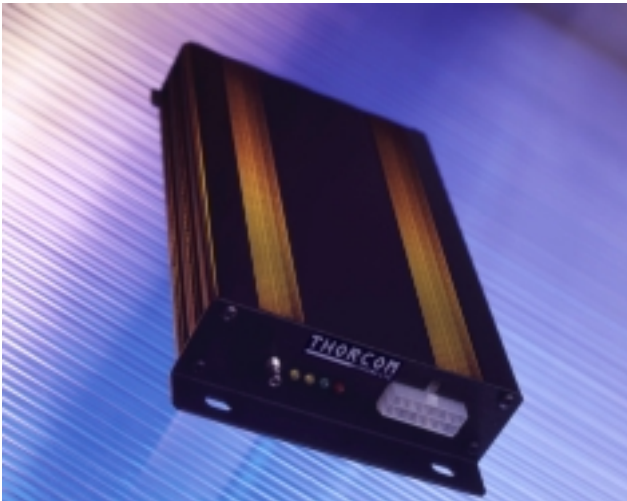


A highly integrated vehicle control unit from Thorcom Systems for Automatic Vehicle Location and Vehicle Telemetry for use with Tetra, GSM, RAM and Trunked Networks



The MCU500 is designed to meet the needs of fleet operators who need a low-cost mobile control unit for the purposes of Automatic Vehicle Location (AVL), vehicle telematics and the option of two-way data.

The MCU500 is designed to allow integrators to implement a complete mobile application with the simple addition of a suitable 'radio' device and any in-vehicle sensors, in particular where operator interaction is to be minimised or even completely eliminated.

Suitable application areas are :

- Public Utilities – field engineer monitoring & job despatching
- Emergency Services – Police, Fire and Ambulance
- Fleet management – transport & logistics control
- High Value Goods tracking
- Vehicle Security and VIP guarding

Currently the MCU500 is designed to interface to any general digital bearer, these being:

- Trunked Radio Control Channel
- Tetra Radio
- GSM Cellular services
- Future bearers include RAM and Satellite services

AVL Systems

The MCU500 uses a Trimble GPS receiver to provide location information. The well known and highly developed AVL engine from previous Thorcom AVL products is used to provide the basis for intelligent 'rules based' mobile originated AVL updates.

Up to 10 different sets of rules (or profiles) can be programmed into the MCU500 which allows a wide range of operation from transmitting AVL messages very frequently down to only once or twice daily, or even less. Polling the mobile, then, can be completely avoided – thus saving on messages, but polling operation is available should it ever be required.

Vehicle Telematics

The MCU500 has on-board I/O which allows for more sophisticated automatic operation, particularly when used in conjunction with AVL data. The MCU500 has:

- 6 digital inputs - ground to activate types
- Single channel pulse counter function on first input
- 2 relay outputs 10A SPCO change-over contacts
- 1 Analogue input : 0 - 2.5 VDC

The digital inputs can be connected to any simple switch device, such as operator or loading door switches, emergency panic switches, or vehicle alarms. The pulse counter function is designed for interfacing to other in-vehicle systems such as a Tachograph or gearbox mounted odometer.

The automotive change over relays are designed for controlling any external device, typical uses might be to control the power supply to other on-board devices, such as the radio, or in-vehicle devices such as an anti-theft device or fuel pump.

The analogue input is intended for measuring other on-board signals, typical uses might be load temperature, or axle weight.

Combining AVL & Telematics Data

By combining AVL information and vehicle telematics, some very useful additional automatic applications can be implemented, where a user terminal might have been previously thought of as necessary. Examples of this might include an automatic delivery system where 'loading door opened' are combined together with 'current location and time' data to update a host application. Lone-worker systems can be implemented using a combination of location, a door or status switch and a software timer.

Two-Way Data

The MCU500 has three externally available serial ports allocated as follows:

- 2 x PC AT type serial RS232 interfaces
- 1 x RS422/485 differential serial interface.

The primary role of the serial interfaces is to allow a mobile data terminal to be attached as part of the vehicle fit, or at any subsequent time when an upgrade is required. Additionally, the serial ports allow the unit to be configured using a personality programmer, or communicate to other on-board devices such as ticket machines, passenger information displays etc.

Power Control

The MCU500 has a built-in high efficiency switched mode power supply with a wide 10-35 V DC input range to allow it to work with 12 or 24 volt vehicle power systems. The MCU500 also combines a power on sense input (usually ignition) with a programmable delay auto shut down facility. When working from batteries and/or solar power this auto shut-down facility can be used in conjunction with a timed self-power up to enable the MCU500 to enter 'sleep mode' for extended periods.

Configuration

The MCU500 can be configured for use by using a Windows configuration tool, the Modem Personality Programmer. This allows all the user parameters to be selected to suit the application, and then programmed into the MCU500's non-volatile memory.

Specifications

Processor :	Zilog Z80182 Intelligent Peripheral Controller (ZIP) at up to 24.576 MHz
Memory :	32Kb or 128Kb Static RAM, 32/64/128/256Kb firmware EPROM/FLASH, 2Kb non-volatile RAM
Serial ports :	Port #1: RS232 serial port on 9-way D- type Port #2: RS232 serial port on 9-way D- type Port #3: RS422/485 differential serial port Port #4: Internally connected to GPS receiver
Supported speeds:	300, 600, 1200, 2400, 4800, 9600 and 19200 baud
Flow control:	XON/XOFF or CTS/RTS possible
Bearer Module Interface:	MPT1327 interface, MAP27 RS232/TTL/Inverse TTL on Port #2 Motorola D700 interface GSM/RAM bearers – please check availability
Digital I/O:	6 inputs all ground to activate types, single channel pulse counter function available on first input 2 relay outputs 10A SPCO change-over contacts
Analogue Input	0 - 2.5 VDC (external or field conditioning required)
GPS Receiver:	Internal Trimble ACEll core module receiver using TSIP interface, 1PPS for timing functions. Input for RTCM SC-104 correction data on Port #1
Connectors:	12-way Molex Minifit Junior, right angled socket with +12V power, GND, Ignition, 2 x changeover relays, 3 x digital inputs (IN1, IN2, IN3). 2 x 9-way D-type male RS232 port RJ45 with RS485 expansion bus and 3 x digital inputs (IN4, IN5, IN6). SMB RF connector for GPS
Power Supply:	High efficiency switched mode power supply 10-35 V DC input range (Two versions selected at time manufacture - Nominally 12V or 24V) 'Power on' sense from ignition line of vehicle. Programmable auto shut down, timed self-power up to enable 'sleep mode'
Power Consumption:	2.7 Watts including GPS
Environmental :	Enclosure to IP54 Temperature range: - 10 to +55 Celsius Humidity: 0 to 90% RH non-condensing MTBF: 70,000 Power on hours (excluding GPS)
Dimensions & weight:	Cased unit: 170mm (L) x 110mm (W) x 32mm (H) OEM PCB: 160mm (L) x 100mm (W) x 25mm (H) Weight: 900gm (cased unit)

Ordering Information

MCU500/MAP27	: MCU500 for Trunked radio, including GPS
MCU500/DTETRA	: MCU500 for Dolphin-Tetra, including GPS



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