

**JOFRA™**

**Wide temperature range**

DTI050:  
-200 to 2500°C / -328 to 4532°F

STS-100 sensor:  
-150 to 650°C / -238 to 1202°F

STS-102 sensor:  
-45 to 155°C / -49 to 311°F

**Improve your accuracy**

DTI050:  
accuracy to  $\pm 0.012^{\circ}\text{C}$  /  $\pm 0.021^{\circ}\text{F}$

DTI050 + STS sensor:  
accuracy to  $\pm 0.04^{\circ}\text{C}$  /  $\pm 0.072^{\circ}\text{F}$

**Fast response time**

Ensures correct monitoring of the temperature stability

**Specified low drift**

Maintains a minimum uncertainty budget throughout the period between re-calibration intervals

**Wide selection of sensors**

Straight sensors, 90° angled sensors or cable sensors, offering flexibility in test methods depending on the sensor-under-test

**True field instrument**

Low temperature coefficient - high accuracy in the lab and in the field

**Documentation made easy**

RS232 communication and JOFRACAL calibration software are included in the standard delivery

Model DTI050 and STS-100 series  
**Digital Temperature Indicator  
and STS Reference Sensor**

**PRODUCT DESCRIPTION**

The JOFRA DTI050 handheld digital temperature indicator, offers a measurement accuracy to  $\pm 0.012^{\circ}\text{C}$ .

Combined with an accurate JOFRA STS-100 temperature reference sensor, the DTI050 temperature reference indicator is the perfect reference thermometer.



**Features**

This simple to use instrument offers great flexibility, being able to work with both 'smart' and standard temperature sensors. A fast response time ensures precise monitoring of temperature stability and low drift reduces uncertainty of measurement between calibration intervals.

Use the JOFRA DTI050 and the STS sensors as the working temperature reference in any calibration application or use the set-up directly for critical measurements in the process.

The superior specifications, combined with a long history of reliability and low drift, make the JOFRA DTI050 and the JOFRA STS sensors the perfect choice.

The graphical display makes it is easy to recognize the status of the instrument and take readings. The DTI050 may also handle signals from 4-wire RTD's, TC's and thermistors.

## JOFRA DTI050 INDICATOR

### Graphical display

Large digits display the temperature, info lines show current status and mode, and the small digits show the details of the sensor.

### Indicator for low battery

Running low on battery an icon in the display clearly shows this.

### ON / OFF

Auto shut-off to extend battery life (user-programmable).

### Resolution

1 °C - 0.001 °C. Maximum resolution depends on the selected sensor type.

### Hold

Makes it possible to “freeze” the results when doing measurement. The results are saved in the EEPROM, when it is switched off.

### External power supply

It is possible to connect the DTI050 to external 9V supply.



### Intelligent sensor reading

Capable of reading calibration data and other information from the memory of the sensor.

### Input

1 input channel with 6-pin REDEL connector.

### Type

Select type of sensor. When using an STS reference sensor with intelligence, the indicator automatically finds the sensor and the data.

### Serial interface

RS232 serial interface to communicate with JOFRACAL calibration software. Also used if adjustment of the unit is necessary.

See spec. sheet SS-CP-2510 for more info about JOFRACAL

### MAX / MIN

Reads the highest and lowest value from last reset. Monitor a safety alarm or look for temperature spikes in the process. Min and max are saved in the EEPROM, when it is switched off.

## ORDERING INFORMATION DTI050

Order No.	Description
DTI050	<b>Temperature Indicator</b> DTI050 Temperature Indicator
	<b>Calibration certificate</b>
G	NIST traceable certificate (standard)
H	Accredited certificate
	<b>Options</b>
C	Carrying Case (max. 350 mm. straight sensor)
X	No option used
DTI050GX	<b>Sample order number</b> JOFRA DTI050 temperature indicator with standard NIST traceable calibration certificate.

## ACCESSORIES

### DTI050 power supply accessories

124720	Mains adapter 9VDC/200mA - 230VAC/115VAC
124717	1x 9 Volt rechargeable battery
124718	Charger for rechargeable batteries - 115/230 VAC
125002	Edge port Converter with 4 pcs of RS232 ports

### DTI050 connectors and cables

125702	Connector for RTD sensors without intelligence
125703	Connector for RTD sensors with intelligence
125759	Connector for TC sensors without intelligence
125704	Connector for TC sensors with intelligence
125522	Cable 2 m with LEMO / Redel for DTI050 with intelligence
125523	Cable to mini TC-connector with intelligence
125521	LEMO/Banana cable, STS100/STS102, with intelligence

## STANDARD DELIVERY

- DTI050 indicator
- NIST traceable calibration certificate in ohm and mV
- Softcase and shoulder strap
- User manual
- 9V battery
- RS232 cable
- JOFRACAL calibration software
- CON050 configuration software

### Softcase (Standard) - SPK-HHC-002

The DTI050 is supplied in a handy softcase designed for easy transportation and vertical operation during the calibration.



### Carrying case (Optional) - 125812

A complete ready-to-use system may be delivered in a practical aluminum carrying case, which can hold the DTI050 and all standard accessories as well as a STS reference sensor.



## SPECIFICATIONS DTI050

### Environmental conditions

Operating temperature ..... -10 to 50°C / 14 to 122°F  
 Storage temperature ..... -20 to 60°C / -4 to 140°F  
 Atmospheric humidity ..... 0 to 90%  
 All specifications specified  
 at ambient temperature ..... 23°C ±5°C / 73°F ±9°F  
 Outside ambient 23°C ±5°C ..... ±0.001% rdg/°C  
 Outside ambient 73°F ±9°F ..... ±0.0028% rdg/°F  
 C/J compensation 18 to 28°C / 64 to 83°F ... 0.2°C / 0.36°F  
 C/JC outside above ..... 0.05°C/°C / 0.05°F/°F

### Power supply

Mains adapter ..... 9 VDC / 200 mA  
 Battery ..... 1 x 9 VDC Alkaline  
 Battery life ..... Minimum 10 hours  
 Low battery indicator ..... at 6 VDC  
 Auto off ..... user selectable, 1-30 minutes

### Display

LCD ..... Graphical display  
 Display resolution ..... 1°C - 0.001°C. \*  
 Display update ..... twice per second  
 \* Maximum resolution depends on the selected sensor type.

### RS232 communication interface

Connector ..... 3-pin JACK  
 Communication rate ..... 9600 baud, ASCII

### Instrument dimensions

Indicator L x W x H ..... 188 x 84 x 52 mm / 7.4 x 3.3 x 2.1 in  
 Indicator weight (including battery) ..... 400 g / 14.1 oz

### Shipping dimensions

Indicator L x W x H. 250 x 160 x 100 mm / 9.8 x 6.3 x 3.9 in  
 Indicator weight (including battery) ..... 1.1 kg / 2.4 lb

## INPUT SPECIFICATIONS FOR DTI050

4-wire RTD Type	Temperature range				12 months accuracy	
	°C		°F		°C	°F
	From	To	From	To		
PT385, 100 ohm	-200	-80	-328	-112	0.012	0.021
	-80	100	-112	212	0.020	0.036
	100	300	212	572	0.030	0.054
	300	400	572	752	0.035	0.063
	400	630	752	1166	0.047	0.084
	630	800	1166	1472	0.057	0.102

Ohm	Range		Accuracy ± 12 months
	min	max	
Ohm read (low)	0.000	400.000	0.004% rdg +0.002 ohm

## JOFRA STS REFERENCE SENSORS

To get an ideal reference system, JOFRA offers a range of reference sensors. JOFRA STS Superior Temperature reference Sensors are based on more than 50 years of industrial temperature sensor manufacturing experience. The main requirement of a reference sensor is stability: The less the sensor drifts, the lower the measurement uncertainty. All JOFRA Superior Temperature Standard sensors are economical and offer fast response times, low immersion depths, compact physical sizes, and specified low drift rates: even at high temperatures. These are all important considerations when selecting a reference sensor.

All sensors are supplied with an accredited or traceable certificate stating the sensor coefficients.

Please find more information about our STS reference sensors in specification sheet AS-CP-2210, which is available at [www.jofra.com](http://www.jofra.com)

### System accuracy for JOFRA DTI050 with STS-100/102

#### STS-100 sensor:

-50 to 250°C (-58 to 482°F): ±0.040°C (±0.072°F) <sup>1) 2)</sup>  
 ±0.055°C (±0.099°F) <sup>1) 3)</sup>

-50 to 320°C (-58 to 608°F): ±0.050°C (±0.090°F) <sup>1) 2)</sup>  
 ±0.060°C (±0.108°F) <sup>1) 3)</sup>

-50 to 400°C (-58 to 752°F): ±0.065°C (±0.117°F) <sup>1) 2)</sup>  
 ±0.080°C (±0.144°F) <sup>1) 3)</sup>

-50 to 650°C (-58 to 1202°F): ±0.090°C (±0.162°F) <sup>1) 2)</sup>  
 ±0.100°C (±0.180°F) <sup>1) 3)</sup>

#### STS-102 cable sensor:

-45 to 155°C (-49 to 311°F): ±0.040°C (±0.072°F) <sup>1) 2)</sup>  
 ±0.070°C (±0.126°F) <sup>1) 3)</sup>

All sensors are as standard supplied with an accredited certificate stating the sensor coefficients. A traceable certificate is optional.

Note 1: Specified at 95% confidence interval k=2, over full range, including calibration uncertainty, excluding 1 LSD (Least Significant Digit).

Note 2: Excl. sensor drift

Note 3: Incl. sensor drift after 100 hours at max. temperature.

We also offer STS-050 reference sensors for the DTI-050. Please find more information in specification sheet SS-CP-2296, which is available at [www.jofra.com](http://www.jofra.com)



## ORDERING JOFRA DTI050 AND STS-100

DTI050		<b>Base model number</b>	DTI050 Temperature Indicator
		<b>Calibration certificate DTI050</b>	
	G		NIST traceable certificate (standard)
	H		Accredited calibration certificate
		<b>STS reference sensor</b>	
		100	Pt100 reference sensor, solid, -150 to 650°C (-238 to 1207°F)
		<b>Diameter of the sensor</b>	
		A	Overall diameter 4 mm (0.16 in)
		B	Overall diameter 6.35 mm (0.25 in)
		<b>Shape and length</b>	
		250	Straight sensor, 250 mm (9.8 in) in alu case
		350	Straight sensor, 350 mm (13.8 in) in alu case
		500	Straight sensor, 500 mm (19.7 in) in alu case
		901	90° angled sensor, 207 mm (8.1 in) in plastic case
		<b>Calibration certificate</b>	
		F	NPL traceable calibration certificate on sensor
		H	Accredited calibration certificate on sensor ( <b>standard</b> )
		FS	NPL traceable system calibration certificate
		HS	Accredited system calibration certificate
		<b>Options</b>	
		C	System carrying case (max. 350 mm. sensor)

**DTI050G100A250HC** **Sample order number**  
 JOFRA DTI050 with NIST traceable certificate and 4 mm STS-100 reference sensor, straight 250 mm. with accredited calibration certificate, carrying case and Cable with LEMO / Redel.

## ORDERING JOFRA DTI050 AND STS-102 A

DTI050		<b>Base model number</b>	DTI050 Temperature Indicator
		<b>Calibration certificate DTI050</b>	
	G		NIST traceable certificate (standard)
	H		Accredited calibration certificate
		<b>STS reference sensor</b>	
		102	Pt100 reference sensor, cable, -50 to 155°C (-58 to 311°F)
		<b>Diameter of the sensor</b>	
		A	Overall diameter 4 mm (0.16 in)
		<b>Shape and length</b>	
		030	Short sensor 30 mm / 1.18 in in plastic case
		<b>Calibration certificate</b>	
		F	NPL traceable calibration certificate on sensor
		H	Accredited calibration certificate on sensor ( <b>standard</b> )
		FS	NPL traceable system calibration certificate
		HS	Accredited system calibration certificate
		<b>Options</b>	
		C	System carrying case (max. 350 mm. sensor)

**DTI050G102A030HC** **Sample order number**  
 JOFRA DTI050 with NIST traceable certificate and 4 mm STS-100, short 30 mm reference sensor with accredited calibration certificate, carrying case and Cable with LEMO / Redel.



**AMETEK Calibration Instruments** is one of the world's leading manufacturers and developers of calibration instruments for temperature, pressure and process signals as well as for temperature sensors both from a commercial and a technological point of view.

**JOFRA Temperature Instruments**  
 Portable precision thermometers. Dry-block and liquid bath calibrators: 4 series, with more than 25 models and temperature ranges from -90° to 1205°C / -130° to 2200°F. All featuring speed, portability, accuracy and advanced documenting functions with JOFRACAL calibration software.

**JOFRA Pressure Instruments**  
 Convenient electronic systems ranging from -1 to 1000 bar (25 inHg to 14,500 psi) - multiple choices of pressure ranges, pumps and accuracies, fully temperature-compensated for problem-free and accurate field use.

**JOFRA Signal Instruments**  
 Process signal measurement and simulation for easy control loop calibration and measurement tasks - from handheld field instruments to laboratory reference level bench top instruments.

**JOFRA / JF Marine Instruments**  
 A complete range of calibration equipment for temperature, pressure and signal, approved for marine use.

**FP Temperature Sensors**  
 A complete range of temperature sensors for industrial and marine use.

**M&G Pressure Testers**  
 Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading.

**M&G Pumps**  
 Pressure generators from small pneumatic "bicycle" style pumps to hydraulic pumps generating up to 1,000 bar (15,000 psi).

*...because calibration is a matter of confidence*

**AMETEK®**  
 CALIBRATION INSTRUMENTS

Headquarters:

**AMETEK Denmark A/S**  
 Gydevang 32-34 • 3450 Allerød • Denmark  
 Tel: +45 4816 8000 • ametek@ametek.dk

Sales & Service:

Europe, Asia, Africa, Middle East and South America

Information in this document is subject to change without notice.  
 ©2007, by AMETEK, Inc., www.ametek.com. All rights reserved.

Pub code SS-CP-2297-US Issue 0901

[www.ametekcalibration.com](http://www.ametekcalibration.com)  
[www.jofra.com](http://www.jofra.com)

Sales & Service Offices:

**AMETEK Mansfield & Green (North America)**  
 Tel: +1 800 527 9999 • cal.info@ametek.com

**AMETEK Singapore Pte. Ltd. (Singapore)**  
 Tel: +65 6 484 2388 • aspl@ametek.com.sg

**AMETEK Inc. Beijing Rep. Office (China)**  
 Tel: +86 10 8526 2111 • jofra@ametek.com.cn

**AMETEK GmbH (Germany)**  
 Tel: +49 2159 9136 510 • info.mct-de@ametek.de

**AMETEK Calibration Instruments (UK)**  
 Tel: +44 (0) 1489 486 404 • jofra@ametek.co.uk