

Density calibration

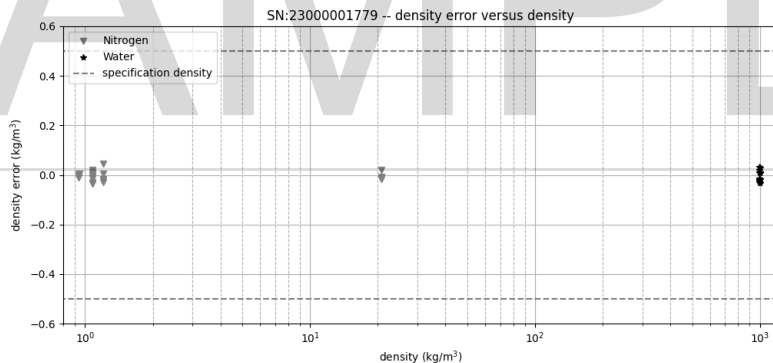
6256 DLO-M2-EX unpotted 23000001779 TDDCP-03
 Cal.Cert.No Sensor Serial No Calibration rig

$C_0 = -2.84674$ $C_1 = 2.31004 \times 10^9$ $C_2 = -1.00966 \times 10^5$ $C_{22} = -2.03478 \times 10^2$
 Density coefficients

$C_5 = 0.$ $C_7 = 7.95664 \times 10^{-7}$ $C_8 = 1.17509 \times 10^{-6}$
 Density coefficients

$T_A = 4.57407 \times 10^{-12}$ $T_B = -3.33278 \times 10^{-5}$ $T_C = -4.37652 \times 10^2$ $T_D = 0.$
 Temperature coefficients

Fluid	Reference Data			DUT Data			Error versus Specification (2K)			
	Press. (bar a)	Temp. (°C)	Density (kg/m ³)	Frequency (Hz)	Temp. (°C)	Density ¹ (kg/m ³)	Temp. (°C)	Spec. (°C)	Density ¹ (kg/m ³)	Spec. (kg/m ³)
Calibration with adjustment										
nitrogen	18.27	24.99	20.71	28 375.3	24.99	20.70	-0.00	0.25	-0.01	0.50
nitrogen	0.96	24.99	1.08	28 467.3	24.99	1.08	0.00	0.25	-0.00	0.50
nitrogen	0.96	-4.98	1.20	28 482.8	-4.98	1.20	0.00	0.25	-0.00	0.50
nitrogen	0.96	69.91	0.94	28 439.7	69.91	0.94	-0.00	0.25	-0.00	0.50
water	0.92	25.00	997.04	24 502.6	25.01	997.04	0.02	0.25	-0.01	0.50
water	18.20	24.99	997.83	24 504.1	24.98	997.83	-0.01	0.25	0.00	0.50
Calibration without adjustment										
water	0.91	25.00	997.04	24 502.6	24.99	997.05	-0.01	0.25	0.00	0.50
nitrogen	0.96	25.00	1.08	28 467.4	24.98	1.08	-0.02	0.25	-0.01	0.50



Calibration method and metrological traceability: Deionized water (thermal conductivity $<5 \times 10^{-1} \mu\text{S/cm}$ and specific gravity < 1.00001) and nitrogen purity 5.0 ($\text{N}_2 \geq 99.5\%$, $\text{O}_2 + \text{Ar} \leq 0.5\%$ and $\text{Ar} < 0.1\%$) are used for calibration. An unbroken chain of calibrations going back to international standards is established for the temperature and pressure reference sensors according to ISO 17025.

	Expanded measurement uncertainty of reference:	Specification sensor:
Pressure (bar)	$\pm < 0.02$	none
Temperature (°C)	$\pm < 0.05$	± 0.3 or $[0.0075 \times T - 25 \text{ °C}]$ if the value is > 0.3
Density (kg/m ³)	$\pm < 0.10$	± 0.50

¹ Note: Density measurement of the density sensor depends on pressure. If the actual measuring pressure is known, the pressure effect can be compensated. The listed calibration data shows measuring performance with active pressure compensation. By default, the pressure compensation is set to a fixed pressure, typically 1 bar (absolute). If the actual measuring pressure is higher than the fixed compensation pressure, the density sensor shows a density that is too low. For detailed information concerning specifications and pressure compensation, see the product documentation.

26.02.2024 11:46 C.Huber
 Date Time Calibrated by Signature