VAISALA

Service Report

Date
05-SEP-2011

Handled by
Sepe, Luigi

Seller's reference
37850

Forwarding agent
UPS Courier

Buyer's reference
SM#10210

Consignee
Oregon State University
Oceanic & Atmos. Sciences
130 Burt Hall
Corvallis OR 97331
United States

Invoicing address(if not consignee)
Vaisala Inc.
Boulder Operations
194 South Taylor Ave.
Louisville CO 80027
United States

Pos	Description	Serial number - Lot Number	Quantity
30816	PTU300 Pressure, Humidity and Temperature Transmitter --CUSTOMER'S DESCRIPTION OF FAILURE-- Unit has been giving suspect humidity readings. --PROBLEM(S) FOUND -- Humidity sensor open circuit. --ACTION(S) TAKEN-- Humidity sensor replaced, operation tested, adjustments made and unit was calibrated. Calibration certificate numbers H37-11350004 (analog output), H35-11350018 (after adjustment RH&T) and H53-11350057 (after adjustment P) issued.	C2610002	1

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Certificate report no. H37-11350004

CALIBRATION CERTIFICATE

Instrument	Pressure, Humidity and Temperature Transmitter PTU307
Order code	PTU300-71F20A4BCPB1A0C1E4B0B0A
Serial number	C2610002
Manufacturer	Vaisala Oyj, Finland
Calibration date	30th August 2011

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	0.49969	- 0.00031	±0.0025
2.500	2.49998	- 0.00002	±0.0025
4.500	4.5005	+ 0.0005	±0.0025

Analog output channel 2 calibration results

Output forced to V	Observed output V	Difference V	Permissible difference V
0.500	0.49976	- 0.00024	±0.0025
2.500	2.49999	- 0.00001	±0.0025
4.500	4.50041	+ 0.00041	±0.0025

Analog output channel 3 calibration results

Output forced to V	Observed output V	Difference V	Permissible difference V
0.500	0.49999	- 0.00001	±0.0025
2.500	2.50015	+ 0.00015	±0.0025
4.500	4.50006	+ 0.00006	±0.0025

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
HP34970A	EM 13666	2011-02-11	K004-11S050

Uncertainty (95 % confidence level, k=2)
Voltage ±0.00069V
Ambient conditions / Humidity 48 ± 5%RH, Temperature 24 ± 2 °C, Pressure 998 ± 20 hPa.

Technician

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Certificate report no. H35-11350018

CALIBRATION CERTIFICATE

Instrument	Pressure, Humidity and Temperature Transmitter PTU307
Order code	PTU300 71F20A4BCPB1A0C1E4B0B0A
Serial number	C2610002
Manufacturer	Vaisala Oyj, Finland
Calibration date	1st September 2011

The above instrument was calibrated by comparing the readings of the instrument to working standards of the manufacturer. The reference humidity was calculated from dewpoint temperature and temperature readings with the exception of the driest condition that was measured as relative humidity. Dewpoint temperature was measured with a 373 LHX dewpoint meter. Temperature and relative humidity were measured with two factory working standards. At the time of shipment, the instrument described above met its operating specifications.

The 373 LHX dewpoint meter has been calibrated at National Institute of Standards and Technology (NIST). The temperature readings of the factory working standards have been calibrated at Vaisala Measurement Standards Laboratory (MSL) by using MSL working standards traceable to NIST. The relative humidity readings of the factory working standards have been calibrated at the Vaisala factory by using a 373 LHX dewpoint meter. The temperature calibration at MSL has been accredited by the FINAS according to the ISO/IEC 17025.

Humidity calibration results

Reference humidity %RH	Reference temperature °C	Observed humidity %RH	Observed probe temperature °C	Additional probe temperature °C	Humidity difference %RH	Permissible difference %RH
+ 0.3	+ 21.95	+ 0.1	-	+ 21.97	- 0.2	±1.0
+ 12.8	+ 21.93	+ 13.1	-	+ 21.94	+ 0.3	± 1.0
+ 33.3	+ 21.93	+ 33.7	-	+ 21.93	+ 0.4	± 1.0
+ 54.5	+ 21.92	+ 54.7	-	+ 21.92	+ 0.2	± 1.0
+ 75.5	+ 21.91	+ 76.0	-	+ 21.88	+ 0.5	± 1.0
+ 95.3	+ 21.91	+ 96.3	-	+ 21.89	+ 1.0	± 1.7

Temperature calibration results

Reference temperature °C	Observed probe temperature °C	Temperature difference °C		Additional probe temperature °C	Temperature difference °C	Permissible difference °C
+ 21.91	-	-		+ 21.88	- 0.03	± 0.10

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
MBW 373 LHX	08-1204	2011-05-13	M-11H032
HMT337 / T	E0840006	2011-04-02	K008-U00907
HMT337 / T	E0840007	2011-04-02	K008-U00908
HMT337 / RH	E0840006	2011-08-24	H33-11351001
HMT337 / RH	E0840007	2011-08-24	H33-11351002

Uncertainties (95 % confidence level, k=2)
Humidity ± 0.6%RH @ 0...40%RH, ± 1.0%RH @ 40...97%RH
Temperature ± 0.10 °C.
Ambient conditions / Humidity 46 ± 5%RH, Temperature + 22 ± 1 °C, Pressure 1004 ± 1 hPa.

Olli-Matti Kekäläinen
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Certificate report no. H53-11350057

CALIBRATION CERTIFICATE

After adjustment

Instrument	PTU300(500-1100) Digital Barometer
Serial number	C2610002
Manufacturer	Vaisala Oyj, Finland
Calibration date	3rd September 2011

The above instrument was calibrated by comparing the readings of the instrument to the factory working standard of Vaisala.

The pressure readings of the factory working standard have been calibrated at an ISO/IEC 17025 accredited calibration laboratory (FINAS), Vaisala Measurement Standards Laboratory (MSL), by using MSL working standards traceable to NIST.

Calibration results, digital output

Reference hPa	Observed hPa	Correction* hPa	Acceptance limit hPa
510.03	510.04	-0.01	± 0.05
550.07	550.07	0.00	± 0.05
650.05	650.06	-0.01	± 0.05
750.05	750.06	-0.01	± 0.05
850.02	850.03	-0.01	± 0.05
950.01	950.02	-0.01	± 0.05
1000.02	1000.03	-0.01	± 0.05
1050.02	1050.02	0.00	± 0.05
1098.00	1098.00	0.00	± 0.05

Calibration results, analog output

Reference	Observed		Correction*	Acceptance limit
hPa	V	hPa	hPa	hPa
510.0	0.0833	510.0	0.0	± 0.3
550.1	0.4175	550.1	0.0	± 0.3
650.1	1.2508	650.1	0.0	± 0.3
750.1	2.0842	750.1	0.0	± 0.3
850.0	2.9167	850.0	0.0	± 0.3
950.0	3.7500	950.0	0.0	± 0.3
1000.0	4.1667	1000.0	0.0	± 0.3
1050.0	4.5833	1050.0	0.0	± 0.3
1098.0	4.9833	1098.0	0.0	± 0.3

*To obtain the true pressure, add the correction to the barometer reading.
Interpolated corrections may be used at intermediate readings of the scale of the barometer.

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
PPC4	476	2011-04-08	K008-U00991
HP34970A	MY44006286	2011-03-03	K004-11S096

Uncertainties (95 % confidence level, k=2)

Pressure ± 0.07 hPa Analog ± 0.0007 V

Ambient Conditions

Humidity 49 %RH ± 5 %RH Temperature 22 °C ± 1 °C Pressure 1012 hPa ± 1 hPa

Technician

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