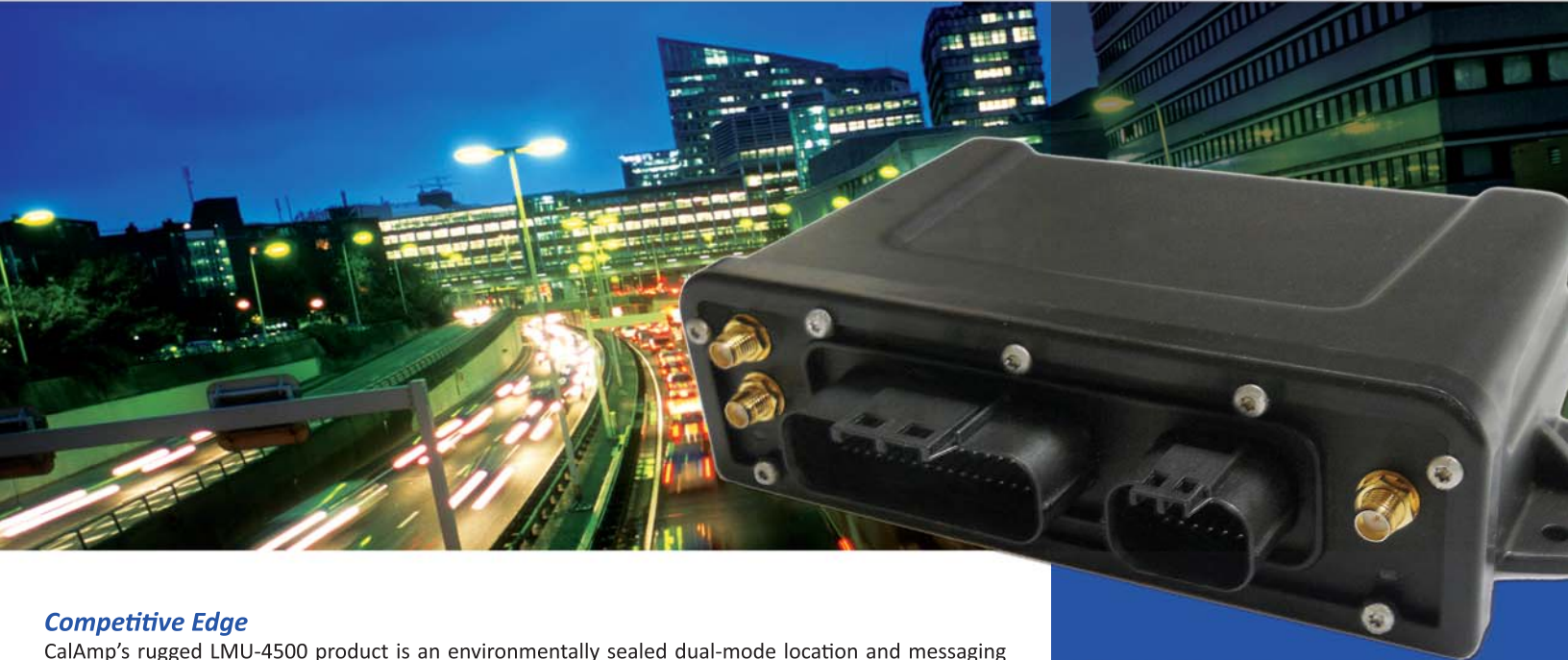# LMU-4500™ Series

ENVIRONMENTALLY SEALED LOCATION MESSAGING UNIT

CalAmp®

Competitive Edge

CalAmp's rugged LMU-4500 product is an environmentally sealed dual-mode location and messaging device for mining and construction markets that features both satellite and cellular communications as well as connection to the vehicles ECU. The rugged LMU-4500 will enable worldwide monitoring and control of mobile assets in severe climates and conditions.   The LMU-4500 offers leading GPS sensitivity receiver technology; either HSPA, GSM/GPRS and CDMA cellular technologies; built 3D accelerometer to measure g-force conditions; a multitude of I/O interfaces to hook up to; and expandable accessories that make it an industry leading value proposition. The LMU-4500 expandability and flexibility lowers the cost of delivering, supporting, and growing heavy duty fleet management solutions.

Expanded Interface

The LMU-4500 is designed to support customers needing a leading fleet management features, 16G accelerometers for measuring motion, driver behavior and impact events in an environmentally sealed enclosure. The LMU-4500 features a multitude of interfaces such as two switched power serial ports, Mobile Data Terminal (MDT) support, a comprehensive I/O system , optional jPOD heavy-duty ECU interface reads and transmits engine condition and performance data such as engine run time, oil pressure, temperature and other key performance metrics to provide the best possible real-time picture of vehicle health.   In addition, the LMU-4500 offers optional WiFi capabilities. This expandable architecture saves upfront costs while allowing your solutions to grow with customers' changing needs.

Flexibility

The LMU-4500 employs CalAmp's industry leading on-board alert engine, PEG™ (Programmable Event Generator). This advanced engine monitors external conditions and supports customer-defined exception-based rules to help meet the needs of your application. PEG continuously monitors the vehicle environment and responds instantaneously to pre-defined threshold conditions related to time, date, motion, location, geo-zone, input and other event combinations. With PEG, your unique application will meet demanding customer requirements. This behavior can be programmed by CalAmp before shipment, at a customer's facility, or over-the-air once the unit has been fielded. Combining affordability and device intelligence with your unique application provides the most flexible tracking device in its class.

Over-the-Air Serviceability

The LMU-4500 also incorporates CalAmp's industry leading over-the-air device management and maintenance software, PULS™ (Programming, Update and Logistics System). Configuration parameters, PEG™ scripts, and firmware can all be updated over the air. PULS™ offers out-of-the-box, hands-free configuration and automatic post-installation upgrades. You can also monitor unit health status across your customers' fleets to quickly identify issues before they become expensive problems.

Experience
The Advantage

- Sealed IP67 enclosure
- HSPA, GSM/GPRS or CDMA 1x cellular configurations
- Dual reporting 20,000 buffered message log to manage cellular, satellite, or WiFi logging
- Built-in 3-axis accelerometer for motion sensing, hard braking, impact detection
- 8 Inputs / 8 Outputs / 4 A-to-D
- Two 1-wire interfaces for driver ID or temperature sensors
- Two switched power serial ports
- Expansion ports for plug-in Vehicle Bus, or WiFi
- Configurable power sleep modes
- Gamin, MDT, and other advanced peripheral support
- 32 built in Geo-fences, plus any combination of circle or polygon zones, up to 4500 points
- Back-up battery
- Automatic, Over-The-Air unit configuration on power-up (PULS™)
- Over-The-Air firmware download (PULS™)
- Web-based device management diagnostic tools (PULS™)
- PEG™ event configurable behavior

LMU-4500 Specifications

GPS Specifications

Location Technology	50-channel GPS (with SBAS)
	SBAS: WAAS, EGNOS, MSAS, GAGAN
Location Accuracy	2.0 meter CEP (with SBAS)
Tracking Sensitivity	-162 dBm
Acquisition Sensitivity	-147 dBm
Kick Start	3 sec @ -130 dBm
AGPS Capable	

Accelerometer Specifications

Internal 3-axis 16G MEMS accelerometer for motion detection , driver behavior, impact detection

Cellular Specifications

Data Support	SMS, GPRS, CDMA 1xRTT or HSPA packet data
GSM/GPRS Quad-Band	850/900/1800/1900 MHz
GSM/GPRS Output Power	Class 4 (2 Watts) 850/900 bands
	Class 1 (1 Watt) 1800/1900 bands
CDMA Dual-Band	800/1900 MHz
CDMA Output Power	800: +24dBm
	1900: +24dBm
HSPA/UMTS Dual-Band	900/2100 MHz (bands VIII, I) or
	850/1900 MHz (bands V, II)
	3GPP release 6
	5.6 Mbps upload, 7.2 Mbps download
GSM/GPRS/EDGE Fallback	850/900/1800/1900 quad-band
	GPRS class 12, EDGE MCS1-MCS9

Comprehensive I/O

Digital Ignition Input	1 fixed bias
Digital Inputs	7 (high/low programmable bias 0-30VDC)
Digital Outputs	5 open collector relay driver (200 mA)
Outputs	2 20mA current limited
Analog Inputs	2 ADC (0-30VDC, +/- 0.1v accuracy)
1-Wire® Interface	2 (Driver ID, temperature sense)
Serial Interfaces	2 TTL (1 5 wire serial TTL, 1 5 wire switched power TTL)
Status LEDs	3 (GPS , Cellular Comm, Alternate Comm Status)

Certifications

Fully certified FCC, CE, IC, PTCRB, Applicable Carriers

Environmental Specifications

Temperature	-30º to +75º C (operating)
	-40º to +85º C (storage)
Humidity	95% R.H. @ 50° C non-condensing
Shock and Vibration	U.S. Military Standard 202G and 810G, SAE J1455
EMC/EMI	SAE J1113; FCC–Part 15B; Industry of Canada

Electrical Specifications

Operating Voltage	6-32 VDC (Filtered 12/24V automotive power supply input; Input voltage monitor ADC
Back-up Battery	Internal 1000mAH Lithium Ion backup battery and charger
Power Consumption	2 mA typical deep sleep mode @ 12 V
	10 mA typical radio active mode @ 12 V (sleep on network with SMS)
	20 mA typical Idle w/IP connection open on Cell Radio @ 12 V (sleep on network with GPRS)
	60 mA typical active tracking w/GPS and Cell enabled @ 12 V (active tracking)

Physical Specifications

Dimensions	4.8" (L) x 3.3" (W) x 1.3" (H) (130 x 80 x 30mm)
Weight	11 oz, (311.8 g)

Connectors, SIM Access

SIM Access	Internal
External Cellular	SMC
External GPS	SMA (with tamper monitoring, 3.3v)
Satellite Option	SMA
WiFi Option	RP-SMA
Vehicle Bus Option	12-pin JAE MX23A
I/O, Power, Expansion	34-pin JAE MX23A

Mounting

Screw mounting

Optional Features/Functions

- Satellite - Iridium
- WiFi - 802.11b/g/n
- jPOD Truck Vehicle Bus - J1708, J1939
- All necessary antennas (GPS, cellular, combined GPS/cellular)
- Weatherproof power/IO cable with flying leads
- Weatherproof power/IO cable with breakout connectors
- Weatherproof expansion slot cable with flying leads
- Weatherproof expansion slot cable with J1939 connector

Development Support Options

- Customized Software Features Available on Request
- Custom Development Available on Request

POD™ Vehicle Bus Adapter