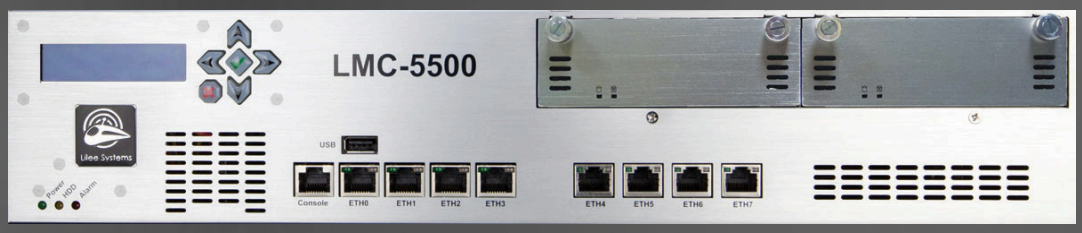
TransAir™ LMC-5500 Series

Lilee Mobility Controller for Mobile Asset Connectivity Applications



Features

- End-to-end IP layer routing transparent to carrier technologies
- Topology agnostic to hide the complexity of underlying layer 2 or layer 3 IP network. User traffic is tunneled from the remote wayside to the control center
- Seamless roaming to hide the locomotive movement from the Internet host: the on board computers and passenger Internet appear to be stationary
- Seamlessly maintains connectivity to remote stations across WLAN, WWAN, LAN, WAN, and 220 MHz PTC radio interfaces

Lilee Mobility Controller Highlights

- Fast handover of less than 50 ms across base stations or roaming between radio interfaces
- Integrated network management system for centralized provisioning, monitoring, and management (including SNMP)
- Support for up to 200 base stations per Mobility Controller
- Failover design automatically switches between active and backup LMC

Introduction

The Lilee Systems TransAir LMC-5500 Series Mobility Controller provides mobile asset connectivity for the management of remote devices such as the DTS-2000 Dynamic Telematics System, WMS-2000 Wayside Messaging Server, and LMS-2450 Lilee Messaging Server to enable applications such as passenger Wi-Fi, onboard information systems and surveillance, telematics and driver performance monitoring, and systems analytics.

The LMC-5500 provides radio device management with roaming control and enables a conduit between the trackside network and the back office servers for Positive Train Control (PTC) applications. The Lilee Mobility Controller (LMC) handles the registration from all four types of system radios: yard, base station, locomotive, and wayside. The LMC manages roaming of the locomotive radios from one base station to another or from one radio technology or medium (such as cellular) to another.

Multiple tunnels can be grouped into a single logical link. User traffic is distributed across tunnels in a group for load balancing and failover. Each tunnel monitors link quality (throughput, RSSI, latency) between the LMC-5500 and LMS-2450 to determine the weight for user traffic load balancing in the tunnel aggregation group. The weight changes dynamically when link quality changes.

In addition, the yard and base station radios establish tunnels with the LMC-5500 to allow locomotive radios to move across different segments of the network without having to be aware of the underlying network topology changes. The LMC also provides comprehensive web-based management to allow all radio devices to be managed centrally from this graphical console. It is a “one-stop shop” for all radio management tasks.

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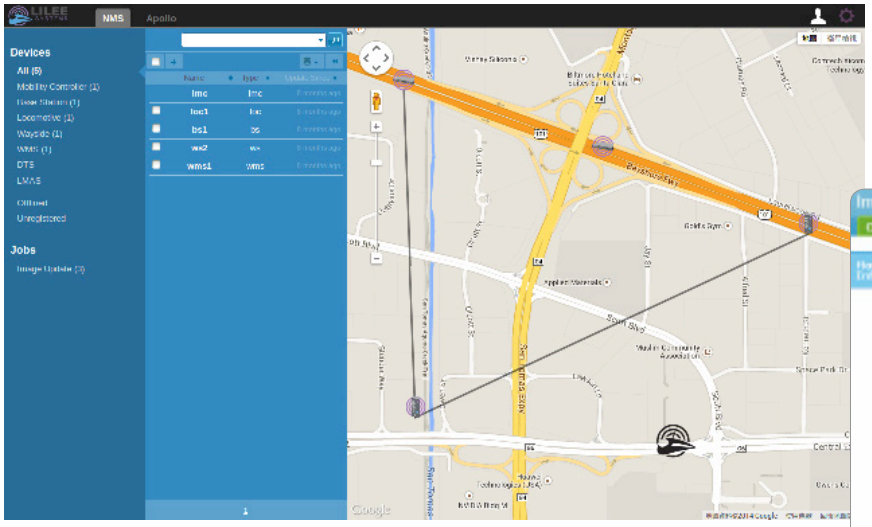


Lilee Systems Network Management GUI enables GIS-based visibility and remote diagnostics of the TransAir radio network.

Centralized Management GUI highlights:

- Remote configuration and management for base stations and locomotives
- Time slot management across base stations and networks
- ATCS protocol support via firmware upgrade
- Profile-based configuration support

LMC-5500 Specifications

Performance	
Remote base stations supported	200
L3 networks supported	800
IPv4 static routes supported	25,600
Locomotive/wayside stations supported	12,800
Aggregated tunnel throughput	800 Mbps
Encryption Types	AES, 3DES
Authentication Types	802.1X
Management Capabilities	SNMP, Web, CLI using SSH, Telnet and console port
Storage Devices	2 TB x 2 (RAID1, redundant, hot swappable)
Watchdog Timer	Hardware watchdog timer
Fans	Two hot swappable fans

I/O Interface	
Ethernet	Eight 10/100/1000Base-T Gigabit Ethernet ports via RJ45
Serial	One RS-232 System console port via RJ45
USB	One USB 2.0 port
LCD Panel	Serial LCD 16x2 characters with buttons
LED Indicators	Power Status, storage access, Ethernet status/speed

Power	
Power Input Voltage	100-240 VAC, 50-60 Hz
Power Supply Unit	Two hot swappable 250 W PSU
Power Supply Distributor	One hot swappable power supply distributor
Power Consumption (Typical)	160 W

Physical Characteristics	
Dimensions (H x W x L)	3.4 x 18 x 17.5 in (86 x 457 x 445 mm)
Weight	30 lbs. (13.6 kg)
Installation	2U standard 19 inch rack mount

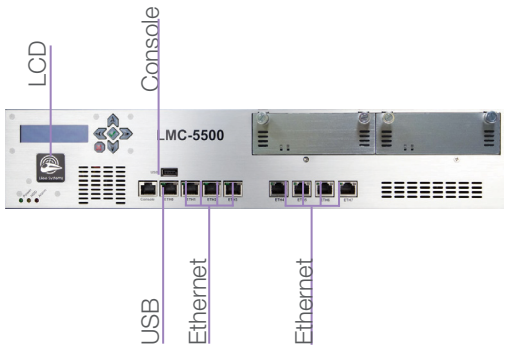
Environmental Limits	
Operating Temperature	5 to 40 °C (41 to 104 °F)
Operating Ambient Relative Humidity	10% to 85%, noncondensing at 35 °C (95 °F)
Storage Temperature	-40 to 70 °C (-40 to 158 °F)
Storage Ambient Relative Humidity	5% to 95%, noncondensing at 35 °C (95 °F)

Certifications

CE
FCC Part 15
IC ICES-003
EN 55022: 2006 + A1: 2007
EN 61000-3-2: 2006 + A2: 2009
EN 61000-3-3: 2008
EN 55024: 1998 + A1, 2001 + A2: 2003
EN 61000-4-2: 2008
EN 61000-4-3: 2006 + A1: 2007
EN 61000-4-4: 2004
EN 61000-4-5: 2005
EN 61000-4-6: 2008
EN 61000-4-8: 2009
EN 61000-4-11: 2004

Interface

LMC-5500



Ordering Information

SKU	Description
LMC-5500-BASE	TransAir Lilee Mobility Controller Base Unit with no software support
LMC-5500-MIP	TransAir Lilee Mobility Controller with IP Mobility support
LMC-5500-2TB	Replacement 2 TB SAS disk
LMC-5500-PSU	Replacement power supply
LMC-5500-FAN	Replacement fan

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