VAISALA

Certificate report nr. H37-09500001

CALIBRATION CERTIFICATE

Instrument	Pressure, Humidity and Temperature Transmitter PTU307
Order code	PTU300-71F20A4BCPB1A0C1E4B0B0A
Serial number	C2610002
Manufacturer	Vaisala Oyj, Finland
Calibration date	07th December 2009
Test procedure	Doc210426-A

The analog outputs of the above instrument were measured by using working standards of the manufacturer. The outputs were forced by digital input signals to three output values. The observed values were determined by measuring the voltage over the output terminals. All results are traceable in terms of voltage to NIST.

Analog output channel 1 calibration results

Output forced to V	Observed output V	Difference V	Permissible difference V
0.500	0.49961	- 0.00039	±0.00125
2.500	2.49962	- 0.00038	±0.00125
4.500	4.49986	- 0.00014	±0.00125

Analog output channel 2 calibration results

Output forced to V	Observed output V	Difference V	Permissible difference V
0.500	0.49973	- 0.00027	±0.00125
2.500	2.4997	- 0.0003	±0.00125
4.500	4.49984	- 0.00016	±0.00125

Analog output channel 3 calibration results

Output forced to V	Observed output V	Difference V	Permissible difference V
0.500	0.49957	- 0.00043	±0.00125
2.500	2.49989	- 0.00011	±0.00125
4.500	4.50017	+ 0.00017	±0.00125

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
HP34970A	EM 11944	2009-07-02	K004-09S516

Uncertainty (95 % confidence level, k=2)
Voltage ±0.00069V
Ambient conditions / Humidity 22 ± 5%RH, Temperature 23 ± 2 °C, Pressure 1017 ± 20 hPa.

For Vaisala Oyj

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Trade Reg. No. 96.607

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MEASUREMENT STANDARDS LABORATORY

CERTIFICATE OF CALIBRATION no S02898

Customer	OREGON STATE UNIVERSITY Oceanic & Atmos. Sciences 130 Burt Hall Corvallis OR 97331 USA
Item	PTU Transmitter Pressure range from 500 to 1100 hPa abs., calibrated from 500 to 1100 hPa Temperature range from - 40 to + 60 °C, calibrated at + 23 °C Humidity range from 0 to 100 %RH, calibrated from 0 to 97 %RH at + 23 °C
Manufacturer	Vaisala Oyj
Model	PTU307
Serial number	C2610002
Instrument number	- -
Calibration performed	From December 11 to 16, 2009
Date	December 18, 2009
Signature	Ville Vuorio Calibration Engineer
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Documents attached	-
NOTES	Transmitter was repaired before calibration.

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Configuration

The transmitter's configuration and settings were read from the transmitter's memory. The calibration is valid only with configuration and settings given in table 1.

Table 1. Configuration and settings

Software	PTU300 / 4.02		
Serial number	C2610002	P1 offset	0
Batch number	C2430026	P1 meas per sec	1 s
Module 1	AOUT-1	P1 average	1 s
Module 2	BARO-1	Mtim	512
Ch3 serial num.	C2310011	Ta	ON
EXT factor	0,03	P1 serial num.	C1720013
Filter	OFF	P1 multi adj.	ON
Pressure	1013.25 hPa	P1 linear adj.	ON
P comp.	ON	P1 poly adj.	OFF
Fixed P comp.	OFF		

PRESSURE CALIBRATION

Description

The pressure calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj on December 11, 2009 by Ville Vuorio.
Before measurements the transmitter was allowed to stabilize to the conditions of the laboratory for at least 2 hours with + 15,0 VDC ± 0,3 VDC power supply switched on.
Before the calibration the Multi Point Correction (MPC) and Linear Correction (LC) -values for the transmitter were read from the transmitter's memory.
The pressure readings of the transmitter were compared to the values of the reference pressure transmitter in the range from 500 to 1100 hPa absolute pressure.
Pressure readings of the transmitter were read with the MPC -corrections ON and the LC -corrections OFF. The pressure reading P was then calculated using the old LC -corrections. New LC -corrections were calculated using the least squares method, input into the memory of the transmitter and the final results were calculated using these new corrections.
The pressure calibration is valid only with the LC -corrections switched ON.
Pressure values were read via serial port with resolution of 0,01 hPa.
The used pressure transmitting medium was air and/or nitrogen.

Reference

DHI PPC3 Pressure Controller/Calibrator, serial number 722, traceable to the National Institute of Standards and Technology (NIST, USA) via MSL and Centre for Metrology and Accreditation (MIKES, Finland).

Uncertainty

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EA Publication EA-4/02.

- The uncertainty is calculated from the uncertainties caused from the reference equipment, calibration process and unit under calibration (UUC) including resolution, stability (short term), linearity, repeatability, hysteresis and rounding of the final results.
- The measurement results and uncertainty may be interpolated between measurement points.

The measurement uncertainty represents the situation at the time and conditions of calibration. When using the UUC at different conditions and at different time the effect of the conditions and stability of the UUC shall be evaluated separately.

Corrections

The MPC and LC -corrections were read from the transmitter's memory.

Table 2. Multi Point Correction -values

MPC -corrections, P1	
Reading [hPa]	Correction [hPa]
499,61	- 0,10
599,05	- 0,07
698,53	- 0,06
800,93	- 0,06
900,39	- 0,05
999,85	- 0,03
1061,29	- 0,03
1099,32	- 0,03

Table 3. Old Linear Correction -values

Reading	LC -corrections, P1	
500	- 0,120	[hPa]
1100	- 0,048	[hPa]

Table 4. New Linear Correction -values

Reading	LC -corrections, P1	
500	- 0,129	[hPa]
1100	- 0,048	[hPa]

Measurement results

The reference and the reading values presented in table 5 are averages of ten independent observations.

Table 5. Measurement results, pressure

Reference [hPa]	Reading P [hPa]	Correction [hPa]	Reading P [hPa]	Correction [hPa]
1099,94	1099,95	- 0,01	1099,95	- 0,01
1050,02	1050,01	+ 0,01	1050,01	+ 0,01
1000,21	1000,21	0,00	1000,21	0,00
950,05	950,06	- 0,01	950,05	0,00
850,03	850,04	- 0,01	850,04	- 0,01
750,27	750,28	- 0,01	750,27	0,00
650,10	650,11	- 0,01	650,10	0,00
550,38	550,38	0,00	550,38	0,00
500,19	500,20	- 0,01	500,19	0,00
500,15	500,16	- 0,01	500,15	0,00
550,38	550,38	0,00	550,38	0,00
649,85	649,86	- 0,01	649,85	0,00
749,96	749,97	- 0,01	749,96	0,00
849,94	849,94	0,00	849,94	0,00
949,92	949,92	0,00	949,92	0,00
999,91	999,91	0,00	999,91	0,00
1049,87	1049,86	+ 0,01	1049,86	+ 0,01
1099,97	1099,97	0,00	1099,97	0,00

The correction shall be added algebraically to the reading.

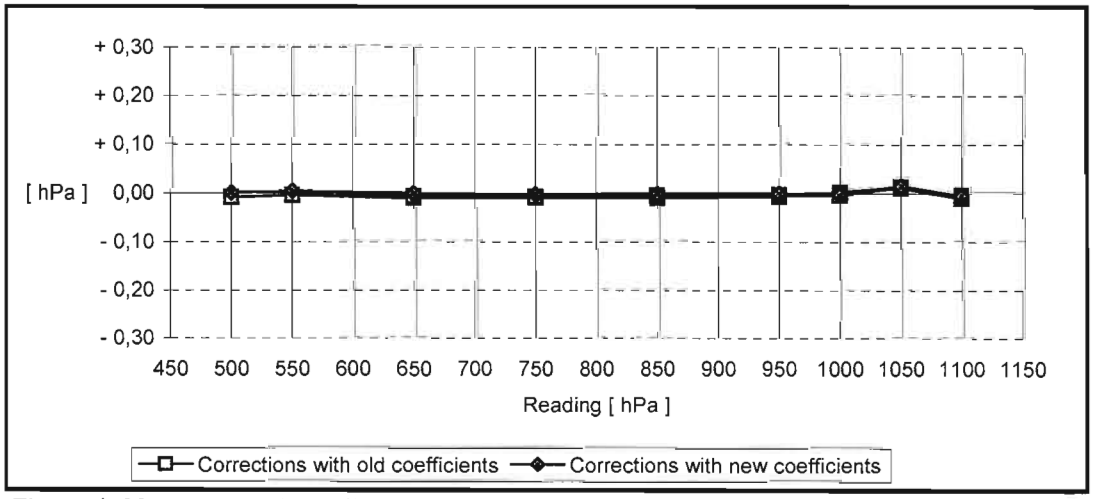

Figure 1. Measurement results

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Measurement Standards Laboratory
Ville Vuorio

Certificate number	***S02898***
Date	December 18, 2009
Item	PTU Transmitter
Manufacturer	Vaisala Oyj
Model	PTU307
Serial number	C2610002
Instrument number	- -

Final results

The reading value is an average of the readings of the pressure transducer installed in the transmitter.

Table 6. Final results, pressure

Reference [hPa]	Reading P [hPa]	Correction [hPa]	Reading P [hPa]	Correction [hPa]	Uncertainty [hPa]
1099,95	1099,96	- 0,01	1099,96	- 0,01	± 0,04
1049,94	1049,93	+ 0,01	1049,93	+ 0,01	± 0,04
1000,06	1000,06	0,00	1000,06	0,00	± 0,04
949,99	949,99	0,00	949,99	0,00	± 0,04
849,98	849,99	- 0,01	849,98	0,00	± 0,04
750,11	750,12	- 0,01	750,11	0,00	± 0,04
649,98	649,99	- 0,01	649,98	0,00	± 0,04
550,38	550,38	0,00	550,38	0,00	± 0,04
500,17	500,18	- 0,01	500,17	0,00	± 0,05

The correction shall be added algebraically to the reading.

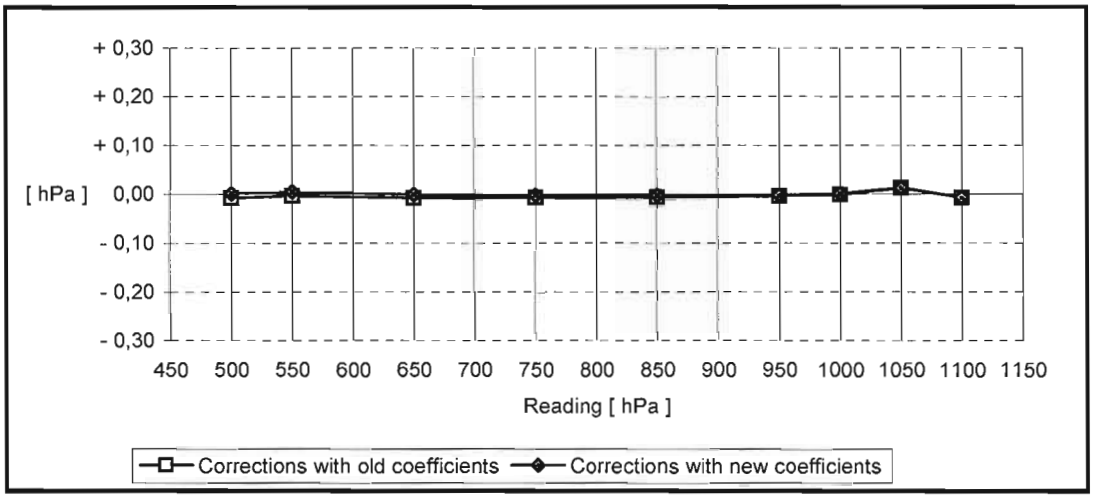

Figure 2. Final results

Conditions

Pressure	1026,4 hPa ± 0,5 hPa
Temperature	+ 22,8 °C ± 0,3 °C
Humidity	36 %RH ± 3 %RH

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Measurement Standards Laboratory
Ville Vuorio

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Model	PTU307
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Instrument number	- -

TEMPERATURE CALIBRATION

Description

The temperature calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj on December 16, 2009 by Ville Vuorio.
Before measurements the transmitter was allowed to stabilize to the conditions of the laboratory for at least 2 hours with + 15,0 VDC ± 0,3 VDC power supply switched on.
The temperature readings of the transmitter were compared to the values of the reference thermometer at + 23 °C in a calibration chamber.
Temperature values were read via serial port with resolution of 0,01 °C.
Calculated correction coefficients were input into the transmitter's memory.
Temperature values are given according to the International Temperature Scale of 1990, ITS-90.

Reference

Vaisala PTU200 PTU Transmitter, serial number U0350007, traceable to National Institute of Standards and Technology (NIST, USA) via MSL.

Uncertainty

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EA Publication EA-4/02.
- The uncertainty is calculated from the uncertainties caused from the reference equipment, calibration process and unit under calibration (UUC) including resolution, stability (short term), repeatability, self heating and rounding of the final results.
- The measurement results and uncertainty are representing the measurement point only.

The measurement uncertainty represents the situation at the time and conditions of calibration. When using the UUC at different conditions and at different time the effect of the conditions and stability of the UUC shall be evaluated separately.

Calculations

Offset- and gain coefficients were calculated from the measurement results. The coefficients are presented in table 7. The final results were calculated using equations 1 and 2.

T = T offset + T gain · T', where (1)
T' = Reading without offset- and gain corrections [°C]

Ta = Ta offset + Ta gain · Ta', where (2)
Ta' = Reading without offset- and gain corrections [°C]

Calculated coefficients were input into the transmitter's memory.

Table 7. Coefficients

	Coefficients	
T offset	- 3,900000100E-02	[°C]
T gain	1,000000000E+00	
Ta offset	- 4,800000190E-02	[°C]
Ta gain	1,000000000E+00	

Final temperature results

The reference and the reading values are averages of ten independent observations. The standard deviations are included in the calculated uncertainties.

Table 8. Final results, temperature, T

Reference [°C]	Reading T [°C]	Correction [°C]	Uncertainty [°C]
+ 22,62	+ 22,62	0,00	± 0,11

The correction shall be added algebraically to the reading.

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Table 9. Final results, temperature, Ta

Reference [°C]	Reading T [°C]	Correction [°C]	Uncertainty [°C]
+ 22,62	+ 22,62	0,00	± 0,10

Conditions	Temperature	+ 23,5 °C ± 0,3 °C
	Humidity	34 %RH ± 3 %RH

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Measurement Standards Laboratory
Ville Vuorio

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Item	PTU Transmitter
Manufacturer	Vaisala Oyj
Model	PTU307
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Instrument number	- -

HUMIDITY CALIBRATION

Description

The humidity calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj on December 16, 2009 by Ville Vuorio.
Before measurements the transmitter was allowed to stabilize to the conditions of the laboratory for at least 12 hours with + 15,0 VDC ± 0,3 VDC power supply switched on.
The humidity readings of the transmitter were compared to the reference humidity values at room temperature in Salt Solution Generator in the range from 0 to 97 %RH.
The humidity readings were read via serial port with resolution of 0,01 %RH.
Coefficients RHI_0, RHI_1, RHI_2, RHI_3 and RHI_4 were calculated from the observed humidity values and input into the transmitter's memory.
Measurements were made in Salt Solution Generator, where the temperature was + 22,74 °C ± 0,03 °C. The 0,1 %RH value was measured in dry nitrogen flow which temperature was + 22,74 °C ± 0,04 °C.

References

Salt Solution Generator UG 8195, traceability is based on the physical phenomenon in which the equilibrium relative humidity values associated with certain saturated salt solutions are known.
The operation principle and values of the Salt Solution Generator are based on Lewis Greenspan's research /1/ and on the international standard ASTM E 104 - 85 /2/.

Uncertainty

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EA Publication EA-4/02.

- The uncertainty is calculated from the uncertainties caused from the reference equipment, calibration process and unit under calibration (UUC) including resolution, stability (short term), linearity, repeatability, hysteresis and rounding of the final results.
- The measurement results and uncertainty may be interpolated between measurement points.

The measurement uncertainty represents the situation at the time and conditions of calibration. When using the UUC at different conditions and at different time the effect of the conditions and stability of the UUC shall be evaluated separately.

Calculations

RHI_0 to RHI_4 coefficients were calculated from the measurement results using the least squares method and input into the transmitter's memory. Complete description of calculations performed is available in the Measurement Standards Laboratory.
During the measurement only temperature T was recorded and the Ta value was calculated using temperature measurement results. With this method the exact humidity readings were calculated using equation 3.

$RH_{OUT} = RH \cdot P_{ws}(T) / P_{ws}(Ta)$, where (3)

RH = Humidity reading with offset- and gain corrections [%RH]
$P_{ws}(T)$ = Water vapor saturation pressure at temperature T
$P_{ws}(Ta)$ = Water vapor saturation pressure at temperature Ta

Table 10. Coefficients, humidity

Coefficient	Coefficients	
RHI_0	+ 1,070000050E-01	[%RH]
RHI_1	- 2,229202750E-02	
RHI_2	+ 5,389499660E-04	[$\%RH^{-1}$]
RHI_3	- 2,539999960E-06	[$\%RH^{-2}$]
RHI_4	0,000000000E+00	[$\%RH^{-3}$]
RH offset	0,000000000E+00	[%RH]
RH gain	1,000000000E+00	

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Certificate number	***S02898***
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Model	PTU307
Serial number	C2610002
Instrument number	- -

Measurement results

The measurements were made for ascending and descending humidity values. The probe was allowed to stabilize to each humidity for 10 minutes before the reference values were recorded and the humidity and temperature values were recorded ten times. The humidity values were then calculated using the equation 3 and coefficients given in table 10. The calculated humidity values in table 11 are averages of these values.

Table 11. Measurement results, humidity

Reference [%RH]	Reading RHout [%RH]	Correction [%RH]
0,10	0,10	+ 0,00
11,30	11,19	+ 0,11
32,92	32,68	+ 0,24
53,57	53,21	+ 0,36
75,38	75,14	+ 0,24
84,68	84,47	+ 0,21
97,43	97,21	+ 0,22
97,43	97,58	- 0,15
84,68	84,99	- 0,31
75,38	75,63	- 0,25
53,57	53,81	- 0,24
32,91	33,19	- 0,28
11,30	11,45	- 0,15
0,10	0,07	+ 0,03

The correction shall be added algebraically to the reading.

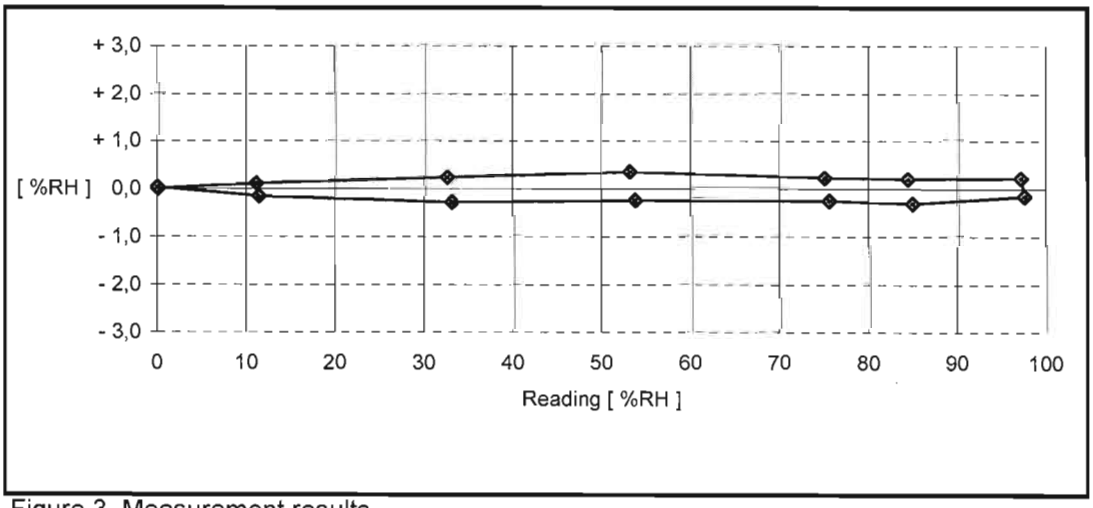

Figure 3. Measurement results

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Measurement Standards Laboratory
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Certificate number	***S02898***
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Manufacturer	Vaisala Oyj
Model	PTU307
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Final results

The final humidity calibration results are averages of measured values.

Table 12. Final results, humidity

Reference [%RH]	Reading RHout [%RH]	Correction [%RH]	Uncertainty [%RH]
0,1	0,1	0,0	± 0,8
11,3	11,3	0,0	± 1,0
32,9	32,9	0,0	± 0,8
53,6	53,5	+ 0,1	± 0,9
75,4	75,4	0,0	± 0,8
84,7	84,7	0,0	± 1,3
97,4	97,4	0,0	± 1,6

The correction shall be added algebraically to the reading.

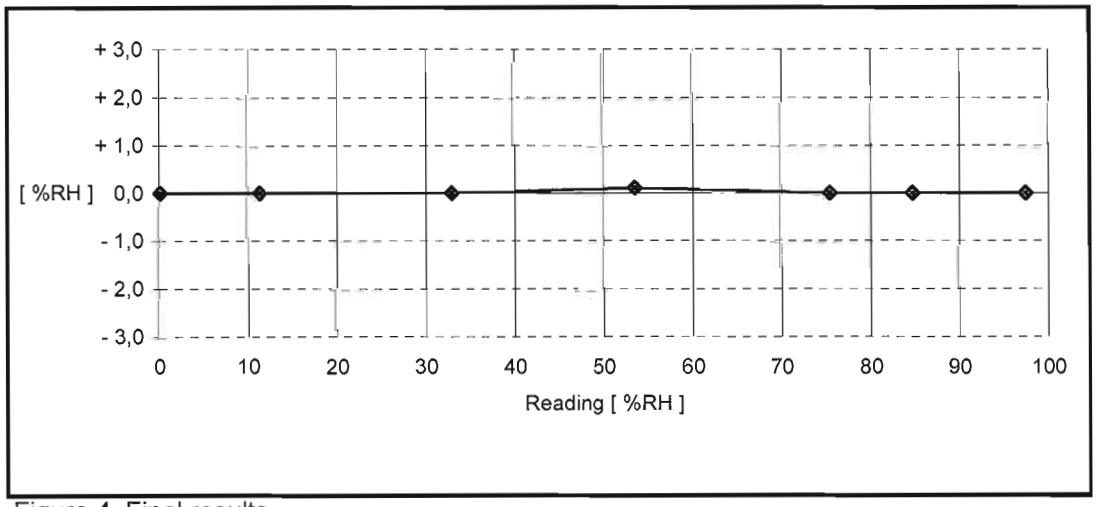

Figure 4. Final results

Conditions

Pressure	1020,1 °C ± 0,3 hPa
Temperature	+ 24,1 °C ± 0,3 °C
Humidity	33 %RH ± 3 %RH

REFERENCES

1. Humidity Fixed Points of Binary Saturated Aqueous Solutions. Lewis Greenspan. Journal of Research. Vol. 81A, No. 1, January - February 1977

2. ASTM E 104-85. Standard practice for maintaining constant relative humidity by means of aqueous solutions. ASTM. American Society for Testing and Materials. 1985

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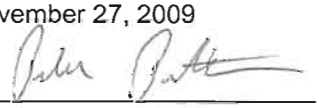
MEASUREMENT STANDARDS LABORATORY

CERTIFICATE OF CALIBRATION no S02789

Customer	OREGON STATE UNIVERSITY Oceanic & Atmos. Sciences 130 Burt Hall Corvallis OR 97331 USA
Item	PTU Transmitter Pressure range from 500 to 1100 hPa abs., calibrated from 500 to 1100 hPa Temperature range from - 40 to + 60 °C, calibrated at + 23 °C Humidity range from 0 to 100 %RH, not calibrated
Manufacturer	Vaisala Oyj
Model	PTU307
Serial number	C2610002
Instrument number	- -
Calibration performed	From November 19 to 25, 2009
Date	November 27, 2009
Signature	 Pekka Puttonen Calibration Engineer
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Documents attached	-
NOTES	Before repair Humidity not measured due to broken Humicap sensor

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Measurement Standards Laboratory
Pekka Puttonen

Certificate number	**S02789**
Date	November 27, 2009
Item	PTU Transmitter
Manufacturer	Vaisala Oyj
Model	PTU307
Serial number	C2610002
Instrument number	- -

Configuration

The transmitter's configuration and settings were read from the transmitter's memory. The calibration is valid only with configuration and settings given in table 1.

Table 1. Configuration and settings

Software	PTU300 / 4.02		
Serial number	C2610002	P1 offset	0
Batch number	C2430026	P1 meas per sec	1 s
Module 1	AOUT-1	P1 average	1 s
Module 2	BARO-1	Mtim	512
Ch3 serial num.	C2310011	Ta	ON
EXT factor	0,03	P1 serial num.	C1720013
Filter	OFF	P1 multi adj.	ON
Pressure	1013.25 hPa	P1 linear adj.	ON
P comp.	ON	P1 poly adj.	OFF
Fixed P comp.	OFF		

PRESSURE CALIBRATION

Description

The pressure calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj on November 19, 2009 by Pekka Puttonen.
Before measurements the transmitter was allowed to stabilize to the conditions of the laboratory for at least 2 hours with + 15,0 VDC ± 0,3 VDC power supply switched on.
Before the calibration the Multi Point Correction (MPC) and Linear Correction (LC) -values for the transmitter were read from the transmitter's memory.
The pressure readings of the transmitter were compared to the values of the reference pressure transmitter in the range from 500 to 1100 hPa absolute pressure.
Pressure readings of the transmitter were read with the MPC -corrections ON and the LC -corrections OFF. The pressure reading P was then calculated using the old LC -corrections.
The pressure calibration is valid only with the LC -corrections switched ON.
Pressure values were read via serial port with resolution of 0,01 hPa.
The used pressure transmitting medium was air and/or nitrogen.

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- The measurement results and uncertainty may be interpolated between measurement points.

The measurement uncertainty represents the situation at the time and conditions of calibration. When using the UUC at different conditions and at different time the effect of the conditions and stability of the UUC shall be evaluated separately.

Corrections

The MPC and LC -corrections were read from the transmitter's memory.

Table 2. Multi Point Correction -values

MPC -corrections, P1	
Reading [hPa]	Correction [hPa]
499,61	- 0,10
599,05	- 0,07
698,53	- 0,06
800,93	- 0,06
900,39	- 0,05
999,85	- 0,03
1061,29	- 0,03
1099,32	- 0,03

Table 3. Linear Correction -values

Reading	LC -corrections, P1	
500	- 0,120	[hPa]
1100	- 0,048	[hPa]

Measurement results

The reference and the reading values presented in table 4 are averages of ten independent observations.

Table 4. Measurement results, pressure

Reference [hPa]	Reading P [hPa]	Correction [hPa]
1099,83	1099,85	- 0,02
1049,96	1049,95	+ 0,01
1000,07	1000,07	0,00
950,16	950,16	0,00
850,38	850,37	+ 0,01
750,49	750,48	+ 0,01
650,66	650,64	+ 0,02
550,79	550,77	+ 0,02
500,66	500,64	+ 0,02
500,57	500,55	+ 0,02
550,44	550,42	+ 0,02
650,32	650,31	+ 0,01
750,20	750,20	0,00
850,14	850,14	0,00
949,93	949,93	0,00
999,66	999,67	- 0,01
1049,84	1049,84	0,00
1099,79	1099,81	- 0,02

The correction shall be added algebraically to the reading.

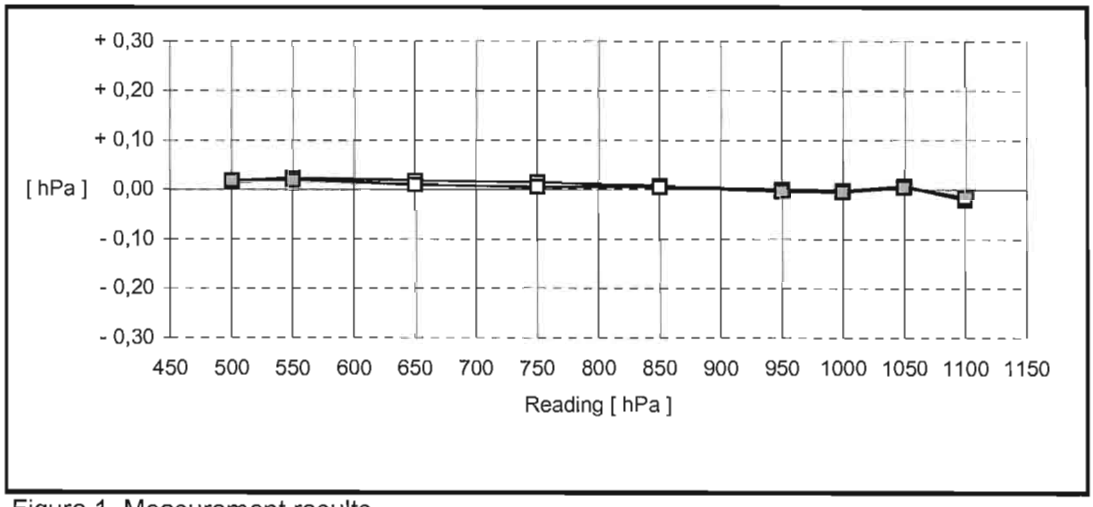

Figure 1. Measurement results

Final results

The reading value is an average of the readings of the pressure transducer installed in the transmitter.

Table 5. Final results, pressure

Reference [hPa]	Reading P [hPa]	Correction [hPa]	Uncertainty [hPa]
1099,81	1099,83	- 0,02	± 0,04
1049,90	1049,89	+ 0,01	± 0,04
999,87	999,87	0,00	± 0,04
950,04	950,04	0,00	± 0,04
850,26	850,25	+ 0,01	± 0,04
750,35	750,34	+ 0,01	± 0,04
650,49	650,48	+ 0,01	± 0,04
550,62	550,60	+ 0,02	± 0,04
500,62	500,60	+ 0,02	± 0,04

The correction shall be added algebraically to the reading.

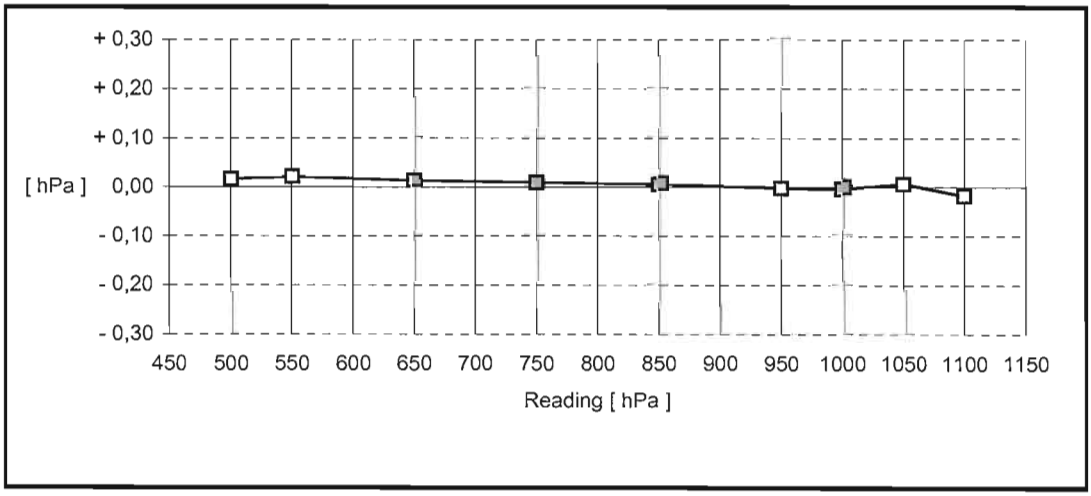

Figure 2. Final results

Conditions

Pressure	1002,9 hPa ± 1,3 hPa
Temperature	+ 22,8 °C ± 0,3 °C
Humidity	37 %RH ± 3 %RH

Measurement Standards Laboratory
Pekka Puttonen

Certificate number	**S02789**
Date	November 27, 2009
Item	PTU Transmitter
Manufacturer	Vaisala Oyj
Model	PTU307
Serial number	C2610002
Instrument number	- -

TEMPERATURE CALIBRATION

Description

The temperature calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj on November 25, 2009 by Antti Leivonen.
Before measurements the transmitter was allowed to stabilize to the conditions of the laboratory for at least 2 hours with + 15,0 VDC ± 0,3 VDC power supply switched on.
The temperature readings of the transmitter were compared to the values of the reference thermometer at + 23 °C in a calibration chamber.
Temperature values were read via serial port with resolution of 0,01 °C.
Temperature values are given according to the International Temperature Scale of 1990, ITS-90.

Reference

Vaisala PTU200 PTU Transmitter, serial number U0350007, traceable to National Institute of Standards and Technology (NIST, USA) via MSL.

Uncertainty

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EA Publication EA-4/02.
- The uncertainty is calculated from the uncertainties caused from the reference equipment, calibration process and unit under calibration (UUC) including resolution, stability (short term), repeatability, self heating and rounding of the final results.
- The measurement results and uncertainty are representing the measurement point only. The measurement uncertainty represents the situation at the time and conditions of calibration. When using the UUC at different conditions and at different time the effect of the conditions and stability of the UUC shall be evaluated separately.

Calculations

Offset- and gain coefficients were read from the transmitters memory. The coefficients are presented in table 6. The final results were calculated using equations 1 and 2.

T = T offset + T gain · T', where (1)
T' = Reading without offset- and gain corrections [°C]

Ta = Ta offset + Ta gain · Ta', where (2)
Ta' = Reading without offset- and gain corrections [°C]

Table 6. Coefficients

	Coefficients	
T offset	-0,0387299995	[°C]
T gain	1,0000000000	
Ta offset	-0,0685999966	[°C]
Ta gain	1,0000000000	

Final temperature results

The reference and the reading values are averages of ten independent observations. The standard deviations are included in the calculated uncertainties.

Table 7. Final results, temperature, T

Reference [°C]	Reading T [°C]	Correction [°C]	Uncertainty [°C]
+ 22,50	+ 22,50	0,00	± 0,09

The correction shall be added algebraically to the reading.

Table 8. Final results, temperature, Ta

Reference [°C]	Reading T [°C]	Correction [°C]	Uncertainty [°C]
+ 22,50	+ 22,51	- 0,01	± 0,09

Conditions

Temperature	+ 23,4 °C ± 0,3 °C
Humidity	37 %RH ± 3 %RH