

TomTom Wireless GPS Receiver Specification

GPS 9821



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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
- ◆ Supports Trickle Power mode Power Saving
- ◆ 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

General

Chipset	SiRF Star IIe/LP
Frequency	L1, 1575.42 MHz
C/A code	1.023 MHz chip rate
Channels	12 channel all-in-view tracking
Antenna Type	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
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Acquisition Rate (Open sky, stationary)

Reacquisition	0.1 sec., average
Snap start	2 sec., average
Hot start	8 sec., average
Warm start	38 sec., average
Cold start	45 sec., average

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

Operational Power	3.3VDC±10% (from internal Lithium-Ion battery pack)
Charging Power	5VDC±10%
Battery Source	Rechargeable 600mAh Lithium-Ion battery with 5V DC input charging circuit
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.

	GPS position(patch)		GPS not position(patch)	
	BT connect	BT not connect	BT connect	BT not connect
Current consumption	Continuous mode 95~105 mA	Trickle-power mode 15--^{5sec}-->65mA 65--^{1sec}-->15mA	98~108mA	65~75mA
Remark	1. Battery is not charging state. 2. The current consumption of active antenna is 21mA			

Typical Operation	Typical use 6- 8 hours
	GPS and Bluetooth fully active 4.5 - 6 hours

Main Interface

Connection	Communication via Bluetooth Serial Port Profile (SPP)
Protocol messages	NMEA-0183 Version 2.20 output protocol Default output format: GGA(1sec), GSA(5sec), GSV(5sec),RMC(1sec),VTG(1sec)

2.2 Environmental Characteristics

Humidity range	5% to 95% No condensing
Operating temperature range	-20 C to +60 C (-4 F to 140 F)
Battery discharge	-20 C to +60 C (-4 F to 140 F)
Battery charge	0 C to +40 C (32 F to 104 F)
Short period storage temperature (1 month)	-20 C to +50 C (-4 F to 112 F)

F)

Long time storage temperature(>1 month) -20 °C to +35 °C (-4 °F to 95 °F)

2.3 Physical Characteristics

Length	3.38" / 86 mm
Width	1.81" / 46mm
Height	0.75" / 19 mm
Weight	2.6 oz. / 75g
Antenna connector	MC plug - Note: The internal antenna will be disabled when an external antenna is connected
Power connector	3.5mm
Cradle connector	Power connector for TomTom Wireless GPS cradle with cover

2.4 Regulatory Standards

Operation	BQB
Safety	CE
Electrical	FCC Class B, ICES-003 Class B, 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

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5.5 Battery

This product uses a Lithium-Ion battery. Please charge fully before first use. Operation in low (below 0 °C/32 °F or high (over 40 °C/110 °F) 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 60 °C(140 °F). 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

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.

CAUTION

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

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.