

FOTEMP Series

Fibre Optic Temperature Measurement Systems



Areas of application:

Medical engineering, microwave and high frequency applications, process monitoring, engineering of generators and transformers, electric motors, applications in the aerospace industry, chemistry and petrochemistry

- Single, multi-channel or custom rack mounted models
- Small size enclosure
- RS-232 communications
- 0 to 10 V or 4 to 20 mA analogue output
- Rugged, flexible probes
- Temperature range: 0°C to 300°C
- Different probe lengths and configurations available



The FOTEMP series of fibre optic temperature measurement systems are ideal for both laboratory and industrial applications. They can be used in areas with high electromagnetic interference, microwave fields and other areas where it is not possible to use electronic probes.

This series offers several models from single-channel units to multi-channel rackmount systems. Each of these is available with a choice of outputs and features a large LCD display with easy to use controls. All functions are displayed on screen in a menu driven format and are

accessed using either the keypad or the PC interface.

The FOTEMP systems provide either a 4 to 20 mA or 0 to 10 V analogue output, with other options available on request. They also come with RS-232 communications built in as standard, or USB interfaces available on request.

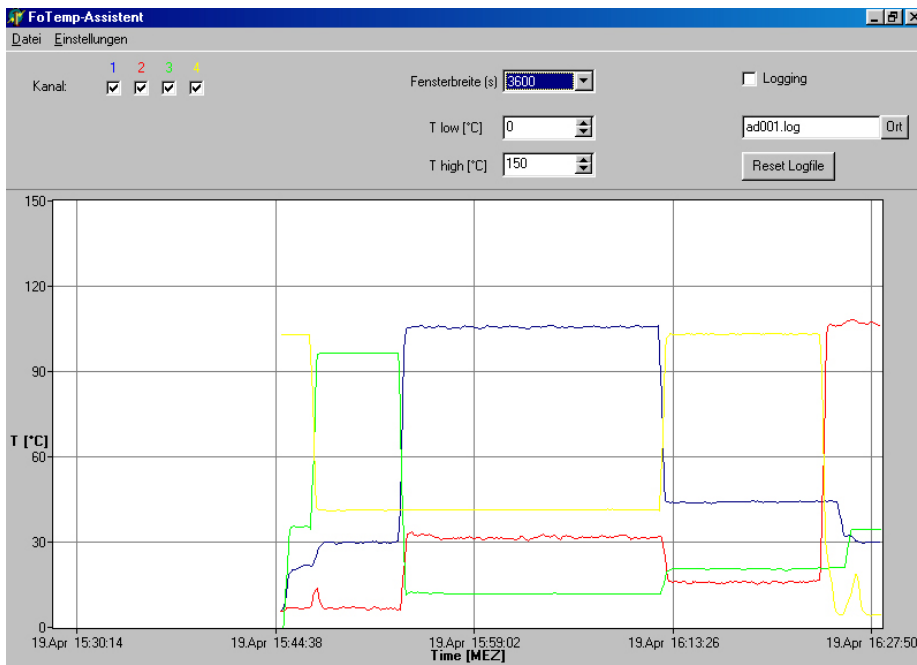
FOTEMP SERIES FIBRE OPTIC TEMPERATURE SENSORS

	FOTEMP 1-OEM	FOTEMP 1	FOTEMP 3	FOTEMP 4
Number of Channels	1	1	3	4
Power Input	350 mA	350 mA	800 mA	800 mA
Measurement Frequency	2 Hz	2 Hz	0.5 Hz	0.5 Hz
Display	LED	1 x 8 digits (Backlit)	LED	2 x 16 digits (Backlit)
Weight	800 g	1,100 g	1,100 g	1,100 g
Dimensions	165 x 100 x 40 mm	230 x 171 x 54 mm	230 x 171 x 54 mm	230 x 171 x 54 mm

	FOTEMP 6	FOTEMP 4-16"	FOTEMP MKT	FOTEMP NANO
Number of Channels	6 to 8	4	1 to 255	1 to 255
Power Input	900 mA	4 x 350 mA	350 mA per channel	350 mA per channel
Measurement Frequency	0.5 Hz	2 Hz	2 Hz	0.5 Hz
Display	LED	2 x 8 digits (Backlit)	2 x 8 digits (Backlit)	2 x 8 digits (Backlit)
Weight	1,200 g	4,200 g	-	-
Dimensions	1210 x 171 x 85 mm	Standard 16"	Standard 19"	230 x 171 x 54 mm or 16"/19"

GENERAL SPECIFICATIONS

Supply Voltage	9 V DC
Display Range	0°C to 300°C
Resolution	0.1°C
System Accuracy	±2°C
Reproducibility	±0.2°C
T₉₀ Time Constant	2s
Analogue Output	0 to 10 V DC, 4 to 20 mA (programmable), BNC
Interface	RS-232, Optional USB converter
Operating Temperature	0°C to 50°C
Software	FOTEMP – Assistant for Windows

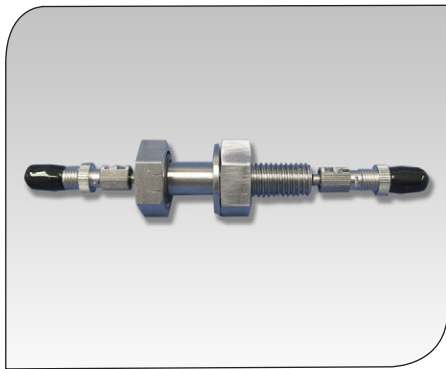


The user-friendly FOTEMP Assistant software enables the user to display and record the fibre optic temperature measurements.

The software is capable of displaying multiple channels at once, allowing the user to compare temperature information from different parts of the process. The temperature measurements can be saved and recalled on screen using the simple menus and the displayed temperature range can be scaled according to the user's needs.

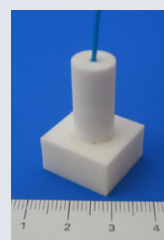
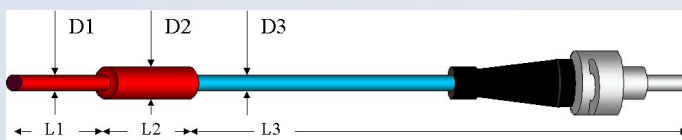
The compact FOTEMP measuring instrument series is easy to use and offers a high degree of accuracy. It is suitable for a wide variety of industrial applications. Due to the flexibility of the FOTEMP module, it can be customised to meet individual needs.

The FOTEMP is ideally suited for measurement in environments with strong magnetic fields, microwave radiation, abrasive chemicals and explosive areas where use of other electronic devices may be prohibited.



FOTEMP SERIES PROBES

	TS1	TS1-S	TS2	TS3	TS4	TS5	TS Nano	TS Multipoint
Design	Custom	Custom Small Head	Standard	Standard Micro-wave	Chemical	Polyimide Head	Standard Nano	Custom 4-point
D1	1.5 mm	0.9 mm	1.0 mm	1.0 mm	1.7 mm	0.55 mm	0.5 mm	0.9 mm
D2	-	-	1.7 mm	1.7 mm	2.0 mm	2.0 mm	1.5 mm	1.6 mm
D3	1.3 mm	0.85 mm	1.3 mm	1.3 mm	1.3 mm	1.3 mm	1.3 mm	1.3 mm
L1	10 mm	10 mm	10 mm	10-130 mm	10 mm	10-600 mm	-	30 mm
L2	-	-	10 mm	30 mm	10 mm	15 mm	-	Max 1m
L3	1 m, 2 m, 5 m, 10 m, 20 m							
Probe jacket	Polyimide	Polyimide	PTFE	Polyimide	PTFE	Polyimide	Polyimide	Polyimide
Probe length coating	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Max temperature	200°C	200°C	300°C	300°C	250°C	200°C	200°C	200°C



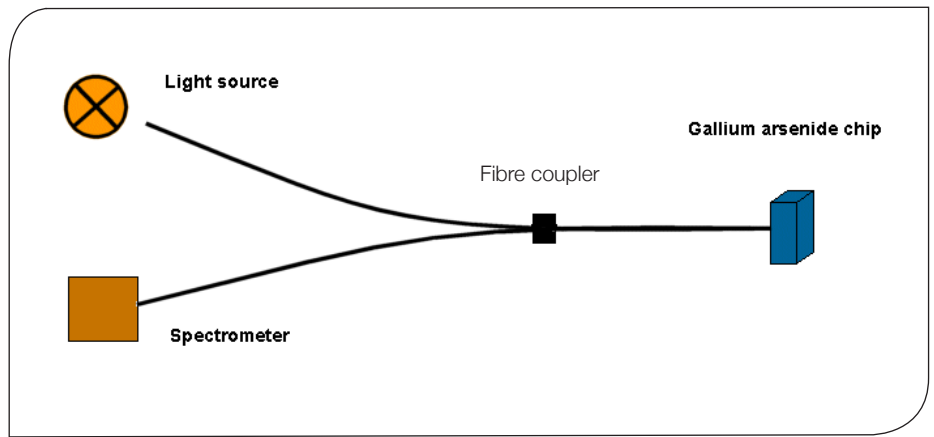
ACCESSORIES

- Sensor probe extensions
- Feedthroughs
- Couple blocks

OPERATION:

Light is transmitted down the fibre optic cable to the GaAs crystal in the head of the probe. The wavelength of the light is changed slightly depending on the temperature of the crystal. The FOTEMP uses a spectrometer to measure the wavelength shift in the light as it comes back from the head of the probe, using a specially generated algorithm to ensure fast and accurate temperature measurement.

This method allows the FOTEMP to measure temperatures without being influenced by electromagnetic fields.



The probe cable consists of a PTFE (Teflon) cladding on a glass fibre core with a GaAs crystal mounted inside the probe head. This completely non-metallic probe is connected to the FOTEMP detector via ST connectors. The probes can be ordered to customer specifications.

APPLICATIONS



POWER ENGINEERING

Fibre optic temperature measurement can be critical for power station transformers and generators. High-power generators often contain hydrogen for cooling. Being completely inert, the FOTEMP probe can be used without risk of explosion.



MICROWAVE CHEMISTRY

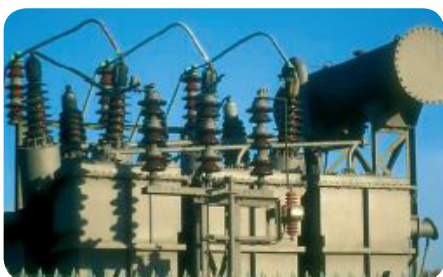
Because FOTEMP series probes are non-metallic, they are one of the few choices for control of microwave processes.



MEDICAL ENGINEERING

In magnetic resonance imaging, metallic probes can interfere with image formation.

In non-invasive surgery, the FOTEMP can provide a sterile method for measuring tissue temperatures during radiative therapies.



ENVIRONMENTAL ENGINEERING

In decontamination of soil using radio wave heating, FOTEMP probes can be used without interfering with the radio signals.

DRYING OF WOOD

During bioremedial timber treatment, core temperatures can be monitored with FOTEMP from the interior of timber beams.