offset/gain specification (Un\G22, Un\G23)	
3.4.8	Offset/gain adjustment value specification (Un\G24)	
3.4.9	Offset/gain range setting (Un\G25)	
3.4.10	Rate control enable/disable setting (Un\G46)	
3.4.11	Warning output setting (Un\G47)	
3.4.12	Warning output flag (Un\G48)	
3.4.13	Scaling enable/disable setting (Un\G53)	
3.4.14	Scaling upper/lower limit value (Un\G54 to Un\G65)	
3.4.15	CH increase/decrease digital limit values (Un\G70 to Un\G81)	
3.4.16	CH warning output upper limit value/lower limit value (Un\G86 to Un\G97)	
3.4.17	Mode switching setting (Un\G158, Un\G159)	
3.4.18	Save data classification setting (Un\G200)	
3.4.19	Factory default setting and user range settings offset/gain values	
	(Un\G202 to Un\G225)	

4 SETUP AND PROCEDURES BEFORE OPERATION

5.4

5.5

5.6

5.6.3

4.1	Handling Precautions4	- 1
4.2	Setup and Procedures before Operation	- 3
4.3	Part Names4	- 4
4.4	Wiring4	- 6
4.4	.1 Wiring precautions	- 6
4.4	.2 External wiring	- 7
4.5	Intelligent Function Module Switch Setting	- 8
4.6	Offset/Gain Settings	- 11

5 UTILITY PACKAGE (GX Configurator-DA) 5 - 1 to 5 - 34 5.1 5.2 5.2.1 5.2.2 5.3 5.3

.3	Utility	Package Operation	
5.3	.1	Common utility package operations	
5.3	.2	Operation overview	5 - 9
5.3	.3	Starting the Intelligent function module utility	5 - 11
.4	Initial	Setting	5 - 15
.5	Auto	Refresh Setting	5 - 17
.6	Monit	oring/Test	
5.6	.1	Monitor/test screen	
5.6	.2	Offset/gain setting operation	5 - 23

- 6

4 - 1 to 4 - 15

5.6	6.4	Pass data	5 - 27
5.7	FB C	Conversion of Initial Setting/Auto Refresh Setting	5 - 29
5.8	Usag	ge of FB	5 - 31
5.8	3.1	Outline	5 - 31
5.8	3.2	Paste an FB to a Sequence Program	5 - 33
5.8	3.3	Convert (Compile) a Sequence Program	5 - 34

6 PROGRAMMING

	6 -	1	to	6	-	18
--	-----	---	----	---	---	----

7 - 1 to 7 - 36

6.1 Pro	gramming Procedure	
6.2 For	Use in Normal System Configuration	
6.2.1	Before creating a program	
6.2.2	Program example using the utility package	
6.2.3	Programming example without using the utility package	
6.3 For	Use on Remote I/O Network	
6.3.1	Program example using the utility package	
6.3.2	Program example without using the utility package	

7 ONLINE MODULE CHANGE

7.1 Onl	ine Module Change Conditions	7 - 2
7.2 Onl	ine Module Change Operations	7 - 3
7.3 Onl	ine Module Change Procedure	7 - 4
7.3.1	When industrial shipment setting is used and initial setting was made with GX Configurator-DA	7 - 4
7.3.2	When industrial shipment setting is used and initial setting was made with sequence program	7 - 9
7.3.3	When user range setting is used and initial setting was made with GX Configurator-DA (other system is available)	7 - 14
7.3.4	When user range setting is used and initial setting was made with GX Configurator-DA (other system is unavailable).	7 - 19
7.3.5	When user range setting is used and initial setting was made with sequence program (other system is available)	7 - 25
7.3.6	When user range setting is used and initial setting was made with sequence program (other system is unavailable)	7 - 30
7.4 Rar	nge Reference Table	7 - 35
7.5 Pre	cautions for Online Module Change	7 - 36

8 TROUBLESHOOTING 8 - 1 to 8 - 7 8.1 Error Code List. 8 - 1 8.2 Troubleshooting. 8 - 3

8.2.1	When the "RUN" LED is flashing or turned off	8 - 3
8.2.2	When the "ERR." LED is on or flashing	8 - 3
8.2.3	When the "ALM" LED is turned on	8 - 3
8.2.4	When an analog output value is not output	8 - 4
8.2.5	When the analog value is not within the reference accuracy of the theoretical value	8 - 5
8.2.6	When analog output value is not "HOLD"	8 - 5

APPENDIX	App- 1 to App - 10
Appendix 1 Dedicated Instruction List and Available Devices	Арр- 1
Appendix 1.1 G(P).OFFGAN	App- 2
Appendix 1.2 G(P).OGLOAD	App- 4
Appendix 1.3 G(P).OGSTOR	Арр- 7
Appendix 2 External Dimension Diagram	App- 10
INDEX	Index - 1 Index - 2

ABOUT MANUALS

The following manuals are also related to this product. If necessary, order them by quoting the details in the tables below.

RELATED MANUALS

Manual Name	Manual Number (Model Code)
GX Developer Version 8 Operating Manual Describes the methods of using GX Developer to create a program and print out, monitor, and debug the program. (Sold separately)	SH-080373E (13JU41)
GX Developer Version 8 Operating Manual (Function Block) Describes the methods of using GX Developer to create a function block and print out the function block. (Sold separately)	SH-080376E (13JU44)

If you would like to obtain a manual individually, printed matters are available separately. Order the manual by quoting the manual number on the table above (model code).

COMPLIANCE WITH THE EMC AND LOW VOLTAGE DIRECTIVES

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(1) For programmable controller system

To configure a system meeting the requirements of the EMC and Low Voltage Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage Directives compliant) into other machinery or equipment, refer to Chapter 9 "EMC AND LOW VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and Inspection). The CE mark, indicating compliance with the EMC and Low Voltage Directives, is

printed on the rating plate of the programmable controller.

(2) For the product

No additional measures are necessary for the compliance of this product with the EMC and Low Voltage Directives.

ABOUT THE GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following general terms and abbreviations.

Abbreviation/general terms	Description of the abbreviation/general terms				
DOS/V personal computer	IBM PC/AT [®] or compatible computer with DOS/V.				
	Generic product name for the SWnD5C-GPPW-E, SWnD5C-GPPW-EA, SWnD5C-GPPW-EV and				
GX Developer	SWnD5C-GPPW-EVA. ("n" is 4 or greater.)				
	"-A" and "-V" denote volume license product and upgraded product respectively.				
GX Configurator-DA	Generic term for digital-analog conversion module setting and monitor tool GX Configurator-DA				
CA Comgulator-DA	(SW2D5C-QDAU-E).				
	Generic term for Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU,				
QCPU (Q mode)	Q25HCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU,				
	Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, Q26UDHCPU,				
	Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU and Q26UDEHCPU.				
Process CPU	Generic term for Q02PHCPU, Q06PHCPU, Q12PHCPU and Q25PHCPU.				
Personal computer	Generic term for DOS/V personal computer				
Industrial shipment setting	Generic term for analog input ranges 0 to 5V, 1 to 5V, -10 to 10V, 0 to 20mA and 4 to 20mA.				
FB	Abbreviation of function block.				
	Generic term for the following:				
	Microsoft $^{\odot}$ Windows Vista $^{\odot}$ Home Basic Operating System,				
	Microsoft [®] Windows Vista [®] Home Premium Operating System,				
Windows Vista	Microsoft $^{\odot}$ Windows Vista $^{\odot}$ Business Operating System,				
	Microsoft [®] Windows Vista [®] Ultimate Operating System,				
	Microsoft [®] Windows Vista [®] Enterprise Operating System				
	Generic term for the following:				
Windows [®] XP	Microsoft [®] Windows [®] XP Professional Operating System,				
	Microsoft [®] Windows [®] XP Home Edition Operating System				

PRODUCT STRUCTURE

The product structure of this product is given in the table below.

Model code	Product name	Quantity	
Q66DA-G	Q66DA-G Model Channel Isolated Digital-Analog Converter module		1
SW2D5C-QDAU-E	GX Configurator-DA Version 2(1-license product)	(CD-ROM)	1
SW2D5C-QDAU-EA	GX Configurator-DA Version 2(Multiple-license product)	(CD-ROM)	1

1 OVERVIEW

This User's Manual describes the specifications, handling and programming methods for the Q66DA-G type channel isolated digital-analog converter module (hereinafter referred to as the Q66DA-G) which are used in conjunction with MELSEC-Q series CPU module (hereinafter referred to as the programmable controller CPU).

1.1 Features

(1) Multi-channel analog input is available.

By using a single Q66DA-G, analog voltage or current outputs of 6 points (6 channels) are available.

(2) Channel isolated

The module is isolated between the channels and between the external supply power and channels.

(3) High accuracy

The reference accuracy^{*1} is as high as +0.1% and the temperature coefficient^{*2} is as high as -80ppm/°C.

*1: Accuracy attained at the ambient temperature when offset/gain setting has been made *2: Accuracy per temperature change of 1°C

Example) Accuracy when the ambient temperature varies from 25°C to 30°C

0.1% (reference accuracy) + 0.008%/°C (temperature coefficient) \times 5°C (temperature variation difference) = 0.14%

(4) Output range switching

The output range*¹ switching can be set easily from GX Developer.

*1: The output range indicates the offset/gain setting type. Besides the generally often used output ranges available as defaults, the user can make offset/gain settings and use the values. (Refer to Section 4.5)

(4) Analog output HOLD/CLEAR function

This function is used to set whether the analog output value will be held or cleared when the CPU module is in a STOP status or when a stop error occurs. (Refer to Section 3.2.1)

(5) Output monitor function

The analog output value output by D/A conversion is reconverted into a digital value within the Q66DA-G and the result is stored into the buffer memory as an output monitor value.

(6) Changing the resolution mode

The resolution mode can be changed according to the application, and digital value resolution settings of 1/4000, 1/12000 or 1/16000 can be selected. (Refer to Section 4.5)

OVERVIEW

(7) Warning output function

A warning is output if a digital input value falls outside the setting range. (Refer to Section 3.2.4.)

(8) Rate control function

The increase and decrease in analog output values per 6ms *1 can be limited, preventing rapid change of the values. (Refer to Section 3.2.4.) *1 6ms is the conversion cycle per channel.

(9) Scaling function

The digital input value range can be changed to any given range between -32000 and 32000, and digital values within the range are converted to analog values. (Refer to Section 3.2.5.)

(10)Online module change

The module can be changed without the system being stopped. Further, the dedicated instruction (G(P). OGLOAD, G(P). OGSTOR), write to the buffer memory, or turning ON the Y signal enables "inheritance of offset/gain settings to the new Q66DA-G replacing the old one changed online" and "transfer of offset/ gain settings to the other Q66DA-G mounted on the other slot". (These apply to the modules of the same model.) (Refer to Chapter 7.)

(11)Offset/gain setting

GX Configurator-DA, dedicated instruction (G(P). OFFGAN) or mode switching setting allows a shift to the offset/gain setting mode easily. (Refer to Section 4.6.)

(12)Easy settings using the utility package

A utility package is sold separately (GX Configurator-DA).

The utility package is not a required item, however, it is useful for on-screen setting of the intelligent function module parameters (initial setting/auto refresh setting). In addition, FB^{*1} can be generated automatically from the intelligent function module parameters that have been set up and used in a sequence program. (Refer to Chapter 5.)

- *1: FB is the function for making a circuit block used in a sequence program repeatedly a part (FB) to use it in the sequence program.
 - This function can improve the efficiency of program development and minimize program bugs to improve program qualities.
 - For the details of FB, refer to "GX Developer Version 8 Operating Manual (Function Block)."

OVERVIEW

2

IRATION

SPECIFICATIONS

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TROUBLESHOOTING

SYSTEM CONFIGURATION 2

This chapter explains the system configuration of the Q66DA-G.

Applicable Systems 2.1

This section describes the applicable systems.

(1) Applicable modules and base units, and No. of modules

(a) When mounted with a CPU module

The table below shows the CPU modules and base units applicable to the Q66DA-G and quantities for each CPU model.

Depending on the combination with other modules or the number of mounted modules, power supply capacity may be insufficient.

Pay attention to the power supply capacity before mounting modules, and if the power supply capacity is insufficient, change the combination of the modules.

Applicable CPU module		No. of mod-	Base	unit ^{*2}	NOI	
C	PU type	CPU model	ules ^{*1}	Main base unit	Extension base unit	D RES PERAT
		Q00JCPU	Up to 16	0	0	
	Basic model QCPU	Q00CPU	Lin to 24			FOCI TUF
Applicable CPU modul No. of modules ^{*1} Base unit ^{*2} CPU type CPU model ules ^{*1} Main base unit Extensit Main base unit Q00JCPU Up to 16 O C Q00JCPU Up to 16 QO O C Q002CPU Q02CPU Up to 24 O C High Performance model QCPU Q02HCPU Up to 64 O C Q02HCPU Q02HCPU Up to 64 O C C Process CPU Q02HCPU Up to 64 O C C Q02HCPU Q02HCPU Up to 64 O C C Q02HCPU Q02HCPU Q00PHCPU QO C C C Q02HCPU Q02HCPU Up to 64 O C C C Q02HCPU Q02PHCPU Q0PHCPU Up to 53 x C C Q03UDCPU Q06UDHCPU Q03UDCPU Q06UDHCPU Q C C Q04UDHCPU		R R R				
		Q02CPU				5
	High Dorformanaa	Q02HCPU				Ľ,
		Q06HCPU	Up to 64	0	0	ATO
		Q12HCPU				GKA
		Q25HCPU				NFIG
		Q02PHCPU				É S
	Process CPU	Q06PHCPU	Lin to 64	0	0	IT (AD
		Q12PHCPU	001004			6
		Q25PHCPU				
Programmable	Redundant CPU	Q12PRHCPU	Lin to 53			(1)
controller CPU		Q25PRHCPU	001000	×	0	AING
		Q02UCPU	Up to 36			AMM
		Q03UDCPU				0GR
		Q04UDHCPU				PRC
		Q06UDHCPU				7
	l Iniversal model	Q13UDHCPU				
	OCPU	Q26UDHCPU	Up to 64	0	0	ш
		Q03UDECPU				OUL
		Q04UDEHCPU				MOI
		Q06UDEHCPU				ШЧЧ
		Q13UDEHCPU				CHAI
		Q26UDEHCPU				00
	Safety CPU	QS001CPU	N/A	×	×	O
C Controller mod		Q06CCPU-V	Lin to 64	0		NG
Q06CCPU-V-B		001004	0	0	IT00	

O: Applicable, ×: N/A

*1 Limited within the range of I/O points for the CPU module.

*2 Can be installed to any I/O slot of a base unit.

(b) Mounting to a MELSECNET/H remote I/O station

The table below shows the network modules and base units applicable to the Q66DA-G and quantities for each network module model.

Depending on the combination with other modules or the number of mounted modules, power supply capacity may be insufficient.

Pay attention to the power supply capacity before mounting modules, and if the power supply capacity is insufficient, change the combination of the modules.

	No. of mod-	Base unit ^{*2}			
Applicable network module	ules ^{*1}	Main base unit of remote I/O station	Extension base unit of remote I/O station		
QJ72LP25-25					
QJ72LP25G					
QJ72LP25GE	Up 10 64	0	0		
QJ72BR15					

O: Applicable, ×: N/A

*1 Limited within the range of I/O points for the network module.

*2 Can be installed to any I/O slot of a base unit.



The Basic model QCPU or C Controller module cannot create the MELSECNET/ H remote I/O network.

(2) Support of the multiple CPU system

When using the Q66DA-G in a multiple CPU system, refer to the following manual first.

- QCPU User's Manual (Multiple CPU System)
- (a) Intelligent function module parameters Write intelligent function module parameters to only the control CPU of the Q66DA-G.

(3) Compatibility with online module change

The Q66DA-G supports online module change (hot swapping). For procedures of the online module change, refer to Chapter7.

(4) Supported software packages

Relation between the system containing the Q66DA-G and software package is shown in the following table.

GX Developer is necessary when using the Q66DA-G.

		Software	Version		
		GX Developer	GX Configurator-DA		
	Single CPU system	Version 7 or later			
	Multiple CPU system	Version 8 or later			
Q02/Q02H/Q06H/	Single CPU system	Version 4 or later			
Q12H/Q25HCPU	Multiple CPU system	Version 6 or later			
	Single CPU system	Varsian 8 68W or later			
QUZFTI/QUUFTICFU	Multiple CPU system				
	Single CPU system	Version 7 10L or later			
QTZFTI/QZ5FTICFU	Multiple CPU system				
Q12PRH/	Redundant CPU	Version 8 45X or later	1		
Q25PRHCPU	system				
Q02U/Q03UD/	Single CPU system		Version 2.06G or later		
Q04UDH/	Multiple CPU system	Version 8.48A or later			
Q06UDHCPU					
Q13UDH/	Single CPU system	Varsian 8 620 or later			
Q26UDHCPU	Multiple CPU system				
Q03UDE/	Single CPU system				
Q04UDEH/					
Q06UDEH/		Version 8.68W or later			
Q13UDEH/	Multiple CPU system				
Q26UDEHCPU					
If installed in a MELSECNET/H remote I/O station		Version 6 or later			

PROGRAMMING

ONLINE MODULE CHANGE

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TROUBLESHOOTING

OVERVIEW

2

MELSEC Q series

2.2 Precautions on System Configuration

(1) For Use with Q12PRH/Q25PRHCPU

- (a) Dedicated instruction
 The dedicated instruction cannot be used.
- (b) GX Configurator-DA connection GX Configurator-DA cannot be used when accessing the Q12PRH/Q25PRHCPU via an intelligent function module on an extension base unit from GX Developer. Connect a personal computer with a communication path indicated below.



This section describes how to check the function version of the Q66DA-G and the GX Configuration-DA software version.

(1) Checking the function version of the Q66DA-G

(a) Checking at "the SERIAL field of the rating plate" located on the side of the module



(b) To check the version using the GX Developer Refer to Section 8.2.7 of this manual.

⊠Point

The serial No. on the rating plate may be different from the serial No. displayed on the product information screen of GX Developer.

- The serial No. on the rating plate indicates the management information of the product.
- The serial No. displayed on the product information screen of GX Developer indicates the function information of the product.

The function information of the product is updated when a new function is added.

OVERVIEW

2

RATION

SPECIFICATIONS

MELSEC Q series

(2) Checking the software version of GX Configuration-DA

The software version of GX Configurator-DA can be checked in GX Developer's "Productinformation" screen.

[Operating procedure]

 $\mathsf{GX} \ \mathsf{Developer} \to [\mathsf{Help}] \to [\mathsf{Product} \ \mathsf{information}]$

Product information	×	
Programming and Maintenance tool GX Developer Version 8.37P (SW8D5C-GPPW-E) COPYRIGHT(C) 2002 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED		
This Product is licensed to:		
Name:		
Company:		
ProductID		
List of version information on Add-in software		
GX Configurator-DA Version2.06G(SW2D5C-QDAU-E) COPYRIGHT(C) 2004 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED	▲	— Software versi
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.		



Performance Specifications 3.1

3.1.1 Performance specifications list

			Table3.1 Performance	e specifications I	ist				
Item		Specifications							
Number of analog outputs				6 points (6	channels)				
Digital input			16-bit sign	ned binary (normal re	esolution mode:-4	1096 to 4095 4 to 16383)			
Using scaling func	tion		Tiigit test	16-bit signed binary	(-32768 to 3276	7)			
	Voltage		-12 to	12VDC (External loa	ad resistance: 1k	to 1MQ)			
Analog output	-		0 to 20	OmADC (External lo	ad resistance: 0 t	0.6002)			
. .	Current		0 to 22mAD	C (External load res	istance: Please n	efer to Note 3)			
						1			
		Ana	alog output range	Normal resol	ution mode Maximum	High resolu	Maximum		
		All	alog output lange	value	resolution	value	resolution		
			0 to 5V	0 to 1000	1.25mV	0 to 12000	0.416mV		
1/O oberesteristics			1 to 5V	0 to 4000	1.0mV	0 to 12000	0.333mV		
maximum resolution		Voltage	-10 to 10V		2.5mV	-16000 to 16000	0.625mV		
			User range setting 2	-4000 to 4000	0.75mV	-12000 to 12000	0.400mV		
			User range setting 3		0.375mV		0.210mV		
		Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.00μA		
		Guilent	User range setting 1	-4000 to 4000	1.5 <i>µ</i> A	-12000 to 12000	0.95 <i>i</i> /A		
			e con range county r	1000 10 1000	noμrt	12000 to 12000	0.00 μ/ (
Accuracy (Accuracy accuracy *1		\pm 0.1% (Voltage: \pm 10mV, Current: \pm 20 μ A)							
analog output value)	Temperature coefficient *2	±80ppm/ °C (0.008%/ °C)							
Conversion speed		6ms/ channels							
Absolute maximum	Voltage	±13V							
output	Current	23mA							
Maximum number of writ memory	tes to flash	Up to 50,000 times							
Output short-circuit prote	ection			Avail	able				
		S	specific isolated area	Isolation m	ethod	ectric withstand oltage	Insulation resistance		
		Between t	he output terminal and pro)-	500VAC	rms, 1min			
Isolation specifications		grammabl	e controller power supply	Transformer		500VDC			
		Between a	analog output channels	isolation	1000VA0	C rms, 1min	10M Ω or more		
		analog out	tput cannel		500VAC	Crms, 1min			
Number of I/O occupied	points		16 poir	nts (I/O assignme	nt: Intelligent 1	6 points)			
External wiring connection	on system	40-pin connector							
Applicable wire size		0.3 mm ² (AWG #22)							
External device connecti	on connector			A6CON4 (So	ld separately)				
External supply power				24VDC, +2	20%, -15%				
		Ripple, spike within 500 mV p-p							
		Inrush current: 4.8A, within 400µs							
		0.22A							
Internal current consump	otion			0.6	2A				
(5 VDC)				0.0					
Weight		0.22kg							

3 - 1

SPECIFICATIONS SETUP AND PROCE-DURES BEFORE OPERATION

OVERVIEW

2

SYSTEM CONFIGU-RATION

3

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

6

PROGRAMMING

ONLINE MODULE CHANGE

TROUBLESHOOT-ING



- *1: Accuracy of offset/gain setting at ambient temperature
 - Q66DA-G needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).
- *2: Accuracy per temperature change of 1 °C
 - Example: Accuracy when temperature changes from 25 to 30 °C

0.1% (Reference accuracy) + 0.008%/ °C (temperature coefficient) × 5 °C (temperature change difference) = 0.14%

*3: The following indicates the external load resistance when output current is 20mA or more.



External load resistance



See the user's manual for the CPU module being used for the general specifications for the Q66DA-G.

3.1.2 I/O conversion characteristics

I/O conversion characteristics are used for converting the digital value written from the programmable controller CPU to an analog output value (voltage or current output), and represented by inclined straight lines when offset and gain values are included.

Offset value

The offset value is the analog output value (voltage or current) when the digital input value set from the programmable controller CPU is 0.

Gain value

The gain value is the analog output value (voltage or current) when the digital input value set from the programmable controller CPU is

4000 (in normal resolution mode)

12000 (when 1 to 5V, 0 to 5V, 4 to 20 mA, 0 to 20 mA or the user range setting1 to 3 is selected in high resolution mode),

16000 (when -10 to 10V is selected in high resolution mode).

(1) Voltage output characteristic

(a) Voltage output characteristic in normal resolution mode
 Fig.3.1 shows a graph of the voltage output characteristic in normal resolution mode.

MELSEG Q series

1

OVERVIEW

SYSTEM CONFIGU-RATION

3

SPECIFICATIONS

SETUP AND PROCE-DURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)



Fig.3.1 Voltage output characteristic in normal resolution mode



(b) Voltage output characteristic in high resolution modeFig.3.2 shows a graph of the voltage output characteristic in high resolution mode.

MELSEG Q series

Fig.3.2 Voltage output characteristic in high resolution mode

⊠ Point

(1) Set within the digital input range and analog output range for each output range.

If these ranges are exceeded, the maximum resolution and accuracy may not fall within the performance specifications. (Avoid using the dotted line area shown in Figures 3.1 and 3.2.)

(2) In user range setting 2, the maximum and minimum output values are 6V and -6V respectively. Obtain these values as follows using the gain and offset values.

Maximum analog output value = Gain value

Minimum analog output value = (Offset value - (Gain value - Offset value)) If a maximum or minimum value exceeds the output range, use user range setting 3.

- (3) Set the offset/gain values for the user range setting 2 *1 within a range in which the following conditions are satisfied.
 - (a) Setting range is from -12 to 12 V.
 - (b) { (Gain value) (Offset value) } > A
 - <Value of A>

Normal resolution mode	High resolution mode
3.0V	5.0V

- (4) Set the offset/gain values for the user range setting 3 *2 within a range in which the following conditions are satisfied.
 - (a) Setting range is from -0.5 to 6 V.
 - (b) { (Gain value) (Offset value) } > A

<Value of A>

Normal resolution mode	High resolution mode
1.5V	2.6V

OVERVIEW

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

TROUBLESHOOT-ING

(2) Current output characteristic

(a) Current output characteristic in normal resolution mode

Fig.3.3 shows a graph of the current output characteristic in normal resolution mode.



Fig.3.3 Current output characteristic in normal resolution mode



(b) Current output characteristic in high resolution mode

Fig.3.4 Current output characteristic in high resolution mode

MELSEC Q series

OVERVIEW

3

SPECIFICATIONS

5

PROGRAMMING

ONLINE MODULE CHANGE

TROUBLESHOOT-ING

⊠ Point

(1) Set within the digital input range and analog output range for each output range.

If these ranges are exceeded, the maximum resolution and accuracy may not fall within the performance specifications. (Avoid using the dotted line area shown in Figures 3.3 and 3.4.)

- (2) Set the offset/gain values for the user range setting 1 *1 within a range in which the following conditions are satisfied.
 - (a) Setting range is from 0 to 22 mA

Normal resolution mode	High resolution mode
6.0mA	11.5mA

OVERVIEW

SYSTEM CONFIGU-RATION

3

SPECIFICATIONS

SETUP AND PROCE-DURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

7

PROGRAMMING

3.1.3 Accuracy

The reference accuracy is the accuracy at the ambient temperature for offset/gain setting.

The temperature coefficient is the accuracy per temperature variation of $1\,{}^{\circ}\!C$.

The reference accuracy is the accuracy relative to the maximum value of the analog output value.

Even if the offset/gain setting or analog output range is changed to change the output characteristic, the reference accuracy and temperature coefficient do not vary and are kept within the ranges given in the performance specifications.

Example) Accuracy when the temperature varies from 25°C $\,$ to 30°C $\,$

0.1% (reference accuracy) + 0.008%/°C (temperature coefficient) × 5°C (difference in temperature variation) = 0.14%

3.1.4 Conversion speed

The conversion speed for the Q66DA-G is "6ms \times the number of conversion enabled channels".

By setting the unused channels to D/A conversion disabled (Refer to Section 3.4.2), the conversion speed can be increased.

3.2 Function List

Table3.2 Function list			
Item	Function	Reference section	
D/A conversion enable/ • Specifies whether to enable or disable the D/A conversion for each channel.		Section 2.4.2	
disable function	Disabling D/A conversion of unused channels can increase the conversion speed.	Section 5.4.2	
D/A output enable/dis- able function	 Specifies whether to output the D/A converted value or output the offset value for each channel. Regardless of the output enable/disable setting, the conversion speed is "6ms x number of conversion-enabled channels". 	Section 3.3.1	
Analog output HOLD/ CLEAR function	 The output analog value can be retained when the programmable controller CPU is placed in the STOP status or when an error occurs. 	Section 3.2.1	
Analog output test during programmable controller CPU STOP	 When the CH output enable/disable flag is forced ON during programmable con- troller CPU STOP, the D/A converted analog value is output. 	Section 3.2.2	
Warning output function	A warning is output if a digital input value falls outside the setting range.	Section 3.2.3	
Rate control function	 The increase and decrease in analog output values per conversion cycle of one station (6ms) can be limited. Using this function prevents rapid change of analog output values. 	Section 3.2.4	
Resolution mode	 The resolution mode can be changed according to the application, and a resolution setting can be selected from 1/4000, 1/12000 and 1/16000. The resolution mode setting is applicable to all channels in block. Refer to Section 3.1.1 for the digital input values and maximum resolution in normal resolution mode and high resolution mode. 	Section 3.1.1 Section 4.5	
Scaling function • The input range of digital values can be changed to any given range between -32000 and 32000.		Section 3.2.5	
Online module change	The module can be changed without the system being stopped.	Chapter 7	

3.2.1 Analog output HOLD/CLEAR function

- (1) For the case where the programmable controller CPU is placed in STOP or in a stop error status, whether to hold (HOLD) or clear (CLEAR) the analog output value can be set.
- (2) Make the setting in the HOLD/CLEAR setting (Refer to Section4.5 (1).) of the intelligent function module switch.
- (3) Depending on combinations of the HOLD/CLEAR setting, D/A conversion enable/disable setting (Un\G0), and CH output enable/disable flag (Y1 to Y6), the analog output status varies as shown in Table 3.3.

Setting combination	D/A conversion enable/dis- able setting (Un\G0)	Enable			Disable	
Execution	CH∏ output enable/ disable flags (Y1 to Y6)	Enable		Disable	Enable or disable	
status	HOLD/CLEAR setting	HOLD	CLEAR	HOLD or CLEAR	HOLD or CLEAR	
Analog output status when programmable controller		Outputs analog values converted		Offset	0 V/0 mA	
CPU is RUN		from digital values. ^{*2}		Chool	0 110 111/	
Analog output status when programmable controller CPU is STOP		Hold	Offset	Offset	0 V/0 mA	
Analog output status when a programmable controller CPU stop error occurs		Hold	Offset	Offset	0 V/0 mA	
Analog output status when a watchdog timer error ^{*1} occurs in Q66DA-G		0 V/0 mA	0 V/0 mA	0 V/0 mA	0 V/0 mA	

Table3.3 Analog output status combination list

*1 This occurs when program operations are not completed within the scheduled time due to a hardware problem of the Q66DA-G. When a watchdog timer error occurs, module READY (X0) turns OFF and the Q66DA-G RUN LED turns off.

*2 The rate control function and the scaling function are operable.

SYSTEM CONFIGU-

3

SPECIFICATIONS

TROUBLESHOOT-ING

Point

The following conditions should be satisfied when the analog output HOLD/ CLEAR function is used on a MELSECNET/H remote I/O station.

- The master module of function version D or later and the remote I/O module of function version D or later are required.
- Validate the station unit block guarantee of the send side cyclic data.
- The setting for holding the Q66DA-G output in the case of a link error must be made in the "Error time output mode in the I/O assignment setting". (Refer to Section 4.5 (2).) The HOLD/CLEAR setting by the intelligent function module switch is invalid. This setting is validated on a permodule basis, and is not made on a per-channel basis. Therefore, to make the output status at a stop error or STOP of the programmable controller CPU matched with the output status at a link error, set the same .HOLD/CLEAR setting to all channels. (Refer to the table below.)

	Error time output mode	HOLD/CLEAR setting (Same setting to all channels)		
Hold analog output	Hold	HOLD		
Clear analog output	Clear			
(Output offset value)	Clear	CLEAR		

For the station unit block guarantee of the cyclic data, refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O Network).

3 SPECIFICATIONS

3.2.2 Analog output test during programmable controller CPU STOP

- (1) While the programmable controller CPU is in STOP, an analog output test as shown in Table 3.4 can be performed.
- (2) To conduct an analog output test, perform the following on Device test of GX Developer or on the relevant test screens of Configurator-DA (Refer to Section 5.6.1.).
 - (a) Set D/A conversion enable/disable setting (Un\G0) of the channel to be tested to enable.
 - (b) Switch the operating condition setting request (Y9) from OFF to ON to OFF.
 - (c) Sets the output enable/disable flag (Y1 to Y6) for the channel to be tested to enable (OFF \rightarrow ON).
 - (d) Write digital values equivalent to analog values that are to be output to the CH□ digital value (Un\G1 to Un\G6).

Setting	D/A conversion enable/disable setting (Un\G0)	Enable		Disable	
combination	CH□ output enable/disable flags (Y1 to Y6)	Enable	Disable	Enable	disable
Analog output test		Allowed	Not allowed	Not allowed *1	

*1 Perform the analog output test after changing the D/A conversion enable/disable setting (Un\G0) to enable.

⊠Point

When the digital input value is set to be written to the CH digital value (Un\G1 to Un\G6) from the CPU device at the automatic refresh setting of GX Configurator-DA, write digital input value to the CPU device where the setting is performed. The automatic refresh can be performed while the programmable controller CPU is in STOP.

PROGRAMMING

TROUBLESHOOT-ING

3.2.3 Warning output function

- If the digitat input value is equal to or greater than the warning output upper limit value or equal to or less than the warning output lower limit value, the warning output flag (Un\G48) and warning output signal (XE) turn ON to give a warning. The warning is output for the D/A conversion enabled channel only.
- (2) The analog output value of waring occurrence is the value converted from the digital value at the warning output upper limit value or warning output lower limit value.
- (3) The warning output flag (Un\G48) and warning output signal (XE) turn OFF when the operating condition setting request (Y9) or warning output clear request (YE) turns ON.
- (4) To use this function, the following settings are required for each setting.
 - Enable the warning output function: Warning output setting (Un\G47)
 - Set the warning output upper and lower limit values: CH warning output upper/ lower limit values (Un\G86 to Un\G97)



(5) When the scaling function is used, input values converted within the scaling range are checked for warning output.
⊠Point

- (1) If the warning is output immediately after D/A conversion is enabled, make a warning output clear request after writing the digital value that is less than the warning output upper limit value and is greater than the warning output lower limit value.
- (2) During an analog output test, the warning output function is invalid.

3.2.4 Rate control function

- (1) The increase and decrease in analog output values per 6ms ^{*1} can be limited, which can prevent rapid change of the values.
 - *1 $\,$ 6ms is the D/A conversion cycle per channel.
- (2) To use this function, the following settings are required for each setting.
 - Enable the rate control function: rate control enable/disable setting (Un\G46)
 - Set the increase/decrease of analog output value per 6ms: CH□ increase/ decrease digital limit value (Un\G70 to Un\G81)
- (3) Although values on a per-6ms basis are set in CH□ increase/decrease digital limit value (Un\G70 to Un\G81), the actual cycle in which the Q66DA-G updates analog values is (6ms x number of conversion-enabled channels). Therefore, the maximum increase/decrease in analog output values under the rate control is a D/A converted value of (Increase/decrease digital limit value values of conversion).

control is a D/A converted value of (Increase/decrease digital limit value x No. of conversion-enabled channels).

[Example Control of channel 3 when No. of conversion-enabled channels is 1 to 3]

- Output range: -10 to 10V
- Increase digital limit value: 100
- Decrease digital limit value: 100



When the digital input value changes, the analog output value increases or decreases in update cycles as follows:

1st time: D/A converted value of the upper/lower digital limit value 2nd time or later: D/A converted value of (Increase/decrease digital limit value x No. of conversion-enabled channels)

- (4) If the operation of the programmable controller CPU varies at the setting of D/A conversion enable, D/A output enable and analog output CLEAR, the rate control functions operate as indicated below.
 - If the programmable controller CPU has switched from RUN to STOP (error): Rate control does not function.
 - If the programmable controller CPU has switched from STOP (error) to RUN: Rate control functions.



(5) When the scaling function is used, digital input values converted within the scaling range are limited.

TROUBLESHOOT-ING

3.2.5 Scaling function

The digital input value range can be changed to any given range between -32000 and 32000.

To use this function, the following settings are required for each channel.

- Enable the scaling function: Scaling enable/disable setting (Un\G53)
- Set the scaling upper and lower limit values: Scaling upper/lower limit value (Un\G54 to Un\G65)

The CH scaling upper/lower limit value settings vary depending on the output range. (Refer to (1) and (2) below.)

(1) When using the factory default setting for the output range

(a) As the scaling upper and lower limit values, set digital values equivalent to the upper and lower limit values of analog output respectively.

[Example] When the output range is "-10 to 10V"

[Example] When the output range is "0 to 5V" or "1 to 5V" Analog output value (V)



(b) The D/A conversion uses values calculated from the following formula.

Digital values actually used for D/A conversion = $\frac{D_{Max}-D_{Min}}{S_{H}-S_{L}} \times (D_{X}-S_{L})+D_{Min}$

- Dx : Digital input value
- DMax : Maximum digital input value of the output range used
- DMin : Minimum digital input value of the output range used
- SH : Scaling upper limit value
- SL : Scaling lower limit value

[Example]

When a digital input value of 7000 is input under the following setting: Output range: -10 to 10V, High resolution mode,

Scaling upper limit value: 14000, Scaling lower limit value: 2000

Digital values actually used for D/A conversion

```
= \frac{16000-(-16000)}{14000-2000} \times (7000-2000) + (-16000)
= -2666.66 · · · · ·
= -2666
Fractional part is rounded down.
```

(2) When using the user range setting for the output range

(a) Set a digital value, which is equivalent to the analog gain value to be output, as the scaling upper limit value. Also, set a digital value, which is equivalent to the analog offset value to be output, as the scaling lower limit value.

[Example] User range setting 2, Offset value: 1V, Gain value: 8V

Analog output value (V)



(b) The D/A conversion uses values calculated from the following formula.

Digital values actually used for D/A conversion = $\frac{D_{Max}}{S_{H}-S_{L}} \times (D_{X}-S_{L})$

Dx : Digital input value

DMax: Maximum digital input value of the output range used

- SH : Scaling upper limit value
- SL : Scaling lower limit value

[Example]

When a digital input value of 4000 is input under the following setting: Output range: User range setting 2, High resolution mode, Scaling upper limit value: 13000, Scaling lower limit value: 2000

Digital values actually used for D/A conversion

 $= \frac{12000}{13000-2000} \times (4000-2000)$ = 2181.81 · · · · · = 2181 OVERVIEW

⊠ Point

- (1) Even if the digital value input range is enlarged, the resolution will not be more than the one applied when the scaling function is not used. As the digital value input range is narrowed, the resolution is lowered.
- (2) When a digital value input range not including zero (0), such as "1000 to 6000", is specified, turn ON the output enable/disable flag after setting values within the input range in the CH□ digital values (Un\G1 to Un\G6). If the output enable/disable flag is turned ON with the default value (0) set in the CH□ digital value, an error will occur and an error code will be stored in the Error code (Un\G19).
- (3) The check of the settable range is performed for "digital values actually used for D/A conversion".
- (4) Depending on whether to use the scaling function or not, the analog output value varies on the boundary between the inside and outside of the digital input value setting range.

[Example 1]

Output range: 4 to 20mA, Normal resolution mode, and not using the scaling function

By the conditions of the output range and resolution mode, the available digital input value setting range is –96 to 4095.

When a digital value is the upper limit of the settable range, 4095 or higher, an analog value equivalent to 4095 is output, which means the same analog value is output for the digital values within and outside the setting range. [Example 2]

Output range: 4 to 20mA, Normal resolution mode (same as Example 1), and using the scaling function with:

Scaling upper limit value: 3000, Scaling lower limit value: 1000

When a digital value is the upper limit of the settable range, 3047 (4094 after calculation), an analog value equivalent to 4094 is output.

On the other hand, if it is out of the settable range, which is 3048 or higher (calculated value is 4096 or higher), an analog value equivalent to 4095 is output.

As a result, the analog output value converted from the upper limit digital value of the settable range is different from the one converted from the value outside the settable range by 1 digit.

3.3 I/O Signals for the Programmable Controller CPU

3.3.1 List of I/O signals

Table 3.5 shows a list of the I/O signals for the Q66DA-G.

Signal direction	Q66DA-G → CPU module	Signal direction	CPU module → Q66DA-G
Device No	Signal name	Device No.	Signal name
X0	Module READY	Y0	Use prohibited *1
X1		Y1	CH1 Output enable/disable flag
X2		Y2	CH2 Output enable/disable flag
X3	Line wrehibited *1	Y3	CH3 Output enable/disable flag
X4	Use prohibited	Y4	CH4 Output enable/disable flag
X5		Y5	CH5 Output enable/disable flag
X6		Y6	CH6 Output enable/disable flag
X7	External power supply READY	Y7	Lies weekshited *1
X8	High resolution mode status flag	Y8	Use prohibited
X9	Operating condition setting completed flag	Y9	Operating condition setting request
XA	Offset/gain setting mode flag	YA	User range writing request
XB	Channel change completed flag	YB	Channel change request
XC	Set value change completed flag	YC	Set value change request
XD	Use prohibited ^{*1}	YD	Use prohibited *1
XE	Warning output signal	YE	Warning output clear request
XF	Error flag	YF	Error clear request

Table3.5 List of I/O signal

⊠Point

*1 These signals cannot be used by the user since they are used by the system. If these are turned ON/OFF by the sequence program, the function of the Q66DA-G cannot be guaranteed. OVERVIEW

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

TROUBLESHOOT-ING

3.3.2 Details of I/O signals

I/O signals for the Q66DA-G are explained in detail below.

(1) Input signals

Device No.	Signal name	Description							
		(1) When the programmable controller CPU is powered on or reset, this signal turns ON when the							
		initial processings in the Q66DA-G are all completed.							
YO		(2) When the Module READY (X0) signal is OFF, D/A conversion processing is not performed.							
70		Module READY (X0) turns OFF in the following situations:							
		During offset/gain setting mode							
		 When the Q66DA-G has a watchdog timer error 							
		(1) This signal turns on 100ms after turning on the external power supply.							
		(2) In normal mode, when Module READY (X0) is OFF, this signal does not turn ON even if 100ms							
		have elapsed after turning on the external power supply.							
		In this case, as soon as Module READY (X0) turns ON, this signal (X7) turns ON.							
		(3) In Offset/gain setting mode, when Offset/gain setting mode flag (XA) is OFF, this signal does							
		not turn on even if 100ms have elapsed after turning ON the external power supply.							
		In this case, as soon as Offset/gain setting mode flag (XA) turns on, this signal (X7) turns on.							
		(4) D/A conversion is performed after the external power supply READY (X7) turns ON.							
		(5) When the external power is not supplied or has been supplied for less than 100ms, X7 is OFF							
		and no D/A conversion is performed.							
		At this time, the analog output value is "UMA/UV" regardless of other settings, and no invalid							
		(c) V7 might net turn ON when the externel neuror supply does not meet the requirements shown							
		in the performance specifications (Pofer to Table 3.1.)							
		(7) The following time chart shows that the external power supply is turned ON after power on of a							
		programmable controller CPU							
		ON							
		Power supply of a							
~7	External power sup-								
~/	ply READY								
		In normal mode :(X0)							
		setting mode :(XA)							
		ON							
		External power supply							
		100ms ON							
		External power supply OFF							
		D/A conversion D/A conversion							
		is not performed							
		(8) When performing D/A output, X0 and X7 must be ON as shown below.							
		Digital value							
		MOVP K4000 G1]-							
X8	High resolution	(1) This turns ON when in high resolution mode.							
	mode status flag	, · · · · · · · · · · · · · · · · · · ·							

XX Offertigan setting mode fag (1) This is used as in interload condition for turning ON/OFF the user range write request (VA) when request (VA) when any of the following setting is is changed. . 0:A conversion enable/disble setting (Un/G4) . 0:And control enable/disble setting condition setting completed fag (X4) turns OFF. (2) The following conditions (Enable) . 0:And control enable/disble setting condition setting completed fag (X4) turns OFF. (3) The is used as an interload condition for turning 0N/OFF the user range write request (VA) . When operating condition setting completed fag (X0) . 0:Perating condition setting condition for turning 0N/OFF the user range write request (VA) . when registering the value affic educement of the offset/gain setting request . 0: Refer to SetUp as the following condition for turning 0N/OFF the user range write request (VA) when setting completed fag (X0) . 0:Perating condition is entrong events request (VA). . When registering the value affic educement of the offset/gain setting the value affic explained to the offset/gain setting mode fag (X4) . User range write request (VA) . 0:Feet/gain setting mode fag (1) This is used as an interload condition to turn 0N/OFF the User range write request (VA) when the user range is restored. . (2) Refer to Chapter 7 regarding the user range restored to the sequence program 	Device No.	Signal name	Description	
X0 Operating condition setting condition set			(1) This is used as an interlock condition for turning ON/OFF the operating condition setting	N
X3 Operating condition setting completed flag Image write request (YA) X4 Operating condition setting request(YB) Image write request (YA) X6 Operating condition setting completed flag Image write request (YA) Image write request (YA) X6 Operating condition setting completed flag Image write request (YA) Image write request (YA) Image write request (YA) XA Offset/gain setting mode flag Image write request (YA) Image write req			request (Y9) when any of the following settings is changed.	ZVIE
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XX Operating condition setting completed flag • Warning output setting (UNC47) • Scaling upper/lower limit value (UNC484 be UNC85) • Uncert set foldowing conditions (UNC47) • Warning output upper/lower limit value (UNC47) to UNC47) • Warning output upper/lower limit value (UNC47) • Performed by the Od60A-0 • Performed by the Sequence program Module READY(X0) OFF • Performed by the Sequence program Module READY(X0) ON Offset/gain setting mode flag (XA) User range write request (YA) • User range write request (YA) • User range write request (YA) • Performed by the Sequence program Module READY(X0) ON Offset/gain setting mode flag (XA) User range write request (YA) • Performed by the Sequence program • Performed by the Sequence p			 Rate control enable/disable setting (Un\G46) 	0
XX Operating condition setting completed flag • • • • • • • • • • • • • • • • • • •			Warning output setting (Un\G47)	2
X0 Operating condition setting completed flag • Sealing upper/lower limit value (UN/GS4 to UN/GS1) • Varming output upper/lower limit value (UN/GS4 to UN/GS1) • Performed by the OBDA-G • Performed by the Sequence program • Offset/gain setting mode flag (XA) • User range write request (YA) •			Scaling enable/disable setting (Un\G53)	–
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				DUB
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3 SPECIFICATIONS

Device No.	Signal name	Description
		(1) This is used as an interlock condition for turning ON/OFF the channel change request (YB)
		when specifying the user range and channel to perform offset/gain settings.
		(2) Refer to Section 4.6 regarding the offset/gain settings.
		Performed by the Q66DA-G
		> Performed by the sequence program
		Offset/gain setting mode. Offset/gain
	Channel change	specificaions (Un\G22, Un\G23)
XB	completed flag	
	completed hug	Onsevgain range setting (OnG25)
		Channel change completed flag
		(XB)
		Channel change request (YB)
		(1) This is used as an interlock condition for turning ON/OEE the set value change request (VC)
		when adjusting the offset/gain settings
		 Refer to Section 4.6 regarding the offset and gain settings.
		> Performed by the O66DA-G
	Catvalua abanga	Performed by the sequence program
XC		
	completed liag	
		Set value change completed (XC)
		Set value change request (YC)
		(1) This turns ON if the digital input value on any of the channels enabled for D/A conversion rises
		to or above the warning output upper limit value or falls below the warning output lower limit
		value.
		(2) Turning ON the warning output clear request (YE) or operating condition setting request (Y9)
		turns OFF the warning output signal (XE).
	Morning output oig	► Performed by the Q66DA-G
XE	vvarning output sig-	→ Performed by the sequence program
	IIdi	
		Warning output signal
		(XE)
		request (VE)
		 (1) The error flag (XF) turns ON when a write error occurs. (2) To turn the error flag (XF) OFF, remove the series of the error and turn ON the error clear.
		(2) To turn the error hag (XF) OFF, remove the cause of the error and turn ON the error clear request (VE)
		The error code (Un)G10) changes to 0 and the ERR I ED turns off
		Performed by the sequence program
		r renormed by the sequence program
XF	Error flag	Error code (Un\G19)
	_	
		Error flag (XF)
		Error clear request (YF)
		· · · /

MELSEG Q series

(2) Output signals

Device No.	Signal name	Description						
		(1) Specify whether to output the D/A converted value or output the offset value for each channel.						
V1 to V6	CH output enable/	ON: D/A converted value OFF: Offset value						
1110 10	disable flag	(2) The D/A conversion speed is 6ms X the number conversion-enabled channels regardless of						
		whether the output enable/disable flag is ON or OFF.						
		(1) Turn ON this signal when changing any of the following settings and making the setting valid.						
		 D/A conversion enable/disable setting (Un\G0) 						
		 Rate control enable/disable setting (Un\G46) 						
	Operating condition	 Warning output setting (Un\G47) 						
Y9		 Scaling enable/disable setting (Un\G53) 						
	setting request	 Scaling upper/lower limit value (Un\G54 to Un\G65) 						
		 Increase/decrease digital limit value (Un\G70 to Un\G81) 						
		 Warning output upper/lower limit value (Un\G86 to Un\G97) 						
		(2) Refer to the X9 column for the ON/OFF timing.						
		[In offset/gain setting mode]						
	User range write request	(1) Turn ON this signal when the values for the adjusted offset/gain settings are registered in the						
		Q66DA-G.						
		(2) Refer to the XA column for ON/OFF timing.						
YA		Refer to Section 4.6 for offset/gain settings.						
		[In normal mode]						
		(1) Turn ON this signal when restoring the user range.						
		(2) Refer to the XA column for the ON/OFF timing.						
		Refer to Chapter 7 for the user range restoration.						
VD	Channel change	(1) Turn ON this signal when specifying the user range and channel to perform offset/gain settings.						
TD	request	(2) Refer to the XB column for the ON/OFF timing.						
		(1) Turn ON/OFF this signal when increasing or decreasing the analog output value during adjust-						
VC	Set value change	ment of the offset/gain settings.						
10	request	(2) The analog output is incremented or decremented depending on the value set to the offset/gain						
		adjustment value specification (Un\G24).						
VE	Warning output clear	(1) Turn ON this signal when clearing the warning output.						
ΪC	request	(2) Refer to the XE column for the ON/OFF timing.						
VE	Error cloar request	(1) Turn ON this signal when clearing a write error.						
۲F	Enor clear request	(2) Refer to the XF column for ON/OFF timing.						

OVERVIEW

2

SYSTEM CONFIGU-RATION

3

SPECIFICATIONS

SETUP AND PROCE-DURES BEFORE OPERATION

TROUBLESHOOT-ING

⊠Point

When the user range write request (YA) is turned ON with D/A conversion enabled in the normal mode, the Q66DA-G restores the user range.



3.4 Buffer Memory

3.4.1 Buffer memory assignment

Table 3.6 indicates the buffer memory assignment of the Q66DA-G.

⊠Point

Do not write data from system area or sequence program to the buffer memory area where writing is disabled.

Doing so may cause malfunction.

Address		Description	Dofault *1	Poad/write *2		
Hexadecimal	Decimal	Description	Delault	Reau/write 2		
0н	0	D/A conversion enable/disable setting	003Fн	R/W		
1н	1	CH1 Digital value	0	R/W		
2н	2	CH2 Digital value	0	R/W		
3н	3	CH3 Digital value	0	R/W		
4н	4	CH4 Digital value	0	R/W		
5н	5	CH5 Digital value	0	R/W		
6н	6	CH6 Digital value	0	R/W		
7н	7					
to	to	System area	-	-		
Ан	10					
Вн	11	CH1 Set value check code	0	R		
Сн	12	CH2 Set value check code	0	R		
Dн	13	CH3 Set value check code	0	R		
Ен	14	CH4 Set value check code	0	R		
Fн	15	CH5 Set value check code	0	R		
10н	16	CH6 Set value check code	0	R		
11н	17	System area				
12н	18	System alea	-	-		
13н	19	Error code	0	R		
14н	20	Setting range (CH1 to CH4)	0	R		
15н	21	Setting range (CH5, CH6)	0	R		
16	22	Offset/gain setting mode	0			
TOH	22	Offset specification	0	FV/ V V		
17	00	Offset/gain setting mode	0			
178	23	Gain specification	0	R/ W		
18н	24	Offset/gain adjustment value specification	0	R/W		
19н	25	Offset/gain range setting	0	R/W		
1Ан	26					
to	to	System area	-	-		
2Dн	45					
2Ен	46	Rate control enable/disable setting	003Fн	R/W		
2Fн	47	Warning output setting	003Fн	R/W		
30н	48	Warning output flag	0	R		
31н	49					
То	to	System area	-	-		
34н	52					

Table3.6 Buffer memory assignment (1/3)

*1 This is the initial value set after the power is turned on or the programmable controller CPU is reset.

*2 Indicates whether reading from and writing to a sequence program are enabled.

R : Reading enabled W : Writing enabled

OVERVIEW

2

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

5

PROGRAMMING

ONLINE MODULE CHANGE

TROUBLESHOOT-ING

Address Description Default *1	Bood/write *2		
Hexadecimal Decimal Default	Reau/write 2		
35н 53 Scaling enable/disable setting 003Fн	R/W		
36н 54 CH1 Scaling lower limit value 0	R/W		
37н 55 CH1 Scaling upper limit value 0	R/W		
38н 56 CH2 Scaling lower limit value 0	R/W		
39н 57 CH2 Scaling upper limit value 0	R/W		
3AH 58 CH3 Scaling lower limit value 0	R/W		
3BH 59 CH3 Scaling upper limit value 0	R/W		
3Cн 60 CH4 Scaling lower limit value 0	R/W		
3DH 61 CH4 Scaling upper limit value 0	R/W		
3EH 62 CH5 Scaling lower limit value 0	R/W		
3FH 63 CH5 Scaling upper limit value 0	R/W		
40H 64 CH6 Scaling lower limit value 0	R/W		
41H 65 CH6 Scaling upper limit value 0	R/W		
42H 66			
to to System area -	-		
45н 69			
46н 70 CH1 Increase digital limit value 64000	R/W		
47H 71 CH1 Decrease digital limit value 64000	R/W		
48H 72 CH2 Increase digital limit value 64000	R/W		
49н 73 CH2 Decrease digital limit value 64000	R/W		
4AH 74 CH3 Increase digital limit value 64000	R/W		
4BH 75 CH3 Decrease digital limit value 64000	R/W		
4CH 76 CH4 Increase digital limit value 64000	R/W		
4DH 77 CH4 Decrease digital limit value 64000	R/W		
4EH 78 CH5 Increase digital limit value 64000	R/W		
4FH 79 CH5 Decrease digital limit value 64000	R/W		
50H 80 CH6 Increase digital limit value 64000	R/W		
51H 81 CH6 Decrease digital limit value 64000	R/W		
52H 82			
to to System area -	-		
55н 85			
56н 86 CH1 Warning output upper limit value 0	R/W		
57H 87 CH1 Warning output lower limit value 0	R/W		
58H 88 CH2 Warning output upper limit value 0	R/W		
59H 89 CH2 Warning output lower limit value 0	R/W		
5AH 90 CH3 Warning output upper limit value 0	R/W		
5BH 91 CH3 Warning output lower limit value 0	R/W		
5CH 92 CH4 Warning output upper limit value 0	R/W		
5DH 93 CH4 Warning output lower limit value 0	R/W		
5EH 94 CH5 Warning output upper limit value 0	R/W		
5FH 95 CH5 Warning output lower limit value 0	R/W		
60H 96 CH6 Warning output upper limit value 0	R/W		
61H 97 CH6 Warning output lower limit value 0	R/W		

Table 3.6 Buffer memory assignment (2/3)

*1 This is the initial value set after the power is turned on or the programmable controller CPU is reset.

*2 Indicates whether reading from and writing to a sequence program are enabled.

R : Reading enabled W : Writing enabled

OVERVIEW

2

SYSTEM CONFIGU-RATION

3

SPECIFICATIONS

SETUP AND PROCE-DURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

6

PROGRAMMING

Table 3.6 Buffer memory assignment (3/3)

Address		Description	Dofault *1	Poad/write *2		
Hexadecimal	Decimal	Description	Delault	Reau/write 2		
62н	98					
to	to	System area	-	-		
9Dн	157			D/M/		
9EH	158	Mode switching setting	0	R/W		
АОн	160		0	10.00		
to	to	System area	-	-		
С7н	199					
С8н	200	Save data classification setting ^{*3}	0	R/W		
С9н	201	System area	-	-		
САн	202	CH1 Factory default setting offset value ^{*3}	0	R/W		
СВн	203	CH1 Factory default setting gain value ^{*3}	0	R/W		
ССн	204	CH2 Factory default setting offset value ^{*3}	0	R/W		
СDн	205	CH2 Factory default setting gain value ^{*3}	0	R/W		
СЕн	206	CH3 Factory default setting offset value ^{*3}	0	R/W		
СГн	207	CH3 Factory default setting gain value ^{*3}	0	R/W		
D 0н	208	CH4 Factory default setting offset value ^{*3}	0	R/W		
D1н	209	CH4 Factory default setting gain value ^{*3}	0	R/W		
D2н	210	CH5 Factory default setting offset value ^{*3}	0	R/W		
D3н	211	CH5 Factory default setting gain value ^{*3}	0	R/W		
D4н	212	CH6 Factory default setting offset value ^{*3}	0	R/W		
D5н	213	CH6 Factory default setting gain value ^{*3}	0	R/W		
D6н	214	CH1 User range settings offset value ^{*3}	0	R/W		
D7 н	215	CH1 User range settings gain value ^{*3}	0	R/W		
D8н	216	CH2 User range settings offset value ^{*3}	0	R/W		
D9н	217	CH2 User range settings gain value *3	0	R/W		
DAH	218	CH3 User range settings offset value ^{*3}	0	R/W		
DВн	219	CH3 User range settings gain value ^{*3}	0	R/W		
DСн	220	CH4 User range settings offset value ^{*3}	0	R/W		
DDH	221	CH4 User range settings gain value *3	0	R/W		
DEH	222	CH5 User range settings offset value ^{*3}	0	R/W		
DFH	223	CH5 User range settings gain value ^{*3}	0	R/W		
ЕОн	224	CH6 User range settings offset value ^{*3}	0	R/W		
Е1н	225	CH6 User range settings gain value *3	0	R/W		

*1 This is the initial value set after the power is turned on or the programmable controller CPU is reset.

*2 Indicates whether reading from and writing to a sequence program are enabled.

R : Reading enabled W : Writing enabled

*3 Areas used to restore the user range settings offset/gain values when online module change is made.

Refer to Chapter 7 for details of online module change.

TROUBLESHOOT- ONLINE MODULE

3.4.2 D/A conversion enable/disable setting (Un\G0)

- (1) Set whether D/A conversion is enabled or disabled for each channel.
- (2) To validate the settings, ON/OFF of the Operating condition setting request (Y9) is required. (Refer to Section 3.3.2.)
- (3) By default, all channels are set to D/A conversion disabled.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
	0	0	0		0	0	0	0	0	0	СН	СН	СН	СН	СН	СН	
UII\GU	0	0	0		0	0	0	0	0	0	6	5	4	3	2	1	
	b6 to b15 information is fixed at 0.												1: D/A 0: D/A	A conn A conv	versio ersion	n disa enabl	bled ed

Point

Design the system so that the D/A conversion enable/disable setting (Un\G0) changes to "Enable" after the external power (Refer to Section 4.3) is supplied. Analog output may not be performed properly if the external power is not at the specified voltage.

3.4.3 CH digital values (Un\G1 to Un\G6)

- (1) This area is used to write digital values from the programmable controller CPU as 16bit signed binary code.
- (2) If a value outside the settable range is written, the upper or lower limit value of the range is used for D/A conversion. (Refer to Table 3.7.)
 Also, if this happens, a check code and an error code will be stored in the Set value check code (Un\G11 to Un\G16) and Error code (Un\G19) respectively.

	Norma	I resolution mode	High resolution mode				
Output range setting	Settable range (practical range)	Digital value that is set when a value outside the settable range is written	Settable range (practical range)	Digital value that is set when a value outside the settable range is written			
0: 4 to 20 mA	-96 to 4095		-288 to 12287				
1: 0 to 20 mA	(Practical range)	4096 or larger: 4095	(Practical range)	12288 or larger: 12287			
2: 1 to 5 V	(1 for 4000)	-97 or smaller: -96	(1 ractical range:	-289 or smaller: -288			
3: 0 to 5 V	0 (0 4000)		01012000)				
4: -10 to 10 V	-4096 to 4095 (Practical range)	4096 or larger: 4095	-16384 to 16383 (Practical range: -16000 to 16000)	16384 or larger: 16383 -16385 or smaller: -16384			
D: User range setting3 E: User range setting2 F: User range setting1	-4000 to 4000)	-4097 or smaller: -4096	-12288 to 12287 (Practical range: -12000 to 12000)	12288 or larger: 12287 -12289 or smaller: -12288			

Table3.7 Output range settings and settable range

3.4.4 CH set value check codes (Un\G11 to Un\G16)

- (1) Digital values set in CH□ Digital value (Un\G1 to Un\G6) are checked and if any of them is outside the settable range, the check result is stored in this area.
- (2) When a digital value outside the settable range (Refer to Section 3.4.3 and Table 3.7) is written, one of the check codes listed in Table 3.8 is stored.

Table3.8 Check code list										
Check code	Description									
000Fн	A digital value exceeding the settable range is written.									
00F0н	A digital value that falls short of the settable range is written.									
	A digital value that either falls short or exceeds the settable range was written.									
00EEu	For example, the 00FFH check code is stored if a digital value exceeding the									
UUITH	valid range is written, and then, without the check code being reset, a digital									
	value that falls short of the settable range is written.									

- (3) Once a check code is stored, it will not be reset even if the digital value is within the settable range.
- (4) To reset the CH□ set value check code, set the error clear request (YF) to ON after rewriting the digital value so that it is within the settable range.
- (5) When the scaling function is used, digital values converted from the digital values set in CH□ Digital values (Un\G1 to Un\G6) are checked. (Refer to Section 3.2.5.)

3.4.5 Error codes (Un\G19)

- (1) This area stores the error codes detected by the Q66DA-G.
- (2) Refer to Section 8.1 for more details of the error codes.

3 - 31

OVERVIEW

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

3.4.6 Setting range (Un\G20, Un\G21)

	b15	\sim		b12	b11	~	~	b8	b7	~	~	b4	b3	~	-	b0
Un\G20 (setting range CH1 to CH4)		CH	4			CI	 3 			CI	 2 			CH	-11	
Un\G21 (setting range CH5, CH6)		0+ 	1			C)н			CI	-16			Cŀ	45	

(1) This area is used to confirm the setting range of the Q66DA-G.

b8 to b15 information is fixed at 0.

Output range	Storing value
4 to 20 (mA)	Он
0 to 20 (mA)	1н
1 to 5 (V)	2н
0 to 5 (V)	3н
-10 to 10 (V)	4 _H
User range setting 3	Dн
User range setting 2	Ен
User range setting 1	Fн

3.4.7 Offset/gain setting mode and offset/gain specification (Un\G22, Un\G23)

- (1) Specifies the channel to be adjusted for the offset/gain settings.
- (2) The channel change request (YB) must be turned ON/OFF to validate the offset/gain setting. (Refer to Section 3.3.2.)
- (3) Specification can be made for 1 channel only. If more than one channel is set at the same time, an error occurs and an error code is stored in the Error code (Un\G19).
- (4) Refer to Section 4.6 for the details of the offset/gain settings.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G22	0	0	0	0	0	0	0	0	0	0	СН	СН	СН	СН	СН	СН
(Offset specification)	-	-	-		-	_		-	-		6	5	4	3	2	1
Lin\G23	0	0	0	0	0	0	0	0	0	0	СН	СН	СН	СН	СН	СН
(gain specification)		Ű	Ū	Ŭ	•	Ŭ	Ũ	Ũ	Ũ	Ũ	6	5	4	3	2	1

b6 to b15 information is fixed at 0.

1: Channel to be set 0: Invalid

3.4.8 Offset/gain adjustment value specification (Un\G24)

- (1) This area is used to set the amount of adjustment for analog output values in the offset/gain setting mode.
- (2) Turning the set value change request (YC) from OFF to ON increments or decrements the analog output value by the adjustment value.
- (3) The settable input range is from -3000 to 3000. When the set value is 1000, the analog output values can be adjusted by following value.

Output range	Adjustment when set value is 1000
User range setting1	Approx. 0.86mA
User range setting2	Approx. 0.38V
User range setting3	Approx. 0.19V

(4) Refer to Section 4.6 for details of offset/gain setting.

3.4.9 Offset/gain range setting (Un\G25)

(1) This area is used to change the output range in the offset/gain setting mode. Turning ON the channel change request (YB) changes the output range into the set one. If any value outside the setting range is set, an error occurs and the corresponding error code (Un\G19) is stored.

Output range	Set value
User range setting 1	000Fн
User range setting 2	000Ен
User range setting 3	000Dн

- (2) The channel change request (YB) must be turned ON/OFF to validate the offset/gain range setting. (Refer to Section 3.3.2.)
- (3) Refer to Section 4.6 for details of offset/gain setting.

OVERVIEW

SPECIFICATIONS

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

TROUBLESHOOT-ING

3.4.10 Rate control enable/disable setting (Un\G46)

- (1) Set whether to enable or disable the rate control on each channel.
- (2) To validate the settings, ON/OFF of the operating condition setting request (Y9) is required. (Refer to Section 3.3.2.)
- (3) The default setting is all-channel rate control disable.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
Un\G46	0	0	0	0	0	0	0	0	0	0	СН	СН	СН	СН	СН	СН	
01110-10	Ű	Ŭ	Ŭ	Ű	Ŭ	Ŭ	0	•	Ŭ	Ũ	6	5	4	3	2	1	
	b6 to b15 information is fixed at 0													: Rate : Rate	contro	ol disa	ble

(4) Refer to Section 3.2.4 for details of rate control function.

3.4.11 Warning output setting (Un\G47)

- (1) Set whether to enable or disable the warning output on each channel.
- (2) To validate the settings, ON/OFF of the operating condition setting request (Y9) is required. (Refer to Section 3.3.2.)
- (3) The default setting is all-channel warning output disable.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
Un\G47	0	0	0	0	0	0	0	0	0	0	СН	СН	СН	СН	СН	СН	
onton		Ū			Ū		Ū	, in the second se	•	Ū	6	5	4	3	2	1	
	b6 to b15 information is fixed at 0														arning arning	outpu outpu	t disable t enable

(4) Refer to Section 3.2.3 for details of warning output function.



OVERVIEW

SYSTEM CONFIGU-RATION

3

SPECIFICATIONS

SETUP AND PROCE-DURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

5

3.4.12 Warning output flag (Un\G48)

- (1) When the digital input value falls outside the CH□ warning output upper limit value/ lower limit value (Un\G86 to Un\G97) range, the bit corresponding to each channel turns to "1".
- (2) Whether the warning is the upper or lower limit value warning can be checked on each channel.
- (3) If the warning is detected on any of the channels enabled for conversion, the warning output signal (XE) turns ON.
- (4) Turning ON the operating condition setting request (Y9) or warning output clear request (YE) clears the warning output flag.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
					CH6	CH6	CH5	CH5	CH4	CH4	CH3	CH3	CH2	CH2	CH1	CH1	
Jn\G48	0	0	0	0	limit value												
	<u> </u>				,												

b12 to b15 information is fixed at 0

1: Warning output 0: Normal

(5) Refer to Section 3.2.3 for details of warning output function.

3.4.13 Scaling enable/disable setting (Un\G53)

- (1) Set whether to enable or disable the scaling on each channel.
- (2) To validate the settings, ON/OFF of the Operating condition setting request (Y9) is required. (Refer to Section 3.3.2.)
- (3) The default setting is all-channel scaling disable.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G53	0	0	0	0	0	0	0	0	0	0	СН	СН	СН	СН	СН	СН
emeee							Ũ	Ũ	Ū	Ū	6	5	4	3	2	1
b6 to b15 information is fixed at 0														1: Sca 0: Sca	ling di lina er	sable nable

(4) Refer to Section 3.2.5 for details of warning output function.



3.4.14 Scaling upper/lower limit value (Un\G54 to Un\G65)

- (1) When the scaling function is used, set a digital value input range. (Refer to Section 3.2.5.)
- (2) The setting range is -32000 to 32000.
 Set them so that the scaling upper limit value is greater than the scaling lower limit value.
 If any value outside the setting range is set, an error occurs and the corresponding error code (Un\G19) is stored.
- (3) To validate the settings, ON/OFF of the operating condition setting request (Y9) is required. (Refer to Section 3.3.2.)

3.4.15 CH□ increase/decrease digital limit values (Un\G70 to Un\G81)

- (1) For rate control, set the range where the digital value can be incremented and decremented in a conversion cycle per channel (6ms). (Refer to Section 3.2.4.)
- (2) The setting range is 0 to 64000 (0 to FA00_H).
 If any value outside the setting range is set, an error occurs and the corresponding error code is stored in error code (Un\G19).
- (3) The operating condition setting request (Y9) must be turned ON/OFF to validate the settings. (Refer to Section 3.3.2.)

Point

When setting CH increase/decrease digital limit values (Un\G70 to Un\G81) from the sequence program, values from 0 to 32767 can be set as decimal numbers without change. Note that this is not applicable to 32768 to 65535. These values must be converted to hexadecimal numbers before setting.

3.4.16 CH□ warning output upper limit value/lower limit value (Un\G86 to Un\G97)

- (1) Set the upper and lower limit values of the digital input value for providing the warning output. (Refer to Section 3.2.3.)
- (2) The setting range is -32000 to 32000.
 Make setting so that the upper limit value is greater than the lower limit value.
 If any value outside the setting range is set, an error occurs and the corresponding error code (Un\G19) is stored.
- (3) The operating condition setting request (Y9) must be turned ON/OFF to validate the settings. (Refer to Section 3.3.2.)

3.4.17 Mode switching setting (Un\G158, Un\G159)

- (1) Set the values of the mode to switch.
- (2) After setting the values, turning the operation condition setting request (Y9) from OFF to ON enables mode switching.
- (3) When mode switching is performed, this area is cleared to zero and the operating condition setting completed flag (X9) turns OFF.
 After confirming that the operating condition setting completed flag (X9) has turned OFF, turn OFF the operating condition setting request (Y9)

Mode to be switched to	Set v	alues					
	Buffer memory address 158	Buffer memory address 159					
Normal mode	0964н	4144н					
Offset/gain setting mode	4144н	0964н					

Point

If the values written are other than the above, mode switching is not performed and only the operating condition is changed.

3.4.18 Save data classification setting (Un\G200)

(1) Areas used to restore the user range settings offset/gain values when online module change is made.

Refer to Chapter 7 for details of online module change.

(2) Specify the user range setting to be saved/restored when saving/restoring the offset/ gain values of any of the user range settings 1 to 3.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
Un\G200	0	0	0	0	CI	 6	Cł	H5	Cł	H4	Cł	13	Cł	H2	CH	11	
b12 to	 o b15	inform	ation i	s fixed	d at 0	I				L	00: U 01: U 10: U	ser ra ser ra ser ra	nge se nge se nge se	etting ? etting 2 etting 3	1 spec 2 spec 3 spec	ificatio ificatio ificatio	or or

⊠Point

Refer to Section 4.6 for the offset/gain value setting method.

OVERVIEW

SYSTEM CONFIGU-RATION

PROGRAMMING

3.4.19 Factory default setting and user range settings offset/gain values (Un\G202 to Un\G225)

 Areas used to restore the user range settings offset/gain values when online module change is made.
 Defer to Chapter 7 for details of online module shapes

Refer to Chapter 7 for details of online module change.

(2) When the offset/gain values of the user range setting are restored, the used data are stored.

The data are stored (saved) when:

- Initial setting write is performed by the utility;
- The operating condition is set (Y9 turns from OFF to ON *);
- The offset/gain values are written in the offset/gain setting mode (YA turns from OFF to ON).
- *: The data are not saved when the set values have been written to the mode switch setting (Un\G158, Un\G159).
- (3) When restoring the offset/gain values of the user range setting, set the data saved in this area similarly into the corresponding area of the module where the data will be restored.
- (4) Buffer memory saving record procedure for online module change
 - 1) Set the save data classification setting (Un\G200).
 - 2) Turn the operating condition setting request (Y9) from OFF to ON.
 - Compare the offset/gain values of the factory default setting and user range settings (Un\G202 to Un\G217) with the range reference table. Refer to Section 7.4 for the range reference table.
 - 4) If the values are proper, record the offset/gain values of the save data classification setting, factory default setting and user range settings.

⊠Point

3 - 38

Refer to Section 4.6 for the offset/gain value setting method.

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

UTILITY PACKAGE (GX CONFIGURATOR-DA)

5

PROGRAMMING

4 SETUP AND PROCEDURES BEFORE OPERATION

4.1 Handling Precautions

- (1) Do not drop the module case or subject it to heavy impact.
- (2) Do not remove the PCB of the module from its case. Doing so may cause the module failure.
- (3) Be careful not to let foreign materials such as swarf or wire chips enter the module. They may cause a fire, mechanical failure or malfunction.
- (4) The top surface of the module is covered with a protective film to prevent foreign materials such as wire chips from entering the module during wiring.
 Do not remove this film until the wiring is completed. Before operating the system, be sure to remove the film to provide adequate heat radiation.
- (5) Tighten the screws such as module fixing screws within the following ranges.

Loose screws may cause short circuits, failures or malfunctions.

Screw location	Tightening torque range
Module fixing screw (M3 screw)	0.36 to 0.48 N • m
Connector screw (M2.6 screw)	0.20 to 0.29 N • m
FG Terminal screw (M3 screw)	0.42 to 0.58 N • m

(6) To mount the module on the base unit, fully insert the module fixing latch into the fixing hole in the base unit, using the module fixing hole as a fulcrum. Improper installation may result in a module malfunction or failure, or may cause the module to fall off.

(7) Fix the Q66DA-G with module fixing bracket after the Q66DA-G is mounted to the base unit.

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4.2 Setup and Procedures before Operation



OVERVIEW 2 SYSTEM CONFIGURATION SPECIFICATIONS 4 ERATION UTILITY PACKAGE (GX CONFIGURATOR-DA) 5 PROGRAMMING ONLINE MODULE CHANGE TROUBLESHOOTING

4.3 Part Names



The name of each part in the Q66DA-G is listed below.

Number	Name	Description	
		Displays the operating status of the Q66DA-G.	
		On : Normal operation	
1)	RUN LED	Flashing : During offset/gain setting mode	
		Off : 5V power switched off, watchdog timer error	
		occurred, or online module change enabled.	
		Displays the error status of the Q66DA-G.	_
		On : Error (Refer to Section 8.1)	
2)		Flashing Error in switch settings	
2)	ERR. LED	Switch No. 5 of the intelligent function module has	
		been set to a value other than zero "0".	
		Off : Normal operation	
		Indicates the warning status of the Q66DA-G.	
3)		On : During warning output occurrence (Refer to Section	
5)		3.2.3)	
		Off : Normal operation	
4)	FG terminal L-Shaped	Metal fitting to wire for EG of the $O66DA_G$	_
-r)	metal fitting		

⊠Point

When two or more errors have occurred, the latest error found by the Q66DA-G is displayed on the LED.

SETUP AND PROCEDURES BEFORE OPERATION

MELSEG **Q** series

			Terminal number	Signal name	Terminal number	Signal name
	_		A1	CH1 V +	B1	CH1 COM1
A1		B1	A2	CH1 I +	B2	-
A2	0 0	B2	A3	-	B3	-
A3 A4		B3 B4	A4	CH2 V +	B4	CH1 COM2
A5		B5	A5	CH2 I +	B5	-
A6 A7		B6 B7	A6	-	B6	-
A8		B8	A7	CH3 V +	B7	CH1 COM3
A9 A10		B9 B10	A8	CH3 I +	B8	-
A11		B11	A9	-	B9	-
A12 A13		B12 B13	A10	CH4 V +	B10	CH1 COM4
A14		B14	A11	CH4 I +	B11	-
A15 A16		B15 B16	A12	-	B12	-
A17		B17	A13	CH5 V +	B13	CH1 COM5
A18 A19		B18 B19	A14	CH5 I +	B14	-
A20		B20	A15	-	B15	-
	\square		A16	CH6 V +	B16	CH1 COM6
oon fi	om th	o front	A17	CH6 I +	B17	-
the r	the module		A18	-	B18	-
		-	A19	24VDC	B19	24VDC
			A20	24GDC	B20	24GDC

Se of

OVERVIEW

2

SYSTEM CONFIGURATION

3

SPECIFICATIONS

PROGRAMMING

4.4 Wiring

The wiring precautions and examples of module connection are provided below.

4.4.1 Wiring precautions

In order to optimize the functions of the Q66DA-G and ensure system reliability, external wiring that is protected from noise is required.

The following shows the precautions for external wiring.

- (1) Use separate cables for the alternating-current control circuit and the external output signals and external supply power of the Q66DA-G in order to avoid AC surges and induction effects.
- (2) Do not mount the cables close to or bundle them with the main circuit line, a high-voltage cable or a load cable from other than the programmable controller. This may increase the effects of noise, surges and induction.
- (3) Perform a one-point grounding for shielded lines and the shields of shielded cables.
- (4) When the wiring of the module mounted right to the Q66DA-G is difficult, perform wiring after removing the Q66DA-G.

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURATOR-DA)

5

PROGRAMMING

4.4.2 External wiring

(1) For voltage output



- *1 Use a twisted two-core shielded wire for the power wire.
- *2 If there is noise or ripples in the external wiring, connect a 0.1 to 0.47μF25V capacitor between the V+ terminal and COM terminal.

(2) For current output



- *1 Use a twisted two-core shielded wire for the power wire.
- *2 If there is noise or ripples in the external wiring, connect a 0.1 to 0.47 μ F25V capacitor between the I+ terminal and COM terminal.

⊠ Point₋

Q66DA-G needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

Similarly, power on 30 minutes prior to offset/gain setting or after online module replacement.

4.5 Intelligent Function Module Switch Setting

The intelligent function module switch settings are performed using the I/O assignment settings of GX Developer.

(1) Setting item

The intelligent function module switches consist of switches 1 to 5 and are set using 16 bit data. When the intelligent function module switches are not set, the default value for switches 1 to 5 is 0.



Table4.1 Switch setting item for intelligent function module

 * Setting any value within the setting range provides the same operation. When the setting range is 1 to FH, set 1 for example.

⊠Point_

(1) The switch 3 is set in binary.

Setting will be easy if the input format is changed to binary number.

[Example For setting CH3, CH5 and CH6 to HOLD.]

Input format	Binary	Hexadecimal
Setting value	00110100	34н

- (2) If the offset/gain setting mode is set using intelligent function module switch 4, resolution mode will be ignored.
- (3) Perform the offset/gain settings after checking the RUN LED flashes in offset/ gain setting mode. If the RUN LED does not flash, check to see if the switch 4 setting is correct.
- (4) Since the analog output value differs considerably depending on the resolution mode setting, thoroughly check the settings for the intelligent function module switches before performing the analog output processing. [Example Analog output value when the setting range is -10 to 10V and the digital input value is set to 4000.]

	High resolution mode	Normal resolution mode
Analog output value	About 2.5 V	About 10.0 V

(2) Operating procedure

Start the settings with GX Developer I/O assignment setting screen.

Qn(ŀ	i) Para	imete	r								
PLC Bool	name t file	PL	C system	P !	PLC file PLC R SFC	AS(1)	PLC RA	S(2) ssig	Dev nment	rice	Program
- 1/D Assignment(*)											
	S	ilot	Туре		Model nam	e	Points		StartXY	٠	
0	I PLC		PLC	•				Ŧ			Switch setting
1	0(0+0)	Intelli.	•	Q66DA-G		16points	-	0000		N 1 1 1 1
2	1(0-1]		•				•			Detailed setting
3	2(0-2	1		•				•			
4	3(0-3	<u>j</u>		•				•			
5	4(0+4	1		•				•			
-	-			•				-		-	
Ba	Assigning the I/O address is not necessary as the CPU does it automatically. Leaving this setting blank will not cause an error to occur. Base setting(*)										
	Main	Base	model name	P	'ower model name	Exten	sion cable	9	ilots		⊂ Auto ⊙ Detail
Ext	t.Base1								-		
Ext	t.Base2								-		
Ext	t.Base3							-	-		8 Slot Default
Ext	t.Base4			-				-	•		12 Slot Default
Ext	t.Base5	l		L				<u> </u>	• •		
(*)Setting using r	is shou nultiple	ld be set as s CPU.	am	e whenIm	port Mul	tiple CPU P	aran	neter	F	Read PLC data
Ack	Acknowledge XY assignment Multiple CPU settings Default Check End Cancel										

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4 NOIL

(a) I/O assignment setting screen

Set the following for the slot in which the Q66DA-G is mounted.The type setting is required; set other items as needed.Type:Select "intelli."Model name:Enter the module model name.Points:Select 16 points.

Start XY :Enter the start I/O signal for the Q66DA-G. Detailed setting :

- When using in the standard system configuration (on the main or extension base), specify the control CPU of the Q66DA-G.
 It is unnecessary to set the "Error time output mode" or "H/W error time PLC operation mode" since these settings are invalid for the Q66DA-G.
- 2) When using on a remote I/O station, if the analog output is to be held in the case of a link error, "Error time output mode" must be set to "Hold".

Intelligent function module detailed setting											
	Slot	Туре	Model name	Error tir outpu mode	me ut e	1/0 response time	•				
0	Remote I/O	Remote I/O			-						
1	0(*-0)	Intelli.	Q66DA-G	Hold	-	-					
2	1(*-1)				-	-					
3	2(*-2)				•	-					
4	3(*-3)				Ŧ	-					
5	4(*-4)				•	-					
6	5(*-5)				-	-					
7	6(*-6)				•	-					
8	7(*-7)				-	-					
9	8(*-8)				•	-					
10	9(*-9)				•	-					
11	10(*-10)				Ŧ	-					
12	11(*-11)				•	-					
13	12(*-12)				-	-					
14	13(*-13)				Ŧ	-					
15	14(*-14)				Ŧ	-	•				
						End		Cancel			

3) Switch setting for intelligent function module screen

Click on [Switch setting] on the I/O assignment setting screen to display the screen shown at the under, then set switches 1 to 5.

The switches can easily be set if values are entered in hexadecimal. Change the entry format to hexadecimal and then enter the values.



Offset/Gain Settings 4.6

When the user range setting is used, perform the offset and gain settings according to the following procedure.

MELSEG Q series

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

ERATION

5

PROGRAMMING

ONLINE MODULE CHANGE

TROUBLESHOOTING

When the industrial shipment setting is used, offset/gain setting is not necessary. If the utility package is installed, perform the offset/gain settings according to the procedure described in Section 5.6.2.

(1) Offset/gain setting procedure



- *1 The mode switching (normal mode to offset/gain setting mode to normal mode) method is given below.
 - Dedicated instruction (G(P).OFFGAN).....Refer to Section 4.6 (2), (a)
 - Setting made to mode switching setting (Un\G158, Un\G159) and turning the operation condition setting request (Y9) from OFF to ONRefer to Section 4.6 (2), (b)
 - •Intelligent function module switch setting Refer to Section 4.5, Section 4.6 (2), (c) (After intelligent function module switch setting, reset the programmable controller CPU or switch power OFF,

then ON.)

⊠ Point₋

(1) Perform the offset/gain settings in the range that satisfies the conditions specified in Section 3.1.2, (1) and (2).

When the setting exceeds this range, the maximum resolution or total accuracy may not be within the range indicated in the performance specification.

- (2) Perform the offset/gain settings separately for each channel. If channels are set in Un\G22 and Un\G23 at the same time, an error will occur and the ERR. LED will be lit.
- (3) After the offset and gain settings are completed, verify that the offset and gain values have been set correctly under actual usage conditions.
- (4) The offset and gain values are stored into the Flash memory and are not erased at power-off.
- (5) At the time of offset/gain setting, turn ON the user range write request (YA) to write the values to the Flash memory.
 Data can be written to the Flash memory up to 100 thousand times.
 To prevent accidental write to the Flash memory, an error will occur and the error code (Un\G19) will be stored if write is performed 26 consecutive times.
- (6) If an error (error code: 40□^{*1}) occurs during offset/gain setting, re-set the correct offset/gain value.

The offset/gain value of the channel where the error has occurred is not written to the Q66DA-G. (*1: indicates the corresponding channel number.)

- (7) Module Ready (X0) turns from OFF to ON when the offset/gain setting mode switches to the normal mode by the dedicated instruction (G(P).OFFGAN) or the setting of the mode switching setting (Un\G158, Un\G159). Note that initial setting processing will be executed if there is a sequence program that makes initial setting when Module Ready (X0) turns ON.
- (8) D/A conversion is discontinued if the mode is switched (from the normal mode to the offset/gain setting mode or from the offset/gain setting mode to the normal mode) by the dedicated instruction (G(P).OFFGAN) or the setting of the mode switching setting (Un\G158, Un\G159).
- (9) Un\G200, Un\G202 to Un\G217 are the areas used to restore the user range settings offset/gain values when online module change is made. Refer to Chapter 7 for details of online module change.
(2) Program examples

The program in the dotted area of (a) is common to (a), (b) and (c). In this example, the I/O signals for the Q66DA-G are X/Y0 to X/YF.

Channel selection	M0
Offset/gain range setting	M1
Offset setting	M2
• Gain setting ·····	М3
Channel change command	M4
Writing the adjustment amount	M5
Analog output value adjust command	M6
Offset/gain setting value write command to the module	M7
Mode switching	M8
Normal mode checking signal	M50
Channel designation storage device	D0
Dedicated instruction (G(P).OFFGAN) setting storage device	D2
Offset/gain adjustment storage device	D1

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

ATION

(a) When switching the mode using the dedicated instruction (G(P).OFFGAN) The following sample program switches to the offset/gain setting mode with the dedicated instruction (G(P).OFFGAN), changes the channel where offset/gain setting will be made, adjusts the offset/gain values, and writes the offset/gain values to the Q66DA-G.

owneries to onsergain setting mode				
[V] [V] 	[M0¥P	K1	D2	Stores setting of dedicated instruction (G.OFFGAN) into D2.
[0.0	DFFGAN	UO	D2	Bedicated instruction (G.OFFGA
Switch to the channel where offset/gain settings will be performed	[W0A	н1	D0	Stores channel where offset/
M1 X0A	[NOA	HOE	UC \ G25	 Gffset/gain range setting.
H2 H3 X0A	[W0A	DO	UC \ G22	Specifies offset setting channel.
	[W0A	ко	UC \ G23	Sets 0 to buffer memory address 23.
M2 M3 X0A	[WOA	ко	UC \ G22	Sets 0 to buffer memory address 22.
	[W0¥	DO	UC \ G23	Specifies gain setting channel.
		[Set	YOB	Turns ON channel change request (YB).
		[RST	YOB	Turns OFF channel change request (YB).
Set the amount of each change within the range from -3000 to 3000 during a	MOV	K100	D1	Set offset value adjustment to D
	[W0A	D1	UC \ G24	Set D1 to buffer memory address 24.
Adjust the analog output value		[Set	YOC	Turn ON Set value change request (YC).
		[RST	YOC	Turn OFF Set value change request (YC).
		[Set	YOA	Turns ON user range change request (YA).
ход		[RST	YOA	Turns OFF user range change request (YA).
Switches to normal mode	[#0¥P	ко	D2	Stores setting of dedicated instruction (G.OFFGAN) into D2.
[G.C	DFFGAN	UO	D2	Dedicated instruction (G.OFFGA
хоа — УГ	Proces	sing in norr	nal mode	3
			[END]

* 1 The program in the dotted area is a common program.

			¥9 ∤f	X9 	[моу	HO	UC\ GO] D/A conversion enable/disable
					*3 Adding initial setting	g items		
						[SET	¥9	Turns ON operation condition setting request (Y9).
	M50					[RST	Y9]
itches to	offset/ga	in setting X0A	mode		[моч	H4144	UC\ G158	J Sets 4144H to buffer memory address 158.
					Емол	H964	UC\ G1 59	Sets 964H to buffer memory address 159.
						[SET	¥9	Turns ON operation condition setting request (Y9).
						SET	M50	Э
M8 	M50	¥9 ──┤	×9 			{RST	Y9	3
					non program			_
itches to	normal n	node						
		X0			Гиол	H964	U0\ G1 58	Sets 964H to buffer memory address 158.
					Гиоч	H4144	U0\ G1 59	Sets 4144H to buffer memory address 159.
						[SET	¥9	Turns ON operation condition setting request (Y9).
						[SET	M51	Э
						[RST	M50	3
	M51	¥9 −− −−	×9 			[rst	¥9	Turns OFF operation condition setting request (Y9).
							— (T0	> 1-second timer
	M51					[RST	M51	Э
							[END	3
		\times	Poi	nt_				
			Wh	en run	this program together with	the norm	nal-mod	e D/A conversion program(
			in S	ection	3), use *2 of this program a	is the ini	itial setti	ing program.

*3 Example of adding initial setting items (Rate control funcion)

(b) When switching the mode using the setting of the mode switching setting (Un\G158, Un\G159) and operation condition setting request (Y9)

(c) When switching the mode by making intelligent function module switch setting Only the common program is necessary.

MOV

MOV

MOV

H3E

K100

K30

U0\ G46

G70 }

U0\

 \mathbf{r} U0\

} G71

Rate control enable/disable setting

CH1 increase digital

CH1 decrease digital limit value

limit value

MELSEG Q series

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

ERATION

UTILITY PACKAGE (GX CONFIGURATOR-DA)

6

PROGRAMMING

ONLINE MODULE CHANGE

Н

TROUBLESHOOTING

5 UTILITY PACKAGE (GX Configurator-DA)

5.1 Utility Package Functions

Table 5.1 shows an overview of the utility package functions.

	Table5.1 Utility package (GX Configurator-DA) function list	
Item	Reference section	Description
Initial setting ^{*1}	 (1) Set the following items that require initial setting. D/A conversion enable/disable setting Scaling enable/disable setting Scaling upper limit value/lower limit value Rate control enable/disable setting Increase/decrease digital limit values Disconnection detection setting Warning output setting Warning output setting Warning output upper limit value/lower limit value (2) The data for which initial setting has been completed is registered in the parameters for the programmable controller CPU, and automatically written to the Q66DA-G when the programmable controller CPU changes to RUN status. 	Section 5.4
Automatic refresh setting ^{*1}	 Sets automatic refresh for the Q66DA-G buffer memory. The buffer memory that was set for automatic refresh is automatically read and written to the specified device when the END command for the pro- grammable controller CPU is executed. 	Section 5.5
Monitor/Test	 Monitor/Test The buffer memory and I/O signals for the Q66DA-G are monitored and tested. (2) Operating condition setting Changes the D/A conversion enable/disable during operation. (3) Offset/gain setting When setting the offset/gain to a value selected by the user (when the analog output range setting is user range setting), the offset and gain can be easily set while viewing the screen. (4) Pass data The pass data (pass data classification setting, industrial shipment settings offset/gain values, user range settings offset/gain values) can be monitored and set. 	Section 5.6
FB conversion	Generates FB automatically from the intelligent function module parameter (initial setting/auto refresh setting).	Section 5.7

5.2 Installing and Uninstalling the Utility Package

For how to install or uninstall the utility package, refer to "Method of installing the MEL-SOFT Series" included in the utility package.

5.2.1 Handling precautions

The following explains the precautions on using the GX Configurator-DA:

(1) For safety

Since GX Configurator-DA is add-in software for GX Developer, read "Safety Precautions" and the basic operating procedures in the GX Developer Operating Manual.

(2) About installation

GX Configurator-DA is add-in software for GX Developer Version 4 or later. Therefore, GX Configurator-DA must be installed on the personal computer that has already GX Developer Version 4 or later installed.

(3) Screen error of Intelligent function module utility

Insufficient system resource may cause the screen to be displayed inappropriately while using the Intelligent function module utility. If this occurs, close the Intelligent function module utility, GX Developer (program, comments, etc.) and other applications, and then start GX Developer and Intelligent function module utility again.

(4) To start the Intelligent function module utility

- (a) In GX Developer, select "QCPU (Q mode)" for PLC series and specify a project. If any PLC series other than "QCPU (Q mode)" is selected, or if no project is specified, the Intelligent function module utility will not start.
- (b) Multiple Intelligent function module utilities can be started. However, [Open parameters] and [Save parameters] operations under [Intelligent function module parameter] are allowed for one Intelligent function module utility only. Only the [Monitor/test] operation is allowed for the other utilities.

OVERVIEW

SYSTEM CONFIGURATION

3

SPECIFICATIONS

(5) Switching between two or more Intelligent function module utilities When two or more Intelligent function module utility screens cannot be displayed side by side, select a screen to be displayed on the top of others using the task bar.

🛃 start 🔰 🏟 MELSOFT series GX D... 🛛 🌌 Intelligent function m... 🛛 🖉 Intelligent function m...

(6) Number of parameters that can be set in GX Configurator-DA

When multiple intelligent function modules are mounted, the number of parameter settings must not exceed the following limit.

When intelligent function modules are installed to:	Maximum number of parameter settings			
When intelligent function intouties are installed to.	Initial setting	Auto refresh setting		
Q00J/Q00/Q01CPU	512	256		
Q02/Q02H/Q06H/Q12H/Q25HCPU	512	256		
Q02PH/Q06PH/Q12PH/Q25PHCPU	512	256		
Q12PRH/Q25PRHCPU	512	256		
Q02UCPU	2048	1024		
Q03UD/Q04UDH/Q06UDH/Q13UDH/Q26UDH/				
Q03UDE/Q04UDEH/Q06UDEH/Q13UDEH/	4096	2048		
Q26UDEHCPU				
MELSECNET/H remote I/O station	512	256		

For example, if multiple intelligent function modules are installed to the MELSECNET/ H remote I/O station, configure the settings in GX Configurator so that the number of parameter settings for all the intelligent function modules does not exceed the limit of the MELSECNET/H remote I/O station.

Calculate the total number of parameter settings separately for the initial setting and for the auto refresh setting.

The number of parameters that can be set for one module in GX Configurator-DA is as shown below.

Target module	Initial setting	Auto refresh setting
Q66DA-G	5 (Fixed)	14 (Max.)





OVERVIEW

5

5.2.2 **Operating environment**

This section explains the operating environment of the personal computer that runs GX Configurator-DA.

Item		Description			
Installation (Add-	in) target ^{*1}	Add-in to GX Developer Version 4 (English version) or later*2			
Computer		Windows [®] -based personal computer	-		
	CPU	Refer to the next page "Operating system and performance required for personal computer"	U IO		
	Required memory		IRA ⁻		
Hard disk	For installation	65 MB or more	IGL IGL		
space ^{*3}	For operation	20 MB or more	AST ONF		
Display		800 \times 600 dots or more resolution ^{*4}	ပ်လဲ		
		Microsoft [®] Windows [®] 95 Operating System (English version)	- 3		
		Microsoft [®] Windows [®] 98 Operating System (English version)	S		
		Microsoft [®] Windows [®] Millennium Edition Operating System (English version)			
		Microsoft [©] Windows NT [©] Workstation Operating System Version 4.0 (English version)			
		${\sf Microsoft}^{\otimes}\;{\sf Windows}^{\otimes}\;$ 2000 Professional Operating System (English version)			
Operating system	,	Microsoft [®] Windows [®] XP Professional Operating System (English version)	с Ч		
Operating system		Microsoft [®] Windows [®] XP Home Edition Operating System (English version)	4		
		Microsoft $^{\odot}$ Windows Vista $^{\odot}$ Home Basic Operating System (English version)	TION		
		Microsoft $^{\odot}$ Windows Vista $^{\odot}$ Home Premium Operating System (English version)	ES		
		Microsoft [®] Windows Vista [®] Business Operating System (English version)			
		Microsoft $^{\odot}$ Windows Vista $^{\odot}$ Ultimate Operating System (English version)	TUP OCE FORI		
		Microsoft $^{\odot}$ Windows Vista $^{\odot}$ Enterprise Operating System (English version)	л н н		

*1: Install the GX Configurator-DA in GX Developer Version 4 or higher in the same language. GX Developer (English version) and GX Configurator-DA (Japanese version) cannot be used in combination, and GX Developer (Japanese version) and GX Configurator-DA (English version) cannot be used in combination.

*2: GX Configurator-DA is not applicable to GX Developer Version 3 or earlier. In addition, GX Developer Version 8 or later is necessary to use the FB conversion function.

*3: At least 15GB is required for Windows Vista[®].

*4: Resolution of 1024 X 768 dots or more is recommended for Windows Vista®.

Operating system	Performance required for personal computer			
Operating system	CPU	Memory		
Windows [®] 95	Pentium [®] 133MHz or more	32MB or more		
Windows [®] 98	Pentium [®] 133MHz or more	32MB or more		
Windows [®] Me	Pentium [®] 150MHz or more	32MB or more		
Windows NT [®] Workstation 4.0	Pentium [®] 133MHz or more	32MB or more		
Windows [©] 2000 Professional	Pentium [®] 133MHz or more	64MB or more		
Windows $^{\odot}$ XP Professional (Service Pack 1 or more)	Pentium [®] 300MHz or more	128MB or more		
Windows $^{\odot}$ XP Home Edition (Service Pack 1 or more)	Pentium [®] 300MHz or more	128MB or more		
Windows Vista [®] Home Basic	Pentium [®] 1GHz or more	1GB or more		
Windows Vista [®] Home Premium	Pentium [®] 1GHz or more	1GB or more		
Windows Vista [®] Business	Pentium [®] 1GHz or more	1GB or more		
Windows Vista® Ultimate	Pentium [®] 1GHz or more	1GB or more		
Windows Vista [®] Enterprise	Pentium [®] 1GHz or more	1GB or more		

Operating system and performance required for personal computer

Point

(1) The functions shown below are not available for Windows $^{\odot}\,$ XP and Windows Vista $^{\odot}$.

If any of the following functions is attempted, this product may not operate normally.

- Start of application in Windows® 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.
- (2) Use a USER authorization or higher in Windows Vista[®].

MELSEG Q series

5.3 Utility Package Operation

5.3.1 Common utility package operations

(1) Control keys

Special keys that can be used for operation of the utility package and their applications are shown in the table below.

Кеу	Application				
Esc	Cancels the current entry in a cell.				
	Closes the window.				
Tab	Moves between controls in the window.				
Ctrl	Used in combination with the mouse operation to select multiple				
Ciri	cells for test execution.				
Delete	Deletes the character where the cursor is positioned.				
Delete	When a cell is selected, clears all of the setting contents in the cell.				
Back Space	Deletes the character where the cursor is positioned.				
$\uparrow \qquad \qquad \leftarrow \qquad \rightarrow$	Moves the cursor.				
Page Up	Moves the cursor one page up.				
Page Down	Moves the cursor one page down.				
Enter	Completes the entry in the cell.				

(2) Data created with the utility package

The following data or files that are created with the utility package can be also handled in GX Developer. Figure 5.1 shows respective data or files are handled in which operation.

<Intelligent function module parameter>

(a) This represents the data created in Auto refresh setting, and they are stored in an intelligent function module parameter file in a project created by GX Developer.



(b) Steps 1) to 3) shown in Figure 5.1 are performed as follows:

1) From GX Developer, select:

 $[Project] \rightarrow [Open project] / [Save]/ [Save as]$

- 2) On the intelligent function module selection screen of the utility, select: [Intelligent function module parameter] → [Open parameters] / [Save parameters]
- 3) From GX Developer, select:

[Online] \rightarrow [Read from PLC] / [Write to PLC] "Intelligent function module parameters"

Alternatively, from the intelligent function module selection screen of the utility, select:

[Online] \rightarrow [Read from PLC] / [Write to PLC]

5 - 7

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

5

CONFIGURATOR-

PROGRAMMING

<Text files>

(a) A text file can be created by clicking the Make text file button on the initial setting, Auto refresh setting, or Monitor/Test screen. The text files can be utilized to create user documents.



Fig5.1 Correlation chart for data created with the utility package

→ 1)

PLC side Device

D12

5.3.2 Operation overview

GX Developer scre	en						
D(Edit mode) MAIN 35 Step]							
Tools Window Help							
Check program Confirm project memory size							
Merge data Check parameter							
Transfer ROM							
Clear all parameters							
IC memory card							
Start ladder logic test							
Set TEL data							
Intelligent function utility	Utility list						
Customize keys Change display color	Start						
Options							
Create start-up setting file							
Screen for selection to the selection of	Cting a target ction module D:WELSECKOPPWDA Tools Help errion Module iel name iupport Parameter e Initial setting Auto refresh Available Available Delete Exit	Enter	"Start I/O No.", and selec	t "Modu	le type"		
ł		and "	Module model name".				
	Initial setting				Auto re	fresh	
Initial settin	ig screen		Auto refr	esh sett	ing scre	en	
nitial setting			Auto refresh setting				
Module information	Quet 1/0 No : 0000	1	Module information				
Module type: D7A Conversion Module Module model name: Q66DA-G	Start I/O NO.: 0000		Module type: D/A Conversion Module	(Start I/O No.:	0000	
C. March and	Cuthe units	1	Module model name: Q66DA-G				
CH1 D/A conversion enable/disable setting	Disable						
CH2 D/A conversion enable/disable setting	Disable 🗸		Setting item	Module side	Module side		Tran
CH3 D/A conversion enable/disable setting	Disable		Setung term	Duilei Size	word count		direc
CH4 D/A conversion enable/disable setting	Disable		CH1 Digital value	1	1		<
CH5 D/A conversion enable/disable setting	Disable		CH2 Digital value	1	1		<
CH6 D/A conversion enable/disable setting	Disable v		CH3 Digital value	1	1		<
unin o daling enablerusable setting		1	CH4 Digital value	1	1		<
			CH5 Digital value	1	1		<
			CH5 Digital value	1	1		<
Details Select input			CH1 Set value check code				
Setting r	ange		CH3 Set value check code	1	1		
Enable			chorset value check code	1	1		
Disable							
1			Males but file		. 1		
Make text file End se	Aup Cancel		make text me	End setu	Ч		
Refer to Se	ection 5.4						-

Refer to Section 5.5.

MELSEG **Q** series

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

SETUP AND PROCEDURES BEFORE OPERATION

5

UTILITY PACKAGE (GX CONFIGURATOR-DA)

6

			<	FB support parameter>> tab
	[Online] - [Monito	or/Test]		- FB conversion
Selecting monit	tor/test module screen	า	FB conversion	n screen
Select monitor/test n	nodule 🛛 🕅	2	FB conversion	
Select monitor/test moc Start I/0 No. N 10000	tule Module type D/A Conversion Module Module model name Q660A-G	F	B program is generated from the following contents. Start I/O Module model Initial Auto No. name setting reflects FB prog	Conversion Close parn name Title
Module implementation Start I/O No 0000 (0660	status Module model name 4-G			
Monitor/Test	Exit		Refer to See	ction 5.7.
Monito	Select a module t	to be monitored/te	sted.	
onitor/Test Module information Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/O No.: 0000			
Setting item	Current value	Setting value		
CH5 Warning output flag upper limit value	Normal			
.H5 Warning output flag lower limit value	Normal			
H6 Warning output flag upper limit value	Normal			
inor code	0			
ietting range CH1-CH4	0000			
etting range CH5-CH6	0000			
/ monitor/test</td <td></td> <td>X/Y monitor/test</td> <td></td> <td></td>		X/Y monitor/test		
Operating condition setting		Operating setting		
Offset/gain setting		Offset/gain setting	_	
Pass data		Pass data	<u> </u>	
Flash ROM setting Write to Save file Current value display	Details Decimal input	Monitoring		
Read from Load fie Make text file	Continue of the		-	

Clos

Execute test Refer to Section 5.6.

Stop monitor

5.3.3 Starting the Intelligent function module utility

[Operating procedure]

Intelligent function module utility is started from GX Developer.

 $[\text{Tools}] \rightarrow [\text{Intelligent function utility}] \rightarrow [\text{Start}]$

[Setting screen]

Display when the <<FB support parameter>> tab is selected

🌌 Intelligent fun	ction module utility D:	\MELSEC\GPPW	/\DA 🔳 🗖 🔀				
Intelligent function ma	odule parameter <u>O</u> nline <u>T</u> o	ools <u>H</u> elp					
Select a target inte	elligent function module.						
Start I/O No.	Module type						
00	00 D/A Conversio	on Module	•				
	Module model na	ame					
	Q66DA-G		•				
Parameter setting n	nodule						
Intelligent function	module parameter FB Supp	ort Parameter					
Start I/O No.	Module model name	Initial setting	Auto refresh 🔺				
0000	Q66DA-G	Available	Available				
			<u> </u>				
			<u> </u>				
(Payamatar	1	_	EB conversion				
	< <parameter conversion<="" fb="" td=""></parameter>						
			1				
Initial setting	Auto refresh	Delete	Exit				

[Explanation of items]

(1) Activation of other screens

Following screens can be displayed from the intelligent function module utility screen. Common operations to the <<Intelligent function module parameter>> tab and <<FB support parameter>> tab

(a) Initial setting screen

"Start I/O No.^{*1}"
$$\rightarrow$$
 "Module type" \rightarrow "Module model name" \rightarrow Initial setting

(b) Auto refresh setting screen

```
"Start I/O No.<sup>*1</sup>" \rightarrow "Module type" \rightarrow "Module model name" \rightarrow Auto refresh
```

(c) Select monitor/test module screen

[Online] \rightarrow [Monitor/Test]

*1 Enter the start I/O No. in hexadecimal.

On the <<FB support parameter>> tab

(a) FB conversion screen
 <<FB support parameter>> tab → FB conversion
 For details, refer to Section 5.7.

MELSEG Q series

⊠Point

The <<FB support parameter>> tab is displayed when the project which is being edited is a label project.

OVERVIEW

(2) Command buttons

Common operations to the <<Intelligent function module parameter>> tab and <<FB support parameter>> tab



Deletes the initial setting and auto refresh setting of the selected module.

However, if initial setting and auto refresh setting have been prepared and the cell of initial setting or auto refresh setting is selected and executed, only the setting of the selected cell is deleted.



Closes this screen.

When the <<FB support parameter>> tab is selected

<<Parameter

Moves the setting of the selected line to the <<Intelligent function module parameter>> tab.

When the <<Intelligent function module parameter>> tab is selected

FB parameter>>

Moves the setting of the selected line to the <<FB support parameter>> tab.

(3) Menu bar

(a) File menu

Intelligent function module parameters of the project opened by GX Developer are handled.

🔏 Intelligent function module	utility	D:\
Intelligent function module parameter	Online	То
Open parameters Close parameters	Ctrl+0	ł
Save parameters Delete parameters	Ctrl+S	51
Open FB support parameters Save as FB support parameters		ы
Exit		

	[Open parameters]:	Reads a parameter file.
	[Close parameters]:	Closes the parameter file. If any data are modified, a dialog asking for file saving will appear.
	[Save parameters]:	Saves the parameter file.
	[Delete parameters]:	Deletes the parameter file.
	[Open FB support parameters]:	Opens the FB support parameter file.
	[Save as FB support parameters]:	Saves the FB support parameter file.
	[Exit]:	Closes this screen.
(b)	Online menu	
	[Monitor/Test]:	Activates the Select monitor/test module screen.
	[Read from PLC]:	Reads intelligent function module parameters from the CPU module.
	[Write to PLC]:	Writes intelligent function module parameters to the CPU module.



Unline Tools Help Monitor/Test... Read from PLC Write to PLC

OVERVIEW

SYSTEM CONFIGURATION

3

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

⊠Point

- (1) Saving intelligent function module parameters in a file Since intelligent function module parameters cannot be saved in a file by the project saving operation of GX Developer, save them on the shown module selection screen for intelligent function module parameter setting.
- (2) Reading/writing intelligent function module parameters from/to a programmable controller CPU using GX Developer
 - (a) Intelligent function module parameters can be read from and written into a programmable controller after having been saved in a file.
 - (b) Set a target programmable controller CPU in GX Developer: [Online] \rightarrow [Transfer setup].
 - (c) When the Q66DA-G is installed to the remote I/O station, use "Read from PLC" and "Write to PLC".
- (3) Checking the required utility

While the start I/O is displayed on the Intelligent function module utility setting screen, "* " may be displayed for the model name.

This means that the required utility has not been installed or the utility cannot be started from GX Developer.

Check the required utility, selecting [Tools] - [Intelligent function utility] - [Utility list...] in GX Developer.

TROUBLESHOOTING

5.4 Initial Setting

[Purpose]

Set the following items in the initial setting parameters.

- D/A conversion enable/disable setting
- Rate control enable/disable setting
- Increase/decrease digital limit values
- Disconnection detection setting
- Warning output setting
- Warning output upper limit value/lower limit value

This initial setting makes sequence program setting unnecessary.

[Operating procedure]

"Start I/O No.*" \rightarrow "Module type" \rightarrow "Module model name" \rightarrow II	nitial setting
---	----------------

* Enter the start I/O No. in hexadecimal.

[Setting screen]

nitial setting				
Module information Module type: D/A Conversion Module Module model name: Q66DA-G		Start I/O No.:	0000	
Setting item		Setti	ng value	-
CH1 D/A conversion enable/disable setting		Disable		-
CH2 D/A conversion enable/disable setting		Disable		•
CH3 D/A conversion enable/disable setting		Disable		-
CH4 D/A conversion enable/disable setting		Disable		•
CH5 D/A conversion enable/disable setting		Disable		•
CH6 D/A conversion enable/disable setting		Disable		-
CH1 Scaling enable/disable setting		Disable		•
	– Details Select inpu Setting r Enable Disable	t ange		

[Explanation of items]

(1) Setting contents

Set the D/A conversion enable/disable setting, rate control enable/disable setting and others for each channel.

OVERVIEW

SYSTEM CONFIGURATION

3

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

ð A

PROGRAMMING

ONLINE MODULE CHANGE

TROUBLESHOOTING

(2) Command button

Make text file	Creates a file containing the screen data in text file format.
End setup	Saves the set data and ends the operation.
Cancel	Cancels the setting and ends the operation.

⊠ Point

Initial settings are stored in an intelligent function module parameter file. After being written to the CPU module, the initial setting is made effective by either (1) or (2).

- (1) Cycle the RUN/STOP switch of the CPU module: STOP \rightarrow RUN \rightarrow STOP \rightarrow RUN.
- (2) With the RUN/STOP switch set to RUN, turn off and then on the power or reset the CPU module.

When using a sequence program to write the initial settings, when the CPU is switched from STOP to RUN the initial settings will be written. So ensures that programming is carried out to re-execute the initial settings.

5.5 Auto Refresh Setting

[Purpose]

Configure the Q66DA-G's buffer memory for automatic refresh.

[Operating procedure]

"Start I/O No.*" → "Module type" → "Module model name" → Auto refresh * Enter the start I/O No. in hexadecimal.

[Setting screen]

A	uto refresh setting						
	Module information Module type: D/A Conversion Module Module model name: Q66DA-G	S	tart I/O No.:	0000			
	Setting item	Module side Buffer size	Module side Transfer word count		Transfer direction	PLC side Device	•
	CH1 Digital value	1	1		<-	D11	-
	CH2 Digital value	1	1		<-	D12	-
	CH3 Digital value	1	1		<-		-
	CH4 Digital value	1	1		<-		
	CH5 Digital value	1	1		<-		
	CH6 Digital value	1	1		<-		-
	CH1 Set value check code	1	1		->		-
	CH2 Set value check code	1	1		->		-
	CH3 Set value check code	1	1		->		-
	Make text file	End setu	,			Cancel	_
					_		

MELSEG Q series

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

SETUP AND PROCEDURES BEFORE OPERATION

5

IFIGURATOR

(GX CON DA)

PROGRAMMING

[Explanation of items]

(1) Items

Module side Buffer size :	: Displays the buffer memory size of the settin				
Module side Transfer word count :	 item (fixed at one word). Displays the number of words to be transferred to the CBU devices from the designate 				
Transfer direction :	address (fixed at one word). " —" indicates that data are written from the device to the buffer memory.				
	" \rightarrow " indicates that data are loaded from the				
PLC side Device :	buffer memory to the device. Enter a CPU module side device that is to be				
	automatically refreshed.				
	Applicable devices are X, Y, M, L, B, T, C, ST, D,				
	W, R, and ZR.				
	When using bit devices X, Y, M, L or B, set a				
	number that can be divided by 16 points (exam-				
	ples: X10, Y120, M16, etc.)				
	Also, buffer memory data are stored in a 16-				
	point area, starting from the specified device number.				
	For example, if X10 is entered, data are stored				
	in X10 to X1F.				

(2) Command buttons

Make text file	Creates a file containing the screen data in text file format.
End setup	Saves the set data and ends the operation.
Cancel	Cancels the setting and ends the operation.

⊠Point

The auto refresh settings are stored in an intelligent function module parameter file.

The auto refresh settings become effective by performing STOP \rightarrow RUN \rightarrow STOP \rightarrow RUN operations for the CPU module, turning the power OFF and then ON or resetting the CPU module after writing the intelligent function module parameters to the CPU module.

The auto refresh settings cannot be changed from sequence programs. However, processing equivalent to auto refresh can be added using the FROM/ TO instruction in the sequence program.

MELSEG **Q** series

5.6 Monitoring/Test

5.6.1 Monitor/test screen

[Purpose]

Start buffer memory monitoring/testing, I/O signal monitoring/testing, operating condition setting, offset/gain settings (refer to Section 5.6.2) and pass data (refer to Section 5.6.3) from this screen.

[Operating procedure]

"Select monitor/test module" screen → "Start I/O No.*" → "Module type" → "Module

model name" → Monitor/test

* Enter the start I/O No. in hexadecimal.

The screen can also be started from System monitor of GX Developer Version 6 or later. Refer to the GX Developer Operating Manual for details.

[Setting screen]

Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/O No.: 0000		
Setting item	Current value	Setting value	-
CH5 Warning output flag upper limit value	Normal		
CH5 Warning output flag lower limit value	Normal		
CH6 Warning output flag upper limit value	Normal		
CH6 Warning output flag lower limit value	Normal		
Error code	0		
Setting range CH1-CH4	0000		
Setting range CH5-CH6	0000		
X/Y monitor/test		X/Y monitor/test	
Operating condition setting		Operating setting	
Offset/gain setting		Offset/gain setting	
Pass data		Pass data	*
Flash ROM setting Wind to Wind to Wind to Save file Current value display Read from module Lord file Make text file	Detais Decimal input Setting range 0 - 4000	Monkoring	
Start monitor Stop monitor	Execute jest	Close	

	X/Y I	monitor/test	
/Y monitor/test			
Module information			
Modula tuna: D/A Conversion Module	Start I/O No : 0000		
Module model name: Q66DA-G			
Setting item	Current value	Setting value	
/02:CH2 Output enable/disable flag	OFF:Disable	OFF:Disable	•
03:CH3 Output enable/disable flag	OFF:Disable	OFF:Disable	-
'04:CH4 Output enable/disable flag	OFF:Disable	OFF:Disable	-
05:CH5 Output enable/disable flag	OFF:Disable	OFF:Disable	-
/06:CH6 Output enable/disable flag	OFF:Disable	OFF:Disable	*
709:Operating condition setting request	OFF:No request		
/0A:User range writing request	OFF:No request		
Y08:Channel change request	OFF:No request		
YDC:Set value change request	OFF:No request		
YOE: Warning output clear request	OFF:No request	OFF:No request	-
YOF:Error clear request	OFF:No request	OFF:No request	
Flash ROM setting	Details		
Write to Save file Current value display	Cannot assessed	had	Monitoring
Read from Load file Make text file		to at	
Start monitor Stop monitor	Execute test		Close



OVERVIEW

	MEL	SEC	Q	series
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1) Offse	t/gain setting		Pass	s data
			+	
Offset/Gain setting		Pass data		
Offset/gain settings is performed.		Module information	0 U 0. M	
Current module Q66DA-G:0000H Error	Error clear	Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/U No.: UUUU	
- Offset/Gain setting		Catting item	Current using	Satting up to
Offset setting Gain setting	Registration	CH1 Pass data classification setting	User range1	User range1
	Conversion	CH2 Pass data classification setting CH3 Pass data classification setting	User range1 User range1	User range1
Channel No. LHI	characteristic	CH4 Pass data classification setting	User range1	User range1
Value		CH5 Pass data classification setting CH6 Pass data classification setting	User range1 User range1	User range1 User range1 Vser range1 Vser range1
For the adjustment value 1000, the Analog value adjustment of Voltage		CH1 Industrial shipment settings offset value	0000	0000
setting 3), Constant during statute should 0,000 in social is		CH1 Industrial shipment settings gain value CH2 Industrial shipment settings offset value	0000	0000
Current during durput, about o convens possible.		CH2 Industrial shipment settings gain value	0000	0000
		CH3 Industrial shipment settings offset value	0000	0000 -
Channel No. User range setting Setting State		Hash HUM setting	Details	Monitoring
CH1 Offset setting Gain set	ing	module Save he display	Select input	-
CH2		Read from Load fie Make text file	Setting range	
CH3			User range1	
CH4 CH5			User range3	
CH6				
		Start monitor Stop monitor	Execute jest	Close
	Close			
sion characteristic	Analog/Range setting Analog Voltage Range setting			
	User range setting 2/Normal resolution			
	Griet value(V) Gain value(V) Range settings			
	Analog/Digital conversion C Analog>Digital Digital>Analog Analog value(V) 500 Digital value 2000			
-12 12 Close	Conversion			

MELSEG Q series

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

SETUP AND PROCEDURES BEFORE OPERATION

5

VFIGURATOR

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[Explanation of items]

(1) Items

Setting item	: Displays buffer memory names.
Current value	: Monitors the present buffer memory values.
Setting value	: Enter or select values to be written into the buffer memory for test operation.

(2) Command buttons

Currect Value	Displays the current value of the item selected. (This is used to check the text that cannot be dis- played in the current value field. However, in this utility package, all items can be displayed in the display fields.)
Make text file	Creates a file containing the screen data in text file format.
Start monitor / Stop monitor	Selects whether or not to monitor current values.
Execute test	Performs a test on the selected items. To select more than one item, select them while holding down the Ctrl key.
Close	Closes the currently open screen and returns to the previous screen.

⊠ Point

(1) Turning the output enable/disable flag ON/OFF or writing the CH digital value during test operation changes the analog output, so perform these after taking ample safety precautions.

Remark ••

The selection test operation is explained below using the CH1 digital value writing as an example.

(1) Change the setting value field for "Y01: CH1 output enable/disable flag" to "ON: enable."

Nothing is written to the Q66DA-G at this point.

- (2) Click and select the setting value field to be written in the Q66DA-G.
 To write more than one setting item at the same time, select the items while holding down the Ctrl key.
- (3) Click the Execute test to execute the write operation. Once writing has been completed, the value that was written will be displayed in the present value field.

5.6.2 Offset/gain setting operation

Perform the offset/gain setting operation in the following sequence.

(1) Switch to the offset/gain setting screen

Perform the operation in Screen 5.6.1 to display the offset/gain setting screen. At this point, a dialog box to confirm the transition of Q66DA-G's operation mode (nor-

mal mode -> offset/gain setting mode) is displayed. Click the Yes button to transit to the offset/gain setting mode.

Offset/gain setting	gs is performed.			
Current modul	e Q66DA-G:0	000H	Error code	
				Error clear
- Offset/Gain sett	ing			
 Offset sett 	ing 📀 Gain setting			
Channel No.	CH1 💌			Conversion characteristic
Adjustment	1 💌	+		
Value	-			
For the adjust	ment value 1000, the Analog v	alua adjustment of t	Voltage	
For the adjust during output:	ment value 1000, the Analog v about 0.38V(User range settin	value adjustment of ^ ng 2), about 0.19V(L	Voltage Jser range	
For the adjust during output: setting 3), Current during	ment value 1000, the Analog v about 0.38V(User range settir joutput: about 0.86mA is poss	value adjustment of ^v ng 2), about 0.19V(L ible.	Voltage Jser range	
For the adjust during output: setting 3), Current during	ment value 1000, the Analog v about 0.38V(User range settir routput: about 0.86mA is poss	value adjustment of ig 2), about 0.19V(L ible.	Voltage Jser range	
For the adjust during output: setting 3), Current during	ment value 1000, the Analog v about 0.38V[User range settir routput: about 0.86mA is poss	value adjustment of ng 2), about 0.19V(L ible. Setting	Voltage Jser range g state	
For the adjust during output setting 3), Current during Channel No.	ment value 1000, the Analog about 0.38V(User range settir output: about 0.86mA is poss User range setting	value adjustment of ig 2), about 0.19V(L ible. Setting Offset setting	Voltage Iser range g state Gain setting	
For the adjust during output setting 3), Current during Channel No. CH1	ment value 1000, the Analog s about 0.38V(User range settir i output: about 0.86mA is poss User range setting	value adjustment of ig 2), about 0.19V(L ible: Setting Offset setting	Voltage Iser range g state Gain setting	
For the adjust during output setting 3), Current during Channel No. CH1 CH2	ment value 1000, the Analog , about 0.38V(User range settin ; output: about 0.86mA is poss User range setting	value adjustment of Y ng 2), about 0.19V(L ble. Setting Offset setting	Voltage Iser range g state Gain setting	
For the adjust during output, setting 3, Current during Channel No. CH1 CH2 CH3	ment value 1000, the Analog a about 0.38V(User range settin I output: about 0.86mA is poss User range setting	value adjustment of ig 2), about 0.19V[L ible. Setting Offset setting	Voltage Iser range g state Gain setting	
For the adjust during output: setting 3), Current during Channel No. CH1 CH2 CH3 CH4	ment value 1000, the Analog, about 0.38V/User range settin output: about 0.86mA is poss	value adjustment of ig 2), about 0.19v[L ble. Setting Offset setting	Voltage Iser range g state Gain setting	
For the adjust during output: setting 3), Current during Channel No. CH1 CH2 CH3 CH4 CH5	ment value 1000, the Analog about 0.33V(User range settin oudput: about 0.86mA is poss User range setting	value adjustment of ing 2), about 0.19V[L ble. Setting Offset setting	Volkage Iser range g state Gain setting	
For the adjust during output: setting 3), Current during Channel No. CH1 CH2 CH3 CH4 CH5 CH6	ment value 1000, the Analog, about 0.33V(User range settin coutput: about 0.86mA is poss	value adjustment of ig 2), about 0.19V[L ble. Setting Offset setting	Volkage Iser range g state Gain setting	
For the adjusts during output: setting 3), Current during Channel No. CH1 CH2 CH3 CH4 CH5 CH6	ment value 1000, the Analog, about 0.339(User range settin couput: about 0.86mA is poss User range setting	value adjustment of ig 2), about 0.19V[L ble. Setting Offset setting	Volkage Jser range g state Gain setting	

(2) Specify a channel

Specify the target channel of offset setting or gain setting on the channel No. combo box.

(3) Specify offset/gain setting

Specify either offset setting or gain setting on the channel specified on the channel No. combo box using the radio button.

(4) Specify the user range setting

Specify a user range used for the offset/gain setting of each channel on the combo box.

(5) Set up adjustment values

Set up an adjustment value of the offset value or gain value. Select "1," "10," "100," or "1000" on the combo box, however, you can also set up adjustment values by entering a number (1 to 3000).

(6) Fine adjustment of voltage output or current output

By clicking the + button or - button, the value of voltage output or current output for the prepared adjustment value is finely adjusted.

(7) Write settings into Q66DA-G

Write the content set up by operations (2) to (6) into Q66DA-G by clicking the Registration button.

(8) Switch to the normal mode

When the offset/gain setting screen is closed by clicking the Close button after the setting operation has finished, Q66DA-G's operation mode transits to the normal mode.

⊠Point

If an error code is displayed while performing the setting operation, the details and measure of the error can be confirmed by clicking the button to the right . . . of the error code display area. In addition, the error code can be cleared by click-

ing the Error clear button.

5.6.3 Confirmation of Conversion Characteristic

[Purpose]

The converted value of digital-analog conversion can be confirmed according to the tilt of the graph, based on the offset/gain setting.

[Operating procedure]

Monitor/Test screen
$$\rightarrow$$
 offset/gain setting \rightarrow Conversion characteristic

[Setting screen]



[Explanation of items]

(1) Items

I/O characteristic diagram: Displays the I/O conversion characteristic to the prepared offset/gain setting.

(2) Setting details

Analog and Range setting

	-
Analog:	Select the output (voltage/current) when a digital value is converted to an analog value.
Range setting:	Select either "User range setting 2" or "User range setting 3. " However, if "Current" is selected for the "Analog" item, only "User range setting 1" can be selected.
Offset/Gain setting	
Offset value:	Enter an offset value to display the I/O characteristic dia- gram.
Gain value:	Enter a gain value to display the I/O characteristic diagram.

Analog/digital conversion:	 Select a conversion type shown below for confirming the correspondence between an analog value and a digital value caused by the conversion characteristic. Digital → Analog Analog → Digital
Analog value:	<when a="" converted="" digital="" to="" value="">Enter an analog value to be converted to a digital value<when an="" analog="" converted="" to="" value="">The analog value converted from a digital value is displayed</when></when>
Digital value:	 <

⊠Point

- The offset value is the analog output value (voltage or current) when a digital entry value of 0 is set from the programmable controller CPU.
- The gain value is the analog value (voltage or current) output when the digital input value set from the programmable controller CPU is as follows:

Normal resolution mode	4000 (User range setting 1 to 3)
High resolution mode	12000 (User range setting 1 to 3)

(3) Command button

Range setting

The entered offset/gain value is determined, and the I/O characteristic diagram is updated.

Conversion for the entered value is performed.

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

5.6.4 Pass data

Perform operation in the following sequence to save/restore the user range.

(1) Switch to the pass data screen

Perform the operation in Section 5.6.1 to display the Pass data screen.

ass data			
Module information			
Module type: D/A Conversion Module	Start I/O No.: 0000		
Module model name: Q66DA-G			
Setting item	Current value	Setting value	
CH1 Pass data classification setting	User range1	User range1	-
CH2 Pass data classification setting	User range1	User range1	-
CH3 Pass data classification setting	User range1	User range1	-
CH4 Pass data classification setting	User range1	User range1	-
CH5 Pass data classification setting	User range1	User range1	-
CH6 Pass data classification setting	User range1	User range1	+
CH1 Industrial shipment settings offset value	0000		0000
CH1 Industrial shipment settings gain value	0000		0000
CH2 Industrial shipment settings offset value	0000		0000
CH2 Industrial shipment settings gain value	0000		0000
CH3 Industrial shipment settings offset value	0000		0000
Flash ROM setting	Details		
Write to Save file Current value			Monitoring
display	Select input		
Read from Local Gla Males Louit Gla			
module Make text file	Setting range		
	User range 1		
	User range3		
Start monitor Stop monitor Ex	ecute test		Close

(2) User range saving

(a) Set the user range to be used in the Setting value field of CH Pass data classifi-

cation setting, and click the Execute test $\[Execute test \]$ button. When the user range setting is completed, the set user range is displayed in the Current value field of CH $\[Pass data classification setting. \]$

(b) Change the Setting value field of Pass data read request to "Request", and click

the <u>Execute test</u> button. When read is completed, the values are displayed in the Current value fields of CHD Industrial shipment settings offset/gain values/CHD User range settings offset/gain values.

 (c) Compare the values with those in the range reference table, and record them if they are correct.

Refer to Section 7.4 for the range reference table.

(3) User range restoration

- (a) Set the user range to be used in the Setting value field of CH□ Pass data classification setting, and click the Execute test button.
 When the user range setting is completed, the set user range is displayed in the Current value field of CH□ Pass data classification setting.
- (b) Set the recorded values in the Setting value fields of CH Industrial shipment settings offset/gain values/user range settings offset/gain values.
- (c) Select all the Setting value fields of CH□ Industrial shipment settings offset/gain values/user range settings offset/gain values, and click the Execute test button. When write is completed, the set values are displayed in the Current value fields of CH□ Industrial shipment settings offset/gain values/CH□ User range settings offset/gain values.
- (d) Change the Setting value field of Pass data write request to "Request", and click the <u>Execute test</u> button.
 Make sure that the indication in the Current value field of Pass data write request changes from "Request" to "OFF" on completion of write.

OVERVIEW

2

SYSTEM CONFIGURATION

SPECIFICATIONS

4

5.7 FB Conversion of Initial Setting/Auto Refresh Setting

[Purpose]

FB is generated automatically from the intelligent function module parameter (initial setting/auto refresh setting).

[Operating procedure]

Intelligent Function Module Parameter Setting Module Selection Screen

<<FB Support Parameter>> \rightarrow FB conversion

[Setting screen]

					Close
Module model name	Initial setting	Auto refresh	FB program name	Title	
Q66DA-G					
Q66DA-G					
	Module model name I66DA-G	Module model Initial name setting 66DA-G	Module model Initial Auto name setting refresh 66DA-G	Module model Initial Auto name setting refresh 66DA-G	Module model Initial Auto name setting refresh FB program name Title GEDA-G

[Explanation of items]

(1)	Items
-----	-------

Start I/O No	:	The start I/O No. of the information which is set up on the currently open intelligent function module parameter is displayed.
Module model name	:	The module model name of the information which is set up on the currently open intelligent function module parameter is displayed.
Initial setting	:	Set up whether to apply FB conversion to the parameter or not. Check if you apply FB conversion to the parameter.
Auto refresh	:	Set up whether to apply FB conversion to the parameter or not. Check if you apply FB conversion to the parameter.

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

SETUP AND PROCEDURES BEFORE OPERATION

5

FB program name	: Set up the name of the converted FB program.
	Up to six single-byte characters can be set up as an FB pro-
	gram name.
	However, the characters and terms shown below cannot be
	set up as FB program name.
	Character: /, :, ;, *, ?, ", <, >, , ,
	Term:COM1 to COM9, LPT1 to LPT9, AUX, PRN, CON,
	NUL, CLOCK\$
	In addition, I- is added for initial setting and A- is added for
	auto refresh setting respectively to the top of the FB name
	setting to be registered in GX Developer after FB conversion
	is performed.
	Ex.: If the FB program name is "ABCDE", the initial setting is
	"I-ABCDE" and the auto refresh setting is "A-ABCDE".
Title	: Set up a title on a converted FB program. Up to 32 single-
	byte characters can be set up as a title.

(2) Command buttons

Conversion

FB conversion is performed for the checked columns of initial setting and auto refresh setting.

5.8 Usage of FB

This section describes the procedure for using FB with GX Developer. Refer to the "GX Developer Version 8 Operating Manual (Function Block)" for details.

5.8.1 Outline

The procedure for creating FB is shown below.

- 1) Set up the intelligent function module parameter (initial setting/auto refresh setting).
- 2) Convert the intelligent function module parameter into FB.
- 3) Paste the FB to a sequence program.
- 4) Convert (compile) the sequence program.

Next, a flowchart of procedures 1) to 4) is shown below.



OVERVIEW

2

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

⊠ Point

The initial setting/auto refresh setting of the intelligent function module can be performed by each of the following methods.

- (1) Set intelligent function parameters (Initial setting/Auto refresh setting) and write them to the programmable controller CPU.
- (2) Create an FB of the intelligent function module parameter (initial setting/auto refresh setting) and paste it to the sequence program.

In accordance with the specification of the system, perform the initial setting/auto refresh setting of the intelligent function module by one of the methods above.^{*1}

- *1: The following explains the case in which both of (1) and (2) are performed.
 - (a) Initial setting
 - FB setting given in (2) is valid.
 - (b) Auto refresh setting
 - Both (1) and (2) are valid.
 - At the time of FB execution and in the END processing of the sequence program, automatic refresh is performed.

Therefore, an analog value corresponding to the specified digital value is output at each auto refresh time.

5.8.2 Paste an FB to a Sequence Program

[Purpose of operation]

Paste an FB in order to use it with a sequence program.

[Operation procedure]

Switch the <<Project>> tab into the <<FB>> tab on GX Developer, and drag & drop the FB to be used onto the sequence program.


MELSEC Q series

OVERVIEW

2

SYSTEM CONFIGURATION

SPECIFICATIONS

4

SETUP AND PROCEDURES BEFORE OPERATION

5

5.8.3 Convert (Compile) a Sequence Program

[Purpose of operation]

Convert (compile) the sequence program to which an FB was pasted so that it can be executed.

MELSOFT series GX Developer (Unset p	roject) [LD/Editmode] MAIN 128	Step1	
Project Edit Eind/Replace Convert View of	Online Diagnostics Tools Window Help		- 8 ×
Global variables 💌			
칾맯썲쎓앍앍긆늤쵔놂		2	
	6 F8 F7 #F5 F5 F6 F7 F8 F9 #F5	T=AD=FP(FP1)	
(Unset project)	89	B:I_START 0	END : B
E Enction Block			
Header	93		[END]
- Body			L
Header			
- Body			
1			
1			
Project FB Structure			~
Ready		Q2SPH Host station	Ovrwite NUM

[Operation procedure]

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

6 PROGRAMMING

This chapter describes the programs of the Q66DA-G. When applying any of the program examples introduced in this chapter to the actual system, verify the applicability and confirm that no problems will occur in the system control.

6.1 Programming Procedure

Create the program that will execute the digital-analog conversion of the Q66DA-G in the following procedure.



6.2 For Use in Normal System Configuration

(1) System configuration



(2) Conditions for the intelligent function module switch setting

	Input range setting	HOLD/CLEAR function setting	Normal resolution mode/ High resolution mode
CH1	4 to 20mA		High resolution mode
CH2	0 to 5V	OLEAR	rightesolution mode
CH3			
to	not used	-	-
CH6			

(3) Program conditions

- (a) CH1 uses the rate control function (Refer to Section 3.2.4.)
 - CH1 increase digital limit value: 100
 - CH1 decrease digital limit value: 30
- (b) CH2 uses the warning output function (Refer to Section 3.2.4.)
 - CH2 warning output upper limit value: 10000
 - CH2 warning output lower limit value: 3000

If a warning is output, the warning output flag status is read and processing for the warning output is performed.

(c) If an error occurs in writing a digital value, an error code is displayed in binary coded decimal (BCD) form.

The error code shall be reset after removal of the cause.

OVERVIEW

MELSEG **Q** series

6.2.1 Before creating a program

Perform the following steps before creating a program.

(1) Wiring of external devices

Mount the Q66DA-G on the base unit and connect the external devices.

- CH1: run the cables for current output. (For details, refer to "4.4.2 (2) .)
- CH2: run the cables for voltage output. (For details, refer to "4.4.2 (1) .)



(2) Intelligent function module switch setting

Based on the setting conditions given in Section6.2 (2), make the intelligent function module switch settings.

(a) Each switch setting

1) Switch1,Switch2: output range setting







3) Switch4: Mode setting

0



4) Switch5: Use prohibited (0:fixed)



* If any other than 0 is set to Switch 5, an error occurs.

(b) Write the settings in (a) to the Q66DA-G.

On GX Developer's "Parameter setting" screen, select the "I/O assignment" tab, click "Switch setting", and make settings of Switch 1 to 5 on the screen shown below.

Swi	Switch setting for I/O and intelligent function module									
	Input format									
	Slot	Туре	Model name	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	*	
0	PLC	PLC								
1	0(0-0)	Intelli.	Q66DA-G	0000	0000	0000	0F00	0000		
2	1(0-1)									

6.2.2 Program example using the utility package

(1) List of devices

Device	Function	1				
D11 ^{*1}	CH1 Digital value					
D12 ^{*1}	CH2 Digital value					
D16 ^{*1}	Warning output flag					
D17 ^{*1}	Error code					
M20,M21	CH1 Warning output flag ^{*2}					
M22,M23	CH2 Warning output flag					
X0	Module ready					
X7	External power supply ready					
XE	Warning output signal					
XF	Error flag					
YE	Warning output clear request					
YF	Error clear request					
X11	Output enable					
X12	Digital value write signal					
X14	Warning output reset signal					
X15	Error code reset signal	1				
Y20 to Y2B	Error code display (BCD 3 digits)	QY10 (Y20 to Y2F)				

*1: Devices used for the automatic refresh function of GX Configurator-DA.

*2: Although channel 1 does not use warning output, these devices are assigned to read out warning output flag data of both channel 1 and 2 at a time.

6 - 5

(2) Operation of utility package

- (a) Initial settings (Refer to Section 5.4)
 - CH1, CH2 D/A conversion enable/disable setting "Enable"
 - CH1 rate control enable/disable setting "Enable"
 - CH1 increase digital limit value "100"
 - CH1 decrease digital limit value "30"
 - CH2 warning output setting "Enable"
 - CH2 warning output upper limit value "10000"
 - CH2 warning output lower limit value "3000"

J	nitial setting		<
	Module information Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/O No.: 0000	
	Setting item	Setting value	•
	CH1 D/A conversion enable/disable setting	Disable	
	CH2 D/A conversion enable/disable setting	Disable 🗸 🗸	
	CH3 D/A conversion enable/disable setting	Disable 🗸 🗸	
	CH4 D/A conversion enable/disable setting	Disable 🗸 🗸	
	CH5 D/A conversion enable/disable setting	Disable 🗸 🗸	
	CH6 D/A conversion enable/disable setting	Disable 🗸 🗸	
	CH1 Scaling enable/disable setting	Disable 🗸	-
	Details Select inp Enable Disable	ut range	
	Make text file End :	etup Cancel	

 (b) Automatic refresh setting (Refer to Section 5.5) CH1, CH2 digital values D11, D12 Warning output D16 Error code D17

PLC side Device
PLC side Device
D11
D12
•

MELSEG Q series

(c) Write of intelligent function module parameters (Refer to Section 5.3.3)
 Write the intelligent function module parameters to the CPU module. Perform this operation on the parameter setting module selection screen.

Write digital values					
	-[MOV	K2000	D11	ב	CH1 digital value setting
	-[mov	K4000	D12	ן	CH2 digital value setting
Set analog output enable					
			(Y1)	CH1 output enable
			(Y2)	CH2 output enable
Read warning output flag					
	-[#0¥	D16	K1M20]	Warning output channel check
M22	[MOV K2000 D11 [MOV K4000 D12 (Y1 (Y1 (Y2 (Y2 [MOV D16 K1M20 [MOY D16 K1M20 [Processing for warning outpu [Processing for warning outpu [Processing for warning outpu [SET Y0E [BCD D17 K3Y20 [SET Y0F [END			}	CH2 warning output (upper limit value) processing
M23	[MOV K2000 D11[MOV K4000 D12(Y1(Y1(Y2[MOV D16 K1M2[Processing for warning ou[Processing for warning ou[SET Y0E[RST Y0E[RST Y0E[SET Y0F[RST Y0F[RST Y0F[END[END[END[END[END[END[END[END			}	CH2 warning output (lower limit value) processing
X14 X0E		-[SET	Y0E	}	Warning output clear request (YE) ON
		-[RST	YOE	}	Warning output clear request (YE) OFF
Error code display and reset processing					
	-[BCD	D17	K3Y20	}	Error code output in BCD
		[SET	YOF	}	Error clear request (YF) ON
XOF YOF		-[rst	YOF	}	Error clear request (YF) OFF
			-[END]	

(3) Program example

6 - 7

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

6.2.3 Programming example without using the utility package

(1) List of devices

Device	Function	
M20,M21	CH1 Warning output flag ^{*1}	
M22,M23	CH2 Warning output flag	
X0	Module ready	
X7	External power supply ready	
X9	Operating condition setting completed flag	
XE	Warning output signal	Q66DA-G
XF	Error flag	(X/Y0 to X/YF)
Y9	Operating condition setting request	
YE	Warning output clear request	
YF	Error clear request	
X11	Output enable	
X12	Digital value write signal	OX10 (X10 to X1E)
X14	Warning output reset signal	
X15	Error code reset signal	
Y20 to Y2B	Error code display (BCD 3 digits)	QY10 (Y20 to Y2F)

*1: Although channel 1 does not use warning output, these devices are assigned to read out warning output flag data of both channel 1 and 2 at a time.

(2) Program example



OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

4

SETUP AND PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURATOR-DA)

6

6.3 For Use on Remote I/O Network

(1) System configuration



(2) Conditions for the intelligent function module switch setting

	Input range setting	HOLD/CLEAR function setting	Normal resolution mode/ High resolution mode				
CH1	4 to 20mA		High resolution mode				
CH2	0 to 5V	CLEAR	rightesoldton mode				
CH3							
to	not used	-	-				
CH6							

Based on the setting conditions given in the above, make the intelligent function module switch settings.

Select the [I/O assignment] tab on the [Intelligent function module switch settings] screen, and click [Switch setting] to set the following values.

Switch No.		Setting value							
Switch 1	0030н	(CH1: 4 to 20mA, CH2: 0 to 5V, CH3 to CH6: Default)							
Switch 2	0000н								
Switch 3	0000н (CH1,CH2: CLEAR)								
Switch 4	0F00н (High resolution mode)								
Switch 5	0000н (0: Fixed)								



(3) Program conditions

- (a) CH1 uses the rate control function (Refer to Section 3.2.4.)
 - CH1 increase digital limit value: 100
 - CH1 decrease digital limit value: 30
- (b) CH2 uses the warning output function (Refer to Section 3.2.3.)
 - CH2 warning output upper limit value: 10000
 - CH2 warning output lower limit value: 3000

If a warning is output, the warning output flag status is read and processing for the warning output is performed.

(c) If an error occurs in writing a digital value, an error code is displayed in binary coded decimal (BCD) form.

The error code shall be reset after removal of the cause.

(4) List of devices

Device	Function	
D11 ^{*1}	CH1 Digital value	
D12 ^{*1}	CH2 Digital value	
D16 ^{*1}	Warning output flag	
D17 ^{*1}	Error code	
M20,M21	CH1 Warning output flag ^{*2}	
M22,M23	CH2 Warning output flag	
X20	Initial setting request signal ^{*3}	
X21	Output enable	
X22	Digital value write signal	QX10 (X20 to X2F)
X24	Warning output reset signal	
X25	Error code reset signal	
Y30 to Y3B	Error code display (BCD 3 digits)	QY10 (Y30 to Y3F)
X120	Module ready	
X127	External power supply ready	
X129	Operating condition setting completed flag	
X12E	Warning output signal	Q66DA-G
X12F	Error flag	(X/Y120 to X/Y12F)
Y129	Operating condition setting request	
Y12E	Warning output clear request	
Y12F	Error clear request	

*1: Devices used for the automatic refresh function of GX Configurator-DA.

*2: Although channel 1 does not use warning output, these devices are assigned to read out warning output flag data of both channel 1 and 2 at a time.

*3: When the initial setting is made by GX Configurator-DA, X20 is not used.

Point

For details on the MELSECNET/H remote I/O network, refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O Network).

Program example using the utility package 6.3.1

(1) Operating GX Developer

- (a) Network parameter setting
 - Network type
- : 0000н
- Head I/O No. • Network No.
- Mode

: MNET/H (remote master)

Start 0100

End 01FF

Points

: 1

: 1

.

Points

Start

000

End

: Online

- · Total number of (slave) stations

Points

Network range assignment

End

Points

•		it i di i	gou	, orgrin			•						
		M station -> R station					M station <- R station						
StationNo.	Y			Y		×			×				
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
1	256	0100	01FF	256	0000	OOFF	256	0100	01FF	256	0000	OOFF]•]
M station -> R station		M station <- R station		M station -> R station			M station <- R station						
StationNo.		В			В		W			W			

End

Start

• F	Refresh	parameters:	

Start

				Link side			PLC side					
	Dev.	name	Points	Start	End		Dev. n	ame	Points	Start	End	-
Transfer SB	SB		512	0000	01FF	+	SB		512	0000	01FF	
Transfer SW	S₩		512	0000	01FF		SW		512	0000	01FF	
Random cyclic	LB							-				1
Random cyclic	LW					↔		-				
Transfer1	LB	4	8192	0000	1FFF	↔	В	-	8192	0000	1FFF	
Transfer2	LW	-	8192	0000	1FFF		W	-	8192	0000	1FFF	
Transfer3	LX	Ψ.	512	0000	01FF		X	-	512	0000	01FF	
Transfer4	LY	+	512	0000	01FF	↔	Y	-	512	0000	01FF	
Transfer5		ł				↔		-				
Transfer6		+				↔		-				-



(2) Operating the utility package

(a)	Initial setting (Refer to Section 5.4)	
	CH1, CH2 D/A conversion enable/disable setting	"Enable"
	CH1 rate control enable/disable setting	"Enable"
	CH1 increase digital limit value	"100"
	CH1 decrease digital limit value	"30"
	CH2 warning output setting	"Enable"
	CH2 warning output upper limit value	"10000"
	CH2 warning output lower limit value	"3000"

Initial setting	
Module information Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/O No.: 0020
Setting item	Setting value
CH1 D/A conversion enable/disable setting	Disable 🗸 🚽
CH2 D/A conversion enable/disable setting	Disable
CH3 D/A conversion enable/disable setting	Disable
CH4 D/A conversion enable/disable setting	Disable
CH5 D/A conversion enable/disable setting	Disable 🗸 🗸
CH6 D/A conversion enable/disable setting	Disable 🗸 🗸
CH1 Scaling enable/disable setting	Disable 🗸 🗸
Details Select in Enabl Disabl	put g range e
Make text file End	setup Cancel

(b) Auto refresh setting (Refer to Section 5.5)

CH1, CH2 digital values	W11, W12
Warning output	W116
Error code	W117

Auto refresh setting						×
Module information Module type: D/A Conversion Module Module model name: Q66DA-G	S	itart I/O No.:	0020			
Setting item	Module side Buffer size	Module side Transfer word count		Transfer direction	PLC side Device	•
CH1 Digital value	1	1		<-	W11	
CH2 Digital value	1	1		<-	W12	
CH3 Digital value	1	1		<-		
CH4 Digital value	1	1		<-		
CH5 Digital value	1	1		<-		_
CH6 Digital value	1	1		<-		
CH1 Set value check code	1	1		->		
CH2 Set value check code	1	1		->		
CH3 Set value check code	1	1		·>		-
Make text file	End setu	. 1			Cancel	_
Make text life	Lind setu	P		_	CarlCer	

(c) Write of intelligent function module parameters (Refer to Section 5.3.3)
 The intelligent function module parameters are written to the remote I/O station.
 Perform this operation on the parameter setting module selection screen.

6 - 13

MELSEG **Q** series

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

(3) Programming example



⊠Point

To write the intelligent function module parameters, set the target remote I/O station from [Online] - [Transfer setup] on GX Developer.

They can be written by:

- Directly connecting GX Developer to the remote I/O station.
- Connecting GX Developer to another device such as a CPU module and passing through the network.

6.3.2 Program example without using the utility package

(1) Operation of GX Developer (Network parameter setting)

Network type

: MNET/H (remote master)

Head I/O No.Network No.

- : 0000н : 1
- Total number of (slave) stations
- Mode

Г

: Online

•	Network rai	:		
		M station -> R station		

			M station	-> H statio	n		M station <- H station						-
StationNo.		Y		Y			×			×			
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
1	256	0100	01FF	256	0000	00FF	256	0100	01FF	256	0000	OOFF	-

:

:1

· Refresh parameters

				Link side				PLC side 🔺				
	Dev.	name	Points	Start	End		Dev.	name	Points	Start	End	
Transfer SB	SB		512	0000	01FF	+	SB		512	0000	01FF	
Transfer SW	SW		512	0000	01FF	₩.	SW		512	0000	01FF	
Random cyclic	LB					↔		•				
Random cyclic	LW					₩.		•				
Transfer1	LB	-	8192	0000	1FFF	₩.	В	-	8192	0000	1FFF	
Transfer2	LW	-	8192	0000	1FFF	₩.	W	-	8192	0000	1FFF	
Transfer3	LX	-	512	0000	01FF	+	Х	-	512	0000	01FF	
Transfer4	LY	-	512	0000	01FF	₩.	Y	-	512	0000	01FF	
Transfer5		-				₩.		-				
Transfer6		-				. ↔		-				

MELSEG Q series

OVERVIEW

SPECIFICATIONS

4

(2) Programming exaple



6



6 - 17

6 PROGRAMMING

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

SETUP AND PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURATOR-DA)

6

PROGRAMMING

ONLINE MODULE CHANGE

Read wa	arning out	put flag									
		[ZP. REMFR	″j1″	K5	K1	H2	K48	W116	K1	M350	Read warning output flag
	₩350	₩351						[WOV	W116	K1M20	Warning output channel check
₩22 								[Proces	sing for wa	rning output	CH2 warning output (upper limit value) processing
₩23 								[Proces	sing for wa	rning output	CH2 warning output (lower limit value) processing
X24	X12E								[Set	Y12E] Warning output clear request (YE) ON
	¥12E								[RST	Y12E	Warning output clear request (YE) OFF
Error co	de display	/ and reset pro	ocessing								
		ZP. REMFR	″j1″	K6	K1	H2	K19	W117	K1	₩370	Bead error code
	M370	H371						[BCD	W117	K3Y30] Error code output in BCD
X25	X12F								[Set	¥12F] Error clear request (YF) ON
X12F	¥12F ───┤								[RST	¥12F	Error clear request (YF) OFF
										[END	3

7 ONLINE MODULE CHANGE

This chapter describes the specifications of an online module change.

- (1) Perform an online module change by operating GX Developer.
- (2) To ensure ease of offset/gain re-setting, there is a user range save/restoration function that is performed by executing the dedicated instruction or read/write from/to buffer memory.

⊠ Point

- (1) Perform an online module change after making sure that the system outside the programmable controller will not malfunction.
- (2) To prevent an electric shock and malfunction of operating modules, provide means such as switches for powering off each of the external power supply and external devices connected to the module to be replaced online.
- (3) After the module has failed, data may not be saved properly. Referring to Section 3.4.18, therefore, prerecord the data to be saved (offset/gain values of the industrial shipment settings and user range settings in the buffer memory).
- (4) It is recommended to perform an online module change in the actual system in advance to ensure that it would not affect the other modules by checking the following:
 - Means of cutting off the connection to external devices and its configuration are correct.
 - Switching ON/OFF does not bring any undesirable effect.
- (5) Do not install/remove the module to/from the base unit more than 50 times after the first use of the product. (IEC 61131-2 compliant) Failure to do so may cause malfunction.

(Note)

The dedicated instruction cannot be executed during an online module change. When using the dedicated instruction to execute save/restoration, therefore, execute save/restoration in the other system*.

If the other system is unavailable, execute restoration by performing write to the buffer memory.

 * : If the module is mounted on the remote I/O station, execute save/restoration in the other system mounted on the main base unit. (Save/restoration cannot be executed in the other system mounted on the remote I/O station.)

7.1 Online Module Change Conditions

The CPU, MELSECNET/H remote I/O module, Q66DA-G, GX Developer and base unit given below are needed to perform an online module change.

(1) CPU

The Process CPU is required. For precautions for multiple CPU system configuration, refer to the QCPU User's Manual (Multiple CPU System).

(2) MELSECNET/H remote I/O module

The module of function version D or later is necessary.

(3) GX Developer

GX Developer of Version 7.10L or later is necessary. GX Developer of Version 8.18U or later is required to perform an online module change on the remote I/O station.

(4) Base unit

- 1) When the slim type main base unit (Q3□SB) is used, an online module change cannot be performed.
- When the power supply module unnecessary type extension base unit (Q5□B) is used, online module change cannot be performed for the modules on all the base units connected.

OVERVIEW

2

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

7.2 Online Module Change Operations

	CPU operation	O: Execu	uted ×: I	Not executed			
		Dedi-		GX Config	jurator		(Intelligent function
X/Y refresh	FROM/TO instruction ^{*1}	cated instruc- tion	Device test	Initial setting parameter	Moni- tor/ test	(User operation)	module operation)
0	0	0	0	×	×	 (1) Conversion disable Turn OFF all Y signals that were turned ON by a sequence program.¹² (2) Dismounting of module Operate GX Developer to start an online module change 	Module is operating as usual. Module stops operating. RUN LED turns off. Conversion disabled. Analog output is 0V/0mA.
×	×	×	×	×	×	Click the [Execution] button of GX Developer to make the module dismountable. Dismount the corresponding module. (3) Mounting of new module Mount a new module.	*3 X/Y refrest resumes and
0	×	×	×	0	×	After mounting the module, click the [Execution] button of GX Developer.	the module starts. RUN LED turns on. Default operation (X0 remains OFF) When there are initial setting parameters, operation is performed according to the initial setting parameters at this point.
0	x	×	0	×	0	(4) Operation check ↓ Click the [Cancel] button of GX Developer to leave the online mode Conduct an operation test on the new module using "Device test" of GX Developer or "Monitor/test" of GX Configurator. Perform user range restoration processing by write to buffer memory at this point. Operation check completed	Module operates according to test operation ^{*4} X0 (Module Ready) turns ON.
0	0	0	0	×	0	(5) Resumption of control Operate GX Developer to resume the online module change mode, and click the [Execution] button to resume control.	Start is made when X0 turns from OFF to ON. Operation is performed according to the initial setting sequence. ⁴

The following gives the operations performed for an online module change.

*1: Access to the intelligent function module device (U \Box \G \Box) is included.

- *2: Operating the intelligent function module switches (*3) starts the module and resumes X/Y refresh. When there are initial setting parameters, operation is performed according to the initial setting parameters.
 - Hence, if the Y signals are not turned OFF, analog outputs will be provided at this point. Therefore, always turn OFF the Y signals that were turned ON by the sequence program.
- *4: In the absence of the operation marked *4, the operation of the intelligent function module is the operation performed prior to that.

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

7.3 Online Module Change Procedure

There are the following online module change procedures depending on whether the user range setting has been made or not, whether the initial setting of GX Configurator-DA has been made or not, and whether the other system exists or not.

Range setting Initial setting Other system Reference section

Range setting	Initial setting	Other system	Reference section
Industrial shipment setting	GX Configurator-DA	_	Section 7.3.1
Industrial shipment setting	Sequence program		Section 7.3.2
User range setting	GX Configurator-DA	Present	Section 7.3.3
User range setting	GX Configurator-DA	Absent	Section 7.3.4
User range setting	Sequence program	Present	Section 7.3.5
User range setting	Sequence program	Absent	Section 7.3.6

7.3.1 When industrial shipment setting is used and initial setting was made with GX Configurator-DA

(1) Conversion disable

(a) Set D/A Conversion enable/disable setting (Un\G0) for all channel conversion disable and turn Operating condition setting request (Y9) from OFF to ON to stop conversion.

After confirming that conversion has stopped with the actual analog output value, turn OFF Operating condition setting request (Y9).

Device test		×							
Bit device		1							
Device		Close							
Y9	-								
FORCE ON FORCE OFF Toggle force Hide histor									
Word device/buffer memory									
O Device		-							
Buffer memory Module start I/0 0000 (Hex)									
Address	Address 0 V DEC V								
Setting value									
3F HEX	 16 bit integer 	▼ Set							
Program Label reference program MAI	N	•							
Execution history									
Device	Setting condi	Find							
Y9	Force ON								
Module start:0 Address:0(D)	3F(H)	Find next							
19	FOICE UFF	Re-setting							
		Clear							

(2) Dismounting of module

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to enter the "Online module change" mode, double-click the module to be changed online to display the "Online module change" screen.

ani mon	itor														
alled sta	ius										Base				
	1	0	1	2	3	4					Base	Modul	в		
	MasterPLC->	<u> </u>	-	-									۲	Main base	
Powe		DEED	Upmo	Homo	Unmo	Unmo							C		ase 1
rsu		A-G	unti	unti	unti	unti							C		
pply	Q25PHCPU	16pt	ng	ng	ng	ng							C	Expansion b	ase (
													C	Expansion b	ase 4
													C		
													C	Expansion b	
			í — —												
ameter s	atus										Mode		0		ise '
ameter s	atus		10	20	30	40					Mode	s System	monil	Expansion b	ase i
ameter s	atus 1/0 Address	0	10	20	30	40					Mode	System Online	C monil	Expansion b tor	ise 7
ameter s Powe r su	atus 1/0 Address Q25PHCPU	0 0 Intelli gent	10 1 None	20 2 None	30 3 None	40 4 None					Mode	s System Online	C monil modul Diag	Expansion b tor le change	ise i
Powe r su pply	atus 1/D Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt					Mode C	System Online	monil modul Diag	Expansion by tor le change nostics ailed Informat	ion
ameter s Powe r su pply	atus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt					Mode C	System Online Module	monil modul Diag s Det	Expansion by tor le change mostics ailed Information	ion
ameter s Powe r su pply	alus I/O Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt					C C	System Online Module F	monil modul Diag s Deta ase Ir ?reduc	Expansion b tor le change mostics ailed Informat iformation at Inf. List	ion
ameter s Powe r su pply tus Modul	atus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	Module we	arning	Start mo	nitor	Mode C	System Online Module ¹ B F Detaile	C monit modul Diag s Detr ase Ir roduc	Expansion bi	ion

(b) Click the "Execution" button to enable a module change.

Online module change		×
Operation	Target module	
Module change execution	I/O address 000H	
Installation confirmation	Module name Q66DA-G	
Module control restart	Status Change module selection completed	
Status/Guidance Please turn off Y signal of the ch intelligent function module.	anged module when you change the	
Execution	Cancel	

If the following error screen appears, click the [OK] button, dismount the module as-is, and mount a new module.



(c) After confirming that the "RUN" LED of the module has turned off, remove the connector and dismount the module.

⊠ Point

Always dismount the module. If mounting confirmation is made without the module being dismounted, the module will not start properly and the "RUN" LED will not be lit.

(3) Mounting of new module

- (a) Mount a new module to the same slot and install the connector.
- (b) After mounting the module, click the [Execution] button and make sure that the "RUN" LED is lit. Module Ready (X0) remains OFF.

Online module change	×
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Changing module
Status/Guidance	
The module can be exchanged.	
Please press the Execute button	after installing a new module.
Execution	Cancel

(4) Operation check

(a) To make an operation check, click the [Cancel] button to cancel control resumption.



(b) Click the [OK] button to leave the "Online module change" mode.



(c) lick the [Close] button to close the System monitor screen.

	iii mieiii	itor																		
Insta	illed stat	us												Ba	se					
			0	1	2	3	4							Ba	se Mi -	odule	•			
		MasterPLC->		•													•	Main	base	
	Pouro			Unmo	Unmo	Unmo	Unmo										С			
	rsu			unti	unti	unti	unti								1		С		nsion ba	
	pply	Q25PHCPU	16pt	ng	ng	ng	ng								1		С	Ехра		
															1		С	Expa		se 4
																	C	Expa		
]		С	Expa		
															1		C			
Para	meter st	atus												M	ode					
Para	meter st	atus 1/0 Address	0	10	20	30	40						_	- Mi	ode O Sy:	stern	mor	itor		
Para	meter st	atus 1/0 Address	0	10	20	30	40							M	ode O Sy: I On	stem i	mor	itor Jle cha	ange	
Para	Powe	atus 1/0 Address Q25PHCPU	0 0 Intelli gent	10 1 None	20 2 None	30 3 None	40 4 None								ode O Sy: • On	stem i line n	mor nodu Dia	itor ule cha gnostic	ange	
Para	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								ode O Sy: • On Mor	stem i line n dule's	mor nodu Dia	itor Ile cha gnostit tailed l	ange >s)n
Para	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								ode ⊃Sy: €On Mo	stem i line n dule's Ba	mor nodu Dia s De ase l	itor ule cha gnostic tailed I nforma	ange 25 Informatio)n
Stati	Powe rsu pply	I/O Address	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								ode Osy: On Mo	stem i line n dule's Ba Pr	mor nodu Dia De ase I	itor ule cha gnostic tailed I nforma ict Inf.	ange 25 Informatio ation)n
Statu	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	Modu	le war	ning	S	art mo	oritor		ode Sy: On Mor	stem i line n dule's Ba Pr tailed	mor nodu Dia s De ase I rodu d inf.	itor ule cha gnostic tailed l nforma of por	ange nformatio ation List wer supp	on

(d) Set digital values to the digital values (Un\G1 to Un\G6) and turn Operating condition setting request (Y9) from OFF to ON. Turn ON the output enable/disable flag (Y1 to Y6) of the used channel to check whether proper conversion has been made or not.

(Be careful since analog outputs are provided actually.)

(5) Resumption of control

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to redisplay the "Online module change" screen, click the [Execution] button to resume control. The FROM/TO instruction for the module resumes.

Online module change	X
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status
	Change module installation completion
Status/Guidance The controls such as I/O, FROM and automatic refresh for the inst Please confirm the parameter set	1/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.
Execution	Cancel

7.3 Online Module Change Procedure

(b) The "Online module change completed" screen appears.



7.3.2 When industrial shipment setting is used and initial setting was made with sequence program

(1) Conversion disable

(a) Set D/A Conversion enable/disable setting (Un\G0) for all channel conversion disable and turn Operating condition setting request (Y9) from OFF to ON to stop conversion.

After confirming that conversion has stopped with the actual analog output value, turn OFF Operating condition setting request (Y9)

Device test		
Bit device		1
Device		Close
Y9	-	
ľ		
FORCE ON FORCE OF	FF Toggle force	Hide history
Word device/buffer memory		
C During		
O Device		
Buffer memory Module star	t 1/0 0000 👻 (Hex)	
		_
Address	IN TIPEC	▼
Satting value		
		- Cet
Jor JHE	× • 16 bit integer	J
- Program		
Label reference program	MAIN	-
		_
Execution history		
Device	Setting condi	Find
Y9	Force ON	
Module start:0 Address:0(D)	3F(H)	Find next
Y9	Force OFF	Be-setting
		no soung
<	>	Clear

(2) Dismounting of module

 (a) After choosing [Diagnosis] - [Online module change] on GX Developer to enter the "Online module change" mode, double-click the module to be changed online to display the "Online module change" screen

System Monitor	
_ Installed status	Base
0 1 2 3 4	Base Module
MasterPLC->	O Main base
Powel 066D Upmo Upmo Upmo	C Expansion base 1
rsu A-G unti unti unti unti	C Expansion base 2
Q25PHCPU 16pt ng ng ng ng	C Expansion base 3
	C Expansion base 4
	C Expansion base 5
	C Expansion base 6
	C Expansion base 7
Parameter status	Mode
I/O Address 0 10 20 30 40	C System monitor
0 1 2 3 4	Online module change
Powe rsu Q25PHCPU gent Anne None None	Diagnostics
pply 16pt 16pt 16pt 16pt	Module's Detailed Information
	Base Information
Status	Product Inf. List
Module system error Module error Module warning	Start monitor Detailed inf. of power supply
Module change	Stop monitor Close

7.3 Online Module Change Procedure

- MELSEG **Q** series
- (b) Click the "Execution" button to enable a module change.



If the following error screen appears, click the [OK] button, dismount the module as-is, and mount a new module.



(c) After confirming that the "RUN" LED of the module has turned off, remove the connector and dismount the module.

⊠Point

Always dismount the module. If mounting confirmation is made without the module being dismounted, the module will not start properly and the "RUN" LED will not be lit.

OVERVIEW

(3) Mounting of new module

- (a) Mount a new module to the same slot and install the connector.
- (b) After mounting the module, click the [Execution] button and make sure that the "RUN" LED is lit. Module Ready (X0) remains OFF.

Online module change	
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Changing module
Status/Guidance	
The module can be exchanged.	
Please press the Execute buttor	rafter installing a new module.
Execution	Cancel

(4) Operation check

(a) To make an operation check, click the [Cancel] button to cancel control resumption.

Online module change	X
Operation	Target module
Module change execution	I/O address 000H Module name Q66DA-G
Module control restart	Status Change module installation completion
Status/Guidance The controls such as I/D, FROM and automatic refresh for the inst Please confirm the parameter set	/TO instruction executions, alled module are restarted. ting and wiiring, etc. and execute.
Execution	Cancel

(b) Click the [OK] button to leave the "Online module change" mode.



OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

5

PROGRAMMING

7

ystem	Moni	itor																		×
Install	ed stati	us												٦٢	Base					
			0	1	2	3	4								Base	Module	в			
		MasterPLC->	<u> </u>			•											•	Main B	ase	
	Powe			Unmo	Unmo	Unmo	Unmo										С	Expan	sion base	1
	rsu		40.1	unti	unti	unti	unti										С	Expan	sion base	2
	pply	Q25PHCPU	Tept	ng	ng	ng	ng										С	Expan	sion base	
																	С	Expan	sion base	4
																	С	Expan	sion base	5
																	С	Expan	sion base	6
																	С	Expan	sion base	7
Paran	neter st	atus					1				 			,][Mode					
		1/0 Address	0	10	20	30	40					_			0	system	mor	itor		
			0	1	2	3	4					-			•	Online	mod	ile char	ige	
	Powe rsu	Q25PHCPU	Intelli aent	None	None	None	None										Dia	gnostics		
	pply		16pt	16pt	16pt	16pt	16pt								h	fodule'	s D e	tailed In	formation	
																В	ase	nformat	ion	
Statu																F	rodu	et Inf. L	ist	
	, Module	e system error	N	/lodule	error			Modu	ıle war	ning	St	art mor	nitor			Detaile	d inf.	of pow	er supply.	

(c) Click the [Close] button to close the System monitor screen.

- (d) Referring to (1), enable the conversion of the channels to be used, set digital values to the digital values (Un\G1 to Un\G6), and turn Operating condition setting request (Y9) from OFF to ON. Turn ON the output enable/disable flag (Y1 to Y6) of the used channel to check whether proper conversion has been made or not. (Be careful since analog outputs are provided actually.)
- (e) Since the new module is in a default status, it must be initialized by a sequence program after control resumption.

Before performing initialization, check whether the contents of the initialization program are correct or not.

1) Normal system configuration

The sequence program should perform initialization on the leading edge of Module READY (X9) of the Q66DA-G.

When control resumption is executed, Module READY (X0) turns ON and initialization is performed. (If the sequence program performs initialization only one scan after RUN, initialization is not performed.)

2) When used on remote I/O network

Insert a user device that will execute initialization at any timing (initialization request signal) into the sequence program. After control resumption, turn ON the initialization request signal to perform initialization. (If the sequence program performs initialization only one scan after a data link start of the remote I/O network, initialization is not performed.)

(5) Resumption of control

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to redisplay the "Online module change" screen, click the [Execution] button to resume control. The FROM/TO instruction for the module resumes.

Online module change	X
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Change module installation completion
Status/Guidance	
The controls such as I/O, FROM and automatic refresh for the ins Please confirm the parameter se	1/TD instruction executions, talled module are restarted. tting and wiring, etc. and execute.
Execution	Cancel

(b) The "Online module change completed" screen appears.

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(Online module change completed.
	ОК

7.3.3 When user range setting is used and initial setting was made with GX Configurator-DA (other system is available)

(1) Conversion disable

(a) Set D/A Conversion enable/disable setting (Un\G0) for all channel conversion disable and turn Operating condition setting request (Y9) from OFF to ON to stop conversion.

After confirming that conversion has stopped with the actual analog output value, turn OFF Operating condition setting request (Y9).

Device test						
Bit device		1				
Device		Close				
Y9	•					
FORCE ON FORCE OFF	Toggle force	Hide history				
Word device/buffer memory						
C Device		7				
Buffer memory Module start I/0 0000 (Hex)						
Address	0 💌 DEC	•				
Setting value						
3F HEX	▼ 16 bit integer	▼ Set				
- Program						
Label reference program MA	IN	-				
Execution history						
Device	Setting condi	Find				
Y9	Force ON	- Circle and				
Module start:0 Address:0(D)	3F(H) Force OFF	Find next				
13	FOICE OFF	Re-setting				
<	>	Clear				

(2) Dismounting of module

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to enter the "Online module change" mode, double-click the module to be changed online to display the "Online module change" screen.

em Mon	itor																	
stalled sta	tus											_	Base					
		0	1	2	3	4							Base	Module	•			
	MasterPLC->	Ē		-		-									œ	Main b	ase	
Powe r su pply	Q25PHCPU	Q66D A-G 16pt	Unmo unti ng	Unmo unti ng	Unmo unti ng	Unmo unti ng									000	Expan Expan Expan	sion basi sion basi sion basi	
															0 0 0	Expan Expan Expan	sion basi sion basi sion basi	4 5 6
									_						C		sion bas	
arameter si	atus												Mode		0		sion bas	
arameter st	atus 1/0 Address		10	20	30	40							Mode	Gystem	moni	Expan tor	sion basi	
arameter st	atus 1/0 Address	0	10	20	30	40							Mode	Gystem Online r	moni	Expan tor le char	sion basi	
arameter st Powe r su pply	tatus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt							Mode C:	Bystem Dnline r	moni nodu Diag	Expan tor le char mostics	ge	7
arameter st Powe r su pply	tatus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								System Online r fodule's	moni nodu Diag	Expan tor le char mostics ailed In	ge 	7
arameter si Powe r su pply	latus 1/D Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								Bystem Online r fodule's Bi	moni modu Diag s Det	Expan tor le char gnostics ailed In	ge formation	
Powe rsu pply	tatus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								System Dnline r fodule's Bi	moni modu Diag s Det ase li rodu	Expan tor le char mostics ailed In nformat	ge : formation ion	7
arameter sl Powe rsu pply atus Modul	I/O Address Q25PHCPU system error	0 Intelli gent 16pt	10 1 None 16pt todule	20 2 None 16pt error	30 3 None 16pt	40 4 None 16pt	Modu	l le war	ning	Sta	att monitor			System Online r fodules B P Octailed	moni modu Diag s Det ase li rodu	Expan tor le char mostics ailed In aformat at Inf. L of powe	ge i formation ion ist er supply	7

OVERVIEW 2 SYSTEM CONFIGURATION SPECIFICATIONS SETUP AND PROCEDURES BEFORE OPERATION UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

6

(b) Click the "Execution" button to enable a module change.

Online module change	×
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Change module selection completed
Status/Guidance	
Please turn off Y signal of the ch intelligent function module.	anged module when you change the
[Execution]	Cancel

If the following error screen appears, the user range cannot be saved. Click the [OK] button, and perform the operation in Section 7.3.4 (2) (c) and later.

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(i)	The target module didn't respond. The task is advanced to the installation confirmation.
	<u>OK</u>

(c) After confirming that the "RUN" LED of the module has turned off, remove the connector and dismount the module.

⊠ Point

Always dismount the module. If mounting confirmation is made without the module being dismounted, the module will not start properly and the "RUN" LED will not be lit.

(3) Mounting of new module

- (a) Mount the dismounted module and new module to the other system.
- (b) Using the G(P).OGLOAD instruction, save the user set values to the CPU device. Refer to Appendix 1.2 for the G(P).OGLOAD instruction.
- (c) Using the G(P).OGSTOR instruction, restore the user set values to the module. Refer to Appendix 1.3 for the G(P).OGSTOR instruction.
- (d) Dismount the new module from the other system, mount it to the slot from where the old module was dismounted in the original system, and install the connector.
- (e) After mounting the module, click the [Execution] button and make sure that the "RUN" LED is lit. Module Ready (X0) remains OFF.

Online module change	
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Changing module
Status/Guidance The module can be exchanged. Please press the Execute button	after installing a new module.
Execution	Cancel

(4) Operation check

(a) To make an operation check, click the [Cancel] button to cancel control resumption.

0	nline module change		×
	Operation	Target module	
	Module change execution	I/O address 000H	
	Installation confirmation	Module name Q66DA-G	
	Module control restart	Status	
		Change module installation completion	١
	Status/Guidance		
	The controls such as I/O, FROM	1/TO instruction executions,	
	and automatic refresh for the ins	talled module are restarted.	
	Please confirm the parameter se	tting and wiring, etc. and execute.	
	Execution	Cancel	

(b) Click the [OK] button to leave the "Online module change" mode.



(c) Click the [Close] button to close the System monitor screen.



(d) Set digital values to the digital values (Un\G1 to Un\G6) and turn Operating condition setting request (Y9) from OFF to ON. Turn ON the output enable/disable flag (Y1 to Y6) of the used channel to check whether proper conversion has been made or not.

(Be careful since analog outputs are provided actually.)

(5) Resumption of control

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to redisplay the "Online module change" screen, click the [Execution] button to resume control. The FROM/TO instruction for the module resumes.

Online module change	
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
 Module control restart 	Status
Classification	Change module installation completion
The controls such as I/O, FROM and automatic refresh for the insl Please confirm the parameter set	1/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.
Execution	Cancel
(b) The "Online module change completed" screen appears.



7.3.4 When user range setting is used and initial setting was made with GX Configurator-DA (other system is unavailable)

(1) Conversion disable

(a) On the Operating condition setting screen of GX Configurator-DA, set "Disable" in the Setting value field of CH □ D/A conversion enable/disable setting, and click

Operating condition setting			
Module information Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/O No.: 0000		
Setting item	Current value	Setting value	-
CH1 D/A conversion enable/disable setting	Disable	Disable	_
CH2 D/A conversion enable/disable setting	Disable	Disable	-
CH3 D/A conversion enable/disable setting	Disable	Disable	
CH4 D/A conversion enable/disable setting	Disable	Disable	
CH5 D/A conversion enable/disable setting	Disable	Disable	
CH6 D/A conversion enable/disable setting	Disable	Disable	-
CH1 Scaling enable/disable setting	Disable	Disable	
CH2 Scaling enable/disable setting	Disable	Disable	
CH3 Scaling enable/disable setting	Disable	Disable	
CH4 Scaling enable/disable setting	Disable	Disable	
CH5 Scaling enable/disable setting	Disable	Disable	
Current value Write to module Save file Read rom module Load file Make text file	Details Select input <u>Setting range</u> Enable Disable	M 	4on

(b) After making sure that the indication in the Current value field of CH □ D/A conversion enable/disable setting is "Disable", change the Setting value field of Operating condition setting request to "Setting request", and click the

Execute test button to stop conversion.

Confirm that conversion has stopped with the actual analog output value.

Operating condition setting		
Module information Module type: D/A Conversion Module Module model name: Q66DA-6	Start I/O No.: 0000	
Setting item	Current value	Setting value
CH2 Warning output upper limit value	0	0
CH2 Warning output lower limit value	0	0
CH3 Warning output upper limit value	0	0
CH3 Warning output lower limit value	0	0
CH4 Warning output upper limit value	0	0
CH4 Warning output lower limit value	0	0
CH5 Warning output upper limit value	0	0
CH5 Warning output lower limit value	0	0
CH6 Warning output upper limit value	0	
CH6 Warning output lower limit value	No request	Setting request
- Flash BDM setting	Details	
Write to Save file Current value display	Select input	Monitoring
Read from Load file Make text file	Setting range No request Setting request	
Start monitor Stop monitor Ex	vecute test	Close

- (c) If the saved buffer memory contents are not yet prerecorded, record them in the following procedure.
 - 1) Display the pass data screen of GX Configurator-DA.
 - 2) Select the user range used for pass data classification setting, and make a pass data read request. (Refer to Section 5.6.3.)
 - Compare the current values of the industrial shipment settings and user range settings offset/gain values with those of the range reference table. Refer to Section 7.3.6 for the range reference table.
 - 4) If the values are proper, record the offset/gain values of the pass data classification setting, industrial shipment settings and user range settings.

⊠Point

If the buffer memory values compared with the reference table are not proper, save and restoration of the user range cannot be executed.

Before executing module control resumption, make offset/gain setting in the GX Configurator-DA. (Refer to Section 5.6.2)

Note that if module control is resumed without offset/gain setting being made, operation will be performed with the default values.

(2) Dismounting of module

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to enter the "Online module change" mode, double-click the module to be changed online to display the "Online module change" screen.

eu siai	us								Bas	e		
			1	2	3	4			Base	Modul	е	
	MasterPLC->	<u> </u>		•							⊛ h	dain base
		0.000									O E	Expansion bas
Powe rsu		4-G	Unmo unti	Unmo unti	Unmo	Unmo unti					O E	
pply		16pt	ng	ng	ng	ng					C E	
	923111010				1						0	
					1						~	
					1						01	xpansion bas
		┞──┥			-						OE	xpansion bas
neter st	atus									le		
neter st	atus	Γn	10	20	30	40			Moc	le Sustem	monito)r
neter st	atus 1/0 Address		10	20	30	40			Moc	le System Opline	monita	or change
neter st	atus 1/O Address		10	20	30	40				le System Online	i monita module	or e change
Powe	atus 1/0 Address Q25PHCPU	0 Intelli gent	10 1 None	20 2 None	30 3 None	40 4 None		+	Moc C	le System Online	monita module Diagn	or e change iostics
Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt				le System Online Module	monita module Diagn	or e change rostics iled Informatio
Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt				le System Online Module	monita module Diagn s Detai ase Infi	or • change • ostics • ited Informatio • ormation
Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt				le System Online Module B	monita module Diagn s Detai ase Infi	or e change lostics iled Informatio ormation Inf. List
Powe rsu pply s Module	atus 1/O Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt error	30 3 None 16pt	40 4 None 16pt	Module warning	Plant monitor		le System Online Module B F Detaile	monito module Diagn s Detai ase Inf Product d inf. of	or e change iostics iled Informatio ormation iInf. List f power supply

(b) Click the "Execution" button to enable a module change.

Online module change	
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Change module selection completed
Status/Guidance Please turn off Y signal of the ch intelligent function module.	anged module when you change the
Execution	Cancel

If the following error screen appears, the user range cannot be saved. Click the [OK] button, and perform the operation in Section (2)(c) and later.

MELSOF	FT series GX Developer 🛛 🗙						
(į)	The target module didn't respond. The task is advanced to the installation confirmation.						
СК							

(c) After confirming that the "RUN" LED of the module has turned off, remove the connector and dismount the module.

⊠Point

Always dismount the module. If mounting confirmation is made without the module being dismounted, the module will not start properly and the "RUN" LED will not be lit.

(3) Mounting of new module

- (a) Mount a new module to the same slot and install the connector.
- (b) After mounting the module, click the [Execution] button and make sure that the "RUN" LED is lit. Module Ready (X0) remains OFF.

Online module change		×
Operation	Target module	
Module change execution	I/O address 000H	
Installation confirmation	Module name Q66DA-G	
Madula control restart	Status	
Module control restart	Changing module	
Status/Guidance		
The module can be exchanged.		
Please press the Execute button	n after installing a new module.	
Execution	Cancel	

(4) Operation check

(a) To make an operation check, click the [Cancel] button to cancel control resumption.



(b) Click the [OK] button to leave the "Online module change" mode.



OVERVIEW SYSTEM CONFIGURATION SPECIFICATIONS Δ SETUP AND PROCEDURES BEFORE OPERATION UTILITY PACKAGE (GX CONFIGURA-TOR-DA) 5 PROGRAMMING AODULE E E TROUBLESHOOTING

Systen	n Moni	itor																	X
Insta	led stat	us												1 [Base				
			0	1	2	3	4								Base Modu	le			
		MasterPLC->	•	•	-	•										6) Mair	n base	
	Powe			Upmo	Unmo	Unmo	Unmo									0) Exp		e 1
	rsu			unti	unti	unti	unti									- C) Exp		e 2
	pply	Q25PHCPU	16pt	ng	ng	ng	ng									C) Exp		е 3
																C) Exp		e 4
																C) Exp	ansion bas	е 5
																C) Exp	ansion bas	e 6
																C) Exp		e 7
Para	neter st	atus									 				Mode				
		1/0 Address	0	10	20	30	40								O Syster	n moi	nitor		
			0	1	2	3	4								Online	mod	lule ch	ange	
	Powe rsu	Q25PHCPU	Intelli gent	None	None	None	None									Dia	agnost	ics	
	pply		16pt	16pt	16pt	16pt	16pt								Module		etailed	Informatio	n
															E	Base	Inform	nation	
- Statu	\$															Prod	uct Inf	. List	
	Module	e system error	•	/lodule	error			Modu	ile war	ning	St	art mor	itor		Detaile	ed inf	. of po	wer suppl	y
	Module	e change									St	op mor	itor				Close	•	

(c) Click the [Close] button to close the System monitor screen.

- (d) On the pass data screen of GX Configurator-DA, set the prerecorded values and make a pass data write request. (Refer to Section 5.6.3.)
- (e) Referring to (1), change the D/A conversion enable/disable setting of the used channel to conversion enable.
- (f) On the monitor/test screen of GX Configurator-DA, set a value in the Setting value field of CH□ digital value of the used channel, and click the [Execute test] button.

Monitor/Test		
─ Module information Module type: D/A Conversion Module Module model name: Q66DA-G	Start I/O No.: 0000	
Setting item	Current value Setting value	_
CH1 Digital value		
CH2 Digital value	0	
CH3 Digital value	0	
CH4 Digital value	0	
CH5 Digital value	0	0
CH6 Digital value	0	0
CH1 Set value check code	0000	
CH2 Set value check code	0000	
CH3 Set value check code	0000	
CH4 Set value check code	0000	
CH5 Set value check code	0000	•
Flash ROM setting Write to module Save file Read from module Load file	Details Move to sub window	Monitoring
Start monitor Stop monitor Ex	ecute jest	Close

 (g) Turn ON the output enable/disable flag (Y1 to Y6) of the used channel and check whether proper conversion has been made or not.
 (Be careful since analog outputs are provided actually)

(5) Resumption of control

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to redisplay the "Online module change" screen, click the [Execution] button to resume control. The FROM/TO instruction for the module resumes.

Online module change	X
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Change module installation completion
Status/Guidance	
The controls such as I/O, FROM and automatic refresh for the inst Please confirm the parameter set	1/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.
Execution	Cancel

(b) The "Online module change completed" screen appears.



7.3 Online Module Change Procedure 7.3.4 When user range setting is used and initial setting was made with GX Configurator-DA (other system

MELSEG **Q** series

7.3.5 When user range setting is used and initial setting was made with sequence program (other system is available)

(1) Conversion disable

(a) Set D/A Conversion enable/disable setting (Un\G0) for all channel conversion disable and turn Operating condition setting request (Y9) from OFF to ON to stop conversion.

After confirming that conversion has stopped with the actual analog output value, turn OFF Operating condition setting request (Y9).

Device test	×
Bit device	
Device	Close
Y9 💌	
FORCE ON FORCE OFF Toggle force	Hide history
Word device/buffer memory	
C Device	~
Buffer memory Module start I/0 0000 (Hex) Address D DEC	•
Setting value 3F HEX 💌 16 bit integer	▼ Set
Program Label reference program MAIN	•
Execution history	
Device Setting condi	Find
Y9 Force ON Module start:0 Address:0(D) 3F(H) Y9 Force OFF	Find next Re-setting
	Clear

(2) Dismounting of module

 (a) After choosing [Diagnosis] - [Online module change] on GX Developer to enter the "Online module change" mode, double-click the module to be changed online to display the "Online module change" screen.

System Monitor		
Installed status		Base
0	1 2 3 4	Base Module
MasterPLC-> ·		Main base
Powe 0660 I		C Expansion base 1
rsu A·G u	unti unti unti	C Expansion base 2
Q25PHCPU	ng ng ng ng	C Expansion base 3
		C Expansion base 4
		C Expansion base 5
		C Expansion base 6
		C Expansion base 7
Parameter status		Made
I/O Address 0	10 20 30 40	C System monitor
0	1 2 3 4	Online module change
Powe rsu Q25PHCPU gent	None None None	Diagnostics
ppy	Tept Tept Tept	Module's Detailed Information
		Base Information
Status		Product Inf. List
Module system error M	lodule error 📃 Module warning 📃	Start monitor Detailed inf. of power supply
Module change		Stop monitor Close

(b) Click the "Execution" button to enable a module change.



If the following error screen appears, the user range cannot be saved. Click the [OK] button, and perform the operation in Section 7.3.6 (2) (c) and later.



(c) After confirming that the "RUN" LED of the module has turned off, remove the connector and dismount the module.

⊠Point

Always dismount the module. If mounting confirmation is made without the module being dismounted, the module will not start properly and the "RUN" LED will not be lit. OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

MELSEG Q series

(3) Mounting of new module

- (a) Mount the dismounted module and new module to the other system.
- (b) Using the G(P).OGLOAD instruction, save the user set values to the CPU device. Refer to Appendix 1.2 for the G(P).OGLOAD instruction.
- (c) Using the G(P).OGSTOR instruction, restore the user set values to the module. Refer to Appendix 1.3 for the G(P).OGSTOR instruction.
- (d) Dismount the new module from the other system, mount it to the slot from where the old module was dismounted in the original system, and install the connector.
- (e) After mounting the module, click the [Execution] button and make sure that the "RUN" LED is lit. Module Ready (X0) remains OFF.

Online module change		×
Operation	Target module	
Module change execution	I/O address 000H	
 Installation confirmation 	Module name Q66DA-G	
Module control restart	Status Changing module	
Status/Guidance The module can be exchanged. Please press the Execute buttor	after installing a new module.	
Execution	Cancel	

(4) Operation check

(a) To make an operation check, click the [Cancel] button to cancel control resumption.

Online module change	X
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
	Status
Module control restart	Change module installation completion
Status/Guidance The controls such as I/O, FROM and automatic refresh for the inst Please confirm the parameter set	1/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.
Execution	Cancel

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

SETUP AND PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

5

PROGRAMMING

7

-INE MODULE

CHANGE

TROUBLESHOOTING

(b) Click the [OK] button to leave the "Online module change" mode.



(c) Click the [Close] button to close the System monitor screen.

em Mor	nitor																	
stalled sta	tus												Bas	e	_			
		0	1	2	3	4					T		Base	e Mod	ule			
	MasterPLC->] (€ Ma	ain base	
Powe			Upmo	Unmo	Upmo	Upmo									(O Ex	pansion l	base 1
rsu	,		unti	unti	unti	unti									(O Ex	pansion l	base 2
pply	Q25PHCPU	16pt	ng	ng	ng	ng] (O Ex	pansion l	base 3
															1	O Ex		base 4
															1	O Ex		
															1	O Ev		
			<u> </u>		-	-					-							
	I										_] (O Ex		base 7
arameter s	tatus													je Svete] (O Ex		base 7
arameter s	tatus 1/0 Address	0	10	20	30	40								je Syste] (mm	O Ex	pansion l	base 7
arameter s	tatus 1/0 Address	0	10	20	30	40								de Syste Online] (m.m. e.mo	O Ex onitor dule c	pansion l	oase 7
arameter s Power su	tatus I/O Address Q25PHCPU	0 Intelli gent	10 1 None	20 2 None	30 3 None	40 4 None								de Syste Online] (m m e mo	O Ex onitor dule o	pansion change stics	oase 7
arameter s Powe rsu pply	I/O Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								de Syste Online Modul	m mi e mo D e's [C Ex onitor dule o iagno	pansion change stics ed Informa	ation
arameter s Powe r su pply	tatus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								de Syste Online Modul	m m e mo D e's E Bass	O Ex onitor dule c iagno) etaile e Info	pansion change stics ed Informa mation	ation
arameter s Powe r su pply	tatus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								de Syste Online Modul	m m e mo D e's E Bass	O Ex onitor dule c iagno e taile e Infor duct In	pansion change stics ed Informa mation nf. List	ation
arameter s Power su pply atus Modu	atus	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	Modu	le war	ning	Si Si	tart mo	eniter		de Syste Online Modul	m m e mo D Base Pro	O Ex onitor dule c letaile e Infor duct In	pansion I change stics ed Informa mation nf. List power su	oase 7

- (d) Referring to (1), enable the conversion of the channels to be used, set digital values to the digital values (Un\G1 to Un\G6), and turn Operating condition setting request (Y9) from OFF to ON. Turn ON the output enable/disable flag (Y1 to Y6) of the used channel to check whether proper conversion has been made or not. (Be careful since analog outputs are provided actually.)
- (e) Since the new module is in a default status, it must be initialized by a sequence program after control resumption.
 Before performing initialization, check whether the contents of the initialization.

Before performing initialization, check whether the contents of the initialization program are correct or not.

1) Normal system configuration

The sequence program should perform initialization on the leading edge of Module READY (X9) of the Q66DA-G.

When control resumption is executed, Module READY (X0) turns ON and initialization is performed. (If the sequence program performs initialization only one scan after RUN, initialization is not performed.)

2) When used on remote I/O network

Insert a user device that will execute initialization at any timing (initialization request signal) into the sequence program. After control resumption, turn ON the initialization request signal to perform initialization. (If the sequence program performs initialization only one scan after a data link start of the remote I/O network, initialization is not performed.)

(5) Resumption of control

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to redisplay the "Online module change" screen, click the [Execution] button to resume control. The FROM/TO instruction for the module resumes.

0	nline module change	
	Operation	Target module
	Module change execution	I/O address 000H
	Installation confirmation	Module name Q66DA-G
	Module control restart	Status Change module installation completion
	Status/Guidance	
	The controls such as I/O, FROM and automatic refresh for the inst Please confirm the parameter set	I/TO instruction executions, talled module are restarted. ting and wiring, etc. and execute.
	Execution	Cancel

(b) The "Online module change completed" screen appears.

MELSOFT series GX Developer 🛛 🛛						
٩	Online module change completed.					
	ОК					

OVERVIEW

SYSTEM CONFIGURATION

SPECIFICATIONS

PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

PROGRAMMING

7

CH/

TROUBLESHOOTING

7.3.6 When user range setting is used and initial setting was made with sequence program (other system is unavailable)

(1) Conversion disable

(a) Set D/A Conversion enable/disable setting (Un\G0) for all channel conversion disable and turn Operating condition setting request (Y9) from OFF to ON to stop conversion.

After confirming that conversion has stopped with the actual analog output value, turn OFF Operating condition setting request (Y9).

Device test		×
Bit device		1
Device		Close
Y9	•	
	_	Lide bistow
FORCE ON FORCE OFF	Toggle force	Hide history
Word device/buffer memory		
C Device		~
		_
Buffer memory Module start I/I	0000 🔻 (Hex)	
Address		-
Adicos		<u> </u>
Setting value		
	16 bit integer	- Set
INC.		
Program		
Label reference program MA	N	-
,		_
Execution history		
Device	Setting condi	Find
Y9	Force ON	
Module start:0 Address:0(D)	3F(H)	Find next
ха	Force UFF	Re-setting
<	>	Clear

- (b) If the saved buffer memory contents are not yet prerecorded, record them in the following procedure.
 - 1) Make the pass data classification setting (Un\G200).
 - 2) Turn Operation Condition Setting Request (Y9) from OFF to ON.
 - Compare the offset/gain values of the industrial shipment settings and user range settings (Un\G214 to Un\G225) with the range reference table. Refer to Section 7.4 for the range reference table.
 - 4) If the values are proper, record the offset/gain values of the pass data classification setting, industrial shipment settings and user range settings.

⊠Point

If the buffer memory values compared with the reference table are not proper, save and restoration of the user range cannot be executed.

Before executing module control resumption, follow the flowchart in Section 4.6 and make offset/gain setting in the device test of GX Developer.

Perform mode switching by making the setting of the mode switching setting (Un\G158, Un\G159) and turning Operation Condition Setting Request (Y9) from OFF to ON.

Note that if module control is resumed without offset/gain setting being made, operation will be performed with the default values.

7.3 Online Module Change Procedure 7.3.6 When user range setting is used and initial setting was made with sequence program (other system is

(2) Dismounting of module

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to enter the "Online module change" mode, double-click the module to be changed online to display the "Online module change" screen.

ysten	n Mon	itor																	N
Insta	lled stat	us												Base					
			0	1	2	3	4							Base	Modul	Э			
		MasterPLC->			•											œ	Main ba	se	
	Bauna		neep		Uluma	Unma	Linea									C	Expans	ion base	1
	rsu		A-G	unti	unti	unti	unti									C	Expans	ion base	2
	pply	Q25PHCPU	16pt	ng	ng	ng	ng									C	Expans	ion base	
																C	Expans	ion base	4
																С	Expans	ion base	5
				ļ												C	Expans	ion base	6
																C	Evpans		
Para	meter st	atus												Mode					
Para	meter st	atus 1/0 Address	0	10	20	30	40							Mode	Gystem	mon	itor		
Para	meter st	atus 1/0 Address	0	10	20	30	40							Mode	Gystem Online	mon	itor ile chan	je	
Para	meter st Powe rsu	atus 1/0 Address Q25PHCPU	0 Intelli gent	10 1 None	20 2 None	30 3 None	40 4 None							Mode	Gystem Online	mon modu Diaj	itor Ile chang	je	
Para	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt							-Mode	Gystem Dnline	mon modu Diaj s De	itor Ile chang gnostics:	je 	
Parar	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								Gystem Dnline Todule	mon modu Dia; s De ase I	itor lle chang gnostics, tailed Inf	je 	
Para	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt								Gystem Dnline fodule F	mon modu Dia; s De ase I	itor Ile chang gnostics. Itailed Inf Informatio	je 	
- Parar	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelligent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	Modu	le wan	ning	St	art mo	nitor		Gystem Dnline fodule B F Detaile	mon modu Diaj s Del ase I trodu d inf.	itor ile chang gnostics tailed Inf nformation of powe	je 	

(b) Click the "Execution" button to enable a module change.

Online module change	X
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Change module selection completed
Status/Guidance Please turn off Y signal of the ch intelligent function module.	anged module when you change the
Execution	Cancel

If the following error screen appears, the user range cannot be saved. Click the [OK] button, and perform the operation in Section (2)(c) and later.



OVERVIEW

2

SYSTEM CONFIGURATION

SPECIFICATIONS

Δ

SETUP AND PROCEDURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

PROGRAMMING

TROUBLESHOOTING

(c) After confirming that the "RUN" LED of the module has turned off, remove the connector and dismount the module.

Point

Always dismount the module. If mounting confirmation is made without the module being dismounted, the module will not start properly and the "RUN" LED will not be lit.

(3) Mounting of new module

- (a) Mount a new module to the same slot and install the connector.
- (b) After mounting the module, click the [Execution] button and make sure that the "RUN" LED is lit. Module Ready (X0) remains OFF.

Online module change	X
Operation	Target module
Module change execution Installation confirmation Module control restart Status/Guidance The module can be exchanged. Please press the Execute button	I/O address 000H Module name Q66DA-G Status Changing module
Execution	Cancel

(4) Operation check

(a) To make an operation check, click the [Cancel] button to cancel control resumption.

Online module change	$\overline{\mathbf{X}}$
Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q66DA-G
Module control restart	Status Change module installation completion
Status/Guidance	
The controls such as I/0, FROM and automatic refresh for the inst Please confirm the parameter set	I/TO instruction executions, talled module are restarted. tring and wiring, etc. and execute.
Execution	Cancel

(b) Click the [OK] button to leave the "Online module change" mode.



(c) Click the [Close] button to close the System monitor screen.

	n Mon	itor														ſ	×
_ Insta	led stat	us										Base					
			0	1	2	3	4					Base	Module	•			
		MasterPLC->	<u>·</u>			-								۲	Main ba	se	
	Bouro			Unmo	Upmo	Unmo	Unmo							0	Expansi	on base 1	
	rsu			unti	unti	unti	unti							$^{\circ}$	Expansi	on base 2	
	pply	Q25PHCPU	16pt	ng	ng	ng	ng							C	Expansi	on base 3	
														0		on base 4	
														C	Expansi	on base 5	
														0	Evpanei	on base 6	
				¦										2	E .		
														0	Expansi		
Deve																	
Para	neter st	atus								 		Mode					
Para	neter st	atus 1/0 Address		10	20	30	40					Mode	System	moni	tor		
Para	neter st	atus 1/0 Address	0	10	20	30	40					Mode C :	Gystem Online r	monil	tor le chang	e	
Para	neter st	atus 1/0 Address	0 0 Intelli	10 1 None	20 2 None	30 3 None	40 4 None					Mode C : C (Gystem Online r	monil nodul Diag	tor le chang nostics	e	
Paral	neter st Powe r su pply	atus 1/0 Address Q25PHCPU	0 0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt					Mode © 9	Gystem Online r	monil nodul Diag	tor le chang nostics	e	
Para	neter st Powe r su pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt						Gystem Online r Todule's	monil nodul Diag s Det	tor le chang nostics ailed Info	e rrmation	
Para	Powe rsu pply	atus I/O Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt					Mode C :	System Online r fodule's Br	moni nodul Diag s Det ase Ir	tor le chang nostics ailed Info	e .rmation	
Para	Powe rsu pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt						Gystem Dnline r fodule's Bi	moni modul Diag s Det ase Ir roduc	tor le chang nostics ailed Info nformatio at Inf. Lis	e 	
Statu	Powe r su pply	atus 1/0 Address Q25PHCPU	0 Intelli gent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	Module w	arning	Start mo	anitar		System Dnline r fodule's Br P Detailed	moni Diag s Det ase Ir roduc	tor le chang nostics ailed Info aformatio at Inf. Lis of power	e m t supply	

- (d) Choose [Online] [Debug] [Device test] on GX Developer and set the values prerecorded in Section (2) to the buffer memory.
- (e) Turn the user range write request (YA) from OFF to ON to restore the user set values to the module.
 After confirming that the offset/gain setting mode status flag (XA) is ON, turn OFF the user range write request (YA).
- (f) Referring to (1), enable the conversion of the channels to be used, set digital values to the digital values (Un\G1 to Un\G6), and turn Operating condition setting request (Y9) from OFF to ON. Turn ON the output enable/disable flag (Y1 to Y6) of the used channel to check whether proper conversion has been made or not. (Be careful since analog outputs are provided actually.)

(g) Since the new module is in a default status, it must be initialized by a sequence program after control resumption.

Before performing initialization, check whether the contents of the initialization program are correct or not.

1) Normal system configuration

The sequence program should perform initialization on the leading edge of Module READY (X9) of the Q66DA-G.

When control resumption is executed, Module READY (X0) turns ON and initialization is performed. (If the sequence program performs initialization only one scan after RUN, initialization is not performed.)

2) When used on remote I/O network

Insert a user device that will execute initialization at any timing (initialization request signal) into the sequence program. After control resumption, turn ON the initialization request signal to perform initialization. (If the sequence program performs initialization only one scan after a data link start of the remote I/O network, initialization is not performed.)

(5) Resumption of control

(a) After choosing [Diagnosis] - [Online module change] on GX Developer to redisplay the "Online module change" screen, click the [Execution] button to resume control. The FROM/TO instruction for the module resumes.



(b) The "Online module change completed" screen appears.



7.4 Range Reference Table

The range reference tables are given below.

(1) Reference table for offset/gain values of industrial shipment settings (Un\G202 to 213)

The reference values change depending on the setting of the pass data classification setting (Un\G200).

	Address (Decimal)					Description Pass data classification setting			Reference value
CH1	CH2	CH3	CH4	CH5	CH6	Description		Setting	(Hexadecimal)
						Industrial shipment	User range setting 1	0mA	Approx. 7FFFн
202	204	206	208	210	212	sottings offsot value	User range setting 2	0V	Approx. 7FFFн
						settings onset value	User range setting 3	0V	Approx. 7FFFн
						Industrial shinment	User range setting 1	20mA	Approx. 24A0н
203	205	207	209	211	213	sottings gain value	User range setting 2	10V	Approx. E4C8н
						settings gailt value	User range setting 3	5V	Approx. E4C8н

(2) Reference table for user range settings offset/gain values (Un\G214 to 225)

Offset/gai	n value	Reference value
	0mA	Approx. 7FFFн
User range	4mA	Approx. 6DB9н
Setting 1	20mA	Арргох. 24А0 н
	-10V	Арргох. 1В36 н
oser range	0V	Approx. 7FFFн
Setting 2	10V	Approx. E4C8н
	0V	Approx. 7FFFн
User range	1V	Арргох. 9427 н
Setting 5	5V	Approx. E4C8н

[Example]

When using User range setting 3 in channel 1 and setting 1V to the offset value and 5V to the gain value, the following values are stored in the User range setting offset/ gain value areas.

- CH1 user range settings gain value (Un\G215): Approx. E4C8H

7.5 Precautions for Online Module Change

The following are the precautions for online module change.

- (1) Always perform an online module change in the correct procedure. A failure to do so can cause a malfunction or failure.
- (2) If an online module change is made with the user range setting, the accuracy after that will fall to about less than three times of the accuracy before that. Re-set the offset/gain values as necessary.

8 **TROUBLESHOOTING**

This chapter explains the types of errors that may occur when the Q66DA-G is used, and how to troubleshoot such errors.

8.1 Error Code List

If an error occurs in Q66DA-G while reading/writing data from/to the programmable controller CPU, the applicable error code is written to error code (Un\G19).

Error code (decimal)	Error description	Processing	
	The setting is outside the output range setting that can be		
	made by the intelligent function module switch of the GX	Reset to the correct parameter with GX Developer param-	
	Developer.	eter setting. (Refer to Section 4.5.)	
	□ indicates the incorrectly specified channel number.		
		Turn the power ON and OFF again. If the error occurs	
111	Hardware error of the module	again, the module may be malfunctioning. Contact the	
		nearest distributor or branch office with a description of the	
		problem.	
112	The value set to the intelligent function switch 5 is other	Re-set the correct parameter value in the parameter set-	
	than 0.	ting of GX Developer. (Refer to Section 4.5.)	
		Perform the offset/gain setting again for all of the channels	
<u>_</u>	An invalid value is set in the offset/gain setting. The num- ber of the error channel cannot be identified.	that use the user range settings.	
120* ³		If the error occurs again, the module may be malfunction-	
		ing. Please consult your local Mitsubishi represeutative,	
		explaining a detailed descriptopm of the problem.	
	An invalid value is not in the offect/gain potting	Perform the offset/gain setting again for the error channel.	
12⊡* ³		In the error occurs again, the module may be manunction-	
		ing. Please consult your local mitsubishi representative,	
	The C(P) OCSTOP instruction was executed in the offset/	explaining a detailed descriptoph of the problem.	
161* ⁴	agin setting mode	dain setting mode	
	• The G(P) OGSTOR instruction was executed consecu-	• Execute the G(P) OGSTOR instruction only once for one	
162* ¹	tively	module	
	• At the time of offset/gain setting a set value was written	At the time of offset/gain setting, write a set value only	
	to the flash memory 26 or more times consecutively.	once at one time.	
163* ¹	The G(P).OGSTOR instruction was executed for the model		
	that differs from the model for which the G(P).OGLOAD	Execute the G(P).OGLOAD and G(P).OGSTOR instruc-	
	instruction had been executed.	tions for the same model.	
	The value set to the G(P).OGLOAD instruction,		
164* ¹	G(P).OGSTOR instruction or save data classification set-	Set the value within the range.	
	ting (Un\G200) is outside the range.		

Table8.1 Error code list (1/2)

Error code (decimal)	Error description	Processing	
40□*1	The offset value is equal to or larger than the gain value.	Reset so that the offset value is smaller than the gain	
40	□ indicates the channel number causing the error.	value.	
500* ¹	More than one channel was set at the same time during	Set the correct value in offset/ gain setting mode(Un\G22,	
500	offset/gain settings.	Un\G23).	
60⊡* ²	The specified digital value is outside the range.	Set a value that is within the range	
60	\Box indicates the channel number where the error occurred.	cer a value that is within the range.	
	The warning output upper/lower limit value setting is out-	Correct the contents of the warning output upper limit	
61⊡* ¹	side the range -32000 to 32000.	value/lower limit value (Un\G86 to 97) to within the range -	
	□ indicates the channel number incorrectly set.	32000 to 32000.	
62 <u>□</u> * ¹	The warning output lower limit value is equal to or greater	Make setting so that the warning output upper limit value is	
	than the warning output upper limit value.	greater than the warning output lower limit value	
	□ indicates the channel number incorrectly set.		
	The analog adjustment output in the offset/gain setting	Change the contents of offset/gain adjustment value speci-	
700* ¹	mode is outside the specified value range.	fication (Un\G24) so that it is within the range from –3000	
		to 3000.	
	The increase/decrease digital limit value setting is outside	Correct the contents of the increase/decrease digital limit	
80⊡* ¹	the range 0 to 64000.	values (Un\G70 to Un\G81) to within the range 0 to 64000.	
	□ indicates the channel number incorrectly set.		
90 □ * ¹	The scaling upper/lower limit value is set outside the range	Correct the scaling upper/lower limit value (Un)G54 to	
	of –32000 to 32000.	Un/G65) within the range of -32000 to 32000	
	□ indicates the channel number set incorrectly.		
91⊡* ¹	The scaling lower limit value is equal to or greater than the	Set CH□ scaling upper/lower limit value (Un\G54 to	
	scaling upper limit value.	Un\G65) so that the scaling upper limit value is greater	
	□ indicates the channel number set incorrectly	than the scaling lower limit value	

Table8.2 Error code list (2/2)

⊠Point

- (1) When two or more errors occur, the latest error code is stored.
- (2) The error described with *1 can be cleared by turning ON the error clear request (YF).
- (3) If the error marked *2 occurs continuously, it is added to the error history of GX Developer in each conversion cycle.
- (4) If an error marked *3 occurs, D/A conversions on all channels will stop. Therefore, after correcting the offset/gain setting, make the initial setting again.
- (5) Error code 161 marked *4 is not stored in the Error code (Un\G19). It is written to the Completion status area, (S) + 1, of the G(P).OGSTOR instruction.

6

PROGRAMMING

ONLINE MODULE CHANGE

8

ESHOOT-

MELSEG Q series

8.1 Error Code List

8.2 Troubleshooting

8.2.1 When the "RUN" LED is flashing or turned off

(1) When flashing

Check item	Corrective action
In the mode pot to the offect/gain potting mode?	Reset switch 4 of the intelligent function module switch setting for GX
is the mode set to the onsergain setting mode?	Developer to the normal mode (Refer to Section 4.5).

(2) When off

Check item	Corrective action
la nowar boing supplied?	Confirm that the supply voltage for the power supply module is within
is power being supplied?	the rated range.
	Calculate the current consumption of the CPU module, I/O module
Is the capacity of the power supply module adequate?	and intelligent function module mounted on the base unit to see if the
	power supply capacity is adequate.
	Reset the programmable controller CPU and verify that it is lit. If the
Lice a watchdog timer array accurred?	RUN LED does not light even after doing this, the module may be
Has a watchoog timer error occurred?	malfunctioning. Please consult your local Mitsubishi representative,
	explaining a detailed description.
Is the module correctly mounted on the base unit?	Check the mounting condition of the module.
Is a module change enabled during an online module change?	Refer to Chapter 7 and take corrective action.

8.2.2 When the "ERR." LED is on or flashing

(1) When on

Check item	Corrective action
Is an error being generated?	Confirm the error code and take corrective action described in Sec-
	tion 8.1.

(2) When flashing

Check item	Corrective action
In intelligent function module patting quitch 5 pat to "other than 0"?	Using GX Developer parameter setting, set intelligent function mod-
is intelligent function module setting switch 5 set to other trian 0 ?	ule setting switch 5 to "0" (Refer to Section 4.5).

8.2.3 When the "ALM" LED is turned on

Check item	Corrective action
Has the warning output occurred?	Check the warning output flag (Un\G48).

8 - 3

OVERVIEW

SYSTEM CONFIGU-RATION

SPECIFICATIONS

Δ

SETUP AND PROCE-DURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

5

8.2.4 When an analog output value is not output

Check item	Action to be taken
In 241/DC being supplied from the systemal power supply? (If not	Verify that 24VDC voltage is being supplied to the external power
"External power supply (X7)" is OFF)	supply terminals (between terminals No. A19 and A20 or B19 and
External power supply (X7) is OFF.)	B20).
Is there any fault with the analog signal lines such as broken or dis-	Check for any abnormality on the signal lines by a visual check and a
connected line?	continuity check.
Is the CPU module in the STOP status?	Set the CPU module to the RUN status.
	Verify that the offset/gain settings are correct (Refer to sections 4.6
	and 5.6.2).
Are the offset/gain settings correct?	If the user range setting is being used, switch to a different default
	input range and check if D/A conversion is correctly performed. If it is
	correctly performed, redo the offset/gain settings.
	Verify setting range (Un\G20, Un\G21) in GX Developer monitor. If
Is the output setting range correct?	the output range setting is incorrect, redo GX Developer intelligent
	function module switch settings (Refer to Section 4.5).
	Check the ON/OFF status of the high resolution mode status flag (X8)
In the recolution made patting correct?	in GX Developer system monitor.
Is the resolution mode setting correct?	If the resolution mode setting is incorrect, redo the GX Developer
	intelligent function module switch setting. (Refer to Section 4.5).
Is the D/A conversion enable/disable setting for the channel to be	Check the D/A conversion enable/disable setting (Un\G0) in GX
output set to Disable?	Developer monitor and set it to Enable using the sequence program
	or utility package (Refer to Section 3.4).
	Verify ON/OFF for the C output enable/disable flags (Y1 to Y6) in GX
Is the D/A output enable/disable setting for the channel to be output	Developer monitor.
set to Disable?	If the output enable/disable flags are OFF, review the initial setting for
	the sequence program or utility package (Refer to Section 3.3).
In the digital value being written to the channel to be output?	Verify CH□ digital value (Un\G1 to Un\G6) in GX Developer monitor
is the digital value being written to the channel to be output?	(Refer to Section 3.4).
	Set the operating condition setting request (Y9) from ON to OFF from
Here the operating condition potting request (V0) here executed?	GX Developer and check to Refer to if the analog output is normal.
Has the operating condition setting request (Y9) been executed?	If normal analog output is obtained, review the initial setting for the
	sequence program or utility package (Refer to Section 3.3).

⊠Point

If the analog output value is not output after the proper corrective action is taken in accordance with the above check item, the possible cause is a module failure. Please consult your local Mitsubishi representative, explaining a detailed description of the problem.

TROL ING

8.2.5 When the analog value is not within the reference accuracy of the theoretical value

Check item	Action to be taken
	If observed, because a voltage drop due to the wiring impedance and
	load current is large and the voltage applied to the external device is
When using voltage output, is a small load resistance of the con-	low, the factory default range setting may not satisfy the reference
nected external device and a long wiring distance observed?	accuracy.
	In this case, use User range setting and adjust the offset and gain
	values after wiring.

8.2.6 When analog output value is not "HOLD"

Check item	Action to be taken
Is the HOLD/CLEAR setting correct?	Check the Switch 3 setting of the intelligent function module switch setting on GX Developer.
Is the Q66DA-G used on a MELSECNET/H remote I/O station?	Take action, referring to POINT (2) in Section 3.2.1.

OVERVIEW

SYSTEM CONFIGU-RATION

SPECIFICATIONS

SETUP AND PROCE-DURES BEFORE OPERATION

UTILITY PACKAGE (GX CONFIGURA-TOR-DA)

5

PROGRAMMING

ONLINE MODULE CHANGE

8

8.2.7 Checking the Q66DA-G status using GX Developer system monitor

When the Q66DA-G detail information is selected in GX Developer system monitor, function version, error code, LED ON status and status of the intelligent function module switch setting can be checked.

(1) Operating the GX Developer

 $[\text{Diagnostics}] \rightarrow [\text{System monitor}] \rightarrow "\text{Select Q66DA-G"} \rightarrow$

Module's Detailed Information

(2) Module Detailed Information

- (a) Checking the function version
 The function version of the Q66DA-G is displayed in the product information field.
- (b) Checking the error code The error code stored in buffer memory address 19 (Un\G19) of the Q66DA-G is displayed in the Present Error field.

Module's Detailed Information Function version Module Product information 070310000000000 Module Name Q66DA-G 1/O Address 0 Implementation Position Main Base OSIo Module Information Module access Possible 1/O Clear / Hold Settings Noise Filter Setting Status of External Power Supply ----Fuse Status Input Type Status of I/O Address Verify Agree Remote password setting status ---Error Display Display format No. Erro Present Error No Error • HEX O DEC Error History The display sequence of the error history is from the oldest error The latest error is displayed in the line as under. HAV Information Stop monitor Close

(When the button Error History is pressed, the contents displayed in the Present Error field are displayed in the No.1 field.)

(3) H/W information

(a) H/W LED information

The LED status is displayed.

No.	LED name	Status
1)	RUN LED	0000µ : Indicates that LED is unlit
2)	ERR. LED	0001μ : Indicates that LED is unit.
3)	ALM LED	

(b) H/W SW information

The status of the intelligent function module switch setting is displayed.

No.	Switch setting for intelligent function module
1	Switch 1
2	Switch 2
3	Switch 3
4	Switch 4
5	Switch 5

1	H/W Informati	on						
	Module Module Name	Q66DA-G	Pro	duct informat	ion 070310	00000000 · C	Display forma	t O DEC
	H/W LED Inform	nation			H/W SW	/ Information		
	Item	Value	Item	Value	It	em Value	Item	Value
1) ——	▶ RUN	0001	ALM	0000			RANGE 1	0000
~	ERR	0000				-3	RANGE2	0000
2) —							HOLD/CLEAR	0000
							MODE	0000
							-	0000
					Start m	onitor Stop mo	nitor	Close

(In the case of GX Developer Version 8)

APPENDIX

Appendix 1 Dedicated Instruction List and Available Devices

(1) Dedicated instruction list

The following table lists the dedicated instructions that can be used with the Q66DA- G.

Instruction	Description	Reference section	
	Switches to the offset/gain setting mode.	Appondix 1.1	
	Switches to the normal mode.		
	Reads the offset/gain values of the user range setting to the	Appondix 1.2	
O(I).OOLOAD	CPU.		
G(P) OGSTOR	Restores the offset/gain values of the user range setting stored	Annendix 1.3	
0(1).0001010	in the CPU to the Q66DA-G.		

⊠ Point

When the module is mounted to a MELSECNET/H remote station, the dedicated instructions cannot be used.

(2) Available devices

The following devices are available for the dedicated instructions:

Internal	devices	File register	0 + + *2	
Bit *1	Word	File register	Constant -	
X, Y, M, L, F, V, B	T, ST, C, D, W	R, ZR	K, H	

*1Word device bit designation can be used as bit data.

Word device bit designation is done by designating Word device . Bit No. . (Designation of bit numbers is done in hexadecimal.)

For example, bit 10 of D0 is designated as DO.A.

However, there can be no bit designation for timers (T), retentive timers (ST) and counters (C). *2Available devices are given in each of the Constant field.

Appendix 1.1 G(P).OFFGAN

Switches the mode of the Q66DA-G. (Normal mode to offset/gain setting mode, offset/gain setting mode to normal mode)



Set data

Device	Description	Setting range	Data type
Un	Start I/O number of the module	0 to FEH	Binary 16 bits
	Mode switching		
	0: Switching to normal mode		
(S)	1: Switching to offset/gain setting mode	0 ,1	Binary 16 bits
	The setting of any other value results in "switching to offset/gain setting		
	mode".		

(1) Function

Switches the mode of the Q66DA-G.

- Normal mode to offset/gain setting mode (the offset/gain setting mode status flag (XA) turns ON)
- Offset/gain setting mode to normal mode (the offset/gain setting mode status flag (XA) turns OFF)

Point

(1) When the offset/gain setting mode is switched to the normal mode, Module Ready (X0) turns from OFF to ON.

Note that initial setting processing will be executed if there is a sequence program that makes initial setting when Module Ready (X0) turns ON.

(2) D/A conversion is discontinued if the mode is switched (from the normal mode to the offset/gain setting mode or from the offset/gain setting mode to the normal mode).

To resume D/A conversion, switch to the normal mode and then turn ON Operating condition setting request (Y9).

(2) Operation error

No errors.

(3) Program example

The following program is designed to switch the Q66DA-G mounted in the position of I/O number X/Y0 to X/YF to the offset/gain setting mode when M10 is turned ON, and to return it to the normal mode when M10 is turned OFF.

Switches to offset/gain setting mode				
	[MOVP	K1	D1]	Stores setting of dedicated instruction (G.OFFGAN) into D1.
	G.OFFGAN	UO	D1]	Dedicated instruction (G.OFFGAN)
	Performs processing for	or offset/g	jain setting]	
Switches to normal mode				
	[MOVP	KO	D1]	Stores setting of dedicated instruction (G.OFFGAN) into D1.
	[G.OFFGAN	UO	D1]	Dedicated instruction (G.OFFGAN)
	Performs processing f	or norma	I mode]	
			-[END]	

Appendix 1.2 G(P).OGLOAD

Set data	Usable devices									
	Interna	device		Link dire	ct device	Intelli-		Con	stant	
	(System, user)			J□/□		gent func-	Index	Constant		
	Bit	Word	File register	Bit	Word	tion module device U⊡\G⊡	register Z⊡	К, Н	S	Other
(S)	—	()		-			—	—	—
(D)		0			-	_		—	—	—

Reads the offset/gain values of the user range setting of the Q66DA-G to the CPU.



Set data

Device	Description	Setting range	Data type
Un	Start I/O number of the module	0 to FEH	Binary 16 bits
(S)	Start number of the device in which control data is stored.	Within the range of the speci- fied device	Device name
(D)	Device that is turned ON 1 scan on completion of dedicated instruction processing. (D) + 1 also turns ON at an abnormal completion.	Within the range of the speci- fied device	Bit

Control data (1/2) *1

Device	Item	Set data	Setting	Set by
(S)	System area	-	range -	-
. ,	· ·	Stores the status when the instruction is complete.		
(S) + 1	Completion status	0 : Normal completion	-	System
(-)		Other than 0: Abnormal completion		
		Specify the user range setting where offset/gain val-		
		ues will be read.		
	Pass data classification setting	00н: Use range setting 1 specified		
		01H: Use range setting 2 specified		
(S) + 2		10н: Use range setting 3 specified	to	User
		$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	0АААн	
		0:Fixed CH6 CH5 CH4 CH3 CH2 CH1		
(S) + 3	System area	-	-	-
(S) + 4	CH1 Industrial shipment settings offset value	-	-	System
(S) + 5	CH1 Industrial shipment settings gain value	-	-	System
(S) + 6	CH2 Industrial shipment settings offset value	-	-	System
(S) + 7	CH2 Industrial shipment settings gain value	-	-	System

App - 4

Control data (2/2) *1

Device	ltem	Set data	Setting	Set by
			range	
(S) + 7	CH2 Industrial shipment settings gain value	-	-	System
(S) + 8	CH3 Industrial shipment settings offset value	-	-	System
(S) + 9	CH3 Industrial shipment settings gain value	-	-	System
(S) + 10	CH4 Industrial shipment settings offset value	-	-	System
(S) + 11	CH4 Industrial shipment settings gain value	-	-	System
(S) + 12	CH5 Industrial shipment settings offset value	-	-	System
(S) + 13	CH5 Industrial shipment settings gain value	-	-	System
(S) + 14	CH6 Industrial shipment settings offset value	-	-	System
(S) + 15	CH6 Industrial shipment settings gain value	-	-	System
(S) + 16	CH1 User range settings offset value	-	-	System
(S) + 17	CH1 User range settings gain value	-	-	System
(S) + 18	CH2 User range settings offset value	-	-	System
(S) + 19	CH2 User range settings gain value	-	-	System
(S) + 20	CH3 User range settings offset value	-	-	System
(S) + 21	CH3 User range settings gain value	-	-	System
(S) + 22	CH4 User range settings offset value	-	-	System
(S) + 23	CH4 User range settings gain value	-	-	System
(S) + 24	CH5 User range settings offset value	-	-	System
(S) + 25	CH5 User range settings gain value	-	-	System
(S) + 26	CH6 User range settings offset value	-	-	System
(S) + 27	CH6 User range settings gain value	-	-	System
(S) + 28				
to	System area	-	-	System
(S) + 35				

*1 Set only the pass data classification setting (S)+2. If data is written to the area set by the system, the offset/gain values will not be read properly.

*2 The set value of the Pass data classification setting, (S) + 2, varies depending on the module. Attention must be paid.

*3 An area of 36 words is required for (S).

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APPENDIX
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(1) Functions

- (a) Reads the offset/gain values of the user range setting of the Q66DA-G to the CPU.
- (b) There are two types of interlock signals for the G(P).OGLOAD instruction: the completion device (D) and the status display device at completion (D) + 1.

1) Completion device

Turns ON in the END processing of the scan where the G(P).OGLOAD instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion

Turns ON and OFF depending on the completion status of the G(P).OGLOAD instruction.

Normal completion : Stays OFF and does not change.

Abnormal completion : Turns ON in the END processing of the scan where the G(P).OGLOAD instruction is completed, and turns OFF in the next END processing.



(2) Operation error

In the following case, an error occurs and the corresponding error code is stored into the completion status area (S)+1.

Error code	Case resulting in operation error
164	The value set to the pass data classification setting (S)+2 is outside the range.

(3) Program example

The following program is designed to read the offset/gain values of the Q66DA-G mounted in the position of I/O number X/Y0 to X/YF when M11 is turned ON.



Appendix 1.3 G(P).OGSTOR

Restores the offset/gain values of the user range setting stored in the CPU to the Q66DA-G.



Set data

Device	Description	Setting range	Data type
Un	Start I/O number of the module	0 to FEH	Binary 16 bits
(S)* ¹	Start number of the device in which control data is stored.	Within the range of the specified device	Device name
(D)	Device that is turned ON 1 scan on completion of dedicated instruction processing. (D) + 1 also turns ON at an abnormal completion.	Within the range of the specified device	Bit

*1 When executing the G(P).OGLOAD instruction, specify the device designated in (S).

Do not change the data read with the G(P).OGLOAD instruction.

If it is changed, normal operation cannot be guaranteed.

APPENDIX

Control data *1

Device	Item	Set data	Setting range	Set by
(S)	System area	-	-	-
		Stores the status when the instruction is complete.		
(8) ± 1	Completion status	0 : Normal completion		System
(3) + 1	Completion status	Other than 0: Abnormal completion	-	System
		(error code)		
		The value set to pass data classification setting (S)+2		
		using the G(P).OGLOAD instruction is stored.		
		00н: Use range setting 1 specified		
		01H: Use range setting 2 specified		
(S) + 2	Pass data classification setting	10H: Use range setting 3 specified	-	User
		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
(S) + 3	System area	_	-	-
(S) + 4	CH1 Industrial shipment settings offset value	_	-	System
(S) + 5	CH1 Industrial shipment settings gain value	-	-	System
(S) + 6	CH2 Industrial shipment settings offset value	-	-	System
(S) + 7	CH2 Industrial shipment settings gain value	-	-	System
(S) + 8	CH3 Industrial shipment settings offset value	-	-	System
(S) + 9	CH3 Industrial shipment settings gain value	-	-	System
(S) + 10	CH4 Industrial shipment settings offset value	-	-	System
(S) + 11	CH4 Industrial shipment settings gain value	-	-	Svstem
(S) + 12	CH5 Industrial shipment settings offset value	-	-	System
(S) + 13	CH5 Industrial shipment settings gain value	-	-	System
(S) + 14	CH6 Industrial shipment settings offset value	-	-	System
(S) + 15	CH6 Industrial shipment settings gain value	-	-	System
(S) + 16	CH1 User range settings offset value	-	-	System
(S) + 17	CH1 User range settings gain value	-	-	System
(S) + 18	CH2 User range settings offset value	-	-	System
(S) + 19	CH2 User range settings gain value	-	-	System
(S) + 20	CH3 User range settings offset value	-	-	System
(S) + 21	CH3 User range settings gain value	-	-	System
(S) + 22	CH4 User range settings offset value	-	-	System
(S) + 23	CH4 User range settings gain value	-	-	System
(S) + 24	CH5 User range settings offset value	-	-	System
(S) + 25	CH5 User range settings gain value	-	-	System
(S) + 26	CH6 User range settings offset value	-	-	System
(S) + 27	CH6 User range settings gain value	-	-	System
(S) + 28				
to	System area	-	-	System
(S) + 35				

*1 When executing the G.OGLOAD instruction, specify the device designated in (S). Do not change the data read with the G.OGLOAD instruction.

If it is changed, normal operation cannot be guaranteed.

*2 The set value of the Pass data classification setting, (S) + 2, varies depending on the module. Attention must be paid.

*3 An area of 36 words is required for (S).

(1) Functions

- (a) Restores the offset/gain values of the user range setting stored in the CPU to the Q66DA-G.
- (b) There are two types of interlock signals for the G(P).OGSTOR instruction: the completion device (D) and the status display device at completion (D) + 1.

1) Completion device

Turns ON in the END processing of the scan where the G(P).OGSTOR instruction is completed, and turns OFF in the next END processing.

2) Status display device at completion

Turns ON and OFF depending on the completion status of the G(P).OGSTOR instruction.

Normal completion : Stays OFF and does not change.

Abnormal completion : Turns ON in the END processing of the scan where the G(P).OGSTOR instruction is completed, and turns OFF in the next END processing.

Sequence program	END processing END processing	g E	ND processing END processing
	ON □	Execution completion of the G.OGSTOR instruction	
G.OGSTOR instruction	OFF		
			ON
Completion device (D)	OFF		
,			ON Abnormal completion
Status display device	OFF		Normal completion
at completion (D)+1			1 scan

(c) When the offset/gain values are restored, the reference accuracy falls to about less than three times of the accuracy before that.

(2) Operation error

In any of the following cases, an error occurs and the corresponding error code is stored into the completion status area (S)+1.

Error code	Case resulting in operation error		
161	The G(P).OGSTOR instruction was executed in the offset/gain setting mode.		
162	The G(P).OGSTOR instruction was executed consecutively.		
163	The G(P).OGSTOR instruction was executed for the model that differs from the		
105	model for which the G(P).OGLOAD instruction had been executed.		
164	The value set to the pass data classification setting (S)+2 is outside the range.		

(3) Program example

The following program is designed to read the offset/gain values of the Q66DA-G mounted in the position of I/O number X/Y0 to X/YF when M11 is turned ON.

Control data setting					
			[SET	M13]
	GP.OGSTOR	U1	D100	M30	Dedicated instruction (GP.OGSTOR)
			[RST	M13	3
	Performs pro	on]			
				-END	I



Appendix 2 External Dimension Diagram

(Unit: mm (inch))
INDEX

[A]

Absolute maximum output 3-	1
Accuracy	9
ALM LED 4-	4
Analog output 3-	1
Analog output HOLD/CLEAR function 3-1	0
Analog output test during programmable controller	
CPU STOP 3-1	0
ALM LED	4 1 0

[B]

Buffer memory 3-2	7
-------------------	---

[C]

CH digital values	3-30
CH set value check codes	3-31
Channel change completed flag	. 3-21,3-24
Channel change request	3-25
Conversion speed	3-1
Current output characteristic	3-6

[D]

D/A conversion enable/disable function	3-10
D/A conversion enable/disable setting	3-30
D/A output enable/disable function	3-10
Dedicated Instruction	App-1
Digital input	3-1

[E]

ERR. LED	4-4
Error clear request	3-21
Error code list	8-1
Error codes	3-31
Error flag	3-21
External Dimension Diagram	App-10
External supply power	3-1

[F]

Function	Version	2-5
i anotion		

[G]

G(P).OFFGAN	App-2
G(P).OGLOAD	App-4
G(P).OGSTOR	App-7
GX Configurator-DA	
GX Developer	A-11,2-3

[H]

Handling Precautions	
----------------------	--

[I]

Installing	5-2
Internal current consumption	3-1

[M]

Maximum resolution	
Mode switching setting	3-29
Module ready	3-21
Monitor/Test.	5-1
Multiple programmable controller system	

[0]

OFFGAN	App-1
Offset value	
Offset/gain adjustment value specification	3-27
Offset/gain setting mode	3-27
Offset/gain setting mode flag	3-21
OGSTÖR	App-7
Online module change	
Operating condition setting completed flag	3-23
Operating condition setting request	3-25
Operating environment	5-4

[P]

Part Identification Nomenclature	4-4
Part identification nomenclature	4-4
Pass data classification setting	3-37
Pass data	5-27
Programming	6-1

[Q]

QCPU (Q mode)A-1

[R]

Rate control enable/disable setting	
Rate control function	
RUN LED	

[S]

Set value change completed flag	3-21
Set value change request	3-25
Setting range	3-27
Setup and Procedures before Operation	4-1

[T]

Troubleshooting8	-1
------------------	----

[U]

Uninstalling	5-2
User range writing request	3-21

[V]

Voltage output	characteristic	
vollage oulput	characteristic	

APPENDIX

[W]

Warning output clear request	3-21
Warning output flag	3-27
Warning output function	3-10
Warning output signal	3-21
Weight	3-1

Warranty

Please confirm the following product warranty details before using this product.

<u>1. Gratis Warranty Term and Gratis Warranty Range</u>

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module. [Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 - 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 - 2. Failure caused by unapproved modifications, etc., to the product by the user.
 - 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 - 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 - 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 - 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
- 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
 - Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice. **6. Product application**

- (1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.

In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.

However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

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Channel Isolated Digital-Analog Converter Module

User's Manual

Q-D/A-G-U-SY-E

MODEL

MODEL CODE

13JR97

SH(NA)-080648ENG-D(0805)MEE

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