

MEASUREMENT UNCERTAINTY BUDGET CALCULATOR

Project: Digital pressure gauge calibration, 0 to 20 bar Calc no: CALC UNC 001 Rev: 0

Yellow cells: enter data. Grey cells: calculated automatically. Free template from instrumentationblog.in

Measurement			
Measurand	Pressure at 10 bar point	Unit	bar
Coverage factor k	2	Tolerance of instrument under test (±)	0.02

Uncertainty contributions						
Source	Value (±)	Distribution	Divisor	Sensitivity ci	Standard uncertainty	u²
Reference standard calibration certificate	0.00400	Normal (k=2)	2.000	1	0.00200	4.0000E-06
Reference standard drift since calibration	0.00200	Rectangular	1.732	1	0.00115	1.3333E-06
Resolution of instrument under test (half digit)	0.00050	Rectangular	1.732	1	0.00029	8.3333E-08
Repeatability (standard deviation of readings)	0.00150	Normal (k=1)	1.000	1	0.00150	2.2500E-06
Temperature effect on reference	0.00100	Rectangular	1.732	1	0.00058	3.3333E-07
Head correction (height difference)	0.00050	Rectangular	1.732	1	0.00029	8.3333E-08
Combined standard uncertainty uc						0.00284
Expanded uncertainty U = k × uc						0.00569
Test uncertainty ratio TUR = tolerance ÷ U						3.52
TUR check (≥ 4 recommended)						CHECK

Divisors: normal k=2 → 2, normal k=1 → 1, rectangular → √3, triangular → √6, U shaped → √2. Values are example figures for illustration.

Prepared by		Checked by	
Name:		Name:	
Signature:		Signature:	
Date:		Date:	