Motion Controller

XMC-E32A/E16A/E08A/E32C

EtherCAT-Based motion control system ensures efficient system environment

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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)
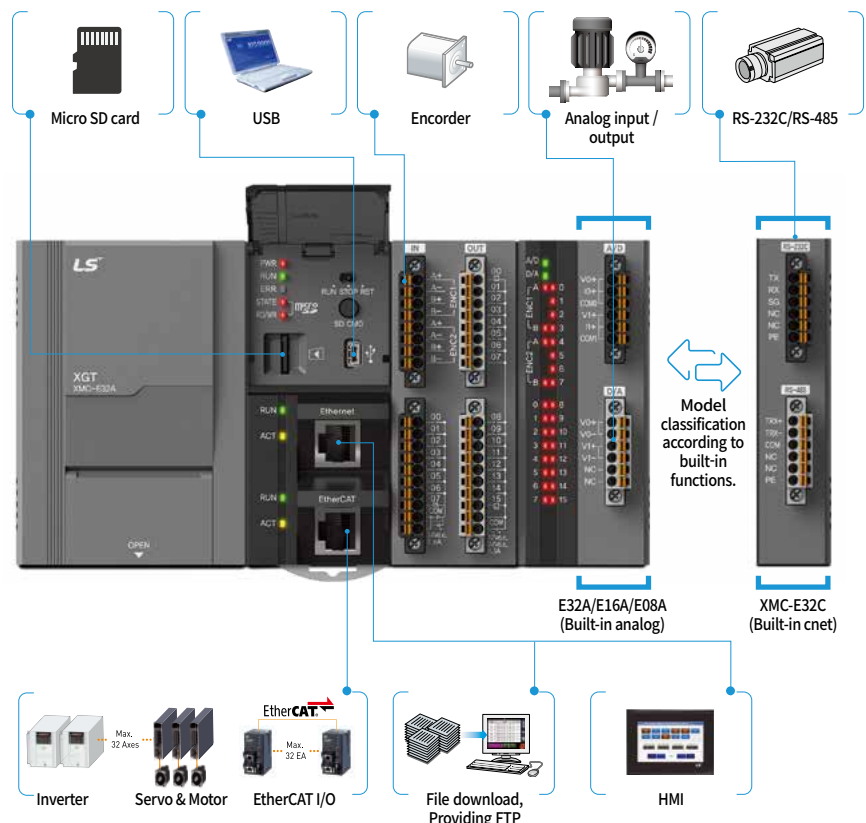 - Saving and executing programs,
    Data logging

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.

Micro SD card   USB   Encorder   Analog input / output   RS-232C/RS-485

Model classification according to built-in functions.

E32A/E16A/E08A (Built-in analog)   XMC-E32C (Built-in cnet)

Inverter   Servo & Motor   EtherCAT I/O   File download, Providing FTP   HMI

Max. 32 Axes   Max. 32 EA   EtherCAT

* 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)
	Flag variable	F	128KB
		K	18KB
		U	1KB
		L	22KB [Note1)
		N	49KB [Note1)
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 [Note2)	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)
Rage 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 [Note1)		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℃), 0.3% (0~55℃) 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 [Note2)	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