

# Fiber Optics, Plastic Types FUR, FUT

CARLO GAVAZZI



- Inner fiber diameter  $\varnothing$ 0.25, 0.5 or 1.0 mm
- Outer fiber diameter  $\varnothing$ 2.2, 1.25 mm
- Bending radius 10, 15 or 25 mm
- For use with fiber optic sensor amplifier FA series
- Overmoulding protection for better curvature and protection from breakage of fiber
- High tensile strength of 8 kg ensuring reliability and durability
- 2000 mm fiber length



Over moulding for better curvature protection

## Ordering Key

**FURC6-20/S10**

Fiber unit

Fiber type

- R Reflective
- T Through-beam

Fiber diameter

- O 1.0 mm/ $\varnothing$ 2.2
- C 0.25 mm x 10/0.5 mm x 1
- A 0.25 mm/ $\varnothing$ 1.25
- D 0.5 mm/ $\varnothing$ 1.25
- S 0.5 mm/ $\varnothing$ 2.2

Head diameter

- 6 M6
- 4 M4
- 3 M3

Fiber length 2000 mm

Options

- /E Extended range
- /A Angled
- /S10 Sleeve 10 mm
- /S20 Sleeve 20 mm
- /S40 Sleeve 40 mm
- /S90 Sleeve 90 mm

### Note:

1. Not every combination is available.
2. Please see Type Selection section to see availability
3. Sleeve option is not available if you choose extended range (/E) or angled (/A) version

## General Specifications

Temperature range

Operating temperature

-55 to +70°C (-67 to +158°F)

Materials

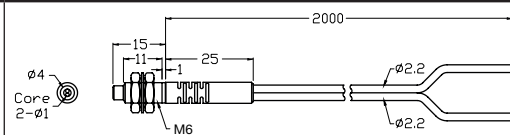
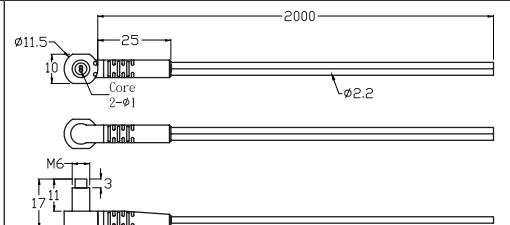
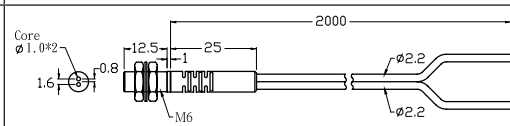
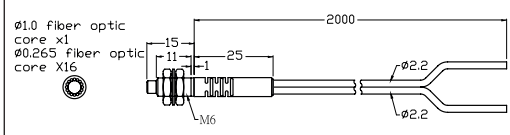
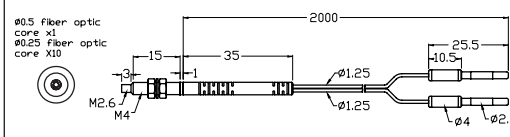
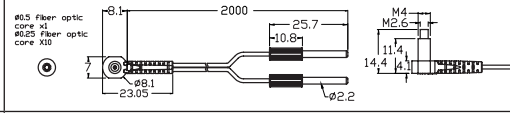
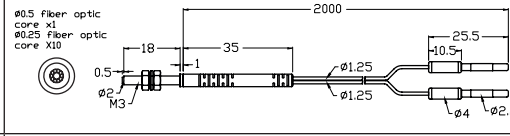
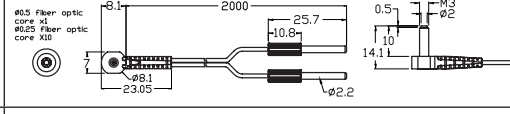
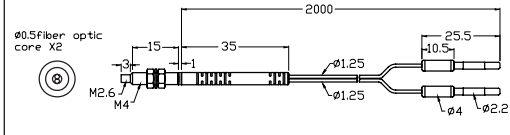
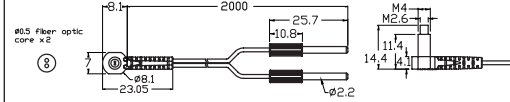
Fiber  
Sheath  
Detection head

PMMA  
PE (polyethylene)  
SUS303

### Note 3:

FURO6-20/E, FURD4-20/E, FURD3-20/E, FUTO4-20/E, FUTO3-20/E head is made of nickel plated brass

## Type Selection

Reflective types							
Inner diameter	Max. detection distance (mm)*	Smallest detectable object	Min. bend radius	Dimensions (mm)**	Weight (g)	Ordering key	
Ø1.0 x 2	90	Ø0.50	R25		38	FURO6-20 FURO6-20/S10 FURO6-20/S20 FURO6-20/S40 FURO6-20/S90	
Ø1.0 x 2	60	Ø0.50	R25		30	FURO6-20/A	
Ø1.0 x 2	100	Ø0.50	R25		38	FURO6-20/E***	
Ø1.0 x 1, Ø0.265 x 16	90	Ø0.50	R25		38	FURC6-20 FURC6-20/S10 FURC6-20/S20 FURC6-20/S40 FURC6-20/S90	
Ø0.5 x 1, Ø0.25 x 10	40	Ø0.05	R15		25	FURC4-20 FURC4-20/S10 FURC4-20/S20 FURC4-20/S40 FURC4-20/S90	
Ø0.5 x 1, Ø0.25 x 10	20	Ø0.05	R15		30	FURC4-20/A	
Ø0.5 x 1, Ø0.25 x 10	40	Ø0.05	R15		25	FURC3-20 FURC3-20/S10 FURC3-20/S20 FURC3-20/S40 FURC3-20/S90	
Ø0.5 x 1, Ø0.25 x 10	20	Ø0.05	R15		29	FURC3-20/A	
Ø0.5 x 2	20	Ø0.10	R15		25	FURD4-20 FURD4-20/S10 FURD4-20/S20 FURD4-20/S40 FURD4-20/S90	
Ø0.5 x 2	20	Ø0.10	R15		20	FURD4-20/A	

\*note 1 : Detection distance in the table is based on FA1 amplifier with setting; response time at 5000µS and threshold value at 27 (max setting)

\*\*note 2 : Dimensional drawing shown here is for the standard version (without sleeve).

\*\*\*note 3 : Head is made of nickel plated brass

## Type Selection (cont.)

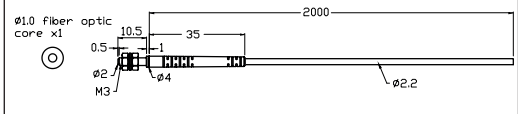
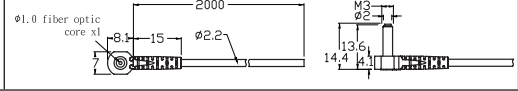
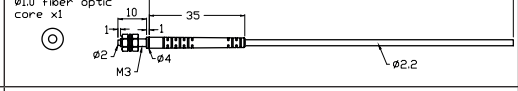
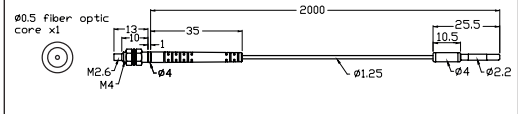
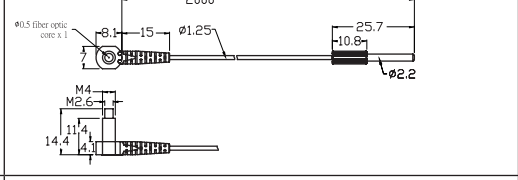
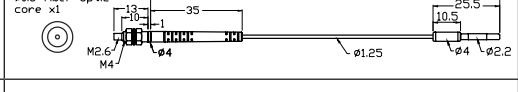
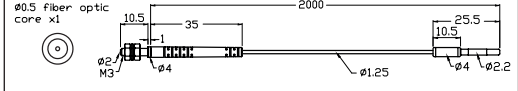
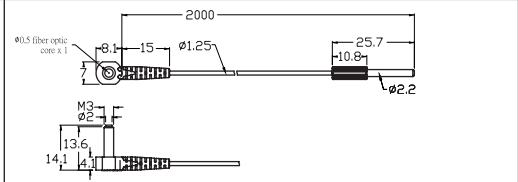
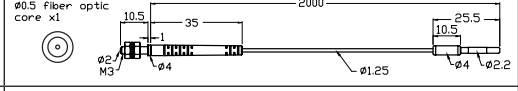
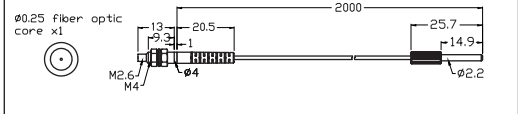
Reflective types							
Inner diameter	Max. detection distance (mm)*	Smallest detectable object	Min. bend radius	Dimensions (mm)**	Weight (g)	Ordering key	
Ø0.5 x 2	30	Ø0.10	R15		25	FURD4-20/E***	
Ø0.5 x 2	20	Ø0.10	R15		24	FURD3-20 FURD3-20/S10 FURD3-20/S20 FURD3-20/S40 FURD3-20/S90	
Ø0.5 x 2	20	Ø0.10	R15		20	FURD3-20/A	
Ø0.5 x 2	30	Ø0.10	R15		24	FURD3-20/E***	
Ø0.25 x 2	7	Ø0.05	R10		16	FURA4-20 FURA4-20/S10 FURA4-20/S20 FURA4-20/S40 FURA4-20/S90	
Ø0.25 x 2	5	Ø0.05	R10		21	FURA4-20/A	
Ø0.25 x 2	7	Ø0.05	R10		16	FURA3-20 FURA3-20/S10 FURA3-20/S20 FURA3-20/S40 FURA3-20/S90	
Ø0.25 x 2	5	Ø0.05	R10		20	FURA3-20/A	
Through-Beam types							
Ø1.0	440	Ø0.50	R25		38	FUTO4-20 FUTO4-20/S10 FUTO4-20/S20 FUTO4-20/S40 FUTO4-20/S90	
Ø1.0	300	Ø0.50	R25		28	FUTO4-20/A	
Ø1.0	490	Ø0.50	R25		38	FUTO4-20/E***	

**\*note 1** : Detection distance in the table is based on FA1 amplifier with setting; response time at 5000µS and threshold value at 27 (max setting)

**\*\*note 2** : Dimensional drawing shown here is for the standard version (without sleeve).

**\*\*\*note 3** : Head is made of nickel plated brass

## Type Selection (cont.)

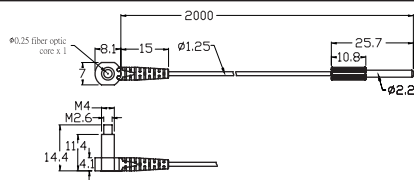
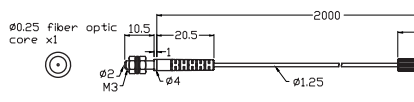
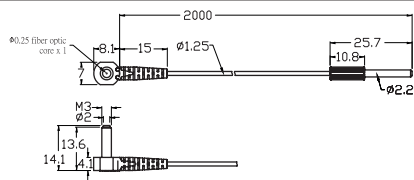
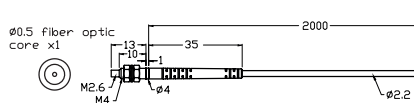
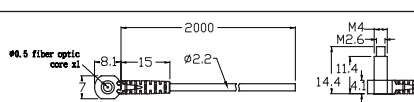
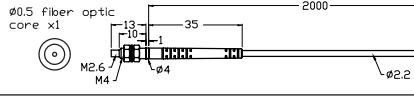
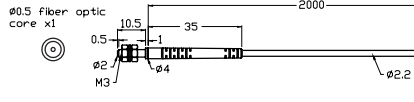
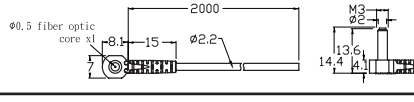
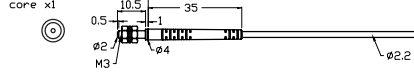
Through-Beam types						
Inner diameter	Max. detection distance (mm)*	Smallest detectable object	Min. bend radius	Dimensions (mm)**	Weight (g)	Ordering key
Ø1.0	440	Ø0.50	R25		36	FUTO3-20 FUTO3-20/S10 FUTO3-20/S20 FUTO3-20/S40 FUTO3-20/S90
Ø1.0	300	Ø0.50	R15		28	FUTO3-20/A
Ø1.0	490	Ø0.50	R25		36	FUTO3-20/E***
Ø0.5	160	Ø0.05	R15		28	FUTD4-20 FUTD4-20/S10 FUTD4-20/S20 FUTD4-20/S40 FUTD4-20/S90
Ø0.5	130	Ø0.05	R15		20	FUTD4-20/A
Ø0.5	180	Ø0.05	R15		28	FUTD4-20/E
Ø0.5	160	Ø0.05	R15		28	FUTD3-20 FUTD3-20/S10 FUTD3-20/S20 FUTD3-20/S40 FUTD3-20/S90
Ø0.5	130	Ø0.05	R15		20	FUTD3-20/A
Ø0.5	180	Ø0.05	R25		28	FUTD3-20/E
Ø0.25	30	Ø0.03	R10		20	FUTA4-20 FUTA4-20/S10 FUTA4-20/S20 FUTA4-20/S40 FUTA4-20/S90

\*note 1 : Detection distance in the table is based on FA1 amplifier with setting; response time at 5000µs and threshold value at 27 (max setting)

\*\*note 2 : Dimensional drawing shown here is for the standard version (without sleeve).

\*\*\*note 3 : Head is made of nickel plated brass

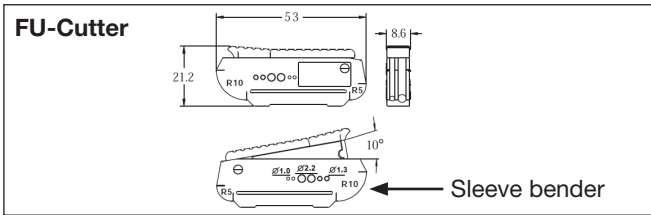
## Type Selection (cont.)

Through-Beam types						
Inner diameter	Max. detection distance (mm)*	Smallest detectable object	Min. bend radius	Dimensions (mm)**	Weight (g)	Ordering key
Ø0.25	20	Ø0.03	R10		25	FUTA4-20/A
Ø0.25	30	Ø0.03	R10		20	FUTA3-20 FUTA3-20/S10 FUTA3-20/S20 FUTA3-20/S40 FUTA3-20/S90
Ø0.25	20	Ø0.03	R10		24	FUTA3-20/A
Ø0.5	160	Ø0.05	R15		25	FUTS4-20 FUTS4-20/S10 FUTS4-20/S20 FUTS4-20/S40 FUTS4-20/S90
Ø0.5	130	Ø0.05	R15		30	FUTS4-20/A
Ø0.5	180	Ø0.05	R15		25	FUTS4-20/E
Ø0.5	160	Ø0.05	R15		25	FUTS3-20 FUTS3-20/S10 FUTS3-20/S20 FUTS3-20/S40 FUTS3-20/S90
Ø0.5	130	Ø0.05	R15		29	FUTS3-20/A
Ø0.5	180	Ø0.05	R15		25	FUTS3-20/E

\*note 1 : Detection distance in the table is based on FA1 amplifier with setting; response time at 5000µS and threshold value at 27 (max setting)

\*\*note 2 : Dimensional drawing shown here is for the standard version (without sleeve).

## Accessories



- 1) Cutter is not included. Sold separately.
- 2) FU-Cutter can also be used as a fiber-unit sleeve bender.

Lenses					
Part No	Description	Usage		Dimensions (mm)	Suitable to be used with
FUT-M4LENS	Through-beam M4 fiber lens	Attaching this lens to the transmitter fiber and to the receiver fiber will increase the scanning distance 4 times.			FUTO4-20 FUTO4-20/A FUTO4-20/E FUTD4-20 FUTD4-20A FUTD4-20/E FUTA4-20/A FUTA4-20 FUTS4-20 FUTS4-20/A FUTS4-20/E
FUT-M4SLENS	Through-beam M4 fiber side lens	The axial fiber unit can be changed to a radial type by attaching this unit to the light emitter or receiver of the fiber unit			FUTO4-20 FUTO4-20/A FUTO4-20/E FUTD4-20 FUTD4-20A FUTD4-20/E FUTA4-20/A FUTA4-20 FUTS4-20 FUTS4-20/A FUTS4-20/E
FUR-M3LENS-2	Reflective M3 fiber lens	The light signal will converge into a 0.5 mm dia. spot, provided the lens is attached to the fiber at a distance of 8 mm.			FURC3-20 FURC3-20/A FURA3-20 FURA3-20/A FURD3-20 FURD3-20/A FURD3-20/E
FUR-M3LENS-1	Reflective M3 fiber lens	The light signal will converge into a 2 mm dia. spot, provided the lens is attached to the fiber at a distance of 8 mm.			FURC3-20 FURC3-20/A FURA3-20 FURA3-20/A FURD3-20 FURD3-20/A FURD3-20/E
FUR-M4LENS	Reflective M4 fiber lens	The light signal will converge into a 0.7 mm dia. spot, provided the lens is attached to the fiber at a distance of 10 mm.			FURD4-20 FURD4-20/A FURD4-20/E FURA4-20/A FURA4-20

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