

HPX-MA Series

The HPX-MA Series features analog output and high-resolution detection, making it ideal for a wide variety of applications.



- Sensitivity selector allows detection ranging from high resolution to high sensitivity.
- A 3-revolution potentiometer enables adjustment of the output range according to the detection range.
- Separate high-speed response mode for high-speed detection.

AMPLIFIER UNIT ORDER GUIDE

Appearance	Supply voltage	Output voltage range	Catalog listing
	10.8 to 26.4Vdc	1 to 5Vdc (proportional to intensity of incoming light)	HPX-MA

AMPLIFIER UNIT SPECIFICATIONS

Model	Analog output model
Catalog listing	HPX-MA
Supply voltage	10.8 to 26.4Vdc (Max.10% ripple)
Current consumption	Max. 40mA
Output voltage range	1 to 5Vdc (proportional to intensity of incoming light)
Output impedance	47Ω
Load resistance	Min. 10kΩ
Resolution	NORMAL/NORMAL (SENS/RESP):1% FS max., NORMAL/FAST (SENS/RESP): 6% FS max. FINE/NORMAL (SENS/RESP): 0.3% FS max., FINE/FAST (SENS/RESP): 2% FS max.
Response time (RESP)	NORMAL (RESP): 50ms, FAST (RESP): 1ms
Sensitivity selection (SENS)	NORMAL/FINE selectable
Light emitter	Red LED (680nm)
Indicator	Output indicator (green): Lights at output voltage 1V or more Output saturation (red): Lights at output voltage 5V or more
Span adjustment (sensitivity adjustment)	3-turn variable resistor
Offset adjustment	1-turn variable resistor (0.75 to 1.5V)
Ambient light immunity	Incandescent lamp: Max. 3,000lux, Solar light: Max. 10,000lux
Operating ambient temperature	-20 to +60°C (gang-mounting: -20 to +50°C)
Storage ambient temperature	-40 to +70°C
Operating ambient humidity	35 to 85% RH (no condensation allowed)
Insurance resistance	Min. 20MΩ (500Vdc megger)
Dielectric strength	1,000Vac 50/60Hz for 1 minute between case and electrically live metals
Vibration resistance	10 to 55Hz, 1.5mm peak-to-peak amplitude, 2 hours in X, Y and Z directions
Shock resistance	500m/s ² 3 times in X, Y and Z directions
Connection method	Pre-leaded
Weight	Approx. 55g (body only, with 2m cable)
Others	Reverse connection protection circuit

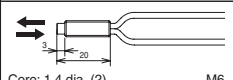
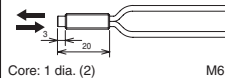
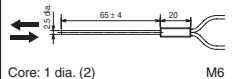
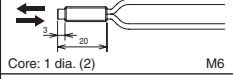
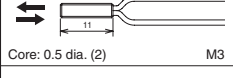

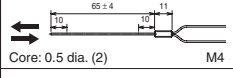
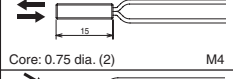
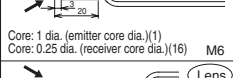
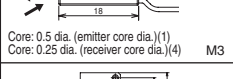
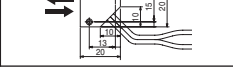
• Installation Instructions No.: CP-UM-5066E

FIBER UNIT AND SENSING TYPE COMBINATIONS

Thru scan

Group	Appearance	Sensing type	Scanning distance (mm)	Features	Cable length (cuttable)	Bend radius	Catalog listing	
Long distance	<p>Core: 1.4 dia. (1) M4</p>	NORMAL	160	Long scanning distance	Cut to length 2m	R20	HPF-T001	
	<p>Core: 1.4 dia. (1) 3 dia.</p>	FINE	20				HPF-T002	
Standard	<p>Core: 1 dia. (1) M4</p>	NORMAL	80	Standard	Cut to length 2m	R20	HPF-T003	
	<p>Core: 1 dia. (1) 3 dia.</p>						FINE	12
	<p>Core: 1 dia. (1) M4</p>	NORMAL	80	Sleeve (flexible)	Cut to length 2m	R10/R20	HPF-T005	
	<p>Core: 1 dia. (1) 3 dia.</p>						FINE	12
	Ultra bend-tolerant	<p>Core: 0.5 dia. (1) M3</p>	NORMAL	10	Static installation, flexible, and small diameter	Cut to length 2m	R1	HPF-T024
		<p>Core: 1 dia. (1) M4</p>	NORMAL	60	Static installation, flexible, and standard model			R2
Side view	<p>Sleeve 1 dia. 2.5 dia.</p>	NORMAL	12	Small diameter sleeve	Cut to length 2m	R15	HPF-T007	
Elastic	<p>Core: 0.25 dia. (1) M3</p>	NORMAL	20	Elastic small diameter	Cut to length 2m	R4	HPF-T008	
	<p>Core: 0.25 dia. (4) 1.5 dia.</p>	FINE	3				HPF-T009	
Narrow beam	<p>Core: 4 dia. M4</p>	NORMAL	300	Parallel beam top view	Cut to length 2m	R20	HPF-T019	
	<p>Core: 4 dia. M4</p>	NORMAL	320	Parallel beam side view			HPF-T020	
	<p>Core: 4 dia. M4</p>	NORMAL	240	Narrow beam top view			R15	HPF-T023
Wide beam	<p>Core: 4 dia. M4</p>	NORMAL	50	Array	Cut to length 2m	R4	HPF-T021	
	<p>Core: 4 dia. M4</p>	FINE	7					

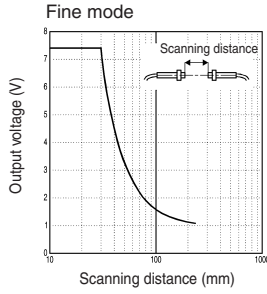
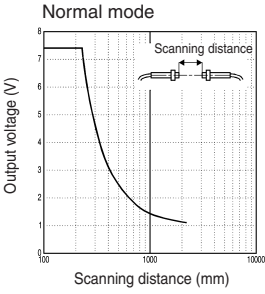
Diffuse scan

Group	Appearance	Sensing type	Scanning distance (mm)	Features	Cable length (cuttable)	Bend radius	Catalog listing
Long distance	 Core: 1.4 dia. (2) M6	NORMAL FINE	24 2	Long scanning distance	Cut to length 2m	R20	HPF-D001
Standard	 Core: 1 dia. (2) M6	NORMAL FINE	16 2	Standard	Cut to length 2m	R20	HPF-D002
	 Core: 1 dia. (2) M6						HPF-D003
Ultra bend - tolerant	 Core: 1 dia. (2) M6	NORMAL FINE	8	Standard	Cut to length 2m	R2	HPF-D030
Small diameter	 Core: 0.5 dia. (2) M3	NORMAL FINE	4	Small diameter	Cut to length 2m	R15	HPF-D004
	 Core: 0.5 dia. (2) 3 dia. Sleeve 1.2 dia.			Small diameter sleeve			HPF-D005
	 Core: 0.5 dia. (2) M4			Small diameter long scanning distance			HPF-D006
	 Core: 0.75 dia. (2) M4	NORMAL FINE	8				HPF-D018
Coaxial	 Core: 1 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(16) M6	NORMAL FINE	16 2	Coaxial	Cut to length 2m	R20	HPF-D009
	 Core: 0.5 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(4) M3	NORMAL FINE	4			R15	HPF-D010
Wide beam	 M6	NORMAL FINE	10	Array	Cut to length 2m	R4	HPF-D026

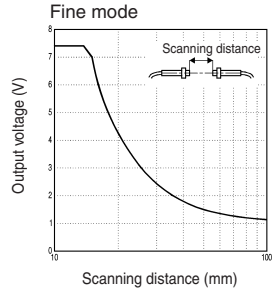
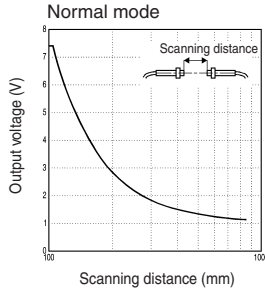
CHARACTERISTICS DIAGRAMS (scanning distance and output voltage) (typical)

● **Thru-scan fiber unit**

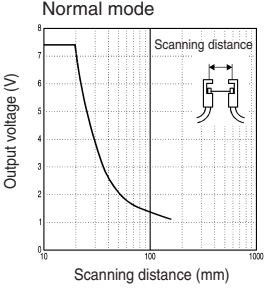
With HPF-T001 or T002



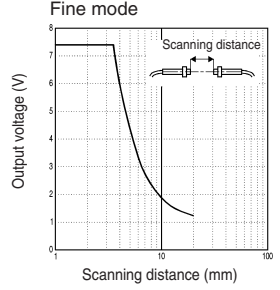
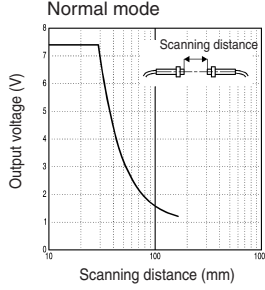
With HPF-T003, T004, T005, or T006



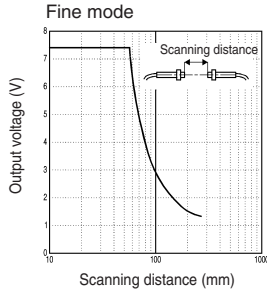
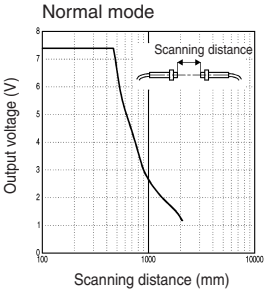
With HPF-T007



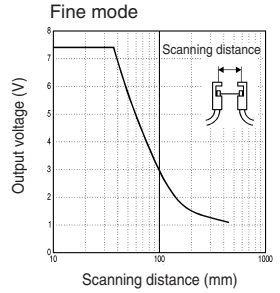
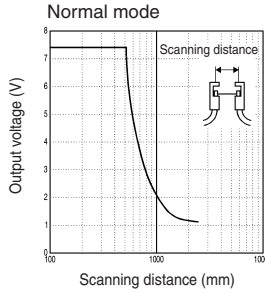
With HPF-T008, or T009



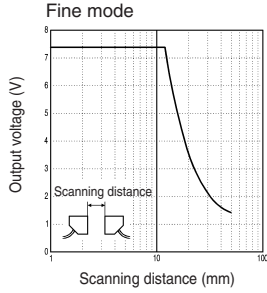
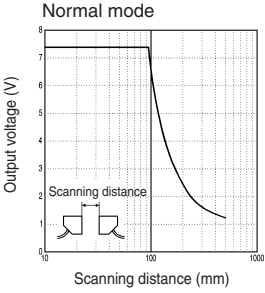
With HPF-T019



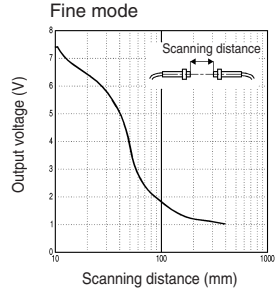
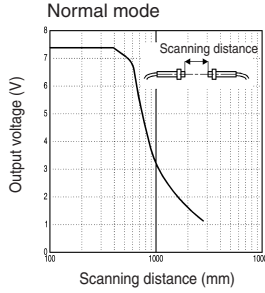
With HPF-T020



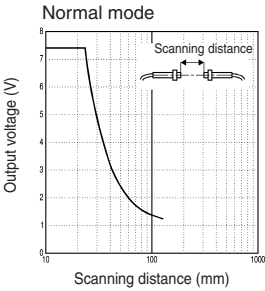
With HPF-T021



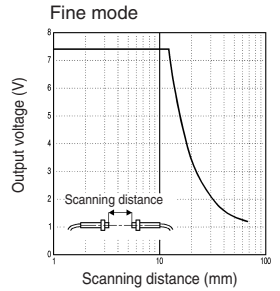
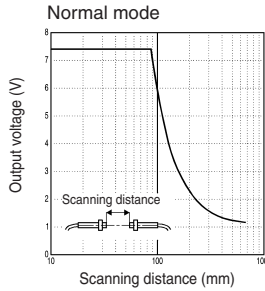
With HPF-T023



With HPF-T024

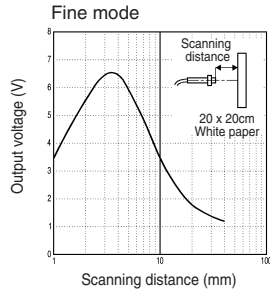
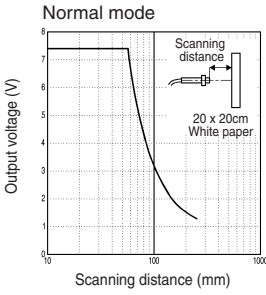


With HPF-T025

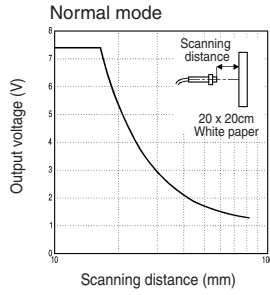


● Diffuse scan fiber unit

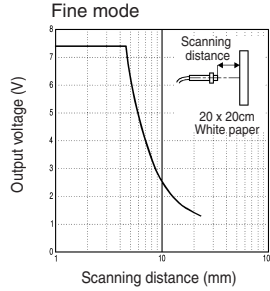
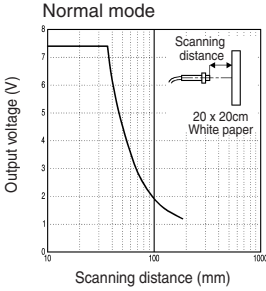
With HPF-D001



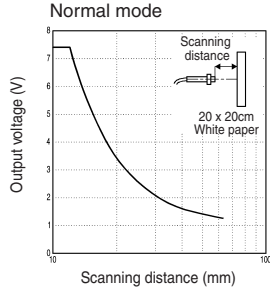
With HPF-D018



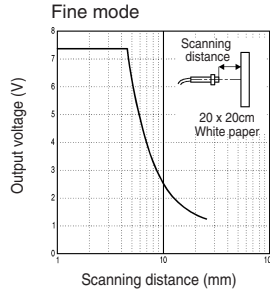
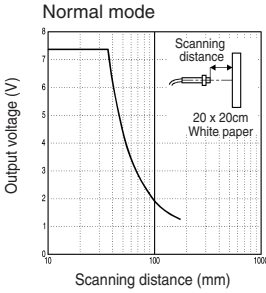
With HPF-D002 or D003



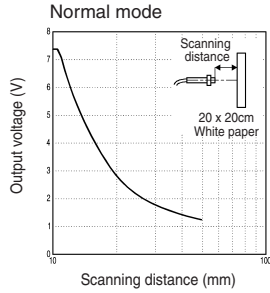
With HPF-D004, D005, or D006



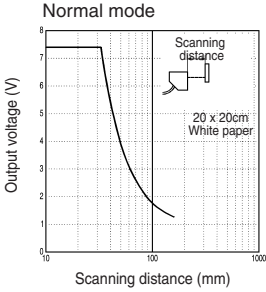
With HPF-D009



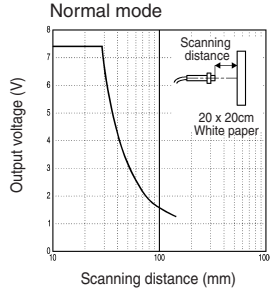
With HPF-D010



With HPF-D026

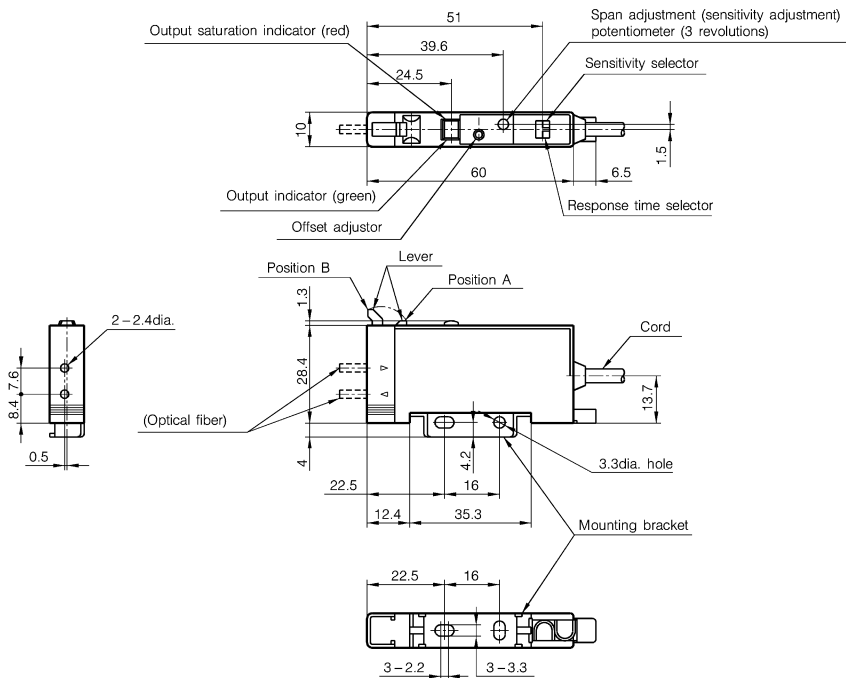


With HPF-D030

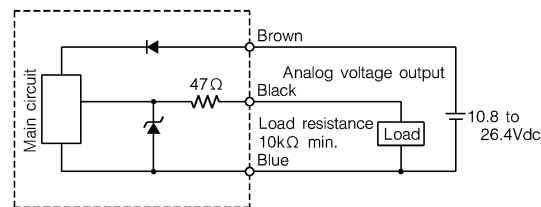


EXTERNAL DIMENSIONS

(unit: mm)



OUTPUT CIRCUIT DIAGRAM



BASIC PRECAUTIONS

• Wiring

- If cable is extended, the conductor resistance of cable may cause output voltage drop. In addition, the resolution may drop by the noise coming directly through the cable. If an extension cable is necessary, use a 0.3mm minimum leads (if possible, use a shielded cable) of maximum 5m. Be sure to check the output voltage and resolution before use. The resolution drop can be prevented to some degree by applying a 10nF ceramic capacitor between output and 0V.
- If the wires of photoelectric sensor are laid in the same conduit together with high-voltage or power lines or switching signal lines, the output voltage may become unstable by the inductance. Isolate the photoelectric sensor's cable or lay in a separate conduit.
- When using a commercially available switching regulator, ground the flame ground and ground terminals. If used without grounding, the switching noise may cause output fluctuations.

• Handling

- Do not swing a photoelectric sensor by its cable.
- Do not impact or damage the scanning head.
- Do not pull the cable of the photoelectric sensor with excessive force. The tensile strength of the cable is about 49N at 50cm from the conduit.