

## GPS-EPOCH TIMED TELEMETRY LINK



**GPS/GT4 Transmitter with GPS receiver**



**GTR4 Receiver**

*The GPS-Epoch timed telemetry* transmission system enables several remote data sources to relay serial data packages to a receiver using only one frequency channel.

This technique efficiently uses the allocated channel for more than one data source as is currently the convention. This technique of time division multiplexing using atomic standard GPS timing enables remote and unconnected data sources to be relayed without over-air contention of radio transmissions

Dependant upon the data content, up to 100 separate channels may be relayed on a single carrier frequency by time multiplexing the data 'slots'. Synchronising of the data periods uses the 1 second (absolute) time mark derived from a standard GPS receiver whereby individual transmitters are set to transmit for a short period within a second, or over every few seconds, as determined by the configuration set-up. Each transmitter also relays its identification code and location such that on reception the data package can be co-related to the actual source.

The receiver, operating on a single frequency, outputs the data in standard Ethernet protocol for real time processing using a standard PC interface utility. Further distribution by a LAN infrastructure for data management and Diversity Reception is also featured.

By using other GPS-Epoch Telemetry links on adjacent channels, when available or needed suggests an expansion capability limited only by the available channels and required data rates.

*Typical applications include* cost effective real time monitoring of personnel or moveable assets such as plant etc., over large open-air sites e.g. farmland, show grounds, race tracks etc".

### **GPS/GT4 TRM GPS Epoch Transmitter**

The GPS/GT4-TRM provides a standard 4800/9600 Baud data link. Serial data is processed to pass over the standard 25 kHz channel spacing radio channel without placing any restrictions on the data to be sent. This function is implemented in software within the GPS/GT4 module.

An integrated GPS receiver supplies the dynamic 'epoch' timing for time division multiplexing to link one of several transmitters to the base station receiver. The GPS receiver also supplies the remote transmitter location to enhance the data content.



## Specification

The GPS/GT4 is an ultra miniature synthesised transmitter module operating in the 458MHz or 868MHz bands. Power levels approach the maximum permitted level of 500mW EIRP. Standard 25kHz channelling is employed. The requirements of EN300-220 are met.

The transmitter is optimised for long battery life having a wide 3V to 6V supply range, and sub-micro amp. quiescent drain. The transmit power can be configured to balance battery life against range. Automatic shutdown at the end of battery life is provided.

An internal 9600 Baud modem is included providing a transparent serial connection capable of transferring standard data. GMSK provides low levels of adjacent channel power. The transmitter may also be modulated directly by an external data source.

- Up to 500mW EIRP
- Data rates to 9600 Bit/s
- 25kHz channel spacing
- 3V to 6V operation
- Very low quiescent current
- Internal 9600 Baud mode

Data input to the transmitter is via a standard serial i/o interface connector. The transmitter can be powered by an external dc source or by the optional internal high capacity 3V3 battery that is charged by a plug top charger. Normal operation time from a fully charged battery is in excess of 3 hours.

## GPS Performance Characteristics

GPS Receiver Type	32 Channels, C/A code,	Update Rate	1 Hz
Start-up Time	Hot start < 3 s	Timing Accuracy	50 ns RMS 1PPS
	Warm start 35 s	Sensitivity	Acquisition -140 dBm
	Cold start 41 s		Tracking -149 dBm
	Reacquisition Time < 1s		

The receiver is configured to automatically appear as a network device on a LAN, such that the data can be accessed at any convenient node by simply enabling the IP address.

The base station is recommended to use a high gain co-linear omni antenna suitable for mounting at a high vantage point on a roof top or the side of a building used the supplied brackets. RF feed to the receiver is by a low loss coaxial lead terminated with connectors to couple to the antenna and receiver respectively.

The receiver should be mounted close to the antenna without need to extend the supplied antenna feeder. A dc power supply allows for connecting to the ac mains in the vicinity of the receiver. This is simplified by the LAN facility as the receiver requires no user intervention and can be installed at a convenient location to minimise the antenna RF feed

Coupling to the LAN is by standard Ethernet CAT5E cable. Access to the received data stream is by standard LAN access procedures. By employing the LAN technique of receiver data distribution, real time **Diversity Reception** from two (or more) receivers statically located to optimise reception, provides for distinct advantages over single point reception.



## NAVTECH SYSTEMS Ltd

Sulby, Nr. Welford, Northamptonshire. NN6 6EZ. UK.  
Telephone: +44 (0)1858 880 857 Fax: +44 (0)1858 880 859  
sales@navtechsystems.co.uk www.navtechsystems.co.uk