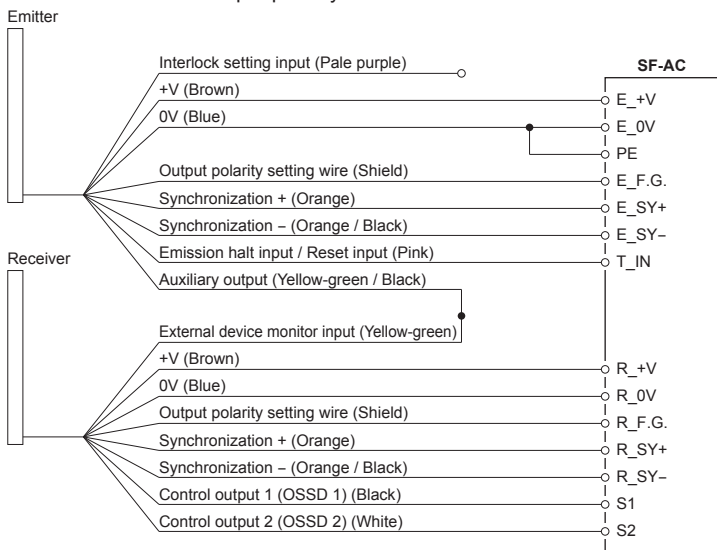


6 EXAMPLE OF CONNECTION CIRCUIT WITH LIGHT CURTAIN

Please wire between X1-X2 when using it by the manual reset as shown in the figure below or please wire between X1-X3 when using it by the auto reset.

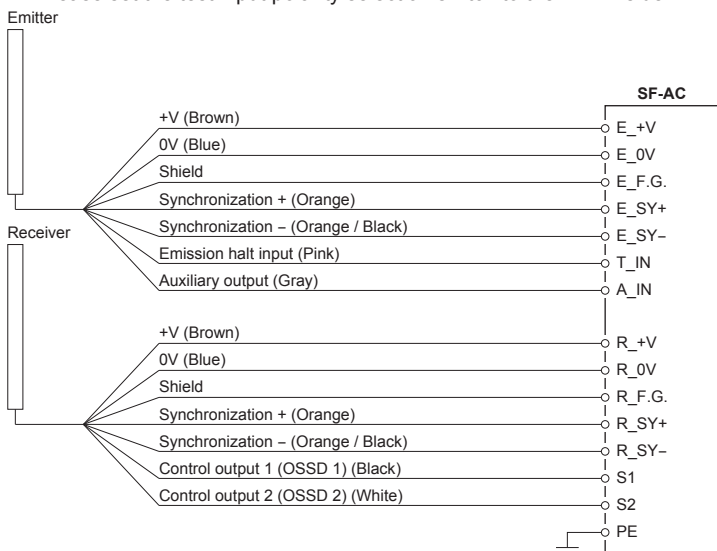
• SF4B<V2> series

- Please set the test input polarity selection switch to the “PNP” side.



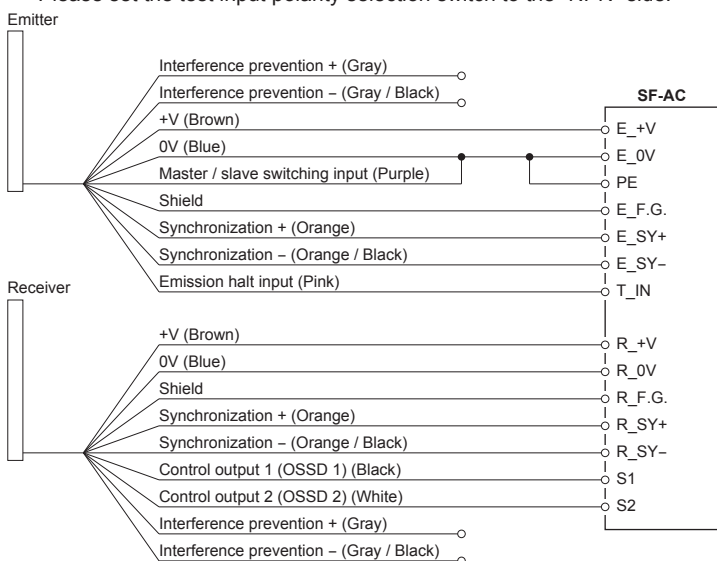
• SF4-AH series

- Please set the test input polarity selection switch to the “PNP” side.



• SF2-EH series

- Please set the test input polarity selection switch to the “NPN” side.



7 SHORT-CIRCUIT PROTECTION

- The power supply unit of this equipment adopts the electronic fuse which do not require any replacement.
- When the electronic fuse is operated, turn OFF the power supply, and remove the cause of overcurrent before restarting the power supply for resetting.
- The electronic fuse is not suitable to use in which the equipment is operated continuously or daily. Note that operating the equipment continuously may be unable to satisfy the specifications.

8 FUNCTIONS

• Trailing edge switching function

- This function is to accept the input when the reset switch is pressed (contact “close”) and then released (contact “open”) at the manual start setting. An unexpected start-up due to the welded reset switch can be avoided.

• Test input polarity selection function

- The function is used to change the polarity of the test input to PNP or NPN with an internal switch.

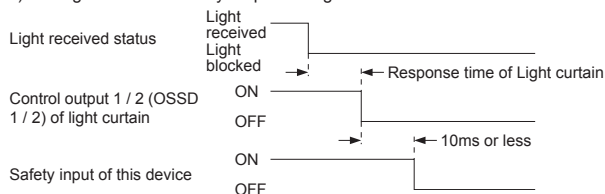
9 MAINTENANCE

- Be sure to do maintenance before use and 6 month periodic maintenance. Refer included instruction manual of light curtain for the inspection items.
- In case replacing this device to new this device, be sure special technician to exchange it. And do daily maintenance and periodic maintenance.

10 SPECIFICATIONS

Model No.		SF-AC
Item	Model No.	SF-AC
Connectable input device	Light curtains manufactured by Panasonic Industrial Devices SUNX (PNP output type)	
Applicable standard	EN 60947-5-1, EN ISO 13849-1 (Category 4, PL _e) EN ISO 13849-2, IEC 60947-5-1, ISO 13849-1 (Category 4, PL _e) ISO 13849-2, JIS B 9705-1 (Category 4)	
Control category	ISO 13849-1 compliance up to Category 4	
Supply voltage	24V DC±10% Ripple P-P 10% or less	
Fuse rating	Built-in electronic fuse, Breaking current: 1.1A or more reset by power supply stop	
Power consumption	Approx. 1.7W (without light curtain)	
Safety output (Note 1)	NO contact × 3	
Switching capacity (13-14, 23-24, 33-34)	Max. 6A 30V DC / 6A 230V AC, resistive load	
Fuse	6A (slow-blow)	
Auxiliary output	NC contact × 1	
Switching capacity (41-42)	Max. 1A 24V DC	
Fuse	1A (slow-blow)	
Alarm output	NC contact × 1 (Non-safety contact, related to input “Alarm in”)	
Switching capacity (51-52)	Max. 1A 24V DC, Min. 5mA 24V DC	
Fuse	1A (slow-blow)	
Application category	AC-15, DC-13(IEC 60947-5-1)	
Pick-up delay	40ms or less / 50ms or less (Auto reset / Manual reset)	
Drop-out delay	10ms or less	
Contact material / contacts	AgSnO, Self cleaning, positively driven	
Contact resistance (Initial value)	100mΩ or less	
Mechanical lifetime	10,000,000 times or more (switching frequency 180 times/min.) (Note 2)	
Electrical lifetime	100,000 times or more (switching frequency 20 times/min. at 230V AC / 3A, resistive load) (Note 2)	
Trailing edge function	Incorporated	
Test input polarity selection function	Incorporated (Selectable PNP or NPN test input polarity by internal switch)	
Overvoltage category	III	
B _{10d} (Note 3)	20,000,000 (load: 20%)	
Environmental resistance	Protection	Enclosure: IP40, Terminal: IP20 (This product must be installed into a control box having IP54 construction.)
	Ambient temperature	-10 to +55°C (No dew condensation or icing allowed) Storage: -10 to +55°C
	Ambient humidity	35 to 85% RH, Storage: 35 to 95% RH
	Vibration resistance	No malfunction when tested with 10 to 55Hz frequency, 0.35mm amplitude in X, Y and Z directions for twenty times each
	Pollution degree	2
Connection terminal	Removable European terminal	
Material	Enclosure: Polycarbonate	
Weight	Approx. 400g	

Notes: 1) Timing chart of the safety output is diagram below.



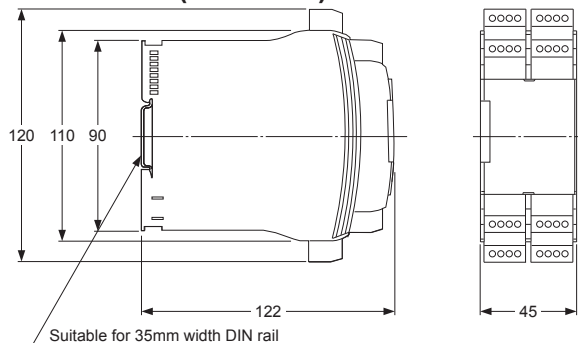
- The lifetime of the switch of relay depends on type of the load, frequency of switching or environment etc.
- Mean cycle time that 10% of parts reach dangerous failure.

11 CAUTIONS

- This product has been developed / produced for industrial use only.
- Make sure that the power is OFF while wiring.
- Take care that wrong wiring will damage the product.
- Verify that the supply voltage variation is within the rating.
- Take care that if a voltage exceeding the rated range is applied, or if an AC power supply is directly connected, the product may get burnt or damaged.
- The DC power supply unit must satisfy the conditions given below:
 - 1) Power supply unit authorized in the region where this device is to be used.
 - 2) Power supply unit SELV (safety extra low voltage) / PELV (protected extra low voltage) conforming to EMC Directive and Low-voltage Directive (In case CE Marking conformity is required.)
 - 3) Power supply unit conforming to the Low-voltage Directive and with an output of 100VA or less.
 - 4) The frame ground (F.G.) terminal must be connected to ground when using a commercially available switching regulator.
 - 5) Power supply unit with an output holding time of 20ms or more.
 - 6) In case a surge is generated, take countermeasures such as connecting a surge absorber to the origin of the surge.
 - 7) Power supply unit corresponding to CLASS 2 (In case UL Listing Mark / C-UL US Listing Mark conformity is required.)
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- Avoid dust, dirt, and steam.
- Take care that the product does not come in contact with water, oil, grease, or organic solvents such as thinner, etc.
- The seal as shown in the drawing on the right is stuck to the engagement point of unit. When the seal is peeled off or broken, this equipment will not be certified as a "Safety equipment" and will not be covered by our guarantee.
- Note that this equipment is applicable only in the control circuit grounded in accordance with IEC 60204-1 and JIS B 9960-1, or in the control circuit in which the insulation monitor unit (ground fault detection unit) is arranged.
- The control category of this equipment follows the light curtain to be connected.
- This unit is suitable for indoor use only.
- This product is suitable for indoor use only.
- In case of disposal, dispose this product as an industrial waste.



12 DIMENSIONS (Unit: mm)



13 INTENDED PRODUCTS FOR CE MARKING

- The model listed under "10 SPECIFICATIONS" comes with CE Marking.
- As for all other models, please contact our office.



14 CE MARKING DECLARATION OF CONFORMITY

EC Declaration of Conformity

Original

K.A. Schmersal GmbH & Co. KG
Möddinghofe 30
42279 Wuppertal/Germany
Internet: www.schmersal.com

We hereby certify that the hereafter described components both in their basic design and construction conform to the applicable European Directives.

Name of the component: Panasonic **SF-AC**

Description of the component: Safety-monitoring module

Relevant Directives:

Machinery Directive	2006/42/EG
EMC-Directive	2014/30/EU
RoHS-Directive	2011/65/EU

Applied standards:

DIN EN 60947-5-1:2010,
DIN EN ISO 13849-1:2016,
DIN EN ISO 13849-2:2013

Notified body, which approved the full quality assurance system, referred to in Appendix X, 2006/42/EC:

TÜV Rheinland Industrie Service
GmbHAlboinstr. 56, 12103 Berlin
ID n°: 0035

Person authorised for the compilation of the technical documentation:

Oliver Wacker
Möddinghofe 30
42279 Wuppertal

Place and date of issue: Wuppertal, April 5, 2018

Authorised signature
Philip Schmersal
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