Abstract—Remainder particles failure and mechanical failure are the two modes among the main disabled modes of the sealed relay. In the process of the sealed relays producing, packaging and using, all kinds of metal and nonmetal particles would be remained or produced inside the enclosure. These particles might result in the remainder particles failure. The moving parts of the relay may result in the mechanical failure for their loose and friction. The traditional failure diagnostic method depended on the vibrating voice recognized by people. It was difficult to distinguish these two types of failure. In this paper, based on the analysis of the characteristics of the remainder particles signal and the moving parts signal, their probability classification was realized by the neutral network. According to this method, the unknown signals from the remainder particles or from the moving parts could be successfully assigned an efficient estimation. By the real testing on the experimental system designed, the feasibility of the method was confirmed. At the same time, it was proved that the identifying rate of the failure was increased by this method. It would benefit for decreasing failure and increasing the reliability of the sealed relay.

Keywords: sealed relay; remainder particles; neutral network