

Certificate issued by

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Date of issue

25th of Jan. 2022

Appetise version

1.1.3

Certificate issued for

Gustave Eiffel
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APTS Sensor General Data

Model	APTS-D50
Range (max)	5 bar
Pressure Cell Serial Number	JG9840k5
Bladder Serial Number	21-192-5V
Dallas ID	AB00002C3ABD1B2D
Excitation voltage (Full bridge)	2,05 V DC
Input resistance	N/A
Output resistance	350 Ohm
Soft cable length	9 m

Calibration Test Conditions

Temperature	23°C
Relative humidity	40%
Pressure range (Full scale)	4 bar

Instrumentation
Data aquisition system

Type / Supplier	DEWE43 A / DEWESOFT
Serial nr.	DB20121701
Calibration certificate nr. / date	22C00080 / 10-JAN-2022

Reference pressure sensor

Type / Supplier	PR-33X / 80794 / KELLER
Serial nr.	1093593
Calibration certificate nr. / date	FR21291506/23-JUIL-2021

Summary of the calibration procedure

The calibration is performed by direct comparison of the pressure signal of the APTS sensor with the reference sensor.

- The sensors are placed four at a time in a pressure vessel.
- After offset adjustment, the air pressure inside the vessel is applied and increased slowly from 0 bar to 4 bar within about 30 seconds, then decreased from 4 bar to 0 bar within about 30 seconds.
- The pressure signals of the reference sensor and the APTS sensors are recorded with the data acquisition system.

The measurement results in the table below, are:

- Applied pressure Pr (Pressure measured by the reference sensor).
- Output signal, given by the APTS sensor.
- Modelling pressure, calculated with column 1 & 2 (linearization of the measurement curve).
- Non-linearity, which is the max value of deviation of the positive slope, given in percentage of the full scale (%FS).
- The sensitivity is the positive slope of the modelling curve, considering the excitation voltage.
- The sensitivity uncertainty is the standard deviation of the sensitivity taking into account 95% confidence interval
- Hysteresis is the half maximum difference between increasing and decreasing values of the pressure, given in % of the FS.

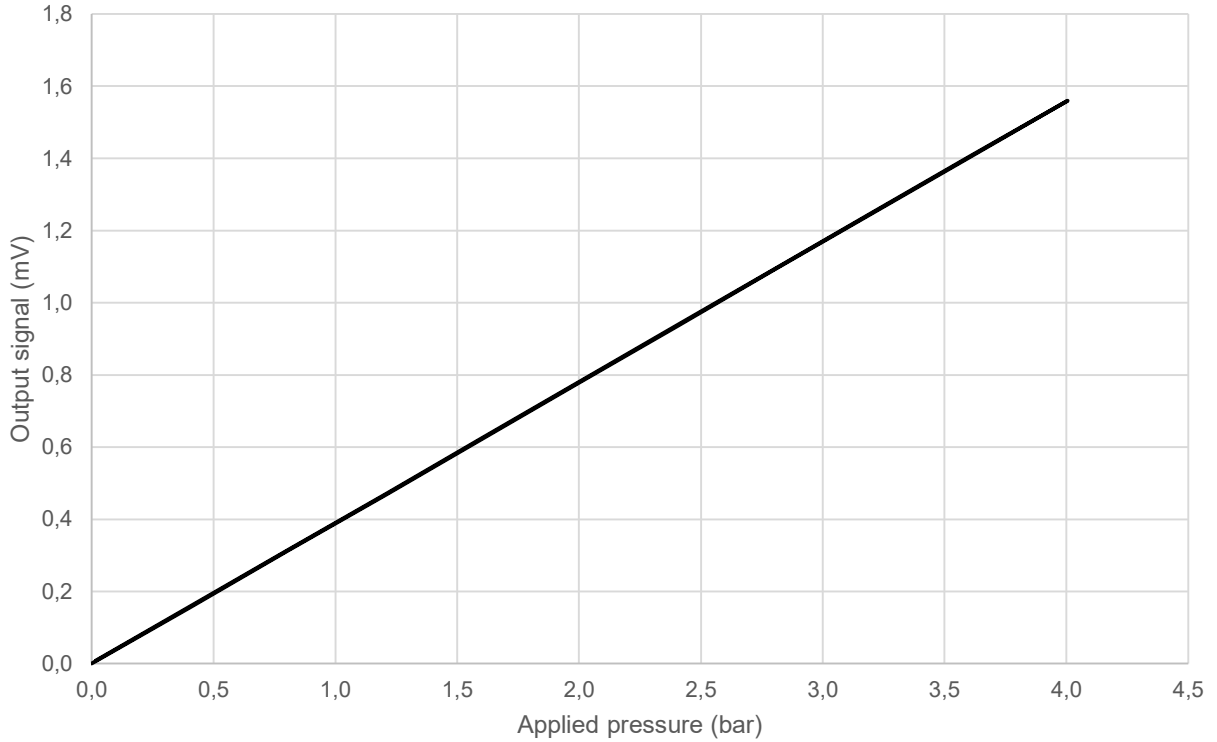
Results table

Applied pressure Pr (bar)	Output signal (mV)	Modelling pressure Pm (bar)	Deviation Pr-Pm (bar)	Non-linearity (%FS)
0,000	0,000	0,003	-0,003	0,1%
0,403	0,156	0,403	0,000	0,0%
0,803	0,312	0,804	-0,001	0,0%
1,208	0,468	1,205	0,003	0,1%
1,601	0,622	1,599	0,001	0,0%
2,005	0,780	2,005	0,000	0,0%
2,404	0,936	2,404	0,000	0,0%
2,802	1,091	2,803	-0,001	0,0%
3,202	1,247	3,203	0,000	0,0%
3,605	1,404	3,606	-0,001	0,0%
4,005	1,560	4,006	-0,001	0,0%
3,604	1,405	3,610	-0,006	0,1%
3,207	1,251	3,213	-0,007	0,2%
2,803	1,093	2,809	-0,006	0,1%
2,405	0,939	2,412	-0,007	0,2%
2,003	0,782	2,009	-0,006	0,2%
1,602	0,625	1,606	-0,005	0,1%
1,207	0,471	1,211	-0,004	0,1%
0,806	0,315	0,811	-0,004	0,1%
0,400	0,157	0,407	-0,006	0,2%
0,017	0,008	0,025	-0,008	0,2%

APTS Calibration Data

Sensitivity (mV/bar)	0,390
Offset (mV)	-0,001
Sensitivity uncertainty U at k=2	0,2%
Non-linearity (%FS)	0,1%
Hysteresis (%FS)	0,1%

Output signal vs Applied pressure



APTS Certification Data : Biofidelity Static Response

Sensor specifications		Test data	
Delta Pressure (bar)	Deflection (mm)	Delta Pressure (bar)	Deflection (mm)
0,60 +/-10%	15,81 +/-10%	0,57	15,92
Test result		Passed	

Observation / Additional information

Visa QC : D MILTON

Date : 25th of Jan. 2022