The Wayback Machine - https://web.archive.org/web/20130602090958/http://metrom-rail.com:80/aura-collision-avoidance-syst…

AURA™ Collision Avoidance System

A WORK VEHICLE SAFETY AND PRODUCTIVITY TOOL

The Metrom Rail AURA™ System is designed to safeguard railway work equipment and operators by detecting spacing of work vehicles to a resolution of just inches. The system offers the flexibility of operator-defined detection and alarm criteria, with integrated, expandable hardware options and the ability to function in all environments and terrain – even tunnels.

AURA™ also offers several productivity tool options, such as: location tracking, key machine function monitoring, and remote data reporting (spreadsheet or custom database) capabilities.

The system is designed for installation into current legacy equipment, and also new vehicles from the production floor.

CALL US: 855.943.8726

Or contact us to learn more about our products & services.

DOWNLOADS

System Specifications (PDF)

INDIVIDUAL COMPONENTS

USER INTERFACE (UIM)

Features a 2 x 16 alpha numeric display for messages and programming, numeric displays of following distances both front and rear, variable audio feedback for alarms, indicator lights for alarm conditions, tactile feedback control panel, contained within an aluminum housing.

CONTROL ELECTRONICS MODULE (CEM)

Utilizing sealed automotive grade connectors, the UIM, TSM and 2.4 GHz radio interface with this main control module which is mounted within the cab of the vehicle. This module also contains expansion ports for connection to work vehicle sensor inputs which can be utilized for productivity measurements.

TRANSMITTER / SENSOR MODULE (TSM)

Located on the roof of the work vehicle, this module contains the Ultra Wide Band (UWB) radio system, and GPS modules. Constructed of aluminum and specific molded Radome materials, this module is installed upon a modular base which can accommodate all vehicles and mounting locations.

METROM Exhibit 2016
Page 2 of 6
IPR2023-00470

AURA MAINTANENCE OF WAY UTILITY

Collision Avoidance and Productivity Capabilities

Retrofits to all Equipment

Fully Customizable Platform

METROM RAIL

For More Information, Visit: www.metrom-rail.com/AURA-MU

AURA MAINTENANCE OF WAY UTILITY

The AURA Maintenance of Way Utility (MU) combines the field-proven capabilities of the Metrom Rail Collision Avoidance System with a comprehensive productivity suite, providing customers with an industry-leading safety and efficiency platform.

- Collision Avoidance functions are designed to safeguard MOW equipment / hi rail vehicles and their operators by providing advanced warning of violations in spacing regulations. The MU offers a speed-based detection system that caters to the specific operating rules of each customer.
- The MU utilizes advanced Ultra-Wide Band radio technology to provide a system accurate to +/- 1cm of ranging capabilities in any environment on the planet - even underground and around tunnel curves.
- Monitored equipment activity is available through a web-based utility called AURA ACCESS. ACCESS allows users to monitor key equipment-specific functions, location, assign work gangs, and establish control points at the push of a button.

AURA MAINTENANCE OF WAY UTILITY CORE TECHNOLOGIES

Ultra-Wide Band RF (UWB)

- Allows the MU to provide accurate and reliable range measurements between equipment without being affected by the same multi-path distortion effects that limit traditional 900 Mhz or 2.4 Ghz systems.
- The AURA UWB system ensures accuracy by broadcasting over a wide range of frequencies and filtering only the most optimal returns.
- UWB technology is enhanced in tunnels or urban environments thanks to a natural amplification of the system in these environments.
- Metrom Rail is the exclusive supplier of UWB technology to the railway industry.

Productivity Sensors

- Derivatives of sensors used in automotive, aerospace, defense, and other heavy-industrial applications.
- Introduce cost-effective and easily integrated options for analyzing equipment functionality.
- A wide variety of sensor options allows for analysis of any specific equipment cycle count or operation

Advanced GPS Technologies

- Utilized for speed acquisition for mode-based alerts and alarms.
- Universal to all current GPS platforms, including GNSS, GONASS, QZSS, and SBAS technologies.

MAINTENANCE OF WAY UTILITY SUMMARY

- Designed to operate in all environments, regardless of extreme conditions, with an effective communication range of over 4,000 ft. in standard conditions.
- Introduces adaptive spacing limits governed by equipment speed in three modes - Travel, Work, and Crawl - specific to the operating rules of each railway.
- Utilizes an integrated data recorder with an internal accelerometer that automatically records data when a high g-force event is detected. Stored information includes machine / vehicle speed, direction, location, and behavior before & after the event.
- MU is available for permanent installation (Standard System) or temporary applications (Mobile System).
- A simple interface provides ease of use to operators and maximizes the use of cab space.
- All modules are designed and tested to applicable railway and Mil-Std specifications.
- Maintenance and installation is simplified by separation of key sub-systems.
- Productivity monitoring is accomplished through equipment-borne sensors. Resulting data is accumulated and transmitted via cellular connection to a Metrom-Rail system. Customers access this information remotely via a web-based platform.

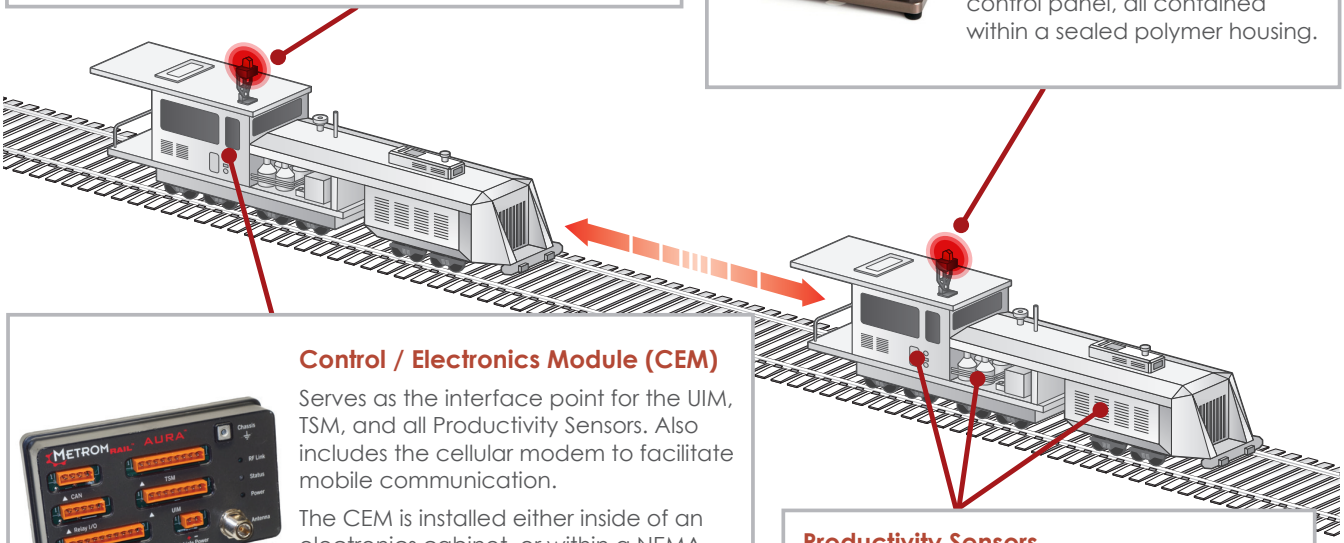
AURA MAINTENANCE OF WAY UTILITY MODULES

Transmitter / Sensor Module (TSM)

Installed on a roof, this module contains the Ultra-wide Band (UWB) RF and GPS systems. The TSM assembly is constructed of durable, lightweight aluminum with proprietary radome material. A bracket allows for the TSM to be folded for shipment / transportation of machines. Located near the roof-based cellular modem.

User Interface (UIM)

Features a 2x16 alpha-numeric display for messages and programming, numeric distance displays, indicator lights for alarm conditions, and tactile feedback control panel, all contained within a sealed polymer housing.



Control / Electronics Module (CEM)

Serves as the interface point for the UIM, TSM, and all Productivity Sensors. Also includes the cellular modem to facilitate mobile communication.

The CEM is installed either inside of an electronics cabinet, or within a NEMA enclosure installed on a machine's exterior.

Productivity Sensors

Heavy industrial sensors adapted for use with equipment to identify key functions such as cycle counts, distance, fuel consumption, and other customer-specific factors.

METROM RAIL

1125 Mitchell Ct, Crystal Lake, IL 60014 | (855) 943-8726 | Metrom-Rail.com

AURA MAINTENANCE OF WAY UTILITY

QUICK SYSTEM FACTS

INSTALLATION:
Installation takes from 1-4 hours, depending on equipment type and complexity. MU can be an upgrade to existing CAS units, or as a new system.

INNOVATION:
Ultra-Wide Band RF technology sets the AURA MU apart from traditional systems, allowing operation in all environments, even underground.

ERGONOMICS:
AURA MU is a non-invasive system that only interacts with an operator when an operating rule has been violated, and is customized to meet any customer requirements.

RELIABILITY:
AURA MU is designed and built to meet military-grade shock, vibration, and climate standards.

AURA MAINTENANCE OF WAY UTILITY CONFIGURATIONS

AURA MU Standard

The Standard AURA MU is intended for permanent installation on equipment such as Maintenance of Way machines.

The Standard System deploys a TSM, CEM, and UIM as separate modules. If productivity capabilities are required, equipment-specific sensors are installed to facilitate the desired level of monitoring.

The TSM mast folds to minimize vertical heights while in transit.

AURA MU Portable

The AURA MU Portable is a variation that allows for daily, weekly, or even monthly deployment depending on the specific application. The MU Portable eliminates the need for a Control / Electronics Module, with the User Interface secured to a windshield by suction cup.

The MU Portable is ideal for short-term use as it is deployed or stowed in a matter of minutes. The system is stored securely in a case when not in use.

A single MU Portable can be transferred easily between equipment, making it a perfect AURA system for contractors.

METROM RAIL

1125 Mitchell Ct, Crystal Lake, IL 60014 | (855) 943-8726 | Metrom-Rail.com