

# Chapter 1 Introduction

## 1.1 Guide to Use This Manual

This manual includes specifications, functions, and handling instructions for the XGB series PLC and is divided up as follows:

No.	Title	Contents
Chapter 1	Introduction	Describes configuration of this manual, PLC features, Product List, and Quick Start Guide
Chapter 2	Quick Start Guide	Guide for quickly getting a new LSIS PLC up and running with a basic program
Chapter 3	Installation and Wiring	Dimensions, Wiring Guidelines, and I/O Schematics
Chapter 4	CPU Specifications	Scan Time, Program Execution, Memory Mapping, and Environmental Specifications
Chapter 5	Programming Concepts	Program Execution, CPU Modes, Timer and Counter Processing, Interrupt Function
Chapter 6	Instruction and Flag List	Programming Instructions and System Flags
Chapter 7	Built-In High-Speed Counter	High Speed Counter Setup and Operation
Chapter 8	Option Boards and memory Module	CPU Option Boards and Program Backup to Memory Module
Chapter 9	Compatibility with MASTER-K	Functions compatible with MASTER-K PLC
Chapter 10	Maintenance	Inspections, Troubleshooting, and Communication Diagnostics
Chapter 11	Warranty	Warranty Information

## 1.2 Features

The features of XGB system are as follows.

1. High performance hardware.
  - a. High Processing Speed
  - b. Max. 38 I/O control supporting small & mid-sized system implementation

Item	Value	Details
Operation processing speed	0.24 $\mu$ S / Step	-
Max IO contact point	38 points	By Use of 2 Option Modules
Program capacity	4kstep	-
Max. no. of expanded stage	Option module 2 stages	-

- c. Large program capacity
  - d. Expanded applications with the support of floating point.
2. Compact: the smallest size compared to competitors.

Item	Type	Size (W * H * D) (mm)	Reference
Main Unit	XBC-Dx10E	100*90*64	"E" type
	XBC-Dx14E		
	XBC-Dx20E	135*90*64	
	XBC-Dx30E		
Extension module	XBE-,XBF-,XBL-	20 * 90 * 60	Basis of minimum size

3. Improved programming ability with multiple kinds of register, RTC option module, comment backup, and more.
  - a. Convenient programming environment by providing analog register and index register.
  - b. Improved programming ability by operating plural and task program through module program.
  - c. Built-in Flash ROM enabling permanent backup of program without any separate battery.
  - d. Detailed comments for devices aid in programming.
  - e. Built-in RTC function enabling convenient history and schedule management
4. Optimized communication environment.
  - a. With built-in COM, communication is available without any expansion module.
  - b. Supporting various protocols for added convenience Modbus, user-defined, and dedicated (XGT server) protocols.

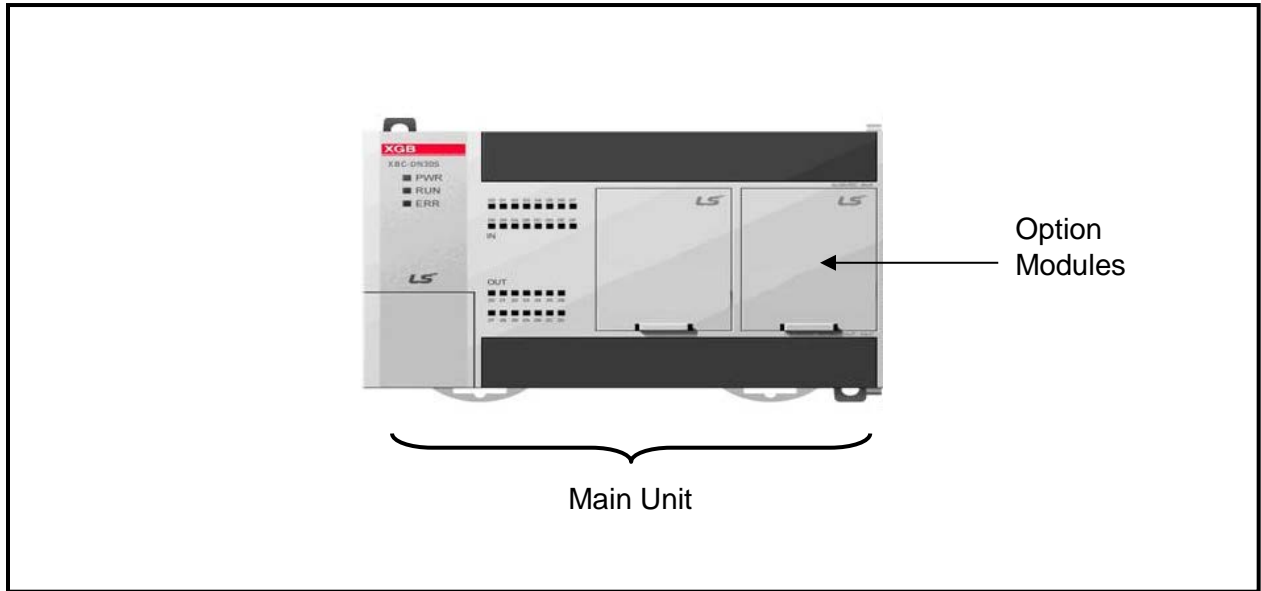
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- c. Convenient network-diagnostic function through network & communication frame monitoring.
- 5. Applications expanded with a variety of Option Modules.
  - a. RTC, Analog, Temperature Input, and additional I/O available
- 6. Applications expanded through analog-dedicated register design and full attachable mechanism.
  - a. Up to 2 analog option modules can be inserted into base.
  - b. With analog dedicated register (U) and monitoring dedicated function, convenient use for I/O is maximized (can designate operations using easy programming of U area and monitoring function)
- 7. Integrated programming environment
  - a. XG 5000: an all-in-one program for convenient application development, monitoring, diagnosis, and editing.
- 8. Built-in high speed counter function
  - a. 1-Phase and 2-Phase high-speed-counter built-in.
  - b. Parameter setting, diverse monitoring, and diagnosis function using XG5000.
  - c. Monitoring function in XG5000 can inspect without a program, inspecting external wiring, data setting, and more.

1.3 XGB E-Type System Configuration

XGB series System Configuration is as follows.  
 For "E" type, only option modules can be attached



Item		Description
Total I/O points		• XBC-DxxxE ("E" type): 10~38 points
Maximum number of expansion modules	Option Module	• "E" type: Max. 2 (If using 10/14 points models, only one is available)
Items	Main Unit	"E" type • XBC-DR10/14/20/30E      • XBC-DN10/14/20/30E • XBC-DP10/14/20/30E

Item		Description
Items	Option module	Digital I/O module • XBO-DC04A(High speed counter is available on "SU "type) • XBO-TN04A(Positioning is available on slot 9 of "SU "type)
		Special module • XBO-AD02A      • XBO-DA02A      • XBO-AH02A • XBO-RD01A      • XBO-TC02A
		RTC module • XBO-RTCA
		Memory module • XBO-M2MB

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### 1.4 Product List

Types	Model	Description	Remark
Main Unit	XBC-DR10E	AC100-220V power supply, DC 24V input 6 point, relay output 4 point	
	XBC-DR14E	AC100-220V power supply, DC 24V input 8 point, relay output 6 point	
	XBC-DR20E	AC100-220V power supply, DC 24V input 12 point, relay output 8 point	
	XBC-DR30E	AC100-220V power supply, DC 24V input 18 point, relay output 12 point	
	XBC-DN10E	AC100-220V power supply, DC 24V input 6 point, transistor output 4 point	
	XBC-DN14E	AC100-220V power supply, DC 24V input 8 point, transistor output 6 point	
	XBC-DN20E	AC100-220V power supply, DC 24V input 12 point, transistor output 8 point	
	XBC-DN30E	AC100-220V power supply, DC 24V input 18 point, transistor output 12 point	
	XBC-DP10E	AC100-220V power supply, DC 24V input 6 point, transistor output 4 point	
	XBC-DP14E	AC100-220V power supply, DC 24V input 8 point, transistor output 6 point	
	XBC-DP20E	AC100-220V power supply, DC 24V input 12 point, transistor output 8 point	
	XBC-DP30E	AC100-220V power supply, DC 24V input 18 point, transistor output 12 point	
Power Supply	XBM-DN16S	DC24V Power supply, DC24V Input 8 point, Transistor output 8 point	
	XBM-DN32S	DC24V Power supply, DC24V Input 16 point, Transistor output 16 point	
	XBM-DR16S	DC24V Power supply, DC24V Input 8 point, Relay output 8 point	

Types	Model	Description	Remark
Option Module	XBO-AD02A	Current/voltage input 2channel	
	XBO-DA02A	Current/voltage output 2 channel	
	XBO-AH02A	Current/Voltage input 1 channel, output 1 channel	
	XBO-RD01A	RTD input 1 channel	
	XBO-TC02A	Thermocouple input 2 channel	
	XBO-DC04A	DC 24V input 4 point(High speed counter is available on "SU "type)	
	XBO-TN04A	Sink type transistor output 4 channel (Positioning is available on slot 9 of "SU "type)	
	XBO-RTCA	RTC module(available on slot 9)	
	XBO-M2MB	Memory module	

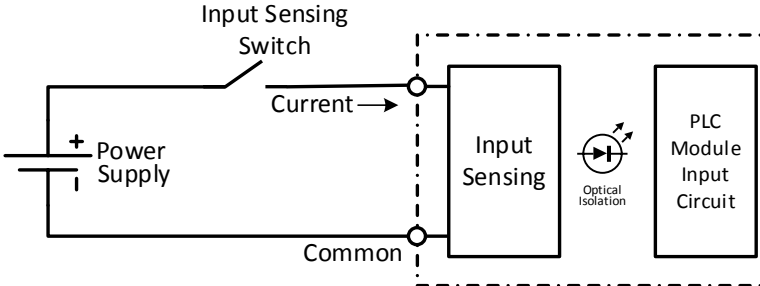
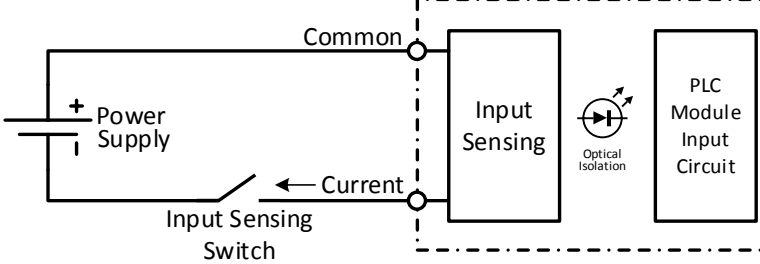
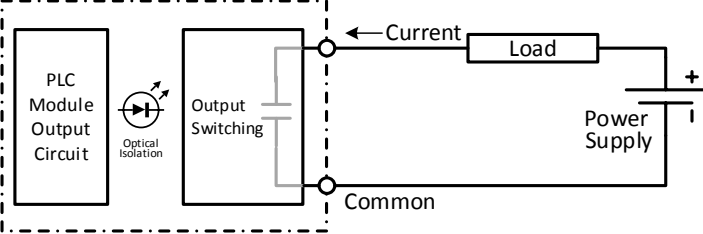
Types	Model	Description	Remark
Cables	PMC-310S	Connection cable (PC to PLC), 9pin(PC)-6pin(PLC)	
	USB-301A	Connection cable (PC to PLC), USB	

### 1.5 Terminology

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

Terms	Definition	Remark
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.	Example: Expansion module, Special module, RTC module
Unit	A single module or group of modules that perform an independent operation as a part of PLC systems.	Example: Main unit, Expansion unit
PLC System	A system which consists of the PLC and peripheral devices. A user program can control the system.	-
XG5000	A program and debugging tool for the MASTER-K series. It executes program creation, edit, compile and debugging. (PADT: Programming Added Debugging Tool)	-
I/O image area	Internal memory area of the CPU module which used to hold I/O status.	-
Cnet	Serial Communication Network	-
FEnet	Fast Ethernet Network	-
Pnet	Profibus-DP Network	-
Dnet	DeviceNet Network	-
RTC	Abbreviation of 'Real Time Clock'. RTC available only through use of XBO-RTCA option board	-
Watchdog Timer	Monitors pre-set execution times of programs and warns if a program is not completed within the pre-set time.	-

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Terms	Definition
Sink Input	<p>Current flows from the switch to the PLC input terminal if an input signal turns on.</p> 
Source Input	<p>Current flows from the PLC input terminal to the switch after an input signal turns on.</p> 
Sink Output	<p>Current flows from the load to the output terminal and the PLC output turns on.</p> 
Source Output	<p>Current flows from the output terminal to the load and the PLC output turns on.</p> 