Product Specifications

LED sensing type for reliable detection weak lighting from LED indicators

Model Number : FX2-A3R-LED

Specifications Number : GK01-0200

Receipt Stamp of this Specifications

SUNX Limited

Approved	Examined	Drawn
開発 11.3.18 熊崎	開発 10.3.18 足立	

SUNX's Release Stamp

Submitted Date :

Number of Copy Submitted :

Specifications
for
High Speed Detection Amplifier Unit of Fiber Optics Sensor
FX2-A3R-LED

1. Application : This specifications applies to FX2-A3R-LED
2. Products Combination : A. Amplifier Unit ; FX2-A3R-LED

3. Specifications

Item	Description	
Detection Performance	Detectable 2mcd or more amber color LED(590nm) at 10mm of sensing distance in the state of no extraneous light. (when combined with FT-FM2+FX-LE1)	
Combined fiber optics	FT-FM2 (Note : 1)	
Power Source Voltage	12 to 24 V dc ±10% , Ripple p-p : 10% or less	
Current Consumption	20 mA or less	
Output	NPN transistor universal output	
	Max. Sink Current	100 mA
	Applied Voltage	30 V dc or less
	Residual Voltage	1.0 V or less (100 mA of sink current) 0.4 V or less (16 mA of sink current)
	Output Operation	Selectable for Light-ON or Dark-ON on control input
	Short circuit Protection	Provided
Response Time	In the state light is received : 50 ms or less In the state light is not received : 100 ms or less	
Operation Indicator	Red LED indicator glows when output is in ON state	
Sensitivity Adjsuter	3 turn endless adjuster	
Enclosure Protection	IP62 (IEC), Drip-proof type	
Ambient Temperature	Operation : 0 to +50℃ (With no dew condensation or icing) Storage : -30 to +70℃	
Ambient Humidity	Operation : 35 to 85% RH Storage : 35 to 95% RH	
Electric Noise Immunity	100 V, 1 μ s pulse duration, applied on power lines	
Insulation Resistance	20 M ohms or more when 500 V dc applied between live parts and enclosure	
Vibration Withstand	10 to 55 Hz frequency, 1.5 mm double amplitudes, applied in X, Y, and Z direction for 2 hours each in power OFF state	
Mechanical Shock Withstand	Approx. 50G (500 m/s^2) applied in X, Y, and Z directions 3 times each in power OFF state	

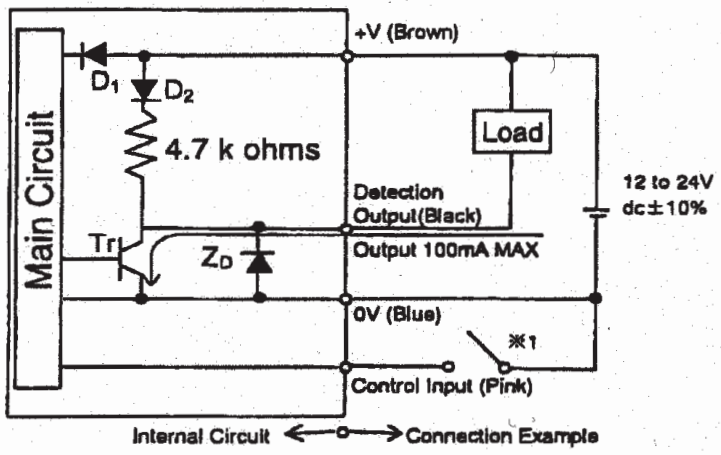
FX2-A3R-LED

Light Receiving Element	Photo diode (peak wave length : 590 nm)
Enclosure	Material : Polycarbonate, Color : Green
Cable	Type : 0.2 mm^2, 4 core cabtyre cable Standard Length: 3 m Cable Coloration : Brown : +V Black : OUT Blue : 0V Pink : Control Input
Cable Extension	Extendable up to 10 m by using 0.3 mm^2 or more cable.
Weight	Approx. 120g
Accessories	1 pc. of adjustment screwdriver 1 pc. of adjuster's knob 1 set of mounting bracket (MS-FX-1)

Note 1 : FT-FM2 is sold by 2 piece set, use only one fiber optics for the receiver.

Note 2 : This product employs high sensitivity dc amplifier so that it is very susceptible to foreign extraneous light. Therefore take care so that an extraneous light should not enter into the light receiving eye.

4. Output Circuit



※1 : Connection and Output Operation of Control Input (Pink)

Connection	Output Operation
OPEN or Connect to 0V	Light-ON
Connect to 0V	Dark-ON

D_1 : Reverse Polarity Protection Diode

D_2 : Reverse Polarity Protection Diode

Z_D : Surge Absorption Zener Diode

Tr : NPN output transistor

FX2-A3R-LED

5. Cautions

This products is not a safety sensor designed or intended to protect life and prevent body injury or property damage from dangerous parts of machinery.

(Power Source)

- When power is supplied from switching regulator type of power source, always ensure that its frame ground (F.G) terminal is grounded.
- Avoid using output signal for approx. 0.5 sec. of transient duration immediately after power is supplied.
- Always use an insulated transformer as dc power source. If an auto-transformer is used, the power source or the internal circuit may get damaged.
- If surge is generated in the power source, connect a surge absorber to the source.

(Wiring)

- Avoid distributing cable in parallel or in the same conduit with high voltage or power lines. It may cause malfunction due to induction.
- Always disconnect the power supply before starting wiring.
- Make the cable length as short as possible to lessen noise pick up.

(Environment Condition)

- If any other equipment which could be a noise source, such as, a switching regulator or an inverter motor, etc., is located near the sensor, ensure that the frame ground (F.G) terminal of the equipment is grounded.
- Avoid using this system where there is excessive vapor, dust or corrosive gas, or in a place where the sensor could be exposed directly to water or chemicals.
- Take care that it does not come in direct contact with organic solvents such as thinner, etc

FX2-A3R-LED

6. Warranty

(Warranted Period)

SUNX warrants products FX2-A3R-LED manufactured by it for twelve(12) months from the date of shipment or delivery to purchaser's appointed warehouse.

(Scope of Warranty)

During the above mentioned period, if a failure of the products occurred under normal use and operation, and found by SUNX that it is responsible for the failure, it shall remedy the defect or tender substitution for exchange at it's cost and expenses.

However, in no event shall SUNX be liable for the failure and for damage or loss stipulated below ;

(1) Failure caused by misuse or improper handling of customers
(2) Failure occurred by the fault of device or equipment other than the sensor
(3) Failure caused by modification or remedy made by customers
(4) Failure due to happening of Force Majeure
(5) Consequential damage or loss arising out of failure of the sensor

Warning
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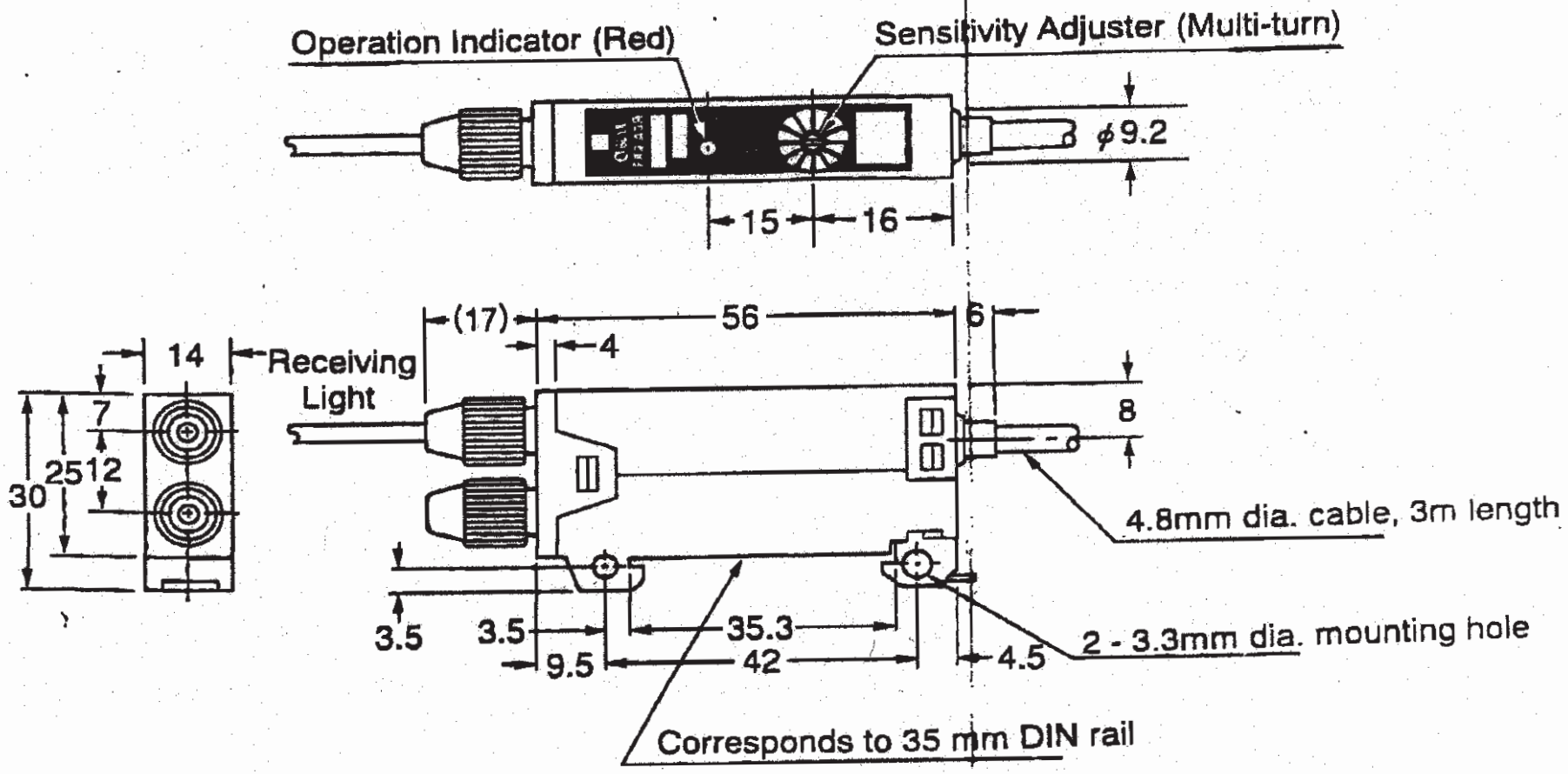
7. Dimensions

Unit : mm



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The last section references the setup of the sensitivity. The way I read this is as follows.

1 – Turn the sensitivity to maximum, the red output LED should be on.

2 – With the target LED OFF turn the sensitivity down until the red output LED goes off. This will be point "A"
This adjusts for ambient light conditions. If the output does not go off then there is to much ambient light and it may be necessary to put a shroud or cover over the end of the fiber optic cable.

3 – Turn the target LED ON. The red output LED should turn ON as well, continue to turn the sensitivity down until the red LED output indicator again goes OFF. This will be point "B"

4 – Now set the sensitivity adjuster to the midpoint between points "A" and "B"

① 時計方向に3回転以上回します。

・3回転以上回し、この位置で止めます。
この位置で最大感度となっています。
LED点灯状態で入光動作となることを確認してください。

〔この位置から反時計方向に3回転するまでの間が感度調整範囲となります。〕

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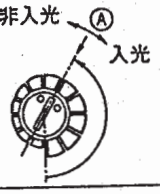
②「非入光」状態で非入光動作となる位置を確認し、これをⒶ点とします。

・「非入光」状態で入光動作となっている場合は、反時計方向へゆっくり回し、非入光となる位置をⒶ点とします。



・初めから非入光動作であれば前記①の位置がⒶ点となります。

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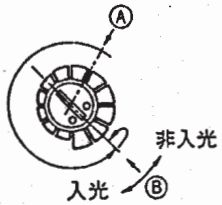
③「入光」状態で入光動作となる位置を確認し、これをⒷ点とします。



・「入光」状態でさらに反時計方向に回し、一度非入光動作としてから時計方向にゆっくり回して、入光動作となる位置を確認し、これをⒷ点とします。

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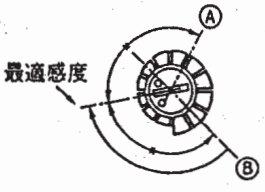
④ Ⓐ点とⒷ点の中間が最適な感度となります。



・Ⓐ点とⒷ点の中間の位置まで時計方向に回します。