

Development of wire length measuring equipment for prefabricated erection of transmission lines

xiaobin li¹, Baojun LIU¹, Pan YAO¹, Hongbing WEN¹, and Riping ZHENG¹

¹Jiangmen Power Supply Bureau of Guangdong Power Grid Co. Ltd

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Abstract

The existing prefabricated wireline construction technology is difficult to accurately measure the real-time length of the deployed wires, resulting in too large construction errors and cannot be popularized and applied. To this end, a length measuring device that can accurately measure the length of the wire during the construction of the prefabricated wire is developed. In terms of the hardware of the length measuring equipment, based on the construction characteristics of the prefabricated wiring and the characteristics of the wire, the photoelectric encoder and the STC8G series single chip microcomputer are used to complete the collection and processing of the wire length data, and the mature and stable LoRa technology is used to complete the wireless transmission of the data. In terms of software program of length measurement equipment, the measurement of wire length data, transmission and interaction of control command signals are realized by optimizing length measurement scheme, interface development of terminal equipment and information interaction program design. Finally, according to the actual working conditions of the prefabricated wiring construction, the mechanical structure of the length measuring equipment is designed, and the assembly is completed. The developed length measuring equipment has been successfully applied to practical projects. According to the wire length measuring equipment, the deviation between the observation sag and the design sag after the wire length is measured by the wire length measuring equipment is 2.0%, which meets the design requirement of $\pm 2.5\%$.

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