

PV String Voltage Calculator

Estimate cold PV string Voc and STC Vmp, then compare string voltage with an entered inverter maximum for preliminary equipment review.

Generated October 10, 2026

<https://www.elecatrix.com/solar-backup-power/pv-string-voltage-calculator/>

Inputs

Input	Value	Unit
Modules in series	10	modules
Module Voc	49.8	V
Module Vmp	41.5	V
Voc temperature coefficient	-0.29	%/C
Minimum design temperature	-10	C
STC temperature reference	25	C
Entered inverter maximum voltage	600	V

Results

Result	Value	Unit
Cold Voc per module	54.8547	V
String cold Voc	548.547	V
String Vmp	415	V
Entered inverter voltage margin	51.453	V

Status

Status	Value	Unit
Inverter-voltage comparison	Entered string voltage is below the inverter maximum.	

Calculation details

Detail	Value	Unit
Calculation basis	Voltage screen uses entered module voltage, modules in series, temperature coefficient, and entered inverter maximum voltage.	

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Review boundary

String-voltage screen only; no inverter acceptance, code-compliance, or final PV design approval is made.

Formulas

$\Delta T = T_{min} - T_{STC}$

$V_{OC,cold} = V_{OC,module} \times (1 + \frac{\alpha_{VOC}}{100} \times \Delta T)$

$V_{OC,string} = N_{modules} \times V_{OC,cold}$

$V_{MP,string} = N_{modules} \times V_{MP,module}$

$\text{Inverter voltage margin} = V_{inv,max} - V_{OC,string}$

Warnings and limitations

This string-voltage screen does not approve PV string design, inverter compatibility, temperature source, rapid shutdown, conductor/OCPD selection, utility interconnection, or code compliance.