Biderivations and Commuting Linear Maps on Current Lie Algebras

Let $L$ be a Lie algebra and let $A$ be an associative commutative algebra with unity, both over the same field $F$. We consider the following two questions. Is every skew-symmetric biderivation on the current Lie algebra $L \otimes A$ of the form $(x, y) \mapsto \lambda([x, y])$ for some $\gamma \in \text{Cent}(L \otimes A)$, if the same holds true for $L$? Does every commuting linear map of $L \otimes A$ belong to $\text{Cent}(L \otimes A)$, if the same holds true for $L$?

**Keywords:** Lie algebra, current Lie algebra, tensor product of algebras, biderivation, commuting linear map, centroid.

**MSC:** 17B05, 17B40, 15A69, 16R60.