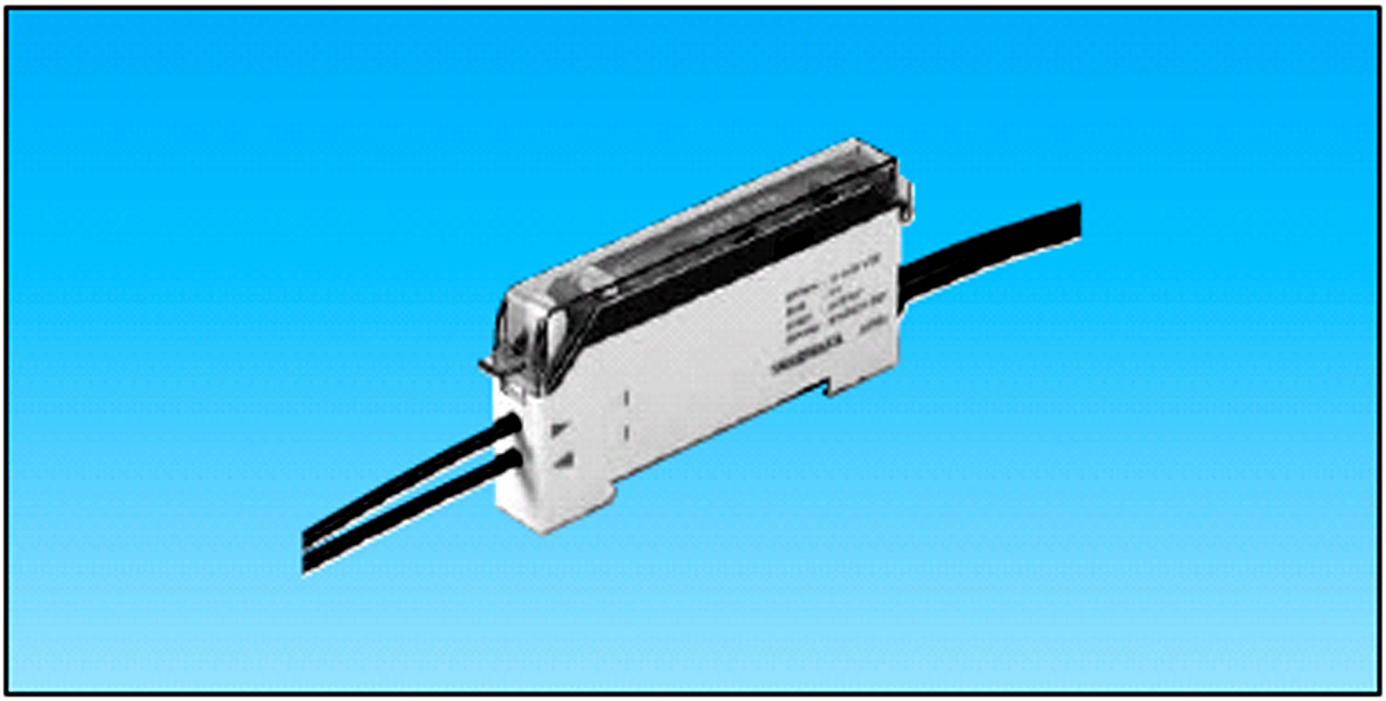
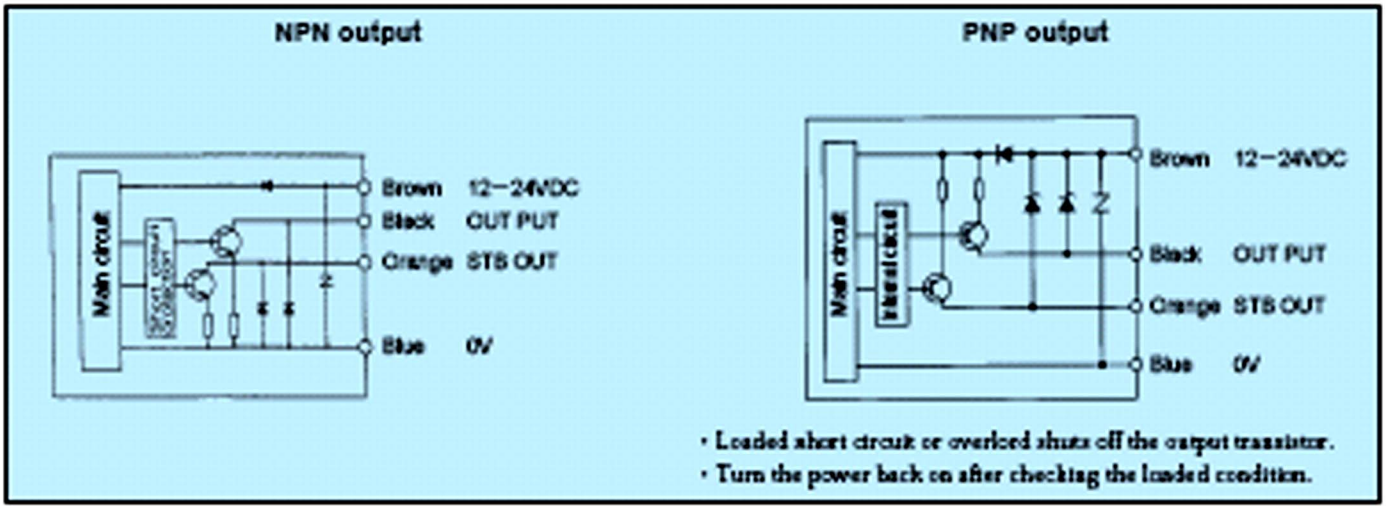
F71R series

FIBER OPTIC SENSORS

- This is an ultra thin type and therefore it does not need a large space even when more than two units are installed close to each other. In addition to this, an eight turn sensitivity adjustment is used, which enables fine setting by looking directly at the indicator.
- Using the optical transfer technology for the first time in the industry, the Anti Mutual Interference function for up to 8 units and the turbo function are built in.



■ OUTPUT CIRCUIT



■ SPECIFICATIONS

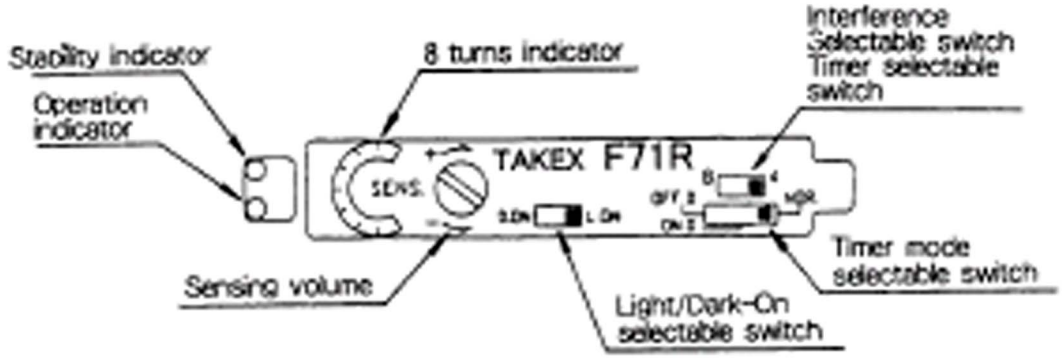
Model	F71R	F71RPN	F71RH	F71RHPN
Detection method	Through-beam, Reflection (By fiber unit)			
Range	Reflection FRSBC : 100mm (10×10cm white paper) Through-beam FTSBC : 270mm			
Power supply	12−24V DC ±10%, Ripple 10% (Max.)			
Current consumption	35mA (Max.)	40mA (Max.)	35mA (max.)	40mA (Max.)
Output mode	NPN	PNP	NPN	PNP
rating	Open Collector : 100mA (DC30V) Max. residual Voltage 1V (Max.)			
Operating mode	Light ON/Dark ON Selectable			
Timer	Timer function selectable			
Exterference function	Built-in			
Response time	250μs : Selectable switch "4" side (Turbo Function : OFF) 500μs : Selectable switch "8" side (Turbo Function : ON)		30μs (Max.)	
Light source	Red LED (660nm)			
Indicators	Operation : Orange LED, Stability : Green LED			
Sensitivity adj	8 Turns VR with indicator			
Switch	Light/Dark-On selectable switch L.ON side : Light-On mode D.ON side : Dark-On mode Timer selectable switch NOR. side : On/Off operating ON.D side : On-Delay operating (40ms) OFF.D side : Off-Delay operating (40ms) Interference/Turbo mode selectable switch 8 side : 8 unit do not interfere (Turbo : ON) 4 side : 4 unit do not interfere (Turbo : OFF)			
Short protection	Built-in short protection (Normal/Stability output)			
Material	Case/Case cover : Polycarbonate			
Connection	Flytag lead (Outer dia 4.8mm) 2m length 0.2sq×4 core ※			
Weight	80g Max. (Mounting bracket included)			
Notes	(The mode setting when shipment) Sensitivity : Max. Light/Dark-On selectable SW : L.ON side Interference selectable SW : 4 side Timer selectable switch : NOR. side			

※ In-Line connector type is available (−J type : 0.3m length M8)

■ ENVIRONMENT

Ambient light	Tungsten lamp : Withstands 10,000 lx (Max.) Sun light : Withstands 20,000 lx (Max.)
Operating temp.	−25～+55℃ (Storage : −40～+70℃)
Humidity	35 to 85% RH
Noise	By Noise simulator Power line : 500V Cycle : 10ms, Pulse duration 1μs Radiation : 1kV Cycle : 10ms, Pulse duration 1μs
Vibration	10Hz to 55Hz, 1.5mm Amplitude, 2 Times, 3 direction
Shock	100m/s² 3 Times, 3 direction
Dielectric withstanding	AC1,000V 1 minute
Insulation resistance	500VDC, 20MΩ (Max.)

■ PANEL AND OPERATION



SENS.	: 8 turns sensitivity adjustment volume
L. ON/D. ON	: Light/Dark On selectable switch
4/8	: Interference Selectable switch
	: Turbo Function Selectable switch
NOR./ON.D/OFF.D	: Timer mode selectable switch
	NOR. side : On/Off operating
	ON. D side : On-Delay operating (40ms)
	OFF. D side : Off-Delay operating (40ms)

Operation indicator : It lights when output transistor becomes ON.

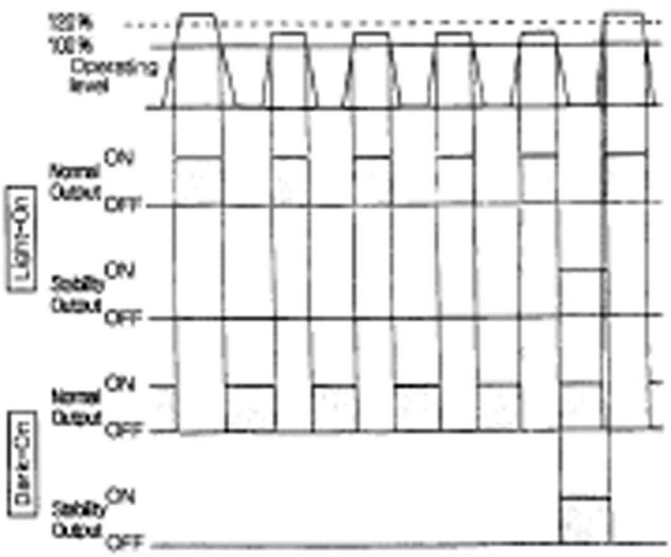
Stability indicator : It lights when the light quantity of receiver has 120% sufficient margin.

※ Interference/Turbo mood selectable switch

8 side : 8 unit do not interfere (Turbo : ON)
(Response time : 500 μ s)

4 side : 4 unit do not interfere (Turbo : OFF)
(Response time : 250 μ s)

■ STABILITY OUTPUT



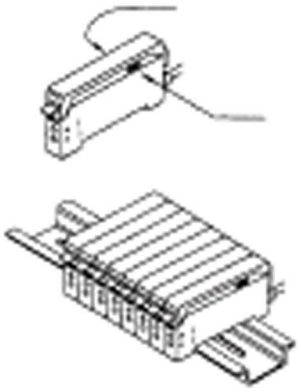
- This is used for an initial check of environmental changes and level reduction during operation.
- If the amount of received light exceeds the operation level but does not reach 120% (no stability) and this happens 4 times consecutively, the control output will go low (OFF) at light ON operation.
  Also, the stability indicator flashes at the same time the stability output operates. When stability returns, the Stability Output will be OFF, and the stability indicator will be ON continuously (normal ON) not flashing.

■ TURBO FUNCTION

- When the turbo mode changeover switch is set to "8", the turbo function will operate. When the turbo function operates, the response time will be 500μ sec, but the detection distance will be increased by approx. 30% from when the turbo function is OFF ("4").

■ ANTI MUTUAL INTERFERENCE

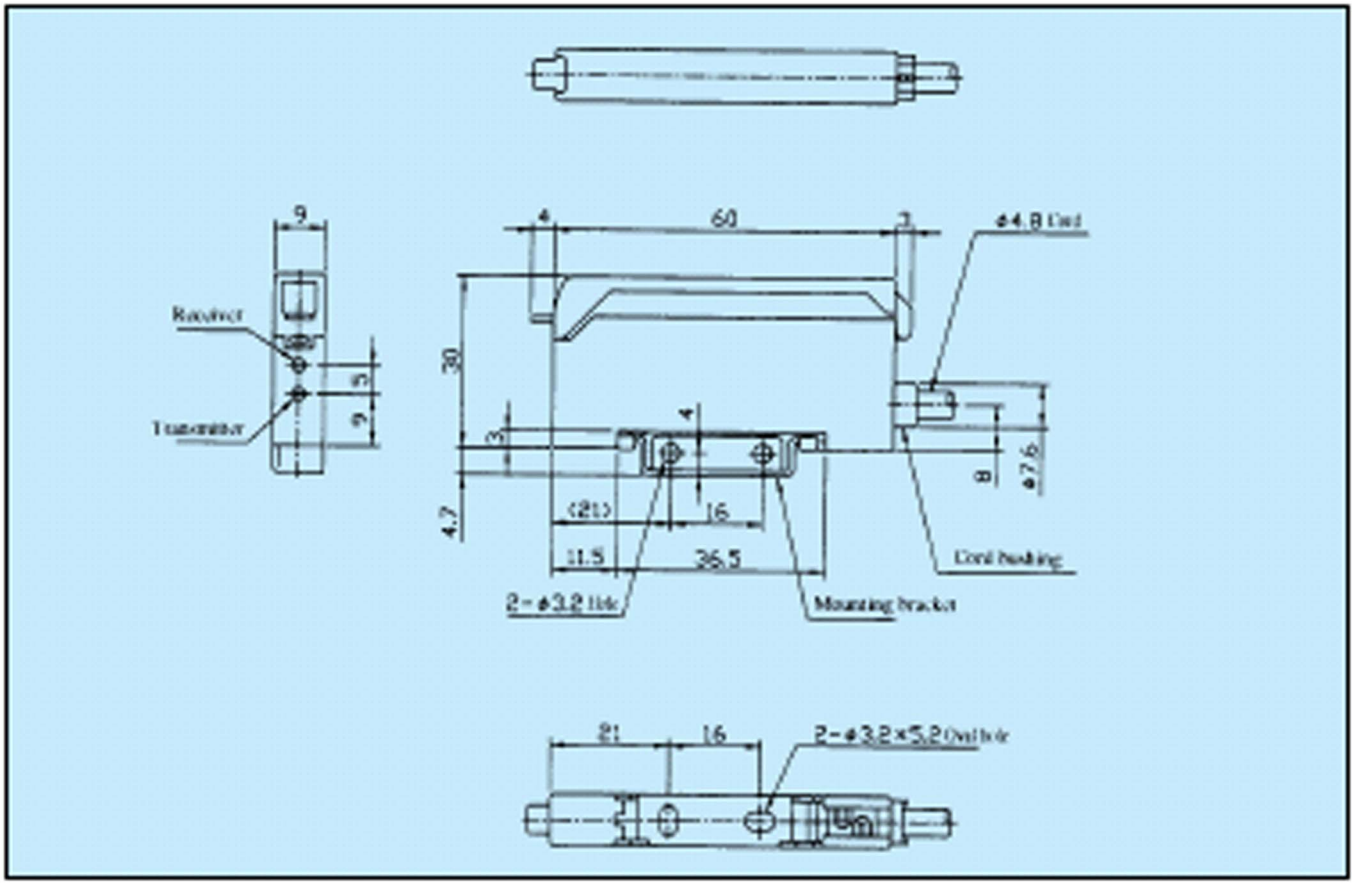
- This product has an Anti Mutual Interference function that uses optical transfer. For the optical transfer there is a window on the side of the unit which is the optical path. There are transmitter and receiver windows.
  Therefore, install the units on a DIN rail and match the transfer windows of the amplifier units next to each other, as shown in the drawing, in order to ensure the function of the Anti Mutual Interference.



Interference selectable switch

8 ⇨■ 4 4 unit do not interfere (Response time : 250μs)

8 ■⇦ 4 8 unit do not interfere (Response time : 500μs)

Cautions : If the amplifier units are mounted next to each other and they are not aligned, or
If the gaps between the amplifier units are too large, or
If the light path between the transfer window is blocked,
the optical transfer will become impossible and malfunction will occur.

■ DIMENSIONS