Satellite based Train Positioning Using Three-Dimensional Track Map

Haruo YAMAMOTO Hiroyuki SUGAHARA
Tomoji TAKASU Nobuaki KUBO

In order to apply the satellite positioning to train control, an algorithm of the positioning with the one-dimensional constraint condition using line coordinate data and the multipath error reduction using the default value, the different physical phenomenon, and the satellite redundancy was developed. The positioning performance was evaluated using the positioning satellite observational data acquired on operating lines, and as a result, it was confirmed that large errors were reduced and degradations of the positioning rate which were the side effect of the error reduction were also few. In addition, the algorithm was ported to the embedded system and it was confirmed that 10 Hz real-time positioning could be performed.