



Next Generation Communications Management Unit (CMU) Solution

Compliant with **49 CFR § 236.1033**
Secure Wireless Communications Requirements

- The first 49 CFR 236.1033-compliant solution on the market meeting FRA's PTC communications security requirements
- Interoperable key management to ensure security and operational efficiency
- AAR S9401-compliant mobile gateways delivering fault-tolerant connectivity

New and Improved Communications Management Unit

The Federal Railroad Administration (FRA), as per the Code of Federal Regulations (CFR) Title 49, Section 236.1033, requires that all wireless communications between the office, wayside, and onboard components in a Positive Train Control (PTC) system provide cryptographic message integrity and authentication.

The Next Generation Communications Management Unit (CMU) solution from LILEE Systems is a proven solution following FRA-approved specifications and fully compatible with the existing ACSES PTC systems.

Designed with interoperability in mind, the solution offers centralized key management capabilities to provide message authentication while boosting operational efficiency. It also includes TransAir™ STS-2025, a rugged mobile gateway that adds fault-tolerant connectivity paths to traditional 220 MHz links.

What is included?

- A fully interoperable **Key Management System (KMS)** with an inter-rail key exchange interface for key distributions and updates
- A **wireless security software** for wayside stations and locomotives to enable authentication of PTC messages on primary 220 MHz and alternate links
- A **rugged mobile gateway, TransAir® STS-2025 with optional HDLC cable** providing direct replacement for aging wayside and onboard communications units to support OTA (over-the-air) remote management, future software upgrades and network redundancy



SKU	Description
CMU-2200-MCM	MCM software for the STS-2025 platform
CMU-2200-BRCM	BRCM software for the STS-2025 platform
CMU-2100-BCM	BCM software for the STS-2025 platform
CMU-2200-IPCM	IP communication gateway to provide an alternative route for 220 MHz radios
CMU-2100-OCM	Office communications management software
CMU-2200-KMS	Key Management Systems for key management and key distributions
STS-2025	Rugged Intelligent Mobile Gateway with 2 5G/LTE, 2 Wi-Fi (802.11a/b/g/n/ac), PoE+ and Application Containers

CMU-2200 Specifications

MCM Software – for Locomotives

- RCP (Radio Control Protocol) and STFP (Simple Timeslot/Frequency/Power Protocol) support
 - 6 second EPOCH (48 Timeslots per EPOCH)
 - Support up to 6 base Radios per Base station radio controller
- ACSES-II ATCS Spec 200 and 250 message support
 - TSR list – ATCS type 11, 12, 19
 - ISR - ATCS type 21, 22, 23, 24, 25, 26
 - MTA - ATCS type 34, 35
 - Polling (Keepalive) – ATCS type 40, 41
- TSR message compression support
- RF Message Chaining support
- Secure message authentication and watermarking
- Redundant IP communication path when 220 MHz is not available

BRCM Software – for Wayside Base Stations

- RCP (Radio Control Protocol) and STFP (Simple Timeslot/Frequency/Power Protocol) support
 - 6 second EPOCH (48 Timeslots per EPOCH)
 - Support up to 6 base Radios per Base station radio controller
- ACSES-II ATCS Spec 200 and 250 message support
 - TSR list – ATCS type 11, 12, 19
 - ISR - ATCS type 21, 22, 23, 24, 25, 26
 - MTA - ATCS type 34, 35
 - Polling (Keepalive) – ATCS type 40, 41
- TSR message compression support
- RF Message Chaining support
- Secure message authentication and watermarking
- Redundant IP communication path when 220 MHz is not available

BCM Software – for Wayside Base Stations

- RRP (Route Resolution Protocol) support to provide ATCS address based message routing based on radio signal strength
- Interfacing with the CMU server using SSH v2 and SNMP v2c protocols.
- Wayside Encoder unit interface support
- Interface with Adjacent BCMs
- Interface with more than one OCM for Failover and recovery
- Invalid, duplicate, and aged message handling
- Whitelist filtering
- Web GUI that provides current device configuration, link health, routing information, view and download log files, and configure alarm and SNMP settings

IPCM Software – for Back Offices

- Redundant IP communication path when 220 MHz is not available
- ACSES-II ATCS Spec 200 and 250 message support
 - TSR list – ATCS type 11, 12, 19
 - ISR – ATCS type 21, 22, 23, 24, 25, 26
 - MTA – ATCS type 34, 35
 - Polling (Keepalive) – ATCS type 40, 41
- TSR message compression support
- RF Message Chaining support

OCM Software – for Back Offices

- Interface with D&MS, STS, and Legacy NS Interface
- Inter-rail operator OCM message exchange protocol support
- Interface with multiple BCMs and Adjacent OCMs
- Interfacing with the CMU server using SSH v2 and SNMP v2c protocols
- Invalid, duplicate, and aged message handling
- Whitelist filtering
- Web GUI that provides current device configuration, link health, routing information, view and download log files, and configure alarm and SNMP settings

Key Management System (KMS) Software – for Back Offices

- Automatic key generation, renewal, and key provision for MCM and BRCM
- Secure key delivery to MCM and BRCM
- Automatic Certificate generation, renewal, and provision for MCM and BRCM
- External key Interface to distribute keys to foreign railroad KMS
- Web-based admin console

CMU Server Software (Management Console) – for Back Offices

- Communications management unit configuration and management
- RCF file Management
- Interfacing with the OCM, BCM, MCM and BRCM using SSH v2 and SNMP v2c protocols
- Log management: automatic log retrieval
- Software updates for OCM, BCM, MCM, and BRCM
- GUI-based admin console

***Please see the STS-2025 datasheet for hardware specifications.**