



LSIS Automation Products

Programmable Logic Controller / Human Machine Interface / Servo Drive & Motor

XGT PLC High performance Rack type (XGR/XGK/XGI Series)

XGR: Redundancy system

- CPU processing speed: 42ns/step
- I/O point: max. 131,072
- Total memory: 25MB (Program 7MB, Data 2MB, Flash 16MB)
- Switching over time: min. 4.3ms/max. 22ms
- Built-in 256 PID loops control



XGR

XGK: Ladder programming

- CPU processing speed: 28ns/step
- I/O point: max. 6,144
- Various types of CPU E/S/A/H/U (16K/32K/32K/64K/128Ksteps)
- Integrated intelligent software package : XG5000
- System solution based on open network: Ethernet, Profibus, DeviceNet
- Built-in PID control



XGK/XGI

* Programming language selection via CPU replacement

XGI: IEC standard programming

- CPU processing speed: 28ns/step
- I/O point: max. 6,144
- Various types of CPU S/H/U (128K/512K/1Mbytes)
- IEC 61131-3 Standard programming
 - LD (Ladder Diagram), SFC (Sequential Function Chart), ST (Structured Text)
 - User defined FB (Function Block)
- Built-in 256 PID loops control

Block type (XGB Series)

XBM: Connector type

- Programming language: Ladder
- CPU processing speed: 160ns/step
- Max. 256-point I/O control
- Program capacity: 10Ksteps
- Floating-point arithmetic
- Built-in Cnet, HSC, PID, Positioning, Pulse catch, Input filter, External interrupt
- Fieldbus option: RS-232C, RS-422/485, Ethernet, Ethernet I/P, CANopen, Profibus-DP



XBM

XBC/XEC: Terminal block type

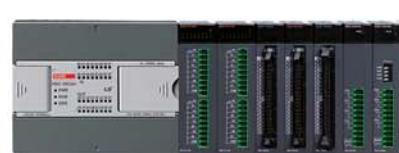
- Supporting floating-point arithmetic
- Built-in Cnet, HSC, PID, Positioning, Pulse catch, Input filter, External interrupt
- Fieldbus Option: RS-232C, RS-422/485, Ethernet, Ethernet I/P, CANopen, Profibus-DP
- Download port: Serial, USB



XBC/XEC economic type



XBC/XEC standard type



XBC/XEC high performance type

Option I/O

XBO-RTCA	RTC(Real Time Clock), Battery	XBO-AD02A	Voltage/Current, Input 2 chs
XBO-DC04A	DC 24V, Input 4 points	XBO-DA02A	Voltage/Current, Output 2 chs
XBO-TN04A	Transistor(Sink), Output 4 points	XBO-AH02A	Voltage/Current, Input 1 ch Voltage/Current, Output 1 ch
XBO-RD02A	RTD(Resistance Temperature Detect), Input 2 chs	XBO-TC02A	TC[Thermocouple], Input 2 chs

* High speed counter and positioning functions are built-in XBO-DC04A and XBO-TN04A, respectively with XGB standard type.

XGT Panel Human Machine Interface

iXP Series (iXP70/iXP80/iXP90)

- 1GHz 32bit RISC Embedded CPU
- 16,777,216 TFT color LCD
- 128MB display data and 1MB back-up memory
- Ethernet 1ch, RS-232C 2ch
- RS-422/485 1ch
- USB host 3ch and device 1ch
- CF/SD memory card interface



iXP70/iXP80/iXP90

XP Series (XP90/XP80/XP70/XP50/XP40/XP30)

- High and vivid distinction with 65,536 colors
- 10/100BASE-T Ethernet interface
- Convenient and easy screen editing
- Strengthened data management (Logging, Recipe, and Alarm).
- Multi-lingual display: up to 8 languages
- Offline and concurrent simulation with XG5000
- USB host for peripheral devices: USB drive, mouse, keyboard, printer, etc
- Sufficient memory for screen data: 10MB



XP30/XP50/XP70/XP80/XP90

Text type (XP10)

- Screen: 192×64 Graphic STN LCD
- Flash memory: Program/Parameter back up
- RS-232C/RS-485 2ch separate to use
- Power requirements-24V input or 5V direct input by LS PLC
- Various function key-ESC ALM SET ENT F1-F4 Arrow keys



XP10

XGT InfoU SCADA Software

- Integrated development environment from the newest graphic technology
- Various graphic library and graphic script
- Active X control and VB script supported
- Industrial standard interface like OLE DB, OPC server/client
- Windows 2000, XP, Vista, 7 compatible



Smart I/O Distributed system

Stand alone type

- Wiring reduction and real time control of distributed I/O
- Supports Rnet, DeviceNet, Profibus-DP, MODBUS (RS-422/485)
- Various I/O (DC/TR/Relay) modules with the unit of 16/32 points

Expandable type



Expandable type

- Easy configuration of remote system using XGB expansion I/O
- Up to 8 modules expandable with Network adapter
- Max. 256 point digital I/O
- Max. 16 channel analog I/O
- Network adapter: Profibus-DP, DeviceNet, Rnet, Modbus TCP/IP, EtherNet/IP

Stand alone type



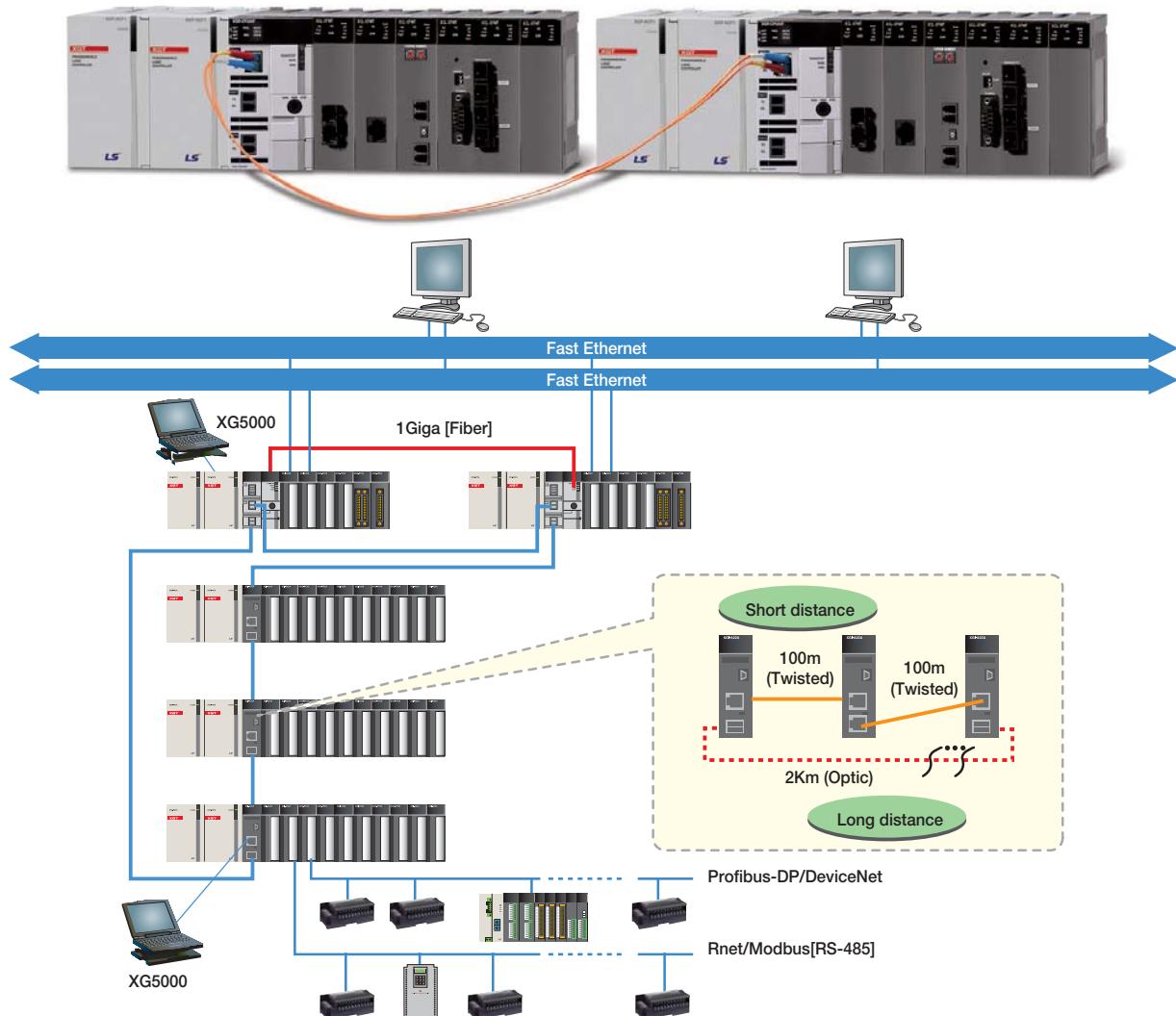
XGT Servo XDL/XML Series

- High resolution serial type encoder (~19bit)
 - Accurate position control and improved stability at low speed
- Motion network type(EtherCAT)-XDL N Series
- 100BASE-TX(100Mbps) Ethernet based real-time communication
- Supports full-closed control (Network type)
- Serial communication (RS-422/485, Modbus)
- Supports various operation modes (CSP, CSV, CST, PP, PV, PT, HM, IP)
- Safe torque off function
- Linked with LSIS's XGT PLC



XGR Series

Redundancy system for high-speed process control based on IEC



High performance

- Processing speed: 42ns/step
- CPU synchronization via fiber optic cable
- I/O points: max. 131,072
- Total memory: 25MB (Program 7MB, Data 2MB, Flash 16MB)
- Switching over time: min. 4.3ms/max. 22ms

Easy expansion installation using network

- Max. 31 expansion base
- Distance: Fiber 2km (Max. expansion 60km), Twisted pair 100m (Max. expansion 3km)
- Program upload and download via expansion base
- No limit to install the communication master on the expansion base

Enhanced maintenance via system history and network ring configuration

- Convenient system analysis using Operation history, Error history, System history
- Ring configuration to prevent a line disconnection error
- Network monitoring, protocol monitoring function
- Error channel monitoring via flag
- Graphic display for the system configuration
- Safe module exchange via Wizard

IEC 61131-3 Standard language

- LD, ST, SFC, IL (read only)
- Program configuration and data type based on IEC

Variety of communication function

- Easy interface using open network (Ethernet, Profibus-DP, DeviceNet, RS-232C, RS-422/485, etc)
- Max. 24 communication module installation on the expansion base (High speed link 12, P2P 8)
- Network diagnosis via network and frame monitoring
- PLC link via dedicated communication based on Ethernet (RAPIDnet)

Variety of input and output modules

- 8 / 16 / 32 / 64 points (8 / 16 points relay output)
- Input / Output / Mixed module

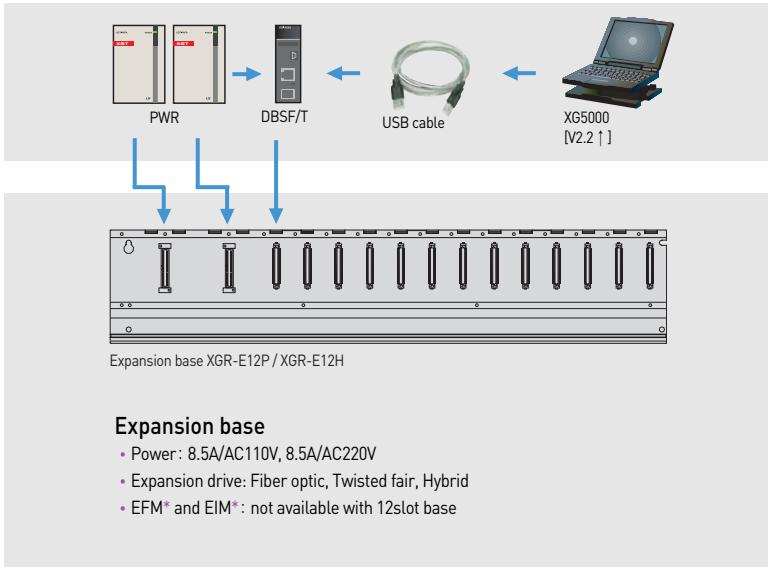
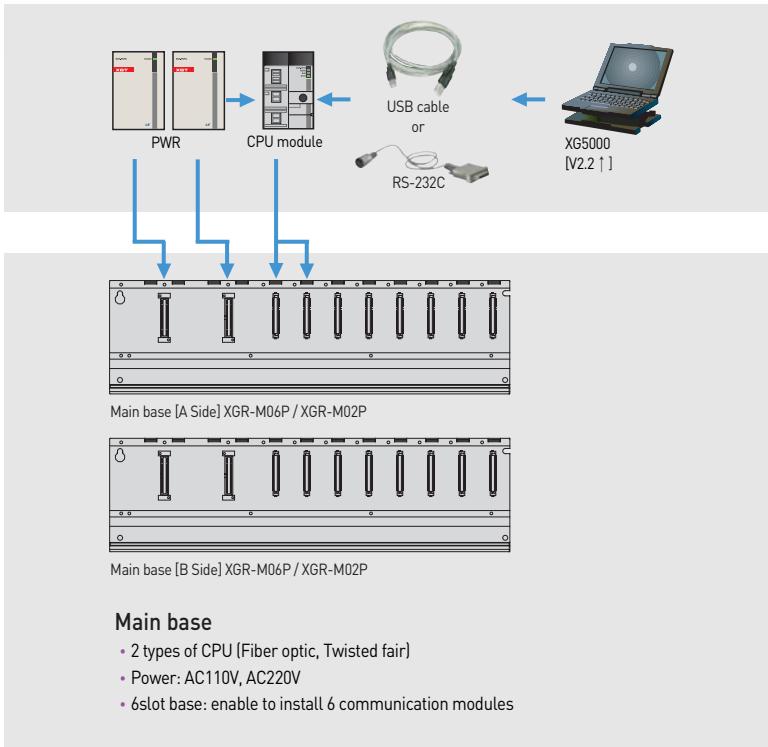
Enhanced analog function

- Enable to install the analog module on the expansion base (Max. 250, analog input 139)
- Insulated type and temperature module
- Easy to set the parameter via I/O parameter and flag
- Debugging function via special module monitoring

Integrated programming & engineering environment

- XG5000 : Easy to program, various monitoring functions and enhanced editing function
- XG-PD : Convenient setup for communication and network parameter
- XG-PM: Software package for positioning module

Product List



CPU module	
Type	I/O point
XGR-CPUH/T [Twisted fair]	2port 23,808 Points
XGR-CPUH/F [Fiber optic]	
Type	I/O point
USB-301A	USB downloading cable
K1C-050A	RS232C downloading cable
XGC-F201	CPU synchronization cable: 2m
XGC-F501	CPU synchronization cable: 5m
Power	
XGR-AC12	110V 5.5A (Main / Expansion base)
XGR-AC13	110V 8.5A (Expansion base)
XGR-AC22	220V 5.5A (Main / Expansion base)
XGR-AC23	220V 8.5A (Expansion base)
XGR-DC42	DC24V / 5V 7A (Main / Expansion base)

CPU module		
Type	I/O point	
XGI-CPUU/XGI-CPUH	6,144 (IEC type)	
XGK-CPUU/CPUH	6,144	
XGK-CPUA	3,072	
XGK-CPUS	3,072	
XGK-CPUE	1,536	
Item	Type	Description
USB cable	USB-301A	USB downloading cable
RS-232C cable	K1C-050A	RS-232C downloading cable
Power module		
AC	Free Voltage	XGP-ACF1 DC5V 3A XGP-ACF2 DC24V 0.6A XGP-AC23 DC5V 6A XGP-AC24 DC5V 8.5A
DC	220V	
DC		XGP-DC42 DC5V 6A
Item	Input module	
	AC110V	AC220V DC24V
8 points	-	XGI-A21A, XGI-A21C XGI-D21A
16 points	XGI-A12A	- XGI-D22A
	-	- XGI-D22B
32 points	-	- XGI-D24A
	-	- XGI-D24B
64 points	-	- XGI-D28A
	-	- XGI-D28B
Item	Output module	
	Relay	Triac Transistor
8 points	XGQ-RY1A	- -
16 points	XGQ-RY2A XGQ-SS2A	XGQ-TR2A XGQ-TR2B
	XGQ-RY2B	-
32 points	-	- XGQ-TR4A
	-	- XGQ-TR4B
64 points	-	- XGQ-TR8A
	-	- XGQ-TR8B
Item	Input/Output mixed module	
	16-point DC input	16-point TR output
Special module		
Analog input	XGF-AV8A	Voltage input type, 8Ch
	XGF-AC8A	Current input type, 8Ch
	XGF-AD8A	Voltage/ Current input, 8Ch
	XGF-AD4S	Voltage/ Current input, 4Ch (Isolated)
	XGF-AD16A	Voltage/ Current input, 16Ch
	XGF-AW4S	2-wire, Voltage/ Current input, 4Ch (Isolated)
Analog output	XGF-DV4A	Voltage output type, 4Ch
	XGF-DC4A	Current output type, 4Ch
	XGF-DV8A	Voltage output type, 8Ch
	XGF-DC8A	Current output type, 8Ch
	XGF-DV4S	Voltage output, 4Ch (Isolated)
	XGF-DC4S	Current output, 4Ch (Isolated)
Analog Input/Output	XGF-AH6A	Input: 4ch, Voltage/ Current Output: 2ch Voltage/ Current
	XGF-HO2A	Pulse [OC] input type, 2ch
High-speed counter	XGF-HD2A	Pulse [LD] input type, 2ch
	XGF-P01A-P03A	Open collector, 1-3axis
Positioning	XGF-P01A-P03A	Line drive, 1-3axis
	XGF-P01H-P04H	Open collector, 1-4axis
	XGF-PD1H-PD4H	Line drive, 1-4axis
Positioning (Network Type)	XGF-PN8A	LS Standard EtherCAT Net, 8axis
	XGF-PN8B	Standard EtherCAT Net, 8axis
Motion module	XGF-M32E	Standard EtherCAT Nee, 32axis
	XGF-TC45	Thermocouple input, 4Ch
	XGF-RD4A	RTD input, 4Ch
Temperature control	XGF-RD4S	RTD input, 4Ch (Insulated)
	XGF-TC4UD	Input: 4ch.[Voltage/Current, RTD/TC] Output: 8ch.[TR/Current] Controller: 4 loops
	XGF-TC4RT	Input: 4ch.[RTD] Output: 4ch.[TR] Controller: 4 loops
Event input	XGF-SOEA	DC24V, 32points
Communication module		
RAPIEnet	XGL-EIMT	RAPIEnet Twisted fair 2Ch
	XGL-EIMH	RAPIEnet Fiber optic/Twisted fair 1Ch
	XGL-EIMF	RAPIEnet Fiber optic 2Ch
	XGL-ES4T	RAPIEnet Switch, 4Ports
	XOL-EIMT	RAPIEnet Twisted fair 2Ch For PC
Cnet	XOL-EIMF	RAPIEnet Fiber optic 2Ch For PC
	XGL-CH2A	RS-232C/RS-422
	XGL-C22A	RS-232C, 2ch
Ethernet (Open)	XGL-EFMF	Fiber optic, Master, SC type
	XGL-EFMT	Twisted pair, Master, RJ-45
Ethernet (Dedicated)	XGL-EHST	Fast Ethernet, Switching hub
	XGL-EDMF	Fiber optic, Master, SC type
EtherNet/IP	XGL-EDMT	Twisted pair, Master, RJ-45
	XGL-EIPT	Industrial Ethernet, 2ports
Rnet	XGL-RMEA	Rnet, Master, TP
	XGL-DMEA	DeviceNet, Master
DeviceNet	XGL-LPMEA	Profinet-DP, Master
	XGL-PMEC	Profinet-DP Slave, Remote interface
Profibus-DP	XGL-PSRA	Profinet-DP Slave
	XGL-PSEA	Profinet-DP Slave
Fnet	XGL-FMEA	Dedicated network

XGK/XGI Series

High performance PLC



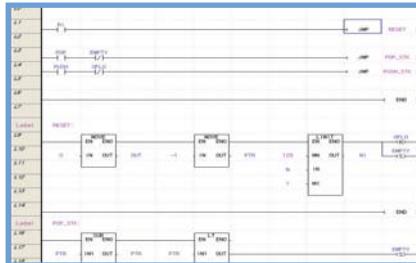
XGK series

- Fastest CPU processing of 28ns/step
- Up to 6,144 I/O points configurable (32,768 points controllable with remote I/O)
- Integrated intelligent software package: XG5000, XG-PD, XG-PM
- System solution based on open network: Ethernet, Profibus-DP, DeviceNet
- Special devices for easy programming
- Massive device memory
- USB I/F for programming up/download & monitoring

XGI series

- Fastest CPU processing of 28ns/step
- Up to 6,144 I/O points configurable (131,072 points controllable with remote I/O)
- IEC 61131-3 Standard programming
 - LD (Ladder Diagram), SFC (Sequential Function Chart), ST (Structured Text)
 - User defined FB (Function Block)
- Built-in PID function (Max. 256 loop)
- USB I/F for programming up/download & monitoring

LD



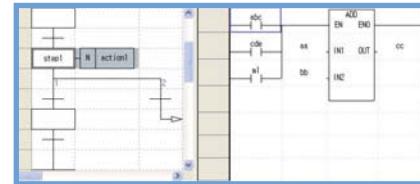
ST

```

16 32.2< C< H = SQRT(U0)/(C-0.01) - 2
20 END_IF;
21
22// CASE
23 TW := WORD_BCD_TO_INT(FRONTAREEL);
25 TW_ERROR := 0;
26 C0 := 0;
27 C1 := 1;
28 1.5* DISPLAY := HIGH_TEMP;
29 2.2* DISPLAY := MOTOR_SPEED;
30 2.5* DISPLAY := FRONTAREEL;
31 3.0* DISPLAY := 0.001*TW * %3;
32 ELSE DISPLAY := 0;
33 END_IF;
34 END_BLOCK;
35 INT_TO_BCD_WORD(DISPLAY);
36
37// END
38 S001 := 0;
39 FOR I := 1 TO 3.00
40  FOR J := 1 TO 1000
41  IF S001 THEN EXIT; END_IF;
42  S001 := S001 + J;
43 END_FOR;
44 S001 := S001 + 1;
45 END_FOR;

```

SFC



XGI:CPUU/D, CPUU, CPUH, CPUS, CPUS/P, CPUE

XGK-CPUU (XGI-CPUU)

- 128Ksteps(1Mbytes) program memory
- 28ns processing speed
- 6,144 I/O points control

XGK-CPUH (XGI-CPUH)

- 64Ksteps(512Kbytes) program memory
- 28ns processing speed
- 6,144 I/O points control

XGK-CPUA

- 32Ksteps program memory
- 28ns processing speed
- 3,072 I/O points control

XGK-CPUS (XGI-CPUS)

- 32Ksteps(128Kbytes) program memory
- 84ns processing speed
- 3,072 I/O points control

XGK-CPUE

- 16Ksteps program memory
- 84ns processing speed
- 1,536 I/O points control

Expansion modules

Power modules

With AC Free voltage, 220V and DC 24 V power supply

Base modules

With 4/6/8/12 main and expansion base

Digital input/output modules

From 8 to 64 of transistor, relay and triac switches

Analog input/output modules

With 4 or 8 ch current/voltage signals

Temperature input modules

With 4 ch Pt100/JPt100 resistance thermometer and thermocouple

High speed counter module

For connection with incremental encoder (2 channels of Open collector or Line driver type)

Positioning module

1~4 axis positioning for servo, step drive and motor

Network modules

Fast Ethernet modules

Ethernet network with TCP/IP protocol

Profibus-DP modules

Profibus-DP fieldbus protocol for connection between LS PLC and different manufacturers

DeviceNet modules

DeviceNet fieldbus protocol for connection between LS PLC and different manufacturers

Rnet modules

Dedicated network for remote I/O control (LS Smart I/O)

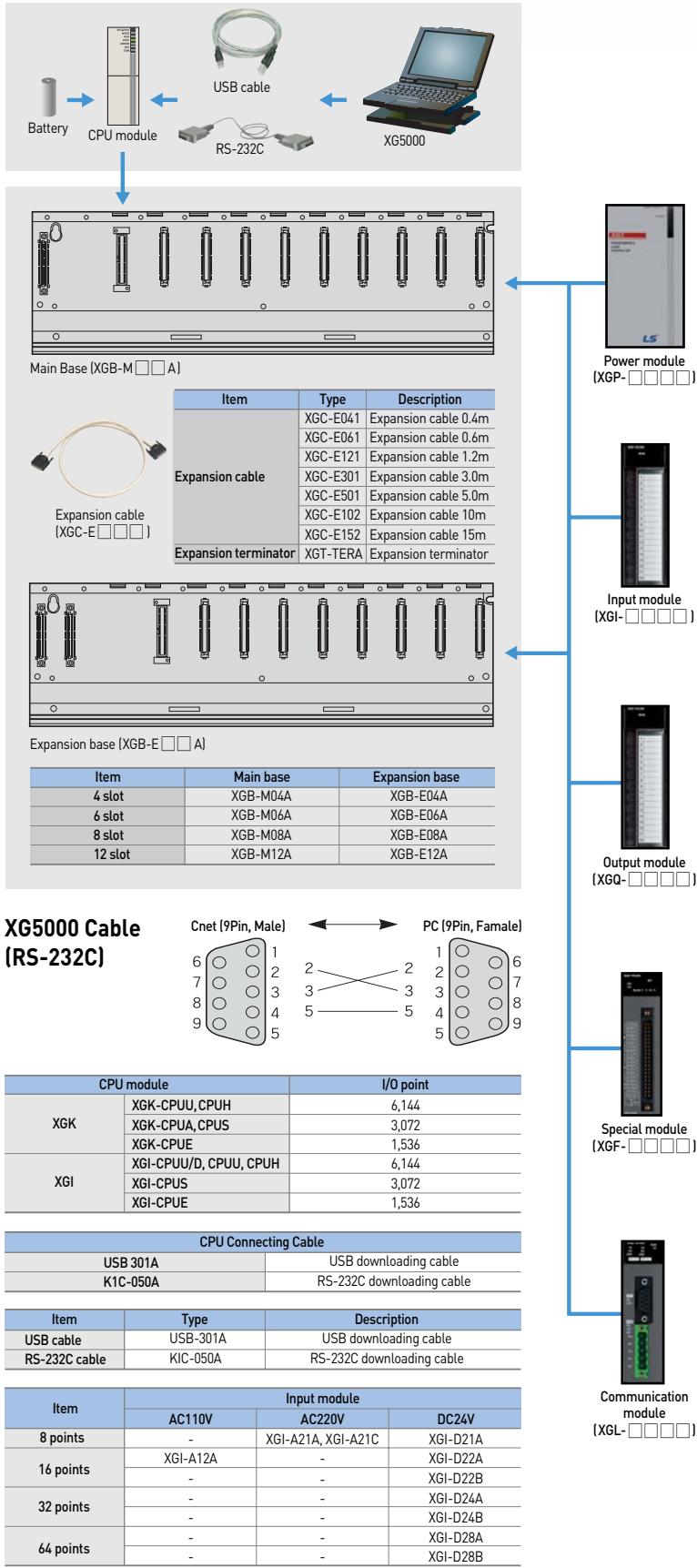
Cnet modules

Serial communication module with RS-232C/422/485

RAPIEnet module

Dedicated network based on Ethernet

Product List



Power module			
AC	Free Voltage	XGP-ACF1	DC5V 3A
		XGP-ACF2	DC24V 0.6A
	220V	XGP-AC23	DC5V 8.5A
DC		XGP-DC42	DC5V 6A

Item	Output module		
	Relay	Triac	Transistor
8 points	XGQ-RY1A	-	-
16 points	XGQ-RY2A	XGQ-SS2A	XGQ-TR2A
	XGQ-RY2B	-	XGQ-TR2B
32 points	-	-	XGQ-TR4A
64 points	-	-	XGQ-TR4B
	-	-	XGQ-TR8A
	-	-	XGQ-TR8B

Item	Input/Output mixed module	
	16-point DC input	16-point TR output

Special module		
Analog input	XGF-AV8	Voltage input type, 8Ch
	XGF-AC8A	Current input type, 8Ch
	XGF-AD8A	Voltage/ Current input, 8Ch
	XGF-AD4S	Voltage/ Current input, 4Ch (Isolated)
	XGF-AD16A	Voltage/ Current input, 16Ch
	XGF-AW4S	2-wire, Voltage/ Current input, 4Ch (Isolated)
Analog output	XGF-DV4A	Voltage output type, 4Ch
	XGF-DC4A	Current output type, 4Ch
	XGF-DV8A	Voltage output type, 8Ch
	XGF-DC8A	Current output type, 8Ch
	XGF-DV4S	Voltage output, 4Ch (Isolated)
Analog Input/Output	XGF-DC4S	Current output, 4Ch (Isolated)
	XGF-AH6A	Input: 4ch, Voltage/ Current
High-speed counter	XGF-H02A	Output: 2Ch Voltage/ Current
	XGF-HD2A	Pulse (OC) input type, 2Ch
Positioning	XGF-P01A-P03A	Pulse (LD) input type, 2Ch
	XGF-PD1A-PD3A	Open collector, 1-3axis
	XGF-P01H-P04H	Line drive, 1-3axis
Positioning (Network Type)	XGF-PD1H-PD4H	Open collector, 1-4axis
	XGF-PN8A	Line drive, 1-4axis
	XGF-PN8B	RS Standard EtherCAT Net. 8axis
Motion module	XGF-M32E	Standard EtherCAT Nee,32axis
Temperature control	XGF-TC4S	Thermocouple input, 4Ch
	XGF-RD4A	RTD input, 4Ch
	XGF-RD4S	RTD input, 4Ch (Insulated)
Temperature controller	XGF-TC4UD	Input: 4ch.(Voltage/Current, RTD/TC)
		Output: 8ch.(TR/Current)
		Controller: 4 loops
	XGF-TC4RT	Input: 4ch.(RTD)
Event input		Output: 4ch.(TR)
	XGF-SOEA	Controller: 4 loops
		DC24V, 32points

Communication module		
RapiNet	XGL-EIMT	RapiNet Twisted fair 2Ch
	XGL-EIMH	RapiNet Fiber optic/Twisted fair 1Ch
	XGL-EIMF	RapiNet Fiber optic 2Ch
	XGL-ES4T	RapiNet Switch, 4Ports
	XOL-EIMT	RapiNet Twisted fair 2Ch For PC
	XOL-EIMF	RapiNet Fiber optic 2Ch For PC
Cnet	XGL-CH2A	RS-232C/RS-422
	XGL-C22A	RS-232C, 2ch
	XGL-C42A	RS-422, 2Ch
Ethernet (Open)	XGL-EFMF	Fiber optic, Master, SC type
	XGL-EFMT	Twisted pair, Master, RJ-45
Ethernet (Dedicated)	XGL-EHST	Fast Ethernet, Switching hub
	XGL-EDMF	Fiber optic, Master, SC type
Rnet	XGL-EDMT	Twisted pair, Master, RJ-45
	XGL-EIPT	Industrial Ethernet, 2ports
EtherNet/IP	XGL-RMEA	Rnet, Master, TP
	XGL-DMEA	DeviceNet, Master
DeviceNet	XGL-PMEA	Profibus-DP, Master
	XGL-PMEC	Profibus-DP, Slave, Remote Inter face
	XGL-PSRA	Profibus-DP, Slave
Profibus-DP	XGL-PSEA	Profibus-DP, Slave
	XGL-FMEA	Dedicated network
Fnet		

XGB Series

Micro PLC

LSIS introduces its most compact and high performance PLC, XGB series. The compactness, high performance, easiness, convenience and functionality are five important characteristics of the XGB PLC.

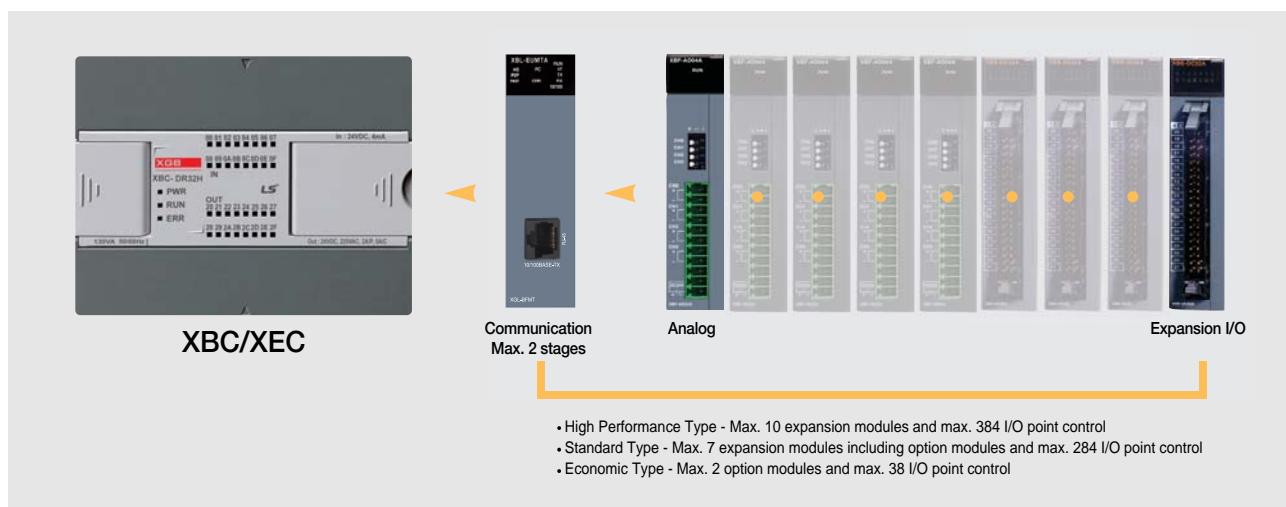
Its compactness ensures that it occupies less space in the equipment and its diverse expendability guarantees flexibility for needs. And its various built-in functions enable the cost-effective PLC system. This controller is particularly suitable for performing small-to-medium performance automation tasks.



Features

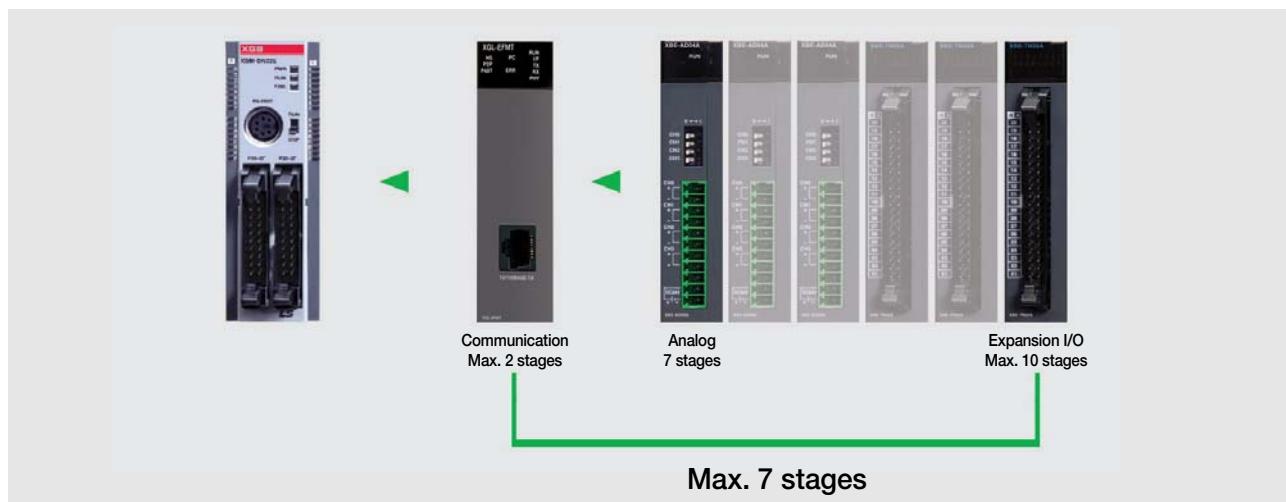
XBC/XEC

Max. 83ns/step processing speed and floating-point arithmetic with on-board CPU



XBM (S-Type)

- 160ns/step processing speed and floating-point arithmetic with on-board CPU
- Max. 7 expansion modules, max. 256 I/O point control: PLC systems for small and medium scale applications
- Max. 5 channel communication with built-in functions and expansion modules



Product List

Main / Expansion modules

Block type unit (Economic type)	
Model	Specification
XBC/XEC-DR10E	AC 100 ~ 240V, 6 points DC input, 4 point Relay output
XBC/XEC-DR14E	AC 100 ~ 240V, 8 points DC input, 6 point Relay output
XBC/XEC-DR20E	AC 100 ~ 240V, 12 points DC input, 8 point Relay output
XBC/XEC-DR30E	AC 100 ~ 240V, 18 points DC input, 12 point Relay output
XBC/XEC-DN10E	AC 100 ~ 240V, 6 points DC input, 4 point transistor output [Sink]
XBC/XEC-DN14E	AC 100 ~ 240V, 8 points DC input, 6 point transistor output [Sink]
XBC/XEC-DN20E	AC 100 ~ 240V, 12 points DC input, 8 point transistor output [Sink]
XBC/XEC-DN30E	AC 100 ~ 240V, 18 points DC input, 12 point transistor output [Sink]
XBC/XEC-DP10E	AC 100 ~ 240V, 6 points DC input, 4 point transistor output [Source]
XBC/XEC-DP14E	AC 100 ~ 240V, 8 points DC input, 6 point transistor output [Source]
XBC/XEC-DP20E	AC 100 ~ 240V, 12 points DC input, 8 point transistor output [Source]
XBC/XEC-DP30E	AC 100 ~ 240V, 18 points DC input, 12 point transistor output [Source]

Block type unit (High performance type)	
Model	Specification
XBC/XEC-DR32H	AC 100~240V, DC24 input 16 points, relay output 16 points
XBC/XEC-DR64H	AC 100~240V, DC24 input 32 points, relay output 32 points
XBC/XEC-DN32H	AC 100~240V, DC24 input 16 points, transistor output 16 points [Sink]
XBC/XEC-DN64H	AC 100~240V, DC24 input 32 points, transistor output 32 points [Sink]
SEC-DR32H	AC 100~240V, DC24 input 16 points, transistor output 16 points [Source]
SEC-DR64H	AC 100~240V, DC24 input 32 points, transistor output 32 points [Source]
XBC-DR32H/DC	DC 24V, DC24 input 16 points, relay output 16 points
XBC-DR64H/DC	DC 24V, DC24 input 32 points, relay output 32 points
XBC-DN32H/DC	DC 24V, DC24 input 16 points, transistor output 16 points [Sink]
XBC-DN64H/DC	DC 24V, DC24 input 32 points, transistor output 32 points [Sink]
SEC-DR32H/D1	DC 12/24V, DC12/24 input 16 points, relay output 16 points
SEC-DR64H/D1	DC 12/24V, DC12/24 input 32 points, relay output 32 points

Block type unit (Standard type)	
Model	Specification
XBC/XEC-DR20SU	AC 100~240V, DC24V input 12 points, relay output 8 points
XBC/XEC-DR30SU	AC 100~240V, DC24V input 18 points, relay output 12 points
XBC/XEC-DR40SU	AC 100~240V, DC24V input 24 points, relay output 16 points
XBC/XEC-DR60SU	AC 100~240V, DC24V input 36 points, relay output 24 points
XBC/XEC-DN20SU	AC 100~240V, DC24V input 12 points, transistor output 8 points [Sink]
XBC/XEC-DN30SU	AC 100~240V, DC24V input 18 points, transistor output 12 points [Sink]
XBC/XEC-DN40SU	AC 100~240V, DC24V input 24 points, transistor output 16 points [Sink]
XBC/XEC-DN60SU	AC 100~240V, DC24V input 36 points, transistor output 24 points [Sink]
XBC/XEC-DP20SU	AC 100~240V, DC24V input 12 points, transistor output 8 points [Source]
XBC/XEC-DP30SU	AC 100~240V, DC24V input 18 points, transistor output 12 points [Source]
XBC/XEC-DP40SU	AC 100~240V, DC24V input 24 points, transistor output 16 points [Source]
XBC/XEC-DP60SU	AC 100~240V, DC24V input 36 points, transistor output 24 points [Source]

Modular type unit	
Model	Specification
XBM-DR16S	DC 24V, 8-point DC 24V input, 8-point relay output
XBM-DN16S	DC 24V, 8-point DC 24V input, 8-point TR output
XBM-DN32S	DC 24V, 16-point DC 24V input, 16-point TR output

Loader cable	
Model	Specification
PMC-310S	Connection cable [PC to PLC], 9pin[PC]-6pin[PLC]
USB-301A	Connection cable [PC to PLC], USB

Memory module	
Model	Specification
XBO-M2MB	Memory

Terminal board	Connection cable	XBM-DN16S / XBM-DN32S	XBE-DC32A	XBE-TN32A	XBE-TP32A	Cable length
TG7-1H40S: (Terminal board)	R40H/20HH-05S-XBM3	●	-	-	-	0.5m
	R40H/20HH-10S-XBM3	●	-	-	-	1.0m
TG7-1H40CA (Terminal board, common)	C40HH-05SB-XBI	-	●	●	●	0.5m
	C40HH-10SB-XBI	-	●	●	●	1.0m
	C40HH-15SB-XBI	-	●	●	●	1.5m
	C40HH-20SB-XBI	-	●	●	●	2.0m
	C40HH-30SB-XBI	-	●	●	●	3.0m
R32C-NS5A-40P (Relay board: sink)	C40HH-05SB-XBI	-	-	●	-	0.5m
	C40HH-10SB-XBI	-	-	●	-	1.0m
	C40HH-15SB-XBI	-	-	●	-	1.5m
	C40HH-20SB-XBI	-	-	●	-	2.0m
	C40HH-30SB-XBI	-	-	●	-	3.0m
R32C-PS5A-40P (Relay board: source)	C40HH-05PH-XBP	-	-	-	●	0.5m
	C40HH-15PH-XBP	-	-	-	●	1.5m
	C40HH-20PH-XBP	-	-	-	●	2.0m

GM7U

Features

Global standard (IEC61131-3) language: IL, ID, SFC

Various main modules: 32 types

- 20/30/40/60 points
- AC/DC power, DC input, Relay/Transistor output



Various expansion modules: 24 types

- Digital I/O 7 types, analog I/O 9 types, Communication I/F 6 types, option module 2 types

Total I/O control: 120 points

Program memory capacity:

132Kbyte (including parameters)



G7M-DR20U

High speed processing

- 0.1 ~ 0.9 μ s/Basic instruction



G7M-DR30U

Batteryless backup

- Program backup: EEPROM

- Data backup: Supercapacitor



G7M-DR40U

Communication channel: 3 channels

- Loader: 1 ch, Built-in RS-485: 1 ch
- Built-in RS-232C or communication I/F: 1 ch
- Various mode: Dedicated/User-defined/
MODBUS/No protocol/LS Inverter mode



G7M-DR60U

Built-in functions

- High speed counter function (32 bits)
 - 1 phase: 100 kHz 2 ch, 20 kHz 2 ch (4 ch in total)
 - 2 phase: 50 kHz 1 ch, 10 kHz 1 ch (2 ch in total)
- Positioning function: DRT type only
 - Control axis: 2 axes (100 kHz)
 - Position/speed/synchronous operation
- Improved PID control function
 - Relay and PRC auto-tuning
 - Forward/reverse
 - PWM output, delta MV
 - Positioning/velocity algorithm
- Pulse catch, external interrupt: 10 μ s 2 points, 50 μ s 6 points
- Input filter: 0~1000 ms



G7L-CUEC

G7E-RY08A

* Expansion modules for GM7U and K120S are common.

Features

Item	GM4-CPUA/B	GM4-CPUC	GM6	GM7U
Control method	Cyclic execution of stored program, interrupt task execution			
I/O Updating method	Program refresh per 1 scan			
Program languages	IL (Instruction list)/LD (Ladder diagram)/SFC (Sequential function chart)			
Number of instructions	Operator	IL: 20, LD: 13		
	Standard function	194	194 + 'real number F'	194
	Special function block	Special function blocks for special modules		
Configuration speed	Operator	0.2 μ s/step	0.12 μ s/step	0.5 μ s/step
	Standard function / Standard function block	0.2 μ s/step	0.12 μ s/step	0.5 μ s/step
	Program capacity	128 K	1 M	68 K
I/O points	Using 32pt module	1,024	1,792	384
	Using 64pt module	2,048	3,584	-
	Network	4,096/8,192	32,768	-

GLOFA-GM6

Features

- High performance features with compact size
- High-speed processing using dedicated CPU
- Designed by international standard language
- Designed by international standard language (IEC61131-3): IL, LD, SFC
- Max. I/O points: 384 points



GLOFA-GM4

Features

- Max. I/O points: GM4A/B (2,048), GM4C (3,584)
- Fast processing time with high-speed gate array
- Fit for small-and medium-sized manufacturing line network
- In case of remote system configuration, large-scale control available
- Cnet, DeviceNet, Fast Ethernet, Fnet, Profibus-DP, Rnet support
- Downsizing and high performance/function
- Special function modules
 - Analog I/O, PID, High-speed counter, Position control (APM), AT, TC, RTD, etc



K120S

Features

20/30/40/60-point standard main unit

10/14/20/30-point economic main unit

- All the standard DRT-units have transistor output for position control (except 10-point unit)
- Max. 120 points are available connecting 3 expansion units

High speed processing

- Basic command: 0.1 ~ 0.9 μ s/step,
Application command: a few to several tens of μ s/step

Batteryless backup

- Program backup: EEPROM backup while online editing
- Data backup: supercapacitor
(over 2000 hours at normal temperature)

Various input handling

- Input filter: filter time can be set from 0 to 1000 ms as the unit of 8 points
- Pulse catch: 10 μ s (P0, P1), 50 μ s (P2 ~ P7)
- External interrupt: 10 μ s (P0, P1), 50 μ s (P2 ~ P7)

High speed counter: 32-bit signed counter

- 1 phase: 100 kHz 2 ch, 20 kHz 2 ch (4 ch in total)
- 2 phase: 50 kHz 1 ch, 10 kHz 1 ch (2 ch in total)
- Additional functions: preset function, latch counter, comparison output, RPM function



MASTER-K 120S

Positioning function

- Control axis: 2 axes (100 kHz)
- Operation mode: single, repeated, end, keep, continuous
- Additional function: return to origin, JOG operation, PWM output

Communication function

- Supports two built-in communication ports RS-232C and RS-485
- Supports 'No Protocol Mode' and communication monitoring

PID control function

- Relay and PRC auto-tuning
- PWM Output, anti-derivative kick, anti-windup, Positioning/velocity algorithm to assign

Item	Model	Specification
Digital I/O	G7E-DR08(10/20)A	G7E-DR08A: slim DC 24 V input 4/relay output 4, G7E-DR10A: DC 24 V input 6 pts/relay output 4 pts, G7E-DR20A: input 12 pts/relay output 8 pts
	G7E-TR10A	TR output 10 pts
Analog	G7E-DC08(RY08)A	G7E-DC08A: slim type [DC 24 V input 8 pts], G7E-RY08A: slim type [relay output 8 pts]
	G7F-ADHA(B)	G7F-ADHA: [AD: 2 chs/DA: 1 ch], G7F-ADHB: slim type [AD: 2 chs/DA: 2 chs]
	G7F-AD2A(B)	G7F-AD2A: [AD: 4 chs], G7F-AD2B: slim type [AD: 4 chs]
	G7F-DA2I	G7F-DA2I: [DA: 4 chs (current output)]/G7F-DA2V: slim [DA: 4 chs (voltage output)]
	G7F-AT2A	4 points [0~200], analog timer
	G7F-RD2A	4 chs, slim type, RTD module
Cnet interface	G7L-CUEB(C)	G7L-CUEB: RS232C 1 ch, G7L-CUEC: RS422 1 ch [Modbus protocol included]
DeviceNet interface	G7L-DBEA	DeviceNet slave interface module
Profibus-DP interface	G7L-PBEA	Profibus-DP slave interface module
Fieldbus interface	G7L-FUEA	Fieldbus interface module: LSIS dedicated protocol
	G7L-RUEA	Fieldbus interface module: LSIS SMART I/O dedicated protocol
RTC module	G7E-RTCA	RTC module
Memory module	G7M-M256B	Memory module (256 K)

Features

Item	K120S		K200S	K300S		
	Economic	Standard				
Operation method	Cyclic execution of stored program					
I/O control method	Scan synchronized batch processing method (Refresh method)					
Program language	Mnemonic, Ladder					
Number of instructions	Basic	30				
	Application	269	277	218		
Max. I/O control points	70	120	384 [512]	1,024		
Program memory capacity	2 K	10 K	7 K	15 K		
Processing speed ($\mu\text{s}/\text{Step}$)	0.4	0.1	0.5	0.2		

MASTER-K200S

Features

- Small-and medium-scale control with 384 points
- High-speed processing: $0.5 \mu\text{s}/\text{step}$
- On-line editing
- Change I/O value by force
- Small-and medium-sized manufacture line control by network
- Various special modules: analog, HSC, positioning, etc
- Built-in flash memory
- 3 types of CPU
- System monitoring function
- Trigger function
- Network support: Cnet, Fast Ethernet, Fnet, Rnet, DeviceNet, and Profibus-DP



MASTER-K300S

Features

- Small-and medium-scale control with 1,024 points
- High-speed processing: $0.2 \mu\text{s}/\text{step}$
- On-line editing
- Change I/O value by force
- Small-and medium-sized manufacture line control by network
- Downsizing and high performance
- Various special modules: analog, HSC, positioning, etc
- Network support: Cnet, Fast Ethernet, Fnet, Rnet, DeviceNet, Profibus-DP (Max. 4 modules in total)



GLOFA-GM/Master-K Series PLC

Product List

GM7U main unit

Type	Part Number	Specification	Power supply	Remarks
GM7U main	G7M-DR30U (/DC)	DC 24V Input 18 points, Relay output 12 points	AC 100~240V (DC 24V)	
	G7M-DR40U (/DC)	DC 24V Input 24 points, Relay output 16 points		
	G7M-DR60U (/DC)	DC 24V Input 36 points, Relay output 24 points		
	G7M-DRT20U (/DC)	DC 24V Input 12 points, Tr. output 4 points/Relay output 4 points		
	G7M-DRT30U (/DC)	DC 24V Input 18 points, Tr. output 4 points/Relay output 8 points		
	G7M-DRT40U (/DC)	DC 24V Input 24 points, Tr. output 4 points/Relay output 12 points		
	G7M-DRT60U (/DC)	DC 24V Input 36 points, Tr. output 4 points/Relay output 20 points		
	G7M-DT20U (N) (/DC)	DC 24V Input 12 points, NPN Tr. output 8 points		
	G7M-DT30U (N) (/DC)	DC 24V Input 18 points, NPN Tr. output 12 points		
	G7M-DT40U (N) (/DC)	DC 24V Input 24 points, NPN Tr. output 16 points		
	G7M-DT60U (N) (/DC)	DC 24V Input 36 points, NPN Tr. output 24 points		
	G7M-DT20U (P) (/DC)	DC 24V Input 12 points, PNP Tr. output 8 points		
	G7M-DT30U (P) (/DC)	DC 24V Input 18 points, PNP Tr. output 12 points		
	G7M-DT40U (P) (/DC)	DC 24V Input 24 points, PNP Tr. output 16 points		
	G7M-DT60U (P) (/DC)	DC 24V Input 36 points, PNP Tr. output 24 points		

K120S main unit

Type	Part Number	Specification	Power supply	Remarks
K120S economic	K7M-DR10UE (/DC)	DC 24V Input 6 points, Relay output 4 points	AC 100~240V (DC 24V)	
	K7M-DR14UE (/DC)	DC 24V Input 8 points, Relay output 6 points		
	K7M-DR20UE (/DC)	DC 24V Input 12 points, Relay output 8 points		
	K7M-DR30UE (/DC)	DC 24V Input 18 points, Relay output 12 points		
	K7M-DR20U (/DC)	DC 24V Input 12 points, Relay output 8 points		
	K7M-DR30U (/DC)	DC 24V Input 18 points, Relay output 12 points		
	K7M-DR40U (/DC)	DC 24V Input 24 points, Relay output 16 points		
	K7M-DR60U (/DC)	DC 24V Input 36 points, Relay output 24 points		
	K7M-DRT20U (/DC)	DC 24V Input 12 points, Tr. output 4 points/Relay output 4 points		
	K7M-DRT30U (/DC)	DC 24V Input 18 points, Tr. output 4 points/Relay output 8 points		
	K7M-DRT40U (/DC)	DC 24V Input 24 points, Tr. output 4 points/Relay output 12 points		
	K7M-DRT60U (/DC)	DC 24V Input 36 points, Tr. output 4 points/Relay output 20 points		
	K7M-DT20U (/DC)	DC 24V Input 12 points, Tr. output 8 points		
	K7M-DT30U (/DC)	DC 24V Input 18 points, Tr. output 12 points		
	K7M-DT40U (/DC)	DC 24V Input 24 points, Tr. output 16 points		
	K7M-DT60U (/DC)	DC 24V Input 36 points, Tr. output 24 points		

GM7U expansion modules

	Type	Part Number	Specification	Power supply	Remarks
Expansion module	Digital I/O	G7E-DR08A	DC 24V Input 4 points, Relay output 4 points	From main module	GM7
		G7E-DR10A	DC 24V Input 6 points, Relay output 4 points		
		G7E-DR20A	DC 24V Input 12 points, Relay output 8 points		
	Input	G7E-DC08A	DC 24V Input 8 points		
		G7E-RY08A	Relay output 8 points		
	Output	G7E-RY16A	Relay output 16 point		
		G7E-TR10A	Tr. output 10 points		
		G7F-ADHA	Analog input 2chs, Analog output 1ch		
Special module	Analog I/O	G7F-ADHB	Analog input 2chs, Analog output 2chs	DC 24V from external power supply	GM7
		G7F-ADHC	Analog input 2chs, Analog output 1ch		
	Analog Input	G7F-AD2A	Analog input 4chs		
		G7F-AD2B	Analog input 4chs		GM7
	Analog Output	G7F-DA2I	Analog current output 4chs		
		G7F-DA2V	Analog voltage output 4chs		
	RTD Input	G7F-RD2A	RTD input 4chs		
	Analog Timer	G7F-AT2A	Analog timer 4chs		GM7
	Cnet I/F	G7L-CUEB	RS-232C 1ch		
		G7L-CUEC	RS-422 1ch		
Comm. module	Fnet I/F	G7L-FUEA	Fnet [dedicated protocol] I/F master	From main module	
	Rnet I/F	G7L-RUEA	Rnet [dedicated protocol for SMART I/Os] I/F master		
	Pnet I/F	G7L-PBEA	Profibus-DP slave unit		
	Dnet I/F	G7L-DBEA	DeviceNet slave unit		
	Option	RTC pack	RTC unit		
		G7M-M256	Memory pack for GM7		GM7 only
		G7M-M256B	Memory pack for GM7U		GM7U only

* If a part number ends with /DC, the supply power is DC24V.

* Slim type: G7E-DC08A, G7E-DR08A, G7E-RY8A, G7F-ADHB, G7F-AD2B, G7F-RD2A

K120S expansion modules

	Type	Part Number	Specification	Power supply	Remarks
Expansion module	Digital I/O	G7E-DR08A	DC 24V Input 4 points, Relay output 4 points	From main module	K120S only
		G7E-DR10A	DC 24V Input 6 points, Relay output 4 points		K80S CPU V1.7↑
		G7E-DR20A	DC 24V Input 12 points, Relay output 8 points		K120S only
	Input	G7E-DC08A	DC 24V Input 8 points		
		G7E-RY08A	Relay output 8 points		
	Output	G7E-RY16A	Relay output 16 point		K80S CPU V1.7↑
		G7E-TR10A	Tr. output 10 points		
		G7F-ADHA	Analog input 2chs, Analog output 1ch		
	Analog I/O	G7F-ADHB	Analog input 2chs, Analog output 2chs		K120S only
		G7F-ADHC	Analog input 2chs, Analog output 1ch		
		G7F-AD2A	Analog input 4chs		
Special module	Analog Input	G7F-AD2B	Analog input 4chs	DC 24V from external power supply	
		G7F-DA2I	Analog current output 4chs		
	Analog Output	G7F-DA2V	Analog voltage output 4chs		K120S only
		G7F-RD2A	RTD input 4chs		
	RTD Input	G7F-AT2A	Analog timer 4chs		
	Cnet I/F	G7L-CUEB	RS-232C 1ch		
		G7L-CUEC	RS-422 1ch		
	Fnet I/F	G7L-FUEA	Fnet [dedicated protocol] I/F master		
	Rnet I/F	G7L-RUEA	Rnet [dedicated protocol for SMART I/Os] I/F master		
	Pnet I/F	G7L-PBEA	Profibus-DP slave unit		
Comm. module	Dnet I/F	G7L-DBEA	DeviceNet slave unit		
	RTC pack	G7E-RTCA	RTC unit	From main module	K120S only
	Memory pack	G7M-M256	Memory pack for K120S		

* If a part number ends with /DC, the supply power is DC24V.

* Slim type: G7E-DC08A, G7E-DR08A, G7E-RY8A, G7F-ADHB, G7F-AD2B, G7F-RD2A

GM6/K200S

Type	Part Number	Specification	Remarks
CPU	GM6-CPUA	Max. I/O: 384 points, Program memory: 68K, Built-in function: RS-232	Program memory: 7k steps
	GM6-CPUB	Max. I/O: 384 points, Program memory: 68K, Built-in function: RS-422, PID, RTC	
	GM6-CPUC	Max. I/O: 384 points, Program memory: 68K, Built-in function: RS-232C, PID, RTC, HSC [50kpps]	
	K3P-07AS	Max. I/O: 384 points, Program memory: 7K, Built-in function: RS-232	
	K3P-07BS	Max. I/O: 384 points, Program memory: 7K, Built-in function: RS-422, PID, RTC	
Power module	K3P-07CS	Max. I/O: 384 points, Program memory: 7K, Built-in function: RS-232C, PID, RTC, HSC [50kpps]	
	GM6-PAFA	AC input [Free], output: DC 5V 2A, DC 24V 0.3A	
	GM6-PAFB	AC input [Free], output: DC 5V 2A, DC 15V 0.5A, DC -15V 0.2A, when analog module used	Analog
	GM6-PAFC	AC input [Free], output: DC 5V 3.5A, DC 24V 0.3A for 12-slot base board	
	GM6-PA2A	AC 220V Only, output: DC 5V 6A	
	GM6-PDFA	DC 12/24V input, output: DC 5V 2A	
	GM6-PDFB	DC 12/24V input, output: DC 5V 3A, DC 15V 0.5A, DC -15V 0.2A, when analog module used	Analog
Base	GM6-B04M	4-slot base board	Not expansible
	GM6-B06M	6-slot base board	
	GM6-B08M	8-slot base board	
	GM6-B12M	12-slot base board, Comm I/F module installation: slot 0~7	
DC input module	G6I-D21A	DC 12/24V input 8 points, Current Sink/Source type	
	G6I-D22A	DC 12/24V input 16 points, Current Sink/Source type	
	G6I-D22B	DC 24V input 16 points, Current Source type	
	G6I-D24A	DC 12/24V input 32 points, Current Sink/Source type	
AC input module	G6I-D24B	DC 24V input 32 points, Current Source type	
	G6I-A11A	AC 110V input 8 points	
Relay output module	G6I-A21A	AC 220V input 8 points	
	G6Q-RY1A	Relay output 8 points, DC 12/24V, AC 220V, 2A	AC, DC
	G6Q-RY2A	Relay output 16 points, DC 12/24V, AC 220V, 2A	
Transistor output module	G6Q-RY2B	Relay output 16 points, DC 12/24V, AC 220V, 2A, Surge absorber	
	G6Q-TR2A	Tr. [NPN] output 16 points, DC 12/24V, 0.5A	DC
	G6Q-TR2B	Tr. [PNP] output 16 points, DC 12/24V, 0.5A	
	G6Q-TR4A	Tr. [NPN] output 32 points, DC 12/24V, 0.1A	
Triac output module	G6Q-TR4B	Tr. [PNP] output 32 points, DC 12/24V, 0.1A	
	G6Q-SS1A	DC 12/24V input 8 points, AC 100~240V, 0.6A	AC
I/O hybrid module	G6H-DR2A	DC 12/24V input 8 points, Relay output 8 points	
A/D module	G6F-AD2A	V/I input: 4 chs, DC 1~5V, 0~10V, -10~10V, 4~20mA	GM6-PAFB/PDFB
D/A module	G6F-DA2V	V output: 4 chs, DC -10~10V	
HSC module	G6F-DA2I	I output: 4 chs, DC 4~20mA	
	G6F-HD1C	2 chs, 500kpps, Counting range: -2,147,483,648~2,147,483,647, Line drive type	
Positioning module	G6F-HO1C	2 chs, 200kpps, Counting range: -2,147,483,648~2,147,483,647, Open collector type	
	G6F-PPX0	X=1, 2, 3: axis, Pulse output, 200kpps, Open collector type	GLOFA CPU V2.0
	G6F-PPXD	X=1, 2, 3: axis, Pulse output, 1M, Line drive type	MASTER-K CPU V2.3
Thermocouple input module	G6F-TC2A	Input: 4 chs (Thermocouple: K, J, E, T, B, R, S)	GM6-PAFB/PDFB
Fast Enet I/F module (Open type)	G6L-EUTB	10/100BASE-TX, UTP	GLOFA CPU V2.1
	G6L-EUFB	100BASE-FX, Fiber optic	MASTER-K CPU V2.4
Fnet I/F module	G6L-FUEA	Fnet master module (Shielded twisted pair cable, 1Mbps)	
Fnet remote I/F module	G6L-RBEA	Fnet remote module (Shielded twisted pair cable, 1Mbps)	
Dnet I/F module	G6L-DUEA	DeviceNet master module (500kbps MAX.)	
Pnet I/F module	G6L-PUEA	Profibus-DP master module (1K)	
Rnet I/F module	G6L-PUEB	Profibus-DP master module (7K)	
Cnet I/F module	G6L-RUEA	Rnet master module	
Dummy module	G6L-CUEB	RS-232C	
	G6L-CUEC	RS-422/485	
Dummy module	GM6-DMMA	Dummy module for empty I/O slot	

GM4/K300S

Type	Part Number	Specification	Remarks
CPU	GM4-CPUA	Max. I/O: 2,048 points, Program memory: 128K, Data memory: 52K	
	GM4-CPUB	Max. I/O: 2,048 points, Program memory: 128K, Data memory: 50K	
	GM4-CPUC	Max. I/O: 2,048 points, Program memory: 1M, Data memory: 428K	
	K4P-15AS	Max. I/O: 1,024 points, Program memory: 15K steps	
Main base	GM4-B04M	4-slot main base board	
	GM4-B06M	6-slot main base board	
	GM4-B08M	8-slot main base board	
	GM4-B12M	12-slot main base board	Not expandable
Main base (High Functional)	GM4-B4EH	4-slot main base board [High Functional]	
	GM4-B6EH	6-slot main base board [High Functional]	
	GM4-B8EH	8-slot main base board [High Functional]	
Expansion base	GM4-B04E	4-slot expansion base board	
	GM4-B06E	6-slot expansion base board	
	GM4-B08E	8-slot expansion base board	
Expansion base (High Functional)	GM4-B4EH	4-slot expansion base board [High Functional]	
	GM4-B6EH	6-slot expansion base board [High Functional]	
	GM4-B8EH	8-slot expansion base board [High Functional]	
Expansion cable	G4C-E041	Length: 0.4m	
	G4C-E121	Length: 1.2m	
	G4C-E301	Length: 3.0m	
Expansion cable (High Functional)	G4C-E051	Length: 0.6m	
	G4C-E601	Length: 6m	
	G4C-E102	Length: 10m	
	G4C-E152	Length: 15m	
Power module	GM4-PA1A	AC 110V input, DC 5V: 4A, DC 24V: 0.7A	
	GM4-PA2A	AC 220V input, DC 5V: 4A, DC 24V: 0.7A	
	GM4-PA1B	AC 110V input, DC 5V: 3A, DC 24V: 0.5A	
	GM4-PA2B	AC 220V input, DC 5V: 3A, DC 24V: 0.5A	
	GM4-PA2C	AC 220V input, DC 5V: 8A	
	GM4-PD3A	DC 24V input, DC 5V: 4A	
DC input module	G4I-D22A	16 points DC 12/24V input [Current Sink/Source type]	
	G4I-D22B	16 points DC 12/24V input [Current Source type]	
	G4I-D22C	16 points DC 24V input [Current Sink/Source type]	
	G4I-D24A	32 points DC 12/24 input [Current Sink/Source type]	
	G4I-D24B	32 points DC 12/24 input [Current Source type]	
	G4I-D24C	32 points DC 24 input [Current Sink/Source type]	
	G4I-D28A	64 points DC 12/24 input [Current Sink/Source type]	
	G4I-A12A	16 points AC 110V input	
AC input module	G4I-A22A	16 points AC 220V input	
	G4Q-RY2A	16 points Relay output [2A]	AC, DC
Transistor output module	G4Q-TR2A	16 points Tr. [NPN] output [0.5A] (Sink type)	
	G4Q-TR2B	16 points Tr. [PNP] output [0.5A] (Source type)	
	G4Q-TR4A	32 points Tr. [NPN] output [0.1A] (Sink type)	
	G4Q-TR4B	32 points Tr. [PNP] output [0.1A] (Source type)	
	G4Q-TR8A	64 points Tr. [NPN] output [0.1A] (Sink type)	
	G4Q-SS2A	16 points Triac output [1.0A]	AC
Triac output module	G4Q-SS2B	16 points Triac output [0.6A]	
	G4H-DR2A	8 points DC 12/24V input, 8 points relay output	
I/O hybrid module	G4H-DT2A	8 points DC 12/24V input, 8 points Tr. output	
	G4F-AD2A	V/I input: 4 chs [DC -5~5V/-10~10V/DC -20~20mA]	
Special module	G4F-AD3A	V/I input: 8 chs [DC 1~5V/0~10V/DC 4~20mA]	
	G4F-DA1A	V/I output: 2 chs [DC -10~10V, DC 4~20mA]	
	G4F-DA3V	V output: 8 chs [DC -10~10V]	
	G4F-DA3I	I output: 8 chs [DC 4~20mA]	
	G4F-DA2V	V output: 4 chs [DC -10~10V]	
	G4F-DA2I	I output: 4 chs [4~20mA]	

GM4/K300S

Type	Part Number	Specification	Remarks
Special module	HSC module	G4F-HSCA	1 ch, 50kHz, Counting range: 0~16,777,215
		G4F-HD1C	2 chs, 500kpps, Counting range: -2,147,483,648~+2,147,483,647, Line drive type
		G4F-HO1C	2 chs, 200kpps, Counting range: -2,147,483,648~+2,147,483,647, Open collector type
	Positioning module	G4F-PPx0	X=1, 2, 3: axis, Pulse output, 200kpps, Open Collector Type
		G4F-PPxD	X=1, 2, 3: axis, Pulse output, 1Mbps, Line Drive Type
	Thermocouple input module	G4F-TC2A	Input: 4 chs (Thermocouple: K, J, E, T, B, R, S)
	RTD input	G4F-RD2A	Input: 4 chs
	PID control module	G4F-PIDB	Max. 16-loop control [Autotuning], 16-point digital output
	Fast Enet	G4L-EUTB	10/100BASE-TX, UTP
Comm. module	I/F module (Open type)	G4L-EUFB	100BASE-FX, Fiber optic
		G4L-EU5B	10BASE-5, AUI
	Fnet I/F module	G4L-FUEA	Fnet master module [Shielded twisted pair cable], 1Mbps
		G4L-FUOA	Fnet master module [Optic cable]
	Fnet remote I/F module	G4L-RBEA	Fnet remote module [Shielded twisted pair cable], 1Mbps
	Dnet I/F module	G4L-DUEA	DeviceNet master module (500kbps MAX.)
	Pnet I/F module	G4L-PUEA	Profibus-DP master module (1Kbyte)
		G4L-PUEB	Profibus-DP master module (7Kbyte)
	Rnet I/F module	G4L-RUEA	Rnet master module
	Cnet I/F module	G4L-CUEA	RS-232C/RS-422: 1ch each, Stand alone/Interlocking mode
	Dummy module	GM4-DMMA	Dummy module for empty I/O slot
	Memory module	G4M-M032	Capacity: 128K (32k steps)
	USB cable	USB-301A	Downloading cable for USB port of GM4-CPUC

* In GM4-CPUC, you are supposed to use high-functional base (main/expansion) and high functional cable when you want to make more than 3-stage expansion.

SMART I/O

Stand alone type

Features

- Wiring reduction and real time control of distributed I/O
- Supporting Rnet, DeviceNet, Profibus-DP, MODBUS (RS-422/485)
- Various I/O (DC/TR/Relay) modules with the unit of 16/32 points



Digital I/O specifications

Item	Input		Output		Mixed module		
	DC (Sink/Source)		Transistor (Sink)		Relay	DC (Sink/Source)	Transistor (Sink)
No. of point	16	32	16	32	16	16	16
Rated input (Load voltage)	DC 24 V		DC 24 V		DC 24 V/AC 110 V/220 V	DC 24 V	DC 24 V
Input current (Load current)	7 mA		0.1 A/2 A, 0.5 A/3 A		2 A/5 A	7 mA 0.1 A/2 A, 0.5 A/3 A	
Response time	Off → On	3 ms or less		3 ms or less	3 ms or less	3 ms or less	3 ms or less
	On → Off	3 ms or less		3 ms or less	3 ms or less	3 ms or less	3 ms or less
Common		16 points/COM		16 points/COM	16 points/COM	16 points/COM	16 points/COM
Current consumption	200 mA	300 mA	280 mA	380 mA	550 mA		350 mA
Network	Rnet	GRL-D22C	GRL-D24C	GRL-TR2C1	GRL-TR4C1	GRL-RY2C	GRL-DT4C1
	Profibus-DP	GPL-D22C	GPL-D24C	GPL-TR2C/TR2C1	GPL-TR4C/TR4C1	GPL-RY2C	GPL-DT4C/DT4C1
	DeviceNet	GDL-D22C	GDL-D24C	GDL-TR2C/TR2C1	GDL-TR4C/TR4C1	GDL-RY2C	GDL-DT4C/DT4C1
	Modbus	GSL-D22C	GSL-D24C	GSL-TR2C1	GSL-TR4C1	GSL-RY2C	GSL-DT4C1

Note1) C Source, Rated current: 0.5A, terminal separated type

C1 Sink, Rated current: 0.5A terminal separated type

Analog I/O specifications

Item	GPL-AV8C	GPL-AC8C	Item	GPL-DV4C	GPL-DC4C
Input channels	8 channels		Output channels	4 channels	
Analog input	DC 1~5 V, 0~5 V, 0~10 V, -10~+10 V	0~20 mA, 4~20 mA, -20~20 mA	Digital input	0~4000, 0~8000, -8000~8000	0~8000
Digital output	0~4000, 0~8000, -8000~8000	0~4000, -8000~8000	Analog output	DC 1~5 V, 0~5 V, 0~10 V, -10~+10 V	0~20 mA, 4~20 mA
Input impedance	1 M Ω	250 Ω	Load impedance	1 K Ω or more (0~5 V or 1~5 V)	
Max. resolution	±15 V	±30 mA	Resolution	2 K Ω or more (0~10 V or -10~10 V)	500 Ω or less
	1.25 mV	2.5 μA		1.25 mV	2.5 μA
Accuracy	±0.3% (full scale, Ta=0~55 °C) ±0.4% (full scale, Ta=0~55 °C)	±0.3% (full scale, Ta=23 °C ± 5 °C)	Accuracy	±0.3% (full scale, Ta=0~55 °C) ±0.4% (full scale, Ta=0~55 °C)	±0.3% (full scale, Ta=23 °C ± 5 °C)
Conversion speed	10 ms or less/8 channel		Conversion speed	10 ms or less/4 channel	
Response period	10 ms or less/8 channels + Transmission period (ms) Analog input/output terminal with FG→Insulation		Response period	10 ms or less/8 channels + Transmission period (ms) Analog input/output terminal with FG→Insulation	
Insulation method	Analog input/output terminal with Communication terminal→Insulation Analog input/output terminal with each channel→No insulation		Insulation method	Analog input/output terminal with Communication terminal→Insulation Analog input/output terminal with each channel→No insulation	
External power supply	DC 24 V [21.6 ~ 26.4]		External power supply	DC 24 V [20.4 ~ 28.8]	
External current consumption	DC 24 V: 220 mA		External current consumption	210 mA	240 mA
Weight (kg)	0.313	0.313	Weight (kg)	0.314	0.322

Communication specifications

Item	Rnet (LS dedicated network)	Profibus-DP	DeviceNet	MODBUS
Protocol	LSIS dedicated protocol (Fnet for Remote)	Profibus-DP (RS-485/EN50170)	DeviceNet (CAN)	MODBUS (RS-422/485)
Transmission speed	1 Mbps	9.6 Kbps ~ 12 Mbps	125/250/500 Kbps	2.4 Kbps ~ 38.4 Kbps
Transmission distance	750 m/segment	100 m ~ 1.2 km	500/250/125 m (Thin cable: 100 m)	500 m
Topology	Bus Token	Bus	Trunk & Drop	Bus
Transmission	Pass & Broadcast	Token Pass & Master/Slave (Poll)	CSMA/NBA (Poll, Cyclic, COS, Bit Strobe)	Master/Slave (Poll)
No. of stations	32/segment (Input: 32, Output: 32)	32/segment, 99/network	64	32
Link capacity	2,048 points/master (64 stations × 32 points)	7 Kbyte/master	2,048 points/master	64 points/station

Note1) Smart I/O supports Poll type currently, but is supposed to support Cyclic, COS and Strobe later on.

SMART I/O

Expandable type



Modbus TCP, EtherNet/IP



DeviceNet



Profibus-DP

Features

- Easy configuration of remote system using XGB expansion I/O
- Up to 8 modules expandable with Network adapter
- Max. 256-point digital I/O
- Max. 16-channel analog I/O
- Network adapter: Profibus-DP, DeviceNet, Rnet, Modbus TCP, EtherNet/IP

DeviceNet specification

Item		Specification		
Communication Mode		Poll, Bit-strobe, COS, Cyclic		
Topology		Bus, Trunk and Drop		
Master/Slave		Slave		
Baud rate/	kbps	125	250	500
Distance	m	500	250	100
Max. Node Number (MAC ID)		64 [0~63]		
Number of Expansion I/O Slots		8		
I/O Data Size		64bytes (Input: 32bytes/Output: 32bytes)		
Max. Analog Channels		32chs (Input: 16chs/Output: 16chs)		
Power	Input	19.2V ~ 28.8V		
	Output	5V(±20%)/1.5A		
Weight		100g		

* When I/O module is installed, check the current consumption (Max. Current: 1.5A)

Modbus TCP, EtherNet/IP Specification

Item	Specification
International standard	IEEE 802.3
Protocol	Modbus TCP, EtherNet/IP
Topology	Line(Daisy-Chain), Star
Max. Protocol size	1500bytes
Flow control	Full duplex, Half duplex
Baud rate	10/100Mbps
Max. Distance between node	100m
Communication port	RJ-45 (2Ports, Switch Built-in)
IP Setting	Software setting
Number of Expansion I/O Slots	8
I/O Data size	64bytes (Input: 32bytes/Output: 32bytes)
Max. Analog channels	32chs (Input: 16chs/Output: 16chs)
Power	Input 19.2V ~ 28.8V Output 5V(±20%)/1.5A
Weight	100g

* When I/O module is installed, check the current consumption (Max. Current: 1.5A)

Profibus-DP Specification

Item		Specification				
Media Access		Poll				
Topology		Bus				
Master/Slave		Slave				
Baud rate/	kbps	9.6	19.2	93.75	187.5	500
	m	1200	1200	1200	1000	400
Distance	kbps	1500	3000	6000	12000	-
	m	200	100	100	100	-
Max. Node Number		100 [0~99]				
Number of Expansion I/O Slots		8				
I/O Data Size		64bytes (Input: 32bytes/Output: 32bytes)				
Max. Analog Channels		32chs (Input: 16chs/Output: 16chs)				
Power	Input	19.2V ~ 28.8V				
	Output	5V(±20%)/1.5A				
Weight		100g				

* When I/O module is installed, check the current consumption (Max. Current: 1.5A)

iXP Series

Human Machine Interface

Graphic type iXP70/iXP80/iXP90

- 1GHz 32bit RISC Embedded CPU
- 16,777,216 TFT color LCD
- 128MB display data and 1MB back-up memory
- Ethernet 1ch, RS-232C 2ch, RS-422/485 1ch
- USB host 3ch and device 1ch
- CF and SD memory card interface
- PLC ladder monitoring(XGK/XBC PLC only)
- Web Server/Data Server
- Path through
- XP-Remote : Remote controlling and monitoring



Item	iXP70-TTA	iXP80-TTA	iXP90-TTA
Display type		TFT LCD	
Screen size	26.4cm [10.4"]	30.7cm [12.1"]	38.1cm [15"]
Display Resolution	800×600(SVGA)	800×600(SVGA)	1,024×768(XGA)
Color indication		16bit/24bit Color (default 16bit)	
Indication degree		Left/Right: 80 deg. Upper: 60 deg. Lower: 80 deg.	
Backlight		LED	
Backlight duration		Approx. 60,000h	
Brightness	700 cd/m ²	550 cd/m ²	800 cd/m ²
Touch panel		4-Line type, analog	
Sound Output		Magnetic buzzer (85dB)	
Process		ARM Cortex-A8 Core (32bit RISC), 1GHz	
Audio input	-		1channel, audio input
Audio Output		1Channel, stereo audio output	
Video input	-		1 channel(camera video input)
Video output	-		D-SUB, 1 channel(monitor)
Memory	Flash	1GB (display 128MB)	
Operating RAM		512MB	
Backup RAM		1MB	
Backup data		Date/Hour data, Logging/Alarm/Recipe data and nonvolatile device	
Battery duration		Approx. 3 years (Operating ambient temperature of 25°C)	
USB Host		3 Channels, USB 2.0 host (mouse, keyboard and USB memory driver is available) 1Channel, USB 2.0 slave (for download and upload project file)	
RS-232C		1 Channel	
RS-422/485		1 Channel, RS-422/485 mode	
Ethernet		1 Channel, IEEE802.1a, 10Base-T/100Base-TX	
CF Card		1 Slot (Compact Flash)	
SD Card		1 Slot (SDHC)	
Human sensor		Detection range: side 1~1.5m, front 40~50cm Angle: high/low 100°, left/right 140° (detecting 5~20 micron infrared light)	
Audio output		LINE-OUT 1channel	
Expansion module		For communication and I/O option module (available later)	
VM I/F		4 channels video input (available later)	
Certifications		CE, UL(cUL), KC	
IP Protection		IP65	
Dimension(mm)	270.5×212.5×57.0	313.0×239.0×57.0	395.0×294.0×60.0
Panel cut(mm)	259.0×201.0	301.5×227.5	383.5×282.5
Power		AC100~240V, DC12/24V	
Power consumption(W)	42	42	42
weight(kg)	2.2	2.4	3.9

Graphic type XP30/XP50/XP70/XP80/XP90

- High and vivid distinction with 65,536 colors
 - High quality raster and vector symbols
 - Various BMP JPG GIF graphic file support: BMP, JPG, GIF, WMF, etc
 - Simple animation effects: animated GIF
 - 10/100BASE-T Ethernet interface
 - Convenient and easy screen editing
 - Strengthened data management: Logging, Recipe, and Alarm
 - Read function of a controller's state information: Monitoring and maintenance
 - Multi-lingual display: up to 8 languages
 - Offline and concurrent simulation with XG5000
 - Easy to change the address of the graphic objects: Tag function with XP-Builder
 - USB host for peripheral devices: USB Drive, Mouse, keyboard, printer, etc
 - Sufficient memory for screen data: 10MB



The image shows three certification logos: CE (European Conformity), KC (Korean Conformity), and UL US LISTED (Underwriters Laboratories). The KC logo is blue and stylized.

Item		XP30-BTE/DC	XP30-BTA/DC	XP30-TTE/DC	XP30-TTA/DC	XP50-TTE/DC	XP50-TTA/DC	XP70-TTA/AC	XP80-TTA/AC	XP90-TTA/AC	
		Mono		Color							
Display description		Mono Blue LCD		TFT Color LCD							
Display Size (inch)		14cm (5.7")				21cm (8.4")	21cm (8.4")	26cm (10.4")	31cm (12.1")	38cm (15")	
Resolution		320 x 240				640 x 480			800 x 600	1024 x 768	
Color		8-bit Gray Scale		256 color	65,536 color	256 color	65,536 color				
Backlight		LED			CCFL (whole LCD), auto On/Off		CCFL (Replaceable LCD), Auto on/off				
		50,000Hours			60,000Hours		50,000Hours				
Contrast		Adjustable		Fixed							
Luminance		230cd/m ²		210cd/m ²	400cd/m ²	200cd/m ²	480cd/m ²	430cd/m ²	400cd/m ²	450cd/m ²	
Viewing angle	Up/Down(Degree)	20/40		80/80	70/50	20/20	50/60	45/65	45/75	50/60	
	Left/Right(Degree)	45/45		80/80	70/70	45/45	65/65	65/65	65/65	75/75	
Touch panel		4-wire system analog					8-wire system analog				
Movement LED		Green : Run [Monitoring, download drawing data]					Red : Error [Communication error, drawing data error]				
Memory	Display data	4MB	10MB	4MB	10MB	4MB	10MB			20MB	
	Backup data	128kB	512kB	128kB	512kB (Logging, alarm data saving)	128kB	512KB (Logging, alarm data saving)				
Ethernet		-	1ch, IEEE802.3, 10/100Base-T	-	1ch, IEEE802.3, 10/100Base-T	-	1ch, IEEE802.3, 10/100Base-T				
USB interface		USB Host x 1	USB Host x 2	USB Host x 1	USB Host x 2	USB Host x 1	USB Host x 2				
Serial	RS-232C	2ch (1 port for PC Communication)									
	RS-422/485	1ch, 422/485 optional mode									
CF memory card interface		-	CF card (TYPE-II) x 1	-	CF card (TYPE-II) x 1	-	CF card (TYPE-II) x 1				
AUX interface		-	Optional	-	Optional	-	Optional				
Certification		CE, UL, KCC									
Protection		IP65F [Front Water Proof Structure]									
Size (W x H x D)mm		181 x 140 x 56.5	181 x 140 x 66.5	181 x 140 x 56.5	181 x 140 x 66.5	240 x 174 x 63	240 x 174 x 73	317 x 243 x 73			
Panel Cut (W x H)mm		155.5 x 123				228 x 158			294 x 227		
Weight (kg)		0.62	0.75	0.62	0.75	1.2	1.4	2.2	2.4	3.9	
Power	Rated voltage		DC 24V						AC100~220V, DC24V		
	Permitted voltage	AC	-						MIN 85 VAC, MAX 264 VAC		
	Watt	DC	MIN 19.2 VDC, MAX 28.8 VDC								
	AC	DC	-						37	40	
			5	8.5	5	8.5	13	20	27	30	

XP40

Human Machine Interface

XP40 (7" Wide Type)

- 7" (17.7cm)
- 256/65,536 TFT color LCD 4MB/10MB display data memory
- 128KB/512KB back-up memory Ethernet 1ch, RS-232C 2ch, RS-422/485 1ch
- USB 2.0 Host 1ch
- PLC ladder monitoring(XGK/XBC PLC only)
- Web Server/Data Server*
- Path through*
- XP-Remote : Remote controlling and monitoring*

* XP40-TTA/DC only



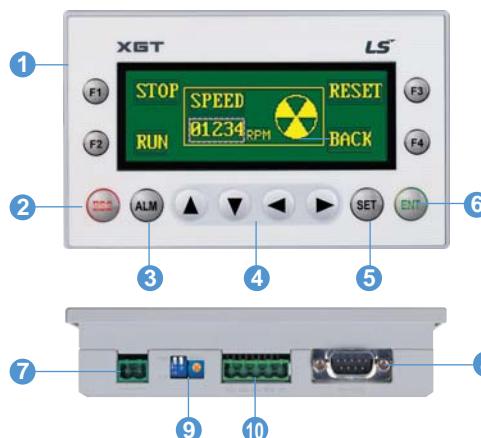
Item	XP40-TTE/DC	XP40-TTA/DC
Display type	TFT LCD	
Screen size	7" [17.7cm]	
Display resolution	800 x 480 pixel	
Display color	256 Colors	65,536 Colors
Display angle	Left/Right: 65 deg. Upper: 50 deg. Lower: 60 deg.	
Backlight	LED (Replaceable)	
Backlight life	Above 30,000 hours	
Contrast	Adjust through touch/parameter	
Brightness	280cd/β ↗	
Touch panel	Analog	
Sound	Magnetic buzzer	
Process	ARM920T (32bit RISC), 200Hz	
Graphic accelerator	Hardware Accelerator	
Memory	Flash	32MB
	Operating RAM	64MB
	Backup RAM	512KB
Backup type	Date/Hour data and Logging/Alarm/Recipe data, Nonvolatile Device	
Battery duration	Approximately 3 years (When operating at 25°C)	
USB host	1 channel, USB 2.0 (printer, USB memory stick driver is available)	
RS-232C		
RS-422/485	Terminal Block	
Ethernet	1 channel, IEEE802.3, 10Base-T / 100Base-TX	
Multilingual language	Up to 8 language simultaneously	
Animation	GIF format is available.	
Recipe	Available	
Data logging	Available	
Script executor	Available	
Standard certification	CE, UL(cUL), KC	
Degree of protection	IP65	

XP Series

Human Machine Interface

Text type XP10

- Screen: 192 × 64 Graphic STN LCD
- System RAM: 1000 words
- Flash memory: Program/Parameter back up
- Communication: Half-duplex comm.
 - Baud rate: 1200~115200 bps
 - Master/slave setting available
 - RS-232C/RS-485 2 ch separate to use
- Power requirements - 24 V input or 5 V direct input by LS PLC
- Various function key - ESC, ALM, SET, ENT, F1~F4, Arrow keys
- Panel Editor - Easy programming and H/W setting



- ① Key to control PLC device and screen
- ② ESC key
- ③ Alarm history
- ④ Data input and Screen change
- ⑤ PLC data setting
- ⑥ Enter key
- ⑦ DC24V input terminal
- ⑧ RS-232C port to download a project
- ⑨ Brightness adjustment
- ⑩ RS-422 port

Item	Specifications	
	XP10BKA/DC	XP10BKB/DC
Input voltage	5VDC 24VDC	DC 4.9 ~ 5.1 [RS-232C port] DC 21.6 ~ 26.4 [DC Input connector]
Consumption current		Less than 200mA
Display	LED back-light (192 x 64 Dots)	
Communication interface	RS-232C, RS-422/485	
Flash memory	256K bytes	
Language	Default: English, Can be switched to Korean/Chinese/Russian	
RTC	None	Supports
Download specification	115,200bps	
Keys	12 Keys [F1~F4, ESC, ALM, ▲, ▼, ▶, ▷, SET, ENT]	

XGT Servo

XDL/XML Series

Inetlligent Control

The interface of the convenient and user oriented function

Enhanced user friendly function through Serial communication (RS-422), Parameter transmission using PC loader, etc.



High Performance

High Resolution Serial type Encoder (16Bit~21Bit)

- Accurate Position Control and Improved Stability at Low Speed

Stable Low Speed Operation with Accurate Speed Check

- Stable Measurement at Low Speed

Absolute Encoder (Multi-turn)

- Origin Function is not needed

Improved Speed Response Frequency

- About 1kHz • Reduced Positioning Time

Convenience

Motion Network Type(EtherCAT) - XDL N Series

High Performance

- High speed, Real-time capability and Synchronization mechanism

Open Network

- Over 1600 worldwide members

Cost Effective

- Standard Ethernet Cabling + Connectors,
Less implementation efforts for master and slave

Easy to Use

- Versatile topology and Diagnostics

XDL Drive with Built-in EtherCAT Interface

- 100BASE-TX(100Mbps) Ethernet based real-time communication
- Support CiA402(IEC61800-7) drive profile • Interoperability
- Precise synchronization mechanism (1us) • Max. 100m between nodes
- Freely settable process data length and mapping
- Four status indication LEDs (L/A0, L/A1, RUN, ERR)
- Standard RJ45 connector and cabling(CAT5)
- Have intrinsic functions of XDL S series (same size)
- Support various homing modes
- Support Full-Closed control (Being developed)

Support various operation modes

- CSP, CSV, CST, PP, PV, PT, HM, IP

Safe Torque Off function

- Forced torque off by HWBB signals without intervention of μ P and FPGA(ASIC), International standard(IEC61508)

Versatile I/O assignment by parameters

- 6 inputs, 4 outputs

High speed position capture function

- Touch probe function (PROBE1, PROBE2)

Provide specialized commissioning tools by LSIS's XGT PLC

- Tune inertia ratio, velocity/position gains, gain conversion configuration

Have conformity of EtherCAT device

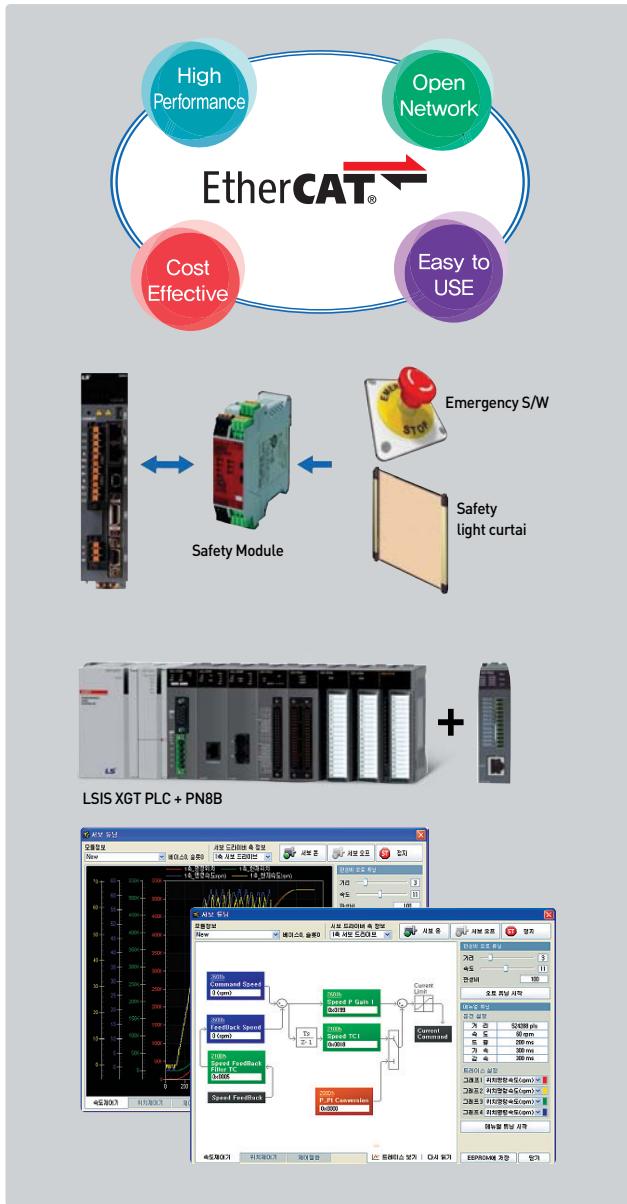
- In-house test using CTT(Conformance Test Tool)

Support scaling objects for position, velocity and acceleration

- Numerator and denominator

Provide Gain Tuning Tools and Commissioning Packages

- Automatic inertia tuning and PI gains • Gain conversion setting
- Manual fine gain tuning tool • Object save and initialization function
- Alarm history function(recently issued 20 alarm codes)





Servo Drive

Product Features

Standard Type

Network Type

Green Innovators of Innovation



- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
Do not disassemble or repair by yourself !
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

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