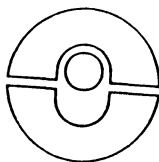


INTERNATIONAL



UNION OF RAILWAYS

U.I.C. CODE

Leaflet to be classified in Volumes:

IV - OPERATING

VIII- WAY AND WORKS

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Brought up-to-date

TRANSMISSION SYSTEMS
AND METHODS OF REMOTE CONTROL (1)
FOR SIGNALLING INSTALLATIONS (2)

(1) The abbreviated description "Remote Control" refers both to actual remote control and to the remote proving of signalling equipment.

(2) This leaflet embodies the conclusions of an investigation carried out among the UIC Railways based on the issue of a questionnaire.



Documents

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Part I

REMOTE CONTROL

1. The metal transmission media employed usually take the form of cables. In certain cases, they may consist of overhead circuits. The transmission media are used either for both remote control and remote proving at the same time, or separate conductors are provided for each. The choice between the two formulae depends on considerations of volume and rapidity of transmission.

2. Overhead lines are only seldom used for remote control transmission, and if so, over small distances only. In the case of cable lines, the maximum distances covered are from 30 to 120 km without repeaters, depending on the diameter of the cable conductors; with repeaters, these distances are appreciably greater.

3. The switching techniques for coding and decoding can vary considerably and make use of either relays or electronic components, or a combination of both. With direct current, particular use is made of short, long or polarised pulse sequences; with alternating current, combinations of frequencies transmitted simultaneously or modulation of a carrier frequency are used.

4. At the present time, terminal equipment always incorporates relays.

5. Whether the satellite points are spread along a line or are concentrated round a centre, the system can employ either relays or electronic components. Electronic remote control is the most rapid system, while remote control with relays is the least costly system available at present. Electronic remote control is, therefore, suitable for use on longer lines.

6. Remote control transmission is effected, generally speaking, by means of trivalent signals +, -, 0; sometimes these are also used for coding and decoding circuits.