

Top 100
Global
Innovator
for 10 years

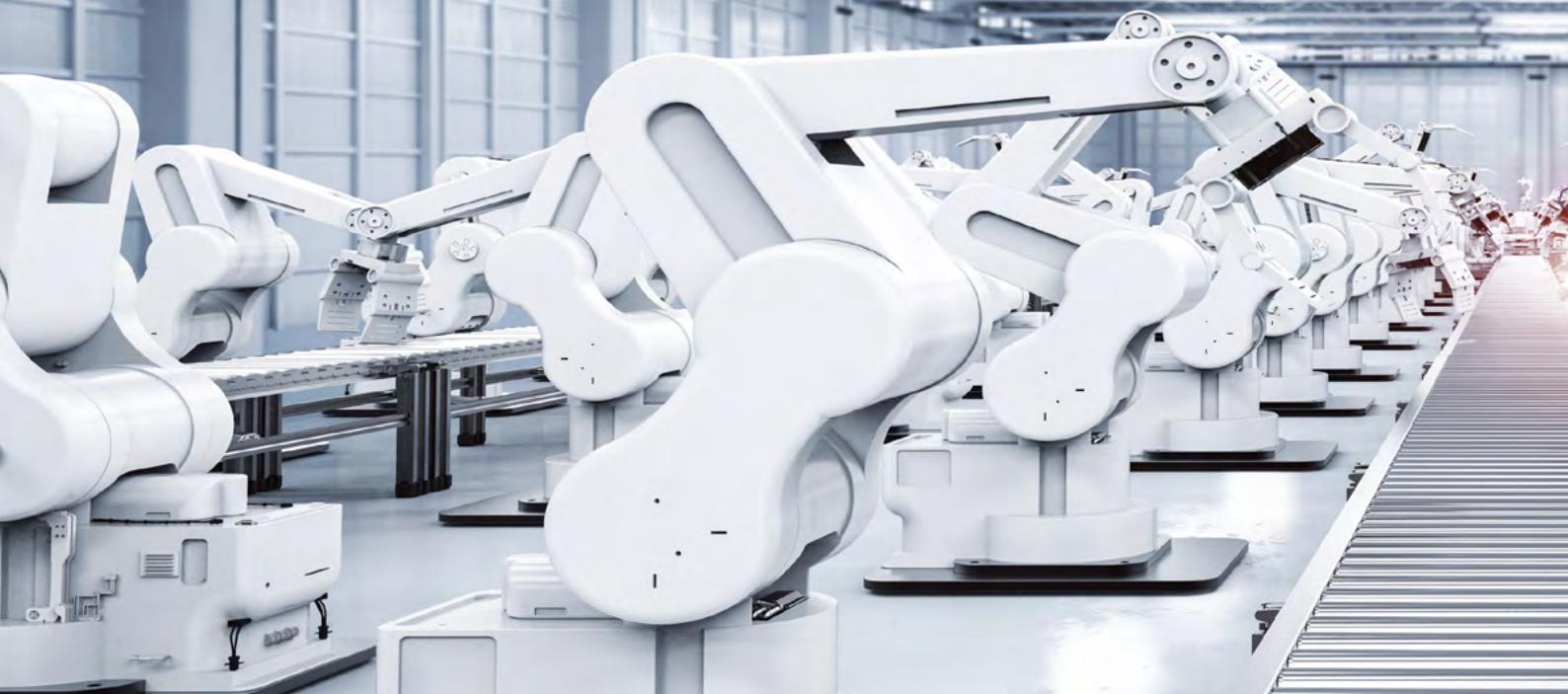
Factory Automation

PLC (XGT) / HMI (XGT Panel) / Motion Controller (XMC) /
Servo Drive & Motor (Xmotion) / Gearbox



LS ELECTRIC

LS Smart Factory Automation Solutions



Full line up for factory automation from controller to devices for your total automation system



PLC & Smart I/O

XGT Series

- XGR (Redundancy)
- XGI (IEC)
- XGK (Ladder)
- XGB

Smart I/O

- Ethernet based block / Expansion type
- Serial based block / Expansion type
- EtherCAT based / Expansion type



Motion Controller

Motion Controller

- XMC-E08/16/32A (8/16/32 axes, Analog)
- XMC-E32C (32 axes, Cnet)



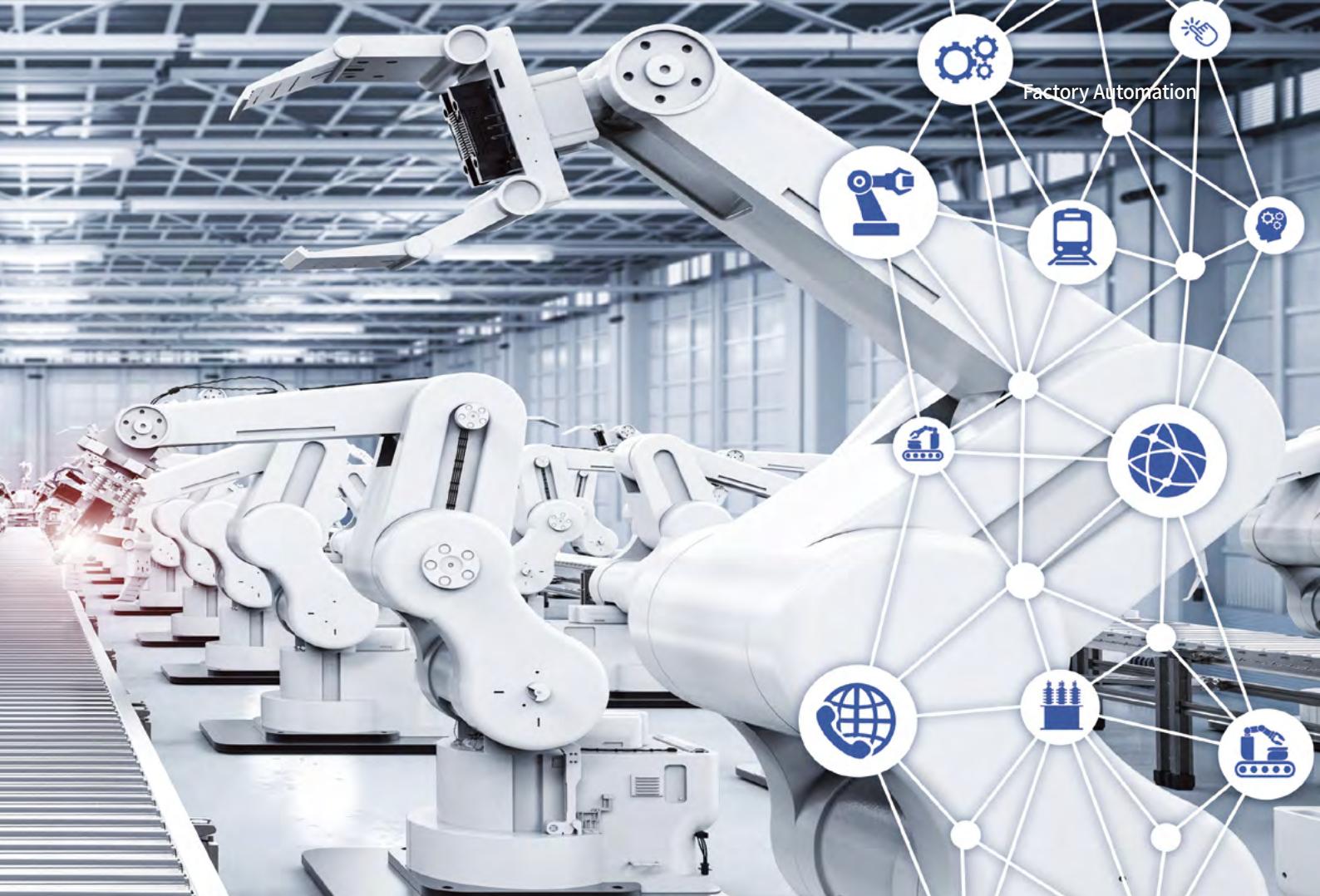
HMI

XGT Panel

- iXP2 (Premium)
- eXP2 (Standard)
- iXP2H (Handyheld)

SCADA software

- XGT InfoU (SCADA)
- XPC (Panel PC)



Servo System

Xmotion (Servo drive & Motor)

AC Servo Drives

- iX7NH Series(EtherCAT)
- L7C Series (Pulse command)
- L7P Series
(Pulse drive with indexer mode)
- L7NH Series (EtherCAT)

DC Servo Drives

- PHOX Series (EtherCAT)

Servo Motors

- F Series (Rotary type)
- MDM Series (Direct drive type)

Integrated Servo Motors

- Pegasus series (EtherCAT)

Gearbox

Helical Gear

- Straight type : MSS / MSR / MSO
- Angular type : MAS / MAR / MAO
- Straight type : HSS / HSR / HSW / HSD
- Angular type : HAS / HAR / HAW / HAD

Spur Gear

- Straight type : SSS / SSO / SSR
- Angular type : SAS / SAO / SAR



CE K c UL US LISTED

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 (RAPIDnet)

Variety of Input and Output Modules

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

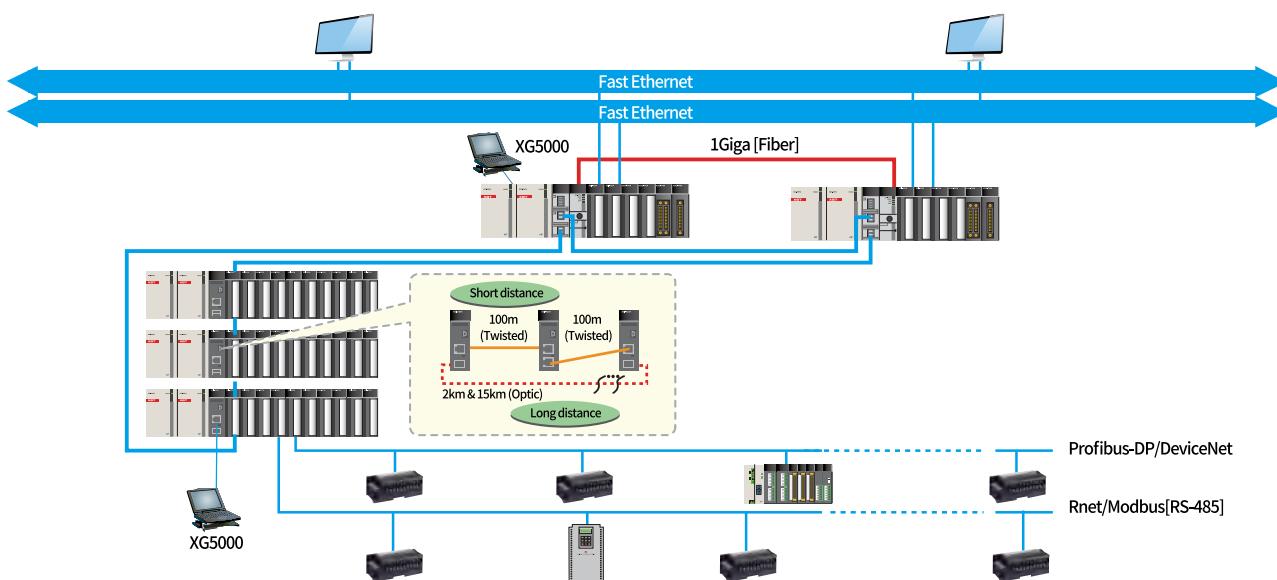
Enhanced Analog Function

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

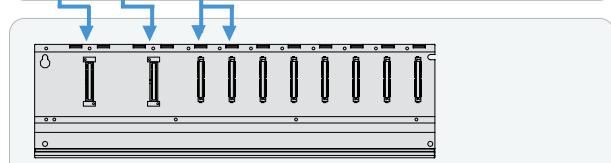
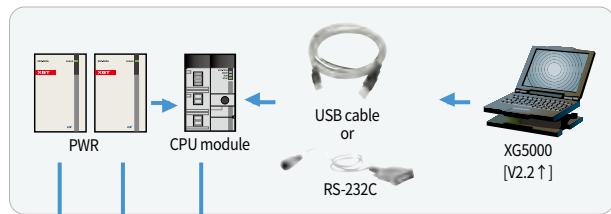
Integrated Programming & Engineering Environment

- 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
- XG-TCON : Temperature control and function of auto tuning

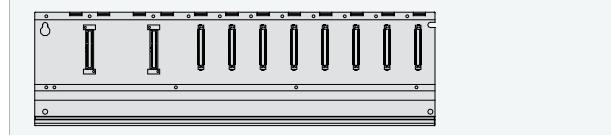
System Configuration Diagram



System Configuration



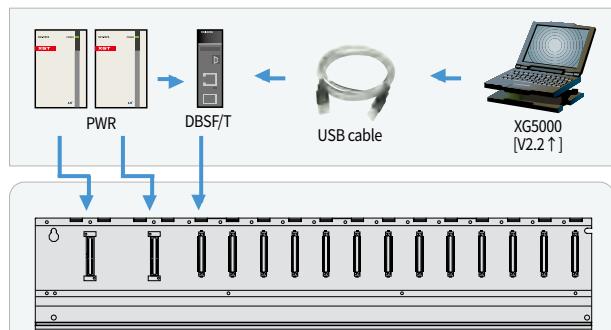
Main base [A Side] XGR-M06P / XGR-M02P



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-CPUF/F	Fiber optic (2km)
	XGR-CPUS/S	Fiber optic (15km)
Power	XGR-AC12	110V, 5.5A (Main base)
	XGR-AC13	110V, 8.5A (Expansion base)
Base	XGR-AC22	220V, 5.5A (Main base)
	XGR-AC23	220V, 8.5A (Expansion base)
Expansion Drive	XGR-DC42	DC24V/DC5V 7A, Main (Expansion base)
	XGR-M02P	2slot (Main base)
	XGR-M06P	6slot (Main base)
	XGR-E12P	12slot (Expansion base)
Expansion Drive	XGR-E12H	12slot (Expansion base, Drive redundancy)
	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	XGR-DBDT	Twisted pair - Twisted
	XGR-DBDF	Pair fiber optic-Fiber optic(2km)
Redundancy	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
32 points	-	-	XGI-D24A
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
64 points	-	-	XGQ-TR8A
	-	-	XGQ-TR8B

Item	Special Module	
	XGF-AV8A	Voltage input type, 8ch
Analog Input	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
Analog Input/Output	XGF-DV4S	Voltage output, 4ch (Isolated)
	XGF-DC4S	Current output, 4ch (Isolated)
	XGF-DA4S	Voltage/Current output, 4Ch (Isolated)
Positioning	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-PQ1H~PO4H	Open collector, 1~4axis
Positioning (Network Type)	XGF-PD1H~PD4H	Line drive, 1~4axis
	XGF-PN8A	LS standard EtherCAT 8 axes
Motion Module	XGF-PN8B	Standard EtherCAT 8 axes
	XGF-M32E	Standard EtherCAT 32 axes
Temperature Control	XGF-TC4S	Thermocouple input, 4ch
	XGF-RD4A	RTD input, 4ch
Temperature Controller	XGF-RD4S	RTD input, 4ch (Insulated)
	XGF-TC4UD	Input : 4ch. (Voltage/Current, RTD/TC) Output : 8ch. (TR/Current)
		Controller : 4 loops
Event Input	XGF-TC4RT	Input: 4ch.(RTD) Output: 4ch.(TR)
	XGF-SOEA	Controller : 4 loops
		DC24V, 32points

Item	Communication Module	
OPCUA	XGL-EOPCT	OPC UA, Twisted fair 2Ch
RAPIEnet+	XGL-EFMTB	Master/client, Twisted fair 2ch.
- RAPIEnetv2	XGL-EFMFB	Master/client, Fiber optic 2ch.
- EtherNet/IP	XGL-EFMHB	Master/client, Twisted fair/fiber optic
- Modbus TCP/IP	XOL-ES4T	Stand alone switch twisted pair 4ch.
- Dedicated XGT Network	XOL-ES4H	Stand alone switch twisted 2ch. fiber 2ch.
	XGL-EH5T	Open Ethernet switching hub
ComputerLink (Cnet)	XGL-CH2B	RS-232C 1ch., RS-422/485 1ch.
	XGL-C22B	RS-232C 2ch.
DeviceNet (Dnet)	XGL-C42B	RS-422/485 2ch.
	XGL-DMEB	DeviceNet, Master
Profibus-DP (Pnet)	XGL-DSEB	DeviceNet, Slave
	XGL-PMEB	Profibus-DP, Master
Rnet	XGL-PSRA	Profibus-DP Slave, Remote interface
	XGL-PSEA	Profibus-DP Slave
Fnet	XGL-RMEB	Rnet, Master, TP
	GOL-RR8T	Rnet stand alone repeater hub
BACnet/IP	XGL-FMEA	Fnet, Master
	XGL-BIPT	BACnet client/server



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-CPUHN

- Built-in Ethernet port
- 128K (1MB) program memory
- 8.5ns 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

General Sequence Control

XGK-CPUS (XGI-CPUS)

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

XGK-CPUU (XGI-CPUU)

- 128K (1MB) program memory
- 28ns 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-CPUA

- 32K program memory
- 28ns 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)

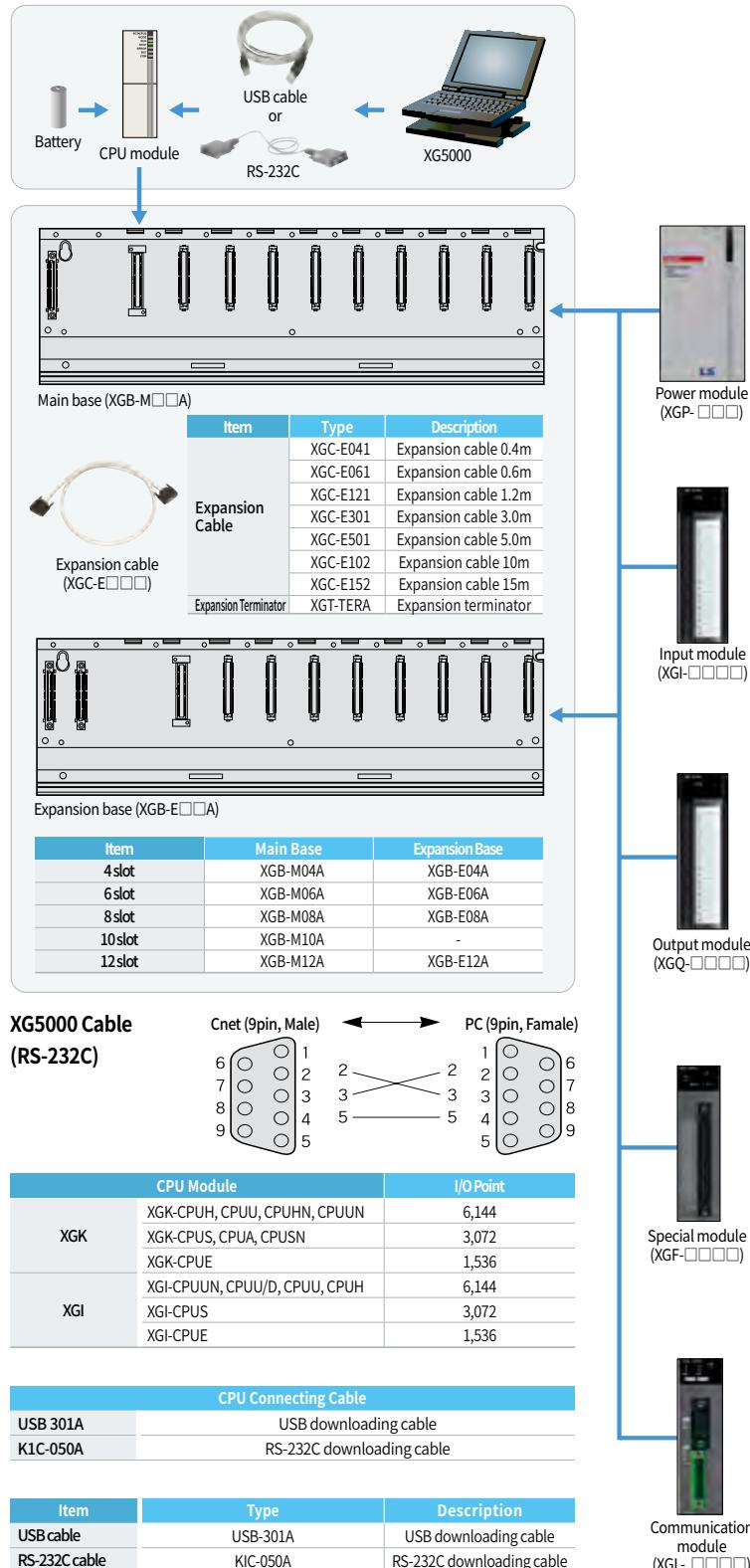
Cnet Module

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

RAPIDnet Module

Dedicated network based on Ethernet

System Composition





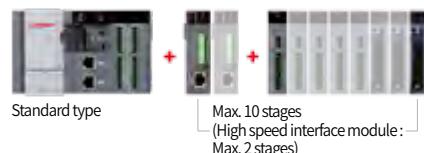
CE **KC** **CUL US LISTED**

Features

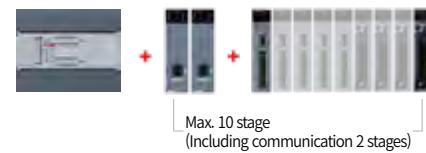
XGB-U (XBC / XEC-U)

- Max. 60ns/step processing speed
- Max. 2 high speed backplane extension modules
- Max. 10 expansion modules
- Max. 352 I/O points
- 32Ksteps/384KB program capacity
- Line-up : Standard, Built-in analog, Built-in positioning
- * Built in Ethernet, SD card

XBC / XEC-U

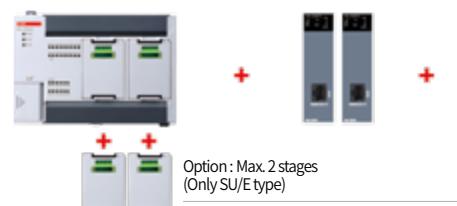


XBC / XEC-H



XBC / XEC-SU

- Max. 94ns/step processing speed
- Max. 7 expansion modules
- Max. 284 I/O points
- 15Ksteps/200KB program capacity



Option Modules

XBO-M2MB	Memory / Program READ/WRITE
XBO-RTCA	RTC (Real time clock), Battery
XBO-DC04A	DC 24V, Input 4 points
XBO-TN04A	TR (Sink), Output 4 points
XBO-AD02A	Voltage/Current, Input 2ch
XBO-DA02A	Voltage/Current, Output 2ch
XBO-AH02A	Voltage/Current, Input 1ch / Voltage/Current, Output 1ch
XBO-RD01A	RTD (Resistance temperature detector), Input 1ch
XBO-TC02A	TC (Thermo couple), Input 2ch

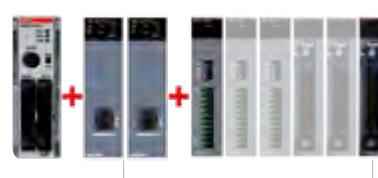
XBC / XEC-E

- Max. 240ns/step processing speed
- Max. 2 expansion modules
- Max. 38 I/O points
- 4Ksteps/50KB program capacity



XBM / XEM-H2, HP

- Max. 40ns/step instruction times
- 64Kstep built-in program memory
- Max. 256 I/O points
- Expandability : 7 cards
(Compatible with all XGB cards)



XBM-S

- Max. 160ns/step processing speed
- Max. 7 expansion modules
- Max. 256 I/O points
- 10Ksteps program capacity

Product List

Block Type Unit (U)	
Model	Specification
XBC/XEC-DN(P)32U	AC 110-220V, 16points DC24V input, 16points transistor sink(Source) type output
XBC/XEC-DR28U	AC 110-220V, 16points DC24V input, 12points relay output
XBC/XEC-DN(P)32UP	AC 110-220V, 16points DC24V input, 16points transistor sink(Source) type output, 4 axes built-in positioning
XBC/XEC-DR28UP	AC 110-220V, 16points DC24V input, 12points relay output, 4 axes built-in positioning
XBC/XEC-DN(P)32UA	AC 110-220V, DC24V input, 16points transistor sink(Source) type output, 8 channel built-in analog
XBC/XEC-DR28UA	AC 110-220V, DC24V input, 12points relay output, 8 channel built-in analog
XBC/XEC-DN(P)32U/DC	DC 24V, 16points DC24V input, 16points transistor sink(Source) type output
XBC/XEC-DR28U/DC	DC 24V, 16points DC24V input, 12points relay output
XBC/XEC-DN(P)32UP/DC	DC 24V, 16points DC24V input, 16points transistor sink(Source) type output, 4 axes built-in positioning
XBC/XEC-DR28UP/DC	DC 24V, 16points DC24V input, 12points relay output, 4 axes built-in positioning
XBC/XEC-DN(P)32UA/DC	DC 24V, DC24V input, 16points transistor sink(Source) type output, 8 channel built-in analog
XBC/XEC-DR28UA/DC	DC 24V, DC24V input, 12points relay output, 8 channel built-in analog
Block Type Unit (High Performance)	
XBC/XEC-DR32H	AC 100-240V, DC24 input 16 pts, Relay output 16 pts
XBC/XEC-DR64H	AC 100-240V, DC24 input 32 pts, Relay output 32 pts
XBC/XEC-DN32H	AC 100-240V, DC24 input 16 pts, Tr. output 16 pts (Sink)
XBC/XEC-DN64H	AC 100-240V, DC24 input 32 pts, Tr. output 32 pts (Sink)
SEC-DP32H	AC 100-240V, DC24 input 16 pts, Tr. output 16 pts (Source)
SEC-DP64H	AC 100-240V, DC24 input 32 pts, Tr. output 32 pts (Source)
XBC-DR32H/DC	DC 24V, DC24 input 16 pts, Relay output 16 pts
XBC-DR64H/DC	DC 24V, DC24 input 32 pts, Relay output 32 pts
XBC-DN32H/DC	DC 24V, DC24 input 16 pts, Tr. output 16 pts (Sink)
XBC-DN64H/DC	DC 24V, DC24 input 32 pts, Tr. output 32 pts (Sink)
SEC-DR32H/D1	DC 12/24V, DC12/24 input 16 pts, Relay output 16 pts
SEC-DR64H/D1	DC 12/24V, DC12/24 input 32 pts, Relay output 32 pts
Block Type Unit (Standard)	
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-DR20SU	AC 100-240V, DC24V input 12 points, Transistor output 8 points (Source)
XBC/XEC-DR30SU	AC 100-240V, DC24V input 18 points, Transistor output 12 points (Source)
XBC/XEC-DR40SU	AC 100-240V, DC24V input 24 points, Transistor output 16 points (Source)
XBC/XEC-DR60SU	AC 100-240V, DC24V input 36 points, Transistor output 24 points (Source)
Block Type Unit (Economic)	
XBC/XEC-DR10E	AC 100-240V, 6 pts DC input, 4 pts relay output
XBC/XEC-DR14E	AC 100-240V, 8 pts DC input, 6 pts relay output
XBC/XEC-DR20E	AC 100-240V, 12 pts DC input, 8 pts relay output
XBC/XEC-DR30E	AC 100-240V, 18 pts DC input, 12 pts relay output
XBC/XEC-DN10E	AC 100-240V, 6 pts DC input, 4 pts Tr. output (Sink)
XBC/XEC-DN14E	AC 100-240V, 8 pts DC input, 6 pts Tr. output (Sink)
XBC/XEC-DN20E	AC 100-240V, 12 pts DC input, 8 pts Tr. output (Sink)
XBC/XEC-DN30E	AC 100-240V, 18 pts DC input, 12 pts Tr. output (Sink)
XBC/XEC-DR10E	AC 100-240V, 6 pts DC input, 4 pts Tr. output (Source)
XBC/XEC-DR14E	AC 100-240V, 8 pts DC input, 6 pts Tr. output (Source)
XBC/XEC-DR20E	AC 100-240V, 12 pts DC input, 8 pts Tr. output (Source)
XBC/XEC-DR30E	AC 100-240V, 18 pts DC input, 12 pts Tr. output (Source)
Modular Type Unit	
XBM/XEM-DN32H2	DC24V, 16 pts DC24V input, 16 pts TR output (Sink), 2 axes built-in positioning (XPM)
XBM/XEM-DN16H2	DC24V, 8 pts DC24V input, 8 pts TR output, 2 axes built-in positioning (XPM)
XBM/XEM-DN32HP	DC24V, 16 pts DC24V input, 16 pts TR output (Sink), 6 axes built-in positioning (XPM)
XBM/XEM-DP32H2	DC24V, 16 pts DC24V input, 16 pts TR output (Source), 2 axes built-in positioning (XPM)
XBM/XEM-DP16H2	DC24V, 8 pts DC24V input, 8 pts TR output (source), 2 axes built-in positioning (XPM)
XBM/XEM-DR14H2	DC24V, 8 pts DC24V input, 6 pts relay output, 2 axes built-in positioning (XPM)
XBM/XEM-DP32HP	DC24V, 16 pts DC24V input, 16 pts TR output (Source), 6 axes built-in positioning (XPM)
XBM-DR16S	AC 100-240V, DC24 input 8 pts, Tr. output 8 pts (Sink)
XBM-DN16S	AC 100-240V, DC24 input 8 pts, Tr. output 8 pts (Source)
XBM-DN32S	AC 100-240V, DC24 input 16 pts, Tr. output 16 pts (Source)
Loader Cable	
PMC-310S	Connection cable (PC to PLC), 9pin (PC)-6pin (PLC)
USB-301A	Connection cable (PC to PLC), USB

Expansion I / O Module										
Model	Specification	Model	Specification							
XBE-AC08A	8 pts AC110V input	XBE-TN08A	8 pts Tr. (Sink) output							
XBE-DC08A	8 pts DC 24V input	XBE-TN16A	16 pts Tr. (Sink) output							
XBE-DC16A	16 pts DC 12/24V input	XBE-TN32A	32 pts Tr. (Sink) output							
XBE-DC16B	16 pts DC24V input	XBE-TP08A	8 pts Tr. (Source) output							
XBE-DC32A	32 pts DC24V input	XBE-TP16A	16 pts Tr. (Source) output							
XBE-RY08A	8 pts relay output	XBE-TP32A	32 pts Tr. (Source) output							
XBE-RY08B	8 pts relay output	XBE-DR16A	8 pts DC24V input, 8pts relay output							
XBE-RY16A	16 pts relay output	XBE-DN32A	16 pts DC24V input, 16 pts TR output							
Special Module										
XBF-AD04A	4ch analog input (Current/Voltage)									
XBF-AD04C	4ch analog input (Current/Voltage, Resolution : 1/16000)									
XBF-AH04A	2ch analog input (Current/Voltage)/2ch analog output (Current/Voltage)									
XBF-DV04A	4ch analog output (Voltage)									
XBF-DV04C	4ch analog input (Voltage, Resolution : 1/16000)									
XBF-DC04A	4ch analog output (Current)									
XBF-DC04C	4ch analog input (Current, Resolution : 1/16000)									
XBF-RD04A	4ch RTD input									
XBF-TC04S	4ch thermocouple input									
XBF-TC04TT	Temperature controller, Thermocouple									
XBF-TC04RT	Temperature controller, RTD									
XBF-PD02A	Line drive 2axes									
XBF-PN08B	EtherCAT positioning module, 8axesa									
XBF-PN04B	Standard EtherCAT network, 4axis									
XBF-AD08A	8Ch analog input (Current/Voltage)									
XBF-H002A	2ch high-speed counter input (Open collector)									
XBF-HD02A	2ch high-speed counter input (Line drive)									
Communication Module										
XBL-C41A	Cnet (RS-422/485), 1ch									
XBL-C21A	Cnet (RS-232C), 1ch									
XBL-EMTA	Fast Ethernet (100Mbps), 1ch									
XBL-EIPT	Ethernet/IP, 2ch									
XBL-EIMT	RAPIEnet, Twisted pair 2ch, 100Mbps									
XBL-EIMF	RAPIEnet I/F, Max. 2km (Fiber 2ch.), 100Mbps									
XBL-EIMH	RAPIEnet I/F (Twisted pair 1ch, Fiber 1ch.), 100Mbps									
XBL-PMEC	Profibus-DP, Master, RS-485									
XBL-PSEA	Profibus-DP, Slave, RS-485									
XBL-DSEA	DeviceNet, Slave									
XBL-RMEA	Rnet, Master									
XBL-CMEA	CANopen (10, 20, 50, 100, 125, 250, 500, 800, 1000Kbps, Num of PDO : 32)									
XBL-CSEA	CANopen (10, 20, 50, 100, 125, 250, 500, 800, 1000Kbps, Num of PDO : 64)									
Option Module										
XBO-AD02A	Voltage/Current, Input 2ch									
XBO-DA02A	Voltage/Current, Output 2ch									
XBO-AH02A	Voltage/Current, Input 1ch, Voltage/Current, Output 1ch									
XBO-TC02A	TC (Thermo couple), Input 2ch									
XBO-RTCA	RTC (Real time clock), Battery									
XBO-DC04A	DC 24V, Input 4 pts									
XBO-TN04A	TR (Sink), Output 4 pts									
XBO-RD01A	RTD (Resistance temperature detector), Input 1ch									
XBO-M2MB	Memory									
Connection Cable										
R40H/20HH-05S-XBM3	XBF-PD02A	XBF-H002A	XBF-HD02A	XBE-D032A	XBE-TN32S	XBE-DN16S	XBM-DN32S	XBM/XEM-H2/HP	XGB-JP	Cable Length
R40H/20HH-10S-XBM3						●	●			0.5m
C40HH-05SB-XBI	●	●	●	●	●	●	●	●	●	0.5m
C40HH-10SB-XBI	●	●	●	●	●	●	●	●	●	1m
C40HH-15SB-XBI	●	●	●	●	●	●	●	●	●	1.5m
C40HH-20SB-XBI	●	●	●	●	●	●	●	●	●	2m
C40HH-30SB-XBI	●	●	●	●	●	●	●	●	●	3m
C40HH-05SB-XBE						●	●			0.5m
C40HH-10SB-XBE						●	●			1m
C40HH-15SB-XBE						●	●			1.5m
C40HH-20SB-XBE						●	●			2m
C40HH-30SB-XBE						●	●			3m
C40HH-05SB-XBE							●			0.5m
C40HH-10SB-XBE							●			1m
C40HH-15SB-XBE							●			1.5m
C40HH-20SB-XBE							●			2m
C40HH-30SB-XBE							●			3m
C40HH-05SB-XBE								●		0.5m
C40HH-10SB-XBE								●		1m
C40HH-15SB-XBE								●		1.5m
C40HH-20SB-XBE								●		2m
C40HH-30SB-XBE								●		3m
C40HH-05SB-XBE									●	0.5m
C40HH-10SB-XBE									●	1m
C40HH-15SB-XBE									●	1.5m
C40HH-20SB-XBE									●	2m
C40HH-30SB-XBE									●	3m

Smart I/O Block Type | RAPIEnet+

RAPIEnet · EtherNet/IP · Modbus TCP/IP



Special Features

- Support for modbus TCP/IP, RAPIEnet, and Ethernet/IP protocols
- connector : RJ45
- Ring, Line topology support can help you configure a network suitable for the site.
- Redundancy support when configuring ring topology
- No IP setup required, simple module setup with just a local number setting.
- Simplify parameter settings : Add modules and check boxes via auto scan possible to set parameters through (No program written)
- Fast data processing
- Reduce cable and connector costs compared to fieldbus based on serial communication

- Provides a variety of diagnostic services
- Error indication in case of a local conflict in the network
- Provides network-based O/S upgrades: Remote O/S download is available via master module
- CRC error flag information can be provided to check the status of communication tracks in the network.
- Enhanced auto-scan capability : Stations conflict indication, Providing module information
- Provide error flag in case of communication error master ↔ Smart I/O

Specification

	Contents	Description
Transmission Specification	Transmission Speed	PORT1, 2 : 100Mbps
	Transmission Type	Base band
	Max Distance Between Nods	100M
	Transmission Media	Category 5e STP (Shielded twisted-pair) cable
	Max Protocol Size	1,500 bytes
	Communication Access Method	CSMA/CD
	Frame Error Checking Way	CRC32
	Max Load	Ethernet: 10,000pps, RAPIEnet: 40,000pps
Topology	Line, Tree, Star, Ring (Available on RAPIEnet only)	
Diagnose Function	Local/IP conflict detection, Self-diagnosis service, Diagnosis by XG5000	
Station/IP Setting Method	Rotary switch, XG5000, BOOTP/DHCP	
Station/IP Setting Range	Station : Rotary switch (1~99) IP : 192.168.1.xx (xx : 100 + rotary switch 1~99)	
LED Status	STATUS, PORT1, PORT2, LACTH (Only output)	
Parameter Setting	XG5000 (Ethernet)	
Device File	EDS file (Available for EtherNet/IP only)	
Protocol	RAPIEnet, EtherNet/IP, Modbus TCP/IP, BOOTP, DHCP (RAPIEnet, EtherNet/IP enables XGL-EFMxB and smart extension)	
Input & Output Refresh Size	Max input refresh size	64 bytes
	Max output refresh size	64 bytes

	Contents	GEL-D24C	GEL-DT4C1	GEL-TR4C1	GEL-RY2C
Digital I/O	Points	32(Input)	16/16(In/Out)	32(Output)	16(Output)
	Rated Input Current	5mA		-	-
	Rated Load Voltage	-	DC 24V		DC24V/AC220V, 2A/point,5A/COM
	Max. Load Current	-	0.5A/point, 3A/COM		AC250V,DC110V, 1,200times/hour
	ON Voltage	DC 19V or higher		-	Min. switching load: DC5V/1mA
	OFF Voltage	DC 6V or less		-	
	Insulation Method	Photo coupler insulation			
	Contents	GEL-AV8C	GEL-AC8C	GEL-DV4C	GEL-DC4C
Analog I/O	Channels	8		4	
	Input/Output Type	Voltage	Current	Voltage	Current
	Input/Output Range	DC 1~5V,0~5V, 0~10V,10~10V	0~20 mA, 4~20 mA	DC 1~5V,0~5V, 0~10V,10~10V	0~20 mA, 4~20 mA
	Accuracy	0.3% (Ambient air temperature 0 ~ 55°C)			
	Max. Resolution	1/16,000			
		Max. Conversion Rate 10ms / Channels			
		Insulation Method Insulation between input / Output terminal and PLC power (No insulation between channels)			

Smart I/O Expansion | RAPIEnet+

RAPIEnet · EtherNet/IP · Modbus TCP/IP



Special Features

- Possible for PLC system of extended smart I/O adapter XEL-BSSRx with extended digital, Analog I/O of XGB series.
- XGB extension I/O available number : 8
- Support for modbus TCP/IP, RAPIEnet, and OtherNet/IP protocols
- Supports 1Gbps maximum media speed for electric, Optical and mixed modules
- 2 port media support for each electric, Optical and mixed module
 - Support for ring and line topology configuration via relay function without additional switches
- One line can be operated without error when extending ring structure.
- Provide service-status diagnostics

Specification

Item	XEL-BSSRT	XEL-BSSRF	XEL-BSSRH
Transmission Speed (Mbps)	100/1000	100/1000	Electric : 100/1000 Optical : 100/1000
Transmission Method	Base band		
Maximum Distance Between Nodes	100m@CAT5E or higher	2km@100Mbps.MM	Electric : 100m Optical : 2km
Send Media	Electric : Category 5E or higher STP (Shielded twisted-pair) cable Optical : Multi mode(MMF)/Single mode(SMF) cable		
Maximum Protocol Size	1,500 bytes		
Communication Network Access Method	CSMA/CD		
Frame Error Check Method	CRC32		
Max. Load	Ethernet : 10,000pps, RAPIEnet : 40,000pps		
Topology	When using RAPIEnet: Lines, Ring (Using MRS if you use a different topology) When not using RAPIEnet: Line, Tree, Star etc. (with switch)		
Diagnose Function	Station number / IP collision detection function, Self-diagnosis service, Diagnosis using XG5000		
Station number / IP setting method	Rotary switch, XG5000, BOOTP/DHCP		
Station number / IP setting range	Station number : Rotary switch (1 ~ 99) IP : 192.168.1.xx (xx:100 + rotary switch 1~99)		
External Connecting Terminal	USB mini B : PADT connection RJ45, SFP : PADT connection, Data communication 3pin push in/Screw fixed type connector : Power input		
Status Indication LED	RUN, RMS, RNS, RELAY, LINK/ACT1, LINK/ACT2 6 types		
Parameter Setting	XG5000 (USB, Ethernet)		
Device File	EDS file (Only EtherNet/IP)		
Maximum Number of Modules to be Installed	8ea		
Protocol	RAPIEnet, EtherNet/IP, Modbus-TCP, BOOTP, DHCP (RAPIEnet, EtherNet/IP can be Smart extension with XGL-EFMxB)		

Available XGB I/O Module

Item	Module
Digital	Input
	XBE-DC08A
	XBE-DC16A/B
	XBE-DC32A
	Output
	XBE-AC08A
	XBE-TN/TP08A
	XBE-TN/TP16A
Input/Output	XBE-TN/TP32A
	XBE-RY08A/B
	XBE-RY16A
	XBE-DR16A
	XBE-DN32A
	XBF-AD04A
	XBF-AD08A
	XBF-AD04C
Analog	Output
	XBF-AD04C
	XBF-DV04A
	XBF-DC04A
	Input/Output
	XBF-DC04B
	XBF-DV04C
	XBF-DC04C
RTD	XBF-AH04A
	XBF-RD04A
	XBF-RD01A
	XBF-TC04B
	TC
	XBF-TC04S
	Load Cell
	XBF-LD02S
High-speed Counter	XBF-HO02A
	XBF-HD02A

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), RAPIEnet (RJ-45)
- 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 (Source: C type, Sink: C1 type)	Relay	DC (Sink / Source)	Transistor (Sink)
No. of Point	16	32	16	32	16	16
Rated Input (Load Voltage)	DC 24V		DC 24V	DC 24V/AC, 110V/220V	DC 24V	
Input Current (Load Current)	7mA		0.1A/2A, 0.5A/3A	2A/5A	0.1A/2A, 0.5A/3A	
Response Time	Off → On On → Off	3ms or less 3ms or less	3ms or less 3ms or less	3ms or less 3ms or less	3ms or less 3ms or less	
Common	16 points / COM		16 points / COM		16 points / COM	16 points / COM
Current Consumption	200 mA	300 mA	200 mA	300 mA	200 mA	300 mA
Network	Rnet Profibus-DP DeviceNet Modbus	GRL-D22C GPL-D22C GDL-D22C GSL-D22C	GRL-D24C GPL-D24C GDL-D24C GSL-D24C	GRL-TR2C/C1 GPL-TR2C/C1 GDL-TR2C/C1 GSL-TR2C/C1	GRL-TR4C/C1 GPL-TR4C/C1 GDL-TR4C/C1 GSL-TR4C/C1	GRL-DT4C/C1 GPL-DT4C/C1 GDL-DT4C/C1 GSL-DT4C/C1

Analog I/O Specifications

Item	GPL-AV8C / GEL-AV8C	GPL-AC8C / GEL-AC8C	Item	GPL-DV4C / GEL-DV4C	GPL-DC4C / GEL-DC4C
Input Channels	8 channels		Output Channels	4 channels	
Analog Input	DC1~5V, 0~5V, 0~10V -10~+10V	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	DC1~5V, 0~5V, 0~10V -10~+10 V	0~20 mA, 4~20 mA
Input Impedance	1MΩ	250 Ω	Load Impedance	1KΩ or more (0~5V or 1~5V) 2KΩ or more (0~10V or -10~10V)	500 Ω or less
Max. Resolution	±15V 1.25 mV	±30 mA 2.5 μA	Resolution	1.25 mV	2.5 μA
Accuracy	±0.3% (Full scale, Ta=0~55 °C) GRL-D22C	±0.3% (Full scale, Ta=23 °C ± 5 °C) ±0.4% (Full scale, Ta=0~55 °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 24V (21.6 ~ 26.4)		External Power Supply	DC 24V (20.4 ~ 28.8)	
External Current Consumption	DC24V: 220mA		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	LS 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	100m~1.2km	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

Smart I/O Expandable Type



CE **KC** **cUL US LISTED**



Modbus TCP, EtherNet/IP DeviceNet Profibus-DP

Features

- IEEE 802.3 standard
- Modbus TCP/IP, EtherNet/IP
- 10/100BASE-TX media
- Ethernet twisted pair 2 ports (RJ-45)
- 2 channels Ethernet MAC
- Auto-negotiation/Auto-crossover
- Various system configuration

Available Module

In/Out	Part Number	XDL-BSSA	XPL-BSSA	XEL-BSSA	XEL-BSSB	XRL-BSSA	XEL-BSSCT
DC Input	XBE-DC08A	O	O	O	O	O	O
	XBE-DC16A(B)	O	O	O	O	O	O
	XBE-DC32A	O	O	O	O	O	O
AC Input	XBE-AC08A	X	O	O	O	O	O
Relay Output	XBE-RY08A(B)	O	O	O	O	O	O
	XBE-RY16A	O	O	O	O	O	O
TR Output	XBE-TN(TP)08A	O	O	O	O	O	O
	XBE-TN(TP)16A	O	O	O	O	O	O
	XBE-TN(TP)32A	O	O	O	O	O	O
Mixed	XBE-DR16A	O	O	O	O	O	O
	XBE-DN32A	X	X	O	O	X	O
AD	XBF-AD04A	O	O	O	O	O	O
	XBF-AD08A	X	O	O	O	O	O
	XBF-AD04C	X	O	O	O	O	O
DA(I)	XBF-DC04A	O	O	O	O	O	O
	XBF-DC04C	X	O	O	O	O	O
DA(V)	XBF-DV04A	O	O	O	O	O	O
	XBF-DV04C	X	O	O	O	O	O
Mixed	XBF-AH04A	O	O	O	O	O	O
	XBF-RD04A	O	O	O	O	O	O
RTD	XBF-TC04S	O	O	O	O	O	O
TC	XBF-LD02S	X	X	X	X	X	O
Loadcell	XBF-HO2A	X	X	X	X	X	O
HSC	XBF-HD2A	X	X	X	X	X	O

DeviceNet Specification

Item		Specification		
Communication Interface		Poll, Bit-strobe, COS/cyclic		
		Group 2 only slave		
		Auto baud rate		
Master/Slave		Slave		
Max. Station		64 (Including master)		
Max. No. of Extension I/O Equipment		8		
Max. Digital I/O Point		512 point (Input max 256 point/output max 256 point)		
Max. No. of Analog I/O Channel		Input 16 channels (Output 16 channels)		
Cable		125kbps	250kbps	500kbps
Communication Speed & Distance	Speed	500m	250m	100m
	Distance	DC 24V		
Input Power	Rated Input Voltage	19.2V ~ 28.8V (Available to operate in 11V)		
	Power Range	5V(±20%) / 1.5A		
	Output Voltage/Current	Speed (Kbps)		
	Insulation	Distance (m)		
Basic Specification	Weight (g)	100		

Modbus TCP, EtherNet / IP Specification

Item	Specification
Communication Speed	10/100mbps
Transmission Path Method	Base band
Standard Functions	IEEE 802.3
Flow Control	HALF/FULL
Modulation Type	NRZI
Max. Distance Between Nodes	100m
Max. Protocol Size	Data 1500byte
Communication Zone Access Method	CSMA/CD
Check Method for Frame Error	CRC32
Connector Connection	RJ-45(2Port)
IP Setting	S/W setting
Topology	Bus, Star
Protocol	MODBUS/TCP, EtherNet/IP
Max. Digital I/O Point	512 (Input 256, Output 256)
Max. Digital I/O Connection Number	8
Max. Analog I/O Connection Number	8
Expansion Analog Module Occupation Number	8byte
Power	Rated Input Voltage/Current
	DC 24V/0.7A
	Power Range
	DC 19.2V ~ 28.8V
Insulation	Output Voltage/Current
	5V(±20%) / 1.5A
	Insulation
	Non-insulation
Weight(g)	
100	

Profibus-DP Specification

Item	Specification
Standard	EN50170 / DIN 19245
Interface	RS-485
Medium Access	Polling
Topology	Bus
Encoding Method	NRZ
Communication Interface	Sink mode, Freeze mode
Master/Slave	Auto baud rate
	Slave
Cable	Shielded twisted pair
Communication Speed and Distance	Speed (Kbps)
	9.6 19.2 93.75 187.5 500
	Distance (m)
	1200 1200 1200 1000 400
Communication Speed and Distance	Speed (Kbps)
	1500 3000 6000 12000 -
	Distance (m)
	200 100 100 100 -
Max. Node	
100 station (Setting range: 0 ~ 99)	
Max. Modular Type I/O Equipment No.	
8	
Max. Digital I/O Point	
512point (Input Max. 256point/output max. 256point)	
Max. Analog I/O Channel No.	
32 channels (Input Max. 16 channels/output Max. 16 channels) (Analog module occupy Digital 64 point)	
Input Power	Rated Input Voltage/Current
	DC 24V/ 0.55A
	Power Range
	DC 19.2 ~ 28.8V
Input Power	Output Voltage/Current
	5V(±20%) / 1.5A
	Insulation
	Non-insulation, Communication part insulation
Weight (g)	
100	

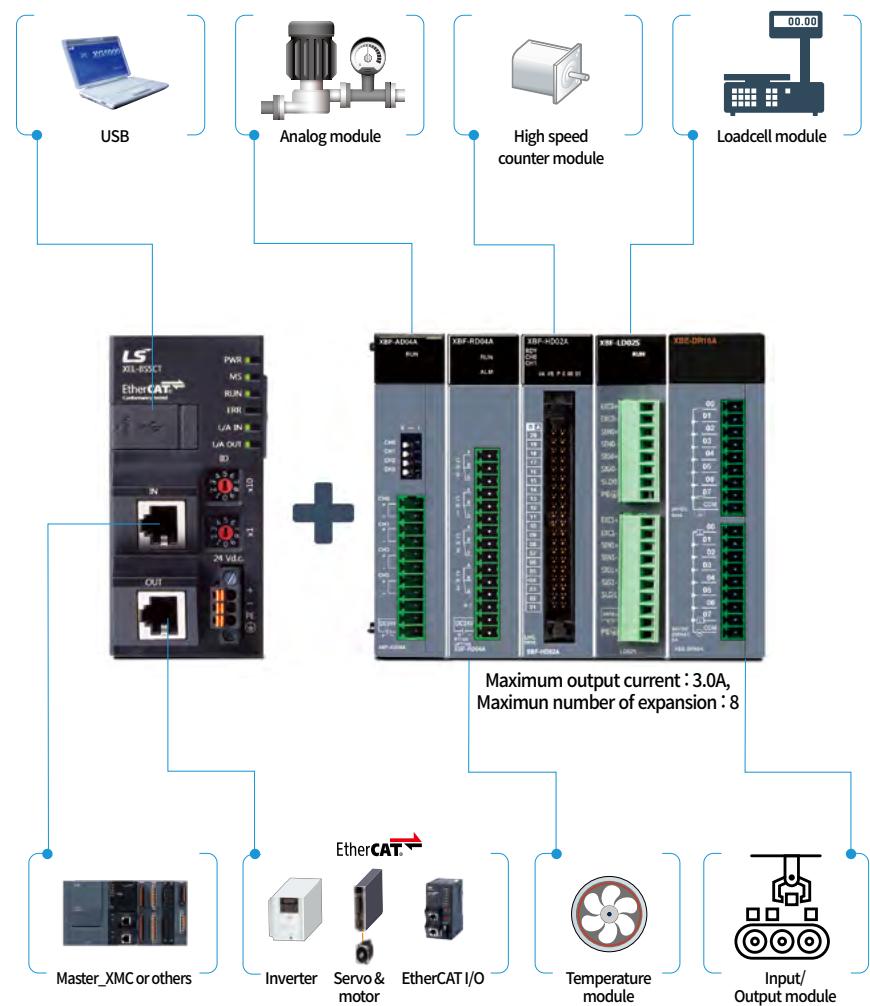
EtherCAT Smart I/O XEL-BSSCT

EtherCAT-Based connectivity



System Configuration

Connectivity with EtherCAT master (XMC-E32A/16A/08A/E32C) offers a total motion solution with devices such as sensors and analog modules



Performance Specification

Classification	Item		Specification
Performance Specification of Adapter	Maximum Number of Expansion		8
	Operation Mode		RUN, STOP (The test operation through the XG5000 is only available in STOP mode.)
	Refresh Time		DC sync0 time x refresh time (0 ~ 100)
	Standard Input Filter		1, 3, 5, 10, 20, 70, 100ms
	Self-Diagnosis Function		Indication of a current error and warning
	EEPROM	Self-Recovery Function	Enable/disable automatic recovery
		EEPROM Size	4 KB
	Memory	F	2 KB
		I	2 KB
		Q	2 KB
		U	1 KB
	External Connection Terminal	Programming Port	USB 1 channel
		Communication Port	RJ45 2 ports (Response to shield)
		Power Port	3-Pin push-in/screw fixing type connector
	Status Indicator LED		6 types including PWR, MS, RUN, ERR, IN and OUT
Communication Specification of EtherCAT	Maximum Number of Expansion Modules to be Mounted		8 modules
	Communication Protocol		EtherCAT
	Data Transfer Speed		100mbps
	Physical Layer		100BASE-TX (IEEE 802.3)
	Topology		Conforms to the specification of EtherCAT master.
	Transmission Media		STP (Shielded twisted-pair) Cable with category 5 or higher
	Transmission Distance		100m or less between the nodes
	Size of PDO Data for Transmission and Reception		Input : Up to 1,024 byte, Output : Up to 1,024 byte
	Size of Mailbox Data		Input : Up to 256 byte, Output : Up to 256 byte
	Mailbox Support Command		SDO requests, SDO information
	Refresh Method		Free-run, Refresh sync mode (For LS ELECTRIC Co., Ltd. only)
	Node Address Setting Method		Rotary switch, Master, PADT
	Node Address Setting Range		Explicit ID(1 ~ 99) Alias address(1 ~ 65535)
			Applies the EEPROM value set by the master when setting PADT 0

Power Specification

	Item	Specification	Condition
Input	Rated Input Voltage	DC24V	
	Input Voltage Range	DC20.4 ~ 28.8V (-15%, +20%)	Within -15% and +20% of the rated input
	Input Current	Less than 1.3A (Typ.1A)	Input +DC28.8V, Maximum load
	Inrush Current	50A peak or less	Input +DC28.8V, Maximum load
	Efficiency	80 % or more	Input +DC28.8V, Maximum load
	Permitted Instantaneous Interruption	Within 10 ms	Input +DC28.8V, Maximum load
Output	Rated Output Voltage	DC5V(±2%)	
	Output Current	3.0A	
Indication of Voltage Status		LED on when the output voltage is normal	
Cable Specification		22 ~ 20 AWG (0.3 ~ 0.5mm ²)	

Motion Controller

XMC-E32A/E16A/E08A/E32C

EtherCAT-Based motion control system ensures efficient system environment



Features



Professional

- CAM control :
Up to 32 CAM profiles
(32,768 points/32 CAM profiles)
- Supports G-code
- Robot control :
Delta3, Delta3R,
Linear delta and Etc.



Productivity

- High-speed program processing :
6.25ns (Basic command)
- EtherCAT-based high speed cycle times : 0.5/1/2/4ms
(Same as main task's cycle time)
- Built-in digital and analog IO



Convenience

- XG5000 software for programming and monitoring
- Sole, Integrated architecture for programming, Diagnosing and simulating for both motion controller and PLC
- IEC standard motion function blocks
- SD card slot (SD card not included)
- Saving and executing programs, Data logging

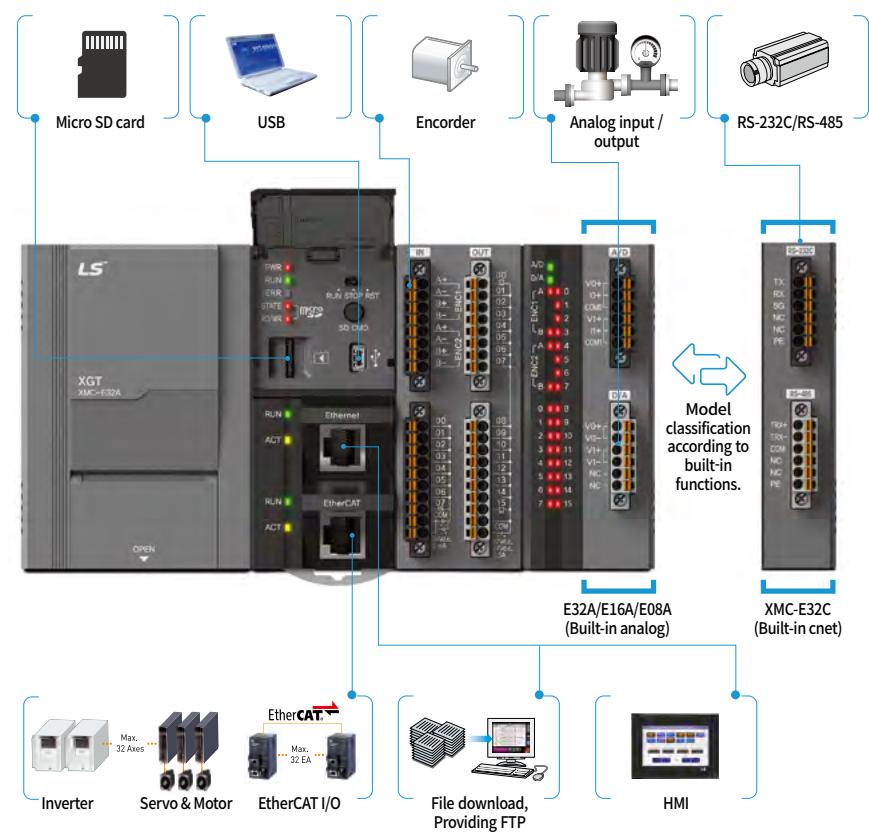


Efficiency

- Integration with a variety of EtherCAT devices
 - Servo drive (Up to 32 axes), Remote I/O (Up to 32 I/Os), AC drives, Robots and Etc.
- Various built-in functions
 - 8 digital inputs / 16 digital outputs, Encoder inputs (2 ch), Ethernet analog input (2 ch)/ Output (2 ch)_E32A, RS-232C/RS-485_E32C

System Configuration

Motion controller delivers an optimized solution to a system that has a need for motion control. With 8 digital inputs / 16 outputs, 2 analog inputs / Output (XMC-E32A/E16A/E08A only), 2 encoder inputs, RS-232C/RS-485(XMC-E32C only), and EtherCAT devices (Servo drive, INV, EtherCAT I/O, Robot), all can be connected rapidly and easily.



* Refer to page 8 (Performance specification) for supported axis information.

Power Specification

Item		Specification
Operation method		Main task/Periodic task: Fixed cyclic operation, repetitive operation. v, Initial task: Only once at the time of entering the RUN
Control period		Main task cyclic time: 0.5ms, 1ms, 2ms, 4ms Periodic task cyclic time: Multiple setting of main task
I/O Control method		Synchronized update with main task cycle (Refresh method)
Program language		Ladder Diagram (Function block), Structured Text, G-Code
Number of instruction	Operator	18
	Basic function	202
	Basic function block	174
	Special function block	97
Processing speed	Basic	6.25ns or more (General point/coil)
	Move	5ns or more (Word type)
	Arithmetic	30ns or more (Word type)
Program	number	Max. 256
	Capacity	10MB (Motion program), 10MB (NC program)
Data area	Symbolic variable (A)	4,096KB (Retain setting available up to 2,048KB)
	Input variable (I)	16KB
	Output variable (Q)	16KB
	Direct variable (M)	2,048KB (Retain setting available up to 1,024KB)
	F	128KB
	K	18KB
	U	1KB
	L	22KB <small>Note1)</small>
	N	49KB <small>Note1)</small>
Timer		No limit in number of I/O points, Time range: 0.001~4,294,967,295sec (1,193hour)
Counter		No limit in number of I/O points, Counter range: 64 bit range
Program		Initial program, Main task program, Periodic task program, NC program
Operation mode		RUN, STOP
Restart mode		Cold, Warm
Self-diagnosis function		Task cycle error, Task time occupancy rate exceed, memory abnormal, power abnormal, etc.
Back-up method		Retain area setting in basic parameter or retain variable setting.
Number of control axis <small>Note2)</small>	XMC-E32A,E32C	32 axes (Real/Virtual axis), 4axes (Virtual axis), 64 slaves (Max 32 slaves in case of 32 axes (Servo, INV) control)
	XMC-E16A	16 axes (Real/Virtual axis), 2axes (Virtual axis), 32 slaves (Max 16 slaves in case of 16 axes(Servo, INV) control)
	XMC-E08A	8 axes (Real/Virtual axis), 1axis (Virtual axis), 16 slaves (Max 8 slaves in case of 8 axes(Servo, INV) control)
CAM operation	XMC-E32A,E32C	32 profiles/32,768 points
	XMC-E16A	16 profiles/16,384 points
	XMC-E08A	8 profiles/8,192 points
Communication		EtherCAT (CoE: CANopen over EtherCAT, FoE: File Access over EtherCAT)
Communication/Control period		0.5ms, 1ms, 2ms, 4ms (Same with main task period)
Servo drive		EtherCAT servo drive which supports CoE
Control unit		Pulse, mm, inch, degree
Control method		Position, Velocity, Torque (Servo drive support), Synchronous, Interpolation
Range of position / Velocity		±LREAL_0
Torque unit		Rated torque % designation
Acc./Dec. profile		Trapezoidal, S-curve(Regarding Jerk value set by function block)
Range of Acc/Dec		±LREAL_0
Manual operation		JOG operation
Absolute system		Available (When using absolute encoder type servo drive)
Encoder input	Channel	2 channels
	Max.input	500kpps
	Input method	Line drive input (RS-422A IEC specification), Available open collector output type encoder
	Input type	CW/CCW, Pulse/Dir, Phase A/B
Input / Output	Digital input / Output	8 point / 16 points (Tr. output)
	Analog input / Output	Channels: 2ch In, 2ch Out, Input/Output voltage range: -10~10V / 0~10V / 1~5V / 0~5V Input current range: 4~20mA / 0~20mA, Max, resolution: 14bit (1/16000), Accuracy: 0.2% (25°C), 0.3% (0~55°C) Conversion speed: 0.5ms/channel, Absolute maximum input: Voltage 15 VDC, Current 30mADC
Coordinate systems	Applicable robot	Cartesian, Delta
	Settings	XG5000
	Control language	Function block
SD Memory	Type	Micro SD/SDHC
	File system	FAT32
	Capacity	Max. 32GB installation (Memory over 8GB can use only 8GB of overall area)
	Service	Program back-up/Restoration, Booting operation, Data log
Embedded ethernet	Communication speed	Auto/10Mbps/100Mbps
	Communication port	1 port
	Communication distance	Max. distance between nodes: 100m
	Service	Loader service (XG5000) , XGT Protocol (LS protocol), Modbus TCP FTP Server: Able to read/Write SD Memory files from other devices , SNTP Client: Network time synchronization with server
Embedded cnet <small>Note2)</small>	Communication port	Ch 1: RS-232C, Ch 2: RS-485
	Service	XGT Protocol, Modbus Protocol, User-defined Protocol, LS Bus (LS AC drive) Protocol
USB	Performance	USB 2.0, 1 port
	Service	Loader service (XG5000)
Error indication		Indicated by LED
Weight		790g

Note1) Analog Input/Output are supported by XMC-E32A/E16A/E08A

Note2) Built-in Cnet communication is supported by XMC-E32C

iXP2 Series



Features

- 1 GHz dual core CPU
- 1 GB display data and 1 MB back-up memory
- Aluminum frame & Reinforced glass
- Ethernet 2 ch, RS-232C 1ch, RS422/485 1ch.
- HDMI/audio output/USB host/device
- Multi touch & screen gesture (Swipe, Flick)
- Dual monitor clone / Extended mode
- IP66 (NEMA 4X) rating

Specification

Item	iXP2-0800A/D	iXP2-1000A/D	iXP2-1200A/D	iXP2-1500A/D			
Display Type	TFT color LCD						
Screen Size	8.4"	10.4"	12.1"	15"			
Display Resolution	800×600						
Color Indication	24-bit color (16.7M colors)						
Backlight	LED method, Automatic On / Off support						
Backlight Lifetime	40,000 hour						
Touch Panel	Capacitive touch						
Audio Output	Magnetic buzzer (85dB)						
Processor	1GHz, Dual core						
Memory	Flash Operating RAM Backup RAM	1GB 1GB 1 Mbyte					
Backup Data	Date / Time data, Logging / Alarm / Recipe data, Non-volatile devices						
Battery	CR2032 (3.0V/210mAh, About 3years/25°C)						
Video Output	1 × HDMI						
Ethernet	1 × 10Base-T / 100Base-TX, 1 × 10Base-T / 100Base-TX / 1000Base-T						
USB Host	3×USB2.0 (Front×1, Rear×2)						
USB Device	1 × USB 2.0 (Send / Receive front, PC and project Data Etc.)						
RS-232C	1 × RS-232C (DSUB 9 / Male type)						
RS-422/485	1 × RS-422/485 (Terminal block)						
Multi-Language	Can display 12 languages simultaneously						
Animation	GIF format support						
Recipe	Support						
Data Logging	Support						
Script Launcher	Support						
Standard Certification	CE, KC, UL, IECEx, KCs, ATEX(Separate product explosion proof: iXP2-xxxxA/D-EX)						
Protection Standard	IP66, Conform to the UL type 4x, NEMA 4x standard						
Explosion Proof	Ex nA IIC T5 Gc, Ex tc IIIC T100°C Dc IP64						
Dimensions (mm)	240×180×60	271×212×60	313×239×60	395×294×66			
Panel Cut (mm)	228.5×158.5	259.0×201.0	301.5×227.5	383.5×282.5			
Power	iXP2-xxxxA: AC100/240V, iXP2-xxxxD: DC24V						
Power Consumption (W)	25	25	30	30			
Weight (Kg)	1.87	2.35	3.0	4.6			

eXP2 Series



CE **KC** **cUL US LISTED** **UL NEMA**

Features

Fully compatible with eXP

- Panel cut, interface, design, and drawing file are 100% compatible.

Superior Performance

- ARM Cortex A8 800MHz, eMMC 4G, DDR3

Enhanced product reliability

- LCD Backlight lifespan extended
- Non Battery Type NVRAM

Variety of interfaces and functions

- Various communication drivers and Micro SD I/F available

Specifications

Item	eXP2-04□*0D	eXP2-05□*0D	eXP2-05□*2D	eXP2-07□*0D	eXP2-07□*1D	eXP2-07□*2D	eXP2-10□*0D	eXP2-10□*1D
Display Type	TFT Color LCD							
Screen Size	10.9cm (4.3")	14.2cm (5.6")		17.8cm (7")			25.9cm (10.1")	
Display Resolution	480 x 272	640 x 480		800 x 480			1024 x 600	
Color Indication	24Bit Color (16.7M)	18Bit Color (262,144)		24Bit Color (16.7M)			24Bit Color (16.7M)	
Indication Degree	Left/Right: 60 deg. Upper: 40 deg. Lower: 50 deg	Left/Right: 60 deg. Upper: 40 deg. Lower: 60 deg.		Left/Right: 70 deg. Upper: 50 deg. Lower: 70 deg.			Left/Right: 70 deg. Upper: 50 deg. Lower: 70 deg.	
Backlight	LED Type (Supports Backlight Auto-off Function)							
Backlight Duration	50,000 Hours	20,000 Hours		50,000 Hours			30,000 Hours	
Touch Panel	4-Wire Resistive, Analog							
Audio Output	Magnetic Buzzer (85dB)							
Process	800MHz	800MHz		800MHz			800MHz	
Drawing Memory	64MB	64MB		64MB			64MB	
Memory	512MB	512MB		512MB			512MB	
Operating RAM	128KB	128KB		128KB			128KB	
Backup Data	Date/Hour Data, Logging/Alarm/Recipe Data and Nonvolatile Device							
Battery Life	Approx. 3 years (Operating Ambient Temperature of 50°C)							
Ethernet	1 Channel, IEEE802.1a, 10Base-T/100Base-TX	-	1 Channel, IEEE802.1a, 10Base-T/100Base-TX	-	-	1 Channel, IEEE802.1a, 10Base-T/100Base-TX		
USB Host	1 Channel, USB 2.0 Host (Mouse, keyboard, printer, USB flash drive, etc.)							
USB Device	-	1 Channel, USB 2.0 Device (for Download and Upload Project File)				1 Channel, USB 2.0 Device (for Download and Upload Project File)		
Micro SD Card	-	-	-	1 Channel SDHC Class10	-	-	-	1 Channel SDHC Class10
RS-485, RS-232C	1 Channel, RS-232C (DSUB 9/Male Type)							
RS-422/485	1 Channel, RS-422/485 (DSUB 9/Male Type)							
Multi-language	Up to 12 Language Simultaneously							
Animation	GIF Format is Available							
Recipe	Available							
Data Logging	Available							
Script Executor	Available							
Certifications	CE, UL(cUL), UL Type 4X, KC	CE, UL(cUL), KC	CE, UL(cUL), UL Type 4X, KC	CE, UL(cUL), KC	CE, UL(cUL), UL Type 4X, KC			
Protection Standard	IP65 <small>Note 1)</small>	IP65 <small>Note 1)</small>	IP65 <small>Note 1)</small>	IP65 <small>Note 1)</small>	IP65 <small>Note 1)</small>	IP65 <small>Note 1)</small>		
Dimension (mm)	128 x 102 x 32.5	165 x 132.5 x 36.1		208 x 154 x 44.4		276 x 218 x 35.1		
Panel Cut (mm)	119 x 93	156 x 123.5		192 x 138		260 x 202		
Rated Voltage	DC24V	DC24V		DC24V		DC24V		
Power Consumption (W)	4	5.5	5.5	6		6		
Weight (kg)	0.27	0.43	0.43	0.59	0.59	0.58	1.0	1.0

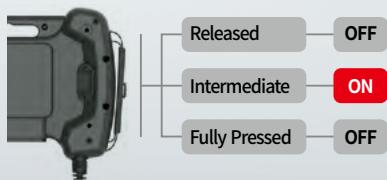
□*0 (WinCE 7.0 Core), 1 (WinCE 7.0 Pro)

Note 1): IP66 for UL Type 4X models.

New Handyheld HMI iXP2H Series

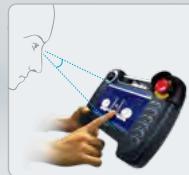


3 - Position Enable Switch



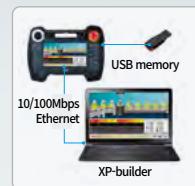
Clear Visibility

- Excellent visibility with high definition and wide screen view
- 1024 X 600 resolution
- 16M color



Project Transfer

- Easy project creation by XP-builder
- Convenient downloading/Uploading of project files via USB port and ethernet (Multi-language supported)



Specification

Model	iXP2H-0702D Series	iXP2H-0704D Series
Display Type		TFT color LCD
Screen Size		7"
Resolution		1024 x 600 pixels
Color Indication		24-bit color (16.7M colors)
Backlight		LED method, Automatic On/Off support
Backlight Lifetime		50,000 hours
Touch Panel		Resistive overlay (Pressure type)
Audio		Magnetic buzzer (120 85 dB)
Processor		ARM cortex-A9 800 MHz, Single core
Memory	Flash Operating RAM Backup RAM	8 GB (Small memory : 128 MB) 1 GB 1 MB
Backup Type		Date/Time data, Logging, Alarm, Recipe data, Non-volatile device
Battery		CR1220 (3.0V/210 mAh, Around 3 years/25°C)
Ethernet		1 x 10Base-T/100Base-TX
USB Host		1 x USB 2.0 (Below x 1)
RS-232C	1 x RS-232C (Terminal block)	-
RS-485	-	1 x RS-485 (Terminal block)
Multiple Languages		Simultaneous display of 12 languages
Animation		GIF format support
Recipe		Supported
Data Logging		Supported
Script Launcher		Supported
Standard Certification		CE, KC
Protection Standard		IP42 (Front)
Dimensions (mm)		195×270×72 (Excluding cables)
Power		DC 24 V ±5%
Power Consumption (W)		12
Weight (Kg)		1.0 (Excluding cables)

Product list

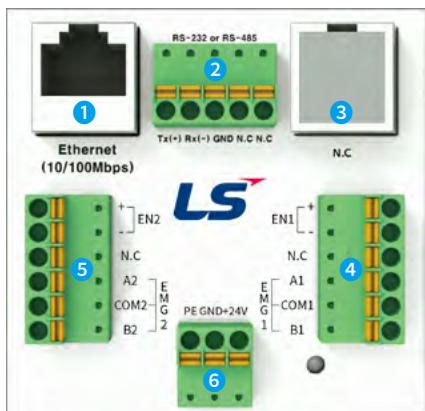
Model	Features
iXP2H-0702D05	RS-232C, Ethernet, 5m cable
iXP2H-0702D10	RS-232C, Ethernet, 10m cable
iXP2H-0704D05	RS-485, Ethernet, 5m cable
Model	Features
iXP2H-0704D10	RS-485, Ethernet, 10m cable
iXP2O-JB0D	Handy junction box (Conversion adapter)

System configuration and features



- 1 TFT-LCD**
1024 x 600 TFT LCD, 16.7M color display resistive overlay
- 2 Emergency stop switch**
Immediately stops the control device or turns off the power as a safety feature
- 3 Left keypad**
Direction key F1, F2, F3: User defined RGB LED: User defined
- 4 Right keypad**
User defined
* Generally used as shortcut key of each axis of robot.
- 5 Extension device**
Slot of the USB extension device
 - When shipped, it is fastened with a separate cover.
 - When used, the cover can be removed with a phillips head (+) screwdriver for use.
- 6 Reset switch**
Switch for resetting the system
- 7 Debug port**
A debugging port for developers
- 8 USB host**
Connect to USB memory : Backup and send logging, Recipe, Alarm, and project data.
Connect to user interface : Use the mouse and keyboard.
- 9 USB device(Option)**
USB device port (Unsupported)
- 10 SD - Card**
Software update SD memory (Store data)
- 11 Enable Switch**
Released : Disable
Intermediate : Enable
Fully Pressed : Disable

Junction Box



- 1 Ethernet Port**
Ethernet : 10Base-T/100Base-TX/1000Base-T
 - Connector for Ethernet connection
- 2 Serial terminal block**
RS-485/232C communication connector
 - 0702D(for RS-232 model): Tx, Rx, GND
 - 0704D(for RS-485 model): TRx+, TRx-
- 3 N.C Not used**
- 4 Switch 1 terminal block**
Signal that is controlled from the front side switch of the product.
 - Enable, Emergency (A contact, B contact) switch
- 5 Switch 2 terminal block**
Signal that is controlled from the front side switch of the product.
 - Enable, Emergency (A contact, B contact) switch
- 6 Power terminal block**
DC 24 V input terminal block

SCADA Software XGT InfoU

The new web plant feature is available in XGT infoU.
Mobile with web-based surveillance software,
It's easy to use with a tablet.



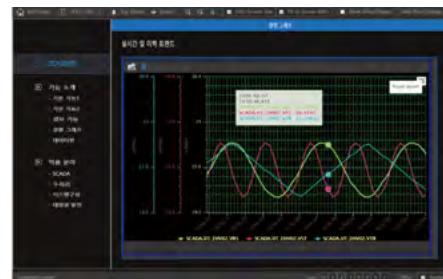
Special Features

- Open architecture with high scalability and compatibility HMI/SCADA operating system
- Simple user interface and application of advanced graphics technology
- Redundant servers, Multi-client support
- Web client, Android app support
- Support for various DBs and various industrial protocols
- User-centric, Convenient report creation
- XGT infoU web plant
- HTML5 based monitoring software features
- Graphic surveillance control, Alarm, Trend
- Supports a variety of graphics formats, Including BMP, JPG, GIF, SVG, PNG, etc.
- Support for dynamic characteristics, Event scripts, and smart symbols

Web Plant Use Cases



Monitoring and control of the automatic assembly line of LS cheonan plant



Real-time history and trend alarm functions

System Configuration

Surveillance System

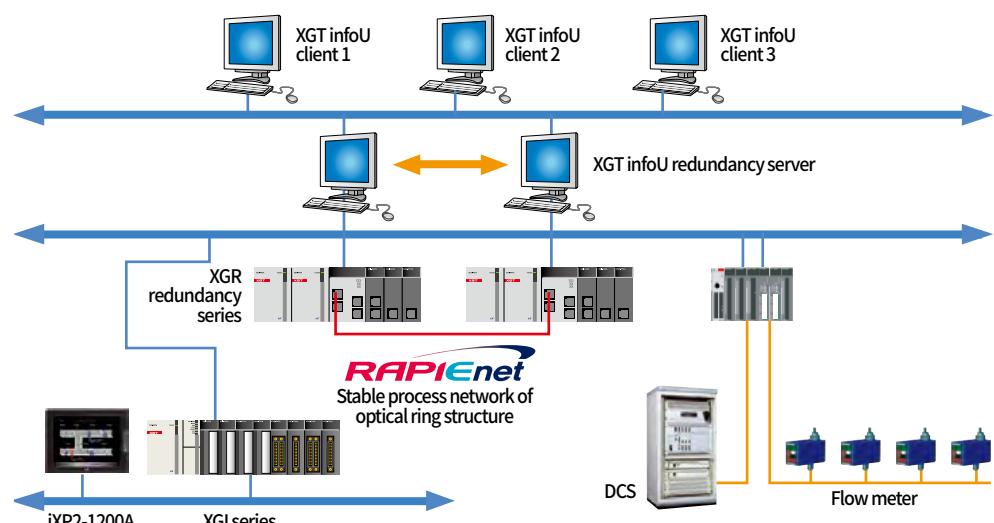
Monitor Field Data
Collected by Server

Server

Control Processes and
Monitor Field Data Collection

Field Control Panel

Monitor and Control
On-Site Devices



- On-site devices scattered in remote areas can be collected through efficient communication and various alarm information can be managed.
 - On-site trip data can be synchronized using SOE module and the exact cause of accident can be analyzed.
 - DataBase connectivity and task capabilities allow tagging and output to general-purpose DataBase such as MS SQL and oracle.
- Efficient data sharing with MES or ERP systems

XGT InfoU Model List

Model	Version	Description
InfoU-RC-75/150/500/1K/2K/MAX	Developer & Runtime version	InfoU Development version, 75/150/500/1000/2000/MAX TAG
InfoU-RT-75/150/500/1K/2K/MAX	Runtime version	InfoU Running version, 75/150/500/1000/2000/MAX TAG
InfoU-OP-WEBMAX/150/500/1K/2K	Web browser version	WEB version, MAX USER, MAX TAG/150/500/1000/2000

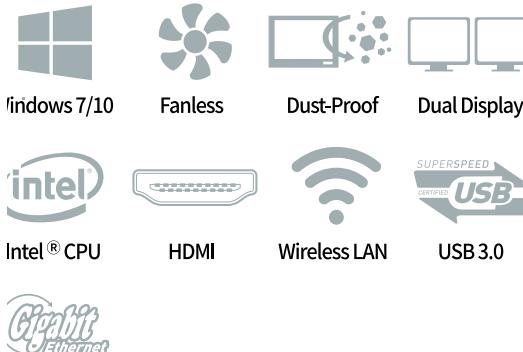
XPC

Panel PC, XPC Series with latest specs quad core CPU

NTP-KF Series

Panel PC with latest intel core CPU

- Intel 6th generation core i3/i5/i7 CPU
- Built-in SSD 128GB, 4GB RAM For maximum performance
- Low-power, Eco-friendly products by minimizing energy consumption
- Fanless structural design enables low heat/noise
- Easy wiring via the wireless connection (Optional)
- A broad lineup of 12" to 19"



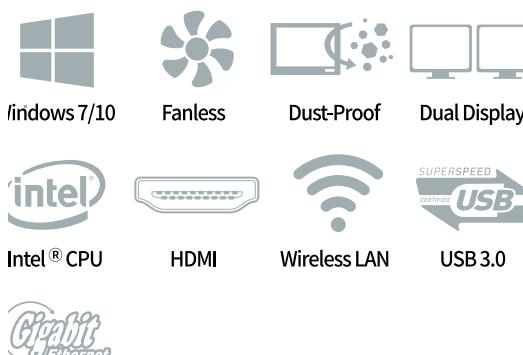
XPC-KF Model List

Model	Description
XPC-NTP12KF	12", Intel 6th core i3/i5/i7 CPU, 4G RAM, SSD 128G
XPC-NTP15KF	15", Intel 6th core i3/i5/i7 CPU, 4G RAM, SSD 128G
XPC-NTP17KF	17", Intel 6th core i3/i5/i7 CPU, 4G RAM, SSD 128G
XPC-NTP19KF	19", Intel 6th core i3/i5/i7 CPU, 4G RAM, SSD 128G

NTP-BF Series

Panel PC with latest intel core CPU

- Latest intel 2.0GHz quad core CPU
- Built-in SSD 128GB, 4GB RAM for maximum performance
- Low-power, Eco-friendly products by minimizing energy consumption
- Fanless structural design enables low heat/noise
- Easy wiring via the wireless connection (Optional)
- 6 broad lineups from 7" to 19"



XPC-BF Model List

Model	Description
XPC-NTP07BF	7", Intel baytrail-D quad core, 4G RAM, SSD 128G
XPC-NTP10BF	10", Intel baytrail-D quad core, 4G RAM, SSD 128G
XPC-NTP12BF	10", Intel baytrail-D quad core, 4G RAM, SSD 128G
XPC-NTP15BF	15", Intel baytrail-D quad core, 4G RAM, SSD 128G
XPC-NTP17BF	17", Intel baytrail-D quad core, 4G RAM, SSD 128G
XPC-NTP19BF	19", Intel baytrail-D quad core, 4G RAM, SSD 128G

Servo System

Xmotion

User-oriented Xmotion servo system completes your optimal solution. its high-performance vector, precision and speed control are user-friendly and cost effective.



Servo Drive

iX7NH Series



Compact & Convenience

- Optimized installation space by highly efficient heat dissipation - 100W ~ 1kW Drive
- Minimized drive depth for 100W and 200W drive by development and application of mini heatsink
 - 172.5mm → 145.2mm ; volume reduced by 16%

More Variety of Supported Encoders & Functionalities

- BiSS, Quadrature, Tamagawa, Panasonic, EnDat 2.2, SSI, Nikon and Sinusoidal (Optional)
- Temperature monitoring by encoders supported
- Capable of saving up to 4 maximum channels such as alarm code & alarm occurrence time/date
- Enhanced USB OTG(On-The-Go) function: Parameter, alarm history back-up, firmware update

Faster Communication Provided in More Diverse Methods

- Fieldbus: EtherCAT & Modbus TCP
- Min. Communication cycle time : 0.125ms
- Built-in web server function

L7NH Series



Real-time control through EtherCAT

- High speed, Real-time capability and synchronization mechanism
- Supporting CoE, EoE and FoE
- Improved EtherCAT communication speed (Min. 250us, DC support)
- Improved speed response(1kHz) frequency

Support various motor and encoder drive

- Supporting rotary, DD and motor drive (Supporting 3rd party motor)
- Quadrature, BiSS-C, Tamagawa serial abs, EnDat 2.2, Resolver

Improved control performance

- Improved control bandwidth
- Vibration control by real-time FET
- Providing 4-step notch-filter
- Real-time gain tuning function

L7P Series**Providing program function built-in single axis position determination module**

- Supporting position control mode by pulse input
- Possible to use without upper controller
- Position control mode
- Modbus RTU protocol (RS-422)

Support various motor and encoder drive

- Supporting rotary, DD and motor drive (Supporting 3rd party motor)
- Quadrature, BiSS-C, Tamagawa serial abs, EnDat 2.2, resolver

Improved control performance

- Improved control bandwidth
- Vibration control by real-time FET
- Providing 4-step notch-filter
- Real-time gain tuning function

L7NHF Series**Real-time control through EtherCAT**

- High speed, Real-time capability and synchronization mechanism
- Supporting CoE, EoE and FoE
- Improved speed response (1kHz) frequency
- Improved communication speed by applying 16bit-bus
 - Improved chip communication speed
 - Improved EtherCAT communication speed

Fully-closed loop control

- Switch among semi-closed loop control, Fully-closed loop control and dual feedback control
- Fully-closed loop control provides quick response with internal and external encoder position values
- Fully-closed loop control ensures high-precision control during machine operation

L7C Series**Control power/main power unification**

- Unification of power for integrated control board and power board
- 0.1~1kW drive line-up for single phase AC220V support

Optimal system implementation with competitive cost ratio

- Unification of power for integrated control board and power board

Maintain and improve L7S specification

- Compatibility with existing L7S I/O pin map
- Maintain current control cycle (10kHz), Speed/position control cycle (5kHz)
- Added operation mode (Indexing mode) and improved memory (1MB)

PEGA Series**Enhanced efficiency integrated servo system**

- Cost effective from installation by integrated system of motor, encoder cable and drive
- Maximization for useful space when installed at limited and small space
- High effectiveness for application of multi axis because there is no limitation for space of installation

Real-time control through EtherCAT

- High speed, Real-time capability and synchronization mechanism
- Improved EtherCAT communication speed
- Supporting CoE, EoE and FoE

Servo Drive**PHOX Series****Real-time control through EtherCAT**

- High speed, Real-time capability and synchronization mechanism
- Improved communication speed by applying 16Bit-bus
 - Improved chip communication speed
 - Improved EtherCAT communication speed
- Supports CoE, EoE and FoE
- Improved speed response (1kHz) frequency

Variable switching frequency

- 16 / 32 / 48kHz

Progammig function including single axis position module

- Positioning control mode with pulse inputs
- Supports the indexing mode
- Provides position control through I/O or HMI without the position control module

Servo Motor**F Series**

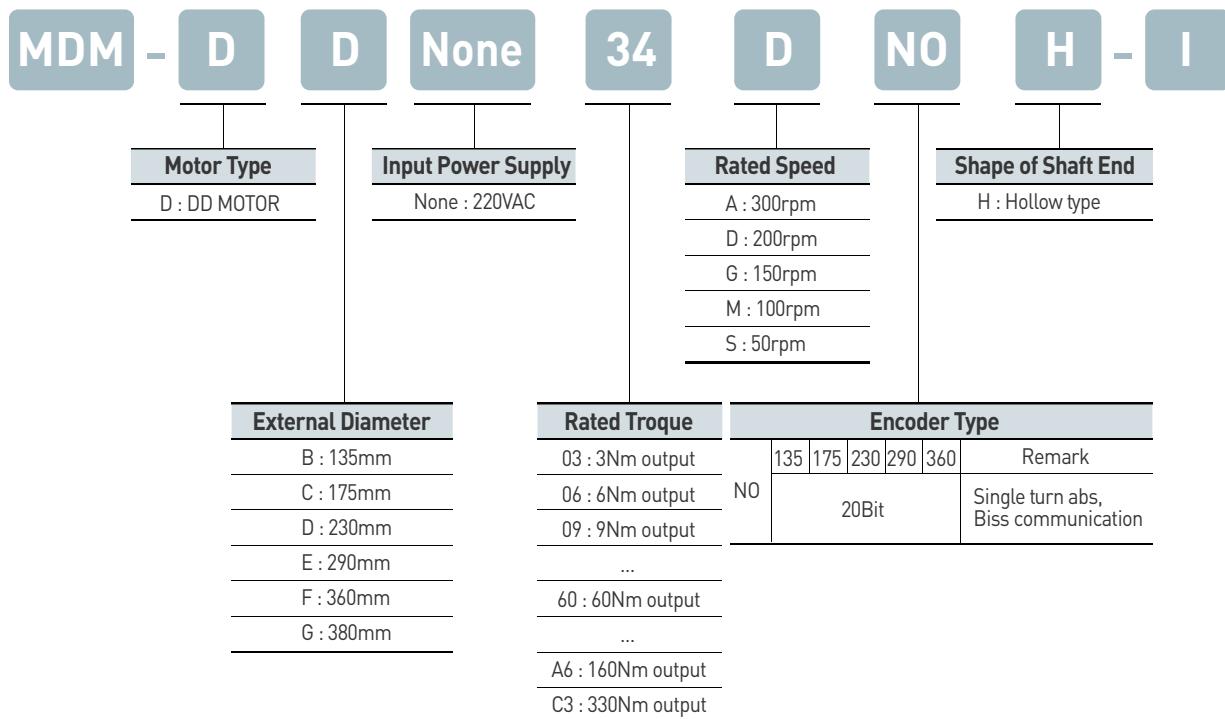
Flat type rotating servo motor



APM	-	F	BL	P	04	A	M	K	1
Model Name									
APM : Servo motor (Made in korea)									
APMC : Servo motor (Made in China)									
Motor Shaft									
F : Flat shaft									
Input Power Supply									
None : 200VAC									
P : 400VAC									
Flange Size									
AL : 40 Flange									
BL : 60 Flange									
CL : 80 Flange									
E : 130 Flange									
F : 180 Flange									
G : 220 Flange									
Motor Capacity									
R5 : 50[W]									
01 : 100[W]									
015 : 150[W]									
02 : 200[W]									
03 : 300[W]									
04 : 400[W]									
07 : 650[W]									
08 : 750[W]									
10 : 1.0[kW]									
20 : 2.0[kW]									
35 : 3.5[kW]									
50 : 5.0[kW]									
75 : 7.5[kW]									
110 : 11[kW]									
150 : 15[kW]									
Encoder Type									
M : 19bit s-turn abs (16bit turn abs)									
M8 : 18bit s-turn abs [FAL type] (16bit m-turn abs)									
Y : 17bit s-turn abs (magnetic)									
Rated Speed									
A : 3000[rpm]									
D : 2000[rpm]									
G : 1500[rpm]									
M : 1000[rpm]									
Oil Seal, Brake Type									
None : None									
1 : Oil seal attached									
2 : Brake attached									
3 : Oil seal, Brake attached									
Note 1) In case of 40, 60, 80 flange product, you can apply 200V drive only.									
Note 2) If you apply nonstandard encoder, please contact our office.									
Note 3) Refer to brake operating voltage									
Shape of Shaft End									
N : Straight									
K : One side round key (standard)									

MDM Series

Direct-drive motor



MDM Flange type Series

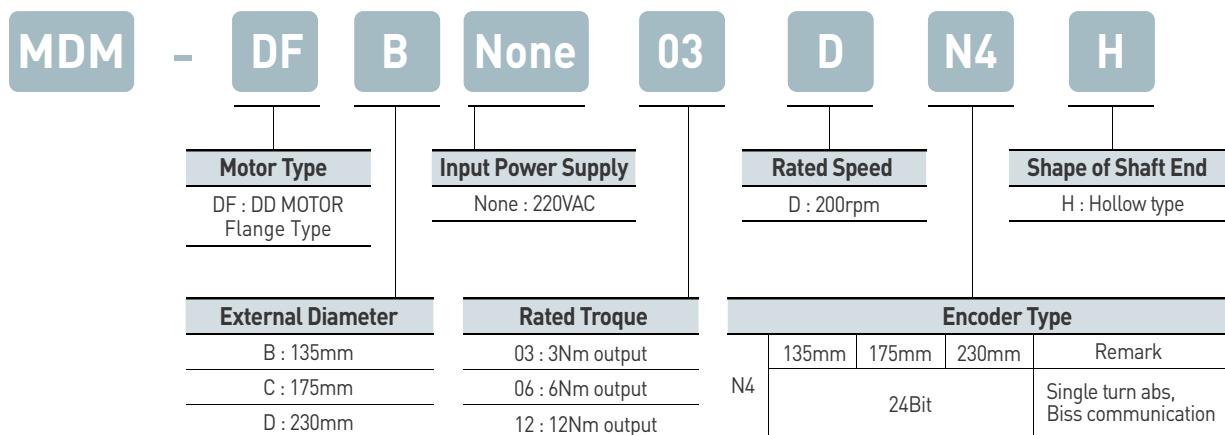
Direct-drive motor flange type

Resolution 16,777,216 [Pulse/rev] (24Bit, single turn)

※ Standard product: Resolution 1,048,576
[Pulse/rev] (20Bit, single turn)

Compact size DD Motor

- 30% smaller size than standard product



Servo Drive

iX7NHA Drive

Item	Part Number	iX7NHA001U	iX7NHA002U	iX7NHA004U	iX7NHA008U	iX7NHA010U	iX7NHA020U	iX7NHA035U
Input Power	Main Power	1-Phase AC100 ~ 120[V], 1-Phase AC200 ~ 240[V], 3-Phase AC200 ~ 240[V], (-15 ~ +10[%]), 50 ~ 60[Hz]			1-Phase AC200 ~ 240[V], 3-Phase AC200 ~ 240[V], (-15 ~ +10[%]), 50 ~ 60[Hz]		3-Phase AC200 ~ 240[V], (-15 ~ +10[%]), 50 ~ 60[Hz]	
	Control Power	1-Phase AC100 ~ 120[V] 1-Phase AC200 ~ 240[V] (-15 ~ +10[10%]), 50 ~ 60[Hz]				1-Phase AC200 ~ 240[V] (-15 ~ +10[10%]), 50 ~ 60[Hz]		
Rated Current [A]		1.4	1.7	3.0	5.2	6.75	13.5	16.0
Peak Current [A]		4.9	5.95	10.5	18.2	20.25	40.5	48.0
Encoder Type		Quadrature (Incremental) , BiSS-B, BiSS-C(Absolute, Incremental) Tamagawa Serial(Absolute, Incremental), EnDat 2.2, Sinusoidal, Analog Hall,SSI, Nikon, Panasonic						
Control Performance	Speed Control Range	Max. 1 : 5000						
	Speed Variation Ratio	$\pm 0.01\%$ or less (Load variation 0~100[%]), $\pm 0.1\%$ or less (temperature: 25±10°C)						
	Torque Control Repetition Accuracy	$\pm 1\%$ or less						
EtherCAT Specification	Communication Standard	FoE (Firmware download) EoE (Parameter setting by UDP, Tuning, Secondary function, Parameter copy) CoE (IEC 61158 Type12, IEC 61800-7 CiA 402 Drive profile)						
	Physical Layer	100BASE-TX(IEEE802.3)						
	Connector	RJ45 x 2						
	Communication Distance	Distance between nodes 100[m] or less						
	DC (Distributed Clock)	Synchronization by DC(Distributed Clock) mode. Minimum DC cycle: 125[us]						
	LED Display	Link Act IN, Link Act OUT, RUN, ERR						
Digital Input, Digital Output	CiA 402 Drive Profile	Profile Position Mode, Profile Velocity Mode, Profile Torque Mode, Cyclic Synchronous Position Mode Cyclic Synchronous Velocity Mode, Cyclic Synchronous Torque Mode, Homing Mode						
	Digital Input	Input Voltage range: DC 12[V] ~ DC 24[V] / Total 6 input channels (allocable) Inputs of total 15 functions are selectively allocable (*POT, *NOT, *HOME, *STOP, *PCON, *GAIN2, P_CL, N_CL, PROBE1, PROBE2, EMG, A_RST, SV_ON, LVSF1, LVSF2) Note) *: Fundamentally allocated signals						
	Digital Output	Service rating: DC 24[V] ±10%, 120[mA] total 3 channels (allocable) Total 11 outputs are selectively allocable (*BRAKE, *ALARM, *READY, ZSPD, INPOS, TLMT, VLMT, INPOS2, INSPD, WARN, TGON) Note)* Automatically allocated signals						
Encoder Decimation Output		Differential Line Driver 3 channels AO, /AO, BO, /BO, ZO, /ZO up to 6.5 [Mpps] on 4x interpolation						
Analog Input & Output	Analog Input	Input voltage range: -10 ~ +10[V], Function: analog torque limit (1 channel, unallocable)						
	Analog Output	Total 2 channels (Allocable): able to selectively allocate total 25 types of output						
Safety Function		2 Input Channels(STO1 and STO2), 1 Output Channel(EDM)						
USB Communication	Function	Firmware download, tuning, test drive, monitoring, parameter duplication						
	Communication Standard	Complies with USB 2.0 Full Speed and OTG 2.0 standards						
	Accessible Device	PC or USB Storage device						
Embedded Function	Dynamic Braking	Standard built-in brake (Activated when the servo alarm goes off or when the servo is off).						
	Regenerative Braking	Built-in by default (100W & 200W excluded)						
	Display Function	7-segment display (5 digits)						
	Self-setting Function	Drive node address setting is possible using rotary switch						
	Additional Function	Gain tuning, alarm history, jog operation, home searching						
Operation Environment	Protection Function	Overcurrent, overload, overheat, overvoltage, insufficient voltage, overspeed, abnormal state of encoder, position following error, current detecting error						
	Operating Temperature / Storage Temperature	0 ~ +50[°C] / -20 ~ +65[°C]						
	Operating Humidity / Storage Humidity	Under 80[%]RH / Under 90[%]RH (noncondensing)						
Environment		Keep indoors. Avoid corrosive / flammable gas or liquid.						

L7NHA Drive

Item	Type Name	L7NHA001U	L7NHA002U	L7NHA004U	L7NHA008U	L7NHA010U	L7NHA020U	L7NHA035U	L7NHA050U	L7NHA075U	L7NHA150U
Input Power	Main Power Supply										
	Control Power Supply					3 phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]					
						Single phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]					
Rated Current[A]		1.4	1.7	3.0	5.2	6.75	13.5	16.7	32	39.4	76
Peak Current[A]		4.2	5.1	9.0	15.6	20.25	40.5	50.1	90.88	98.5	190
Encoder Type											
						Quadrature (Incremental) BISS-B, BISS-C (Absolute, Incremental) Tamagawa serial (Absolute, Incremental)					
Control Performance	Speed Control Range										Maximum 1: 5000
	Frequency Response										Maximum 1[kHz] or above (When the 19-bit serial encoder is applied)
	Speed Variation Ratio										±0.01[%] or lower (When the load changes between 0 and 100%) ±0.1[%] or less (Temperature of 25°C[±10])
	Torque Control Repetition Accuracy										Within ±1%
EtherCAT Communication Specifications	Communication Standard										FoE (Firmware download) EoE (Parameter setting by UDP, Tuning, Secondary function, Parameter copy) CoE (IEC 61158 type12, IEC 61800-7 CIA 402 drive profile)
	Physical Layer										100BASE-TX (IEEE802.3)
	Connector										RJ45x2
	Communication Distance										Within connection between nodes 100[m]
	DC(Distributed Clock)										By DC mode synchronism. Minimum DC cycle : 250[us]
	LED Display										LinkAct IN, LinkAct OUT, RUN, ERR
EtherCAT Drive Profile											Profile position mode Profile velocity mode Profile torque mode Cyclic synchronous position mode Cyclic synchronous velocity mode Cyclic synchronous torque mode Homing mode
Digital Input/Output	Digital Input										Input voltage range : DC 12[V] ~ DC 24[V] Total 8 input channels (Allocable) Above 12 functions can be used selectively for assignment. (*POT, *NOT, *HOME, *STOP, *PCON, *GAIN2, *P_CL, *N_CL, PROBE1, PROBE2, EMG, A_RST)
	Digital Output										Service rating : DC 24[V] ±10%, 120[] Total 4 input channels (Allocable) Above 11 functions can be used selectively for assignment. (*BRAKE±, *ALARM±, *READY±, *ZSPD±, INPOS±, TLMT±, VLMT±, INSPD±, WARN±, TGON±, INPOS±)
Safety Function											2 input channels (STO1, STO2), 1 output channels (EDM±)
USB Communication	Function										Firmware download, Parameter setting, Tuning, Secondary function, Parameter copy
	Communication Standard										USB 2.0 Full speed (Applies standard)
Internal Function	Connect										PC or USB storing medium
	Dynamic Braking										Standard built-in brake (Activated when the servo alarm goes off or when the servo is off)
	Regenerative Braking										Default multilin(Excluding 15kW), External installation possible
	Display Function										7 segments (5DIGIT)
	Self-setting Function										The [MODE] key changes the content displayed in 7 segments
	Additional Function										Auto gain tuning function
Internal Function	Protection Function										Overcurrent, Overload, Overvoltage, Insufficient voltage, Main power input problem, Control power input problem, Overspeed, Motor cable, Overheat(Power module overheat, Abnormal drive operation's temp), Encoder problem, Over-regenerative, Sensor problem, Communication problem
Operation Environment	Operating Temperature / Storage Temperature										0 ~ 50[°C] / -20 ~ 70[°C]
	Operating Humidity / Storage Humidity										Below 80[%]RH / Below 90[%]RH (Avoid dew-condensation)
	Environment										Indoor, Avoid corrosive, Inflammable gas or liquid, and electrically conductive dust.

Servo Drive

L7NHB Drive

Item	Type Name	L7NHB010U	L7NHB020U	L7NHB035U	L7NHB050U	L7NHB075U	L7NHB150U
Input Power	Main Power Supply			3 phase AC380 ~480[V](-15 ~ +10[%]), 50 ~ 60[Hz]			
	Control Power Supply			Single phase AC380 ~ 480[V](-15 ~ +10[%]), 50 ~ 60[Hz]			
Rated Current[A]		3.7	8	10.1	17.5	22.8	39
Peak Current[A]		11.1	24	30.3	47.25	57	97.5
Encoder Type				Quadrature (Incremental) BISS-B, BISS-C (Absolute, Incremental) Tamagawa serial (Absolute, Incremental)			
				EnDat 2.2 Sinusoidal Analog hall			
Control Performance	Speed Control Range			Maximum 1 : 5000			
	Frequency Response			Maximum 1[kHz] or above (When the 19-bait serial encoder is applied)			
	Speed Variation Ratio			±0.01[%] or lower (When the load changes between 0 and 100%)	±0.1[%] or less(Temperature of 25°C[±10])		
	Torque Control Repetition Accuracy			Within ±1%			
EtherCAT Communication Specifications	Communication Standard			FoE (Firmware download) EoE (Parameter setting by UDP, Tuning, Secondary function, Parameter copy) CoE (IEC 61158 type12, IEC 61800-7 CIA 402 drive profile)			
	Physical Layer Connector			100BASE-TX(IEEE802.3)			
	Communication distance			Within connection between nodes 100[m]			
	DC(Distributed Clock)			By DC mode synchronism. Minimum DC cycle : 250[us]			
	LED Display			LinkAct iN, LinkAct OUT, RUN, ERR			
	Cia402 Drive Profile			Profile position mode Profile velocity mode Profile torque mode Cyclic synchronous position mode Cyclic synchronous velocity mode Cyclic synchronous torque mode Homing mode			
Digital Input / Output	Digital Input			Input voltage range : DC 12[V] ~ DC 24[V] Total 8 input channels (Allocable) Above 12 functions can be used selectively for assignment. (*POT, *NOT, *HOME, *STOP, *PCON, *GAIN2, *P_CL, *N_CL, PROBE1, PROBE2, EMG, A_RST)			
	Digital Output			Service rating: DC 24[V] ±10%, 120[] Total 4 input channels (Allocable) Above 11 functions can be used selectively for assignment. (*BRAKE±, *ALARM±, *READY±, *ZSPD±, INPOS±, TLMT±, VLMT±, INSPD±, WARN±, TGON±, INPOS±)			
Safety Function				2 input channels (STO1, STO2), 1 output channels (EDM±)			
USB Communication	Function			Firmware download, Parameter setting, Tuning, Secondary function, Parameter copy			
	Communication Standard			USB 2.0 full speed (Applies standard)			
	Connect			PC or USB storing medium			
Internal Function	Dynamic Braking			Standard built-in brake (Activated when the servo alarm goes off or when the servo is off).			
	Regenerative Braking			Default built-in (Excluding 15kW), External installation possible			
	Display Function			7 segments (5DIGIT)			
	Self-setting Function			The [MODE] key changes the content displayed in 7 segments			
	Additional Function			Auto gain tuning function			
	Protection Function			Overcurrent, Overload, Overvoltage, Insufficient voltage, Main power input problem, Control power input problem, Overspeed, Motor cable, Overheat (Power module overheat, Abnormal drive operation's temp), Encoder problem, Over-regenerative, Sensor problem, Communication problem			
Operation Environment	Operating Temperature / Storage Temperature			0 ~ 50[°C] / -20 ~ 70[°C]			
	Operating Humidity / Storage Humidity			Below 80[%]RH / Below 90[%]RH (Avoid dew-condensation)			
	Environment			Indoor, Avoid corrosive, Inflammable gas or liquid, and electrically conductive dust.			

L7PA Drive

Item	Type Name	L7PA001U	L7PA002U	L7PA004U	L7PA008U	L7PA010U	L7PA020U	L7PA035U	L7PA050U	L7PA075U	L7PA150U
Input Power	Main Power Supply										
	Control Power Supply										
Rated Current[A]		1.4	1.7	3.0	5.2	6.75	13.5	16.7	32	39.4	76
Peak Current[A]		4.2	5.1	9.0	15.6	20.25	40.5	50.1	90.88	98.5	190
Encoder Type											
	Speed Control Range										
Control Performance	Frequency Response										
	Speed Variation Ratio										
	Accel/Decel Time										
	Input Frequency										
	Input Pulse Type										
RS422 Communication Specifications	Communication Specifications										
	Communication Protocol										
	Connector										
	Synchro Method										
	Transmission Speed										
	Transmission Distance										
	Power Consumption										
	Terminating Resistance										
Input/Output Signal	Digital Input										
	Digital Output										
Analog Input/Output	Analog Input										
	Analog Output										
USB Communication	Protection										
	Communication Specifications										
	Connection Device										
	Dynamic Braking										
	Regenerative Braking										
	Display										
	Setting Function										
	Additional Function										
	Protective Function										
Operation Environment	Operating Temperature / Storage Temperature										
	Operating Humidity / Storage Humidity										
	Environment										

Servo Drive

L7PB Drive

Item	Type Name	L7PB010U	L7PB020U	L7PB035U	L7PB050U	L7PB075U	L7PB150U
Input Power	Main Power Supply			3 phase AC380 ~480[V](-15 ~ +10[%]), 50 ~ 60[Hz]			
	Control Power Supply			Single phase AC380 ~ 480[V](-15 ~ +10[%]), 50 ~ 60[Hz]			
Rated Current[A]		3.7	8	10.1	17.5	22.8	39
Peak Current[A]		11.1	24	30.3	47.25	57	97.5
Encoder Type				Universal encoder feedback quadrature (Incremental) BiSS-B, BiSS-C (Absolute, Incremental) Tamagawa serial (Absolute, Incremental) EnDat 2.2 sinusoidal analog hall			
Control Performance	Speed Control Range			Maximum 1: 5000			
	Frequency Response			Maximum 1 [kHz] or above (When using 19bit serial encoder)			
	Speed Variation Ratio			±0.01 [%] or lower [When load changes between 0 and 100%] ±0.1[%] or lower [Temperature 25 ±10°C]			
	Accel/Decel Time			Straight or s-curve acceleration/Deceleration (0~10,000[ms], 0~1,000[ms] unit configurable)			
	Input Frequency			1[Mpps], Line drive / 200[kpps], Open collector			
	Input Pulse Type			Symbol + pulse series, CW+CCW, A/B phase			
RS422 Communications Specifications	Communication Specifications			ANSI/TIA/EIA-422 standard specifications			
	Communication Protocol			MODBUS-RTU			
	Connector			RJ45x2			
	Synchro Method			Asynchronous			
	Transmission Speed			9600 / 19200 / 38400 / 57600 [bps] Can be configured at [0x3002]			
	Transmission Distance			Maximum 200 [m]			
Input/Output Signal	Power Consumption			100[mA]			
	Terminating Resistance			Dip S/W(On/Off), Built-in 120Ω			
	Digital Input			Input voltage range: DC 12[V] ~ DC 24[V] total 16 input channel (Allocatable) 30 function inputs can be selectively allocated (*SV_ON, *POT, *NOT, *A-RST, *START, *STOP, *REGT, *EMG, *HOME, *HSTART, *ISEL0, *ISEL1, *ISEL2, *ISEL3, *ISEL4, *ISEL5, PCON, GAIN2, P_CL, N_CL, PAUSE, ABSRQ, JSTART, JDIR, PCLR, SPD1/LVSF1, SPD2/LVSF2, SPD3, AOVr, MODE,)			
Input/Output Signal	Digital Output			Use rating: DC 24[V] ±10%, 120[mA] total 8 input channel (Allocatable) 19 function inputs can be selectively allocated (*ALARM±, *READY±, *BRAKE±, *INPOS1±, *ORG±, *EOS±, *TGON±, *TLMT±, VLMT±, INSPD±, ZSPD±, WARN±, INPOS2±, IOUT0±, IOUT1±, IOUT2± IOUT3±, IOUT4±, IOUT5±)			
	Analog Input			Total 2 channels Analog speed override input (-10[V] ~ +10[V]) Analog torque command input (-10[V] ~ +10[V]))			
Analog Input/Output	Analog Output			Total 2 channels 15 function inputs can be selectively allocated			
	Protection			Firmware download, Parameter setting, Tuning, Auxiliary function, Parameter copy			
USB Communication	Communication Specifications			Complies with USB 2.0 full speed specifications			
	Connection Device			PC or USB storage media			
	Dynamic Braking			Standard built-in (Activated by servo alarm or servo OFF)			
Built-in Functions	Regenerative Braking			Default built-in (Excluding 15kW), External installation possible			
	Display			7 segment (5 DIGIT)			
	Setting Function			Drive node address can be set using rotary switch			
Operation Environment	Additional Function			Gain tuning, Alarm history, JOG operation, Origin search			
	Protective Function			Excessive current, Overload, Excessive current Limit, Overheating, Excessive voltage, Low voltage, Excessive speed, Encoder fail, Position following fail, Current sensing fail			
	Operating Temperature / Storage Temperature			0 ~ 50[°C] / -20 ~ 70[°C]			
Operation Environment	Operating Humidity / Storage Humidity			Below 80[%]RH / Below 90[%]RH (Avoid dew-condensation)			
	Environment			Indoor, Avoid corrosive, Inflammable gas or liquid, and electrically conductive dust.			

L7NHFA Drive

Item	Type Name	L7NHFA010U	L7NHFA020U	L7NHFA035U	L7NHFA150U
Input Power	Main Power Supply		3 phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]		
	Control Power Supply		Single phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]		
Rated Current[A]		6.75	16.7	32	39.4
Peak Current[A]		20.25	50.1	90.88	98.5
1st Encoder Encoder A			Quadrature (Incremental) BiSS-B, BiSS-C (Absolute, Incremental) Tamagawa serial (Absolute, Incremental) EnDat 2.2, Sinusoidal, Analog hall		
2nd Encoder Encoder B			Quadrature (Incremental), SSI sinusoidal, Analog hall (Analog to BiSS converter)		
Control Performance	Speed Control Range		Maximum 1: 5000		
	Frequency Response		Maximum 1[kHz] or above (When the 19-bit serial encoder is applied)		
	Speed Variation Ratio		±0.01[%] or lower (When the load changes between 0 and 100%) ±0.1[%] or less (Temperature of 25°C[±10])		
	Torque Control Repetition Accuracy		Within ±1%		
	Input Frequency		4[Mpps], Lind drive		
	Input Pulse Method		Symbol+pulse series, CW+CCW, PhaseA/B		
EtherCAT Communication Specifications	Communication Standard		FoE (Firmware download) EoE (Parameter setting by UDP, Tuning, Secondary function, Parameter copy) CoE (IEC 61158 type12, IEC 61800-7 CIA 402 drive profile)		
	Physical Layer		100BASE-TX (IEEE802.3)		
	Connector		RJ45x2		
	Communication Distance		Within connection between nodes 100[m]		
	DC(Distributed Clock)		By DC mode synchronism. Minimum DC cycle : 250[us]		
	LED Display		LinkAct iN, LinkAct OUT, RUN, ERR		
Digital Input/Output	Cia402 Drive Profile		Profile position mode, Profile velocity mode, Profile torque mode, Cyclic synchronous position mode Cyclic synchronous velocity mode, Cyclic synchronous torque mode, Homing mode		
	Digital Input		Input voltage range : DC12[V] ~ DC 24[V] Total 6 input channels (Allocable) (*POT, *NOT, *HOME, *STOP, *PCON, *GAIN2, *P_CL, *N_CL, PROBE1, PROBE2, EMG, A_RST, SV_ON, LVSF, LVSF2) * Default signal		
	Digital Output		Total 3 input channels (Allocable) Total 11 output can be used selectively for assignment. (*BRAKE±, *ALARM±, *READY±, *ZSPD±, INPOS±, TLMT±, VLMT±, INSPD±, WARN±, TGON±, INPOS2±) * Default signal		
	Analog Output		Total 2 channels (Allocable) Total 25 output can be used selectively for assignment.		
	Safety Function		2 input channels (STO1, STO2)		
	Function		Firmware download, Parameter setting, Tuning, Auxiliary function, Parameter copy		
USB Communication	Communication Specifications		USB 2.0 full speed (Applies standard)		
	Connect		PC or USB storage media		
	Dynamic Braking		Standard built-in brake (Activated when the servo alarm goes off or when the servo is off).		
	Regenerative Braking		Default built-in(Excluding 15kW), External installation possible		
	Display Function		7 segments (5DIGIT)		
	Self-setting Function		The [MODE] key changes the content displayed in 7 segments		
Internal Function	Additional Function		Auto gain tuning function		
	Protection Function		Overcurrent, Overload, Overvoltage, Insufficient voltage, Overspeed, Overheat (Power module overheat, Abnormal drive operation's temp), Encoder problem, Position tracking, Problem, Current sensing problem		
	Operating Temperature / Storage Temperature		0 ~ 50[°C] / -20 ~ 70[°C]		
	Operating Humidity / Storage Humidity		Below 80[%]RH / Below 90[%]RH (Avoid dew-condensation)		
	Environment		Indoor, Avoid corrosive, Inflammable gas or liquid, and electrically conductive dust.		

Servo

Drive

L7C Drive

Item	Type Name	L7CA001U	L7CA002U	L7CA004U	L7CA008U	L7CA010U
Input power		Single phase AC200~230[V] (-15~+10%), 50~60[Hz]				
Rated Current[A]	1.4	1.7	3.0	5.2	6.75	
Peak Current[A]	4.2	5.1	9.0	15.6	20.25	
Encoder Type	Quadrature (Incremental), Biss-B, Biss-C (Absolute, Incremental)					
Control Performance	Speed Control Range	Maximum 1:5000				
	Frequency Response	Maximum 1[KHz] or above (When using 19bit serial encoder)				
	Speed Variation Ratio	$\pm 0.01 [\%]$ or lower [When load changes between 0 and 100%] $\pm 0.1 [\%]$ or lower [Temperature 25 $\pm 10^\circ\text{C}$]				
	Accel/Decel Time	Straight or s-curve acceleration/Deceleration (0-10,000[ms], Possible to be set by one[ms] unit)				
	Input Frequency	1[Mpps], Line driver / 200[kpps], Open collector				
	Input Pulse Type	Symbol + pulse series, CW+CCW, A/B phase				
RS-422	Specification	ANSI/TIA/EIA-422 standard specifications				
	Protocol	MODBUS-RTU				
	Synchro Method	Asynchronous				
	Power Consumption	100[mA]				
	Transmission Speed	9,600/19,200/38,400/57,600bps				
	Distance	Maximum 200[m]				
EtherCAT Communication Specifications	Terminating Resistance	Connecting the outside connector (CN1 7pin, 28pin connection), Built-in 120 Ω				
	Digital Input	Input voltage range : DC12V ~ DC24V Total 10 input channels (Allocable) Total 34 function's input can be used selectively for assignment. (*SV_ON, *SPD/LVSF1, *SPD2/LVSF2, *SPD3, *A-RST, *JDIR, *POT, *NOT, *EMG, *STOP, START, REGT, HOME, HSTART, ISEL0, ISEL1, ISEL2, ISEL3, ISEL4, ISEL5, PCON, GAIN2, P_CL, N_CL, MODE, PAUSE, ABSRQ, JSTART, PCLR, AOVR, INHIBIT, EGEAR1, EGEAR2, ABS_RESET) * Basic allocation signal				
		Service rating : DC24V $\pm 10\%$, 120mA 5 of 8 input channels are allocable, 3 channels are fixed with AL00, AL01, AL02 Total 19 function's input can be used selectively for assignment. (*ALARM, *READY, *ZSPD, *BREAK, *INPOS1, ORG, EOS, TGON, TLMT, VLMT, INSPD, WARN, INPOS2, IOUT0, IOUT1, IOUT2, IOUT3, IOUT4, IOUT5) * Basic allocation signal				
	Digital Output	2 channel Analog speed input (Command/Override) $\pm 10\%$ Analog torque input (Command/Limit) $\pm 10\%$				
		PC USB 2.0 full speed (Applies standard)				
Internal Function	Connect	PC, USB 2.0 full speed (Applies standard)				
	Dynamic Braking	Standard built-in brake (Activated when the servo alarm goes off or when the servo is off)				
	Regenerative Braking	Both default built-in and external installation possible				
	Display Function	7 segments (5DIGIT)				
	Self-setting Function	Gain tuning, Alarm history, JOG operation, Origin search				
	Protection Function	Excessive current/Voltage/Overload/Overheating/Speed, Excessive current limit, Low voltage, Encoder/Position following/Current sensing fail				
Operation Environment	Operating Temperature / Storage Temperature	0~50°C / -20 ~ 65°C				
	Operating Humidity / Storage Humidity	Below 80[%]RH / Below 90[%]RH (Avoid dew-condensation)				
	Environment	Indoor, Avoid corrosive, Inflammable gas or liquid, and electrically conductive dust.				

Drive Combination Table

iX7NHA

Rated Speed (rpm)	Maximum Speed (rpm)	Flange	Motor	iX7 Drive	Encoder Cable		iX7 Power Cable	iX7 Power + Brake	Brake
					Serial	Absolute			
3,000	5,000	□40	FALR5A	iX7NHA001U	APCS-E□□□ES-□	APCS-E□□□ES-□1	APCS-P□□□LSX	APCS-B□□□QS-□	
		□40	FAL01A	iX7NHA001U					
		□40	FAL015A	iX7NHA004U					
		□60	FBL01A	iX7NHA001U					
		□60	FBL02A	iX7NHA002U					
		□60	FBL04A	iX7NHA004U					
		□80	FCL04A	iX7NHA004U					
		□80	FCL06A	iX7NHA008U					
		□80	FCL08A	iX7NHA008U					
		□80	FCL10A	iX7NHA010U					
		□130	FE09A	iX7NHA010U					
		□130	FE15A	iX7NHA020U					
		□130	FE22A	iX7NHA020U					
		□130	FE30A	iX7NHA035U					
2,000	3,000	□130	FE06D	iX7NHA008U	APCS-E□□□DS	APCS-E□□□DS1	APCS-P□□HSX1	APCS-P□□NBX1	
		□130	FE11D	iX7NHA010U					
		□130	FE16D	iX7NHA020U					
		□130	FE22D	iX7NHA020U					
1,500	3,000	□130	FE05G	iX7NHA008U			APCS-P□□HSX1	APCS-P□□NBX1	
		□130	FE09G	iX7NHA010U					
		□130	FE13G	iX7NHA020U					
		□130	FE17G	iX7NHA020U					
1,000	2,000	□130	FE03M	iX7NHA004U			APCS-P□□HSX1	APCS-P□□NBX1	
		□130	FE06M	iX7NHA008U					
		□130	FE09M	iX7NHA010U					
		□130	FE12M	iX7NHA020U					

Drive Combination Table

iX7NHA DD Motor

Rated Speed (rpm)	Maximum Speed (rpm)	External Diameter Of Motor(Φ)	Motor	Drive	Encoder Cable		iX7 Power Cable	iX7 Power + Brake Cable	Brake
					Serial	Absolute			
200	500	135Φ	DB03D	iX7NHA001U	APCS-E□□□ZS	APCS-P□□□YSX	APCS-P□□□ZSX	APCS-P□□□YSX1	-
			DB06D	iX7NHA002U					
			DB09D	iX7NHA004U					
	400	175Φ	DC06D	iX7NHA002U					
			DC12D	iX7NHA004U					
			DC18D	iX7NHA008U					
	500	230Φ	DD12D	iX7NHA004U					
	400		DD22D	iX7NHA008U					
	300		DD34D	iX7NHA010U					
150	250	360Φ	DE40D	iX7NHA010U					
			DE60D	iX7NHA020U					
50	100	380Φ	DGC3S	iX7NHA020U	APCS-E□□□ZS1	APCS-P□□□YSX1	APCS-P□□□ZSX	APCS-P□□□YSX1	-
200	500	135Φ	DFB03D	iX7NHA001U					
		175Φ	DFC06D	iX7NHA002U					
		230Φ	DFD12D	iX7NHA004U					

L7NHA

Rated Speed (rpm)	Maximum Speed (rpm)	Flange	Motor	Drive	Encoder Cable		Power	Power + Brake	Brake
					Serial	Absolute			
3,000	5,000	<input type="checkbox"/> 40	FALR5A	L7NHA001U	APCS-E□□□□ES-□	APCS-E□□□□ES-□1	APCS-P□□□LS-□	APCS-B□□□QS-□	
		<input type="checkbox"/> 40	FAL01A	L7NHA001U					
		<input type="checkbox"/> 40	FAL015A	L7NHA004U					
		<input type="checkbox"/> 60	FBL01A	L7NHA001U					
		<input type="checkbox"/> 60	FBL02A	L7NHA002U					
		<input type="checkbox"/> 60	FBL04A	L7NHA004U					
		<input type="checkbox"/> 80	FCL04A	L7NHA004U					
		<input type="checkbox"/> 80	FCL06A	L7NHA008U					
		<input type="checkbox"/> 80	FCL08A	L7NHA008U					
		<input type="checkbox"/> 80	FCL10A	L7NHA010U					
2,000	3,000	<input type="checkbox"/> 130	FE09A	L7NHA010U	APCS-E□□□□DS	APCS-E□□□□DS1	APCS-P□□□HS1APCS-P□□□NB1	APCS-B□□□QS-□	
		<input type="checkbox"/> 130	FE115A	L7NHA020U					
		<input type="checkbox"/> 130	FE22A	L7NHA020U					
		<input type="checkbox"/> 130	FE30A	L7NHA035U					
		<input type="checkbox"/> 180	FF30A	L7NHA035U					
		<input type="checkbox"/> 180	FF50A	L7NHA050U					
		<input type="checkbox"/> 80	FCL03D	L7NHA004U					
		<input type="checkbox"/> 80	FCL05D	L7NHA008U					
		<input type="checkbox"/> 80	FCL06D	L7NHA008U					
		<input type="checkbox"/> 80	FCL07D	L7NHA008U					
1,500	2,000	<input type="checkbox"/> 130	FE06D	L7NHA008U	APCS-E□□□□DS	APCS-E□□□□ES-□1	APCS-P□□□LS-□	APCS-B□□□QS-□	
		<input type="checkbox"/> 130	FE11D	L7NHA010U					
		<input type="checkbox"/> 130	FE16D	L7NHA020U					
		<input type="checkbox"/> 130	FE22D	L7NHA020U					
		<input type="checkbox"/> 180	FF22D	L7NHA020U					
		<input type="checkbox"/> 180	FF35D	L7NHA035U					
		<input type="checkbox"/> 180	FF55D	L7NHA050U					
		<input type="checkbox"/> 180	FF75D	L7NHA075U					
		<input type="checkbox"/> 220	FG22D	L7NHA020U					
		<input type="checkbox"/> 220	FG35D	L7NHA035U					
1,000	2,000	<input type="checkbox"/> 220	FG55D	L7NHA050U	APCS-E□□□□DS	APCS-E□□□□DS1	APCS-P□□□JS2APCS-P□□□LB2	APCS-P□□□SB	
		<input type="checkbox"/> 220	FG75D	L7NHA075U					
		<input type="checkbox"/> 220	FG110D	L7NHA150U					
		<input type="checkbox"/> 130	FE05G	L7NHA008U					
		<input type="checkbox"/> 130	FE09G	L7NHA010U					
		<input type="checkbox"/> 130	FE13G	L7NHA020U					
		<input type="checkbox"/> 130	FE17G	L7NHA020U					
		<input type="checkbox"/> 180	FF20G	L7NHA020U					
		<input type="checkbox"/> 2,700	FF30G	L7NHA035U					
		<input type="checkbox"/> 3,000	FF44G	L7NHA050U					
1,500	2,500	<input type="checkbox"/> 180	FF60G	L7NHA075U	APCS-E□□□□DS	APCS-E□□□□DS1	APCS-P□□□JS2APCS-P□□□LB2	APCS-P□□□SB	
		<input type="checkbox"/> 2,000	FF75G	L7NHA075U					
		<input type="checkbox"/> 3,000	FG20G	L7NHA020U					
		<input type="checkbox"/> 2,700	FG30G	L7NHA035U					
		<input type="checkbox"/> 3,000	FG44G	L7NHA050U					
		<input type="checkbox"/> 220	FG60G	L7NHA075U					
		<input type="checkbox"/> 220	FG85G	L7NHA150U					
		<input type="checkbox"/> 220	FG110G	L7NHA150U					
		<input type="checkbox"/> 220	FG150G	L7NHA150U					
		<input type="checkbox"/> 130	FE03M	L7NHA004U					
1,000	2,000	<input type="checkbox"/> 130	FE06M	L7NHA008U	APCS-E□□□□DS	APCS-E□□□□DS1	APCS-P□□□HS1APCS-P□□□NB1	APCS-P□□□SB	
		<input type="checkbox"/> 130	FE09M	L7NHA010U					
		<input type="checkbox"/> 130	FE12M	L7NHA020U					
		<input type="checkbox"/> 180	FF12M	L7NHA020U					
		<input type="checkbox"/> 180	FF20M	L7NHA020U					
		<input type="checkbox"/> 1,700	FF30M	L7NHA035U					
		<input type="checkbox"/> 180	FF44M	L7NHA050U					
		<input type="checkbox"/> 2,000	FG12M	L7NHA020U					
		<input type="checkbox"/> 2,000	FG20M	L7NHA020U					
		<input type="checkbox"/> 1,700	FG30M	L7NHA035U					
		<input type="checkbox"/> 2,000	FG44M	L7NHA050U					
		<input type="checkbox"/> 2,000	FG60M	L7NHA075U					

Drive Combination Table

L7NHA DD Motor

Rated Speed (rpm)	Maximum Speed (rpm)	External Diameter Of Motor(Φ)	Motor	Drive	Encoder Cable		Power	Power + Brake	Brake
					Serial	Absolute			
200	500	135Φ	DB03D	L7NHA001U	APCS-E□□□ZS	APCS-PN□□□YS	APCS-PN□□□YS	-	-
			DB06D	L7NHA002U					
			DB09D	L7NHA004U					
		175Φ	DC06D	L7NHA002U					
			DC12D	L7NHA004U					
	400	230Φ	DC18D	L7NHA008U					
	500		DD12D	L7NHA004U					
	400		DD22D	L7NHA008U					
	300		DD34D	L7NHA010U					
150	250	360Φ	DE40D	L7NHA010U			APCS-PN□□□ZS	-	-
			DE60D	L7NHA020U					
	50	380Φ	DGC3S	L7NHA020U					
200	500	135Φ	DFB03D	L7NHA001U	APCS-E□□□ZS1	-	APCS-PN□□□YS1	-	-
		175Φ	DFC06D	L7NHA002U					
		230Φ	DFD12D	L7NHA004U					

L7NHB

Rated Speed (rpm)	Maximum Speed (rpm)	Flange	Motor	Drive	Encoder Cable		Power	Power + Brake	Brake
					Serial	Absolute			
3,000	5,000	□130	FEP09A	L7NHB010U			APCS-P□□□HS1	APCS-P□□□NB1	-
		□130	FEP15A	L7NHB020U					
		□130	FEP22A	L7NHB035U					
		□130	FEP30A	L7NHB035U			APCS-P□□□IS1	APCS-P□□□PB1	
		□180	FFP30A	L7NHB035U			APCS-P□□□JS1	APCS-P□□□LB1	
		□180	FFP50A	L7NHB050U					
2,000	3,000	□130	FEP06D	L7NHB010U			APCS-P□□□HS1	APCS-P□□□NB1	-
		□130	FEP11D	L7NHB010U					
		□130	FEP16D	L7NHB020U					
		□130	FEP22D	L7NHB020U			APCS-P□□□IS1	APCS-P□□□PB1	
		□180	FFP22D	L7NHB020U					
		□180	FFP35D	L7NHB035U			APCS-P□□□JS1	APCS-P□□□LB1	
		□180	FFP55D	L7NHB050U					
	2,500	□180	FFP75D	L7NHB075U	APCS-E□□□DS	APCS-E□□□DS1	APCS-P□□□IS1	APCS-P□□□SB	APCS-P□□□SB
	3,000	□220	FGP22D	L7NHB020U					
	2,700	□220	FGP35D	L7NHB035U					
	3,000	□220	FGP55D	L7NHB050U			APCS-P□□□JS1		
	2,500	□220	FGP75D	L7NHB075U			APCS-P□□□MS1		
		□220	FGP110D	L7NHB150U					
1,500	3,000	□130	FEP05G	L7NHB010U			APCS-P□□□HS1	APCS-P□□□NB1	-
		□130	FEP09G	L7NHB010U					
		□130	FEP13G	L7NHB020U					
		□130	FEP17G	L7NHB020U			APCS-P□□□IS1	APCS-P□□□PB1	
		□180	FFP20G	L7NHB020U			APCS-P□□□JS1	APCS-P□□□LB1	
		2,700	□180	FFP30G					
		3,000	□180	FFP44G			APCS-P□□□IS1	APCS-P□□□SB	
	2,500	2,500	□180	FFP60G			APCS-P□□□JS1		APCS-P□□□SB
		2,200	□180	FFP75G			APCS-P□□□MS1		
		3,000	□220	FGP20G			APCS-P□□□IS1		
		2,700	□220	FGP30G			APCS-P□□□JS1		
		3,000	□220	FGP44G			APCS-P□□□IS1		
		2,500	□220	FGP60G			APCS-P□□□JS1		
		2,000	□220	FGP85G			APCS-P□□□MS1		
1,000	2,000	□200	FGP110G	L7NHB150U			APCS-P□□□HS1	APCS-P□□□NB1	-
		□220	FGP150G	L7NHB150U					
		□130	FEP03M	L7NHB010U					
		□130	FEP06M	L7NHB010U					
		□130	FEP09M	L7NHB010U			APCS-P□□□IS1	APCS-P□□□PB1	
		□130	FEP12M	L7NHB020U			APCS-P□□□JS1	APCS-P□□□LB1	
	1,700	□180	FFP12M	L7NHB020U			APCS-P□□□IS1	APCS-P□□□SB	APCS-P□□□SB
		□180	FFP20M	L7NHB020U					
		1,700	□180	FFP30M					
		□180	FFP44M	L7NHB050U			APCS-P□□□JS1	APCS-P□□□MS1	
1,000	2,000	□220	FGP12M	L7NHB020U			APCS-P□□□IS1	APCS-P□□□SB	APCS-P□□□SB
		□220	FGP20M	L7NHB020U					
		□220	FGP30M	L7NHB050U					
		□220	FGP44M	L7NHB050U			APCS-P□□□JS1		
		□220	FGP60M	L7NHB150U			APCS-P□□□MS1		

Drive Combination Table

L7CA

Rated Speed (rpm)	Maximum Speed (rpm)	Flange	Motor	Drive	Encoder Cable		Power	Power + Brake	Brake
					Serial	Absolute			
3,000	5,000	□40	FALR5A	L7CA001U	APCS-E □□□ES	APCS-E □□□ES1	APCS-P□□□LSC	-	APCS-B□□□QS
		□40	FAL01A	L7CA001U					
		□40	FAL015A	L7CA002U					
		□60	FBL01A	L7CA001U					
		□60	FBL02A	L7CA002U					
		□60	FBL04A	L7CA004U					
		□80	FCL04A	L7CA004U					
		□80	FCL06A	L7CA008U					
		□80	FCL08A	L7CA008U					
		□80	FCL10A	L7CA010U					
2,000	2,500	□80	FCL03D	L7CA004U					
		□80	FCL05D	L7CA008U					
		□80	FCL06D	L7CA008U					
		□80	FCL07D	L7CA008U					

Precision Planetary Gearbox



LS planetary gearbox is a device that transfers increased torque to the Application by decreasing motor speed.

LS thrives to provide total solution in the industrial automation market by having a wide range of products with high performance and promised quality, including motion controllers to servo drives, motor.



Special Features



High Performance by LS Strict Quality Process

- Low noise level
- Best-in-class backlash
- High output torque
- High efficiency



Easy Installation with Various Motors and Manufacturing by Korea Technology.

- Competitive price
- Short delivery



Variable Gear Ratios

- Straight type : 3:1 ~ 100:1
- Angle type : 3:1 ~ 200:1



Application

- Packaging machines
- Semiconductor machines
- Logistics machines
- FPD/LCD machines

Gear Series

Spur Gear Series

- SSS Series
- SSO Series
- SSR Series
- SAS Series
- SAO Series
- SAR Series



Helical Gear Series

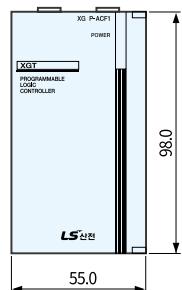
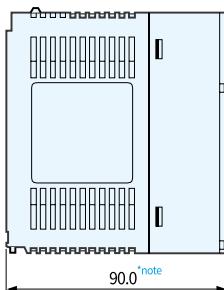
- MSS Series
- MSR Series
- MSO Series
- MAS Series
- MAR Series
- MAO Series
- HSS Series
- HSR Series
- HSW Series
- HSD Series
- HAS Series
- HAR Series
- HAW Series
- HAD Series



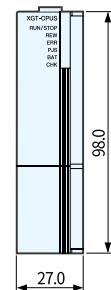
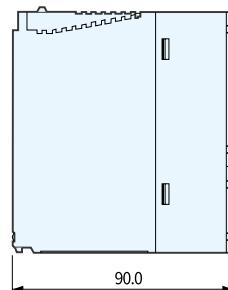
Dimension

XGK/XGI/XGR

Power



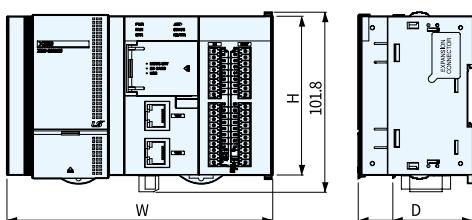
CPU, I/O



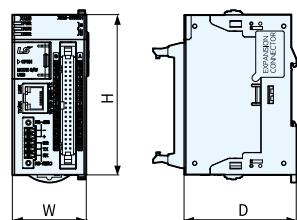
*note) XGP-AC23:110.0

XGB

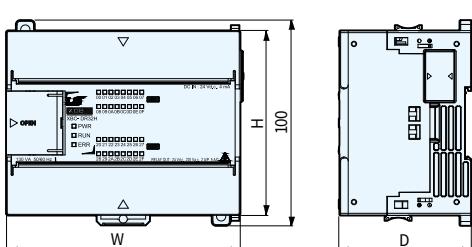
XBC/XEC DN32U



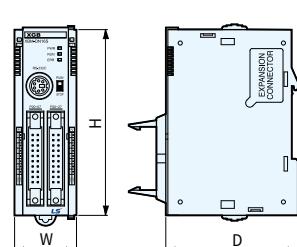
XBM H2, HP



XBC/XEC DR32H



XBM DN16S

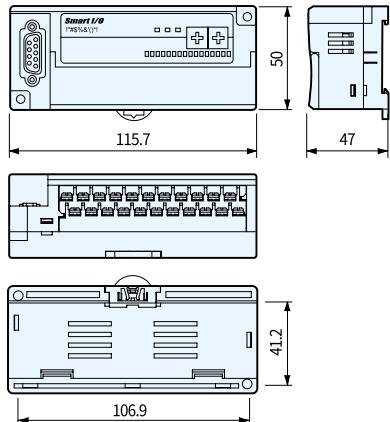


Item	Type	Model	W	H	D
CPU	XBC/XEC "U"	DN, DR 32U	150	90(100)	64
		DN, DR 32UP	185		
		DN, DR 32UA	185		
	XBC/XEC "H"	DR(N/P)32H	114		
		DR(N/P)64H	180		
XBC/XEC "SU"		DR, DN, DP 20/30SU	135	90(100)	64
		DR, DN, DP 40SU	161		
		DR, DN, DP 60SU	210		
	XBC/XEC "E"	DR, DN, DP 10/14E	100		
I/O		DR, DN, DP 20/30E	135	90	63
	XBM/XEM H2, HP	DN/DP32H2, DN/DP32HP	41.5		
I/O	XBM(Slim)	DR16S, DN16S, DN32S	30	90(100)	
	Expansion I/O	DC32A	20	90	63
		TN32A			
		TP32A			
		DC08A			
	Special module	DC16A(B)			
		TN08A			
		TN(P) 16A			
	Relay I/O	Special module	27	90	63
		DR16A / RV16A / RY08A(B)			
	Network module	EIPT / EIMT/F/H / EMTA C41A,C21A,CMEA,CSEA,PMEC			

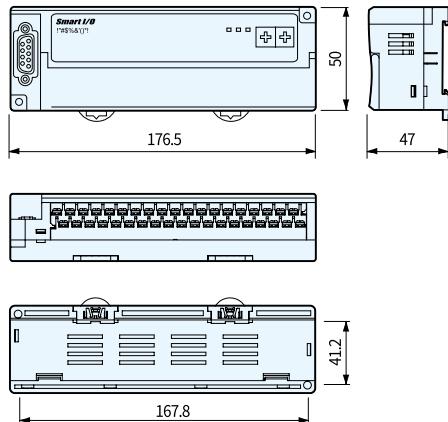
Dimension

Smart I/O

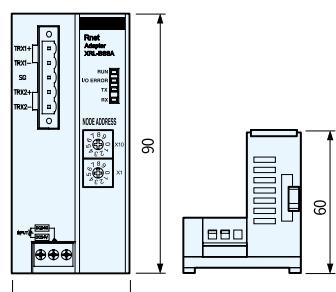
Input 16pt, output TR



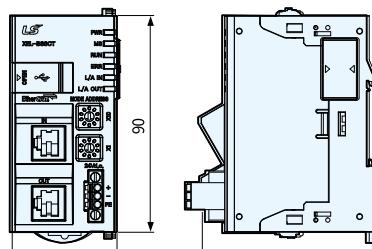
Input 32pt, TR output, Relay output 16pt, analog input / output



XRL-BSSA

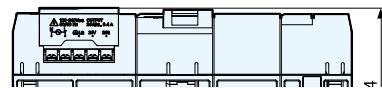
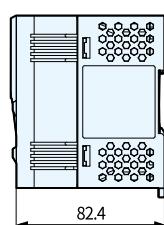
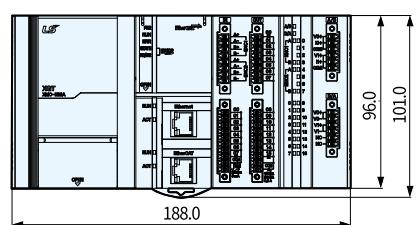
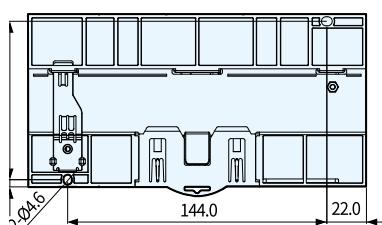


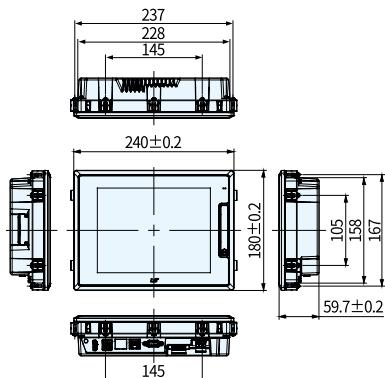
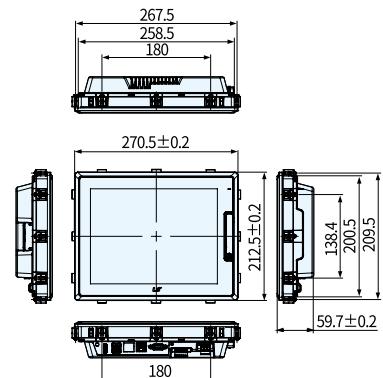
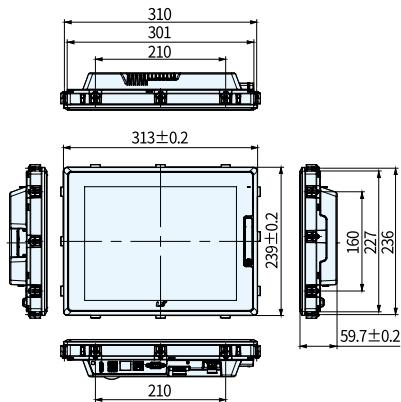
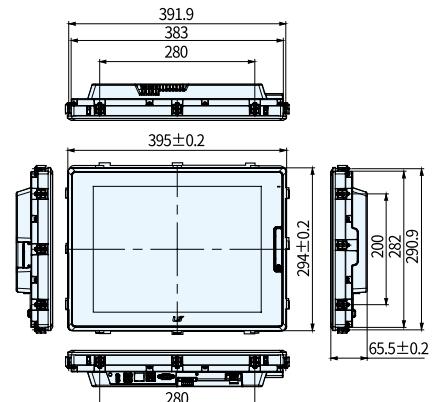
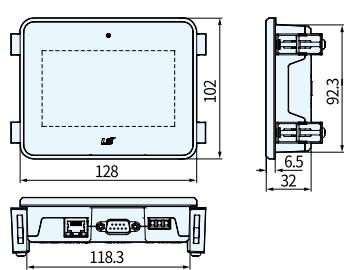
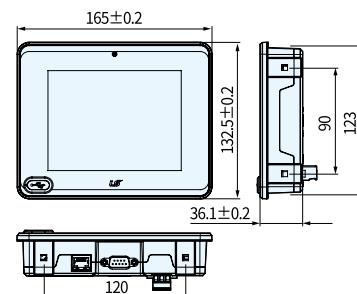
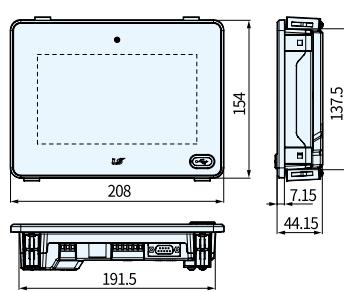
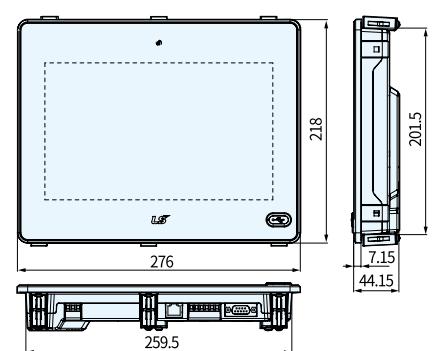
XEL-BSSCT



XMC

XMC-E32A/E16A/E08A/E32C



XGT Panel**iXP2-0800****iXP2-1000****iXP2-1200****iXP2-1500****eXP20-TTA****eXP30-TTA****eXP40-TTA****eXP60-TTA**

Memo

SOLUTION **SQUARE**

EVERYTHING ABOUT AUTOMATION ENGINEERING



SOLUTION SQUARE provides technical information and training materials across a wide range of automation technologies.

SOLUTION **SQUARE**

Engineering Software-associated Services

Linked with Automation Software

Users can access graphic libraries and samples in the engineering software in a few clicks.



Simple Software Updates

Check the latest information and keep your software up-to-date.



Quick and Easy Search for Automation Technologies

Getting Effective Search Results

Quick and easy search for up-to-date content of products and technologies



Mobile Friendly

Optimized for web and mobile





Safety Instructions

- 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.



- According to The WEEE Directive, please do not discard the device with your household waste.



■ Headquarter

LS-ro 127(Hogye-dong) Dongan-gu, Anyang-si, Gyeonggi-Do, 14119, Korea

■ Seoul Office

LS Yongsan Tower, 92, Hangang-daero, Yongsan-gu, Seoul, 04386, Korea
Tel: 82-2-2034-4033, 4888, 4703 Fax: 82-2-2034-4588

E-mail: automation@ls-electric.com

■ Overseas Subsidiaries

• LS ELECTRIC Japan Co., Ltd. (Tokyo, Japan)
Tel: 81-3-6268-8241 E-Mail: japan@ls-electric.com

• LS ELECTRIC (Dalian) Co., Ltd. (Dalian, China)
Tel: 86-411-8730-6495 E-Mail: china.dalian@lselectric.com.cn

• LS ELECTRIC (Wuxi) Co., Ltd. (Wuxi, China)
Tel: 86-510-6851-6666 E-Mail: china.wuxi@lselectric.com.cn

• LS ELECTRIC Middle East FZE (Dubai, U.A.E.)
Tel: 971-4-886-5360 E-Mail: middleeast@ls-electric.com

• LS ELECTRIC Europe B.V. (Hoofddorp, Netherlands)
Tel: 31-20-654-1424 E-Mail: europartner@ls-electric.com

• LS ELECTRIC America Inc. (Chicago, USA)
Tel: 1-800-891-2941 E-Mail: sales.us@lselectricamerica.com

• LS ELECTRIC Türkiye Co., Ltd.
Tel: 90-212-806-1225 E-Mail: Türkiye@ls-electric.com

www.ls-electric.com

■ Overseas Branches

• LS ELECTRIC Tokyo Office (Japan)
Tel: 81-3-6268-8241 E-Mail: tokyo@ls-electric.com

• LS ELECTRIC Beijing Office (China)
Tel: 86-10-5095-1631 E-Mail: china.auto@lselectric.com.cn

• LS ELECTRIC Shanghai Office (China)
Tel: 86-21-5237-9977 E-Mail: china.auto@lselectric.com.cn

• LS ELECTRIC Guangzhou Office (China)
Tel: 86-20-3818-2883 E-Mail: china.auto@lselectric.com.cn

• LS ELECTRIC Chengdu Office (China)
Tel: 86-28-8670-3201 E-Mail: china.auto@lselectric.com.cn

• LS ELECTRIC Qingdao Office (China)
Tel: 86-532-8501-2065 E-Mail: china.auto@lselectric.com.cn

• LS ELECTRIC Nanjing Office (China)
Tel: 86-25-8467-0005 E-Mail: china.auto@lselectric.com.cn

• LS ELECTRIC Bangkok Office (Thailand)
Tel: 66-90-950-9683 E-Mail: thailand@ls-electric.com

• LS ELECTRIC Jakarta Office (Indonesia)
Tel: 62-21-2933-7614 E-Mail: indonesia@ls-electric.com

• LS ELECTRIC Moscow Office (Russia)
Tel: 7-499-682-6130 E-Mail: info@lselectric-ru.com

• LS ELECTRIC America Western Office (Irvine, USA)
Tel: 1-949-333-3140 E-Mail: america@ls-electric.com

• LS ELECTRIC Italy office (Italy)
Tel: 39-030-8081-833 E-Mail: italia@ls-electric.com