

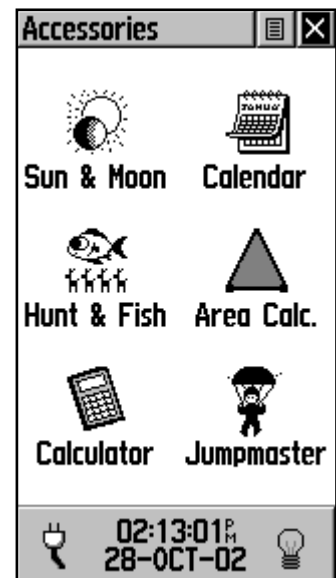


Jumpmaster

Using Jumpmaster an eTrex Vista accessory

The eTrex Vista's Jumpmaster is an accessory designed for experienced skydivers, particularly those in the military. A military 'jumpmaster' is the individual in charge of a unit of skydivers coordinating a unit or cargo drop. Special operation forces including Navy SEALs, Army Rangers, Army Green Berets, Marine Static and Freefall jumpers, Army Static jumpers, foreign special operation forces and others benefit from the Jumpmaster accessory.

The Jumpmaster follows military guidelines for calculating a jumpmaster's high altitude release point (HARP). The accessory can auto-detect when you have jumped to begin navigating toward the desired impact point (DIP) using the barometer and electronic compass.



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The Jumpmaster Page

The Jumpmaster page allows you to set the jump type to one of three types (HAHO, HALO, or Static). The jump type selected determines what additional setup information is required. For all jump types, altitudes (drop or opening) are measured in feet above ground level (AGL).

For HAHO jumps, a desired impact point (DIP) must be set. This is a waypoint marked where the jumpmaster wants to land. The drop altitude of at least 1,000 feet must be specified next, and for HAHO jumps, it is assumed the drop altitude is the same as the opening altitude. Common values for a drop altitude range from 12,000-24,000 feet AGL.

For HALO jumps, the required information is the same as the HAHO jump type, plus an opening altitude. This altitude may not be a larger value than the drop altitude. Common values for an opening altitude range from 2,000 to 6,000 feet AGL.

For Static jumps, a drop altitude of at least 1,000 feet must be specified. A constant wind speed and direction for the duration of the jump is assumed.

For HAHO and HALO jumps, wind speeds and directions can be entered for every 1,000 feet of canopy drift (CD) and every 2,000 feet of free fall drift (FFD). These wind speeds are entered on the Wind Setup page by selecting the **Wind** button.

“Forward Throw” and “Course to HARP” allow a user to determine the direction and magnitude the aircraft will carry him after jumping and before freefall or canopy drift begins.

A number of additional constants are entered on the Constant Setup page by selecting the **Constant** button.

A checkbox at the bottom allows for auto-navigation to the DIP. If you want your Vista to determine when you have jumped, this box should be checked. A message displays describing how to manually navigate the route.

Clicking the **Goto HARP** button begins the navigation process and will take you to the Wind Setup page if that information is missing or automatically setting up the route with the calculated HARP and then the selected DIP before taking you to the Navigation page.

The screenshot shows the Jumpmaster configuration window with the following settings:

- Jump Type:** HALO
- Desired Impact Point:** GUYS CACHE
- Drop Alt (AGL):** 30000ft
- Open Alt (AGL):** 30000ft
- Forward Throw:** 0m
- Course to HARP:** 0°
- Buttons:** Wind, Constant, Goto HARP
- Checkbox:** Auto to DIP

The Wind Setup Page

Wind speeds and directions are added on the Wind Setup page.

Wind speeds are measured in knots and directions are based on origination of wind. This information is usually based on data collected from National Oceanographic & Atmospheric Administration (NOAA) or by a drop zone support team leader (DZSTL) monitoring the course of a Pilot Balloon (PiBal) dropped from a plane.

Jumpmaster is capable of handling doglegs in wind direction.

Select “Clear All” from the Option Menu of this page to clear the list of wind speeds and directions. Wind speeds and directions must be entered as a pair to be valid. Those pairs left as “_ _ _” will be ignored in calculations.

Alt AGL	Wind Speed	Dir From
13000ft	---k	---°
14000ft	---k	---°
15000ft	---k	---°
16000ft	---k	---°
17000ft	---k	---°
18000ft	---k	---°
19000ft	---k	---°
20000ft	---k	---°
21000ft	---k	---°
22000ft	---k	---°
23000ft	---k	---°
24000ft	---k	---°
25000ft	---k	---°

The Constant Setup Page

The Constant Setup page allows you to fine-tune certain aspects of the planned jump.

All jump types also can use a “Percent Max” to increase or decrease the range or their jump. Entries less than 100% decrease drift distance to the DIP while those greater than 100% increase drift distance. More experienced jumpmasters may choose to use smaller numbers while those less experienced may use larger numbers.

“Safety Factor” is used in HAHO jump types to allow a margin or error for a jump. Safety factors are usually integer values, no smaller than two, and are determined by the jumpmaster based on specifications for the jump.

A number of K values may be specifiable for different jumps. HAHO jumps use K-open while HALO jumps use K-open and K-freefall. Static jumps use K-static. K-values are based on the parachute canopy rating. Each parachute should be labeled with a K value. Common values may range from 3.0 for K-freefall to 48.0+ for HAHO K-open.

Select “Restore Defaults” from the Option Menu of this page to reset the values.

The screenshot shows the Constant Setup configuration window with the following settings:

- Percent Max (%):** 100%
- Safety Factor (kft):** 2
- K-open:** 25.0



Definitions

The following is a list of abbreviations and acronyms commonly used by military jumpmasters that also relate specifically to this accessory:

AGL	Above Ground Level	Altitude measure
CD	Canopy Drift	drift while parachute is open
DIP	Desired Impact Point	location where landing should occur
DZ	Drop Zone	area where landing should occur
DZSTL	Drop Zone Support Team Leader	
LFFD	Free Fall Drift	drift before parachute is open
HAHO	High Altitude High Opening	type of jump
HALO	High Altitude Low Opening	type of jump
HARP	High Altitude Release Point	location jumper exits from plane
MSL	Mean Sea Level	Altitude measure
NOAA	National Oceanographic & Atmospheric Administration	
PRP	Primary Release Point	HARP plus forward throw of aircraft

The following list of additional terms are often used by jumpmasters:

Drop Altitude	Altitude when jumpmaster exits aircraft, measured in AGL
Forward Throw	Horizontal distance traveled by due to aircraft speed
HAHO Jump	Type of jump where the jumpmaster jumps from a very high altitude and opens chute at a high altitude
HALO Jump	Type of jump where the jumpmaster jumps from a very high altitude and opens chute at a low altitude
K values	Wind drag values for parachutes
Opening Altitude	Altitude when jumpmaster opens chute, measured in AGL
Static Jump	Type of jump where wind speed and direction are assumed constant for the duration of the jump

The following “typical” example is used in jumpmaster training courses. While the solution to this problem is outside the scope of this document, this example is included to give an idea of the capabilities of the Jumpmaster accessory.

EXAMPLE: HALO JUMP

The exit altitude is 14,000 feet. The jumpmaster wants 1,000 feet for canopy assembly and a 1,000-foot arrival altitude over the DZ.

Winds are as follows:

Altitude	Velocity	Direction
14000	25	090
12000	22	080
10000	21	090
9000	21	090
8000	20	085
7000	18	080
6000	18	080
5000	17	085
4000	16	080
3000	12	075
2000	12	080
1000	8	080

The jumpmaster plans a course to the HARP at 235 degrees at 300 feet forward throw. Given the coordinate for the DIP, calculate the HARP.