State estimation (SE) in distribution networks is not as accurate as that in transmission networks. Traditionally, distribution networks (DNs) are lack of direct measurements due to the limitations of investments and the difficulties of maintenance. Therefore, it is critical to improve the accuracy of SE in distribution networks by placing additional physical meters. For state-of-the-art SE models, it is difficult to clearly quantify measurements' influences on SE errors, so the problems of optimal meter placement for reducing SE errors are mostly solved by heuristic or suboptimal algorithms. Under this background, this paper proposes a circuit representation model to represent SE errors. Based on the matrix formulation of the circuit representation model, the problem of optimal meter placement can be transformed to a mixed integer linear programming problem (MILP) via the disjunctive model. Comprehensive numerical studies show the effectiveness and efficiency of the proposed method.