

ESM Series Measuring Light Curtain



Product Introduction

ESM series measuring light curtain is mainly used for measuring the scale, outline and volume of objects; Compact and beautiful in appearance, diverse installation; The detection accuracy can reach up to 2.5mm, with various parameter configurations, perfect fault detection and fault monitoring, and the digital tube can visually display various working states; Hold the function of shielding lamp beads through the upper computer; The light curtain has strong anti-interference ability and can work normally in various servo motors and harsh environments.

Product Feature

- Working voltage DC12V-30V.
- Smallest detection accuracy is 2.5mm.
- 2.5mm sensing distance up to 3m, 5mm/10mm sensing distance up to 5m.
- Digital tube and visible indicator showing working state.
- Special anti-shock structure and aluminum alloy enclosure ensure good performance against vibration.
- Various brackets ensure well mounted on different machine.

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Product Parameter

Power Supply	DC12V-30V	
Capacity	<5W	
Beam Space	2.5mm, 5mm, 10mm	
Beam	2.5mm	32, 64.....640
	5mm	16, 24.....640
	10mm	16, 24.....400
Protective Height	Protection height=(N-1)*beam space, (N is beams)	
Wavelength	940nm	
Response Time	Response time=(N*0.1ms)+0.4ms (N is beams)	
Output Method (OSSD)	Switch quantity: NPN or PNP	
	Analog quantity: 0-5V, 0-10V, 4-20mA	
Communication	Communication: RS485	
	Baud rate:9600bps(default), 19200bps, 38400bps, 57600bps, 115200bps	
	Protocol: Modbus-RTU	
	Data sending: active mode, passive mode	
Sensing distance	2.5mm Beam gap	0. 1~1m, 0.1~3m (switch quantity/analog quantity)
		0.1~2m (encoder PP)
	5mm Beam gap	0.1~1m, 0.1~3m, 0.1~5m (switch quantity/analog quantity)
		0.1~2m (encoder PP)
	10mm Beam gap	0.1~1m, 0.1~3m, 0.1~5m (switch quantity/analog quantity)
		0.1~3m (encoder PP)
Sensing Method	Thru-beam	
Synchronization	Wire-syn	
Enclosure Material	Aluminum alloy	
Enclosure Rate	IP65	
Sectional Size	32*30mm	
Vibration Resistance	Frequency 10Hz-55Hz, amplitude 0.35±0.05mm, 20 times each in X, Y and Z direction.	
Ambient Temperature	-10℃~55℃ (no freezing)	
Store Temperature	-30℃~70℃ (no freezing)	
Ambient Humidity	When temperature 20℃, the humidity max. 85%	

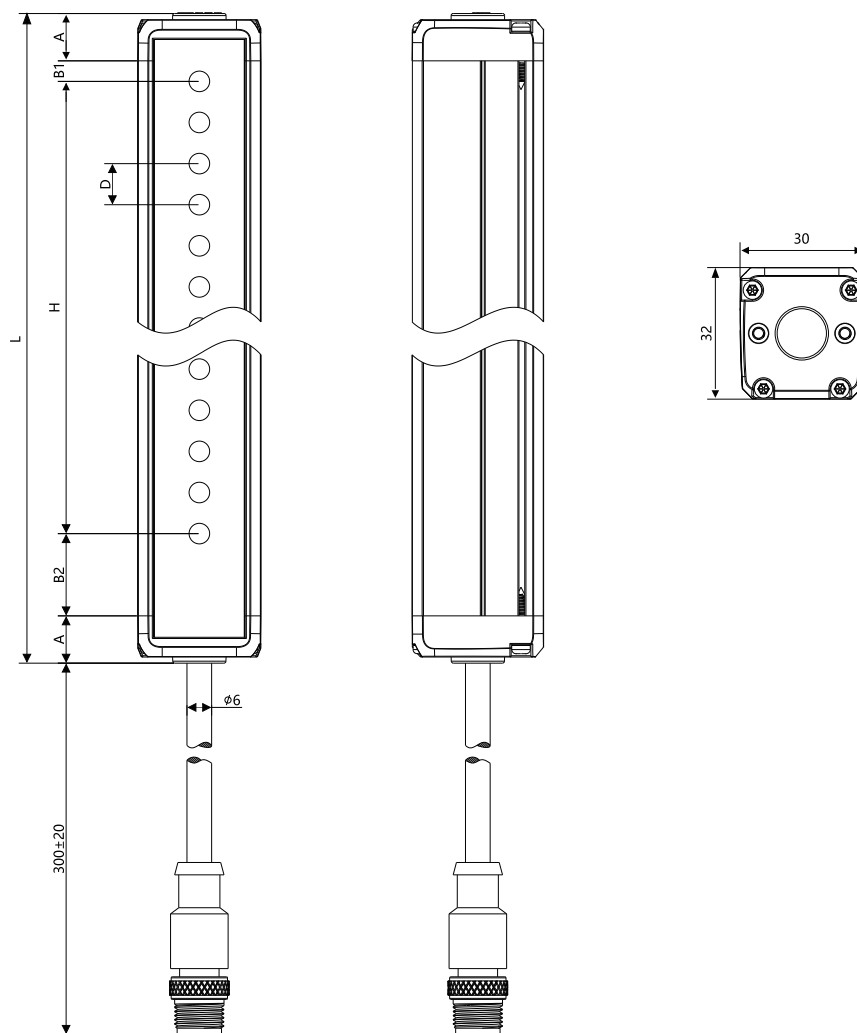
Model Selection (e.g.: ESM-1610NL-3)

Product Series	Beams	Beam Space	Output Option	Bracket	Sensing Distance
ESM	16	10	N	L	3
	16, 24, 32.....	2.5mm 5mm 10mm	N: 2 NPN P: 2 PNP U1: 0-5V U2: 0-10V I: 4-20mA PP: 1 loop P-pulse input	L: L1 bracket Q2: Q2 bracket	1: 0.1~1m 3: 0.1~3m 5: 0.1~5m (Remark: please let us know when with reflectivity)

Note: 1. When the interface is selected as PP(1-channel P-type pulse input), the maximum sensing distance for 10mm beam gap is 3 meters, and the maximum sensing distance for 2.5mm and 5mm beam gap is 2 meters.

2. RS485 passive mode is default setting. In which, active mode, baud rate, address, output method, OSSD trigger, analog output and shielding setting can be configured on host computer. Please refer manual for detailed operation.

Product Size



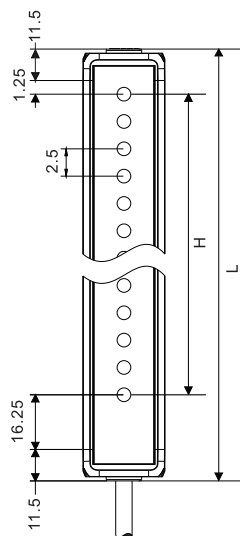
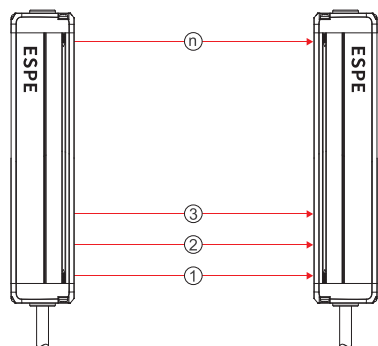
A: upper & lower end caps
 B1: up blind area
 B2: bottom blind area
 D: beam space
 H: detection height
 L: total length

A=11.5mm
 When D=2.5mm, B1=1.25mm; B2=16.25mm
 When D=5.0mm, B1=2.5mm; B2=17.5mm
 When D=10mm, B1=5.0mm; B2=20mm
 $H=(\text{beams}-1) \times \text{beam space}$
 $L=A \times 2 + B1 + B2 + H$

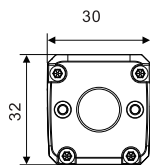


ESM Model Selection Table

- Detection accuracy 2.5mm



Front View



Top View

H is protective height: $H = (\text{beams} - 1) * \text{beam space}$.

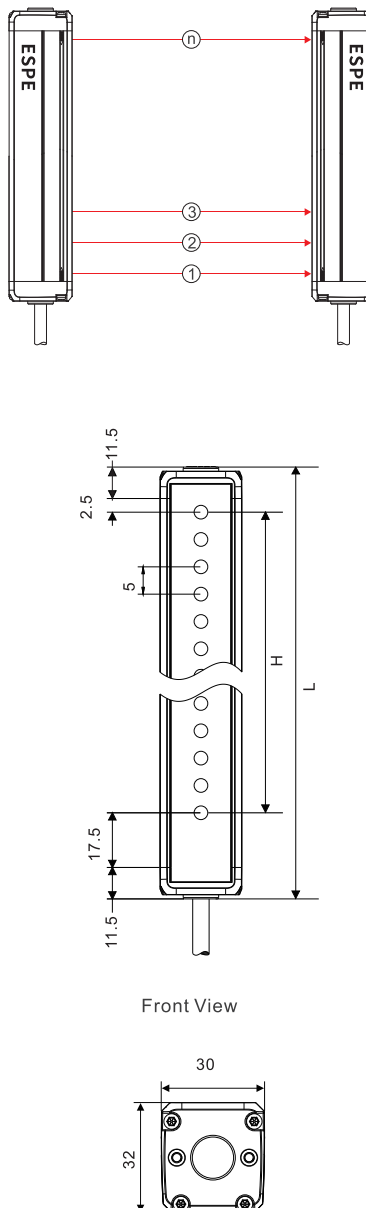
L is total height: $L = A + B_1 + B_2 + H$

[illegible]

Remark: Beside above models, other light curtains can be customized

ESM Model Selection Table

- Detection accuracy 5mm

Picture (mm)	Beams (n)	Protection Height (mm)	Total Height (mm)	Model
 Front View Top View H is protective height: $H = (beams - 1) * beam\ space$. L is total height: $L = A + B1 + B2 + H$	16	75	118	ESM1605
	24	115	158	ESM2405
	32	155	198	ESM3205
	40	195	238	ESM4005
	48	235	278	ESM4805
	56	275	318	ESM5605
	64	315	358	ESM6405
	72	355	398	ESM7205
	80	395	438	ESM8005
	88	435	478	ESM8805
	96	475	518	ESM9605
	104	515	558	ESM10405
	112	555	598	ESM11205
	120	595	638	ESM12005
	128	635	678	ESM12805
	136	675	718	ESM13605
	144	715	758	ESM14405
	152	755	798	ESM15205
	160	795	838	ESM16005
	168	835	878	ESM16805
	176	875	918	ESM17605
	184	915	958	ESM18405
	192	955	998	ESM19205
	200	995	1038	ESM20005
	208	1035	1078	ESM20805
	216	1075	1118	ESM21605
	224	1115	1158	ESM22405
	232	1155	1198	ESM23205
	240	1195	1238	ESM24005
	248	1235	1278	ESM24805
	256	1275	1318	ESM25605
				
	640	3195	3238	ESM64005

Remark: Beside above models, other light curtains can be customized

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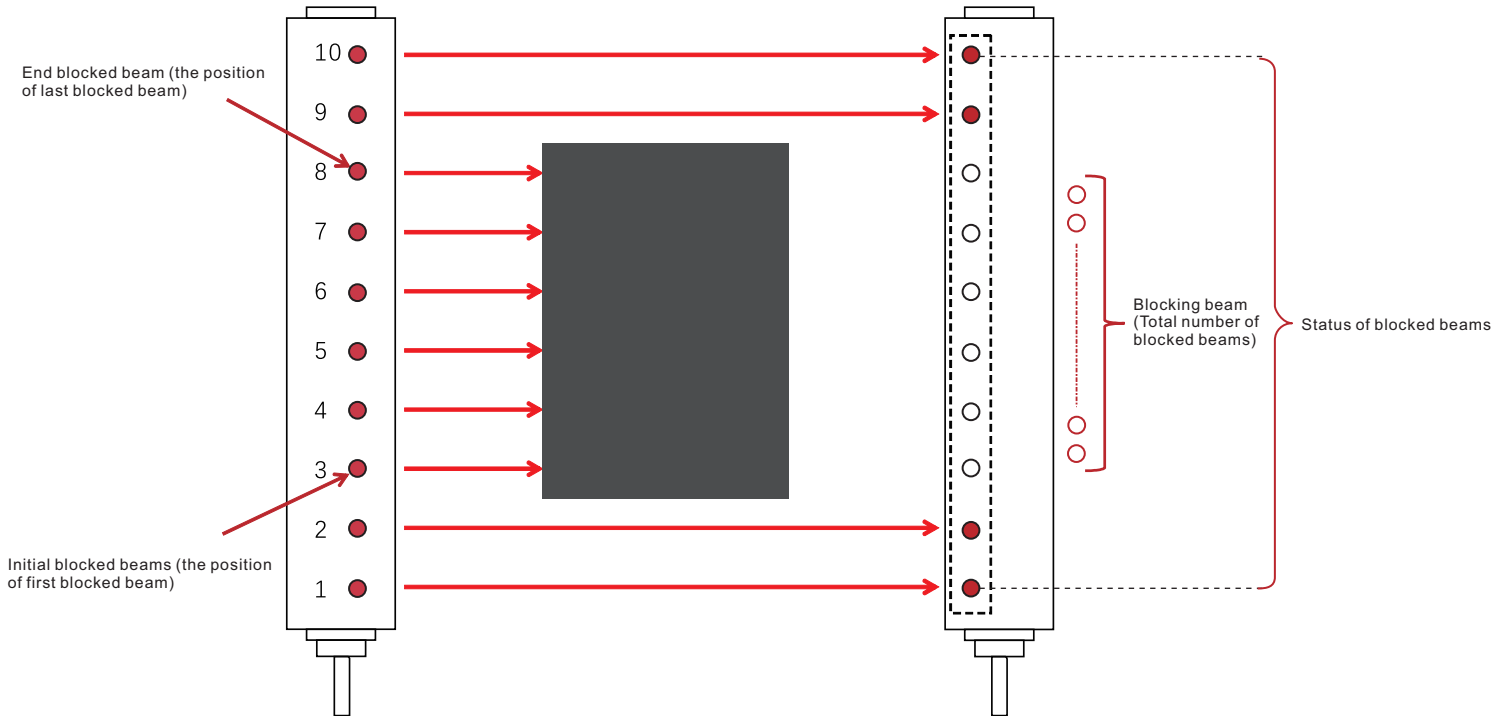
ESM Model Selection Table

- Detection accuracy 10mm

Picture (mm)	Beams (n)	Protection Height (mm)	Total Height (mm)	Model
	16	150	198	ESM1610
	24	230	278	ESM2410
	32	310	358	ESM3210
	40	390	438	ESM4010
	48	470	518	ESM4810
	56	550	598	ESM5610
	64	630	678	ESM6410
	72	710	758	ESM7210
	80	790	838	ESM8010
	88	870	918	ESM8810
	96	950	998	ESM9610
	104	1030	1078	ESM10410
	112	1110	1158	ESM11210
	120	1190	1238	ESM12010
	128	1270	1318	ESM12810
	136	1350	1398	ESM13610
	144	1430	1478	ESM14410
	152	1510	1558	ESM15210
	160	1590	1638	ESM16010
	168	1670	1718	ESM16810
	176	1750	1798	ESM17610
	184	1830	1878	ESM18410
	192	1910	1958	ESM19210
	200	1990	2038	ESM20010
	208	2070	2118	ESM20810
	216	2150	2198	ESM21610
	224	2230	2278	ESM22410
	232	2310	2358	ESM23210
	240	2390	2438	ESM24010
	248	2470	2518	ESM24810
H is protective height: $H = (\text{beams} - 1) \times \text{beam space}$. L is total height: $L = A + B1 + B2 + H$	256	2550	2598	ESM25610
				
	400	3990	4038	ESM40010

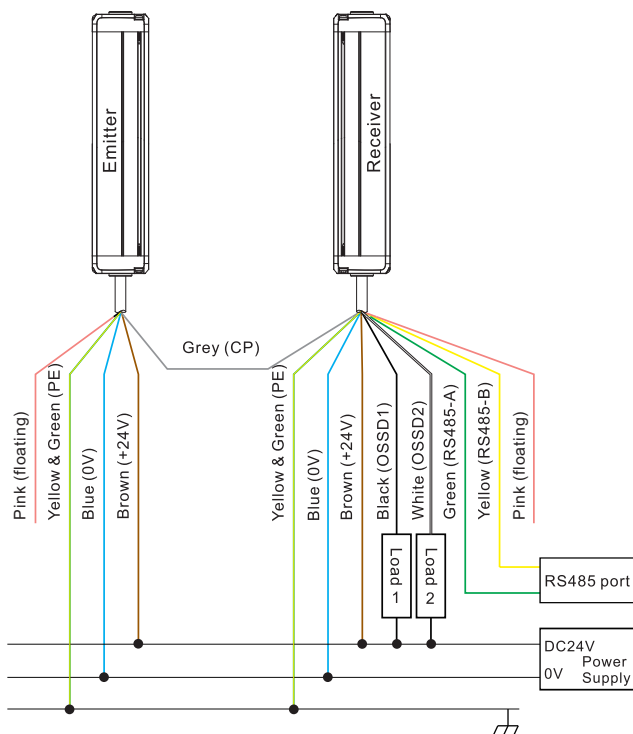
Remark: Beside above models, other light curtains can be customized

Light Curtain Output Data Description

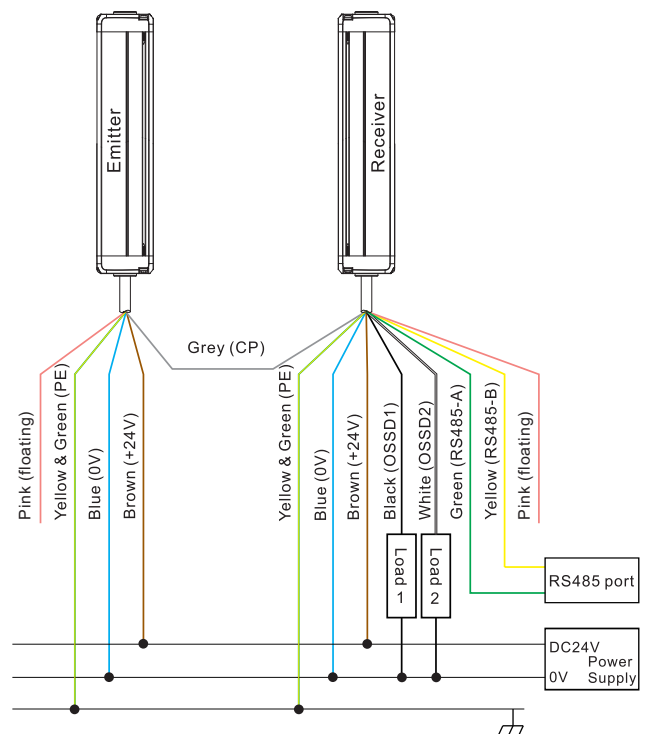


Wire Diagram

NPN

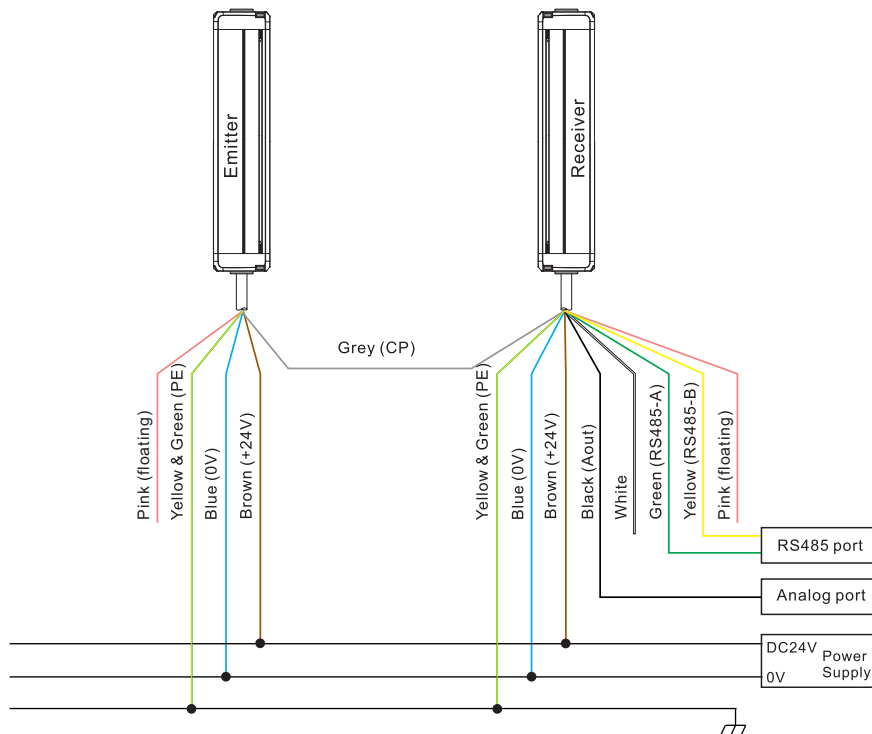


PNP

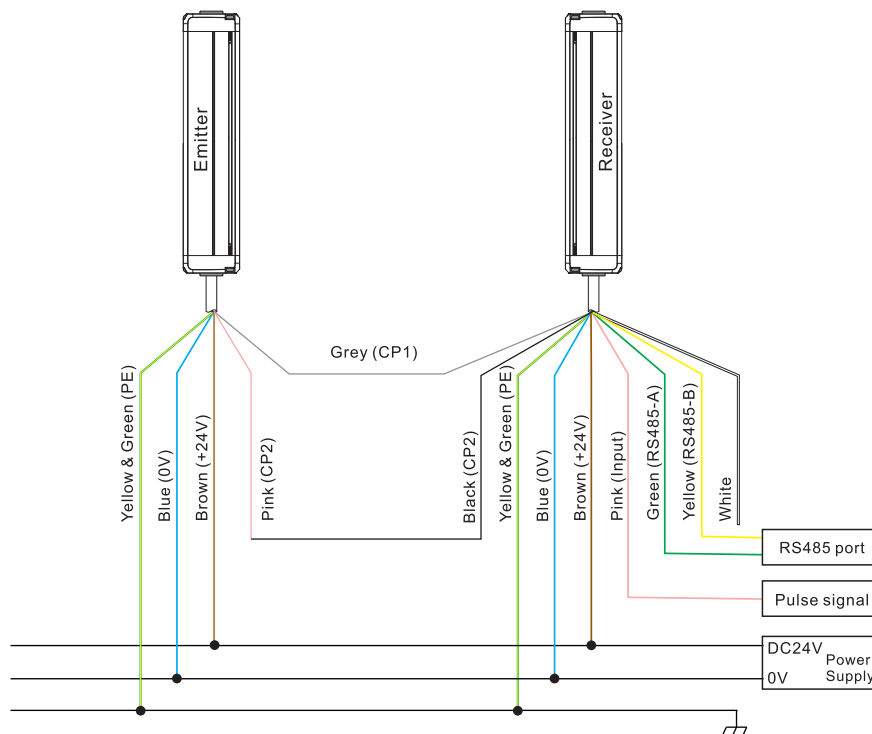


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Analog Wiring Diagram



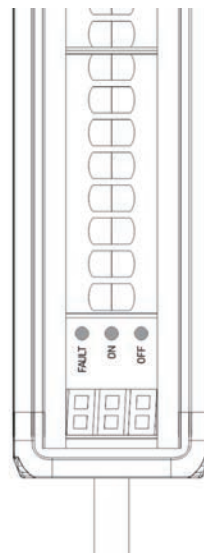
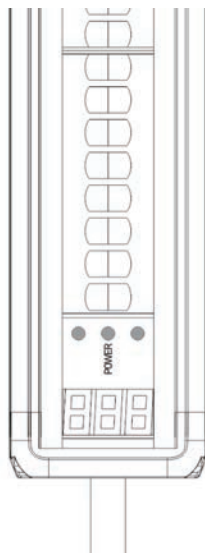
Pulse Transmission Wiring Diagram



Connection

Barrier	Color	Wire Mark	Function	Connection
Emitter	Brown	24V	Positive of power	Connect to 24V of power
	Blue	0V	Negative of power	Connect to 0V of power
	Grey	CP/CP1	Synchronization wire	Connect to CP/CP1 of emitter
	Black	CP2/NC	Wire synchronization/ reservation	Connect the receiver CP2/ Suspend
	Yellow & Green	PE	Shielding wire	Connect to receiver PE then grounding
Receiver	Brown	24V	Positive of power	Connect to 24V of power
	Blue	0V	Negative of power	Connect to 0V of power
	Grey	CP/CP1	Synchronization wire	Connect to CP/CP1 of emitter
	Black	OSSD1/Aout/CP2	Switch output 1/ analog output signal/synchronization signal	Connect to input port of switch signal/ analog signal/ CP2 of receiver accordingly.
	White	OSSD2/NC	Switch output 2/ NULL	Connect switch signal input 2/NULL
	Green	RS485-A	RS485 communication interface	Connected to RS485 bus A
	Yellow	RS485-B		Connected to RS485 bus B
	Pink	Input/NC	Pulse transmission/reservation	Connect pulse signal/suspend
	Yellow & Green	PE	Shielding wire	Connect to emitter PE then grounding

Indicator Light



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Specification of Indicator Light

Indication Code For ESM Receiver



Power on, light all LEDs for 1s to check if LEDs can work normally.



Power ON and shows communication data.
Baud rate: 9600
Parity: None
Digital tube shows 96N



Parameter get configured or changed.
Red, green, orange blink in 2.5Hz.
Digital tube shows: SET



No error, beam-thru
Digital tube show: 000
Red LED OFF
Green LED ON
Orange LED OFF



No error, digital tube shows initial blocked beam,
take 111 as example.
Digital tube shows: 111
Red LED ON
Green LED OFF
Orange LED OFF



Fault, EEPROM not configured or data error.
Red LED OFF.
Green LED OFF.
Orange 1Hz blink



Fault, CP open circuit
Digital tube show: CP
Red LED OFF
Green LED OFF
Orange LED 1Hz blink



Fault, CP overcurrent
Digital tube shows: 0C
Red LED OFF
Green LED OFF
Orange LED blink in 1Hz.



Fault, power supply overvoltage
Digital tube shows: 0V
Red LED steady ON
Green LED OFF
Orange LED 1Hz blink



Fault, power supply undervoltage.
Digital tube shows: UV
Red LED steady ON
Green LED OFF
Orange LED 1Hz blink

Indicator Code For ESM Emitter



Power ON and light all LEDs for 1s to check if all LEDs can work well.



No error
Digital tube OFF
Red LED OFF
Green LED steady ON
Orange LED OFF

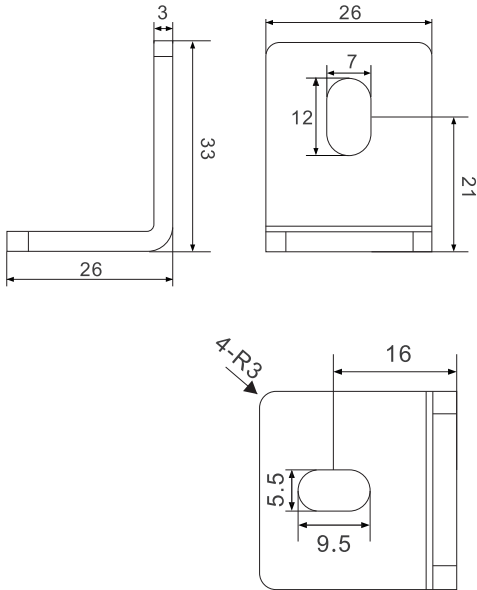


Fault, power supply overvoltage.
Digital tube shows: 0V
Red LED steady ON
Green LED OFF
Orange LED 0.5Hz blink



Fault, power supply undervoltage.
Digital tube shows: UV
Red LED steady ON
Green LED OFF
Orange LED 0.5Hz blink

Option of Bracket

Picture	Name & Accessories	Size
	L bracket: L bracket (4pcs) M5 Slider (4pcs) M6 gasket (4pcs) M6 spring washer (4pcs) M6*16 screw (4pcs) M5*6 screw (4pcs)	
	Q4 bracket: Q4 bracket (4pcs) M3*7 screw (4pcs) M6 gasket (4pcs) M6 spring washer (4pcs) M6*16 screw (4pcs)	