

# Model **FL** series


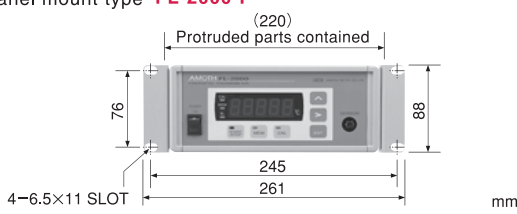

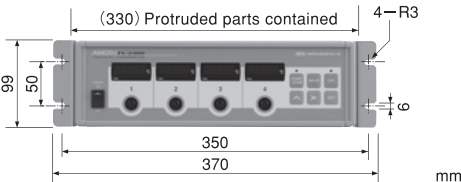
## Fiber Optic Thermometer

The products in the FL Series can measure temperatures in environments subject to high-frequency waves, microwaves, or high voltages-areas where electric thermometers such as thermocouples, platinum resistance temperature detectors, and thermistors are typically ineffective.

### FL 模式系列

荧光式光纤温度计FL模式系列可以测量金属测棒温度计不能测量的高频率、微波及高电压等特殊环境的温度。

荧光式光ファイバー温度計 FLシリーズは、熱電対やPt、サーミスタなどの電気式温度計では計測困難な高周波・マイクロ波または高電圧などの過酷な環境下において接触式で温度計測が可能です。

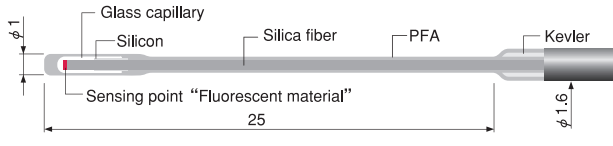
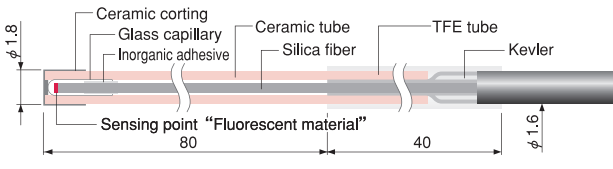
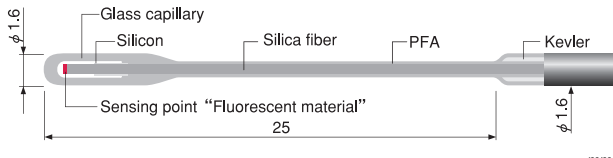
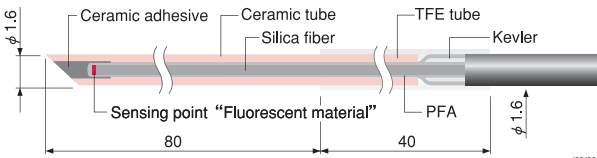
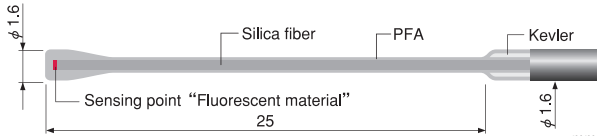
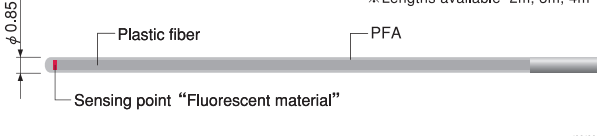
<p><b>1ch. model FL-2000</b></p> <p>Stand type <b>FL-2000</b></p> 	<p>Panel mount type <b>FL-2000-P</b></p> 
<p><b>4ch. model FL-2400</b></p> <p>Stand type <b>FL-2400</b></p> 	<p>Panel mount type <b>FL-2400-P</b></p> 

### Features

- Capable of measurements in environments subject to high-frequency waves or high voltages. • 可在高频率、高电压的环境下测量。
- A fiber optic thermometer offering a wide measurement range. • 此荧光式光纤温度计可测量广域温度。
- Analog output capability allows use for machine temperature control. • 信号输出功能可用于设备的温度控制。
- Measurement data can be imported into a PC using software\* bundled with the thermometer. • 附带的PC软件可采集测量数据。

\* for Microsoft® Windows® XP (SP.3 or newer), Windows Vista®, Windows® 7 (for English)  
 \* All PCs under the recommended environment are not guaranteed to work successfully with AMS-850.  
 \* AMS-850 can be used only by the user that has a system administrative right (Administrator).  
 \* AMS-850 does not support Mac OS.  
 \* Microsoft® Windows® XP, Windows Vista®, Windows® 7 and Excel® are registered trademarks of Microsoft Corporation in the United States and other countries.

### Fiber probes

<p><b>FS100-*M</b> General-purpose type temp. range : -190°C~260°C</p> <p>Applications involving microwaves, high magnetic fields, certain food preparation processes, power lines, and electric circuit components</p> 	<p><b>FS400-*M</b> High temperature type temp. range : 20°C~400°C</p> <p>Various materials, excluding liquids, in semiconductor manufacturing equipment or microwave heating devices</p> 
<p><b>FS200-*M</b> Chemical-resistant type temp. range : -30°C~200°C</p> <p>Oils or chemicals</p> 	<p><b>FS500-*M</b> Needle type temp. range : -60°C~260°C</p> <p>Semisolid substances, e.g., food</p> 
<p><b>FS300-*M</b> Light-resistant type temp. range : -190°C~260°C</p> <p>Measurements performed in laser beam, plasma, or other intense light</p> 	<p><b>FS600-*M</b> Plastic type temp. range : 0°C~80°C</p> <p>Animal tests using hyperthermia equipment or MRI or NMR systems              ※ Lengths available 2m, 3m, 4m</p> 

Replace the asterisk (\*) in the model number with a cable length in meters.

## Specifications

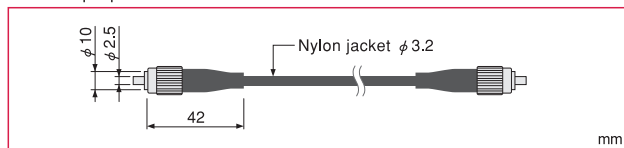
Type		FL-2000	FL-2400
Input point		1	4
Measurement range		-195.0~450.0°C	
Resolution		0.1°C	
Accuracy	Calibration not executed	-195.0~399.9°C : ±2°C, 400.0~450.0°C : ±5°C	
	Calibration executed	±0.5°C (within ±50°C of calibration point) (at an ambient temp. of 25°C±5°C)	
Temperature coefficient		± (0.01% of F.S./°C) within operating temperature	
Operating environment		Temperature : 0~40°C, Humidity : 15~80%RH (non-condensing)	
Storage environment		Temperature : -10~50°C, Humidity : 10~85%RH (non-condensing)	
Display		Height of character : 15mm, RED LED	Height of character : 8mm, RED LED
Display update		1 s	
Light source		Blue LED	
Power supply	AC power	Please specify a power supply voltage when ordering (choose from 100 VAC, 115 VAC, or 230 VAC).	
	Dry battery	six AA-size alkaline batteries	—
Power consumption		approx. 12 VA	approx. 40 VA
Memory		Up to 15,000 data, one second interval (synchronized with display)	No memory
Interface		RS-232C Transfer rate : 9600bps Data formation : 7bit, odd parity, 1 stop bit	
Calibration		One-point calibration (using real temperature within a measured area)	
Analog output	Output rate	10mV/°C	
	Resolution	1mV	
	Accuracy	± (0.2% of F.S.) at an ambient temperature of 25°C ±5°C	
	Temperature coefficient	± (0.01% of F.S./°C)	
External dimensions		210 (W) × 88 (H) × 230 (D) mm Protruded parts excluded	320 (W) × 99 (H) × 280 (D) mm Protruded parts excluded
Weight		approx. 3 kg	approx. 5 kg
Supplied accessories		Power cable (two-wire plug attached) × 1 Fuse (2A mini fuse) × 1 Analog output cable × 1 Communication cable × 1 PC software AMS-850 (CD ROM) × 1 User's manual (main unit and software) × 1	Power cable (two-wire plug attached) × 1 Fuse (2A mini fuse) × 1 Analog output cable × 4 Communication cable × 1 Conversion cable (RS-232C→USB) PC software AMS-850 (CD ROM) × 1 User's manual (main unit and software) × 1

## Optional accessories

### Extension cable

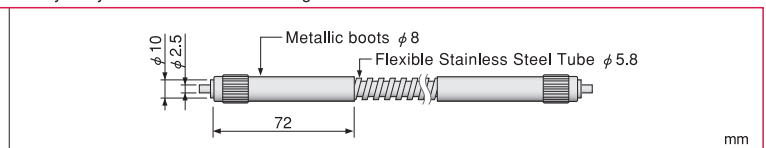
#### FK1-\*M

General-purpose extension cable for normal use.



#### FK2-\*M

Heavy-duty extension cable for rough environments.



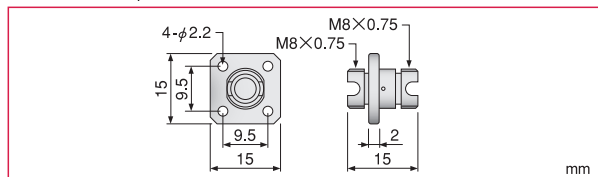
Replace the asterisk (\*) in the model number with a cable length in meters. The extension cable cannot be used with FS600-\*M (plastic fiber).

FA1 (Optical adapter) is required for the connection of fiber sensors and relay cables.

### Optical adapter

#### FA1

Can connect a probe to an extension cable.

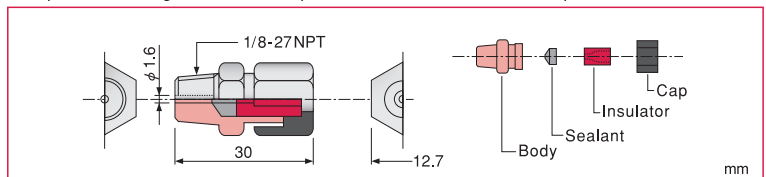


### Compression fitting

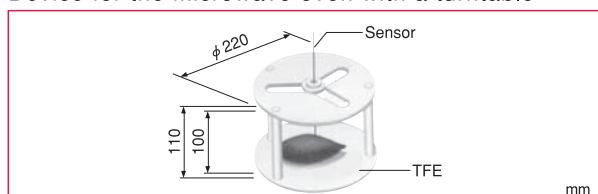
#### FN1-T (sealant material : TFE)

#### FN1-V (sealant material : Viton)

Compression fitting used to insert probe into a vacuum device or pressure vessel.



### Device for the microwave oven with a turntable



Pressure rating 1.33×10<sup>-4</sup>Pa~11.0 MPa at 20°C using stainless steel rod

Various options can be tailored to meet special requirements. Please contact us for more information.