

Mitsubishi Programmable Controller

MELSEC Q_{series}

Channel Isolated Digital-Analog Converter Module User's Manual

-Q62DA-FG -GX Configurator-DA (SW2D5C-QDAU-E)



• SAFETY PRECAUTIONS •

(Read these precautions before using this product.)

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

The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used. In this manual, the safety precautions are classified into two levels: "_____ WARNING " and "_____ CAUTION".



Under some circumstances, failure to observe the precautions given under "<u>N</u> CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

 Do not write data into the "System area" of the buffer memory of intelligent function modules. Also, do not use any "Use prohibited" 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 "Use prohibited" may cause a programmable controller system malfunction.

• 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, a voltage may be applied or a current may flow between output terminals for a moment. In such case, wait until the analog output becomes stable to start controlling the external device.

[Installation Precautions]

 Use the programmable controller in an environment that meets the general specifications contained in the user's manual of the CPU module to use. Using this programmable controller in an environment outside the range of the general specifications may cause electric shock, fire, malfunction, and damage to or deterioration of the product.
While pressing the installation lever at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops.
Improper installation may result in malfunction, breakdown or the module coming loose and dropping.
Securely fix the module with screws if it is subject to vibration during use. • Tighten the screws within the range of specified torque.
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 damage to the screw and/or the module, resulting in fallout, short circuits or malfunction.
 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 damage to the module.
In the system where a CPU module supporting 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 Online module change in this manual.
• Do not directly touch the conductive area or electronic components of the module.
Doing so may cause malfunction or failure in the module.

[Wiring Precautions]

• After wiring, attach the included terminal cover to the module before turning it on for operation. Failure to do so may result in electric shock.

• Individually ground the FG terminal of the programmable controller with a ground resistance of 100Ω or less.

There is a risk of electric shock or malfunction.

• Use applicable solderless terminals and tighten them with the specified torque. If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

 Tighten the terminal screws within the specified torque range. Undertightening can cause short circuit, fire, or malfunction.
 Overtightening can damage the screw and/or module, resulting in drop, short circuit, 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.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring.

Do not remove the film during wiring.

Remove it for heat dissipation before system operation.

[Starting and Maintenance Precautions]

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws or module mounting screws.
 Failure to do so may cause the module to fail or malfunction.
 Undertightening can cause drop of the screw, short circuit, or malfunction.
 Overtightening can damage the screw and/or module, resulting in drop, short circuit, or
 - malfunction.

- 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 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 Online module change in this manual.

- Do not install/remove the module to/from the base unit, or the terminal block to/from the module more than 50 times after the first use of the product. (IEC 61131-2 compliant) Failure to do so may cause 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.

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[Disposal Precautions]

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

• CONDITIONS OF USE FOR THE PRODUCT •

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the

PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

REVISIONS

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

Print Date	* Manual Number	Revision
May, 2002	SH (NA)-080281E-A	First printing
Feb., 2003	SH (NA)-080281E-B	Correction
		Safety precautions, Section 2.1, 3.2.2, 3.4.1, 3.4.19, 5.1, 5.2.2, 5.6.3,
		7.3.3, 7.3.4, 7.3.5, 7.3.6, 7.4, Appendix 1.2, Appendix 1.3
May, 2003	SH (NA)-080281E-C	Correction
		Section 2.2, 3.4.1, 3.4.18, 3.4.19, 4.5, 4.6, 5.3.1
May, 2004	SH (NA)-080281E-D	Addition
		Section 8.2.5
		Correction
		Section 2.2, 3.1.3, 3.2.1, 3.4.4, 7.1, 7.3.1 to 7.3.6
Aug., 2004	SH (NA)-080281E-E	Correction
		Section 1.1, 5.1, 5.2.1, 5.2.2, 5.3.1, 5.3.2, 5.3.3, 5.6.1, 5.6.2
		Addition
		Section 5.6.3, 5.7, 5.8
Oct., 2004	SH (NA)-080281E-F	Correction
		Safety precautions, Section 2.1, 3.1.1, 4.1, 6.3.1
Sep., 2005	SH (NA)-080281E-G	Correction
		Safety precautions, Section 2.1, 5.2.2, 6.3.2
Mar., 2006	SH (NA)-080281E-H	Correction
		Safety precautions, Appendix 1
Jan., 2007	SH (NA)-080281E-I	Correction
	<u></u>	Section 3.2.1, 3.4.2, 4.5, 4.6, 6.2.1, 6.2.2, 6.3.1, 6.3.2
Jan., 2008	SH (NA)-080281E-J	Addition
		Section 2.2
		Correction
		SAFETY PRECAUTIONS, About the Generic Terms and Abbreviations
		5.2.1, Section 5.2.2, Section 7.3.3, Section 7.3.5, Section 8.1, Appendix
		1, Appendix 1.1, Appendix 2, Appendix 2.1, Appendix 2.2, Appendix 2.3
May, 2008	SH (NA)-080281E-K	Correction
		SAFETY PRECAUTIONS, Compliance with the EMC and Low Voltage
		Directives, About the Generic Terms and Abbreviations, Section 2.1, Section 4.1, Section 5.2.1, Section 5.2.2, Section 5.3.1, Section 5.3.3,
		Chapter 7, Section 7.1

* The manual number is given on the bottom left of the back co	over
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Print Date	* Manual Number	Revision
Nov., 2010	* Manual Number SH (NA)-080281E-L	Addition CONDITIONS OF USE FOR THE PRODUCT, Section 3.4.17, Section 3.4.18, Section 3.4.19, Section 3.4.20, Appendix 3 Correction SAFETY PRECAUTIONS, INTRODUCTION, Compliance with the EMC and Low Voltage Directives, About the Generic Terms and Abbreviations, Section 1.1, Sections 2.1 to 2.3, Section 3.1, Section 3.1.1, Section 3.1.2, Section 3.2, Section 3.2.1 to 3.2.6, Section 3.3.2, Section 3.4.1 to 3.4.17, Section 3.4.19 to 3.4.23, Section 4.1, Section 4.3, Section 4.4.2, Section 4.5, Section 4.6, Section 5.1, Section 5.2.1, Section 5.3.1, Section 5.3.3, Section 5.4, Section 5.5, Section 5.6.1, Section 5.6.2, Section 6.3, Section 6.3.1, Section 6.3.2, Chapter 7, Section 7.1, Section 7.2, Section 7.3, Sections 7.3.1 to 7.3.6, Section 7.4, Section 7.5, Section 8.1, Section 8.2.1 to 8.2.4, Section 8.2.5, Section 8.2.6, Appendices 1.1 to 1.3, Appendix 2, Appendix 3, Appendix 4
May, 2015	SH (NA)-080281E-M	Correction SAFETY PRECAUTIONS, Related Manuals, Compliance with the EMC and Low Voltage Directives, About the Generic Terms and Abbreviations, Section 2.1, Section 2.3, Section 3.1.2, Section 3.2.2, Section 3.4.23, Section 4.3, Section 4.6, Section 5.2, Section 5.2.1, Section 5.2.2, Section 6.2.2, Chapter 7, Section 7.1, Section 8.1, Appendix 4

Japanese Manual Version SH-080280-P

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INTRODUCTION

Thank you for purchasing the MELSEC-Q series programmable controller. Before using the product, please read this manual carefully to develop full familiarity with the functions and performance of the Q series programmable controllers to ensure correct use.

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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)
GX Works2 Version 1 Operating Manual (Common) Describes the system configuration, parameter settings, and online operations (common to Simple project and Structured project) of GX Works2 (Sold separately)	SH-080779E (13JU63)
GX Works2 Version 1 Operating Manual (Intelligent Function Module) Describes how to operate the parameter settings, monitor, predefined protocol support function, and others of the intelligent function modules on GX Works2 (Sold separately)	SH-080921E (13JU69)

REMARK

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

- (1) For programmable controller system
 To ensure that Mitsubishi programmable controllers maintain EMC and Low
 Voltage Directives when incorporated into other machinery or equipment, certain
 measures may be necessary. Please refer to one of the following manuals.
 QCPU User's Manual (Hardware Design, Maintenance and Inspection)
 - Safety Guidelines

(This manual is included with the CPU module or base unit.) The CE mark on the side of the programmable controller indicates compliance with EMC and Low Voltage Directives.

(2) For the product

For the compliance of this product with the EMC and Low Voltage Directives, refer to the "CC-Link module" section in the "EMC AND LOW VOLTAGE DIRECTIVES" chapter of the User's Manual for the CPU module used.

ABOUT THE GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this manual uses the following generic 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.					
GX Developer						
GX Works2	Product name of the software package for the MELSEC programmable controllers.					
GX Configurator-DA	Generic term for digital-analog conversion module setting and monitor tool GX Configurator-DA (SW2D5C-QDAU-E).					
QCPU (Q mode)	Generic term for Basic model QCPU, High Performance model QCPU, Process CPU, Redundant CPU, and Universal model QCPU.					
Basic model QCPU	Generic term for Q00JCPU. Q00CPU. and Q01CPU.					
High Performance model QCPU	Generic term for Q02CPU, C02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU.					
Process CPU	Generic term for Q02PHCPU, Q06PHCPU, Q12PHCPU and Q25PHCPU.					
Redundant CPU	Generic term for the Q12PRHCPU and Q25PRHCPU.					
Universal model QCPU	Generic term for Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDVCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU.					
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.					
Windows Vista [®]	Generic term for the following: Microsoft [®] Windows Vista [®] Home Basic Operating System, Microsoft [®] Windows Vista [®] Home Premium Operating System, Microsoft [®] Windows Vista [®] Business Operating System, Microsoft [®] Windows Vista [®] Ultimate Operating System, Microsoft [®] Windows Vista [®] Enterprise Operating System					
Windows [®] XP	Generic term for the following: Microsoft [®] Windows [®] XP Professional Operating System, Microsoft [®] Windows [®] XP Home Edition Operating System					
Windows [®] 7	Generic term for the following: Microsoft [®] Windows [®] 7 Starter Operating System, Microsoft [®] Windows [®] 7 Home Premium Operating System, Microsoft [®] Windows [®] 7 Professional Operating System, Microsoft [®] Windows [®] 7 Ultimate Operating System, Microsoft [®] Windows [®] 7 Enterprise Operating System Note that the 32-bit version is specified as "32-bit Windows [®] 7", and the 64-bit version is specified as "64-bit Windows [®] 7".					

PRODUCT STRUCTURE

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

Manual Name	Product name	Quantity
Q62DA-FG	Q62DA-FG 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

MEMO

1 OVERVIEW

This User's Manual describes the specifications, handling and programming methods for the Q62DA-FG type channel isolated digital-analog converter module (hereinafter referred to as the Q62DA-FG) which are used in conjunction with MELSEC-Q series CPU module (hereinafter referred to as the programmable controller CPU).

1.1 Features

(1) Channel isolated

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

(2) High accuracy

The reference accuracy *1 is as high as \pm 0.1% and the temperature coefficient *2 is as high as \pm 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)
 - imes 5°C (temperature variation difference) = 0.14%

(3) 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.

(4) Analog output HOLD/CLEA 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.

(5) Output monitor function

The analog output value output by D/A conversion is reconverted into a digital value within the Q62DA-FG and the result is stored into the buffer memory as an output monitor value.

- (6) Warning output function A warning is output if a digital input value falls outside the setting range.
- (7) Rate control function The increment and decrement of the analog output value per conversion cycle can be restricted.
- (8) Disconnection detection function When the analog output range is 4 to 20mA, 4 to 20mA (Extended mode), or user range setting 1, the output monitor value is watched to detect disconnection.

(9) Online module change

Further, the specifications can be handed down to the new Q62DA-FG by the followings:

- Succession of offset/gain settings to the new Q62DA-FG replaced by Online module change.
- Transfer of offset/gain setting values to the other Q62DA-FG mounted on the other slots.
- (10) 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.

(11) Easy settings with GX Configurator-DA

The number of sequence programs can be reduced since GX Configurator-DA (sold separately) allows the Q62DA-FG settings on the dialog box. Also, GX Configurator-DA simplifies checking of the module settings and operation status.

In addition, FB^{*1} can be automatically created from intelligent function module parameters set in advance to use them in a sequence program.

 *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)."

1

2 SYSTEM CONFIGURATION

This chapter explains the system configuration of the Q62DA-FG.

2.1 Applicable Systems

This section describes the applicable systems.

- (1) Applicable modules and base units, and No. of modules
 - (a) When mounted with a CPU module For the applicable modules, the number of modules, and base units applicable to the Q62DA-FG, refer to the user's manual for the CPU module used.

Note the following when the Q62DA-FG is mounted with a CPU module.

- 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 modules.
- Mount a module within the number of I/O points for the CPU module. If the number of slots is within the available range, the module can be mounted on any slot.

REMARK

When the module is used with a C Controller module, refer to the user's manual for the C Controller module.

(b) Mounting to a MELSECNET/H remote I/O station For the MELSECNET/H remote I/O station, the number of modules, and base units applicable to the Q62DA-FG, refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network).

REMARK

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

(2) Support of multiple CPU system

The function version of the Q62DA-FG has been "C" from the first release, supporting the multiple CPU system.

When using the Q62DA-FG in a multiple CPU system, refer to the following manual first.

• QCPU User's Manual (Multiple CPU System)

(3) Support of Online module change

The function version of the Q62DA-FG has been "C" from the first release, supporting Online module change. For details, refer to CHAPTER 7.

(4) Supported software packages

Relation between the system containing the Q62DA-FG and software package is shown in the following table.

GX Developer or GX Works2 is necessary when using the Q62DA-FG.

	_	Software Version			
		GX Developer	GX Configurator-DA	GX Works2	
	Single CPU system	Version 7 or later			
Q00J/Q00/Q01CPU	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	Version 0.00W en later	Version 1.14Q or later		
QUZPH/QU6PHCPU	Multiple CPU system	Version 8.68W or later			
	Single CPU system				
Q12PH/Q25PHCPU	Multiple CPU system	Version 7.10L or later			
Q12PRH/ Q25PRHCPU	Redundant CPU system	Version 8.45X or later	Version 1.15R or later		
Q00UJ/Q00U/	Single CPU system	Version 0.700 er leter			
Q01UCPU	Multiple CPU system	version 8.78G or later			
02U/Q03UD/ Single CPU system				Refer to the GX Works?	
Q04UDH/ Q06UDHCPU	Multiple CPU system	Version 8.48A or later		Version 1 Operating Manual (Common).	
Q10UDH/	Single CPU system	Varaian 9.790 ar latar			
Q20UDHCPU	Multiple CPU system	version 8.78G or later	Version 2.000 es later		
Q13UDH/	Single CPU system	Varaian 8 620 ar latar	Version 2.00G of later		
Q26UDHCPU	Multiple CPU system	Version 8.62Q or later			
Q03UDE/Q04UDEH/	Single CPU system	Version 8 68W/ or later			
Q26UDEHCPU	Multiple CPU system				
Q10UDEH/	Single CPU system				
Q20UDEHCPU	Multiple CPU system	Version 8.78G or later			
CPU modules other	Single CPU system	Not sure a stad	Not over a set of		
than the above	Multiple CPU system	Not supported	Not supported		
If installed in a MELSECNET/H remote I/O station		Version 6 or later	Version 1.14Q or later		

POINT

- (1) Function versions A and B are not available for the Q62DA-FG. Function version C indicates that the module supports the multiple CPU configuration and Online module change.
- (2) Depending on the version of GX Configurator-DA, CPU modules and functions of the Q62DA-FG differ.
- (3) When using GX Works2, refer to the following.
 - GX Works2 Version 1 Operating Manual (Common)
 - GX Works2 Version 1 Operating Manual (Intelligent Function Module)

2.2 Precautions on System Configuration

(1) Using the Q62DA-FG with Redundant CPU

- (a) Dedicated instruction The dedicated instruction cannot be used.
- (b) GX Configurator-DA GX Configurator-DA cannot be used when accessing the Redundant CPU via an intelligent function module on an extension base unit from GX Developer.

Connect a personal computer to the Redundant CPU with a communication path indicated below.



- 2.3 Checking Function Version, Serial Number, and Software Version
 - (1) Checking the function version and serial number of the Q62DA-FG The serial number and function version of the Q62DA-FG are described in the rating plate, on the front part of the module, or displayed in the System monitor dialog box of GX Developer.
 - (a) Checking on the rating plate on the side of the Q62DA-FG

MELSEC-Q	
MITSUBISHI	
MODEL	
	Function version
SERIAL 110320000000000000	
+	Relevant regulation standards
MITSUBISHI ELECTRIC MADE IN JAPAN	J

(b) Checking on the front of the module

The serial number and function version on the rating plate is shown on the front (at the bottom) of the module.



 (c) Checking on the System monitor dialog box (Product Information List) To display the system monitor, select [Diagnostics] - [System monitor] and click the Product Information List button of GX Developer.

	Function version									
							Serial No.		Product No.	
Product 1	Informatior	List						+	le la	×
Slot	Type	Series	Model name	Points	I/O No.	Master PLC	Serial No	Ver.	Product No.	
PLC	PLC	Q	QOGUDHCPU	-	-	-	110130000000000	В	091013092955015-B	Ī_
0-0	Intelli.	Q	Q62DA-FG	16pt	0000	-	110420000000000	С	-	-
0-1	-	-	None	-	-	-	-	-	-	
0-2	-	-	None	-	-	-	-	-	-	
0-3	-	-	None	-	-	-	-	-	-	
0-4	-	-	None	-	-	-	-	-	-	

 Displaying the product No. Since the Q62DA-FG does not support the display function, "-" is displayed in the "Product No." field.

POINT

The serial number displayed on the Product information list dialog box of GX Developer may differ from that on the rating plate and on the front of the module.

- The serial number on the rating plate and front part of the module indicates the
- management information of the product.
 The serial number displayed on the Product information list dialog box
- The serial number displayed on the Product information list dialog box of GX Developer indicates the function information of the product.

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

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

The software version of GX Configurator- PT can be checked by selecting [Help]-[Product information] of GX Developer.

Product information 2	<
Programming and Maintenance tool GX Developer Version 7.13P (SW7D5C-GPPW-E)	
COPYRIGHT(C) 2001 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED	
This Product is licensed to:	
Name: MITSUBISHI	
Company: MITSUBISHI ELECTRIC CORPORATION	Software version
List of version information on Add-in software	
GX Configurator-DAVersion1.14Q(SW0D5C-QDAU-E) COPYRIGHT(C) 1999 MITSUBISHI ELECTRIC CORPORATION ALL RIGHTS RESERVED	
Warning :	
This product is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program or any of it may result in severe civil and criminal penalties, and will be prosecuted to the maximum extension possible under the law.	

(In the case of GX Developer Version 7)

REMARK

The version indication for the GX Configurator-DA has been changed as shown below from the SW0D5C-QDAU-E 60G upgrade product.

Previous product		Upgrade and subsequent versions
SW0D5C-QDAU-E 60G	\rightarrow	GX Configurator-DA Version 1.10L

MEMO

3 SPECIFICATIONS

Г

3.1 Performance Specifications

3.1.1 Performance specifications list

Type		Q62DA-FG					
Number of analog outputs				2 points (2 chan	nels)		
Digital input		16-bit signed binary (-12288 to 12287, -16384 to 16383)					
	Voltage		-12 to 12	VDC (External load res	sistance: 1k to $1M\Omega$)		
Analog output	Current		0 to 20mADC (External load resistance: 0 to 600Ω) 0 to 22mADC * ³				
		Ana	Analog output range Digital inp		nput value Max	imum resolution	
			0 to 5V 1 to 5V	0 to	12000	0.416mV 0.333mV	
			-10 to 10V	-16000	to 16000	0.625mV	
		Voltage	1 to 5V (Extended mode)) * ⁵ -3000 t	o 13500	0.333mV	
I/O characteristics maximum resolution	_* 4		User range settir	ng 2 -12000	to 12000	0.366mV	
			0 to 20mA	0 to	12000	1.66 μA	
		Current	4 to 20mA 4 to 20mA	3000 t	 	1.33 µA	
			(Extended mode) User range settir) * ⁵ -3000 1 ng 1 -12000	to 12000	0.671 μA	
Accuracy (Accuracy	Reference	Within \pm 0.1% (Voltage: \pm 10mV, Current: \pm 20 μ A)					
relative to maximum analog output value)	Temperature	± 80ppm/ °C (± 0.008%/ °C)					
Conversion speed		10ms/2 channels					
Absolute maximum	Voltage	± 13V					
output	Current	<u></u>					
	Resolution	12bit					
Output monitor	Reference accuracy * 1	± 0.2%					
	Temperature coefficient*2	160ppm/ °C (± 0.016%/ °C)					
Maximum number of v E ² PROM	writes for	100,000					
Output short-circuit pr	otection	Available					
				ľ			
Isolation specifications		Specific isolated area		Isolation method	Dielectric withstand voltage	Insulation resistance	
		Between the I/O terminal and programmable controller power supply		Photocoupler isolation			
		Between analog output		Transformer isolation	(elevation 2000m)	500VDC 10MΩ or more	
		Between external supply power and analog output cannel		Transformer isolation	ormer isolation		
Number of I/O occupied points		16 points (I/O assignment: Intelligent 16 points)					
Connected terminal		18 points terminal block					
Applicable wire size		0.3 to 0.75mm ²					
Applicable solderless terminals		R1.25-3 (Solderless terminals with sleeves are not applicable)					

3 SPECIFICATIONS

Type Item	Q62DA-FG		
External supply power	24VDC, +20%, -15%		
	Ripple, spike within 500 mV p-p		
	Inrush current: 5.2A, within 300 μ s		
	0.3A		
Internal current consumption (5 VDC)	0.37A		
Weight	0.20kg		

*1 Accuracy of offset/gain setting at ambient temperature

The Q62DA-FG 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) \times 5 °C (temperature change difference) =

3

0.14%

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



External load resistance

*4 For the details of the I/O conversion characteristic, refer to Section 3.2.1.

*5 GX Configurator-DA is not available with extended mode range settings.

REMARK

Refer to the user's manual for the CPU module being used for the general specifications for the Q62DA-FG.

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

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),

16000 (when -10 to 10V is selected).



Figure 3.1 Voltage output characteristic

MELSEC-Q

F	NIO	Т	
(1)	Set	t with	in the digital input range and analog output range for each output
	rang	e.	
	If the	ese ra	nges are exceeded, the maximum resolution and accuracy may not
	fall v	vithin	the performance specifications. (Avoid using the dotted line area
	shov	vn in	Figures 3.1.)
(2)	Set	t the o	offset/gain values for the user range setting $2 *$ within a range in
	whic	h the	following conditions are satisfied.
	(a)	Sett	ing range is from –12 to 12 V.
	(b)	{ (G	ain value) – (Offset value) } > 4.5A
(3)	Set	t the o	offset/gain values for the user range setting $3 *$ within a range in
	whic	h the	following conditions are satisfied.
	(a)	Sett	ing range is from 0.5 to 6 V.
	(b)	{ (G	ain value) – (Offset value) } > 3A





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 3.2.)

- (2) Set the offset/gain values for the user range setting1 * within a range in which the following conditions are satisfied.
 - (a) Setting range is from 0 to 22 mA
 - (b) { (Gain value) (Offset value) } > 10mA

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°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) \times 5°C (difference in temperature variation) = 0.14%

3.2 Function List

Table 3.2 shows the function of the Q62DA-FG.

Table 3.2 Function list

Item	Function	Reference section
D/A conversion enable/disable function	 Specifies whether to enable or disable the D/A conversion for each channel. The conversion speed is 10ms constant despite the number of D/A conversion enabled channels. 	Section 3.4.2
D/A output enable/disable function	 Specifies whether to output the D/A converted value or output the offset value for each channel. The conversion speed is 10ms constant independently of whether the output is enabled or disabled. 	Section 3.3.1
Analog output HOLD/CLEAR function	 The output analog value can be retained when the programmable controller CPU module is placed in the STOP status or when an error occurs. 	Section 3.2.1
Analog output test during programmable controller CPU STOP	• When CHD Output enable/disable flag (Y1, Y2) is forced on during programmable controller CPU STOP, the D/A converted analog value is output.	Section 3.2.2
Output monitor function	 The analog output value output by D/A conversion is reconverted into a digital value within the Q62DA-FG and the result is stored into the buffer memory as an output monitor value. 	Section 3.2.3
Warning output function	• A warning is output if a digital input value falls outside the setting range.	Section 3.2.4
Rate control function	 The increment and decrement of the analog output value per conversion cycle can be restricted. 	Section 3.2.5
Disconnection detection function	 When the output range is 4 to 20mA, 4 to 20mA (Extended mode), or user range setting 1, the output monitor value is watched to detect disconnection. When the range is set to 4 to 20mA (Extended mode), users can choose the method of setting the disconnection detection value from either arbitrarily or automatically. 	Section 3.2.6
Online module change	• The module can be changed without the system being stopped. However, when a user changes modules from an analog output range extended mode compatible to a non-compatible one, while in analog output range extended mode setting, an intelligent function module switch error occurs.	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) Set the HOLD/CLEAR in "Switch 3" (HOLD/CLEAR function setting) cell of Switch setting for I/O and intelligent function module dialog box. (Refer to Section 4.5 (1))
- (3) Depending on combinations of the HOLD/CLEAR setting, D/A conversion enable/disable setting (buffer memory address 0: Un\G0), and CH□ Output enable/disable flag (Y1, Y2), the analog output status varies as shown in Table 3.3.

Setting combination execution	D/A conversion enable/disable setting (buffer memory address 0: Un\G0)	Enable			Disable
	CH□ Output enable/disable flag (Y1, Y2)	Enable		Disable	Enable or disable
status	HOLD/CLEAR setting	HOLD	CLEAR	HOLD or CLEAR	HOLD or CLEAR
Analog output status when programmable controller CPU is RUN		Output analog values converted from digital values. * ²		Offset	0 V/0 mA
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 the Q62DA-FG		0 V/0 mA	0 V/0 mA	0 V/0 mA	0 V/0 mA

Table 3.3 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 Q62DA-FG. When a watchdog timer error occurs, Module ready (X0) turns off and the Q62DA-FG RUN LED turns off.

*2 Rate control function is activated.

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 Q62DA-FG 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 per-module 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 (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).

3.2.2 Analog output test during programmable controller CPU STOP

- (1) During the programmable controller CPU STOP, an analog output test as shown in Table 3.4 can be performed.
- (2) The analog output test performs the following operations in GX Developer device testing or GX Configurator-DA selection testing described in Section 5.6.1.
 - (a) Set D/A conversion enable/disable setting (buffer memory address 0: Un\G0) of the channel to be tested to enable.
 - (b) Turn Operating condition setting request (Y9) from off to on. (Refer to Section 3.3.2.)
 - (c) Check that Operating condition setting completed flag (X9) turns off, and then turn Operating condition setting request (Y9) from on to off.
 - (d) Enable (off \rightarrow on) Output enable/disable flag (Y1, Y2) of the channel where the test is to be conducted.
 - (e) Write a digital value corresponding to the desired analog output value in CH Digital value (buffer memory address 1, 2: Un\G1, Un\G2) in the buffer memory.

Table 3.4 List of analog output test

Setting combination	D/A conversion enable/disable setting (buffer memory address 0: Un\G0)	Enable		Disable	
	CHD Output enable/disable flag (Y1, Y2)	Enable	Disable	Enable	disable
Analog output test		Allowed	Not allowed	Not allo	wed * ¹

*1 Perform the analog output test after changing D/A conversion enable/disable setting (buffer memory address 0: Un\G0) to enable.

POINT

When the digital value storage device has been set in the automatic refresh setting of GX Configurator-DA, the buffer memory is overwritten since automatic refresh is performed if the programmable controller CPU is during STOP.

In this case, write a digital value to the digital value storage device instead of the buffer memory.
3.2.3 Output monitor function

To check the actually output analog value, the analog output value is converted into a digital value within the Q62DA-FG and the result is stored at the buffer memory address 38, 39 (Un\G38, Un\G39) as CH^{II} Output monitor value. Monitor start flag (X8) is turned on when the A/D conversion of the analog output value is completed.

A/D conversion is performed on the D/A conversion-enabled channel to update the output monitor value.



POINT

CH Output monitor value (buffer memory address 38, 39: Un\G38, Un\G39) is stored into the buffer memory a maximum of two conversion cycles (20ms) after the digital input value has been written.

Hence, the digital input value and output monitor value compared immediately after write will not be the same.



3.2.4 Warning output function

- (1) When the digital value stored in the buffer memory is greater than the warning output upper limit value or less than the warning output lower limit value, a warning is informed by Warning output flag (buffer memory address 48: Un\G48), Warning output signal (XE), and the ALM LED lighting. The warning is output for the D/A conversion enabled channel only.
- (2) At occurrence of the warning, the analog output value is converted from the digital value at the warning output upper limit value or warning output lower limit value.
- (3) Warning output flag (buffer memory address 48: Un\G48) and Warning output signal (XE) turn off when Operating condition setting request (Y9) or Warning output clear request (YE) turns on.
- (4) For the warning output function, Disconnection detection/Warning output setting (buffer memory address 47: Un\G47) allows enable/disable of the warning output to be specified for each channel. To enable the warning output, write "0" to the bit position corresponding to the channel number and turn on Operating condition setting request (Y9). The default is all-channel disable.
- (5) Set CH□ Warning output upper/lower limit value to the buffer memory address 86 to 89: Un\G86 to Un\G89.



3.2.5 Rate control function

- (1) The increase and decrease in analog output values per conversion cycle (10ms) can be limited to prevent rapid changes of the values.
- (2) For the rate control function, Rate control enable/disable setting (buffer memory address 46: Un\G46) allows enable/disable of the rate control to be specified for each channel.

To enable the rate control, write "0" to the bit position corresponding to the channel number and turn on Operating condition setting request (Y9). The default is all-channel disable.

(3) Set CH Increase/Decrease digital limit value (buffer memory address 70 to 73: Un\G70 to Un\G73).

Example) The control example in the following case is indicated below.

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



- (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 function is 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.



3.2.6 Disconnection detection function

- (1) When the Q62DA-FG, whose output range is set to either 4 to 20mA, 4 to 20mA (Extended mode), or user range setting 1, detects disconnection at output monitor value of 1mA (with an accuracy of ±1.0%) or lower, the module notifies the disconnection with Disconnection detection flag (buffer memory address 49: Un\G49), Disconnection detection signal (XD), and by flashing of the ALM LED. Disconnection is detected only on the channel set for D/A conversion enable and D/A output enable.
- (2) Disconnection detection flag (buffer memory address 49: Un\G49) and Disconnection detection signal (XD) turn off when Operating condition setting request (Y9) or Disconnection detection clear request (YD) turns on.
- (3) For the disconnection detection function, Disconnection detection/Warning output setting (buffer memory address 47: Un\G47) allows enable/disable of the disconnection detection to be specified for each channel. To enable the disconnection detection, write "0" to the bit position corresponding to the channel number and turn on Operating condition setting request (Y9). The default is allchannel disable.



- (4) Disconnection detection mode can be selected from the followings only when the output range is set to 4 to 20mA (extended mode). The default is "fixed".
 - (a) Fixed The Q62DA-FG detects disconnection at output monitor value of 1mA (with an accuracy of \pm 1.0%) or lower.
 - (b) Arbitrarily setting

The disconnection detection value can be set arbitrarily by a user. Set $CH\square$ Disconnection detection setting value (buffer memory address 142, 143: Un\G142, 143) for each channel.

The disconnection detection values are ranged from 0 to 25.0% (4 to 0mA).



*1 Analog output is an expected value from the digital input value. The analog output value is not an actual output. (c) Auto setting

As shown from 1) to 3), the Q62DA-FG automatically changes the disconnection detection values according to the expectable analog output values.



- 1) The expectable analog output value is greater than 2mA.
- 2) The expectable analog output value is within the range of 0.5 to 2mA. : Q62DA-FG sets the disconnection
- 3) The expectable analog output value is less than 0.5mA.
- : Q62DA-FG sets the disconnection detection value to 1mA.
- : Q62DA-FG sets the disconnection detection value to the half of the expectable analog output value.
- : Q62DA-FG regards the range as a dead band and does not detect the disconnection.

Ρ		
(1)	Even if th	ne sensor has been connected properly, the Q62DA-FG detects the
	disconnec	tion at its output monitor value is lower than 1mA or lower when either
	of the follo	owing ranges is set to the module.
	• 4 to 20m	A (Extended mode) with the disconnection detection mode set to
	"fixed",	
	 User ran 	ige setting 1.
	When the	output monitor value is 1mA or lower, perform one among the
	followings	
	Set the c	disconnection detection mode to either "arbitrarily" or "auto setting" or
	Set the or disabled	disconnection detection function to "disconnection detection ".
(2)	In case o	of the "auto setting" is set to disconnection mode and the Q62DA-FG
	analog va	lue is anywhere between 0.5mA and 2mA (or digital values of -2625
	and -1500	respectively), the formula to calculate the output monitor value at the
	disconnec	tion detection is as shown below:
	The d	butput monitor value at isconnection detection = Digital value + $\left(\frac{-3000-\text{ digital value}}{2}\right)$
(3)	When th	e disconnection detection function is activated, "1" is stored to the bit of
	the corres	ponding channel in Disconnection detection operation flag (buffer
	memory a	ddress 139: Un\G139).
	In the case	e of the "auto setting", if digital values are set within the dead band, the
	disconnec	tion is not detected and "0" is stored to the bit of the corresponding
	channel in	Disconnection detection operation flag (buffer memory address 139:
	Un\G139)	

- (d) Program examples of using disconnection detection mode
 - System configuration The system configuration is the same as shown in "For Use in Normal System Configuration". (Refer to Section 6.2 (1))
 - 2) Initial settings
 - Disconnection detection enabled channels: CH1, CH2
 - Arbitrarily setting mode: CH1 (disconnection detection setting value: 20% (0.8mA))
 - Auto setting mode: CH2
 - 3) User devices
 - Disconnection detection setting flag: M0
 - · Disconnection detection resetting flag: M1
 - · Disconnection detection active flag: M10, M11
 - Disconnection detection flag: M20, M21
- Disconnection detection setting Enabling the disconnection -in-G4 7 - MOV НЗ ٦ detection function. υo∖ Setting the disconnection --[MOV H21 G141 detection mode. UΟ\ CH1 disconnection detection G142 -Mov K200 setting value. Turning on Operating condition SET ¥9 setting request (Y9). Monitoring the operating status of the disconnection detection function Turning off Operating condition setting request (Y9). -Î ŀ RST Y9 x U0\ Obtaining the disconnection +-Mov G139 K1M10 detection active flag. ΠO G140 Mov K2M20 FMOV K1M20 Гмоч K1M24 D2 Reading the disconnection detection flags Checking the disconnection detected channels. FMOV G4 9 кімзо м20 **- | 1 |** Processing for CH1 Processing for disconnection detection. disconnection detection M2: L Processing for disconnection detection. Processing for CH2 disconnection detection. Requesting the disconnection detection clear Turning ON the disconnection -M-SET YOD detection clear request. Clearing the information of -Mov НO K1M30 disconnection detected channels. YOD XOD Turning OFF the disconnection 1 -[RST YOD + + detection clear request. END ٦
- 4) Program example

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 Q62DA-FG. Note that I/O numbers (X/Y) shown in this chapter and thereafter are the values when the start I/O number for the Q62DA-FG is set to 0.

Signal direction	Q62DA-FG \rightarrow CPU module	Signal direction	CPU module ← Q62DA-FG
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		Y3	
X4	Use prohibited * 1	Y4	
X5		Y5	Lise prohibited *1
X6		Y6	Use promoted
X7		Y7	
X8	Monitor start flag	Y8	
X9	Operating condition setting completed flag	Y9	Operating condition setting request
ХА	Offset/gain setting mode flag	YA	User range writing request
ХВ	Channel change completed flag	YB	Channel change request
XC	Set value change completed flag	YC	Set value change request
XD	Disconnection detection signal	YD	Disconnection detection clear request
XE	Warning output signal	YE	Warning output clear request
XF	Error flag	YF	Error clear request

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 Q62DA-FG cannot be guaranteed.

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3.3.2 Details of I/O signals

I/O signals for the Q62DA-FG are explained in detail below.

(1)	Input signals	
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Device No.	Signal name	Description
X0	Module ready	 When the programmable controller CPU is powered on or reset, this signal turns on once the preparation for D/A conversion has been completed, and D/A conversion processing is then performed. When Module ready (X0) signal is off, D/A conversion processing is not performed. Module ready (X0) turns off in the following situations: During offset/gain setting mode When the Q62DA-FG has a watchdog timer error
X8	Monitor start flag	 The monitor start flag turns on at the A/D conversion completion of the analog output value and the converted value is stored to CH[□] Output monitor value (buffer memory address 38, 39: Un\G38, Un\G39). Monitor start flag (X8) turns off when Operating condition setting request (Y9) turns on.
Х9	Operating condition setting completed flag	 (1) This is used as an interlock condition for turning on/off Operating condition setting request (Y9) when any of the following settings is changed. D/A conversion enable/disable setting (buffer memory address 0: Un\G0) Rate control enable/disable setting (buffer memory address 46: Un\G46) Disconnection detection/Warning output setting (buffer memory address 47: Un\G47) CH□ Increase/Decrease digital limit value (buffer memory address 70 to 73: Un\G70 to 73) Disconnection detection mode setting (buffer memory address 141: Un\G141) CH□ Disconnection detection setting value (buffer memory address 142,143: Un\G142, Un\G143) (2) Under the following conditions, Operating condition setting completed flag (X9) turns off. When Operating condition setting request (Y9) is on

Device No.	Signal name	Description			
ХА	Offset/gain setting mode flag	[In offset/gain setting mode] (1) This is used as an interlock condition for setting User range writing request (YA) to on/off when registering the value after adjustment of the offset/gain settings have been completed. (2) Refer to Section 4.6 regarding the offset/gain settings. ————> Performed by the Q62DA-FG ————> Performed by the Sequence program OFF Module ready (X0) Offset/gain setting mode flag (XA) User range write request (YA) [In normal mode] (1) This signal is used as an interlock condition to run on/off User range writing request (YA) when the user range is restored. (2) Refer to Chapter 7 regarding the user range restoration. ————> Performed by the Q62DA-FG ————> Performed by the Sequence program Module ready (X0) Offset/gain setting mode flag (XA)			
ХВ	Channel change completed flag	 (1) This is used as an interlock condition for turning on/off Channel change request (YB) when changing the channel where offset/gain settings will be performed or changing the offset/gain range settings. (2) Refer to Section 4.6 regarding the offset/gain settings. > Performed by the Q62DA-FG > Performed by the sequence program Offset/gain specifications (buffer memory addresses 22 and 23: Un\G23) Offset/gain range setting (buffer memory addresses 25: Un\G25) Channel change completed flag (XB) Channel change request (YB) 			

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Device No.	Signal name	Description			
		(1) This is used as an interlock condition for setting Set value change request (YC) to			
		on/off when adjusting the offset/gain settings.			
		(2) Refer to Section 4.6 regarding the offset and gain settings.			
		→ Performed by the Q62DA-FG			
XC		→ Performed by the sequence program			
	completed liag	Set value change completed			
		Set value change request (YC)			
		(1) Disconnection detection signal (XD) turns on when the Q62DA-FG detects			
		disconnection at any channel when either of the analog output range of 4 to 20mA,			
		4 to 20mA (Extended mode), or user range setting 1.			
		(2) I urning on Disconnection detection clear request (YD) or Operating condition			
	Disconnection	setting request (Y9) turns on Disconnection detection signal (XD). → Performed by the Q62DA-FG			
XD	detection signal	← Performed by the sequence program			
		signal (XD)			
		Disconnection detection			
		clear request (YD)			
		(1) This turns of it the digital input value of 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 Warning output clear request (YE) or Operating condition setting			
		request (Y9) turns off Warning output signal (XE).			
XE	Warning output signal	→ Performed by the Q62DA-FG			
		→ Performed by the sequence program			
		Warning output signal (XE)			
		Warning output clear			
		(1) Error flag (XF) turns on when a write error occurs.			
		(2) To turn Error flag (XF) off, remove the cause of the error and set Error clear			
		request (YF) to on.			
		Error code (buffer memory address 19: Un\G19) changes to 0 and the ERR. LED			
		turns off.			
		→ Performed by the Q62DA-FG			
YE	Error flag	Performed by the sequence program			
AI	LITOL Hag				
		Error clear request (YF)			
		En or code is read during this interval.			

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(2) Output signals	
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Device No.	Signal name	Description	
Y1 to Y2	CH□ Output enable/disable flag	 Specifies whether to output the D/A converted value or offset value for each channel. on: D/A converted value off: Offset value The D/A conversion speed is constant regardless of whether the output 	
	ļ	enable/disable flag is on or off.	
Y9	Operating condition setting request	 (1) Turn on this signal when changing any of the following settings and making the setting valid. D/A conversion enable/disable setting (buffer memory address 0: Un\G0) Rate control enable/disable setting (buffer memory address 46: Un\G46) Disconnection detection/Warning output setting (buffer memory address 47: Un\G47) CH□ Increase/Decrease digital limit value (buffer memory address 70 to 73: Un\G70 to 73) Disconnection detection mode setting (buffer memory address 141: Un\G141) CH□ Disconnection detection setting value (buffer memory address 142,143: Un\G142, Un\G143) 	
		(2) Refer to the X9 column for the on/off timing. [In offset/gain setting mode]	
YA	User range writing	 This turns on when the values for the adjusted offset/gain settings are registered in the Q62DA-FG. Refer to the XA column for the on/off timing. Refer to Section 4.6 for offset/gain settings. 	
	request	 [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. 	
YB	Channel change request	 Turn on this signal when changing the channel where the offset/gain settings will be performed or changing the offset/gain range settings. Refer to the XB column for the on/off timing. 	
YC	Set value change request	 This turns on/off when increasing or decreasing the analog output value during adjustment of the offset/gain settings. By turning this signal on, the analog output value increases or decreases by the value stored in Offset/gain adjustment value specification (buffer memory address 24: Un\G24). 	
YD	Disconnection detection clear request	 Turn on this signal when clearing the disconnection detection. Refer to the XD column for the on/off timing. 	
YE	Warning output clear request	 (1) Turn on this signal when clearing the warning output. (2) Refer to the XE column for the on/off timing. 	
YF	Error clear request	 This turns on when a write error is cleared. Refer to the XF column for on/off timing. 	



3.4 Buffer Memory

3.4.1 Buffer memory assignment

Table 3.6 indicates the buffer memory assignment of the Q62DA-FG.

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	Read/write	Reference
Hexadecimal	Decimal	Description	Delault	* 2	section
Оц	0	D/A conversion enable/disable setting	00034	R/M	Section
011	0		000011	1000	3.4.2
1н	1	CH1 Digital value	0	R/W	Section
2н	2	CH2 Digital value	0	R/W	3.4.3
3н	3				
to	to	System area	—	—	_
AH	10	OUA Osturskas skasla sada	0		0 "
BH	11		0	R R	Section
CH	12	CH2 Set Value check code	0	ĸ	3.4.4
DH	13 to	Sustem area			
12⊔	18	System area	_	_	_
1211	10				Section
13н	19	Error code	0	R	3.4.5
14.	20	Setting range (CU11, CU2)	0	Р	Section
148	20		0	ĸ	3.4.6
15н	21	System area			—
16 ⊢	22	Offset/gain setting mode	0	RW	
		Offset specification			Section
17н	23	Offset/gain setting mode	0	R/W	3.4.7
		Gain specification			
18H	24	Offset/gain adjustment value specification	0	R/W	Section 3.4.8
19н	25	Offset/gain range setting	0	R/W	Section
1.0	20				3.4.9
IAH to	20 to	System area			
10 25⊔	10 37	System area	_	_	_
26H	38	CH1 Output monitor value	0	R	Section
<u>20н</u> 27н	39	CH2 Output monitor value	0	R	3.4.10
28H	40		Ŭ		01110
to	to	System area	_	_	_
2Dн	45	-,			
2Ен	46	Rate control enable/disable setting	0003н	R/W	Section
2 F н	47	Disconnection detection/Warning output setting	3003н	R/W	3.4.11 Section 3.4.12

Table 3.6 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

Address			D-f	Read/write	Reference
Hexadecimal	Decimal	Description	Default	* 2	section
30н	48	Warning output flag	0	R	Section 3.4.13
31н	49	Disconnection detection flag	0	R	Section 3.4.14
32н	50				
to	to	System area	—	—	—
45н	69				
46н	70	CH1 Increase digital limit value	32000	R/W	
47н	71	CH1 Decrease digital limit value	32000	R/W	Section
48H	72	CH2 Increase digital limit value	32000	R/W	3.4.15
49н	73	CH2 Decrease digital limit value	32000	R/W	
4Ан	74				
to	to	System area	—	—	—
55н	85				
56н	86	CH1 Warning output upper limit value	0	R/W	
57н	87	CH1 Warning output lower limit value	0	R/W	Section
58H	88	CH2 Warning output upper limit value	0	R/W	3.4.16
59н	89	CH2 Warning output lower limit value	0	R/W	
5Ан	90				
to	to	System area	—	—	—
8Ан	138				
8Вн	139	Disconnection detection operation flag	0	R	Section 3.4.17
8Сн	140	Disconnection detection mode monitor	0	R	Section 3.4.18
8DH	141	Disconnection detection mode setting	0	R/W	Section 3.4.19
8Ен	142	CH1 Disconnection detection setting value	187	R/W	Section
8Fн	143	CH2 Disconnection detection setting value	187	R/W	3.4.20
90н	144				
to	to	System area	—	—	—
9Dн	157				
9Ен	158	Mode outtabing potting	0	R/W	Section
9Fн	159	wode switching setting	0	R/W	3.4.21
А0н	160				
to	to	System area	—	—	—
С7н	199				
С8н	200	Pass data classification setting ^{* 3}	0	R/W	Section 3.4.22
С9н	201	System area	_	_	_
САн	202	CH1 Industrial shipment settings offset value (used for D/A) *3	0	R/W	
СВн	203	CH1 Industrial shipment settings gain value (used for D/A) * ³	0	R/W	Section
ССн	204	CH2 Industrial shipment settings offset value (used for D/A) $*^3$	0	RM	3.4.23

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

*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.

Address		Description	Default *1	Read/write	Reference
Hexadecimal	Decimal	Description	Detault	* 2	section
СDн	205	CH2 Industrial shipment settings gain value (used for D/A) *3	0	R/W	
СЕн	206	CH1 Industrial shipment settings offset value (used for monitor output) * ³	0	R/W	
СГн	207	CH1 Industrial shipment settings gain value (used for monitor output) * ³	0	R/W	
D0H	208	CH2 Industrial shipment settings offset value (used for monitor output) * ³	0	R/W	
D1н	209	CH2 Industrial shipment settings gain value (used for monitor output) * ³	0	R/W	Section
D2 н	210	CH1 User range settings offset value (used for D/A) $^{ m *3}$	0	R/W	3.4.23
D3н	211	CH1 User range settings gain value (used for D/A) $^{ m *3}$	0	R/W	
D4H	212	CH2 User range settings offset value (used for D/A) $^{ m *3}$	0	R/W	
D5H	213	CH2 User range settings gain value (used for D/A) $^{ m *3}$	0	R/W	
D6H	214	CH1 User range settings offset value (used for monitor output) *3	0	R/W	
D7 н	215	CH1 User range settings gain value (used for monitor output) *3	0	R/W	
D8H	216	CH2 User range settings offset value (used for monitor output) *3	0	R/W	
D9н	217	CH2 User range settings gain value (used for monitor output) *3	0	R/W	

Table 3.6 Buffer memory assignment (3/3)

*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

*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.

3.4.2 D/A conversion enable/disable setting (buffer memory address 0: Un\G0)

- (1) Set whether D/A conversion is enabled or disabled for each channel.
- (2) It is necessary to set Operating condition setting request (Y9) to on/off to validate D/A conversion enable/disable setting. (refer to Section 3.3.2.)
- (3) By default, all channels are set to D/A conversion disabled.

Un\G0

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	0	0	0	0	0	CH 2	CH 1	
														,		

b2 to b15 information is fixed at 0.

1: D/A conversion disabled 0: D/A conversion enabled

POINT

Design the system so that D/A conversion enable/disable setting (buffer memory address 0 : Un\G0) changes to "Enable" after the external power (Refer to Section 4.3.) is supplied. Analog output may not properly be performed if the external power is not at the specified voltage.

3.4.3 Digital value (buffer memory address 1, 2: Un\G1, Un\G2)

- (1) This area is used to write digital values for performing D/A conversion from the programmable controller CPU as 16-bit 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.) Then, a check code is stored in CH^I Set value check code (buffer memory address 11, 12: Un\G11, Un\G12) and an error (Error code: 60^I) occurs.

Output range setting	Valid range (practical range)	Digital value that is set when a value outside the valid range is written				
0: 4 to 20 mA						
1: 0 to 20 mA	0 to 12287	12288 or larger: 12287				
2: 1 to 5 V	(Practical range: 0 to 12000)	-1 or smaller: 0				
3: 0 to 5 V						
4: 10 to 10 \/	-16384 to 16383	16384 or larger: 16383				
410 10 10 V	(Practical range: -16000 to 16000)	–16385 or smaller: –16384				
A: 4 to 20 mA (Extended mode)	-3000 to 13787	13788 or larger: 13787				
B: 1 to 5 V (Extended mode)	(Practical range: -3000 to 13500)	–3001 or smaller: –3000				
D: User range setting 3	10000 / 10007	10000 1 10007				
E: User range setting 2	-12288 to 12287	12288 or larger: 12287				
F: User range setting 1	(Practical range: -12000 to 12000)	-12289 or smaller: -12288				

3.4.4 Set value check code (buffer memory address 11, 12: Un\G11, Un\G12)

- (1) This area stores the result of checking whether a digital value that was set is within or outside the valid range.
- (2) When a digital value outside the valid range (refer to Table 3.7) is written, one of the check codes listed in Table 3.8 is stored.

Check code	Description
000F н	A digital value exceeding the valid range was written.
00F0н	A digital value that falls short of the valid range was written.
	A digital value that either falls short or exceeds the valid range was written.
00FFH	For example, the 00FFH check code is stored if a digital value exceeding
001111	the valid range is written, and then, without the check code being reset, a
	digital value that falls short of the valid range is written.

Table 3.8 Check code list

- (3) Once a check code is stored, it will not be reset even if the digital value is within the valid range.
- (4) To reset CH Set value check code, set Error clear request (YF) to on after rewriting the digital value so that it is within the valid range.

3.4.5 Error code (buffer memory address 19: Un\G19)

- (1) The error codes detected by the Q62DA-FG are stored.
- (2) Refer to Section 8.1 for more details of Error code.

3.4.6 Setting range (buffer memory address 20: Un\G20)

(1) This area is used to confirm the setting range of the Q62DA-FG.

	b15	to	b12	b11	to	b8	b7	to	b4	b3	to	b0
Un\G20 (setting range CH1, CH2)		0н			0н			CH2			CH1	
						,						

b8 to b15 information is fixed at 0.

Output range	Setting value
4 to 20 mA	Он
0 to 20 mA	1н
1 to 5 V	2н
0 to 5 V	Зн
-10 to 10 V	4н
4 to 20 mA (Extended mode)	Ан
1 to 5 V (Extended mode)	Вн
User range setting3	Dн
User range setting2	Ен
User range setting1	Fн

POINT

The output range cannot be changed by using Setting range (buffer memory address 20: Un\G20).

Change the output range in the switch setting for I/O and intelligent function module dialog box. (Refer to Section 4.5.)

3.4.7 Offset/gain setting mode Offset/gain specification (buffer memory address 22, 23: Un\G22, Un\G23)

- (1) Specifies the channel to be adjusted for the offset/gain settings.
- (2) Channel change request (YB) is required to be turned on/off to validate the offset/gain setting offset specification or gain specification. (Refer to Section 3.3.2.)
- (3) Specification can be made for 1 channel only.If more than one channels are set at the same time, an error (Error code: 500) occurs.
- (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 Offset/gain setting mode Offset specification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	CH2	CH1
Un\G23 Offset/gain setting mode Gain specification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	CH2	CH1

b2 to b15 information is fixed at 0.

1: Channel to be set 0: Invalid

3.4.8 Offset/gain adjustment value specification (buffer memory address 24: 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 Set value change request (YC) from off to on increments or decrements the analog output value by the adjustment value.
- (3) The valid input range is from –3000 to 3000. When the input value is 1000, the analog output values can be adjusted by about 0.33 V (user range setting 2) and about 0.18 V (user range setting 3) for voltage output and about 0.67 mA for current output.
- (4) Refer to Section 4.6 for the details of the offset/gain settings.

3.4.9 Offset/gain range specification (buffer memory address 25: Un\G25)

(1) This area is used to change the output range in the offset/gain setting mode. Turning on Channel change request (YB) changes the output range into the set one.

If a value outside the setting range is set, an error (Error code: $60\Box$) occurs.

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

- (2) Channel change request (YB) is required to 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.

3.4.10 Output monitor value (buffer memory address 38, 39: Un\G38, Un\G39)

(1) The analog value being output is always reconverted into a digital value within the Q62DA-FG and the result is stored. (Refer to Section 3.2.3.)

Output range setting	Output monitor value
0 to 20 mA	
4 to 20 mA	
User range setting 1	0 to 12000
1 to 5 V	
0 to 5 V	
-10 to 10 V	-16000 to 16000
4 to 20 mA (Extended mode)	0000 1. 40500
1 to 5 V (Extended mode)	-3000 to 13500
User range setting 2	-12000 to 12000
User range setting 3	0 to 12000

(2) Turning on Operating condition setting request (Y9) clears the output monitor value.

3.4.11 Rate control enable/disable setting (buffer memory address 46: Un\G46)

- (1) Set whether to enable or disable the rate control on each channel. (Refer to Section 3.2.5.)
- (2) Operating condition setting request (Y9) is required to be turned on/off to validate Rate control enable/disable setting. (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	0	0	0	0	CH2	CH1
					b2 to	b15 ir	nforma	ation i	s fixe	d at 0			1: Ra 0: Ra	te cor te cor	ntrol d	isable nable

3.4.12 Disconnection detection/Warning output setting (buffer memory address 47: Un\G47)

- (1) Set whether to enable or disable the disconnection detection and warning output on each channel. (Refer to Section 3.2.4 and Section 3.2.6.)
- (2) Operating condition setting request (Y9) is required to be turned on/off to validate the disconnection detection/warning output setting. (Refer to Section 3.3.2.)
- (3) The default setting is all-channel disconnection detection/warning output disable.



3.4.13 Warning output flag (buffer memory address 48: Un\G48)

- (1) When the digital input value falls outside CH□ Warning output upper/lower limit value (buffer memory address 86 to 89: Un\G86 to Un\G89) range, the bit corresponding to the channel turns to "1". (Refer to Section 3.2.4.)
- (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, Warning output signal (XE) also turns on.
- (4) Turning on Operating condition setting request (Y9) or Warning output clear request (YE) clears Warning output flag.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G48	0	0	0	0	0	0	0	0	0	0	0	0	CH2 lower limit value	CH2 upper limit value	CH1 lower limit value	CH1 upper limit value
													, 1	· War	nina a	outout

b4 to b15 information is fixed at 0.

1: Warning output 0: Normal

3.4.14 Disconnection detection flag (buffer memory address 49: Un\G49)

- (1) If the disconnection occurs in the output range of either 4 to 20mA, 4 to 20mA (Extended mode), or when the user range setting 1 is set to the channel, the bit corresponding to each channel turns to "1". (Refer to Section 3.2.6.)
- (2) If disconnection is detected on any one channel, Disconnection detection signal (XD) also turns on.
- (3) Turning on Operating condition setting request (Y9) or Disconnection detection clear request (YD) clears the disconnection detection flag.

	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Un\G49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	CH2	CH1
b2 to b15 information is fixed at 0.														1: Dis 0: No	sconne	ection

- 3.4.15 Increase/Decrease digital limit value (buffer memory address 70 to 73: Un\G70 to Un\G73)
 - (1) For rate control, set the range where the digital value can be incremented and decremented in a single conversion cycle (10ms). (Refer to Section 3.2.5.)
 - (2) The setting range is 0 to 32000.
 If any value outside the setting range is set, an error (Error code: 80□) occurs.
 - (3) Operating condition setting request (Y9) is required to be turned on/off to validate the increase digital limit values and decrease digital limit values. (Refer to Section 3.3.2.)
- 3.4.16 Warning output upper/lower limit value (buffer memory address 86 to 89: Un\G86 to Un\G89)
 - (1) Set the upper and lower limit values of the digital input value for providing the warning output. (Refer to Section 3.2.4.)
 - (2) The setting range is -16384 to 16383. 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 (Error code: 61□) occurs.
 - (3) Operating condition setting request (Y9) must be turned on/off to validate the warning output upper and lower limit values. (Refer to Section 3.3.2.)

3.4.17 Disconnection detection operation flag (buffer memory address 139: Un\G139)

(1) When the disconnection detection function is operated, "1" is stored to the bit of the corresponding channel in this area.

In the following cases, "0" is stored to the bit of the corresponding channel.

- Disconnection detection function is "disabled".
- An analog output value is within the dead band when "auto setting" is set to the disconnection detection mode.
- D/A conversion enable/disable setting (buffer memory address 0: Un\G0) is set to "D/A conversion disable".



function is active 0: Disconnection detection

function is stopped

3.4.18 Disconnection detection mode monitor (buffer memory address 140: Un\G140)

(1) This area shows the disconnection detection mode under operation by channels.

	b15	to	b12	b11	to	b8	b7	to	b4	b3	to	b0
Un\G 140		0н			0н			CH2			CH1	

b8 to b15 information is fixed at 0.

Disconnection detection mode	Set value
Fixed	Он
Arbitrarily setting	1н
Auto setting	2н

3.4.19 Disconnection detection mode setting (buffer memory address 141: Un\G141)

(1) The disconnection detection mode is set by channels.

	b15	to	b12	b11	to	b8	b7	to	b4	b3	to	b0
Un\G 141		0н			0н			CH2			CH1	

b8 to b15 information is fixed at 0.

Disconnection detection mode	Descriptions	Set value
Fixed	When the analog output value is lower than 1mA, the disconnection is detected.	Он
Arbitrarily setting	When the analog output value is lower than the disconnection detection set by CH Disconnection detection setting value (buffer memory address 142, 143: Un\G142, Un\G143), the disconnection is detected.	1н
Auto setting	When the analog output value is lower than the disconnection detected value set automatically, the disconnection is detected.	2н

- (2) To validate the settings, on/off of Operating condition setting request (Y9) is required. (Refer to Section 3.3.2.)
- (3) If other than 0H, 1H, 2H is set, an error (Error code: 63^[]) occurs.
- (4) The default is set in all-channel " 0_{H} " (fixed).
- 3.4.20 Disconnection detection setting value (buffer memory address 142, 143: Un\G142, Un\G143)
 - (1) These are areas to set the disconnection detection values.
 - (2) The setting values are ranged from 0 to 250 (corresponds to 4 to 0mA). Set the values in 0.1% increments.
 Use the following formula to find the setting values from the current value to detect the disconnection.

Disconnection detection value = 62.5 \times (4 – current value)

[Example]

Set "175" to detect the disconnection at the output monitor value of 1.2mA.

- (3) To validate the settings, on/off of Operating condition setting request (Y9) is required.
 (Refer to Section 3.3.2.)
- (4) If values out of the range from 0 to 250 are set, an error (Error code: 64□) occurs.
- (5) The default setting is "187" (or equivalent to 1mA).

3.4.21 Mode switching setting (buffer memory address 158, 159: Un\G158, Un\G159)

- (1) Set the values of the mode to which you want to switch.
- (2) After setting the values, turning Operating condition setting request (Y9) from off to on switches to that mode.
- When Mode switching is performed, this area is cleared to zero and Operating condition setting completed flag (X9) turns off.
 After confirming that Operating condition setting completed flag (X9) has turned off, turn off Operating condition setting request (Y9).

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

POINT	
If the values w	ritten are other than the above, mode switching is not performed and
only the opera	ting condition is changed.

3.4.22 Pass data classification setting (buffer memory address 200: 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	to	b12	b11	to	b8	b7	to	b4	b3	to	b0
	0н			0н			CH2			CH1	
	b8 to b15	inform	ation is	fixed at ().	0: 1: 2:	User ran User ran User ran	ge sett ge sett ge sett	ting 1 s ting 2 s ting 3 s	pecification pecification pecification	on on on

POINT

- (1) Refer to Section 4.6 for the offset/gain value setting method.
- D/A conversion aborts if the data is written to this area in the new Q62DA-FG and User range writing request (YA) is turned on.
 To resume D/A conversion, turn Operating condition setting request (Y9) from off to on, then to off again.

- 3.4.23 Industrial shipment settings offset/gain value and User range settings offset/gain value (buffer memory address 202 to 217: Un\G202 to Un\G217)
 - 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) When the offset/gain values of the user range setting are restored, the used data are stored.

The data are stored (saved) when:

- Writing initial setting by the utility package,
- Turning Operating condition setting request (Y9) from off to on *1,
- Turning User range write request (YA) from off to on in the offset/gain setting mode.
 - *1 The data are not saved when values have been written to Mode switching setting (buffer memory address 158, 159: Un\G158, Un\G159).
- (3) When restoring the offset/gain values of the user range setting, set the data saved here similarly into the corresponding area of the module where the data will be restored.
- (4) Buffer memory saving recording procedure for Online module change
 1) Set Pass data classification setting (buffer memory address 200: Un\G200).
 - 2) Turn Operating condition setting request (Y9) from off to on.
 - 3) Compare CH□ Industrial shipment settings offset/gain value and CH□ User range settings offset/gain value (buffer memory address 202 to 217: Un\G202 to Un\G217) with the range reference values. Refer to Section 7.4 for the range reference values.
 - If the values are proper, record the offset/gain values of Pass data classification setting, industrial shipment settings and user range settings.

POINT

- (1) Refer to Section 4.6 for the offset/gain value setting method.
- (2) D/A conversion aborts if the data is written to this area in the new Q62DA-FG and User range writing request (YA) is turned on. To resume D/A conversion, turn Operating condition setting request (Y9) from
 - off to on, then to off again.

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 to fail.
- (3) Be careful not to let foreign particles 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 objects such as wire burrs from entering the module during wiring. Do not remove this film until the wiring is complete. Before operating the system, be sure to remove the film to provide adequate heat ventilation.
- (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) * ¹	0.36 to 0.48 N · m
Terminal block screw (M3 screw)	0.42 to 0.58 N · m
Terminal block mounting screw (M3.5 screw)	0.66 to 0.89 N · m

*1 The module can be easily fixed onto the base unit using the hook at the top of the module.

However, it is recommended to secure the module with the module fixing screw if the module is subject to significant vibration.

(6) While pressing the installation lever at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Improper installation may result in malfunction, breakdown or the module coming loose and dropping.

4.2 Setup and Procedures before Operation



4.3 Part Identification Nomenclature

The name of each part in the Q62DA-FG is listed below.



Number	Name	Description
1)	RUN LED	Displays the operating status of the Q62DA-FG. On : Normal operation Flashing : During offset/gain setting mode Off : 5V power supply interrupted, watch dog timer error, 5V power switched off, watchdog timer error occurred, or Online module change enabled.
2)	ERR. LED	Displays the error status of the Q62DA-FG. On : Error * ¹ Flashing : Error in switch settings Switch No. 5 of the intelligent function module has been set to a value other than zero "0". Off : Normal operation
3)	ALM LED	Indicates the warning status of the Q62DA-FG. On : During warning output occurrence Flashing : During disconnection detection Off : Normal operation
4)	External power supply terminal	This is the terminal for connecting the 24 V DC external power supply.
5)	Serial number plate	Indicates the serial No. of the Q62DA-FG.

*1 Check Error code for details.

POINT

When two or more errors have occurred, the latest error found by the Q62DA-FG is displayed on the LED.

Terminal number	Signal	name
1		V +
2	CH1	COM1
3		+
4	Vac	cant
5	Vac	cant
6	Vac	cant
7	Vac	cant
8	Vac	cant
9		V +
10	CH2	COM2
11		+
12	Vac	cant
13	Vac	cant
14	Vac	cant
15	Vac	cant
16	24	1V
17	24	IG
18	F	G

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 Q62DA-FG and ensure system reliability, external wiring that is protected from noise is required. Please observe the following precautions for external wiring:

- Use separate cables for the alternating-current control circuit and the external output signals and external supply power of the Q62DA-FG 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 sealed cables.
- (4) A solderless terminal with insulating sleeve cannot be used for the terminal block. Covering the cable- connection portion of the solderless terminal with a marked tube or an insulation tube is recommended.

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 0.47 F25V capacitor between the V+ terminal and COM terminal.





- *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 F25V capacitor between the I+ terminal and COM terminal.

POINT

The Q62DA-FG needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

Therefore, power on 30 minutes prior to offset/gain setting or after Online module change.

4.5 Switch Setting for Intelligent Function Module

The settings for the intelligent function module 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.

		Setting item	
		Analog output range	Output range setting value
		4 to 20 mA	0н
		0 to 20 mA	1н
		1 to 5 V	2н
	Output range setting	0 to 5 V	3н
		– 10 to 10 V	4н
Switch 1		4 to 20 mA (Extended mode)	Ан
	00н: Fixed	1 to 5 V (Extended mode)	Вн
		User range setting3	Dн
		User range setting2	Ен
		User range setting1	Fн
Switch 2		Not used	
Switch 3	CH2 CH1 00H: Fixed	HOLD/CLEAR func 0н 1н to Fн (numeric v	ction setting ∶ CLEAR alue other than 0⊦) : HOLD
Switch 4	н	000н: Fixed	
Owner +	Он 1н to Fн (value oth	: Normal mo (numeric er than 0н) ^{*1} : Offset/gair	ode (D/A conversion processing) n setting mode
Switch 5		0н : Fixed	

Table 4.1 Switch setting item for intelligent function module

*1 Setting any value within the setting range will provide the same operation. When the setting range is 1_H to F_H, set 1_H for example.

(2) Operating procedure

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

S	lot Type	э	Model name	F	Points	Start		Constale calls
0 PLC	PLC	-			-		_	Switch setti
1 0(*•0)	Intelli.	-	Q62DA-FG		-		_	
2 1(*•1)		-			-		_	Detailed setti
3 2(*·2)		-			-		_	
4 3(*·3)		•			-	-	_	
5 4[*-4]		-			•		-	
5 5(1-5) 7 6(1-5)		-	-		-	-	-	
It is not p	rt X and Y are no iossible to check	ot inpu corre	ut, the PLC assigns the actly, when there is a	nem automat slot of the u	ically. nsetting	on the wa	ay.	
It is not p Standard	rt X and Y are no iossible to check setting(*)	ot inpu corre	it, the PLC assigns the ectly, when there is a	nem automat slot of the u	ically. nsetting	on the wa	ay.	
It is not p Standard	rt X and Y are no iossible to check setting(*) Base model na	ot inpu corre ame	it, the PLC assigns the cetly, when there is a Power model name	nem automat slot of the u Extemsion	ically. nsetting cable	on the wa	ay.	Base mode
It is not p Standard Main	rt X and Y are no nossible to check setting(*) Base model na	ot inpu corre ame	it, the PLC assigns the actly, when there is a Power model name	nem automat slot of the u Extemsion	ically. nsetting cable	on the wa Points	ay.	Base mode
It is not p Standard Main Increase	rt X and Y are no possible to check setting(*) Base model na	ot inpu corre ame	it, the PLC assigns the actly, when there is a Power model name	nem automat slot of the u Extemsion	ically. nsetting cable	Points	ay.	Base mode Auto C Detail
It is not p Standard Main Increase1	rt X and Y are no oossible to check setting(*) Base model na	ot inpu corre ame	it, the PLC assigns the cctly, when there is a Power model name	nem automat slot of the u Extemsion	ically. nsetting cable	Points	ay.	Base mode Auto C Detail
It is not p Standard Main Increase Increase	rt X and Y are no cossible to check setting(*) Base model na	ot inpu corre ame	it, the PLC assigns the actly, when there is a Power model name	nem automat slot of the u Extemsion	ically. nsetting cable	Points	ay.	Base mode Auto Detail 8 fixation
Main Increase Increase	rt X and Y are no cossible to check setting(*) Base model na Base model na	ame	at, the PLC assigns the actly, when there is a Power model name	nem automat slot of the u Extemsion	ically. nsetting cable	Points	ay.	Base mode Auto Detail 8 fixation 12 fixation

(a) I/O assignment setting screen

Set the following for the slot in which the D/A converter module 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 number for the Q62DA-FG.

Detailed setting:

- When using in the standard system configuration (on the main or extension base), specify the control CPU of the Q62DA-FG.
 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 Q62DA-FG.
- 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	ne It e	I/O response time		
0	Remote I/O	Remote I/O			-		•	
1	0(×-0)	Intelli.	Q62DA-FG	Hold	-		•	
2	1(*-1)				-		•	
3	2(*-2)				Ŧ		-	
4	3(*-3)				Ŧ		·	
5	4(*-4)				-		·	
6	5(*-5)				-		-	
7	6(*-6)				•		·	
8	7(*-7)				-		·	
9	8(*-8)				•	•	<u> </u>	
10	9(*-9)				-	_	<u> </u>	
11	10(*-10)				-		<u>_</u>	
12	11(*-11)				•		<u> </u>	
13	12(*-12)				-		<u> </u>	
14	13(*-13)				*		·	
15	14(*-14)				•		• •]
						End		Cancel
(b) Switch setting for intelligent function module dialog box Click on [Switch setting] on the I/O assignment setting dialog box to display the dialog box 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.



4.6 Offset/Gain Settings

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

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



4 - 10

Ρ	INT						
(1)	Perform the offset/gain settings in the range that satisfies the conditions pecified in Section 3.1.2, (1) and (2). Vhen the setting exceeds this range, the maximum resolution or total ccuracy may not be within the range indicated in the performance pecification.						
(2)	Perform the offset/gain settings separately for each channel. If channels are set in buffer memory address 22 (Un\G22) and 23 (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 ain values have been set correctly under actual usage conditions.						
(4)	The offset and gain values are stored into the E ² PROM and are not erased at ower-off.						
(5)	At the time of offset/gain setting, turn on User range writing request (YA) to write the values to the E^2 PROM. Wata can be written to the E^2 PROM up to 100 thousand times. To prevent unnecessary write to the E^2 PROM, an error (Error code: 162) occurs when values are written 26 times continuously.						
(6)	If an error (Error code: 40 \square^{*1}) occurs during offset/gain setting, re-set the orrect offset/gain value. he offset/gain value of the channel where the error has occurred is not written to the Q62DA-FG. (*1 \square indicates the corresponding channel number.)						
(7)	Module ready (X0) turns from off to on when the offset/gain setting mode witches to the normal mode by the dedicated instruction (G(P).OFFGAN) or ne setting of Mode switching setting (buffer memory address 158, 159: In\G158, Un\G159). Note that initial setting processing will be executed if there is a sequence rogram that makes initial setting when Module ready (X0) turns on.						
(8)	D/A conversion is discontinued if the mode is switched (from the normal node to the offset/gain setting mode or from the offset/gain setting mode to be normal mode) by the dedicated instruction (G(P).OFFGAN) or the setting f Mode switching setting (buffer memory address 158, 159: Un\G158, In\G159). To resume DA conversion, switch to the normal mode, then, turn on operating condition setting request (Y9).						
(9)	Buffer memory address 200 (Un\G200), 202 to 217 (Un\G202 to Un\G217) re 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 Q62DA-FG are X/Y0 to X/YF.	
	Channel selection N	10
	Offset/gain range setting N	11
	Offset setting ······ N	12
	Gain setting ······ N	13
	Channel change command ······ N	14
	Writing the adjustment amount ······ N	15
	Analog output value adjust command	16
	Offset/gain setting value write command to the module	17
	Mode switching N	18
	Normal mode checking signal	150
	Channel designation storage device D)0
	Dedicated instruction (G(P).OFFGAN) setting storage device D)2
	Offset/gain adjustment storage device D)1

(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 Q62DA-FG.



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



(b) When switching the mode using the setting of Mode switching setting (buffer memory address 158, 159: Un\G158, Un\G159) and Operating condition setting request (Y9)

POINT

When running this program together with the normal-mode D/A conversion program (shown in Section 6.2.2), use *1 of this program as the initial setting program. When using functions of the Q62DA-FG with the D/A conversion program in the normal mode, add the respective initial setting items to the functions to be used to *2 in this program. (For the example with *2, refer to the following.) *2 Example of adding initial setting items (Rate control function)



Note) When adding this program to the normal-mode D/A conversion program (shown in Section 6.2.2), replace the existing initial setting program with the program marked *1.

(c) When switching the mode by making intelligent function module switch setting

Only the common program is necessary.

5 UTILITY PACKAGE (GX Configurator-DA)

5.1 Utility Package Functions

Table 5.1 shows an overview of the utility package functions.

Item	Description	Reference section
Initial setting * ¹	 (1) Set the following items that require initial setting. D/A conversion enable/disable setting Rate control enable/disable setting Increase/decrease digital limit values Disconnection detection setting *² 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 Q62DA-FG when the programmable controller CPU changes to RUN status. 	Section 5.4
Auto refresh setting ^{* 1}	Section 5.5	
Monitor/Test	 (1) Monitor/Test The buffer memory and I/O signals for the Q62DA-FG are monitored and tested. (2) Operating condition setting Changes the initial setting 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 value) 	
FB conversion	Section 5.7	

POINT	
*1 If initial setting and automatic refresh setting are performed, the intelligent	
function module parameters require a maximum of 24 bytes per module.	
*2 Disconnection detection mode and Disconnection detection setting value	
cannot be set by GX Configurator-DA.	
Use sequence programs for the setting.	

5.2 Installing and Uninstalling the Utility Package

For how to install or uninstall the utility package, refer to "Method of installing the MELSOFT 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
 - In GX Developer, select "QCPU (Q mode)" for programmable controller series and specify a project.
 If any programmable controller 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.
- (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 Deve... 🜌 Intelligent function Module ... 🜌 Intelligent function M...

5

(6) Number of parameters that can be set in GX Configurator-DA When multiple intelligent function modules are mounted, the number of parameter setting must not exceed the following limit.

When intelligent function modules are installed to:	Maximum number of parameter settings				
when intelligent function modules 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			
Q00UJ/Q00U/Q01UCPU	512	256			
Q02UCPU	2048	1024			
Q03UD/Q04UDH/Q06UDH/Q10UDH/					
Q13UDH/Q20UDH/Q26UDH/	4006	2048			
Q03UDE/Q04UDEH/Q06UDEH/Q10UDEH/	4096				
Q13UDEH/Q20UDEH/Q26UDEH					
CPU modules other than the above	Not supported	Not supported			
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-DA 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	
Q62DA-FG	4 (Fixed)	9 (Max.)	

Example) Counting the number of parameter settings in Auto refresh setting

Auto refresh setting					_	×	1	
Module information Module type: D/A Conversion Module Module model name: Q62DA-FG	\$	Start 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		<-	D1			
CH2 Digital value	1	1		<.	D2			
CH1 Set value check code	1	1		->	D3	_]∙	┥—	 This one row is counted as one setting.
CH2 Set value check code	1	1		->	D4	+		Blank rows are not counted.
CH1 Output monitor value	1	1		->	D5			Count up all the setting items on this screen, and
CH2 Output monitor value	1	1		->	D6			add the total to the number of settings for other
Warning output flag	1	1		->	D7			intelligent function modules to get a grand total.
Disconnection detection flag	1	1		->	D8			
Error code	1	1		->	D9	Ţ		
Make text file	End set	up			Cancel			

5.2.2 Operating environment

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

	Item	Description				
Installation (add	d-in) target * ¹	GX Developer Version 4 (English version) or later * ²				
Personal comp	uter	Personal computer running one of the following operating systems.				
	CPU	Refer to the next page "Operating system and performance required for a personal				
	Required memory	computer".				
Available hard	For installation	65 MB or more				
disk capacity	For operation	20 MB or more				
Monitor		Resolution of 800 $ imes$ 600 pixels or higher *3				
		Microsoft [®] Windows [®] 95 Operating System				
		Microsoft [®] Windows [®] 98 Operating System				
		Microsoft [®] Windows [®] Millennium Edition Operating System				
		Microsoft [®] Windows NT [®] Workstation Operating System Version 4.0				
		Microsoft [®] Windows [®] 2000 Professional Operating System				
		Microsoft [®] Windows [®] XP Professional Operating System SP1 or later				
		Microsoft [®] Windows [®] XP Home Edition Operating System SP1 or later				
		Microsoft [®] Windows Vista [®] Home Basic Operating System				
Operating syste	em	Microsoft [®] Windows Vista [®] Home Premium Operating System				
		Microsoft [®] Windows Vista [®] Business Operating System				
		Microsoft [®] Windows Vista [®] Ultimate Operating System				
		Microsoft [®] Windows Vista [®] Enterprise Operating System				
		Microsoft [®] Windows [®] 7 Starter Operating System * ⁴				
		Microsoft [®] Windows [®] 7 Home Premium Operating System * ⁴				
		Microsoft [®] Windows [®] 7 Professional Operating System * ⁴				
		Microsoft [®] Windows [®] 7 Ultimate Operating System * ⁴				
		Microsoft [®] Windows [®] 7 Enterprise Operating System * ⁴				

*1 Install GX Configurator-DA in GX Developer Version 4 or later in the same language. GX Developer (English version) and GX Configurator-DA (Japanese version) or 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 required to use the FB conversion function.

*3 For Windows Vista[®] and Windows[®] 7, the recommended resolution is 1024 \times 768 pixels or higher.

*4 For Windows[®] 7 (32-bit edition), install GX Configurator-DA Version 2.11M or later as an add-in to GX Developer Version 8.91V or later.

For Windows[®] 7 (64-bit edition), install GX Configurator-DA Version 2.11M or later as an add-in to GX Developer Version 8.98C or later.

	Performance required for a 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 [®] XP	Pentium [®] 300MHz or higher	128MB or more					
Windows Vista®	Pentium [®] 1GHz or higher	1GB or more					
Mindows [®] 7	Dentium [®] 101 la er hinher	1GB or more (for 32-bit edition)					
		2GB or more (for 64-bit edition)					

Operating system and performance required for a personal computer

POINT

 The following functions cannot be used when the computer is running under Windows[®] XP, Windows Vista[®], and Windows[®] 7.
If these functions are used, this product may not perform properly. Activating the application with Windows [®] compatible mode Simplified user switch-over
Remote desktop Large font size (Advanced setting of Display Properties) DBL actting other than 100%
In addition, Windows [®] XP (64-bit edition) and Windows Vista [®] (64-bit edition) are not supported.
 On Microsoft Vista[®] and Windows[®] 7, the user should have USER authority or higher.
 The following functions cannot be used under Windows[®] 7: Windows XP Mode Windows Touch

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.

Key	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 cells for test execution.
Delete	Deletes the character where the cursor is positioned. When a cell is selected, clears all of the setting contents in the cell.
Back Space	Deletes the character where the cursor is positioned.
$\begin{array}{c} \\ \end{array} \end{array}$	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.

(a) Intelligent function module parameter

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) Text files

A text file can be created by clicking the Make text file button on the initial

setting, Auto refresh setting, or Monitor/Test screen.







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]
- On the intelligent function module selection screen of the utility, select: [Intelligent function module parameter] → [Open parameters]/[Save parameters]
- From GX Developer, select:
 [Online] → [Read from PLC]/[Write to PLC] → "Intelligent function module parameters"
 Alternatively, from the intelligent function module selection screen of the utility, select:

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

5.3.2 Operation overview

GX Developer screen	
t mode) MAIN 124 Step]	
Tools Window Help	
Check program Confirm project memory size	₩ ↔ { } = F6 F7 F8 F9
Merge data Check parameter	
Transfer ROM Delete unused comments	+
Clear all parameters IC memory card	
Start ladder logic test	
Set TEL data	+
Intelligent function utility	Utility list
Customize keys	Start
Change display color Options	
Create start-up setting file	

[Tools] – [Intelligent function utility] – [Start]



	fun	ction	mo	dule		
🖉 Intelligent funct	ion modu	le utility C:\	MELSE	GPPW\DA		_ 🗆 🗙
ntelligent function m	dule <u>p</u> aran	neter <u>O</u> nline	Tools	Help		
Select a target inte	ligent func	tion module				
Start I/O No.		Module type				
00	00	D/A Corv	ersion M	odule		-
		Module mod	lel name			
		Q62DA-FI	à			•
Start I/O No.	Modi 362DA-FG	le model nam	e	Initial setting Available	Auto refre: Available	h 🔺
Start I/O No.	Mod	le model nam	e	Initial setting	Auto refre:	n 🔺
				THANADA		
						= 11
						- 11
FB parameter>>						
Initial setting	Auto	refresh)elete	Exit	

Refer to Section 5.3.3.

Enter "Start I/O No.", and select "Module type" and "Module model name".

Initial setting

-	
Initial setting	screen

Auto refresh setting screen

→ 1)

Auto refresh

nitial setting	X	Auto refresh setting				<
Module inforamation Module type: D/A Conversion Module Module model name: Q62DA-FG	Start I/O No.: 0000	Module information	Start 1/0 No.: 0000			
Setting item	Setting value	Module model name: Ub2DA+Fu				1
CH1 D/A conversion enable/disable setting	Disable 🔹		,			1
CH2 D/A conversion enable/disable setting	Disable	Module side	Module side	Transfer	PLC side 📤	1
CH1 Rate control enable/disable setting	Disable 🗸 🚽	Secong kemi buner size	word count	direction Device		1
CH2 Rate control enable/disable setting	Disable 🗸 🗸	CH1 Digital value	1	<-	D1	1
CH1 Increase digital limit value	32000	CH2 Digital value	1	<-	D2	1
CH1 Decrease digital limit value	32000	CH1 Set value check code	1 1	->	D3	1
CH2 Increase digital limit value	32000	CH2 Set value check code	1	->	D4	1
		CH1 Output monitor value	1 1	->	D5	1
		CH2 Output monitor value	1	->	D6	1
- Details-		Warning output flag	1	->	D7	1
Select inpu		Disconnection detection flag	1	->	D8	1
Setting r	ange	Error code	1	->	D9	1
Make text file End or	tup Cancel	Make text file	up		Cancel	



Refer to Section 5.5.

1)]
	[Online] – [Monitor/Tes	t]		< <fb parameter="" support="">> tab – FB conversion</fb>
Selecting monitor	★ /test module screen	FF	R conve	* ersion screen
Select monitor/test module		2 FB conversion	001110	x
- Select monitor/test module		0 10 contension		
Start I/O No. Module	type	FB program is generated from the	following cor	ntents.
0000 D/A (Conversion Module			
Module	model name	Start I/O Module model	Initial /	Auto FB program name Title
Q62D	DA-FG	0000H Q62DA-FG		
Modulo implementation status				
0000 Q62DA-FG				
		-		o //
		R	eter to	Section 5.7.
	•			
Monitor/test	Exit			
	1			
	Select a module to be I	nonitored/tested.		
Monit	or/Test			
Monitor/Test				
Module information				
Module type: D/A Conversion Module	Start I/O No.: 0000			
Module model name: Q62DA-FG				
Setting item	Current value Setting	value		
CH2 Disconnection detection flag Normal CH1 Warning output flag upper limit value Normal				
CH1 Warning output flag lower limit value Normal CH2 Warning output flag upper limit value Normal				
CH2 Warning output flag lower limit value Normal Error code	0			
Setting range CH1-CH2 X/Y monitor/test	0000 X/Y mon	itor/test		
Operating condition setting Offset/gain setting	Operating Offset/gai	n setting		
Pass data	Pass -	data 💌		
Write to module Save file Current value display	L'OURO	Monitoring		
Read from Lood file Make text file	Decimal input			
module wow me	0 - 12000			
Statimentar Example	*	Fine		
Execute les	4	Liuse		

Refer to Section 5.6.

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

	C\GPPW\DA	_ 🗆 ×
Intelligent function module parameter Online Tools	Help	
Select a target intelligent function module.		
Start I/O No. Module type		
D/A Conversion M	lodule	_
Module model name		
Q62DA-FG		_
Parameter setting module		
Intelligent function module parameter FB Support F	Parameter	
Start I/O No Module model name	Initial setting	Auto refresh
0000 Q62DA-FG	Available	Available
(/Parameter		EP conversion
		rb conversion
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" → "Module type" → "Module model name" →
 Initial setting
- (b) Auto refresh setting screen "Start I/O No.*1" \rightarrow "Module type" \rightarrow "Module model name" \rightarrow Auto refresh
- (c) Select monitor/test module screen
 [Online] → [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 \rightarrow FB conversion

For details, refer to section 5.7.

POINT

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

(2) Command buttons

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

Delete 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" is selected and executed, only the setting of the selected cell is deleted.

Exit

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

		Developer are nativieu.	
odule utility C:\MEL		[Open parameters]:	Reads a parameter file.
Ctrl+O		[Close parameters]:	Closes the parameter file. If any data are
Ctrl+5			modified, a dialog asking for file saving
5			will appear.
eters		[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.

ntelligent function module parameter	Online	T
Open parameters Close parameters	Ctrl+0	
Save parameters Delete parameters	Ctrl+S	
Open FB support parameters Save as FB support parameters		
Exit		

∂ Intelligent function mo	dule util	ity C:\N	1elsec	GPPW
Intelligent function module pa	rameter	Online	Tools	Help
Intelligent function module	paramete	Moni Read	tor/test i from P	 LC
Start I/O No.	Modi	Write	e to PLC	
0000	D/	A Conve	rsion M	odule

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 Q62DA-FG 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.

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^{*1}
- Warning output setting
- Warning output upper limit value/lower limit value

Setting parameters in the Initial setting screen can omit parameter settings with sequence program.

*1 The disconnection detection mode and disconnection detection setting value cannot be set by GX Configurator-DA.

Use sequence programs for the setting.

[Operating procedure]

"Start I/O No. $^{*_{2_{n}}}
ightarrow$ "Module type" ightarrow "Module model name" ightarrow

Initial setting

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

[Setting screen]

nitial setting		_ 🗆 🗡
Module inforamation Module type: D/A Conversion Module Module model name: Q62DA-FG	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	•
CH1 Rate control enable/disable setting	Disable	-
CH2 Rate control enable/disable setting	Disable	-
CH1 Increase digital limit value		32000
CH1 Decrease digital limit value		32000
CH2 Increase digital limit value		32000

	Details Select input Enable Disable	
Make text file	End setup	Cancel

[Explanation of items]

(1) Setting contents

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

(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 writing the initial settings using a sequence program, the initial setting parameter value is written under the situation of that CPU module status changes from STOP to RUN. So, execute the initial setting using the sequence program again.

5.5 Auto Refresh Setting

[Purpose]

Configure the Q62DA-FG buffer memory for automatic refresh.

[Operating procedure]

"Start I/O No.^{*1}" \rightarrow "Module type" \rightarrow "Module model name" \rightarrow Auto refresh

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

[Setting screen]

Module type: D/A Conversion Module	S	itart I/O No.:	0000		
Moudie model name. GozDA-FG					
Setting item	Module side Buffer size	Module side Transfer word count		Transfer direction	PLC side Device
CH1 Digital value	1	1		<-	D1
CH2 Digital value	1	1		<-	D2
CH1 Set value check code	1	1		->	D3
CH2 Set value check code	1	1		->	D4
CH1 Output monitor value	1	1		->	D5
CH2 Output monitor value	1	1		->	D6
Warning output flag	1	1		->	D7
Disconnection detection flag	1	1		->	D8
Error code	1	1		->	D9

[Items]

licei	119]	
(1)	Contents of the screen disp	blay
	Module side Buffer size	: Displays the buffer memory size of the
		setting item. (fixed at one word).
	Module side Transfer word count	: Displays the number of words to be
		transferred to the CPU devices from the
		designated address (fixed at one word).
	Transfer direction	: "—" indicates that data are written from the
		device to the buffer memory.
		" \rightarrow " indicates that data are loaded from the
		buffer memory to the device.
	PLC side 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
		(examples: 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 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

The auto refresh settings are stored in an intelligent function module parameter file. After being written to the CPU module, the auto refresh setting takes effect 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.

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.

5.6 Monitor/Test

5.6.1 Monitor/test screen

Monitor/Test

[Purpose]

Start buffer memory monitoring/testing and I/O signal monitoring/testing, operating condition setting, offset/gain settings (refer to Section 5.6.2), pass data (refer to Section 5.6.4)from this screen.

[Operating procedure]

```
Select monitor/test module screen \rightarrow "Start I/O No.<sup>*1</sup>" \rightarrow "Module type" \rightarrow "Module model name" \rightarrow [Monitor/test]
```

*1 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.

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[Setting screen]

	Start I/O No : 0000					
Module type: D/A Conversion Module						
include type. Drive conversion include	Start Porte. 6000					
Module model name: Q62DA-FG						
Setting item	Current value	Setting value				
H2 Disconnection detection flag	Normal					
H1 Warning output flag upper limit value	Normal					
H1 Warning output flag lower limit value	Normal					
H2 Warning output flag upper limit value	Normal					
H2 Warning output flag lower limit value	Normal					
rror code						
etting range CH1-CH2	0000					
/Y monitor/test		X/Y monitor/test				
perating condition setting		Operating setting				
ffset/gain setting		Offset/gain setting				
ass data		Pass data 💌				
Tash ROM setting	- Details-					
Write to Save file Current value display		Monitoring				
Read from Load Re Make text Re	Decimal input					
todule	0 - 12000					
Construction of Characteria	European I					
Stop monitor	Execute jest	Liose				
						-
]				1
	X/Y	monitor/test		Operat	tina settina]
	X/Y	monitor/test		Operat	ting setting]
	X/Y	monitor/test		Opera	ting setting]
	X/Y	monitor/test		Opera	ting setting]
	X/Y	monitor/test		Opera	ting setting]
monitor/test	×/Y	monitor/test	Operating condition setting	Opera	ting setting]
monitor/test	↓ X/Y	monitor/test	Operating condition setting	Opera	ting setting]
monikor/kest Ardula information	↓ X/Y	monitor/test	Operating condition setting	Opera	ting setting]
monitor/test Acide Information Acide Ippe — D/A Conversion Module	Start I/D No.: 0000	monitor/test	Operating condition setting — Module normation — Module Spec. D/A Cerversion Module	Start I/O No: 000	ting setting]
monitor/Lest Todale Information Todale Upper D/X Conversion Module Todale Days Toda English	Start I/O No.: 0000	monitor/test	Operating condition setting - Module Information - Module type: D /A Convention Module Module tope: D STD & E1	Start I/D No: 0000	ting setting]
nonitor/test odule information adule type: D/A Convenion Module adule model name: QESDA FG	Start I/O No. 0000	monitor/test	Operating condition setting — Module information Module type: D/A Conversion Module Module model name: D&DA FG	Start I/O No: 0000	ting setting]
nonitor/Rest odde Information odde type: D/A Conversion Module odde model name: 0620A FG	Sher 1/0 Na: 0000	monitor/test	Bpenating condition setting - Module information Module type: D/A Convension Module Module model name: GEDDAFD		ting setting]
noniko/Nest odule information odule type: D/A Conversion Module odule model name: @620AFG Setting kem	Start I/D No: 0000	monitor/test	Operating condition setting Module information Module give: D/A Conversion Module Module model name: DE2DA-FG Setting Item	Start I/O No.: 0000	ting setting]
nonitory/kest odule information odule type: D/A Corversion Module odule model name: Q&20AFG Setting kem	Start /O No. 0000	monitor/test	Dperating condition setting - Module Information Module type: D/A Convension Module Module model name: DR2DA FD Setting tem DH1 D/A convension emable/disable setting	Start VO No.: 0000	ting setting Setting value	
nontov/test odule information odule type: D/A Convention Module odule model name: QE20A FG Setting Rem Setting Rem	Start I/O No: 0000	monitor/test	Operating condition setting Module infomation Module goe: D/A Conversion Module Module model name: DEXDAFG Setting item DH1 D/A convention metable/discle setting DH2 D/A convention metable/discle setting	Start //0 No.: 000	ting setting	
nontor/test odule information adule type: D/A Conversion Module odule model name: QE20A FG Setting kem Othodule ready Deneming conduction setting completed flag	Start /D No. 0000 Current value OFF Monice tapp OFF Monice tap	monitor/test	Dpenating condition setting - Module Information - Module type: D/A Convention Module Module model name: QEDA FG Setting Rem DH1 D/A convention metableficiale setting DH1 20/A convention metableficiale setting	Start VD No: 0000	ting setting Setting value Disable D	
nonkor/test edule information edule type: D/A Convention Module edule model name: QEDA FG Setting Rem Observation Table Table Statistical conditions testing completed lag Observation condition setting completed lag	Start I/O No: 0000 Caren' value ON-Piedy ON-Pied	monitor/test	Operating condition setting Module information Module gipe: D/A Conversion Module Module model name: DECDAFG Setting Inm DH1 D/A conversion metable/disable setting DH1 D/A conversion metable/disable setting DH1 Fisite control metable/disable setting DH1 Fisite control metable/disable setting	Start I/O No.: 0000	ting setting Setting value Disable D	
nontory/test odule information odule type: D/A Corversion Module odule model name: QK2DA FG Setting kem 2Modula ready Setting kem 2Modula ready Setting completed lig Control cymic retring mode flag CORted cymic retring mode flag CORted cymic retring mode flag	Start /D No.: 0000 Current value DIF Monder dap OFF Monder dap	monitor/test	Operating condition setting Module information Module type: D/A Convention Module Module type: D/A Convention Module Module type: D/A Convention Module DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting DH1 D/A convention matched ficialle tetting	Start VD No.: 0000	ting setting Setting value Disable D	
nonitor/test odule information odule type: D/A Convention Module odule model name: QEODA FG Setting Rem Module ready Module ready Module ready Distribution satting completed flag Convent of thomas completed flag Convent of thomas completed flag Convent of thomas completed flag	Start I/D No: 0000 Current Value OR Ready OR Ready OR Ready OR Ready OR Reagent OR Reagent OR Respect to the reader to the reade	monitor/test	Operating condition setting Module information Module give: D/A Conversion Module Module model name: DECDAFG Setting from DH1 D/A conversion metable disable setting DH1 D/A conversion metable disable setting DH1 First control metable disable setting	Start I/O No.: 0000	ting setting	
nonitor/test Iodule Infomation Iodule Ispae: D/A Convension Module Iodule model name: GEDA FG Setting Iam OtHodule ready Elevanito and Integ Delevanito and Integ Delevanita and Integ Delevanito and Integ Delevanito and	Start //D No.: 0000 Current value ON Ready OFF Monitor Integrat OFF Non examt	monitor/test	Decreating condition setting Module information Module type: D/A Convention Module Module indeel name: QECDAFG DAFG DAFG convention mabilitidicable setting DH1 D/A convention mabilitidicable DH1 D/A convention mabilitidicable	Start VD No: 0000	ting setting Setting value Dirable Dirable Dirable Dirable Dirable Dirable 000	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
nonikar/test todal: information codal: type: D/A Conversion Module todal: model name: QESDA FG Setting Rem Module randy Module randy Module randy Module randy Module randy Module randy Discorrisping completed flag Conversion for the random for Discorrisping random for Di	Start I/D No: 0000 Current value ON Ready OTF Nongart OTF Nongart OTF Nongart OTF Nongart OTF Regula operation OTF Regula operation OTF Regula operation	monitor/test	Operating condition setting Module infomation Module spee: D/A Conversion Module Module model name: DEDAFG Setting from DH1 D/A conversion metable disable setting DH1 D/A conversion metable disable setting DH1 D/A conversion metable disable setting DH1 Diac control metable disable setting DH1 Diacease digal intri value DH1 Increase digal inti value DH1 Increase digal inti value	Start //O No. 000	ting setting Setting value Ditable D	2000 32000 32000
monitor/Lest todale information todale types D/A Conversion Module todale model name: GREDA-FG Setting Item Ol Module mody Biopening control and flag Depening control and flag	Start //D No.: 0000 Current value OFF Money and OFF Mone	monitor/test	Decreting condition setting Module information Module information Module model name: QECDAFG Module model name: QECDAFG DET 201A convention mabble/disable setting DET 201A convention disable/disable setting DET 201A convention DET 201A convention disable/disable setting DET 201A conve	Current value Curren	ting setting Setting value Dirable D	×
noniko/kest oduk information oduk tepps: D/A Conversion Moduke oduk model name: GEODA FG Selling kem Moduk randy Moduk randy Moduk randy Moduk randy Moduk randy Moduk randy Discorrection detection rgsnal Conversion detection rgsnal Version guardus testing Discorrection rgsnal Discorrection rg	Current Value Current Value OR Ready OFF Monita dap OFF Monita dap OFF Nonegaria	monitor/test	Describing condition setting Notice information Module index intervention Module Module model name: DECDAFG Setting Area	Start //O No. 000 Start //O No. 000 Current value Deable	ting setting Setting value Disable D	
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5 UTILITY PACKAGE (GX Configurator-DA)

MELSEC-	Q
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1) Offset/gain setting		Pass data	
Diffset (Cain setting	Page data	*	
	Pass data		
Uffset/gain settings is performed.	Module Information	Start I/O No - 0000	
Target module Q62DA-FG:0000H Error code	Module gpe: D/A conversion module Module model name: Q62DA-FG	Start / O NU. 0000	
	Setting item	Current value Setting	value
Registration	CH1 Pass data classification setting	User range1 User range1	
Ultraet setting U Lain setting	CH1 Industrial shipment settings offset value	User range1 User range1 0000	0000
Channel No. CH1 Characteristic	(used for D/A) CH1 Industrial chimment settings gain value	0000	0000
Adjustment 1 + -	(used for D/A)	0000	0000
For the activity and using 1000, the Appleor value activity and of Moltage	CH2 Industrial shipment settings offset value (used for D/A)	0000	0000
during output: about 0.33V(User range setting 2), about 0.18V(User range	CH2 Industrial shipment settings gain value	0000	0000
Setting 3), Current during output: about 0.65mA is possible.	CH1 Industrial shipment settings offset value	0000	0000
	Elash BOM setting	Details	
	Write to Gave file Current value	D'otais	Monitoring
Channel No. User range setting		Select input	
CH1 CH1	Read from module Load file Make text file	Setting range	
CH2		User range1 User range2	
		User range3	
	Start monitor Stop monitor Ex	ecute test	Close
	×		
287 Analog Voltage Range setting User range setting 2 Offset/Gain setting Offset value(V) Gain value(V) 10.00 Range settings			
2288 Analog/Dipital conversion C Analog/Dipital conversion C Analog/Dipital conversion C Dipital value Conversion Conversion Conversion			

[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 b	utton
	Current value	Displays the current value of the item selected. (This is used to check the text that cannot be displayed 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
 Selects whether or not to monitor current values.

 Stop monitor
 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 CH Digital value during test operation changes the analog output, so perform these after taking ample safety precautions.

(3) Examples of "Selection test"

The followings explain the case of forcing on CH1 Output enable/disable flag (Y1).

- (a) Click the Operating condition setting button in the Monitor/Test screen.
- (b) Change the setting value field for "Y01: CH1 Output enable/disable flag" to "ON: enable."
 Nothing is written to the Q62DA-FG at this point.
- (c) Click on the field, of which setting value has been changed in step (b).
 (When multiple items have been changed in operation (b), select the setting value fields where setting values were changed, while holding down the
 Ctrl key. Multiple fields can also be selected by dragging the mouse over them.)
- (d) Click the Execute test button to write the data.

After the writing is completed, the written values are displayed in the "Current 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 screen to confirm the transition of the Q62DA-FG's operation mode (normal mode -> offset/gain setting mode) is displayed. Click the Yes button to transit to the offset/gain setting mode.

Offset/Gain sett	ing			×
Offset/gain setting	gs is performed.			
Target module	e Q62DA-FG:0	000H	Error code	Error clear
Offset/Gain set	ting O Gain setting			Registration
Channel No.	CH1 💌			Conversion characteristic
Adjustment value	1	+		
during output setting 3), Current during	about 0.33V(User range settin g output: about 0.65mA is possi	g 2), about 0.18V(L	Iser range	
Channel No.	User range setting	Setting	g state	
041		Offset setting	Gain setting	
CH1 CH2				
				Close

(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 the Q62DA-FG

Write the content set up by operations (2) to (6) into the Q62DA-FG by clicking the Registration button.

(a) Precautions

Avoid the following operations during the writing of the data, which has been set up by operations (2) to (6), into the module after the click of the Registration button.

Doing so causes an error in the $\mathsf{E}^2\mathsf{PROM}$ data and the Q62DA-FG may not operate properly.

- 1) Powering off the programmable controller CPU
- 2) Resetting the programmable controller CPU
- (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, the Q62DA-FG'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, Error code can be cleared by clicking the _____ 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]



[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/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
	diagram.
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=""></when>
Enter an analog value to be converted to a digital value
When converted to an analog value>
The analog value converted from a digital value is displayed
Digital value:
Digital value. Source of the digital value corresponding to an optional applies value in
the digital value corresponding to an entered analog value is
displayed.
<when an="" analog="" converted="" to="" value=""></when>
Enter a digital value to be converted to an analog 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:
12000 (When Liner range acting 1 to 2 are selected)
12000 (When User range setting 1 to 5 are selected)
(3) Explanation of screen command buttons
[Range setting] I he entered offset/gain value is determined, and the I/O

(3

characteristic diagram is updated. Conversion for the entered value is performed.

Conversion

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.

Pass data			_
Module information Module type: D/A Conversion Module Module model name: Q62DA-FG	Start 1/0 No.: 0000		
Setting item	Current value	Setting value	
CH1 Pass data classification setting	User range1	User range1	
CH2 Pass data classification setting	User range1	User range1	•
CH1 Industrial shipment settings offset value (used for D/A)	0000		0000
CH1 Industrial shipment settings gain value (used for D/A)	0000		0000
CH2 Industrial shipment settings offset value (used for D/A)	0000		0000
CH2 Industrial shipment settings gain value (used for D/A)	0000		0000
CH1 Industrial shipment settings offset value	0000		0000 🖵
Flash RDM setting Current value Write to module Save file Current value Read from module Load file Make text file	Details Select input Setting range User range? User range?		Monitoring
Start monitor Stop monitor E:	xecute jest		Close

(2) User range saving

(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 \Box Pass data classification setting.

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

When read is completed, the values are displayed in the Current value fields of CH[□] Industrial shipment settings offset/gain values/CH[□] 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 \square 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 Execute test 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.

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 \rightarrow

<<FB Support Parameter>> tab \rightarrow FB conversion

[Setting screen]

FB conv FB program	Conversion				
Start I/O No.	Module model name	Initial setting	Auto refresh	FB program name	Title
0000H	Q62DA-FG				

[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.

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 program 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.



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

- \pm 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.

Before pasting

	HUGH Forker Character Character Protect Edit ForAreacter Convert Edit Discharacter The State State Discharacter The State State	ECGPPW (GX Configurator D W Orline Dignostics Tools D D D D D D D D D D D D D D D D D D T D D D D D D D D D D D T D D D D D D D D D D D D T D D D D D D D D D D D D D D D D D D D		· · · · · · · · · · · · · · · · · · ·		_5× _5×
	■ M M M M M M M M M M M M M M				anz)	, A
Ready Riter pasting	Project FB Structure					
stfter pasting Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Main 124 step) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft mode) Image: Strates to Reveloper C(MELSC (GRPW.OX Configurator DA - ID/Cdft		「日間」 「日」 「日」 「日」 「日」 「日」 「日」 「日」 「日	Q12H Host station	e 1975-28-1.bmp 122 Intelligent	Ovrwrte	NUM 11:34 AM
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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.



[Operation procedure]

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

6 PROGRAMMING

This chapter describes the programs of the Q62DA-FG.

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 Q62DA-FG in the following procedure.



6.2 For Use in Normal System Configuration

System configuration used in the program explanation

(1) System configuration



Perform the following intelligent function module switch settings in advance.

- Switch 1 0030H (CH1: 4 to 20mA, CH2: 0 to 5V)
- Switch 2 Empty
- Switch 3 0000H (CH1, CH2: Clear)
- Switch 4 0000H (Normal mode (D/A conversion processing))
- Switch 5 0000H (0: Fixed)

(2) Program conditions

The digital values of CH1 and CH2 are written and their output monitor values are read.

If a digital value write error occurs, the corresponding error code is displayed in BCD.

- (a) Initial settings
 - Analog output enabled channel......CH1, CH2
 - Rate control enabled channel..... CH1 (increase digital limit
 - value: 100, decrease digital
 - limit value: 30)
 - · Disconnection detection enabled channel ... CH1
 - Warning output enabled channel..... CH2 (warning output upper
 - limit value: 10000, warning output lower limit value: 3000)

(b) Devices used by user

Output enable	X11
Digital value write signal	X12
Disconnection detection reset signal	X13
Warning output reset signal	X14
Error code reset signal	X15
Error code display (BCD 3 digits)	Y20 to Y2B
CH1 Digital value	D11
CH2 Digital value	D12
CH1 Output monitor value	D13
CH2 Output monitor value	D14
Disconnection detection flag	D15
Warning output flag	D16
• Error code	D17
Disconnection detection channel flag	M10
Warning output channel flag	M22, M23

6.2.1 Program example using the utility package

- (1) 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"
 CH1 Disconnection detection setting"Enable"
 CH2 Warning output setting"Enable"
 CH2 Warning output upper limit value"1000"
 CH2 Warning output lower limit value"300"

Module tupe: D/A Conversion Module	Start I/O No · 0000	
Module model name: 0620A-EG	Start / O No 0000	
induic modername. Gozowi ra		
Setting item	Setting value	
CH1 D/A conversion enable/disable setting	Enable	+
CH2 D/A conversion enable/disable setting	Enable	-
CH1 Rate control enable/disable setting	Enable	•
CH2 Rate control enable/disable setting	Disable	•
CH1 Increase digital limit value		100
CH1 Decrease digital limit value		30
CH2 Increase digital limit value		32000
- Details Select	input	
Set	ing range	
	ble	

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

CH1, CH2 Digital value	D11, D12
CH1, CH2 Output monitor value	D13, D14
Disconnection detection	D15
Warning output	D16
Error code	D17

Module type: D/A Conversion Module Module model name: Q62DA-FG	S	itart 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	
CH1 Set value check code	1	1		->		
CH2 Set value check code	1	1		->		
CH1 Output monitor value	1	1		->	D13	
CH2 Output monitor value	1	1		->	D14	
Warning output flag	1	1		->	D15	
Disconnection detection flag	1	1		->	D16	
Error code	1	1		->	D17	-

(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.

X0 X12 [MOV K2000 D11] CH1 Digital value s [MOV K4000 D12] CH2 Digital value s Set analog output enable [MOV K4000 D12] CH1 Output enable [MI] [MI] [Y1) CH1 Output enable [Y1) CH2 Output enable	etting
Example [MOV K4000 D12] CH2 Digital values Set analog output enable (Y1) CH1 Output enable (Y1) CH2 Output enable (Y1) (Y2) CH2 Output enable	otting
Set analog output enable X11 (Y1 (Y1) CH1 Output enable (Y2) CH2 Output enable	eung
(Y1) CH1 Output enable	
(Y2) CH2 Output enable	;
	;
Read disconnection detection flag	
Mov D15 K1M10 Disconnection deter Connection deter Channel check	ction
M10 Processing for disconnection detection] Processing for CH1 disconnection detection	ction
X13 X0D SET YOD Image: YOD	ction clear
xop YoD [RST YOD] [RST YOD] [R	ction clear
Read warning output flag	
X0E [MOV D16 K1M20] Warning output cha	innel check
x22 Processing for warning output CH2 Warning output (upper limit value) p	ut processing
x23 [Processing for warning output] CH2 Warning output III (lower limit value) p	ut processing
X14 X0E SET Y0E (YE) on	ar request
XOE YOE [RST YOE (YE) off	ar request
Error code display and reset processing	
x15 x0F Image:	ו BCD
[SET YOF] Error clear request	(YF) on
YOF XOF Image: State of the state of t	(YF) off
END]	

(2) Program example

X0 _/// -[SET M100 7 Initial setting | M100 U0\ G0 ¥9 -↓∕-X9 D/A conversion enable/disable setting -Гмоч H0 U0\ G46 Rate control enable/disable setting Гмоч H2 U0\ G70 K100 CH1 Increase digital limit value Гмоч U0\ G71 CH1 Decrease digital limit value K30 Гмоч U0\ G47 Disconnection detection/warning output H2001 -Гмоу setting U0\ G88 CH2 Warning output upper limit value K10000 Гмоч setting U0\ G89 CH2 Warning output lower limit value K3000 -Гмоч setting Turns on Operation condition setting SFT Y9 request (Y9) **FRST** M100 X9 Y9 Turns off Operation condition setting -RST Y9 request (Y9) Read output monitor values U0\ G38 X0 X8 Х9 ЦЦ Гмоч D113 Reads CH1 Output monitor value U0\ G39 [моv D114 Reads CH2 Output monitor value Write digital values U0\ X0 X12 K2000 Гмоч CH1 Digital value setting G1 U0\ [моv K4000 CH2 Digital value setting G2 Set analog output enable X0 X -(Y1 Enables analog output of CH1 -(Y2 Enables analog output of CH2 Read disconnection detection flag U0\ G49 [моv K1M10 Disconnection detection channel check Processing for CH1 disconnection detection M10 Processing for disconnection detection M13 Turns on Disconnection detection clear -M {SET Y0D request (YD) Y0D Turns off Disconnection detection clear request (YD) -[RST Y0D Read warning output flag U0\ G48 -[моv K1M20 Warning output channel check M22 CH2 Warning output upper limit value Processing for warning output processing M23 CH2 Warning output lower limit value Processing for warning output processing X0E Turns on Warning output clear -[SET Y0E request (YE) X0E Y0F Turns off Warning output clear -[RST Y0E request (YE) Error code display and reset processing U0\ G19 -[BCD K3Y20 Error code output in BCD -[SET Y0F Turns on Error clear request (YF) Y0F X0F Turns off Error clear request (YF) -[RST Y0F END

6.2.2 Programming example without using the utility package

6.3 For Use on Remote I/O Network

 (1) System configuration Remote master station (Network No.1) Power a a a a a a a a a a a a a a a a a a a										
Remote master station (Network No.1) Remote I/O station (Station No.1) Power Q </td <td colspan="10">(1) System configuration</td>	(1) System configuration									
Power supply module Q P Q T Q T Q T Q T Q T </td <td></td>										
 X/Y100 X/Y110 X/Y120 to to to X/Y10F X/Y11F X/Y12F Perform the following intelligent function module switch settings in advance. Switch 1 0030H (CH1: 4 to 20mA, CH2: 0 to 5V) Switch 2 Empty Switch 3 0000H (CH1, CH2: Clear) Switch 4 0000H (Normal mode (D/A conversion processing)) Switch 5 0000H (0: Fixed) (2) Program conditions The digital values of CH1 and CH2 of the Q62DA-FG are written and their out monitor values are read to the programmable controller CPU of the remote master station. If a digital value write error occurs, the corresponding error code is displayed in 										
 to to to to X/Y10FX/Y11FX/Y12F Perform the following intelligent function module switch settings in advance. Switch 1 0030H (CH1: 4 to 20mA, CH2: 0 to 5V) Switch 2 Empty Switch 3 0000H (CH1, CH2: Clear) Switch 4 0000H (Normal mode (D/A conversion processing)) Switch 5 0000H (0: Fixed) (2) Program conditions The digital values of CH1 and CH2 of the Q62DA-FG are written and their out monitor values are read to the programmable controller CPU of the remote master station. If a digital value write error occurs, the corresponding error code is displayed in 										
 Perform the following intelligent function module switch settings in advance. Switch 1 0030H (CH1: 4 to 20mA, CH2: 0 to 5V) Switch 2 Empty Switch 3 0000H (CH1, CH2: Clear) Switch 4 0000H (Normal mode (D/A conversion processing)) Switch 5 0000H (0: Fixed) (2) Program conditions The digital values of CH1 and CH2 of the Q62DA-FG are written and their out monitor values are read to the programmable controller CPU of the remote master station. If a digital value write error occurs, the corresponding error code is displayed in										
 Program conditions The digital values of CH1 and CH2 of the Q62DA-FG are written and their out monitor values are read to the programmable controller CPU of the remote master station. If a digital value write error occurs, the corresponding error code is displayed in 										
 2) Program conditions The digital values of CH1 and CH2 of the Q62DA-FG are written and their output monitor values are read to the programmable controller CPU of the remote master station. If a digital value write error occurs, the corresponding error code is displayed in BCD. (a) Initial settings • Analog output enabled channel • CH1 CH2										
 Analog output enabled channel										
output lower limit value: 300	00)									
 (b) Devices used by user Initial setting request signal										

6.3.1 Program example using the utility package

- (1) **Operating GX Developer**
 - Network parameter setting (a)
 - Network type
- : MNET/H (remote master)
- Head I/O No.
- Network No.
- : 0000н
- :1
- Total number of (slave) stations : 1
- Mode
- Network range assignment

			M station	-> R static	in		M station <- R station							
StationNo.	Y				Y			X			X			
	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 stati	on -> R sta	ation	M stati	on <- Rista	ation	M stati	on -> R sta	ation	M stati	M station <- R station			
StationNo.	В				В			W		W				
	Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End		
. 1							256	0000	OOFF	256	0100	01FF	-	

:

:

: Online

· Refresh parameters

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

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).

(2)

(a) Initia CH1, 0 CH1 F CH1 II CH1 II CH1 II CH2 V CH2 V CH2 V	I setting (Refer to CH2 D/A conversion Rate control enable increase digital lim Decrease digital lim Disconnection deter Varning output set Varning output upp Varning output low	Section on ena e/disab it value nit value ection s tting per limi ver limi	n 5.4) ble/disable le setting e setting it value t value	setting	"Enable "Enable "100" "30" "Enable "Enable "10000" "3000"
Initial se	tting				_ 🗆 🗙
- Modu Modu Modu	le inforamation le type: D/A Conversion Module le model name: Q62DA-FG		Start I/O No.:	0020	
	Setting item		ing value		
CH1 D	/A conversion enable/disable setting		Enable		•
CH2 D	/A conversion enable/disable setting	<u>`</u>	•		
CH1 R	ate control enable/disable setting		Enable		-
CH2 R	ate control enable/disable setting		Disable		-
CH1 In	crease digital limit value				100
CH1 D	ecrease digital limit value				30
CH2 In	crease digital limit value			32000 🚽	
		Details Select input Enable Disable	ange		
Mak	e text file	End set	tup		Cancel
(b) Auto	refresh setting (R CH2 Digital value	efer to	Section 5.5	5)	W11 W

uto refresh setting					_	
Module information						
Module type: D/A Conversion Module	S	itart I/O No.:	0020			
Module model name: Q62DA-FG						
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	
CH1 Set value check code	1	1		->		
CH2 Set value check code	1	1		->		
CH1 Output monitor value	1	1		->	W113	
CH2 Output monitor value	1	1		->	W114	
Warning output flag	1	1		->	W116	-
Disconnection detection flag	1	1		->	W115	-
Error code	1	1		->	W117	- -
Make text file	End set	qu			Cancel	

(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.





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 typeHead I/O No.
- : MNET/H (remote master) : 0000н
- Network No.
- : 1 : 1

: Online

- Total number of (slave) stations
- Mode

•	Network range assignment :																
[M station -> R station							M station <- R station								
	StationNo.		Y			Y			Х			X					
		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	•			
														_			

:

Refresh parameters

	Link side									PLC side		٠
	Dev. r	name	Points	Start	End		Dev. i	name	Points	Start	End	—
Transfer SB	SB		512	0000	01FF	+	SB		512	0000	01FF	
Transfer SW	S₩		512	0000	01FF	₩.	S₩		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	₩.	X	-	512	0000	01FF	
Transfer4	LY	-	512	0000	01FF	₩.	Y	-	512	0000	01FF	
Transfer5		-				₩.		-				
Transfer6		-				₩.		-				-

(2) Programming example







7 ONLINE MODULE CHANGE

When performing Online module change, carefully read the following.QCPU User's Manual (Hardware Design, Maintenance and Inspection)This chapter describes the specifications of Online module change.

- (1) Online module change is operated by 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 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 3.4.22, 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 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, or the terminal block to/from the module 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 Online module change. When using the dedicated instruction to execute save/restoration, therefore, execute save/restoration in the other system.^{*1}

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

* 1 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, Q62DA-FG, GX Developer and base unit given below are needed to perform Online module change.

(1) CPU

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

- (2) MELSECNET/H remote I/O module The module of function version D or later is necessary.
- (3) Q62DA-FG

The module of function version C or later is necessary.

(4) GX Developer

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

- (5) Base unit
 - 1) When the slim type main base unit (Q3_SB) is used, 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.

7.2 Online Module Change Operations

C	CPU operation	on O:Exe	cuted ×:	Not execute	d	
X/Y refresh	FROM/TO instruction * 1	Dedicated instruction	Device test	GX Con Initial setting parameter	figurator Monitor/ test	(User operation) (Intelligent function module operation)
0	0	0	0	×	0	 (1) Conversion disable Turn off all Y signals that were turned on by a sequence program. '2 (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 "5
0	×	×	×	0	×	After mounting the module, click the [Execution] button of GX Developer.
0	×	×	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
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. (5) Resumption of 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 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.

*5 If a module is replaced with the one that does not support the extended mode range with either of 4 to 20mA (Extended mode) or 1 to 5V (Extended mode) output range set an intelligent function module switch error occurs. In that case, the extended mode range cannot be used.

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	
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

ľ

- (a) Take the following steps to disable the conversion:
 - 1) Set D/A conversion enable/disable setting (buffer memory address 0: Un\G0) to All channel conversion disable (3_H) .
 - 2) Turn Operating condition setting request (Y9) from off to on to stop the conversion.
 - 3) Operating condition setting completed flag (X9) turns off from on.
 - 4) Check that the conversion is stopped by seeing the actual analog output value.
 - 5) Turn Operating condition setting request (Y9) from on to off.

Deuties hash		V						
- Bit device								
Device		Close						
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-							
1.2	<u> </u>							
FORCE ON FORCE OF	F Toggle force	Hide history						
-Word device/buffer memory								
C Device		T						
Buffer memory Module start I/0 (Hex)								
Address 0 V DEC V								
Setting value								
3 HE>	< 🔽 16 bit integer	▼ Set						
Program-								
Label reference program	MAIN	-						
Execution history								
Device	Setting condition	Find						
Y9	Force ON	Find nout						
Y9	S(H) Force OFF	- Ind 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.

<u>Sys</u> tem Monito	1										_	_	_	_		×
- Installed status -														л — В	Base	
	0	1	2	3	4	5	6	7				Т		Ba	ase Module	
MasterPLC->	-	-	-	-	-	-	-	-						II L		base
Q12PHCPU	Q62D A-FG 16pt	Unmo unti ng	Unmo unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unmo unti ng	Unmo unti ng							C Expanded C	Insion 1 2 Insion 3 Insion 4 Insion 5 Insion 6
- Parameter statu:	s														□□○ Expa base	nsion 7
I/O Address	0	10	20	30	40	50	60	70				Т		C	System monito	or
	0	1	2	3	4	5	6	7				Ť		e	🕅 Online module	change
Q12PHCPU	Inte llig ent l6pt	None 16pt							Diagnos Module's D Information	tics etailed						
															Base Inform	nation
- Status Module syste	em erro	or 🔲 M	/lodule	error	Шм	odule v	varning	I Ma	dule c	hange	ן	Sta	rt mor	nitor	Product In	f. List
												Sto	p mor	nitor	Clos	в

(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 Q62DA-FG
Module control restart	Status Change module selection completed
- Status/Guidance	
Please turn off Y signal of the ch intelligent function module.	nanged 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.

MELSOF	T series GX Developer 🛛 🕅
٩	The target module didn't respond. The task is advanced to the installation confirmation.
	<u> </u>

(c) After confirming that the "RUN" LED of the module has turned off, remove the terminal block 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 terminal block.
- (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 Module name Q62DA-FG 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	×						
C Operation-	Target module						
Module change execution	I/O address 000H						
Installation confirmation	Module name Q62DA-FG						
Module control restart	Status Change module installation completion						
- Status/Guidance							
Status/Guidance The controls such as I/O, FROM/TO instruction executions, and automatic refresh for the installed module are restarted. Please confirm the parameter setting and wiring, etc. and execute.							
Execution	Cancel						

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

MELSOF	T series GX Developer 💌	
i)	The online module change mode is stopped. Even if the stop is executed, the online module change mode on the PLC side is not cancelled. Please execute the online module change and restart the control of the module again.	

installed status-									 			n - B	ase
	0	1	2	3	4	5	6	7				Ba	se Module
MasterPLC->	-	-	-	-	-	-	-	-					🛛 💽 Main base
Q12PHCPU	16pt	Unmo unti ng					C Expansion base 1 Expansion base 2 Expansion base 3 Expansion base 4 C Expansion base 5 C Expansion base 5 C Expansion base 6						
													C Expansion base 7
Parameter statu									 				o do
I wranneser essen	x											M	
I/O Address	* : 0	10	20	30	40	50	60	70		1		16	System monitor
I/O Address	s 0	10	20	30	40	50	60	70					System monitor Online module chan
I/O Address Q12PHCPU	S 0 Inte llig ent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				0	System monitor Online module chan Diagnostics Module's Detailed Information
[/O Address Q12PHCPU	0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt					System monitor Online module chan Diagnostics Module's Detailed Information Base Information.
C/O Address Q12PHCPU Status	0 0 Inte 1lig ent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt			itart mo	nitor	System monitor Online module chan Diagnostics Module's Detaileo Information Base Information. Product Inf. List.

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

- (d) Set digital values to CH Digital value (buffer memory address 1, 2: Un\G1, Un\G2) and turn Operating condition setting request (Y9) from off to on. Turn on CH Output enable/disable flag (Y1, Y2) 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 display the "Online module change" screen again, click the [Execution] button to resume control. Module ready (X0) turns on.

Online module change	×								
Operation	Target module								
Module change execution	I/O address 000H Module name Q62DA-FG								
Installation confirmation									
Module control restart	Change module installation completion								
- Status/Guidance									
The controls such as I/O, FROM and automatic refresh for the ins	M/TO instruction executions, stalled module are restarted.								
Please confirm the parameter se	atting and wiring, etc. and execute.								
Execution	Cancel								

(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) Take the following steps to disable the conversion:
 - Set D/A conversion enable/disable setting (buffer memory address 0: Un\G0) to All channel conversion disable (3_H).
 - 2) Turn Operating condition setting request (Y9) from off to on to stop the conversion.
 - 3) Operating condition setting completed flag (X9) turns off from on.
 - 4) Check that the conversion is stopped by seeing the actual analog output value.

	ig contaition.	
evice test Bit device		×
Device		Close
Y9	~	
FORCE ON FORCE OF	F Toggle force	Hide history
Word device/buffer memory-		_
C Device		Ŧ
Buffer memory Module start	1/0 • (Hex)	
Address	0 V DEC	-
Setting value	K 💌 16 bit integer	▼ Set
Program Label reference program	MAIN	*
Execution history		
Device	Setting condition	Find
Y9 Module start:0 Address:0(D) Y9	Force ON 3(H) Force OFF	Find next Re-setting
		Clear

5) Turn Operating condition setting request (Y9) from on to off.

(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.

	0	1	2	3	4	5	6	7		Т	Bas	e Module
asterPLC->	-	-	-	-	-	-	-	-		 +] 🗌 💽 Main base
Q12РНСРU	Q62D A-FG 16pt	Unmo unti ng	Unno unti ng	Unno unti ng	Unmo unti ng	Unno unti ng	Unmo unti ng	Unno unti ng				C Expansion base 1 C Expansion base 2 C Expansion base 3 C Expansion base 4 C Expansion base 5 C Expansion base 5 C Expansion base 6 C Expansion base 7 C Expansion C Expansi
	1											II IC Emportation
oarameter statu	s	10	20	30	40	50	60	70				ode
^p arameter statu 70 Address	s	10	20	30	40	50	60	70				ode System monitor Online module cha
⁹ arameter statu /O Address Q12PHCPU	0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				base 7 base 7 ode System monitor Online module cha Diagnostics Module's Detaile Information
'arameter statu /0 Address Q12PHCPU	0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				de System monitor Online module cha Diagnostics Module's Detaile Information Base Information

(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 Q62DA-FG
Module control restart	Status Change module selection completed
- Status/Guidance	
Please turn off Y signal of the cł intelligent function module.	nanged 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.

MELSOF	T series GX Developer 🛛 🔀
٩	The target module didn't respond. The task is advanced to the installation confirmation.
	<u> </u>

(c) After confirming that the "RUN" LED of the module has turned off, remove the terminal block 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 terminal block.
- (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
C Operation	Target module	
Module change execution	I/O address 000H Module name Q62DA-FG	
Module control restart	Changing module	
- Status/Guidance	·	
The module can be exchanged. Please execute 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	×
_ Operation	Target module
Module change execution	1/O address 000H
Installation confirmation	Module name Q62DA-FG
Module control restart	Status Change module installation completion
Status/Guidance	,
The controls such as I/O, FRO and automatic refresh for the ins Please confirm the parameter se	4/TO instruction executions, stalled module are restarted. Itting and wiring, etc. and execute.
[Execution]	Cancel

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



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

System Monito	r													×
- Installed status-														se
	0	1	2	з	4	5	6	7					Base	e Module
MasterPLC->	-	-	-	-	-	-	-	-					1 []]	Main base
Q12PHCPU	l6pt	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unmo unti ng						C Expansion base 1 C Expansion base 2 C Expansion base 3 C Expansion base 4 C Expansion base 5 base 5 C Expansion base 6
														C Expansion
														Dase /
– Parameter statu:	s													de
I/O Address	0	10	20	30	40	50	60	70					<u> </u>	System monitor
	0	1	2	з	4	5	6	7						Unline module change
Q12PHCPU	Inte llig ent l6pt	None 16pt						Diagnostics Module's Detailed Information						
]	Base Information
- Status-		v IIII k	4odule	error	Пм	odule v	aming	M	odula c	hande		Start mo	nitor	Product Inf. List
module syste	Sin Circ	" "	nodule	onor			van in ig			ananye	9	Stop mo	nitor	Close

(d) Enable conversion using D/A conversion enable/disable setting (buffer memory address 0: Un\G0). Set a digital value to CH Digital value (buffer memory address 1, 2: Un\G1, Un\G2) and turn Operating condition setting request (Y9) from off to on. Turn on CH Output enable/disable flag (Y1, Y2) of the channel to used to check whether the conversion has been succeeded.

(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.
 - Normal system configuration The sequence program should perform initialization on the leading edge of Module ready (X0) of the Q62DA-FG. 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 display the "Online module change" screen again, click the [Execution] button to resume control. Module ready (X0) turns on.

Online module change	×
_ Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q62DA-FG
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/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.
Execution	Cancel

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



- 7.3.3 When user range setting is used and initial setting was made with GX Configurator-DA (other system is available)
 - (1) Conversion disable
 - (a) Take the following steps to disable the conversion:
 - Set D/A conversion enable/disable setting (buffer memory address 0: Un\G0) to All channel conversion disable (3_H).
 - 2) Turn Operating condition setting request (Y9) from off to on to stop the conversion.
 - 3) Operating condition setting completed flag (X9) turns off from on.
 - 4) Check that the conversion is stopped by seeing the actual analog output value.
 - 5) Turn Operating condition setting request (Y9) from on to off.

Device test	×
Bit device	1
Device	Close
Y9 🔽	
FORCE ON FORCE OFF Toggle force	Hide history
- Word device/buffer memory]
C Device	~
Buffer memory Module start I/0 (Hex)	_
Address 0 V DEC	-
Setting value	
3 HEX ▼ 16 bit integer	▼ Set
Program-	
Label reference program MAIN	-
Execution history	
Device Setting condition	Find
Y9 Force ON	
Module start: 0 Address: 0(D) 3(H)	Find next
13 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.

	0	1	2	3	4	5	6	7		Т	Bas	e Module
asterPLC->	-	-	-	-	-	-	-	-		 +] 🗌 💽 Main base
Q12РНСРU	Q62D A-FG 16pt	Unmo unti ng	Unno unti ng	Unno unti ng	Unmo unti ng	Unno unti ng	Unmo unti ng	Unno unti ng				C Expansion base 1 C Expansion base 2 C Expansion base 3 C Expansion base 4 C Expansion base 5 C Expansion base 5 C Expansion base 6 C Expansion base 7 C Expansion C Expansi
	1											II IC Emportation
oarameter statu	s	10	20	30	40	50	60	70				ode
^p arameter statu 70 Address	s	10	20	30	40	50	60	70				ode System monitor Online module cha
⁹ arameter statu /O Address Q12PHCPU	0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				base 7 base 7 ode System monitor Online module cha Diagnostics Module's Detaile Information
'arameter statu /0 Address Q12PHCPU	0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				de System monitor Online module cha Diagnostics Module's Detaile Information Base Information

nline module change	×
- Operation	Target module
 Module change execution 	I/O address 000H
Installation confirmation	Module name Q52DA-FG
Module control restart	Status Change module selection completed
Please turn off Y signal of the ch intelligent function module.	langed module when you change the
Execution	Cancel

(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 7.3.4 (2)(c) and later.

MELSOF	T series GX Developer 🛛 🔀
٩	The target module didn't respond. The task is advanced to the installation confirmation.
	()

(c) After confirming that the "RUN" LED of the module has turned off, remove the terminal block 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 terminal block.

(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 Module confirmation Module control restart	I/O address 000H Module name Q62DA-FG Status Changing module
Status/Guidance The module can be exchanged. Please execute 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 Q62DA-FG							
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/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.							
Execution	Cancel							

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

MELSOF	series GX Developer
į	The online module change mode is stopped. Even if the stop is executed, the online module change mode on the PLC side is not cancelled. Please execute the online module change and restart the control of the module again.
	OK]

System Monito	ystem Monitor												
Installed status-									 				ase
	0	1	2	з	4	5	6	7				Ва	se Module
MasterPLC->	-	-	-	-	-	-	-	-				L	• Main base
Q12PHCPU	16pt	Unmo unti ng	Unno unti ng	Unno unti ng	Unmo unti ng	Unmo unti ng	Unmo unti ng	Unmo unti ng					C Expansion Base 1 Expansion Base 2 Expansion base 2 C Expansion base 3 C Expansion base 4 C Expansion base 4 C Expansion base 5 C Expansion base 6 Expansion base 6 Expansion
												C	C Expansion base 7
Parameter statu	·											M	lode
I/O Address	0	10	20	30	40	50	60	70		1		1 o	System monitor
	0	1	2	3	4	5	6	7		<u> </u>	+	i 🖸 🖸	Online module change
Q12PHCPU	Inte llig ent l6pt	None 16pt					Diagnostics Module's Detailed Information						
												1	Base Information
- Status-	Status Start monitor Product Inf. List												
Module syst	Module system error Module error Module warning Module change Stop monitor Close												

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

- (d) Set digital values to CH Digital value (buffer memory address 1, 2: Un\G1, Un\G2) and turn Operating condition setting request (Y9) from off to on. Turn on CH Output enable/disable flag (Y1, Y2) of the channel to use 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 display the "Online module change" screen again, click the [Execution] button to resume control. Module ready (X0) turns on.

Online module change	×
_ Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q62DA-FG
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	4/TD instruction executions, talled module are restarted. Itting 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 disabled
 - (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 the [Execute test] button.

Dperating condition setting		
Module information		
Module type: D/A Conversion Module	Start I/O No.: 00	00
Module model name: Q62DA-FG		
Setting item	Current value	Setting value
CH1 D/A conversion enable/disable setting	Enable	Disable 🔻
CH2 D/A conversion enable/disable setting	Enable	Disable 🔽
CH1 Rate control enable/disable setting	Disable	Disable 🔻
CH2 Rate control enable/disable setting	Disable	Disable 🔻
CH1 Increase digital limit value	100	32000
CH1 Decrease digital limit value	30	32000
CH2 Increase digital limit value	32000	32000
CH2 Decrease digital limit value	32000	32000
CH1 Disconnection detection setting	Enable	Disable 💌
CH2 Disconnection detection setting	Disable	Disable 💌
CH1 Warning output setting	Disable	Disable 💌 👻
Flash ROM setting	Details	
Write to File save Current value module	Select input	Monitoring
Read from File read Make text file	Enable Disable	
Start monitor Stop monitor	Execute test	Close

(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.

perating condition setting								
Module information Module type: D/A Conversion Module Module model name: Q62DA-FG	Start I/O No.: OC	00						
Setting item	Current value	Setting value						
CH2 Disconnection detection setting	Disable	Disable 💌						
CH1 Warning output setting	Enable	Disable 🔻						
CH2 Warning output setting	Disable	Disable 🔻						
Please set the Warning output setting value so that it becomes as below. Iower limit value cupper limit value" CH1 Warning output upper limit value CH1 Warning output lower limit value	000000000000000000000000000000000000000	0						
CH2 warning output upper limit value	10000	0						
Operating condition setting request	No request	Setting request						
Flash ROM setting Current value Write to module File save Read from module File read	Details Select input Setting range No request Setting request	Monitoring						
Start monitor Stop monitor	Execute 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.)
 - 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 7.4 for the range reference table.
 - If the values are proper, record the offset/gain values of 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.

System Monito	r												×
-Installed status-													ase
	0	1	2	3	4	5	6	7				Ba	se Module
MasterPLC->	-	-	-	-	-	-	-	-					Main base
Q12PHCPU	Q62D A-FG 16pt	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unmo unti ng	Unmo unti ng					C Expansion base 1 C Expansion base 2 C Expansion base 3 C Expansion base 4 C Expansion base 4 C Expansion base 5 D C Expansion base 6
													DC Expansion base 7
– Parameter statu:	·												ode
I/O Address	10	10	20	30	40	50	60	70				10	System monitor
	0	1	2	3	4	5	6	7		<u> </u>	<u> </u>	i 🖸	Online module change
Q12РНСРU	Inte 11ig ent 16pt	None 16pt					Diagnostics Module's Detailed Information						
]	Base Information
- Status-	Status Start monitor Product Inf. List									Product Inf. List			
module syst	Module system endition module endition module warning module change Stop monitor Close												

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

Online module change	×
- Operation	Target module
Module change execution Installation confirmation Module control restart	I/D address 000H Module name Q62DA-FG Status Change module selection completed
Please turn off Y signal of the ch intelligent function module.	nanged 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 operations described in (2)(c) in this section and later.

MELSOF	T series GX Developer 🛛 🔀
٩	The target module didn't respond. The task is advanced to the installation confirmation.
	[0K]

(c) After confirming that the "RUN" LED of the module has turned off, remove the terminal block 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 terminal block.
- (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	٦
Module change execution	I/O address 000H Module name Q62DA-FG	
Module control restart	Status Changing module	
Status/Guidance The module can be exchanged. Please execute after installing a	I new module.	
Execution	Cancel	

(4) Operation check

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

Online module change	×
- Operation	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q62DA-FG
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	I/TO instruction executions, talled module are restarted. tting and wiring, etc. and execute.
[Execution]	Cancel

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

MELSOFT	series GX Developer
٩	The online module change mode is stopped. Even if the stop is executed, the online module change mode on the PLC side is not cancelled. Please execute the online module change and restart the control of the module again.
	0K

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

System Monitor														
Installed status														
	0	1	2	3	4	5	6	7					Base	Module
MasterPLC->	-	-	-	-	-	-	-	-						Main base
Q12PHCPU	16pt	Unmo unti ng						C Expansion base 1 C Expansion base 2 C Expansion base 3 C Expansion base 4 C Expansion base 5 C Expansion base 6						
- Parameter statu	1													C Expansion base 7
I/O Address	= = 0	10	20	30	40	50	60	70					10	System monitor
	0	1	2	3	4	5	6	7			<u> </u>	+	je	Online module change
Q12PHCPU	Inte llig ent l6pt	None 16pt						Diagnostics Module's Detailed Information						
													1	Base Information
Status Start mor											nitor	Product Inf. List		
Module system error module error Module warning Module change											nitor	Close		

- (d) On the pass data screen of GX Configurator-DA, set the prerecorded values and perform User range writing request. (Refer to Section 5.6.3.)
- (e) On the Operating condition setting screen of GX Configurator-DA, set "Enable" in the Setting value field of used channels CH D/A conversion enable/disable setting.
(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: Q62DA-FG	Start I/O No.: 0000	
Setting item	Current value	Setting value
CH1 Digital value CH2 Digital value CH2 Digital value CH2 Set value check code CH2 Set value check code CH2 Output monitor value CH2 Output monitor value CH2 Dutput monitor value CH2 Disconnection detection flag CH2 Disconnection detection flag CH1 Warning output flag upper limit value CH1 Warning output flag lower limit value	00000 00000 00000 00000 00000 0000 0000 00	
LH2 Warning output has upper limit value Flash ROM setting Write to module File save Bead from module File read Make text file Start monitor	Details Details Setting range 0 - 12000	Monitoring

- (g) Turn on CH Output enable/disable flag (Y1, Y2) 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 display the "Online module change" screen again, click the [Execution] button to resume control. Module ready (X0) turns on.

Online module change	×
Operation	Target module
Module change execution Installation confirmation	I/O address 000H Module name Q62DA-FG
Module control restart	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.



- 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) Take the following steps to disable the conversion:
 - Set D/A conversion enable/disable setting (buffer memory address 0: Un\G0) to All channel conversion disable (3_H).
 - 2) Turn Operating condition setting request (Y9) from off to on to stop the conversion.
 - 3) Operating condition setting completed flag (X9) turns off from on.
 - 4) Check that the conversion is stopped by seeing the actual analog output value.
 - 5) Turn Operating condition setting request (Y9) from on to off.

, ,	0	0
Device test		×
Bit device		1
Device		Close
Y9	▼	
		Hide history
FORCE ON FORCE OF	F Toggle force	
-Word device/buffer memory-		
C Device		~
G D. K.		
 Burrer memory Module start 		
Address	0 🔽 DEC	-
Setting value		
3 HE>	K 💌 16 bit integer	✓ Set
- Program		
Label reference program	JAIN	-
Laber reference program	4AIN	<u> </u>
Execution history		
Device	Setting condition	Eind
Y9	Force ON	1 11 13
Module start:0 Address:0(D)	3(H)	Find next
N Y9	Force OFF	Be-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.

		1	2	3	4	5	6	7					Bas	e Module
esterDLC->	-	-	-	-	-	-	-	-		<u> </u>	+	_		🗌 💿 Main ba:
Q12PHCPU	Q62D A-FG 16pt	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unmo unti ng	Unno unti ng						C Expansic base 1 C Expansic base 2 C Expansic base 3 C Expansic base 4 C Expansic base 5 C Expansic base 5 C Expansic
													∥∟	LC base 7
^o arameter statu	s												<u>∟</u> 1= Mo	ode
9 arameter statu 2/0 Address	s	10	20	30	40	50	60	70						ode System monitor
^p arameter statu :/0 Address	s	10	20	30	40	50	60	70						ode System monitor Online module ch
^D arameter statu :/O Address Q12PHCPU	S 0 Inte 1lig ent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt						ode System monitor Online module ch Diagnostics. Module's Detai Information
^a rameter statu /0 Address Q12PHCPU	0 0 Inte 1lig ent 16pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt						ode System monitor Online module ch Diagnostics. Module's Detai Information Base Informatio

Inline module change	X
Operation-	Target module
Module change execution	I/O address 000H
Installation confirmation	Module name Q62DA-FG
Module control restart	Status Change module selection completed
Please turn off Y signal of the ch intelligent function module.	nanged module when you change the
[Execution]	Cancel

(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.

MELSOF	T series GX Developer 🛛 🕅
(j)	The target module didn't respond. The task is advanced to the installation confirmation.
	[]

(c) After confirming that the "RUN" LED of the module has turned off, remove the terminal block 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 terminal block.

(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 Installation confirmation Module control restart	I/O address 000H Module name Q62DA-FG Status Changing module
⊂ Status/Guidance — The module can be exchanged. Please execute 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 Q62DA-FG
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. titing and wiring, etc. and execute.
Execution	Cancel

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



	0	1	2	з	4	5	6	7			Ba	se Module
lasterPLC->		-	-	-	-	-	-	-			L	🛛 🔲 🖲 Main base
Q12PHCPU	l6pt	Unmo unti ng	Unmo unti ng	Unmo unti ng	Unno unti ng	Unno unti ng	Unno unti ng	Unno unti ng				Expansion base 1 Expansion base 2 Expansion base 3 Expansion base 4 Expansion base 4 Expansion base 5 Expansion
		1	·							1		D926 D
											Í∥⊏	Dase o Expansion base 7
⁹ arameter statu	s											Dase o Expansion base 7
arameter statu /0 Address	s	10	20	30	40	50	60	70				Dase o Expansion base 7 lode
'arameter statu /0 Address	s	10	20	30	40	50	60	70				C Expansion Expansion base 7
Parameter statu /O Address Q12PHCPU	s 0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				Constraints of the second seco
arameter statu /0 Address Q12PHCPU	0 Inte llig ent l6pt	10 1 None 16pt	20 2 None 16pt	30 3 None 16pt	40 4 None 16pt	50 5 None 16pt	60 6 None 16pt	70 7 None 16pt				C Expansion

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

(d) Enable conversion using D/A conversion enable/disable setting (buffer memory address 0: Un\G0). Set digital values to CH Digital value (buffer memory address 1, 2: Un\G1, Un\G2) and turn Operating condition setting request (Y9) from off to on. Turn on CH Output enable/disable flag (Y1, Y2) of the channel to use to check whether the conversion has been succeeded.

(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.
 - Normal system configuration The sequence program should perform initialization on the leading edge of Module ready (X0) of the Q62DA-FG. 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.)
 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 display the "Online module change" screen again, click the [Execution] button to resume control. Module ready (X0) turns on.

Online module change	×
Operation	Target module
Module change execution Installation confirmation Module control restart	I/O address 000H Module name Q62DA-FG Status Change module installation completion
Status/Guidance The controls such as I/O, FRON and automatic refresh for the ins Please confirm the parameter se	I/TO instruction executions, talled module are restarted. Iting and wiring, etc. and execute.
Execution	Cancel

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



- 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) Take the following steps to disable the conversion:
 - Set D/A conversion enable/disable setting (buffer memory address 0: Un\G0) to All channel conversion disable (3_H).
 - 2) Turn Operating condition setting request (Y9) from off to on to stop the conversion.
 - 3) Operating condition setting completed flag (X9) turns off from on.
 - 4) Check that the conversion is stopped by seeing the actual analog output value.

Device test	×
Bit device	
Device	Close
Y9 🔽	
FORCE ON FORCE OFF Toggle force	Hide history
Word device/buffer memory	
C Device	T
Buffer memory Module start I/D Image: General Address Image: G	-
Setting value 3 HEX I6 bit integer	▼ Set
Program Label reference program MAIN	-
Execution history	
Device Setting condition Y9 Force DN Module start:0 Address:0(D) 3(H) Y9 Force OFF	Find next Re-setting Clear

5) Turn Operating condition setting request (Y9) from on to off.

- (b) If the saved buffer memory contents are not yet prerecorded, record them in the following procedure.
 - Perform Pass data classification setting (buffer memory address 200: Un\G200).
 - 2) Turn Operating condition setting request (Y9) from off to on.
 - 3) Compare the offset/gain values in CH Industrial shipment settings offset/gain value and CH User range settings offset/gain value (buffer memory address 202 to 217: Un\G202 to Un\G217) with the range reference table. Refer to Section 7.4 for the range reference table.
 - If the values are proper, record the offset/gain values of 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 Mode switching setting (buffer memory address 158, 159: Un\G158, Un\G159) and turning Operating 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.

(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.



(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 Q62DA-FG
Module control restart	Status Change module selection completed
Status/Guidance Please turn off Y signal of the ch intelligent function module.	nanged 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 operations described (2) (c) in this section and later.

MELSOFT series GX Developer					
٩	The target module didn't respond. The task is advanced to the installation confirmation.				

(c) After confirming that the "RUN" LED of the module has turned off, remove the terminal block 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 terminal block.
- (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 Q62DA-FG
Module control restart	Status Changing module
The module can be exchanged.	
Please execute 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	×			
- Operation-	Target module			
Module change execution	I/O address 000H			
Installation confirmation	Module name Q62DA-FG			
Module control restart	Status Change module installation completion			
Status/Guidance				
The controls such as I/D, FROM/TO instruction executions, and automatic refresh for the installed module are restarted. Please confirm the parameter setting and wiring, etc. and execute.				
Execution	Cancel			

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

MELSOFT	series GX Developer 🛛 🛛
٩	The online module change mode is stopped. Even if the stop is executed, the online module change mode on the PLC side is not cancelled. Please execute the online module change and restart the control of the module again.
	OK]

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

System M	lonito	ſ													×
-Installed :	status –														Base
		0	1	2	3	4	5	6	7					7 ^B .	ase Module
Masterl	PLC-≻	-	-	-	-	-	-	-	-] L	Main base
Q12PH	CPU	l6pt	Unno unti ng						C Expansion base 1 Expansion base 2 Expansion base 3 C Expansion base 4 C Expansion base 4 C Expansion base 5 C Expansion base 6						
- Paramete	a status	,													C Expansion base 7
I/O Add	dress	0	10	20	30	40	50	60	70					٦lld	System monitor
		0	1	2	3	4	5	6	7					10	Online module change
Q12PH	CPU	Inte 11ig ent 16pt	None 16pt						Diagnostics Module's Detailed Information						
															Base Information
- Status	ile svste	em erro	or 🔲 N	1odule	error	Пм	odule v	varning	M	odule c	hange] ۲	Start m	onitor	Product Inf. List
Stop monitor															

- (d) Choose [Online] [Debug] [Device test] on GX Developer and set the values prerecorded in Section (2) to the buffer memory.
- (e) Turn User range writing request (YA) from off to on to restore User set values to the module.
 After confirming that Offset/gain setting mode flag (XA) is on, turn off User range writing request (YA).

- (f) Set the used channels to "D/A conversion enabled" in D/A conversion enable/disable setting (buffer memory address 0: Un\G0). Set digital values to CH Digital value (buffer memory addresses 1, 2: Un\G1, Un\G2) and turn Operating condition setting request (Y9) from off to on. Turn on the output enable/disable flag (Y1, Y2) of the used channel to check whether proper conversion has been made. Enable conversion using D/A conversion enable/disable setting (buffer memory address 0: Un\G0). Set a digital value to CH Digital value (buffer memory address 1, 2: Un\G1, Un\G2) and turn Operating condition setting request (Y9) from off to on. Turn on CH Output enable/disable flag (Y1, Y2) of the channel to use to check whether the conversion has been succeeded. (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.
 - Normal system configuration The sequence program should perform initialization on the leading edge of Module ready (X0) of the Q62DA-FG. 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 display the "Online module change" screen again, click the [Execution] button to resume control. Module ready (X0) turns on.



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

MELSOFT series GX Developer 🛛 🔀					
(j)	Online module change completed.				
	(OK)				

7.4 Range Reference Table

The range reference tables are given below.

 Reference table for offset/gain values in CH□ Industrial shipment settings offset/gain value (buffer memory address 202 to 209: Un\G202 to Un\G209)

The reference values change depending on the setting of Pass data classification setting (buffer memory address 200: Un\G200).

Address CH1	(Decimal) CH2	Description	Pass data classification setting	Reference value (Hexadecimal)
	0		User range setting 1	Approx. 7FC0н
202	204	Industrial snipment settings offset	User range setting 2	Approx. 7FC0н
			User range setting 3	Approx. 14EAн
		Industrial chinmont acttings gain value	User range setting 1	Approx. F310н
203	205	(used for D/A)	User range setting 2	Approx. E830н
			User range setting 3	Арргох. 6895 н
			User range setting 1	Арргох. 0005 н
206 208		industrial shipment settings onset	User range setting 2	Арргох. 0920 н
			User range setting 3	Арргох. 1060н
		Industrial shipment settings gain value (used for monitor output)	User range setting 1	Арргох. 6665 н
207	209		User range setting 2	Approx. 519Вн
			User range setting 3	Approx. 2D50н

(2) Reference table for CH□ User range settings offset/gain value (buffer memory address 210 to 217: Un\G210 to Un\G217)

- Example: When the offset value of channel 1 is 4mA and its gain value is 18mA in user range settings 1, the user range settings offset/gain values are as indicated below.
- CH1 User range settings offset value (used for D/A) : Approx. 96D0H (Buffer memory address 210: Un\G210)
- CH1 User range settings gain value (used for D/A) : Approx. E788H (Buffer memory address 211: Un\G211)
- CH1 User range settings offset value (used for monitor output) : Approx. 147EH (Buffer memory address 214: Un\G214)
- CH1 User range settings gain value (used for monitor output) : Approx. 5C29_H (Buffer memory address 215: Un\G215)

Offset/gain value		Reference value for D/A conversion (Hexadecimal)	Reference value for monitor output (Hexadecimal)
Lloor rongo	0mA	Арргох. 7FC0н	Approx. 0005н
	4mA	Approx. 96D0н	Approx. 147Ен
setting i	20mA	Approx. F310н	Арргох. 6665 н
Lloor rongo	-10V	Арргох. 6870 н	Approx. C0A5н
User range	0V	Approx. 7FC0н	Арргох. 0920 н
setting 2	10V	Approx. E830н	Approx. 519Вн
User range	1V	Approx. 14EAн	Арргох. 01060н
setting 3 5V		Арргох. 6895 н	Approx. 2D50н

7.5 Precautions for Online Module Change

The followings are the precautions for Online module change.

- (1) Always perform Online module change in the correct procedure. A failure to do so can cause a malfunction or failure.
- (2) If Online module change is set in 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.
- (3) Do not perform Online module change in the offset/gain setting mode. (If performed, the Q62DA-FG may not operate properly.)
- (4) Do not perform the following operations (a) and (b) during Online module change. (If performed, the Q62DA-FG may not operate properly.)
 - (a) Power off the programmable controller CPU.
 - (b) Reset the programmable controller CPU.
- (5) If a module having the first five digits (product information) 11102 or later was replaced with a module having 11042 or later, the following settings are ignored.
 - Disconnection detection mode setting (buffer memory address 141: Un\G141),
 - CH Disconnection detection setting value (buffer memory address 142,143: Un\G142, Un\G143).

In this case, the disconnection detection function operates by default (detect the disconnection at an output monitor value of 1mA).

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8 TROUBLESHOOTING

This chapter explains the types of errors that may occur when the Q62DA-FG is used, and how to troubleshoot such errors.

8.1 Error Code List

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If an error occurs in the Q62DA-FG while writing to or reading data from the programmable controller CPU, the applicable error code is written to buffer memory address 19 (Un\G19).

Error code (decimal)	Error description	Processing
10□	The setting is outside the output range setting that can be made by the intelligent function module switch of the GX Developer. indicates the incorrectly specified channel number.	Reset to the correct parameter with GX Developer parameter setting. (Refer to Section 4.5.)
111	Module error at startup.	Turn the power on and off again. If the error occurs 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 module switch 5 is other than 0.	Re-set the correct parameter value in the parameter setting of GX Developer. (Refer to Section 4.5.)
161 ^{* 1}	The G(P).OGSTOR instruction was executed in the offset/gain setting mode.	Do not execute the G(P).OGSTOR instruction in the offset/gain setting mode.
162 ^{* 2}	 The G(P).OGSTOR instruction was executed consecutively. At the time of offset/gain setting, a set value was written to the E²PROM 26 or more times. 	 Execute the G(P).OGSTOR instruction only once for one module. At the time of offset/gain setting, write a set value only once at one time.
163 ^{* 2}	The G(P).OGSTOR instruction was executed for the model that differs from the model for which the G(P).OGLOAD instruction had been executed.	Execute the G(P).OGLOAD and G(P).OGSTOR instructions for the same model.
164	The value set to the G(P).OGLOAD instruction, G(P).OGSTOR instruction, or Pass data classification setting (buffer memory address 200: Un\G200) is outside the range.	Set the value within the range.
40□ ^{*2}	The offset value is equal to or larger than the gain value. □ indicates the channel number causing the error.	Reset so that the offset value becomes smaller than the gain value.
500 ^{* 2}	More than one channel was set at the same time during offset/gain settings.	Set the correct value in buffer memory address 22 and 23 (Un\G22 and Un\G23).
60□ ^{*2*3}	The specified digital value is outside the valid range. I indicates the channel number where the error occurred.	Set a value that is within the valid range.
61□ ^{*2}	The warning output upper/lower limit value setting is outside the range -16384 to 16383.	Correct values of the buffer memory address 86 to 89 (Un\G86 to Un\G89) to the value within the range from 16384 to 16383.

Table 8.1 Error code list (1/2)

Error code (decimal)	Error description	Processing
62□ ^{*2}	The warning output lower limit value is equal to or greater than the warning output upper limit value. □ indicates the channel number incorrectly set.	Make setting so that the warning output upper limit value is greater than the warning output lower limit value.
63□ ^{*2}	The value set to Disconnection detection mode setting is other than 0н, 1н, and 2н. □ indicates an error channel number incorrectly set.	Set any of 0н, 1н, or 2н to buffer memory address 141 (Un\G141).
64□ ^{*2}	The value set to the disconnection detection setting value is out of the range from 0 to 250. □ indicates an error channel number incorrectly set.	Correct the values in buffer memory address 142, 143 (Un\G142, Un\G143) within the range from 0 to 250.
700 ^{*2}	The analog adjustment output in the offset/gain setting mode is outside the specified value range.	Change the contents of buffer memory address 24 (Un\G24) so that it is within the range from –3000 to 3000.
71□ ^{*2}	The offset/gain range setting is outside the range Dн to Fн.	Correct the contents of the buffer memory address 25 (Un\G25) to within the range D_H to F_{H} .
80□ ^{*2}	The increase/decrease digital limit value setting is outside the range 0 to 32000. □ indicates the channel number incorrectly set.	Correct the values of the buffer memory address 70 to 73 (Un\G70 to Un\G73) to the values within the range from 0 to 32000.

Table 8.1 Error code list (2/2)

POINT

- (1) When two or more errors occur, the latest error code is stored.
- (2) Error code 161 marked with *1 is not stored in the buffer memory address
 19 (Un\G19). It is written to the Completion status area, (S) + 1, of the G(P).OGSTOR instruction.
- (3) Error code marked with *2 can be cleared by turning on Error clear request (YF).
- (4) If the error marked with *3 occurs continuously, it is added to the error history of GX Developer in each conversion cycle.

8.2 Troubleshooting

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

(1) When flashing

Check item	Corrective action
Is the mode set to the offset/gain setting mode?	Reset switch 4 of the intelligent function module switch setting for GX Developer to the normal mode (Refer to Section 4.5).

(2) When off

Check item	Corrective action
Is power being supplied?	Confirm that the supply voltage for the power supply module is within the rated range.
Is the capacity of the power supply module adequate?	Calculate the current consumption of the CPU module, I/O module and intelligent function module mounted on the base unit to see if the power supply capacity is adequate.
Has a watchdog timer error occurred?	Reset the programmable controller CPU and verify that it is lit. If the RUN LED does not light even after doing this, the module may be malfunctioning. Contact the nearest distributor or branch office with a description of the problem.
Is the module correctly mounted on the base unit?	Check the mounting condition of the module.
Is a module change enabled during 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 Error code and take corrective action described in Section 8.1.		

(2) When flashing

Check item	Corrective action
Is intelligent function module setting switch 5 set to "other	Using GX Developer parameter setting, set intelligent
than 0"?	function module setting switch 5 to "0" (Refer to Section 4.5).

8.2.3 When the "ALM" LED is turned on or flashing

(1) When on

Check item	Corrective action	
Has the warning output occurred?	Check Warning output flag (buffer memory address 48, Un\G48).	

(2) When flashing

Check item	Corrective action		
Has the disconnection occurred?	Check Disconnection detection flag (buffer memory address 49, Un\G49).		

8 TROUBLESHOOTING

8.2.4 When an analog output value is not output

Check item	Action to be taken		
	Verify that 24VDC voltage is being supplied to the external		
IS 24VDC external power supply being supplied?	power supply terminals (terminal numbers 16, 17).		
Is there any fault with the analog signal lines such as broken	Check for any abnormality on the signal lines by doing a		
or disconnected line?	visual check and performing a 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 effect/acid actions correct?	If the user range setting is set to the Q62DA-FG, switch the		
Are the onsevgain settings correct?	output range to one of defaults. Then check if D/A		
	conversion is performed correctly. If the input is properly		
	converted, reconfigure the offset/gain settings.		
	Verify buffer memory address 20 (Un\G20) in GX Developer		
le the output actting range correct?	monitor. If the output range setting is incorrect, redo GX		
is the output setting range correct?	Developer intelligent function module switch settings		
	(Refer to Section 4.5).		
	Check D/A conversion enable/disable setting using buffer		
Is D/A conversion enable/disable setting for the channel to	memory 0 (Un\G0) in GX Developer monitor and set it to		
be output set to D/A conversion disabled?	Enable using the sequence program or utility package		
	(Refer to Section 3.4).		
	Verify on/off for Output enable/disable flags (Y1, 2) in GX		
Is the D/A output enable/disable setting for the channel to be	Developer monitor.		
output 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).		
Is the digital value being written to the channel to be output?	Verify buffer memory address 1, 2 (Un\G1, Un\G2) in GX		
	Developer monitor (Refer to Section 3.4).		
	Set Operating condition setting request (Y9) from on to off		
	from GX Developer and check to see if the analog output is		
Has Operating condition setting request (Y9) been	normal.		
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. Consult the nearest sales representative or branch.

8.2.5 When an analog output value is not held

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 Q62DA-FG used on a	Take corrective actions, referring to POINT in Section
MELSECNET/H remote I/O station?	3.2.1.

8.2.6 Checking the Q62DA-FG status using GX Developer system monitor

When the Q62DA-FG 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 [Diagnostics] \rightarrow [System monitor] \rightarrow "Select Q62DA-FG" \rightarrow [Module's Detailed Information]
- (2) Module Detailed Information
 - (a) Checking the function version The function version of the Q62DA-FG is displayed in the product information field.
 - (b) Checking Error code Error code stored in buffer memory address 19 (Un\G19) of the Q62DA-FG is displayed in the Present Error field.

(When the Error History button is pressed, the contents displayed in the

Present Error field are displayed in the No.1 field.)

odule's Detailed Informatic	n		×
Module			-
Module Name Q620)A-FG	Product information 11042000000000 🛈 🗲	Function version
I/O Address 0			
Implementation Position Main	Base OSlot		
Module Information			-
Module access	Possible	I/O Clear / Hold Settings	
Fuse Status		Noise Filter Setting	
Status of I/O Address Verify	Agree	Input Type	
		Remote password setting status	
	ne display seque ne latest error is	nce of the error history is from the oldest error. displayed in the line as under.	
Error contents - Disposal			
Contents:		<u>^</u>	
Disposal:		<u> </u>	
1			
H/W Information	Start monitor	Stop monitor Close]

(3) H/W information

(a) H/W LED information

The LED status is displayed.

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

(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				

	H/W Informati	DN							X
	- Module							Display forma	it
	Module Name	Q62DA-FG	Pro	duct informal	tion	1104200000000)00 - C	• HEX	O DEC
	H/W LED Info	mation				H/W SW Informa	ation		
4)	Item	Value	Item	Value		Item	Value	Item	Value
1)	RUN	0001	ALM	0000	i	<u> </u>		RANGE	0000
2)—	ERR	0000						-	0000
								HOLD/CLEAR	0000
								MODE	0000
								-	0000
				<u> </u>					
				<u> </u>					
						Start monitor	Stop mo	nitor	Close

(In the case of GX Developer Version 8.90U)

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 Q62DA-FG.

Instruction	Description	Reference section
G(P).OFFGAN	Switches to the offset/gain setting mode. Switches to the normal mode.	Appendix 1.1
G(P).OGLOAD	Reads the offset/gain values of the user range setting to the CPU.	Appendix 1.2
G(P).OGSTOR	Restores the offset/gain values of the user range setting stored in the CPU to the Q62DA-FG.	Appendix 1.3

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	Constant * 2	
Bit ^{* 1}	Word	File register		
X, Y, M, L, F, V, B	T, ST, C, D, W	R, ZR	K, H	

*1 Word 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 D0.A.

However, there can be no bit designation for timers (T), retentive timers (ST) and counters (C).

*2 Available devices are given in each of the Constant field.

Appendix 1.1 G(P).OFFGAN

		onseu	gain settin	ig mode to	normai n	iode)				
	Usable devices									
Setting data	Internal device (System, user)			Link direct device J□\□		Intelligent function	Index	Constant		
	Bit	Word	register Bit Wo		Word	module device U⊡\G□	register Z□	К, Н	\$	Others
(S)	_	· · · ·							_	_
[Instruction [Execution symbol] condition] Command G.OFFGAN							G.OFFGAN	Un	(S)]
GP.OFFC	GAN _		Commar	nd			GP.OFFGA	N Un	(S)	

Switches the mode of the Q62DA-FG. (Normal mode to offset/gain setting mode, offset/gain setting mode to normal mode)

Setting data

Setting data	Description	Setting range	Data type	
Un	Start I/O number of the module	0 to FEн	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 Q62DA-FG.
- Normal mode to offset/gain setting mode (Offset/gain setting mode flag (XA) turns on)
- Offset/gain setting mode to normal mode (Offset/gain setting mode flag (XA) turns off)

POINT

 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 require D/A conversion, switch to the normal mode and then turn on

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 Q62DA-FG 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.

Switche	s to offse	et/gain setting mode				
	м10 		Ем	OVP K1	D1	Stores setting of dedicated instruction (G.OFFGAN) into D1.
			[G.OFFGAN	UO	D1	Dedicated instruction (G.OFFGAN)
-			Performs processi	ing for offse	et/gain setting	3
Switche	s to norr	nal mode				
-	м10 		[м	OVP KO	D1	Stores setting of dedicated instruction (G.OFFGAN) into D1.
			[G.OFFGAN	UO	D1	Dedicated instruction (G.OFFGAN)
-			Performs processi	ng for norn	nal mode	3
-					END]

Appendix 1.2 G(P).OGLOAD

Usable devices Link direct device Internal device Intelligent Constant function Setting JD\D (System, user) Index File data module register Others register Bit Word Bit Word device ZΠ K, H \$ U□\G□ 0 (S) 0 (D) [Instruction [Execution symbol] condition] Command G.OGLOAD G.OGLOAD Un (S) (D) Command GP.OGLOAD GP.OGLOAD Un (S) (D) Setting data Setting Data type Setting range Description data Start I/O number of the module 0 to FEH Binary 16 bits Un Within the range of the (S) Start number of the device in which control data is stored. Device name specified device Device that is turned on 1 scan on completion of dedicated Within the range of the instruction processing. (D) Bit specified device

Reads the offset/gain values of the user range setting of the Q62DA-FG to the CPU.

Control data $*^{1}$ (1/2)

(D) + 1 also turns on at an abnormal completion.

Device	Item	Setting data	Setting range	Set by
(S)	System area	—	_	_
(S) + 1	Completion status	Stores the status when the instruction is complete. 0 : Normal completion Other than 0: Abnormal completion	_	System
(S) + 2	Pass data classification setting	Specify the user range setting where offset/gain values will be read. OH: Use range setting 1 specified 1H: Use range setting 2 specified 2H: Use range setting 3 specified b15tob12b11 to b8b7 to b4b3 to b0 OH OH CH2 CH1	_	User
(S) + 3	System area	_	—	—
(S) + 4	CH1 Industrial shipment settings offset value (used for D/A)	—	_	System
(S) + 5	CH1 Industrial shipment settings gain value (used for D/A)	—	—	System
(S) + 6	CH2 Industrial shipment settings offset value (used for D/A)	—	—	System
(S) + 7	CH2 Industrial shipment settings gain value (used for D/A)	—	—	System
(S) + 8	CH1 Industrial shipment settings offset value (used for monitor output)	—	_	System
(S) + 9	CH1 Industrial shipment settings gain value (used for monitor output)	—	_	System

*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.

Device	Item	Setting data	Setting range	Set by
(S) + 10	CH2 Industrial shipment settings offset value (used for monitor output)	—	_	System
(S) + 11	CH2 Industrial shipment settings gain value (used for monitor output)	_	_	System
(S) + 12	CH1 User range settings offset value (used for D/A)	—		System
(S) + 13	CH1 User range settings gain value (used for D/A)	_		System
(S) + 14	CH2 User range settings offset value (used for D/A)	_	_	System
(S) + 15	CH2 User range settings gain value (used for D/A)	—	_	System
(S) + 16	CH1 User range settings offset value (used for monitor output)	_		System
(S) + 17	CH1 User range settings gain value (used for monitor output)	—		System
(S) + 18	CH2 User range settings offset value (used for monitor output)	_		System
(S) + 19	CH2 User range settings gain value (used for monitor output)	—	_	System

Control data $*^{1}$ (2/2)

*1 Set only 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.

(1) Functions

- (a) Reads the offset/gain values of the user range setting of the Q62DA-FG 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.

 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 Pass data classification setting (S)+2 is outside
164	the range.

(3) Program example

The following program is designed to read the offset/gain values of the Q62DA-FG 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 Q62DA-FG.

					Usable	devices				
Setting data	Interna (Syster	l device n, user)	Filo	Link direct device J□∖□		Intelligent function	Index	Constant		
	Bit Word		register	Bit	Word	module device U□\G□	register Z□	K, H	\$	Others
(S)		(\supset		_					
(D)		0			—					
[Instructic symbol]	on [Exe con	ecution idition]	Commar	nd						
G.OGST	DR		┝──┤┝		[G.OGSTOR	Un	(S)	(D)	
GP.OGS			Commar	nd	[GP.OGSTO	R Un	(S)	(D)	

Setting data

Setting data	Description	Setting range	Data type
Un	Start I/O number of the module	0 to FEн	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.

Control data *1 (1/2)

Device	Item	Setting data	Setting range	Set by
(S)	System area	—	_	_
(S) + 1	Completion status	Stores the status when the instruction is complete. 0 : Normal completion Other than 0: Abnormal completion (Error code)	_	System
(S) + 2	Pass data classification setting	The value set to Pass data classification setting (S)+2 using the G(P).OGLOAD instruction is stored. OH: Use range setting 1 specified 1H: Use range setting 2 specified 2H: Use range setting 3 specified DH OH CH2 CH1	–	User
(S) + 3	System area			
(S) + 4	CH1 Industrial shipment settings offset value (used for D/A)	_	_	System
(S) + 5	CH1 Industrial shipment settings gain value (used for D/A)	_	_	System
(S) + 6	CH2 Industrial shipment settings offset value (used for D/A)	—		System
(S) + 7	CH2 Industrial shipment settings gain value (used for D/A)	_	—	System

Device	Item	Setting data	Setting range	Set by
(S) + 8	CH1 Industrial shipment settings offset value (used for monitor output)	_		System
(S) + 9	CH1 Industrial shipment settings gain value (used for monitor output)			System
(S) + 10	CH2 Industrial shipment settings offset value (used for monitor output)	—	_	System
(S) + 11	CH2 Industrial shipment settings gain value (used for monitor output)	_	_	System
(S) + 12	CH1 User range settings offset value (used for D/A)	_	_	System
(S) + 13	CH1 User range settings gain value (used for D/A)	—	_	System
(S) + 14	CH2 User range settings offset value (used for D/A)	—	—	System
(S) + 15	CH2 User range settings gain value (used for D/A)	-		System
(S) + 16	CH1 User range settings offset value (used for monitor output)	—	—	System
(S) + 17	CH1 User range settings gain value (used for monitor output)	_		System
(S) + 18	CH2 User range settings offset value (used for monitor output)	_	_	System
(S) + 19	CH2 User range settings gain value (used for monitor output)	—	_	System

Control data^{*1} (2/2)

- (1) Functions
 - (a) Restores the offset/gain values of the user range setting stored in the CPU to the Q62DA-FG.
 - (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.
 - 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.
 - 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.



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

POINT

D/A conversion is suspend if the G(P).OGSTOR instruction is executed. To resume the D/A conversion, turn Operating condition setting request (Y9) from off to on, then to off again.

(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
101	setting mode.
162	The G(P).OGSTOR instruction was executed consecutively.
	The G(P).OGSTOR instruction was executed for the model that
163	differs from the model for which the G(P).OGLOAD instruction had
	been executed.
404	The value set to Pass data classification setting (S)+2 is outside the
164	range.

(3) Program example

The following program is designed to read the offset/gain values of the Q62DA-FG mounted in the position of I/O number X/Y0 to X/YF when M11 is turned on.



Appendix 2 Performance Comparison between the Q62DA-FG and Q62DA

The following table indicates performance comparison between the Q62DA-FG and Q62DA.

Table Appendix. 1 Performance Comparison Table

	_												
Item	Туре		Q62DA-FG					Q62DA					
Number of outputs	fanalog	2 points (2 channels)											
Digital inpu	ut	16-bit signed binary (-12288 to 12287, -16384 to 16383)						16-bit signed binary (normal resolution mode: -4096 to 4095, high resolution mode: -12288 to 12287, -16384 to 16383)					
Analog	Voltage	-12	to 12VDC (External	load resist	ance: 1k to	<u>1MΩ)</u>	_	-10 to 10 V DC (External load resistance value: $1 \text{ k}\Omega$ to $1\text{M}\Omega$))
output	Current	0 to	20mADC (Externa 0 to	22mADC	ance: 0 to	50052)		((External load resi	stance value:	0Ω to 600	<u>אכ</u>	
		Analog output range Digital input value			Maximum resolution		Anal	log output range	Digita valu	ll input Je ^{*1}	Maximum resolution*1		
			0 to 5V	0 to	12000	0.416mV			0 to 5V	0 to	4000	1.25mV (0.416mV)	
		N G H S S S	1 to 5V	40000	ta 40000	0.333mV			1 to 5V	(0 to ⁻	12000)	1.0mV (0.333mV)	
I/ O charad	cteristics	voitage	1 to 5V (Extended mode)	-3000	to 13500	0.625mV 0.333mV	Voltage	voitage	-10 to 10V	-4000 (-16000	to 4000 to 16000)	2.5mV (0.625mV)	
maximum	resolution		User range setting User range setting	2 3 -12000	to 12000	0.366mV 0.183mV			User range setti	ng -4000 (-12000	to 4000 to 12000)	0.75mV (0.333mV)	
			0 to 20mA	0 to	12000	1.66 µA			0 to 20mA	0 to	4000	5µA (1.66µA)	
		Current	4 to 20mA 4 to 20mA (Extended mode)	-3000	to 13500	1.33 μA 1.33 μA		Current	4 to 20mA	(0 to 7	12000)	4µA (1.33µA)	
			User range setting	1 -12000	to 12000	0.671 µA			User range setti	-4000 rg (-12000 r	to 4000 to 12000)	1.5 µ A (0.83 µ A)	
Accuracy (Accuracy relative to maximum analog output value)		Reference accuracy: Within ± 0.1% (Voltage: ± 10mV, Current: ± 20 µA) Temperature coefficient: ± 80ppm/ °C (± 0.008%/ °C)					а () А	$\begin{array}{l} \text{Ambient temperature 25 \pm 5 \ C} \\ \text{Within } \pm 0.1 \ \% \ (Voltage: \pm 10 \ \text{mV}, \text{Current: } \pm 20 \ \mu\text{A}) \\ \text{Ambient temperature 0 to 55 \ C} \\ \text{Within } \pm 0.3 \ \% \ (Voltage: \pm 30 \ \text{mV}, \text{Current: } \pm 60 \ \mu\text{A}) \end{array}$					A) A)
Conversion	n speed		10ms	2 channels	6			80 µs/channel					
Absolute	Voltage		=	± 13V				± 12 V					
output	Current			23mA				21 mA					
	Resolution	12bit											
Output	Reference		Ę	: 0.2%				_					
monitor	Temperature coefficient	± 160ppm/ °C (± 0.016%/ °C)						·					
Maximum writes for E	number of E ² PROM	Max. 100 thousand times											
Output sho protection	ort-circuit	Available											
					Dielectric			<u> </u>			Dielectric		
		Specifi	c isolated area	Isolation method	withstand voltage	Insulation resistance		Specific	c isolated area	Isolation method	withstand voltage	Insulation resistance	
Isolation sp	pecifications	Between and prog controller	the I/O terminal rammable power supply	notocoupler plation	1780VAC	500/100		Between and prog controller	the I/O terminal rammable power supply	Photocoupler solation	500VAC for 1 minute	500VDC 20MΩ or more	
		Between channels	analog output Tr	ansformer plation	cycles	500VDC 10MΩ or		Between channels	analog output	No insulation	_	_	
		Between power an cannel	external supply Triad analog output	ansformer plation	2000m)	more		Between power an cannel	external supply ad analog output I	No insulation	_	_	
Number of I/O occupied								into					•
points						16	o po	ints	-				
Connected terminal Applicable wire size						18 points 0.3 to	$\frac{\text{terr}}{0.07}$	ninai biocł 75mm²	ĸ				
Applicable wire size Applicable solderless				R 1.2	5-3 (Solde	rless terminal	ls w	ith sleeve	s are not applicab	le)			
						24VDC,	+2(0%, -15%					
External su	upply power			5 0A with:-	300 442	Ripple, spike	with	nin 500 m\	/ p-p	+ 1 0 1 11	n 300		
			iniusri current:	0.3A	1300 µs		+			0.12A	πουυ με		
Internal cu consumpti	rrent on (5 VDC)			0.37A			1			0.33A			
Weight	· /	1) 20kg			0 10kg						

*1 The values in parentheses are those in the high resolution mode.

Appendix 3 Functions Added or Changed by Version Upgrade

The Q62DA-FG has been upgraded with new functions and specifications. The functions available for use of the Q62DA-FG vary according to the first five digits of product number.

Added function	Description	First 5 digits of product number	Reference section
Analog output range expanded mode	 When the following output ranges are selected in the intelligent function module switch setting, the analog output ranges can be extended. 4 to 20mA (Expanded mode) 1 to 5V (Expanded mode) 	11042 or later	Section 3.1.1 Section 4.5
	The output ranges supported by the analog output range expanded mode cannot be used for products of incompatible version.		
Disconnection detection mode	 When an output range is set to 4 to 20mA (Extended mode), disconnection detection settings can be changed by selecting either of the following. Arbitrarily (Set a value for the disconnection detection) Auto setting Modules that do not support this function cannot select and set values for disconnection detection. The following buffer memories are not available. 	11102 or later	Section 3.2.6

Appendix 4 External Dimension Diagram



Unit : mm (inch)

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WARRANTY

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

1. Gratis Warranty Term and Gratis Warranty Range

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.

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SPREAD

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 SH(NA)-080281E-M(1505)MEE

 MODEL:
 Q-D/A-FG-U-SY-E

 MODEL CODE:
 13JR52

MITSUBISHI ELECTRIC CORPORATION

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