

Remarks about module feeding

Thermoelectric modules are devices of direct current (DC):

If there are current ripples in power source of a TE module then characteristics go down as illustrated in the formula below:

$\Delta T/\Delta T_{\max} = 1/(1+K^2)$; where K - ripples coefficient.

E.g. At DC feeding and $\Delta T_{\max}=72^\circ$ pulsation of power source is K = 0.2 (20%), then

$\Delta T/\Delta T_{\max} = 1/(1+0.2^2) = 0.96$;

$\Delta T = 0.96$

$\Delta T_{\max} = 69^\circ$;

Quick-Cool recommends $K \leq 0.1$ (10%).

At using impulse power source the current ripples coefficient can be calculated in accordance with the formula given below:

$K = I(\text{Imp})/I(\text{DC}) \times T(\text{Imp})/T$, where:

I(Imp), T(Imp) - amplitude and duration of current impulse;

I(DC) - value of direct current; T - pulse period.

Presence of short-time impulses in feeding circuit with

$T \leq 1 \times 10^{-3}$ sec even of big amplitude up to ten of I (max) provides no negative influence upon "life time" of TE module.