Abstract. Let $X$ and $Y$ be Banach spaces and $f : X \to Y$ an odd mapping. For any rational number $r \neq 2$, C. Baak, D. H. Boo, and Th. M. Rassias have proved the Hyers-Ulam stability of the following functional equation:

$$rf \left( \frac{\sum_{j=1}^{d} x_j}{r} \right) + \sum_{i(j) \in \{0,1\}} \sum_{\sum_{j=1}^{d} i(j) = \ell} rf \left( \frac{\sum_{j=1}^{d} (-1)^{i(j)} x_j}{r} \right) = (C_{d-1}^\ell - C_{d-1}^{\ell-1} + 1) \sum_{j=1}^{d} f(x_j)$$

where $d$ and $\ell$ are positive integers so that $1 < \ell < \frac{d}{2}$, and $C_q^p := \frac{q!}{(q-p)!p!}$, $p, q \in \mathbb{N}$ with $p \leq q$.

In this note we solve this equation for arbitrary nonzero scalar $r$ and show that it is actually Hyers-Ulam stable. We thus extend and generalize Baak et al.’s result. Different questions concerning the $^*\!$-homomorphisms and the multipliers between $C^*$-algebras are also considered.