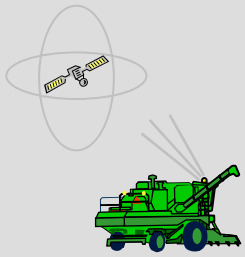
UT Extension
Precision Agriculture

Using the GPS Position Window in ArcPad

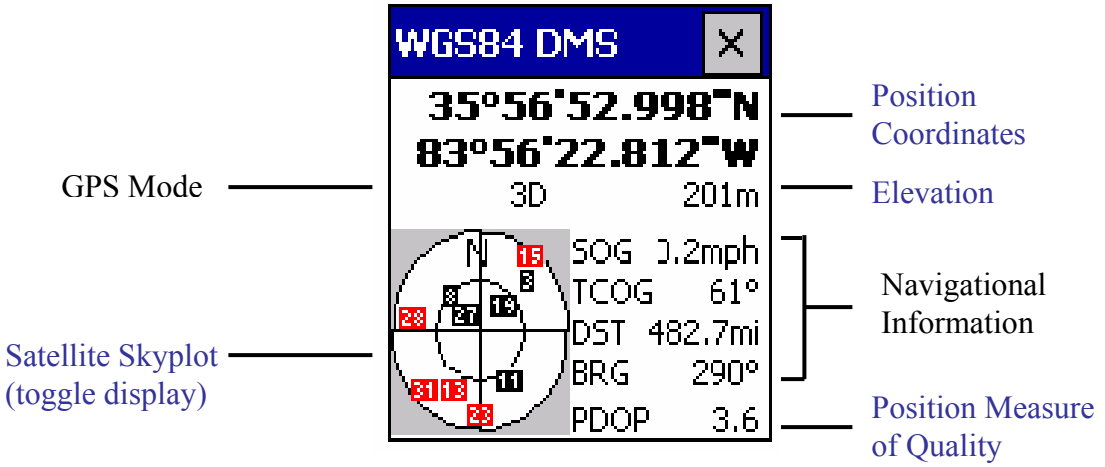
Michael J. Buschermohle, Professor
Biosystems Engineering and Environmental Science



BEES 104

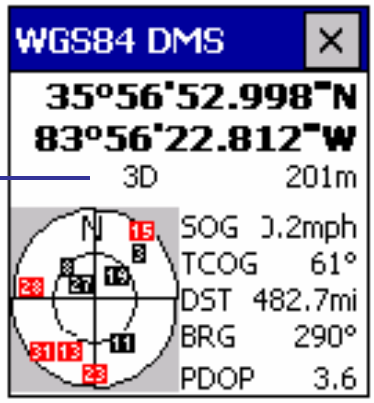
The GPS Position Window has many useful functions. It is used to display information about the GPS satellites and your current GPS position. It also displays navigational information such as the direction and distance from your current position to your selected destination and how fast you are traveling to that destination. The GPS Position Window can be opened, moved or closed at any time as long as the GPS receiver remains active. You can move the GPS Position Window anywhere around the screen by tapping and holding the blue title bar. Deactivating the GPS receiver automatically closes the GPS Position Window.

The display fields shown in blue text have tap and hold menus that display different data formats or information. To bring up the menu, tap and hold with the stylus on the display field. The current selection in the menu is indicated by a check mark to the left of the selection.



GPS Mode

The GPS Mode displays the type of position being calculated by the GPS receiver.



NOFIX – indicates that ArcPad is not receiving a position from the GPS receiver

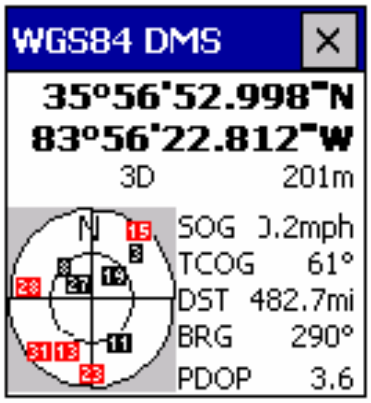
2D – indicates that only three satellites are available and are being used to calculate the x and y position coordinates.

3D – indicates that four or more satellites are available and are being used to calculate the x, y and z (elevation) position coordinates.

DPGS – indicates that real-time differential correction is being used to calculate the x, y and z (elevation) position coordinates. Wide Area Augmentation System (WAAS) differential correction can improve accuracy of your GPS receiver on average to less than three meters.

Satellite Skyplot

The Satellite Skyplot shows the position of each satellite that should be visable or available to the GPS receiver. The outer circle represents the horizon; the inner circle represents 45^{o} above the horizon; and the center point represents what is directly overhead.



Black indicates the satellite is available and is being used to calculate the GPS position.

Blue indicates the satellite is available but not used.

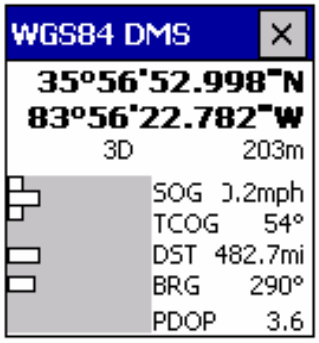
Red indicates the satellite is unavailable

The satellite Skyplot is a toggle field. Tapping the Skyplot changes the display to the Signal Chart.

Signal Chart

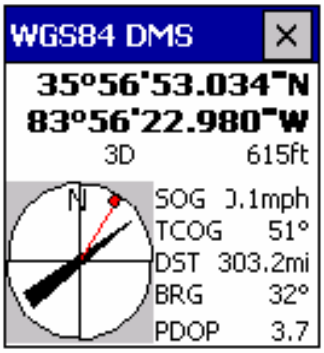
The Signal Chart shows a horizontal bar chart of the signal strength of the satellites. A red bar indicates that a satellite is not available

The Signal Chart is a toggle field. Tapping the Chart changes the display to the Compass.



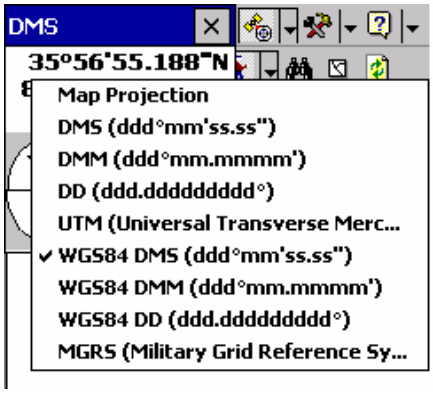
Compass

The Compass is used for navigation. The black arrow shows the GPS direction and the red arrow shows the direction to the position you are navigating to. The GPS direction corresponds to the Course over Ground (COG) direction displayed in the navigational section of the GPS Position Window and Bearing (BRG) corresponds to the direction to the position you are navigating to.



Position Coordinates

The Position Coordinate field has a tap and hold menu that displays a list of coordinate systems or projections that can be used for displaying the current GPS position.



DMS: latitude-longitude in degrees, minutes and decimal seconds (ddd°mm'ss.ss")

DMM: latitude-longitude in degrees and decimal minutes (ddd°mm.mmmm')

DD: latitude-longitude in decimal degrees (ddd.ddddddddd°)

UTM: the current UTM (Universal Transverse Mercato) coordinates and zone.

WGS84 DMS: latitude-longitude in degrees, minutes and decimal seconds (ddd°mm'ss.ss"), using the WGS84 datum

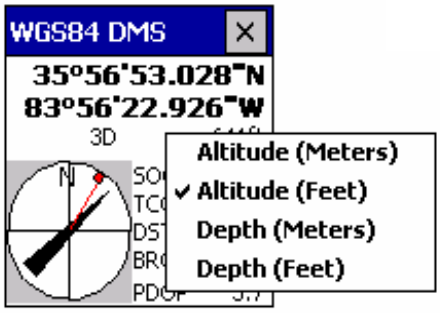
WGS84 DMM: latitude-longitude in degrees and decimal minutes (ddd°mm.mmmm'), using the WGS84 datum

WGS84DD: latitude-longitude in decimal degrees (ddd.ddddddddd°), using the WGS84 datum

MGRS: The Military Grid Reference System coordinate

Elevation

The elevation field is a tap and hold menu that displays a list of altitude or depth units in the elevation field.



Altitude (Meters)

Altitude (Feet)

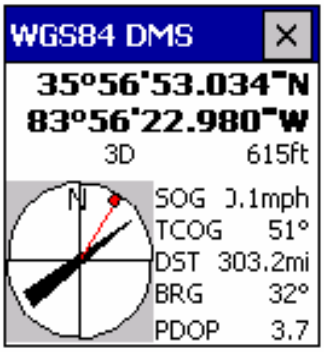
Depth (Meters)

Depth (Feet)

Navigation Information

SOG: Speed Over Ground is the actual speed the GPS receiver is moving over the ground

COG: The Course Over Ground is the direction the GPS receiver is moving. GOG corresponds to the direction indicated by the black arrow on the compass. The COG is a tap and hold menu field that provides you the option of displaying the COG in the following formats:



TCOG: True North Course Over Ground

MCOG: Magnetic North Course Over Ground

DST: Gives you the distance from the current GPS location to destination you are navigating to.

BRG: Gives you the bearing from your current GPS position to the destination you are navigating to.

Position Measure of Quality

The Position Measure of Quality is a tap and hold menu field and is an indicator of the potential accuracy of the GPS receiver. Dilution of Precision (DOP) indicates the quality of the geometry of the GPS satellite constellation at any one time. A lower DOP value indicates a good satellite geometry and a more accurate position than a higher DOP value. Position Dilution of Precision (PDOP) is the most commonly used measure of GPS accuracy. A PDOP value of six or less is generally good enough to insure you are capturing an accurate position.