Chapter 1. General

1.1 How to Use This Manual

This manual includes specifications, functions and handling instructions for the GLOFA-GM7 series PLC.
This manual is divided up into chapters as follows:

Chapters	Title	Contents
Chapter 1	General	Describes configuration of this manual, unit's features and terminology.
Chapter 2	System configuration	Describes available units and system configurations in the GLOFA-GM7 series.
Chapter 3	General Specification	Describes general specifications of units used in the GLOFA-GM7 series.
Chapter 4	Names of Parts	Describes each kind of manufacturing goods, titles, and main functions
Chapter 5	CPU Part	Describes each kind of manufactured goods' usage
Chapter 6	Digital Input and Output Parts	
Chapter 7	Guides on Each Function	
Chapter 8	Communications Function	Describes built-in communication functions
Chapter 9	Installation and Writing	Describes installation, wiring and handling instructions for reliability of the PLC system
Chapter 10	Maintenance and Inspection	Describes the check items and method for long-term normal operation of the PLC system.
Chapter 11	Troubleshooting	Describes various operation errors and corrective actions.
Appendix1	System Definition	Describes parameter setting for basic I/O and communications module
Appendix 2	Flag List	Describes the types and contents of various flags.
Appendix 3	Function / Function Block List	Describes the types and processing time of function/function block.
Appendix 4	Dimensions	Shows dimensions of the base units and expansion modules

REMARK

1) This manual does not describe the programming method. For their own functions, refer to the related user's manuals.

1.2. Features

1) GLOFA-GM series features

(1) Design on the basis of international standard specifications (IEC61131-3)

- Easy programming device support
- Language in compliance with IEC61131-3 are given (IL / LD / SFC)

(2) Open network by us of communications protocol in compliance with international standard specifications.

(3) High speed processing with an operation-dedicated processor included.

(4) Various special modules that enlarge the range of application of the PLC

2) GM7 series is extremely compact, to fit a wide range of applications.

(1) High speed processing

High speed processing of 0.5μs/step with an operation-dedicated processor included.

(2) Various built-in functions

The base unit can perform many functions without using separate modules.

It is possible to construct various systems just using the base unit.

- Fast Processing Applications

  -Pulse catch: Allows the base unit to read 4 inputs, each having a pulse width as small as 0.2ms

  -High speed counter: Support high-speed counting up to 1 phase 16kHz, 2 phase 8kHz.

  -External interrupts : Using in applications that have a high-priority event which requires immediate responses.

- The input filter function help reduce the possibility of false input conditions from external noise, such as signal chattering. The filter time can be programmed from 0 to 15 ms.
- Using built-in pulse output without separate positioning module, it can control stepping motor or servo motor.
- Using RS-232C built-in port, it can connect with external devices, such as computers or monitoring devices and communicate 1:1 with GM7 or GM6 system.
- Using RS-485 built-in port, it can connect with external devices, such as computers or monitoring devices and communicate 1:N with GM7 or GM6 system. (10-point base unit only)
- It has PID control function with which it can easily constitute a system without separate module.

(3) It can easily do On/Off of the system, using RUN/STOP switch.

(4) It can constitute various system, using separate Cnet I/F module. (10-points main unit can not

(5) It can easily save the user program by simple manipulation in GMWIN.

(6) Strong self-diagnostic functions

It can detect the cause of errors with more detailed error codes.

(7) It can prevent unintentional reading and writing, using password.

(8) Restart mode setting function

It has cold and warm mode that it can be set for the convenience of the users.

(9) Debugging function

On-line debugging is available if the PLC Operation mode is set to debug mode.

- executed by one command.
- executed by break-point settings.
- executed by the condition of the device
- executed by the specified scan time.

(10) Various program execution function

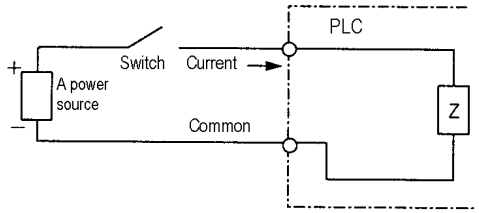
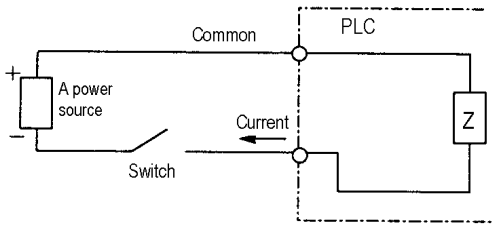
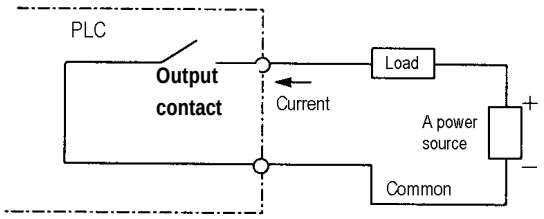
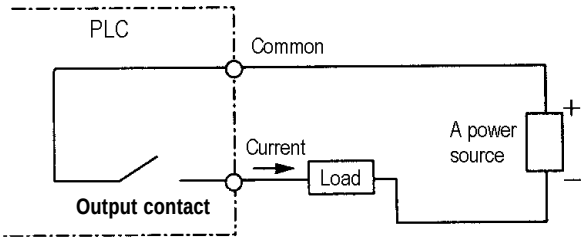
Time driven task, external and internal task program as well as scan program can be executed by setting the execution condition.

The user can set variously the program execution mode.

1.3 Terminology

The following table gives definition of terms used in this manual.

Terms	Definition	Remarks
Module	A standard element that has a specified function which configures the system. Devices such as I/O board, which inserted onto the mother board or base unit.	Example) CPU module Power Supply module I/O module
PLC system	A system which consists of the PLC and peripheral devices. A user program can control the system.	
Cold Restart	To restart the PLC system and user programs after all of the data(Variables and programs of I/O image area, of internal register, of timer of counter) were set to the specified conditions automatically or manually.	
Warm Restart	In the warm restart mode, The power supply Off occurrence will be informed to the user program and the PLC system restarts with the previous user-defined data and user program after the power supply Off.	
I/O Image Area	Internal memory area of the CPU module which used to hold I/O statuses.	
Watch Dog Timer	Supervisors the pre-set execution times of programs and warns if a program is not completed within the pre-set time.	
Function	Operation Unit which outputs immediately its operation result of an input, while four arithmetic operations comparison operation store their results in the inside of instructions.	
Function Block	Operation Units which store operation result in the inside of instruction such as timer and counter and use the operation results which have been stored through many scans.	
Symbolic Variable	Variables used after the user's definition of their names and types. Declarations as 'INPUT_0' = %IX0.0.2, 'RESULT = %MD1234' makes INPUT_0 and RESULT be able to used instead of %IX0.0.2 and %MD123 in programming.	
GMWIN	A peripheral device for the GLOFA-GM series. It executes program creation, edit, compile and debugging.	
FAM	Abbreviation of the word 'Factory Automation Monitoring S/W'. It is used to call S/W packages for process supervision.	
Task	It means startup conditions for a program. There are three types of periodic task, internal contact task and external contact task which starts by the input signals of external input modules.	

Terms	Definition	Remarks
Sink Input	Current flows from the switch to the PLC input terminal if a input signal turns on. 	
Source Input	Current flows from the PLC input terminal to the switch after a input signal turns on. 	
Sink Output	Current flows from the load to the output terminal and the PLC output turns on. 	
Source Output	Current flows from the output terminal to the load and the PLC output turns on. 	
Fnet	Fieldbus Network	
Cnet	Computer Network	
Dnet	DeviceNet Network	