## Panasonic




## 1 SPECIFICATIONS



## 2 mounting

How to mount the amplifier
(1) Fit the rear part of the mounting section of the amplifier
on a 35 mm width DIN rail. (2) Press oww the rear apart of the mounting section of the
unit on the 35 mm width DIN rail and fit the front part of unit on the 35 mm width DIN rail and fitt the front part of
the mounting section to the DIN rail. How to remove the amplifier
(1) Push the amplifier forward.


Note: Take care that if the front part is is lifed without pushing the amplifier forward, the hook on the How to connect the fiber cables
Be sure to fit the altachment to the fibers first before inserting the fibers to the
amplifier. For details, refer to the instruction manual enclosed with the fibers. (1) Snap the fiber lock lever down.
(2) Insert the fiber cables slowly into the inlets until they stop. (Note 1 )
Rtopurn the fiber lock lever to the original position, till it stops.



Fiber
2) Weththe coaxial relective type fiber, such as. FD-G4 or FD-FM2, insert the single-core fiber

## 3 CONNECTION

Make sure that the power supply is off while connecting or disconnecting the quickConnection method
Connection method
(1) Hollaing the connector of the quick-connection cable, align
its projection witt the groove at the top portion of the
amplifier connector.
(2) Insertit the connector till a click is felt.

Disconnection method
tion at the to
(1) Pressing the projection at the
cable, pull out the connector.



## 4 CAUTIONS

- This product has been developed / produced for industrial use only.

This product does not incorporate the optical communication function (copy

- Whuction and interference prevention function).
'SN', the eutput may be unstable. Do not use the output control for 0.5 sec. after
starting emission.
Make sure that the power supply is off while wiring.
- Make sure that the power supply is of while wiring.
- Verity that the supply voltage variaion is within her rating,
Take care that if a voltage exceeding the rated range is

Tar care that if a voltage exceeding the rated range is applied, or if an AC powe
supply is directly connected, the sensor may get burrt or damaged.
In case noise generating equipment (switching regulator, inverter motor, etc.) )
used in the vicinity of this product, connect the frame ground (F.G.) terminal of the
equipment to an actual ground.
prower is supplied from a commercial switching regulator, ensure that the fram
ground (F.G.) terminal of the power supply is connected to an actual ground.
Do not use during the initial transient time ( 0.5 sec.) after the power supply

- Twitched on. Take care that short-circuit of the load or wrong wiring may burn or damage the

Do not run the wires together with high-voltage lines or power lines or put them in
the same raceway. This can cause maltunction due to induction.

- Make sure to use the optional quick-connection cable for cornection of the amplifier.

Exiension up totad
units are connected in cascade: 20 m ) is possible with $0.3 \mathrm{~mm} \mathrm{~m}^{2}$, or more, cable
However, in order to reduce noise, make the wiring as short as possible.
Take care that cable extension increases the residual voltage.

- Take care that cable extension increases the
- This sessor is sutatale for indoor use only.
Avoid dust, dirt, and steam
- Avoid dusts dirt, and steam.
organic solvents, such as, thinner, etc., strong acido or alkacline.
This sensor cannot be used in an environment containing inflammable or explosive
- $\begin{aligned} & \text { gases. } \\ & \\ & \text { Never di }\end{aligned}$


## 5 CASCADING

Make sure that the power supply is off while adding or removing the amplifiers.

- Make sure to check the allowable ambient temperature, as it depends on the num-
- Make sure to check the allowable ambient temperature, as it depends on the num-
ber of amplifiers conected in cascade.
- In case two, or more, amplifiers are connected in cascade, make sure to mount
- In case two, or mail
them on a IN rail.

When the amplifiers move on the DIN rail depending on the attaching condition or
the amplifiers are mounted close to each other in cascade, fit them between the optional end plates (MS--DIN-EE) mounted at the two ends.
Up to maximum 15 amplifies can be added total 16 amplifier conet between the
 - When connecting more than two amplifiers in cascade, use the sub caa
as the quic-connection cable ofothe second amplifier onwards.

When this sensor is used by cascading along with the other ligitital fiber amplifier, since the optical communication function (copy function and interference preven-
tion function) is not incorporated, mount identical models together.
For mounting and removing the amplifier, refer to '2 MOUNTING'
Cascading method
(1) Mount the amplifiers, one by one,
on the 35 mm width DiN rail.
(2)
(2) Slide the amplifiers next to each
other, and con
nection ables.
(3) Mount the o
nection cabies.
(3) Munt the opional end plates
(MS-DIN-E) at both the ends to hold
(MS-DIN-E) at both the ends sto ohold
the amplifiers between their flat sides.

(4) Tighten the screws to fo fix the end | plates. |
| :--- |
| Dismantling |

(1) Losen the screws of the end plates.
2) Remove the end plates.

Bemove he enliates.
them one by one.


## 6 I/O CIRCUIT DIAGRAMS

## - NPN output type



## 7 PART DESCRIPTION

 |c Mun


## 8 OPERATION PROCEDURE



| MODE key |  |  |  |
| :---: | :---: | :---: | :---: |
| Press | Press | Jog switch |  |
|  |  |  |  |

1: When Jog switch is pressed, the setting is confirmed.
2: When MODE Key is pressed for 2 sec., or more, the sensor returns to the 'RUN' mode. 3: Cancellation is possible by pressing MODE key during setting.
4: When Jog switch is turned in the 'RUN' 'oode, the current threshold value is display

- And then, the



[^0]

The 0-ADJ setting function in this product was removed from production starting May, 2005.

## 9 TEACHING MODE

## in case of 2 -level teaching

This is the method of setting the threshold value by teaching two levels, corre-
sponding to the object present and object absent conditions. Normally, setting is done by this method.

| Step | splay | Descripion |
| :---: | :---: | :---: |
| (1) | 1234 | - Set the fiber within the sensing range. <br> Press MODE key to light up MODE indicator <br> TEACH (yellow). |
| (2) | 567 | Press Jog switch in the object present condition. If the teaching is accepted, the read incident light intensity Press blinks in the digital display. |
| (3) | 1234 | - The MODE indiataro I TEACH (yellow) blinks. P . |
| (4) | So0d <br> HiProd |  |
| (5) | 300 | - The threshold value is displayed. |
| © | 123 |  |

In case of limit teaching

- This is the method of setting the threshold value by teaching only the object
absent condition (stable incident light condition). This is used for detection in the




## In case of full-auto teaching

Full-auto teaching is used when it is desired to set the threshold value without

| Step | play | Descripion |
| :---: | :---: | :---: |
| (1) | 1230 | - Set the fiber within the sensing range. <br> Press MODE key to light up MODE indicator <br> TEACH (yellow). |
| (2) | 567 | Press Jog switch continuously for 0.5 sec . or more with the object moving on the assembly line. (The incident light intensi- Press ty is displayed during sampling.) |
| (3) | Ruto | 'Ruto ' is displayed on the digital display. Release the jog switch when the object has passed. |
| (4) | 5900 |  <br> Atter this, the judgment on the stability of sensing is isisplayed. <br> In case stable sensing is not possibio: $:$ 'hird $d$ ' is is isplayed. |
| (5) | 900 | threshold value is displaye |
| 6 | 1239 | - The incident I İght intensity appears in the digitad display and the seting |

10 THRESHOLD VALUE FINE ADJUSTMENT MODE
 When Jog switch is turned to the ' + ' side, the threshold




## 11 OUTPUT OPERATION SETTING MODE

 The output operation is chang
turned to the + side or the - side.
When Jog switch is pressed, the threshold value is confirmed


## 12 TIMER OPERATION SETTING MODE

- The setting for whether the timer is used or not can be $\begin{aligned} & \text { uuN } \\ & \text { INOH }\end{aligned}$
done when MODE Eindicator / TIMER (yellow) lights up.
- 10 ms OFF-delay (initial value) timer is automatically set
when the timer is set to be used. - Refer to 'IGPRO-MODE / PRO1 mode setting' or the setting
delay timer, ON-delay timer and ONE-SHOT timer intervals.


Notes: 1) The timer interal seti ithe PRO mode is displayed.
2) The factor seting is without timer

## 13 PRO MODE

For details of the settings and the setting procedure of the PRO mode, refer to Panasasonic
Industrial Devices sUNX website (http:/Ipanasonic..etididpidsx(lgobal)' or contact our ofice.
 PRO1 mode setting


PRO4 mode setting


Take care that if this product and the other digitit
cascade. The setting method is the same as well.


Notes: 11 When any oode other than the codes given in the code seting table below is is ised, d - ' ' is ting table, as shown below. Thus, the factory seting is sispolayed as '-OP4:



## 14 KEY LOCK FUNCTION

-If the jog switch and MODE key are pressed for more than 2 sec. at the same time
value mode condition, the key operations are locked, and only the threshold
value confirmation function or the adjust function (vailid only when the adjust lock
function is canceled) is valid.
To cancel the lock function, press both the keys for more than 2 sec. once again.

## 15 INTENDED PRODUCTS FOR CE MARKING

The models listed under " SPECIFICATIONS" come with CE
Marking.
As for all other models, please contact our office.

- Contact for CE

Panasonic Elecctric Works Europe AG
Rudolf-Diesel-Ring 2, D-83607 Holzkirchen, Germany
<From July $1,2013>$
Panasonic Marketing Europe GmbH Panasonic Testing Center
Panasonic Industrial Devices SUNX Co., Lt


2431-1 Ushiyma-cho, Kasuai:shi, Aichi, 486 -0901,
Phone: $+81-568-33-7861$ FAX:
F
$\frac{\text { About our sale networ, please visit our website. }}{\text { PRINTED IN JAPsonic Industrial Devices SUNX Co., Lto. } 2012}$


[^0]:    SENTRONIC $_{A G} \quad 0562223818$
    mailbox@sentronic.com

