

# User Manual

## JOFRA STS-200 A/B

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





# User manual

# JOFRA STS-200 A/B

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## 1.0 General information

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This manual is only effective for the following products:

JOFRA STS-200 A – 915 (90°)  
JOFRA STS-200 B – 915 (90°)  
JOFRA STS-200 A – 916 (90°)  
JOFRA STS-200 B – 916 (90°)  
JOFRA STS-200 A – 917 (90°)  
JOFRA STS-200 B – 917 (90°)  
JOFRA STS-200 A – 925 (90°)  
JOFRA STS-200 B – 925 (90°)  
JOFRA STS-200 A – 970 (90°)  
JOFRA STS-200 B – 970 (90°)

The products are manufactured by:



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## 2.0 Safety instructions

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### Read this manual carefully before using the sensor!

In order to avoid any personal injuries and/or damage to the sensor all safety instructions and warnings must be observed.



### Warning

- Do not use in hazardous area.
- Handle carefully.
- Never exceed temperature range



### Caution...

- When measuring temperature in fluids (e.g. at re-calibration) the enclosed protection tube must be used.
- The probe must **always** be protected against any mechanical damage.
- The probe must **never** be exposed to mechanical shock effects.
- Avoid thermal shock

- Any bending of the probe may cause permanent damage
- **Never** use power or tools to place the probe.

## 3.0 Introduction

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The JOFRA STS-200 A/B probes are specially designed for fast and traceable calibration and temperature measuring with your JOFRA equipment and are ready for use.

Please read this manual carefully before use, to obtain maximum value of your calibration system.



### Warning

- Do not use in hazardous area.
- Handle carefully.
- Never exceed temperature range



## 4.0 Functionality

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### 4.1 Functional description

The sensors can be used for measuring temperatures in the range :

- -65°C to 160°C / -85°F to 320°F (915)
- -65°C to 160°C / -85°F to 320°F (916)
- -100°C to 155°C / -148°F to 311°F (917)
- 0°C to 250°C / 32°F to 482°F (925)
- 0°C to 700°C / 32°F to 1292°F (970)

The JOFRA STS-200 A/B probes may be supplied with certificates for a limited temperature range.

The resistance of the JOFRA STS-200 A/B probe is converted to temperature according to ITS-90 (calculated coefficients specific for the probe is stated on the certificate).

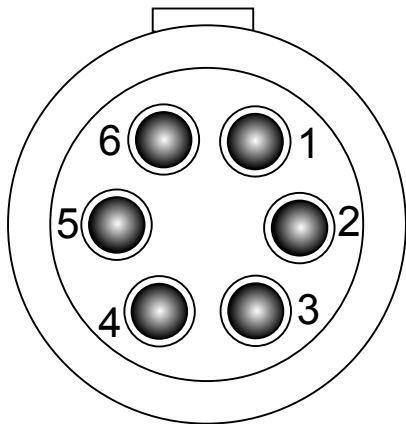
### 4.2 Connections

The pin-layout is as follows:

Pin 1 : RTD I-/ CJC Pt1000 –  
Pin 2 : RTD S-/ TC V-  
Pin 3 : RTD S+/ TC V+

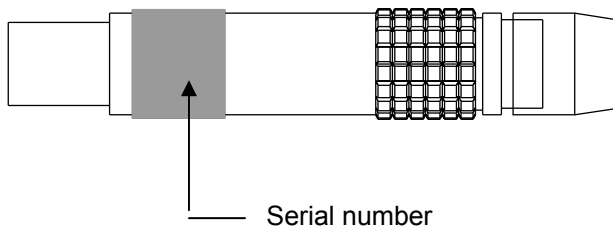
Pin 4 : RTD I+/ CJC Pt1000 +  
Pin 5 : Memory GND  
Pin 6 : Memory I/O

The figure below is shown from the connector side of the probe connector.



### 4.3 Serial number

The serial number is placed on the probe as shown on the figure below:



## 5.0 Operation

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### 5.1 Operation area

All the probes are intended for use in areas, which meet the following operating conditions:

Probe connector  
and cable : -20°C to 70°C (-4°F to 158°F)  
Storage temp. : -20°C to 70°C (-4°F to 158°F)  
Humidity : 0% to 90% RH  
Protection class : IP 50



### **Warning**

Do not use in hazardous areas.

## 6.0 Maintenance

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The probe does not require specific maintenance before or after use. The user may carry out the following procedure himself:

Cleaning the probe : Use alcohol or water and a soft cloth.



### Caution...

- The probe must **always** be protected against any mechanical damage.
- The probe must **never** be exposed to mechanical shock effects.
- Avoid thermal shock
- Any bending of the probe may cause permanent damage

## 7.0 Technical specifications

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Sensor type : Platinum sensor Pt100.  
 $\alpha = 0.00385$

Probe length (915) : 160 mm (6.30 in) (90° angle)  
(916) : 182 mm (7.16 in) (90° angle)  
(917) : 192 mm (7.56 in) (90° angle)  
(925) : 182 mm (7.16 in) (90° angle)  
(970) : 225 mm (8.85 in) (90° angle)

### Temperature range

STS-200 A/B (915): -65°C to 160°C / -85°F to 320°F

STS-200 A/B (916): -65°C to 160°C / -85°F to 320°F

STS-200 A/B (917): -100°C to 155°C / -148°F to 311°F

STS-200 A/B (925): 0°C to 250°C / 32°F to 482°F

STS-200 A/B (970): 0°C to 700°C / 32°F to 1292°F

### Accuracy

Repeatability : 0.002°C (0.004°F)

Hysteresis<sup>1)</sup> : 0.01°C @ 0°C  
(0.02°F @ 32°F)

Stability<sup>2)</sup> : typ. 0.016°C @ 0°C  
(0.029°F @ 32°F)

Stability<sup>3)</sup> (917) : typ. 0.014°C @ 0°C  
(0.025°F @ 32°F)

Self heating effect : 0.06°C/mW / 0.11°F/mW  
Diameter : A: OD4 mm  
                  : B: OD1/4"  
Immersion depth : A: 100 mm (2.36 in)  
                  : B: 110 mm (3.54 in)  
Media compatibility : INCONEL 600

1)When used in the range -65°C to 160°C / -85°F to 320°F (STS-200 A/B 915/916), -100°C to 155°C / -148°F to 311°F (STS-200 A/B 917), 0°C to 250°C / 32°F to 482°F (STS-200 A/B 925) or 0°C to 700°C / 32°F to 1292°F (STS-200 A/B 970).

2)Stability when exposed to 700°C (1292°F) for 100 hours. Stability will depend on actual use of the probe.

3)Stability when exposed to 155°C (311°F) for 100 hours. Stability will depend on actual use of the probe.

Response time : A:  $\tau(50\%) = 8 \text{ sec.}$   
                  :  $\tau(90\%) = 26 \text{ sec.}$   
                  : B:  $\tau(50\%) = 18 \text{ sec.}$   
                  :  $\tau(90\%) = 44 \text{ sec.}$

Recommended  
meas. current : 1 mA  
Connection : LEMO plug with build in  
                  : memory is standard

## Certificate:

If the STS-200 A/B reference probe is supplied with a certificate, the calibration is carried out as recommended below according to the ITS 90 temperature scale.

The STS-200 A/B type 915/916 probe is as standard calibrated in the range :  
-45°C to 155°C (-49°F to 311°F).

The STS-200 A/B type 917 probe is as standard calibrated in the range :  
-100°C to 155°C (-148°F to 311°F).

The STS-200 A/B type 925 probe is as standard calibrated in the range :  
0°C to 250°C (32°F to 482°F)

The STS-200 A/B type 970 probe is as standard calibrated in the range :  
0°C to 660°C (32°F to 1220°F) or  
0°C to 700°C (32°F to 1292°F) with extended uncertainty between 660°C (1220°F) and 700°C (1292°F).

It is recommended to calibrate in minimum 3 – 6 calibration points (depending on the temperature range) above 0°C and in minimum 2 calibration points beneath 0°C.



#### **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: 5 series, with more than 25 models and temperature ranges from -90° to 1205°C / -130° to 2200°F.

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#### **JOFRA Pressure Instruments**

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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.

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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).



## **TEST & CALIBRATION INSTRUMENTS**

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