

# User Manual

## JOFRA STS-150 A

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





# User manual

# JOFRA STS-150 A

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## 1.0 General information

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This manual is only effective for the following products:

JOFRA STS-150 A 912 (90°)  
JOFRA STS-150 A 915 (90°)  
JOFRA STS-150 A 935 (90°)  
JOFRA STS-150 A 966 (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-150 A 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 :

- -90°C to 125°C / -130°F to 257°F (912)
- -25°C to 155°C / -13°F to 311°F (915)
- 0°C to 350°C / 32°F to 662°F (935)
- 0°C to 660°C / 32°F to 1220°F (966)

The JOFRA STS-150 A probes may be supplied with certificates for a limited temperature range.

The resistance of the JOFRA STS-150 A 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-

Pin 2 : RTD S-

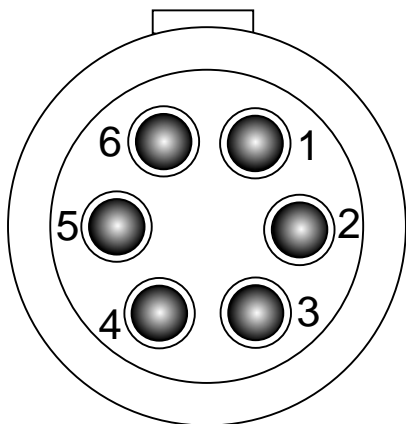
Pin 3 : RTD S+

Pin 4 : RTD I+

Pin 5 : Memory GND

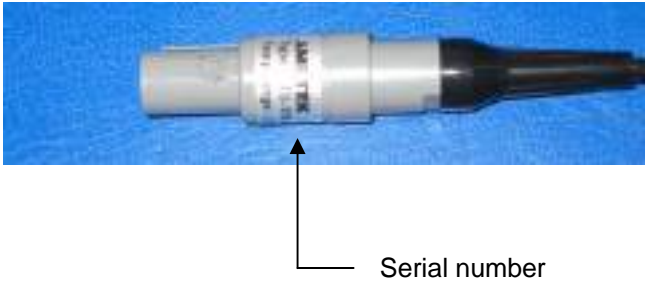
## Pin 6 : Memory I/O

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.  
STS-150 A  $\alpha = 0.00385$

Probe length :

- (912) : 210/193 mm (90° angle)  
(8.27/7.60 in)
- (915) : 180/163 mm (90° angle)  
(7.09/6.42 in)
- (935) : 165/148 mm (90° angle)  
(6.50/5.83 in)
- (966) : 201/183 mm (90° angle)  
(7.91/7.20 in)

Temperature range :

- (912) : -90°C to 125°C / -130°F to 257°F
- (915) : -25°C to 155°C / -13°F to 311°F
- (935) : 0°C to 350°C / 32°F to 662°F
- (966) : 0°C to 660° / 32°F to 1220°F

Accuracy :

- Repeatability : 0.004°C (0.007°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)
Self heating effect	:	0.06°C/mW / 0.11°F/mW
Diameter	:	OD4 mm
Immersion depth	:	
(912/915/935)	:	60 mm (2.36 in)
(966)	:	100 mm (3.94 in)
Media compatibility	:	INCONEL 600

1)When used in the range -90°C to 125°C / -130°F to 257°F (STS-150 A 912), -25°C to 155°C / -13°F to 311°F (STS-150 A 915), 0°C to 350°C / 32°F to 662°F (STS-150 A 935) or 0°C to 660°C / 32°F to 1220°F (STS-150 A/B 966).

2)Stability when exposed to maximum temperature for 100 hours. Stability will depend on actual use of the probe.

Response time	:	
(912/915/935)	:	$\tau(50\%) = 7 \text{ sec.}$ $\tau(90\%) = 18 \text{ sec.}$
(966)	:	$\tau(50\%) = 8 \text{ sec.}$ $\tau(90\%) = 26 \text{ sec.}$

Recommended meas. current	:	1 mA
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- Connection :
- (912/915/935) : Cable with REDEL connector
  - (966) : LEMO plug with build in memory is standard

Certificate:

If the STS-150 A reference probe is supplied with a certificate, the calibration is carried out as recommended below according to the ITS 90 temperature scale.

The STS-150 A type 912 probe is as standard calibrated in the range :  
-90°C to 125°C (-130°F to 257°F).

The STS-150 A type 915 probe is as standard calibrated in the range :  
-25°C to 155°C (-13°F to 311°F).

The STS-150 A type 935 probe is as standard calibrated in the range :  
0°C to 350°C (32°F to 662°F)



The STS-150 A type 966 probe is as standard calibrated in the range :  
0°C to 660°C (32°F to 1220°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.

All featuring speed, portability, accuracy and advanced documenting functions with JOFRACAL calibration software.

#### **JOFRA Pressure Instruments**

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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).



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