

MASTER-K120S

Programmable Logic Controller

Economic type

■ Features

High-performance and various block type

- Economic type: 10/14/20/30 points
(10/14 points: 2points built-in Analog Timer)
- Standard type: 20/30/40/60 points
- Various expansion modules: input, output, mixed modules
- P area extended for SMART I/O application (P000~P63F)
- High-speed processing speed: 0.1 μ s/step (standard type)
- Battery-less backup
 - Program backup: EEPROM backup while online editing
 - Data backup: Super capacitor
- Various input handling: Input filter, pulse catch

Enhanced communication functions

- Built-in RS-232C (Ch0) and RS-485 (Ch1) support ⁽¹⁾
- Transmitting data monitoring support: KGLWIN
- Various option modules
 - Cnet (RS-232C, RS-422) Fnet/Rnet (master module)
 - Profibus-DP/DeviceNet (slave module)



■ Specifications

Item		Specifications				Remark
		K7M-DR10UE (DC)	K7M-DR14UE (DC)	K7M-DR20UE (DC)	K7M-DR30UE (DC)	
Operation method		Cyclic execution of stored program, Time-driven interrupt, Process-driven interrupt				
I/O control method		Refresh method, Direct method by command				
Program language		Instruction list, Ladder diagram				
Number of instructions		Basic: 30, Application: 269				
Processing speed		0.1~0.9 μ s/step				
Programming memory capacity		10k steps				
I/O points	Input	6	8	12	18	
	Output	4	6	8	12	
Data area	P	P000~P63F				I/O relay
	M	M000~M191F				Auxiliary relay
	K	K000~K31F				Keep relay
	L	L000~L63F				Link relay
	F	F000~F63F				Special relay
	T	100ms: T000~T191 (192 points), 10ms: T192~T250 (59 points), 1ms: T251~T255 (5 points), Adjustable by parameter setting				Timer
	C	C000~C255				Counter
	S	S00.00~S99.99				Step controller
D	D0000~D4999				Data register	
Operation mode		Run, Stop, Pause				
Self-diagnostic function		Scan time, memory, I/O, and power supply error detection				
Data back-up method		Program: EEPROM, Data: Super-capacitor				
Max. expansion stage		Up to 2 stages (external memory or RTC module can be connected as 3rd expansion)				
Built-in function	Cnet I/F function	Dedicated protocol, MODBUS protocol, User-defined protocol, No protocol				RS-485 only in K7M-DR(10/14)UE
		RS-232C: 1 port				
	HSC	Speed	1-phase 2 channels: 10kHz, 2-phase 1 channel: 5kHz			
		Mode	4-different counter modes: 1-phase operation mode, 2-phase CW/CCW mode 1-phase pulse+direction mode, 2-phase multiplication mode			
		Additional function	Internal/external preset, Latch counter, RPM, Comparison output			
	Pulse catch	Minimum pulse width: 50 μ s (4 points)				
	External interrupt	50 μ s (4 points)				
Input filter	0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)					

¹ In case of K7M-DR10UE (DC) and K7M-DR14UE (DC), you are not able to use built-in RS-232C/485 at the same time. When you want to use built-in Cnet, you have to select either built-in RS-232C (Cnet dip switch on) or built-in RS-485 (Cnet dip switch off). In these two types, if you are going to use Cnet I/F module, you cannot use any built-in Cnet channels while built-in Cnet dip switch is on.

² In other economic types, you are not supposed to use built-in RS-232C and Cnet I/F module at the same time. When you turn off Cnet dip switch, you can use Cnet I/F module.

Standard type

■ Features

Powerful built-in functions

- High-speed counter: 32-bit signed operation,
 - Counter range: -2,147,483,648 ~ 2,147,483,647
 - Function: ring counter, latch counter, comparison (equal/zone/task), RPM
- Positioning function (DRT/DT type)
 - Control axis: 2 axes (100kHz)
 - Operation method: single, repeat
 - Operation mode: end, keep, continuous
 - Additional functions: return to origin, JOG operation, PWM output
- PID operation function
 - Relay/PRC auto-tuning, SV ramp, delta MV, PWM output, position/velocity algorithm

Various expansion modules

- 7 Digital I/O modules: G7E-DR(08/10/20)A, G7E-TR10A, G7E-DC08A, G7E-RY(08/16)A
- 9 Analog I/O modules: G7F-ADHA(B/C), G7F-AD2A(B), G7F-DA2I(V), G7F-AT2A, G7F-RD2A
- 6 Comm. modules: G7L-CUEB(C), G7L-DBEA, G7L-PBEA, G7L-FUEA, G7L-RUEA
- 2 Option modules: G7E-RTCA, G7M-M256B

■ Specifications

Item		Specifications				Remark
		K7M-DR/DRT/DT20U(DC)	K7M-DR/DRT/DT30U(DC)	K7M-DR/DRT/DT40U(DC)	K7M-DR/DRT/DT60U(DC)	
Operation method		Cyclic execution of stored program, Time-driven interrupt, Process-driven interrupt				
I/O control method		Refresh method, Direct method by command				
Program language		Instruction list, Ladder diagram				
Number of instructions		Basic: 30, Application: 277				
Processing speed		0.1 μ s/step				
Programming memory capacity		10k steps				
I/O points	Input	12	18	24	36	
	Output	8	12	16	24	
Data area	P	P000~P63F				I/O relay
	M	M0000~M191F				Auxiliary relay
	K	K000~K31F				Keep relay
	L	L000~L63F				Link relay
	F	F000~F63F				Special relay
	T	100ms: T000~T191 (192 points), 10ms: T192~T250 (59 points), 1ms: T251~T255 (5 points), Adjustable by parameter setting				Timer
	C	C000~C255				Counter
S	S00.00~S99.99				Step controller	
D	D0000~D4999				Data register	
Operation mode		Run, Stop, Pause, Debug				
Self-diagnostic function		Scan time, memory, I/O and power supply error detection				
Data back-up method		Program: EEPROM, Data: Super-capacitor				
Max. expansion stage		Up to 3 stages (External memory or RTC module can be connected as 4th expansion)				
Built-in function	PID function		<ul style="list-style-type: none"> • Controlled by command, Relay and PRC auto-tuning • PMM/Manual output, Adjustable operation scan time • Anti-windup, SV ramp, Delta MV, Position and velocity algorithm 			
	Cnet I/F function		Dedicated protocol, MODBUS protocol, User-defined protocol, No protocol			
	HSC	Speed	1-phase 2 channels: 100kHz, 1-phase 2 channels: 20kHz 2-phase 1 channel: 50kHz, 2-phase 1 channel: 10kHz			
		Mode	4-different counter modes: 1-phase operation mode, 2-phase CW/CCW mode 1-phase pulse+direction mode, 2-phase multiplication mode			
		Additional function	Internal/external preset, Latch counter, RPM, Comparison output			
	POS	Function	No. of control axis: 2, Control method: PTP/speed control, Control unit: pulse Positioning data: 20/axis (operation step no. 1~20)			DRT/DT type only
		Positioning	<ul style="list-style-type: none"> • Position method: absolute/incremental, Operation method: Single/Repeat • Operation mode: End/Keep/Continuous, Address range: -2,147,483,648~2,147,483,647 • Speed: Max. 100kpps (Setting range: 5~100,000) • Acceleration/Deceleration method: Trapezoidal method 			
		Return to origin JOG	Origin detection: DOG/HOME (ON), DOG/HOME (OFF), approximate origin Setting range: 5~100,000 (high/low speed)			
	Pulse catch		Minimum pulse width: 10 μ s (2 points), 50 μ s (6 points)			
	External interrupt		10 μ s (2 points), 50 μ s (6 points)			
Input filter		0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)				

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Input/output specifications

Input part

Type		Main					
		K7M-DR10UE (DC)	K7M-DR14UE (DC)	K7M-DR20UE (DC)	K7M-DR30UE (DC)	K7M-DR40U (DC)	K7M-DR60U (DC)
Item							
Power supply		K7M-DR□□UE, K7M-DR□□U, K7M-DT□□U, K7M-DRT□□U: AC100~240V (50/60Hz), K7M-DR□□UE/DC, K7M-DR□□U/DC, K7M-DT□□U/DC, K7M-DRT□□U/DC: DC12/24V					
Input point		6	8	12	18	24	36
Insulation method		Photocoupler					
Rated input voltage		DC24V					
Rated input current		7mA (Standard type: P0~P3 [9mA], Economic type: P0~P1 [9mA])					
Operating voltage range		DC20.4V~28.8V (Fipple rate <5%)					
Max. simultaneous input		100% simultaneous ON					
On voltage/current		DC19V or higher/5.7mA or higher					
Off voltage/current		DCEV or lower/1.8mA or lower					
Input impedance		About 3.3kΩ (Standard type: P0~P3 [2.7kΩ], Economic type: P0~P1 [2.7kΩ])					
Response time	Off → On	0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)					
	On → Off	0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)					
Operating indicator		LED					

Relay output part

Type		Main					
		K7M-DR10UE (DC)	K7M-DR14UE (DC)	K7M-DR20UE (DC)	K7M-DR30UE (DC)	K7M-DR40U (DC)	K7M-DR60U (DC)
Item							
Output point		4	6	8	12	16	24
Insulation method		Relay insulation					
Rated load voltage/current		DC24V/2A (Resistive load), AC220V/2A (COS φ =1)/point, 5A/COM					
Min. load voltage/current		DC5V/1mA					
Max. load voltage		AC250V, DC110V					
Off leakage current		0.1mA or less (AC220V, 60Hz)					
Max. on/off frequency		1200 times/hr					
Surge absorber		None					
Service life	Mechanical	20 million times or more					
	Electrical	100,000 times or more (rated load voltage)					
Response time	Off → On	10ms or less					
	On → Off	12ms or less					
Operating indicator		LED					

Transistor/mixed output part

Type		Main			
		K7M-DT20U (DC)	K7M-DT30U (DC)	K7M-DT40U (DC)	K7M-DT60U (DC)
Item					
Output point	DT-type output point	8	12	16	24
	DRT-type Tr. output point	4	4	4	4
	DRT-type relay output point	4	8	12	20
Insulation method		Photocoupler (Tr. output points), Relay insulation (Relay output points)			
Rated load voltage		DC12V/24V			
Operation load voltage		DC10.2~26.4V			
Max. load voltage		0.5A/point (DRT type: P40~43[0.1A/point], DT type: P40~41 [0.1A/point])			
Off leakage current		0.1mA or less			
Voltage drop		Less than DC0.3V			
Surge absorber		Zener diode			
Inrush current		Less than 4A, 10ms			
Response time	Off → On	0.2ms or less (Tr)			
	On → Off	0.2ms or less (Tr)			
Operating indicator		LED			

* For the characteristics of relay outputs in a DRT-type module, please refer to the output part (relay) in the above.

Expansion specifications

■ Input part

Item	Type	Expansion			
		G7E-DC08A *	G7E-DR08A *	G7E-DR10A	G7E-DR20A
Input point		8	4	6	12
Insulation method		Photocoupler			
Rated input voltage		DC24V			
Rated input current		7mA			
Operating voltage range		DC20.4V~28.8V (Ripple rate <5%)			
Max. simultaneous input		100% simultaneous ON			
On voltage/current		DC19V or higher/5.7mA or higher			
Off voltage/current		DC6V or lower/1.8mA or lower			
Input impedance		About 3.3k Ω			
Response time	Off \rightarrow On	0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)			
	On \rightarrow Off	0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)			
Operating indicator		LED			

■ Relay output part

Item	Type	Expansion				
		G7E-RY08A *	G7E-RY16A	G7E-DR08A *	G7E-DR10A	G7E-DR20A
Output point		8	16	4	4	8
Insulation method		Relay insulation				
Rated load voltage/current		DC24V/2A (Resistive load), AC220V/2A (COS ϕ =1)/point, 5A/COM				
Min. load voltage/current		DC5V/1mA				
Max. load voltage		AC250V, DC110V				
Off leakage current		0.1mA or less (AC220V, 60Hz)				
Max. on/off frequency		1200 times/hr				
Surge absorber		None				
Service life	Mechanical	20 million times or more				
	Electrical	100,000 times or more (rated load voltage)				
Response time	Off \rightarrow On	10ms or less				
	On \rightarrow Off	12ms or less				
Operating indicator		LED				

■ Transistor output

Item	Type	Expansion
		G7E-TR10A
Output point		10
Insulation method		Photocoupler
Rated load voltage		DC12/24V
Operation load voltage		DC10.2~26.4V
Max. load voltage		0.5A/points, 4A/COM
Off leakage current		0.1mA or less
Inrush current		Less than 4A, 10ms
Voltage drop		Less than DC1.5V
Surge absorber		Clamp diode
Response time	Off \rightarrow On	2ms or lower
	On \rightarrow Off	2ms or lower
Operating indicator		LED

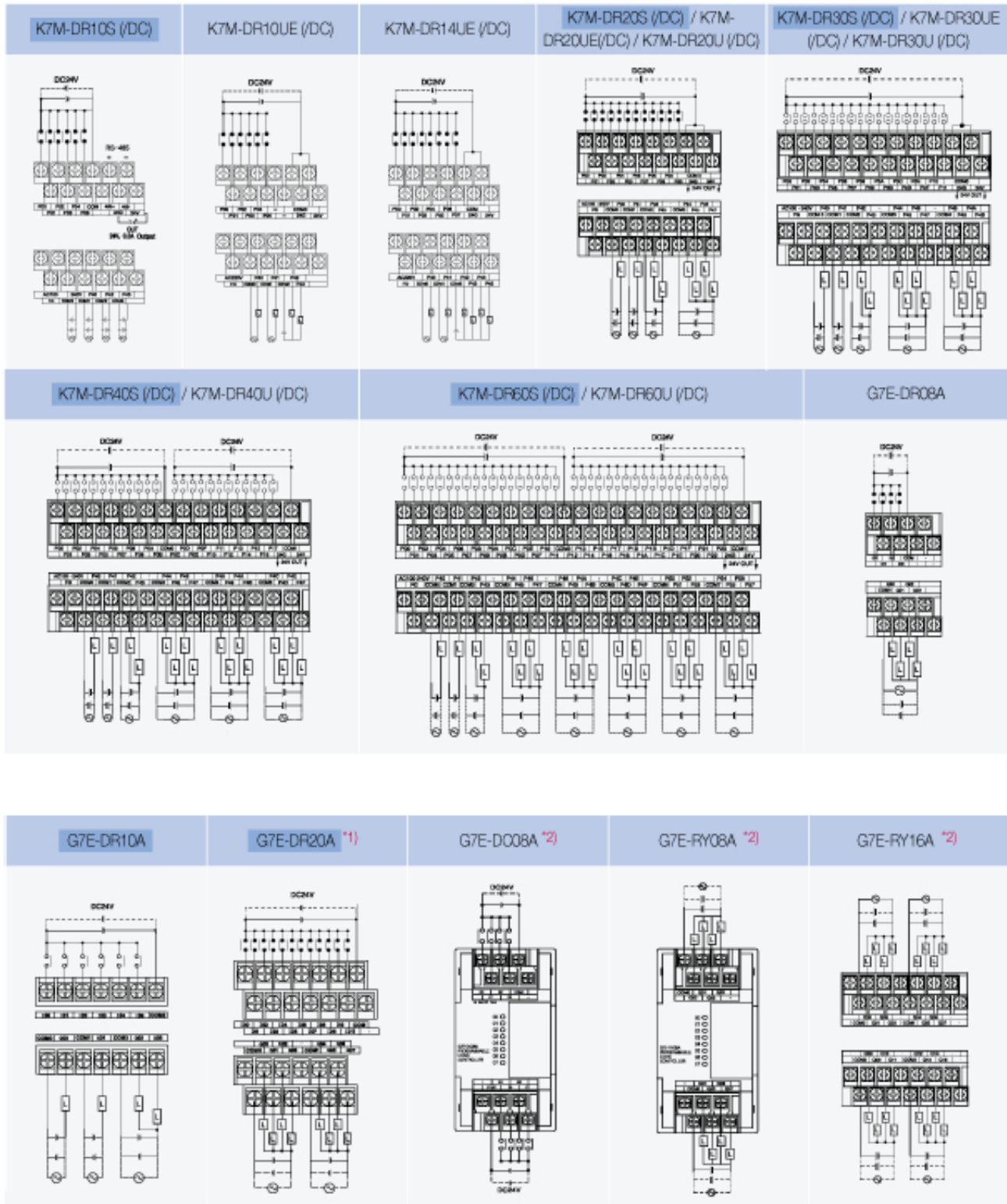
* Slim type

MASTER-K80S/120S wiring diagram

Programmable Logic Controller

Wiring diagram

■ Input/Output (Relay output) & Input/Output (Expansion)



*1) In case of K80S, its O/S should be 1.7 or later for its usage.

*2) K120S only

* All the /DC types need DC24V for their operation and they don't supply DC24V output.

*  stands for K80S series

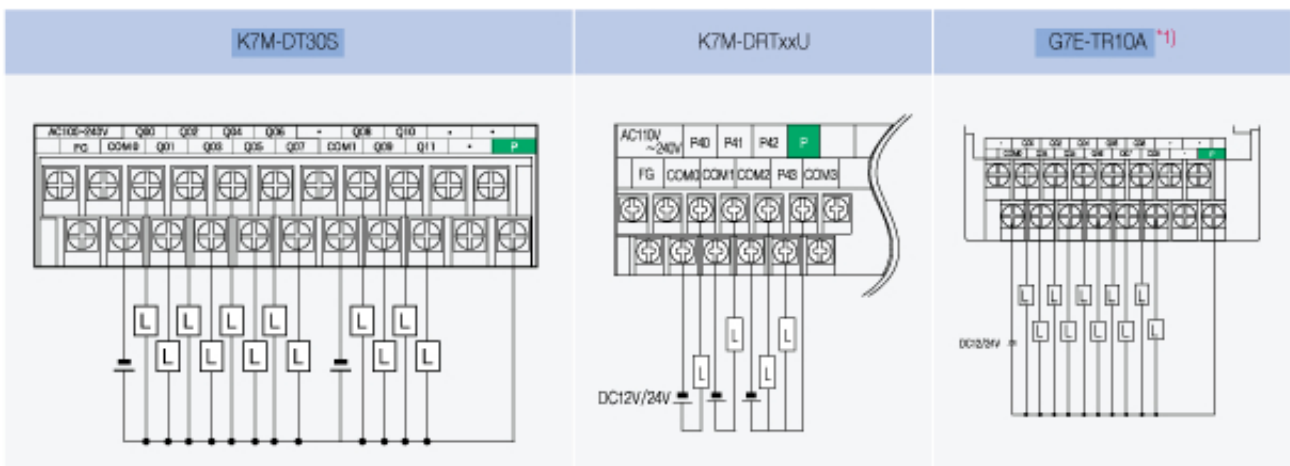
* Refer to user's manual for wiring.

■ K80S DT Output



■ K120S DT/DRT output

■ Output expansion unit



^{*)} In case of K80S, its O/S should be 1.7 or later for its usage.
^{*} Input terminal of transistor output modules is identical to that of relay output.
 You should connect DC24V to P terminal when you use an external power supply for load operation.
^{*} Refer to user's manual for wiring.

MASTER-K80S/120S expansion unit

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Analog input/output unit

Item		A/D • D/A Hybrid module		A/D Module	D/A Module		
		G7F-ADHA (C) *1)	G7F-ADHB *2)	G7F-AD2A (B) *3)	G7F-DA21 *4)	G7F-DA2V *2)	
Analog input	Input range	Voltage	DC 0~10V (Input resistance: More than 1 M Ω)				
		Current	DC 0~20mA (Input resistance 250 Ω) DC 4~20mA (Input resistance 250 Ω) Classified by parameter				
	Digital output	12 bits (0~4,000)					
	Voltage/current selection	Set by jumper pin for V/I selection upper part of product (Up: V, down: I)	Set by dip S/W for V/I selection on left side of product (Left: V, right: I)	Set by input terminal (When current input is used, short the V and I terminal)			
			V/I selected by KGLWIN parameter Short V and I terminal when current input is used.				
	No. of channel	2Ch/module		4Ch/module			
Absolute max. input	V	DC+12V		DC \pm 15V			
	I	DC+24mA		DC \pm 25mA			
Analog output	Output range	V	DC 0~10V (External load resistance 2 M Ω ~1 M Ω)		DC 0~20mA (Load resistance 510 Ω) DC 4~20mA (Load resistance 510 Ω)	DC 0~10mA (Load resistance 2 M Ω ~1 M Ω)	
		I	DC 0~20mA (External load resistance 510 Ω) DC 4~20mA (External load resistance 510 Ω) Classified by parameter				
	Digital input	12 bits (0~4,000)			12 bits (0~4,000)		
	Voltage/current selection	Separated from terminal					
	No. of channel	1Ch/module	2Ch/module	4Ch/module			
	Absolute max. output	V	DC +12V		DC +24mA	DC +12V	
I		DC +24mA					
Common	Max. resolution	V	DC 0~10V: 2.5 μ A (1/4000) DC 0~20mA: 5 μ A (1/4000)		DC 0~20mA: 5 μ A (1/4000)	2.5 μ A (1/4000)	
		I	DC 4~20mA: 6.25 μ A (1/3200)		DC 4~20mA: 6.25 μ A (1/3200)		
	Accuracy	\pm 0.5% (Full scale)			0.5%		
	Max. conversion speed	1ms/Ch + scan time (K120S), 2ms/Ch + scan time (K80S)			500 μ s*5) + scan time	1ms*5) + scan time	
	Insulation	Photocoupler insulation between I/O terminal and PLC power supply (Non-insulation between channels).					
	Connect terminal	9 points 2 terminals	8 points 2 terminals	2 points/16 points terminals	16 points terminal	8 points 2 terminals	
	Internal current consumption	20mA	20mA	100mA	20mA	15mA	
	External power supply	DC 21.6~26.4V					
	Weight	V	80mA	95mA	100mA	80mA	90mA
		I	240g	180g	300g	280g	160g

*1) Caution for wiring • 2-core, shielded twisted pair cable is recommended. Size: AWG22 (0.3mm) or higher.
• Wiring with high voltage or generation line, it makes induction failure which may cause malfunction or be out of order.

*2) Input voltage range of G7F-ADHC is DC 0~1V and the rest features are equal to those of G7F-ADHA.

*3) K120S only: G7F-ADHB, G7F-DA2V and G7F-RD2A

*4) G7F-AD2B is a slim type

*5) To use in K80S, CPU OS should be 1.7 or later.

*6) 500 μ s: G7F-DA21 is for all channels. So is 1ms in G7F-DA2V.

■ Slim type: G7F-ADHB, G7F-AD2B, G7F-DA2V, G7F-RD2A

■ G7F-RD2A

Item	Specifications	
Connectable RTD	• Pt100 (JIS C1640-1989, DIN 43760-1990) • JPt100 (KS C1603-1991, JIS C1604-1991)	
Temperature input range	• Pt100: -200~600°C (18.48 to 313.59 Φ) • JPt100: -200~600°C (17.14 to 317.28 Φ)	
Digital output	• Digital conversion value: 0~4,000 • Detected temperature value: -2000~6000 (10-time scaled up value)	
Burnout detection	Each of three wires at every channel has detection function	
Accuracy	\pm 0.5% (Full scale)	
Maximum conversion speed	40scan/module	
Number of temperature input device points	4 channels/module	
Insulation method	Photocoupler insulation between the input terminal and PLC power supply (Non-insulation between channels)	
Connection terminal block	Two 8-point terminal blocks	
Internal current consumption	25mA	
External power supply	V	DC 21.6~26.4V
	I	70mA
Weight	240g	

■ G7F-AT2A

Item	Specification
Channels	4
Output value range	8 bits (0 ~ 200)
Setting type	Setting by variable resistance
Accuracy of timer	\pm 2.0% (Accuracy about max. value)
Internal current consumption	50mA
Weight	200g

■ Data register table

• The table for special modules and their corresponding data register are as follows.

Data register	Expansion	Item						
		A/D • D/A Hybrid module		A/D Conversion module	D/A Conversion module		Analog timer	RTD input module
		G7F-ADHA	G7F-ADHB	G7F-AD2A	G7F-DA2I	G7F-DA2V	G7F-AT2A	G7F-RD2A
D4980	#1	CH0	CH0	CH0	CH0	CH0	CH0	CH0
		A/D value	A/D value	A/D value	D/A value	D/A value	A/T value	Temperature
D4981		CH1	CH1	CH1	CH1	CH1	CH1	CH1
		A/D value	A/D value	A/D value	D/A value	D/A value	A/T value	Temperature
D4982	#1	CH0	CH0	CH2	CH2	CH2	CH2	CH2
		D/A value	D/A value	A/D value	D/A value	D/A value	A/T value	Temperature
D4983		-	CH1	CH3	CH3	CH3	CH3	CH3
			D/A value	A/D value	D/A value	D/A value	A/T value	Temperature
D4984	#2	CH0	CH0	CH0	CH0	CH0	CH0	CH0
		A/D value	A/D value	A/D value	D/A value	D/A value	A/T value	Temperature
D4985		CH1	CH1	CH1	CH1	CH1	CH1	CH1
		A/D value	A/D value	A/D value	D/A value	D/A value	A/T value	Temperature
D4986	#2	CH0	CH0	CH2	CH2	CH2	CH2	CH2
		D/A value	D/A value	A/D value	D/A value	D/A value	A/T value	Temperature
D4987		-	CH1	CH3	CH3	CH3	CH3	CH3
			D/A value	A/D value	D/A value	D/A value	A/T value	Temperature
D4988	#3	CH0	CH0	CH0	CH0	CH0	CH0	CH0
		A/D value	A/D value	A/D value	D/A value	D/A value	A/T value	Temperature
D4989		CH1	CH1	CH1	CH1	CH1	CH1	CH1
		A/D value	A/D value	A/D value	D/A value	D/A value	A/T value	Temperature
D4990	#3	CH0	CH0	CH2	CH2	CH2	CH2	CH2
		D/A value	D/A value	A/D value	D/A value	D/A value	A/T value	Temperature
D4991		-	CH1	CH3	CH3	CH3	CH3	CH3
			D/A value	A/D value	D/A value	D/A value	A/T value	Temperature

• In case RTD input module, a digital conversion value for temperature is stored in the following data register.

Expansion	Temperature				Digital conversion value			
	CH0	CH1	CH2	CH3	CH0	CH1	CH2	CH3
#1	D4980	D4981	D4982	D4983	4780	D4781	D4782	D4783
#2	D4984	D4985	D4986	D4987	4784	D4785	D4786	D4787
#3	D4988	D4989	D4990	D4991	4788	D4789	D4790	D4791

- * You are not supposed to change offset/gain values; they are fixed
- * Analog signal for special modules is set as current when manufactured.
- * You are able to expand up to 3 stages.

MASTER-K80S/120S expansion unit

Programmable Logic Controller

Communication unit

■ Cnet modules (G7L-CUEB, G7L-CUEC)



Item		Specifications
Interface		G7L-CUEB: RS-232C (Modem), G7L-CUEC: RS-422/485
Communication mode	Dedicated mode	Supports 1:1, 1:N and high-speed link
	KGLWIN mode	Supports remote programming and mounting via KGLWIN
	Modbus mode	Supports master and slave function with Modbus protocol (ASCII, RTU)
	User-defined mode	Supports user-defined communication
Data structure	Data bit	7 or 8
	Stop bit	1 or 2
	Start bit	1 or 2
	Parity bit	EVEN/ODD/NONE
Synchronization		Asynchronous method
Transmission speed		1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 38,400 / 57,600bps
Setting method		Communication parameter setting in KGLWIN
Distance		Max. 15m (CUEB), Max. 500m (CUEC)
Max. number of stations		Max. 32 stations
Weight		180g

■ Fnet/Rnet module (G7L-FUEA/RUEA) *1)



Item		Specifications
Transmission speed		1Mbps
Communication	Segment	Max. 750m
	Repeater (Up to 6)	Max. 5.25km
Max. number of stations		Max. 64 stations
Setting method		Communication parameter setting in KGLWIN
Cable		Shielded twisted pair cable
Weight		220g

*1) Rnet is a dedicated protocol for LSIS SMART I/Os.

■ Pnet module (G7L-PBEA)



Item		Specifications
Network type		Profibus-DP (Slave)
Protocol		EN50170/DIN19245
Media access		Token passing & Poll
Transmission and speed		1200m (9.6-187kbps) / 400m (500kbps) / 200m (1.5Mbps) / 100m (3-12Mbps)
Max. Node	Network	127 stations
	Segment	32 stations
Interface		RS-485 (electric)
Setting method		Communication parameter setting in KGLWIN
Cable		Shielded twisted pair cable
Weight		210g

■ Dnet module (G7L-DBEA)

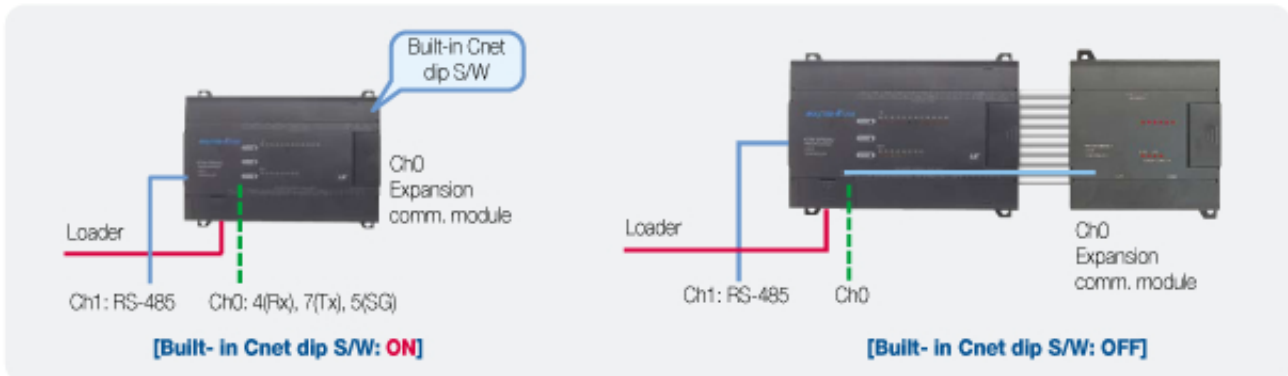


Item		Specifications			
Network structure		Trunk/drop line			
Protocol		Peer explicit message, Predefined explicit message Predefined I/O message (Poll, bit strobe, COS, cyclic)			
Max. extension & speed	Speed	Network distance	Drop cable	Total drop cable	
	500kbps	100m or less	6m or less	39m or less	
	250kbps	250m or less	6m or less	78m or less	
	125kbps	500m or less	6m or less	156m or less	
Channel		64 stations			
Diagnosis function		CRC error check/Scan list			
Setting method		Communication parameter setting in KGLWIN			
Cable		5 lines (signal 2 lines, power 2 lines, shield 1 line)			

* 1) In case of K80S, only 1 communication module is available and you are not able to use a communication module and built-in Cnet at the same time because they are set as CH0 in KGLWIN parameter. You are not able to connect a communication module to K7M-DR10S (VDC) and K7M-DT10S, which support either RS-232C or RS-485, and you can select a communication channel using a dip switch (built-in). If it is on, RS-232C is enabled and if it is off, RS-485 is activated.

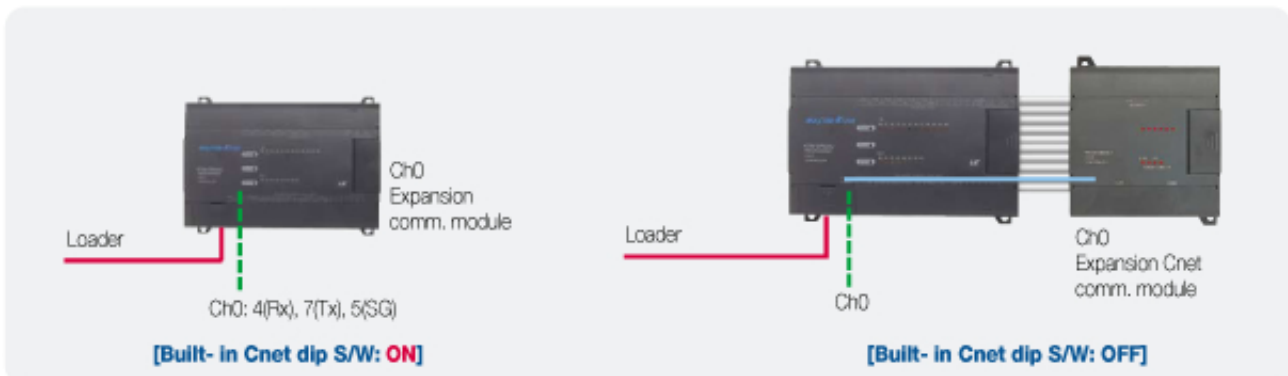
* 2) In case of K120S, only 1 communication module is available and you are not able to use a communication module and built-in RS-232C at the same time because they are set as CH0 in KGLWIN parameter. Besides you are able to use both CH0 and built-in RS-485 (CH1) simultaneously. For more information, refer to P1 and P14.

■ K120S standard type



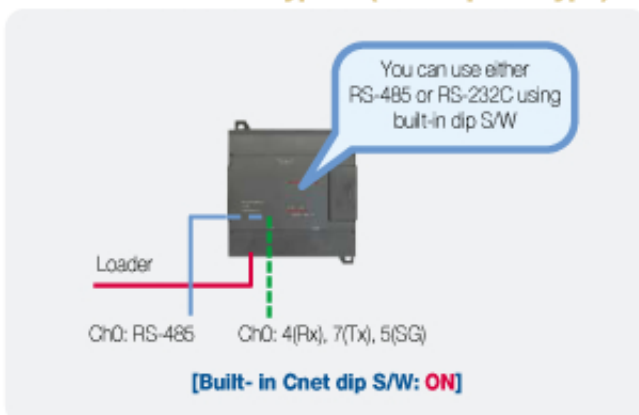
When built-in dip S/W is on, you are not supposed to use an expansion communication module while the built-in Cnet port is enabled, and if it's off, you can use an expansion communication module but the built-in Cnet port is disabled.

■ K120S economic type I



1. Only one channel (Ch0) for communication except the loader port is available in economic types.
2. When the built-in dip S/W is on, you are not supposed to use an expansion Cnet module while the built-in Cnet port is enabled, and if it's off, you can use an expansion communication module but the built-in Cnet port is disabled.

■ K120S economic type II (10/14-point type)



1. If the built-in Cnet dip S/W is on, you are able to use RS-232C (4, 7, 5 pins) as Ch0 and if it is off, RS-485 is enabled as Ch0.
2. With these modules you are not supposed to connect a modem to RS-232C for download/upload, monitoring or controlling. To use a dedicated/dial-up modem, you are required to use G7L-CUEB as expansion comm. module and before applying a modem, please contact LSIS.
3. You are able to use an expansion Cnet module when you do not use built-in Cnet (RS-232C/485) after turning off the built-in Cnet dip switch. In this case, no other device is connected to the built-in RS-485 port.

Block type PLC configuration

Programmable Logic Controller

■ System configuration for K10S1 and K80S

Item	System configuration
K10S1	Separate
K80S	<ul style="list-style-type: none"> • Available system (max. 3 units in total) • Digital I/O: max. 2 units • Analog I/O: max. 2 units • Analog timer: max. 3 units • Communication I/F: 1 unit

■ System configuration



K10S1



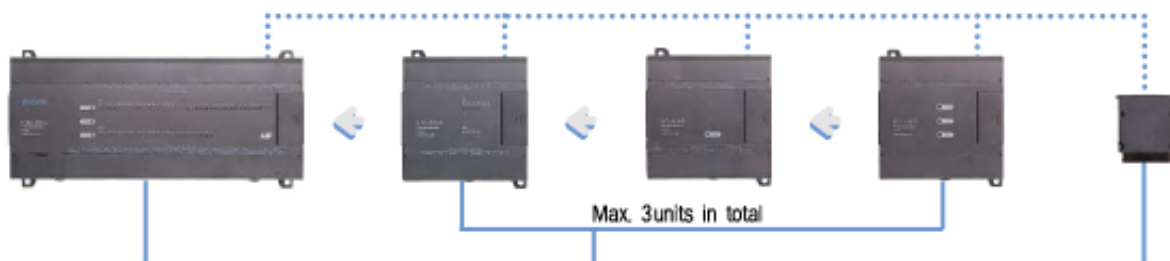
K80S



Option pack

* I/O assignment applies to digital expansion module. For example, if an analog module is used at the 1st expansion and digital I/O is used at the 2nd expansion, then, the input of 2nd expansion module is from P80 and the output is from P90. And I/O assignment of K120S and K80S is equal

■ System configuration (K80S)



Base unit

- Processing speed: 0.5 μ s
- Program capacity: 7k steps
- Type:

K7M-DR10S	K7M-DR10S/DC
K7M-DR20S	K7M-DR20S/DC
K7M-DR30S	K7M-DR30S/DC
K7M-DR40S	K7M-DR40S/DC
K7M-DR60S	K7M-DR60S/DC

- | | |
|-----------|-----------|
| K7M-DT10S | K7M-DT40S |
| K7M-DT20S | K7M-DT60S |
| K7M-DT30S | |

Expansion unit

- Digital I/O *1)
 - G7E-DR10A: DC in 6 points/relay out 4 points
 - G7E-DR20A: DC in 12 points/relay out 8 points
 - G7E-TR10A: Tr. output 10 points
- Special unit
 - G7E-ADHA: Analog I/O (Input 2 channels, output 1 channel)
 - G7E-AD2A, G7F-AD2B: Analog input (4 channels)
 - G7E-DA2I: Analog output (4 channels)
 - G7E-AT2A: Analog timer (4 points)
- Communication unit *2)
 - Cnet: RS-232C, RS-422 - Fnet (Master) - Fnet (Master)
 - DeviceNet (Slave) - Profibus-DP (Slave)

Option pack

- G7E-RTCA: RTC (Real time clock) pack
- G7E-M256: Memory pack (For program back-up)

Available system (3 units in total) *3)

- Digital I/O: Max. 2 units
- Analog I/O: Max. 2 units
- Analog Timer: Max. 3 units
- Communication I/F: Max. 1 unit

Option pack

- Base unit used: Connect to the expansion connector of the basic unit.
- Expansion unit connected: Connect to the expansion connector of the last connected one.
- You are able to use only one option pack.

*1) When digital I/Os are used, the 1st expansion input is assigned from P80 and its output from P90. The 2nd expansion input is from P100 and its output from P110 and so on. I/O allocation does not apply to other expansion modules. It does only to digital expansion modules.

*2) You are not able to connect a communication module to K7M-DR10S/DC and K7M-DT10S while you can do a communication module to other types of K80S. Built-in Cnet and a communication module shares the same communication port and you are not able to use them at the same time.

*3) Option pack is not included.

■ System configuration for K120S

Base unit for economic type

- Processing speed: 0.4 μ s
- Program capacity: 2k steps
- 8 types:
 - K7M-DR10UE (VDC), K7M-DR14UE (VDC)
 - K7M-DR20UE (VDC), K7M-DR30UE (VDC)

Base unit for standard type

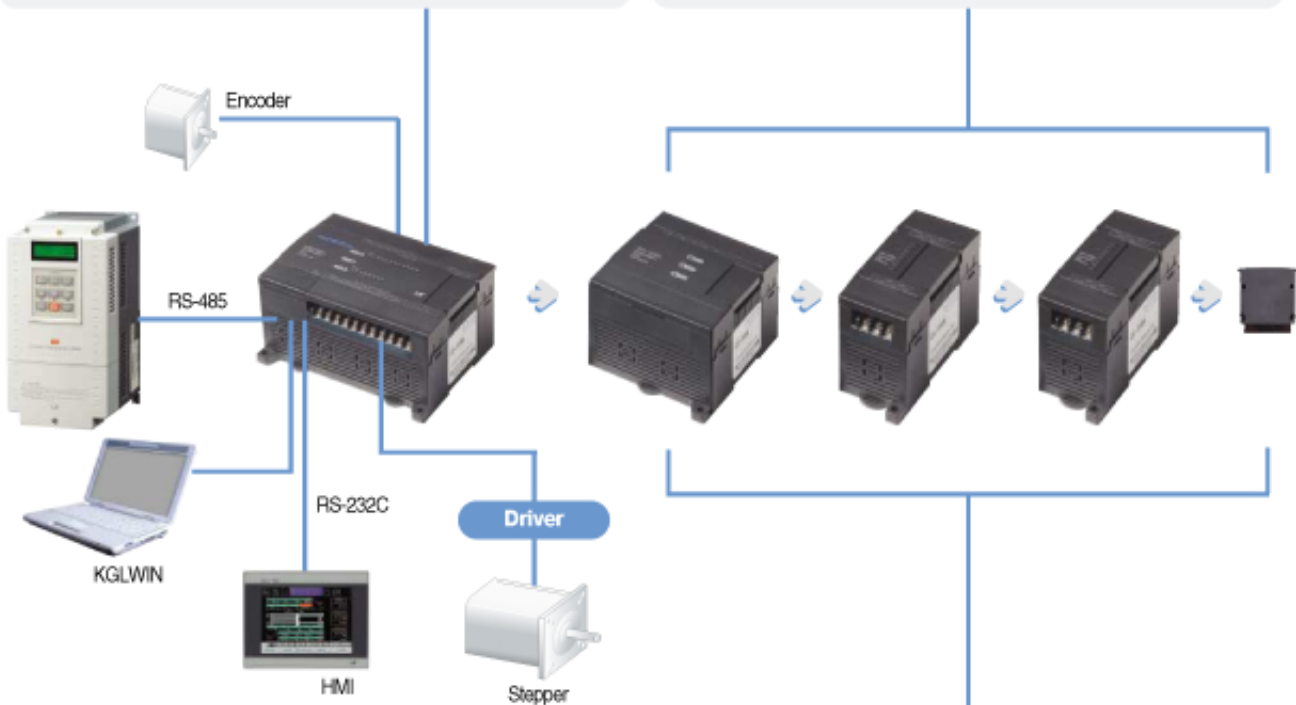
- Processing speed: 0.1 μ s
- Program capacity: 10k steps
- 24 types:
 - K7M-DR/DRT/DT20U (VDC), K7M-DR/DRT/DT30U (VDC)
 - K7M-DR/DRT/DT40U (VDC), K7M-DR/DRT/DT60U (VDC)

Max. number of expansion unit installation

- Standard: max. 3 units in total
- Economic: max. 2 units in total

Installation	Max. number of installation	Remark
Digital I/O	3	2 in economic type
Analog I/O	3	Not available in economic type
Analog timer	3	
Communication I/F	1	

- You are able to connect an option pack to the connector of the last expansion module



■ Expansion modules *1)

Digital I/O modules

- Input
 - G7E-DC08A *2): DC input 8 points
- Output
 - G7E-TR10A: Tr output 10 points
 - G7E-RY08A *2): Relay output 8 points
 - G7E-RY16A *2): Relay output 16 points
- Input/Output
 - G7E-DR08A *2): DC in 4 points / relay out 4 points
 - G7E-DR10A: DC in 6 points / relay out 4 points
 - G7E-DR20A: DC in 12 points / relay out 8 points

Special modules

- A/D
 - G7F-AD2A, G7F-AD2B : Analog input (4 channels)
- D/A
 - G7F-DA2V *2): Voltage output (4 channels)
 - G7F-DA2I: Current output (4 channels)
- A/D, D/A
 - G7F-ADHA: Analog (in 2 channels, out 1 channel)
 - G7F-ADHB *2): Analog (in 2 channels, out 2 channels)
 - G7F-ADHC *2): Analog (in 2 channels, out 1 channel)
- RTD
 - G7F-RD2A *2): RTD 4 channels
- Analog timer
 - G7F-AT2A: Analog timer (4 points)

Communication unit *3)

- G7L-CUEB: RS-232C 1 channel
- G7L-CUEC: RS-422 1channel
- G7L-FUEA: Fieldbus I/F (Fnet master)
- G7L-RUEA: Fieldbus I/F (Fnet master)
- G7L-DBEA: DeviceNet (slave)
- G7L-PBEA: Profibus-DP (slave)

Option pack

- G7E-RTCA: RTC (Real timer clock) pack
- G7E-M256B: Memory pack (for program back-up)

*1) I/O assignment is the same as that of K80S.

*2) K120S only. And  stands for a slim type

*3) You are not able to connect a communication module to K7M-DR10UE (VDC) and K7M-DR14UE (VDC) while you can do a communication module to other types of K80S. Built-in RS-232C and a communication module shares the same communication port (CH0) and you are not able to use them at the same time. In case of a standard type, you are able to use built-in RS-485 (CH1) and a comm. module (CH0) at the same time.



MASTER-K200S

Programmable Logic Controller

■ Features

- Small- and medium-scale control with 384 points
- High-speed processing: 0.5 μ s/step
- On-line editing
- Change I/O value by force
- Small- and medium-sized manufacture line control by network
- Various special modules: analog, HSC, positioning, etc
- Built-in flash memory
- 3 types of CPU
- System monitoring function
- Trigger function
- Network support: Cnet, Fast Ethernet, Fnet, Rnet, DeviceNet, and Profibus-DP



■ Specifications

Items		K3P-07AS	K3P-07BS	K3P-07CS	
Operation method		Cyclic execution of stored program, Time-driven operation, Interrupt task operation			
I/O control method		Scan synchronized batch processing method (Refresh method), Direct method by program			
Program language		Ladder diagram, Mnemonic			
Number of instructions	Basic	30			
	Application	218			
Processing speed	Basic instructions	0.5 μ s/Step			
Program memory capacity		7k steps			
Max. I/O points		384			
Memory device	P (I/O Relay)	P0000-P031F (512 points) *1)			
	M (Auxiliary relay)	M0000-M191F (3,072 points)			
	K (Keep relay)	K0000-K031F (512 points)			
	L (Link relay)	L0000-L063F (1,024 points)			
	F (Special relay)	F0000-F063F (1,024 points)			
	T (Timer)	100ms	T000-T191 (192 points): available to change by parameter		
		10ms	T192-T255 (64 points): available to change by parameter		
	C (Counter)	C000-C255 (256 points)			
S (Step controller)	S00.00-S99.99 (100X100 step)				
D (Data register)	D0000-D4999 (5,000 words)				
Timer type	On-delay, Off-delay, Integration, Monostable, Retriggerable timer				
Counter type	Up, Down, Up-down, Ring counter				
Special function	On-line editing, Change I/O value by force				
Operation mode	Run, Stop, Pause, Debug				
Max. expansion stage	Main base only				
Self-diagnostic functions	Watchdog timer, Memory error, I/O error, Battery error, Power supply error				
Base type	4/6/8/12 slot *2)				
Built-in functions	Cnet (RS-232C) *3)	PID control Cnet (RS-422/485) RTC function	PID control Cnet (RS-232C) *3) HSC (50kHz) RTC function		
Internal current consumption	170mA	210mA	170mA		

*1) With a 32-point I/O installation, P area is P0000-P031F and the rest of it is available to use as internal memory.

*2) The suitable power module for GM6-B12M is GM6-PAFC, which can't support an analog module. For analog modules or TC module, you are supposed to use GM6-PAFB or GM6-PDFB considering internal current consumption of each module. Communication modules are not to be installed in after slot number 7.

*3) Built-in RS-232C port: 4(Rx), 7 (Tx), 5 (SG)