raxoll

FR-2-AX *Series*

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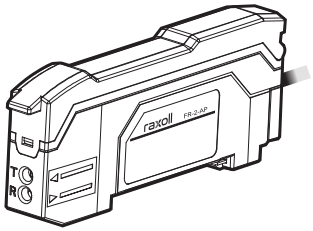
Digital Fiber Ampfilier with Analog Output



INSTRUCTION MANUAL

Thank you for choosing raxoll fiber optic amplifier. Please read the manual before using this product.

- The product should be applied by someone with a certain level of electrical knowledge.
- Please read and make sure that you understand how to operate the product before using it.
- Please keep this manual readily accessible for future reference when needed.

⚠ WARNING

Please do not exceed maximum rated voltage during usage in order to prevent tester malfunction or fire.
Please do not apply AC power supply to avoid breakage.
Please do not subject the product to high temperature to avoid scalding.

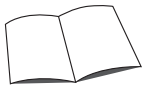
SAFETY PRECAUTIONS

It is dangerous to wire or attach/remove the connector with the power on. Make sure to turn off the power before operation.
Make sure to use the product with the protective cover attached and closed.
Installing in the following places may result in malfunction:

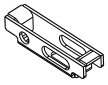
1. A dusty or steamy place.
2. A place generating corrosive gas.
3. A place directly receiving scattering water or oil.
4. A place suffered from heavy vibration or impact.

The product is not designed for outdoor use.
Do not use the sensor in transient state after power on(approx. 300ms.)
Do not wire with the high voltage cable or the power line.
Failure to do this will cause malfunction by induction or damage.
The sensor performance or digital display values may depend on the individual units or the condition of detected product.
This product in not an explosion-proof construction.
Do not use the product under flammable, explosive gas or liquid environment.
Do not use the product in water.
Do not disassemble, repair or convent the product.
Failure to do this may cause failure, fire or electric shock.
Operate within the rated range.

ACCESSORIESS LIST



1 PCS INSTRUCTION MANUAL



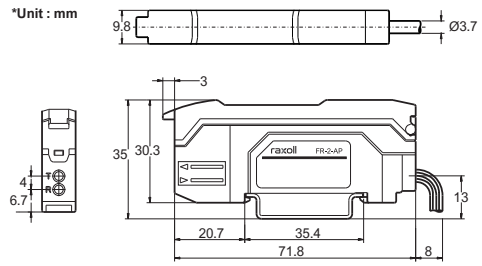
1 PCS BRACKET

TECHNICAL SPECIFICATIONS

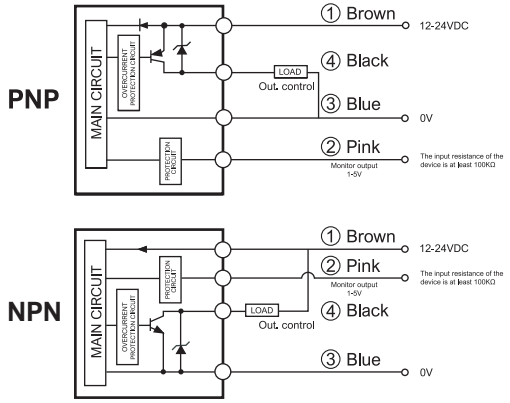
Power Source Voltage		12-24VDC±10%including a ripple
Power Consumption	Normal	900mW max.(20mA or less/24V)
	Eco All	800mW max.(18mA or less/24V)
Response Time		Anti off: 100μs (HIGH SPEED) / 250μs (FINE), 1ms (SUPER / 8ms (MEGA) Anti off: 300μs (HIGH SPEED) / 500μs (FINE), 2ms (SUPER / 16ms (MEGA) - Anti stag: (S1 S2 S3 S4) 1ms
Control Output		PNP / NPN Open collector 100mA / 24V or less Load Current : 100mA or less, Residual Voltage : 1V, Analog:1-5VDC
Output Method		Light ON / Dark ON Switching type in the function
Circuit Protection		Reverse elektrode protection(power), Overcurrent/Overvoltage protection(output)
Light Source		Red LED (580nm)
Indicator Light / Display		Output indicator light : Orange (Ch 1) / 7 segment 8 digit display
Sensitivity Setting		Teaching / Manual Adjustment
Timer Function		Delayed-breaking-off timer / Delayed-turn-on timer One-shot timer
Ambient Luminance Tolerance		Incandescent lamp : max. 20,000lux, Sunlight : max. 30,000lux
Anti Vibration Tolerance		500 m/s², each 3 times for X/Y/Z axis
Operating Temperature / Humidity		-20~+55C° / 35~85%RH (No freezing and No condensation)
Store Temperature / Humidity		-30~+70C° / 35~85%RH (No freezing and No condensation)
Shock Resistance		10~55Hz Amplitude 1.5mm 2 hours for each direction of X,Y and Z
Protective Category		IP50
Material		PC : Cover, Case
Connection Type		2m Cable
Weight		50g (Including cordes)

DIMENSIONS

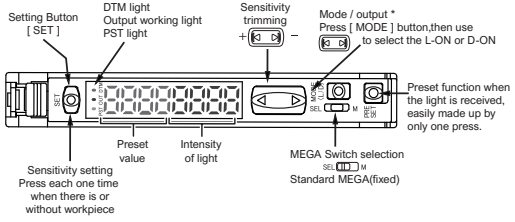
*Unit : mm



OUTPUT CIRCUIT DIAGRAM



DISPLAY / INDICATOR / BUTTONS



*Press [MODE] button for the advanced settings

INSTALLATION

Mounting and Removing to/from DIN rail

Aligning the slot at the bottom of the device with the DIN rail, as shown in Figure 1. Push the device to the direction of arrow 1 and press down in the direction of arrow 2. If remove the sensor, push the device forward to the arrow 1 meanwhile raise the device to the arrow 3 direction.

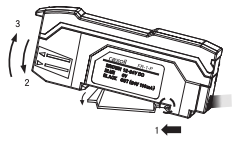


Figure 1

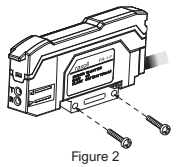
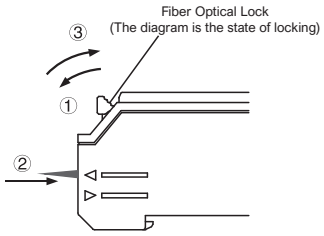


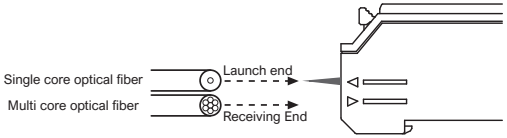
Figure 2

How to connect the fiber cables



① Lock rod to horizontal position.
② Insert the optical fiver until to the most inside.
③ Dial the lock lever to the vertical position, at this point the optical fiber has been fastened, remove the optical fiber and dial the lock lever to the horizontal position.

To connect coaxial reflector optical fiber unit to amplifier, please connect the single core optical fiber to the launch end, and multi core optical fiber to the receiving end.



OUTPUT SWITCHING

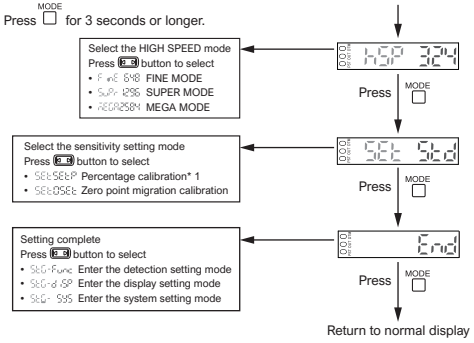
Optional mode is the action of light entry (L.ON) or light shading (D.ON)

1-) When showing the current value, press the [MODE] button.

2-) Use the button to switch the output mode (L.ON - D.ON), after that, press [MODE] button one more time. After the switching of output, the module shows the current value.

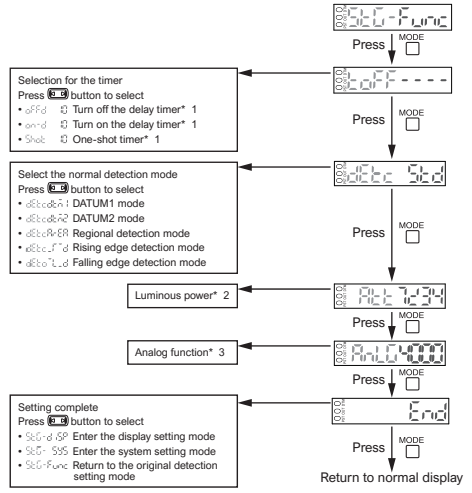
BASIC SETTING

Press MODE for 3 seconds or longer.



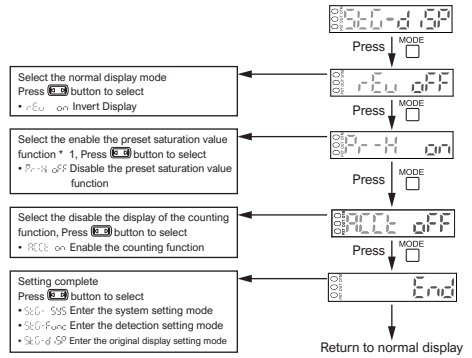
*1 Press the button to setthe value range of 999 to -999

DETECTION SETTINGS



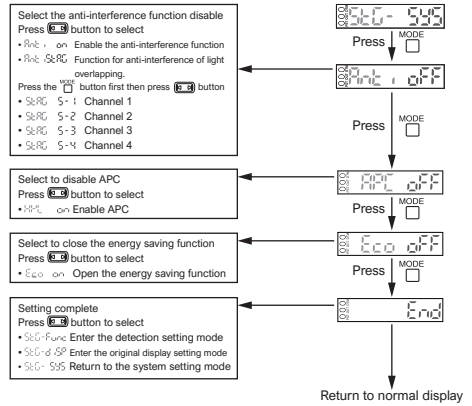
*1 Press the button to preset the value range from 1 to 9999 (ms)
*2 The value range can be set from 1 to 100
*3 The value range can be set from 1 to 4000

DISPLAY SETTINGS



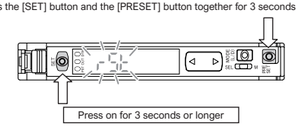
*1 Press the button, set the value in the range from 100P to 200P.

SYSTEM SETTINGS



INITIALIZATION SETTINGS

1-) Press the [SET] button and the [PRESET] button together for 3 seconds



2-) Use the [▲] button to select "rSt" and then press [MODE] button
3-) Use the [▲] button to select "init" and then press [MODE] button

After the initialization is completed, the module redisplays the current value.

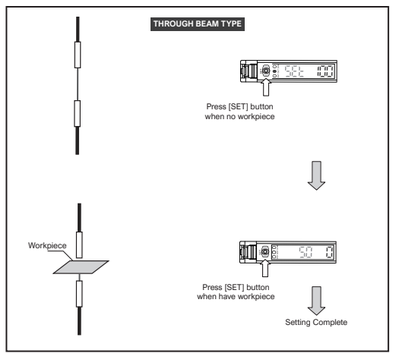
Initial Setting

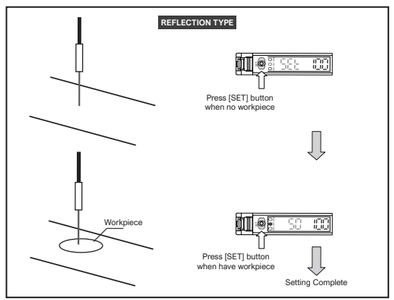
Setting	Initial Value
Power Mode	FINE
Detection Mode	STD(normal)
Preset Value	200
Output Switching	L.ON

CALIBRATION MODE

Detect the extremely subtle difference

Two points calibration:
Two points calibration is the most basic calibration mode.
Just press two times [SET] button to calibrate the sensitivity.
Press once when placed and not.



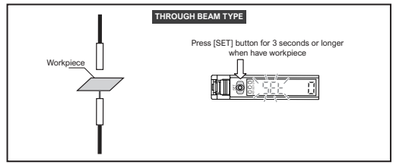


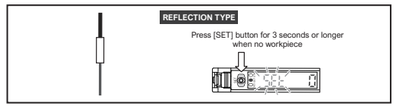
Two point calibration is based on with the workpiece or without the workpice to calibrate. The preseted point is the intermediate value of the above two cases.
If the difference between the cases that with or without workpiece is too small, then after the calibration will appear "- - - - -" blink for about 2 seconds.

OTHER CALIBRATION MODE

Enhance the applicability of the dusty ambient

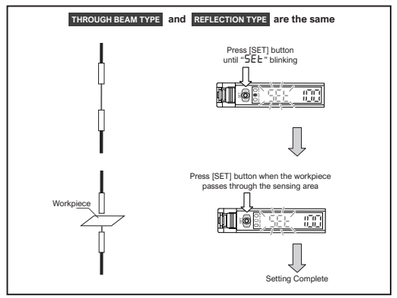
Maximum sensitivity setting:
In the case shown below, hold the [SET] button for 3 seconds or longer, until "SEt" blinking.





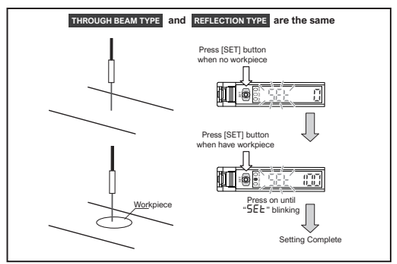
Calibrating the moving workpiece

Automatic calibration:
In the case of have no workpiece, press [SET] button, when "SEt" is blinking, make the workpiece pass through the sensing area.
(Do not release the [SET] button when the workpiece is passing through the sensing area)



Calibrating the fixed workpiece

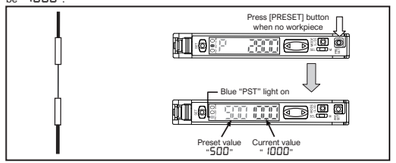
Positioning calibration:
In the case of have no workpiece, press [SET] button.
Place the workpiece in the desired position, press the [SET] button for 3 seconds or longer, until "SEt" blinking, release the button.
When the workpiece is placed, the edge of the workpiece is aligned with the center of the beam.



FUNCTIONS

Easily Setting Display

Presetting function:
When the light is recieved, press the [PRESET] button and the current value is setted to be " 1000".



Press the [PRESET] button to change the preset value and the current value.
When disable the presetting function. The preset value is set to "500", the preset value can be changed by normal calibration. When the presetting function is enable, the current value is setting to " 1000", the preset value is unchanged.

NOTICE The preset function can not be used together with the zero point migration function. If want to use the zero point migration function, must disable the preset function first.

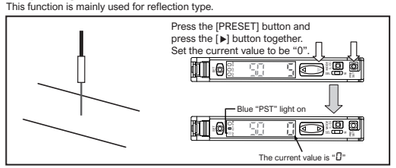
This mode is not suitable to transparent workpiece and other low light intensity difference detection cases.

Disable the presetting function:
Press the [PRESET] button to disable the presetting function.
When the presetting function is disable, the ratio between the preset value and the current value is unchange.

TIPS **The convenience of presetting functions**
This function is most suitable for the use of simple detection of opposite-type fiber optical unit. For example, complete block detection, such as optical axis of optical fiber units are blocked by non transparent parts.

Set the Current Value to be "0"

Zero point migration function:
This function is mainly used for reflection type.



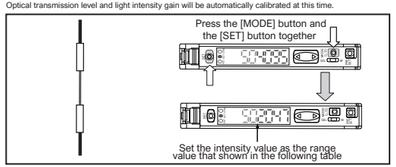
NOTICE The preset function can not be used together with the zero point migration function. If want to use the zero point migration function, must disable the preset function first.

Disable the zero point migration function:
Press the [PRESET] button to disable the zero point migration function.

TIPS **The convenience of zero point migration function**
This function is mainly used to set the current value to "0" for reflective fiber optical unit. Sometimes after installing the reflective fiber optical unit, the intensity of light is not be set to "0". If this happens, use zero migration function to set the value to "0" when no workpiece. This makes the light intensity difference more obvious.

Adjusting when the light intensity is too large(saturated)

Enable the saturation recovery function:
Press the [MODE] button and the [SET] button together, to enable saturation recovery function.
Optical transmission level and light intensity gain will be automatically calibrated at this time.



Power Mode	Light Intensity Setting Range
HSP*, FINE	2000 ± 350
SUPER	4095 ± 500
MEGA	5000 ± 600

* HIGH SPEED

Disable the saturation recovery function:
When the saturation recovery function is enable, press the [MODE] button and the [SET] button together can disable this function.

TIPS **The convenience of the saturation recovery function**
After installation, this function is practicluary useful when the light intensity value is saturated. This function can automatically calibrate optical transmission level and optical gain through simple operation.

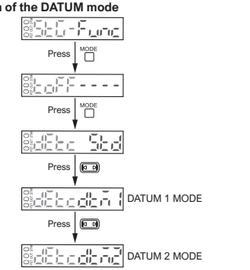
DATUM MODE

The DATUM mode opposite-type is suitable for the light intensity is gradually changing ambient. Such as that large scale temperature changes or easily pollute the optical module ambient.

The DATUM mode's reflection type is only suitable for the ambient that with strong reflection background and the targer is week reflection. For example, a black button on a white cloth.

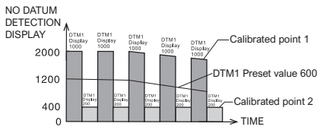
In the DATUM mode, the intensity of the received light is always corrected to " 1000" (for DATUM 1), "0" (for DATUM 2) when without workpiece.
In addition, the preset value will be corrected according to the correction amount, then the ratio between the preset value and the received light intensity remains unchanged.

Start the operation of the DATUM mode

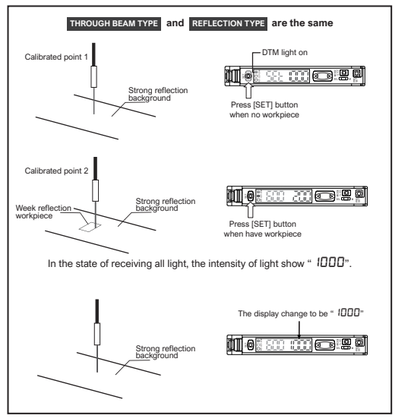


Sensitivity Setting in DATUM Mode 1

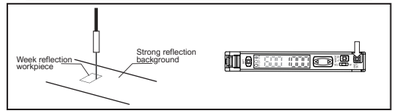
The sensitivity preset value is always automatically corrected, therefore, in case of no workpiece, the intensity of received light is " 1000"



The following sensitivity setting procedure is an example of two point calibration. When there is no workpiece, the intensity of the received light is " 1000", when there is workpiece, the intensity of light received is "200".

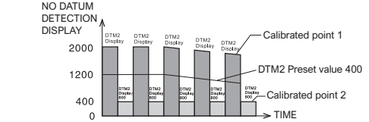


NOTICE If there is no workpiece, the displayed value is lower than " 1000" and after 30 seconds still does not reach " 1000", please press the [PRESET] button. This will correct the received light intensity to be " 1000". When the intensity of the received light stops flashing, the correction is completed.

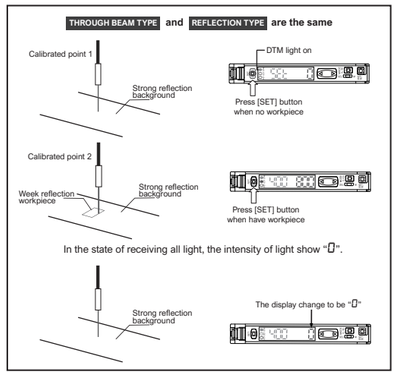


Sensitivity Setting in DATUM Mode 2

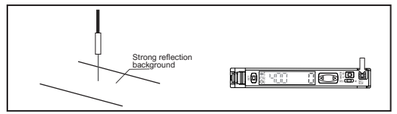
The sensitivity preset value is always automatically corrected, therefore, in case of no workpiece, the intensity of received light is "0"



The following sensitivity setting procedure is an example of two point calibration. When there is no workpiece, the intensity of the received light is "800", when there is workpiece, the intensity of light received is "0".

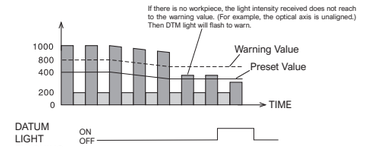


NOTICE If there is no workpiece, the displayed value is over than "0" and after 30 seconds still does not reach "0", please press the [PRESET] button. This will correct the received light intensity to be "0". When the intensity of the received light stops flashing, the correction is completed.



Change the Warning Output Level

DATUM Warning value is the intermediate value of the received light's intensity and the preset value when there is no workpiece, if the intensity of the received light is between the warning value and the preset value, the intensity of the received light will stop correcting, and the DTM light will flash to warn.



ERROR DISPLAY AND CORRECTION

Error Display	ERC	ERE	END APC	LOC
Reason	Overcurrent exist in the control output	Internal data write/load failure	Light source overload	Keylock
Solution	Detect the load and return the current to the rated range	Perform initialization	For high presicion detection, please replace the sensor	For disabling (setting)methods please refer to the FR-1-X user manual.

YOU CAN NOTE HERE

CONTACT US

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