



- **MAMBO56**

- GSM / GPRS / GPS / Bluetooth device

- Operational description



OPERATIONAL DESCRIPTION

Based on the GSM/GPRS and state-of-art GPS technology for satellite navigation, FALCOM introduces a new powerful pocket size device with a stand-alone software system for personal safety and security as well as asset monitoring. FALCOM MAMBO consists of the GSM/GPRS engine, 20-channel GPS receiver, Bluetooth™ class 2.0 and a 3-D motion detector (in the state of inactivity it can be set into the low power mode) as an all-in-one solution.

FALCOM MAMBO is a Tri-band GSM/GPRS engine that works on the three frequencies either GSM 900/1800/1900 MHz or GSM 850/1800/1900 MHz. The integrated GPS receiver architecture based on the SiRFstarIII chipset, provides more than enough precise location information using satellite signals to enable it to track people wherever they are in the world. With its integral housing, compact design, ultra-low power consumption, easy-to-carry and easy-to-use, it is an outstanding quality, high-performance, operating as a stand-alone device ideally suited for personal security, asset management and automotive applications as well. The configurable internal firmware is a fundamental component, which in combination with the excellent hardware performance makes the FALCOM MAMBO device to be the best application where the fleet management and personal security today are required. Operating as a stand-alone personal security device, manufactured in a form factor 85 mm x 59 mm x 25 mm and weighing less than 120 grams with battery, it can be easily fit in a jacket pocket (e.g. into a child's pocket). Ease-of-use is ensured with just three touch-buttons and three LEDs. Each LED includes three-different lighting colors. Each Button and LED is free-configurable. Based on the internal firmware all Buttons and LEDs can be adjusted to the user requirements. Depending on the user-defined configuration, each touch-button can execute more than one action (voice call, TCP packets, SMS generation etc.). In the event of emergency, the person carrying the device can contact a range of services by pressing just a button. Upon button activation, the equipment uses the GPS signals to define its accurate position, and it sends a SMS message with its location information or it performs a voice call to one of the predefined numbers via the GSM network. With the help of the implemented TCP/IP protocol, FALCOM MAMBO (person who carrying it) can be continually tracked and monitored live from any Internet connection point around the world.

FALCOM MAMBO provides Geofence features, which can be used for territory management, route verification, prohibited locations, and more. Once a Geofence area is manually set-up, the device automatically notifies the destination number via SMS, Voice or Data calls or TCP, if the person carrying it enters into and/or leaves the pre-defined area(s).

The FALCOM MAMBO contains a History function which enables it to archive unique locations in sequence for up to 45 days long (for example, archive interval up to 20 sec.) and at a later time the history data can be downloaded either locally via Bluetooth or over-air GSM network or TCP-connection for further evaluation.

Additionally, the FALCOM MAMBO is also a high-capacity navigation system, an intelligent and dynamic destination guidance that allows you to navigate freely without the hassle of messy wire connections. The integrated Class 2 Bluetooth™ transceiver in the FALCOM MAMBO is capable to communicate with any Serial Port Profile Bluetooth™ device and to transmit its data within a 10m radius. The FALCOM MAMBO in communication with your installed GPS Mapping software on the Bluetooth™-enabled device points you the way comfortably and reliably from the current location A to your desired destination B.

FALCOM MAMBO is equipment that can be used in a variety of applications such as:

- ◆ Personal safety and security
- ◆ Fleet tracking and management
- ◆ Remote tracking (Locating people)
- ◆ Real-time Navigation and Positioning
- ◆ Finding streets and routes
- ◆ Travel planning and many others ...

BUTTON-ASSIGNMENTS & LED-BEHAVOIRS



Figure 1: MAMBO & Headset

Button assignments

Actions	Button number & Duration of depressing			
	1	2	3	4
Turns power on	long (>5s)	-	-	-
Turns power off	-	-	double	-
Sends actual position to server	short	-	-	-
Sends alarm as SMS	long (>2)	-	-	-
Establishes voice calls*	double	-	-	double
Hanges up an established call*	short	short	short	short
Accepts an incoming call*	short	short	short	short
Hanges up an outgoing call*	short	short	short	short

* alternative button allocation

LED behaviours

LED name	LED color	Short blinking	Permanent
GSM	Red	network search in progress	
	Blue	data transfer	
	Yellow	TCP search in progress	
	Off	GSM/TCP is connected	
	Green	battery state 65-100%	*battery charging state 90-100%

STAT	Yellow	battery state 30-65%	*battery charging state 10-90%
	Red	battery state 0-35%	*battery charging state 0-10%
	Blue	Bluetooth is connected	
	Off	device OFF	
GPS	Red	GPS invalid	
	Off	GPS valid	

* only in charge mode

CIRCUIT CONCEPT

The MAMBO architecture includes the following major functional components:

❖ ARCHITECTURE INTEGRATES:

- ✓ high-performance Tri Band GSM/GPRS core (operating at 26MHz)
- ✓ 20 parallel channel low-power GPS core (operating at L1 1575.42 MHz and C/A code 1,023 MHz chip rate)
- ✓ ARM7TDMI Processor (at speed 25MHz) that controls all functions of the system
- ✓ Bluetooth™ technology
- ✓ 3D detector system (MSENS module)
- ✓ Power Control for Li-Ion Batteries
- ✓ high capacity (3.7V/ 850 mA/h) Li-Ion battery
- ✓ FLASH-Memory (2MB - 512KB).
- ✓ Internal SIM card reader
- ✓ Internal GSM/GPRS antenna
- ✓ Internal GPS antenna
- ✓ Internal Bluetooth antenna
- ✓ Internal Speaker and Microphone

❖ PHYSICAL INTERFACES:

- ✓ Audio interface (for headset)

RF EXPOSURES

This device contains 850/1800/1900 MHz GSM/GPRS functions that is operational in these frequencies.

The following statements according to the FCCs are only applied for the MAMBO56. However, the MAMBO56 unit contains 1800 MHz GSM functions that are not operational (must not be used) in U.S. Territories. This filing is only applicable for 850MHz GSM/1900 MHz PCS operations, whereby only these frequencies (850MHz GSM/1900 MHz PCS) are possible to be used in U.S. Territories.

The external antennas used for this mobile transmitter must provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Statement according to FCC part 15.19:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

this device may not cause harmful interference, and

this device must accept any interference received, including interference that may cause undesired operation.

Statement according to FCC part 15.21:

Modifications not expressly approved by this company could void the user's authority to operate the equipment.

Statement according to FCC part 15.105:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help