

User manual  
**Jofra STS-120 A**



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## 1.0 General information

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This manual is only effective for the following products:

JOFRA STS-120 A 915 (90°)

JOFRA STS-120 A 935 (90°)

JOFRA STS-120 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-120 A probes are specially designed for fast and traceable calibration and temperature measuring with your JOFRA CTC temperature calibrator 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:

- $-45^{\circ}\text{C}$  to  $155^{\circ}\text{C}$  /  $-49^{\circ}\text{F}$  to  $311^{\circ}\text{F}$  (915)
- $0^{\circ}\text{C}$  to  $350^{\circ}\text{C}$  /  $32^{\circ}\text{F}$  to  $662^{\circ}\text{F}$  (935)
- $0^{\circ}\text{C}$  to  $660^{\circ}\text{C}$  /  $32^{\circ}\text{F}$  to  $1220^{\circ}\text{F}$  (966)

The JOFRA STS-120 A probes may be supplied with certificates for a limited temperature range.

The resistance of the JOFRA STS-120 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-

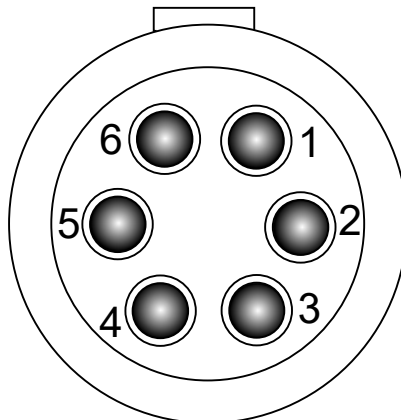
Pin 3 : RTD S+

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 : 5% to 90% RH, non-condensing

Protection class: DIN 40050, 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-120 A               |   | $\alpha = 0.00385$                   |
| Probe length            |   |                                      |
| (915)                   | : | 140 mm/5.51 inch (90° angle)         |
| (935)                   | : | 135 mm/5.32 inch (90° angle)         |
| (966)                   | : | 151 mm/5.95 inch (90° angle)         |
| Temperature range       |   |                                      |
| (915)                   | : | -45°C to 155°C / -49°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)                    |
| Dead band <sup>1)</sup> | : | 0.01°C @ 0°C<br>(0.02°F@32°F)        |
| Stability <sup>2)</sup> | : | typ. 0.014°C @ 0°C<br>(0.025°F@32°F) |
| Self heating effect     | : | 0.06°C/mW / 0.11°F/mW                |
| Diameter                | : | OD4 mm                               |
| Immersion depth         |   |                                      |
| (915/935)               | : | 60 mm (2.36 in)                      |
| (966)                   | : | 100 mm (3.94 in)                     |
| Media compatibility     | : | INCONEL 600                          |

1)When used in the range -45°C to 155°C / -49°F to 311°F (STS-120 A 915), 0°C to 350°C / 32°F to 662°F (STS-120 A 935) or 0°C to 660°C / 32°F to 1220°F (STS-120 A/B 966).

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

## Response time

(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

## Connection

(915/935) : Cable with REDEL connector

(966) : LEMO plug with build in memory is standard

## Certificate:

If the STS-120 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-120 A type 915 probe is as standard calibrated in the range :  
-45°C to 155°C (-49°F to 311°F).

The STS-120 A type 935 probe is as standard calibrated in the range :  
0°C to 350°C (32°F to 662°F)

The STS-120 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 Sensors, Test & Calibration**

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*

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