2007-08-15

5011630103-P203

ELC-GP02

GRAPHIC PANEL SERIES

Instruction Sheet

⚠ WARNING

- DANGER - DC input power must be disconnected before any maintenance. Do not connect or disconnect wires and connectors while power is applied to the circuit. Maintenance must be performed by qualified technicians.
- DANGER - The ELC-GP02 requires 24VDC input power. The 24VDC input power should not be connected to the RS-485 communication port. The unit may be destroyed or can't be repaired if the input power is improperly applied. Please always check the correctly input power wiring before apply power.
- DANGER - An electrical charge will remain on the DC-link capacitors for 1 minute after power has been removed. Do not conduct any wiring or investigation on the ELC-GP02 until 1 minute after power has been removed. Do NOT touch terminals when power on.
- CAUTION - Always ground the ELC-GP02 by using the grounding terminal. Not only this acts as a safety, but also filter out electrical noise. The ground method must comply with the laws of the country where the unit is to be installed.
- CAUTION - ELC-GP02 may be damaged if the fixed support (shipped with the pack) is adjusted too tight.
- Please carefully read this instruction before using the ELC-GP02.
- The ELC-GP02 display panel is waterproof. But please prevent grease, corrosive liquids and sharp objects from contacting the ELC-GP02.
- Do not disconnect while circuit is live unless area is known to be non-hazardous.
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or Non-Hazardous Locations only.
- Explosion Hazard – Substitution of components may impair suitability for class I, Division 2.
- Explosion Hazard – Do not disconnect equipment unless power has been switched off or the area is known to be Non – Hazardous.
- Power, input and output (I/O) wiring must all be in accordance with Class I, Division 2 wiring methods, Article 501-4 (b) of the National Electrical Code, NEPA 70,or as specified in Section 18-152 of the Canadian Electrical Code for units installed within Canada, and in accordance with that location's authority.

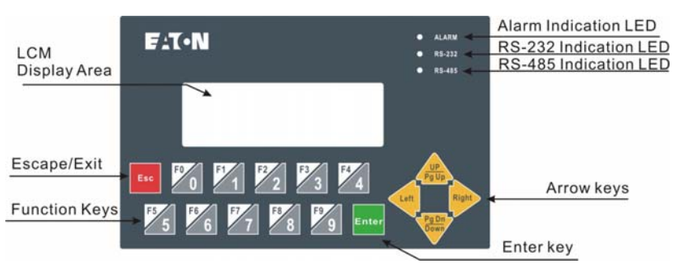
1 INTRODUCTION

1.1 Model Explanation

Thank you for choosing Eaton Logic Controler (ELC) GP series products. The features of ELC-GP02 are: resolution is 160*32, display 10*2 Chinese characters max. and Multilanguage support. Built-in two communication ports (RS-232 and RS-485/RS-422, can be used simultaneously).

Communication and alarm indication LEDs. Extension slot for ELC-GPXFERMOD to copy settings and programs rapidly and save download time. Built-in variety objects to meet your requirements.

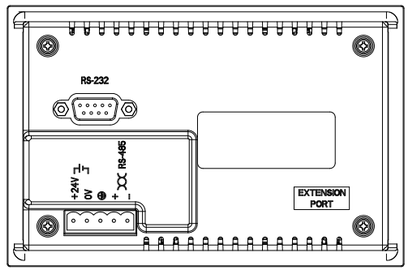
1.2 Outline



1.3 Panel Function Explanation

PANEL COMPONENT	EXPLANATION
Alarm Indication LED	Status 1: When power is on, the LED will flash three times slowly. Status 2: When there is an abnormal situation, the LED will flash quickly along with an alarm sound.
RS-232 Indication LED (Yellow)	It will be flashing when transmitting program and communicating by using RS-232.
RS-485 Indication LED (Green)	It will be flashing when communicating by using RS-485.
LCM display Area	Liquid Crystal Module display area used to display current program state.
Esc Escape/Exit)	Used to cancel an incorrect input, or to Exit a programming step.
Arrow Keys	**UP/Pg Up**: Used to increase the value or move up one page. **Pg Dn/DOWN**: Used to decrease the value or move down one page. **Left:** Left direction key. (move curser to left) **Right**: Right direction key. (move cursor to right)
Enter Key	Used to input a value or accept a programming command.
Function Keys	F0/0: It is used to be constant 0 and user can define the function of F0. F1/1: It is used to be constant 1 and user can define the function of F1. F2/2: It is used to be constant 2 and user can define the function of F2. F3/3: It is used to be constant 3 and user can define the function of F3. F4/4: It is used to be constant 4 and user can define the function of F4. F5/5: It is used to be constant 5 and user can define the function of F5. F6/6: It is used to be constant 6 and user can define the function of F6. F7/7: It is used to be constant 7 and user can define the function of F7. F8/8: It is used to be constant 8 and user can define the function of F8. F9/9: It is used to be constant 9 and user can define the function of F9.

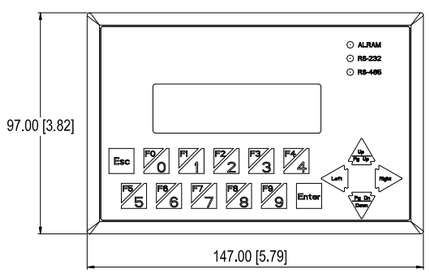
1.4 Back Panel



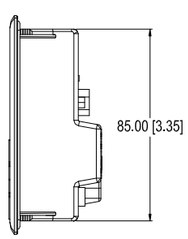
5-PIN terminals:
Wire gauge: 12-24 AWG
Torque: 4.5 lb.-inch

1.5 Dimension

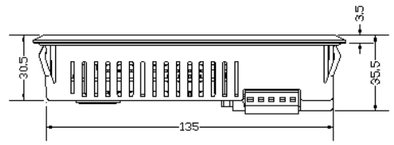
Front panel (unit: mm [inch])



Right side diagram (unit: mm [inch])

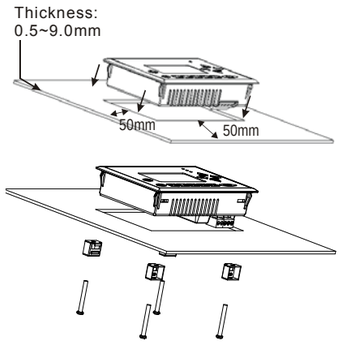


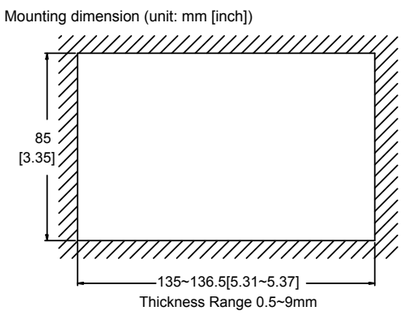
Vertical view (Unit: mm)



1.6 Installation

Mounting ELC-GP02 into the opening is done by carefully fitting the unit into the opening and pressing firmly on all four corners. You could fix it by using the fixed support packaged with ELC-GP02. You should infix the fixed support in the back cover and turn the screw in to fix. Warning: If you turn the screw exceeds torque: 4-5(kg-cm), ELC-GP02 may be damaged. (Note：the flat surface shoud be a Type 4 "Indoor Use Only" enclosure or equivalent.) Please leave sufficient space (more than 50mm) around the unit for heat dissipation.





2 ELECTRICAL SPECIFICATION

2.1 Electrical Specification

ITEM	ELC-GP02
Function Key / Digital Key	F0/0~F9/9, ESC, ENTER and ARROW keys
External Input Power	24VDC (-15%~20%) 3W MAX.
Memory Capacity	256K Byte
CPU	Hitachi MAX002
RAM of System	32K Byte
Communication Interface	COM1: RS-232 and COM2: RS-485
Waterproof Class of Front Panel	IP65/NEMA4/UL Type 4 (indoor use)
Environment Condition	0~50℃, relative humidity 20-90% RH（non-condensing）
Storage Temperature of Hardware	-20~60 °C
Vibration	5Hz≦f＜9Hz = Continuous: 1.75mm / Occasional: 3.5mm 9Hz≦f≦150Hz = Continuous: 0.5g / Occasional: 1.0g
Impact	15g peak, 11ms duration, half-sine, three shocks in each direction per axis, on 3 mutually perpendicular axes (total of 18 shocks)
RF Radiation Test	CISPR11, Class A
Static Electricity Discharge Test	EN61000-4-2
RF Radiation Test	EN61000-4-3
High Frequency Transient Test	EN61000-4-4
Weight / Dimension	0.24kg / 147×97×35.5mm (Weight(W)×Height(H)×Deep(D))
Cooling Method	Natural Air-Cooling
Temperature Code	T6
Hazardous Location rating	Class I, Division 2, Group A, B, C, and D

2.2 Function Specification

ITEM		ELC-GP02
Display Screen	Screen	STN-LCD
	Color	Monochromatic
	Back-light	The back-light automatic turn off time is 1~99 minutes (0 = do not to turn off) (back-light life is about 50 thousand hours at 25℃)
	Resolution	160X32 dots

ITEM		ELC-GP02
External Interface	Display Range	72 mm (W) X 22 mm (H)
	Contrast Adjustment	15-step contrast adjustment
	Language Font	ASCII: characters Other: user define
	Font Size (ASCII)	5 X 8, 8 X 8, 8 X 12, 8 X 16
	ALARM Indication LED	1. Power on indication (Flash three times) 2. Flash for communication error or other alarm 3. Special Indication by user programming
	RS-232 Indication LED	Flashing when communicating by using RS-232.
	RS-485 Indication LED	It will be flashing when communicating by using RS-485.
Program Memory		256KB flash memory
	Serial Communication Port RS-232 (COM1)	RS-232 Data length: 7 or 8 bits Stop bits: 1or 2 bits Parity: None/Odd/Even Transmission speed: 4800bps~115200bps RS-232: 9 PIN D-SUB male
	Extension Communication Port RS-485 (COM2)	RS-485 Data length: 7 or 8 bits Stop bits: 1 or 2 bits Parity: None/Odd/Even Transmission speed: 4800bps~115200bps RS-485: 5-Pin Removal Terminal
	Extension Slot	The slot for program copy card
	5-Pin Removal Terminal	There are DC 24V input and RS-485 input

3 TRANSFER MODULE

The function of program copy card that ELC-GP02 provides to copy user program, system function and passwords is different from the copy program. It is used to copy the whole HMI environment settings and application programs to another HMI rapidly. It can save much time and manpower. The operation is in the following.

Definition: ELC-GPXFERMOD = XMOD, GP Series = GP

Step	GP→XMOD	XMOD→GP
1	Turn the switch on the XMOD to GP→XMOD	Turn the switch on the XMOD to XMOD→GP
2	Insert the XMOD into the extension slot of GP	Insert the XMOD into the extension slot of GP
3	Input the power to GP	Input the power to GP
4	It will display “remove XMOD” on the screen and power on again	It will display “remove XMOD” on the screen and power on again

HMI display message

Copy HMI program to XMOD (GP→XMOD)	Copy XMOD program to HMI (XMOD→GP)
If the model type of GP does not correspond with the model type of program of XMOD, GP will display “GP series and XMOD is different. Press Enter to Confirm GP series→XMOD. Press Esc to Exit”.	If there is no program in XMOD, GP will display “The XMOD is Empty. XMOD→GP series is illegal”.
GP will display “GP →XMOD series Please wait!” during transmission.	GP will display “GP →XMOD series Please wait!” during transmission.
GP will display “Please Remove the XMOD and Reboot” when completing transmitting.	GP will display “Please Remove the XMOD and Reboot” when completing transmitting.

4 PASSWORD FUNCTION

1 If the password is forgotten, the password may be cleared using the following code: 8888. This universal code will clear the password and all internal programs of ELC-GP02. The ELC-GP02 will be re-set to the factory settings.

2 Users may use 0~9 and A~Z as characters for the password. Users must use the function keys F0~F4 to input the password characters.

F0: scrolls in a loop as follows 0 → A → B → C → D → E → F → 0

F1: scrolls in a loop as follows 1 → G → H → I → J → K → 1

F2: scrolls in a loop as follows 2 → L → M → N → O → P → 2

F3: scrolls in a loop as follows 3 → Q → R → S → T → U → V →3

F4: scrolls in a loop as follows 4 → W → X →Y → Z → 4

F5: it just can be used to be constant 5.

F6: it just can be used to be constant 6.

F7: it just can be used to be constant 7.

F8: it just can be used to be constant 8.

F9: it just can be used to be constant 9.

5 HARDWARE OPERATION

The steps to Startup the ELC-GP02:

1 Apply 24V DC power,

2 Enter into the startup display,

3 Enter the user-designed program,

4 Press Esc key and hold on for 5 seconds to return to system menu.

There are five selections in the system menu and are described below.

SELECTIONS	EXPLANATION
Download Program	Use the connection cable (ELC-CBPCTP3) to connect the serial communication port RS-232 of ELC-GP02 to a PC. Then use the ELCSoftGP software to download an application program to the ELC-GP02.
Upload Program	Use the connection cable (ELC-CBPCTP3) to connect the serial communication port RS-232 of ELC-GP02 to a PC. Then use the ELCSoftGP software to upload an application program from the ELC-GP02.
Copy Program	Transfer a program between two ELC-GP02 units. 1: transmit programs 2: receive programs When transmitting programs and data between two ELC-GP02 unit. Set one ELC-GP02 to “Receive Program” mode and the other ELC-GP02 to “Transmit Program” mode. Please use twisted pair wires to connect the two units via the RS-485 ports.
GP02 Settings	Used to modify the ELC-GP02 system settings. There are 8 items that may be modified. 1. Communication protocol: Set the address of ELC-GP02 and the communication string for either RS-232 or RS-485. 2. Contrast: Adjust the contrast of LCM display screen. 3. Back-light: adjust the automatic turn off time of LCM. Setting range is 00~99 seconds. If set to 00, the LCM Back-light will not turn off. 4. Buzzer: Used to set the buzzer sound, normal mode or quiet mode. 5. Language Setting: Used to set the displayed language. English, Traditional Chinese, simplified Chinese or user defined language. 6. Password setting: Used to set, enable, and disable the password function. If the password function is enabled, it will require the user to input a password before the system menu may be accessed. The factory password is 1234. 7. Startup display: Used to select the ELC-GP02 startup display. 8. Comm. Indicator : Used to select the communication Indicator enable or disable.
ELC Connection	There are two methods to connect to ELC: 1. Use the connection cable (ELC-CBPCELC3) to connect program communication I/O RS-232C of ELC to serial communication port (COM1) RS-232 of ELC-GP02. 2. Use twisted cable to connect RS-485 of ELC to extension communication port (COM2) RS-485.
Execution	Execute the internal program that download from ELCSoftGP or transmitted from other ELC-GP02 units. When entering execution program, you can return to system menu by pressing Escape/Exit (Esc) key for 5 seconds.

6 COMMUNICATION CONNECTION

■ **ELC-GP02 may connect to a PC by using cable ELC-CBPCGP3**

ELC-CBPCGP3

PC COM Port 9 PIN D-SUB female			GP02/04 COM Port 9 PIN D-SUB female	
Rx	2	⟷	3	Tx
Tx	3	⟷	2	Rx
GND	5	⟷	5	GND

■ **ELC-GP02 may connect to ELC using cable ELC-CBPCELC3**

PC/HMI COM Port 9 PIN D-SUB female			ELC COM1 Port 8 PIN MINI DIN	
Tx	3	⟷	4	Rx
Rx	2	⟷	5	Tx
GND	5	⟷	8	GND
			1,2	5V

1, 4, 6 ┐ 7, 8 ┘

■ **The Pin definition of 9 PIN D-SUB**

RS-232:

ELC-GP02 COM Port RS-232 9 PIN D-SUB male	
3	Tx
2	Rx
5	GND