北京平和
Bei Jing Ping He

PHLR Series
High Performance Safety Interlock Switch



PHLR Series introduction

Safety interlock switch is a safety device used to lock and monitor the movable mechanisms such as safety fence doors, and protective covers. The strong structural design of SLR11 series make it withstand higher tension. The RFID technology has higher security and confidentiality. Sensor & actuator support universal and unique coding. Small size for easy installation.

Product features

- With locking & monitoring function;
- Optional coding modes: universal coding &unique coding;
- Self-diagnose &cross-diagnose: periodic double cross-diagnose improves security;
- Independent redundant dual signal: in case of hazard caused by signal loop failure;
- Small size: 29.7mm* 29.7mm section size;
- Flexible installation: directly installed on aluminum frame less than 30mm, brackets is no need.

Product parameters

Standard		EN ISO 13849-1 (Category 4/PL e);EN ISO 14119; EN IEC 60947-5-2;EN IEC 60947-5-3
Certification		CE
Lock mode		Mechanical/electromagnetic
Response time	Lock→unlock	<250ms
	Unlock→lock	<300ms
Lock	Lock retentivity Fzh	≥2000N
	Lock bolt insertion deviation	≤2mm
	Mechanical endurance	>100 million times (door operating speed 1m/s)
	Operation frequency	1Hz
	Minimum radius of the revolving door	≥250mm
	Manual unlock	Front, back
Safe output OSSD output	Output signal	NPN*2/PNP*2
	Max. load current	≤200mA
	Residual voltage when it's ON	<2.5V (cable 5m)
	Voltage when it's OFF	≤2V (cable 5m)
	Leakage current	≤0.5mA
	Max. load capacity	2uF
	Load connection resistance	≤2.5Ω
Auxiliary output AUX output	Output signal	NPN*1/PNP*1
	Max. load current	50mA
	Residual voltage when it's ON	≤2.5V@50mA
External input breakage current	Safe input	5mA*2
	Reset/EDM input	About 10mA*1
	Lock control input	About 10mA*1
Power supply	Working voltage	DC24V±20%
	Power consumption	3.6W*[1]
Protection		Power supply reverse polarity, output short circuit, output reverse polarity protection
Environment	Enclosure protection class	IP65
	Working temperature	-20~55℃ (no freezing)
	Storage temperature	-25~70℃ (no freezing)
	Working humidity	5%~95%RH
	Storage humidity	5%~95%RH
	Vibration resistance	10-55Hz, double amplitude 2.0mm, 5 minutes each in X, Y and Z directions
	Shock resistance	30G, 6 times each in X, Y and Z directions (IEC 60947-5-3)
	Cascade connection	Up to 20 units
Start time		1.5s
Material		Nylon/zinc alloy/stainless steel

*1: Power consumption and load current is excluded. The moment the lock control input is activated, the power consumption will temporarily increase (up to 15W, approximately 50ms).

PHLR Series Safety Interlock Switch

Model Selection (ex: PHLR-□□□□□-□□)

Product Series	Lock mode	Configuration type	Code type	Output type	Wire type	Cable length	AUX function selection
PHLR	– □	□	□	□	□	– □	□
	0: Electromagnetic 1: Mechanical	0: Standard 1: Advanced	0: Universal 1: Unique	N: NPN P: PNP	No: leading wire C: M12 connector	3: 3m 5: 5m 10: 10m	No: Output monitored by door lock (reverse) A: Output is monitored by key (reverse) B: Output is monitored by key (front) D: Output is monitored by door lock (front)

Function of Standard Mode & Advanced Mode						
	Safe output channel	AUX output channel	Safe input channel	Lock input channel	EDM	Reset
Standard mode	●	●	●	●	—	—
Advanced mode	●	●	●	●	●	●

AUX Function Selection

No: AUX output is monitored by door lock (reverse)

Door state	Lock state	OSSD output	AUX output
Open	Non-locking	OFF	ON
Close	Non-locking	OFF	ON
Close	Locking	ON	OFF

A: AUX output is monitored by key (reverse)

Door state	Lock state	OSSD output	AUX output
Open	Non-locking	OFF	ON
Close	Non-locking	OFF	OFF
Close	Locking	ON	OFF

B: AUX output is monitored by key (front)

Door state	Lock state	OSSD output	AUX output
Open	Non-locking	OFF	OFF
Close	Non-locking	OFF	ON
Close	Locking	ON	ON

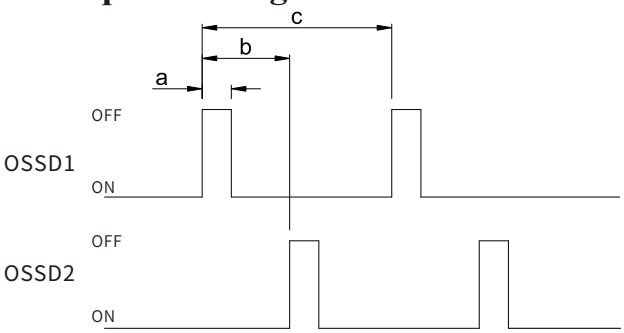
D: AUX output is monitored by door lock (front)

Door state	Lock state	OSSD output	AUX output
Open	Non-locking	OFF	OFF
Close	Non-locking	OFF	OFF
Close	Locking	ON	ON

PHLR Series Selection Table

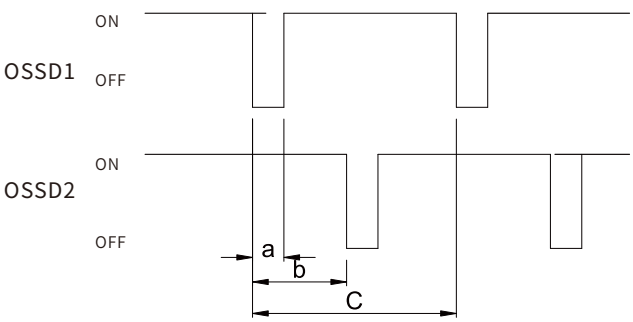
Lock mode	Configuration	Output type	Code type	Model
Electromagnetic	Standard	NPN	Universal	PHLR-000N
		NPN	Unique	PHLR-001N
		PNP	Universal	PHLR-000P
		PNP	Unique	PHLR-001P
	Advanced	NPN	Universal	PHLR-010N
		NPN	Unique	PHLR-011N
		PNP	Universal	PHLR-010P
		PNP	Unique	PHLR-011P
Mechanical	Standard	NPN	Universal	PHLR-100N
		NPN	Unique	PHLR-101N
		PNP	Universal	PHLR-100P
		PNP	Unique	PHLR-101P
	Advanced	NPN	Universal	PHLR-110N
		NPN	Unique	PHLR-111N
		PNP	Universal	PHLR-110P
		PNP	Unique	PHLR-111P

Sequence Diagram



a: 150-250us b: 50-80ms c: 100-200ms

NPN output diagnostic sequence

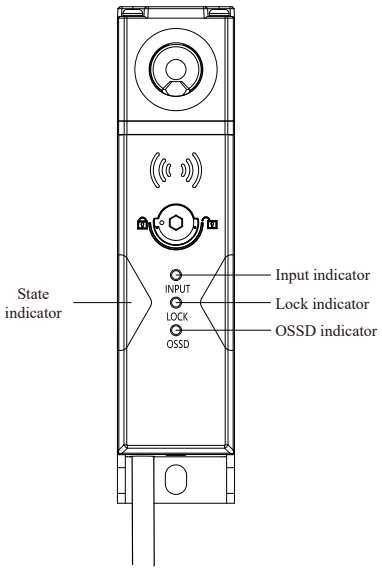


a: 150-250us b: 50-80ms c: 100-200ms

PNP output diagnostic sequence

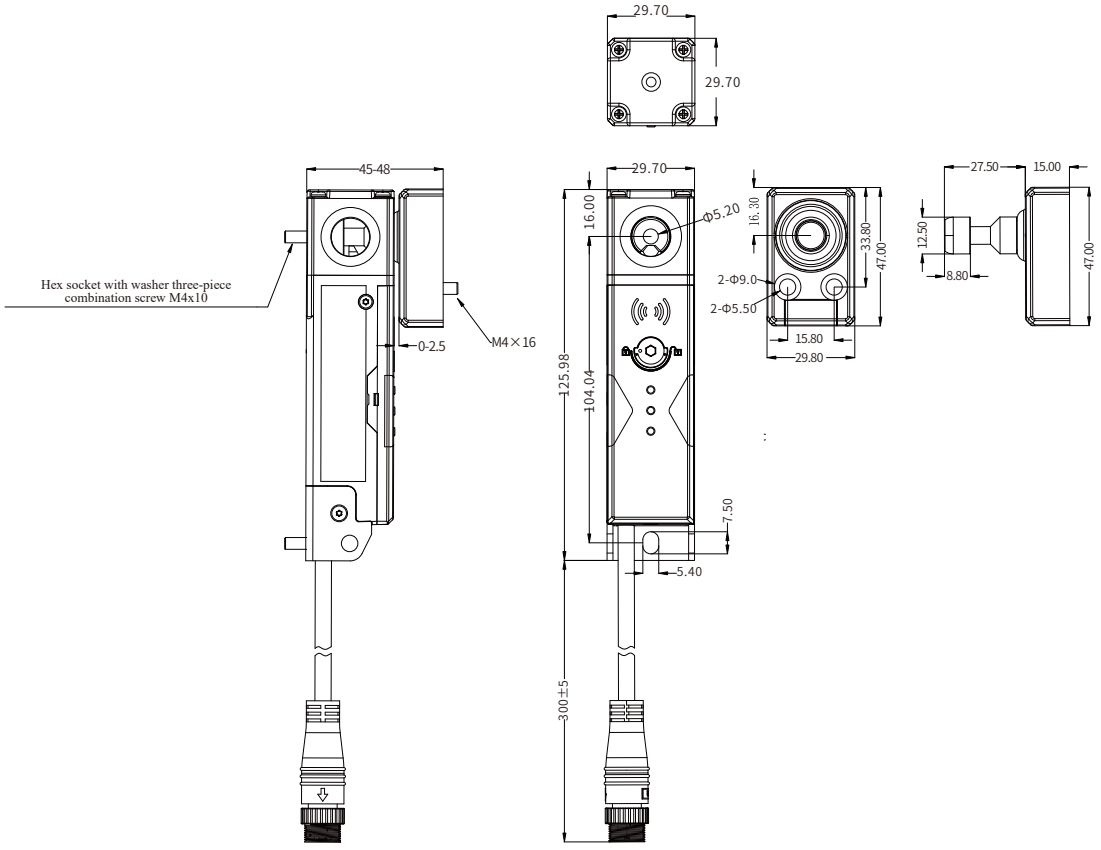
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Light indicator

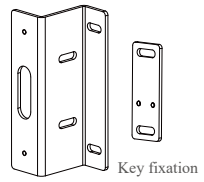
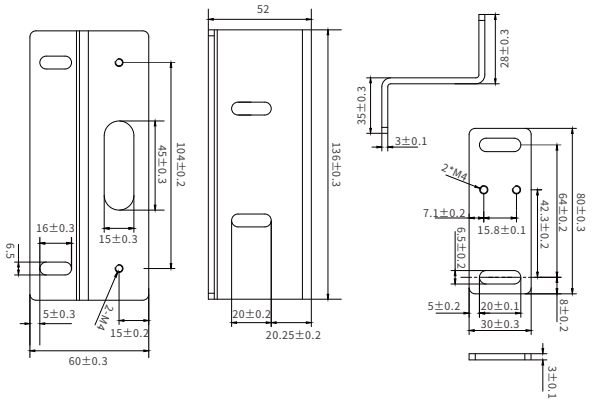
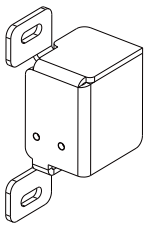
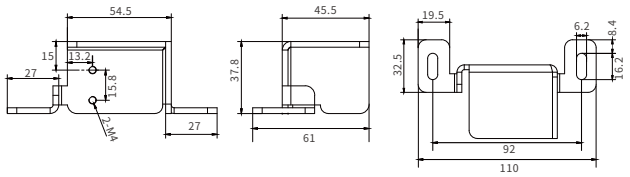
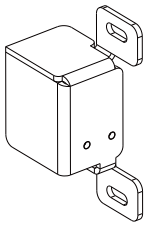
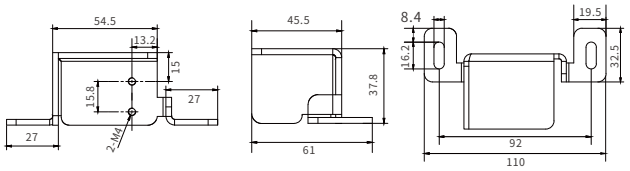
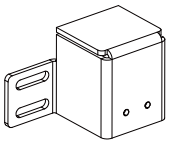
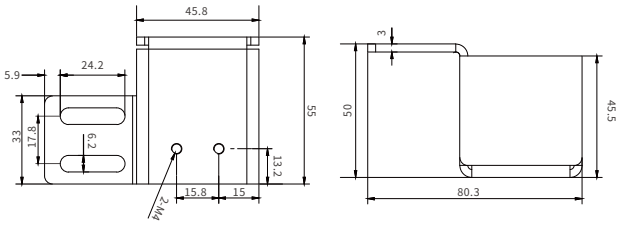
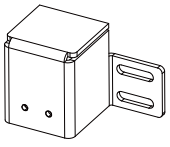
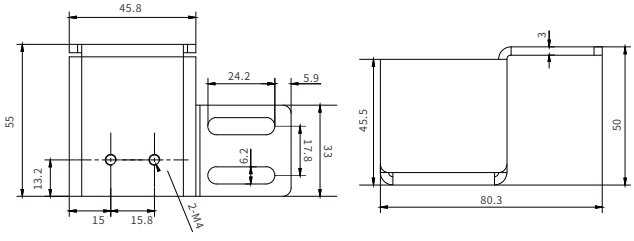


Indicator	Color	Details
Output	Red, green	OSSD output: green OSSD close: red OSSD error: red blink (2Hz) EDM error: red blink (1Hz)
Locking	Green	Locking: steady on Lock error: 2Hz blink (solenoid error, optocoupler error) No RFID: 1Hz blink Attempt to lock: ON after double blinking Attempt to unlock: OFF after double blinking Releasing: OFF
Input	Orange	Normal input: light on No input (waiting for input): OFF Wait for reset: 1Hz blink Safe input error: 2Hz blink
Working state	Green, red, orange	OSSD with output: green light is steady on OSSD without output: red light is steady on Voltage error: orange light 1Hz blink Unique code not matched: red, green and orange blink

Product Dimension



Bracket Selection

Appearance	Bracket name	Model	Dimension
	Inner montage bracket（Inner side is equipped with fixing device）	PHLR-B01	
	Left-opening sliding mounting bracket (Push-pull key fixation)	PHLR--BL01	
	Right-opening sliding mounting bracket (Push-pull key fixation)	PHLR--BR01	
	Left-opening rotary mounting bracket (Hinge key fixed)	PHLR--BL02	
	Right-opening rotary mounting bracket (Hinge key fixed)	PHLR--BR02	

Montage Diagram

Direction of lock body and key

Correct montage



From front



From side

Incorrect montage







Mutual interference

When multiple PHLR used closely, they may malfunction due to mutual interference.
In order to avoid mutual interference, please install interlock as below.

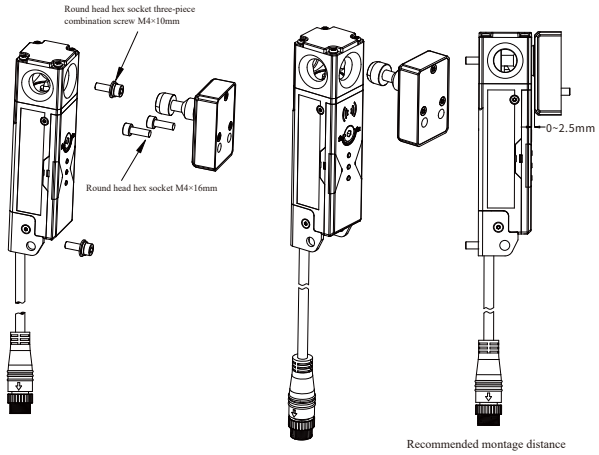


50mm over

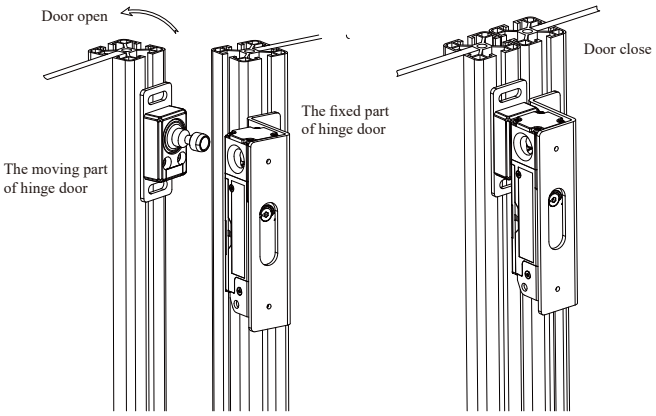


50mm over

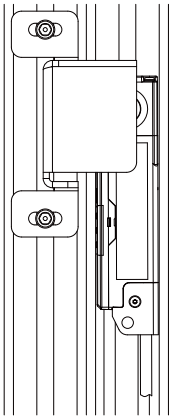
Montage without bracket

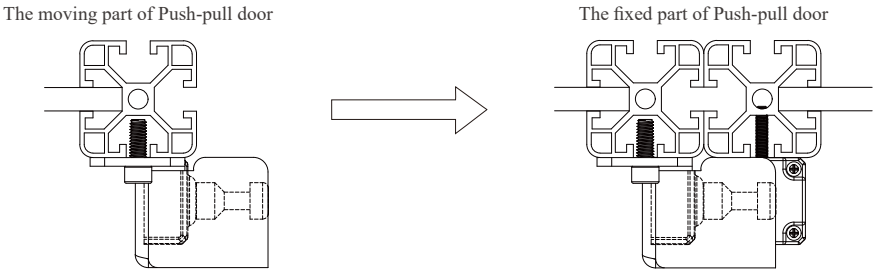


Montage with inside bracket

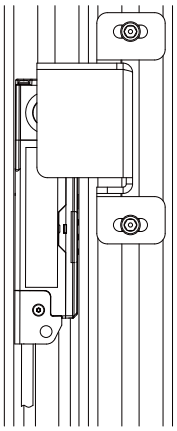


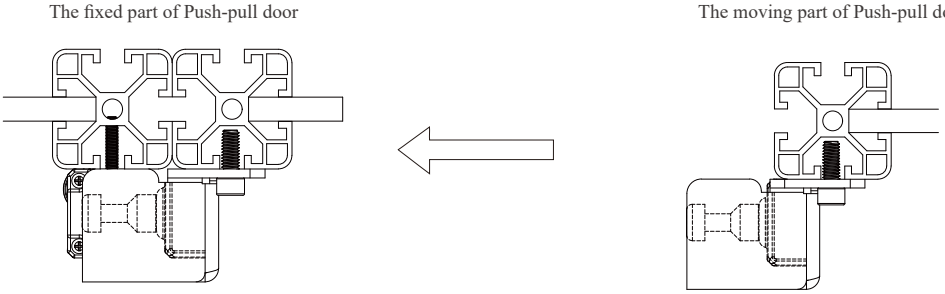
Left-opening slide bracket montage





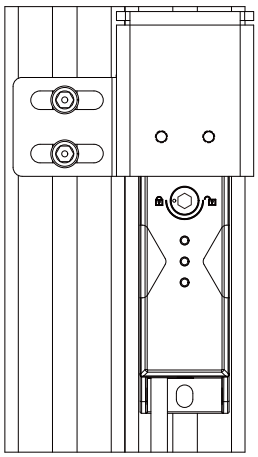
Right-opening slide bracket montage

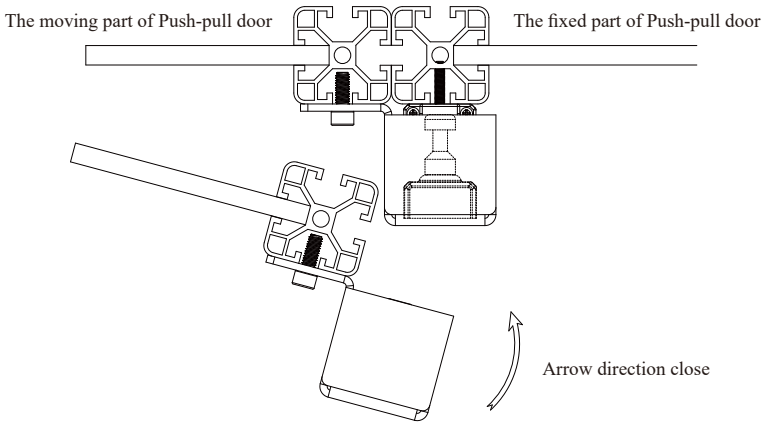




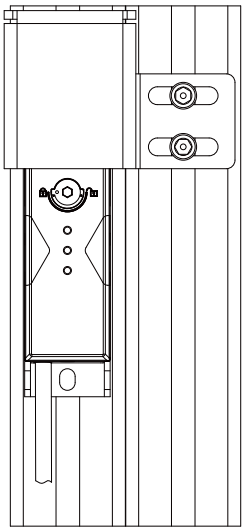
PHLR Series Safety Interlock Switch

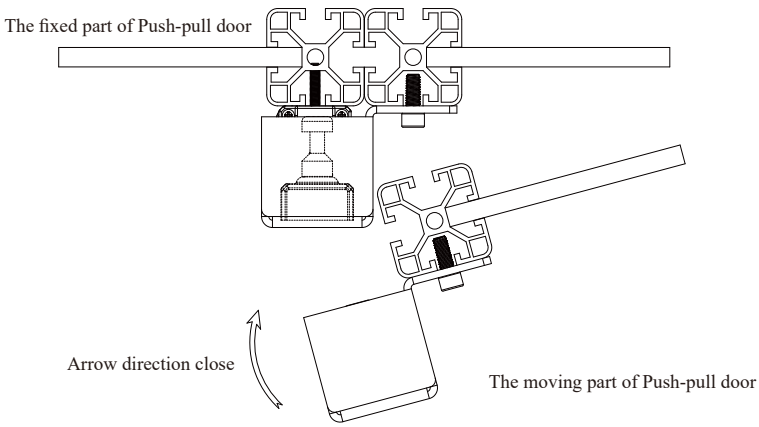
Left-opening rotate bracket montage





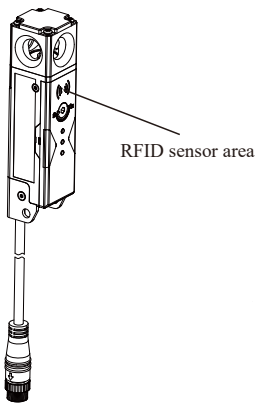
Right-opening rotate bracket montage

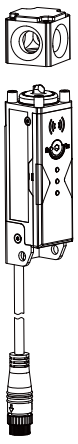


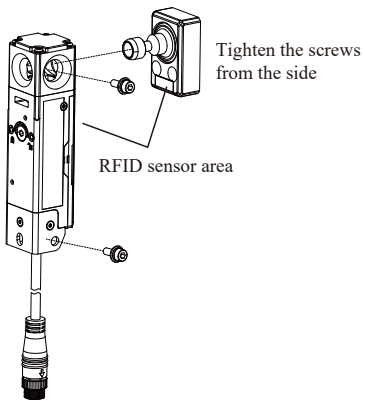


Lock adjustment

Loosen the four screws on the top of the lock,and refer to the diagram below and rotate the lock until the RFID sensor area on the main unit faces the key. Finally, tighten the four screws on the top of the lock

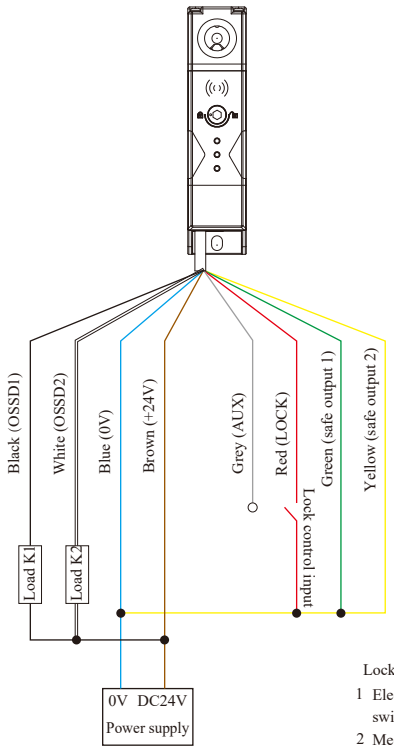




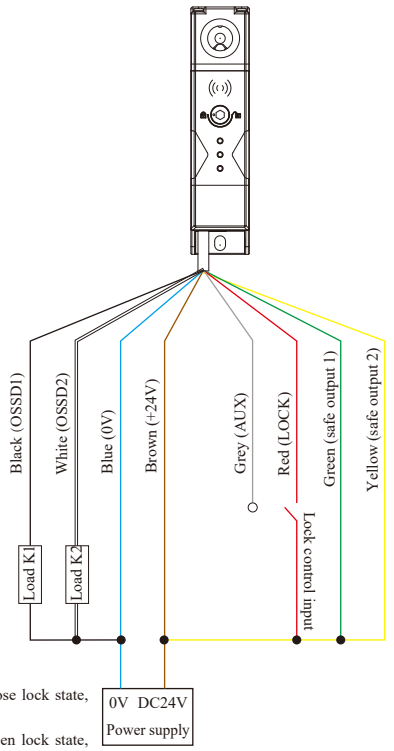


Connection wiring

PHLR standard mode (NPN, no cascade)



PHLR standard mode (PNP, no cascade)

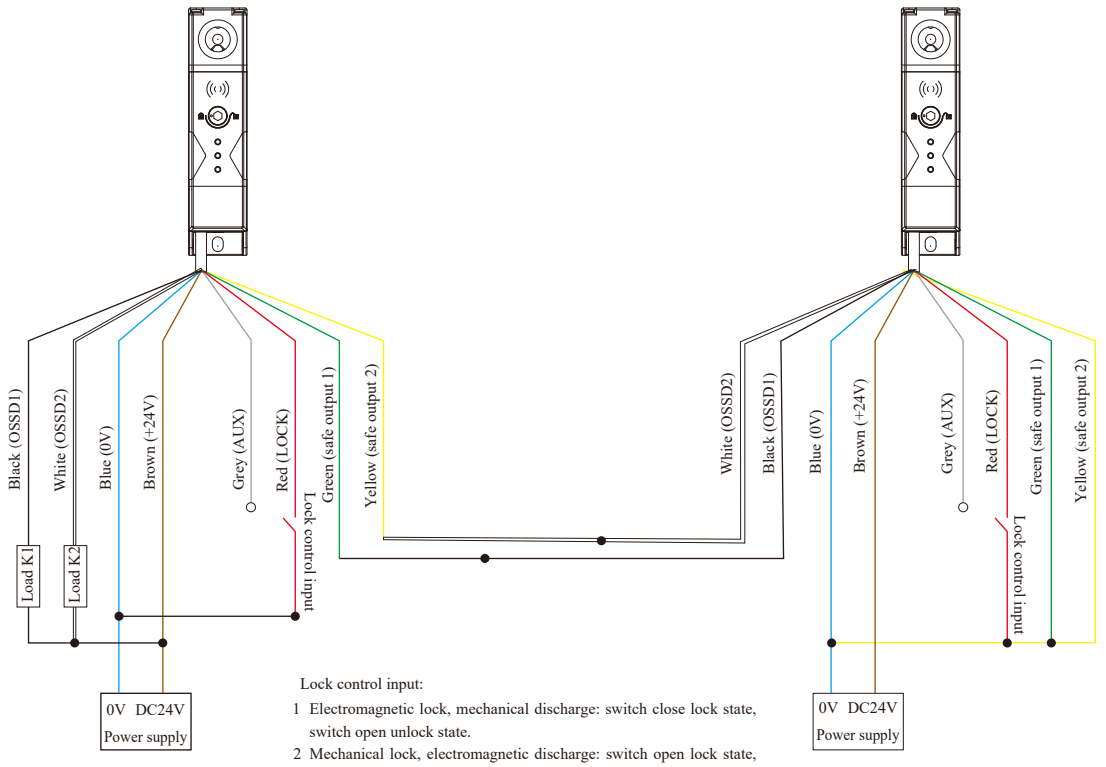


Lock control input:

1 Electromagnetic lock, mechanical discharge: switch close lock state, switch open unlock state.

2 Mechanical lock, electromagnetic discharge: switch open lock state, switch close unlock state.

PHLR standard mode (NPN, cascade)



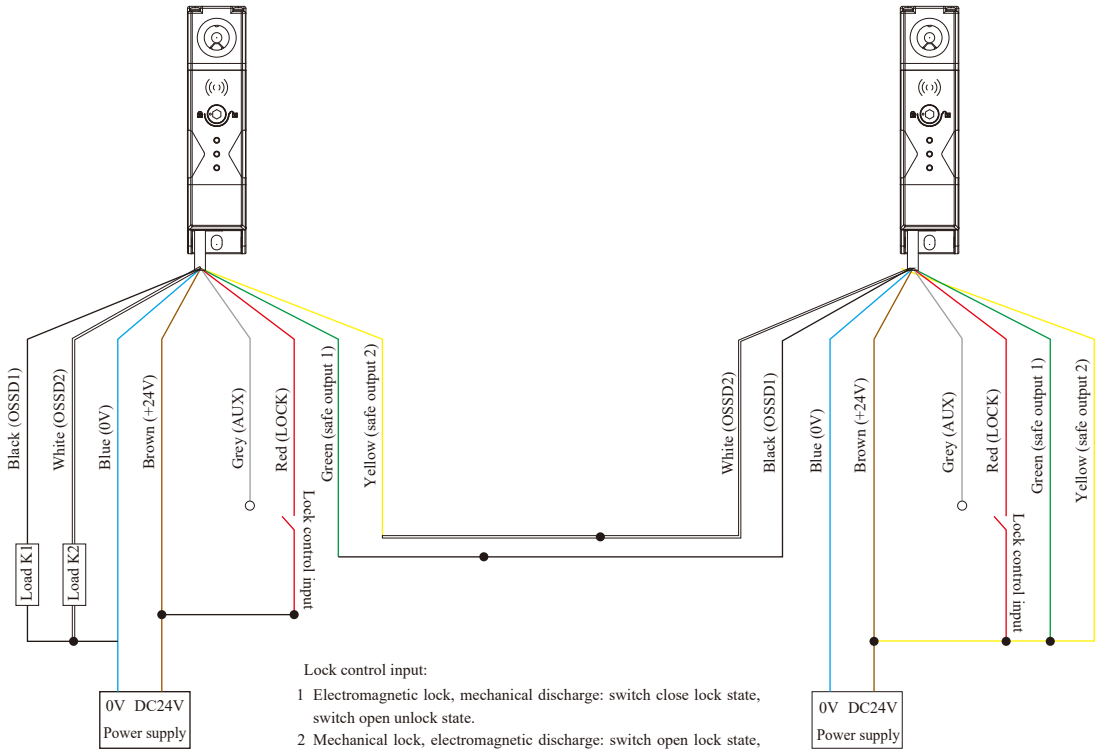
Lock control input:

1 Electromagnetic lock, mechanical discharge: switch close lock state, switch open unlock state.

2 Mechanical lock, electromagnetic discharge: switch open lock state, switch close unlock state.

PHLR Series Safety Interlock Switch

PHLR standard mode (PNP, cascade)

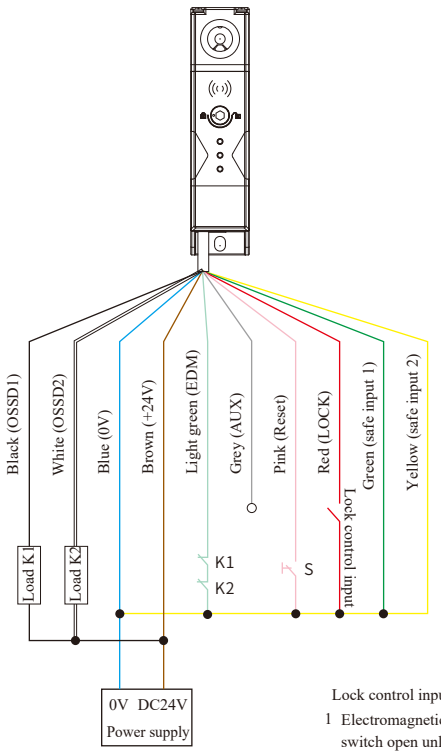


Lock control input:

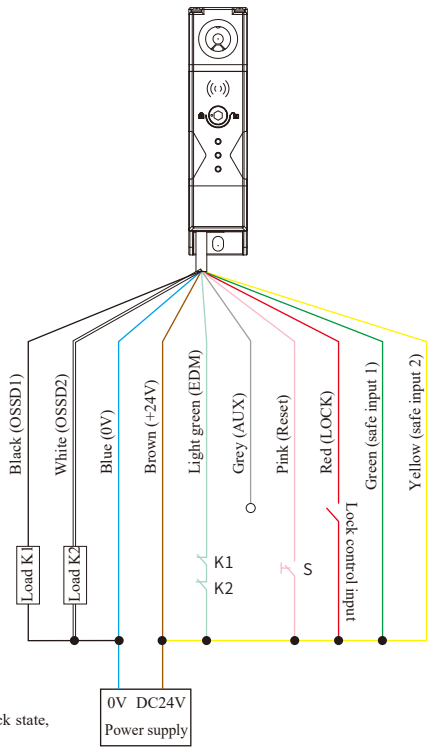
1 Electromagnetic lock, mechanical discharge: switch close lock state, switch open unlock state.

2 Mechanical lock, electromagnetic discharge: switch open lock state, switch close unlock state.

PHLR advanced mode (NPN, no cascade)



PHLR advanced mode (PNP, no cascade)



Lock control input:

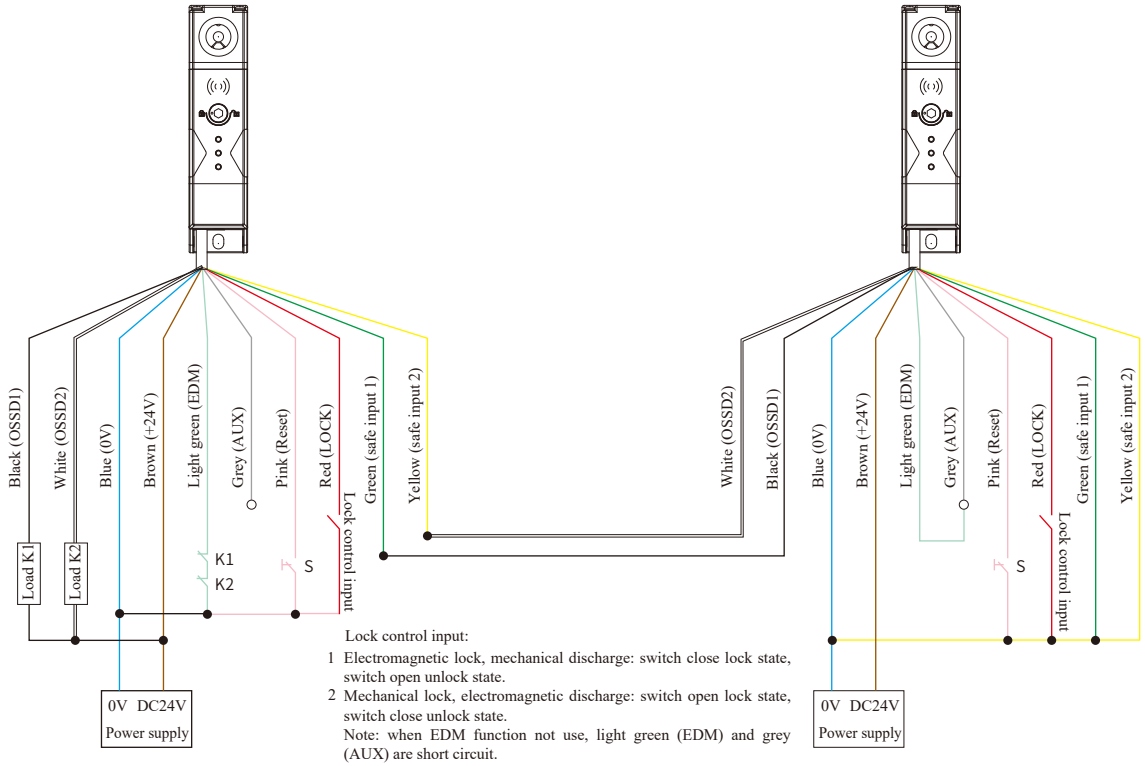
1 Electromagnetic lock, mechanical discharge: switch close lock state, switch open unlock state.

2 Mechanical lock, electromagnetic discharge: switch open lock state, switch close unlock state.

Note: when EDM function not use, light green (EDM) and grey (AUX) are short circuit.

Connection wiring

PHLR advanced mode (NPN, cascade)



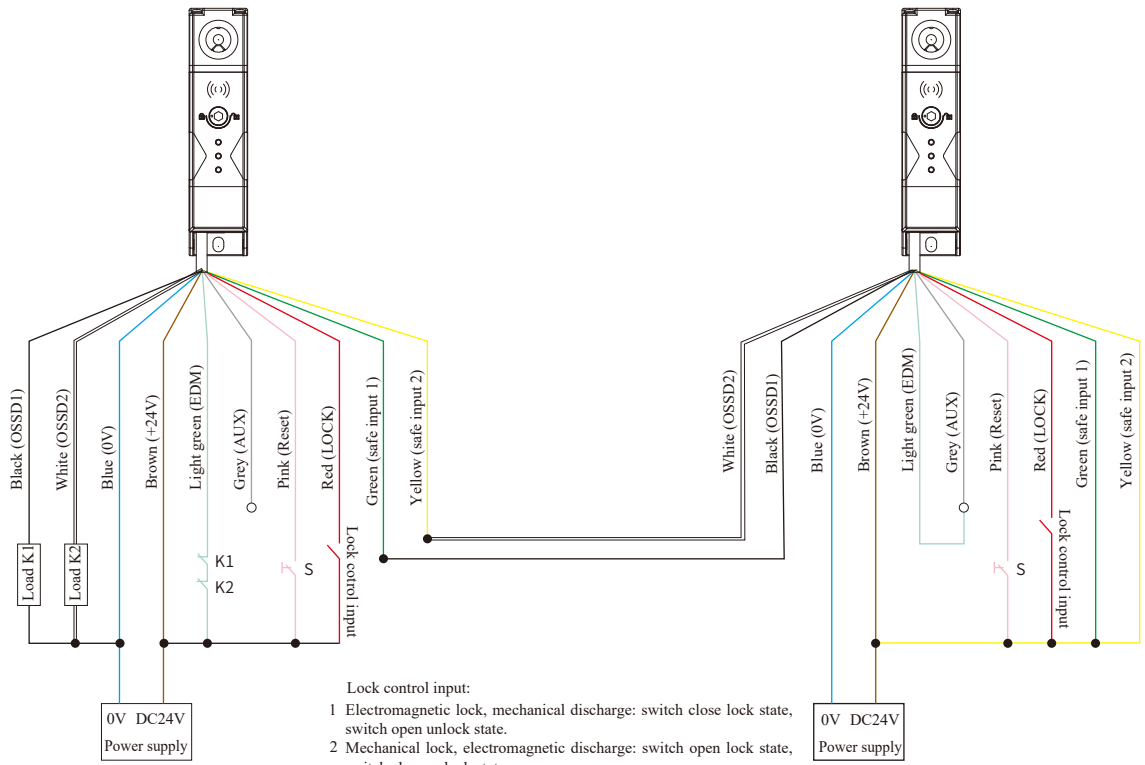
Lock control input:

1 Electromagnetic lock, mechanical discharge: switch close lock state, switch open unlock state.

2 Mechanical lock, electromagnetic discharge: switch open lock state, switch close unlock state.

Note: when EDM function not use, light green (EDM) and grey (AUX) are short circuit.

PHLR11 advanced mode (PNP, cascade)



Lock control input:

1 Electromagnetic lock, mechanical discharge: switch close lock state, switch open unlock state.

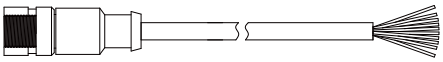
2 Mechanical lock, electromagnetic discharge: switch open lock state, switch close unlock state.

Note: when EDM function not use, light green (EDM) and grey (AUX) are short circuit.

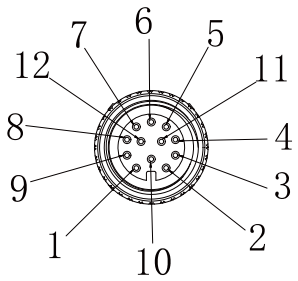
Cable Selection

Product Series		Wire number	Wire rod type	Cable length
PHLR	– M12P	□	□	□
		8:8 wire 10:10 wire	S: one side for wire, one side with straight female aviation connector	3: 3m 5: 5m 10: 10m

Cable Selection Table

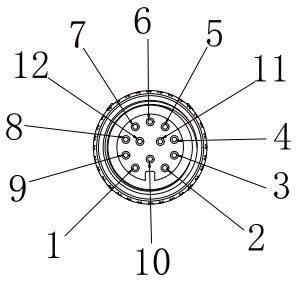
Standard cable	Type	Length	Model
	Standard mode	3m	PHLR-M12P8S3
		5m	PHLR-M12P8S5
		10m	PHLR-M12P8S10
	Advanced mode	3m	PHLR-M12P10S3
		5m	PHLR-M12P10S5
		10m	PHLR-M12P10S10

Note: If leading wire type, you have no need to refer cable selection table.



Standard Model Pin (M12 Connector)

1 Brown - positive VCC;
2 Blue - negative GND;
3 Grey - AUX output;
4 Black - OSSD1;
5 White - OSSD2;
6 Green - safe input 1;
7 Yellow - safe input 2;
8 Red - lock control;
9 Empty;
10 Empty;
11 Empty;
12 Empty



Advanced Mode Pin (M12 Connector)

1 Brown - positive VCC;
2 Blue - negative GND;
3 Grey - AUX output;
4 Black - OSSD1;
5 White - OSSD2;
6 Green - safe input 1;
7 Yellow - safe input 2;
8 Red - lock control;
9 Light green - EDM;
10 Pink - Reset;
11 Empty;
12 Empty