

EVALUATION OF MEASUREMENT UNCERTAINTY

1. COMPANY NAME : Sri Balaji Castings Pvt. Ltd.

DATE : 16-02-2024

2. DEVICE UNDER CALIBRATION : dd

Range (mm) : 25	Resolution (mm) : 23	Coefficient of Thermal Expansion (DUC)-(αD)(mm/m°C) : 0.0047
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3. STANDARDS / EQUIPMENT USED FOR CALIBRATION :

Sr.No	Master Name	Range/Size (mm)	L.C. (mm)	Uncertainty (mm)	Accuracy (mm)	Material
Master 1	Vernier Height Gauge - SBC2/VHG/03	0-300	0.01	25	36	Ceramic

4. ENVIRONMENTAL PARAMETERS

Start Temp T1 (°C)	End Temp T2 (°C)	Mean Temp (TA= (T1+T2)/2)	Ref. Temp (TR)	Thermal Expansion of master (mm/m°C) (αM)	Thermal Expansion of DUC (mm/m°C) (αD)	Uncertainty of Temperature Indicator (°C) UT (±)
12	23	17.50	20	0.0105	0.0047	53

5. REPEATABILITY (mm)

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Standard Deviation	n
25	36	95	85	75	2	36	52	74	96	32.1704	10

6. UNCERTAINTY BUDGET

Source of uncertainty Xi		Estimates (Xi)	Probability Distribution	Type	Factor (x)	Standard Uncertainty $u = (Xi / x)$	Sensitivity Coefficient (y)	Uncertainty contribution $ui = (x * y)$	Degree of freedom $vi = (n - 1)$
U1	Uncertainty due to Calibration of Master 2 mentioned in the certificate		Normal	Type B	2		1		∞
U2	Uncertainty due to Calibration of Master 1 mentioned in the certificate	25.0000	Normal	Type B	2	12.5000	1	12.5000	∞
U3	Uncertainty due to Calibration of Master 3 mentioned in the certificate		Rect	Type B	$\sqrt{3}$		1		∞
U4	Uncertainty due to accuracy of Master 1	36.0000	Rect	Type B	$\sqrt{3}$	20.7846	1	20.7846	∞

Combined Uncertainty (Uc) : 24.2539 mm

Coverge Factor (k) : -

Degree of freedom (v_{eff}): -

Expanded Uncertainty (U): ± 0.0000 mm

Metric Metric

Prepared By