Load Cell Output Signal (mV/V)

Output voltage of a strain-gauge load cell from its sensitivity in mV/V, the excitation voltage and the load, with the resolution of a reading instrument.

Method: Definition of rated output (OIML R 60 terminology)

Input parameters

Unit system: SI

Parameter	Value	Unit
Rated output (mV per V at rated load)	2.0000	
Excitation voltage	10.000	V
Rated capacity	1,000.0	kg
Applied load	350.00	kg
Resolution of the indicator	1.0000	µV

Calculated results

Parameter	Value	Unit
Output at rated load	20.000	mV
Output at the applied load	7.0000	mV
Smallest load step the indicator resolves	0.050000	kg

Formula and method

$$V_{FS} = S V_{ex}, \quad V_o = V_{FS} \frac{m}{m_r}$$

Variables

S	Rated output (mV per V at rated load)	-
V_{ex}	Excitation voltage	V
m_r	Rated capacity	kg
m	Applied load	kg
δV	Resolution of the indicator	V
V_{FS}	Output at rated load	V
V_o	Output at the applied load	V
δm	Smallest load step the indicator resolves	kg

Method and standards

Definition of mV/V.

Assumptions and limits

- Linear cell.

References

- Definition of rated output (OIML R 60 terminology)

Report details

Report reference	FCC-F7WD-QAW5 (the same inputs always give the same reference)
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Calculator	Load Cell Output Signal (mV/V)
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/instrumentation/signals-calibration/load-cell-output

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.