

Приборы измерения и контроля температуры

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Portable Thermocouple Thermometers

This accurate digital Thermocouple Thermometer can measure surface temperatures, liquids, and solids as well as any biological temperature and is CE marked.

- Superior accuracy: 0.1°C ±1 digit in physiological range, 0.1% ±1 digit over full range
- Fast readings to 0.1°C (usually in 2 to 5 seconds)
- Auto correction feature compensates for ambient temperatures from 0° to 50°C
- Analog output for strip chart recorders
- Choose from 39 different interchangeable Probes and Microprobes to meet all temperature needs

Item No.	Description
52-1302	Portable Thermocouple Thermometer with 9 V Disposable Batteries



DETAILS

This accurate digital Thermocouple Thermometer can measure surface temperatures, liquids, and solids as well as any biological temperature and is CE marked.

- Superior accuracy: 0.1°C \pm 1 digit in physiological range, 0.1% \pm 1 digit over full range
- Fast readings to 0.1°C (usually in 2 to 5 seconds)
- Auto correction feature compensates for ambient temperatures from 0° to 50°C
- Analog output for strip chart recorders
- Choose from 39 different interchangeable Probes and Microprobes to meet all temperature needs

This thermometer is available for use with either a disposable 9 volt transistor battery or for AC power with battery operation using rechargeable NiCad batteries and an integral battery charger.

It will operate for 120 hours with a single 9 volt battery. Automatic warnings indicate low battery or faulty probe.

This Portable Thermocouple Thermometer is completely waterproof, dustproof, and fume-proof because of its sturdy, sealed construction. It is supplied with a heavy-duty carrying case that can be worn like a camera, leaving the hands free.

Temperature Probes are not included.

SPECIFICATIONS

Temperature Range	-100° to +200°C
Resolution	0.1°C of reading ±1 digit
Accuracy (Instrument Only)	0.1°C ±1 digit between 0° to 50°C
Calibration	Conforms to NBS thermocouple tables within 1 digit
Ambient Temperature	Auto-corrected to 0.1°C
Compensation	0° to 50°C
Display	LCD, 3½ digits, 13 mm (½ in) high
Sensor	Type "T" Thermocouple, copper-constant
Input Socket	Miniature "T", quick disconnect, copper-constant
Analog Output	Approximately 10 mV/°C
Battery	9 V transistor
Dimensions, H x W x D	12.7 x 6.4 x 15.2 cm (5 x 2½ x 6 in)
Weight	0.9 kg (2 lb) including carrying case

Accessories for Portable and Monitoring Thermocouple Thermometers

Probe Selectors, Extension Cable and Tilt Base for use with both the Portable and Monitoring Thermocouple Thermometers

Item No.

Description

72-7564

Extension Cable for Miniature Type T Temperature Probes



DETAILS

Probe Selectors, Extension Cable and Tilt Base for use with both the Portable and Monitoring Thermocouple Thermometers

Two-Way Probe Selector

Permits two probes to be monitored with one Thermometer. This small unit plugs into the probe input on any of the Thermocouple Thermometers. It measures, H x W x D, 2.5 x 3.5 x 2.5 cm (1 x 1-3/8 x 1 in)

Five-Way Probe Selector

Accepts up to five Temperature Probes. A single connector goes to any of the Thermocouples Thermometers. It measures, H x W x D, 7 x 15.2 x 16 cm (2-3/4 x 6 x 6-1/3 in) and weighs 0.6 kg (1-1/4 lb), see left.

Tilt Base

Black, heavy metal base has a locking tilt head and omnidirectional swivel. It provides for easy positioning of the Portable Thermocouple Thermometer or Thermocouple Monitoring Thermometers

SPECIFICATIONS

Specifications

52-1310

Depth English	
Depth Metric	
Height English	
Height Metric	
Width English	
Width Metric	

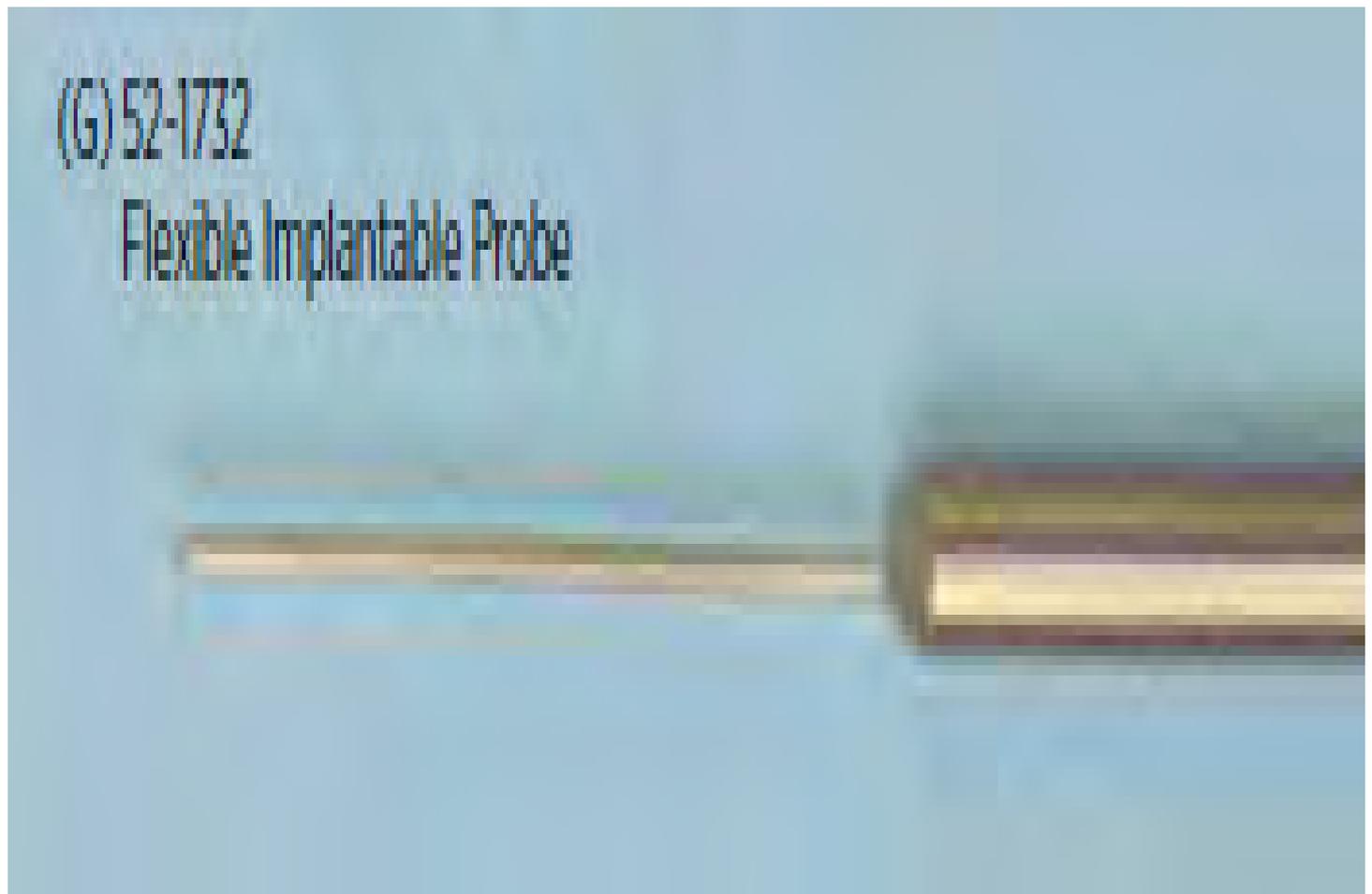
Flexible Implantable Thermocouple Probes

Used for implantation in brain and muscle tissue, blood vessels, spectrophotometer cuvettes, rectally in neonatal mice, in water baths, etc.

Implantable in semi-solids and tissue with supplied needle.

Many other are available.

Item No.	Description
52-1732	Copper Constantan Thermocouple Flexible Implantable Probe, 0.6 mm Tip Diameter



DETAILS

These probes are implantable in tissues and semi-solids with a needle (supplied). They are also for immersion in various solutions and rectal measurements in small animals.

- Electrically isolated probes, totally sheathed in PTFE
- Quite rugged
- Maximum temperature 150°C
- Supplied individually

SPECIFICATIONS

Specifications	52-1724	52-1732	52-1740
Accuracy Metric	0.1	0.1	0.1
Lead Length English	3	3	1
Lead Length Metric	0.9	0.9	0.3
Probe Wire Isolation	Isolated	Isolated	Isolated
Shaft Diameter (Teflon sheathed) English	0.05	0.025	0.016
Shaft Diameter (Teflon sheathed) Metric	1.3	0.64	0.41
Sterilization	by gas (ETO) or Cidex	by gas (ETO) or Cidex	by gas (ETO) or Cidex
Thermocouple Wire Material	Proprietary Copper Constantan	Proprietary Copper Constantan	Proprietary Copper Constantan
Time Constant	0.3	0.1	0.08

Homeothermic Monitoring System

The Harvard Apparatus Homeothermic Monitoring System is a closed loop temperature control system for small rodents. It features an easy-to-use touchscreen, small flexible rectal probe, and heating pads available in several sizes to meet all your surgical needs. The Homeothermic Monitoring System is the perfect addition to any lab utilizing anesthesia in small rodents.

Key Features

- Easy-to-use color touchscreen
- Flexible rectal probe
- Easy to clean, flexible heating pad
- Multiple heating pad sizes available
- Insulation pad insulates heating pad from surgical surface to prevent heat loss and improve efficiency

Accessories and replacement items are also available. Please see [Item Listing](#)

Item No.	Description
55-7020	Homeothermic Monitoring System includes: Homeothermic Control Unit, Flexible Rectal Probe, Standard Size Heating Pad (12.0 x 20.5 cm), Insulation Pad and USB cable
55-7034	Homeothermic Monitoring System includes: Homeothermic Control Unit, Flexible Rectal Probe, Large Size Heating Pad (20.3 x 25.4 cm), Insulation Pad and USB cable
55-7030	Homeothermic Monitoring System includes: Homeothermic Control Unit, Flexible Rectal Probe, Mouse Stereotaxic Heating Pad (7.0 x 14.5 cm), Insulation Pad and USB cable
55-7031	Homeothermic Monitoring System includes: Homeothermic Control Unit, Flexible Rectal Probe, Stereotaxic Gas Anesthesia Heating Pad (3.7 x 14.5 cm), Insulation Pad and USB cable

Item No.	Description
55-7021	Flexible Rectal Probe, 1.6 mm OD
55-7022	Heating Pad, standard, 12.0 x 20.5 cm
55-7023	Heating Pad, for Mouse Stereotaxic Adapter, 7.0 x 14.5 cm
55-7025	Insulation Pad, for Standard Heating Pad, 12.0 x 20.5 cm
55-7033	Insulation Pad, for Large Heating Pad, 20.3 x 25.4 cm



DETAILS

The Homeothermic Monitoring System is a closed loop temperature control system for small rodents. The subject's core body temperature can be accurately controlled utilizing a small, flexible rectal probe to monitor the animal's core temperature and a heating pad to provide heat input. The system is provided complete and includes the control unit, flexible rectal probe, standard size heating pad (12 x 20.5 cm) and an insulation pad that insulates the heating pad from the surgical surface to prevent heat loss and improve efficiency.

- Easy-to-use color touchscreen
- Flexible rectal probe
- Easy to clean, flexible heating pad
- Multiple heating pad sizes available

The easy-to-use touchscreen allows users to set the target temperature and clearly view the subject's current core body temperature, as well as the set temperature, at all times. Additionally, audible alarms can be set to advise the user should the animal's core body temperature deviate $\pm 1^{\circ}\text{C}$ from the set temperature.

Heating pads are available in three sizes to fit all your surgical needs. The standard size is appropriate for mice and rats and fits nicely into standard stereotaxic instruments. Two additional sizes are available to fit the common stereotaxic instrument adapters. The pads are flexible enough to fully wrap the animals, which allows the animal to be warmed from all sides rather than just the front or back.

SPECIFICATIONS

Temperature Range	20 to 50°C (68 to 122°F)
Resolution	0.1°C
Integrated Temperature Sensor	Yes
Temperature Stability	+/-0.1°C
Temperature Display	User selectable °C and °F
Pad Material	Silicone
Pad Size	12.0 x 20.5 cm (4.72 x 8.07 in)
Probe	Flexible rectal probe
Probe Tip Diameter	1.6 mm (0.06 in)
Probe Shaft Diameter	1.6 mm (0.06 in)
Probe Shaft Length	100 mm (3.94 in)
Serial Communication	RS-485
Analog Output	0 to 5 V, 20 to 50°
Analog Input	0 to 5 V, 20-50°

Dimensions (H x W x D)	12.0 x 22.6 x 15.8 cm (4.72 x 8.91 x 6.21 in)
Weight	0.68 kg (1.5 lb)
Power	100 to 240 VAC, 50/60 Hz
Regulatory	CE, ETL (UL, CSA), WEEE, EU RoHS
Warranty	1 year

Accessories for Size 1 and Size 5 Operating Tables

Replacement parts and accessories for Size 1 and Size 5 non-heated, heated and homeothermic operation tables for rodents.

For use with:

Heated Fixed Temperature Operating Tables

Homeothermic Controlled Operating Tables

Item No.	Description
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50-7217	Flexible Probe For Size 1 and Size 5 Operating Tables, 1.6 mm OD
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DETAILS

Replacement parts and accessories for Size 1 and Size 5 non-heated, heated and homeothermic operation tables for rodents.

D16 Digital Thermometer for Evaluating Body Temperature

This multi-channel digital thermometer suitable for the measurement of animal body temperature using rectal probes. The system is designed for working with up to 12 resistive temperature probes simultaneously.

- Precalibrated and interchangeable probes
- Measures current body temperature (degrees)
- Recordings by each user-defined interval of time (TMP812RS)
- Data transfer to PC or printer
- Species-specific temperature probes available separately
- Optional SEDACOM software and adapter

Item No.	Description
76-0065	12-Channel Digital Thermometer, Multiple Temperature Display (Model TMP812RS) - Probes not included
76-0066	Temperature Probe for Rabbit, 3.9 mm (Model YS401)
76-0406	SEDACOM Software V2.0



DETAILS

This is a multi-channel digital thermometer suitable for the measurement of animal body temperature using rectal probes. The system is designed for working with up to 12 resistive temperature probes simultaneously.

- Precalibrated and interchangeable probes
- Measures current body temperature (degrees)
- Recordings by each user-defined interval of time (TMP812RS)
- Data transfer to PC or printer
- Species-specific temperature probes available separately
- Optional SEDACOM software and adapter

Temperature is measured by using Yellow Springs (YSI) thermistor probes. The registered current value shown in the digital display of the front panel has a resolution of 0.1 degrees. There is no difference between channels or temperature probes, freely interchangeable. Standard YSI temperature probes (not supplied with the instrument; must be ordered separately) should be plugged into the jack connectors on the rear panel, while the temperature value is read from the front panel display.

The TMP812 model displays the current temperature of one channel (probe) at a time. Select the desired channel via the 12-position front panel rotary commutator.

The TMP812RS model offers a 20 x 4 LCD display for showing the current temperature of all the probes at the same time. A built-in RS-232/USB communication port allows sending (by pressing a front panel "SEND" button) the temperature values from all the probes to an external device (matrix printer with serial port or PC computer).

Additionally, the Windows-based program SEDACOM, purchased separately, allows the transfer of the current data to the PC at user-selected time intervals programmed directly from the SEDACOM application.

Components included:

- Control unit (TMP12RS includes RS-232 communications port)
- SEDACOM Software (only TMP12RS)
- Instruction manual
- Cables, connectors
- Set of two spare fuses
- 2-year warranty

SPECIFICATIONS

Resolution: 0.1°C

Capacity: 12 temperature probes simultaneously

Communications: RS-232 (USB)

Rectal Thermocouple Probe, Stainless Steel

For fast intermittent measurements in mice and rats.

Stainless steel shaft with a 1.5 m (5 ft) lead

Maximum temperature 125°C (257°F)

Many other are available.

Item No.	Description
52-1583	Copper Constantan Thermocouple Stainless Steel Rectal Probe, for Rats, 0.8 sec Time Constant
52-1591	Copper Constantan Thermocouple Stainless Steel Rectal Probe, for Mice, 0.5 sec Time Constant



(A) 52-1591

Stainless Steel Rectal Probe for Mice

DETAILS

For fast intermittent measurements in mice and rats. They have a stainless steel shaft with a 1.5 m (5 ft) lead.

- Maximum temperature 125°C
- Not isolated.
- Available with two different shaft sizes
- Supplied individually

SPECIFICATIONS

Specifications

52-1583

52-1591

Specifications	52-1583	52-1591
Accuracy Metric	0.1	0.1
Animal	Rats	Mice

Specifications**52-1583****52-1591**

Lead Length English	5	5
Lead Length Metric	1.5	1.5
Maximum Temperature English	257	257
Maximum Temperature Metric	125	125
Probe Wire Isolation	Not Isolated	Not Isolated
Sensor Bead Diameter English	0.125	0.065
Shaft Diameter English	0.059	0.025
Shaft Diameter Metric	1.5	0.71
Shaft Length English	1	0.75
Shaft Length Metric	25.4	19.1
Shaft Material	Stainless Steel	Stainless Steel
Sterilization	by gas (ETO) or Cidex	by gas (ETO) or Cidex
Thermocouple Wire Material	Proprietary Copper Constantan	Proprietary Copper Constantan
Time Constant	0.8	0.5

FISO Fiber Optic Temperature Sensors

FISO's Fiber Optic Temperature Sensors provide accurate, stable, and repeatable measurements. These measurements are based on variations of the reflected light – when compared to the emitted light – due to thermal expansion of the highly stable glass used within the sensor. The fiber optic lead cable can be up to several meters long without affecting the quality or the accuracy of the results.

are also available.

Item No.	Description
75-0711	FISO Fiber Optic Temperature Catheter, 0.8 mm OD, 2 M Length, -10 to 120 deg C, <0.5 sec Response Time (FPI-HR Compatible)
75-0712	FISO Fiber Optic Temperature Catheter, 1.7 mm OD, 2 M Length, -10 to 120 deg C, <1.5 sec Response Time (FPI-HR Compatible)
75-0704	FISO FPI-LS Signal Conditioner, Single Channel, 15 kHz Analog Output
75-0700	FISO Evolution Series EVO-2 Chassis, 24 VDC, 70 W, for Mounting up to 2 FISO Signal Conditioners
75-0701	FISO Evolution Series EVO-5 Chassis, 24 VDC, 70 W, for Mounting up to 5 FISO Signal Conditioners



DETAILS

FISO's Fiber Optic Temperature Sensors provide accurate, stable, and repeatable measurements. These measurements are based on variations of the reflected light — when compared to the emitted light — due to thermal expansion of the highly stable glass used within the sensor. The fiber optic lead cable can be up to several meters long without affecting the quality or the accuracy of the results.

Key Features

- Intrinsically safe
- Up to 300°C (572°F)
- High accuracy ($\pm 0.5^{\circ}\text{C}$ $<85^{\circ}\text{C}$ and $\pm 1^{\circ}\text{C}$ $>85^{\circ}\text{C}$) and resolution ($\pm 0.1^{\circ}\text{C}$)
- Miniature and rugged sensor

Applications

- Microwaves and RF
- Medical and life science research applications
- NMR or MRI environments

- In situ process monitoring
- Harsh and hazardous environments
- High temperature environments

The FOT-L-SD is sheathed with PTFE and has a temperature range from as low as -40°C up to 300°C (-40°F to 572°F).

The FOT-L-BA is designed with a much smaller diameter to provide an even faster response time, while withstand temperatures of up to 250°C.

SPECIFICATIONS

Specifications	75-0711	75-0712
Accuracy	±0.1°C	±0.1°C
Calibration	Factory Calibration no on site calibration needed	Factory Calibration no on site calibration needed
Coated Fiber Diameter	1.0 ± 0.1 mm	1.0 ± 0.1 mm
Coating	PTFE	PTFE
Length	2 meters	2 meters
Measurement media	Fluid or gas	Fluid or gas
Response Time	≤0.5 sec	≤1.5 sec
Sensitive Zone	6.5 ± 0.5mm	6.5 ± 0.5mm
Sensor Diameter	0.8 mm	1.7 mm
Storage temperature	-40-+80°C (-40-176°F)	-40-+80°C (-40-176°F)
Temperature Measurement Range Metric	-40°C to 250°C	-40°C to 300°C
Tolerated bend radius	10mm (0.4in)	10mm (0.4in)

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