



## Marlin Portable Unit

## Marlin Portable Monitoring Unit

### Overview

Marlin is a rapidly deployable system for the monitoring of calls made across the Inmarsat and Thuraya satellite systems. The call intercept is invisible to both the user and the satellite network.

Marlin enables traffic between the mobile terminal and the satellite to be monitored in a line of sight operation, within radio range of the target.

Control of the system is via an intuitive windows based GUI. Incoming calls are displayed in real-time, and voice is played via a laptop computer, with each side of the call played back on either channel of the stereo output. Software to decode and display a number of fax and data protocols is included with the GUI.



Information relating to the identification of called and calling parties is recorded, along with the geographical location (depending on service type and network).

### Physical Description

The Marlin Portable Monitoring System comprises:

- Laptop
- Satellite and Target Antennae
- Marlin Portable Monitoring Unit
- Power Supply

These are supplied in travel cases for easy transport.

The monitoring unit itself is housed in a small desktop case (a rack mountable version is also available).

It contains the following removable cards:

- 2 x Multi-channel Demodulator Cards
- 1 x Dual L-band Down Converter

Each card sits horizontally and plugs into the unit from the front, allowing easy replacement of individual cards. A backplane provides power and signal distribution within the unit, along with accommodating an Ethernet Switch and Frequency Reference.

## Key Features

### Platform

- Satellite to ground monitoring in line of sight
- Intercept of up to 7 calls simultaneously
- Small, portable form factor
- Lightweight
- L-band 'Target' and 'Satellite' inputs
- Built in high stability reference
- 10/100BaseT Ethernet Control & Data Interface

### Inmarsat

- B (including HSD)
- M
- Mini-M
- Gan (including HSD)

### Thuraya

- Voice, Fax and Data
- Up to 3 spot-beams simultaneously monitored
- Up to TBC simultaneous calls

## Technical Description

The Demodulator Card includes the following:

- Wideband High Speed ADC
- Digital Down-Converter
- Digital Signal Processor
- Ethernet Interface

The Demodulator Card accepts an instantaneous bandwidth of 34MHz, centered around 72MHz. The signal is filtered for image rejection, and then digitized by a high-speed analog-to-digital converter. Frequency-tuning is performed by a digital down converter (DDC). The resultant base-band signals are filtered by a programmable digital filter and DMA'd directly to the DSP for demodulation. The demodulated data is output via the Ethernet Interface.

The Dual Down Converter Card takes L-band input from the Satellite and Target antennas, and down-converts to the 72MHz required by the demodulator cards. Power is supplied to the antenna LNAs via the same connection, allowing rapid deployment. It features variable attenuation to accommodate the wide range of signal conditions experienced in the tactical environment.

The backplane provides a 10 MHz reference and IF input signal to each of the Demodulator Cards. The 10MHz frequency reference is derived from a temperature compensated crystal oscillator with a stability of 1ppm.

The Ethernet Switch provides 4 10/100BaseT auto-negotiating Ethernet ports. Two of the ports connect internally to the Demodulator Cards. The remaining two ports are connected to RJ-45 connectors on the front of the unit. One allows connection to the laptop required for control of the Marlin. The other is an expansion port. This allows a second unit to be 'daisy chained', so that both units may be controlled from a single laptop, or for the connection of compatible accessories.

## Specifications

<b>Ref Input</b>	
Target Connector	BNC Female
Satellite Connector	TNC Female
Input Impedance	50 $\Omega$
Target Attenuation	0 – 60 dB in 30dB steps
Satellite Attenuation	0 – 24 dB in 6dB steps
Target Frequency Range	1626.5 – 1660.5 MHz
Satellite Frequency Range	1525.0 – 1559.0 MHz
<b>Internal Frequency Reference</b>	
Reference Frequency	10 MHz
Reference Type	Temperature Compensated Crystal Oscillator (TCXO)
Reference stability	1ppm
<b>Ethernet Control &amp; Data Interface</b>	
Connector	Female RJ-45
Number of Connectors	2
Interface Type	10/100BaseT auto-negotiating
Description	Command input/data and status output, daisy chain to subsequent unit
<b>Physical</b>	
Unit Dimension	135mm (h) x 315mm (w) x225mm (d) (excludes 19" rack mounting hardware)
Weight	5.2 kg unit standalone, 6 kg rack mounted
Unit contents	2 x Demodulator Cards 1 x Dual Down Converter
Card Size	233 (h) x 220 (d)
Color	RAL 9006 Light Grey
Operating Temperature	0°C to +40°C
Storage Temperature	0°C to +60°C
Relative Humidity	10% to 90% non-condensing
Cooling	Internal forced air cooling provided
<b>CE Approval</b>	
Safety	EN60950 LVD
EMC	EN55022 Emissions EN55024 Immunity
<b>External Power Supply</b>	
Voltage	115-230V AC
Frequency	60-50 Hz
Voltage selection	Auto-ranging
Power Consumption	250W
Dimensions	65mm (h) x 188mm (w) x 95 (d)
Weight	0.8 kg



If you would like further Information about ELAMAN,  
or would like to discuss a specific requirement or project, please contact us at:

**Elaman GmbH**  
**German Security Solutions**  
**Seitzstr. 23**  
**80538 Munich**  
**Germany**

**Tel: +49-89-24 20 91 80**  
**Fax: +49-89-24 20 91 81**  
**info@elaman.de**  
**www.elaman.de**