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㎲/step (standard type)
- Battery-less backup
  - Program backup: EEPROM backup while online editing
  - Data backup: Super capacitor
- Various input handing: 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			0.4㎲/step				
Programming memory capacity			2k 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-232C: 1 port				RS-485 only in K7M-DR(10/14)UE
	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㎲ (4 points)				
	External interrupt		50㎲ (4 points)				
	Input filter		0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)				

* 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.

* 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 μs/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 2 stages (External memory or RTC module can be connected as 4th expansion)				
Built-in function	PID function		• 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 RS-232C: 1 port, RS-485: 1port				
	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	• 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	Origin detection: DOG/HOME (ON), DOG/HOME (OFF), approximate origin				
		JOG	Setting range: 5~100,000 (high/low speed)				
	Pulse catch		Minimum pulse width: 10μs (2 points), 50μs (6 points)				
	External interrupt		10μs (2 points), 50μs (6 points)				
	Input filter		0, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000ms (Default: 10ms)				

MASTER-K120S

Programmable Logic Controller

Input/output specifications

■ Input part

Item \ Type		Main					
		K7M-DR10UE (/DC)	K7M-DR14UE (/DC)	K7M-DR20UE (/DC) K7M-DR20U (/DC) K7M-DT20U (/DC) K7M-DRT20U (/DC)	K7M-DR30UE (/DC) K7M-DR30U (/DC) K7M-DT30U (/DC) K7M-DRT30U (/DC)	K7M-DR40U (/DC) K7M-DT40U (/DC) K7M-DRT40U (/DC)	K7M-DR60U (/DC) K7M-DT60U (/DC) K7M-DRT60U (/DC)
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 (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 3.3㏀ (Standard type: P0~P3 [2.7㏀], Economic type: P0~P1 [2.7㏀])					
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

Item \ Type		Main					
		K7M-DR10UE (/DC)	K7M-DR14UE (/DC)	K7M-DR20UE (/DC) K7M-DR20U (/DC)	K7M-DR30UE (/DC) K7M-DR30U (/DC)	K7M-DR40U (/DC)	K7M-DR60U (/DC)
Output point		4	6	8	12	16	24
Insulation method		Relay insulation					
Rated load voltage/current		DC24V/2A (Resistive load), AC220V/2A (COS ø =1)/point, 5A/COM					
Min. load voltage/current		DC5V/1mA					
Max. load voltage		AC250V, DC110V					
Off leakage current		0.1mA or less (AC220V, 60㎐)					
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

Item \ Type		Main			
		K7M-DT20U (/DC) K7M-DRT20U (/DC)	K7M-DT30U (/DC) K7M-DRT30U (/DC)	K7M-DT40U (/DC) K7M-DRT40U (/DC)	K7M-DT60U (/DC) K7M-DRT60U (/DC)
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 3.3㏀			
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

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 ø =1)/point, 5A/COM				
Min. load voltage/current		DC5V/1mA				
Max. load voltage		AC250V, DC110V				
Off leakage current		0.1mA or less (AC220V, 60㎐)				
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 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 → On	2ms or lower
	On→ Off	2ms or lower
Operating indicator		LED

* Slim type

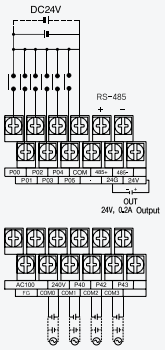
MASTER-K80S/120S wiring diagram

Programmable Logic Controller

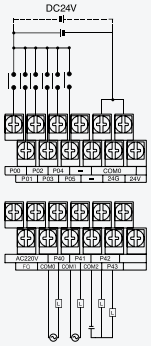
Wiring diagram

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

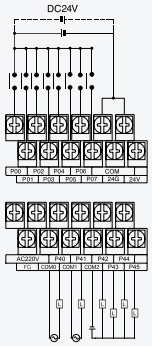
K7M-DR10S (/DC)



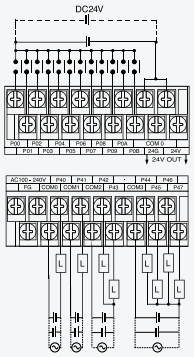
K7M-DR10UE (/DC)



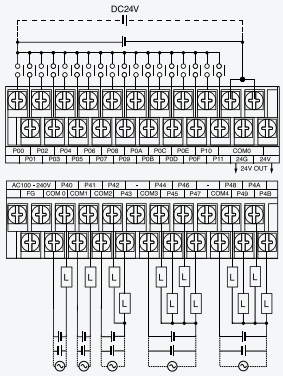
K7M-DR14UE (/DC)



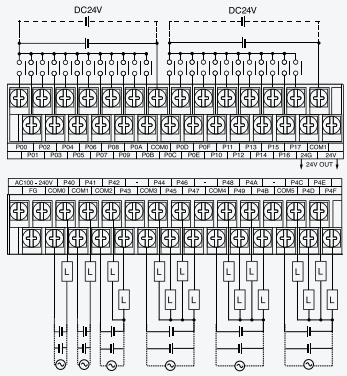
K7M-DR20S (/DC) / K7M-DR20UE(/DC) / K7M-DR20U (/DC)



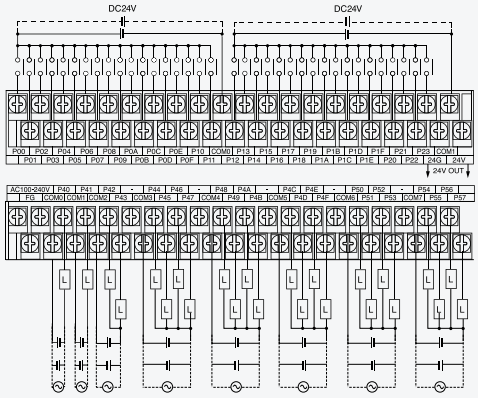
K7M-DR30S (/DC) / K7M-DR30UE (/DC) / K7M-DR30U (/DC)



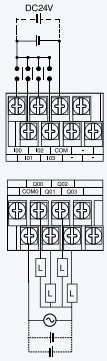
K7M-DR40S (/DC) / K7M-DR40U (/DC)



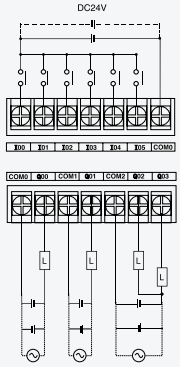
K7M-DR60S (/DC) / K7M-DR60U (/DC)



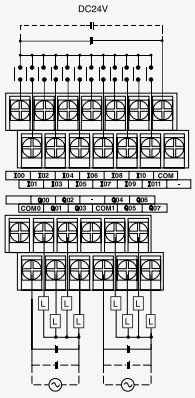
G7E-DR08A



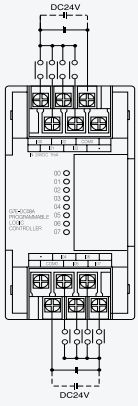
G7E-DR10A



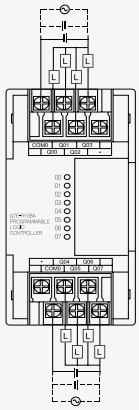
G7E-DR20A *1)



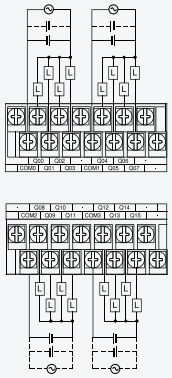
G7E-DC08A *2)



G7E-RY08A *2)



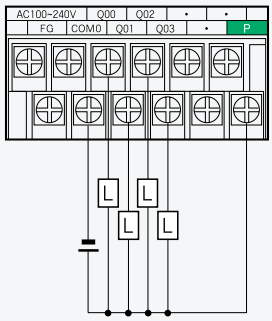
G7E-RY16A *2)



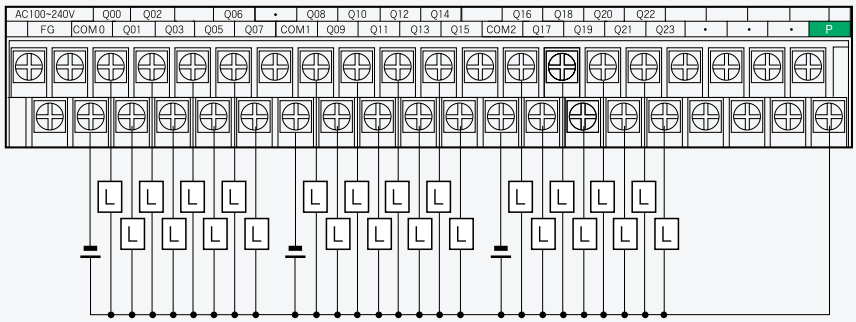
*1) In case of K80S, its O/S should be 1.7 or later for its usage.
*2) K120S only
* All the /DC types need DC24V for their operation and they don't supply DC24V output.
* ▬ stands for K80S series
* Refer to user's manual for wiring.

■ K80S DT Output

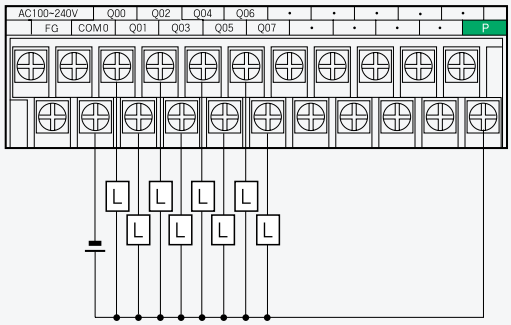
K7M-DT10S



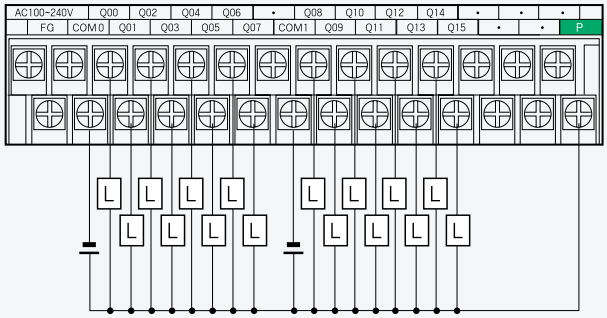
K7M-DT60S



K7M-DT20S

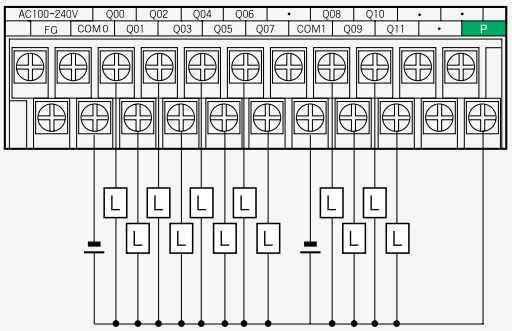


K7M-DT40S



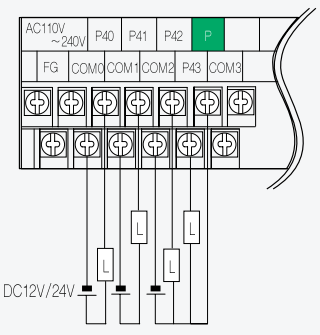
■ K120S DT/DRT output

K7M-DT30S

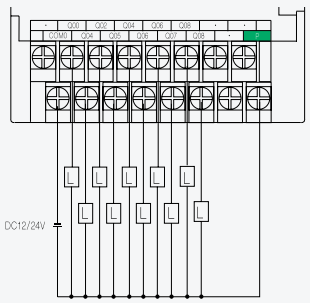


■ Output expansion unit

K7M-DRTxxU



G7E-TR10A *1)



*1) 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

Programmable Logic Controller

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-DA2I *4)	G7F-DA2V *2)
Analog input	Input range	Voltage	DC 0~10V (Input resistance: More than 1㏁)			-	
		Current	DC 0~20㎃ (Input resistance 250Ω) DC 4~20㎃ (Input resistance 250Ω) 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±15V		
		I	DC+24㎃		DC±25㎃		
Analog output	Output range	V	DC 0~10V (External load resistance 2㏀~1㏁)			DC 0~20㎃ (Load resistance 510Ω) DC 4~20㎃ (Load resistance 510Ω)	DC 0~10㎃ (Load resistance 2㏀~1㏁)
		I	DC 0~20㎃ (External load resistance 510Ω) DC 4~20㎃ (External load resistance 510Ω) 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 V max. output	V	DC +12V			DC +24㎃	DC +12V
		I	DC +24㎃				
Common	Max. resolution	V	DC 0~10V: 2.5㎷ (1/4000)			DC 0~20㎃: 5㎂ (1/4000)	2.5㎷ (1/4000)
		I	DC 0~20㎃: 5㎂ (1/4000) DC 4~20㎃: 6.25㎂ (1/3200)			DC 4~20㎃: 6.25㎂ (1/3200)	
	Accuracy		±0.5% (Full scale)			0.5%	
	Max. conversion speed		1㎳/Ch + scan time (K120S), 2ms/Ch + scan time (K80S)			500㎲*5) + scan time	1㎳*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		20㎃	20㎃	100㎃	20㎃	15㎃
	External power supply	V	DC 21.6~26.4V				
		I	80㎃	95㎃	100㎃	80㎃	90㎃
	Weight		240g	180g	300g	280g	160g

※ Caution for wiring • 2-core, shielded twisted pair cable is recommended. Size: AWG22 (0.3㎟) or higher.
• Wiring with high voltage or generation line, it makes induction failure which may cause malfunction or be out of order.

*1) Input voltage range of G7F-ADHC is DC 0~1V and the rest features are equal to those of G7F-ADHA.
*2) K120S only: G7F-ADHB, G7F-DA2V and G7F-RD2A
*3) G7F-AD2B is a slim type
*4) To use in K80S, CPU OS should be 1.7 or later.
*5) 500㎲ G7F-DA2I 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 43760-1980) · JPt100 (KS C1603-1991, JIS C1604-1981)
Temperature input range		· Pt100: -200~600℃ (18.48 to 313.59Ω) · JPt100: -200~600℃ (17.14 to 317.28Ω)
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		±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		25㎃
External power supply	V	DC 21.6~26.4V
	I	70㎃
Weight		240g

■ G7F-AT2A

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

■ Data register table

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

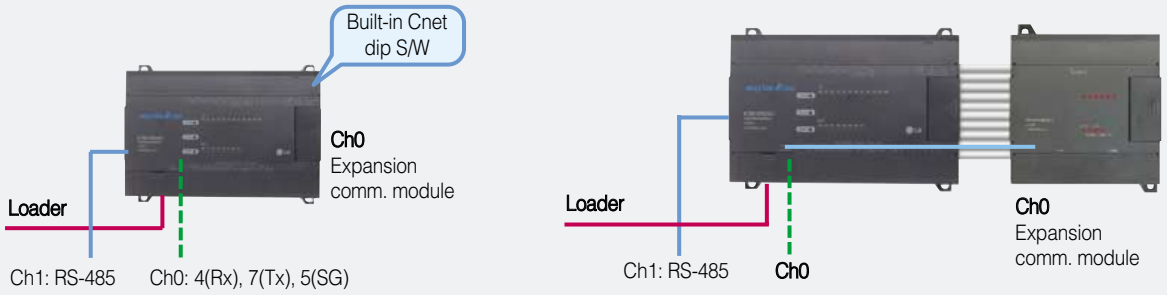
Data register	Expansion	Item						
		A/D • D/A Hybrid module		A/D Conversion module	D/A Conversion module		Analog timer	RTD input module
		G7F-ADHA	G7F-ADHB	G7F-AD2A	G7F-DA2I	G7F-DA2V	G7F-AT2A	G7F-RD2A
D4980	#1	CH0 A/D value	CH0 A/D value	CH0 A/D value	CH0 D/A value	CH0 D/A value	CH0 A/T value	CH0 Temperature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

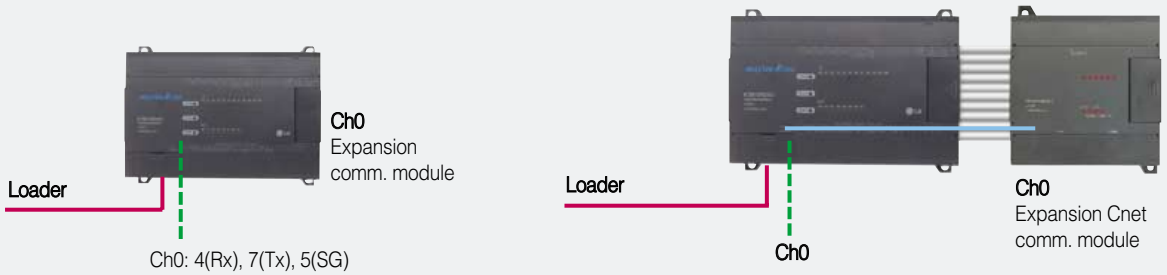
■ K120S standard type



[Built- in Cnet dip S/W: ON] **[Built- in Cnet dip S/W: OFF]**

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.

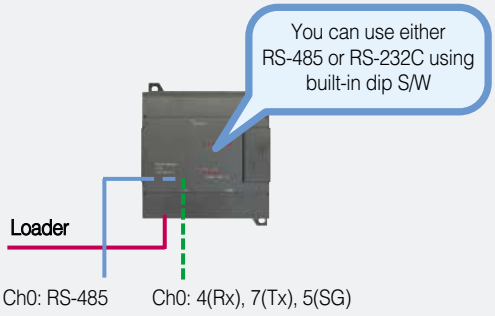
■ K120S economic type I



[Built- in Cnet dip S/W: ON] **[Built- in Cnet dip S/W: OFF]**

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)



[Built- in Cnet dip S/W: ON]

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 LGIS.
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	• 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

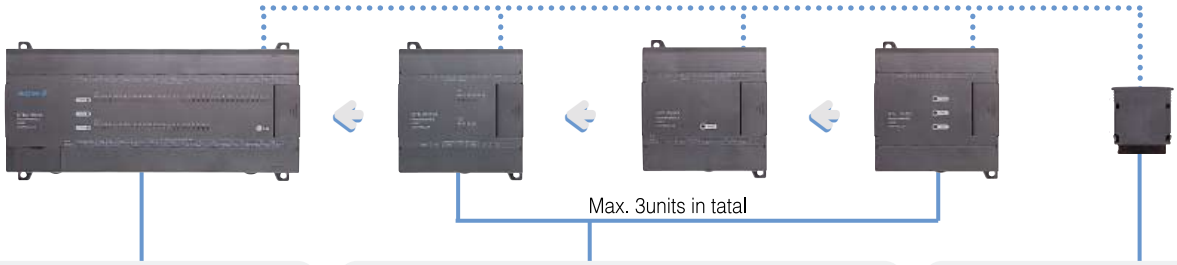
K10S1

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㎲
- 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)
  - Rnet (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㎲
- Program capacity: 2k steps
- 8 types:
  - K7M-DR10UE (/DC), K7M-DR14UE (/DC)
  - K7M-DR20UE (/DC), K7M-DR30UE (/DC)

Base unit for standard type

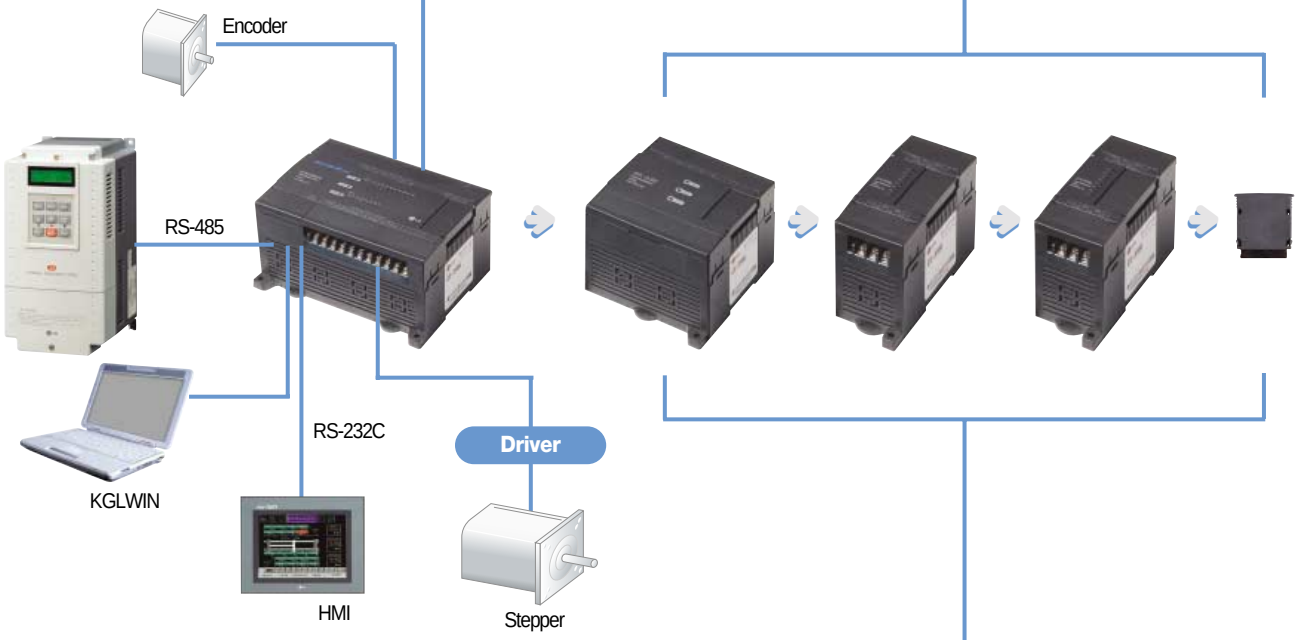
- Processing speed: 0.1㎲
- Program capacity: 10k steps
- 24 types:
  - K7M-DR/DRT/DT20U (/DC), K7M-DR/DRT/DT30U (/DC)
  - K7M-DR/DRT/DT40U (/DC), K7M-DR/DRT/DT60U (/DC)

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 (Rnet 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 (/DC) and K7M-DR14UE (/DC) 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.