



Fiber optic sensors

- Digital indication of sensing information
- Various advanced functions provide for optimum use of the sensor
- Unparalleled “high resolution” allows highly accurate detection
- LCD with backlight for ease of reading
- Longer detecting distance (about 2-X that of a conventional Takex model)

Variation

Type	Model		Light source	Output mode
	NPN output	PNP output		
Digital display high-performance type	F70R	F70RPN	Red LED	Open collector (NPN/PNP)
	F70G	F70GPN	Green LED	
	F70B	F70BPN	Blue LED	
	F70W	F70WPN	White LED	

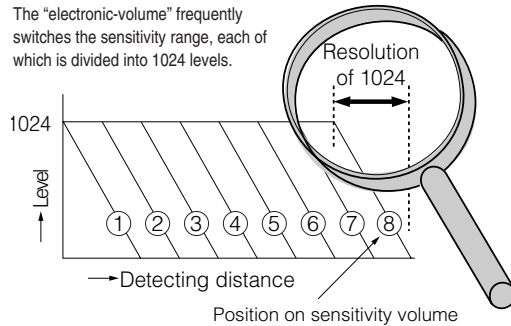
Excellent detection performance

Built-in high-resolution provides highly accurate detection

Wide dynamic range and high resolution are achieved at the same time

High resolution is maintained even with a wide dynamic range. The provided electronic volume feature has both a wide dynamic range and high resolution.

The “electronic-volume” frequently switches the sensitivity range, each of which is divided into 1024 levels.



(6) 8-position sensing indication with electronic volume



Self-diagnosis stability indication

Function mode indicated

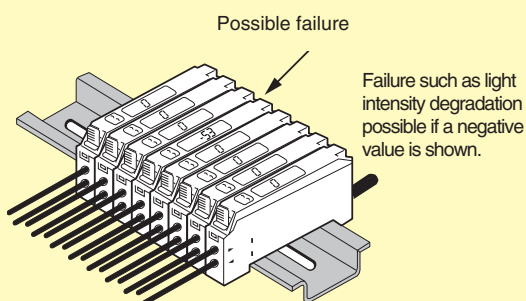
Operation/timer mode indicated

Light emission frequency channel switched for Anti Mutual Interference feature

Display function :(beyond received light level)

Displacement indication function

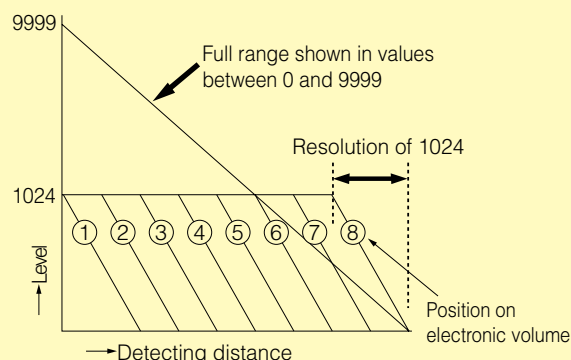
All amplifiers should show "0" with no work.



The value for a deviation (positive or negative) of received light level from the original level is shown at the time of detection, which allows central management of sensors.

Absolute value indication

Received light level indication going beyond the



If the received light level at light blocking is 10 and the level at light reception is 6000, the light blocking / light reception ratio is calculated as 600 times.

supporting high resolution

Enhanced teaching features (sensitivity setting)

- Full auto teaching

Simply pressing the button allows easy teaching of an object moving at a high speed. The teach hold feature allows indication of the maximum and minimum data.

- Auto teaching

2-point teaching with and without the presence of work, allows the detection of slight level differences such as the thickness of a piece of work and/or the presence of a film.

- Positioning teaching

This feature is ideal for high-accuracy positioning that requires accurate determination of a detecting point.

- Maximum sensitivity setting

For applications requiring a "maximum" sensitivity setting such as the detection of work with a through-beam type-fiber optic cable. The incorporated extra powerful light would allow use in an adverse environment.

- Manual setting

Arbitrary manual increase and decrease of a set-point level allows level setting while checking the operation.

Auto sensing function compensates for adverse environment

The level of received light is constantly monitored and fluctuation is detected and automatically adjusts the activation/deactivation level.

Stable detection at optimum sensitivity is ensured even if the received light level frequently fluctuates due to dust or water drops.

Manual hysteresis setting feature

The hysteresis can be arbitrarily set according to the application, allowing setting of a small hysteresis for severe, high-accuracy detection and a large hysteresis for detection of large variation and prevention of chattering.

Timer functions

On-delay, off-delay and on-off delay timer functions are provided, which allows for a wide range of detecting and input conditions from the connected devices.

The delay time setting is variable between: 10 ms, 20 ms, 40 ms, 60 ms, 80 ms, 100 ms and 120 ms.

Teach hold function

The sensor has the ability to hold instantaneous data for an object moving at a high rate of speed during full auto teaching. This data is displayed when the teaching has been completed.



(Data for light reception is 325 and for light blocking 120.)

F70A • F70series

Rating/Performance/Specification

Model	NPN type	F70AR	F70AG	F70AB	F70AW	F70R	F70G	F70B	F70W	
	PNP type	F70ARPN	F70AGPN	F70ABPN	F70AWPN	F70RPN	F70GPN	F70BPN	F70WPN	
Rating/performance	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 (*)	Open collector output / Rating: sink current 100 mA (30 VDC max.) / Residual voltage: 1 V or less							
		Stability output (*)	Open collector output / Rating: source current 100 mA (30 VDC max.) / Residual voltage: 2 V or less							
	Operation mode	NPN type	Open collector output / Rating: sink current 50 mA (30 VDC max.) / Residual voltage: 1 V or less							
		PNP type	Open collector output / Rating: source current 50 mA (30 VDC max.) / Residual voltage: 2 V or less							
	Operation mode	Light-ON/Dark-ON selectable								
	Timer	Off delay/disabled selectable				On delay/off delay/on-off delay/disabled selectable				
		Delay time: 40 ms fixed				Delay time: selectable between 10, 20, 40, 60, 80, 100 and 120 ms / Default: 40 ms				
Response time	Light emission frequency channel 1: 600 μ s max. Light emission frequency channel 2: 700 μ s max.				Light emission frequency channel 1: 500 μ s max. Light emission frequency channel 2: 600 μ s max.					
Specification	Light source (wavelength)	Red LED (660nm)	Green LED (525nm)	Blue LED (470nm)	White LED	Red LED (660nm)	Green LED (525nm)	Blue LED (470nm)	White LED	
	Indicator	Operation indicator: orange LED / Stability (STB) indicator: green LED								
	Display	LCD display with backlight								
	Switch	2 set buttons / Mode selector switch: RUN/SET				2 set buttons / Mode selector switch: RUN/SELECT/MODE				
	Sensitivity setting	Full auto teaching / Auto teaching								
	Sensitivity setting input	Set button input				Set button input/external input				
	Sensitivity adjustment function	Provided (manual sensitivity adjustment)								
	Functions	<ul style="list-style-type: none"> • Anti Mutual Interference feature • Short circuit protection feature 				<ul style="list-style-type: none"> • Sensor function: AUTO/TEACH/LOCK • Auxiliary function: <ul style="list-style-type: none"> S for manual adjustment of sensitivity and activation level H for manual hysteresis setting V for displacement indication and absolute value indication modes • Anti Mutual Interference feature • Self-diagnosis feature • Short circuit protection feature 				
	Material	Polycarbonate								
	Connection	Permanently attached cord (outer dimension: dia. 4.8) 0.2sq. 3 core 2 m length				Permanently attached cord (outer dimension: dia. 4.8) 0.2sq. 5 core 2 m length				
Mass	Approx. 80 g (including 2-m cord and mounting bracket)									
Accessory	Mounting bracket / Operation manual									

(*) Avoid the transient condition (0.5 seconds) immediately after power-up for output.

Environmental Specification

Environment	Ambient light	Incandescent lamp: 10,000 lx / Sunlight: 20,000 lx
	Ambient temperature	1-3 adjacent units in operation: $-25 - +55$ °C
		4-10 adjacent units in operation: $-25 - +50$ °C
		11-16 adjacent units in operation: $-25 - +45$ °C Storage: $-40 - +70$ °C (non-freezing)
	Ambient humidity	35-85%RH (non-condensing)
	Protective structure	IP40
	Shock	10-55 Hz / 1.5 mm amplitude / 2 hours each in 3 direction 500 m/s ² / 3 times each in 3 directions