

Trolley Wire Inspection System

To diagnose the trolley wire, the trolley wire inspection system consists of the equipment to measure the dynamic conditions of the trolley wire facilities and the equipment for data processing and correction. Measured data is automatically processed in real time at every post interval and checked for any possible abnormality. The results are displayed and printed out.

To the measuring pantograph, optical sensors, strain gage acceleration transducers, touch-sensitive microswitches and potentiometers, 59 in total, are mounted for collecting various information.

Measurement Objects

1. Height of trolley wire
2. Deviation (up to 4 trolley wires)
3. Obstacle
4. Discontact
5. Hard spot
6. Crossover position
7. Pole position
8. Velocity
9. Distance

Data Correction Unit

Corrects deviation of trolley wire by detecting inclination of the car.

Observation Dome

Allows visual inspection of the pantograph's sliding condition while monitoring and photographing through the on-board CCD camera for trolley wire monitoring.

Sodium Lamp-Based Trolley Wire Abrasion Measuring Unit

Using a low-pressure sodium lamp as the light source, this simple and compact unit can measure abrasion of trolley wire without contacting it on the car running at a regular speed.

- Applicable number of pantographs: Max. 4
- Measuring pitch: 1000 Hz (Measurement is made at every 5 cm.)
- Types of trolley wires: Various circular grooved wires (110 mm², 150 mm², 170 mm²) from which an applied one is automatically selected.
- Measurement accuracy: Within 0.3 mm in standard deviation of error

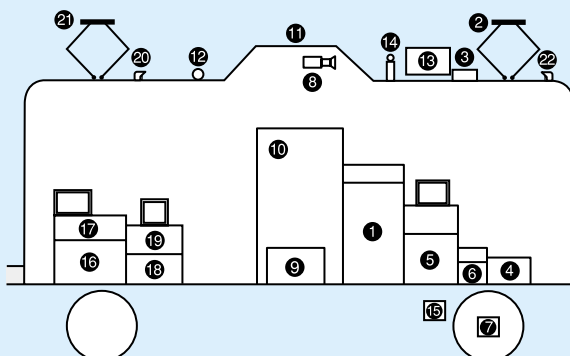
Data Analysis System

This system allows desktop theoretical analysis of measured data to realize efficient preservation of trolley wires through the following:

1. Confirming measured results and creating data for re-measurement by grasping abnormal or control value-exceeded points
2. Correcting data of measured results by inputting re-measurement results in the original data
3. Comparing time-series data for age control of trolley wires. Since the data is compatible with commercially available tabulation software, a separate file can be compiled for use beyond this system.

Safety of the train service is ensured through actual checking of abnormal points by the railroad service staff.

Electric Inspection Car and Inspection System Configuration



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| ① Trolley wire inspection unit | ⑬ Sodium lamp-based trolley wire measuring unit |
| ② Measuring pantograph | ⑭ Supplemental power supply |
| ③ Rooftop high-voltage box | ⑮ Carriage vibration sensor |
| ④ High-voltage box | ⑯ Signal inspection unit |
| ⑤ Inspection data processing unit | ⑰ Signal inspection data processing unit |
| ⑥ Thermal array recorder | ⑱ Telemetry inspection unit |
| ⑦ Distance pulse generator | ⑲ Telemetry electric field strength data processing unit |
| ⑧ Trolley wire monitoring camera | ⑳ Telemetry antenna for measurement |
| ⑨ Uninterruptible power supply | ㉑ Corrent collector pantograph |
| ⑩ Trolley wire observation stand | ㉒ Telemetry antenna for train service |
| ⑪ Observation dome | |
| ⑫ Projector | |