VLR200

Vehicle Locator and Telematics Unit

The Thorcom® VLR200 is a high performance vehicle location and telemetry unit combining a 50 channel GPS receiver and quad band GSM/GPRS communications in a robust unit suitable for a wide range of vehicle monitoring and mobile data applications.

The VLR200 is the latest development in GPS/GSM vehicle location and telemetry systems by Thorcom® and represents over 15 years experience implementing GPS positioning and vehicle location systems.

VLR200 brings together best-in-class 50 channel GPS receiver that includes Satellite Based Augmentation Service (SBAS), quad band 850/900/1800/1900MHz GSM/GPRS communications technology for world-wide radio coverage, analogue and digital inputs/outputs for telemetry and on-board data processing using the Java™ J2ME programming environment.

The VLR200 is small, lightweight and robust and is easily installed in the majority of vehicles. The unit can be used with permanent antennas, temporary (magnetically mounted) antennas or covert antennas.

VLR200 connects to the vehicle battery and uses an ignition sense (engine on) signal to power on and off automatically without user intervention. The unit operates over an extended supply range and is suitable for use with both 12V and 24V vehicles.

Four telemetry inputs can monitor indications such as a "panic" switch, hand-brake on/off, blue-lights on, door opened or other signals. An analogue input allows voltages to be measured over the range 0-36V and two open collector outputs allow relays, solenoids or other control devices to be operated.

An alarm input allows connection of a vehicle security alarm and a "force off" input allows the unit to be shut down in areas where transmissions are not permitted such as petrochemical sites or security restricted areas or disabled for privacy reasons when installed in privately owned staff cars when the staff member is off duty.

The VLR200 transmits location updates to any host that is reachable via IP from the GPRS network operator's public internet connection or over a private GPRS APN in a corporate environment.

Vehicle location information can be delivered to host computer systems, job despatch systems, or command and control systems via the Thorcom resource location gateway (ARL Gateway) or can be accessed via a web-based managed services such as Xlocate®.

Key features

- High performance GPS receiver
- Quad band GSM/GPRS radio
- Intelligent AVL engine
- Telemetry inputs and outputs
- Buffered data transmissions
- GSM voice call capability
- Low power consumption
- Compatible with existing systems
- Remote configuration and upgrade

Applications

- Automatic vehicle location
- Vehicle telemetry/telecontrol
- Asset tracking
- High value goods tracking
- VIP and guarding
- Emergency services
- Public transport
- Local authorities
- Public utilities
- Lone worker systems
- Security services

Options

- Integration with Satellite Navigation†
- Mobile data via SatNav screen†
- Upgrade to Galileo positioning‡
- USB data port (data modem function)‡
- Terminal server (remote data access)†

† software upgrade required
‡ hardware option (at time of manufacture)

"The VLR200 provides a high performance mobile tracking and telemetry unit designed for demanding applications and mission critical systems"

THORCOM

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Technical Specifications

GSM/GPRS

Cinterion TC65i with Java J2ME.
Quad band operation 850/900/1800/1900MHz.
Class 4 (+33dBm) on ESGM850/900MHz and
Class 1 (+30dBm) on GSM1800/1900MHz.
GPRS Multislot Class12, Full PBCCH,
Coding Schemes 1-4, Mobile Station Class B.
Speech codecs: Half-Rate (HR), Full-Rate (RF), Enhanced Full Rate (EFR), Adaptive Multi Rate (AMR).
SIM card: Standard GSM11.11 1.8V or 3.3V .

GPS

Ublox 50-channel GPS L1 (1575.42MHz) C/A receiver.
Satellite Based Augmentation System (SBAS) - compatible with WAAS and EGNOS and others.
Time-To-First-Fix: Cold - 32s, Warm - 32s, Hot - 1s.
Receiver sensitivity: -160dBm (-143dBm cold start).
Horizontal position: < 3.0m, with SBAS < 2.0m
Active antenna 20-30dB gain, 3.0V DC power, antenna supervisor detects open/short circuit faults.

Input/Output

Four general purpose inputs (0-33V)
Two special purpose inputs for Ignition and Alarm
Two general purpose switching outputs (1A max)
Two analogue inputs (supply voltage and user)

Status Indicators

PWR: Power on
SVC: Network service
GPS: GPS receiver operating
MSG: Message transmission

Connectors

Power & I/O: 12-way Molex Minifit Jnr.
Serial: RJ45 RS232 with TXD/RXD, RTS/CTS, GND.
GSM Antenna: FME male, 50 ohm.
GPS Antenna: SMB socket, 50 ohm.
Audio: RJ11 6-way connector.

Power

Supply: 9.0-33.0V DC negative earth.
Consumption: <5mA (powered down), 60mA (idle), 250mA (transmit).

Mechanical

Enclosure: Aluminium extruded case.
Size: 112mm (W) x 90mm (D) x 33mm (H) excluding connectors.
Weight: 250g.

Approvals

GSM: 3GPP TS 51.010-1 and EN 301 511 V9.0.2.
R&TTE: 99/05/EC – CE0682.
EMC: 89/336/EC - EN 301.489-1 (CE)
Vehicle EMC: 95/54/EC and 2004/104/EC
RoSH: Lead free - 2002/95/EC
FCC Id: QIPTC65I. Industry Canada Id: 7830A-TC65I

GPS and GSM specifications quoted as per manufacturer data.

Thorcom reserves the right to amend the product description and specification in line with its policy of continued improvement.

Errors & Omissions Excepted.

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Accurate positioning

The 50 channel Ublox GPS receiver combines high sensitivity, fast start-up times and accurate positioning using a standard active antenna. The Satellite Based Augmentation Service (SBAS) further enhances operation and allows position accuracies of better than 2m to be acheived. A variant of VLR200 is available that can be upgraded to the European 'Galileo' navigation system providing dual mode (GPS+Galileo) operation - please enquire.

Intelligent rules based reporting

Thorcom's intelligent rules-based tracking algorithm provides location updates at configurable rates without the central system having to poll to obtain information. When correctly configured this maximises the usefulness of data transmitted while minimising transmissions and operating costs.

Reporting rules include:

- power on
- first GPS fix
- time since last update
- distance travelled
- started or stopped moving
- maximum rate of turn exceeded
- maximum speed exceeded
- approaching waypoint
- change of GPS navigation status
- change of GPRS radio coverage
- change of telemetry inputs
- alarms and fault conditions
- supply voltage low/failing
- system shut down

Voice call support

VLR200 supports placing and receiving GSM voice calls via an audio interface connector that supports a standard 4-wire interface suitable for a telephone handset, Bluetooth® adaptor or loud-speaker and microphone for "hands free" operation. The unit can be configured with manual or automatic answer of incoming calls and can be configured to dial preset destination numbers on operation of digital inputs.

Data buffering

VLR200 incorporates a data buffer that stores position reports if they cannot be transmitted due to poor radio coverage and will re-transmit stored location updates recorded the next time the unit returns to normal radio service in "catch up" mode. Retransmission of missing data is automatic and occurs in background. This feature is designed to avoid loss of information in areas of poor radio coverage and counter tampering by deliberate disconnection of antennas. The data buffer can hold up to 2000 reports which is typically enough for two days vehicle usage (depending on configuration).

Alarm and fault monitoring

VLR200 monitors the operation of the GSM network connection and GPS antenna operation for indication of loss of network, faults and possible tampering and reports "fault" and "fault cleared" events over the air or to the data buffer for reporting later.

Security and resilience

A range of techniques are employed to ensure data integrity and security including time-stamping of all messages, message sequence numbers, CRC checking and data encryption. End-to-end network connectivity checking and the ability to deliver all messages via one or two data centres provide additional resilience for mission critical users such as the emergency services.

Satellite navigation integration

VLR200 can be integrated with Satellite Navigation systems from Garmin® that have the Fleet Management Interface (FMI) allowing mobile data applications to be implemented on the satellite navigation system's display. Applications include job despatch, automated guidance navigation guidance to destinations, status messaging and two-way text messaging.
Market places include emergency ambulance despatch, passenger transport ambulance day control, courier despatch, domestic repair engineer management systems, fleet logistics, private limousine and taxi operations, and more - please consult Thorcom regarding the availability of mobile data software for your application.

Configuration and management

VLR200 is configured using a Command Line Interface (CLI) via the RS232 serial port or remotely over the GPRS network. Network access allows the unit to be re-configured and diagnostics to be performed remotely. Firmware can be upgraded over the air (OTAP) allowing updates and new features to be deployed without having to visit the vehicle, reducing engineering effort and costs.

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