

Ashtech Z-Xtreme

Static Field Data Collection – Receiver Operation

GPS survey work can be accomplished through the use of conventional static procedures. Static surveying is accomplished by collecting GPS data at a minimum of two locations simultaneously, one at a known control station (Base Station) and the other occupying either known or unknown sites, (Rover Stations). Static surveying may be performed simultaneously with as many receivers as are available and usually last for a predetermined amount of time, (Session).

Scheduling the static surveys during abundant satellite coverage and good geometry is very important to ensure the best possible accuracy for short collection periods. Plan to track at least six healthy satellites as conditions may arise where the required minimum of five satellites tracked by both receivers may be hindered by obstructions.

Tracking time for static surveying will be at 15-second recording intervals using an elevation mask angle of 10-degrees. Each control point and new station will be occupied at least twice to provide redundancy and a method to perform data comparisons unless checks are determined between known control and conventional occupation of the new stations performs these checks. Data files will be generated in the receivers occupying each site. Typically they will be designated:

***AAAASYR.xxx**

Where: * = **Type of Data File, (B, E, S-Files).**

AAAA = 4-character Alpha-Numeric Site ID; **S** = Session ID; **YR** = Last 2-digits of Year
.xxx = Julian Day (Day of Year).

Equipment Setup at All Stations:

GPS Antenna:

Plumb tripod over existing control or new station utilizing fixed height pole or optical tribrach. Attach antenna cable to the GPS antenna and place the GPS antenna on the fixed height pole or tribrach assembly. Align the North arrow on the GPS antenna to North and re-check the plumb and set-up over the station. Measure the Slant Height to TGP, (Top of Ground Plane), at the ***top, inside notch***, of the brass antenna plate.

When using the Ashtech Geodetic-IV, L1/L2 antenna (p/n 701975-01) and the fixed height pole, the nominal HI = 2.000m. The mechanical offset between the ARP (Antenna Reference Point) to TGP (Top of Ground Plane) = 0.043m. Note the Mechanical Offset and Electrical Phase Center Offset labels on the underside of the GPS Antenna.

Check with the Field Coordinator for the GPS project, the preferred ***“Height Entered in Receiver”*** value method. In most cases, 2.000m would be the ***“Height Entered in Receiver”*** value, along with noting the documented **GPS Antenna: Manufacturer and Model** information.

Ashtech Geodetic-IV, p/n 701975-01 (-GP); No Ground Plane.

GPS Receiver:

Open the Battery / PC Card compartment of the Z-Xtreme receiver, align and insert the L-ION battery into the battery slot. After inserting the battery and confirming the PCMCIA (Data Storage) card are both properly inserted into their respective slots, close and lock the compartment door on the Z-Xtreme receiver.

The L-Ion battery has a soft-key “Test-Button” on the exterior surface of the battery to visually confirm the current charge status of the battery. At the beginning of the observation session, the green battery indicator status light-bar should equal 100%. The L-ion battery is rated to operate the receiver for ten-hours. One L-Ion battery can be used inside the Z-Xtreme, the receiver also supports using an additional external L-Ion battery in the Z-Xtreme Battery Bag Kit, (Ashtech P/N – 800896), connected to the receiver’s back panel external power port.

Hardware Setup

- Connect the antenna cable from the GPS Receiver to the Antenna connector on the rear panel of the GPS receiver.
- Verify the PC Data Card (Memory Card) has been correctly inserted.
- Ensure that a fully charged battery (Internal or External) is connected to the receiver. If operating with an external battery, connect the battery to PWR connector on the rear panel of the GPS receiver.
- Place the receiver / system bag in a secure area near the Station.

Receiver Operations at All Stations:

Receivers collect GPS data in the static mode at all stations. Set up the receivers in as instructed over the station to be surveyed. Plumb the antenna, set up the receiver, batteries and cables as in normal setup. Secure the receiver as conditions allow.

- Setup and Plumb Antenna over the Station.

The Z-Xtreme front panel allows you to control basic receiver operations as well as perform Static, Rapid Static, Kinematic, and RTK Base surveys.

For Static Surveying Mode, the following items must be Entered / Verified by the field surveyor:

- **SITE ID** (4-Character Site ID).
- **ANTENNA HEIGHT** (Antenna HI to **ARP**, in Meters).
- **RECORDING INTERVAL** (15 Second Record Interval).

See Z-Xtreme Quick Reference Card...

Ashtech Part Number 630846-01 Rev A

Monitoring via the Front Panel

- Turn on the receiver **POWER**.

Apply power to the receiver by pressing the **On/Off** button. The unit displays **CHECK**, And then the Main Menu **SYSINFO...**

If the Z-Xtreme does not detect the external GPS Antenna, an Alarm will sound (BEEP-BEEP-BEEP...) and the LCD display menu will display the Warning: “**NO ANTENNA DETECTED**”. Ensure the Antenna cable is properly connected to the GPS Antenna and the GPS receiver. If both of these cable connections seem OK, the antenna cable may be damaged and should be replaced.

To cancel the Alarm state, depress the ↓ (Down Arrow) to re-fresh the LCD display window, then depress the ↓ (Down Arrow) again to cancel the Alarm.

At the **SYSINFO** menu, press the ↑ (Up Arrow) for less than two seconds. Every time you press ↑, the unit displays a different menu in the following order:

SYSINFO -> SURVEY:STATIC -> SURVCONF -> SESSIONS -> SETTINGS...

For Static surveying, the GPS receiver / field operator **MUST** input the **SITE ID**, the **ANTENNA HEIGHT** and the **RECORD INTERVAL**.

Some of these Parameters can be saved to memory, (**Antenna Height & Record Interval**), But, it highly recommended the field operator input the **SITE ID** for each and every station occupation.

Good field procedures, Input the **SITE ID**, then verify the proper **Antenna Height** and **Record Interval** parameters are properly set per the GPS Project Manager's instructions.

Enter the **SITE ID...**

Refresh the LCD Display menu, press the ↓ for 1 Second.

From the **SYSINFO** menu, press the ↑, navigate the menu to **SURVEY:STATIC..**

At the **SURVEY:STATIC** menu, press the ↓ for 3 seconds
(Move to Lower Menu).

The next prompt = **SITE: ????** Tap the ↓ for 1 second (set display in Edit Mode).

Enter the Alpha-Numeric 4-Character **SITE ID** using the combination of the ↑ & ↓ buttons. When each individual character is selected, press the ↵ for 1 Second
(Accept Changes).

Repeat this process for each character in the 4-Character **SITE ID**.

Upon completion of entering the 4-Character **SITE ID**, the LCD display menu will scroll the entered **SITE ID** for confirmation. If you made a mistake entering the **SITE ID**, simply depress the ↓ for 1 second, re-enter the correct **SITE ID**.

If you have entered the correct 4-Character **SITE ID**, depress the ↑ for 1 Second.
(Scroll Through Menu).

This will advance the LCD display menu to **ANT HT** menu...

The **ANT HT: 02.0000m** may have been pre-programmed in to the receiver memory. If this is the case, verify the **ANT HT** is correct per the GPS Project instructions. If the **ANT HT** is correct, simply bypass this menu by pressing the ↑ for 1 second.

This will advance the LCD display menu to **DESIRED VECTOR LENGTH** menu...
Bypass this menu by pressing the ↑ for 1 Second. (Scroll Through Menu).

Enter the **ANT HT...**

To input the **ANT HT** menu, Tap the ↓ for 1 second (set display in Edit Mode).

Enter the correct **ANT HT** using the combination of the ↑ & ↓ buttons. When each individual number character is selected, press the ↵ for 1 Second
(Accept Changes).

Repeat this process for each integer in the **ANT HT**.

Upon completion of entering the numeric **ANT HT**, the LCD display menu will scroll the entered **ANT HT** for confirmation. If you made a mistake entering the **ANT HT**, simply depress the ↓ for 1 second, re-enter the correct **ANT HT**.

This will advance the LCD display menu to **DESIRED VECTOR LENGTH** menu...
Bypass this menu by pressing the ↑ for 1 Second. (Scroll Through Menu).

This will advance you to the LCD display to **STATUS** Menu...
The **STATUS** menu is a Sub-Menu that displays the current Position, PDOP, Satellites Used, and Time.

To gain entry to the **STATUS** Sub-Menu, press the ↓ for 3 seconds
(Move to Lower Menu).

This is a READ-ONLY Menu, the User CAN-NOT input any information in this Menu.
It is for status / monitoring purposes ONLY.

Use the ↑ for 1 Second. (Scroll Through Menu) to view the current Latitude, Longitude, Ellipsoid Ht, PDOP and Time. This data can be written onto the Observation Log.

Press the ↑ for 3 Seconds, this will return you to the **STATUS** menu, Press the ↑ for 3 seconds again, this will return you to the **SURVEY: STATIC** menu.

This returns you to the **MAIN MENU**...
Scroll through the **MAIN MENU** by pressing the ↑ for 1 Second, this will navigate you back through the **SYS INFO**, **SURVEY: STATIC**, **SURVCONF**, **SESSION**, **SETTINGS** menus.

Enter the REC INT...

From the **SURVEY:STATIC** menu, press the ↑, for 1 Second, navigate the menu to **SURVCONF**...

At the **SURVCONF** menu, press the ↓ for 3 seconds
(Move to Lower Menu). This will move you into the **REC INT: 015s** menu.

The **REC INT: 015s** may have been pre-programmed in to the receiver memory.
If this is the case, verify the **REC INT** is correct per the GPS Project instructions.
If the **REC INT** is correct, simply bypass this menu by pressing the ↑ for 1 second.

To enter the **REC INT** menu, Tap the \Downarrow for 1 second (set display in Edit Mode).

Enter the correct **REC INT** using the combination of the \Uparrow & \Downarrow buttons. When each individual number character is selected, press the \Leftarrow for 1 Second (Accept Changes).

Repeat this process for each integer in the **REC INT**.

Once the **REC INT** is correct, simply bypass this menu by pressing the \Uparrow for 1 second.

This will move you into the **ELEV MASK: 10 °** menu.

The **ELEV MASK: 10°** may have been pre-programmed in to the receiver memory. If this is the case, verify the **ELEV MASK** is correct per the GPS Project instructions. If the **ELEV MASK** is correct, simply bypass this menu by pressing the \Uparrow for 1 second.

This will move you to the **MODE: STATIC** menu.
Leave the receiver in **MODE: STATIC**.

To escape from this menu, press the \Uparrow for 3 Seconds.
This will return you to the **MAIN MENU...**

You have successfully entered the **SITE ID, ANTENNA HEIGHT, and RECORD INTERVAL**.

The physical length of the GPS Observations (Session) will be determined by the GPS Project Manager, please refer to the GPS Project Instructions.

For additional and complete reference for Z-Xtreme Operations, please consult the **Z-XTREME – OPERATIONS & REFERENCE MANUAL**.

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