

# TRIMBLE TDL2.4 DATA LINK RADIO

## QUICK START GUIDE

### Introduction

Trimble® Robotic total stations communicate through a Cirronet FHSS network operating at 2.4 GHz. Throughout this document, this network is referred to as a *Trimble Total Station Radio* or *Trimble Radio*.

The Trimble TDL2.4 data link radio provides connectivity between a data collector and a Trimble Total Station Radio by bridging a Bluetooth® wireless technology connection from a data collector to the TDL2.4 data link radio and routed to a remote Trimble Total Station Radio. Once it is configured and connected, data transfer to and from the data collector to a Trimble Total Station Radio through a TDL2.4 data link radio is completely transparent.

Intended uses include connection of a Trimble Slate Controller, a TSC3 controller (without radio), a Trimble Tablet (without radio), or a third-party data collector to a Trimble robotic total station as shown below.



## Parts of the TDL2.4 data link radio



# What's in the Box?

Confirm that all parts are in the packout (P/N: 93675-00).









# Installing and Charging the Battery

1. Attach the antenna to the TDL2.4 data link radio.
2. Unscrew the battery door using a T1 Philips head screw-driver.
3. Install the battery.
4. Reseal the battery door.
5. Connect the charger to an AC adapter or computer.
6. Charge for four hours (additional time may be required if using a computer).
7. Turn on the TDL2.4 data link radio and connect to a Trimble Radio and data collector through the data collector interface.

# Button and LED Behavior



The three buttons and LEDs are arranged as follows:

LED state	Description
	<p>The Power button with the Power LED above.</p>  <p>The single green Power LED reflects the state of the TDL2.4. When illuminated, the TDL2.4 data link radio is turned on.</p>
	<p>The Battery button with the battery status LEDs above it.</p>  <p>The Battery LEDs communicate the power level of the battery. When the battery is charging, the green LEDs reflect the charging state of the battery. The red LED indicates a malfunctioning battery.</p>
	<p>The Radio button with the radio status LEDs above it.</p>  <p>The Radio LEDs indicate the state of the Bluetooth and Trimble radios. The blue LED represents the Bluetooth radio. The green LED represents the Trimble radio. The red LED indicates a malfunctioning radio. All three of the LEDs are used to indicate various radio connection states.</p>

## Battery LEDs

The Button Press Behaviors table on page 6 indicates when the battery status LEDs are activated.

Repeated presses of the Battery button resets the on time for the battery status LEDs. The status LEDs stay on for five seconds after the last press of the Battery button.

The following table shows the battery status LED states for given battery charge levels. When the TDL2.4 data link radio is on, battery levels between 0 and 10 percent are shown automatically on the red (error) LED.

Battery percentage	LED status
0 – 5	Red LED fast flashing
5 – 10	Red LED slow flashing
10 – 40	First green LED on solid
40 – 70	First two green LEDs on solid
70 – 100	All three green LEDs on solid

## Battery charging via the USB port

When connected to a USB power source, the battery status LEDs will light up indicating the battery level and charging status. The LEDs operate in a cascading fashion with 0 or more LEDs on solid based on the current battery level with the next level status LED slow flashing. All three status LEDs appear solid when charging is complete. The following table shows the state of the status LEDs during charging.

Item	Description
0 – 35	First green LED slow flashing
35 – 70	First green LED on solid, second green LED slow flashing
70 – 99	First two green LEDs on solid, third green LED slow flashing
100	All three green LEDs on solid

When plugged into the USB port on a computer, the device will charge at a .5 amp rate. When plugged into a higher capacity, non-computer based USB charging device, the unit will use the higher amperage supplied by the charger.

## Radio LEDs

LED state	Description
All LEDs off	None of the radios have an active connection
Blue and Red LEDs flashing	The Bluetooth radio is discoverable
Blue LED on	There is an active Bluetooth connection
Green and Red LEDs flashing	The Trimble Radio is turned on and waiting for a connection
Green LED on	The Trimble Radio is connected to another Trimble Radio
Red LED on	One of the radios is malfunctioning

## Button Press Behaviors

Button	Press	Device is off	Device is On
Power	Short press	If battery level is greater than 5%, the device turns on. Otherwise the battery red LED fast flashes six times and device remains off.	No action
	Long press	If battery level is greater than 5%, the device turns on. Otherwise the battery red LED fast flashes six times and the device remains off.	Device turns off
Battery	Short or long press	LEDs show the battery state for five seconds and then turn off.	LEDs show battery state for 5 seconds then turn off
	Short press	No action	No action
Radio	Long press	No action	The Bluetooth module's bonding table is cleared and then it is configured to be discoverable

## Bluetooth Pairing

When the Bluetooth radio module is made discoverable by pressing and holding the Radio button, the blue Bluetooth and the red Radio Error LEDs flash indicating that the device is ready to be paired. Depending on the data collector pairing with the TDL2.4 data link radio, you may not need to enter a pairing code. If a pairing code is required, use the number **1234**.

Once the pairing is complete, the Bluetooth and Error radio LEDs stop flashing and the MAC address of the remote Bluetooth device is stored internally in the Bluetooth module. The data collector that paired with the TDL2.4 data link radio can now open a serial port connection to the TDL2.4. Once the connection is established, the Bluetooth LED will be turned on.

Once the data collector has been paired, all subsequent requests to bond from the remote device will be honored. The data collector is the Bluetooth master and must initiate all pairing and bonding activities. The pairing relationship is persistent across loss of power in both the pairing data collector and the TDL2.4 data link radio. When the TDL2.4 radio is not connected to a "device", the relationship can be removed from the TDL2.4 data link radio by holding down the Radio Button until the Bluetooth and Error radio LEDs start to flash. At this point, all pairing information will have been removed from the TDL2.4 data link radio and it will be made discoverable again.

## Connecting to a Trimble Radio

The internal Trimble Radio of the TDL2.4 data link radio is only turned on after a Bluetooth connection is established. After the radio is turned on, the Trimble Radio and Error LEDs start flashing. The Trimble Radio establishes a connection based on its internal settings and those of the Trimble Total Station radio.

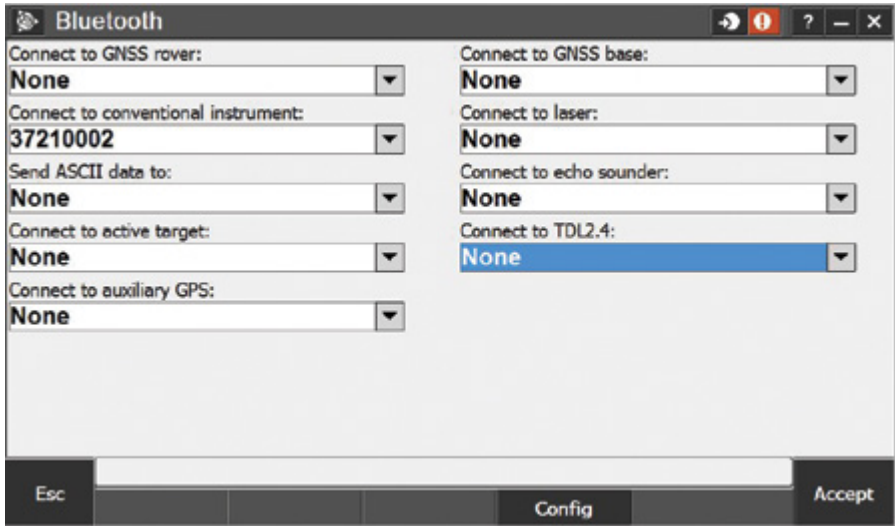
Once the Trimble radio is connected, the TDL2.4 data link radio is essentially transparent. An application can send and receive data over Bluetooth to the TDL2.4 data link radio and it will automatically be sent over the Trimble Radio to the remote Trimble Radio. The TDL2.4 data link radio receives the data from the remote Trimble Radio and sends it via Bluetooth to the data collector.

## Connections in the Trimble Access software

To successfully pair your data collector to the TDL2.4 data link radio, refer to the General Survey Help guide of the Trimble Access™ software and search for **Bluetooth**. Follow the specific instructions for your data collector.

Once a Bluetooth pairing is established, follow these steps in the Trimble Access software to connect to your instrument.

1. From the Trimble Access menu, tap *Settings / Connect / Bluetooth*.
2. Select the device to connect to from the appropriate field:



The screenshot shows the 'Bluetooth' configuration screen. It features two columns of dropdown menus. The left column includes: 'Connect to GNSS rover:' (None), 'Connect to conventional instrument:' (37210002), 'Send ASCII data to:' (None), 'Connect to active target:' (None), and 'Connect to auxiliary GPS:' (None). The right column includes: 'Connect to GNSS base:' (None), 'Connect to laser:' (None), 'Connect to echo sounder:' (None), and 'Connect to TDL2.4:' (None). The 'Connect to TDL2.4:' dropdown is currently selected and highlighted in blue. At the bottom of the screen, there are three buttons: 'Esc', 'Config', and 'Accept'.

If Auto connect is enabled, the Trimble Access software connects to the device within a few seconds. Otherwise, start a survey to connect to the instrument.

*Note* – To connect the TDL2.4 data link radio to a Trimble VX™ Spatial Station or Trimble S Series total station, you must configure the TDL2.4 data link radio to use the same radio settings as the instrument. For more information, see the radio settings section of the Trimble Access General Survey Help file.

3. Tap **Accept**.

*Note* – Unless you change the settings in the device field in the Bluetooth screen, the data collector automatically connects to the selected device the next time you turn on both devices. Ensure that Auto-connect is selected.

## Specifications

Certification	IP55 and MIL-STD-810G
Charging Temperature	0° C to +40° C (32° F to 104° F)
Humidity	Safe to dock handheld damp with condensation
Robust connector	Supports 2,000 insertions/removals

## Cerfications

CE, FCC, C-TICK, RoHS compliant

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