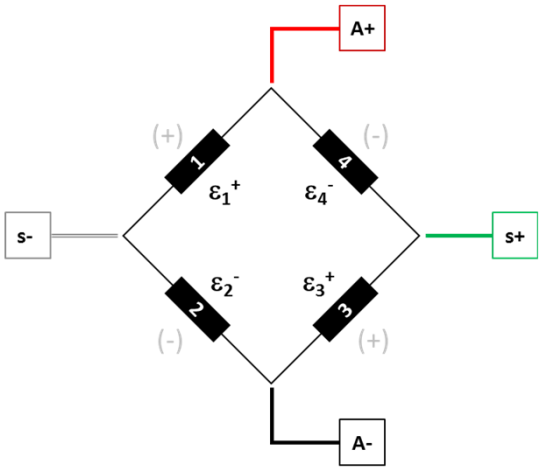
Technical file

Optimal power supply voltage computing for a strain gage bridge



Bridge excitation – Computing

- Power supply voltage of a strain gages bridge:

$$U = 2 * \sqrt{R_J * \varphi_J * S_J}$$

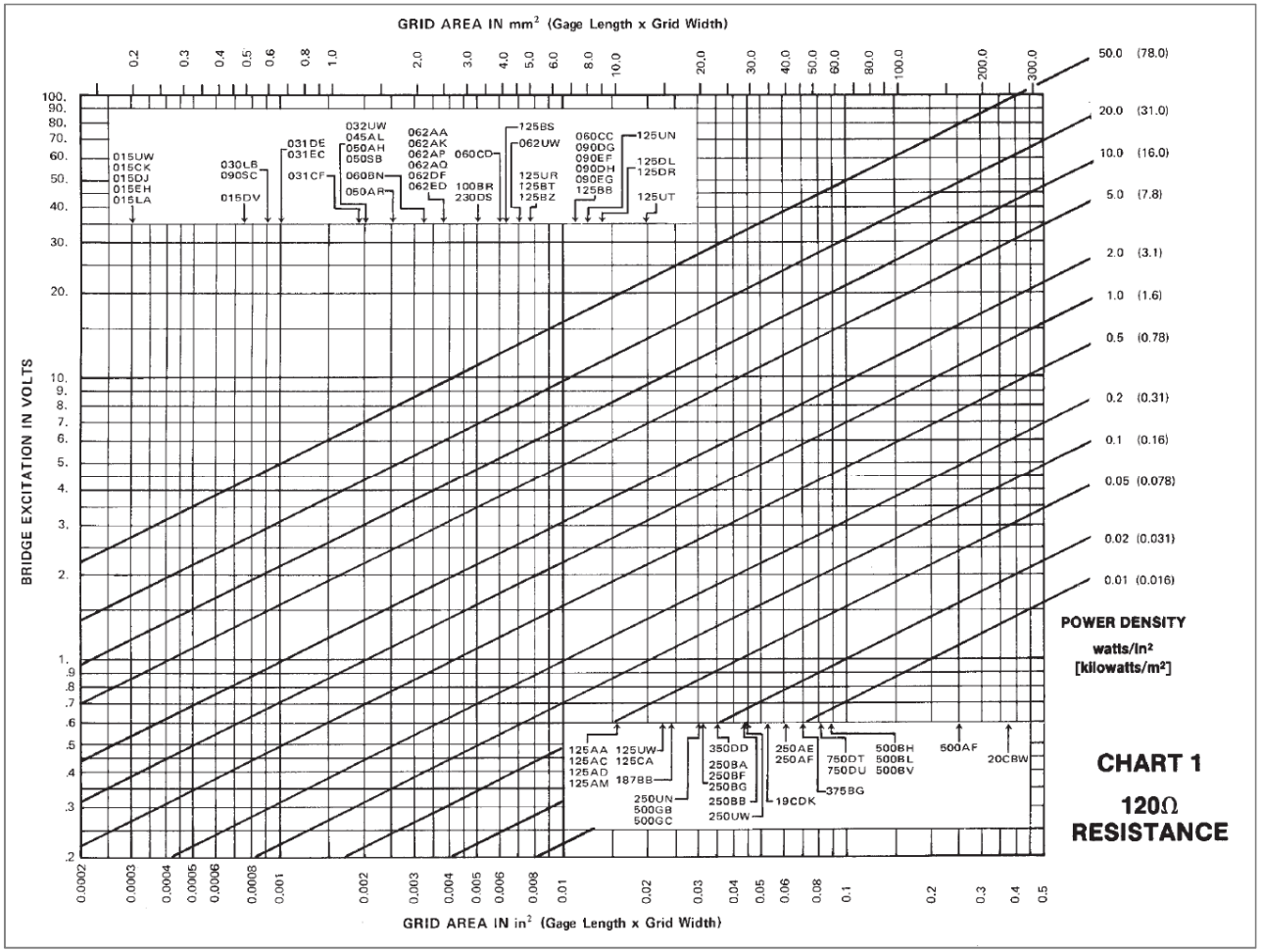
With:

U:	Bridge power supply voltage	**[V]**
R_J:	Gage resistance	**[Ω]**
φ_J:	Heat flow density	**[W/m²]**
S_J:	Gage grid surface	**[m²]**

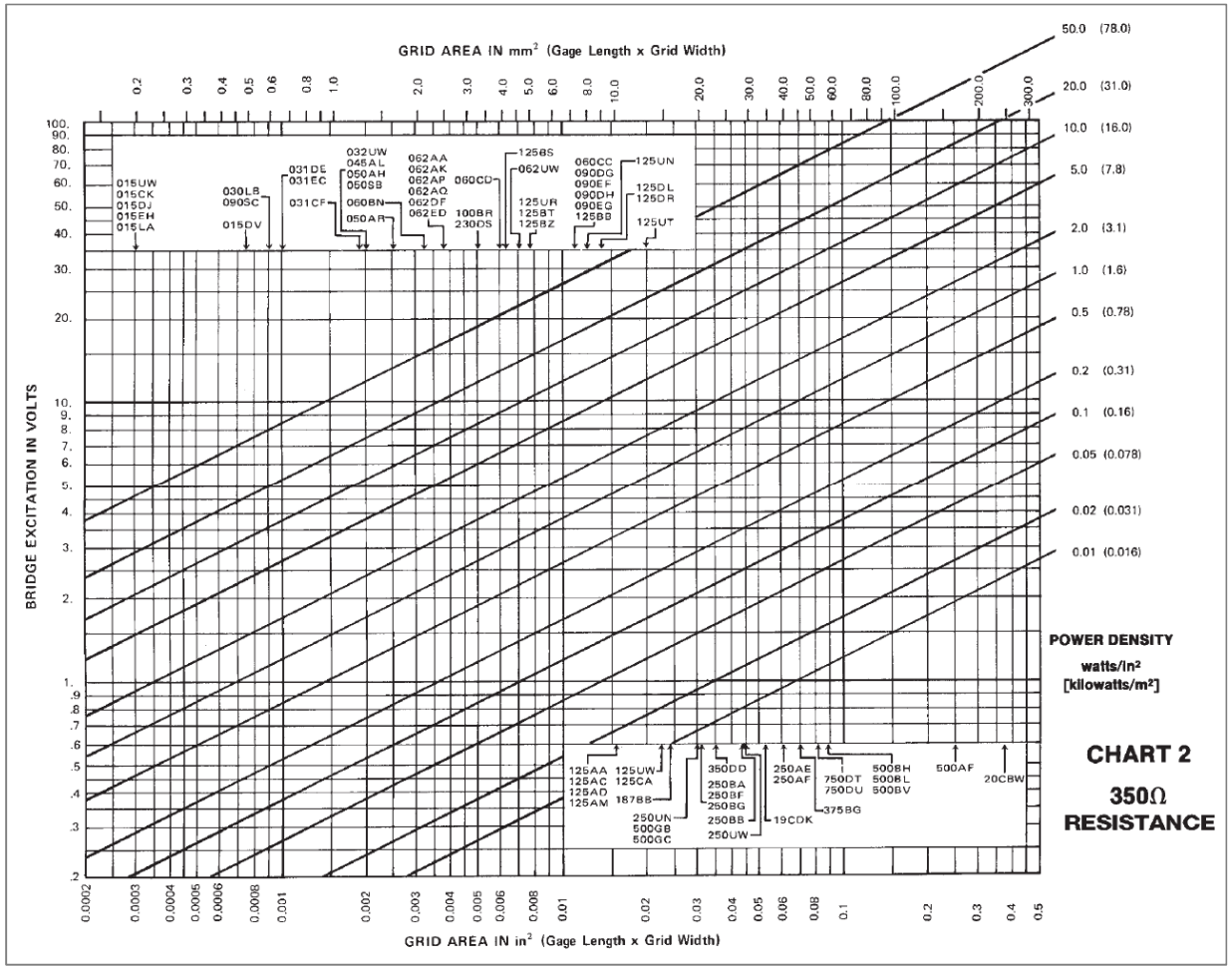
Target Stability		φ_J - Heat dissipating power [kW/m²]				
		EXCELLENT *Aluminium épais, pièce en cuivre*	GOOD *Acier épais*	MEDIUM *Inox fin, titane*	BAD *Résine et composite*	VERY BAD *Acrylique, polystyrène*
STATIC	*High*	**3,1-7,8**	**1,6-3,1**	**0,78-1,6**	**0,16-0,31**	**0,016-0,031**
	Medium	**7,8-16**	**3,1-7,8**	**1,6-3,1**	**0,31-0,78**	**0,031-0,078**
	Low	**16-31**	**7,8-16**	**3,1-7,8**	**0,78-1,6**	**0,078-0,16**
DYNAMIC	*High*	**7,8-16**	**7,8-16**	**3,1-7,8**	**0,78-1,6**	**0,016-0,078**
	Medium	**16-31**	**16-31**	**7,8-16**	**1,6-3,1**	**0,078-0,31**
	Low	**31-78**	**31-78**	**16-31**	**3,1-7,8**	**0,31-0,78**

Source: *TN502 – Optimizing Strain Gage Excitation Levels*, VISHAY Micromeasurements technical notes

Bridge excitation – 120 Ω gage



Bridge excitation – 350 Ω gage



Bridge excitation – 1000 Ω gage