Recommended Functional/Operating Guidelines for Electronic Track Circuit for Control of Railway Signals

Revised 2023 (2 Pages)

A. Purpose

This Manual Part recommends functional/operating guidelines for electronic track circuit systems.

B. General

1. System shall conform to Manual Part 11.2.1 Recommended General Practices for Electrical Surge Protection of Signal Systems.

2. System shall conform to Manual Part 11.5.1 Recommended Environmental Requirements for Electrical and Electronic Railroad Signal System Equipment; for the environmental class appropriate to where each piece of equipment comprising the electronic track circuit operates.

3. System shall conform to Manual Part 11.5.2 Recommended Electromagnetic Compatibility Immunity and Emissions Testing for Signaling Products.

4. The system shall perform its intended function without readjustment during normal weather variations.

5. System installations shall not interfere with or be affected by existing track circuits.

6. System shall conform to Manual Part 2.2.1 Recommended Functional/Operating Guidelines for Automatic Block Signal Circuits and Systems, Manual Part 2.2.10 Recommended Functional/Operating Guidelines for Interlockings, and Manual Part 2.2.15 Recommended Functional/Operating Guidelines for Traffic Control Systems, as applicable.

C. Operation

1. System shall be designed on the fail-safe principle, as defined in Manual Part 1.1.1 Recommended Definitions for Technical Terms, Acronyms and Abbreviations Used in Railway Signaling.

2. System shall be capable of detecting track occupancy.

3. System shall be capable of detecting broken rails.

4. System shall provide shunt-fouling protection conforming to Manual Part 8.1.1 Recommended Functional/Operating Guidelines for Track Circuits.

5. System shall operate over a range of ballast resistance as specified by the railroad.

6. System uses frequencies and/or coded pulses that may interfere with those used for grade crossing warning systems and may require the addition of track filters.

7. System performance may be adversely affected by interference from other systems on the same or adjacent track, pole line, power line, and/or cable within the same instrument housing or other possible source of interference in the area; where this occurs refer to manufacturer's guidelines and railroad requirements. Additional information may be found in the EPRI Power System and Railroad Electromagnetic Compatibility Handbook, 2006.

8. System control battery shall comply with Manual Part 1.5.15 Recommended Practice for Electrical Interfaces between Signal, Train Control and Grade Crossing Equipment.