



DCS
SERIES

DCS: AH-64D



Early Access Guide

D I G I T A L C O M B A T S I M U L A T O R

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DCS: AH-64D

The AH-64 was first deployed in 1986 and some 2,400 have been delivered. The AH-64D served as the backbone of the U.S. Army attack helicopter force since 2003. Based on the AH-64A, the “Delta” version is a tandem-crewed helicopter with the pilot in the back seat and the co-pilot/gunner (CP/G) in the front. Armed with a 30mm Chain Gun under the nose, Hellfire missiles and 2.75” rockets on the stub wings, the AH-64D proved its mettle in Iraq and Afghanistan against a wide array of threats.

The aircraft is powered by two T-700-GE-701C engines, and enjoys provisions for both external and internal/supplemented fuel tanks for long mission duration. Protecting the crew stations and critical elements, the AH-64D is designed to be capable of sustaining small to medium-caliber fire. The Aircraft Survivability Equipment (ASE) system includes missile, laser, and radar warning sensors, a radar jammer, and expendable countermeasures.

The AH-64D is a very capable platform at night thanks to the Pilot Night Vision System (PNVS) and an advanced Forward Looking Infrared (FLIR) sensor that is part of the Target Acquisition and Designation Sight (TADS). AH-64D pilots are equipped with the Integrated Helmet and Display Sighting System (IHADSS) that projects flight, sensor, and weapon information to their right eye. They can simply look at a target to engage it.

In addition to the U.S. Army, AH-64D variants have also served with the United Kingdom, the Netherlands, Japan, Egypt, Greece, and more.

Later in development, our AH-64D will also be equipped with the Fire Control Radar (FCR) that will enable it to detect, classify, track, and engage both air and surface targets with radar-guided Hellfire missiles.

PLACE HOLDER

YOUTUBE VIDEO TUTORIAL SERIES GUIDE

HELMET DISPLAY

Matt Wagner YouTube Link:

https://www.youtube.com/watch?v=e_590aQTEFk&list=PLer9oF4AanvF7CTss44TU4-aDOxb5A9Jic&index=7

Hey everyone, Wags here from Eagle Dynamics.

In this DCS AH-64D video we'll discuss the symbology projected to the helmet display unit or HDU. This is part of the larger Integrated Helmet Display inside the system or IHADSS.

The HDU can be worn by either the pilot or the copilot/gunner or CP/G and it can display imported navigation, sensor and weapon systems data to the crew member's right eye.

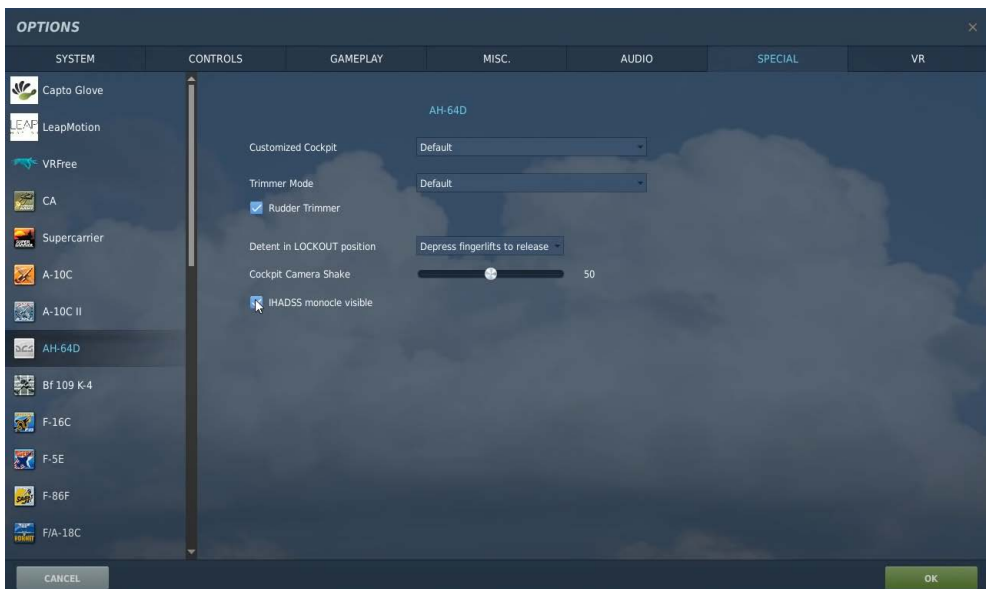
We'll discuss the HDU early in this tutorial series as we're referring to it in later lessons.

The HDU can be toggled on and off by pressing the i key.

The physical monacle that the HDU is displayed on can be toggled on and off from the Options, Special tab, AH-64D page.

OPTIONS

Check or un-check the IHADSS monacle visible box.



BRIGHTNESS

To adjust the brightness of the HDU display, rotate the symbol brightness knob in the pilot cockpit.



And the TEDAC symbol brightness rocker in the CP/G cockpit.



DISPLAY MODES

There are four HDU display modes that can be selected from the symbology select switch on cyclic:

Cruise C



Transition T



Hover H**Bob Up B**

When selected these only affect the HDU display; they do not affect the flight control system.

HDU FORMATS

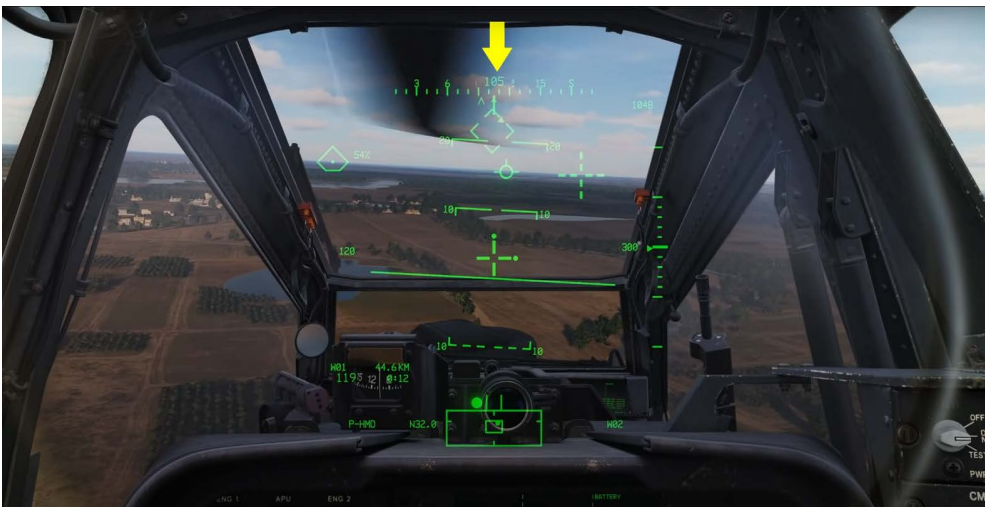
There are two general formats of HDU symbology: Flight symbology and Weapon symbology. For this video we'll discuss the flight symbology and we'll discuss the weapon symbology in later weapon lessons.

When you enter a hot aircraft, Cruise Mode will be selected by default.

Let's discuss the display elements.

HEADING

Along the top is the Magnetic Heading tape with a level line in the center that indicates your heading in degrees.



BANK ANGLE INDICATION

The solid triangle is the Bank Angle Indication also known as the Bank Angle Triangle.



COMMAND HEADING CHEVRON

The open chevron along the bottom of the heading tape is the Command Heading Chevron and indicates the direction of your selected "Direct To" as selected on the Tactical Situation Display or TSD. We'll discuss the TSD and its functions in a later video.



LINE OF SIGHT RETICLE

The Line Of Sight reticle consisting of two vertical and two horizontal lines with an open center, is centered in the HDU and provides a fixed reference for aircraft pitch attitude and for weapons aiming. It will flash when the line of sight is invalid or when the NVS mode switch is in the "NORM" position and the TADS or the PNVIS are at their slew limits.



QUEUING DOTS

Queuing dots can be located on the tips of the line of sight reticle and indicates the direction of the selected acquisition source. An acquisition source can be one of several things including a pilot and gunner's helmet sites, the TADS, a stored way-point or hazard, a control measure target or threat and more.



QUED LINE-OF-SIGHT RETICLE

When the acquisition source is located within the HDU field of view it is indicated by the Cued Line-Of-Sight reticle consisting of two broken vertical and two broken horizontal lines with an open center.



FLIGHT PATH VECTOR (FPV)

The flight path vector (FPV) is much like that of a fixed-wing aircraft HUD velocity vector symbol and indicates the flight vector of the aircraft. Essentially the aircraft will fly to the location of the FPV. This can be very helpful when flying nap of the earth it also serves to alert the crew of the precise location for their future scene of crash assuming no other inputs are made.



HEAD TRACKER

The large segmented diamond is the head tracker and represents your head position relative to the nose of the aircraft.



NAVIGATION FLY-TO QUE (HOME PLATE)

The Navigation Fly To Queue or Home Plate symbol indicates the location of your currently selected TSD, Navigation Direct To.



HORIZON LINE AND PITCH LADDER

Centered in the HDU is the horizon line and pitch ladder in 10 degree increments.



DIGITAL BAROMETRIC ALTIMETER

At the top right side of the HUD in Cruise Mode is the Digital Barometric Altimeter and below that is the Vertical Speed Indicator scale and the Digital Radar Altitude readout.



VERTICAL SPEED INDICATOR

The Vertical Speed Indicator represented by the filled in carat indicates the current rate of climb in reference to a scale of 100 feet per minute increments up to a maximum of 1000 feet per minute, after which a digital readout will display the extended rate of climb or descent when the VSI is centered the aircraft is in level flight.

The solid bar on the scale indicates altitude from zero to 200 feet AGL in 10 foot small increments and 50 foot large increments above 200 feet AGL the bar is removed from the scale.



SELECTED ACQUISITION SOURCE

The bottom right corner is Selected Acquisition Source in this case Way point 02. The source can be selected from different MPD pages such as the weapon and TSD pages. We'll talk about this in later video.



ENGINE TORQUE VALUE

At the top left side is the Engine Torque Value and below that is the Turbine Gas Temperature or TGT. TGT is only displayed when nearing the engine limitation.



TRUE AIRSPEED

In the center left of the display is the aircraft's current true airspeed.



WAY POINT STATUS WINDOW

In the bottom left we have the Way point Status Window that displays the currently selected Direct To, Distance, Ground Speed, and estimated time-in-route to this point.



HIGH ACTION DISPLAY

Along the bottom is the High Action Display. In the top left corner the High Action Display is the Site Select Status which is currently Pilot HMD. Below this is the Site Status Window.



RANGE AND RANGE SOURCE

To the right of the Site Select Status is the Range and Range Source to our currently selected Acquisition Source. Range sources can be Manual M, Navigation N, Laser Asterisk, default 1.5 for pilot and 3.0 for CP/G and others.



FIELD OF REGARD BOX

The bottom center is dominated by the field of regard box. Within the field of regard the Field of view box is displayed.



Field of View Box



The edge of the box marks the azimuth limit for the selected sensor. For TADS it is 120 degrees left and right in azimuth and plus 30 to minus 60 degrees in elevation. For PNVIS it is 90 degrees left and right in azimuth and plus 20 and minus 45 degrees in elevation

QUEUED LINE OF SIGHT DOT

Within the field of regard is the queued line of sight dot that indicates the relative location of the selected acquisition source.



TRIM BALL

Above the box is the trim ball and most aviators consider its location between the two vertical lines a transit condition. Professionals unlike me, keep it centered.



TRANSITION MODE

To switch to transition mode press forward on the symbology select switch. Pressing the switch forward will toggle between Cruise and Transition modes. Transition mode de-clutters Cruise mode by removing the Digital Barometric Altimeter the pitch ladder bank angle triangle and the horizon line is represented by a broken horizontal line from the center of the line of sight.



VELOCITY VECTOR LINE

From the center of the line of sight reticle the Velocity Vector Line indicates the magnitude and direction of the aircraft's velocity relative to the nose of the aircraft. Its point of origin is approximately the rotor nest. when in transition mode it indicates 60 knots of ground speed at full deflection. in hover and bob up it indicates a maximum of six knots of ground speed at full deflection.



ACCELERATION QUE

The small circle is the Acceleration Que and it can be thought of as the position of the cyclic. It should be noted that wherever the Acceleration Que is positioned the velocity vector will follow. It can be used to precisely maintain the constant ground speed which is useful during nap of the earth flight or when a precise time on target is required.



HOVER MODE

Pressing AFT on the symbology select switch selects hover mode. When below 6 knots this is your mode of choice when picking up, hovering and landing. When in hover mode and compared to transition mode the way point and acquisition source data and horizon line are removed.

BOB UP MODE

Pressing AFT again on the symbology select switch toggles to the Bob Up mode. When selected an octagon known as a bob up box is placed in the center of the HDU and this marks the point below your aircraft. When initiated by moving the aircraft forward and back and side to side you can keep the line aside reticle inside the octagon to maintain your hover position.

The box represents a 12 square foot area. At full scale deflection, the aircraft has traveled 40 feet from starting position. This could be a useful mode when conducting a pop-up attack from behind cover in a confined area.

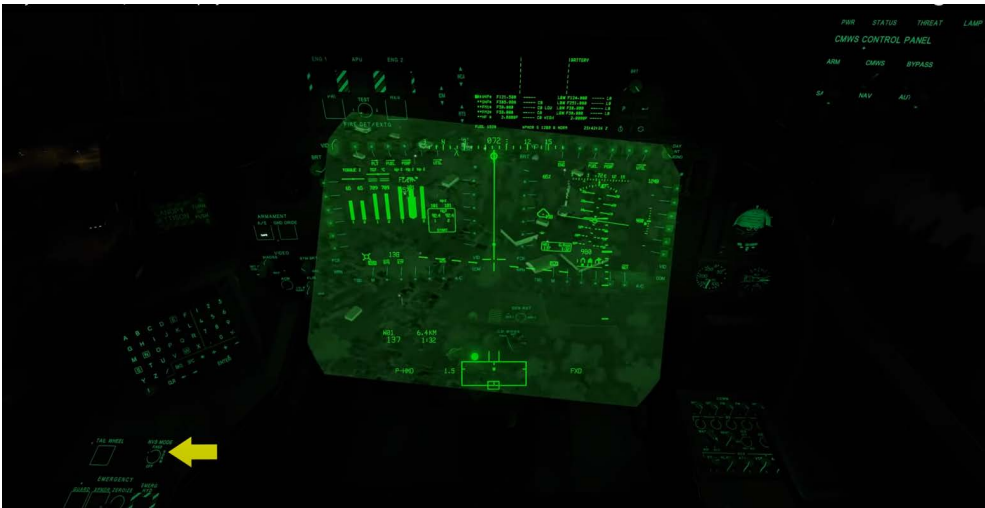


PILOT NIGHT VISION SYSTEM (PNVS)

When operating at night the Pilot Night Vision System or PNVS with the TADS FLIR video can be projected to the HDU.

By setting the NVS mode switch to the NORM position on the Tail Wheel Unlock and NVS mode panel the FLIR sensors will follow the HDU line of sight.

If the switch is set to fixed it will be locked forward along the aircraft's longitudinal axis.



FLIR VIDEO ADJUSTMENT

To adjust the FLIR video image on the HDU the outside knob of the FLIR knob controls the gain and the inside knob controls the level.



IHADSS ADJUSTMENT

To the left is the IHADSS knob in which the inside knob controls video brightness and the outside knob controls video contrast.



When in the pilot you will most often use the PNVS for night navigation with the TADS as a backup. To switch between PNVS and TADS the NVS select switch on the collective can be set to either PNVS or TADS. Be aware though if the CP/G is using the TADS for targeting and you select NVS select TADS, you'll have a very grumpy gunner as they will be steering a black screen from that point forward.

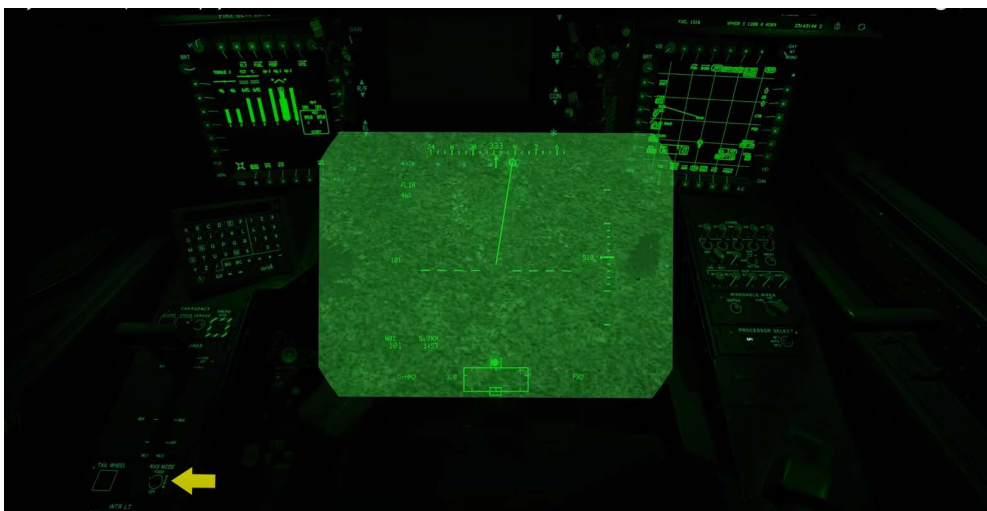
FLIR INDICATION

When NVS is enabled, FLIR is displayed above the engine torque indication on the HDU.



CP/G SEAT

When in the CP/G seat the NVS mode switch acts the same and it disables the TADS as a site selection from the TEDAC grip.



FLIR VIDEO ADJUSTMENT

FLIR video is controlled by the brightness and contrast rocker switches on the TEDAC. You can also toggle the polarity of the video by pressing the force polarity button on the collective.



I hope you enjoyed this video on the flight elements of the HDU and thank you for watching

PLACE HOLDER