

OS10S SERIES PHOTOELECTRIC SENSOR



Product Description:

- Compact body, to meet the needs of electronics, photovoltaic, semiconductor and other industries for compact space.
- the product has excellent black and white detection characteristics, can stably detect different colors of the measured objects.

Product features:

- Φ3 mounting hole, built-in metal parts, strong, long life
- RS485 output types



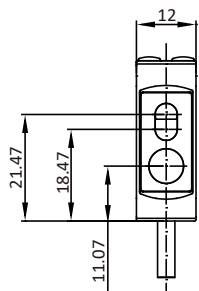
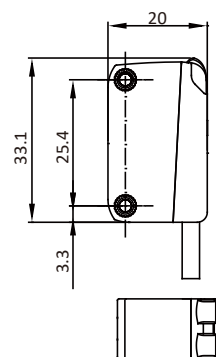
Type	Distance	light source	Indicated light source	Output	Connection	Wiring
OS10S-K4000/485/R- ¹⁾ *-Q8	50...4000mm	VCSEL Laser	Red LED	Modbus Protocol TIA / EIA-485A standard	*m pigtail + M8 Connector, 4pin	Fig.1

Note 1): * refers to the pigtail cable length in meters. Example:0.2 represents 0.2 meters pigtail.

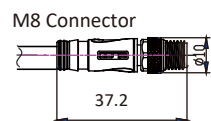
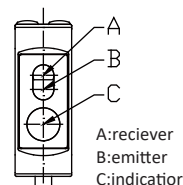
TECHNICAL SPECIFICATION

OPERATING VOLTAGE	10...30VDC	AMBIENT TEMPERATURE OPERATION	-20°C ... +60°C
LIGHT SOURCE TYPE	940nm VCSEL Laser	AMBIENT TEMPERATURE	-40°C ... +70°C
INDICATED LIGHT SOURCE	Red LED	STORAGE	
OUTPUT CHARACTERISTIC	modbus-485	PROTECTION DEGREE	IP67
RANGING FREQUENCY	80Hz	HOUSING MATERIAL	PC+PBT,PMMA
RANGE RESOLUTION	1mm	CIRCUIT PROTECTION	Short-circuit protection, Over-load protection
REPETITION ACCURACY	5mm		Reverse polarity protection,
ABSOLUTE ACCURACY	<20mm	CONNECTING TYPE	*m pigtail + M8 Connector

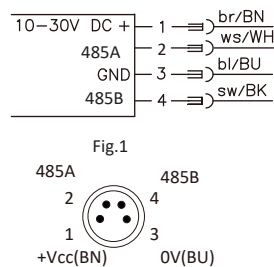
DIMENSIONS



INDICATORS/OPERATING MEANS



ELECTRICAL CONNECTION



OS10S Communication description

Baud rate: 115200bps, 8 data bits, 1 start bit, 1 stop bit, no parity.

Ranging range: 50 ~ 4000mm. If the distance exceeds, send 0xffff.

Default output mode: active upload, upload speed 80Hz, default address: 0x01

OS10S SERIES PHOTOELECTRIC SENSOR



Full frame data format description

Start character (1byte)	Address bit(1byte)	Byte length (1byte)	Command code (1byte)	Data bit (nbyte)	Sum check(2byte) cs1 cs2	Terminator (1byte)
0x68	adr	From command code to bytes checked	See command list	See command details (small end format)	From address to data sum check (small end format)	0x16

Supplementary description of data format:

1. Start character: 0x68, which is the start byte of a frame of data;
2. The address bit adr can be set through the menu or instruction, and the setting range is 1 ~ 254 (0xfe);The default address is 1 and the broadcast address is 0xff;
3. Byte length refers to the number of bytes from command code to check code (including check code);
4. Command code: different command codes correspond to different function instructions. See the table below for details;
5. Data bit: the returned data can be one byte or multiple bytes, and the data format is small end format.
Small end format: low byte comes first and high byte comes last; For example, when transmitting data 0x1234, first transmit low byte 0x34, and then transmit high byte 0x12;
6. Check is sum check, which is the sum from address bit to data bit, and the data format is small end format
For example, distance reading instruction: 68 ff 03 00 02 01 16, ff is the address code, 03 is the byte length,including 1 instruction code and 2 check bytes,0xff + 0x03 + 0x00 = 0x0102, the low byte comes first and the high byte comes last, cs1 = 0x02, cs2 = 0x01, 00 is the instruction code.
7. Terminator: 0x16, which is the end flag of one frame of data;
8. Both sending data and returning instructions meet the above instruction frame format;
Example of sending instruction: distance reading instruction: 68 ff 03 00 02 01 16
Resolution: 68 is the starting character and ff is the broadcast address code; 03 is the byte length, including 1 instruction code and 2 check bytes; 00 is the command code;02 01 is the check byte; 16 is the end code
Example of receiving instruction: distance return instruction: 68 00 05 00 0D 13 25 00 16
Resolution: 68 is the starting character and 00 is the default address code; 05 is the byte length, including 1 instruction code, 2 data bytes and 2 check bytes;0D 13 is the data byte, the small end format is converted into hexadecimal 0x130D, the corresponding decimal is 4877mm, and 25 00 is the sum check byte,The small end format is converted to hexadecimal as 0x0025 = 01 + 05 + 00 + 0D + 13; 16 is the end code;

Command list

function describe	Command code	Full instruction	Return instruction	Remark
read distance	0x00	68 adr 03 00 cs1 cs2 16 Take address 0xff as an example: 68 ff 03 00 02 01 16	68 adr 05 00 d1 d2 cs1 cs2 16	d1 d2: distance data; Unit: mm
Set address	0x80	68 adr 04 80 d1 cs1cs2 16 For example, set the address to 1: 68 ff 04 80 01 84 01 16	68 adr 04 80 state cs1 cs2 16 Return: state 0: successful; 1: Fail	d1: device address Setting range 1-254, 0xff is the broadcast address, 0x00 is reserved
set up Baud rate	0x81	68 adr 04 81 d1 cs1 cs2 16 For example, set the baud rate to 9600 68 ff 04 81 02 86 01 16 Set the baud rate to 19200 68 ff 04 81 03 87 01 16 Set the baud rate to 115200 80 ff 04 81 05 89 01 16	68 adr 04 81 state cs1 cs2 16 Return: state 0: successful; 1: Fail	d1: corresponding baud rate level 0x02: 9600bit/s 0x05: 115200bit/s (default) 0x03: 19200bps
Set sending mode	0x83	68 adr 04 83 00 cs1 cs2 16 For example, set the continuous transmission mode command: 68 ff 04 83 00 86 01 16 Query instruction setting: 68 ff 04 83 01 87 01 16	68 adr 04 83 state cs1 cs2 16 Return: state 0: successful; 1: Fail	The default mode is continuous transmission mode. In this mode, only one device can be mounted on the bus;

OS10S系列光电传感器

产品说明:

• 小巧机身，满足电子、光伏、半导体等行业对紧凑空间的需求

• 产品具有优良的黑白检测特性，可稳定检测不同颜色被测物。

产品特点:

• Φ3 安装孔，内置金属件，坚固、长寿命

• 485输出类型

型号	检测距离	光源	指示光源	输出方式	连接方式	接线图
OS10S-K4000/485/R-*-Q8 ¹⁾	50...4000mm	VCSEL激光	红光LED	modbus协议 TIA/EIA-485A标准	*m pigtail +M8连接器 4pin	图1

注1): *表示猪尾巴长度,单位米,例如:*为0.2表示0.2米猪尾巴。

技术参数

工作电压

光源类型

指示光源

输出特性

距离分辨率

重复精度

绝对精度

测距频率

10...30VDC Class2

940nm VCSEL激光

红光LED

Modbus-RS485

1mm

5mm

<20mm

80Hz

工作温度

储存温度

保护电路

防护等级

外壳

连接方式

-20°C ... +60°C

-40°C ... +70°C

短路保护、反极性保护、
输出过载保护

IP67

PBT+PC

*m pigtail+M8连接器

外形尺寸

操作指示

接线图

33.1

25.4

3.3

20

A

B

C

21.47

13.47

11.07

12

M8连接器

37.2

Φ10

图1

10-30V DC +

485A

GND

485B

1

2

3

4

br/BN

ws/WH

bl/BU

sw/BK

A:接收端

B:发射端

C:指示光源

图1

485A

2

1

+Vcc(BN)

485B

4

3

0V(BU)

OS10S 通信说明

波特率:115200bps，8位数据位,1位起始位,1位停止位,无奇偶校验。

测距范围:50~4000mm，距离超出时发送0xffff

默认输出方式:主动上传,上传速度80Hz

默认地址:0x01

OS10S系列光电传感器

完整帧数据格式说明

起始符(1byte)	地址位(1byte)	字节长度(1byte)	命令码(1byte)	数据位(nbyte)	和校验(2byte) cs1 cs2	结束符(1byte)
0x68	adr	从命令码到 校验的字节数	见命令列表	见命令详解 (小端格式)	从地址到数据的 和校验 (小端格式)	0x16

数据格式补充说明:

1.起始符:0x68,为一帧数据的起始字节;

2.地址位adr可通过菜单或者指令设定,可设定范围为1~254 (0xfe) ;默认地址为1,广播地址为0xff;

3.字节长度指的是从命令码到校验码的字节数 (含校验码) ;

4.命令码:不同命令码对应不同功能指令,详见下表;

5.数据位:返回数据可为1个字节,也可为多个字节,数据格式为小端格式

小端格式:低字节在前,高字节在后;例如数据0x1234,传递时先传递低字节0x34,再传递高字节0x12;

6.校验为和校验,从地址位到数据位的和,数据格式位小端格式

例如,距离读取指令:68 ff 03 00 02 01 16, ff为地址码,03为字节长度,包含1个指令码与2个校验字节,0xff+0x03+0x00=0x0102,传递时低字节在前,高字节在后,cs1=0x02, cs2=0x01,00为指令码。

7.结束符:0x16,为一帧数据的结束标志;

8.发送数据和返回指令均满足以上指令帧格式;

发送指令示例:距离读取指令:68 ff 03 00 02 01 16

解析:68为起始符,ff为广播地址码;03为字节长度,包含1个指令码与2个校验字节;00为命令码;02 01 为校验字节;16为结束码

接收指令示例:距离返回指令:68 00 05 00 0D 13 25 00 16

解析:68为起始符,00为默认地址码;05为字节长度,包含1个指令码,2个数据字节,2个校验字节;0D 13为数据字节,小端格式转化为十六进制为0x130D,对应的十进制为4877mm,25 00 为和校验字节,小端格式转化为十六进制为0x0025 = 01+05+00+0D+13;16为结束码;

命令列表

功能描述	命令码	全指令	返回指令	备注
读取距离	0x00	68 adr 03 00 cs1 cs2 16 以地址0xff为例:68 ff 03 00 02 01 16	68 adr 05 00 d1 d2 cs1 cs2 16	d1 d2:距离数据; 单位为mm
设置地址	0x80	68 adr 04 80 d1 cs1 cs2 16 例, 设置地址为1: 68 ff 04 80 01 84 01 16	68 adr 04 80 state cs1 cs2 16 返回:state 0:成功;1: 失败	d1:设备地址 设置范围1-254, 0xFF为广播地址,0x00保留
设置波特率	0x81	68 adr 04 81 d1 cs1 cs2 16 例, 设置波特率为9600 68 ff 04 81 02 86 01 16 设置波特率为19200 68 ff 04 81 03 87 01 16 设置波特率为115200 80 ff 04 81 05 89 01 16	68 adr 04 81 state cs1 cs2 16 返回:state 0:成功;1:失败	d1: 对应波特率等级 0x02: 9600bit/s 0x05: 115200bit/s(默认) 0x03:19200bps
设置发送模式	0x83	68 adr 04 83 00 cs1 cs2 16 例,设置连续发送模式指令: 68 ff 04 83 00 86 01 16 设置查询模式指令: 68 ff 04 83 01 87 01 16	68 adr 04 83 state cs1 cs2 16 返回:state 0:成功;1:失败	默认为连续发送模式, 该模式下,总线上只能 挂载一台设备;

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第1页

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第2页