THUNDERBOLT E GPS DISCIPLINED CLOCK QUICK REFERENCE CARD

This Quick Reference Card describes how to set up and run the Trimble® ThunderBolt® E GPS disciplined clock.

Before you start

1. Check the Starter Kit contents.

1	75 feet (22.9 m) of Belden RG-6 cable, terminated with TNC connectors on both ends	4	BNC-m / TNC-f connector
		5	Power adaptor cable
2	Trimble Bullet™ antenna (5 V, with TNC connector)	6	ThunderBolt E module
3	Power converter (24 V DC AC/DC)	7	Power pin adapters

2. Your computer must be running one of the following Microsoft® operating systems: Windows® 2000 (with Service Pack 4), Windows XP (with Service pack 2), or Windows Vista®. You must also have a free serial port.

3. Download the Trimble GPS Monitor (TrimbleMon) application as follows:

   a. Go to www.trimble.com/support.shtml, select ThunderBolt E and then select Software Tools.

   b. Download the required files to a directory on the hard drive.

4. Install and then run TrimbleMon to make sure that there is no communication difficulty.

For further assistance, refer to the *Trimble ThunderBolt E GPS Disciplined Clock User Guide*.

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Set up the starter kit

Note: You can either set up the starter kit temporarily for testing or evaluation purposes or embed it permanently into your system. The procedure is (largely) the same.

1. Connect the TNC connector of the antenna cable to the Bullet antenna.

2. Place the antenna so that it has the fullest possible view of the sky.

   To mount the antenna permanently, place it on a high point such as a roof. Make sure that it is placed away from any obstructions, such as neighboring buildings that may block its view of the sky, or overhanging objects such as trees or towers.

   Note: If required, you can mount the antenna on a 1" marine pipe with 14 threads per inch, or a 3/4" plumbers pipe.

3. Route the antenna cable to the receiver.

   CAUTION: Be careful not to damage the cable. Take care to avoid sharp bends or kinks in the cable, hot surfaces (for example, exhaust manifolds or stacks), rotating or reciprocating equipment, sharp or abrasive surfaces, door and window jambs, and corrosive fluids or gases.

4. Secure the cable using tie-wraps, starting at the antenna and working towards the ThunderBolt E module. Ensure that the cable is secured at points close to the antenna and the ThunderBolt E module.

5. If required, cut the cable to the required length, and terminate it correctly, re-using the connectors. Make sure that:

   • There is enough slack for a service loop near the antenna to allow for disconnection, for moisture to drip away from the connection, and for normal movements of the antenna.

   • All contact surfaces are clean and firm before crimping.

6. Attach the BNC (m) - TNC (f) connector to the other end of the antenna cable.

7. Connect a DB9-m to DB9-f RS-232 cable (not supplied) between the ThunderBolt E and the office computer.

8. Connect the output lead of the AC/DC adaptor to the power adaptor cable and plug the other end of the adaptor cable into the ThunderBolt E DC power Input.

9. Plug the AC/DC convertor into the main power source.

   Note: *Use a F-F DB9 adaptor and an additional 4 foot (1.2 meter) cable if this is required.*

   Note: *The TSIP serial port is set at 9600 baud, No Parity, 8-bit, 1 stop/start bit.*

10. Verify communication from the ThunderBolt E to the user's computer using the Trimble Monitor software. You will see the status fields fill with information.

After power is applied, the Thunderbolt E takes 5 minutes for the ovenized oscillator to warm up. During this time it will begin acquiring satellites in less than 60 seconds, as shown in the Trimble Monitor software on your computer.

Once the ThunderBolt E has warmed up and acquired satellites it performs a self-survey, and if at least one satellite is currently available, will output 1PPS and 10 MHz. The complete process can take an hour.

Overall performance will improve after several days of continuous operation. 1PPS and 10 MHz is not synchronized with GPS until the unit enters Over-determined Clock Mode.

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