F70T Series

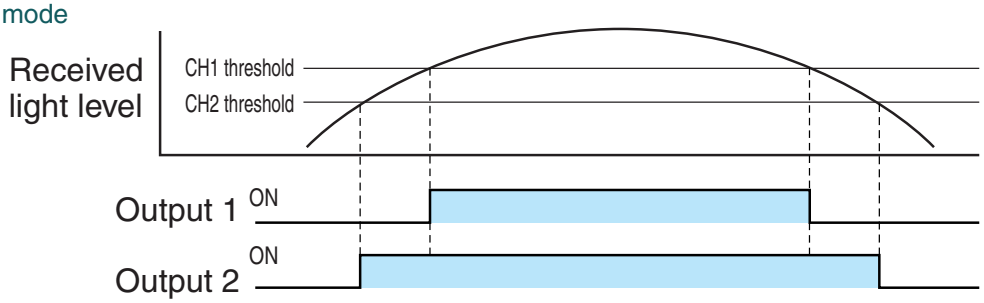
- 2-point “area” output modes are available
- Inherits advanced functions of the F70 Series and now allows a wider range of detecting conditions

Type

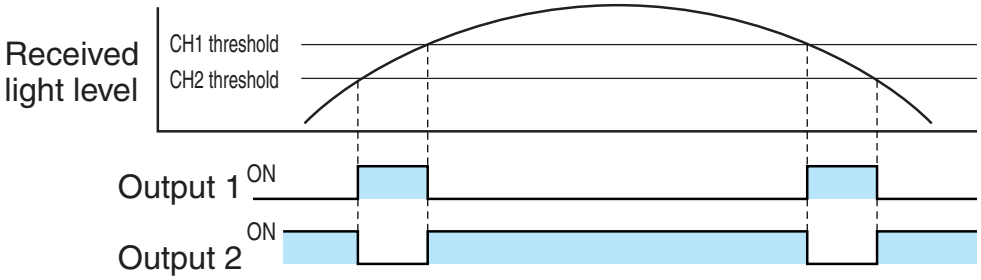
Detection method/ detecting distance	Model		Operation mode	Output mode	Light source
	NPN output	PNP output			
Dependant on fiber optic cable, light source, etc.	**F70TR**	**F70TRPN**	Light-ON/ Dark-ON selectable	2-point output/area output selectable, open collector	Red LED
	F70TG	**F70TGPN**			Green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

Output mode selectable

● 2-point output mode



● Area output (window comparator output) mode



Rating/Performance/Specification

Rating/performance	Model	NPN type	F70TR	F70TG	F70TB	F70TW
		PNP type	F70TRPN	F70TGPN	F70TBPN	F70TWPN
	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 ±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			
		Rating 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

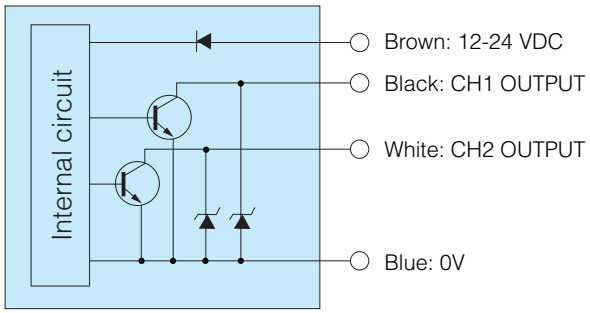
Environment	Ambient light	Incandescent lamp: 10,000 lx max. / Sunlight: 20,000 lx max.
	Ambient temperature	-25 ~ +55ºC Storage: -40 ~ +70 ºC (non-freezing)
	Ambient humidity	35~85%RH (non-condensing)
	Vibration	10~55 Hz / 1.5 mm amplitude / 2 hours each in 3 direction
	Shock	500 m/s² / 3 times each in 3 directions

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

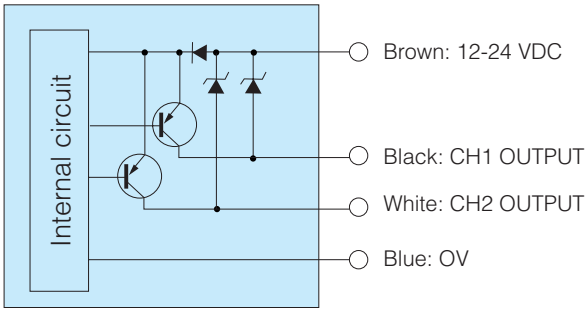
F70T

Input/Output Circuit and Connection

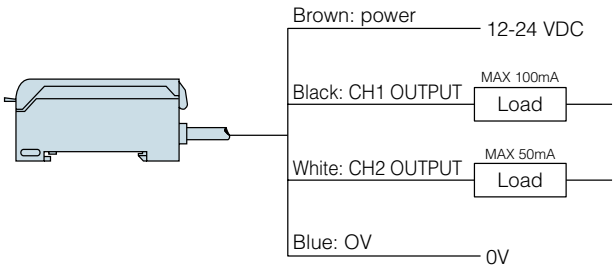
- NPN output



- PNP output



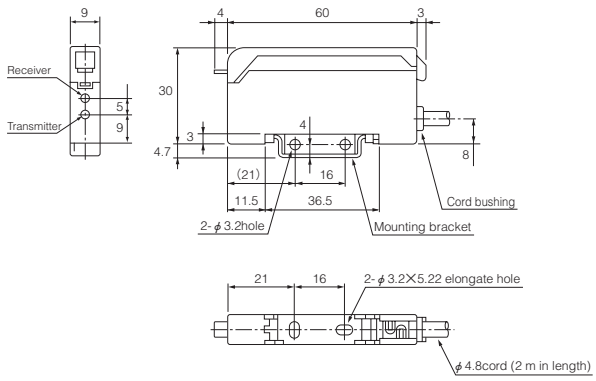
- Connection



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

Dimensions (in mm)

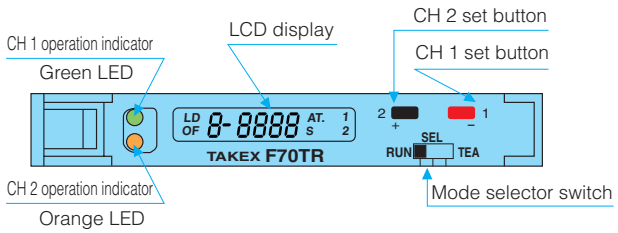
CAD



For Correct Use

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

Part names



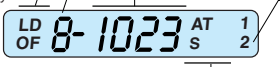
LCD display

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

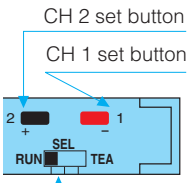
Channel indication
The number for the channel currently selected is displayed.

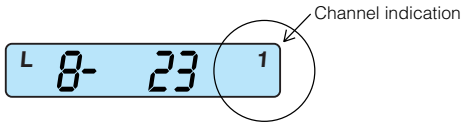


Function
A (Area output): Illuminated when the selected output mode is area output.
Not illuminated when 2-point output is selected.
T (Teaching): Flashes when in the teaching mode.
S (Sensitivity adjustment): Indicates that the operation level is being set manually and flashes when sensitivity adjustment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



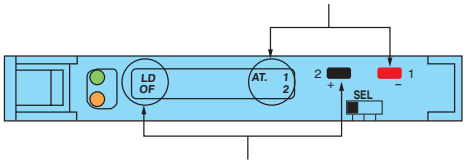


Example showing indication of Channel 1 information

Operation

Selecting operation and output modes

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

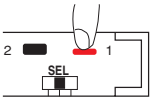


Button 2 for selecting between operation modes

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.

1/2 or A flashes

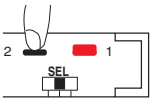
Selection: { For 2-point output, select the flashing indication for 1/2.
For area output, select the flashing indication for A.

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.

Channel No.

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

LD — Light-ON
LD — Dark-ON
OF — Off delay
OF — On delay

Output operation: Light-ON, Dark-ON
Timer operation: Off delay, On delay

Operation mode indication flashes

5. Select the operation mode as required and 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.

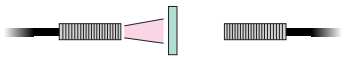
Sensitivity setting for 2-point output

Maximum sensitivity setting: Press the set button twice with the light blocked.

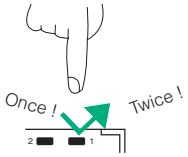
1. Set the operation selector switch to TEA. 

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.

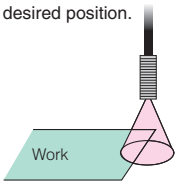
For reflective type

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.

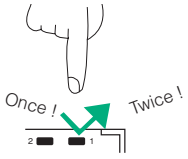
Work positioning setting

1. Set the operation selector switch to TEA. 

2. Place the detectable object at the desired position.



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

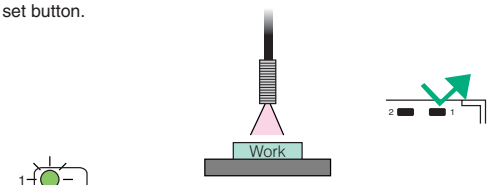


4. Set the operation selector switch back to RUN to complete.

Sensitivity setting using stationary work: auto teaching

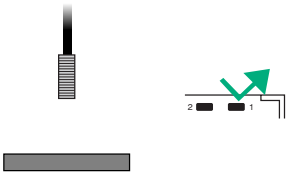
1. Set the operation selector switch to TEA. 

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



Indicator for the channel to set flashes

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

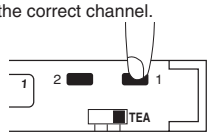


4. Set the operation selector switch back to RUN to complete.

Sensitivity setting using moving work: full auto teaching

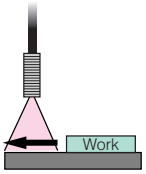
1. Set the operation selector switch to TEA. 

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

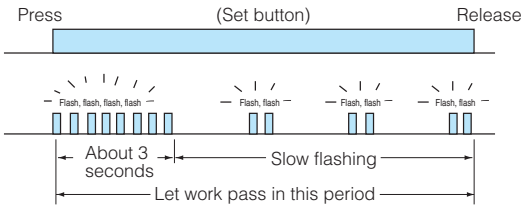


Indicator for the channel to set flashes

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.

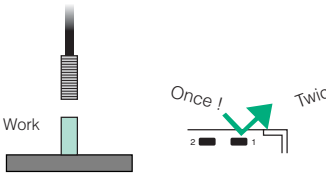
For Correct Use

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)

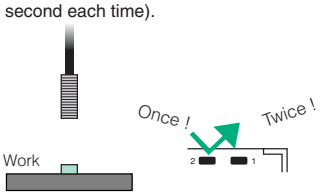
1. Set the operation selector switch to TEA.   T flashes.

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



Flashes and goes out

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



Flashes and goes out

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

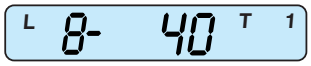
Sensitivity adjustment: manual adjustment (fine-tuning) of sensitivity

1. Set the operation selector switch to  .

2. Press button once for each channel requiring sensitivity adjustment.

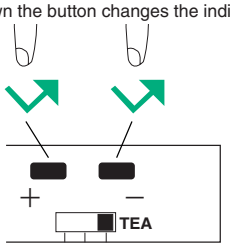
Selected channel No. and S flashes.

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).



Pressing "+" increases the activation level
= SENS DOWN

Pressing "–" decreases the activation level
= SENS UP

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