

# CALIBRATION CERTIFICATE FOR CPT PROBE 5778

Probe No 5778  
 Date of Calibration 2022-09-27  
 Calibrated by Alexander Dahlin.....  
 Run No 2334  
 Test Class: ISO 1

<b>Point Resistance</b>	<b>Tip Area 10cm<sup>2</sup></b>	
Maximum Load	50	MPa
Range	50	MPa
Scaling Factor	<b>1300</b>	
Resolution	0,5869	kPa
Area factor (a)	0,871	
Zero	7,197	MPa

## ERRORS

Max. Temperature effect when not loaded 22,288 kPa  
 Temperature range 5 –40 deg. Celsius.

<b>Local Friction</b>	<b>Sleeve Area 150cm<sup>2</sup></b>	
Maximum Load	0,5	MPa
Range	0,5	MPa
Scaling Factor	<b>4230</b>	
Resolution	0,009	kPa
Area factor (b)	0,001	
Zero	111,14	kPa

## ERRORS

Max. Temperature effect when not loaded 0,297 kPa  
 Temperature range 5 –40 deg. Celsius.

## **Pore Pressure**

Maximum Load	2,5	MPa
Range	2,5	MPa
Scaling Factor	<b>3478</b>	
Resolution	0,0219	kPa
Zero	269,17	kPa

## ERRORS

Max. Temperature effect when not loaded 2,718 kPa  
 Temperature range 5 –40 deg. Celsius.

## **Tilt Angle**

Scaling Factor	<b>0,94</b>	
Range	0 - 40	Deg.

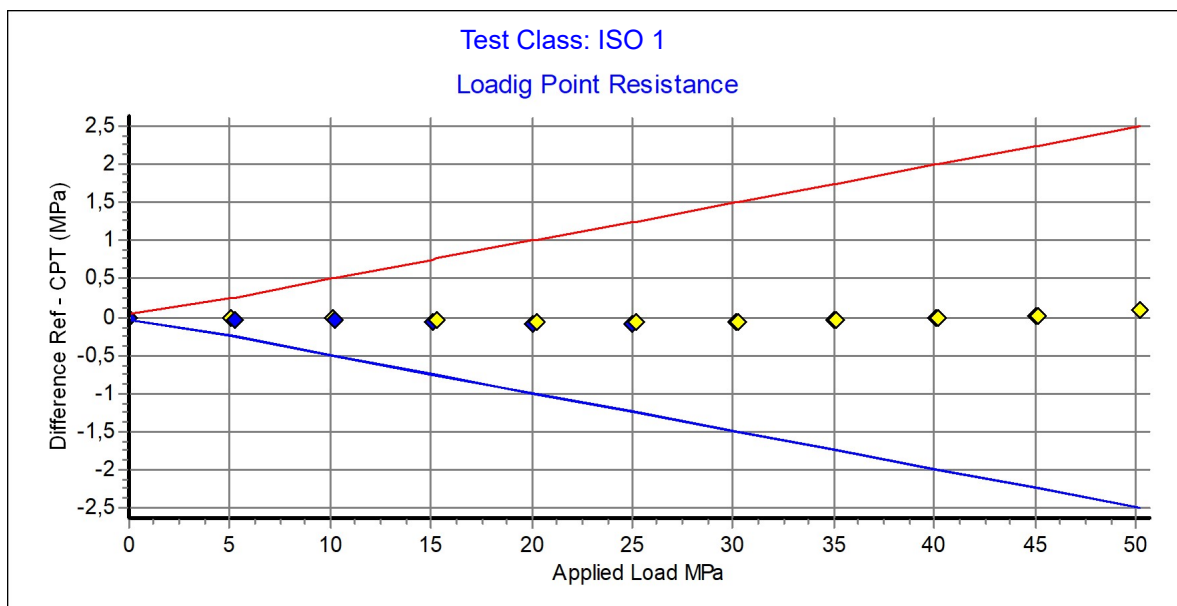
## **Backup memory**



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Probe No: **5778**  
 Date of Calibration: **2022-09-27**  
 Calibration Run No: **2334**  
 Calibrated by: **Alexander Dahlin**  
**Scaling Factor: 1300**  
 Reference Cell: **58604**

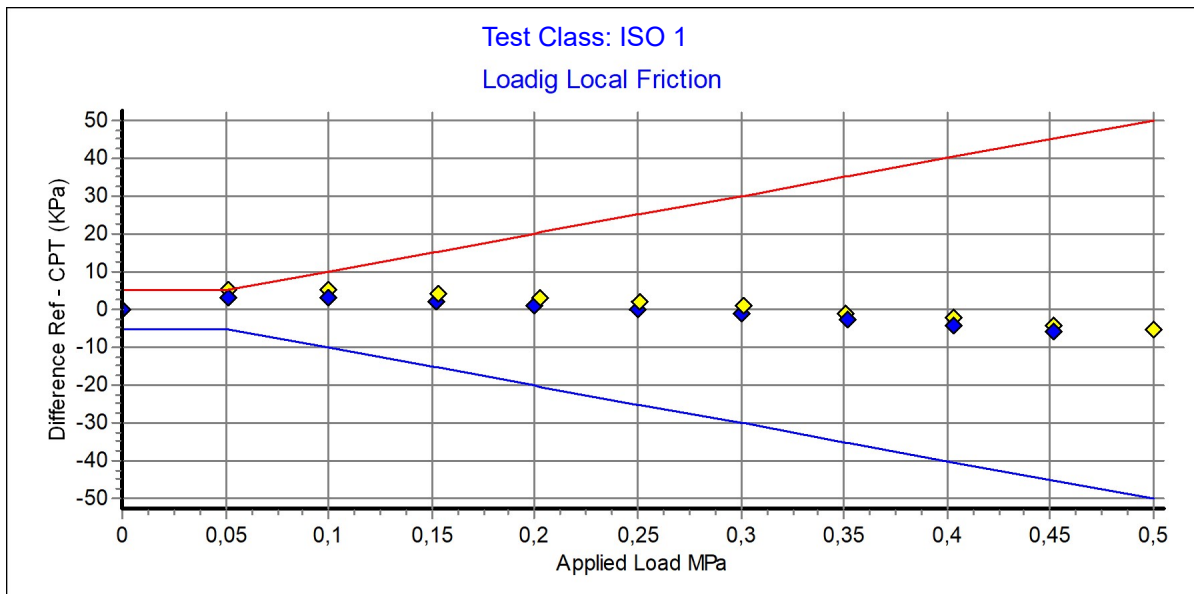
Applied Load MPa	PointRes. MPa	Difference MPa	Accuracy %/MV	Friction MPa	PorePress MPa
0,000	0,000	0,000	0,000	0,000	0,000
5,041	5,060	-0,019	-0,376	0,000	0,000
10,159	10,167	-0,008	-0,078	0,000	-0,001
15,311	15,345	-0,034	-0,222	0,000	-0,002
20,242	20,300	-0,058	-0,286	0,000	-0,002
25,174	25,235	-0,061	-0,242	0,000	-0,003
30,210	30,264	-0,054	-0,178	0,000	-0,004
35,090	35,132	-0,042	-0,119	0,001	-0,004
40,141	40,157	-0,016	-0,039	0,001	-0,005
45,170	45,144	0,026	0,057	0,002	-0,005
50,193	50,113	0,080	0,159	0,002	-0,006
45,017	44,999	0,018	0,040	0,001	-0,005
40,028	40,049	-0,021	-0,052	0,000	-0,004
35,010	35,060	-0,050	-0,142	0,000	-0,003
30,192	30,260	-0,068	-0,225	0,000	-0,003
25,037	25,122	-0,085	-0,339	0,000	-0,002
20,023	20,105	-0,082	-0,409	0,000	-0,001
15,088	15,156	-0,068	-0,450	0,000	0,000
10,181	10,219	-0,038	-0,373	0,000	0,000
5,230	5,267	-0,037	-0,707	0,000	0,000
0,003	0,003	0,000	0,000	0,000	0,000



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 Calibrated by: **Alexander Dahlin**  
**Scaling Factor: 4230**  
 Reference Cell: **50598**

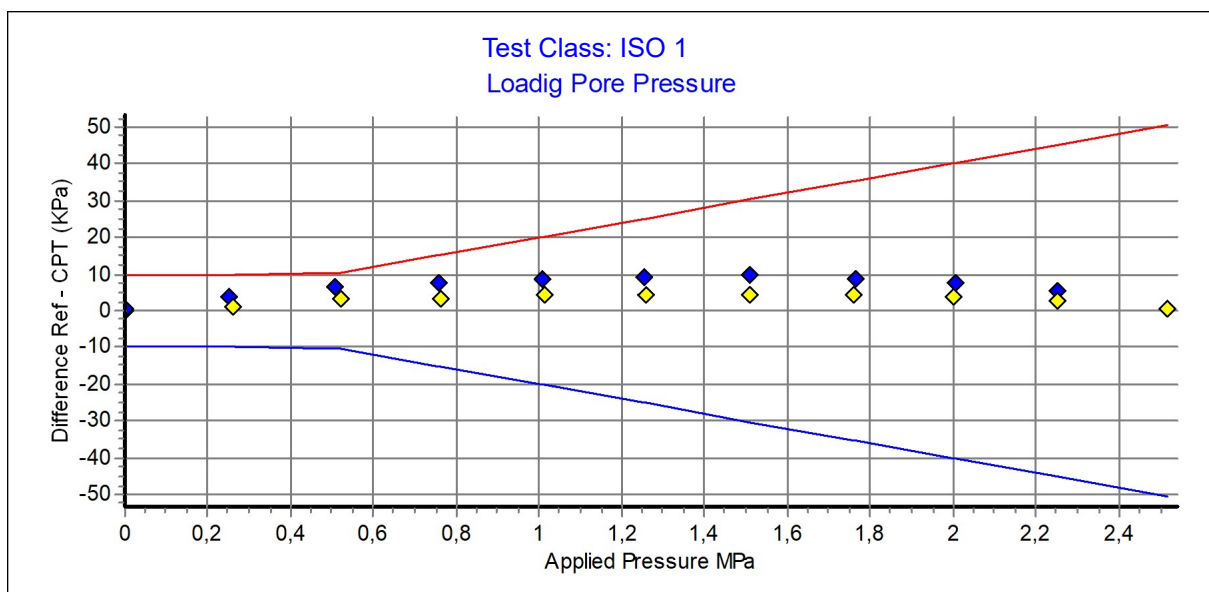
Ref MPa	Friction MPa	Difference KPa	Accuracy %/MV	PointRes. MPa	PorePress MPa
0,000	0,000	0,000	0,000	0,000	0,000
0,051	0,046	5,083	0,000	0,021	0,000
0,100	0,095	5,096	0,000	0,021	0,000
0,153	0,149	4,260	0,000	0,022	0,000
0,203	0,200	3,233	1,613	0,023	0,000
0,251	0,248	2,325	0,934	0,024	0,000
0,301	0,300	0,979	0,326	0,025	0,000
0,351	0,352	-0,917	-0,260	0,027	0,000
0,403	0,405	-2,235	-0,551	0,028	0,000
0,452	0,456	-4,017	-0,880	0,028	0,000
0,500	0,505	-5,374	-1,062	0,029	0,000
0,452	0,457	-5,527	-1,207	0,025	0,000
0,403	0,407	-4,231	-1,038	0,024	0,000
0,352	0,354	-2,712	-0,764	0,021	0,000
0,300	0,301	-1,295	-0,429	0,019	0,000
0,250	0,250	-0,084	-0,033	0,018	0,000
0,200	0,199	1,051	0,000	0,017	0,000
0,152	0,150	1,886	0,000	0,016	0,000
0,100	0,097	2,951	0,000	0,015	0,000
0,051	0,048	3,412	0,000	0,014	0,000
0,000	0,000	0,022	0,000	0,000	0,000



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**Scaling Factor: 3478**  
 Reference Cell: 153810109

Appl. Press MPa	PorePress MPa	Difference KPa	Accuracy %/MV	PointRes. MPa	Friction MPa	Area Factor A = PR/PP	Area Factor B = LF/PP
0,000	0,000	0,100	0,000	0,000	0,000	0,000	
0,259	0,258	0,875	0,338	0,233	0,000	0,903	0,000
0,522	0,519	3,115	0,600	0,458	0,001	0,882	0,001
0,763	0,760	3,215	0,422	0,668	0,001	0,878	0,001
1,013	1,009	4,110	0,407	0,883	0,001	0,875	0,001
1,257	1,253	4,507	0,359	1,093	0,002	0,872	0,001
1,511	1,506	4,321	0,286	1,312	0,002	0,871	0,001
1,761	1,756	4,238	0,241	1,524	0,002	0,867	0,001
2,003	2,000	3,582	0,179	1,731	0,003	0,865	0,001
2,252	2,249	2,554	0,113	1,945	0,003	0,864	0,001
2,517	2,516	0,429	0,017	2,173	0,003	0,863	0,001
2,251	2,246	5,204	0,231	1,946	0,002	0,866	0,000
2,007	2,000	7,374	0,368	1,737	0,002	0,868	0,001
1,763	1,754	8,909	0,507	1,529	0,002	0,871	0,001
1,509	1,499	9,574	0,638	1,313	0,001	0,875	0,000
1,254	1,245	9,403	0,755	1,097	0,001	0,881	0,000
1,008	0,999	8,655	0,866	0,884	0,000	0,884	0,000
0,759	0,752	7,397	0,983	0,666	0,000	0,885	0,000
0,507	0,500	6,235	1,245	0,444	0,000	0,888	0,000
0,252	0,248	3,540	1,424	0,220	0,000	0,887	0,000
0,000	0,000	0,740	0,000	0,001	0,000	0,000	



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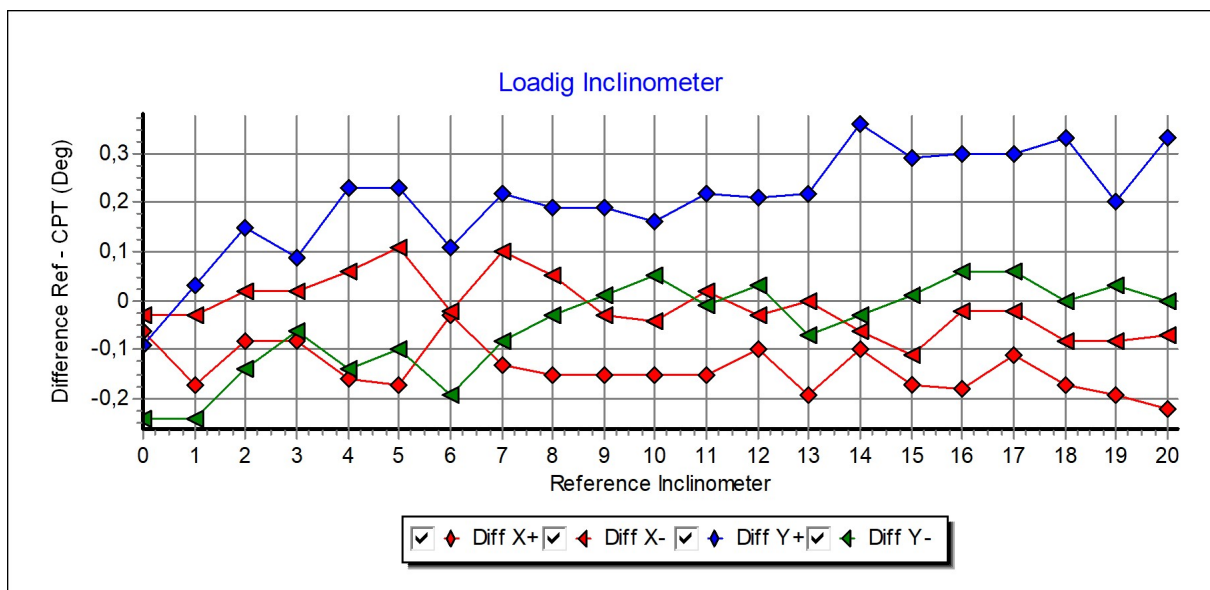
# Calibration Certificate.

# Loading Inclinometer

Göteborg:2022-09-27

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**Scaling Factor: 0,94**

Appl. Incin. Deg	X+ Deg	X- Deg	Y+ Deg	Y- Deg	Diff X+ Deg	Diff X- Deg	Diff Y+ Deg	Diff Y- Deg
0,00	0,06	0,03	0,09	0,24	-0,06	-0,03	-0,09	-0,24
1,00	1,17	1,03	0,97	1,24	-0,17	-0,03	0,03	-0,24
2,00	2,08	1,98	1,85	2,14	-0,08	0,02	0,15	-0,14
3,00	3,08	2,98	2,91	3,06	-0,08	0,02	0,09	-0,06
4,00	4,16	3,94	3,77	4,14	-0,16	0,06	0,23	-0,14
5,00	5,17	4,89	4,77	5,10	-0,17	0,11	0,23	-0,10
6,00	6,03	6,02	5,89	6,19	-0,03	-0,02	0,11	-0,19
7,00	7,13	6,90	6,78	7,08	-0,13	0,10	0,22	-0,08
8,00	8,15	7,95	7,81	8,03	-0,15	0,05	0,19	-0,03
9,00	9,15	9,03	8,81	8,99	-0,15	-0,03	0,19	0,01
10,00	10,15	10,04	9,84	9,95	-0,15	-0,04	0,16	0,05
11,00	11,15	10,98	10,78	11,01	-0,15	0,02	0,22	-0,01
12,00	12,10	12,03	11,79	11,97	-0,10	-0,03	0,21	0,03
13,00	13,19	13,00	12,78	13,07	-0,19	0,00	0,22	-0,07
14,00	14,10	14,06	13,64	14,03	-0,10	-0,06	0,36	-0,03
15,00	15,17	15,11	14,71	14,99	-0,17	-0,11	0,29	0,01
16,00	16,18	16,02	15,70	15,94	-0,18	-0,02	0,30	0,06
17,00	17,11	17,02	16,70	16,94	-0,11	-0,02	0,30	0,06
18,00	18,17	18,08	17,67	18,00	-0,17	-0,08	0,33	0,00
19,00	19,19	19,08	18,80	18,97	-0,19	-0,08	0,20	0,03
20,00	20,22	20,07	19,67	20,00	-0,22	-0,07	0,33	0,00

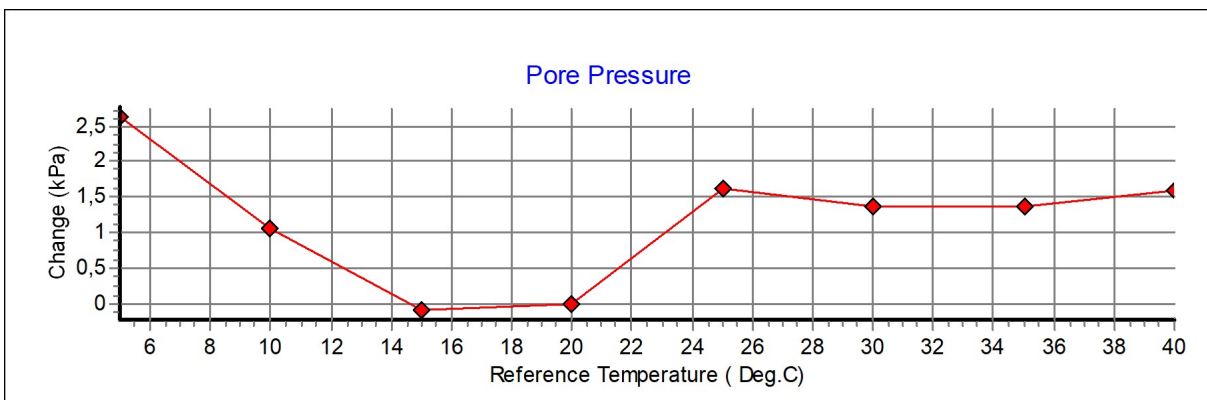
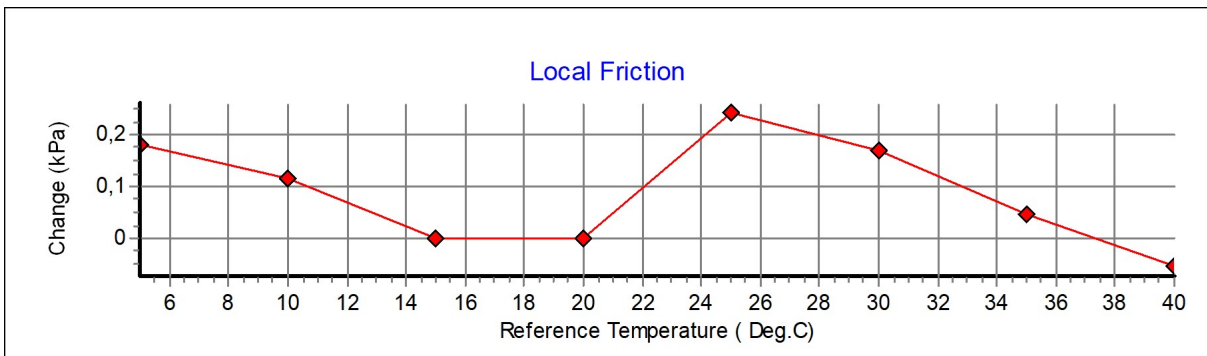
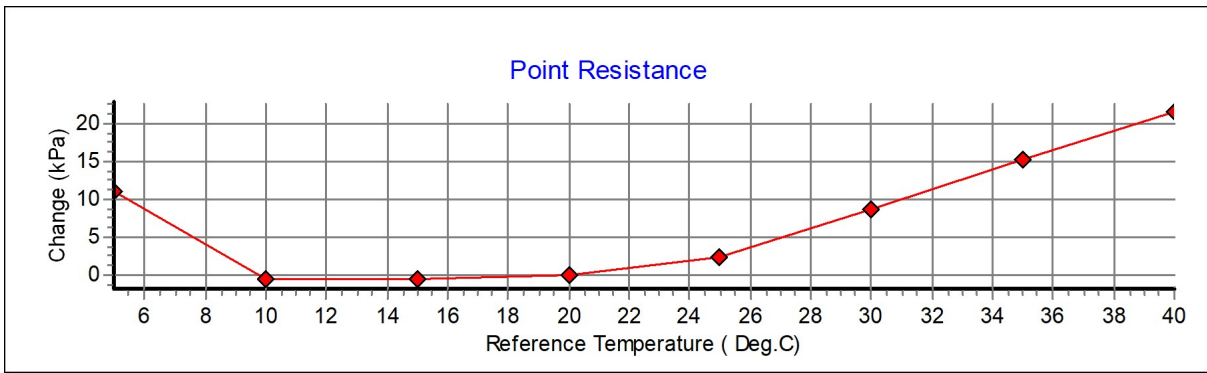


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# Calibration of temperature effect when not loaded.

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# Calibration procedure.

Göteborg: 2022-09-27

Upon delivery, the equipment complies with ISO 22476-1:2012, including Technical Corrigendum 1 (ISO 22476-1:2012/Cor 1:2013)

## Point resistance.

The point resistance is calibrated from 0 to maximum range in 10 steps up and down. Then we adjust the calibration factor to fit the best linearity.

## Local friction.

A special adapter unit substitutes the cone and transfers the axial forces to the lower end of the friction sleeve. The friction is calibrated from 0 to maximum range in 10 steps up and down then the sleeve is turned 90 degrees and the calibration repeated.

Then we adjust the calibration factor to fit the best linearity.

## Pore pressure & Area ratio a and b.

The completed probe is installed in a special chamber and the pore pressure sensor are calibrated from 0 to maximum range in 10 step up and down.

Then we adjust the calibration factor to fit the best linearity.

At half range the pressure of the point and friction is registered and used for calculation of the area factor.

## Tilt inclination.

The tilt sensor is calibrated +/- 20deg. from vertical line in steps of 1 deg.

This will be done in 2 orthogonal directions.

## Temperature.

The temperature sensor is calibrated in steps of 5°C from 5 to 40 °C.

## Temperature compensation.

The Point, Friction and the Pore pressure sensors in the probe is temperature compensated and tested in the range 5 to 40 °C.

The reference sensors are connected to the Geotech black box together with the CPT probe. The measuring data from the reference sensors are simultaneously send to the computer and stored in the Geotech calibration software. The completed systems are recalibrated at RISE Research Institutes of Sweden once a year.

Environment.

Air pressure: - hPa.

Temperature: °C.