MicroCab® Cab Signaling System

General Information

ASTS USA’s MicroCab Cab Signal System is the industry standard for dependability and flexibility configuration to customer requirements for well over a decade. Systems are now in revenue service on numerous US Class I railroads, international railroads and mass-transit properties. MicroCab can be structured for basic Automatic Train Stop (ATS) with cab display of wayside signals only or Automatic Train Protection (ATP) with a complex mix of functions such as overspeed protection and brake assurance, as well as Automatic Train Operation (ATO) functions such as speed regulation, station stopping, door control and berthing.

MicroCab is also a key element of the latest driverless Automatic Train Control (ATC) systems such as the Copenhagen Metro, and works in concert with the ASTS USA AF-900 Series Digital FSK Track Circuit to manage a diverse range of vehicle functions for achieving the most demanding headways.

Advantages

- Adaptable to all modes of rail transportation and vehicle configurations;
- Readily interfaced to various carborne subsystems and equipment;
- Basic cab signal control to complex ATP/ATO/ATS applications;
- Suited for driverless vehicle systems and profile-based speed control;
- Readily integrated with intermittent speed control systems;
- State-of-the-art processor and interface electronics;
- Highly flexible application software;
- Certified to latest industry safety and reliability standards;
- Internal or external event recording capabilities;
- Built-in self test, departure test and diagnostics;
- Low cost, space-saving solid-state controlling enclosure;
- Aspect Display Units incorporate latest operator display/control technologies;
- Modular design expedites upgrades and maintenance.

System Applications

The MicroCab system may be used for any carborne application using continuous cab signaling, including heavy freight or commuter rail locomotives, heavy or light-rail mass-transit cars (single or married-car trainsets) and automated people-movers.
Basic Locomotive Automatic Train Protection

System Applications (cont’d)
ATP-related control and monitoring functions available with MicroCab can include:

- Cab signal display only;
- Cab signal with:
  - Automatic Train Stop (ATS);
  - Overspeed Automatic Train Control (ATC);
  - Brake assurance;
  - Driverless operation ATC/ATO;
  - On-board departure test;
- Single-unit or redundant (failover-based) controlled systems.

ATO/ATS-related control and monitoring functions available with MicroCab can include:

- Speed regulation;
- Station stopping and departure;
- Precision berthing;
- Skip stop;
- Turn-back;
- Door control;
- Passenger annunciation;
- Automatic station identification;
- Train to Wayside Communications interface;
- Automatic Vehicle Identification (AVI);

For ATP and ATO/ATS operations, MicroCab is fully compatible with a variety of external subsystems and equipment such as:

- External event recorders and Alerters
- Master controllers (monitoring and decoding);
- Brake valve controllers;
- Brake pipe pressure transducers;
- Trainlines (monitoring and control outputs);
- Vehicle health monitoring system (e.g. TCMS);
- LON Works communications channels.

The MicroCab hardware is adaptable to the full range of standard or customized cab signal code rates and carriers, carrier-filtering devices, axle speed sensors, brake, throttle and trainline equipment, Aspect Display Units (ADUs), alerters and external event recorders. The system can be configured for operation with single or multiple-cab carrier frequencies ranging from standard 60/100 Hz rates to audio frequencies used on light or rail mass-transit properties. MicroCab can also be configured for full or partial cut-out of system control by the operator or maintainer. Built-in controls allow precise calibration of variables such as wheel size, carrier current pick-up levels and operator response times to overspeed and restrictive change in signals.
Safety and Reliability Certification
MicroCab vital software has been developed and controlled according to CMM Level II principles; ASTS USA has successfully achieved this software development requirement. In addition, the MicroCab system has already been independently approved on several major railroads and transit authorities with respect to:

- Operational Safety Design
- Approved Hazard and Safety Analysis
- Environmental Testing & Documentation

Test Equipment
MicroCab is supported with field and shop test equipment to check and adjust all hardware and software. The test equipment includes:

- Bench Test Equipment (BTE) – ASTS USA’s BTE is a semi-automated, test platform designed for testing ASTS USA’s MicroCab circuit boards and other devices such as Aspect Display Units (ADU). The BTE also includes an integrated computer system, which contains all the necessary test software for each circuit board test procedure.

- Portable Test Unit (PTU) – ASTS USA’s PTU is used to view diagnostic information on an installed MicroCab system. The PTU consists of a laptop computer which is connected directly to a serial data port on the MicroCab system under test, and customized PTU diagnostic software. This software is installed on any commercially available laptop PC.

- Portable Test Equipment (PTE) – ASTS USA’s PTE is designed to check out MicroCab as a complete on-board system. The PTE is typically employed when the MicroCab system has been removed from the vehicle for shop maintenance, but can also be utilized in an on-board mode provided AC and battery power can be supplied to operate the unit, and equipment rack connectors are accessible for PTE test cables.

Additional Information
- For additional information on MicroCab system applications, contact your ASTS USA Account Executive.

MicroCab® is a registered trademark of Ansaldo STS USA, Inc.