IMO

Programmable Controller G Series

G6

The IMO G6 is a very compact modular programmable controller offering extremely high performance. It is ideal for all applications from process control to machine control

- Up to 256 I/O
- High speed processing with dedicated MPU 0.5µsec per step
- Memory capacity 17Ksteps
- Conforms to elements of the IEC1131-3 standard (IL/LD/SFC)
- PID control, computer link, high speed counter and RTC CPU options are available
- Fieldbus option 1Mbps (FNet), deviceNet, and Profibus options
- Computer link module for linking up to 32 PLCs to a computer, or to other devices by easily configuring user protocols
- Wide range of digital and analogue I/O
- High speed counter module
- Conforms to CE requirements

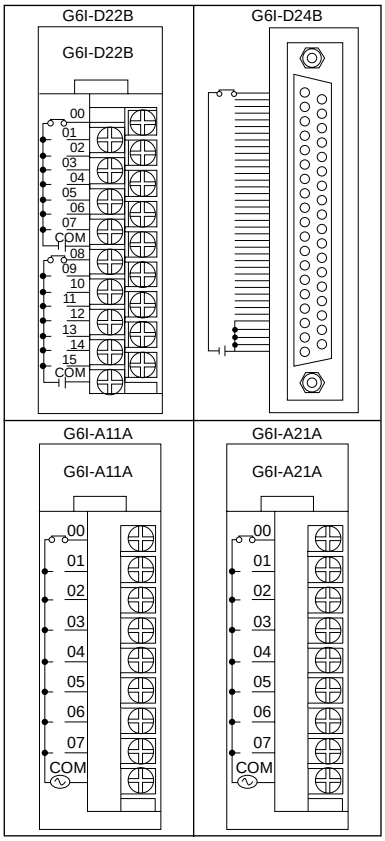
Options and ordering codes

Item	Part No.	Description
CPU modules	GM6-CPUA	Max I/O: 256 memory capacity: 17Ksteps: computer link
	GM6-CPUB	As GM6-CPUA plus PID, RTC and RS485 computer link
	GM6-CPUC	As GM6-CPUA plus high speed counter and PID
Power supply module	GM6-PAFA	85 to 264VAC for standard I/O
	GM6-PAFB	85 to 264 for use with analog I/O
Base	GM6-B04M	Up to 41/O modules can be mounted
	GM6-B06M	Up to 6 I/O modules can be mounted
	GM6-B08M	Up to 8 I/O modules can be mounted
DC input modules	G6I-D22A	16 point 24VDC input module (sink source)
	G6I-D24A	32 point 24VDC input module (sink source)
	G6I-D22B	16 point 24VDC input module (current source)
	G6I-D24B	32 point 24VDC input module (current source)
AC input module	G6IA11A	8 point 110VAC
	G6I-A21A	8 point 220VAC
Relay output module	G6Q-RY2A	16 relay outputs 12/24VDC, 240VAC 2A
Transistor output module	G6Q-TR2A	16 point transistor output (current sink) 12/24VDC 0.5A
	G6Q-TR4A	32 point transistor output (current sink) 12/24VDC 0.1A
Triac output module	G6Q-SS1A	8 point triac output 100-240VAC 1A
A/D conversion module	G6F-AD2A	Voltage/current input 4 channels 1-5V, 1-10V, -10 to +10V, 4-20mA
D/A conversion module	G6F-DA2V	Voltage output 4 channels 4-20mA
	G6F-DA2I	Current ouput 4 channels 4-20mA
High speed counter module	G6F-HSCA	50kpps 1 channel counting range 0-16,777,215
FNet I/F module	G6L-FUEA	1Mbps
CNet I/F module	G6L-CUEB	Computer link RS-232C
	G6L-CUEC	Computer link RS-485

CPU Specification

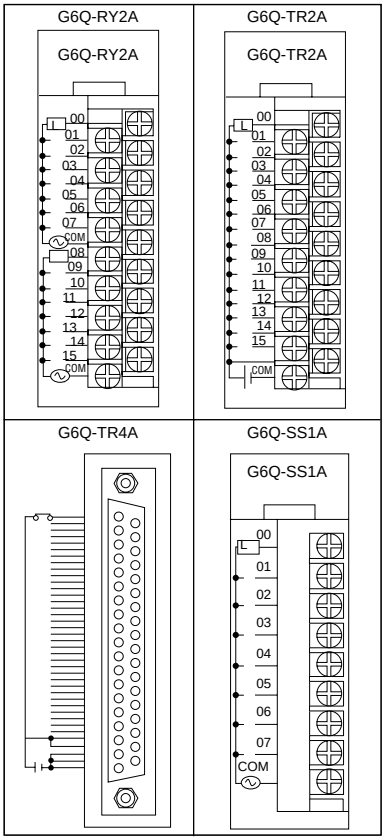
Item		Specification			Remarks
		GM6-CPUA	GM6-CPUB	GM6-CPUC	
Operation method		Cyclic operation, interrupt task method			
I/O control method		Scan synchronised batch processing method (refresh method)			
Programming language IEC1131-3		IL (instruction list) LD (ladder diagram) SFC (sequential function chart)			
Number of instructions	Operator	LD: 13, IL: 21			
	Basic	194			
	Basic block	11			
	Special block	Dedicated function block for special modules			
Processing speed	Operator	0.5µsec			
	Basic	0.5µsec			
	Basic block	0.5µsec			
Programming memory		68Kbytes (17Ksteps)			
I/O points		128 points (16 point modules) 256 points (32 point modules)			
Data memory	Direct variable area	2 to 8 Kbytes			
	Symbolic variable area	32Kbytes (direct variable area)			
Timer		No limitations in points: time range: 0.001 to 4,294,967.295 (1,193 hours)			1 point occupies 20bytes in symbolic area
Counter		No limitations in points counting range: -32,768 to +32,767			1 point occupies 8bytes in symbolic area
Operating modes		RUN, STOP, PAUSE, DEEBUG			
Data protection method at power failure		Set to retain variables at data declaration			
Program types	Number of program blocks	128			
	Scan program	100			
	Time driven tasks	8			Number of tasks 8
	External interrupt tasks	8			
	Internal tasks	8			
	Initialisation program	1			
Self-diagnostic functions		Watchdog timer, memory error detection, I/O error detection, Battery error detection, power supply error detection			
Restart modes		Cold, warm, hot			
Built-in functions		RS232C Computer link	PID, RTC, RS485, RS232 Computer link	High speed counter PID, RS232C	

Digital input modules



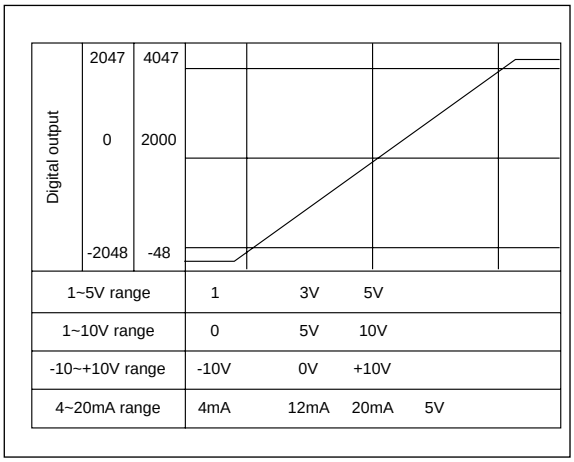
Input type		DC input		AC input	
Model		G6I-D22B	G6I-D24B	G6I-A11A	G6I-A21A
Number of input points		16 points	32 points	8 points	
Rated input voltage		24VDC	24VDC	100 to 120VAC (50/60Hz)	200 to 240VAC (50/60Hz)
Rated input current		7mA	7mA	11mA (AC110V/60Hz)	11mA (AC220V/60Hz)
On voltage/On current		DC15V or higher/ 4.5mA or higher	DC15V or higher/ 4.5mA or higher	AC79V or higher/ 5mA or higher	AC79V or higher/ 5mA or higher
Off voltage/Off current		DC5V or less/ 1mA or less	DC5V or less/ 1.7mA or less	AC20V or less/ 1mA or less	AC20V or less/ 1mA or less
Response time	Off → On	2 to 4.8ms or less	2 to 4.3ms or less	15ms or less	
	On → Off	2 to 4.8ms or less	2 to 4.3ms or less	20ms or less	
Common terminal		8 points	32 points	8 points	
Operating indicator		LED turns on at ON state of input			
Insulation method		Photo coupler			
Internal current consumption		70mA	75mA	70mA	

Digital output modules



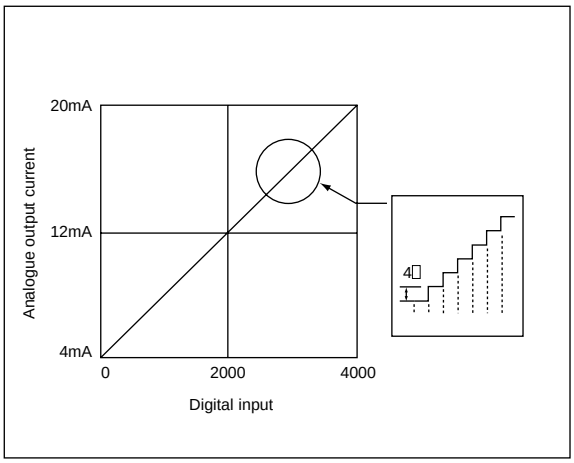
Output type		Relay output	Triac output	Transistor output	
Model		G6Q-RY2A	G6Q-SS1A	G6Q-TR2A	G6Q-TR4A
Number of output points		16 points	8 points	16 points	32 points
Rated load voltage		12/24VDC 220VAC	100 to 240VAC (50/60Hz)	12/24VDC	12/24VDC
Rated load current	1 point	2A	1A	0.5A	0.1A
	1 common	5A	4A	4A	2A
Response time	Off → On	10ms or less	1ms or less	2ms or less	2ms or less
	On → Off	5ms or less	0.5cycle+1ms or less	2ms or less	2ms or less
Common terminal		8 points	8 points	16 points	32 points
Operating indicator		LED turns on at ON state of output			
Insulation method		Relay	Photo coupler		
Internal current consumption		480mA	230mA	200mA	160mA

Analogue input modules

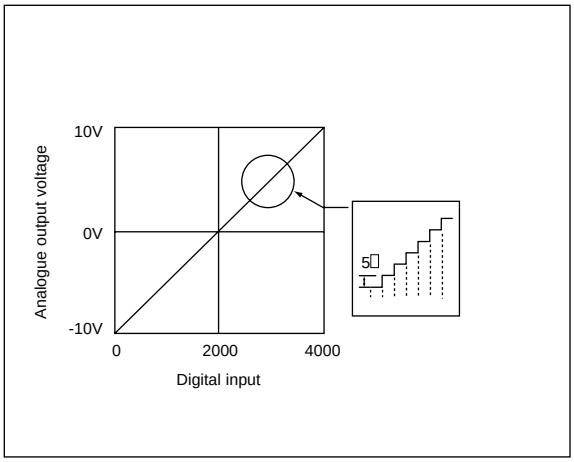


Items		G6F-AD2A
Analogue input	Voltage	1-5V 1~+10V -10~+10V } Input resistance: 1MΩ
	Current	4~20mA (input resistance: 250MΩ
Digital output		16-bit signed binary (data: 12bit)
Max. resolution	1~5V	1mV (1/4,000)
	0~+10V	2.5mV (1/4,000)
	-10~+10V	5mV (1/4,000)
	4-20mA	4□A (1/4,000)
Overall accuracy		±0.5% or lower (±0.3% at ambient temperature 25□)
Max. conversion speed		5ms/channel
Max. absolute input	Voltage	±12V
	Current	±25mA
Number of analogue input point		4 channels/module
Isolation		Photo coupler is used to isolate between input terminals and PLC (among the channels: Non-isolated)
Internal current consumption		100mA

Analogue output modules



Items	G6F-DA2I
Digital input	16-bit signed binary (0~4,000)
Analogue output	DC 4~20mA
Maximum resolution	4□A (1/4,000)
Accuracy	±0.5% or lower (Full scale)
Maximum conversion speed	Less than 10ms/4 channels
Maximum absolute output	DC24mA
Number of output channel	4 channels
Isolation	Photo coupler is used to isolate between input terminals and PLC (among the channels: Non-isolated)
Internal current consumption	100mA
External power supply	Not necessary

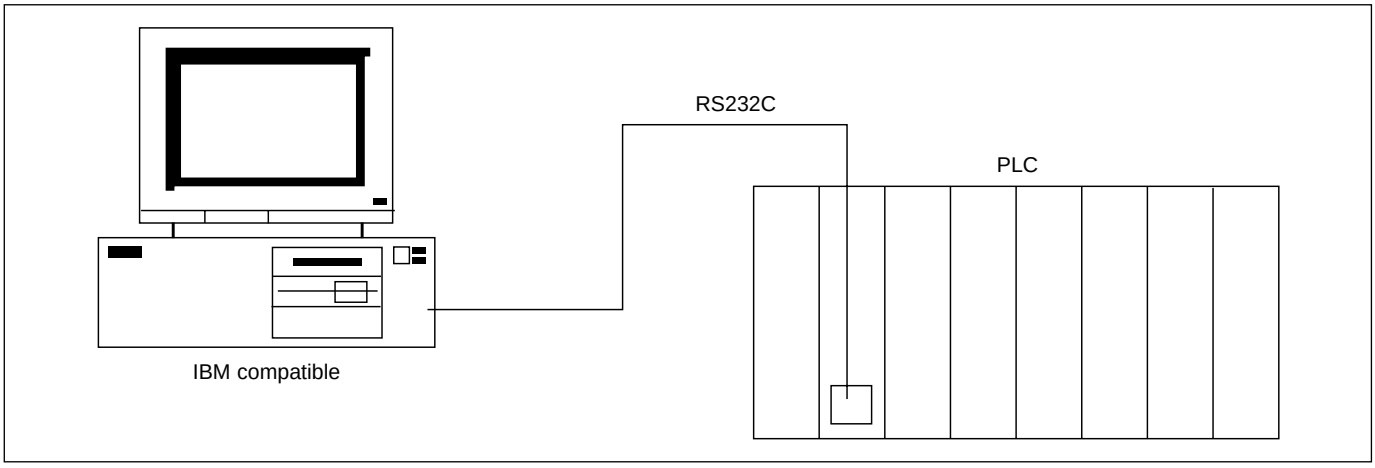


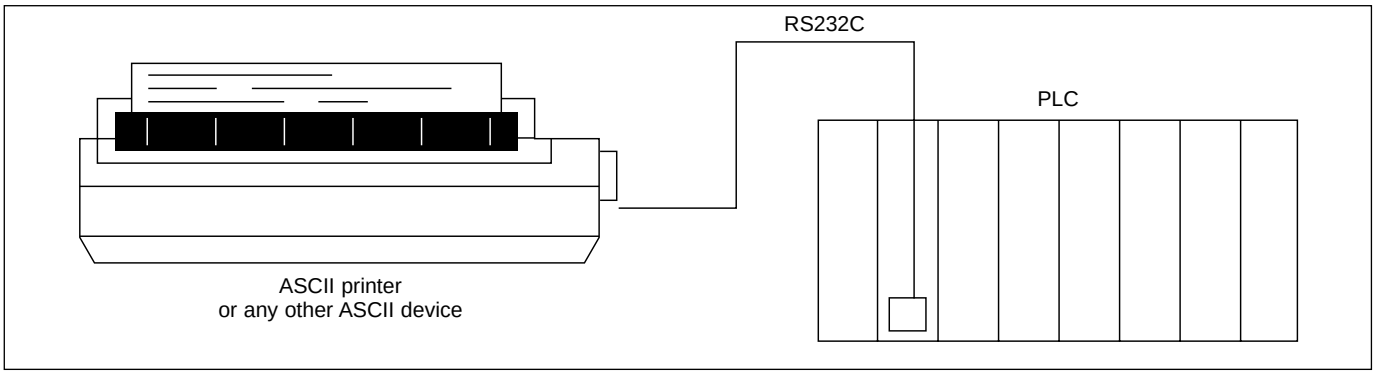
Items	G6F-DA2V
Digital input	16-bit signed binary (0~4,000)
Analogue output	DC -10~+10V
Maximum resolution	5mV (1/4,000)
Accuracy	±0.5% or lower (Full scale)
Maximum conversion speed	10ms or lower/4 channels
Maximum absolute output	±15V
Number of output channel	4 channels
Isolation	Photo coupler is used to isolate between input terminals and PLC (among the channels: Non-isolated)
Internal current consumption	100mA
External power supply	Not necessary

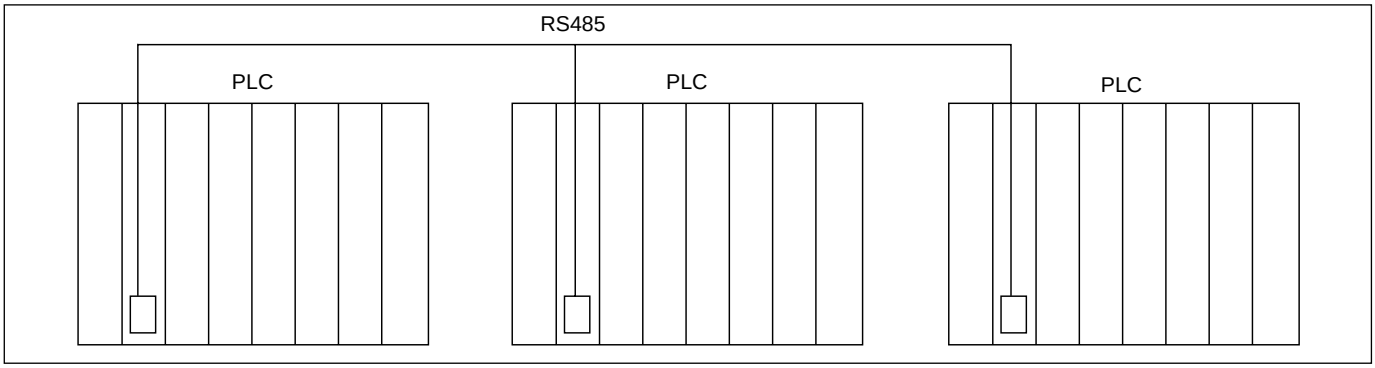
CNet computer link

- Enables communication between a computer and a maximum of 32 programmable controllers using the RS485 multi-drop module
- Can communicate to the K series RS485 interface, enabling a link to the small programmable controllers
- Different devices protocols can be easily configured using the frame editor, enabling communication to such devices as bar code readers, smartcards, weigh scales and other manufacturer's programmable controllers
- Up to 4 modules can be mounted
- Communication method can be either full-duplex or half-duplex
- Long distance remote programming can be achieved using a modem and the GMWIN programming software
- Built in loop-back test diagnostics

Items		G6L-CUEB	G6L-CUEC
Interface		RS232C	RS485
Operating mode	Dedicated protocol	Supporting multidrop/1:1 communication by dedicated protocol for G series PLCs	
	GMWIN protocol	PLC remote control and programming is possible through GMWIN software	
	User-defined protocol	Different devices' protocols can be configured using the CNet frame editor	
Data type	Data bit	7 or 8	It is possible to configure using frame editor
	Stop bit	1 or 2	
	Start bit	1	
	Parity	Even/Odd	
Modem connection		Remote communication with external devices such as computer via modem is possible	
Synchronisation		Asynchronous	
Transmission speed		300/600/1200/2400/4800/9600/19200/38400bps can be selected	





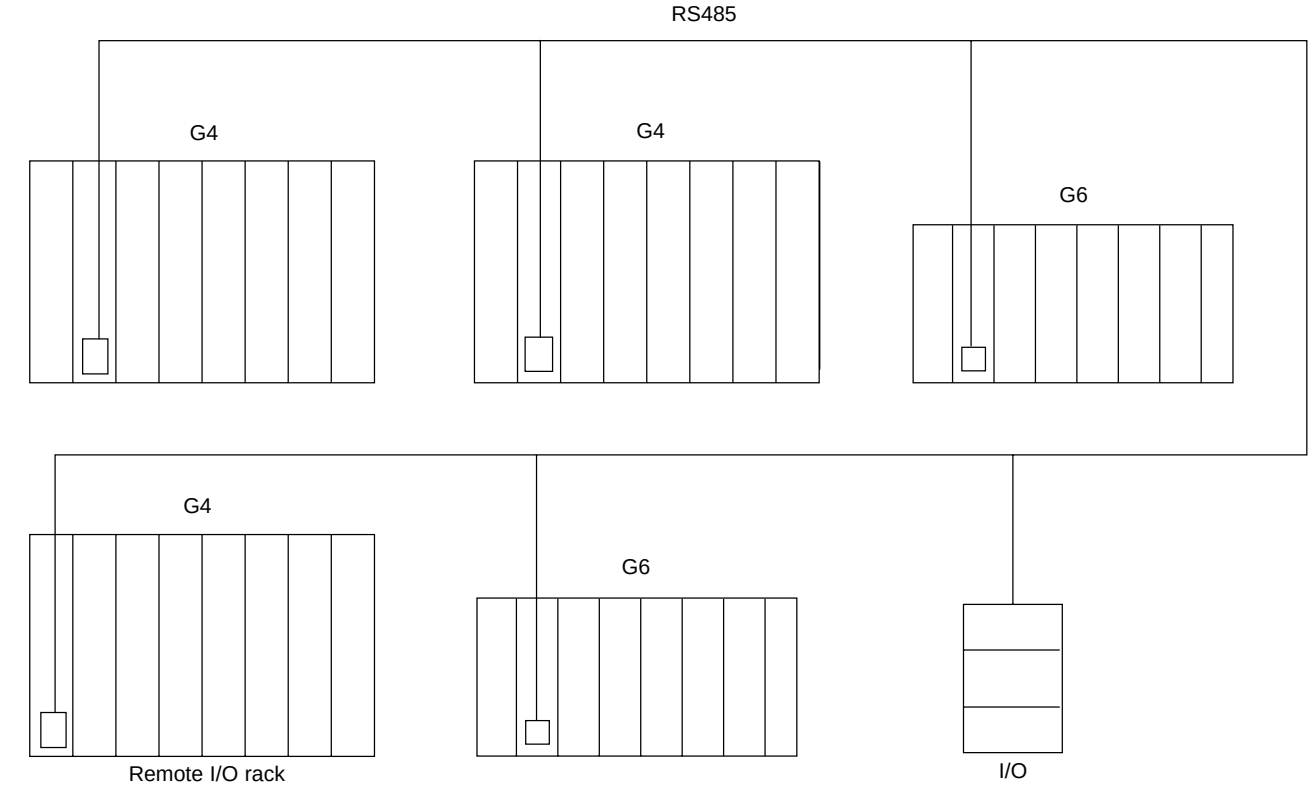


FNet fieldbus

- The IMO FNet fieldbus is very easy to use and configure, offering a cost effective solution to your wiring costs
- FNet the IMO process fieldbus, is the local area network for lower and medium cell communications, and communications to field level devices such as remote I/O modules
- By utilising a token passing methodology a deterministic response is guaranteed
- Low cost shielded twisted pair cable is used
- A transmission speed of 1Mbps is used ensuring fast response
- A maximum cable distance of 5.25Km can be achieved by utilising repeaters
- FNet can be configured to communicate peer to peer remote I/O and to single remote I/O modules, or any combination

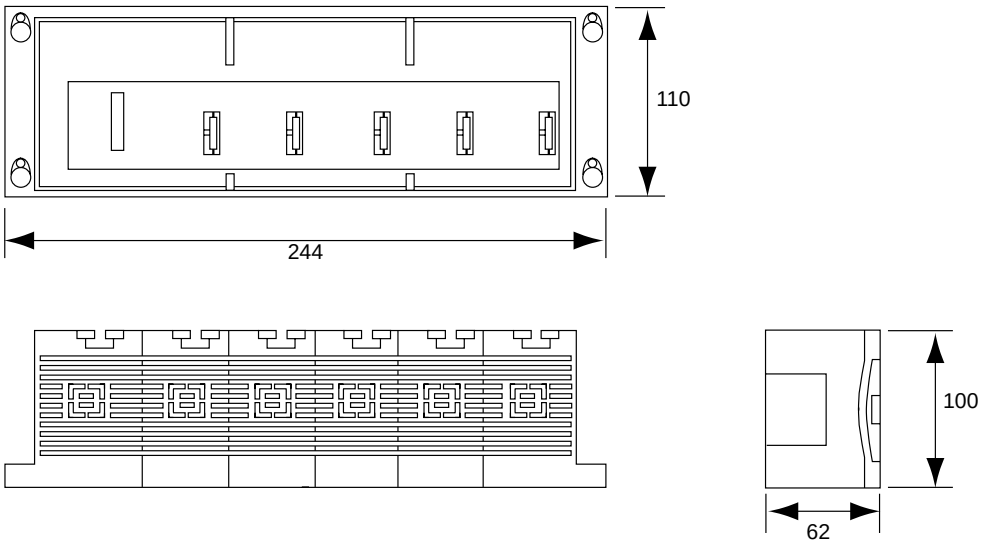
Items		G6L_FUEA
Transmission speed		1Mbps
Encoding type		Manchester biphase-L
Transmission distance (per segment)		Maximum 750m
Transmission distance (using repeaters)		Maximum 750m *(6 repeater +1) = 5.25Km
Transmission line		Twisted pair shielded cable
Maximum number of stations connected		64 stations
Access type of communications		Circulated token passing
High speed link	Maximum number of link per 1 station	61440 points (3840 words)
	Maximum number of transmissions for peer station	30720 points (1920 words)
	Maximum block number	64
	Maximum number of transmissions per block	60 words

FNet communications example

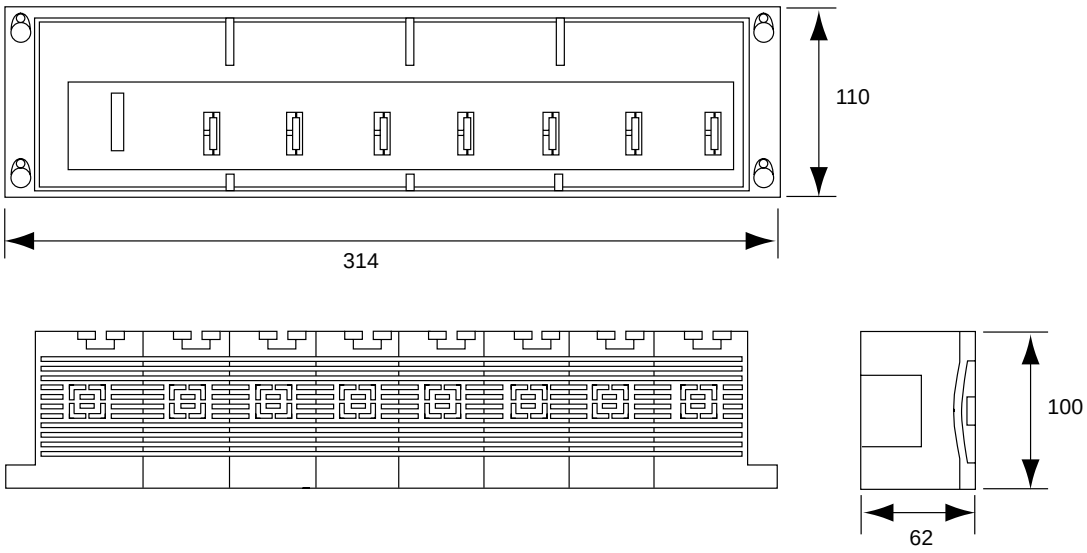


Base dimensions

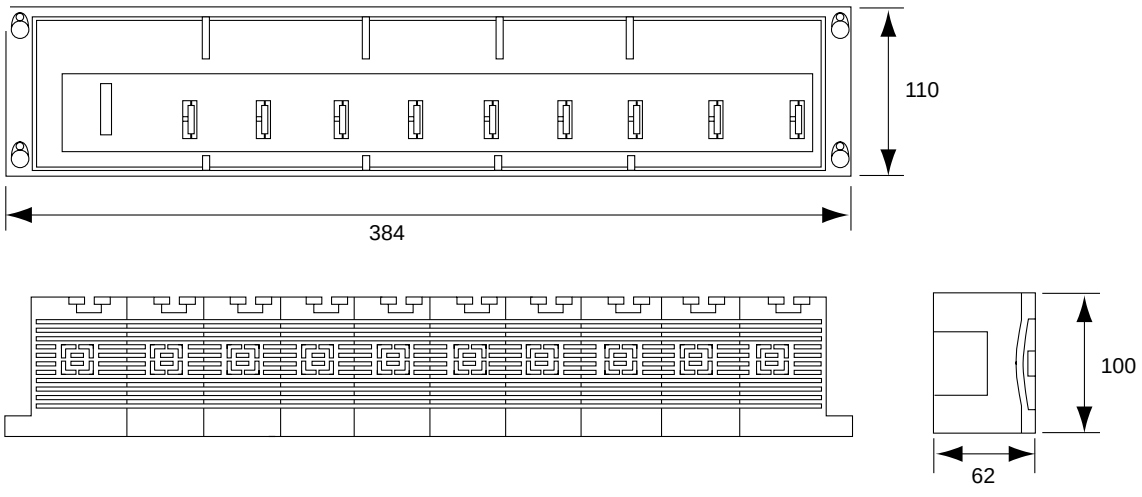
4 Slot



6 Slot



8 Slot

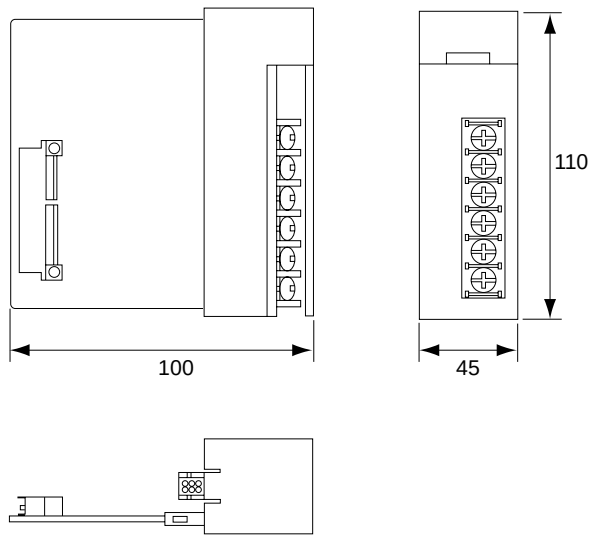


High speed counter

Item		G6F-HSCA
Number of channel		1 channel
Count input signal	Signal	Phase A, phase B, phase Z
	Signal level	DC5/12/24V (divided in terminal)
Counting range		0~16, 777, 216 (24 bits binary)
Counting speed		50kpps
Setting increment/ decrement	1-phase 1 input	Set by program
	1-phase 2 input	Set up phase B
	2-phase 1 input	Automatically set by difference of phase
Multiplication		The multiplication factor for the input pulse may be set to 1, 2 or 4 (selected by DIP switch adjustment)
Preset		Set by terminal arrangement or program
Limit switch input		DC24V
External output	Type	Out 1, out 2 (one among >, =, < is selected)
	Signal type	Transistor output (open collector output)
Internal current consumption		300mA

Module dimensions

Power supply module



CPU and I/O module