Leadtek®
We Make Dreams a Reality

TomTom Wireless GPS
User's Manual

9821

tomtom®

Version 1.1 beta

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Contents

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1 Main Features

- 12 Channels “All-In-View” Tracking
- Position accuracy of 10 meters 2D RMS
- Cold/Warm/Hot Start Time: 45/38/8 Seconds
- Reacquisition Time: 0.1 seconds
- RF connector for external GPS antenna
- Supports Standard NMEA-0183
- Compatible with Bluetooth devices with Serial Port Profile (SPP)
- Superior Sensitivity for Urban Canyon and Foliage Environment
- Small, sleek, and lightweight design easily fits in your hand
- Two LEDs indicating Bluetooth and GPS activity
- Lithium-ion battery lasting full working day typical use
- On/off push button
- Dimensions: 1.81” x 3.38” x 0.75” / 46mm x 86mm x 19mm

2 Specifications

2.1 Electrical Characteristics

	Items	Description
Chipset	GSP2e/LP	SiRF starII LP technology
General	Frequency	L1, 1575.42 MHz
	C/A code	1.023 MHz chip rate
	Channels	12
	Antenna	Built-in Ceramic patch antenna External antenna optional
Accuracy	Position	10 meters, 2D RMS
	Velocity	0.1 meters/second
	Time	1 microsecond synchronized to GPS time
Datum	Default	WGS-84
Acquisition Rate(Open Sky & Stationary Requirements)	Reacquisition	0.1 sec., average
	Snap start	2 sec., average
	Hot start	8 sec., average typical TTFF
	Warm start	38 sec., average typical TTFF
	Cold start	45 sec., average typical TTFF
Dynamic Conditions	Altitude	18,000 meters (60,000 feet) max.
	Velocity	515 meters/second (1000 knots) max.
	Acceleration	4g, max.
	Jerk	20 meters/second^3, max.
Power	Main power input	3.3±10%V DC input.
	Charging Power	5VDC±10%
	Battery Source	Rechargeable 600mAh Lithium-Ion battery with 5V DC input charging circuit
	Supply Current	Please refer to the following table. **<Note 1>**
	Battery Charging	Full charge 2 hours

	Backup Power	3.3V(internal onboard rechargeable backup battery).
	Operational Current	The device is enabled by Lithium-Ion battery only.
	Type Operation	Typical use 6-8 hours GPS and Bluetooth fully active 5~6 hours
Bluetooth Module	CSR chip solution	Samsung Bluetooth Module

<Note 1> Current consumption

9821vE	GPS position(patch)		GPS not position(patch)	
BT connect state	Yes	No	Yes	No
Current consumption	107~113mA	80~90mA	110mA	83~96mA
Remark	1.Battery is not charging state. 2.The current consumption of active antenna is 21mA			

2.2 Other Characteristics

	Items	Description
Environmental Characteristics	Humidity range	5% to 95% No condensing
	Operating temperature range	-20ºC to +60ºC (-4ºF to 140ºF)
	Battery discharge	-20ºC to +60ºC (-4ºF to 140ºF)
	Battery charge	-10ºC to +55ºC (-4ºF to 104ºF)
	Short period storage temperature (1 month)	-20ºC to +50ºC (-4ºF to 112ºF)
	Long time storage temperature (>1 month)	-20ºC to +35ºC (-4ºF to 95ºF)
Physical Characteristics	Length	86 mm (3.38in)
	Width	46 mm (1.81 in)
	Height	19 mm (0.75 in)
	Weight	75g(2.6 oz)
	Antenna connector	MC plug**<Note2>**
	Power connector	3.5mm
	Cradle connector	Power connector for TomTom Wireless GPS cradle with cover
Antenna	Active antenna	3.3V Active antenna
	Passive antenna	With LR 9410 LNA module

<Note2> The internal antenna will be disabled when an external antenna is connected.

2.3 Firmware Characteristics

Items	Description
Core of firmware	HS Version 2.0 (SiRF Xtrac)
Baud rate	4800
Code type	NMEA-0183 ASCII
Datum	WGS-84
Protocol message	NMEA-0183 Version 2.20 output protocol, Default output format: GGA(1sec), GSA(5sec), GSV(5sec), RMC(1sec), VTG(1sec)
Output frequency	1 Hz

2.4 Certifications

Items	Description
Bluetooth	BQB
RF relative	CE! & FCC_ID
Safety	FCC & CE
Other	E-mark

3 Accessories

3.1 Power

Cigarette Lighter Adapter	Cigarette Lighter Adapter for in-vehicle use. Supports 12V and 24V. Inline splitter optionally allows simultaneous charging of GPS receiver and PDA or smartphone with the extra PDA powercable (5V, 3.5mm connector), compatible with most PDA's. iPaq inline converter provided.
Mains Adapter	Mains Adapter for charging. Supports 110V-220V. Multiple AC plugs provided for US, UK and Europe.
Vehicle connection	TomTom Wireless GPS cradle connects to either the Cigarette Lighter Adapter, or directly to the vehicle's electrical system with provided cable.

3.2 Mounting

Magnetic	Strong magnets for mount on magnetic surface. Rooftop use not advised (theft, weather, loss). Adhesive magnetic plate for dashboard provided.
Cradle	Multi-function cradle for office use (charging) or in-vehicle mounting. Includes adhesive tape for attachment to windshield, or screwholes for permanent mounting. Cradle powers and charges TomTom Wireless GPS if connected to 5V supply (Cigarette Lighter Adapter or Mains Adapter) or 12V-24V supply (vehicle's electrical system).

4 Operation

4.1 Hardware Description

The Bluetooth GPS has two LED light which each has two colors. One is GPS & Charge status LED, that is named LED 2, and the other is Bluetooth & low power status LED, that is named LED 1. The status table of LED shows as follows:

<State Table of LED>

LED1

BT & Low Power LED	**Description**	
LED1 Color and Action	**Bluetooth Active**	**Low Power**
Blue Flash	Yes	No
Purple–Red Flash	Yes	Yes

LED2

GPS & Charge LED	**Description**	
LED2 Color and Action	**Battery Charged**	**Position Fixed**
Dark	No	No
Green Flash	No	Yes
Orange	Yes	No
Orange-Red Flash	Yes	Yes

4.2 Turn on/off

Turn on

To turn on the receiver, press the power button on the topside briefly (0.5 seconds). The right LED(LED 2) indicator will flash briefly. The left LED(LED 1) indicator will start flashing. Note: When the Receiver is in the cradle, it will switch on when power to the cradle is switched on (to synchronize with vehicle ignition).

Turn off To turn off the receiver, press the power button on the topside for 3 seconds. The LED indicator will flash briefly before switching off the receiver. Note: When the receiver is in the cradle, the receiver will switch off if the power to the cradle is interrupted or switched off (to synchronize with vehicle ignition).

4.3 Charging

Low Power The left LED(LED 1) indicator will turn RED (normally BLUE) when battery power becomes low. Connect the receiver to a powers source to continue operation and to recharge the battery.

Charging The right LED(LED 2) indicator will turn RED (or ORANGE) when the battery is being charged. When fully charged, the RED indicator will switch off.

4.4 Bluetooth Communication

Waiting to connect The left LED(LED 1) indicator will flash if there is no communication between the receiver and another device.

Connected The left LED(LED 1) indicator will turn to continuous lighting when the receiver is connected through the wireless link with another device.

4.5 GPS

Navigating The right LED will flash GREEN (or ORANGE when charging) if the receiver is able to determine the current position.

4.6 PIN CODE

The **PIN** code means Personal Identification Number for Bluetooth device and it is also called as **Pass Key**. The Bluetooth GPS receiver has the default PIN Code, and is "**0000**". Generally speaking, there are two steps in Bluetooth connecting. One is pairing process, the other is link process. If you need PIN code to pairing and connect, you can use the default pin code, "**0000**" to connect Bluetooth device. Our GPS receiver belongs to non-safety connecting, you can use in general application to finish connecting.

5. Notices

5.1 Global Positioning System

The Global Positioning System (GPS) is operated and maintained by the Government of the United States of America who are responsible for the availability and the accuracy of the system. Changes in the operation, availability and accuracy may affect the operation of your GPS receiver.

5.2 Aircraft and Hospitals

Use of devices with an antenna is prohibited on most aircraft and in many hospitals. The TomTom Wireless GPS receiver is a receiving and transmitting device with two antenna's and should not be used in these environments.

5.3 Heat Reflective Shields

Modern vehicles may have a heat reflective shield in the windshield, preventing proper GPS signal reception if the receiver is placed under the windshield. To get proper reception:

(a) Use an external antenna, or

(b) Place the receiver in a different position, or

(c) Attach the cradle to the windshield behind the rearview mirror, where many vehicles have an opening in the heat reflective shield, indicated by a black outline.

5.4 Important

The information in this document is subject to change without notice. No liability shall be assumed for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the performance or use of this material. This document contains information protected by copyright.

5.5 Battery

This product uses a Lithium-Ion battery. Please charge fully before first use. Operation in low (below 0º C/32ºF or high (over 40ºC/110ºF) temperatures will affect power supply efficiency and the ability to charge the battery. All Lithium-Ion batteries will experience power supply efficiency deterioration over time even if not used and have a limited life expectancy. Permanently powering the battery will reduce life expectancy. Do not use your product in a humid, wet and/or corrosive environment. Do not put, store or leave your product in or near a heat source or in a high temperature location and do not expose it to temperature over 60ºC(140ºF). Failure to follow these guidelines may cause the Lithium-Ion battery to become hot, explode or ignite and cause injury and/or damage. THE LITHIUM-ION BATTERY CONTAINED IN THE PRODUCT MUST BE RECYCLED OR DISPOSED OF PROPERLY. USE ONLY WITH SUPPLIED CHARGER(s) AND SUPPLIED AC ADAPTOR FOR BATTERY CHARGING.

5.6 FCC Warning Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

Installation and use of this TomTom Wireless GPS must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

FCC RF Radiation Exposure Statement: This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

Your device contains a low power transmitter. When device is transmitted it sends out RadioFrequency (RF) signal.

Safety Information

In order to maintain compliance with the FCC RF exposure guidelines, this equipment shouldbe installed and operated with minimum distance 20cm between the radiator and your body.Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

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

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

CAUTION

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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