

XGB U

Programmable Logic Controller

- Dual port Ethernet
- 1 channel RS232 port
- 1 channel RS485 port
- Built-in web-server and FTP
- Data log in 16GB SD card
- Built-in USB port
- 8 channel high speed counter
- Email and SMTP built-in
- Versions available with built-in analog and positioning options



Technical Specifications

Item	Description		Standard		
Ambient Temperature	0 ~ 55°C				
Storage Temperature	-25 ~ +70°C				
Ambient Humidity	5 ~ 95%RH (Non-condensing)				
Storage Humidity	5 ~ 95%RH (Non-condensing)				
Vibration Resistance	Continuous Vibration			10 times each direction (X, Y and Z)	IEC61131-2
	Frequency	Acceleration	Pulse Width		
	10 ≤ f < 57Hz	-	0.075mm		
	57 ≤ f ≤ 150Hz	9.8m/s ² (1G)	-		
	Continuous Vibration				
	Frequency	Acceleration	Pulse Width		
	10 ≤ f < 57Hz	-	0.035mm		
	57 ≤ f ≤ 150Hz	4.9m/s ² (0.5G)	-		
Shock Resistance	•Peak acceleration: 147m/s ² (15g) •Duration: 11ms •Pulse waveform: Half-sine, 3times each direction per each axis		IEC61131-2		
Noise Resistance	Square wave impulse noise	±500 V		IMO Standard	
	Electrostatic Discharge	4kV		IEC61131-2 IEC61000-4-3	
	Radiated electromagnetic field noise	80 ~ 1000MHz, 10V/m		IEC61131-2 IEC61000-4-3	
	Fast transient/Burst noise	Main Unit	Expansion Module	IEC61131-2 IEC61000-4-4	
	2kV	1kV			
Operating Ambience	Free from corrosive gases and excessive dust				
Altitude	up to 2,000m				
Pollution Level*1	Less than 2				
Cooling	Air-cooling				

*1) Pollution level indicates the degree to which conductive material is generated in the environment where the equipment is used. Pollution level 2 is the condition that only non-conductive pollution occurred but temporary conductivity may be produced due to condensing.

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Performance Specifications - XBC U

Item	Specifications						Remark
	XBC-DN(P)32U	XBC-DR28U	XBC-DN(P)32UA	XBC-DR28UA	XBC-DN(P)32UP	XBC-DR28UP	
Program Control Method	Cyclic execution of stored program, Time-driven interrupt, Process-driven interrupt						
I/O Control Method	Batch processing by simultaneous scan (Refresh method), Directed by program instruction						
Program Language	Ladder Diagram, Instruction List						
Number of Instructions	Basic	28					
	Application	677					
Processing Speed (Basic Instruction)	60ns/step						
Program Capacity	32Kstep						
Max. I/O Points	352points	348points	352points	348points	352points	348points	Main + 10 expansions
Data Area	P	P00000 ~ P2047F(32,768 point)					Input/Output
	M	M00000 ~ M2047F(32,768 point)					
	K	K00000 ~ K8191F(131,072 point)					
	L	L00000 ~ L4095F (65,536 point)					Link
	F	F00000 ~ F2047F (32,768 point)					Flag
	T	100ms, 10ms, 1ms: T0000 ~ T2047 (2,048 point)					Timer
	C	C000 ~ C2047 (2,048 point)					Counter
	S	S00.00 ~ S127.99					Step
	D	D00000 ~ D19999(20000word)					Data Register
	U	U00.00 ~ U0B.31 (384 word)					Analog Data
	Z	Z000~Z127 (128 word)					
	N	N0000~N10239(10,240 word)					
File Register	R	RAM area 2 block (R0 ~ R16,383)					
		FLASH area : 4 block (128Kbyte)					
Total Program	256						
Initial Task	Initial Task	1					
	Cyclic Task	Max 16					
	I/O Task	Max 8					
	Internal Device Task	Max 16					
	High Speed Counter Task	Max 8					
Operation Mode	RUN, STOP, DEBUG						
Self-Diagnosis Function	Detects errors of scan time, memory, I/O and power supply						
Program Port	USB 1 channel, Ethernet						
Retain Data at Power Failure	Latch area setting in basic parameter						
Internal Consumption Current	700mA	990mA	780mA	1,040mA	1,250mA	1,550mA	
Weight	571g	630g	683g	732g	673g	722g	

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Performance Specifications - XEC U

Item		Specifications					Remark	
		XEC-DN(P)32U	XEC-DR28U	XEC-DN(P)32UA	XEC-DR28UA	XEC-DN(P)32UP		XEC-DR28UP
Program Control Method		Cyclic execution of stored program, Time-driven interrupt, Process-driven interrupt						
I/O Control Method		Batch processing by simultaneous scan (Refresh method), Directed by program instruction						
Program Language		Ladder Diagram, Instruction List, SFC, ST						
Number of Instructions	Operator	18						
	Basic Function	136 + Floating-point Arithmetic Functions						
	Basic Function Block	43						
	Special Function Block	Each special module has own special function blocks						
Processing Speed (Basic Instruction)		60ns/step						
Program Memory		384Kbyte						
Max. I/O Points		352points	348points	352points	348points	352points	348points	Main + 10 expansions
Data Area	Symbolic Variable (A)	64KB (Retain setting available)						
	Input Variable (I)	2KB						
	Output Variable (Q)	2KB						
	Direct Variable	M	32KB (Retain setting available)					
		R	32KB * 2blocks					
		W	64KB					Same area with R
	Flag Variable	F	4KB					System Flag
		K	16KB					Keep Relay
		L	8KB					Link Relay
		U	768 Byte					Analog Data Refresh area
N		20KB					P2P Parameter	
Flash Area		4blocks (128Kbyte)					Using R Device	
Timer		No limit in points (Time range: 0.001 ~ 4,294,967.295)						
Counter		No limit in points (Counter range: 64 bit range)						
Total Program		256						
Initial Task	Initial Task	1						
	Cyclic Task	Max 16						
	Initial Task	1						
	Cyclic Task	Max 16						
	I/O Task	Max 8						
	Internal Device Task	Max 16						
	High Speed Counter Task	Max 8						
Operation Mode		RUN, STOP, DEBUG						
Self-Diagnosis Function		Detects errors of scan time, memory, I/O and power supply						
Program Port		USB 1 channel, Ethernet						
Retain Data at Power Failure		Latch area setting in basic parameter						
Internal Consumption Current		700mA	990mA	780mA	1,040mA	1,250mA	1,550mA	
Weight		571g	630g	683g	732g	673g	722g	

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Built-In Function

Item		Specifications					Remark
		XBC/XEC-DN(P)32U	XBC/XEC-DR28U	XBC/XEC-DN(P)32UA	XBC/XEC-DR28UA	XBC/XEC-DN(P)32UP	
PID Control		Control by instruction, auto-tuning, PWM output, Forced output, Operation scan time setting, Antiwindup, Delta MV, PV tracking, Hybrid operation, Cascade operation					
Serial	Protocol	Dedicated protocol, Modbus protocol, User defined protocol					Embedded00 P2P:01
	Channel	RS-232C 1 port and RS-485 1 port					
Ethernet	Transfer Spec	Cable: 100Base-TX Speed: 100Mbps Auto-MDIX *1 IEEE 802.3					
	Topology	Line, star					
	Diagnosis	Module information, service condition					
	Protocol	XGT dedicated Modbus TCP/IP user define frame					Embedded01 P2P:02 High-speed link:01
	Service	P2P, High Speed link, Remote connection					
Datalog	Group	Max 10 group					
	Data Set	32 per group					
	Extension	csv file					
	File Size	Max 16MB					
	SD Memory Type	SD,SDHC type(Recommand: SanDisk, Transcend)					
	Memory Size	Max 16GB					
	File System	FAT32					
High Speed Counter	Performance	1-phase : 100KHz 8 channels 2-phase : 50KHz 4 channel					
	Counter Mode	<ul style="list-style-type: none"> • 4 counter modes are supported based on input pulse and INC/DEC method <ul style="list-style-type: none"> • 1 pulse operation Mode : INC/DEC count by program • 1 pulse operation Mode : INC/DEC count by phase B pulse input • 2 pulse operation Mode : INC/DEC count by input pulse • 2 pulse operation Mode : INC/DEC count by difference of phase 					
	Function	<ul style="list-style-type: none"> • Internal/external preset • Latch counter • Compare output • No. of rotation per unit time 					

*1) Auto-MDIX(Automatic medium-dependent interface crossover) :

It is the function to automatically detect whether the cable connected to the Ethernet port is peer-to-peer(straight) or cross cable

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XBC/XEC U Built-In Positioning Function

Item	Specifications	Remark
Basic Function	No. of control axis: 4axis Control Method: Position, Speed, Speed/Position, Feed Control Control Unit: Pulse, mm, inch, degree Positioning Data: Each axis can have up to 400 data (Step number: 1~400) Operation pattern: End, Keep, Continuous Operation method: Singular, Repeat	Available Only On UP Type
Interpolation	2/3/4 axis linear interpolation 2 axis circular interpolation 3 axis helical interpolation	
Positioning	Method: Absolute/Incremental method Address range: 2,147,483,648~2,147,483,647 Speed: Max 2Mpps (1~2,000,000pps) Acc /Dec process: Trapezoid type, S-type	
Homing Method	DOG+HOME(Off), DOG+HOME(On), Upper limit + HOME, DOG, High speed, Upper/Lower limit, HOME	
Manual Operation	Jog operation, MPG operation, Inching operation	
Encoder Input	Line drive (RS-422A) input 1 Channel (Max 200kpps)	

XBC/XEC U Analog

Item	Specifications	Remark			
Analog Input	Channels	4 channels (current/voltage)	Available Only On UA Type		
	Specification	Input Range		Voltage: 1~5V, 0~5V, 0~10V, -10~10V, Current: 4~20mA, 0~20mA Current input or Voltage input can be selected through the external terminal wiring setting.	
		Input Resistance		1MΩ or more (voltage input), 250 Ω (current input)	
		Max Resolution		1/16000	
				0.250mV (1~5V), 0.3125mV (0~5V) 0.625mV (0~10V), 1.250mV (±10V)	1.0μA (4~20mA) 1.25μA (0~20mA)
		Accuracy		±0.2% or less (When ambient temperature is 25°C) ±0.3% or less (When ambient temperature is 0~55°C)	
Analog Output	Channels	Voltage 2 channels, Current 2 channels	Available Only On UA Type		
	Specification	Output Range		Voltage: 1~5V, 0~5V, 0~10V, -10~10V, Current: 4~20mA, 0~20mA Output ranges are set in user program or I/O parameter per each channel.	
		Load Resistance		1MΩ or more (voltage output), 600 Ω or less (current output)	
		Max Resolution		1/16000	
				0.250mV (1~5V), 0.3125mV (0~5V) 0.625mV (0~10V), 1.250mV (±10V)	1.0μA (4~20mA) 1.25μA (0~20mA)
		Accuracy		±0.2% or less (When ambient temperature is 25°C) ±0.3% or less (When ambient temperature is 0~55°C)	

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Input/Output Wiring XBC-DN32U (16 point DC24V input)

Circuit Configuration		No.	Contact	No.	Contact	Type	
		TB1	0	TB1	8		
		TB2	1	TB2	9		
		TB3	2	TB3	A		
		TB4	3	TB4	B		
		TB5	4	TB5	C		
		TB6	5	TB6	D		
		TB7	6	TB7	E		
		TB8	7	TB8	F		
					TB9		COM
					TB10		COM

XEC U Input/Output Wiring XBC-DN32U 16 point transistor output (Sink type)

Circuit Configuration		No.	Contact	Type
		TB1	0	
		TB2	1	
		TB3	2	
		TB4	3	
		TB5	4	
		TB6	5	
		TB7	6	
		TB8	7	
		TB1	8	
		TB2	9	
		TB3	A	
		TB4	B	
		TB5	C	
		TB6	D	
		TB7	E	
		TB8	F	
	TB9	DC12/24V		
	TB10	COM		

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Input/Output Specification U Type Input Specification

Item		XEC-DN32U/XEC-DN32UP/XEC-DN32UA XEC-DR28U/XEC-DR28UP/XEC-DR28UA
Input Point		16 point
Insulation Method		Photo coupler insulation
Rated Input Voltage		DC24V
Rated Input Current		About 4mA (Contact point 0~3: about 7mA)
Operation Voltage Range		DC20.4~28.8V (within ripple rate 5%)
On Voltage / On Current		DC19V or higher / 3mA or higher
Off Voltage / Off Current		DC6V or lower / 1mA or lower
Input Resistance		About 5.6KΩ (P00~P07: about 4.7KΩ)
Response Time	Off → On	1/3/5/10/20/70/100ms (Set by I/O parameter) Default: 3ms
	On → Off	
Insulation Pressure		AC560Vrms/3 cycle (altitude 2000m)
Insulation Resistance		10ms or more by MegOhmMeter
Common Method		16 point/COM
Proper Cable Size		0.3~0.75mm ²
Operation Indicator		LED On when Input On
External Connection Method		8 point terminal block + 10point terminal connector

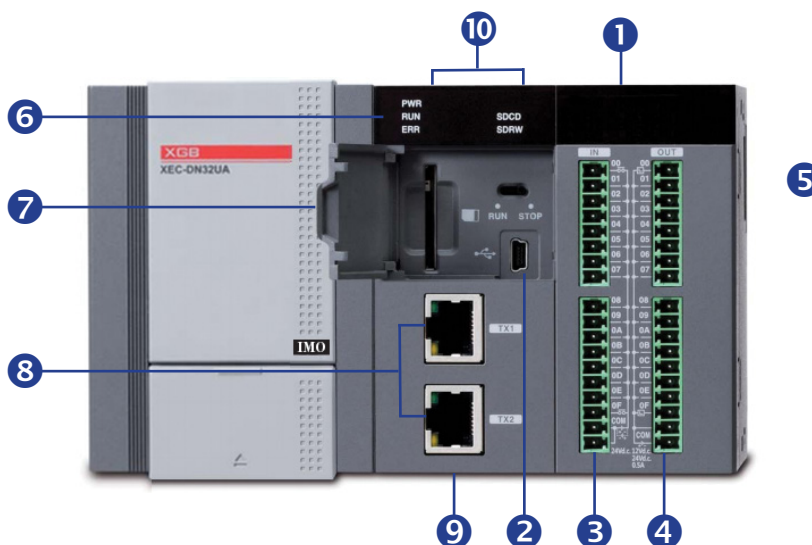
Input/Output Specification U Type Transistor Output Specification

Item		XEC-DN32U/XEC-DN32UP/XEC-DN32UA
Output Point		16 point
Insulation Method		Photo coupler insulation
Rated Load Voltage		DC12/24V
Operation Load Voltage Range		DC 10.2 ~ 26.4V
Max. Load Current		0.5A/1 point, 2A/1COM
Off Leakage Current		0.1mA or less
Max. Inrush Current		4A/10ms or less
Max. Voltage Drop When On		DC 0.4V or less
Surge Absorber		Zener diode
Response Time	Off → On	1ms or less
	On → Off	1ms or less (rated load, resistive load)
Common Method		16 point/COM
Proper Cable Size		Stranded wire 0.3~0.75mm ² (external diameter 2.8mm or less)
External Power	Voltage	DC12/24V ± 10% (Ripple voltage 4 Vp-p or less)
	Current	10mA or less (When connecting DC24V)
Operation Indicator		LED On when Output On
External Connection Method		8 point terminal block connector + 10 point terminal block connector

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Names & Functions Block Type Unit (U)



No	Name	Description
1	LED for displaying input, output	Displays the On/Off status of input, output contacts
2	Connector	Connector (USB 1channel) to access to XG5000
3	Input terminal block	Terminal block receiving the actual input signal
4	Output terminal block	Terminal block outputting the actual output signal
5	RUN/STOP mode switch	Sets the basic unit's operation mode. - STOP → RUN : Program's operation is executed. - RUN → STOP : Program's operation is stopped. (In case of STOP, the remote operation is available.)
6	Status display LED	Displays the basic unit's operation status. - PWR (Red light On) : The power is supplied. - RUN (Green light On) : During RUN mode - ERR (Flickering red light) : Occurrence of errors during operation - STATE (Red light On/flickering Red light): When the SD card is installed, the red light is turned On; when the SD card error occurs, the red light is flickering. - RD/WR (Flickering red light) : During SD card Write
7	SD card connector	Connector with the SD memory card
8	Terminal block for the embedded Enet communication	Terminal block for the embedded Enet communication
9	Terminal block for the embedded communication	Terminal block (lower part of the product) for the embedded RS-232C/485 communication
10	Battery holder	Battery holder (upper part of the product)