ABSTRACT: Correlations between the scalar field values (temperature, particle number etc.) in two space - time points in the turbulent medium are considered. Explicit analytical fore of correlators is obtained. Possible random sources of the scalar fields are taken into account. Obtained formulae are true in the most important case when the characteristic scale of the turbulence is of the order of $u_0 \tau_0$, where $u_0$ is the turbulent velocity, and $\tau_0$ is the correlation time. The obtained results may be important for the problem of stellar convection.