

## 23. Standard for Local Control Panel Inspection and Maintenance

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**Abstract:** This standard provides procedures for inspecting and maintaining rail transit local control panels.

**Keywords:** local control panel, inspection, maintenance, signal

## Introduction

(This introduction is not a part of APTA RT-SC-S-023-03, *Standard for Local Control Panel Inspection and Maintenance*.)

APTA rail transit safety standards represent an industry consensus on safety practices for rail transit systems to help achieve a high level of safety for passengers, employees, and the general public. This document was created by and for those parties concerned with its provisions; namely, rail transit systems (operating agencies), manufacturers, consultants, engineers, and general interest groups. This standard provides procedures for inspecting and maintaining rail transit local control panels.

APTA recommends this standard for:

- Individuals or organizations that inspect, maintain, and/or operate rail transit systems
- Individuals or organizations that contract with others for the inspection, maintenance, and/or operation of rail transit systems
- Individuals or organizations that influence how rail transit systems are inspected, maintained, and/or operated (including but not limited to consultants, designers, and contractors)

This standard intends to meet the following objectives:

- To ensure special life/safety equipment is operational and reliable
- To help rail transit systems incorporate safety considerations during the inspection and maintenance process
- To identify inspection criteria and maintenance standards that provide a high level of passenger and personnel safety

The application of any standards, practices, or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of how a rail transit system operates. In such cases, the government regulations override any conflicting practices this document requires or recommends.

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# Standard for Local Control Panel Inspection and Maintenance

## 1. Overview

### 1.1 Scope

This document establishes standard requirements for inspecting and maintaining rail transit local control panels.

### 1.2 Purpose

The purpose of this standard is to verify that local control panels are operating safely and as designed through periodic inspection and maintenance, thereby increasing reliability and reducing the risk of hazards and failures.

### 1.3 Alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. A rail transit system (RTS) may develop alternates to the APTA standards so long as the alternates are based on a safe operating history and are described and documented in the system's safety program plan (or another document that is referenced in the system safety program plan).

Documentation of alternate practices shall:

- a) Identify the specific APTA rail transit safety standard requirements that cannot be met
- b) State why each of these requirements cannot be met
- c) Describe the alternate methods used
- d) Describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

## 2. Definitions and acronyms

For the purposes of this standard, the following definitions and acronyms apply:

### 2.1 Definitions

**2.1.1 eyelet:** A closed loop electrical fastener that provides a terminating point for wiring. Also referred to as ring terminal.

**2.1.2 hazard:** Any real or potential condition that can cause injury, death, or damage or loss of equipment or property.

**2.1.3 insulating block:** An inert, dielectric part that prohibits the passage of electrical current between two electrically active metal components.

**2.1.4 local control panel:** A panel displaying a line diagram of the trackage in and near a particular interlocking or group of interlockings, and equipped with various pushbuttons, electric switches, indicator lights, and audible alarms to allow control and monitoring of that section of trackage. *Syn:* **interlocking control panel.**

**2.1.5 operations control center (OCC):** That facility from which train control, train dispatching, and/or train supervision takes place for the entire RTS or for specific segments of a system if there is more than one control center. *Syn:* **rail control center, rail operations center, rail service control center, train command center.**

**2.1.6 original equipment manufacturer (OEM):** The enterprise that initially designs and builds a piece of equipment.

**2.1.7 personal protective equipment (PPE):** All clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

**2.1.8 rail transit system (RTS):** The organization or portion of an organization that operates rail transit service and related activities. *Syn:* **operating agency, operating authority, transit agency, transit authority, transit system.**

**2.1.9 terminal block:** A molded non-conductive material containing one or more electrical wiring terminals. *See also:* **terminal board.**

**2.1.10 terminal board:** A small panel made of non-conductive materials containing one or more electrical wiring terminals. *See also:* **terminal block.**

**2.1.11 terminal post:** A terminal designed to electrically connect two or more wires. *Syn:* **binding post.**

## 2.2 Acronyms

<b>ac</b>	alternating current
<b>dc</b>	direct current
<b>LED</b>	light emitting diode
<b>OCC</b>	operations control center
<b>OEM</b>	original equipment manufacturer
<b>PPE</b>	personal protective equipment
<b>RTS</b>	rail transit system

## 3. Inspection and maintenance requirements

### 3.1 Inspection and maintenance frequency

The inspection and maintenance procedures in this standard shall be performed when local control panels are placed in service, when they are modified, repaired, or disarranged, or as otherwise deemed necessary by the RTS. The RTS shall schedule inspection and maintenance to avoid potential impact on rail operations.

The RTS shall determine the need for additional inspection and maintenance frequencies for local control panels. A review of the following factors may be useful in making this assessment:

- OEM-recommended intervals
- Industry experience
- Operating environment/conditions
- Historical data
- Reliability-centered maintenance program development
- Failure analysis
- RTS testing and experience
- Regulatory requirements

The frequency of tasks shall comply with applicable federal, state, and local regulations.

### 3.2 Training

The RTS and/or their maintenance contractors shall develop and execute training programs that provide employees with the knowledge and skills necessary to safely and effectively perform the tasks outlined in this standard.

### 3.3 Materials

The following materials are required for inspecting and maintaining local control panels:

- Dust clothes and/or other RTS-approved dusting utensils
- RTS-approved contact cleaner
- Lint-free cloths
- Appropriate bulbs/LED
- Additional materials as required by the OEM and/or RTS

### 3.4 Tools

The following tools are required for inspecting and maintaining local control panels:

- Allen keys
- Bulb extractor
- Multi-meter\*
- Terminal nut wrench
- RTS-approved portable radio
- Standard tools carried by maintenance personnel
- Additional tools as required by the OEM and/or RTS

\* Calibrate in accordance with OEM and/or RTS requirements.

### 3.5 Personal protective equipment

Personal protective equipment, as required by the RTS, shall be worn at all times during inspection and maintenance.

### 3.6 Safety

RTS established safety rules, procedures, and practices shall be followed at all times during inspection and maintenance procedures.

### 3.7 Inspection and maintenance procedures

Local control panel inspection and maintenance procedures may be modified for each rail transit system's requirements (see Section 1.3) but shall contain the steps listed in Sections 3.7.1-3.7.14 as a minimum.

- 3.7.1** Notify the operations control center (OCC) and/or other authorities of the inspection and maintenance activities to be performed.
- 3.7.2** Inspect local control panel equipment for condition of wire tags, defective insulation, heat, and loose, corroded, rusted, damaged, or missing connectors and terminals.
- 3.7.3** Inspect local control panel equipment for rust, corrosion, damage, cracks, breaks, defective latches, locks, hinges, covers, weather seals, gaskets, loose, deteriorated, or damaged conduit connections, and missing or loose components and hardware. Holes and unused entrances not used for ventilation shall be sealed.
- 3.7.4** Clean the internal and external parts of local control panel. Replace worn or defective parts.
- 3.7.5** Ensure all contacts, if so equipped, are properly adjusted and in good condition.
- 3.7.6** Ensure all serial/plug coupler connections, if so equipped, are secure.
- 3.7.7** Ensure required component seals are properly secured in compliance with RTS requirements.
- 3.7.8** Ensure manipulation charts and/or other test procedure documents established by the RTS are readily available.
- 3.7.9** Ensure local control panels equipped with transfer control key switches have the appropriate key available for immediate use. Ensure the key is secured as prescribed by the RTS.
- 3.7.10** Take control of the local control panel.
- 3.7.11** Ensure power supplies and train control equipment associated with local control panel are indicating/functioning as intended. The following indications/functions, where applicable, shall be checked and/or tested for proper operation:
  - a) track occupancy
  - b) signal aspect
  - c) train routing
  - d) alternating current (ac) power off

- e) direct current (dc) power off
- f) ac blown fuse
- g) dc blown fuse
- h) auxiliary switch operation
- i) transfer of control
- j) switch position
- k) switch transition
- l) traffic controls
- m) code system status
- n) microprocessor status
- o) wheel detector status
- p) compressed air supply
- q) snow melting equipment status
- r) ac ground detection
- s) dc ground detection
- t) smoke/fire intrusion alarms
- u) bridge position
- v) bridge operation
- w) route request
- x) route request cancel
- y) public address equipment
- z) signal maintainer horn / buzzer
- aa) sound power phones/communication devices
- bb) volt meters
- cc) amp meters

dd) diagnostic equipment

ee) additional train control equipment controlled or monitored by the local control panel

**3.7.12** Ensure all covers and locks are in place and secured.

**3.7.13** Perform additional tests as required by the OEM and/or RTS.

**3.7.14** Notify the OCC and/or other authorities when inspection and maintenance activities are complete.

### **3.8 Correction of deficiencies**

Deficiencies identified during local control panel inspection and maintenance shall be corrected and documented in accordance with OEM and/or RTS requirements.

### **3.9 Documentation**

Inspection and maintenance activities shall be documented, reviewed, and filed in accordance with RTS procedures.

## **Annex A**

(informative)

### **Bibliography**

- [B1] New York City Transit, Division of Signals, Interlocking and Test Report form, 1992.
- [B2] New York City Transit, Division of Signals, Standard Procedures Manual, 7.66.110 through 7.66.437, 1992.
- [B3] Original equipment manufacturer (OEM) specifications for local control panel inspection and maintenance.
- [B4] Rail transit system (RTS) procedures for local control panel inspection and maintenance.