

NAVTECH MSF / GPS RECEIVER NTS-MSF-G/M-01

Now Verified and approved by the National Physical Laboratory.



MSF/GPS Receiver module



MSF Antenna module

Overview:

Since the move of the MSF transmitter from Rugby to Anthorn in Cumbria, many of the existing MSF receivers are failing due to the extended range of reception necessary and a general increase in radio noise around the MSF frequency of 60 KHz. To overcome this situation a more intelligent radio receiver has been developed and seamlessly combined with the absolute time reference from the GPS system. This realises a very robust, dual signal source, time code reference that provides uninterrupted time to Universal Accuracy together with automatic BST/UTC (GMT) change over within the time code.

Description:

The Navtech Systems MSF/GPS receiver is the latest 'state of the art' facility for accessing the extremely accurate timing information broadcast by the UK MSF transmitter and the US GPS satellite constellation. An integrated DSP-based MSF receiver (able to process two antenna feeds simultaneously) with an (optional) extremely sensitive 12-channel GPS receiver provides for the most comprehensive off air timing reference available.

Timing, status and signal quality information is displayed on an internal LCD panel. Regenerated MSF information, completely locked to the received MSF signal, is output for connection to third party MSF decoders via a 3.5mm mono jack plug. A multi-function RS-232 port allows for connection to a PC. Model versions are differentiated by the presence or absence of a GPS receiver (**G** = GPS and MSF, **M** = MSF only).

The complete system comprises of either two or three small weatherproof plastic housings. In the three-box version, two contain the tuned ferrite antennas together with filtering and signal amplification; these are connected to the third enclosure, containing the DSP receiver (via coaxial cables with TNC fittings). A single 12V DC input is made to the receiver housing; power for the antenna signal amplifiers is via their coaxial interconnection cables.



MSF antennas:

Signals from one or two ferrite rod antennas may be processed simultaneously. The receiver module continuously monitors the signals available from the two antennas. It also continuously monitors the signals available from its integrated GPS receiver (if fitted).

MSF/GPS:

The device automatically selects which of the signal sources to use at any time by monitoring the measured signal quality parameters. GPS is used in preference to MSF when five or more satellites are visible.

The signal source being used at any time is indicated on the unit's LCD display. An 'event log' records the last 1000 signal source changes. This log is accessible via a PC connected to the unit's RS-232 connector if desired. When switching between sources or in the event of poor signals from all external sources, the unit's internal clock provides continuous time output. This internal clock is phase locked to the MSF signals and enables completely seamless source switching.

In the rare event both MSF and GPS become off line the internal phase locked clock maintains an accurate time code for several hours until either MSF or GPS time is restored.

Specification:

Power	: 12Volts dc; approx 250mA via dc power jack (ac plug top PSU supplied)
MSF	: Remote antennas with LNA, filter, cable driver in weatherproof housing.
GPS	: High sensitivity embedded GPS module with integral and external antenna.
Data	: Standard NPL/MSF data pulse code timing format - 2 independent outputs
GPS	: Auxiliary GPS NMEA time and position messages
LCD	: Integrated 2 row LCD status monitor showing receiver status and time data
10MHz	: Internal PLL, TCO crystal oscillator slaved to off-air time reference

Connectivity:

Input power	2.1mm dc power jack
Antenna input	TNC socket (X2)
Data output	3.5mm Stereo jack (MSF time signal)
PC data I/O	Serial 9 way D socket - selected
GPS Antenna	Internal with SMA for external antenna (optional)
GPS data	Serial 9 way D socket - selected
10MHz (TTL)	Coaxial jack (optional)

Dimensions:

Receiver module	120 X 90 X 50 mm approx
Antenna module	110 X 82 X 35 mm approx



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