AMETEK®
TEST & CALIBRATION INSTRUMENTS

User Manual
JOFRA STS-200 A/B

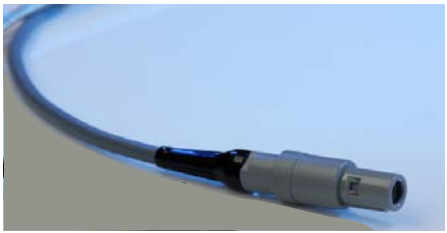
Visit TRANSCAT.com >
sales@transcat.com | 800.828.1470

...because calibration is a matter of confidence



User manual
JOFRA STS-200 A/B

© Copyright 2012 AMETEK Denmark A/S



List of contents

1.0 General information 4

2.0 Safety instructions 5

3.0 Introduction..... 7

4.0 Functionality 8

4.1 Functional description 8

4.2 Connections 8

4.3 Serial number..... 10

5.0 Operation 11

5.1 Operation area 11

6.0 Maintenance..... 12

7.0 Technical specifications 13

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 – 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:

AMETEK
TEST & CALIBRATION INSTRUMENTS

AMETEK Denmark A/S
Gydevang 32-34
3450 Allerød - Denmark

TEL: +45 48 16 80 00
FAX: +45 48 16 80 80

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)
- 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).

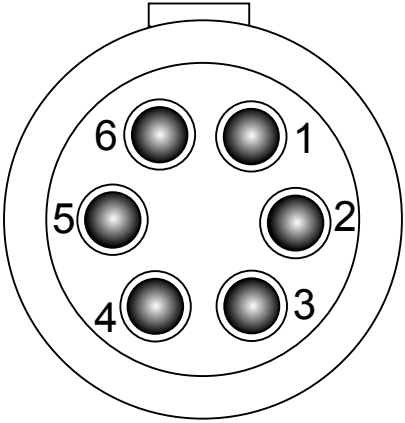
4.2 Connections

The pin-layout is as follows:

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

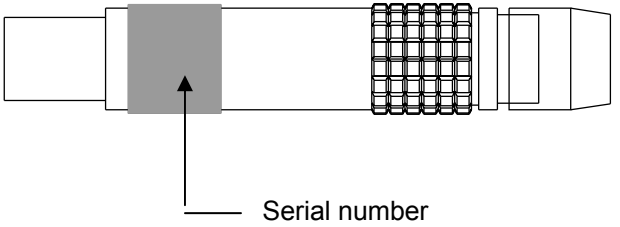
Pin 4 : RTD I+/ CJC Pt1000 +
Pin 5 : Memory GND
Pin 6 : Memory I/O

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	:	0% 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. α = 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° / 32°F to 1292°F

Accuracy

Repeatability	:	0.002°C (0.004°F)
Hysteresis[1)]	:	0.01°C @ 0°C (0.02°F@32°F)
Stability[2)]	:	typ. 0.016°C @ 0°C (0.029°F@32°F)
Stability[3)] (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 sec. $\tau(90\%)$ =26 sec. B: $\tau(50\%)$ = 18 sec. $\tau(90\%)$ = 44 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. All featuring speed, portability, accuracy and advanced documenting functions with JOFRACAL calibration software.

JOFRA Pressure Instruments
Convenient electronic systems ranging from -25 mbar to 1000 bar (0.4 to 15,000 psi) - multiple choices of pressure ranges, pumps and accuracies, fully temperature-compensated for problem-free and accurate field use.

JOFRA Signal Instruments
Process signal measurement and simulation for easy control loop calibration and measurement tasks - from handheld field instruments to laboratory reference level bench top instruments.

JOFRA / JF Marine Instruments
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.

M&G Pressure Testers
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).

Visit TRANSCAT.com >
sales@transcat.com | 800.828.1470

AMETEK®
TEST & CALIBRATION INSTRUMENTS

www.jofra.com

UK
AMETEK Calibration Instruments
Tel +44 (0)1243 833 302
jofra@ametek.co.uk

France
AMETEK S.A.S.
Tel +33 (0)1 30 68 89 40
general.lloyd-instruments@ametek.fr

Germany
AMETEK GmbH
Tel +49 (0)2159 9136 510
info.mct-de@ametek.de

Denmark
AMETEK Denmark
Tel +45 4816 8000
jofra@ametek.com

USA
AMETEK Mansfield & Green
Tel +1 (800) 527 9999
cal.info@ametek.com

India
AMETEK Instruments India Pvt Ltd.
Tel +91 22 2836 4750
jofra@ametek.com

Singapore
AMETEK Singapore Pte Ltd
Tel +65 6484 2388
jofra@ametek.com

China
AMETEK Inc. - Shanghai
Tel +86 21 5868 5111

AMETEK Inc. - Beijing
Tel +86 10 8526 2111

AMETEK Inc. - Guangzhou
Tel +86 20 8363 4768
jofra.sales@ametek.com.cn

Information in this document is subject to change without notice. ©2012 by AMETEK, Inc., www.ametek.com. All rights reserved.