

9016 Uncertainty Analysis

Parameter	Error (%FS)	X ²	Error Type	S sum	B sum	S rss	B rss	U
9016 Scanner								
Pressure Sensor								
Repeatability	0.01	0.0001	S	0.000557	8.38E-05	0.02359	0.009153	0.056333
Hysteresis	0.005	0.000025	S					
Zero Drift (24 hours)	0.02	0.0004	S					
A/D Resolution	0.0015	2.25E-06	S					
PGA Nonlinearity	0.005	0.000025	B					
A/D Nonlinearity	0.0015	2.25E-06	B					
Calibration Network Error (system gain error)	0.005	0.000025	S					
Temperature Sensor								
Zero Drift (24 hours)	0.002	0.000004	S					
A/D Resolution	0.00015	2.25E-08	S					
PGA Nonlinearity	0.0005	2.5E-07	B					
A/D Nonlinearity	0.00015	2.25E-08	B					
Calibration Network Error (system gain error)	0.0005	2.5E-07	S					
Data Reduction								
Floating Point Resolution	2 ⁻⁶⁴ = 0	0	S					
Curve Fit Error	0.0075	5.63E-05	B					

$$U = \pm (B_{rss} + t_{95} \cdot S_{rss})$$

Where:

S_{rss} = Root Sum Square of Precision Errors

B_{rss} = Root Sum Square of Bias Errors

t₉₅ = 2 (due to sufficient degrees of freedom)

U = Uncertainty (%FS)