PLC

XGR | Redundancy System PLC Based on IEC

Features

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 Multi type 2km, Single type 15km (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 Functions

- 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 (RAPIEnet)

Variety of Input and Output Modules

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

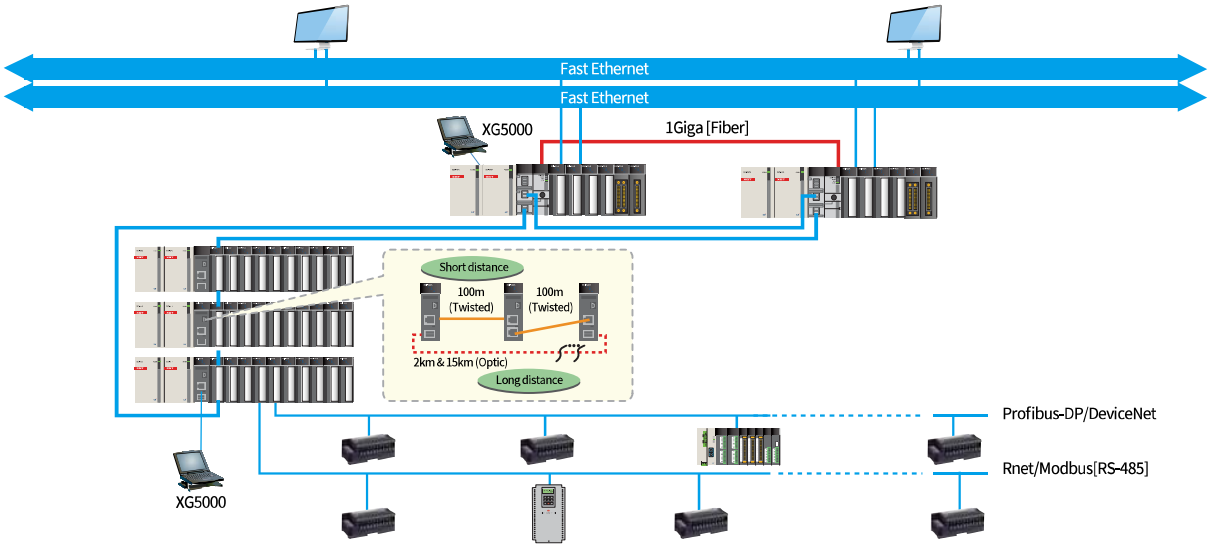
Enhanced Analog Function

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

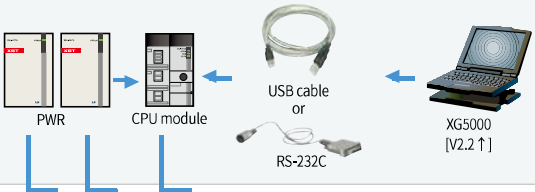
Integrated Programming & Engineering Environmen

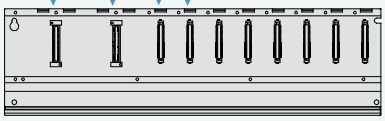
- XG5000 : Easy to program, Various monitoring functions and enhanced editing function
- XG-PD : Convenient setup for communication and network parameter
- XG-PM : Software package for positioning module
- XG-TCON : Temperature control and function of auto tuning

System Configuration Diagram

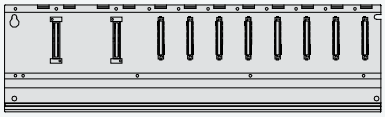


System Configuration





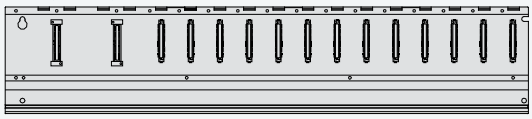
Main base [A Side] XGR-M06P / XGR-M02P



Main base [B Side] XGR-M06P / XGR-M02P

Main base

- 2 types of CPU (Fiber optic, Twisted fair)
- Power : AC110V, AC220V
- 6slot base : Enable to install 6 communication modules



Expansion base XGR-E12P / XGR-E12H

Expansion base

- Power 8.5A/AC110V, 8.5A/AC220V
- Expansion drive : Fiber optic, Twisted fair, Hybrid
- EFM* and EIM* not available with 12slot base

Item	XGR Module	
CPU	XGR-CPUH/T	Twisted pair
	XGR-CPUH/F	Fiber optic (2km)
	XGR-CPUH/S	Fiber optic (15km)
Power	XGR-AC12	110V, 5.5A (Main base)
	XGR-AC13	110V, 8.5A (Expansion base)
	XGR-AC22	220V, 5.5A (Main base)
	XGR-AC23	220V, 8.5A (Expansion base)
	XGR-DC42	DC24V/DC5V 7A, Main (Expansion base)
Base	XGR-M02P	2slot (Main base)
	XGR-M06P	6slot (Main base)
	XGR-E08P	8slot (Expansion base)
	XGR-E12P	12slot (Expansion base)
	XGR-E12H	12slot (Expansion base, Drive redundancy)
Expansion Drive	XGR-DBST	Twisted pair - Twisted
	XGR-DBSF	Pair fiber optic - Fiber optic(2km)
	XGR-DBSH	Twisted pair - Fiber optic(2km)
	XGR-DBSFS	Pair fiber optic - Fiber optic(15km)
	XGR-DBSHS	Twisted pair - Fiber optic(15km)

Item	XGR Module	
Expansion Drive Redundancy	XGR-DBDT	Twisted pair - Twisted
	XGR-DBDF	Pair fiber optic-Fiber optic(2km)
	XGR-DBDH	Twisted pair - Fiber optic(2km)
Sync & Expansion Cable	XGC-F201	2m (Fiber optic)
	XGC-F501	5m (Fiber optic)

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	-	XGQ-TR1C
16 points	XGQ-RY2A	XGQ-SS2A	XGQ-TR2A
	XGQ-RY2B	-	XGQ-TR2B
32 points	-	-	XGQ-TR4A
	-	-	XGQ-TR4B
64 points	-	-	XGQ-TR8A
	-	-	XGQ-TR8B

Item	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
High-Speed Counter	XGF-HO2A	Pulse (OC) input type, 2ch
	XGF-HD2A	Pulse (LD) input type, 2ch
Positioning	XGF-PO1H~PO4H	Open collector, 1~4axis
	XGF-PD1H~PD4H	Line drive, 1~4axis
Positioning (Network Type)	XGF-PN8A	LS standard EtherCAT 8 axes
	XGF-PN8B	Standard EtherCAT 8 axes
Motion Module	XGF-M32E	Standard EtherCAT 32 axes
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)
		Output : 4ch.(TR)
		Controller : 4 loops
Event Input	XGF-SOEA	DC24V, 32points

Item	Communication Module	
RAPIEnet+ - RAPIEnet v2 - EtherNet/IP - Modbus TCP/IP - Dedicated XGT Network	XGL-EFMTB	Master/client, Twisted fair 2ch.
	XGL-EFMFB	Master/client, Fiber optic 2ch.
	XGL-EFMHB	Master/client, Twisted fair/fiber optic
	XOL-ES4T	Stand alone switch twisted pair 4ch.
	XOL-ES4H	Stand alone switch twisted 2ch. fiber 2ch.
	XGL-EH5T	Open Ethernet switching hub
Computer Link (Cnet)	XGL-CH2B	RS-232C 1ch., RS-422/485 1ch.
	XGL-C22B	RS-232C 2ch.
	XGL-C42B	RS-422/485 2ch.
DeviceNet (Dnet)	XGL-DMEB	DeviceNet, Master
Profibus-DP (Pnet)	XGL-PMEB	Profibus-DP, Master
	XGL-PSRA	Profibus-DP Slave, Remote interface
	XGL-PSEA	Profibus-DP Slave
Rnet	XGL-RMEB	Rnet, Master, TP
	GOL-RR8T	Rnet stand alone repeater hub
Fnet	XGL-FMEA	Fnet, Master
BACnet/IP	XGL-BIPT	BACnet client/server

PLC

XGK/XGI Series | Large and Medium Scale Solution PLC

Features

XGK Series

- Fastest CPU processing of 8.5ns/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 8.5ns/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

Modules

CPU Modules

High-Speed and Large Scale Control

XGK-CPUUN (XGI-CPUUN)
- Built-in Ethernet port
- 256K (2MB) program memory
- 8.5ns processing speed
- 6,144 I/O points control

XGK-CPUU (XGI-CPUU)
- 128K (1MB) program memory
- 28ns processing speed
- 6,144 I/O points control

XGK-CPUHN
- Built-in Ethernet port
- 128K (1MB) program memory
- 8.5ns processing speed
- 6,144 I/O points control

XGK-CPUH (XGI-CPUH)
- 64K (512KB) program memory
- 28ns processing speed
- 6,144 I/O points control

XGK-CPUSN
- Built-in Ethernet port
- 64K (512KB) program memory
- 8.5ns processing speed
- 3,072 I/O points control

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

General Sequence Control

XGK-CPUS (XGI-CPUS)
- 32K (128KB) pprogram memory
- 84ns processing speed
- 3,072 I/O points control

XGK-CPUE (XGI-CPUE)
- 16K (64KB) 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)

Motion/Positioning module
EtherCAT based motion / positioning for servo and motor (1~32 axes)

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

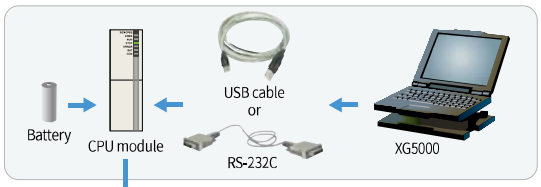
DeviceNet Modules
DeviceNet fieldbus protocol for connection between LS PLC and different manufacturers

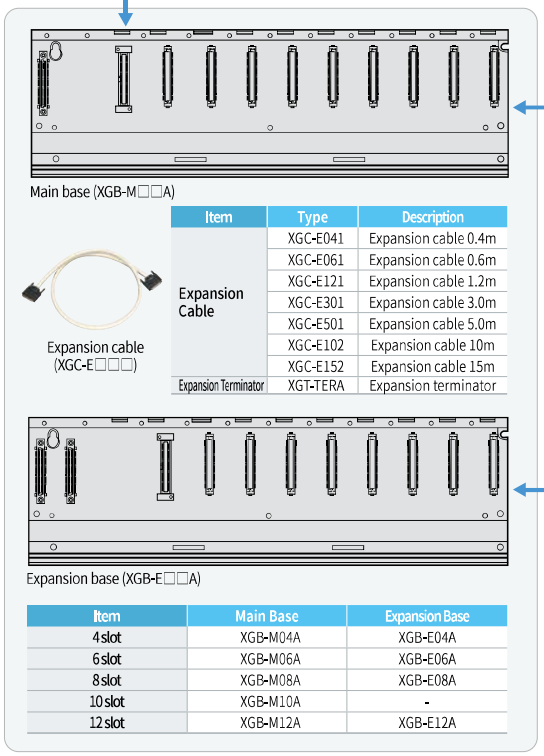
Rnet Modules
Dedicated network for remote I/O control (LS Smart I/O)

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

RAPIEnet Module
Dedicated network based on Ethernet

System Composition

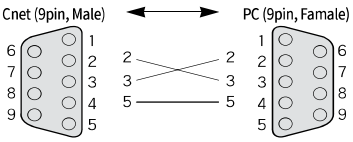




Item	Type	Description
Expansion Cable	XGC-E041	Expansion cable 0.4m
	XGC-E061	Expansion cable 0.6m
	XGC-E121	Expansion cable 1.2m
	XGC-E301	Expansion cable 3.0m
	XGC-E501	Expansion cable 5.0m
	XGC-E102	Expansion cable 10m
	XGC-E152	Expansion cable 15m
Expansion Terminator	XGT-TERA	Expansion terminator

Item	Main Base	Expansion Base
4 slot	XGB-M04A	XGB-E04A
6 slot	XGB-M06A	XGB-E06A
8 slot	XGB-M08A	XGB-E08A
10 slot	XGB-M10A	-
12 slot	XGB-M12A	XGB-E12A

XG5000 Cable (RS-232C)



CPU Module		I/O Point
XGK	XGK-CPUH, CPUU, CPUHN, CPUUN	6,144
	XGK-CPUS, CPUA, CPUSN	3,072
	XGK-CPUE	1,536
XGI	XGI-CPUUN, CPUU/D, CPUU, CPUH	6,144
	XGI-CPUS	3,072
	XGI-CPUE	1,536

CPU Connecting Cable	
USB 301A	USB downloading cable
K1C-050A	RS-232C downloading cable

Item	Type	Description
USB cable	USB-301A	USB downloading cable
RS-232C cable	KIC-050A	RS-232C downloading cable

Item	Input Module		
	AC110V	AC220V	DC24V
8 points	-	XGI-A21A	XGI-D21A
16 points	XGI-A12A	-	XGI-D22A
	-	-	XGI-D22B
32 points	-	-	XGI-D24A
	-	-	XGI-D24B
64 points	-	-	XGI-D28A
	-	-	XGI-D28B

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

Item	Output Module		
	Relay	Triac	Transistor
8 points	XGQ-RY1A	-	XGQ-TR1C
16 points	XGQ-RY2A	XGQ-SS2A	XGQ-TR2A
	XGQ-RY2B	-	XGQ-TR2B
32 points	-	-	XGQ-TR4A
	-	-	XGQ-TR4B
64 points	-	-	XGQ-TR8A
	-	-	XGQ-TR8B

Item	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
High-Speed Counter	XGF-HO2A	Pulse (OC) input type, 2ch
	XGF-HD2A	Pulse (LD) input type, 2ch
Positioning	XGF-PO1H~PO4H	Open collector, 1~4axes
	XGF-PD1H~PD4H	Line drive, 1~4axes
Positioning (Network Type)	XGF-PN8A	LS Standard EtherCAT Net. 8axes
	XGF-PN8B	Standard EtherCAT Net. 8axes
Motion Module	XGF-M32E	Standard EtherCAT 32axes
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)
		Output : 4Ch.(TR)
		Controller : 4 loops
Event Input	XGF-SOEA	DC24V, 32points
Data Log	XGF-DL16A	USB2.0,CF2001,Max16Gbyte, 32 points 1 slot(Input 22 points, Output 10 points)

Item	Communication Module	
RAPIEnet+ - RAPIEnet v2 - EtherNet/IP - Modbus TCP/IP - Dedicated XGT Network	XGL-EFMTB	Master/Client, Twisted fair 2ch.
	XGL-EFMFB	Master/Client, Fiber optic 2ch.
	XGL-EFMHB	Master/Client, Twisted fair/fiber optic
	XGL-DBDT	Expansion driver - Twisted pair 2ch.
	XGL-DBDF	Expansion driver - Fiber optic 2ch.
	XGL-DBDH	Expansion driver - Fiber optic / Twisted pair
	XOL-ES4T	Stand alone switch twisted pair 4ch.
	XOL-ES4H	Stand alone switch twisted 2ch. fiber 2ch.
	XGL-EH5T	Open Ethernet switching hub
Computer Link (Cnet)	XGL-CH2B	RS-232C 1ch., RS-422/485 1ch.
	XGL-C22B	RS-232C 2ch.
	XGL-C42B	RS-422/485 2ch.
DeviceNet (Dnet)	XGL-DMEB	DeviceNet, Master
Profibus-DP (Pnet)	XGL-PMEB	Profibus-DP, Master
	XGL-PSRA	Profibus-DP Slave, Remote interface
	XGL-PSEA	Profibus-DP Slave
Rnet	XGL-RMEB	Rnet, Master, TP
	GOL-RR8T	Rnet stand alone repeater hub
Fnet	XGL-FMEA	Fnet, Master
BACnet/IP	XGL-BIPT	BACnet client/server
RAPIEnet v1	XGL-EIMT	RAPIEnet, Twisted fair 2Ch
	XGL-EIMF	RAPIEnet, Fiber optic 2Ch
	XGL-EIMH	RAPIEnet, Twisted fair, Fiber optic
EtherNet/IP	XGL-EIPT	Industrial Ethernet, Twisted fair 2Ch