

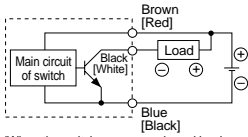
Switches

Solid State Switch Connection and Examples

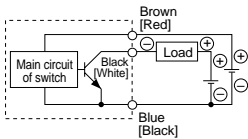
Basic Wiring

3 wire, NPN

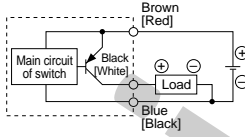
(When the switch power supply and load power supply are the same)



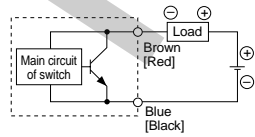
(When the switch power supply and load power supply are separate)



3 wire, PNP

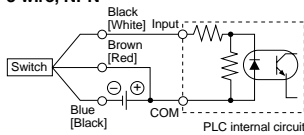


2 wire

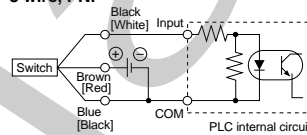


Examples of Connection to PLC

Sink input specifications, 3 wire, NPN

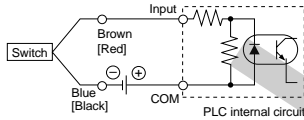


Source input specifications, 3 wire, PNP

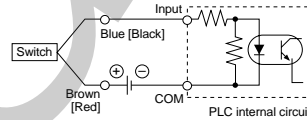


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

2 wire

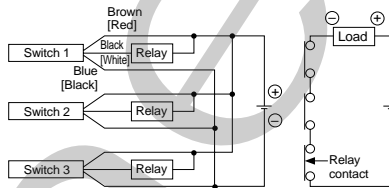


2 wire

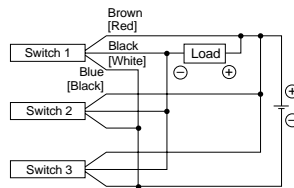


Connection Examples for AND (Series) and OR (Parallel)

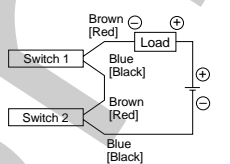
3 wire, AND connection for NPN output



3 wire, OR connection for NPN output



2 wire with 2 switch AND connection

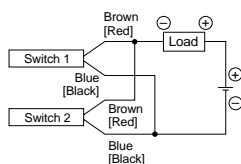


When two switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the switches are in the ON state.

Load voltage at ON = Power supply voltage - Residual voltage x 2 pcs.
= 24V - 4V x 2 pcs.
= 16V

Example: Power supply voltage is 24VDC.
Internal voltage drop in switch is 4V.

2 wire with 2 switch OR connection



When two switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1mA x 2pcs. = 3kΩ
= 6V

Example: Load impedance is 3kΩ.
Leakage current from switch is 1mA.

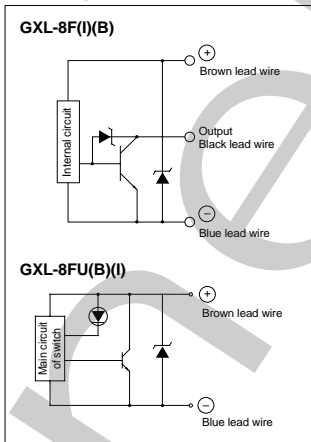
Applicable switch models

Applicable model	Model type	Part no.	Switch type	
LXF LXS	G	GXL-8F	Standard	N.O. (A contact) 3 wire
	GD	GXL-8FI	Varying frequencies	N.O. (A contact) 3 wire
	GB	GXL-8FB	Standard	N.C. (B contact) 3 wire
	GDB	GXL-8FIB	Varying frequencies	N.C. (B contact) 3 wire
	GU	GXL-8FU	Standard	N.O. (A contact) 2 wire
	GUB	GXL-8FUB	Standard	N.C. (B contact) 2 wire

Switch specifications (SUNX Corporation)

Part no.		GXL-8F(I)(B)	GXL-8FU	GXL-8FUB
Repeatability		Direction of detecting axis, Perpendicular to detecting axis: 0.04mm or less		
Power supply voltage		12 to 24VDC $\pm 10\%$, Ripple P-P 10% or less		
Current consumption		15mA	0.8mA or less (when output is OFF)	
Output		NPN Maximum load current: 100mA Maximum applied voltage: 30VDC Residual voltage: 1V or less	2 wire solid state DC Load current: 3 to 70mA Residual voltage: 3V or less	
Maximum response frequency		500Hz	1kHz	
Indicator light		Red LED (lights up when ON)	Green LED (stable detection) Red LED (unstable detection)	
Environmental resistance	Ambient temperature	-10° to 55° C	-25° to 70° C	
	Ambient humidity	45 to 85% RH		
	Noise resistance	Power line: 240Vp, pulse width of 0.5 μ s		
Detecting distance fluctuation	Temperature characteristics	Within $\pm 15/-10\%$ of detecting distance at 20° C within ambient temperature range		
	Voltage characteristics	Within $\pm 2\%$ with $\pm 10\%$ fluctuation of operating voltage		
Cable		0.08mm 3 wire heavy duty cable 1m	0.15mm 2 wire heavy duty cable 1m	

Proximity switch internal circuit



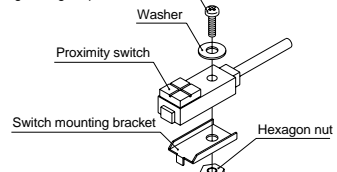
Proximity Switch/Switch Plate Mounting

Be sure to use the mounting screws included, and mount the proximity switch as shown in the drawing to the right.

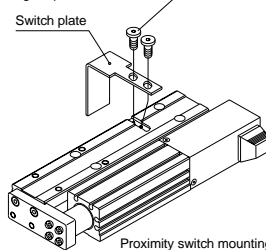
Mount the switch plate as shown below. Always use the proper tightening torque and use a thread locking agent on screws to prevent loosening.

The switch body is made of PBT and acrylic resin. Select a thread locking agent that will not affect these materials.

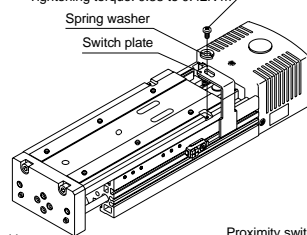
Button head screw (M2.6 x 10)
Tightening torque: 0.4 to 0.5N·m



Thin head screw (M3 x 4)
Tightening torque: 0.38 to 0.42N·m



Round head screw (M2.5 x 5)
Tightening torque: 0.38 to 0.42N·m



Proximity switch mounting position

LXF

LXS

1mm or more

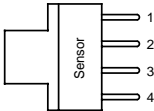
1mm or more

1mm or more

Standard Photo Micro Sensor for Home Position (OMRON Corporation)

Rating

Power supply voltage	5 to 24VDC $\pm 10\%$, Ripple (p-p) 10% or less		
Current consumption	35mA or less		
Control output	5 to 24VDC load current (Ic) 100mA, Residual voltage 0.8V or less Load current (Ic) 40mA, Residual voltage 0.4V or less		
Ambient temperature	Operation: -25° to 55° C (When stored: -30° to 80° C)		
Ambient humidity	Operation: 5 to 85%RH (When stored: 5 to 95%RH)		
Part no.	EE-SX672 equivalent	EE-SX673 equivalent	EE-SX674
Applicable actuator	LXF	LXP, LXS	LG1 (non-standard motor)



Terminal arrangement

1	Brown	Vcc	⊕
2	White	L*	
3	Black	OUTPUT	
4	Blue	GND (OV)	⊖

* Normally ON when light is blocked.
However, if the (L) terminal and ⊕ terminal are shorted, it changes to ON when light enters.

Output level circuit

Operating condition of output transistor	ON when light enters	ON when light is blocked
Output circuit		
Time chart	("L" and "+" shorted) Light enters Light blocked Lighted indicator light (Red) Light ON Light Off Output Transistor ON OFF Load 1 (Relay) Operate Return Load 2 H L	("L" and "+" open) Light enters Light blocked Lighted indicator light (Red) Light ON Light Off Output Transistor ON OFF Load 1 (Relay) Operate Return Load 2 H L