

GM7U Series



Automation Equipment





Line-Up

Programmable Logic Controller

GLOFA GM7U Series

GM7U

Type	Part Number	Specification	Power supply	Remarks	
GM7U main	G7M-DR20U (/DC)	DC 24V Input 12 points, Relay output 8 points	AC 100~240V (DC 24V) (50/60Hz)		
	G7M-DR30U (/DC)	DC 24V Input 18 points, Relay output 12 points			
	G7M-DR40U (/DC)	DC 24V Input 24 points, Relay output 16 points			
	G7M-DR60U (/DC)	DC 24V Input 36 points, Relay output 24 points			
	G7M-DRT20U (/DC)	DC 24V Input 12 points, Tr. output 4 points/Relay output 4 points			
	G7M-DRT30U (/DC)	DC 24V Input 18 points, Tr. output 4 points/Relay output 8 points			
	G7M-DRT40U (/DC)	DC 24V Input 24 points, Tr. output 4 points/Relay output 12 points			
	G7M-DRT60U (/DC)	DC 24V Input 36 points, Tr. output 4 points/Relay output 20 points			
	G7M-DT20U (N) (/DC)	DC 24V Input 12 points, NPN Tr. output 8 points		NPN Tr.	
	G7M-DT30U (N) (/DC)	DC 24V Input 18 points, NPN Tr. output 12 points			
	G7M-DT40U (N) (/DC)	DC 24V Input 24 points, NPN Tr. output 16 points			
	G7M-DT60U (N) (/DC)	DC 24V Input 36 points, NPN Tr. output 24 points		PNP Tr.	
	G7M-DT20U (P) (/DC)	DC 24V Input 12 points, PNP Tr. output 8 points			
	G7M-DT30U (P) (/DC)	DC 24V Input 18 points, PNP Tr. output 12 points			
	G7M-DT40U (P) (/DC)	DC 24V Input 24 points, PNP Tr. output 16 points			
	G7M-DT60U (P) (/DC)	DC 24V Input 36 points, PNP Tr. output 24 points			
Expansion module	Digital I/O	G7E-DR08A	From main module		
		G7E-DR10A			
		G7E-DR20A			
	Input	G7E-DC08A			
		Output		G7E-RY08A	
				G7E-RY16A	
G7E-TR10A					
Special module	Analog I/O	G7F-ADHA	DC 24V from external power supply		
		G7F-ADHB			
		G7F-ADHC			
	Analog Input	G7F-AD2A			
		G7F-AD2B			
	Analog Output	G7F-DA2I			
		G7F-DA2V			
	RTD Input	G7F-RD2A			
Analog Timer	G7F-AT2A				
Comm. module	Cnet I/F	G7L-CUEB	From main module		
		G7L-CUEC			
	Fnet I/F	G7L-FUEA			
	Rnet I/F	G7L-RUEA			
	Pnet I/F	G7L-PBEA			
Dnet I/F	G7L-DBEA				
Option	RTC pack	G7E-RTCA			
	Memory pack	G7M-M256B			

* If a part number ends with /DC, the supply power is DC24V.

* Slim type: G7E-DC08A, G7E-DR08A, G7E-RY08A, G7F-ADHB, G7F-AD2B, G7F-DA2V, G7F-RD2A

Specifications

Programmable Logic Controller

Specifications

Item	Specifications				Remark
	20	30	40	60	
Output type	DR type: Relay output				
	DRT type: NPN Tr output + Relay output				
	DT (N) type: NPN Tr output				
	DT (P) type: PNP Tr output				
Operation method	Cyclic execution of stored program, Time-driven operation, Internal task operation				
I/O control method	Scan synchronized batch processing method (Refresh method)				
Program language	IL (Instruction list) / LD (ladder diagram) / SFC (Sequential function chart)				
Number of Instructions	Operator	LD: 13, IL: 20			
	Standard function	194			
	Standard function block	12			
	Special function block	Function blocks for built-in functions, special, communication modules			
Processing speed for operator	0.1~0.9 μ s/step				
Program memory capacity	132 Kbyte (including parameters)				
I/O points	Input: 12, Output: 8	Input: 18, Output: 12	Input: 24, Output: 16	Input: 36, Output: 24	Max. 120
Data	Direct variable area (DVA)	14K			
Memory	Symbolic variable area (SVA)	30K			
Timer	No limitation. Time range: 0.001~4294967.295 sec (1193 hours)				
Counter	No limitation. Count range: -32768~32767				
Operation mode	RUN, STOP, PAUSE, DEBUG				
Data retention at power failure	Set to 'Retain' at data declaration				
Number of program blocks	100				
Program type	Task	Scan	100 - (Number of program blocks in task)		
		Time-driven	8		
		External	8		
		Internal	8		8 in total
		HSC	4		
		Initialization	1 (_INIT)		
Self-diagnostic function	Watchdog timer, Memory error, I/O error, etc				
Restart mode	Cold, Warm				
Built-in function	PID control	Control by function block, Autotuning, Forward/Reverse operation, Manual output, Delta MV, SV ramp function, Anti-windup, etc			
	Cnet interface	Dedicated, LG Inverter, MODBUS, User-defined, No protocol			
	HSC	Counting speed	1-phase: 100kHz (2 channels) / 20kHz (2 channels)		
			2-phase: 50kHz (1 channel) / 10kHz (1 channel)		
		Counting method	1-phase up counter		
	Position	Positioning	1-phase up/down counter (up/down: selection by B-phase)		
			2-phase up/down counter (up/down: pulse input)		
		Return to origin	2-phase up/down counter (up/down: automatic selection by phase difference)		
			Internal/external preset, Latch counter, Comparison output, RPM		
	Position	Positioning	No. of control axis: 2, Control method: PTP/speed/synchronous, Control unit: pulse		
Positioning data: 20/axis (operation step no. 1~20)					
Position method: absolute/incremental, Operation method: single/repeat					
Position	Positioning	Address range: -2,147,483,648~2,147,483,647		DRT/DT type only	
		Speed: Max. 100kpps (setting range: 5~100,000pps)			
Position	Return to origin	Acceleration/Deceleration method: Trapezoidal method			
		DOG/HOME (ON), DOG/HOME (OFF), approximate origin			
Position	JOG	Setting range: 5~100,000 (high/low speed)			
		DOG/HOME (ON), DOG/HOME (OFF), approximate origin			
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)				



Built-in Functions

Programmable Logic Controller

20/30/40/60-point main unit

- Standard DRT-unit: Transistor output for position control (except 10-point unit)
- Max. 120 points: Connecting 3 expansion units

High speed processing

- Basic command: 0.1 ~ 0.9 μ s/step
- Application command: A few to several tens of μ s/step

Batteryless backup

- Program backup: EEPROM backup while online editing
- Data backup: Supercapacitor (Over 2000 hours at normal temperature)



GM7U

Various input handling

- Input filter: Filter time can be set from 0 to 1000ms as the unit of 8 points
- Pulse catch: 10 μ s (2points), 50 μ s (6points)
- External interrupt: 10 μ s (2points), 50 μ s (6points)

High speed counter: 32-bit signed counter

- 1 phase: 100kHz 2CH, 20kHz 2CH (4CH in total)
- 2 phase: 50kHz 1CH, 10kHz 1CH (2CH in total)
- Additional functions: preset function, latch counter, comparison output, RPM function

Positioning function

- Control axis: 2 axes (100kHz)
- Operation mode: Single, Repeated, End, Keep, Continuous
- Additional function: Return to origin, JOG operation, PWM output

Communication function

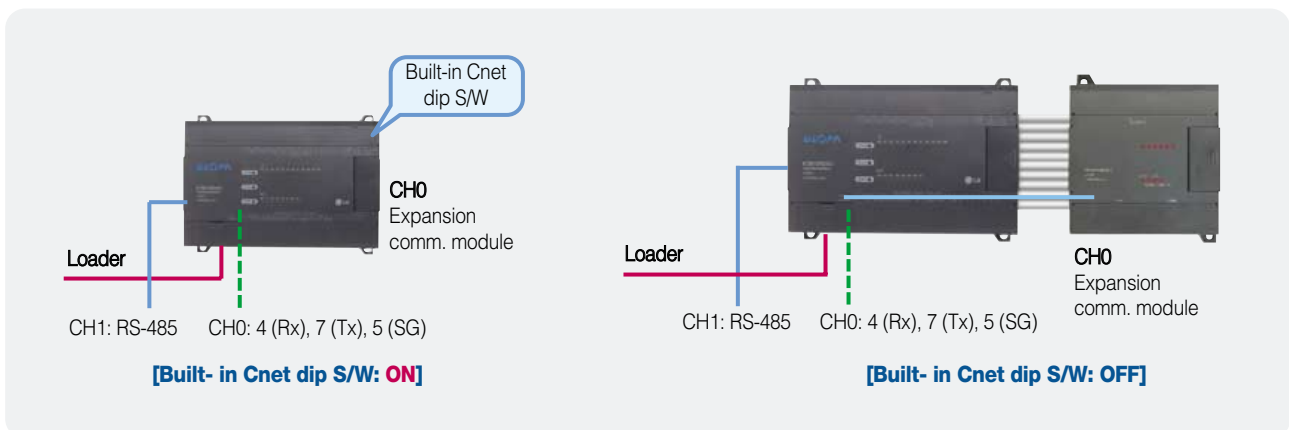
- Supports two built-in communication ports RS-232C (CH0) and RS-485 (CH1)
- Supports 'No protocol mode' and communication monitoring

PID control function

- Relay and PRC auto-tuning
- Forward/Reverse
- PWM Output, Anti-derivative kick, Anti-windup, Positioning/Velocity algorithm to assign



Serial communication



When built-in dip S/W is on, you are not supposed to use an expansion communication module while the built-in Cnet port (CH0) is enabled, and if it's off, you can use an expansion communication module but the built-in Cnet port (CH0) is disabled.

System configuration

Programmable Logic Controller

System configuration

Base unit

- Processing speed: 0.1 μ s
- Program capacity: 132k
- 32 types:
 - G7M-DR/DRT/DT20U (N/P) *1 (/DC)
 - G7M-DR/DRT/DT30U (N/P) (/DC)
 - G7M-DR/DRT/DT40U (N/P) (/DC)
 - G7M-DR/DRT/DT60U (N/P) (/DC)

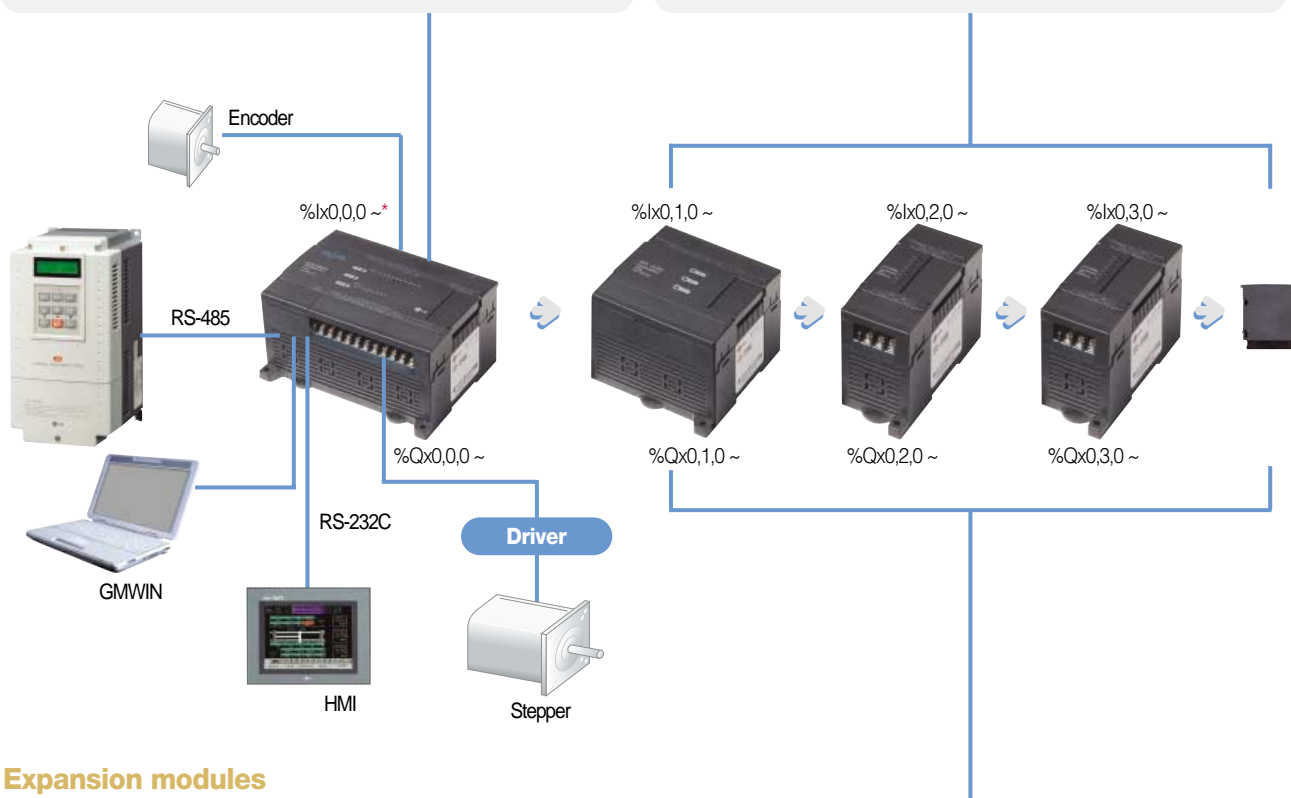
*1) (N): NPN Tr., (P): PNP Tr.

Max. number of expansion unit installation

- Max. 3 units in total

Installation	Max. number of installation
Digital I/O	3
Analog I/O	3
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

Digital I/O modules

- Input
 - G7E-DC08A : DC input 8 points
- Output
 - G7E-TR10A : Tr output 10 points
 - G7E-RY08A : Relay output 8 points
 - G7E-RY16A : Relay output 16 points
- Input/Output
 - G7E-DR08A : 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 : 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: Analog (in 2 channels, out 2 channels)
 - G7F-ADHC: Analog (in 2 channels, out 1 channel)
- RTD
 - G7F-RD2A : RTD 4 channels
- Analog timer
 - G7F-AT2A: Analog timer (4 points)

Communication unit *2)

- G7L-CUEB: RS-232C 1 channel
- G7L-CUEC: RS-422 1 channel
- 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)  stands for a slim type.

*2) Built-in RS-232C and a communication module share the same communication port (CH0) and you are not able to use them at the same time. In case of GM7U, you are able to use built-in RS-485 (CH1) and a comm. module (CH0) at the same time.

* For I/O assignment, please refer to GM7U user's manual.

Communication

Programmable Logic Controller

Communication unit

Cnet (G7L-CUEB, G7L-CUEC)



Item		Specifications
Interface		G7L-CUEB: RS-232C (Modem), G7L-CUEC: RS-422/485
Communi- cation mode	Dedicated mode	Supports 1:1, 1:N and high-speed link
	GMWIN mode	Supports remote programming and mounting via GMWIN
	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 GMWIN
Distance		Max. 15m (CUEB), Max. 500m (CUEC)
Max. number of stations		Max. 32 stations
Weight		180g

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



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

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

Profibus-DP (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 GMWIN
Cable		Shielded twisted pair cable
Weight		210g

DeviceNet (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 GMWIN			
Cable		5 lines (signal 2 lines, power 2 lines, shield 1 line)			

* 1) In case of GM7U, 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 GMWIN parameter. You are able to use both CH0 and built-in RS-485 (CH1) simultaneously.

Features

Programmable Logic Controller



Global standard (IEC61131-3) language: IL, ID, SFC

Various main module: 32 types

- 20/30/40/60 points
- AC/DC power, DC input, Relay/Transistor output

Various expansion module: 24 types

- Digital I/O 7 types, Analog I/O 9 types,
Communication I/F 6 types,
Option module 2 types

Total I/O control: 120 points

**Program memory capacity:
132Kbyte (including parameters)**

High speed processing

- 0.1 ~ 0.9 μ s/Basic instruction

Batteryless Backup

- Program backup: EEPROM
- Data backup: Supercapacitor

Communication Channel: 3 channels

- Loader: 1CH, Built-in RS-485: 1CH
Built-in RS-232C or communication I/F: 1CH
- Various mode: Dedicated / User-defined /
MODBUS / No protocol / LG Inverter mode

Built-in functions

- High speed counter function (32bits)
 - 1 phase: 100kHz 2CH, 20kHz 2CH (4CH in total)
 - 2 phase: 50kHz 1CH, 10kHz 1CH (2CH in total)
- Positioning function: DRT type only
 - Control axis: 2 axes (100kHz)
 - Position/Speed/Synchronous operation
- Improved PID control function
 - Relay and PRC auto-tuning
 - Forward/Reverse
 - PWM output, Delta MV
 - Positioning/Velocity algorithm
- Pulse catch, External Interrupt: 10 μ s 2 points, 50 μ s 6 points
- Input filter: 0~1000ms

* Expansion modules for GM7U and K120S are common.



G7M-DR20U



G7M-DR30U



G7M-DR40U



G7M-DR60U



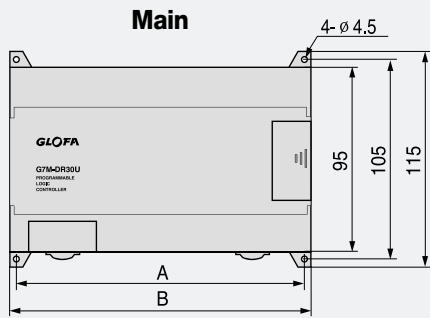
G7L-CUEC



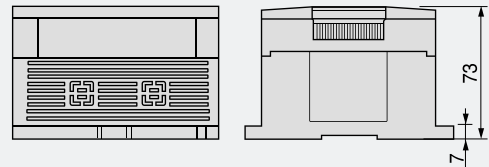
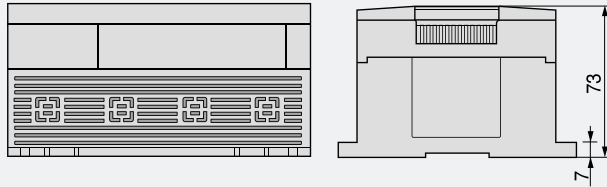
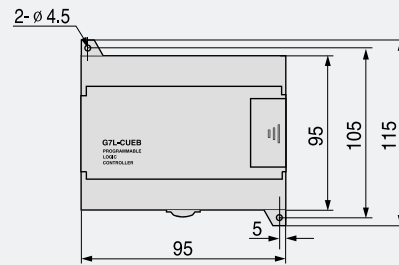
G7E-RY08A



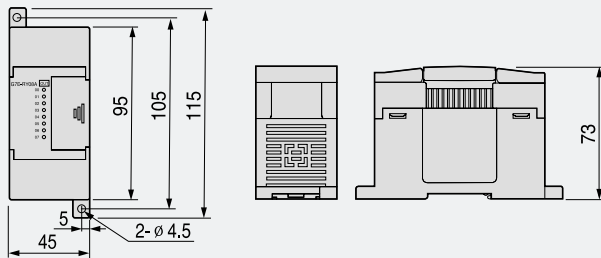
Dimensions



Expansion module



Expansion module (slim type)



GM7U	A	B
G7M-D□20U	135	145
G7M-D□30U	165	175
G7M-D□40U	215	225



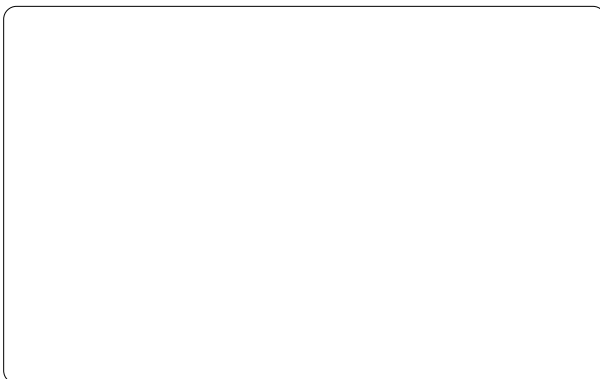
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