

User Manual

JOFRA STS-200 A/B

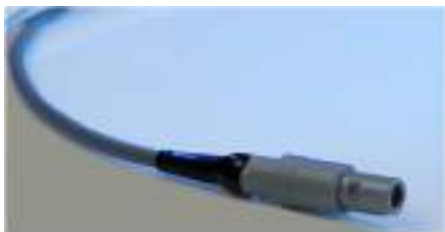
*...because calibration is
a matter of confidence*



User manual

JOFRA STS-200 A/B

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1.0 General information

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 918 (90°)
JOFRA STS-200 B 918 (90°)
JOFRA STS-200 A 919 (90°)
JOFRA STS-200 B 919 (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



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

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

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)
- -65°C to 180°C / -85°F to 356°F (918)
- -65°C to 165°C / -85°F to 329°F (919)
- 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.

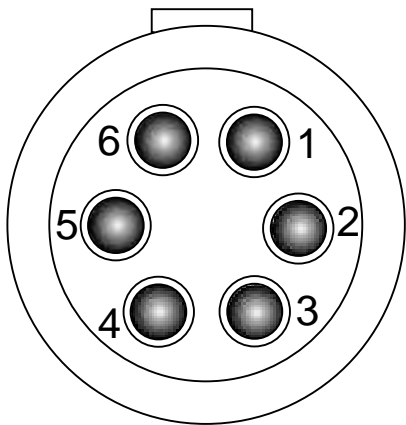
The resistance of the JOFRA STS-200 A/B probe is converted to temperature according to ITS-90 (calculated coefficients specific for the probe is stated on the certificate).

4.2 Connections

The pin-layout is as follows:

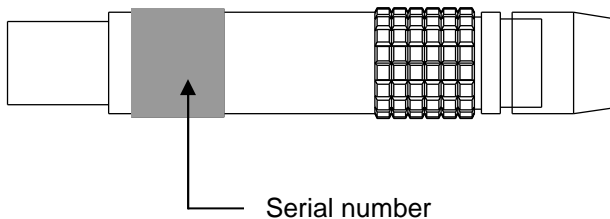
- Pin 1 : RTD I-/ CJC Pt1000 –
- Pin 2 : RTD S-/ TC V-
- Pin 3 : RTD S+/ TC V+
- Pin 4 : RTD I+/ CJC Pt1000 +
- Pin 5 : Memory GND
- Pin 6 : Memory I/O

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

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 : 5% to 90% RH

Protection class : IP 50



Warning

Do not use in hazardous areas.

6.0 Maintenance

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

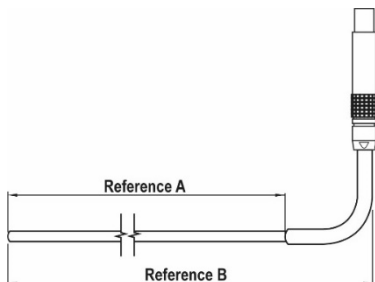
7.0 Technical specifications

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

Probe length :

Reference A (915) : 145 mm (5.7 in) (90° angle)
(916) : 167 mm (6.57 in) (90° angle)
(917) : 176 mm (6.92 in) (90° angle)
(918) : 145 mm (5.7 in) (90° angle)
(919) : 167 mm (6.57 in) (90° angle)
(925) : 167 mm (6.57 in) (90° angle)
(970) : 206 mm (8.11 in) (90° angle)

Reference B (915) : 179 mm (7.05 in) (90° angle)
(916) : 201 mm (7.91 in) (90° angle)
(917) : 210 mm (8.27 in) (90° angle)
(918) : 179 mm (7.05 in) (90° angle)
(919) : 167 mm (6.57 in) (90° angle)
(925) : 201 mm (7.91 in) (90° angle)
(970) : 240 mm (9.45 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 (918): -65°C to 180°C / -85°F to 356°F

STS-200 A/B (919): -65°C to 165°C / -85°F to 329°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° / 32°F to 1292°F

Accuracy

Repeatability : 0.002°C (0.004°F)

Hysteresis¹⁾ : 0.01°C @ 0°C
(0.02°F@32°F)

Stability²⁾ (970) : typ. 0.016°C @ 0°C
(0.029°F@32°F)

Stability³⁾ : typ. 0.014°C @ 0°C
(0.025°F@32°F)

Self heating effect : 0.06°C/mW / 0.108°F/mW

Diameter : A: OD4 mm
B: OD1/4"

Immersion depth : A: 100 mm (3.9 in)
B: 110 mm (4.3 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), -65°C to 180°C / -85°F to 356°F (STS-200 A/B 918), -65°C to 165°C / -85°F to 329°F (STS-200 A/B 919), 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 918 probe is as standard calibrated in the range :
-45°C to 180°C (-49°F to 356°F).

The STS-200 A/B type 919 probe is as standard calibrated in the range :
–45°C to 165°C (-49°F to 329°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.



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