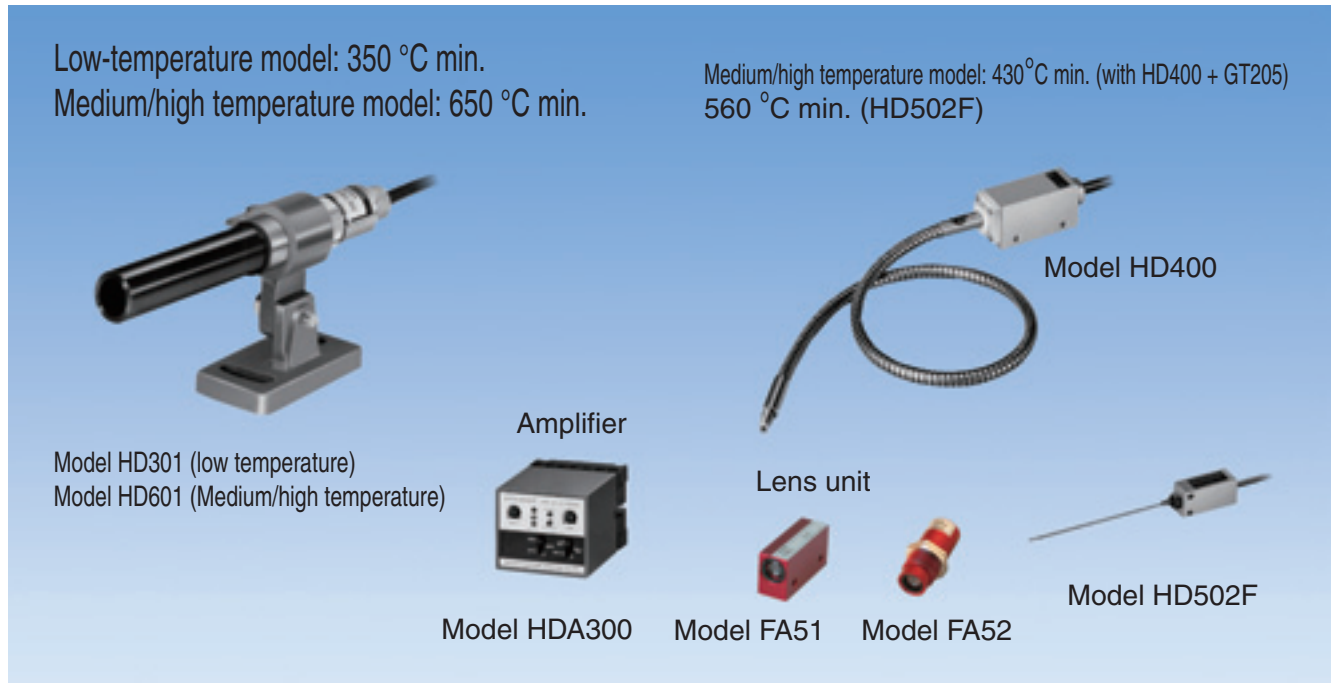


HD



Low-temperature model: 350 °C min.
 Medium/high temperature model: 650 °C min.

Medium/high temperature model: 430°C min. (with HD400 + GT205)
 560 °C min. (HD502F)

Model HD301 (low temperature)
 Model HD601 (Medium/high temperature)

Amplifier

Model HDA300

Lens unit

Model FA51

Model FA52

Model HD400

Model HD502F

The HD Series HMDs are radiation detection photo sensors with separate amplifiers that have achieved compact sizes and low cost.

HD301 and 601 are intended for sites where temperature in the vicinity of the receiver is up to 50 or 70 °C and available in models for low temperature and medium/high temperature. Applications include detection of presence or passage of heated steel material, glass, etc.

HD400 and 502F are optical fiber type sensors with ultra-small heads. Applications include detection of heated steel material, glass, etc.

● Ordering guide (for HD400 Series)

A set is composed of an amplifier, receiver and fiber optic cable unit and there is no set No. Order by specifying the individual model Nos. of components as shown below:

Type	Model	Quantity
Amplifier	HDA300	1
Receiver	HD400	1
1-m fiber	GT21	1

Features

- Low-cost
 The HD Series offers the lowest cost of all HMDs. Amplifiers are separately installed and no water-cooling is involved.
- Airless hood provided
 The HD Series sensors come with Airless hood for prevention of soiling of lens.
- Fiber type
 HD 400 may be used in combination with heat-resistant generic fiber optic cables, which improves the resistance to heat and electric safety of the sensing head. Attaching a lens unit at the end extends the detecting distance.
 HD502F is the lowest-cost model of HMD. The fiber optic cable covered with ø1.1 stainless tube allows focused detection of heated condition of electronic components or mechanical parts.

Compact multifunctional amplifier (HDA300)

- 3-point level indicator
 The received light intensity level is shown by flashing 3 indicators for easy checking of stability.
- Sensitivity adjustment volume
- Relay output and voltage output available

Rating/Performance/ Specification/ Environmental Specification

Type		Cord connection type		Fiber detachable type				Permanently attached fiber type
Model	Fiber (length)	—		GT205 (50cm)	GT21 (1m)	GT22 (2m)	GT23 (3m)	70mm fixed
	Sensor	HD301 (low temperature model)	HD601 (medium/high temperature model)	HD400				HD502F
	Amplifier	HDA300						
Detection object temperature		350°C min.	650 °C min.	430°C min.	440°C min.	460°C min.	490°C min.	560°C min.
Output mode		Relay contact output/voltage output						
Rating		Relay contact output: 1c 250 VAC 5 A (resistance load) Voltage output 12 VDC 5 mA max.						
Operation mode		Light-ON (activated for presence of material) Timer operation selectable/external gating						
Timer		On-delay, off-delay, one-shot, timer disabled (ON/OFF)						
Time		Selectable between 0.1-1 s and 1-10 s						
Response time		Relay contact output: 25 ms; voltage output: 3 ms						
Power supply		AC100/110V · AC200/220V±10%, 50/60Hz						
Power consumption		5VA max.						
Connection	Amplifier	(screw diameter 3.5 mm)						
	Sensor	Two 0.5 mm ² shielded cords 20 m					One 0.3 mm ² shielded cord 2 m	
Ambient temperature (non-freezing)	Amplifier	-10~+50°C						
	Sensor	-25~+50°C	-25~+70°C	-25~+50°C				
	Fiber	—		-20~+200°C			(Fiber tip: maximum + 70 °C)	
Ambient humidity (non-condensing)	Amplifier	35~85%RH						
	Sensor	35~95%RH		35~85%RH				
	Fiber	—		95%RH max. (20%RH max. for 70 °C or higher)				
Insulation resistance	Amplifier	DC 500 V 20MΩ min. *1					Omitted (case-grounded)	
	Sensor	DC 500 V 20MΩ min.					Omitted (case-grounded)	
Dielectric withstanding	Amplifier	1500V AC for 1 minute *1					Omitted (case-grounded)	
	Sensor	1500V AC for 1 minute					Omitted (case-grounded)	
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 (twice for sensor)						
Protective structure	Amplifier	IP40						
	Sensor	IP66		IP40			IP66	
Mass	Amplifier	About 450 g (including socket)						
	Sensor	1500 g max. (including cord)		1100 g max. (including cord)			50 g max. (including cord)	
	Fiber	—		110 g max.	190 g max.	350 g max.	530 g max.	
Fiber allowable bending radius		—		R50			10 mm (except for 15 mm from the tip)	
Fiber material (covering)		—		Glass (stainless steel spiral tube)			Glass (annealed stainless steel tube)	

*1 Between case and grounding terminal (No. 1)

Between case and relay contacts (collective)

Between grounding terminal (No. 1) and relay contacts (collective)

Between case and entire power supply

Between grounding terminal (No. 1) and entire power supply

Between entire power supply and relay contacts (collective)

Detection Field of View Characteristics (Typical example)

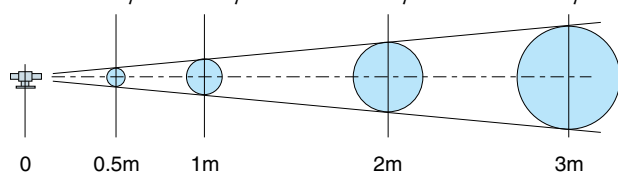
• Cord connection type

Model HD301 (low temperature)

Model HD601 (high temperature)

HD301 : About ϕ 30 About ϕ 70
HD601 : About ϕ 25 About ϕ 50

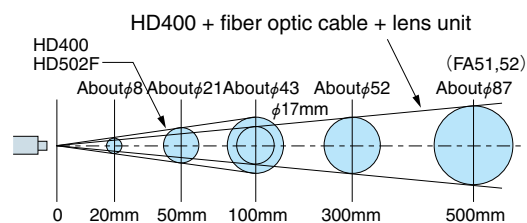
About ϕ 140 About ϕ 210
About ϕ 100 About ϕ 150



• Fiber type

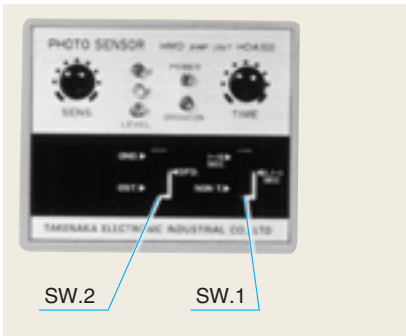
Model HD400

Model HD502F

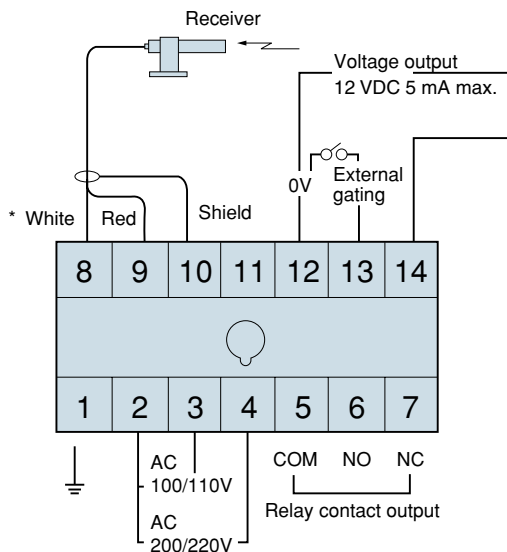


HD

Amplifier panel layout (HDA300)

	SENS	Sensitivity adjustment volume Turning clockwise increases the sensitivity and decreases the minimum detectable temperature.
	LEVEL	Level indicator Received light intensity is shown with 3 LEDs, which are illuminated differently for the individual levels: LEVEL 1: operation level LEVEL 2: double the operation level LEVEL 3: 3.5 times as much as the operation level
	POWER OPERATION TIME	Illuminated at power-up. Operation indicator: illuminated when control output is activated. Delay time adjustment
	SW.1	Delay time range selection and timer enabled/disabled
	SW.2	Time limit operation selector switch

Connection



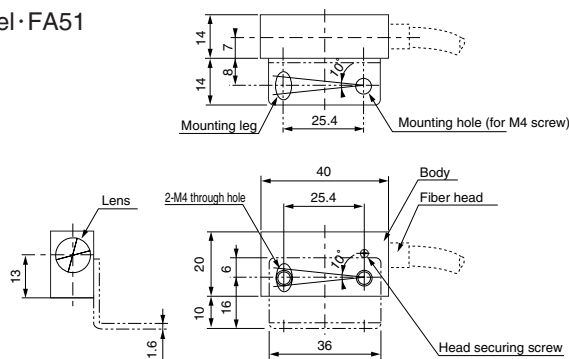
*Only red and shielded lines for HD502F.

1. Be sure to limit the length of the receiver cord within the length of the provided cord (20 m) and route separately from power supply lines. Extension of the cord or insecure connection of the shielded line may cause induction, which may lead to faulty operation
2. Be sure to connect the grounding terminal. Failure to ground may cause faulty operation due to induction.
3. Terminals Nos. 12 and 13 are for external gating. Short-circuiting these terminals disables the internal circuit (output). Provide contact or open collector for operation. When not using external gating leave the terminals open.

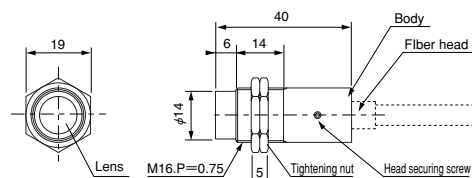
Dimension (in mm)

Lens unit

Model·FA51

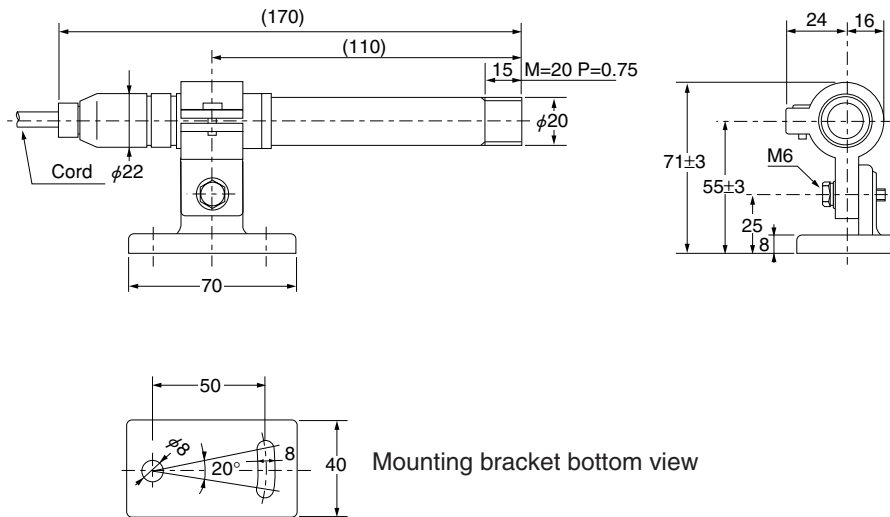


Model·FA52

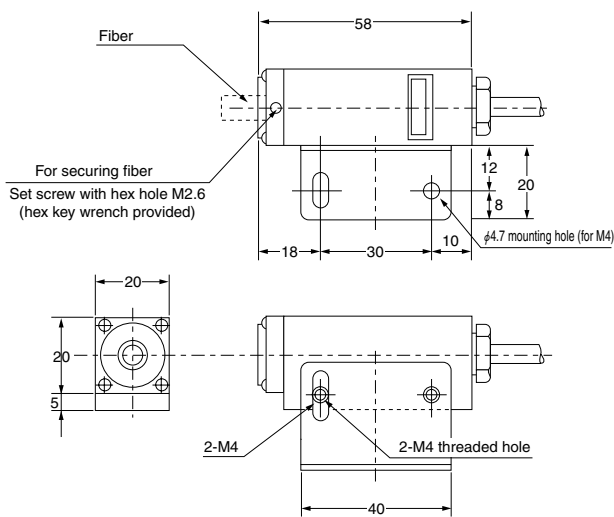


Dimension (in mm)

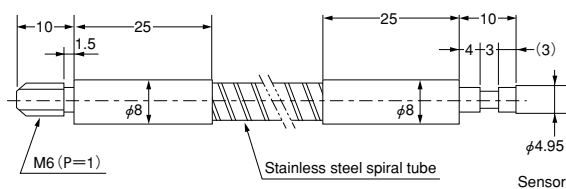
(Sensor) model HD301/601



(Sensor) model HD400

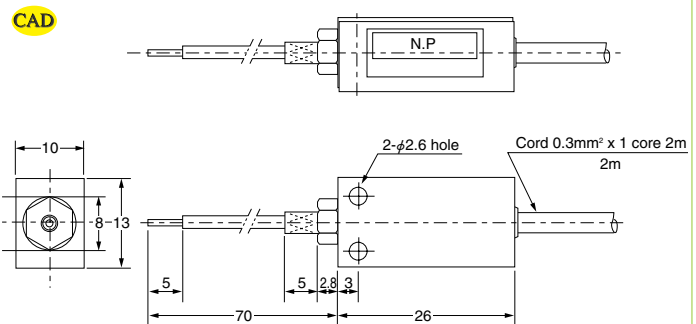


(Fiber) GT series



Model	Length
GT205	500mm
GT21	1m
GT22	2m
GT23	3m

(Sensor) model HD502F



(Amplifier) model HDA300

