

temperature



» **Wide temperature range**

DTI050            -200 to 2500°C / -328 to 4532°F  
STS-050           -50 to 400°C / -58 to 752°F

» **Improve your accuracy**

DTI050:  
accuracy to  $\pm 0.012^{\circ}\text{C}$  /  $\pm 0.021^{\circ}\text{F}$   
DTI050 + STS sensor:  
accuracy to  $\pm 0.04^{\circ}\text{C}$  /  $\pm 0.072^{\circ}\text{F}$

» **Intelligent sensor**

Critical information stored in a memory chip in the intelligent sensor gives easy access to relevant data and avoid mistakes

» **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

## Digital Temperature Indicator and STS Reference Sensor **DTI050 and STS-050**



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

Combined with an accurate JOFRA STS-050 temperature reference sensor, the DTI050 temperature reference indicator is the perfect reference thermometer.

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.

Supplied with a JOFRA STS-050 'smart' temperature reference sensor, the unit becomes a fully traceable thermometer with excellent accuracy of measurement. It can be used as the reference for accurate verification of temperature for both dry block and liquid bath temperature calibrators or for direct measurement of critical temperatures in a process environment.

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.

**ISO 9001 Manufacturer**

Specification Sheet  
SS-DTI050\_STS050

**AMETEK®**  
TEST & CALIBRATION INSTRUMENTS

## 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><br>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><br>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             |

## 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  
 CJ compensation 18 to 28°C / 64 to 83°F ... 0.2°C / 0.36°F  
 CJC 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<br>RTD Type | Temperature range |     |      |      | 12 months<br>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 ±<br>12 months |
|----------------|-------|---------|-------------------------|
|                | min   | max     |                         |
| Ohm read (low) | 0.000 | 400.000 | 0.004% rdg +0.002 ohm   |

## JOFRA STS REFERENCE SENSORS

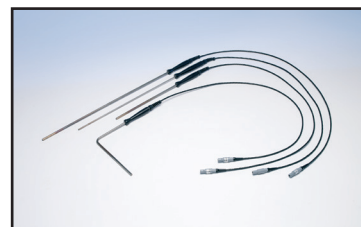
To get an ideal reference system, JOFRA offers a range of reference sensors. JOFRA STS Superior Temperature reference Sensors are based on more than 50 years of industrial temperature sensor manufacturing experience. The main requirement of a reference sensor is stability: The less the sensor drifts, 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.

## INTELLIGENT SENSORS

Especially for the DTI050 reference indicator, AMETEK has developed a specific series of reference sensors, - the JOFRA STS-050.

The JOFRA DTI050 uses intelligent detection technology for sensors. This means that it is able to automatically read calibration data and sensor type from a memory chip placed in the sensor. This chip is standard in the STS-050 series.



The intelligent sensor reading makes it possible to change the sensors used without re-programming the DTI050. When an intelligent sensor is connected, all information about the sensor, such as serial number, calibration data and coefficients are read by DTI050. All information can be shown on the display in the config menu for verification. Recalling existing data eliminates errors as a result of programming sensor data.

### System accuracy for JOFRA DTI050 with STS-050

-50 to 250°C (-58 to 482°F): ±0.040°C (±0.072°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>  
 ±0.090°C (±0.162°F) <sup>1) 3)</sup>

All sensors are as standard supplied with a traceable certificate stating the sensor coefficients. An accredited 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.

If better system accuracies or a wider temperature range are needed, we also offer STS-100/102 reference sensors for the DTI-050.

## ORDERING JOFRA DTI050 AND STS-050

|        |                    |  |
|--------|--------------------|--|
| DTI050 |                    | <b>Base model number</b><br>DTI050 Temperature Indicator   |
| G<br>H |                    | <b>Calibration certificate DTI050</b><br>NIST traceable certificate (standard)   |
|        |                    | Accredited certificate   |
|        | 050                | <b>STS reference sensor</b><br>Pt100 reference sensor, solid, with handle, -50 to 400°C (-58 to 752°F)   |
|        | A                  | <b>Diameter of the sensor</b><br>Overall diameter 4 mm (0.16 in)   |
|        | 250<br>350         | <b>Shape and length</b><br>Straight sensor, 250 mm (9.8 in)<br>Straight sensor, 350 mm (13.8 in)   |
|        | F<br>H<br>FS<br>HS | <b>Calibration certificate</b><br>Traceable calibration certificate on sensor ( <b>standard</b> )<br>Accredited calibration certificate on sensor<br>Traceable system calibration certificate<br>Accredited system calibration certificate |
|        | C                  | <b>Options</b><br>System carrying case (max. 350 mm. straight sensor)  |

**DTI050G050A250FC** **Sample order number**  
JOFRA DTI050 temperature indicator with NIST traceable calibration certificate and 4 mm STS-050 Reference sensor, Straight 250 mm with NPL traceable calibration certificate and Cable with REDEL connector for DTI050



### AMETEK Test & Calibration Instruments

A business unit of AMETEK Measurement & Calibration Technologies Division offering the following industry leading brands for test and calibration instrumentation.

### JOFRA Calibration Instruments

#### Temperature Calibrators

Portable dry-block calibrators, precision thermometers and liquid baths. Temperature sensors for industrial and marine use.

#### Pressure Calibrators

Convenient electronic systems ranging from -25 mbar to 1000 bar - fully temperature-compensated for problem-free and accurate field use.

#### Signal Instruments

Process signal measurement and simulation for easy control loop calibration and measurement tasks.

### M&G Dead Weight Testers & Pumps

Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading. Pressure generators delivering up to 1,000 bar.

### Crystal Pressure

Digital pressure gauges and calibrators that are accurate, easy-to-use and reliable. Designed for use in the harshest environments; most products carry an IS, IP67 and DNV rating.

### Lloyd Materials Testing

Materials testing machines and software that guarantees expert materials testing solutions. Also covering Texture Analysers to perform rapid, general food testing and detailed texture analysis on a diverse range of foods and cosmetics.

### Davenport Polymer Test Equipment

Allows measurement and characterization of moisture-sensitive PET polymers and polymer density.

### Chatillon Force Measurement

The hand held force gauges and motorized testers have earned their reputation for quality, reliability and accuracy and they represent the de facto standard for force measurement.

### Newage Hardness Testing

Hardness testers, durometers, optical systems and software for data acquisition and analysis.

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TEST & CALIBRATION INSTRUMENTS

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