



Application

Specially designed for heavy machiney, engineering machinery and cranes etc.

Main functions and features

- Use outdoor super bright LED module display technology, external long life, high penetration.
- Use PROFIBUS-DP communication technology, providing super strong electromagnetic compatibility and anti-interference capability.
- Stainless steel enclosure, sealed construction, providing environmental protection and shockproof, IP protection is IP65.
- Insert cables to the terminals inside the display from cable gland, easy for wiring and mounting.
- Anti-reflection design and visible angle is more than 120 degree.
- Dot display, which can display digit, alphabet, Chinese characters etc.

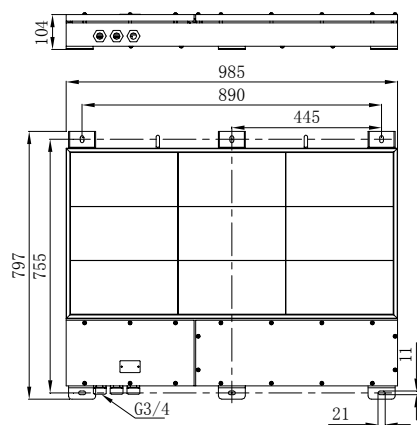
Specifications

Working voltage	AC100-AC240V	Display color	Red/green
Visible angle	>120°	Fresh frequency	>15Hz
Visible distance	>50m	Communication mode	PROFIBUS-DP
Image definition	10X10	Pixel	Φ5
Ambient temperature	-30℃ ~ +70℃	IP Protection	IP65
Relative humidity	10% ~ 95% (no coagulation)	Material	Stainless steel 316
Weight	35kg		

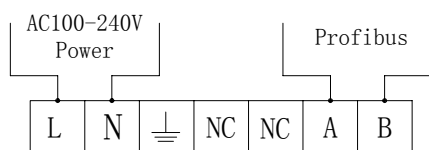
Installation and operation

- Check whether the supply voltage complies with the rated voltage of the display.
- Mounting surface should be in a line with the display body.
- Secure the display body on a smooth surface with enough support strength using 6 nos M10 screw.
- Unfasten terminal cover screws and then take the terminal cover off and the terminal will appear.
- Insert three power cables from the cable gland and then connect power cables and signal cables to corresponding terminals.
- Set PROFIBUS website address according to control operation and parameter setting.
- Power on after checking the wiring.
- Please use the product strictly in accordance with the instruction above.

Mounting dimension (Unit : mm)



Wiring diagram



Application





LD122 Communication Agreement

This agreement regulates the communication requirements and basic document parameter format of the control panel PLC and LED display screen and communication transmission protocol.

The document transmission between control panel PLC and LED adopts PROFIBUS protocol transmission. Series transfer rate is 9600bit/s, N no calibration, 8 bit data, 1 bit stop bit, all data are hex format. CRC check function includes all of 16 byte in front of check byte, its value is OR results between the bytes including start byte. Data block is the parameter and data attached by data frame which is related to the command byte. When it is "0" , it means no frame data block or parameter. Data Length is the length of the parameter or data attached by the frame which is related to command byte. And the length is 1 byte. The display code of alphabet or numerical number character adopts ASC code. Special arrow code "<->" code: 0x03; "<->" code: 0x02, "<->" code: 0x01. The data frame format of LED screen sent by data terminal:

一、 Every frame data format from PLC to LED screen

Frames definition	Bytes
Start byte (0x7e)	1 Byte
Data Length(Len)	1 Byte
Information Block (info)	0-255 Byte
Check byte (CRC)	1 Byte

Data Length (Len): the data length of information.

二、 Every frame data format from LED controller to PLC

Frames definition	Bytes
Start byte1 (0x7e)	1 Byte
Start byte2 (0x00)	1 Byte
Data Length (Len)	1 Byte
Information Block (info)	0-10 Byte
Check byte (CRC)	1 Byte

Data Length (Len): The data length of information block.

三、 Information block Info code instruction (N Byte means N pcs of Byte)

Info definition	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	1 Byte	N Byte
Instruction	Display method	Flash method	Flash frequency	Flash time	Color selection	Pattern selection	Data content

3.1 Display definition (Default value is 30 seconds)

Data	Definition
0x00	Enter from left
0x01	Enter from right
0x02	Enter from top
0x03	Enter from bottom
0x04	Straight into the display

3.2 Flash method definition

Data	Definition
0x00	All screen flash
0x01	One line flash
0x02	Two lines flash
0x03	Three lines flash
0x04	No flash



3.3 Flash frequency definition

Data	Definition	Data	Definition
0x01	50ms per time	0x0B	550ms per time
0x02	100ms per time	0x0C	600ms per time
0x03	150ms per time	0x0D	650ms per time
0x04	200ms per time	0x0E	700ms per time
0x05	250ms per time	0x0F	750ms per time
0x06	300ms per time	0x10	800ms per time
0x07	350ms per time	0x11	850ms per time
0x08	400ms per time	0x12	900ms per time
0x09	450ms per time	0x13	950ms per time
0x0A	500ms per time	0x14	1000ms per time

3.4 Flash time definition

Data	Definition
0x00	0 second
0x01	1 second
0x02	2 seconds
0x03	3 seconds
0x04	4 seconds
0x05	5 seconds
.....	
0x50	80 seconds

3.5 Color selection definition

This byte has 8 bits binary, D0~D7 bit respectively control the color display ranging from 1st module to 8th module. 0 display red, 1 display green.

3.6 Pattern selection definition

This byte has 8 bits binary, D7 control the color display of 9th module. 0 display red, 1 display green. D0~D6 bit can represent 127 values meaning the control card can embed at least 127 patterns display. Pattern display is a permanent display. (For pattern display, need to fill in at least 1 byte data content)

- 00H represent no pattern to display, only perform the behind data content
- 01H~7FH represent only perform 127 kinds of pattern contents, not perform the behind data content. Command length can end here. Actual displaying pattern is 24 kinds, the pattern contents refer to Annex 4.12
- FFH represent aging test, ① all red lights are on and keep 2 minutes ② all the lights are off and keep 40 seconds ③ all green lights are on and keep 2 minutes, ④ all the lights are off and keep 40 seconds ⑤ Each of 24 kinds of the patterns display 10 seconds ⑥ all the lights are off and keep 40 seconds , ①②③④⑤⑥ is one cycle, need to carry out the cycles until send other command to change the mode



4. Enclosure: The data illustrated by communication protocol (the illustrated data is directly loaded to the Profibus lines and then get the display results) is denoted by Hex. E.g. 7E indicates 0x7e, 29 indicate 0x29, alphabet and byte only use 1 byte, and Chinese characters use 2 byte. LD 122 display screen displays 12 bytes each row. If there is no displayed part, please use blank space ASCII code 0x20 for the replacement. If the byte number is more than 12pc, it will display in next row. Chinese code refer to Annex 4.10

4.1 The frame data structure

Start byte	Data length	Display method	Flash method	Flash frequency	Flash time	Color selection	Pattern selection	First line 9-20 byte	Second line 21-32 byte	Third line 33-44 byte	CRC (XOR)
1B	1B	1B	1B	1B	1B	1B	1B	12B	12B	12B	1B

4.2 In the transmission of data structure

From 9 byte to 20 byte is data displayed on first line.

From 21 byte to 32 byte is data displayed on second line.

From 33 byte to 44 byte is data displayed on third line.

Byte	Content
9-20	First line, Backward position
21-32	Second line, license plate
33-44	Third line, case number

Remark: If the byte number is greater than 36, the excess part will be displayed in next screen.

4.3 Display content is following, command datagram: Direction PLC - > LED controller

Green is display content in first line, red is display content in second line, blue is display content in third line.

进<<<36
作业 TP54678
TJ010102112

A . Entrance method is left entrance, flash way is full screen flash

7E2900000A050000BDF83C3C3C333620202020D7F7D2B52054503534363738544A30313031303231313271

B. Entrance method is direct full screen display, full screen flash

7E2904000A050000BDF83C3C3C333620202020D7F7D2B52054503534363738544A30313031303231313275

C . Entrance method is direct full screen display, only flash in the first line

7E2904010A050000BDF83C3C3C333620202020D7F7D2B52054503534363738544A30313031303231313274

D. Entrance method is direct full screen display, only flash in the second line.

7E2904020A050000BDF83C3C3C333620202020D7F7D2B52054503534363738544A30313031303231313277

4.4 Display content as following

99>>>退
作业 TP54678
TJ010102112



A. Direct full screen entrance, flash in the second line.

7E2904020A0500002020202039393E3E3ECD7F7D2B52054503534363738544A303130313013233

B. Direct full screen entrance, flash in the third line.

7E2904030A0500002020202039393E3E3ECD7F7D2B52054503534363738544A30313031303231313232

C. Direct full screen entrance, full screen stills and no flash

7E2904040A0500002020202039393E3E3ECD7F7D2B52054503534363738544A30313031303231313235

4.5 Display content is referred to the below diagram

Backward 88cm license plate TP01234 container number JZXHG050678

88>>>退
待命 TP01234
JZXHG050678

A. Direct full screen entrance, flash in the first line.

7E2E04010A0800002020202038383E3E3ECD7F7D2B52054503031323334204A5A5848473035303637382020202042

4.6 Display first and second line data content

License plate TP01234 standby , backward 66cm flash in first line.

66>退
待命 TP01234

Example of datagram

7E2204010A0800002020202038383E3E3ECD7F7D2B520545030313233342020202025

4.7 License plateTP01234 standby , quick backward and flash in the first line

>>>>退
待命 TP01234

Example of datagram

7E2204010A080000202020203E3E3E3E3ECD7F7D2B520545030313233342020202025

4.8 Example of standard arrow indicator

7E0B04040A050000BDF80303033c display result

进<<<

7E0B04040A050000BDF80202023d display result

进->>>

7E0B04040A050000BDF80101013e display result

进- - - -

7E0B04040A050000BDF80301013c display result

进<-

7E0B04040A050000BDF82003011D display result

进<

7E0B04040A050000BDF82020033c display result

进<



4.9 Example of link order

Link order only has success and failure.

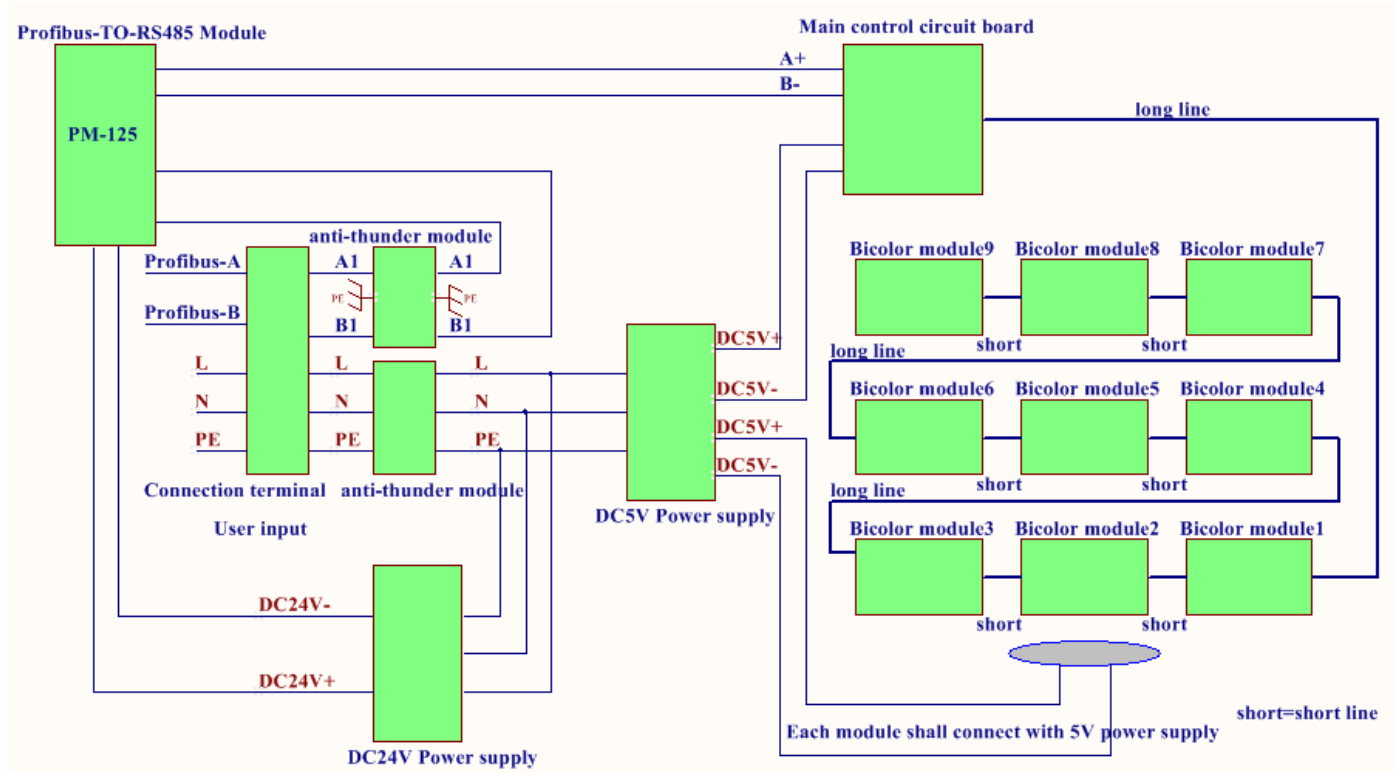
Success 7E 00 01 30 4F

Failure 7E 00 01 31 4E

4.10 Partial common simplified Chinese characters are referred to the below diagram:

待	B4FD	前	C7B0	注	D7A2	生	C9FA	偏	C6AB
命	C3FC	进	BDF8	意	D2E2	产	B2FA	气	C6F8
作	D7F7	后	BAF3	安	B0B2	热	C8C8	强	C7BF
业	D2B5	退	CDCB	全	C8A8	烈	C1D2	疏	CAE8
大	B4F3	紧	BDF4	台	CCA8	欢	BBB6	散	C9A2
风	B7E7	急	BCB1	暴	B1A9	迎	D3AD	自	D7D4
警	BEAF	撤	B3B7	雨	D3EA	领	C1EC	动	B6AE
报	B1A8	离	C0EB	莅	DDB0	导	B5BC	集	BCAF
化	BBAF	码	C2EB	头	CDB7	临	C1D9	力	C1A6
装	D7B0	箱	CFE4	货	BBF5	参	B2CE	级	BCB6
东	B6AB	南	C4CF	西	CEF7	观	B9DB	温	CEC2
重	D6D8	量	C1BF	米	C3D7	北	B1B1	浪	C0CB
度	B6C8	压	D1B9	等	B5C8	柜	B9F1	临	C1D9

4.11 Display bock diagram





4.12 Display pattern content

指令(HEX)	Pattern content
01	当心吊物 Beware Hanging
02	小心，危险 Caution,Danger
03	车道 1 Lane1
04	车道 2 Lane2
05	禁止吸烟 No smoking
06	安全帽 Safety Helmets
07	限速 10 Speed Limit
08	限速 15 Speed Limit
09	限速 20 Speed Limit
0A	限速 25 Speed Limit
0B	限速 30 Speed Limit
0C	限速 35 Speed Limit
0D	限速 40 Speed Limit
0E	限速 45 Speed Limit
0F	安全靴 Safety shoes
10	安全带 Safety belts
11	车道 1 关/车道 2 关 Lane1 closed/Lane2 closed
12	车道 1 关/车道 2 开 Lane1 closed/Lane2 open
13	车道 1 开/车道 2 关 Lane1 open/Lane2 closed
14	车道 1 开/车道 2 开 Lane1 open/Lane2 open
15	车道 2 关/车道 1 关 Lane2 closed/Lane1 closed
16	车道 2 开/车道 1 关 Lane2 open/Lane1 closed
17	车道 2 关/车道 1 开 Lane2 closed/Lane1 open
18	车道 2 开/车道 1 开 Lane2 open/Lane1 open