



NEW OPTICAL TOUCH SWITCH

SW-101



Conforming to
OSHA / ANSI



Zero Force Touch Switches

Providing low impact machine control



Greater convenience with less stress on the hands. A new concept in ergonomic switches.



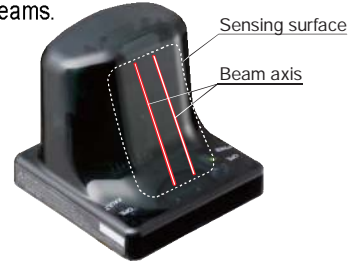
From
Push

To Touch



Operate the switch simply by touching it

This is an optical-type switch (two beam axis) which allows you to start equipment simply by touching the sensing surface to interrupt the light beams.



Reduces load on hands and fingers

Provides a zero force, low impact, machine control solution.

Prevents medical issues

The switch reduces the possibility of medical problems that are associated with high impact push buttons, such as tendonitis or carpal tunnel syndrome.

Equipped with external input indicators

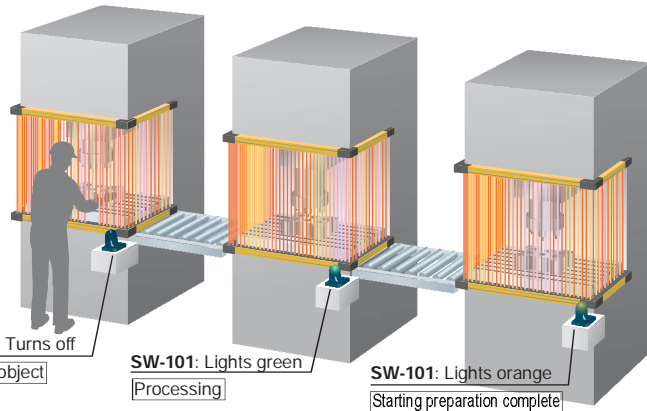
Two sets of external input indicators (two colors) are provided, so that they can be used as operation indicators for a variety of purposes.

Application example

SW-101: Turns off
Setting object

SW-101: Lights green
Processing

SW-101: Lights orange
Starting preparation complete



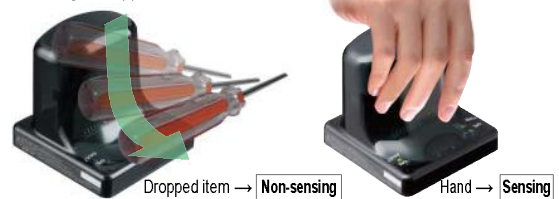
Prevents operating errors caused by dirt

The shape of the switch body is curved so that it will not collect dust or dirt which could otherwise cause operating errors. In addition, if the light is continuously interrupted for more than 10 seconds by dust, etc., the switch is disabled and the warning indicator illuminates.



Reduction in operating errors from dropped objects

The response time is set for a slight delay so that the switch will not respond a falling object, such as a dropped tool. The switch is designed so that it will operate when touched by hand, but operating errors will rarely occur when something is dropped onto it.



Uses a long-life Photo-MOS relay

Because a Photo-MOS relay is used for the output, a single unit can be configured without a specific output polarity. In addition, there is no need for periodic replacement of parts such as contact-type relays.

SPECIFICATIONS

Designation	Optical touch switch	
Item / Model No.	SW-101	
Sensing method	Thru-beam type photoelectric sensor (2 beam axes)	
Applicable standard	CSA 22.2 No.14, CSA 22.2 No.0.8, ANSI / NFPA 79, UL 508, EN 60947-5-2 (EMC only)	
Power supply	12 to 24 V DC $\pm 10\%$, Ripple P-P10 % or less	
Current consumption	100 mA or less (excluding external connection load)	
Output	Semiconductor Photo-MOS relay output $\times 3$	
	<ul style="list-style-type: none"> • Maximum load current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 1.5 V or less (at 100 mA of load current) 	
	Output operation	Output 1 : When an object is detected (light is interrupted): OFF/ When an object is not detected (light is received): ON Output 2, 3 : When an object is detected (light is interrupted): ON/ When an object is not detected (light is received): OFF
Short-circuit protection	Incorporated	
Response time	100 ms or less when an object is detected, 50 ms or less when an object is not detected	
Time-out function	Switched between enabled and disabled by short-circuiting terminals (disabled when short-circuited)	
External input	0 to 1 V or 10 V to +V: Valid (External input indicator lights up) 4 to 6 V or Open: Invalid (External input indicator turns off)	
Indicators	Power indicator (POWER)	Green LED (Lights up when the power is ON)
	Operation indicator (OPE.)	Green LED (Lights up when an object is detected)
	External input indicator 1	Green LED (Lights up when external input 1 is valid)
	External input indicator 2	Orange LED (Lights up when external input 2 is valid)
	Fault indicator (FAULT)	Yellow LED (Blinks or lights up when fault occurs)
Protection	IP65 (IEC) TYPE1 (UL 50) (Excluding terminal part)	
Environmental resistance	Ambient temperature	-25 to $+50$ °C -13 to $+122$ °F (No dew condensation or icing allowed) Storage: -30 to $+70$ °C -22 to $+158$ °F
	Ambient humidity	30 to 85 % RH, Storage: 30 to 85 % RH
	Ambient illuminance	Incandescent light: 3,000 lx at the light-receiving face
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure
	Insulation resistance	20 M Ω , or more, with 500 V DC megger between all supply terminals connected together and enclosure
	Vibration resistance	10 to 500 Hz frequency, 3 mm 0.118 in amplitude in X, Y and Z directions for two hours each
Shock resistance	500 m/s ² acceleration (50 G approx.) in X, Y and Z directions for three times each	
Removable-type terminals	Connector	3.5 mm 0.138 in pitch, 2-level socket: 12 pins
	Terminal part	3.5 mm 0.138 in pitch spring gauge terminals: 6 pins $\times 2$ (FMC1,5/6-ST-3,5 manufactured by Phoenix Contact)
Cables	0.2 to 1.5 mm ² [including single wire or ferrule (sleeve)]	
Maximum cable length	Up to 20 m 65.617 ft (for cables less than 0.2 to 0.3 mm ²) Up to 100 m 328.084 ft (for cables from 0.3 to 1.5 mm ²)	
Material	Enclosure: Polycarbonate, Polyester, Nut: PBT., O-ring: Silicone rubber	
Weight	Net weight: 130 g approx. Gross weight: 200 g approx.	

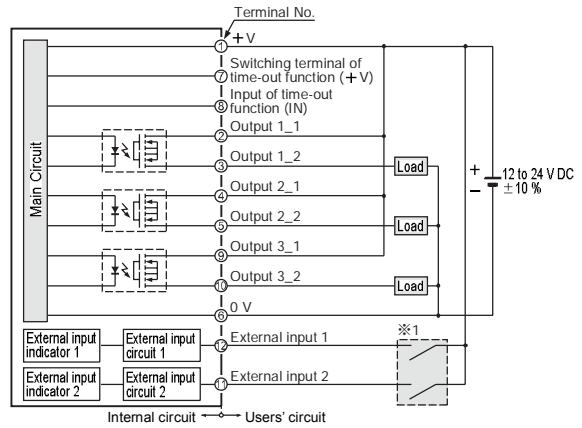
Note: Where measurement conditions have not been specified precisely, the conditions used were ambient temperature $+23$ °C $+73.4$ °F.

OPTIONS

Designation	Model No.	Description
Mounting tool	SW-MT1	Tool for tightening mounting nuts with a commercially-available wrench.
Sensing surface protective sheet	SW-PS1	Protects the sensing surface from dirt and scratches. 5 sheets per set

I/O CIRCUIT AND WIRING DIAGRAMS

In case of Minus Common

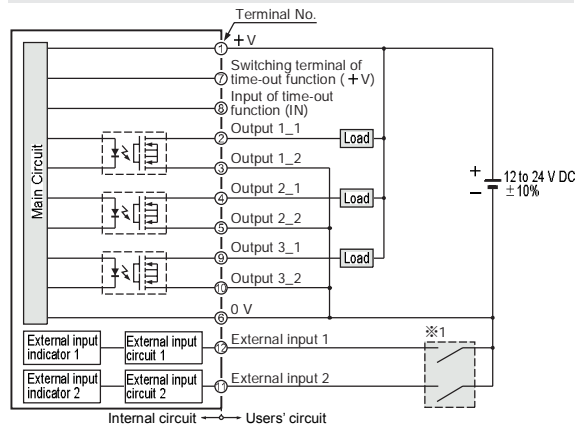


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Non-voltage contact or NPN open-collector transistor, PNP open-collector transistor

0 to 1 V or 10 V to +V: Valid (External input indicator lights up)
4 to 6 V or Open: Invalid (External input indicator turns off)

In case of Plus Common

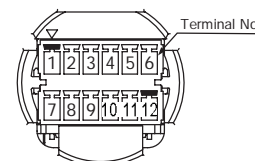


※1

Non-voltage contact or NPN open-collector transistor, PNP open-collector transistor

0 to 1 V or 10 V to +V: Valid (External input indicator lights up)
4 to 6 V or Open: Invalid (External input indicator turns off)

Terminal arrangement diagram



PRECAUTIONS FOR PROPER USE

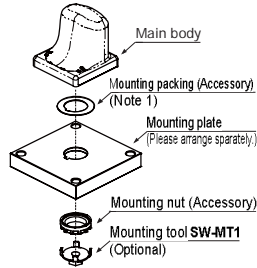


- Never use this product with devices for personnel protection.
- In case of using devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- Do not use this product as a device for emergency stop.
- This product is used to start up the machinery. Securing safety for the start-up of machinery should be performed separately.
- When using the products for two-hand control, comply with the following contents.
 - Select a model of a control device for two-hand control, based on results of risk assessment.
 - Make sure to use a controller for two-hand control which complies with ISO 13851 (EN 574.)
 - For another requirements such as mounting of this product, or prevention of accidental actuation and of defeat etc., comply with ISO 13851 (EN 574, JIS B 9712) and ANSI B11.1, B11.9. Furthermore, comply with the regulations established by national or regional security committees (Occupational Safety and Health Administration: OSHA, the European Standardization Committee, etc.)

Mounting

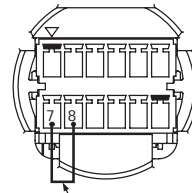
- Fasten a mounting nut (accessory) from the reverse side of the mounting plate. (Note 2)
The tightening torque should be 2 to 3N·m.

- Notes: 1) Make sure to use the attached mounting packing, or waterproof property will be invalid.
- 2) A mounting tool (SW-MT1) for fastening the mounting nut is available separately. The shape of fastening part of SW-MT1 is M10 nut.

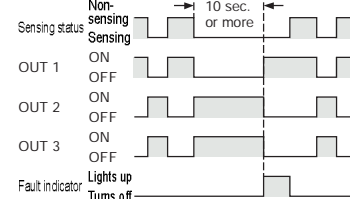


Time-out function

- Unintended light interrupted status caused by dirt on the sensing surface, etc. can be monitored.
 - When light interrupted status (sensing status) continues for 10 sec. or more, output 1 turns ON and outputs 2 and 3 turn OFF (output status is the same as non-sensing status.)
 - This function can be invalid by short-circuiting 'between switching terminals of time-out function (terminal No. 7 and No. 8)' as described below.
- Note: When time-out function is operated, the fault indicator (yellow) lights up. In this case, once light is received, the fault indicator lights off and the sensor returns to normal operation.



<Time Chart (In case time-out function works)>

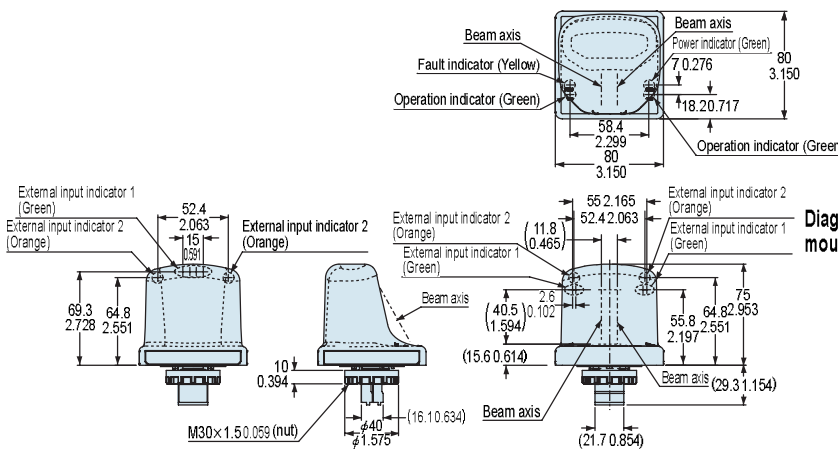


Others

- When the power of the thru-beam type photoelectric sensor inside the main body turns on in light interrupted status, output 1 turns ON and outputs 2 and 3 turn OFF, then the fault indicator (yellow) lights up. In this case, once light is received, the fault indicator lights off and the sensor returns to normal operation.
- Use a power supply unit conforming to the EMC Directive and the Low Voltage Directive. (Only for use in Europe)
- Use a power supply unit conforming to CLASS 2. (Only for use in the North America)
- Use a power supply unit with an output holding time of 20 ms or more.
- Do not use during the initial transient time (300 ms approx.) after the power supply is switched on.

DIMENSIONS (Unit: mm in)

The CAD data in the dimensions can be downloaded from the website: <http://www.sunx.jp/>



Panel cut-out dimensions

<When mounting with a resin plate>

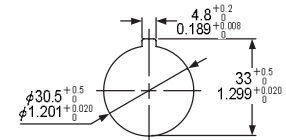
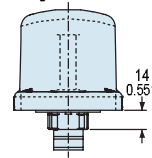
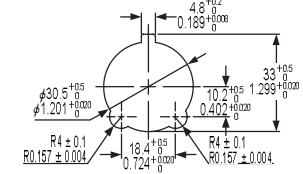


Diagram without mounting nuts installed



<When mounting with a metal plate>



Note: The panel thickness should be 3 mm 0.118 in or less.

All information is subject to change without prior notice.



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