PROGRAMMABLE LOGIC CONTROLLER

EP series

PLC USER'S MANUAL

☛ Before using EP series PLC, please read this user's manual in detail.
♦ Input power of EP series PLC is DC 24V. When connect the wiring, please turn off power。
♦ This panel is protected against water, but it is not protected against oil or corrosion liquid. When using it, please avoid using sharp goods to scrape the panel.
♦ When fix the panel, please use a steady which is attached by original manufacturer. To avoid the case is damaged, please do not lock the screw too tight.

◼◼◼ Introduction ◼◼◼

♦ EP series is programmable logic controller (PLC) with human machine interface (HMI). LCM is 128x64 dots. It can display 8X4 words in Chinese or 16X8 letters in English.
♦ If do not use HMI programming software, user also can use PLC's program to control screen to display Ascii code English letter.
♦ About PLC's commands, please refer to Ex1, Ex2 series user's manual.
♦ The programming software of HMI is EpEditor.
♦ The programming software of PLC is ExEditor.

- Item No. -

Ep1n314R-C
— Real Time Clock function
— R: Relay output, T: Transistor output
— I/O points (8IN/6OUT)
— 3 inches display screen
— Series (Ep1n, Ep2n)

EP300-C
— Real Time Clock function
— No input / output points
— 3 inches display screen
— Series
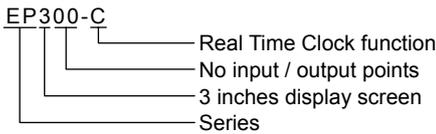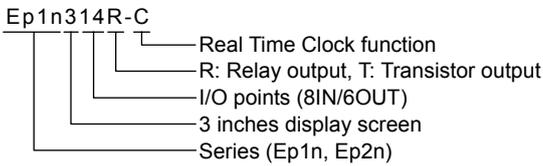
- EP314 I/O interface circuit diagram -

♦ Input Specification

Item	DC input (Sink) NPN	DC input (Source) PNP
Circuit		
Input voltage	DC24V+10%, -15%	DC24V+10%, -15%
Input current	7mA / DC24V	7mA / DC24V
Impedance	3.3 KΩ	3.3 KΩ
Response time	About 10 ms (X00~X07 High Speed)	About 10 ms (X00~X07 High Speed)
Input pattern	No voltage contact or NPN open collector	No voltage contact or PNP open collector
Circuits isolation	Photo coupler	Photo coupler

♦ Output Specification

Item	Relay output	Transistor output
Circuit		
Load voltage	Under AC250V DC30V	DC5V ~ 30V
Rated current	2A / 1 point	0.5A / 1 point
Rated capacity	100W	12W
Response time	About 10ms	Under 1 ms
Circuits isolation	Machine isolation	Photo coupler

◼◼◼ Dimensions ◼◼◼

♦ Front view, unit : mm
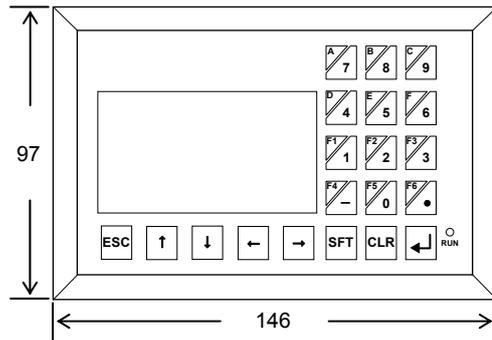
♦ Back view
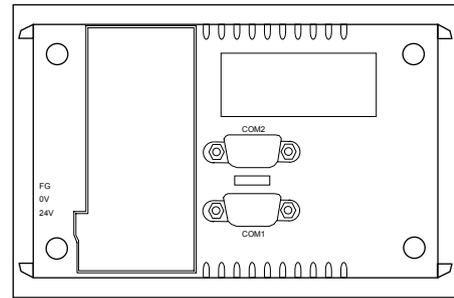
♦ Lateral view
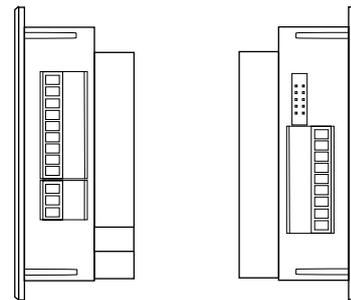
♦ Vertical view, unit: mm
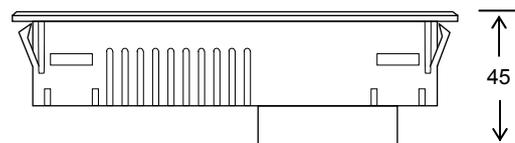
♦ Dimensions of inserting hole, unit: mm

135 ~ 136.5
Thickness Range : 0.5 ~ 2mm
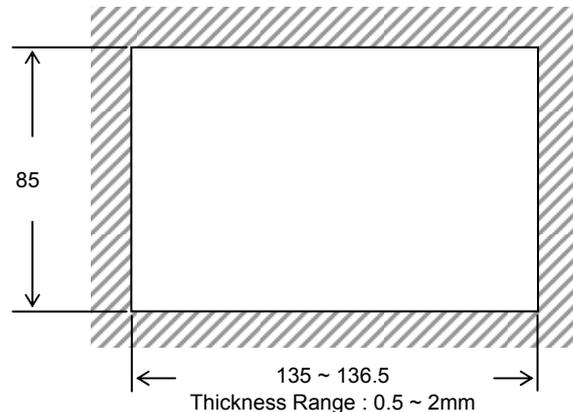
1. General specification

Item		EP300 / EP314
Display	Screen	STN-LCD
	Color	monochrome
	Backlight	Setting range of backlight auto-closed 1~99 minutes (value=0 is not closed) (Life is about 50,000 hours at 25°C)
	Number of dot	128 X 64 dots
	Range of display	67mm (W) X 32mm (H) ; 3.00" (Diagonal)
	Contrast	10 section contrast
	Language / Font	ASCII: character Taiwan: Traditional Chinese BIG5 code
	Size of word	
	LCD contrast adjustment	VR
	LCD backlight	LED backlight
External interface	COM1 (RS232, RS422/485)	Non-synchronous transmission method Transmission speed: 9600 bps or 19200 bps
	COM2 (RS232)	Non-synchronous transmission method Transmission speed: 9600 bps or 19200 bps

2. Electric specification

Item	EP300 / EP314
External power	24V (100mA Max.)
Function key / Numeral key	0~9, A~F, F1~F6, ESC, SFT, CLR, ENTER, and Direction keys
Capacity of memory	EP300: 256KB / EP314: 64KB
RAM of system	32KB
Communication interface	COM1: RS232,RS422/485 ; COM2: RS232
Protection of panel	IP65
Temperature of using hardware	0~50°C; relative humidity 20~90% RH (without condensation)
Temperature of storing hardware	-20~60°C
Shake against	0.5mm displacement, 10-55Hz, X, Y, Z three directions per 2 hours
Strike against	10G, X, Y, Z three directions per 3 times
Cooling method	Air convection to be cool naturally
Weight	EP300:289g / EP314:330g (include steady)

▮▮▮ Wiring Diagram ▮▮▮

- PC to EPPLC -

PC side				EPPLC COM2 side	
2	RXD			2	TX
3	TXD			3	RX
5	GND			5	GND
7	RTS				
8	CTS				

9PIN female D-SUB (up view of cable)

9PIN male D-SUB (up view of cable)
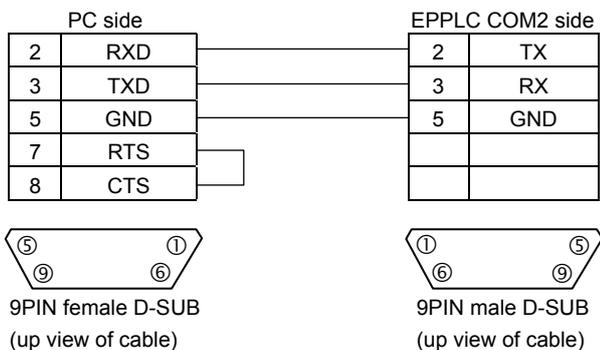
- EP300 to LIYAN PLC EX series -

EP300 COM1 side				EXPLC side	
2	RX			2	TXD
3	TX			7	RXD
5	GND			3	GND

9PIN female D-SUB (up view of cable)

8PIN male MINI DIN (up view of cable)
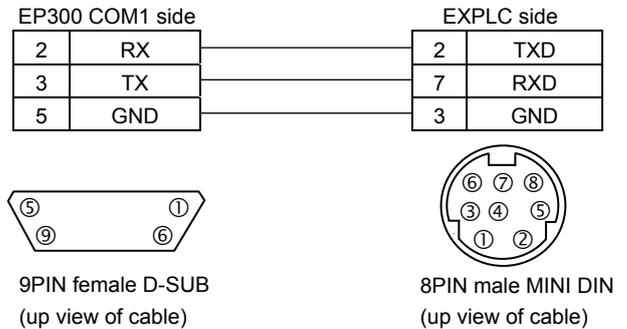
- EP300 to Mitsubishi PLC FX series -

EP300 COM1 side				FXPLC side	
8	TD+			2	RD+
9	TD-			1	RD-
6	RD+			7	TD+
7	RD-			4	TD-
5	GND			3	SG

9PIN female D-SUB (up view of cable)

8PIN male MINI DIN (up view of cable)

- EP300 to LIYAN EX232BD -

EP300 COM1 side				EX232BD side	
2	RX			2	TXD
3	TX			3	RXD
5	GND			5	GND

9PIN female D-SUB (up view of cable)

9PIN male D-SUB (up view of cable)
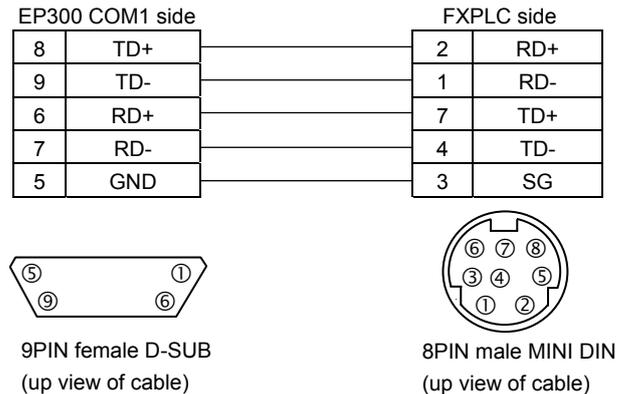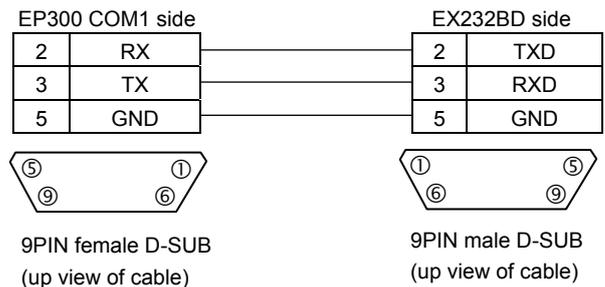
▮▮▮ Pin Arrangement ▮▮▮

- COM2 -

RS-232 9PIN D-SUB Female
2 TX
3 RX
5 GND

- COM1 -

RS-232, RS422/485 9PIN D-SUB Male	
RS232	RS422/485
2 RX 3 TX 5 GND	6 RDA (RD+) 7 RDB (RD-) 8 TDA (TD+) 9 TDB (TD-)

- COM1 communication mode (4PIN Dip Switch) -

4PIN Dip Switch	RS232	RS422/485
SW1-SW2	OFF	ON
SW3-SW4	ON	OFF

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                          ┌──────────────┐
                          │  POWER ON    │
                          └──────┬───────┘
                                 ↓
                          ┌──────────────┐
                          │  Main frame  │   Press ESC anytime, it will come back to main frame.
                          └──────┬───────┘
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SFT	SFT	SFT	SFT		↵
A / 7	D / 4	E / 5	F / 6		

| System information | PLC's program controlling frame (refer to Example program) | Set PLC RUN/STOP | Monitor status of X device | → | X device increase |
| | | | | → | X device decrease |

↑ ↓ (between each)

| | | Adjust low power of back-light | Monitor status of Y device. | → | Y device increase |
| | | | | → | Y device decrease |

		Adjust Buzzer mode	Monitor status of M device.	→	M device increase
					Continue to press ← 2 sec, then fast move
				→	M device decrease

		Copy program	Monitor status of S device	→	S device increase
					Continue to press ← 2 sec, then fast move
				→	S device decrease

		Date/Time	Monitor status of D device (16 bits)	→	D device increase
					Continue to press ← 2 sec, then fast move
				→	D device decrease

		Set station number	Monitor status of D device (32 bits)	→	D device increase
					Continue to press ← 2 sec, then fast move
				→	D device decrease

User editing screen

♦Search device number and Set new value

Monitor status of D or D device   D : 16 bits ; D : 32 bits

F6 . → Input Device No.[4] : → Input device number → ↵ → Jump to inputted device number.

CLR → Change Device Data : → Input new value → ↵ → Value of device is changed.

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M8013
 ┤├──────────────────────────────────────────────────────( Y004  )
      ─────────────────────────────────────────────────────( Y005  )
      ─────────────────────────────────────────────────────( M4    )
M8013
 ┤├──────────────────────────────────────────────[ INCP    D998   ]
      ────────────────────────────[ DBCDP      D998        D996    ]
                                 ─[ASCIP     D996    D4537   K8     ]
M8013
 ┤↑├─────────────────────────────[ASC    abcdefgh        D4512     ]
      ───────────────────────────[ASC    87654321        D4518     ]
      ───────────────────────────[ASC        Liyan       D4522     ]
      ───────────────────────────[ASC       Electri      D4526     ]
      ───────────────────────────[ASC    c               D4530     ]
M8013
 ┤↓├─────────────────────────────[ASC    12345678        D4512     ]
      ───────────────────────────[ASC                    D4518     ]
M8012
 ┤├───────────────────────────────────────────────[DINCP    D0     ]
      ──────────────────────────────────────────────[DDECP    D2     ]
      ─────────────────[DADDP    K10000       D4            D4     ]
      ─────────────────[DADDP    K-10000      D6            D6     ]
 ──────────────────────────────────────────────────────────[ END  ]
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♦In this mode, register D4000~D4999 can not be used for other purpose.
♦This mode can display 20X8 letters in English. User just move letter which you want to display to corresponding register by MOV or ASC command, then it will be ok.
♦Corresponding form between Screen and register

D4512 D4513 D4514 D4515 D4516 D4517 D4518 D4519 D4520 D4521

D4522
D4532
D4542
D4552
D4562
D4572
D4582

D4591