

FACTORY CALIBRATION

N° FC2069-04

Rev 1

No. of page: 1 of 1
Date of issue: 08/06/04

Customer: Endress + Hauser S.A.
Order No.: 39/48662625/39179327
Order confirmation No.: 48662625-0040

Resistance thermometer model: TR45-BB5A1S2HJRH00
S.N.: FC2069-04
Class: A IEC 751
Tag: TIC 03251

Transmitter model: TMT182-A (Pt100 - 3 wires)
Range: 0 / 100°C
S.N.: 6403B3 04125

Procedures No.: QPA9805
Reference thermometer: TF8163-9540 validated by certificate of calibration SIT 04-009
78-00054 validated by certificate of calibration SIT 04-007
Immersion depth: 120mm

The temperature values are according to the ITS-90.

All the measurements between $-20^{\circ}\text{C} < t < 250^{\circ}\text{C}$ were made in a liquid stirred bath by comparison and at 0°C , at the melting ice-point.

The measurement between $250^{\circ}\text{C} < t < 650^{\circ}\text{C}$ were made in electric furnace by comparison.

Nominal calibration point	Standard reference temperature	Measured output	Temperature value	Deviation	Tolerance
(°C)	(°C)	(mA)	(°C)	(°C)	(±°C)
0	0.000	3.997	-0.02	-0.02	0.35
30	29.621	8.719	29.50	-0.13	0.41
60	59.654	13.546	59.66	0.01	0.47
100	99.862	19.985	99.90	0.04	0.55

The measurements have been made on the inset without thermowell

The total measurements uncertainty, evaluated at twice the standard deviation, is:

From -20°C to 250°C less than: $0,2^{\circ}\text{C}$

From 250°C to 500°C less than: ***

From 500°C to 650°C less than: ***

All measurements have been made in ambient controlled at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and R.U. $50\% \pm 10\%$

Thermolab inspector
C.Bini



FACTORY CALIBRATION

N° FC2070-04

Rev 1

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Date of issue: 08/06/04

Customer: Endress + Hauser S.A.
Order No.: 39/48662625/39179327
Order confirmation No.: 48662625-0070

Resistance thermometer model: TR10-AJA1CDSXR3000
S.N.: FC2070-04
Class: A IEC 751
Tag: TI 03252

Transmitter model: TMT182-A (Pt100 - 4 wires)
Range: 0 / 150°C
S.N.: 6502C9 04125

Procedures No.: QPA9805
Reference thermometer: 78-00055 validated by certificate of calibration SIT 04-011
78-00054 validated by certificate of calibration SIT 04-007
Immersion depth: 180mm

The temperature values are according to the ITS-90.

All the measurements between $-20^{\circ}\text{C} < t < 250^{\circ}\text{C}$ were made in a liquid stirred bath by comparison and at 0°C , at the melting ice-point.

The measurement between $250^{\circ}\text{C} < t < 650^{\circ}\text{C}$ were made in electric furnace by comparison.

Nominal calibration point	Standard reference temperature	Measured output	Temperature value	Deviation	Tolerance
(°C)	(°C)	(mA)	(°C)	(°C)	(±°C)
0	0.000	3.997	-0.02	-0.02	0.35
55	54.768	9.843	54.78	0.01	0.46
110	110.107	15.737	110.03	-0.08	0.57
150	149.543	19.939	149.43	-0.11	0.65

The measurements have been made on the inset without thermowell

The total measurements uncertainty, evaluated at twice the standard deviation, is:

From -20°C to 250°C less than: $0,2^{\circ}\text{C}$

From 250°C to 500°C less than: ***

From 500°C to 650°C less than: ***

All measurements have been made in ambient controlled at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and R.U. 50% $\pm 10\%$

Thermolab inspector
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FACTORY CALIBRATION

N° FC2071-04

Rev 1

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Customer: Endress + Hauser S.A.
Order No.: 39/48662625/39179327
Order confirmation No.: 48662625-0070

Resistance thermometer model: TR10-AJA1CDSXR3000
S.N.: FC2071-04
Class: A IEC 751
Tag: TI 03253

Transmitter model: TMT182-A (Pt100 - 4 wires)
Range: 0 / 150°C
S.N.: 6502D4 04125

Procedures No.: QPA9805
Reference thermometer: 78-00055 validated by certificate of calibration SIT 04-011
78-00054 validated by certificate of calibration SIT 04-007
Immersion depth: 180mm

The temperature values are according to the ITS-90.

All the measurements between $-20^{\circ}\text{C} < t < 250^{\circ}\text{C}$ were made in a liquid stirred bath by comparison and at 0°C , at the melting ice-point.

The measurement between $250^{\circ}\text{C} < t < 650^{\circ}\text{C}$ were made in electric furnace by comparison.

Nominal calibration point	Standard reference temperature	Measured output	Temperature value	Deviation	Tolerance
(°C)	(°C)	(mA)	(°C)	(°C)	(±°C)
0	0.000	3.983	-0.16	-0.16	0.35
55	54.768	9.830	54.66	-0.11	0.46
110	110.107	15.726	109.93	-0.18	0.57
150	149.543	19.922	149.27	-0.27	0.65

The measurements have been made on the inset without thermowell

The total measurements uncertainty, evaluated at twice the standard deviation, is:

From -20°C to 250°C less than: $0,2^{\circ}\text{C}$

From 250°C to 500°C less than: ***

From 500°C to 650°C less than: ***

All measurements have been made in ambient controlled at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and R.U. $50\% \pm 10\%$

Thermolab inspector
C.Bini



FACTORY CALIBRATION

N° FC2072-04
Rev 1

No. of page: 1 of 1
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Customer: Endress + Hauser S.A.
Order No.: 39/48662625/39179327
Order confirmation No.: 48662625-0100

Resistance thermometer model: TR10-AJA1CDSXR3000
S.N.: FC2072-04
Class: A IEC 751
Tag: TI 13201

Transmitter model: TMT182-A (Pt100 - 4 wires)
Range: -20 / 40°C
S.N.: 6502CA 04125

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Procedures No.: QPA9805
Reference thermometer: ST306-01 validated by certificate of calibration SIT 03-107
78-00054 validated by certificate of calibration SIT 04-007
Immersion depth: 180mm

The temperature values are according to the ITS-90.
All the measurements between -20°C < t < 250°C were made in a liquid stirred bath by comparison and at 0°C, at the melting ice-point.
The measurement between 250°C < t < 650°C were made in electric furnace by comparison.

Nominal calibration point	Standard reference temperature	Measured output	Temperature value	Deviation	Tolerance
(°C)	(°C)	(mA)	(°C)	(°C)	(±°C)
-20	-19.661	4.050	-19.81	-0.15	0.39
0	0.000	9.310	-0.09	-0.09	0.35
40	39.715	19.890	39.59	-0.13	0.43

The measurements have been made on the inset without thermowell
The total measurements uncertainty, evaluated at twice the standard deviation, is:
From -20°C to 250°C less than: 0,2°C
From 250°C to 500°C less than: ***
From 500°C to 650°C less than: ***
All measurements have been made in ambient controlled at 23°C ± 2°C and R.U. 50% ±10%

Thermolab inspector
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FACTORY CALIBRATION

N° FC2073-04

Rev 1

No. of page: 1 of 1
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Customer: Endress + Hauser S.A.
Order No.: 39/48662625/39179327
Order confirmation No.: 48662625-0100

Resistance thermometer model: TR10-AJA1CDSXR3000
S.N.: FC2073-04
Class: A IEC 751
Tag: TI 13202

Transmitter model: TMT182-A (Pt100 - 4 wires)
Range: -20 / 40°C
S.N.: 6502CE 04125

Procedures No.: QPA9805
Reference thermometer: ST306-01 validated by certificate of calibration SIT 03-107
78-00054 validated by certificate of calibration SIT 04-007
Immersion depth: 180mm

The temperature values are according to the ITS-90.

All the measurements between $-20^{\circ}\text{C} < t < 250^{\circ}\text{C}$ were made in a liquid stirred bath by comparison and at 0°C , at the melting ice-point.

The measurement between $250^{\circ}\text{C} < t < 650^{\circ}\text{C}$ were made in electric furnace by comparison.

Nominal calibration point	Standard reference temperature	Measured output	Temperature value	Deviation	Tolerance
(°C)	(°C)	(mA)	(°C)	(°C)	(±°C)
-20	-19.661	4.076	-19.72	-0.06	0.39
0	0.000	9.331	-0.01	-0.01	0.35
40	39.715	19.936	39.76	0.05	0.43

The measurements have been made on the inset without thermowell

The total measurements uncertainty, evaluated at twice the standard deviation, is:

From -20°C to 250°C less than: $0,2^{\circ}\text{C}$

From 250°C to 500°C less than: ***

From 500°C to 650°C less than: ***

All measurements have been made in ambient controlled at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and R.U. $50\% \pm 10\%$

Thermolab inspector
C.Bini.



FACTORY CALIBRATION

N° FC2074-04

Rev 1

No. of page: 1 of 1
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Customer: Endress + Hauser S.A.
Order No.: 39/48662625/39179327
Order confirmation No.: 48662625-0100

Resistance thermometer model: TR10-AJA1CDSXR3000
S.N.: FC2074-04
Class: A IEC 751
Tag: TI 13203

Transmitter model: TMT182-A (Pt100 - 4 wires)
Range: -20 / 40°C
S.N.: 6502D5 04125

Procedures No.: QPA9805
Reference thermometer: ST306-01 validated by certificate of calibration SIT 03-107
78-00054 validated by certificate of calibration SIT 04-007
Immersion depth: 180mm

The temperature values are according to the ITS-90.

All the measurements between $-20^{\circ}\text{C} < t < 250^{\circ}\text{C}$ were made in a liquid stirred bath by comparison and at 0°C , at the melting ice-point.

The measurement between $250^{\circ}\text{C} < t < 650^{\circ}\text{C}$ were made in electric furnace by comparison.

Nominal calibration point	Standard reference temperature	Measured output	Temperature value	Deviation	Tolerance
(°C)	(°C)	(mA)	(°C)	(°C)	(±°C)
-20	-19.649	4.058	-19.78	-0.13	0.39
0	0.000	9.306	-0.10	-0.10	0.35
40	39.704	19.899	39.62	-0.08	0.43

The measurements have been made on the inset without thermowell

The total measurements uncertainty, evaluated at twice the standard deviation, is:

From -20°C to 250°C less than: $0,2^{\circ}\text{C}$

From 250°C to 500°C less than: ***

From 500°C to 650°C less than: ***

All measurements have been made in ambient controlled at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and R.U. $50\% \pm 10\%$

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