

XGB Basic Tutorial

- XBMS**
- XBC-U/H/S/SU/E Type**

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- 1. Specification**
- 2. Main Unit**
- 3. System Configuration**
- 4. XG5000**

1. Specifications

1.1 General Specifications

No.	Item	Specification			Reference	
1	Ambient Temp.	0 ~ 55 °C				
2	Storage Temp.	-25 ~ +70 °C				
3	Ambient Humidity	5 ~ 95 %RH, Non-Condensing				
4	Storage Humidity	5 ~ 95 %RH, Non-Condensing				
5	Vibration	Occasional vibration			-	IEC61131-2
		Frequency	Acceleration	Amplitude	Times	
		10 < f < 57 Hz	-	0.075 mm	10 times each direction (X,Y and Z)	
		57 < f < 150 Hz	9.8 m/s ² (1 G)	-		
		Continuous vibration				
		Frequency	Acceleration	Amplitude		
		10 < f < 57 Hz	-	0.0375 mm		
		57 < f < 150 Hz	4.9m/s ² (0.5 G)	-		
6	Shock	• Peak acceleration : 147 m/s2 (15 G) • Duration : 11 ms • Half-sine, 3 times each direction per each axis			IEC61131-2	
7	Impulse Noise	Square wave impulse noise	AC ±1,500 V DC ±900 V		LSIS standard	
		Electrostatic discharge	Voltage: 4 kV (Contact discharge)		IEC61131-2 IEC61000-4-2	
		Radiated electromagnetic field noise	27 ~ 500 MHz, 10V/m		IEC61131-2 IEC61000-4-3	

1. Specifications

No.	Item	Specification				Reference
7	Impulse Noise	Fast transient /Burst noise	Segment	Power supply module	Digital/Analog Input/Output, Communication Interface	IEC61131-2 IEC61000-4-4
			전압	2 kV	1 kV	
8	Operation ambience	Free from corrosive gases and excessive dust				
9	Altitude	Less than 2,000 m				
10	Pollution degree*	2 or less				
11	Cooling	Air-cooling				

* Pollution degree: An index indicating pollution degree of the operating environment which decides insulation performance of the devices. For instance, Pollution degree 2 indicates the state generally that only non-conductive pollution occurs. However, this state contains temporary conduction due to dew produced.

1. Specifications

1.2 CPU Specifications

1.2.1 XBMS Type

Item		Specification			Remarks
		XBM-DR16S	XBM-DN16S	XBM-DN32S	
Program control method		Reiterative operation, fixed cycle operation, constant scan			
I/O control method		Scan synchronous batch processing method (Refresh method), Directed by program instruction			
Program language		Ladder Diagram, Instruction List			
Number of instructions	Basic	28			
	Application	677			
Processing speed		0.16 μ s/Step			Basic Instruction
Program capacity		10 Ksteps			
Max. I/O points		240 Points		256 Points	7 Expansion
Total No. of Programs		128			Total 128
Initial task		1			
Cyclic task		Max. 8			
I/O task		Max. 8			
Internal device task		Max. 8			
Operation mode		RUN, STOP, DEBUG			
Diagnosis functions		Watch-dog, Memory, I/O error, Power failure			
Data back up		K area, Latch area set up(Super Capacitor: ??)			25°C
Built in functions		RS-232C/485, High speed counter, PID, Pulse catch, Input filter, Internal Interrupt, Position control*			* Position Control: XBM-DNxxS Only

* Data can be backed-up up to 5 days by built-in Super Capacitor.

1. Specifications

1.2.2 XBC-H Type

Item		Specification				Remarks
		XBC-DN32H	XBC-DR32H	XBC-DN64H	XBC-DR64H	
Program control method		Reiterative operation, fixed cycle operation, constant scan				
I/O control method		Scan synchronous batch processing method (Refresh method), Directed by program instruction				
Program language		Ladder Diagram, Instruction List				
Number of instructions	Basic	28				
	Application	687				
Processing speed		0.083 μ s/Step				Basic Instruction
Program capacity		15 Ksteps				
Max. I/O points		352 Points		384 Points		10 Expansion
Total No. of Programs		128				Total 128
Initial task		1				
Cyclic task		Max. 8				
I/O task		Max. 8				
Internal device task		Max. 8				
Operation mode		RUN, STOP, DEBUG				
Diagnosis functions		Watch-dog, Memory, I/O error, Power failure				
Data back up		K area, R area, Latch area set up(Battery: 3 Years)				25°C
Built in functions		RS-232C/485, High speed counter, PID, Pulse catch, Input filter, External Interrupt, Position control*				* Position Control: XBC-DNxxH Only

1. Specifications

1.2.3 XBC-S/SU Type

Item		Specification				Remarks
		XBC-DN20S/SU	XBC-DN30S/SU	XBC-DN40SU	XBC-DN60SU	S: RS-232C Loader SU: RS-232C and USB Loader
		XBC-DR20SU	XBC-DR30SU	XBC-DR40SU	XBC-DR60SU	
Program control method		Reiterative operation, fixed cycle operation, constant scan				
I/O control method		Scan synchronous batch processing method (Refresh method), Directed by program instruction				
Program language		Ladder Diagram, Instruction List				
Number of instructions	Basic	28				
	Application	687				
Processing speed		0.094 μ s/Step				Basic Instruction
Program capacity		15 Ksteps				
Max. I/O points		244 Points	254 Points	264 Points	284 Points	7 Expansion
Total No. of Programs		128				Total 128
Initial task		1				
Cyclic task		Max. 8				
I/O task		Max. 8				
Internal device task		Max. 8				
Operation mode		RUN, STOP, DEBUG				
Diagnosis functions		Watch-dog, Memory, I/O error, Power failure				
Data back up		K area, R area, Latch area set up(Super Capacitor: 18 Days, RTC option: 3 Years)				25°C
Built in functions		RS-232C/485, High speed counter, PID, Pulse catch, Input filter, External Interrupt, Position control*				* Position Control: XBC-DNxx Only

1. Specifications

1.2.4 XBC-E Type

Item		Specification				Remarks
		XBC-DR10E	XBC-DR14E	XBC-DR20E	XBC-DR30E	
		XBC-DN10E	XBC-DN14E	XBC-DN20E	XBC-DN30E	
		XBC-DP10E	XBC-DP14E	XBC-DP20E	XBC-DP30E	
Program control method		Reiterative operation, fixed cycle operation, constant scan				
I/O control method		Scan synchronous batch processing method (Refresh method), Directed by program instruction				
Program language		Ladder Diagram, Instruction List				
Number of instructions	Basic	28				
	Application	677				
Processing speed		0.24 μ s/Step				Basic Instruction
Program capacity		4 Ksteps				
Max. I/O points		14 Points (Main + 1 Option)	18 Points (Main + 1 Option)	28 Points (Main + 2 Option)	38 Points (Main + 2 Option)	
Total No. of Programs		128				Total 128
Initial task		1				
Cyclic task		Max. 8				
I/O task		Max. 4				
Internal device task		Max. 8				
Operation mode		RUN, STOP, DEBUG				
Diagnosis functions		Watch-dog, Memory, I/O error, Power failure				
Data back up		K area, R area, Latch area set up(Super Capacitor: 5 Days, RTC option: 3 Years)				25°C
Built in functions		RS-232C/485, High speed counter, Pulse catch, Input filter, External Interrupt				

1. Specifications

1.2.5 XBC-U Type

Item		Specification			Remarks
		XBC-DR28U	XBC-DR28UP	XBC-DR28UA	
		XBC-DN32U	XBC-DN32UP	XBC-DN32UA	
Program control method		Reiterative operation, fixed cycle operation, constant scan			
I/O control method		Scan synchronous batch processing method (Refresh method), Directed by program instruction			
Program language		Ladder Diagram, Instruction List			
Number of instructions	Basic	28			
	Application	677			
Processing speed		0.060 μ s/Step			Basic Instruction
Program capacity		32 Ksteps			
Max. I/O points		XBC-DR28U/UP/UA: 348 Points, XBC-DN32U/UP/UA: 352 Points			10 Expansion
Total No. of Programs		256			Total 256
Initial task		1			
Cyclic task		Max. 16			
I/O task		Max. 8			
Internal device task		Max. 16			
High Speed Task		Max. 8			
Operation mode		RUN, STOP, DEBUG			
Diagnosis functions		Watch-dog, Memory, I/O error, Power failure			
Data back up		K area, R area, Latch area set up(Battery Back-up: 3 Years)			25°C

1. Specifications

Item	Specification			Remarks
	XBC-DR28U	XBC-DR28UP	XBC-DR28UA	
	XBC-DN32U	XBC-DN32UP	XBC-DN32UA	
Built in functions	Common	Fast Ethernet, RS-232C/485, High speed counter, PID, Pulse catch, Input filter, Data Logging, Web-Server		
	XBC-DNxxUP	Common + Position Control		
	XBC-DNxxUA	Common + Analog Input/Output		

1. Specifications

1.3 Data Memory Specifications

Item		XBM	XBC-H	XBC-S/SU	XBC-E	XBC-U	Remarks
Bit	P	P0000 ~ P127F (2,048 Bits)	P0000 ~ P1023F (16,384 Bits)	P0000 ~ P1023F (16,384 Bits)	P0000 ~ P127F (2,048 Bits)	P00000 ~ P2047F (32,768 Bits)	I/O Refresh
	M	M0000 ~ M255F (4,096 Bits)	M0000 ~ M1023F (16,384 Bits)	M0000 ~ M1023F (16,384 Bits)	M0000 ~ M255F (4,096 Bits)	M00000 ~ M2047F (32,768 Bits)	Internal Bit
	F	F000 ~ F255F (4,096 Bits)	F0000 ~ F1023F (16,384 Bits)	F0000 ~ F1023F (16,384 Bits)	F000 ~ F255F (4,096 Bits)	F00000 ~ F2047F (32,768 Bits)	System Flag
	L	L00000 ~ L1279F (20,480 Bits)	L0000 ~ L2047F (32,768 Bits)	L0000 ~ L2047F (32,768 Bits)	L00000 ~ L1279F (20,480 Bits)	L00000 ~ L4095F (65,536 Bits)	P2P Flag & HS Link Flag
	K	K00000 ~ K2559F (40,960 Bits) (Built-in Parameter: K02600~2559F)	K0000 ~ K4095F (65,536 Bits)	K0000 ~ K4095F (65,536 Bits)	K00000 ~ K2559F (40,960 Bits) (Built-in Parameter: K02600~2559F)	K00000 ~ K8191F (131,072 Bits)	Keep Relay
Word	D	D0000 ~ D5,119 (5120 Word)	D0000 ~ D10,239 (10,240 Word)	D0000 ~ D10,239 (10,240 Word)	D0000 ~ D5,119 (5,120 Word)	D0000 ~ D19,999 (20,000 Word)	Data Register
	Z	Z000~Z127 (128 Word)	Z000~Z127 (128 Word)	Z000~Z127 (128 Word)	Z000~Z127 (128 Word)	Z000~Z127 (128 Word)	Index Register
	U	U00.00 ~ U07.31 (256 Word)	U0.0 ~ U0A.31 (352 Word)	U0.0 ~ U0A.31 (352 Word)	U00.00 ~ U0A.31 (352 Word)	U00.00 ~ U0B.31 (384 Word)	Special Module I/F
	R	-	R00000 ~ R10239 (10,240 Word)	R00000 ~ R10239 (10,240 Word)	-	R00000 ~ R16,383 (16,384 Word)	Latch Data Register
Step	S	S00.00 ~ S127.99	S00.00 ~ S127.99	S00.00 ~ S127.99	S00.00 ~ S127.99	S00.00 ~ S127.99	99 Steps X 128 Pairs
Timer	T	T000 ~ T255 (256 Points)	T0000 ~ T1023 (1,024 Points)	T0000 ~ T1023 (1,024 Points)	T000 ~ T255 (256 Points)	T0000 ~ T2047 (2,048 Points)	1, 10, 100 ms base time
Counter	C	C000 ~ C255 (256 Points)	C0000 ~ C1023 (1,024 Points)	C0000 ~ C1023 (1,024 Points)	C000 ~ C255 (256 Points)	C0000 ~ C2047 (2,048 Points)	

1. Specifications

1.4 Built-In Functions Specifications

1.4.1 Serial Communication(RS-232C, RS-485)

Item		Specification					Remarks
		XBM	XBC-H	XBC-S/SU	XBC-E	XBC-U	
Channels*		RS-232C: 1 Ch. RS-485: 1 Ch.					
Baud Rate		1,200/2,400/4,800/9,600/19,200/38,400/57,600/76,800/115,200					
Data Bit		7/8					
Stop Bit		1/2					
Parity Bit		None/Even/Odd					
Topology	RS-232C	1:1					
	RS-485	1:1, 1:n					
Protocol		XGT Protocol, Modbus-RTU/ASCII, User-Defined Protocol					Client/Server
Diagnostic function		Frame monitor, Service Monitoring, P2P Flag(NDR, ERR, SVC_CNT, ERR_CNT)					

* Simultaneous use of RS-232C and RS-485 is possible except XBC-E Type. XBC-E type can use only 1 channel between RS-232C and RS-485 channel.

1. Specifications

1.4.2 High Speed Counter

Item		Specification					Remarks
		XBM	XBC-H	XBC-S/SU	XBC-E	XBC-U	
Performance & Channels	1 Phase	20 KHz 4 Ch.	100 KHz 4 Ch. 20 KHz 4 Ch.	100 KHz 2 Ch. 20 KHz 6 Ch.	4 KHz 4 Ch.	100 KHz 8 Ch.	
	2 Phase	10 KHz 2 Ch.	50 KHz 2 Ch. 10 KHz 2 Ch.	50 KHz 1 Ch. 8 KHz 3 Ch.	2 KHz 2 Ch.	50 KHz 4 Ch.	
Input Pulse Type		• 1 Phase Pulse (Direction is assigned by program) • 1 Phase Pulse + Direction • 2 Phase Pulse • CW/CCW Pulse					
Pulse Signal Level		DC 24 V					
Counter Range		-2,147,483,648 ~ 2,147,483,647					
Additional Function		• Internal/External preset function • Latch counter function • Comparison output function • Revolution number per unit time function					

1. Specifications

1.4.3 Position Control*1)

Item	Specification				Remarks
	XBM	XBC-H	XBC-S/SU	XBC-UP	
Performance & Channels	100 kpps 2 Ch.			2 Mpps 4 Ch.	
Output Pulse Type	• Pulse & Direction	• Pulse & Direction • CW/CCW	• Pulse & Direction	• Pulse & Direction • CW/CCW • Phase	
Pulse Signal Level	DC 24 V Open Collector			Line Drive	
Control Unit	Pulse			Pulse, mm, Inch, Degree	
Position Range	-2,147,483,648 ~ 2,147,483,647 Pulse			• Pulse: -2,147,483,648 ~ 2,147,483,647 • mm: Pulse X 10⁻⁴ • Inch, Degree: Pulse X 10⁻⁵	
Speed Range	0 ~ 100,000 pps			• Pulse: 0 ~ 2,000,000 pps*2)	
Control Method	• Position Control • Speed Control			• Position Control • Speed Control • Feed Control	
Interpolation Operation	-			• Linear: 2/3/4 Axis • CAM: 2/3/4 Axis • Circular, Elliptical: 2 Axis • Helical: 3 Axis	
Servo Drive Interface	Pulse			Pulse, Drive Ready Servo ON, Servo error Reset	
External Interface	High Limit, Low Limit, Dog, Home				

*1) Position Control function is not available in XBC-E, XBC-U, XBC-UA type.

*2) When one of mm, Inch, Degree is selected in control unit, the speed range is dependent on mechanical constant assigned by parameters such as pulses per rotation, Travel per rotation and Unit multiplier, and its unit can be selected one of the two choices, unit/m and rpm.

1. Specifications

1.4.4 PID*

Item	Specification				Remarks
	XBM	XBC-H	XBC-S/SU	XBC-U	
Loop	16 Loops				
Control Method	• P Control (Proportional Control) • PI Control (Proportional-Integral Control) • PID Control (Proportional-Integral-Derivative Control)				
Functions	• Controlled by PID Instruction • Auto-tuning • PWM Output • Manual Value Output • Adjustable Cycle time • Anti-Windup • Delta-MV • SV-RAMP			• Forward/Reverse hybrid operation • Cascade PID	

* PID Control function is not available in XBC-E.

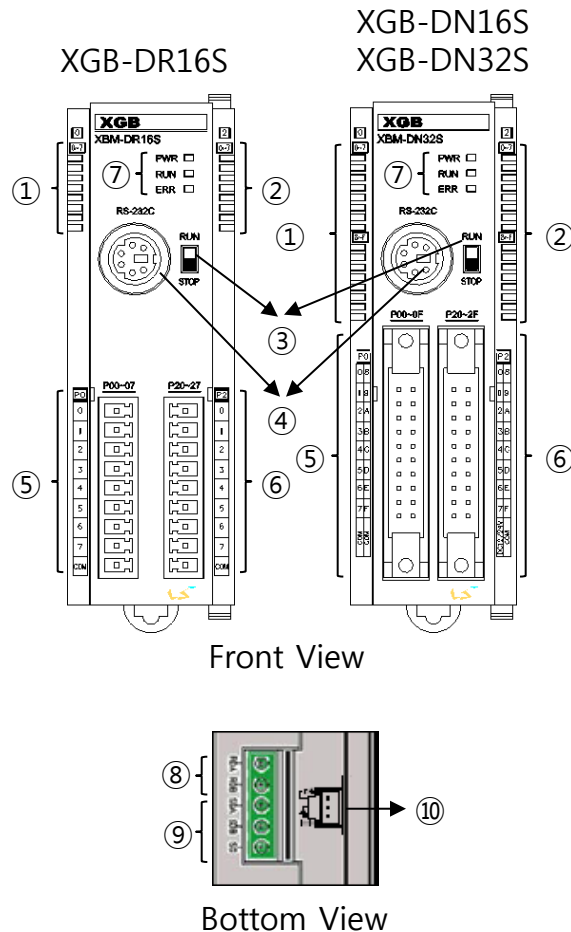
1. Specifications

1.4.5 Others

Item	Specification					Remarks
	XBM	XBC-H	XBC-S/SU	XBC-E	XBC-U	
Pulse Catch	• 50 μ s 8 Points (P00 ~ P07)	• 10 μ s 4 Points (P00~P03) • 50 μ s 4 Points (P04 ~ P07)	• 10 μ s 2 Points (P00~P01) • 50 μ s 6 Points (P02 ~ P07)	• 50 μ s 4 Points (P00 ~ P03)	• 50 μ s 8 Points (P08 ~ P0F)	
External Interrupt	• 50 μ s 8 Points (P00 ~ P07)	• 10 μ s 4 Points (P00~P03) • 50 μ s 4 점 (P04 ~ P07)	• 10 μ s 2 Points (P00~P01) • 50 μ s 6 Points (P02 ~ P007)	• 50 μ s 4 Points (P00 ~ P03)	• 50 μ s 8 Points (P08 ~ P0F)	
Input Filter	1,3,5,10,20,70,100 ms					

2. Main Unit

2.1 XBMS type Main Unit Part Name

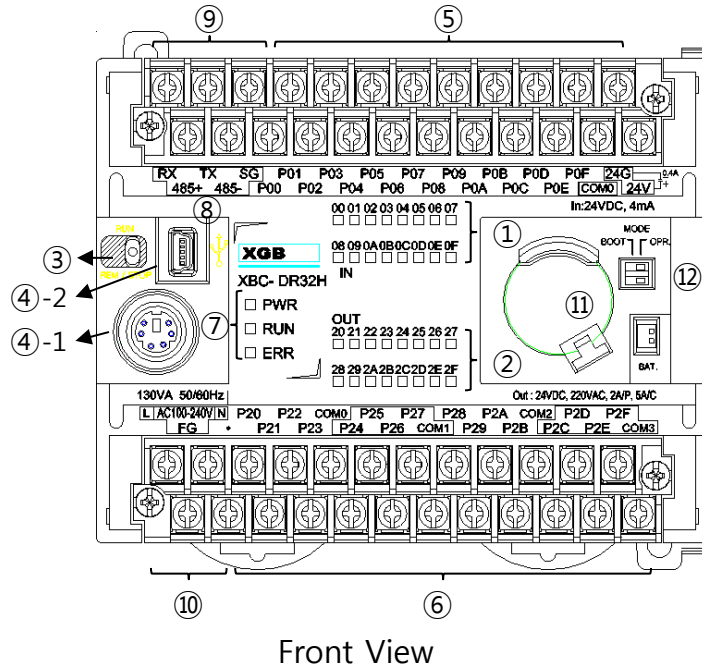


No.	Name	Description
①	Input indicator LED	Input indicator LED
②	Output indicator LED	Output indicator LED
③	Mode switch	RUN / STOP mode switch ▪ RUN: Local Run mode ▪ STOP: Local Stop mode/Remote mode
④	Loader Port	Programming tool connector(RS-232C)
⑤	Input Connector	Input wiring connector
⑥	Output Connector	Output wiring connector
⑦	CPU Status indicator LED	▪ PWR(Red): Power status ▪ RUN(Green): RUN status - ON: RUN mode - Off: STOP mode ▪ Error(Red): In case of error, it is flickering.
⑧	RS-485 Port*	RS-485 communication port
⑨	RS-232C Port*	RS-232C communication port
⑩	Power Connector	Main power input connector(DC 24 V)

* SG is signal ground of RS-232C and RS-485 together.

2. Main Unit

2.2 XBC-H type Main Unit Part Name

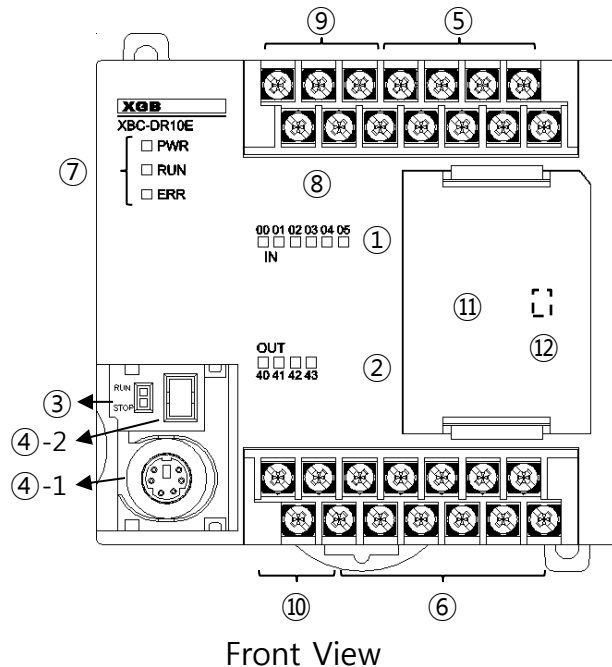


No.	Name	Description
①	Input indicator LED	Input indicator LED
②	Output indicator LED	Output indicator LED
③	Mode switch	RUN / STOP mode switch ▪ RUN: Local Run mode ▪ STOP: Local Stop mode/Remote mode
④-1	Loader Port	Programming tool connector(RS-232C)
④-2	Loader Port	Programming tool connector(USB)
⑤	Input Connector	Input wiring connector
⑥	Output Connector	Output wiring connector
⑦	CPU Status indicator LED	▪ PWR(Red): Power status ▪ RUN(Green): RUN status - ON: RUN mode - Off: STOP mode ▪ Error(Red): In case of error, it is flickering.
⑧	RS-485 Port*	RS-485 communication port
⑨	RS-232C Port*	RS-232C communication port
⑩	Power Connector	Main power input connector(AC 100/220 V)
⑪	Battery	Program, Data backup battery
⑫	O/S Download Switch	O/S download mode select switch

* SG is signal ground of RS-232C and RS-485 together.

2. Main Unit

2.3 XBC-S/SU/E type Main Unit Part Name



No.	Name	Description
①	Input indicator LED	Input indicator LED
②	Output indicator LED	Output indicator LED
③	Mode switch	RUN / STOP mode switch ▪ RUN: Local Run mode ▪ STOP: Local Stop mode/Remote mode
④-1	Loader Port	Programming tool connector(RS-232C)
④-2	Loader Port ^{*1)}	Programming tool connector(USB)
⑤	Input Connector	Input wiring connector
⑥	Output Connector	Output wiring connector
⑦	CPU Status indicator LED	▪ PWR(Red): Power status ▪ RUN(Green): RUN status - ON: RUN mode - Off: STOP mode ▪ Error(Red): In case of error, it is flickering.
⑧	RS-485 Port ^{*2)}	RS-485 communication port
⑨	RS-232C Port ^{*2)}	RS-232C communication port
⑩	Power Connector	Main power input connector(AC 100/220 V)
⑪	Option Slot	Slot in which option module is connected
⑫	O/S Download Switch ^{*3)}	O/S download mode select switch

^{*1)} USB loader port is available in XBC-SU type.

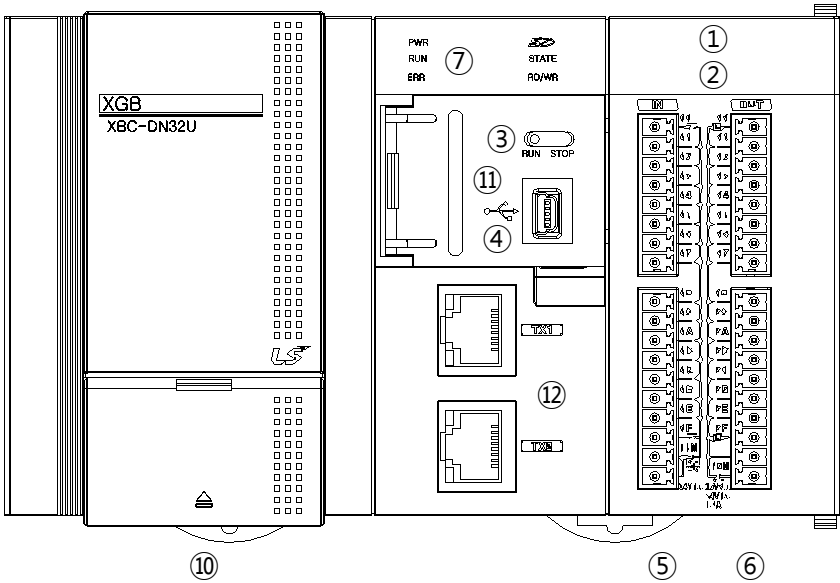
^{*2)} SG is signal ground of RS-232C and RS-485 together.

^{*2)} XBC-E case, only one of the two communication port, RS-232C and RS-485, can be used.

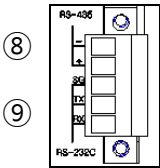
^{*3)} O/S download switch is inside of main unit.

2. Main Unit

2.4 XBC-U type Main Unit



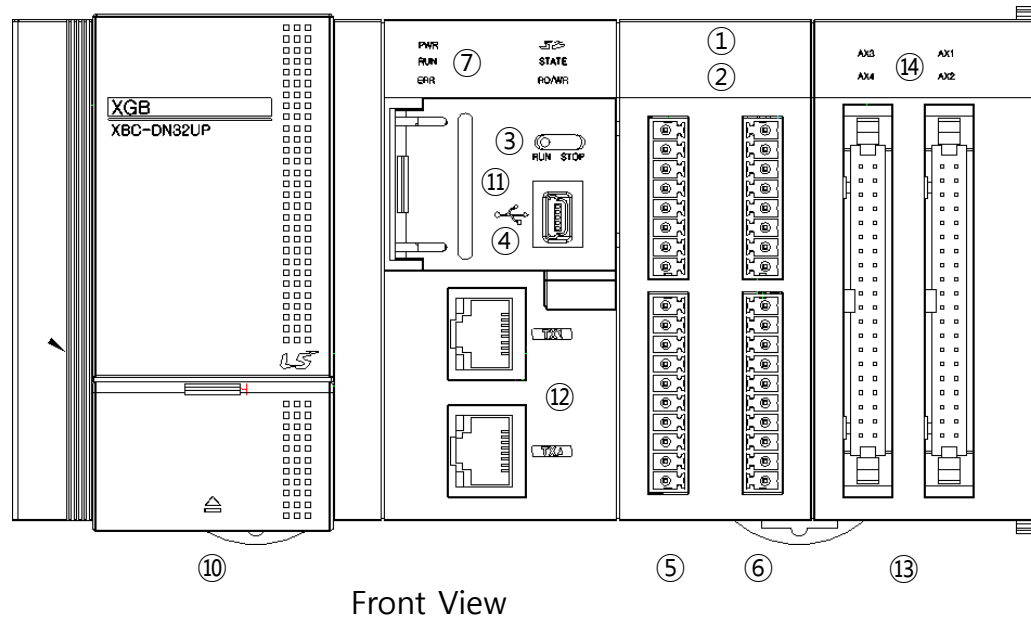
Front View



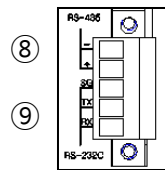
Bottom View

2. Main Unit

2.5 XBC-UP type Main Unit



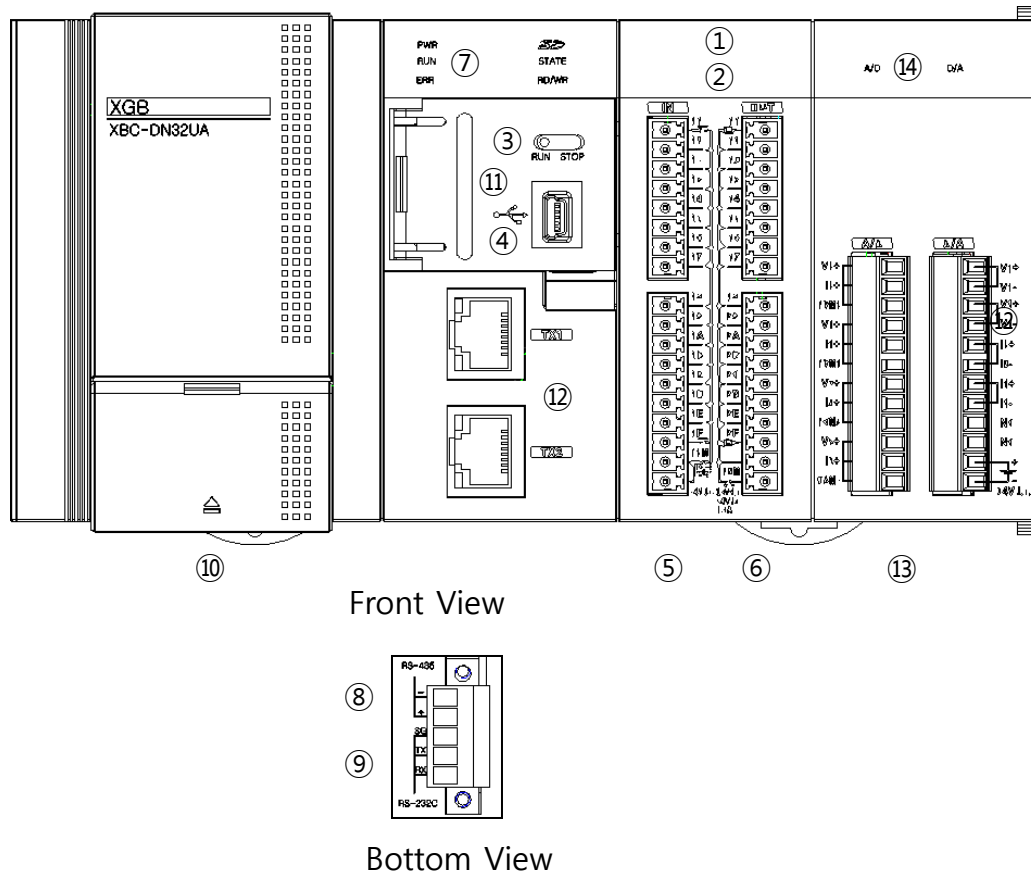
Front View



Bottom View

2. Main Unit

2.6 XBC-UA type Main Unit



2. Main Unit

2.7 XBC-U type Main Unit Part Name

No.	Name	Description
①	Input indicator LED	Input indicator LED
②	Output indicator LED	Output indicator LED
③	Mode switch	RUN / STOP mode switch ▪ RUN: Local Run mode ▪ STOP: Local Stop mode/Remote mode
④	Loader Port	Programming tool connector(USB)
⑤	Input Connector	Digital input wiring connector
⑥	Output Connector	Digital output wiring connector
⑦	CPU Status indicator LED	▪ PWR(Red): Power status ▪ RUN(Green): RUN status - ON: RUN mode - Off: STOP mode ▪ Error(Red): In case of error, it is flickering.
⑧	RS-485 Port*	RS-485 communication port
⑨	RS-232C Port*	RS-232C communication port
⑩	Power Connector	Main power input connector(AC 100/220 V)
⑪	SD Card Slot	Slot in which option module is connected
⑫	Ethernet Port	Built-in Ethernet port
⑬	Option Connector	Option function wiring connector(UP, UA)
⑭	Option State LED	Option operation state display(UP, UA)

* SG is signal ground of RS-232C and RS-485 together.

3. System Configuration

3.1 System Configuration

3.1.1 XBMS type System Configuration

1) Module Configuration



Main Unit

Expansion Module^{*1)} (Max. 7EA including Max. 2 expansion communication module)

2) I/O Address^{*2)}

Slot		I/O Address	Slot	I/O Address
Main Body	Input	P00000 ~ P0001F	Slot 4	P00160 ~ P0019F
	Output	P00020 ~ P0003F	Slot 5	P00200 ~ P0023F
Slot 1		P00040 ~ P0007F	Slot 6	P00240 ~ P0027F
Slot 2		P00080 ~ P0011F	Slot 7	P00280 ~ P0031F
Slot 3		P00120 ~ P0015F	-	-

^{*1)} High speed bus expansion modules(XBF-PN04/08B) cannot be connected to XBM type main unit.

^{*1)} The total current consumption of expansion modules must not exceed the current supplied by the main unit. For main unit current supply and current consumption of each expansion module, please refer to the XGB catalog or the manual of each module.

^{*2)} Each slot charges 4 words in P device regardless of module type.

3. System Configuration

3.1.2 XBC-H type System Configuration

1) Module Configuration



Main Unit



Expansion Module^{*1)} (Max. 10EA including Max. 2 expansion communication module)

2) I/O Address^{*2)}

Slot		I/O Address	Slot	I/O Address
Main Body	Input	P00000 ~ P0001F	Slot 5	P00200 ~ P0023F
	Output	P00020 ~ P0003F	Slot 6	P00240 ~ P0027F
Slot 1		P00040 ~ P0007F	Slot 7	P00280 ~ P0031F
Slot 2		P00080 ~ P0011F	Slot 8	P00320 ~ P0035F
Slot 3		P00120 ~ P0015F	Slot 9	P00360 ~ P0039F
Slot 4		P00160 ~ P0019F	Slot 10	P00400 ~ P0043F

^{*1)} High speed bus expansion modules(XBF-PN04/08B) cannot be connected to XBC-H type main unit.

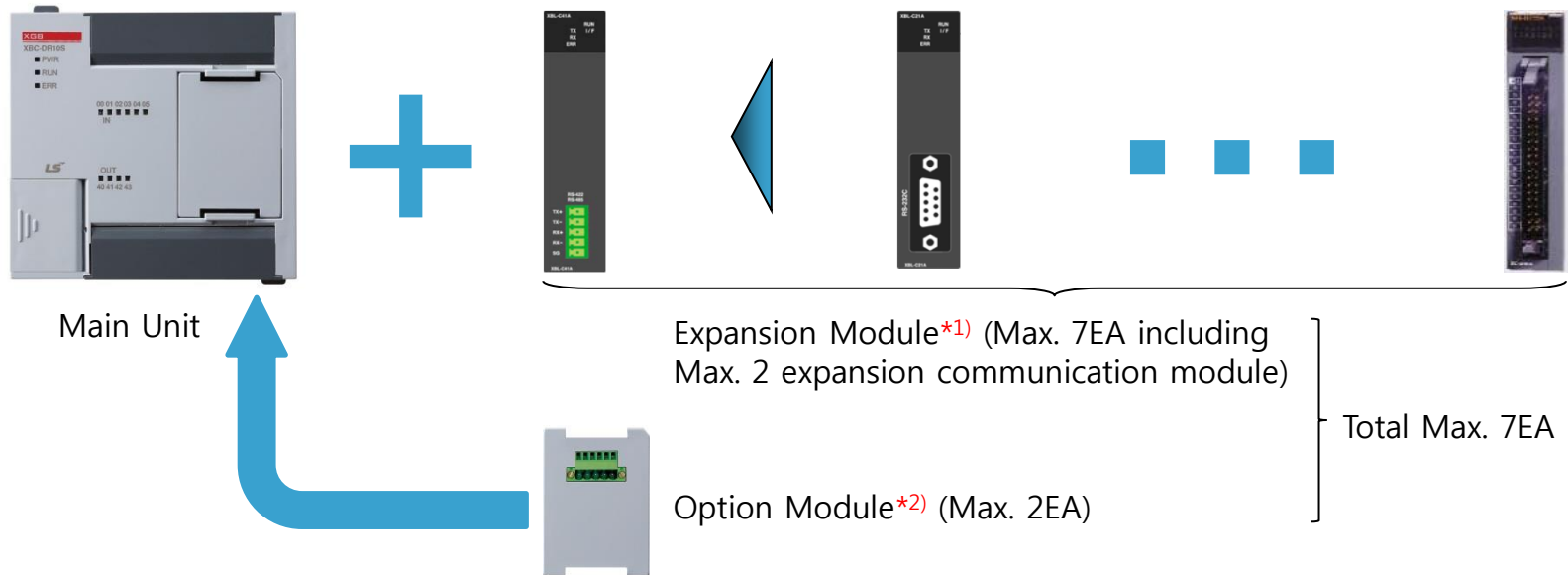
^{*1)} The total current consumption of expansion modules must not exceed the current supplied by the main unit. For main unit current supply and current consumption of each expansion module, please refer to the XGB catalog or the manual of each module.

^{*2)} Each slot charges 4 words in P device regardless of module type.

3. System Configuration

3.1.3 XBC-S/SU type System Configuration

1) Module Configuration



*1) High speed bus expansion modules(XBF-PN04/08B) cannot be connected to XBC-S/SU type main unit.

*2) Number of option module slot is 1 or 2 depending on the size of main unit. (20 points: 1, 30, 40, 60 points: 2)

*1, 2) The total current consumption of expansion modules must not exceed the current supplied by the main unit. For main unit current supply and current consumption of each expansion module, please refer to the XGB catalog or the manual of each module.

3. System Configuration

2) I/O address*

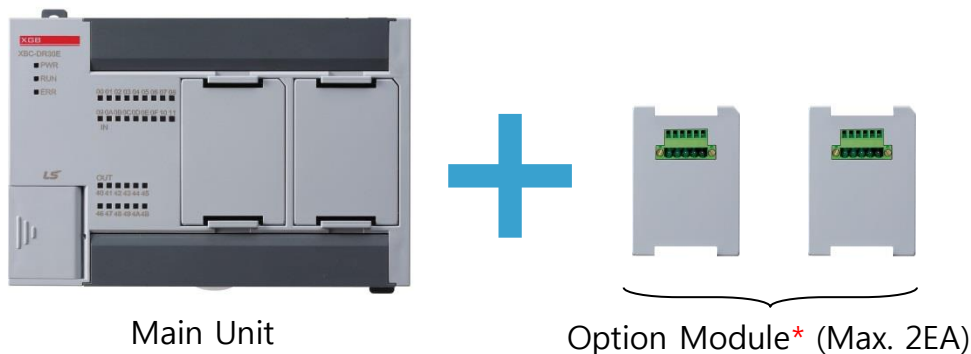
Slot		I/O Address	Slot	I/O Address
Main Body	Input	P00000 ~ P0001F	Slot 5	P00240 ~ P0027F
	Output	P00040 ~ P0007F	Slot 6	P00280 ~ P0031F
Slot 1		P00080 ~ P0011F	Slot 7	P00320 ~ P0035F
Slot 2		P00120 ~ P0015F	-	-
Slot 3		P00160 ~ P0019F	Slot 9(Optional 1)	P00400 ~ P0043F
Slot 4		P00200 ~ P0023F	Slot 10(Optional 2)	P00440 ~ P0047F

*2) Each slot including option slot charges 4 words in P device regardless of module type.

3. System Configuration

3.1.4 XBC-E type System Configuration

1) Module Configuration



2) I/O Address*2)

Slot		I/O Address	Slot	I/O Address
Main Body	Input	P00000 ~ P0001F	Slot 9(Option 1)	P00400 ~ P0043F
	Output	P00040 ~ P0007F	Slot 10(Option 2)	P00440 ~ P0047F
Slot 1 ~ 8		-	-	-

*1) All kinds of expansion modules cannot be connected to XBC-E type main unit.

*1) Number of option module slot is 1 or 2 depending on the size of main unit. (10, 14, 20 points: 1, 30 points: 2)

*1) The total current consumption of expansion modules must not exceed the current supplied by the main unit. For main unit current supply and current consumption of each expansion module, please refer to the XGB catalog or the manual of each module.

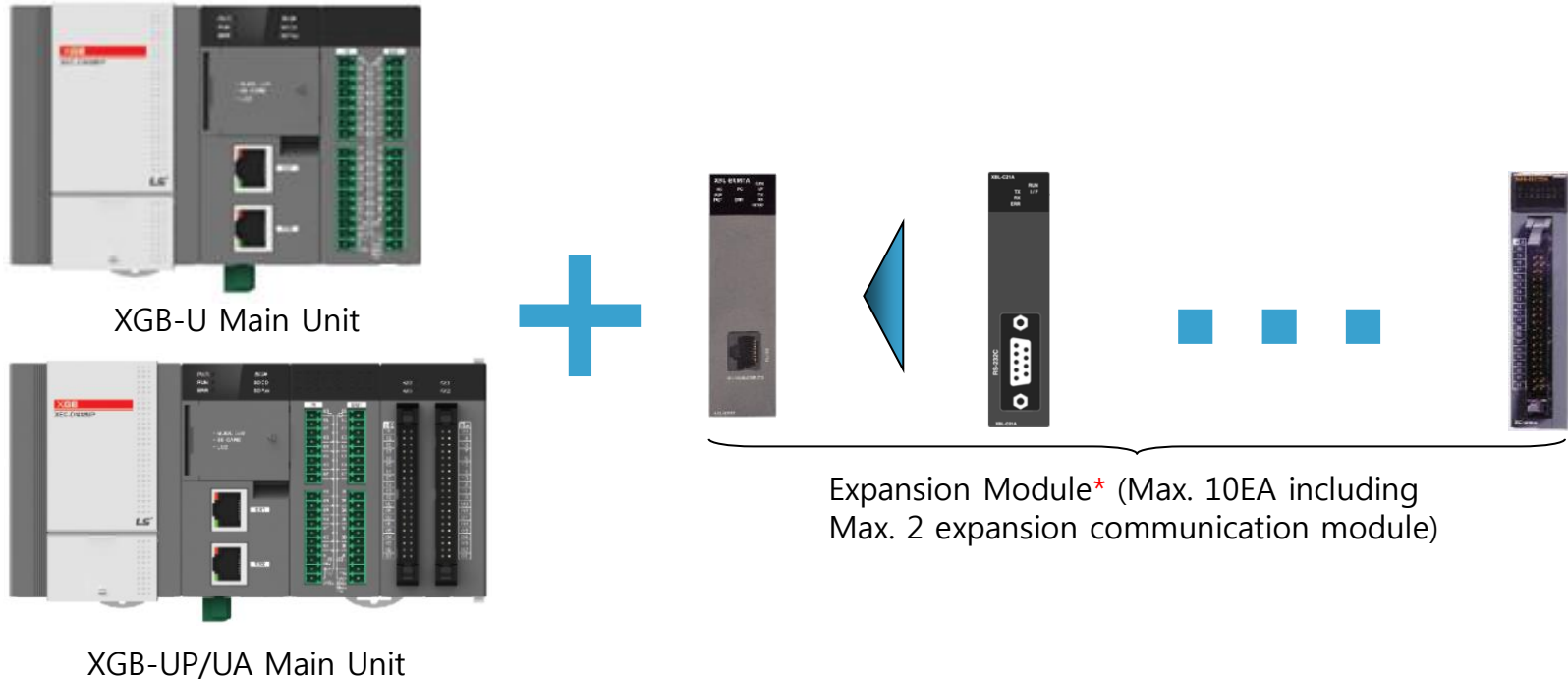
*2) Slot numbers 1 ~ 8 of which I/O addresses are P00080 ~ P00039F are not used. The appropriate devices can be used as internal device.

*2) Each slot including option slot charges 4 words in P device regardless of module type.

3. System Configuration

3.1.5 XBC-U type System Configuration

1) Module Configuration



* High speed bus expansion modules(XBF-PN04/08B) can be connected to all kinds of XBC-U type main unit.

* The total current consumption of expansion modules must not exceed the current supplied by the main unit. For main unit current supply and current consumption of each expansion module, please refer to the XGB catalog or the manual of each module.

3. System Configuration

2) I/O Address^{*1)}

Slot		I/O Address	Slot	I/O Address
Main Body	Input	P00000 ~ P0001F	Slot 6	P00240 ~ P0027F
	Output	P00020 ~ P0003F	Slot 7	P00280 ~ P0031F
-		-	Slot 8	P00320 ~ P0035F
Slot 2 ^{*2)}		P00080 ~ P0011F	Slot 9	P00360 ~ P0039F
Slot 3		P00120 ~ P0015F	Slot 10	P00400 ~ P0043F
Slot 4		P00160 ~ P0019F	Slot 11	P00440 ~ P0047F
Slot 5		P00200 ~ P0023F	-	-

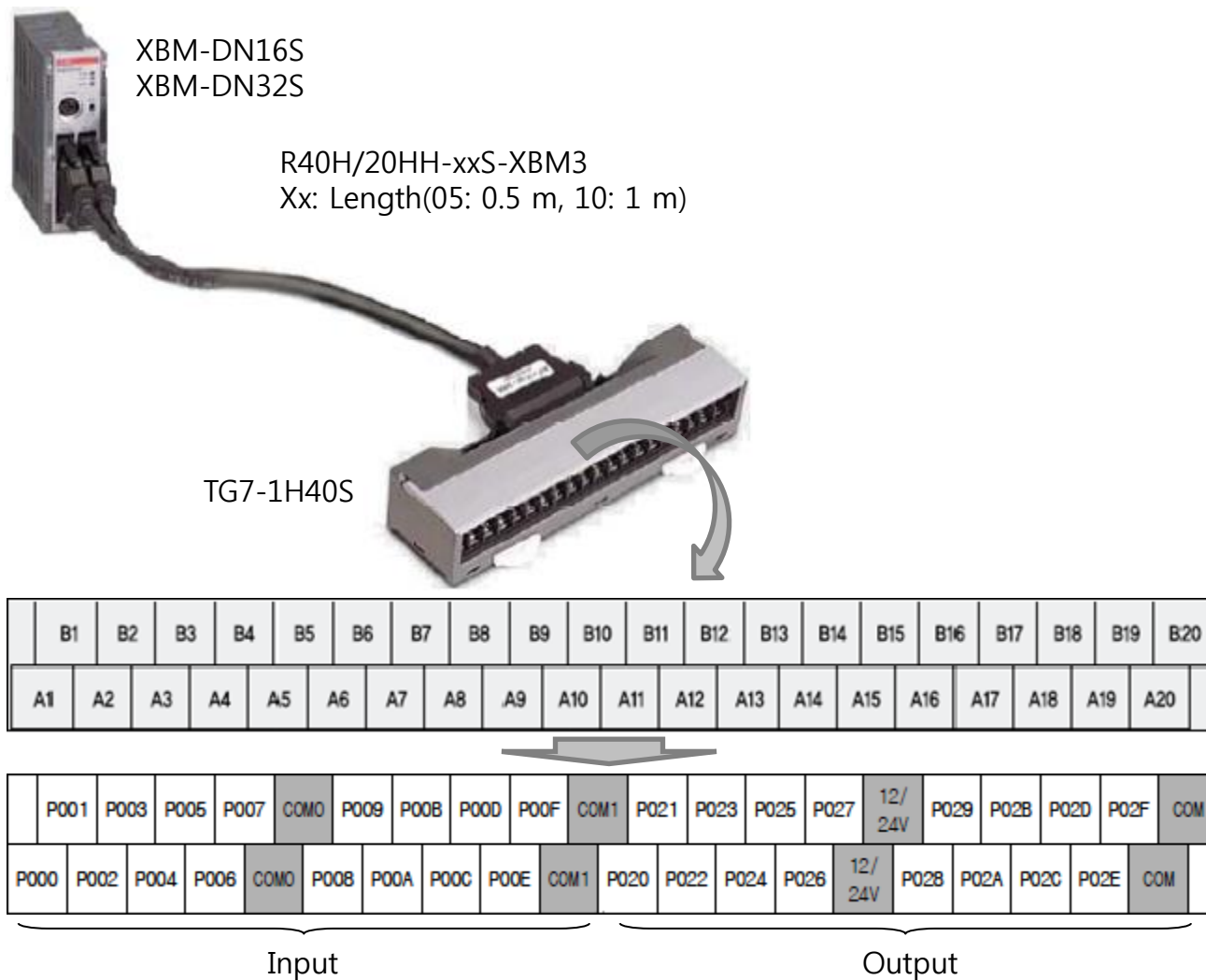
^{*1)} Each slot charges 4 words in P device regardless of module type.

^{*2)} Because slot 1 is assigned to built-in function, the first expansion module charges slot number 2, regardless of main unit type U, UP or UA.

3. System Configuration

3.3 Wiring

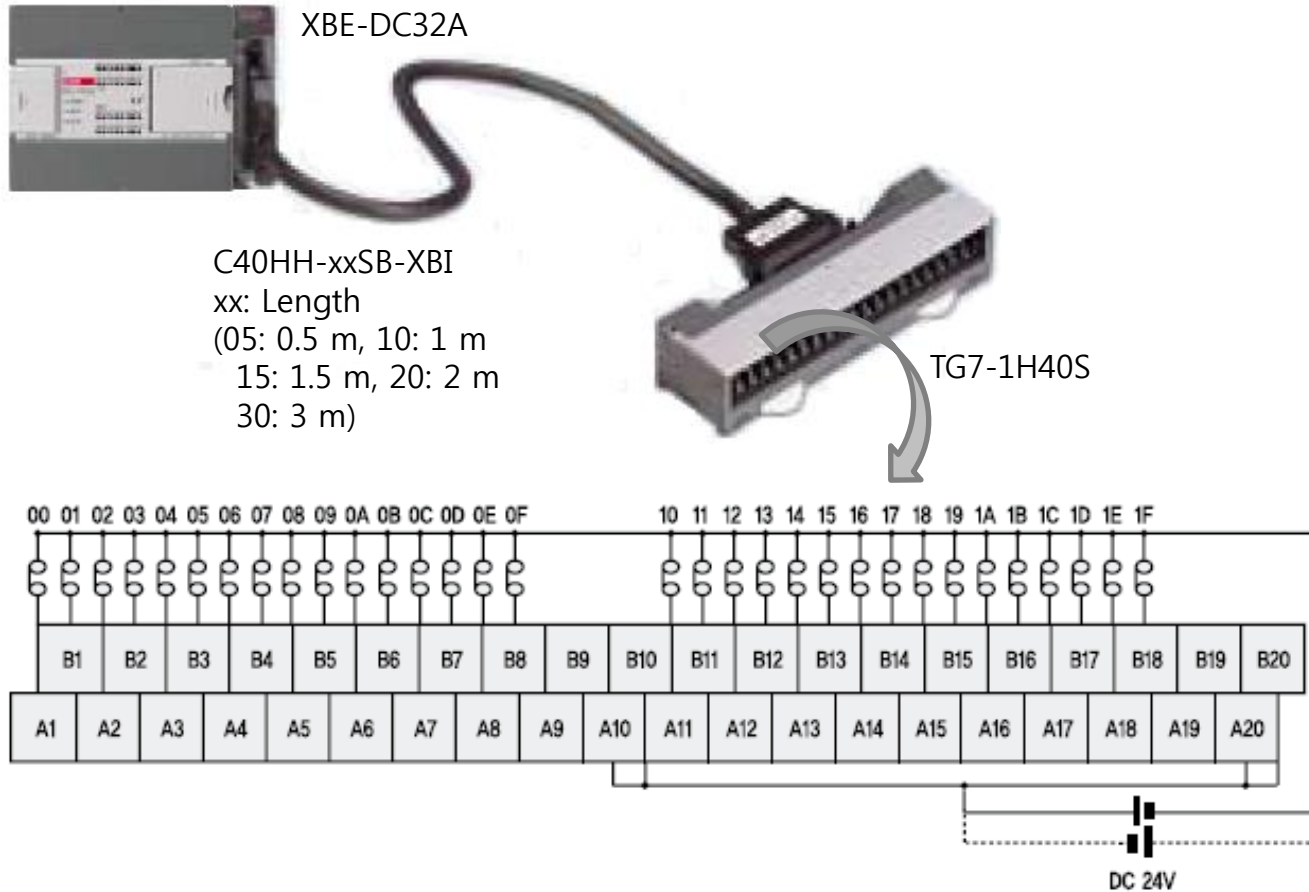
3.3.1 XBMS Transistor Output type Main Unit Wiring



* Wiring connector is not included in XBM-DN16S and XBM-DN32S unit.

3. System Configuration

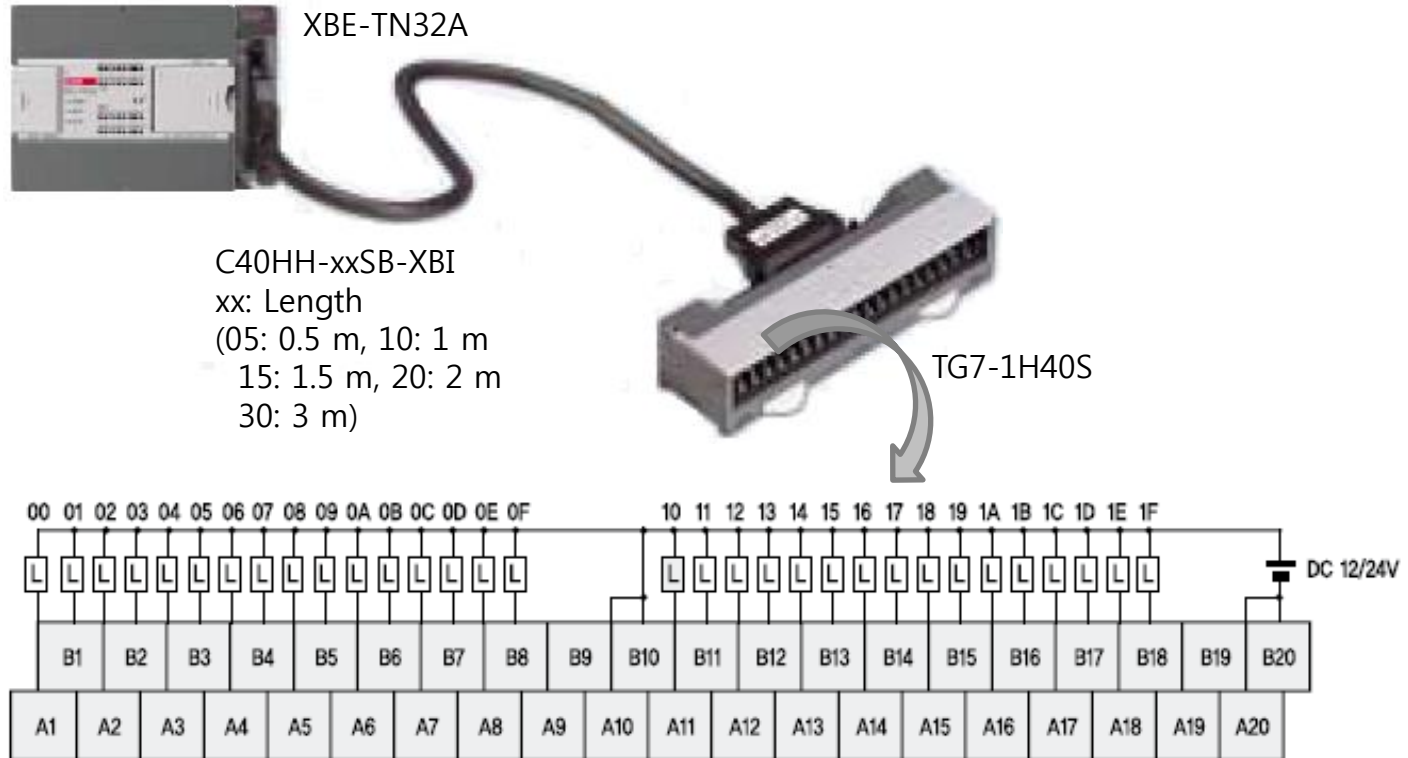
3.3.2 32 Points Digital Input Module Wiring



* Wiring connector is not included in XBE-DC32A module.

3. System Configuration

3.3.3 32 Points Digital Output Module Wiring(NPN, Terminal Board)

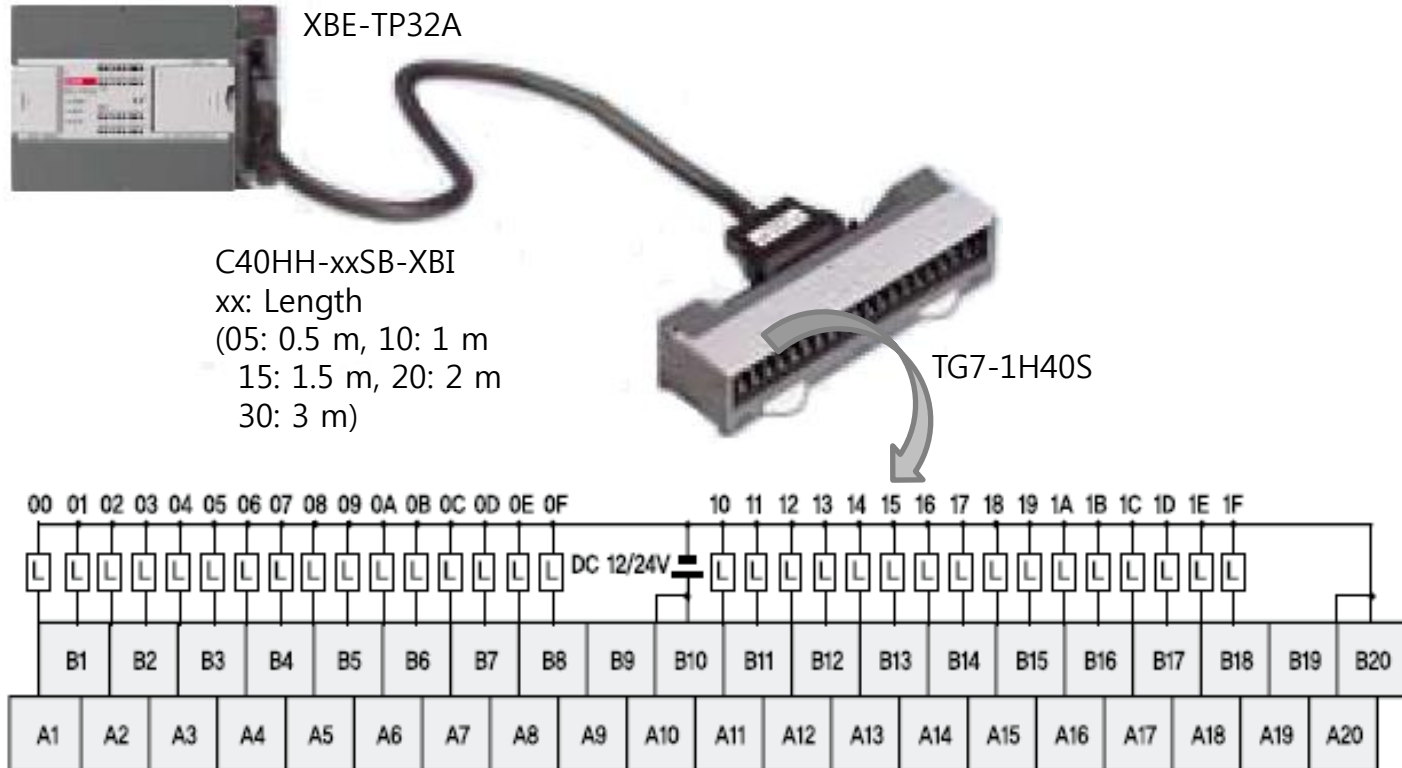


* Wiring connector is not included in XBE-TN32A module.

* TG7-1H40S and C40HH-xxSB-XBI are available in cabling XBF-PD02A(Position control expansion module) and XBC-UP type built-in position control.

3. System Configuration

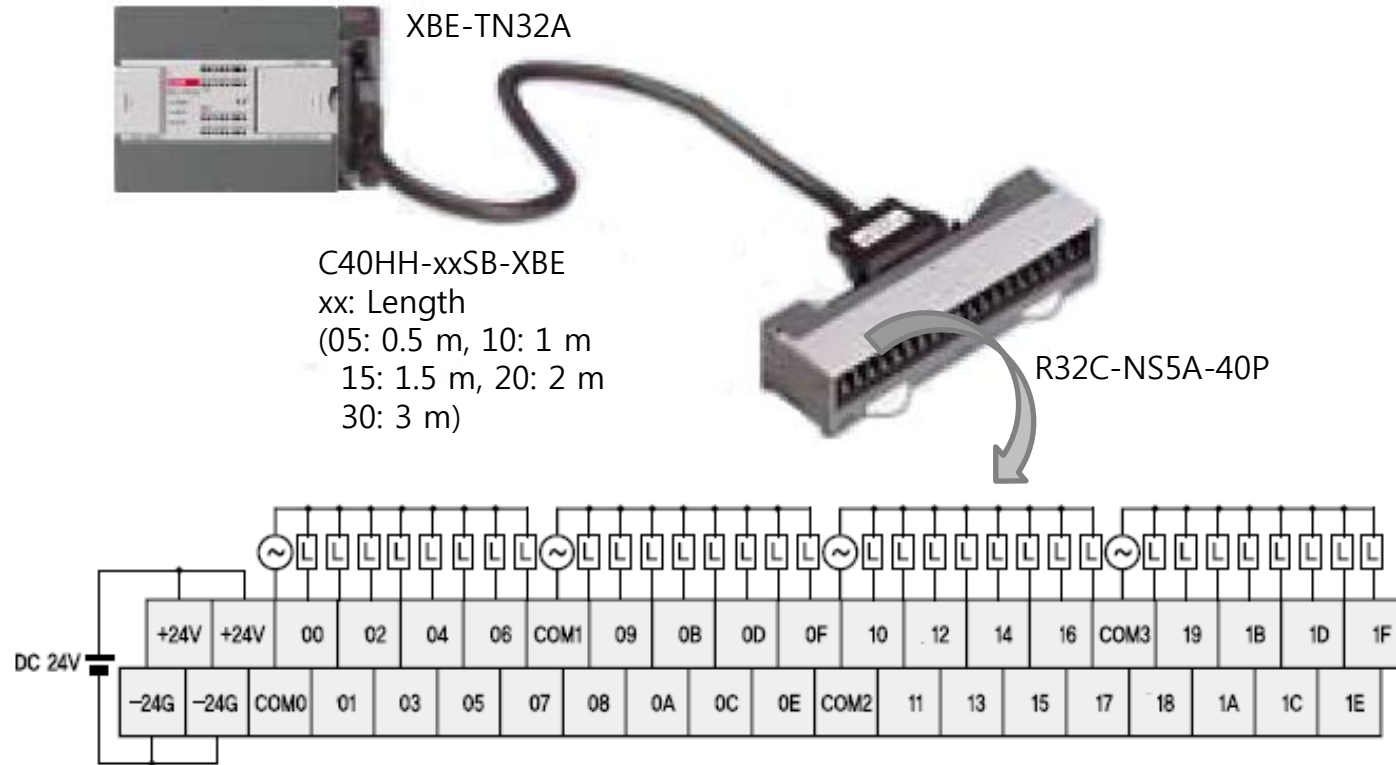
3.3.4 32 Points Digital Output Module Wiring(PNP, Terminal Board)



* Wiring connector is not included in XBE-TP32A module.

3. System Configuration

3.10 32 Points Digital Output Module Wiring(NPN, Relay Board)

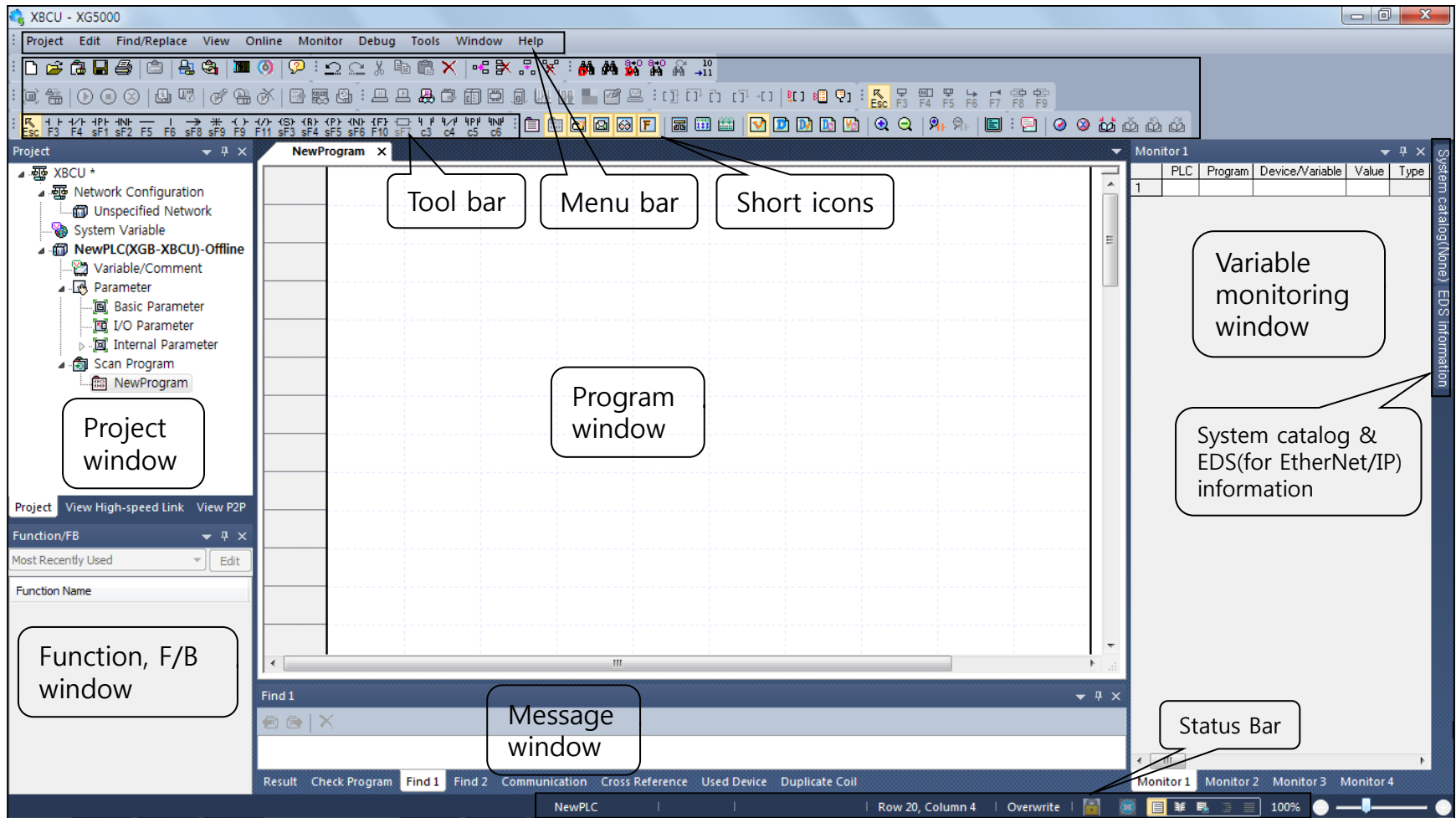


* Wiring connector is not included in XBE-TN2A module.

4. XG5000

4.1 XG5000 Overview

XG5000 is programming and diagnostic tool for XGT series PLC including XGR, XGI, XGK and XGB.



* The placement of each window can be changed by dragging window, selecting or deselecting window in view menu.

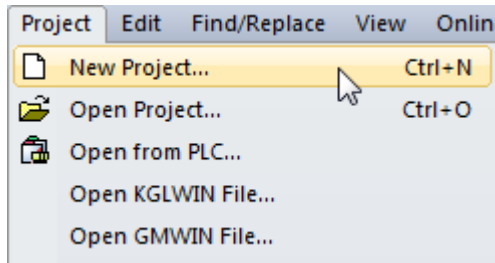
4. XG5000

4.2 Project Composition

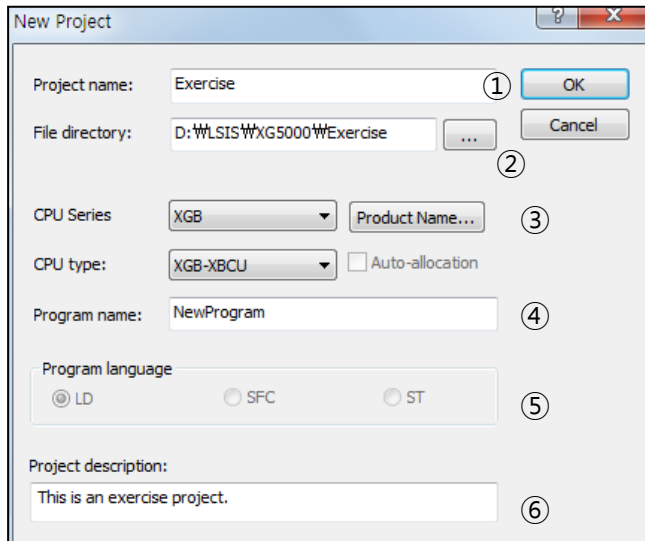
There are 3 methods in project composition.

4.2.1 Composing New Project

Composing new project can be started by selecting 'New Project' in the project menu of XG5000.



1) New Project Window



① Project name.

② Project file storage folder.

When project name is given in ①, XG5000 will make a folder whose name is same as project under the base folder.

The base folder can be assigned in 'Options' in Tools menu.

③ CPU series and type

- XGK: XGK-CPUE, XGK-CPUS, XGK-CPUA, XGK-CPUH, XGK-CPUU.
- XGB: XGB-XBMS, XGB-XBCH, XGB-XBCS, XGB-XBCE, XGB-XBCU.
- XGB(IEC): XGB-XECH, XGB-XECS, XGB-XECE, XGB-XECU.
- XGI: XGI-CPUE, XGI-CPUS, XGI-CPUH, XGI-CPUU/D.
- XGR: XGR-CPUH, XGR-INC.

4. XG5000

④ Program name

PLC needs scan program and XGT series PLC can have maximum 128/256 programs in one PLC.

Program name assigned here is the name of the 1st scan program for the PLC.

⑤ Program Language: XGB series PLC can use only LD(Ladder Diagram) language.

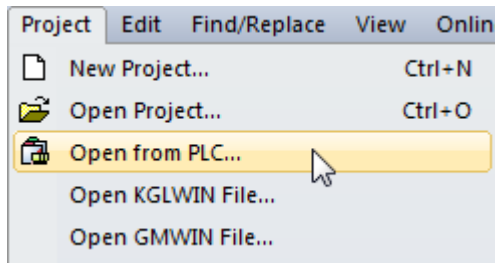
⑥ Project Description: Description for the project can be given.

When setting is completed and 'OK' button is clicked, XG5000 will compose a new project.

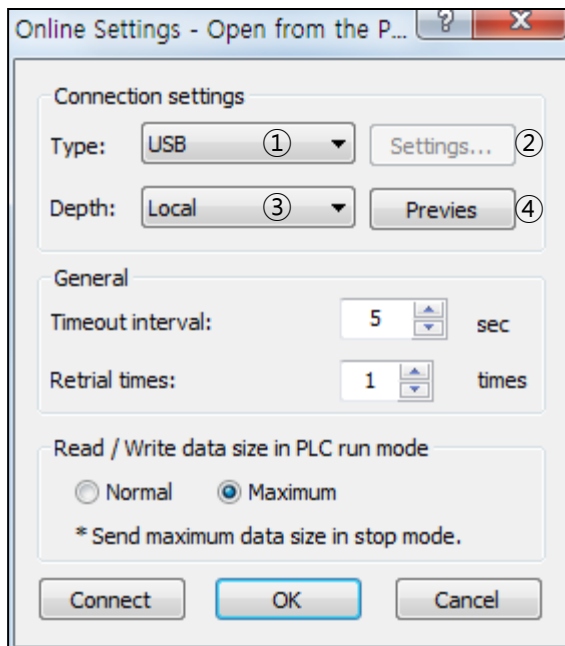
4. XG5000

4.2.2 Open from PLC

Project can be composed by modifying project in a PLC. To modify project in a PLC, the project in a PLC must be read. Project in a PLC can be read by selecting 'Open from PLC' in Project menu of XG5000.



1) Online Settings Window



- ① Type: Communication method can be assigned.
 - RS-232C.
 - USB.
 - Ethernet.
 - Extended Base USB: XGR Only.
- ② Settings: Parameters for selected communication can be assigned.
- ③ Depth
 - Local: Direct connection between computer and PLC CPU
 - Remote 1: Connection between computer and PLC CPU via one communication module.
 - Remote 2: Connection between computer and PLC CPU via two communication modules.
- ④ Preview: Display connection settings.

4. XG5000

2) Connection Depth

① Local Connection



XBM: RS-232C
XBC-H, XBC-SU: USB, RS-232C
XBC-S, XBC-E: RS-232C
XBC-U: USB, Ethernet



- USB cable(Part name: USB-301A)



A type

mini b type

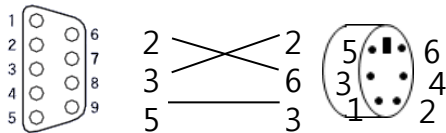
- RS-232C cable(Part name: PMC-310S)



D-sub 9 pin
(Female)

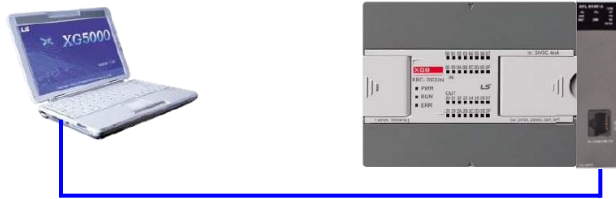
PS-2 6 pin
(Male)

- RS-232C cable wiring



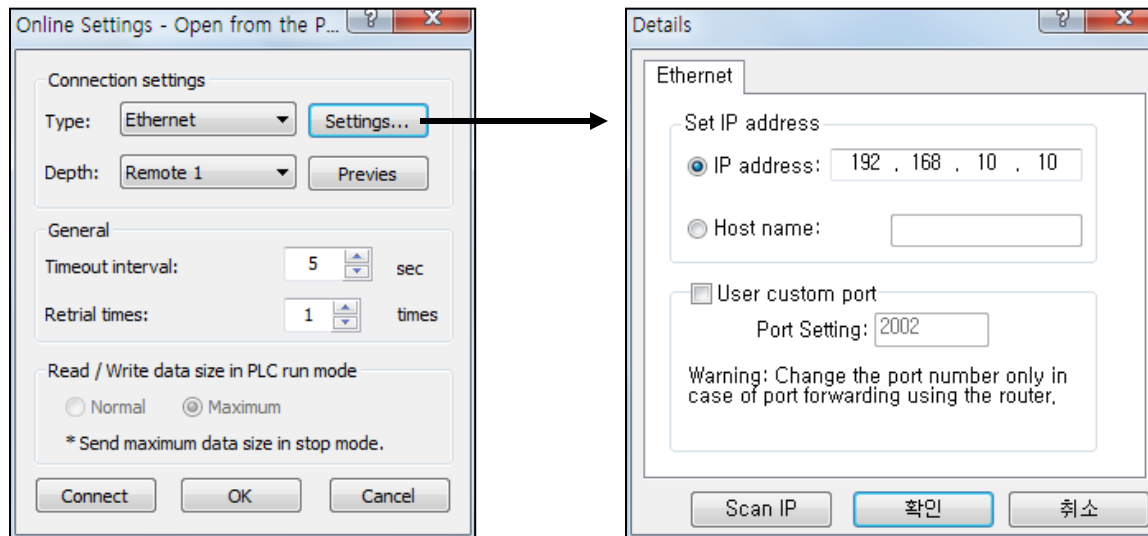
4. XG5000

② Remote 1 Connection



Remote 1 Connection

• Connection setting and Parameter setting

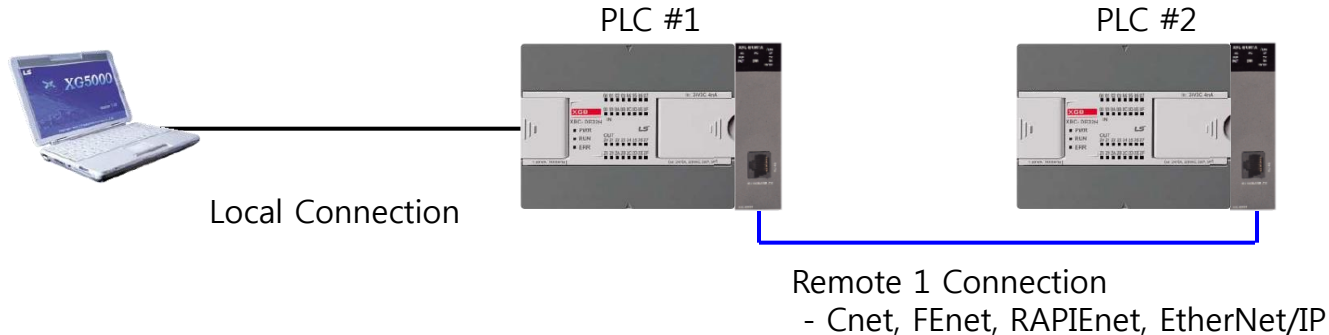


- IP address: IP address of PLC Ethernet module.
- Scan IP: Searching all XGT series PLC in the Ethernet network in which the computer is included.

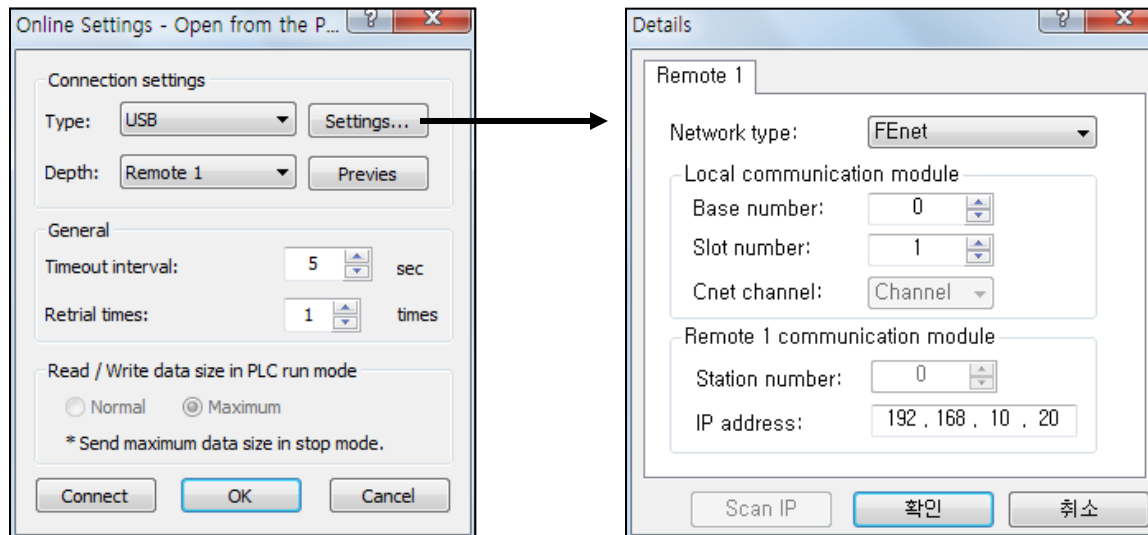
* Host name and User custom port are available when connection is executed with Ethernet module via DDNS host.

4. XG5000

③ Local and Remote 1 Connection



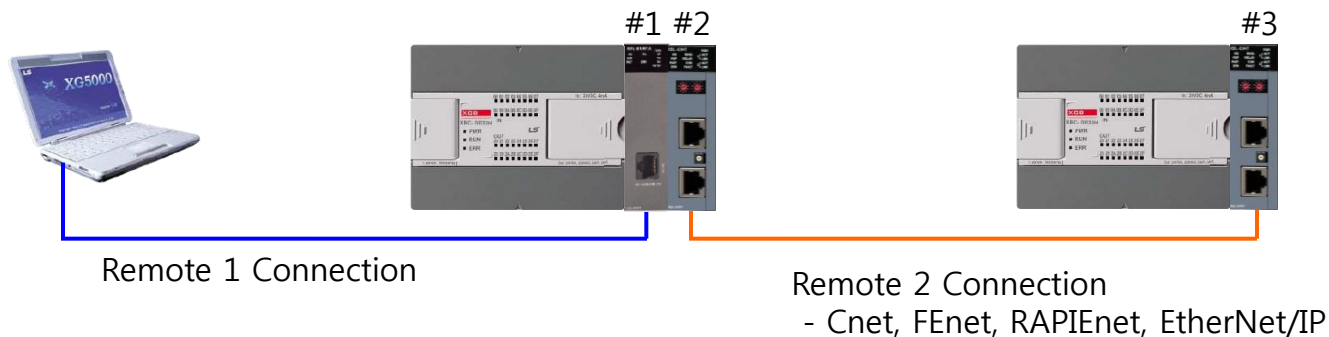
• Connection setting and Parameter setting



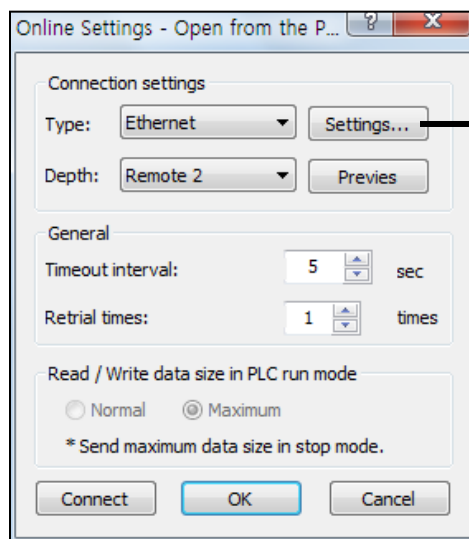
- Local communication module: Base and Slot number where communication module which is used for remote connection is installed in locally connected PLC.(PLC #1)
- Remote 1 communication module: Communication parameters for communication module installed in the remote connection PLC.(PLC #2)

4. XG5000

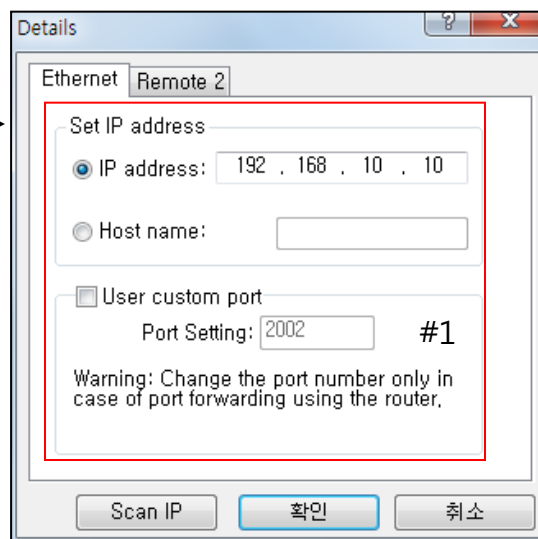
④ Remote 1 and Remote 2 Connection



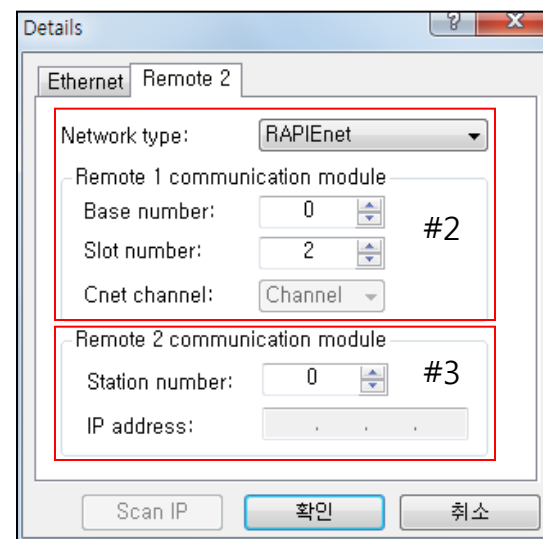
• Connection setting and Parameter setting



Connection Setting



Remote 1 Connection Setting



Remote 2 Connection Setting

* #1, #2, #3 in this page are communication module number, regardless of module type and parameters such as station number.

4. XG5000

⑤ Local, Remote 1 and Remote 2 Connection



Local Connection

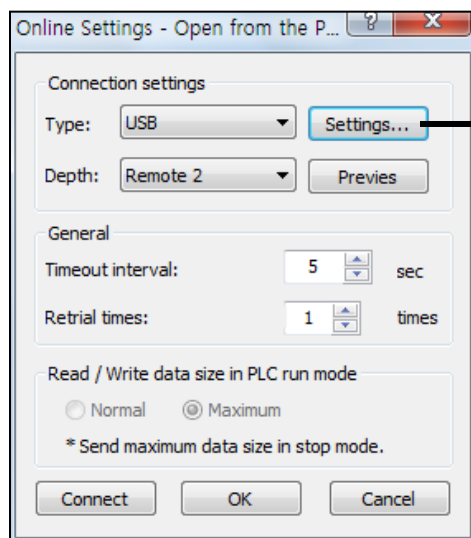
Remote 1 Connection

- Cnet, FEnet, RAPIEnet, EtherNet/IP

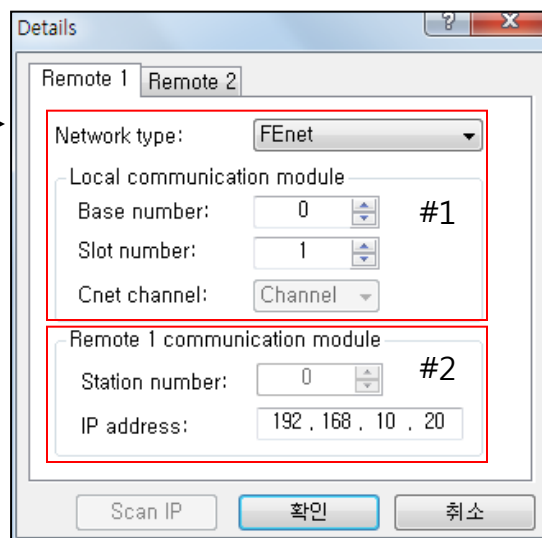
Remote 2 Connection

- Cnet, FEnet, RAPIEnet, EtherNet/IP

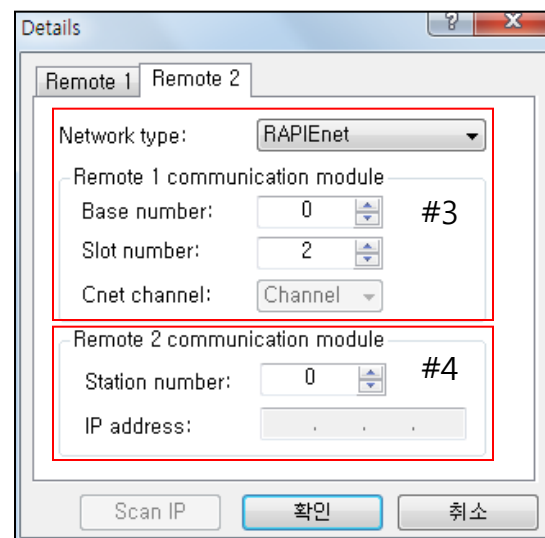
• Connection setting and Parameter setting



Connection Setting



Remote 1 Connection Setting



Remote 2 Connection Setting

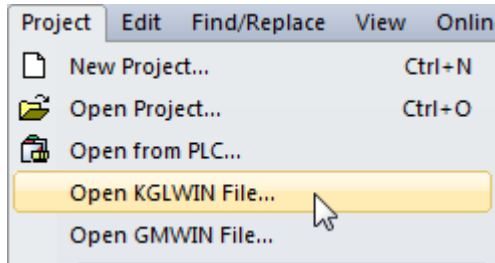
* #1, #2, #3, #4 in this page are communication module number, regardless of module type and parameters such as station number.

4. XG5000

4.2.3 Open KGLWIN/GMWIN file

KGLWIN and GMWIN are programming and diagnostic tool for LS old products, MASTER-K and GLOFA-GM series PLC, respectively.

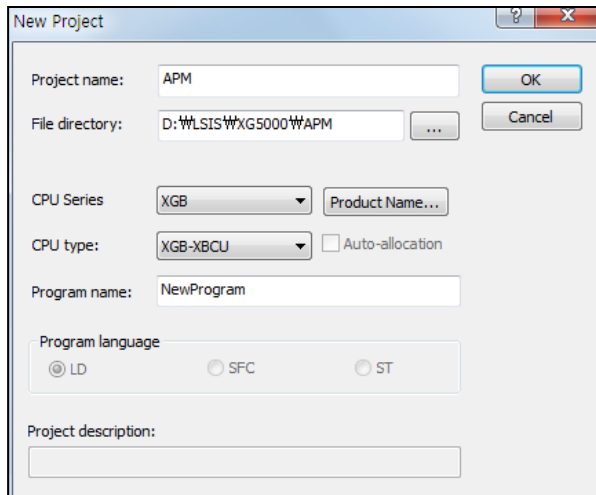
KGLWIN file can be converted to project file for XGK, XBM and XBC series PLC and GMWIN file can be converted to project file for XGR, XGI and XEC series PLC. When file is converted, program and comments will be converted, but parameters in KGLWIN/GMWIN file will not be converted. So, When conversion is finished, program and parameters must be checked.



- KGLWIN file → XGK, XBM, XBC project file.
- GMWIN file → XGR, XGI, XEC project file.

1) New Project Window

CPU series and type can be selected in 'New Project' window which is displayed when KGLWIN/GMWIN file is open.



4. XG5000

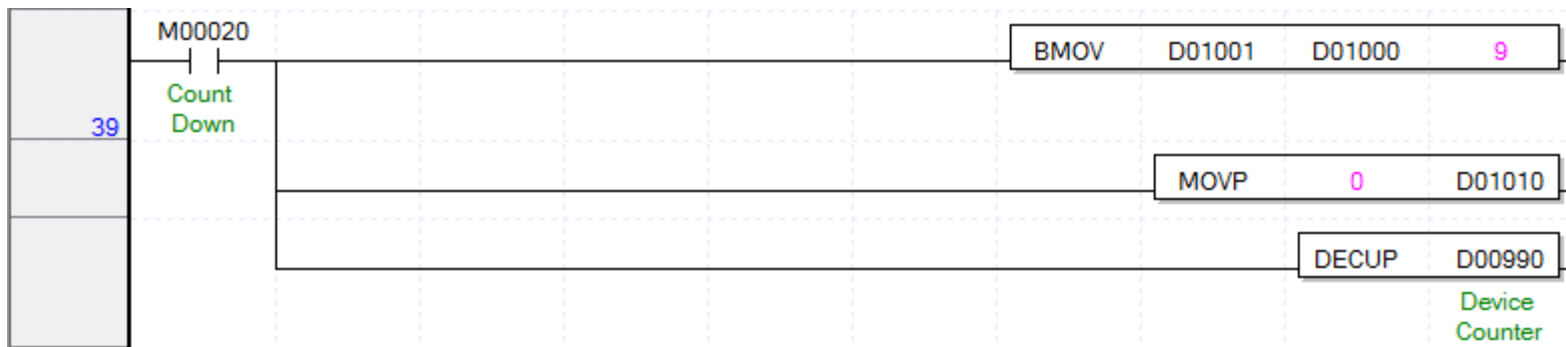
2) Checking converted Program

Not all components of KGLWIN/GMWIN file is converted to XGT series PLC project because some concept is changed.

- ① Normally converted program, program and comments, together, are converted.



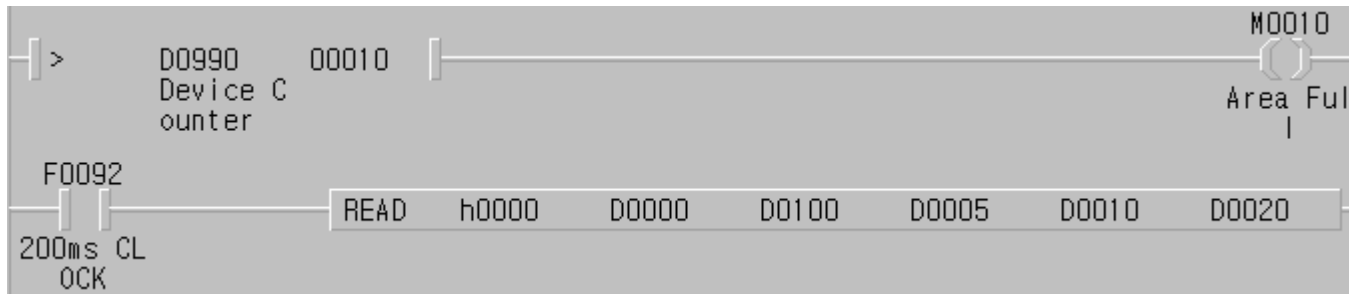
KGLWIN Program



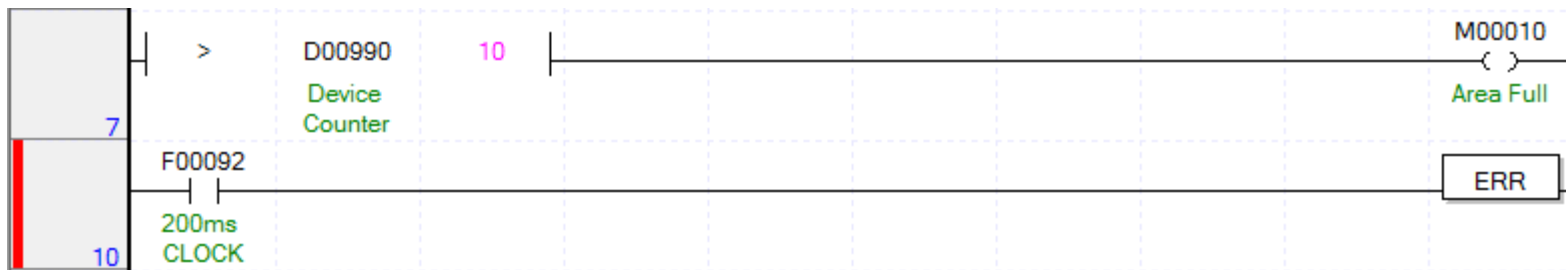
XG5000 Program

4. XG5000

- ② Error occurs while program conversion, red line will be displayed in step number printing cell and if instruction cannot be converted, the original instruction will be converted to 'ERR'.
If 'ERR' is in converted program, the instruction must be modified.



KGLWIN Program



XG5000 Program

- ③ Parameters such as latch area setting and timer boundary and so on cannot be converted and all parameters of XGT project will be initial value.
Especially, KGLWIN file is converted to XGK, XBM, XBC series PLC project, timer boundary must be checked because number of timer and initial boundary is different from MASTER-K PLC.

* Some reasons of incomplete conversion

- Special function and communication modules are controlled by instruction in MASTER-K and GLOFA-GM PLC, but those modules of XGT PLC are controlled by parameters. Instruction for special function and communication module cannot be converted.
- Some instructions available in MASTER-K and GLOFA-GM PLC is not available in XGT PLC.

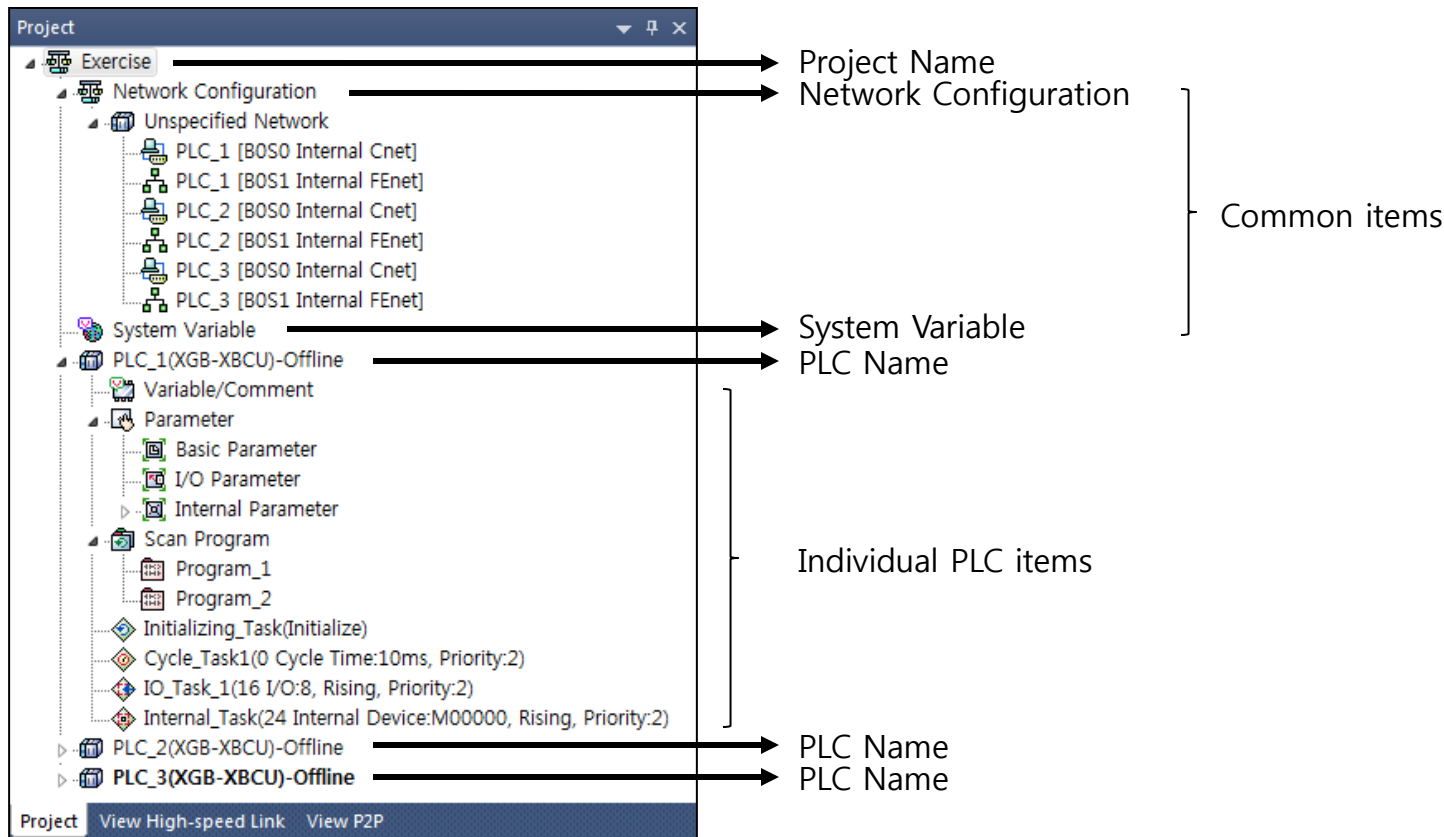
4. XG5000

4.3 Project Structure

XG5000 project can be composed with more than one PLCs. There are two common items between PLCs in the project, Network Configuration and System Variables, and each PLC has Variables/Comment, Parameters, Scan Programs and Tasks such as Initializing, Cycle, Input and Internal Device Task.

4.3.1 Project Tree

Project configuration is displayed in the project window.



* Project composed with more than two PLCs is multi-PLC project. PLCs in a multi-PLC project can be connected to one XG5000 simultaneously.

4. XG5000

1) Common

- ① Network Configuration: More than one network configuration can be registered in one project and each Network Configuration must have more than one network modules installed in the PLCs in the project. Network parameters for network modules can be setup in Network Configuration. Actual communication function and data will be assigned in High speed Link and P2P tab of project window.
- ② System Variable: Variables used in the High Speed Link and P2P will be listed up.

2) Individual items

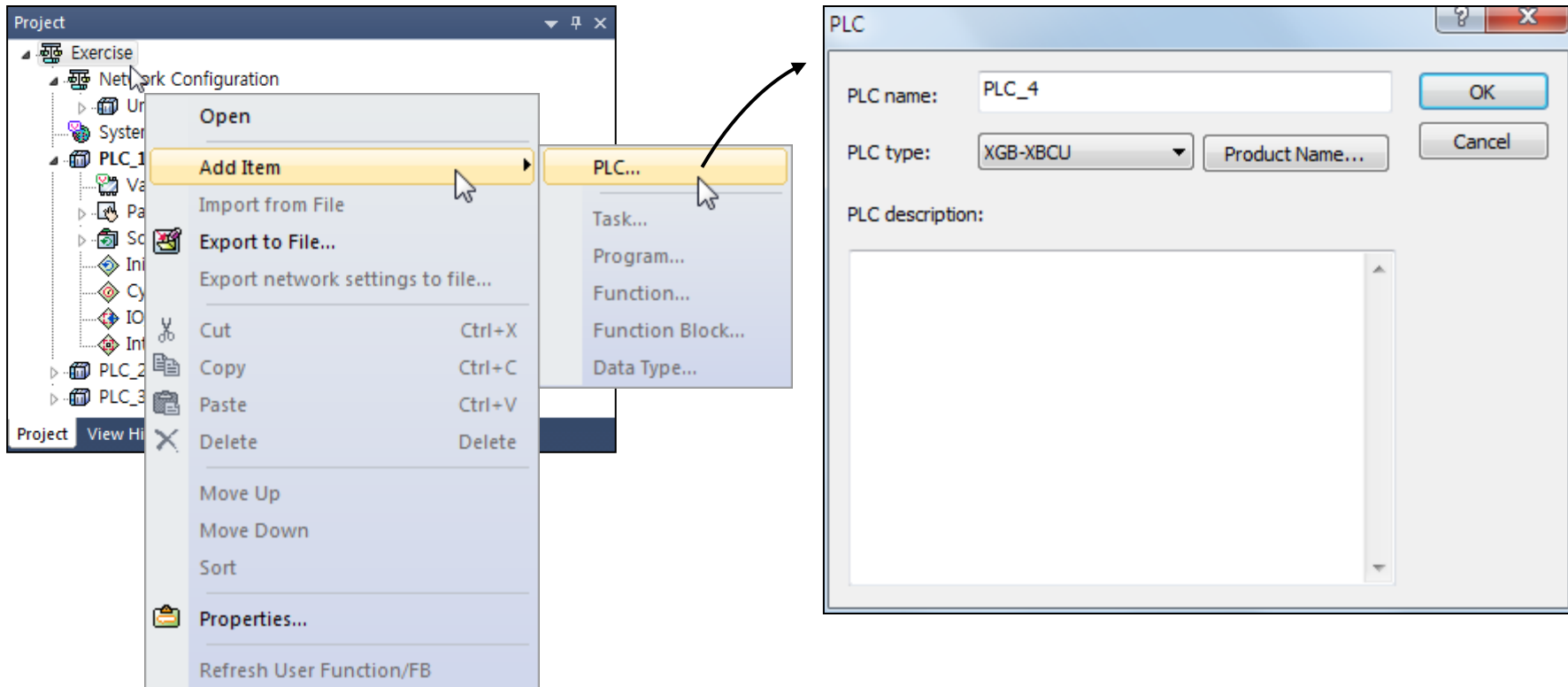
- ① Variable/Comment: Variable and/or comment for device can be edited or listed up.
- ② Parameter: Parameters are composed with 3 items, Basic, I/O and Internal parameters. Internal parameters are different depending on main module type.
 - XBM, XBC-H/S/SU: High Speed Counter, PID, Positioning.
 - XBC-E: High Speed Counter.
 - XBC-U: High Speed Counter, PID, Data Log.
- ③ Scan Program: Maximum (128/256 – number of Task program) programs can be edited for one PLC.
- ④ Task: All types of XGB series PLC has Initializing, Cycle, Input and Internal Device Task, commonly. Especially XBC-U type has one more task, High Speed Counter task.

4. XG5000

3) Item Modification

① Add Item

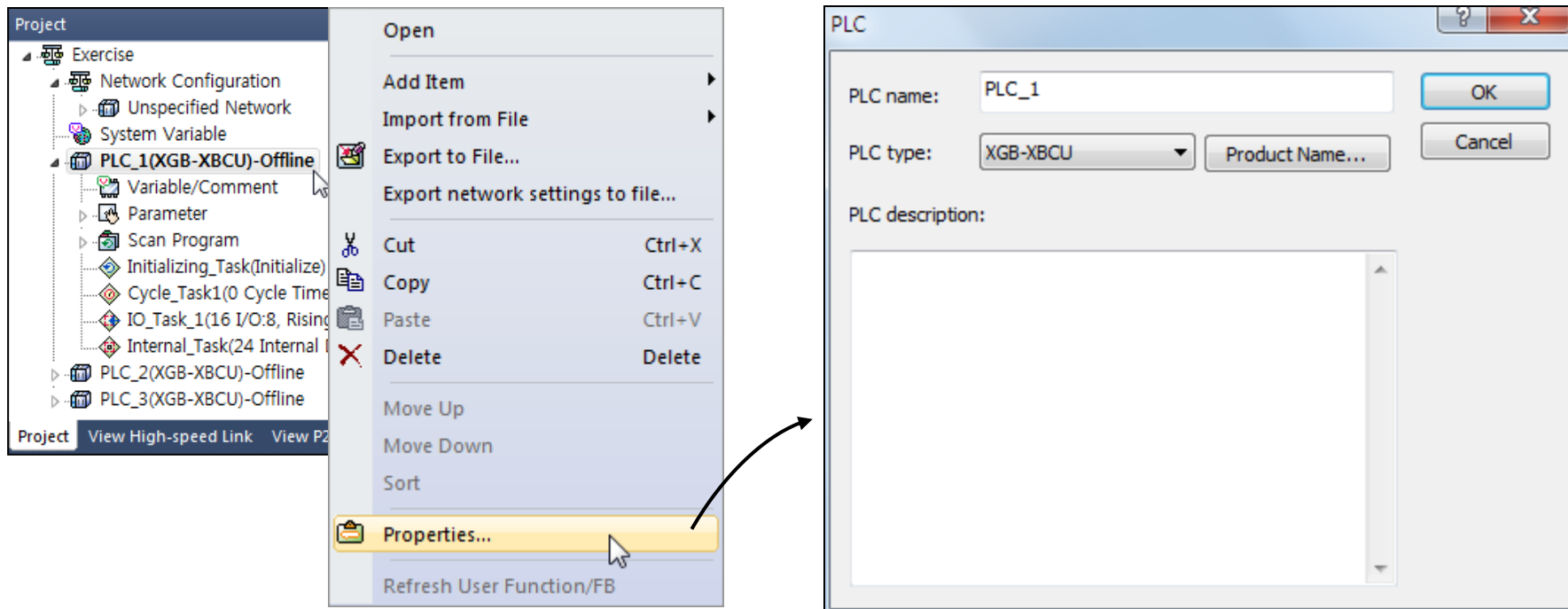
- 1) Select 1 step higher item. For example, to add a PLC, project must be selected.
- 2) Click right button of mouse and 1st pop-up menu will be displayed.
- 3) Select 'Add Item' in the 1st pop-up menu and 2nd pop-up menu will be displayed and items which can be added will be enable in 2nd pop-up menu.
- 4) Select item to be added and 'Properties' window of selected item will be displayed.
- 5) Editing 'Properties' window is completed and 'OK' button is clicked, the selected item will be added in the project.



4. XG5000

② Item Properties modification

- 1) Select an item to be modified properties.
- 2) Click right button of mouse and pop-up menu will be displayed.
- 3) Select 'Properties' in the pop-up menu and Properties window of selected item will be displayed.
- 4) Editing 'Properties' window is completed and 'OK' button is clicked, the selected item properties will be modified.

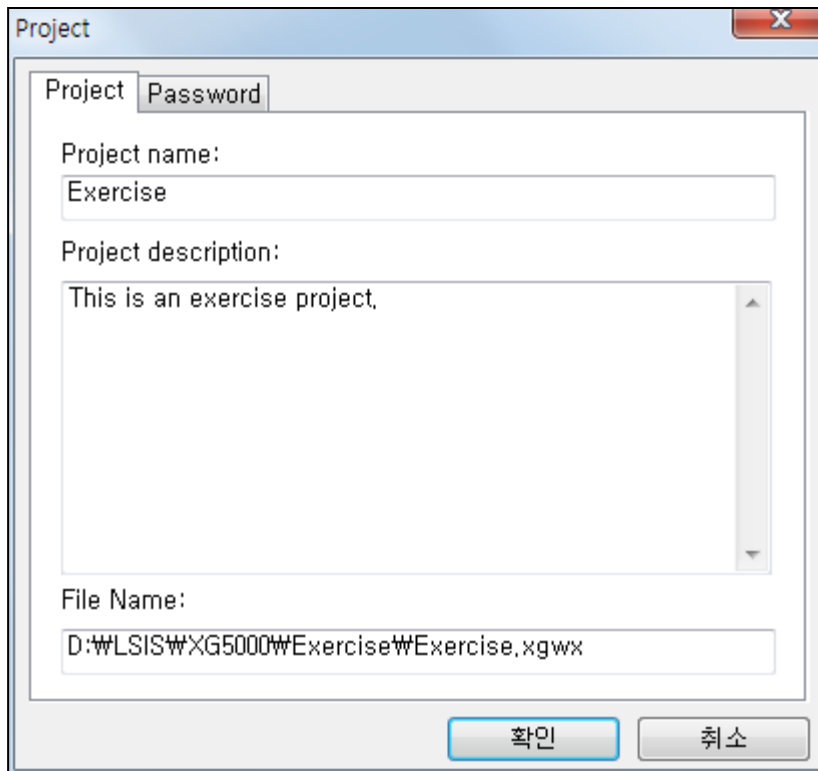


4. XG5000

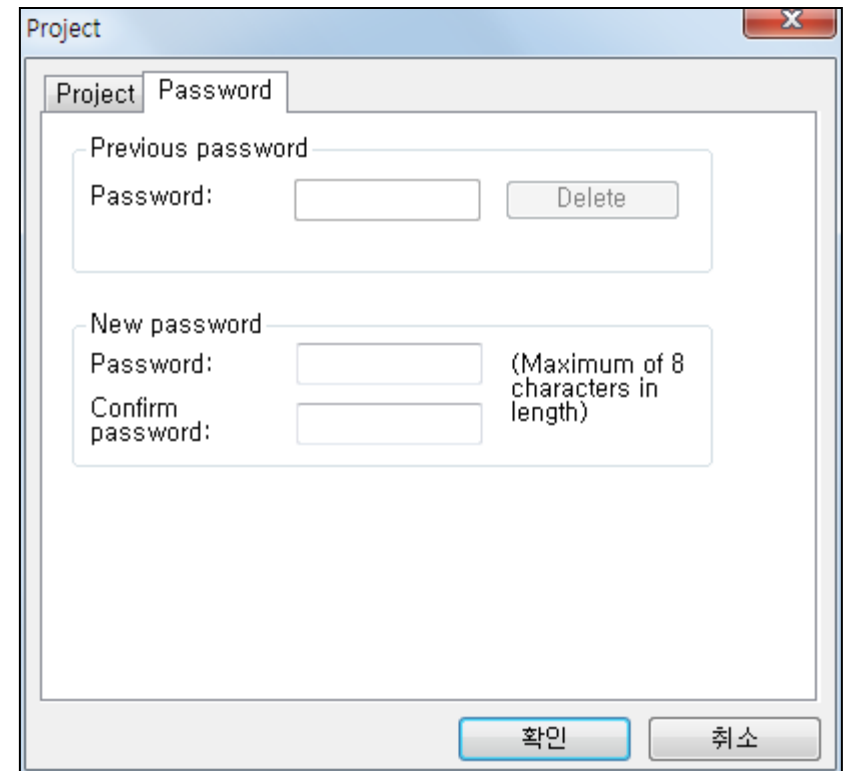
4.3.2 Project Component

1) Project Properties

- ① Project name, description and project file storage can be modified in 'Project' tab.
- ② Password can be assigned or modified in 'Password' tab. The password assigned here is file open password. When XG5000 opens a project file in which file open password is assigned, XG5000 will ask the password. Password assigned here will not be downloaded to PLC.
Online password which is asked when connection is tried can be set up in 'Online' menu of XG5000.



The screenshot shows the 'Project' tab of the XG5000 software interface. It contains three main sections: 'Project name' with a text box containing 'Exercise', 'Project description' with a text area containing 'This is an exercise project.', and 'File Name' with a text box containing 'D:\WLSIS\W\XG5000\WExercise\WExercise.xgwx'. At the bottom, there are two buttons labeled '확인' (Confirm) and '취소' (Cancel).

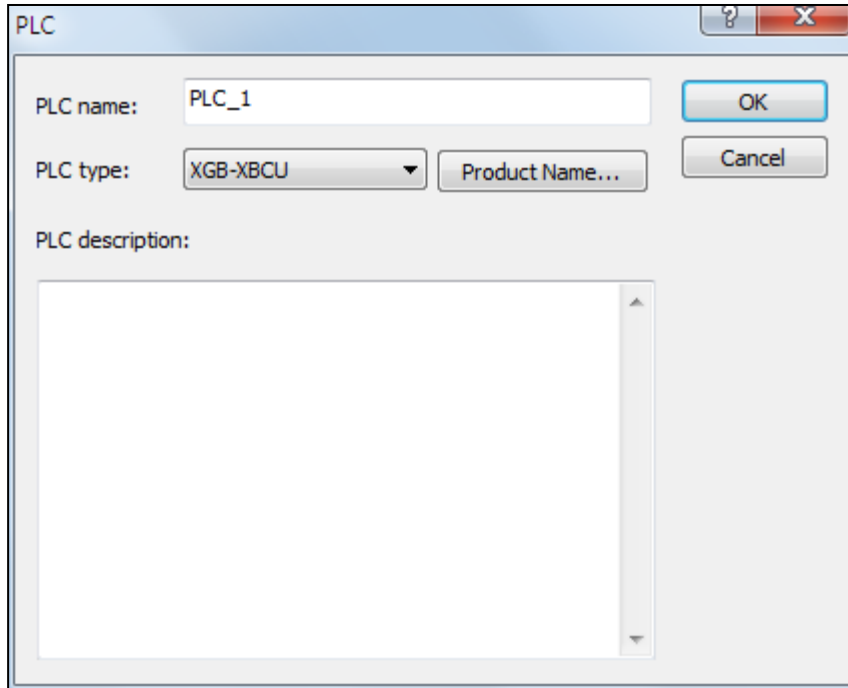


The screenshot shows the 'Password' tab of the XG5000 software interface. It contains two main sections: 'Previous password' with a 'Password' text box and a 'Delete' button, and 'New password' with 'Password' and 'Confirm password' text boxes. A note next to the new password boxes states '(Maximum of 8 characters in length)'. At the bottom, there are two buttons labeled '확인' (Confirm) and '취소' (Cancel).

4. XG5000

2) PLC Properties

- ① PLC name, type, description can be modified. For PLC type modification, XGK, XBM, XBC type PLCs can be modified mutually and XGR, XGI, XEC type PLCs can be modified mutually, but XGK, XBM, XBC type PLCs cannot be modified to XGR, XGI, XEC type PLCs and vice versa.



The screenshot shows a dialog box titled "PLC" with a standard Windows-style title bar (minimize, maximize, close buttons). The dialog contains the following elements:

- PLC name:** A text input field containing "PLC_1".
- PLC type:** A dropdown menu currently showing "XGB-XBCU". To its right is a button labeled "Product Name...".
- PLC description:** A large, empty text area with a vertical scrollbar on the right side.
- Buttons:** "OK" and "Cancel" buttons are located on the right side of the dialog.

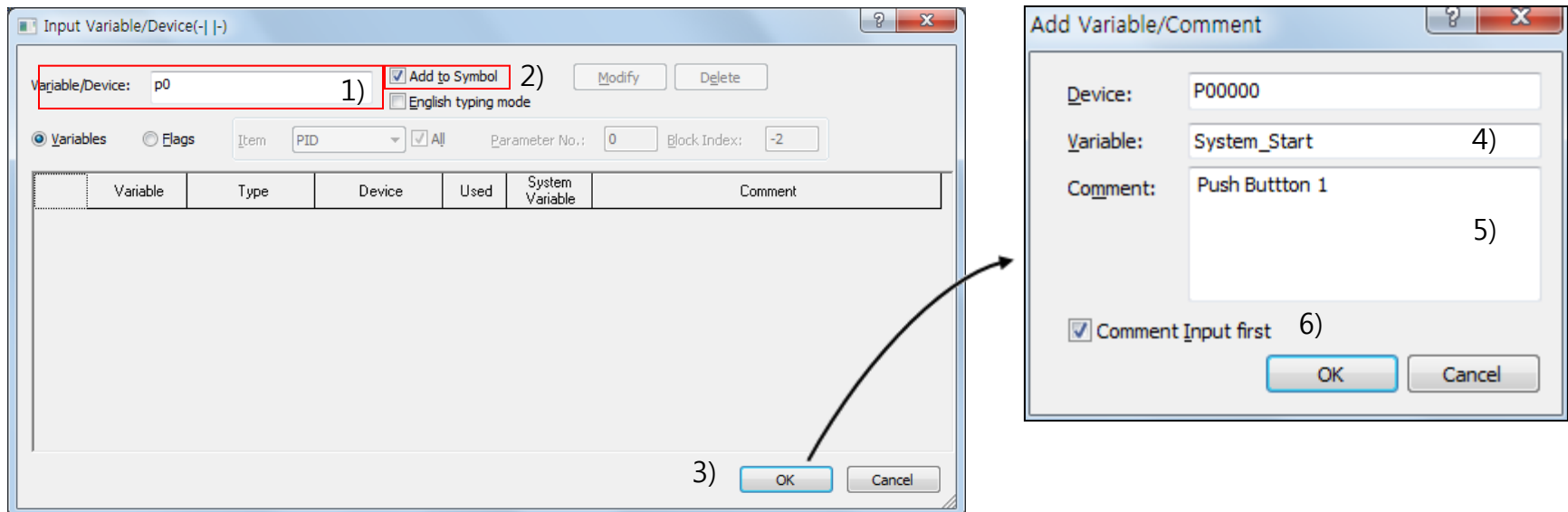
4. XG5000

3) Variable/Comment Edition

When Variable/Comment is double clicked Variable/Comment window will be displayed. There are three methods for editing variable/comment.

① Editing variable/comment when editing program

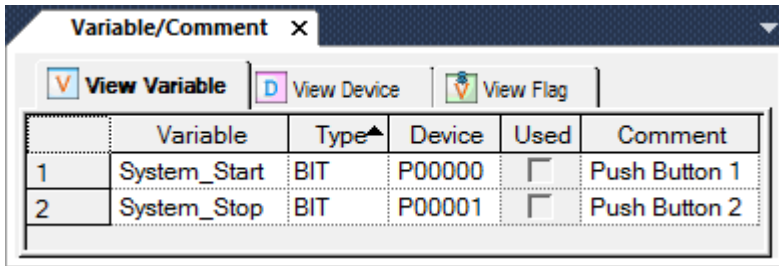
- 1) Type device in Variable/Device.
- 2) Check 'Add to Symbol' in 'Input Variable/Device' window.
- 3) Click 'OK' button.
- 4) Type characters which will be used as variable. For variable, characters, numbers and under bar(_) are available.
- 5) Type characters which will be used as comment. For comment, characters, numbers and all kinds of special characters are available.
- 6) When 'Add Variable/Comment' window is displayed, cursor will be flicker in variable input cell. If 'Comment input first' is checked, cursor will be flicker in comment input cell.



* Input Variable/Device window will be displayed when ladder symbol is registered in 'Program' window or a device in the program is double clicked.

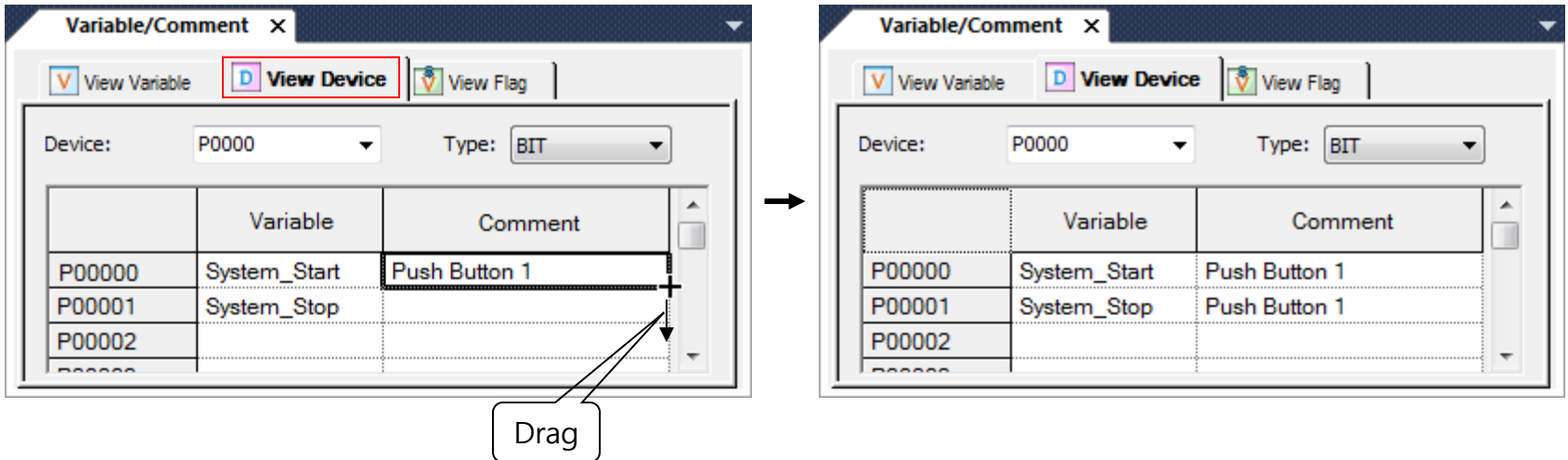
4. XG5000

- ② Editing variable/comment in the 'Variable/Comment' window
Variable and/or comment can be edited in 'Variable/Comment' window.



	Variable	Type	Device	Used	Comment
1	System_Start	BIT	P00000	☐	Push Button 1
2	System_Stop	BIT	P00001	☐	Push Button 2

It is convenient to select 'View Device' tab when variable and/or comment are edited in Variable/Comment window.
- Copying Data: A variable or comment is edited and it is dragged, it will be copied to dragged cell.



Device: P0000 Type: BIT

	Variable	Comment
P00000	System_Start	Push Button 1
P00001	System_Stop	
P00002		
P00003		

Drag

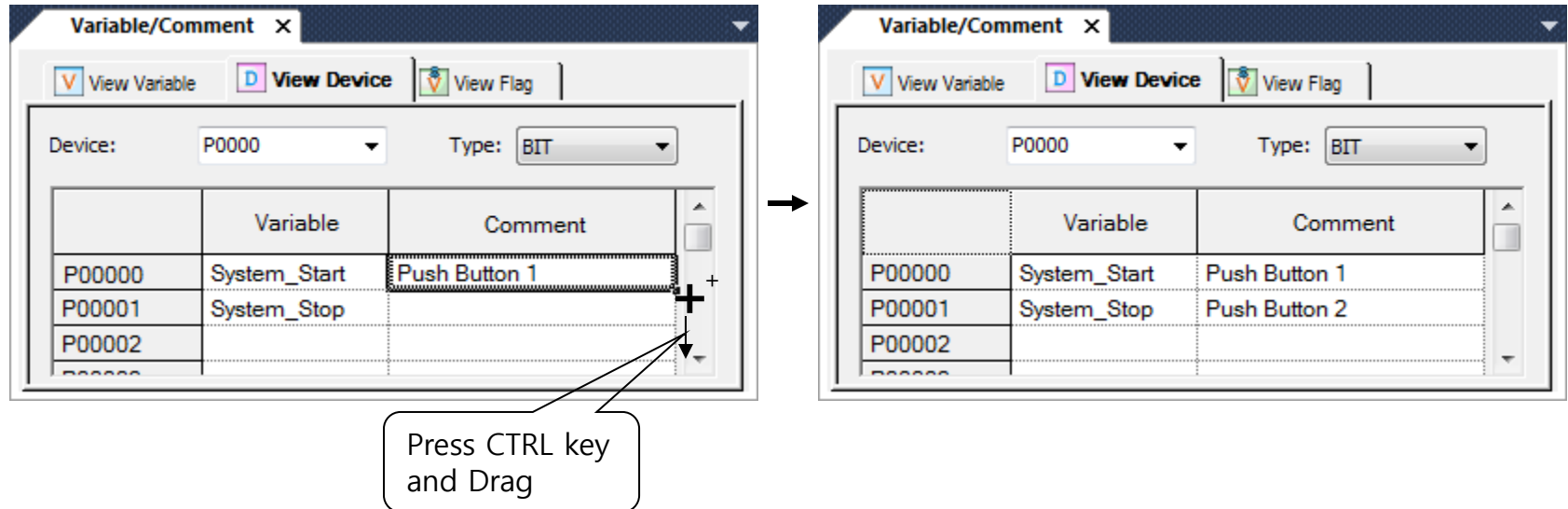
Device: P0000 Type: BIT

	Variable	Comment
P00000	System_Start	Push Button 1
P00001	System_Stop	Push Button 1
P00002		
P00003		

* Short cut key for line insertion is CTRL+ L. in View Variable window.

4. XG5000

- Number Automatic Increasing: A variable or comment with number is edited and it is dragged while 'CTRL' key is pressed, the number in variable or comment will be increased automatically.

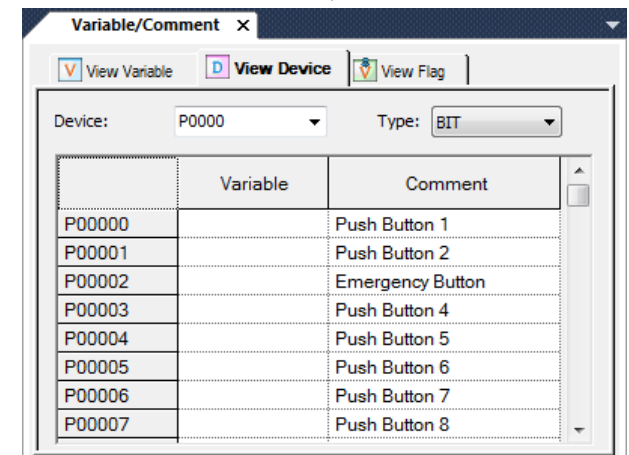
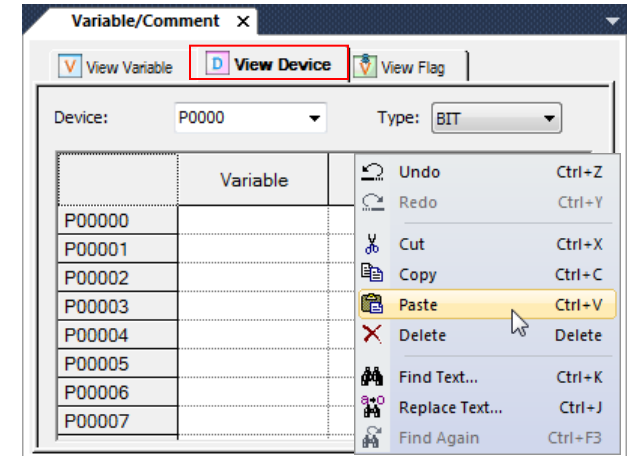
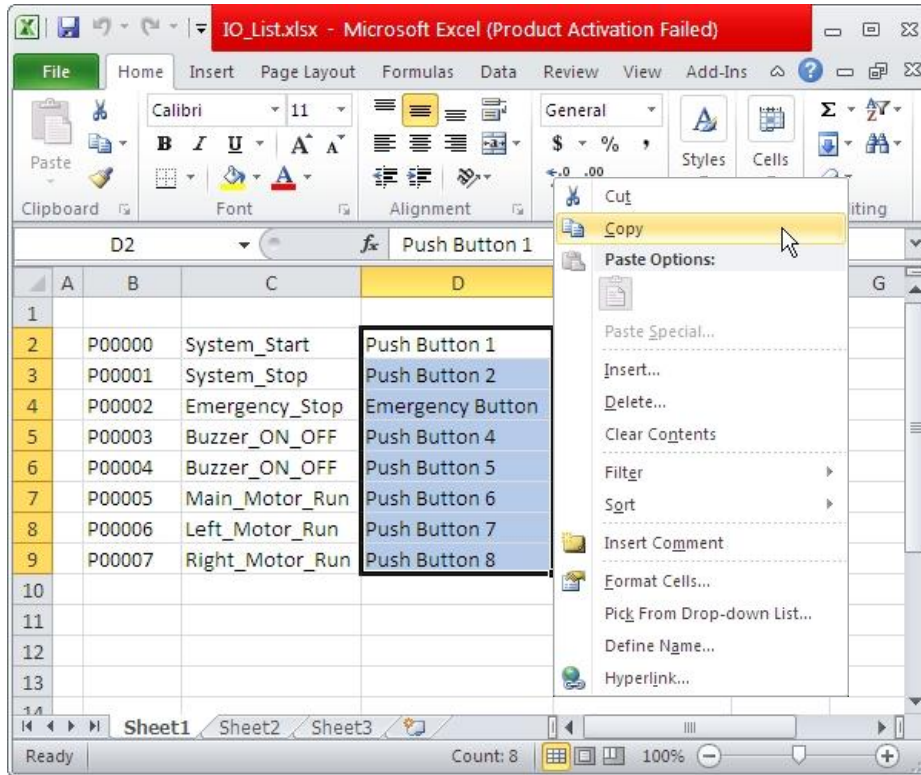


* Short cut key for line insertion is CTRL+ L.

4. XG5000

③ Editing variable/comment by copying from MS-Excel

If MS-Excel file in which the usage of device is described exists, the MS-Excel file contents can be copied to XG5000 variable and/or comment. It is convenient to select 'View Device' tab when MS-Excel contents are copied.



4. XG5000

4) Task

- ① Task name, Priority, number, type and items dependent on task type can be assigned. Adding 'Task' means registering task event in the project, and task program must be registered independent of adding task event for data processing when task event occurs.
Task program can be registered by project item adding sequence after registering task event.

Task

Task name:

Priority:

Task number: (Cycle Time:0~15, External Contacts:16~23, Internal Device:24~39, High-speed Counter:40~47)

Execution condition

☐ Initialization

☒ Cycle time ms

☐ I/O

I/O execution conditions

☒ Rising ☐ Falling ☐ Transition

☐ Internal device

Internal device execution conditions

Device:

☒ Rising ☐ Falling ☐ Transition ☐ On ☐ Off

☐ High-speed counter Channel:

OK Cancel

* Any Task will not be registered when new project is composed. To use task in a new project, task must be added manually.

4. XG5000

4.3.3 Parameter

1) Basic Parameter

① Basic Operation Setup

The screenshot shows the 'Basic Parameter Setting' dialog box. It has three tabs: 'Basic Operation Setup', 'Device Area Setup', and 'Error operation setup'. The 'Basic Operation Setup' tab is active. It contains three main sections:

- Basic operation settings:**
 - ☐ Fixed period operation: mode (1 ~ 999ms) [10] ms
 - ☒ Assign fixed points to I/O slot(64)
- Timer Setup:**
 - Watchdog Timer: [500] ms (10 ~ 1000ms)
 - Standard Input Filter: [3] ms
- Output Control:**
 - ☒ Output during debugging
 - ☐ Keep output when an error occurs
 - ☐ Keep output when converting RUN→STOP
 - ☐ Keep output when converting STOP→RUN
 - ☐ Delete all areas except latch when an error occurs

At the bottom right, there are three buttons: 'Default', '확인' (OK), and '취소' (Cancel).

- Fixed period operation time must be longer than maximum scan time which can be monitored 'Online' menu.
- Watchdog Timer: If scan time is longer than watchdog timer time, PLC will be error state.

4. XG5000

- Standard Input Filter: this parameter decides input response time. The state of input signal must hold state(ON/OFF) longer than standard input filter time to be recognized as normal input. If state of input signal is changed within input filter time, the change of state will be ignored. Standard input filter time will be applied to all input points except individual input filter time is set in I/O parameter.
If short input filter time is set, the input points can be sensitive to noise.
- Output during debugging: This option decides if digital output data is transmitted to output module while debugging operation. If this option is not checked, output points will not be turned on although output data is turned on in the program while debugging operation.
- Keep output when an error occurs: This option decides if all digital output data will be cleared or not when error occurs. Generally, all digital output data will be cleared when error occurs, . And although this option checked digital output data will be cleared when error occurs. One more parameter, I/O parameter must be set up to keep digital output status when error occurs.
- Delete all areas except latch when an error occurs: Although error occurs, the data stored in data memory outside of latch area will not be cleared until PLC is reset. When this option is checked, the data stored in data memory outside of latch area will be cleared when error occurs.

4. XG5000

② Device Area Setup

Basic Parameter Setting

Basic Operation Setup | **Device Area Setup** | Error operation setup

Select latch area
Selects the area to save data. If not selected, the set values in right table will be ignored.

☐ Enable area 1 ☐ Enable area 2

Timer Boundary

Kind	Start	End
100ms	0	999
10ms	1000	1999
1ms	2000	2047

Latch Area

Kind	Latch area 1			Latch area 2		
	Use	Start	End	Use	Start	End
D	☐	0	19999	☐	0	0
M	☐	0	2047	☐	0	0
S	☐	0	127	☐	0	0
C	☐	0	2047	☐	0	0
T(100ms)	☐	0	999	☐	0	0
T(10ms)	☐	1000	1999	☐	0	0
T(1ms)	☐	2000	2047	☐	0	0

Default 확인 취소

- Enable area 1 and 2: Because K and R areas of data memory are latch area, the data in these area will not be cleared when PLC is reset. If more latch memory is required or data in other area must not be cleared when PLC is reset, the other area can be used as latch area by checking Enable area 1 and/or 2. Latch area 1 and 2 are not simple area division but each area has different property depending on resetting method.

4. XG5000

- Data Status after PLC mode change.

Operation	K, R area	Latch 1 area	Latch 2 area
CPU STOP/RUN	Hold	Hold	Hold
Power Reset	Hold	Hold	Hold
Reset	Hold	Hold	Hold
Overall Reset	Clear	Clear	Hold
Clear	Selecting area to be cleared.		
Clear All	Clear	Clear	Clear

- Latch Area: Latch 1 and/or 2 area can be selected in D, M, S, C, T data memory area.
- Timer Boundary: XGB series PLC has 256(XBM, XBC-E), 1024(XBC-H/S/SU) or 2048(XBC-U) timers and its base time can be 1, 10, 100ms. Tome number of each base time can be set up in timer boundary. For each base time, more than one timer must be allocate.

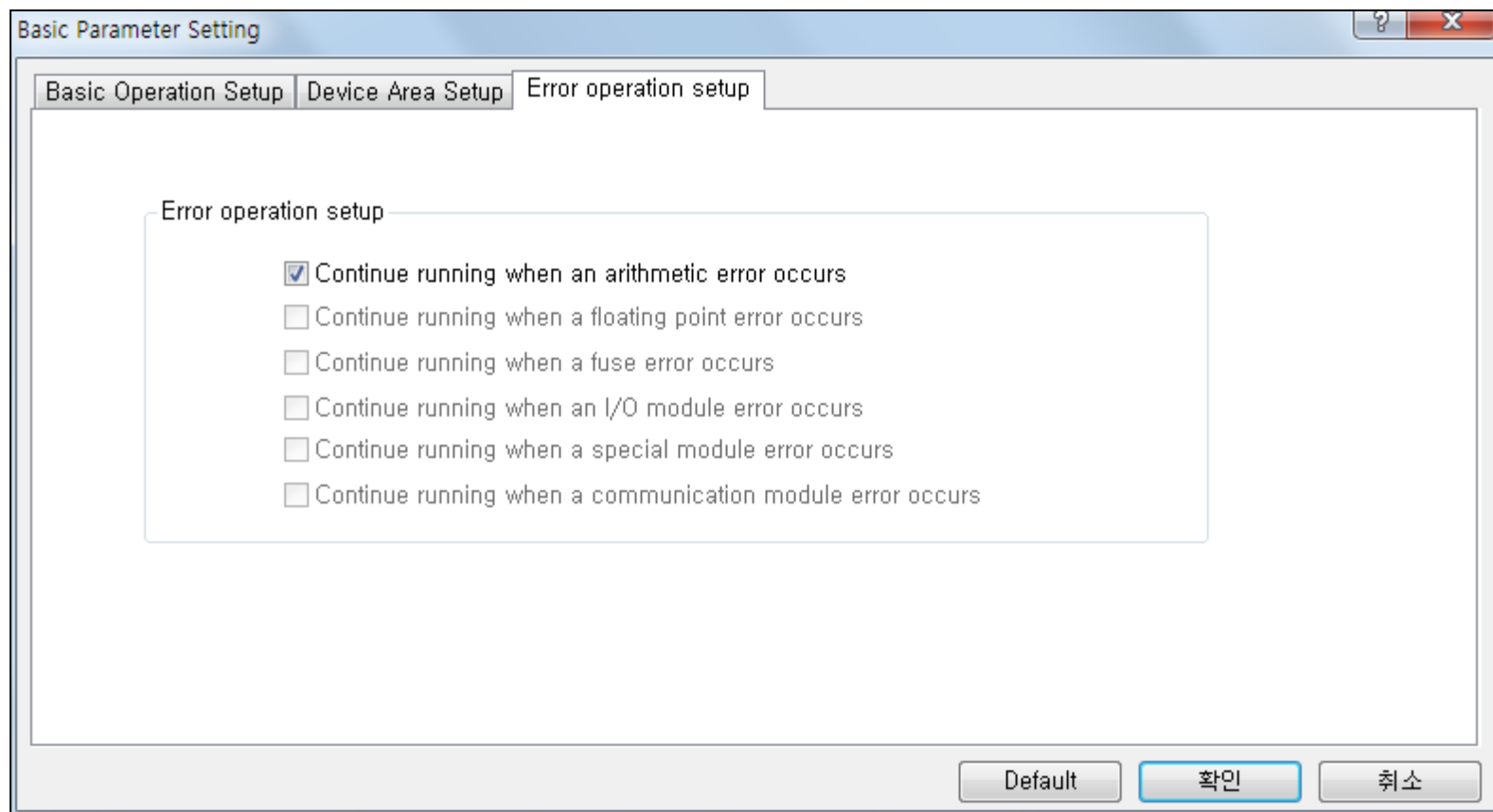
* Reset and Clear function can be executed with XG5000.

* When 'Clear All' is executed, all items in the PLC including data, program, parameter, online password will be cleared.

4. XG5000

③ Error operation Setup

Holding RUN mode or changing to error mode can be selected when some error occurs.



4. XG5000

2) I/O Parameter

Module configuration and operation can be assigned in I/O parameter. Setting items will be different depending on type of module.

- Digital input module: Input filter time.
- Digital output module: Clear/hold output data when error occurs.(Combination with basic parameter)
- Special function module: Channel enable/disable, input/output data type and options for module operation etc.

The screenshot displays the 'I/O Parameter' configuration window. The top section shows a rack of modules with slots 00 to 05. Slot 00 is XBC-DN32U, Slot 01 is XBF-PD04E, Slot 02 is XBF-AD04A, and Slot 03 is XBF-DV04A. The bottom section shows a table of module parameters.

Slot	Module	Comment	Input Filter	Emergency Out	Allocation
0(main)	XBC-DN32U (DC 24V		3 Standard[ms]	Default	P0000 ~ P003F
1(Internal)	XBF-PD04E (Line-Driv		-	-	P0040 ~ P007F
2	XBF-AD04A (Volt/Curr		-	-	P0080 ~ P011F
3	XBF-DV04A (Voltage,		-	-	P0120 ~ P015F
4					
5					

* The operations for network module can be set up in Network Configuration, High Speed Link and/or P2P.

4. XG5000

3) Internal Parameter

The operation of built-in functions can be set up in internal parameter.

① High Speed Counter

Special Module Parameter

High Speed Counter Module

Parameter	CH 0	CH 1	CH 2	CH 3
☐ Counter mode	Linear	Linear	Linear	Linear
☐ Pulse input mode	1-Phs 1-In x1	1-Phs 1-In x1	1-Phs 1-In x1	1-Phs 1-In x1
Internal preset	0	0	0	0
External preset	0	0	0	0
Ring Counter Min. Value	0	0	0	0
Ring Counter Max. Value	0	0	0	0
☐ Comp0 output mode	(Magnitude)<	(Magnitude)<	(Magnitude)<	(Magnitude)<
☐ Comp1 output mode	(Magnitude)<	(Magnitude)<	(Magnitude)<	(Magnitude)<
Comparator Output0 Min.Value	0	0	0	0
Comparator Output0 Max.Value	0	0	0	0
Comparator Output1 Min.Value	0	0	0	0
Comparator Output1 Max.Value	0	0	0	0
☐ Comp0 output point	No use	No use	No use	No use
☐ Comp1 output point	No use	No use	No use	No use
Unit time [ms]	1	1	1	1
Pulse/Rev value	1	1	1	1
☐ Freq. Measure	1 Hz	1 Hz	1 Hz	1 Hz

-2147483648~2147483647

OK Cancel

4. XG5000

- ② PID: PID parameter is composed with two items, operation and Auto Tuning.

Embedded PID(16 Loop)

Parameter	LOOP 0	LOOP 1	LOOP 2	LOOP 3
Operational Mode	Auto Opr	Auto Opr	Auto Opr	Auto Opr
Operational Direction	Forward	Forward	Forward	Forward
Secondary Anti windup	Disable	Disable	Disable	Disable
Derivative term Cal. Method	By Error	By Error	By Error	By Error
Enable PWM Output	Disable	Disable	Disable	Disable
Set Value	0	0	0	0
Scan Period	100	100	100	100
Proportional Gain	1.000000e+000	1.000000e+000	1.000000e+000	1.000000e+000
Integral Time	0.000000e+000	0.000000e+000	0.000000e+000	0.000000e+000
Derivative Time	0.000000e+000	0.000000e+000	0.000000e+000	0.000000e+000
Delta PV Limit	0	0	0	0
Delta MV Limit	0	0	0	0
Max. MV	4000	4000	4000	4000
Min. MV	0	0	0	0
Manual MV	0	0	0	0
DeadBand Setting Value	0	0	0	0
Set filtering coefficient	0	0	0	0
PWM Contact	P20	P20	P20	P20
PWM Output Period	100	100	100	100
Set SV Ramp	0	0	0	0
Set PV Tracking	0	0	0	0
Min PV	0	0	0	0
Max PV	4000	4000	4000	4000

OK Cancel

Embedded PID Auto Tuning(16 Loop)

Parameter	LOOP 0	LOOP 1	LOOP 2	LOOP 3
Operational Direction	Forward	Forward	Forward	Forward
Enable PWM Output	Disable	Disable	Disable	Disable
Set Value	0	0	0	0
Scan Period	100	100	100	100
Max. MV	4000	4000	4000	4000
Min. MV	0	0	0	0
PWM Contact	P20	P20	P20	P20
PWM Output Period	100	100	100	100
Hysteresis Band	10	10	10	10

OK Cancel

* Because XBC-E PLC type doesn't support PID function, a project with XBC-E type PLC project doesn't have PID parameter.

4. XG5000

- ③ Positioning parameter is composed with two items, operation parameters and operation data.

The 'Positioning' dialog box is shown with the 'Position Parameter' tab selected. It contains two main sections: 'Basic Parameter' and 'Home Parameter'.

Item	X Axis	Y Axis
Positioning	0: Not Use	0: Not Use
Pulse Output Level	0: Low Active	0: Low Active
Pulse Output Mode	0: CW/CCW	0: CW/CCW
MCode Output Mode	0: None	0: None
Bias Speed	1 pls/s	1 pls/s
Speed Limit	100000 pls/s	100000 pls/s
ACC No.1	500 ms	500 ms
DEC No.1	500 ms	500 ms
ACC No.2	1000 ms	1000 ms
DEC No.2	1000 ms	1000 ms
ACC No.3	1500 ms	1500 ms
DEC No.3	1500 ms	1500 ms
ACC No.4	2000 ms	2000 ms
DEC No.4	2000 ms	2000 ms
S/W Upper Limit	2147483647 pls	2147483647 pls
S/W Lower Limit	-2147483648 pls	-2147483648 pls
Backlash Compensation	0 pls	0 pls
S/W Limit Detect	0: No Detect	0: No Detect
Upper/Lower Limit	1: Use	1: Use
Home Method	0: DOG/HOME(OFF)	0: DOG/HOME(OFF)
Home Direction	1: CCW	1: CCW
Home Address	0 pls	0 pls
Home High Speed	5000 pls/s	5000 pls/s
Home Low Speed	500 pls/s	500 pls/s
Homing ACC Time	1000 ms	1000 ms
Homing DEC Time	1000 ms	1000 ms
DWELL Time	0 ms	0 ms
JOG High Speed	5000 pls/s	5000 pls/s
JOG Low Speed	1000 pls/s	1000 pls/s
JOG ACC Time	1000 ms	1000 ms
JOG DEC Time	1000 ms	1000 ms
Inching Speed	100 pls/s	100 pls/s

At the bottom, there are tabs for 'Position Parameter', 'X-Axis Data', and 'Y-Axis Data'. The 'Position Parameter' tab is currently selected. There are 'OK' and 'Cancel' buttons at the bottom right.

The 'Positioning' dialog box is shown with the 'X-Axis Data' tab selected. It displays a table of 32 rows of data for the X-axis.

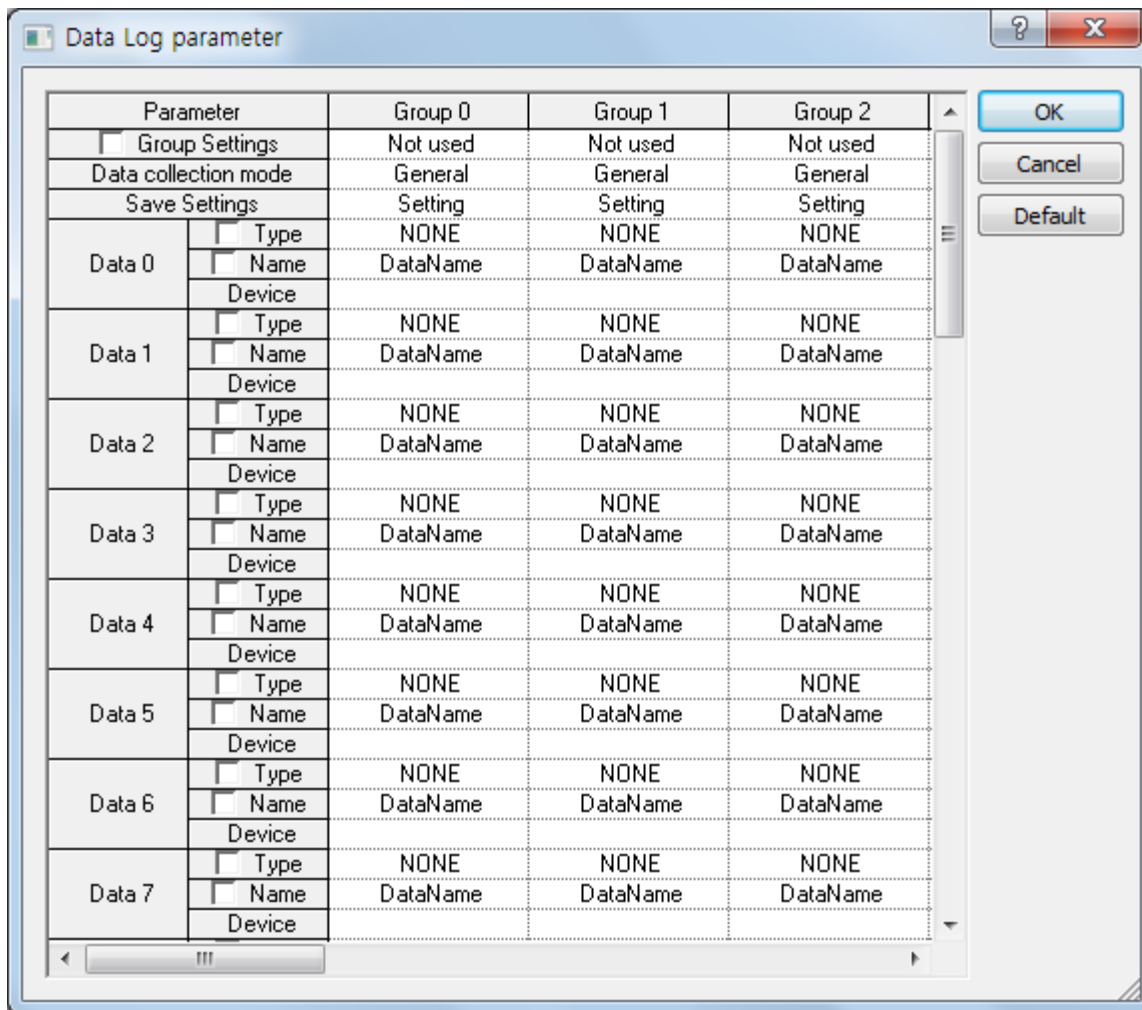
	Coord	Pattern	Control	Method	REP Step	Address (pulse)	M Code	A/D No	Speed (pls/s)	Dwell (ms)
1	ABS	END	POS	SIN	0	0	0	No.1	0	0
2	ABS	END	POS	SIN	0	0	0	No.1	0	0
3	ABS	END	POS	SIN	0	0	0	No.1	0	0
4	ABS	END	POS	SIN	0	0	0	No.1	0	0
5	ABS	END	POS	SIN	0	0	0	No.1	0	0
6	ABS	END	POS	SIN	0	0	0	No.1	0	0
7	ABS	END	POS	SIN	0	0	0	No.1	0	0
8	ABS	END	POS	SIN	0	0	0	No.1	0	0
9	ABS	END	POS	SIN	0	0	0	No.1	0	0
10	ABS	END	POS	SIN	0	0	0	No.1	0	0
11	ABS	END	POS	SIN	0	0	0	No.1	0	0
12	ABS	END	POS	SIN	0	0	0	No.1	0	0
13	ABS	END	POS	SIN	0	0	0	No.1	0	0
14	ABS	END	POS	SIN	0	0	0	No.1	0	0
15	ABS	END	POS	SIN	0	0	0	No.1	0	0
16	ABS	END	POS	SIN	0	0	0	No.1	0	0
17	ABS	END	POS	SIN	0	0	0	No.1	0	0
18	ABS	END	POS	SIN	0	0	0	No.1	0	0
19	ABS	END	POS	SIN	0	0	0	No.1	0	0
20	ABS	END	POS	SIN	0	0	0	No.1	0	0
21	ABS	END	POS	SIN	0	0	0	No.1	0	0
22	ABS	END	POS	SIN	0	0	0	No.1	0	0
23	ABS	END	POS	SIN	0	0	0	No.1	0	0
24	ABS	END	POS	SIN	0	0	0	No.1	0	0
25	ABS	END	POS	SIN	0	0	0	No.1	0	0
26	ABS	END	POS	SIN	0	0	0	No.1	0	0
27	ABS	END	POS	SIN	0	0	0	No.1	0	0
28	ABS	END	POS	SIN	0	0	0	No.1	0	0
29	ABS	END	POS	SIN	0	0	0	No.1	0	0
30	ABS	END	POS	SIN	0	0	0	No.1	0	0
31	ABS	END	POS	SIN	0	0	0	No.1	0	0
32	ABS	END	POS	SIN	0	0	0	No.1	0	0

At the bottom, there are tabs for 'Position Parameter', 'X-Axis Data', and 'Y-Axis Data'. The 'X-Axis Data' tab is currently selected. There are 'OK' and 'Cancel' buttons at the bottom right.

- * Because XBC-E PLC type doesn't support positioning function, a project with XBC-E type PLC project doesn't have positioning parameter.
- * Because positioning parameters and data for XBC-UP type PLC are set up by XG-PM software which is executed when 'Position Control' is selected in 'Tool' menu of XG5000, a project with XBC-U type PLC project doesn't have positioning parameter.

4. XG5000

④ Data log



The dialog box titled "Data Log parameter" contains a table for configuring data logging parameters. The table has four columns: "Parameter", "Group 0", "Group 1", and "Group 2". The parameters include "Group Settings", "Data collection mode", "Save Settings", and data groups "Data 0" through "Data 7". Each data group has sub-parameters for "Type", "Name", and "Device". The "Type" parameter for all data groups is set to "NONE". The "Name" parameter for all data groups is set to "DataName". The "Device" parameter is currently empty for all groups. To the right of the table are three buttons: "OK", "Cancel", and "Default".

Parameter	Group 0	Group 1	Group 2
☐ Group Settings	Not used	Not used	Not used
Data collection mode	General	General	General
Save Settings	Setting	Setting	Setting
Data 0			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 1			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 2			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 3			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 4			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 5			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 6			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			
Data 7			
☐ Type	NONE	NONE	NONE
☐ Name	DataName	DataName	DataName
Device			

* Because Data Log function is supported by XBC-U type only, Data Log parameter can be seen in a project with XBC-U type PLC project.

4. XG5000

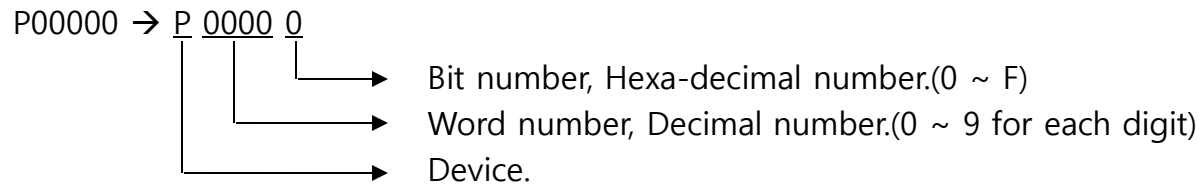
4.4 Programming

4.4.1 Device notation

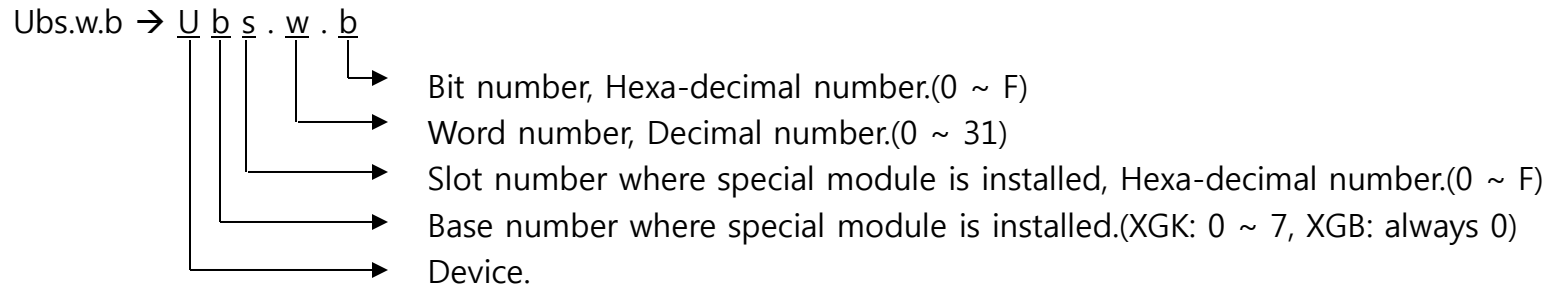
1) Bit Device Notation

Bit devices are used with contacts, coils and 4/8 bit data processing instructions.

① P, M, K, F, L Device



② U Device (Special function module interface area)



③ Timer(T), Counter(C) Device

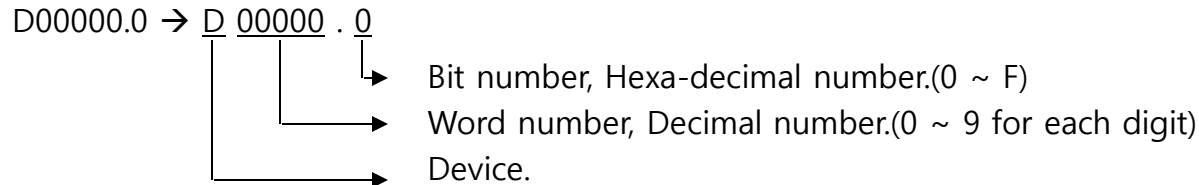


* T and C devices used with contact or coil stands for output state and T and C used with word data processing instructions stands for the current value of timer and counter, respectively.

* U, T and C devices cannot be used with 4/8 bit data processing instructions.

4. XG5000

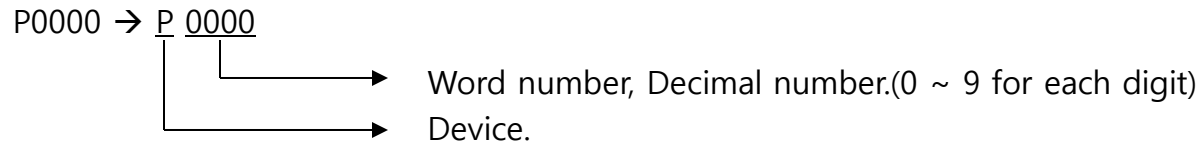
④ Bit in Word Device(D, R Device)



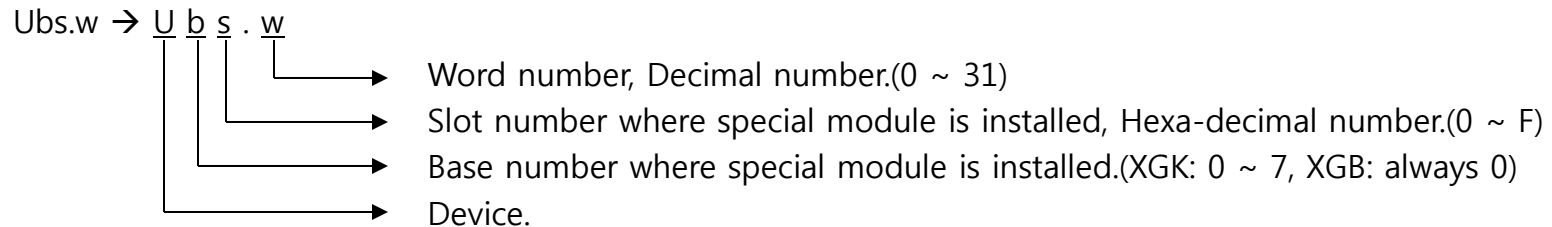
2) Word Device Notation

Word devices are used with word, double word, floating number data processing instructions.

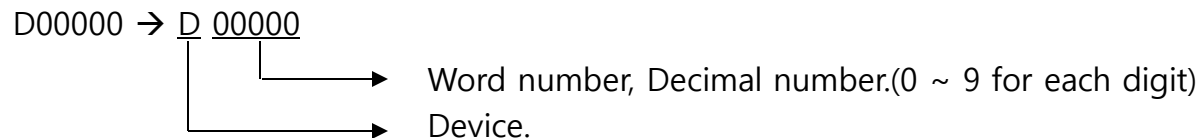
① P, M, K, F, L Device



② U Device (Special function module interface area)



③ D, R, Z, C, T Device



* Z, C, T devices cannot be expressed with word.bit notation.

4. XG5000

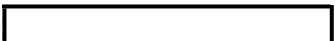
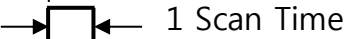
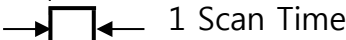
4.4.2 Programming Procedure

1) Symbols for Sequence Program

Program composed of contacts and coils is sequence program.

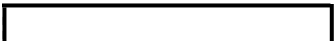
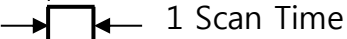
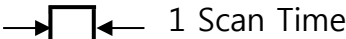
① Contacts

- Four kinds of contacts are available in XGT series PLC and the function of contacts is reading a bit device.

Symbol	Name	
 F3	Normally Open Contact	
 F4	Normally Closed Contact	
 sF1	Positive Transition Sensing Contact	
 sF2	Negative Transition Sensing Contact	

② Coils

- Six kinds of coils are available in XGT series PLC and the function of coils is writing the result of logic operations to a bit device.

Symbol	Name	
 F9	Coil	
 F11	Negated Coil	
 sF5	Positive Transition Sensing Coil	
 sF6	Negative Transition Sensing Coil	
 sF3	Set Coil	
 sF4	Reset Coil	

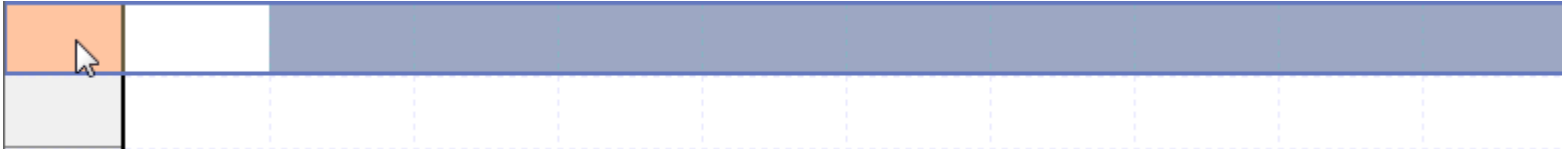
* Set/Reset coils are controlled by condition, not result.

4. XG5000

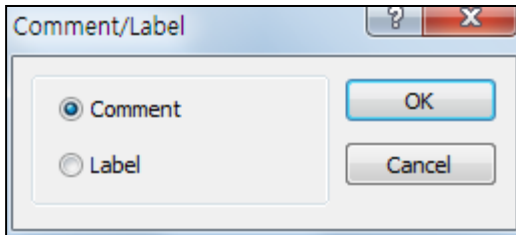
2) Sequence programming Procedure

① Rung comment edition

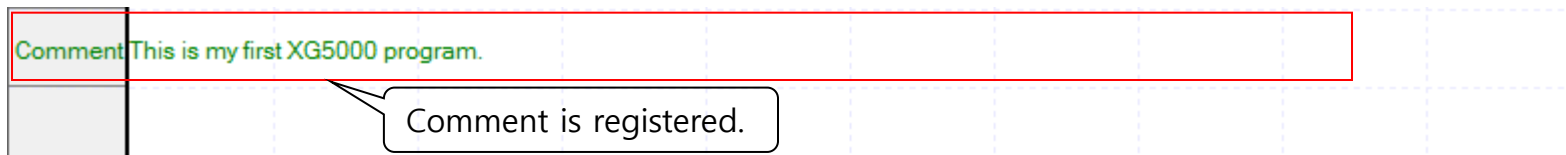
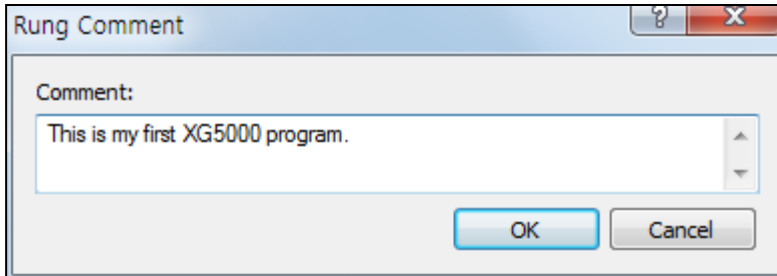
1) Double click step number displaying area.



2) Select 'Comment' in 'Comment/Label' window.



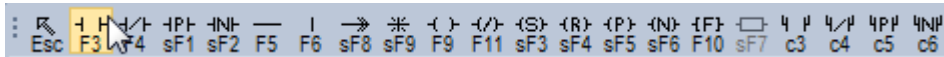
3) Edit the comment in 'Rung Comment' window. 'OK' button is clicked after editing comment, the edited comment will be displayed in 'Program' window.



4. XG5000

② Editing Contact

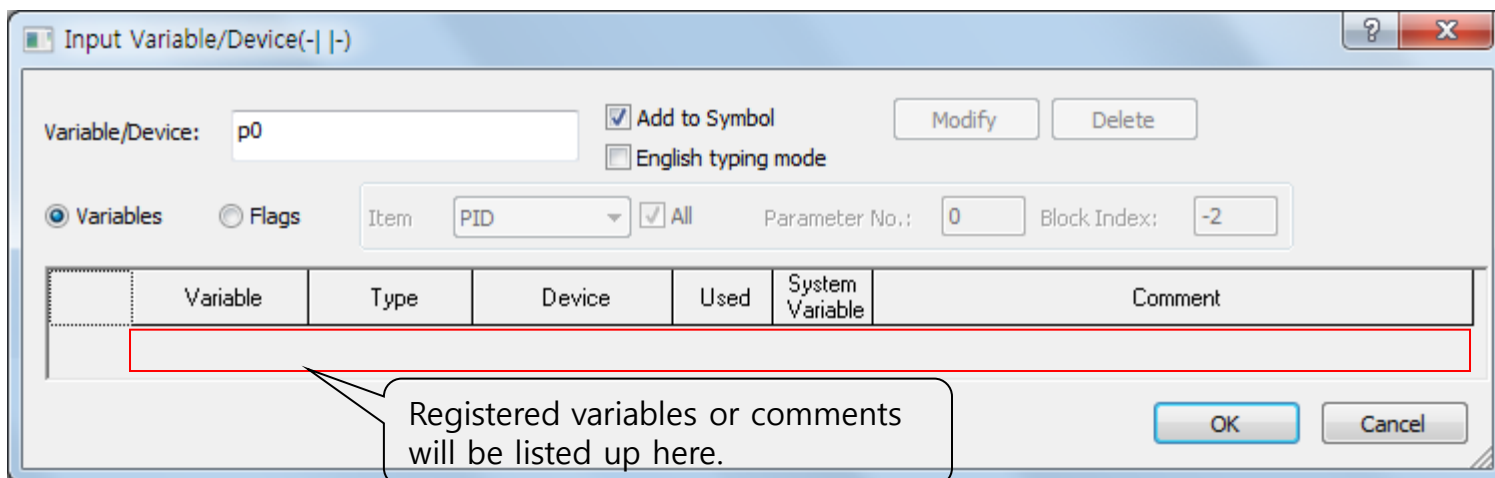
1) Select coil in tool bar.



2) Selected item will be located at the bottom of cursor when cursor is located in program window. Click mouse after locating cursor in a cell where contact will be edited in program window.



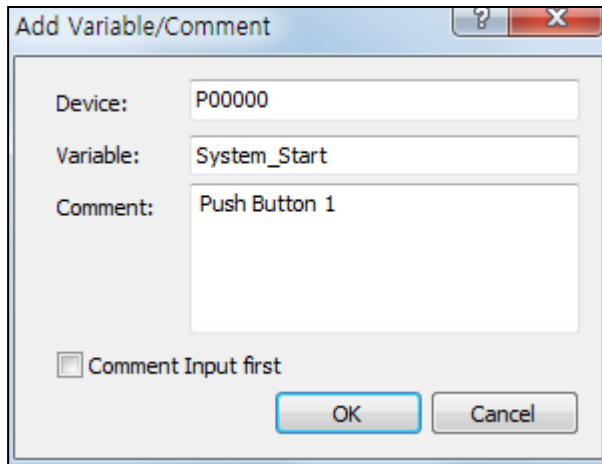
3) Input variable or device in 'Variable/Device' item. If variable or comment is to be edited, check 'Add to Symbol' and click 'OK' button. And if 'English typing mode' is checked and 'Variable/Device' item is clicked, keyboard will be changed to English typing mode automatically.



4. XG5000

4) Edit variable and/or comment in 'Add Variable/Comment' window.

If 'Comment Input first' is checked, cursor will be flicker in comment edition box when 'Add Variable/Comment' window is displayed.

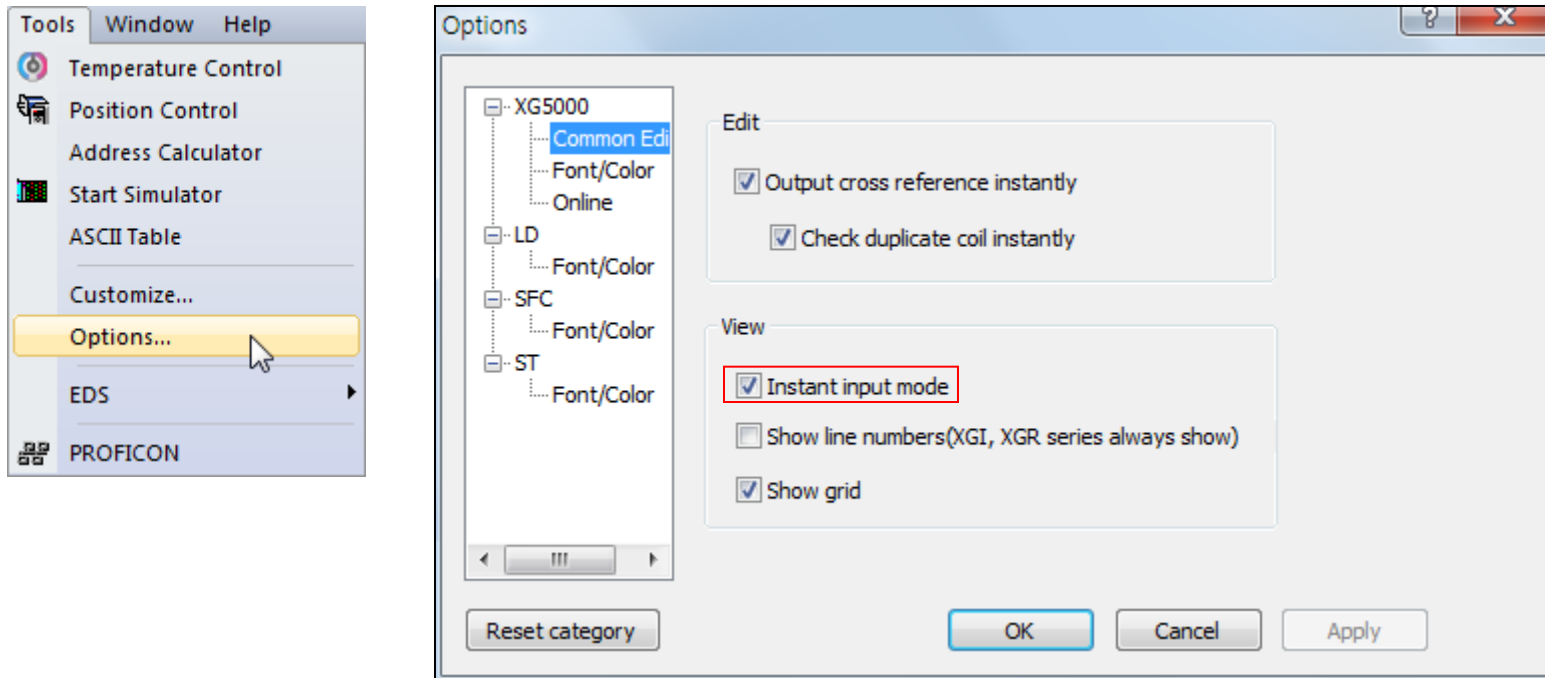


5) 'OK' button is clicked after editing variable and/or comment, edited variable, comment and/or device will be displayed in program window.

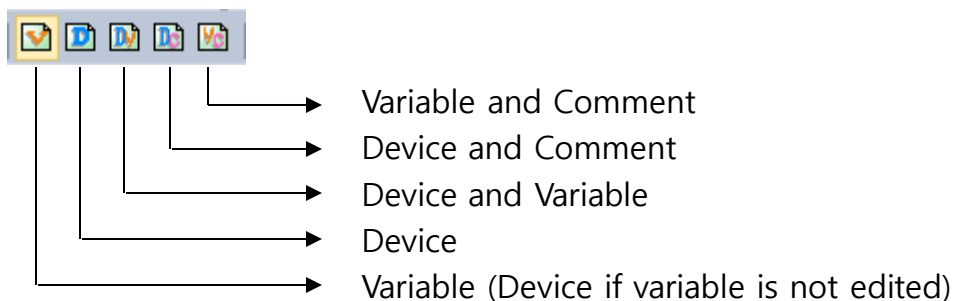


4. XG5000

* If 'Input Variable/Device' window is not displayed when contact is registered, check XG5000 options in 'Tools' menu. If 'Instant input mode' is not checked, variable or device can be edited by double clicking symbol after registering symbol.



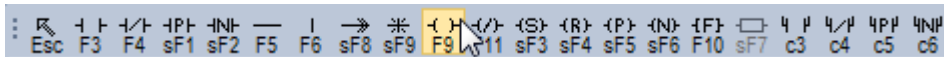
* Items to be displayed in program window are different depending on display option.



4. XG5000

③ Editing Coil

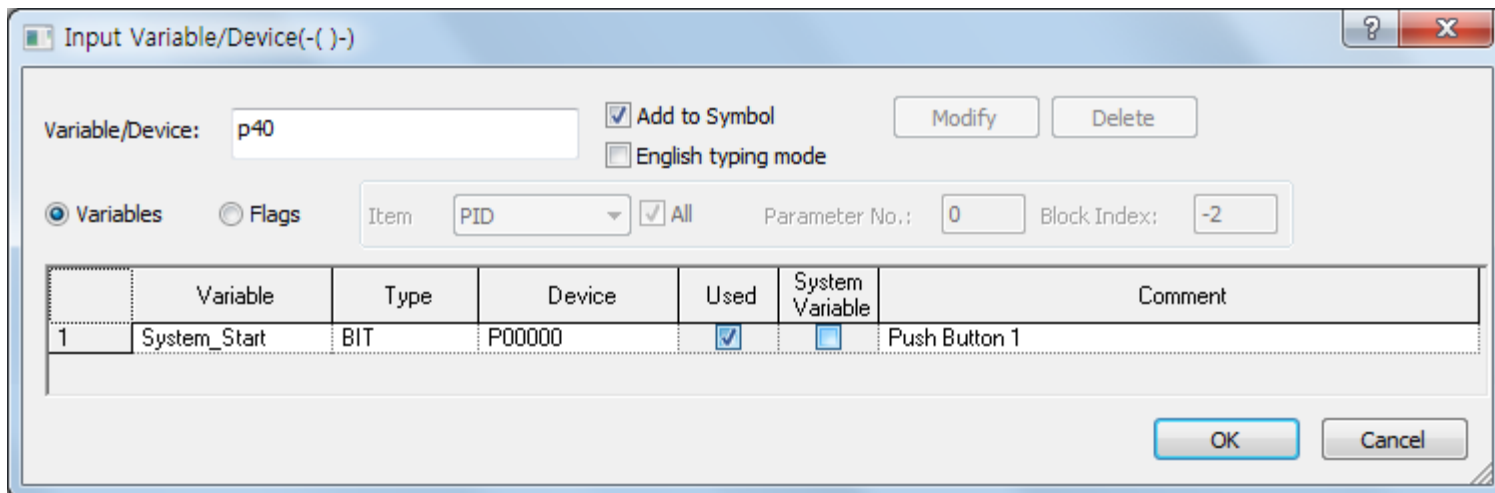
1) Select coil in tool bar



2) Selected item will be located at the bottom of cursor when cursor is located in program window. Click mouse after locating cursor in a cell next to last contact in program window.

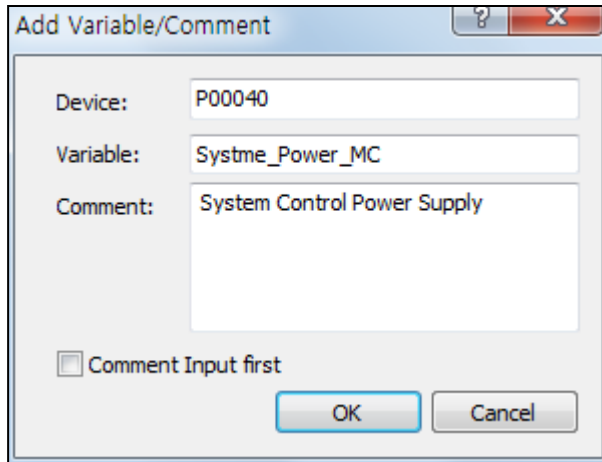


3) Input variable or device in 'Variable/Device' item. If 'Add to Symbol' and/or 'English typing mode' is checked previously, the status will be maintained.

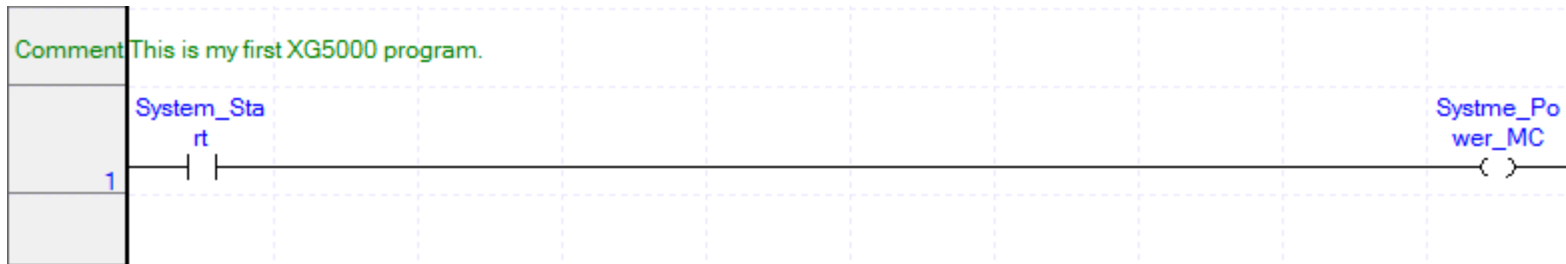


4. XG5000

4) Edit variable and/or comment in 'Add Variable/Comment' window.



5) 'OK' button is clicked after editing variable and/or comment, edited variable, comment and/or device will be displayed in program window.

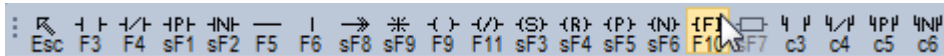


4. XG5000

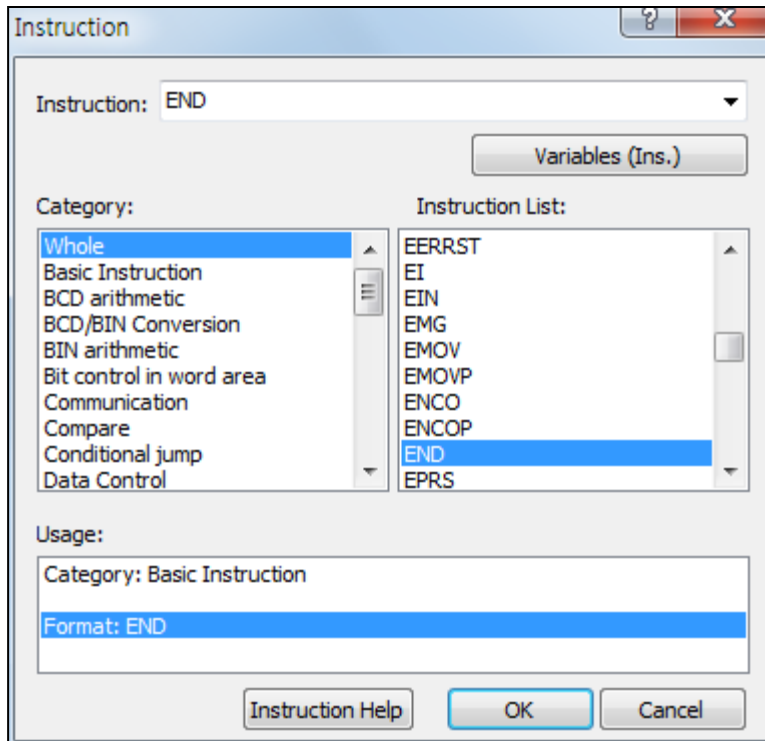
④ Editing 'END' Instruction

More than one programs can be registered in a PLC and each program must be finished with 'END' instruction. 'END' instruction can be edited with Function/FB.

1) Select Function/FB in tool bar.



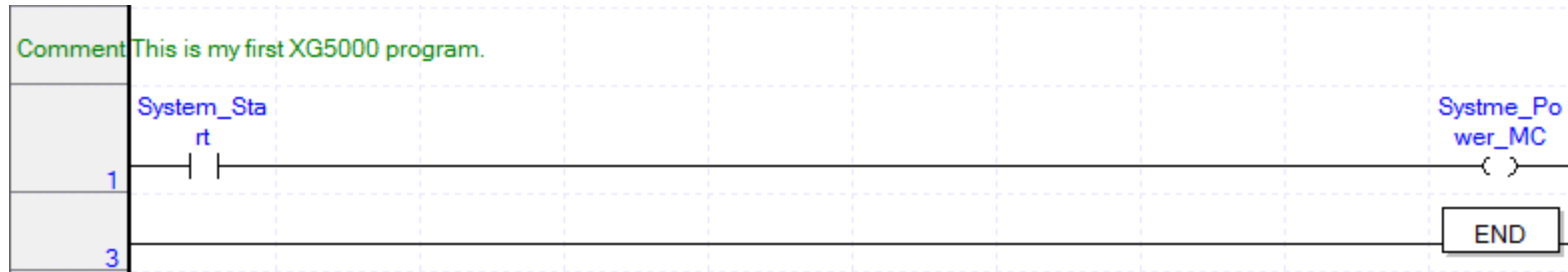
2) Type 'END' in 'Instruction' item or select 'END' in 'Instruction List'.



* END instruction must be edited without condition and operand.

4. XG5000

3) 'END' instruction is edited.

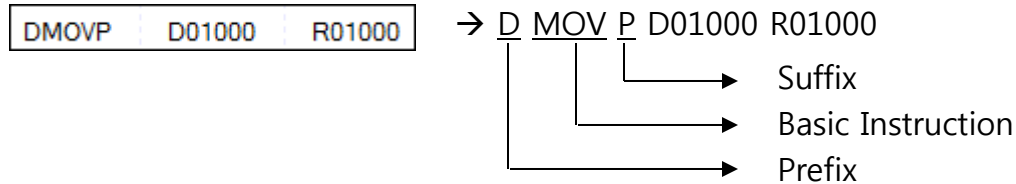


4. XG5000

3) Instruction programming

① Structure of instructions

Instructions for XGK, XBM, XBC series PLCs are composed of prefix, basic instruction and suffix.



1) Basic instructions deals with one word(16 bits) size data. For numeric data processing instruction, data types of operands are signed integer. For example, 'ADD D00000 D00001 D00010' is edited, data in D00000 and D00001 are converted to signed integer and stores the result of addition operation in D00010. If the result is out of signed integer range(-32,768 ~ 32,767), arithmetic error will occur.

2) Prefix assigns data size or type.

D: Double word size integer data processing. Ex) DMOV stores or copy double word(32 bits) size data.

R: Float number data type. Ex) RMOV stores float number.

L: Long number(64 bits float) data type. Ex) LMOV stores long number.

U: Unsigned integer data type. Ex) U=, U>, U< compares two 16 bit size data with unsigned integer data type.

G: Group data. Ex) GMOV copies group data.

\$: String data processing. \$MOV stores string data.

3) Suffix assigns data size, type and operation condition.

P: Instruction will be executed at the rising edge of condition.

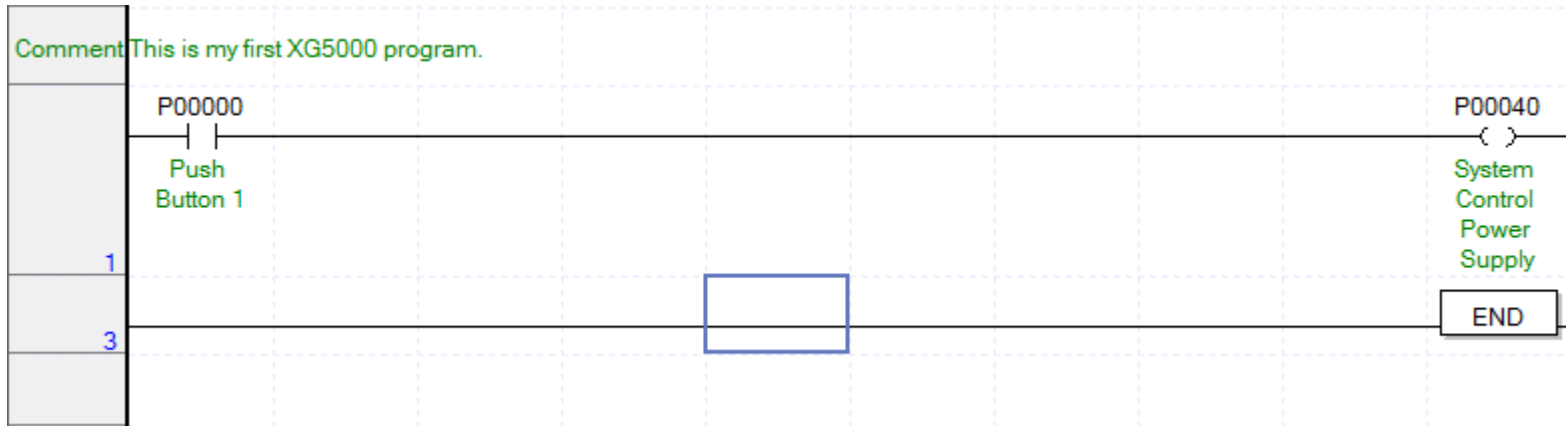
4/8: 4/8 bits data processing. 4/8 are used as suffix, operands must be bit device.

U: Unsigned integer data type. Ex) ADD calculates addition of two 16 bit size data with unsigned integer data type.

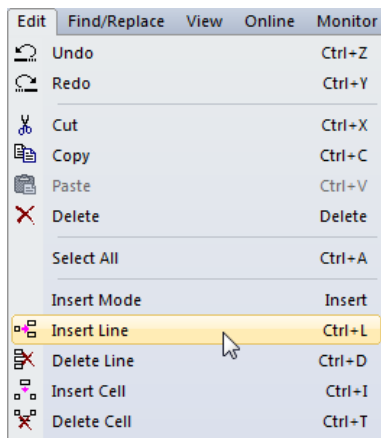
4. XG5000

② Instruction programming procedure

1) To insert line in program, locate rectangle cursor a line in which line will be inserted.



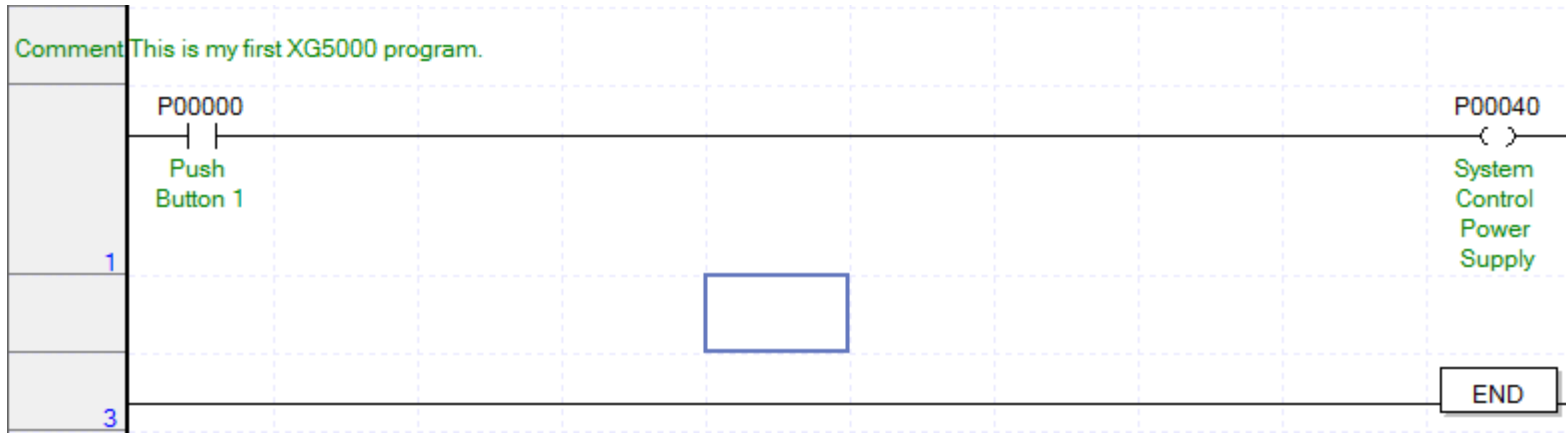
2) Select 'Insert Line' in 'Edit' menu.



* Shortcut key for line insertion is CTRL + L and line deletion is CTRL + D, respectively.

4. XG5000

3) An empty line is inserted.



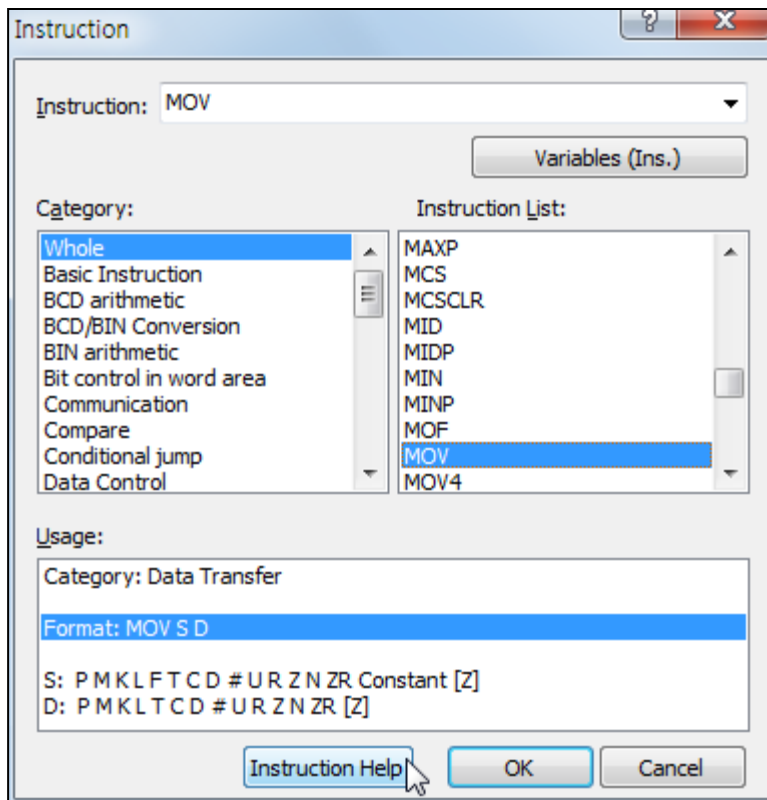
4. XG5000

③ Editing Conditions to Execute Instruction

Almost instructions except some instructions such as END, FOR, NEXT and so on need condition to be executed. Generally, conditions are edited with contacts or comparison result. For editing contacts and instructions, refer to the previous verse.

Here some useful tips for editing instruction will be explained.

1) An instruction is selected and 'Instruction Help' button is clicked, instruction help will be displayed.



4.11 Data transfer Instruction

XGK	XGB
☐	☐

4.11.1 MOV, MOVP, DMOV, DMOVP

Instruction	Area Available													Step	Flag				
	PMK	F	L	T	C	S	Z	D.x	R.x	Con st.	U	N	D		R	Error (F110)	Zero (F111)	Carry (F112)	
MOV(P)	S	O	O	O	O	O	-	O	-	-	O	O	O	O	O	2~5	O	-	-
DMOV(P)	D	O	-	O	O	O	-	O	-	-	-	O	O	O	O				

MOV, DMOV S D

MOVP, MOVP P S D

means MOV/DMOV

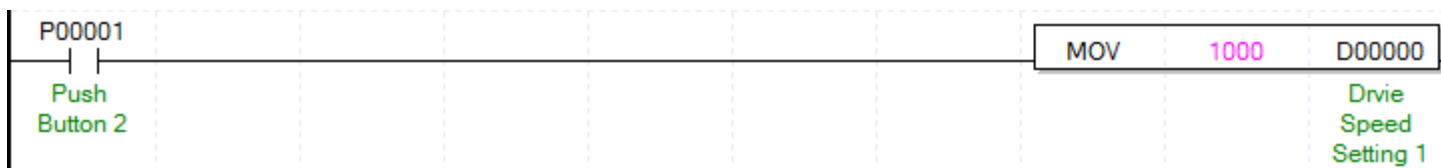
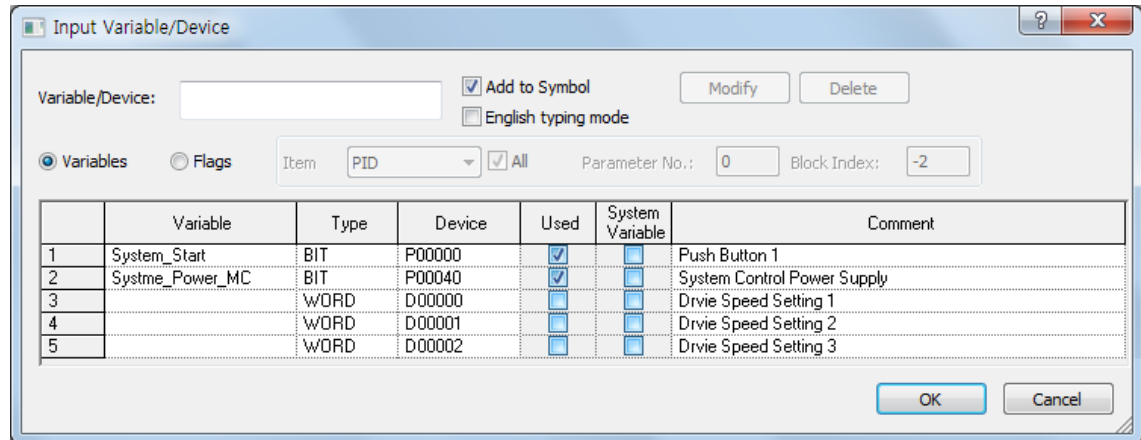
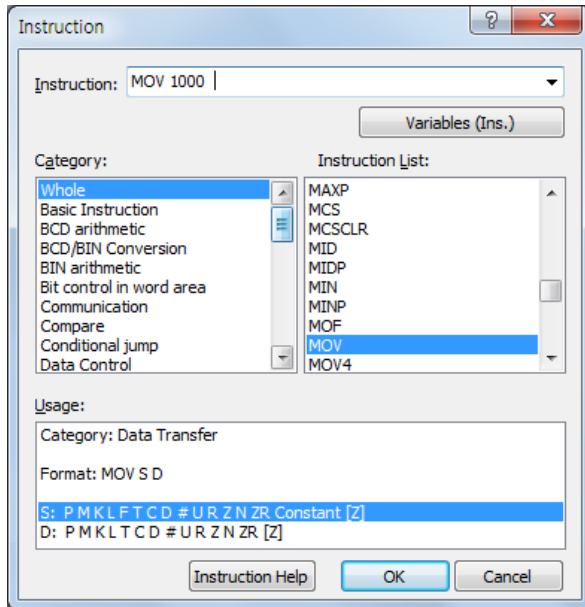
[Area Setting]

Operand	Description	Data Type
S	Data to transfer or device number data is saved in	WORD/DWORD
D	Device number to save data transferred	WORD/DWORD

* To open instruction manual, a software which can read pdf file must be installed in computer.

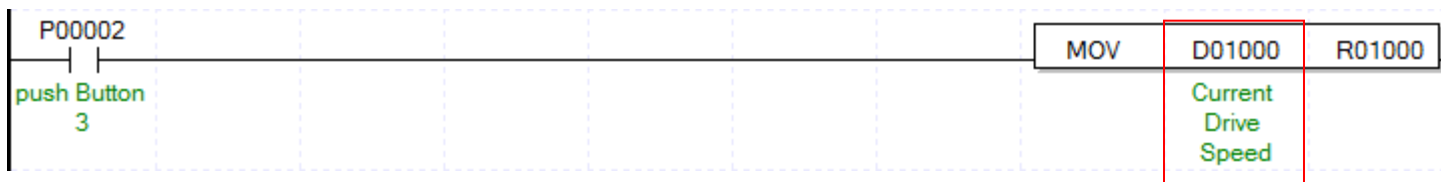
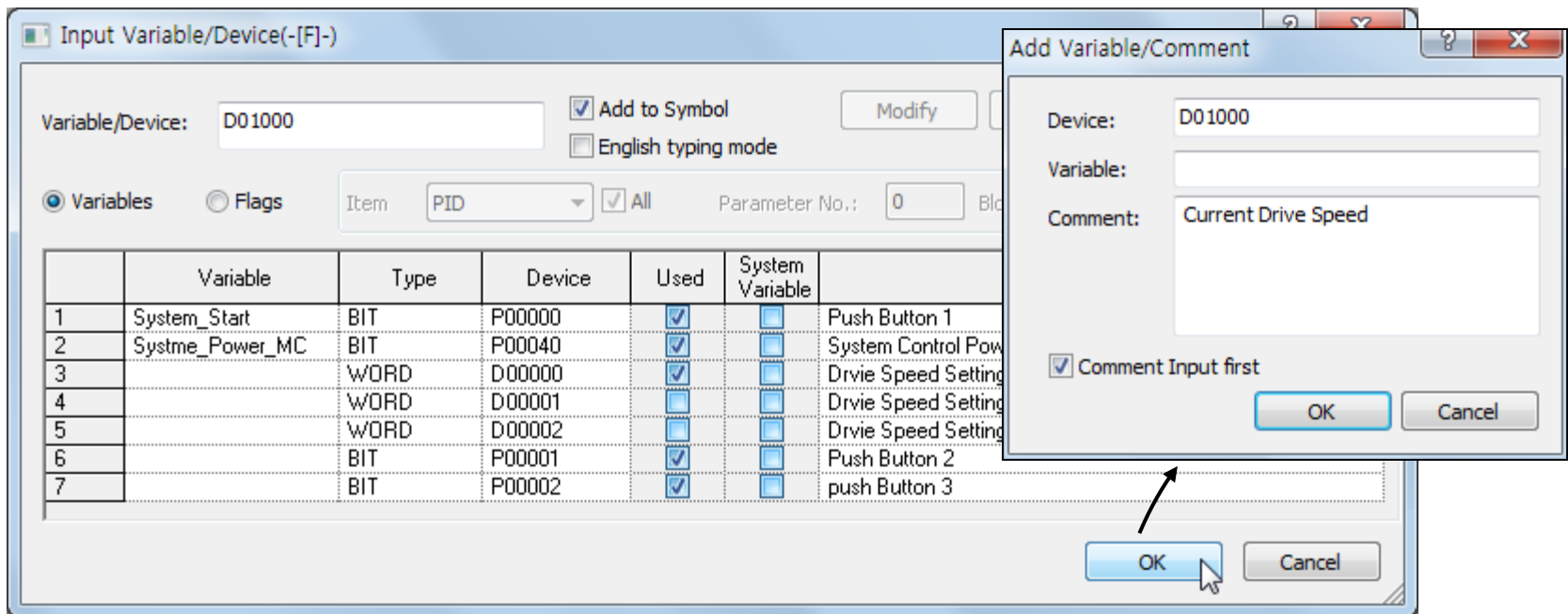
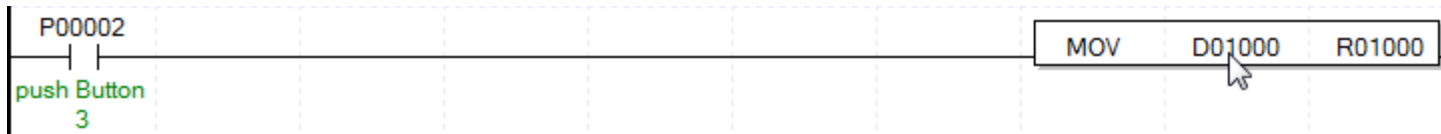
4. XG5000

- 2) 'Variables(Ins.)' button is clicked, variables and/or comments previously edited can be referred while instruction is edited. A variable or device is selected in 'Input Variable/Device' window, selected variable or device will be registered as operand where cursor is located.



4. XG5000

- 3) Variable and/or comment for devices used with instructions can be edited by double clicking device after editing instruction.

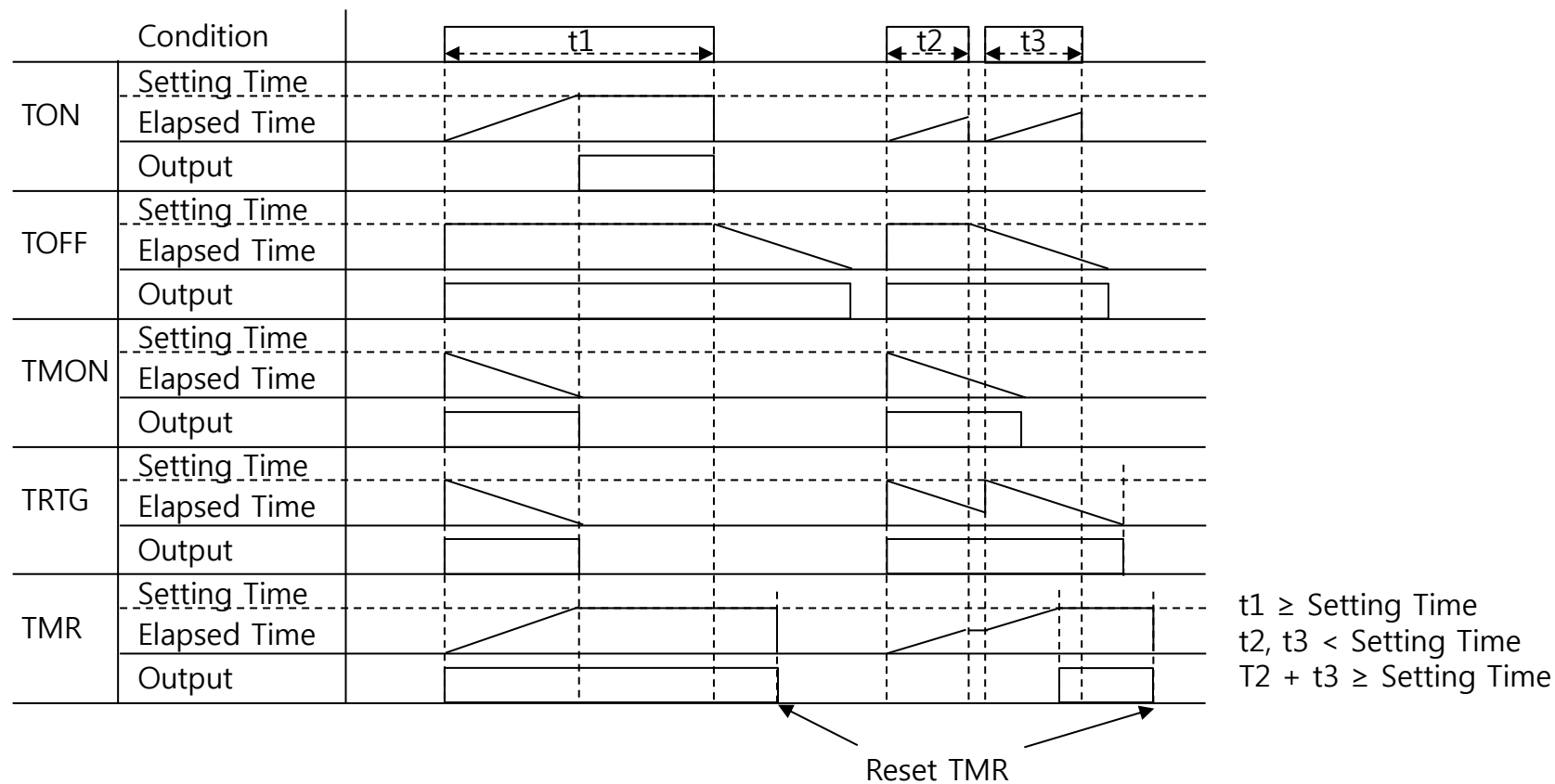


4. XG5000

4) Timers

Five types of timer are available in XGK, XBM and XBC series PLC.

① Types and operation of timer



4. XG5000

② Timer Boundary and Latch

The base time of XGK, XBM, XBC is 100ms, 10ms and 1ms. Base time is setting time when setting value is 1. The total number of timer is fixed and timers must be allocated to each base time. Numbers of each base time can be assigned in 'Basic Parameter', 'Device Area Setup' tab.

When PLC is reset including turning off main power, elapsed time will be cleared. If elapsed time is to be preserved when PLC is reset, latch area must be set up.

Basic Parameter Setting

Basic Operation Setup | **Device Area Setup** | Error operation setup

Select latch area
Selects the area to save data. If not selected, the set values in right table will be ignored.

☒ Enable area 1 ☒ Enable area 2

Timer Boundary

Kind	Start	End
100ms	0	999
10ms	1000	1999
1ms	2000	2047

Latch Area

Kind	Latch area 1			Latch area 2		
	Use	Start	End	Use	Start	End
D	☒	0	999	☒	1000	1999
M	☐	0	2047	☐	0	0
S	☐	0	127	☐	0	0
C	☐	0	2047	☐	0	0
T(100ms)	☒	800	899	☒	900	999
T(10ms)	☒	1800	1889	☒	1990	1990
T(1ms)	☒	2030	2039	☒	2040	2047

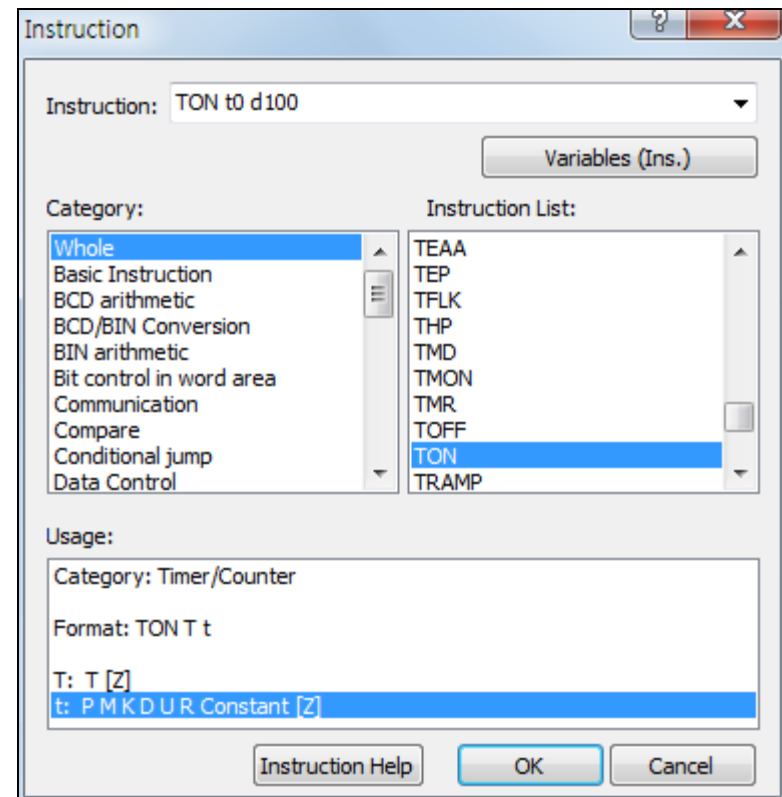
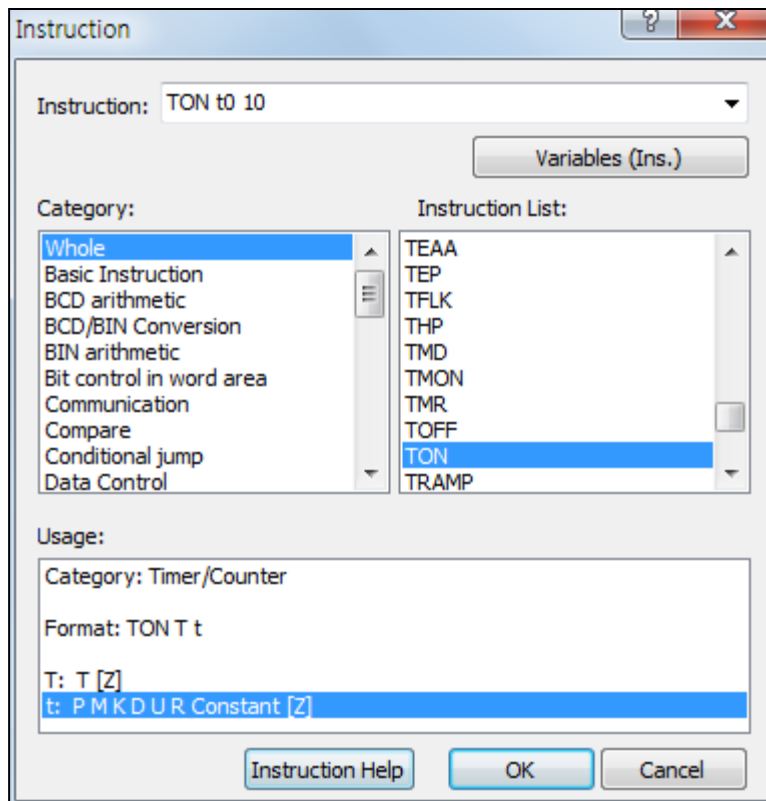
Default | **확인** | 취소

* No timer is allocated to latch 1 and/or latch 2 area in initial project.

4. XG5000

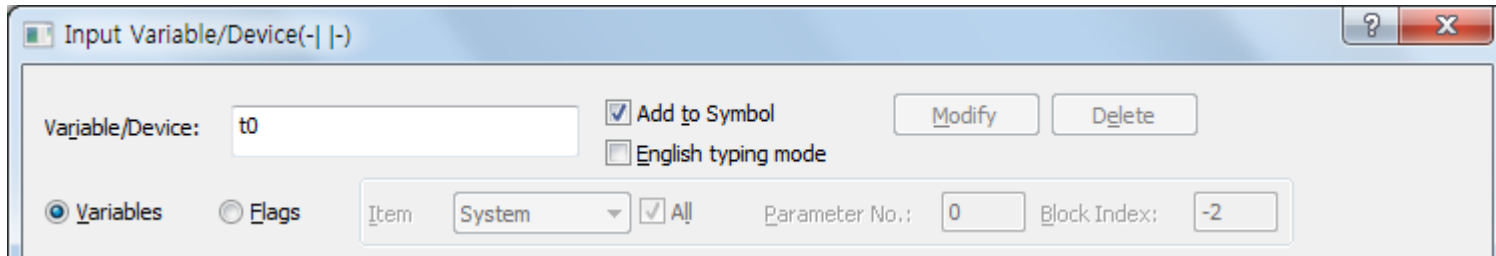
③ Timer Editing Procedure

- 1) Edit condition and call Function/FB like instruction editing.
- 2) Edit in order of timer function, timer number and setting value in 'Instruction'. If setting value is to be varied, allocate one word size device in setting value item.

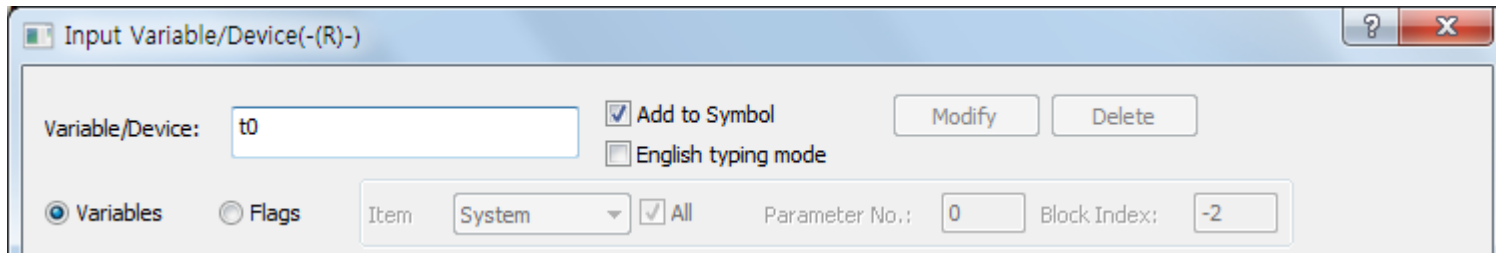


4. XG5000

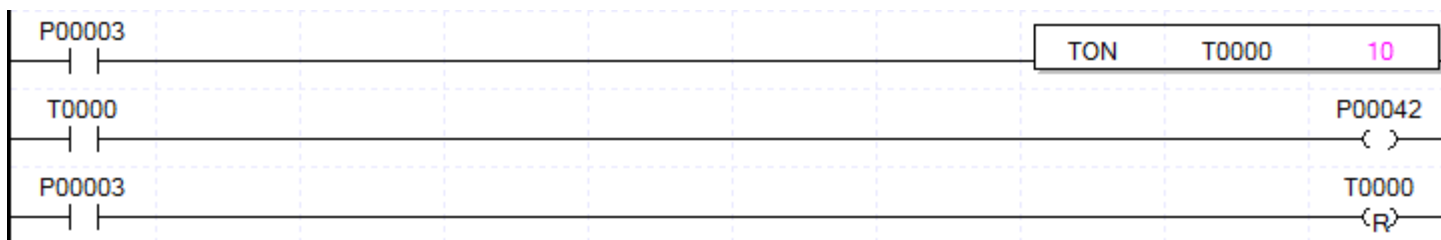
3) To use output of timer, use contact of which device is timer number.



4) To reset timer, edit reset coil of which device is timer number to be reset. Especially, integration timer, TMR, is used, resetting timer logic must be edited.



5) Program example for TON timer.

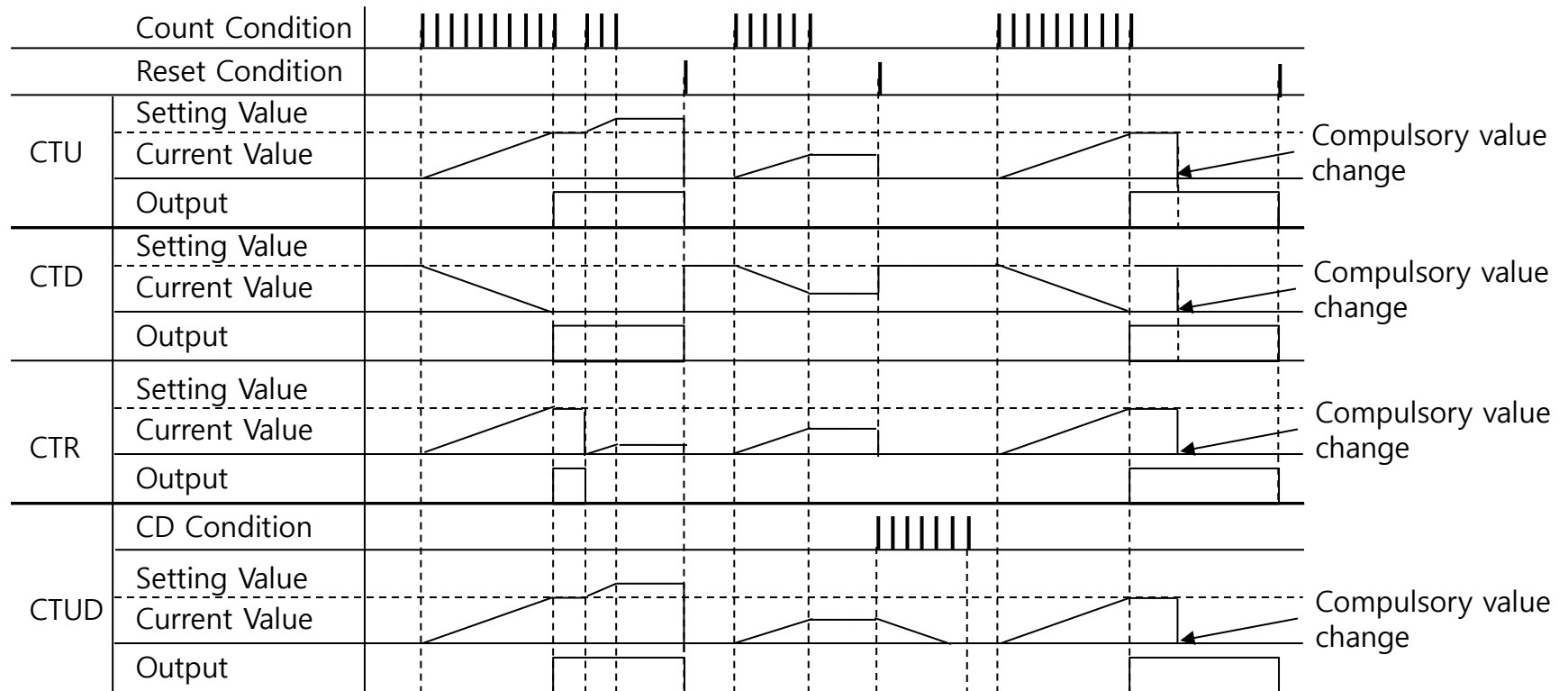


4. XG5000

5) Counters

Four types of counter are available in XGK, XBM and XBC series PLC.

① Types and operation of counter



4. XG5000

② Counter Latch

When PLC is reset including turning off main power, current value of counter will be cleared. If current value is to be preserved when PLC is reset, latch area must be set up. Latch area can be set up in 'Basic Parameter', 'Device Area Setup' tab.

Basic Parameter Setting

Basic Operation Setup | **Device Area Setup** | Error operation setup

Select latch area
Selects the area to save data. If not selected, the set values in right table will be ignored.

☒ Enable area 1 ☒ Enable area 2

Timer Boundary

Kind	Start	End
100ms	0	999
10ms	1000	1999
1ms	2000	2047

Latch Area

Kind	Latch area 1			Latch area 2		
	Use	Start	End	Use	Start	End
D	☒	0	999	☒	1000	1999
M	☐	0	2047	☐	0	0
S	☐	0	127	☐	0	0
C	☒	1900	1999	☒	2000	2047
T(100ms)	☒	800	899	☒	900	999
T(10ms)	☒	1800	1889	☒	1900	1999
T(1ms)	☒	2030	2039	☒	2040	2047

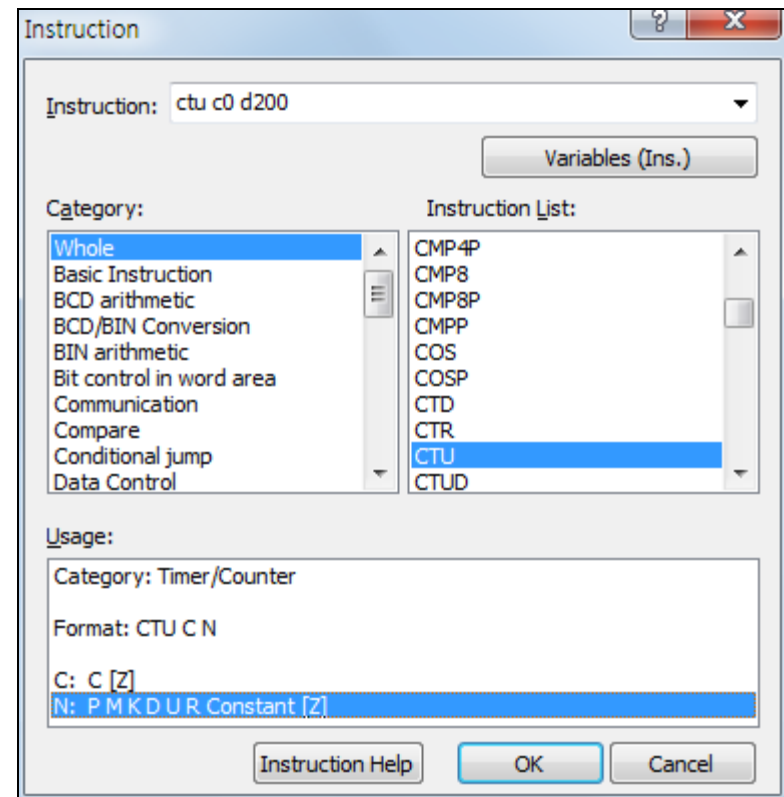
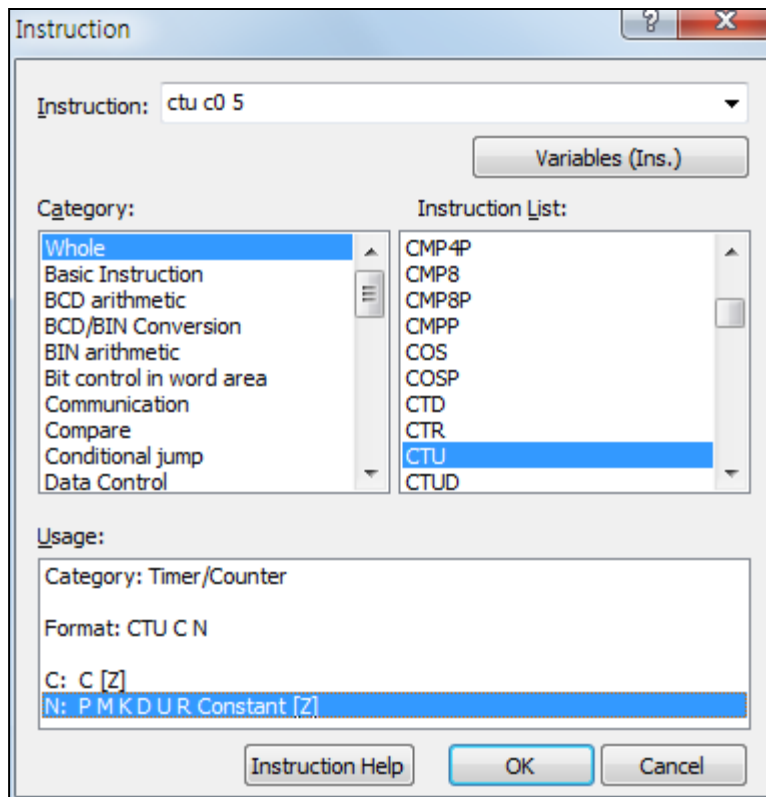
Default **확인** 취소

* No counter is allocated to latch 1 and/or latch 2 area in initial project.

4. XG5000

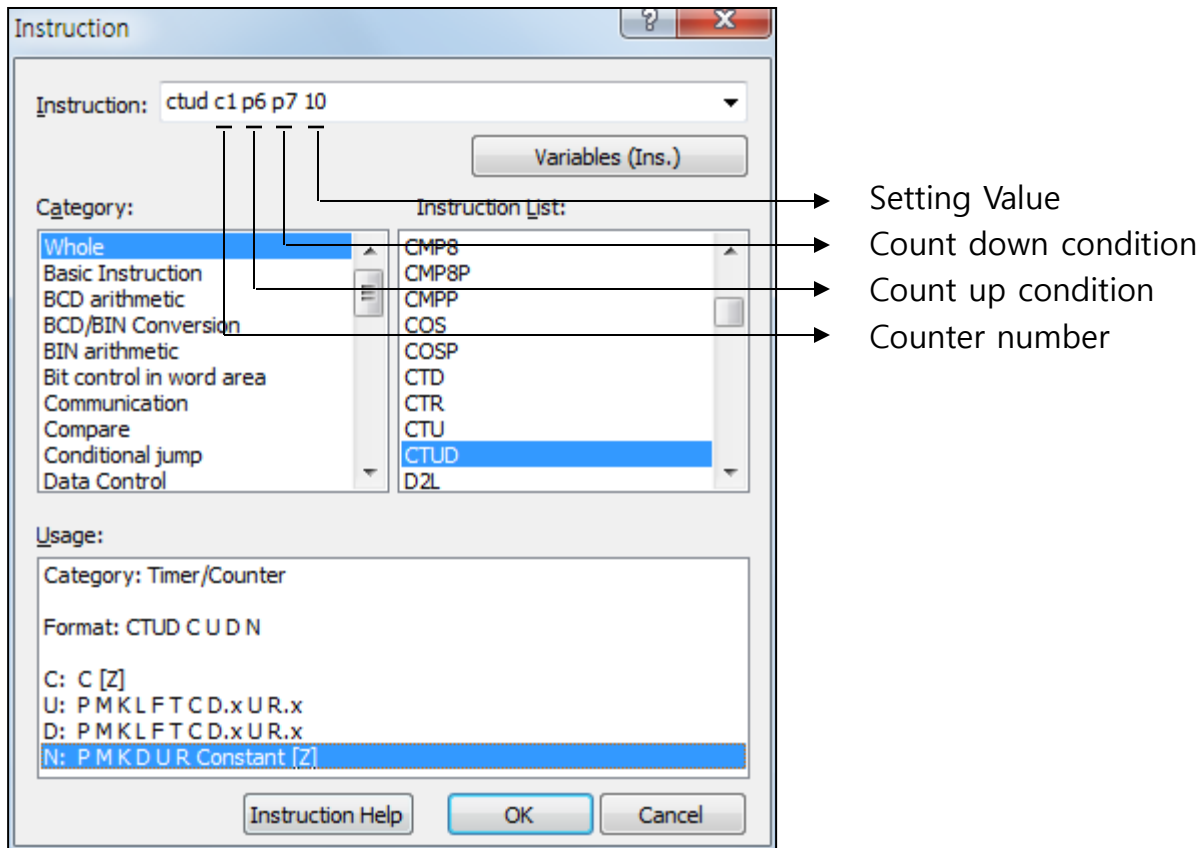
③ Counter Editing Procedure(CTU, CTD, CTR)

- 1) Edit condition and call Function/FB like instruction editing.
- 2) Edit in order of counter function, counter number and setting value in 'Instruction' item. If setting value is to be varied, allocate one word size device in setting value item.



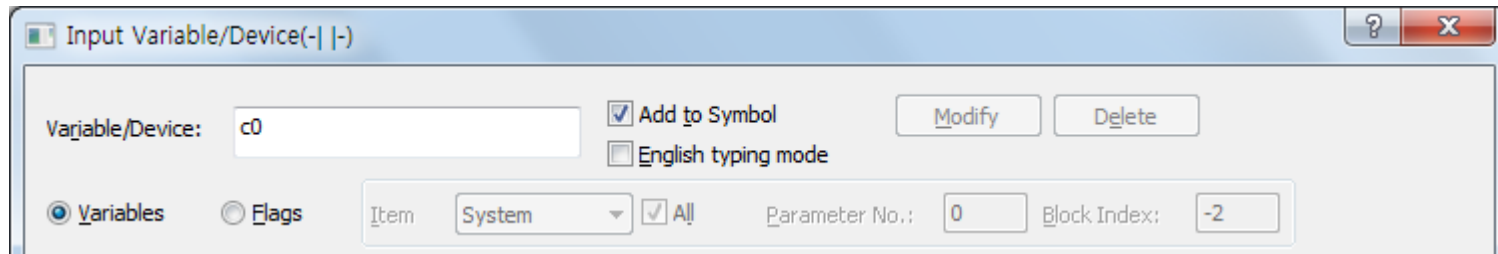
4. XG5000

- 3) When CTUD counter is edited, condition must be 'Always ON' flag(F00099) and operands are counter number, count up and down conditions and setting value.

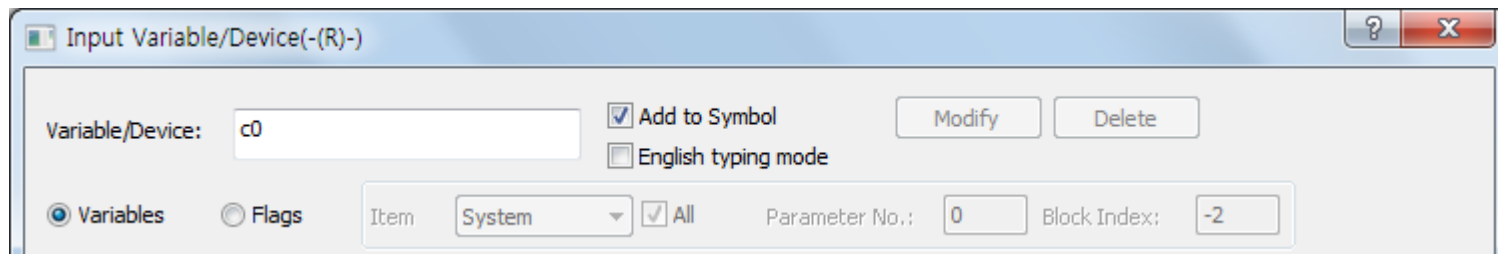


4. XG5000

4) To use output of counter, use contact of which device is counter number.

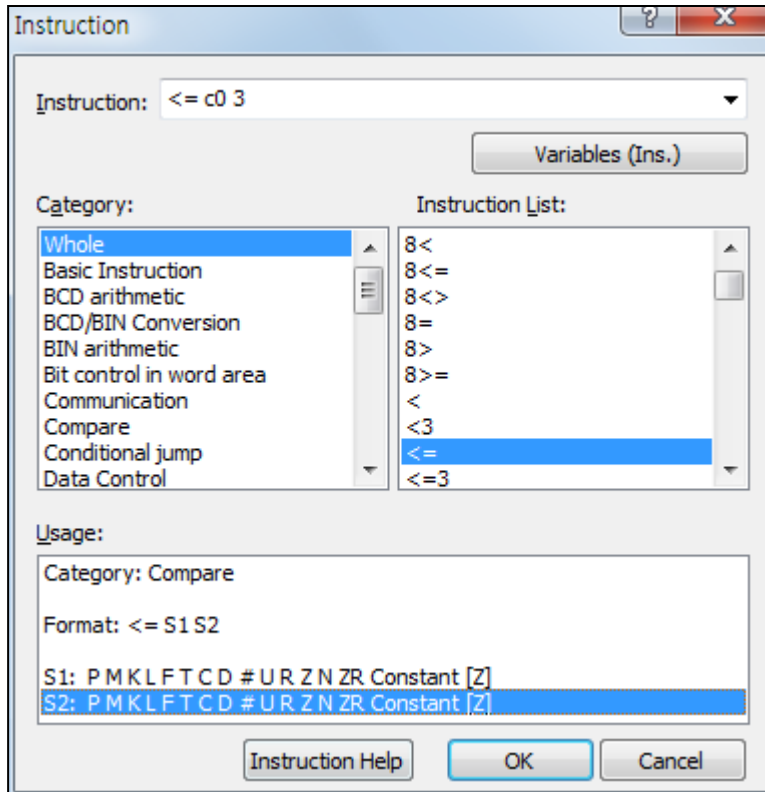


5) To reset counter, edit reset coil of which device is counter number to be reset.



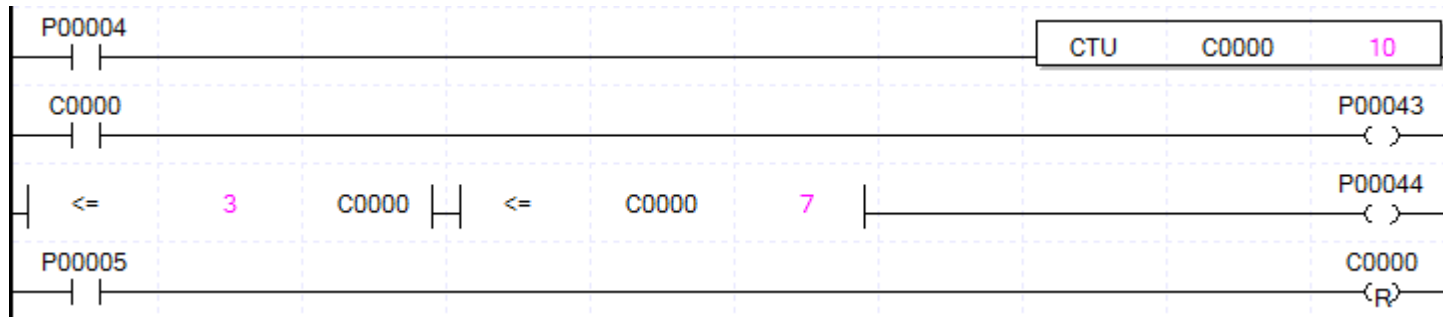
4. XG5000

6) To use current value of counter, use counter number for operand of instruction of which data size is one word.

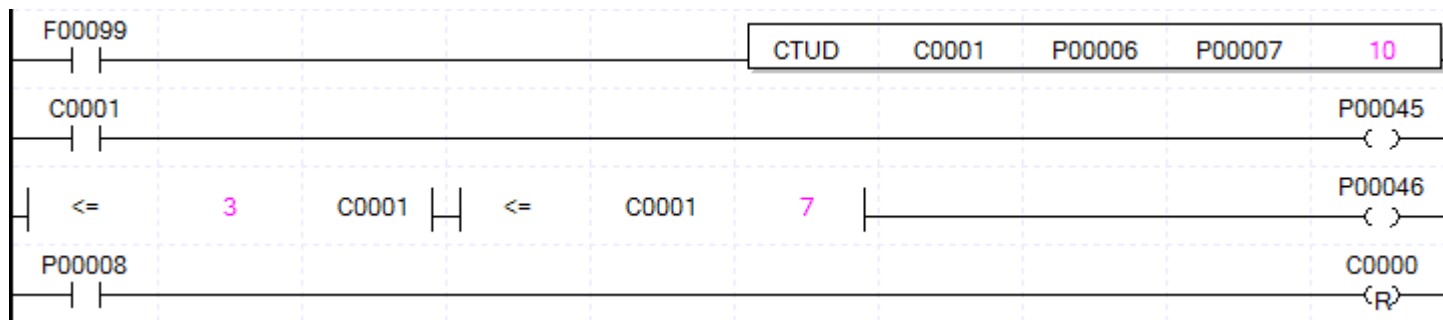


4. XG5000

7) Program example for CTU counter



8) Program example for CTUD counter



4. XG5000

4.5 Downloading

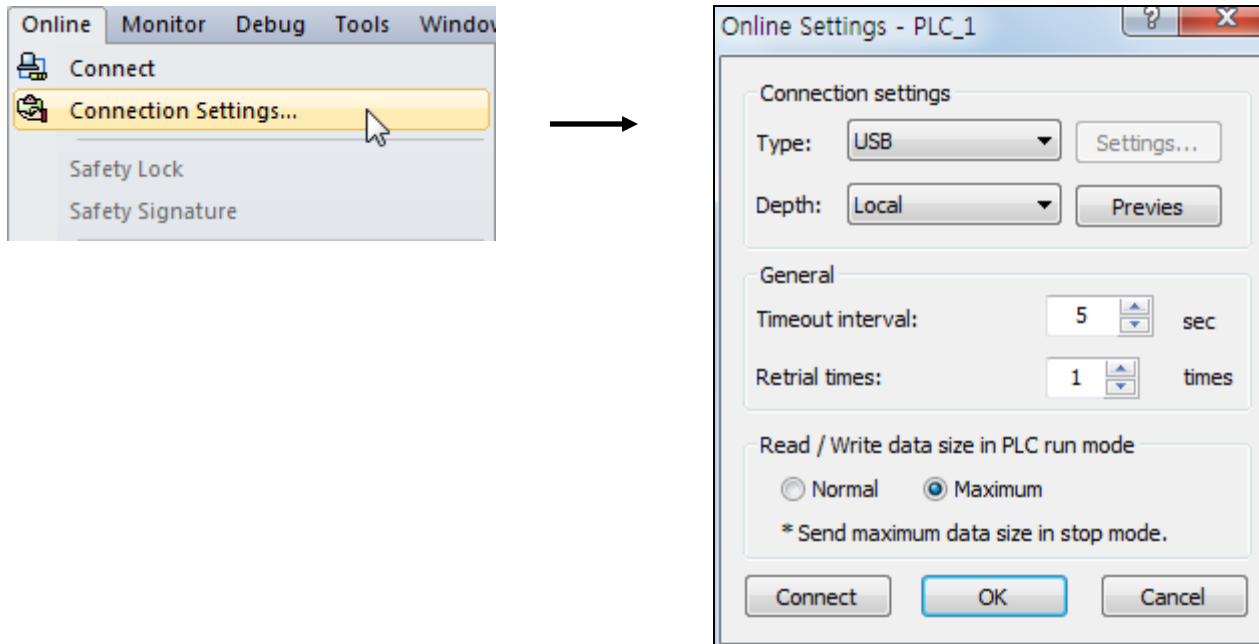
Writing programs, parameters to PLC is downloading. Comments can be included or excluded depending on user's decision.

4.5.1 Downloading Procedure

1) Connection

① Connection setting

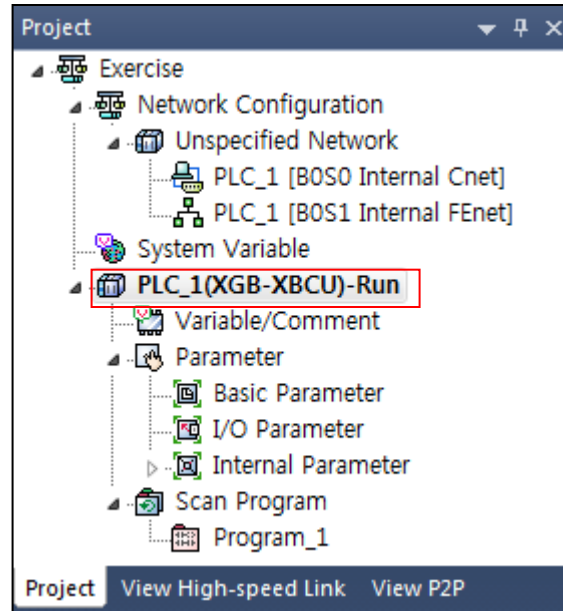
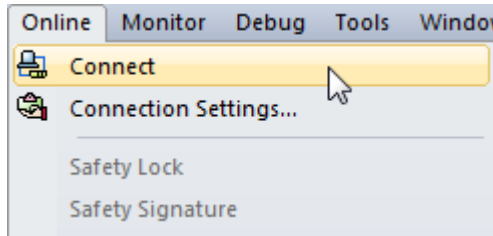
Connection between computer and PLC must be established to download project items. For successful connection, connection setting appropriate to actual connection must be assigned. Connection setting can be assigned in 'Connection Settings' item in Online menu. For connection, refer to 4.4.2 verse.



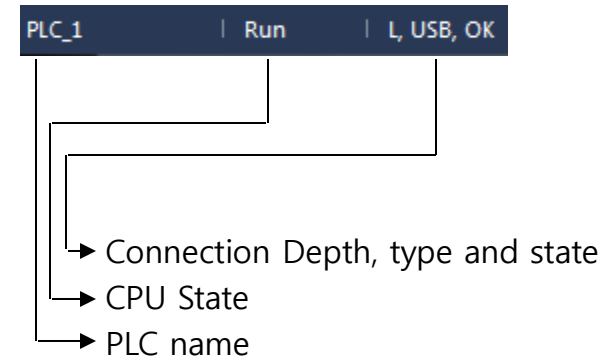
4. XG5000

② Connection

Connection will be established when 'Connect' is selected. When connection is established PLC status will be displayed in project window and status bar.



Project window

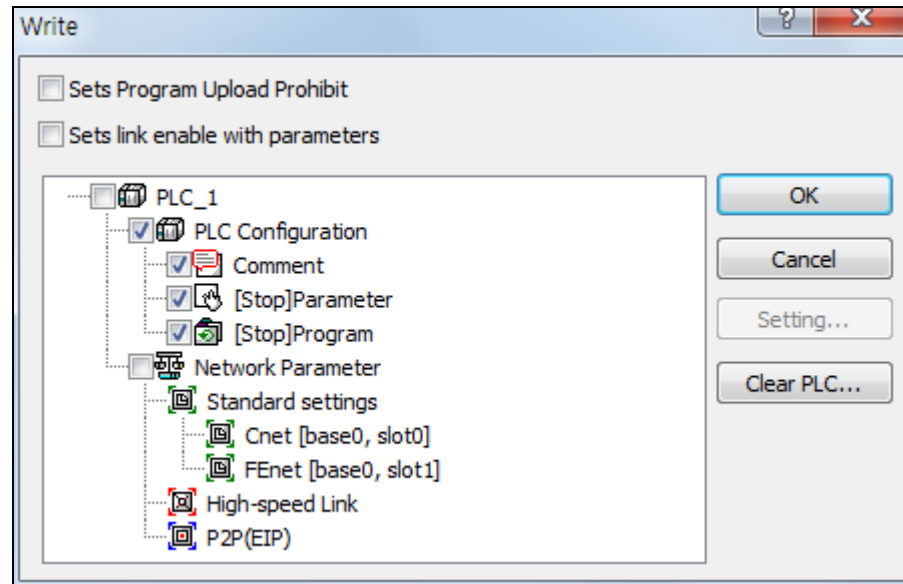
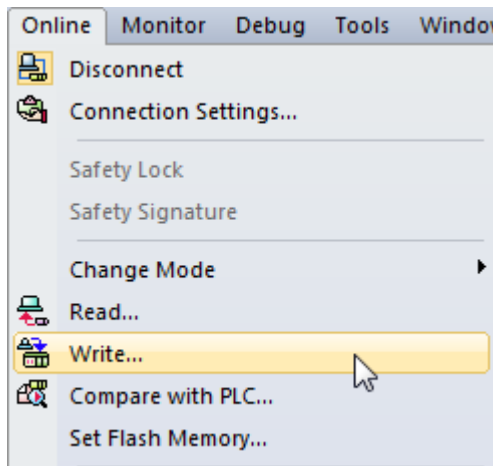


Status bar

4. XG5000

③ Download

'Write' in 'Online' menu is selected, selection items to be downloaded window will be displayed.

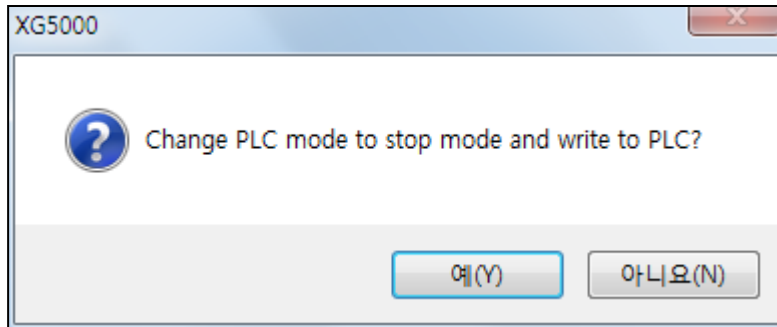


- 1) Sets Program Upload Prohibition: This option is checked when program is downloaded, the program in the PLC cannot be read with anyway.
- 2) Sets link enable with parameters*: High speed link or P2P communication is set and downloaded, link must be enabled to start communication. When this option is checked and High speed link and/or P2P parameter is downloaded, the communication will start automatically.
- 3) Clear PLC: This button is enabled when PLC is stop mode. Generally, 'Clear PLC' is needless because all items in PLC except the data in latch area will be cleared when downloading is executed. To clear the data in latch area, 'Clear PLC' can be used.

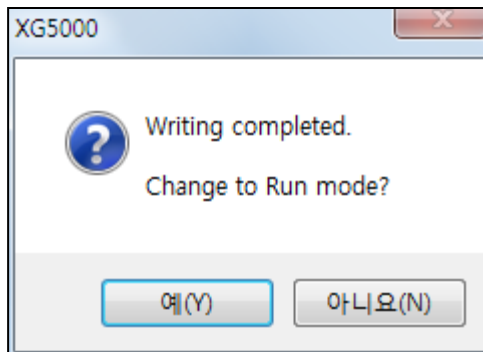
* Link can be enabled in 'Communication module setting' in Online menu if 'Sets link enable with parameters' is not checked when parameter is downloaded.

4. XG5000

- 4) Because downloading while PLC is running is not possible, a message window which ask to permit to change PLC to stop mode will be displayed when downloading is executed while PLC is running.



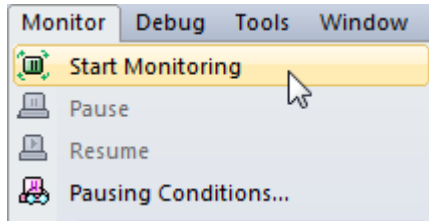
- 5) When downloading is completed, a message window which ask to permit to change PLC to Run mode will be displayed when downloading is executed while PLC is running.



4. XG5000

4.6 Monitoring

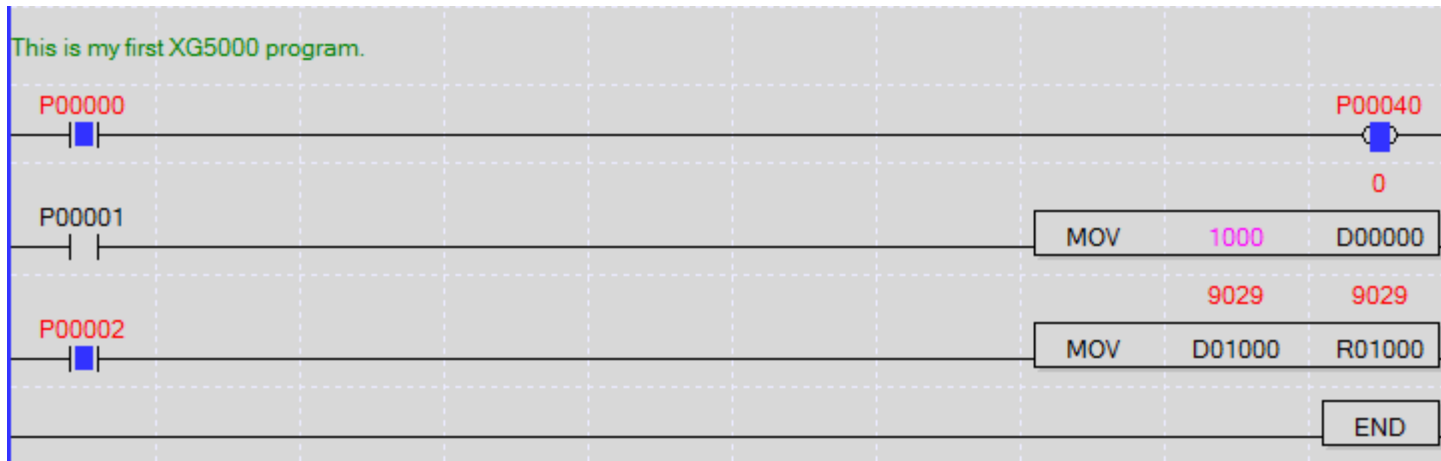
XG5000 supports many kinds of monitoring functions. Monitoring starts when 'Start Monitoring' in Monitor menu is selected.



4.5.1 Monitoring Functions

1) Program Monitoring

Turned ON or OFF state for bit devices and numeric data for word devices used in program are displayed in program window when monitoring starts.

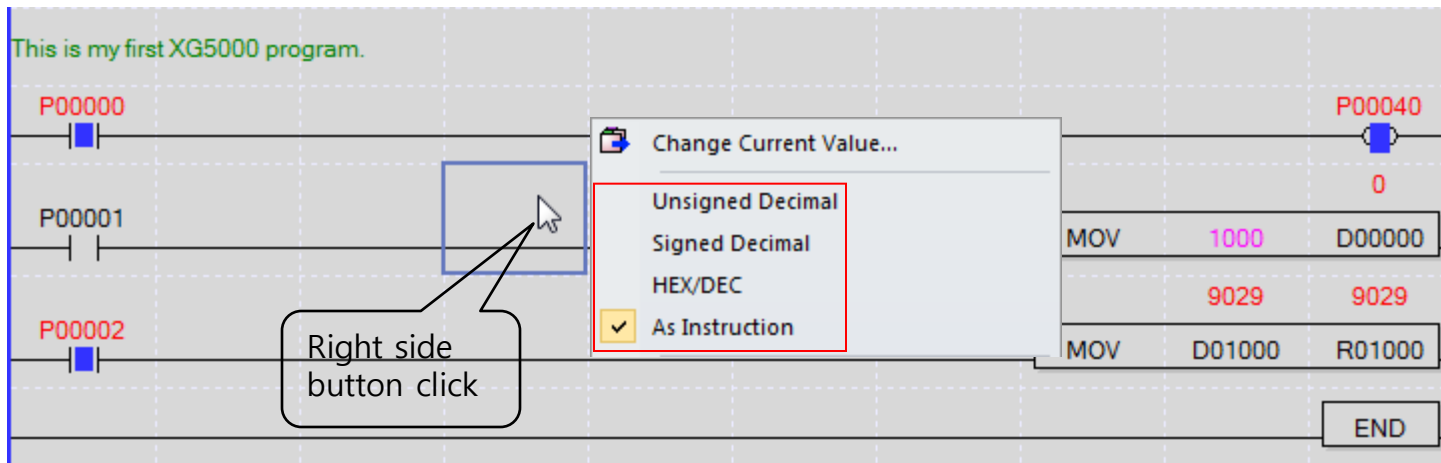


4. XG5000

① Displaying data type change

The type of numeric data displayed in program window can be changed between hexa-decimal, signed decimal, unsigned decimal and 'As instruction'. When 'As Instruction' is selected, the data will be displayed of which data type is instruction driven type.

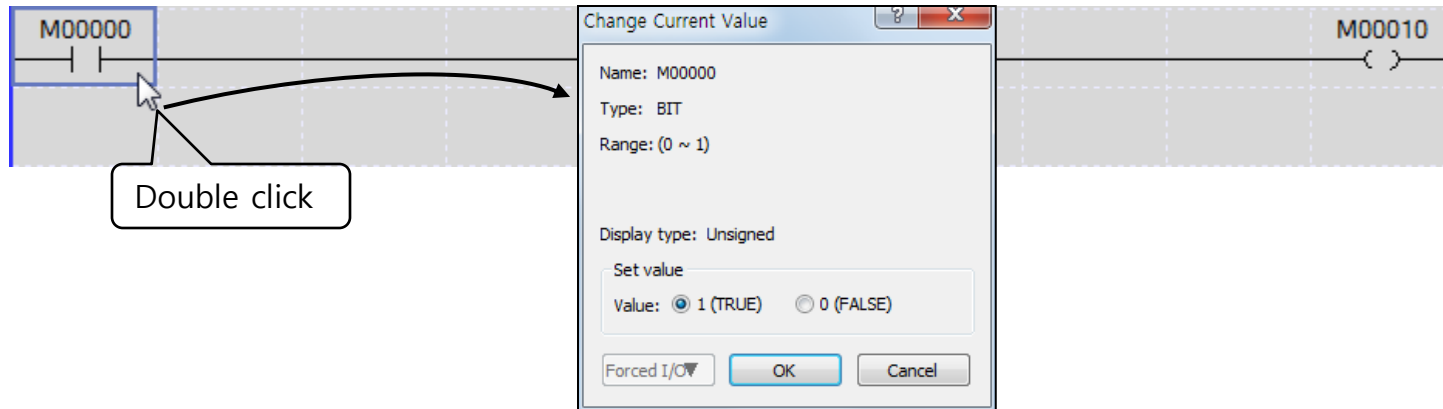
When mouse cursor is in program window and right side button of mouse is clicked, a pop-up window will be displayed. In the pop-up window, displaying data type can be selected.



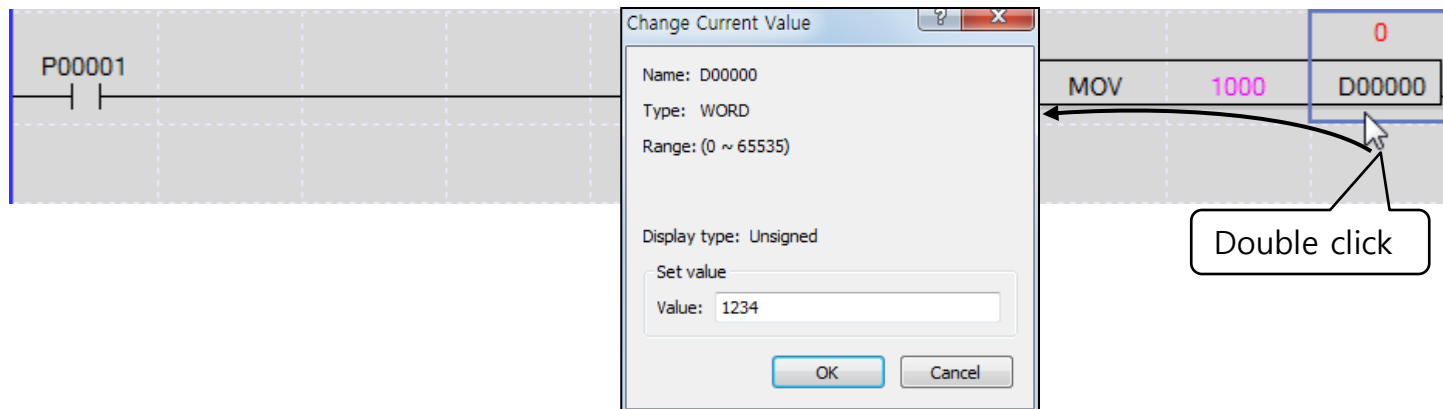
4. XG5000

② Internal bit state change

The state of internal bit used with contact can be changed. *



③ Internal word device value change



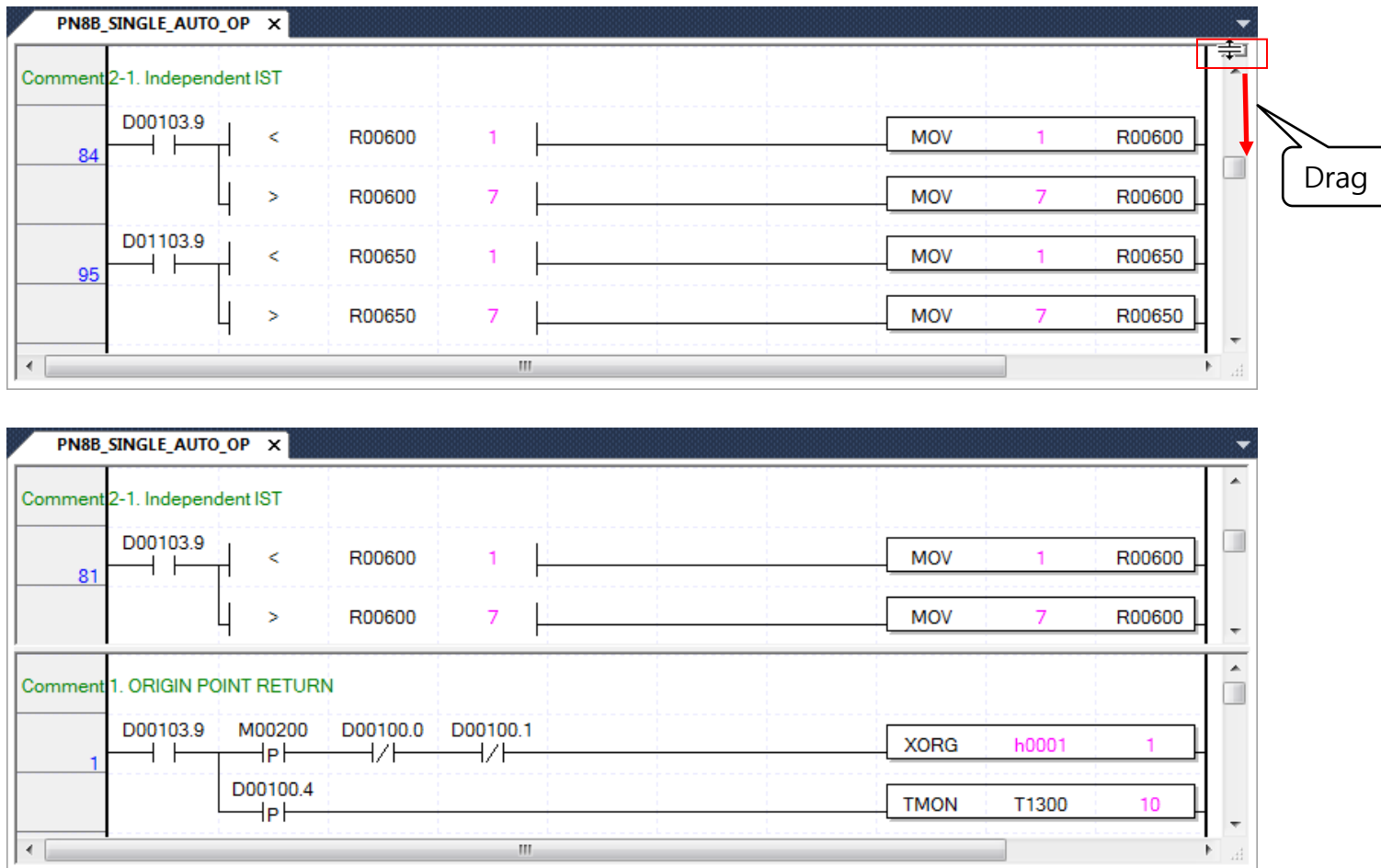
* The state of internal bit used with coil cannot be changed.

* If PLC is writing data to selected device, data will not be changed although data is written by XG5000.

4. XG5000

④ Program window Division

Program window can be divided into two window.

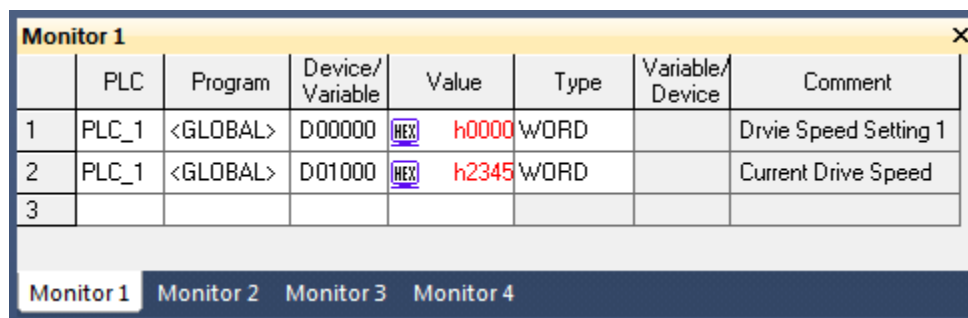
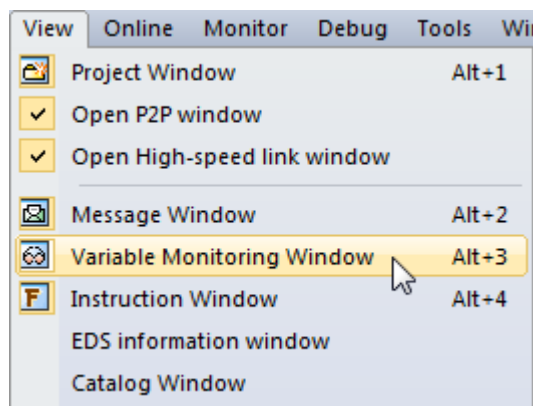


* Editing program is possible although program window is divided.

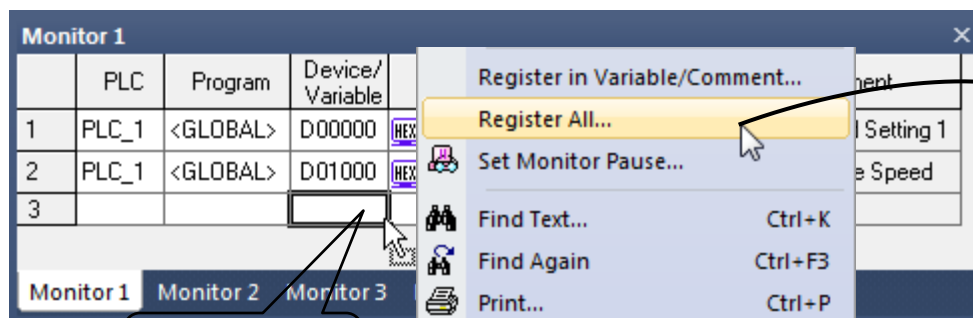
4. XG5000

2) Variable monitoring window

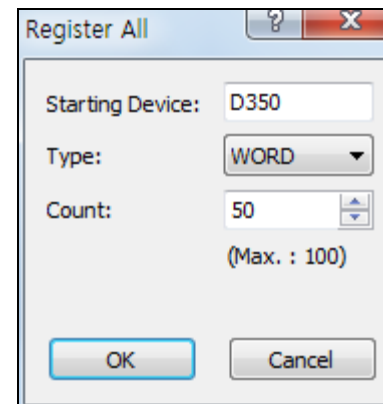
Device not displayed in program can be monitored with variable monitoring window. Variable monitoring window will be displayed when 'Variable Monitoring Window' in 'View' menu is selected. Changing displaying data type and value is possible in variable monitor window.



If devices to be monitored are continuous address devices, maximum 100 continuous address devices can be registered by one operation called 'Register All'.



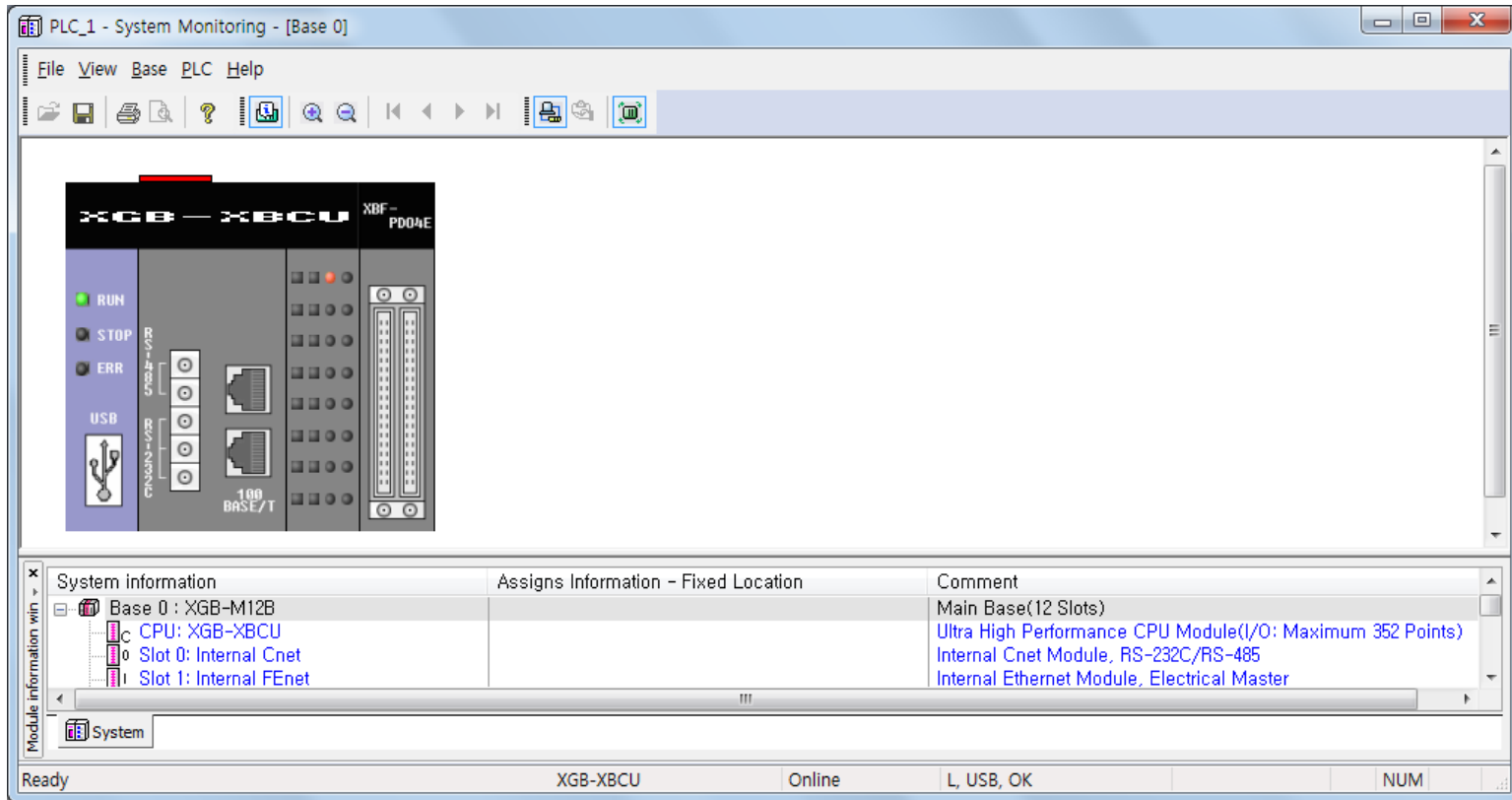
Right side
button click



4. XG5000

3) System Monitoring

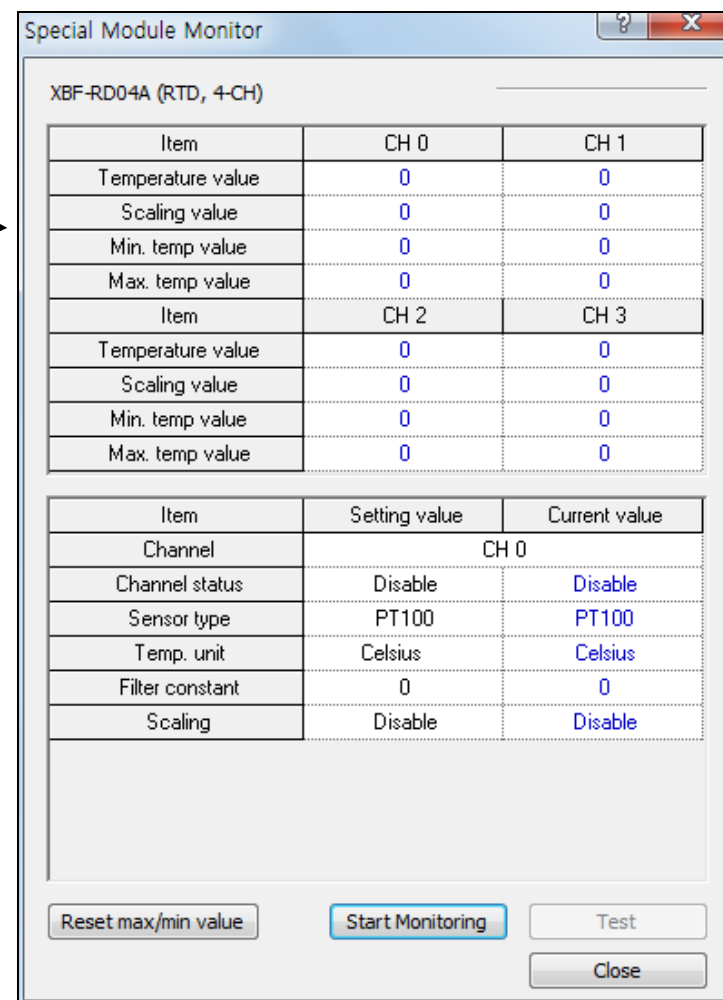
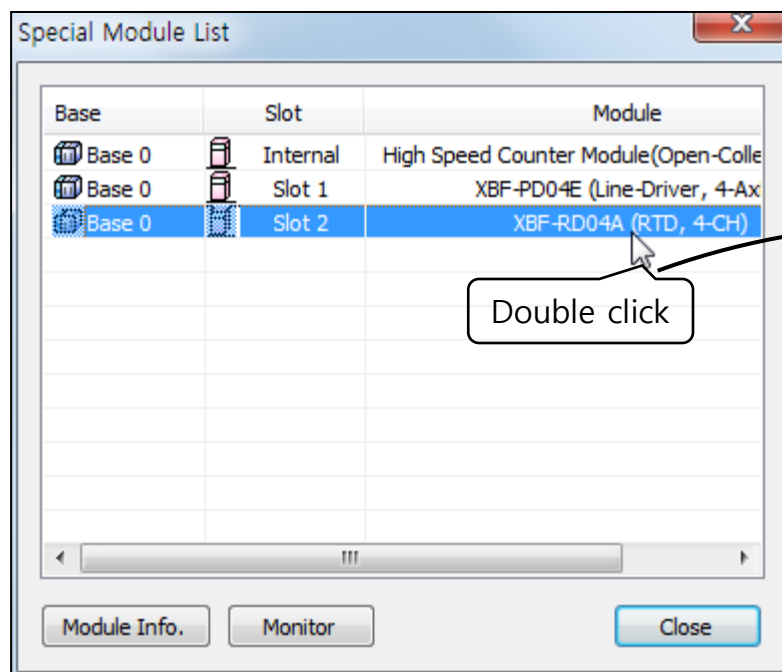
System Monitoring displays outline of system configuration and operating status.



4. XG5000

5) Special Module Monitoring

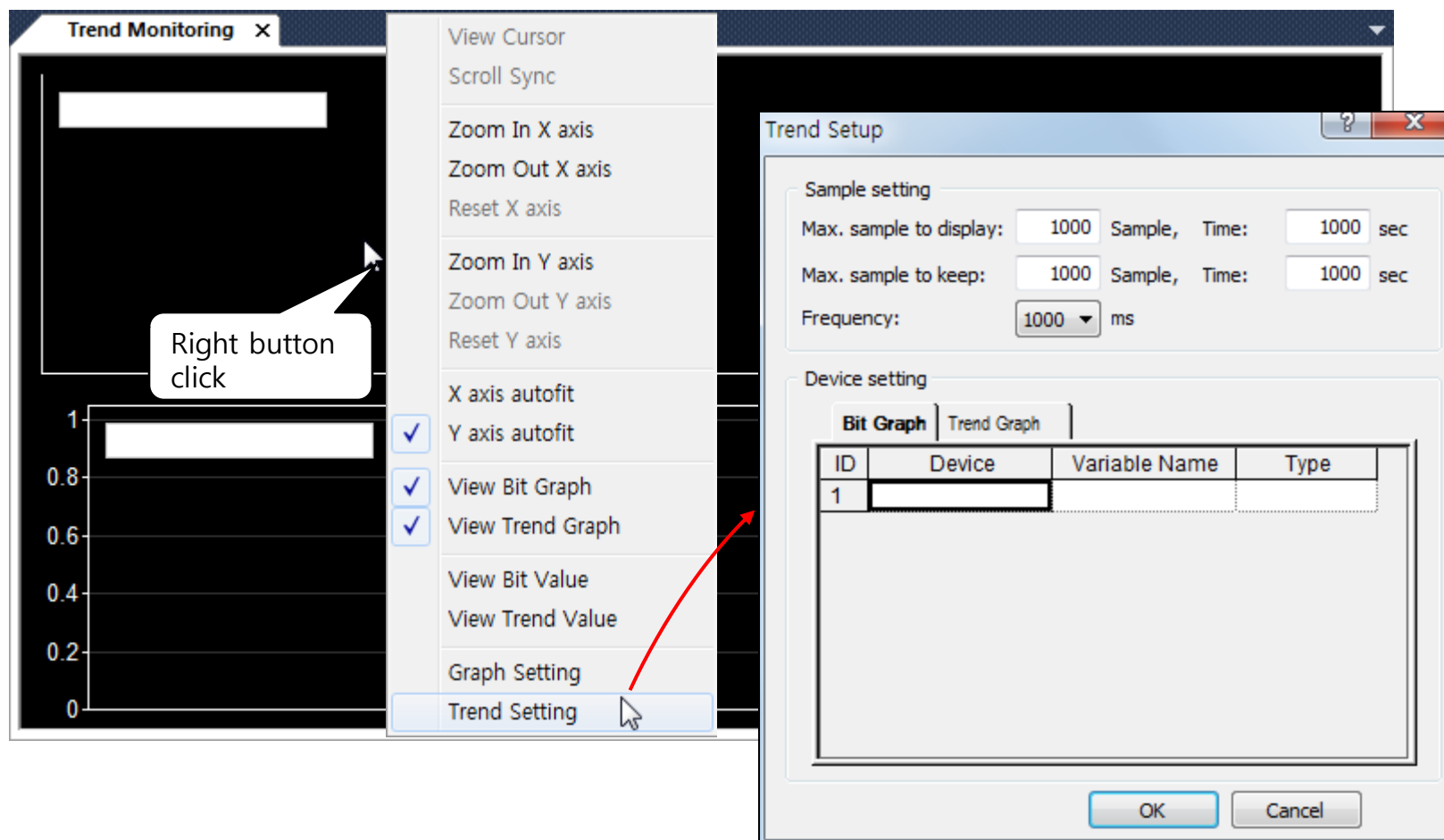
The operation of special function module can be set up and monitored with 'Special Module monitoring.



4. XG5000

6) Trend Monitoring

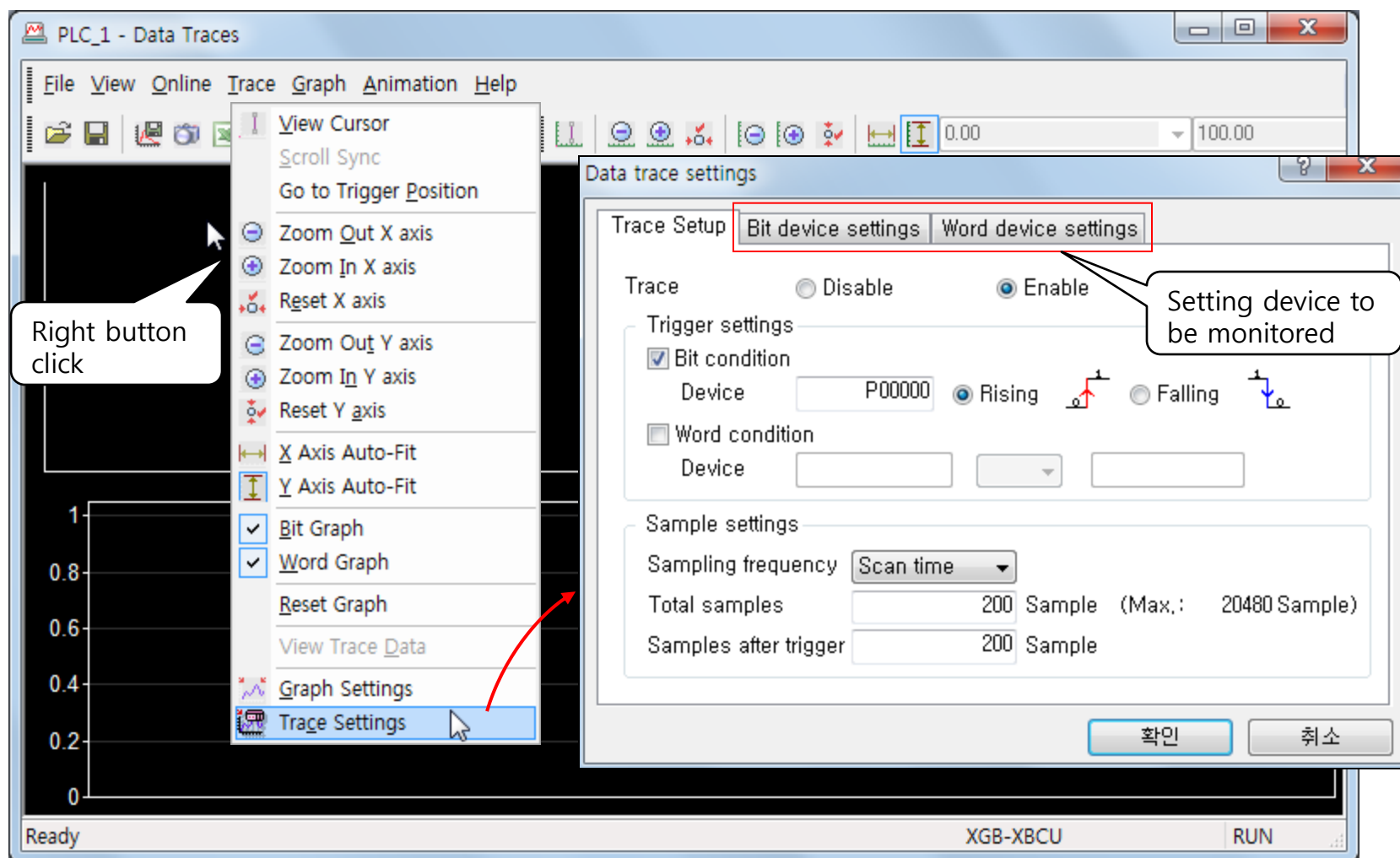
The change of data according to time change can be displayed with trend monitoring.



4. XG5000

7) Data Trace

The data when an event occurs can be monitored with Data Trace. After event occurs, data will be captured every assigned interval. Because, different from trend monitoring, captured data is stored in CPU, the minimum data capturing interval is scan time. The captured data is read by XG5000 and displayed. The size of storage for data trend is 128 KB.



4. XG5000

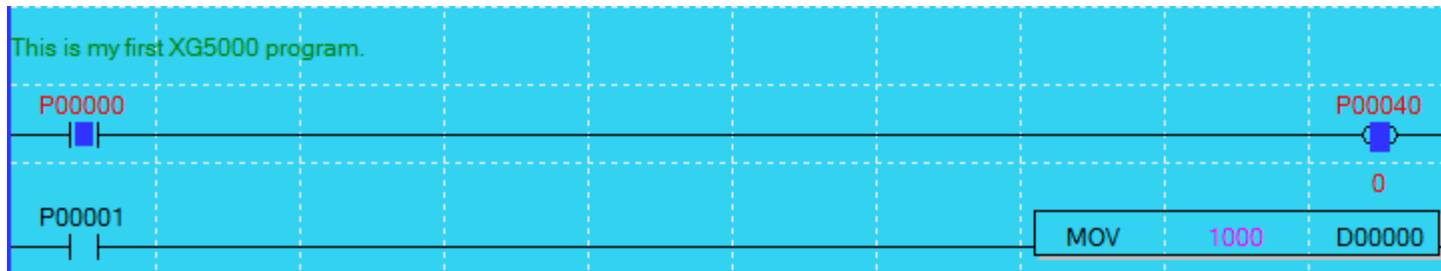
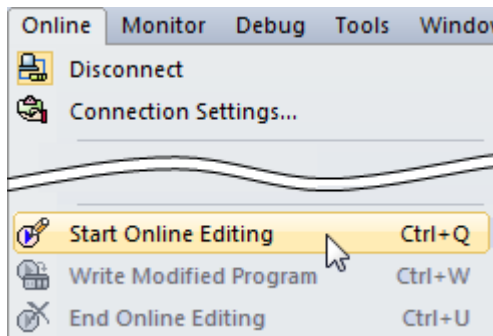
4.7 Online Editing

PLC program can be modified while PLC is running. But parameters cannot be modified and only one program block can be modified at a time. If parameters except network parameter is modified, PLC must be stop mode to download the modified parameter. Network can be downloaded while PLC is running.

4.7.1 Online Editing Procedure

1) Start Online Editing

When 'Start Online Editing' in 'Online' menu is selected, the background color of program window will be changed. At this moment, online editing is possible.

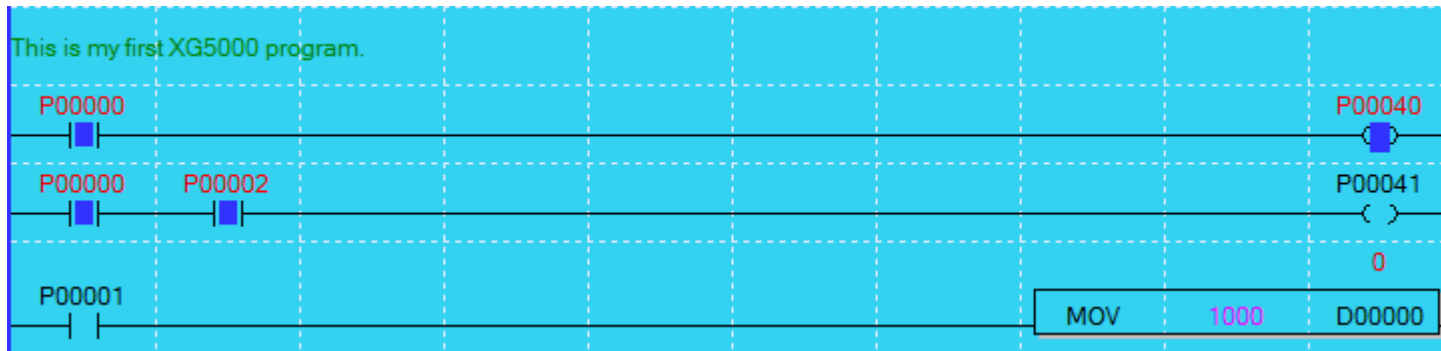


- * Short cut key for 'Start Online Editing' is CTRL + Q.
- * Monitoring is possible while online editing is executing.
- * The background color can be modified in 'Options' in 'Tools' menu.

4. XG5000

2) Program modification

All kinds of program edition is possible for one program. While program is edited, although a program for a line is completed, PLC will not execute modified program. In the second line program below, although the conditions are satisfied, output coil, P41, is not turned on because PLC doesn't executed modified program.



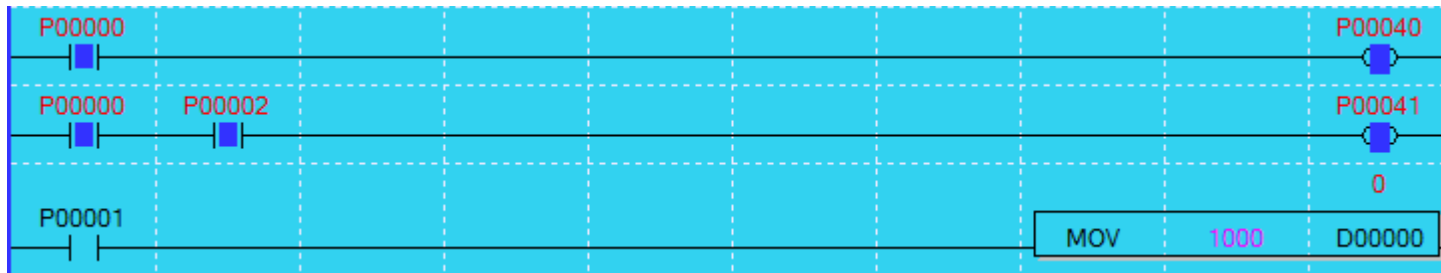
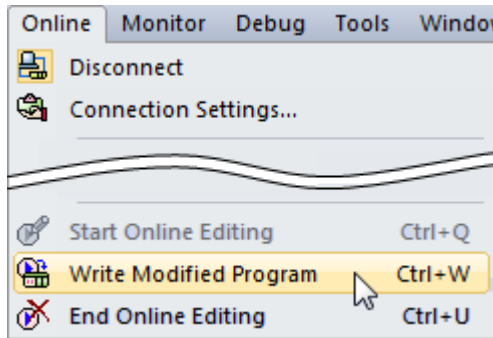
4. XG5000

3) Write Modified Program

Program modification is completed, the modified program must be written to PLC to be executed by PLC.

XG5000 will check program prior to downloading. If error is in program, XG5000 will report error and writing stop writing.

When writing is completed successfully, PLC will execute the modified program.

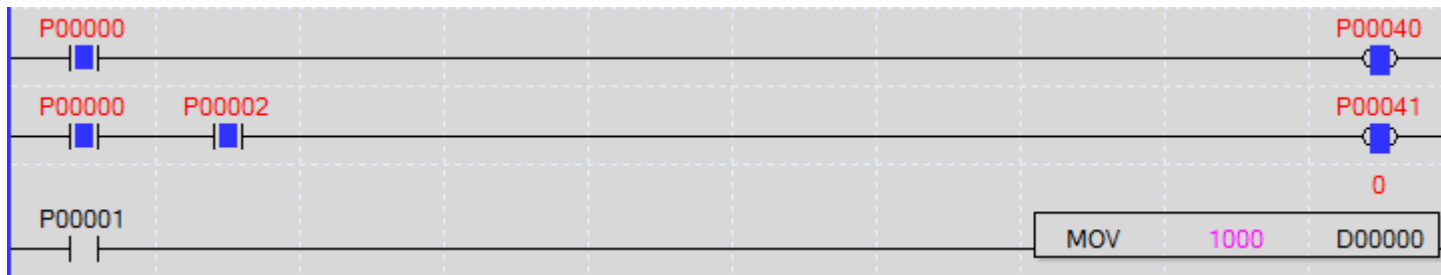
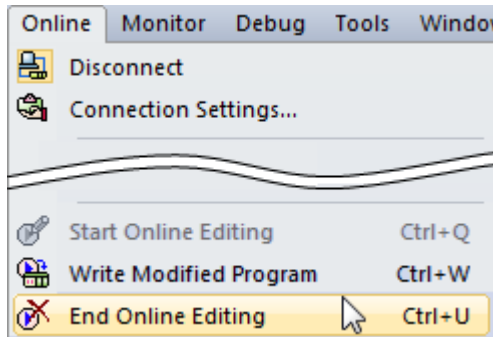


* Short cut key for 'Write Modified Program' is CTRL + W.

4. XG5000

4) End Online Editing

When online editing is completed, it's better to When 'End Online Editing' is selected, the background of program window will return to original color.



* Short cut key for 'End Online Editing' is CTRL + U.

* When program is modified and written to PLC in online editing mode, the modified program will not be saved in computer. To save the modified program in computer, 'Save Project' or 'Save As' in 'Project' menu must be selected.