



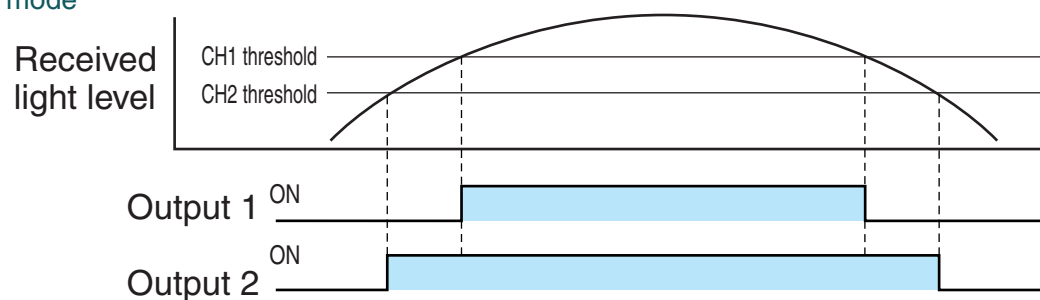
- 2-point “area” output modes are available
- Inherits advanced functions of the F70 Series and now allows a wider range of detecting conditions

Type

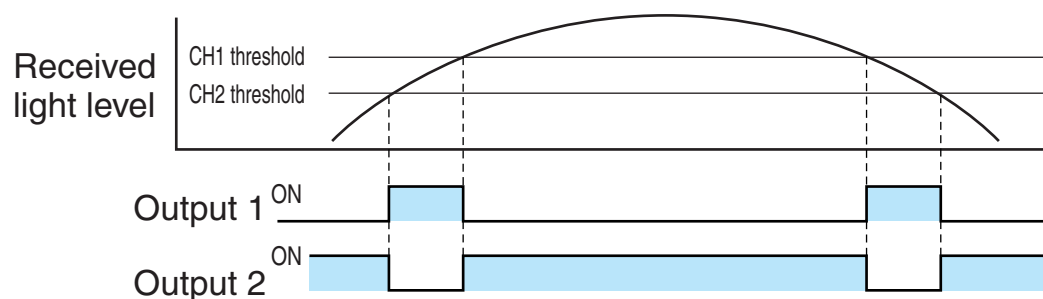
| Detection method/ detecting distance | Model | | Operation mode | Output mode | Light source |
|-------------------------------------------------------|--------------|----------------|------------------------------------|-------------------------------------------------------------------|--------------|
| | NPN output | PNP output | | | |
| Dependant on fiber optic cable, light source, etc. | F70TR | F70TRPN | Light-ON/ Dark-ON selectable | 2-point output/area output selectable, open collector | Red LED |
| | F70TG | F70TGPN | | | Green LED |
| | F70TB | F70TBPN | | | Blue LED |
| | F70TW | F70TWPN | | | White LED |

Output mode selectable

● 2-point output mode



● Area output (window comparator output) mode



Fiber optic sensors

Rating/Performance/Specification

| Model | NPN type | F70TR | F70TG | F70TB | F70TW |
|---------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------|
| | PNP type | F70TRPN | F70TGPN | F70TBPN | F70TWP |
| Detection method | | Through-beam type, reflective type (Dependant on fiber optic cable) | | | |
| Detecting distance | | Dependant on fiber optic cable, light source, etc. | | | |
| Power supply | | 12~24V DC \pm 10% / Ripple 10% max. | | | |
| Current consumption | NPN type | 39 mA max. | | | |
| | PNP type | 50 mA max. | | | |
| Output mode | Control output | 2-point output/area output (window comparator output) selectable 2 open collector outputs | | | |
| | Rating | NPN type | Ch 1: sink current 100 mA (30 VDC max.) / Residual voltage: 1 V or less Ch 2: sink current 50 mA (30 VDC max.) / Residual voltage: 1 V or less | | |
| PNP type | | Ch 1: source current 100 mA (30 VDC max.) / Residual voltage: 2 V or less Ch 2: source current 50 mA (30 VDC max.) / Residual voltage: 2 V or less | | | |
| Operation mode | | Light-ON/Dark-ON selectable | | | |
| Timer | | On delay/off delay/on-off delay/disabled selectable Delay time: 40 ms fixed | | | |
| Response time | | 1 ms max. | | | |
| Accessory | | Mounting bracket / Operation manual | | | |
| Specification | Light source (wavelength) | Red LED (660nm) | Green LED (525nm) | Blue LED (470nm) | White LED |
| | Indicator | Operation indicator: CH1 = Green LED / CH2 = Orange LED | | | |
| | Display | LCD display with backlight | | | |
| | Switch | 2 set buttons / Mode selector switch: RUN/SELECT/TEACH | | | |
| | Teaching method | Full auto teaching / Auto teaching | | | |
| | Teaching input | Set button | | | |
| | Short circuit protection | Provided | | | |
| | Material | Polycarbonate | | | |
| | Connection | Permanently attached cord (outer dimension: dia. 4.8) 0.2sq. 4 core 2 m length | | | |
| | Mass | Approx. 80 g (including mounting bracket) | | | |

Environmental Specification

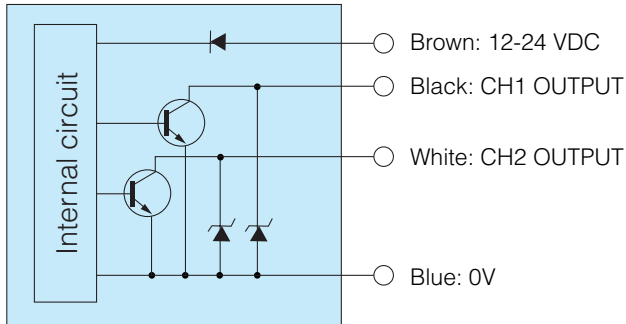
| | | |
|-------------|---------------------|--------------------------------------------------------------|
| Environment | Ambient light | Incandescent lamp: 10,000 lx max. / Sunlight: 20,000 lx max. |
| | Ambient temperature | -25 ~ +55°C Storage: -40 ~ +70 °C (non-freezing) |
| | Ambient humidity | 35~85%RH (non-condensing) |
| | Vibration | 10~55 Hz / 1.5 mm amplitude / 2 hours each in 3 direction |
| | Shock | 500 m/s ² / 3 times each in 3 directions |

For different types and specifications of fiber optic cables, see pp. 59-.

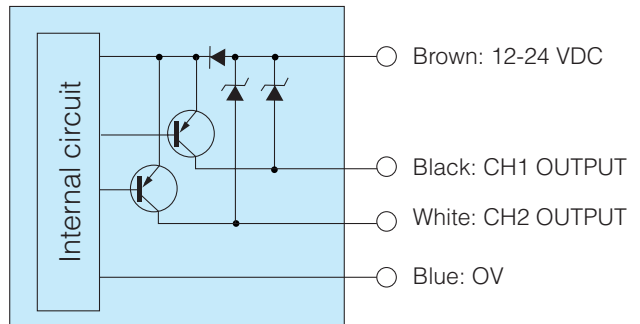
F70T

Input/Output Circuit and Connection

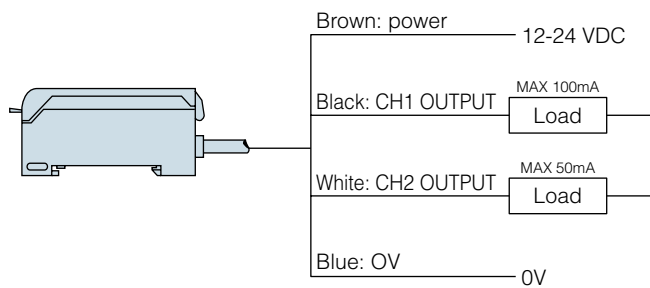
• NPN output



• PNP output

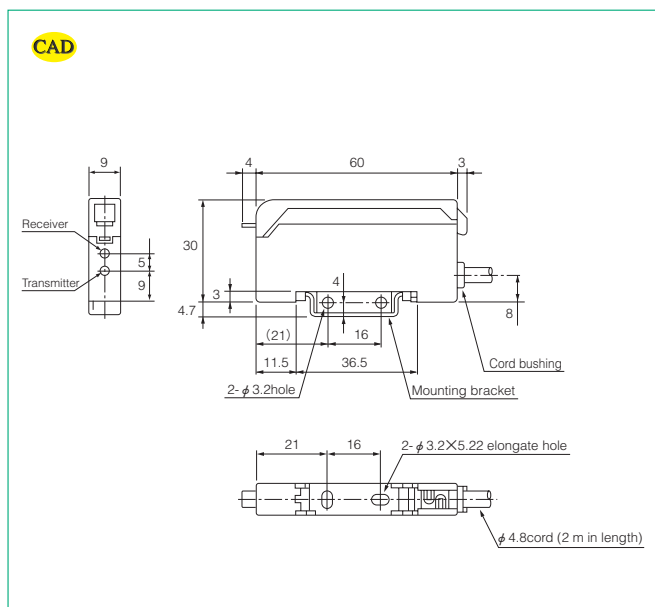


• Connection



- To extend the cord, use wires of at least 0.3 mm² and limit the length to within 100 m.

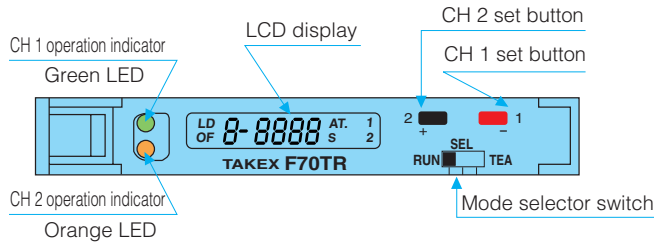
Dimensions (in mm)



For Correct Use

Be sure to follow the instructions in the operation manual provided for correct use of the product.

Part names



LCD display

Operation mode
 L: Light-ON
 D: Dark-ON
 O: On delay
 F: Off delay

Position on electronic volume
 (8-step indication: 1, 2, ..., 8)

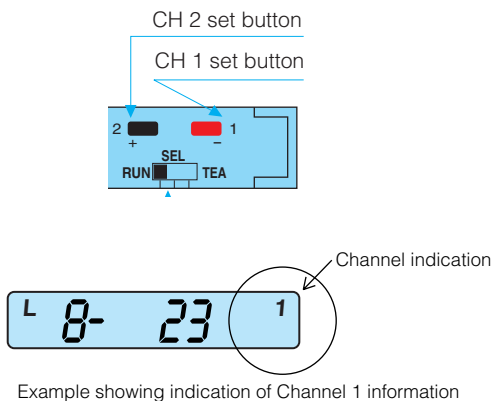
Received light level

Channel indication
 The number for the channel currently selected is displayed.

Function
 A (Area output): Illuminated when the selected output mode is area output. Not illuminated when 2-point output is selected.
 T (Teaching): Flashes when in the teaching mode.
 S (Sensitivity adjustment): Indicates that the operation level is being set manually and flashes when sensitivity adjustment is selected.

Channel indication

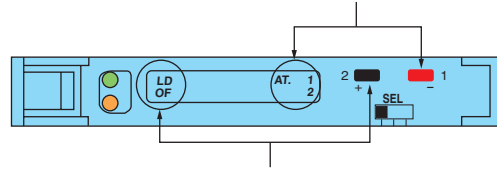
The "display" switches between indications for Channels 1 and 2. The LCD channel display indicates the active channel. To switch between channels, with the selector switch at the RUN position, press the set button for the channel to display.



Operation

Selecting operation and output modes

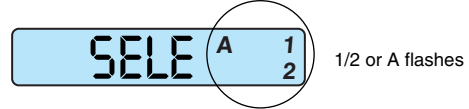
Button 1 for selecting between output modes (2-point/area)



Button 2 for selecting between operation modes

Output mode selection: selecting between 2-point/area output modes

1. Set the operation selector switch to SEL.
2. Press and hold down Button 1 for 3 seconds or longer then release the button.
3. Pressing Button 1 once (for about 1 second) alternates between flashing indications for 1/2 and A.

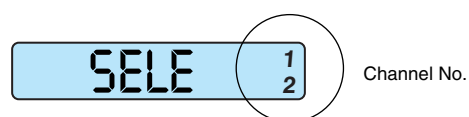


Selection: { For 2-point output, select the flashing indication for 1/2.
 For area output, select the flashing indication for A.

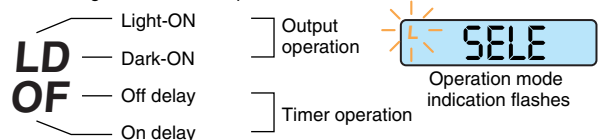
4. Set the output selector switch back to RUN.

Operation mode selection: selecting between Light-ON/Dark-ON and timer functions

1. Set the operation selector switch to SEL.
2. Press and hold down Button 2 for 3 seconds or longer and release the button.
3. Use Button 1 to select the channel to set.



4. Pressing Button 2 once (for about 1 second) switches between the flashing indications for operation modes.



5. Select the operation mode as required and set the operation selector switch back to RUN to complete.



F70T



For Correct Use

Be sure to follow the instructions in the provided operation manual for correct use of the product.

Sensitivity setting for 2-point output

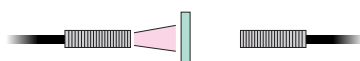
Maximum sensitivity setting:

Press the set button twice with the light blocked.

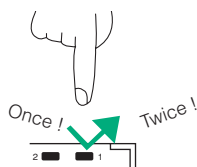
1. Set the operation selector switch to TEA.  TEA  T flashes.

2. Block the light beam with detectable object, this will set the light blocking state.

Example for through-beam type



3. Press the channel-set button twice, to set the correct channel.





4. Set the operation selector switch back to RUN to complete.

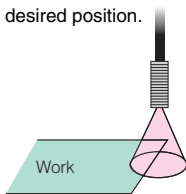
For reflective type

Use of a reflective-type fiber optic cable at the maximum sensitivity may cause inadequate light blocking. Be sure to use a work for sensitivity setting.

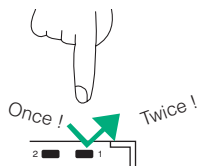
Work positioning setting

1. Set the operation selector switch to TEA.  TEA  T flashes.

2. Place the detectable object at the desired position.





3. Press the button twice to set the correct channel.



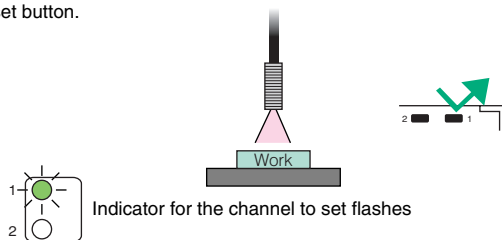
4. Set the operation selector switch back to RUN to complete.



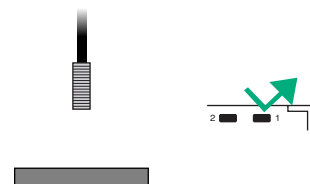
Sensitivity setting using stationary work: auto teaching

1. Set the operation selector switch to TEA.  TEA  T flashes.

2. With the work in place, press once (for about 1 second) the channel-set button.





3. Without the detectable object, press once (for about 1 second) the channel-set button, this will set the correct channel.



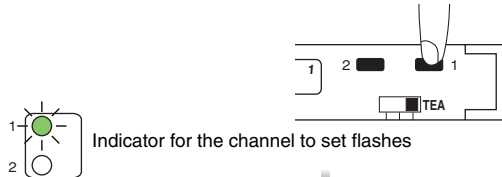
4. Set the operation selector switch back to RUN to complete.



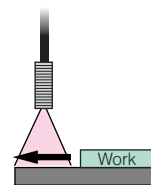
Sensitivity setting using moving work: full auto teaching

1. Set the operation selector switch to TEA.  TEA  T flashes.

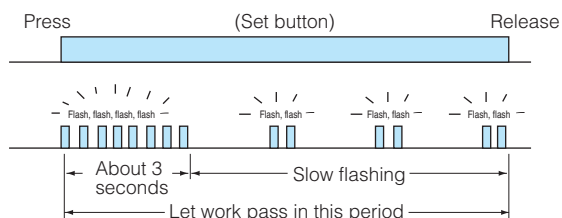
2. Press and hold down button to set the correct channel.



Let the work pass while holding down the button.



3. Confirm the indicator is flashing slowly when the work has passed and then release the set button.




4. Set the operation selector switch back to RUN to complete.

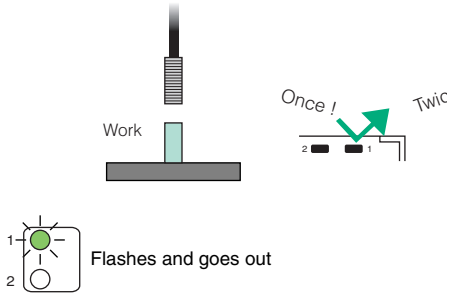


For Correct Use

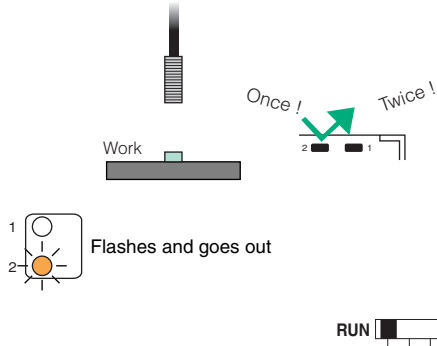
Be sure to follow the instructions in the provided operation manual for correct use of the product.

Sensitivity setting for area output (a good example would be detecting different levels)

1. Set the operation selector switch to TEA.  T flashes.
2. With the detectable object in place for the upper limit, press Button 1 twice (for about 1 second each time).




3. With the detectable object in place for the lower limit, press Button 2 twice (for about 1 second each time).




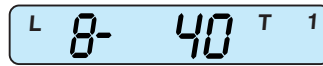
4. Set the operation selector switch back to RUN to complete.

Sensitivity adjustment: manual adjustment (fine-tuning) of sensitivity

1. Set the operation selector switch to SEL. 
2. Press button once for each channel requiring sensitivity adjustment.

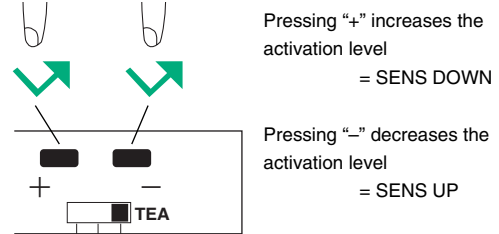


3. Set the operation selector switch to TEA. 



The value display shows the current ON level.

4. Press the "+" or "-" button to adjust the sensitivity (holding down the button changes the indication faster).



5. When sensitivity adjustment is finished, set the operation selector switch back to RUN to complete.

