DADS Parameter Definitions List

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DADS Parameter Definitions List

The following is a list of the parameters available from the DADS. Parameter information includes full name, description, source, range, and, where applicable, orientation. A key to the acronyms and abbreviations used is provided at the end of the list.

cabin alt — Cabin altitude - Effective altitude of the aircraft cabin - as a function of cabin pressure as it relates to sea-level.

Source: Rosemount Mod 1241 A6CD
Range: -1,000 to 20,000 ft

d/f point 2 — Dew frost point - 2-stage - Ambient dew or frost point in degrees centigrade.

Source: General Eastern 1011A two-stage thermoelectric hygrometer system
Range: -75° to 50° C
Orientation: The following state flags appear in the thousands digit of the data field:

1 max cooling (internal)
2 max heating (internal)
4 max cooling commanded by operator
5 max cooling (commanded and internal)
6 max cooling (commanded) and max heating (internal)

d/f point 3 — Dew frost point - 3-stage - Ambient dew or frost point in degrees centigrade.

Source: EG&G Model 300 three-stage, cooled mirror hygrometer system
Range: ± 75° C
Orientation: The following, state flags appear in the thousands digit of the data field:

0 normal operation
3 invalid data
4 max cooling commanded by operator
8 max heating commanded by operator

day — Day of year - The day number of the present date according to GMT.

Source: Datum Model 9110-633 TCG
DADS internal system clock and year (if TCG invalid)
Range: 1 to 366

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dec moon

Moon declination - The angular distance of the moon from the celestial equator.

Source: Calculated from: year
day
time
Range: ± π/2 rad
Orientation: + north of the celestial equator
- south of the celestial equator

dec sun

Sun declination - The angular distance of the sun from the celestial equator.

Source: Calculated from: year
day
time
Range: ± π/2 rad
Orientation: + north of the celestial equator
- south of the celestial equator

des track

Desired track - The great circle path on the earth's surface connecting the departure and destination positions or two waypoints, measured with respect to true north.

Source: NMS
Range: 0 to 360 deg

dist to go

Distance to go - The distance measured along a great circle path with respect to the aircraft's present position and the next selected waypoint.

Source: NMS
Range: ± 4,096 nm
Orientation: + to selected waypoint
- from selected waypoint

drift angle

Drift angle - The angle between the desired track and the aircraft's heading.

Source: NMS
Range: ± 39.9 deg
Orientation: + desired track right of aircraft heading
- desired track left of aircraft heading

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EW velocity

East-west vector velocity - The east-west vector velocity component of the aircraft's ground speed.

Source: NMS
Range: ± 2,000 kts
Orientation: + east
- west

GPS alt

Altitude - The aircraft's present altitude.

Source: GPS
Range: -1,000 to +131,072

GPS latitude

Latitude - The aircraft's present latitudinal position over the surface of the earth relative to the equator.

Source: GPS
Range: ± 90 deg
Orientation: + north of the equator
- south of the equator

GPS long

Longitude - The aircraft's present longitudinal position over the surface of the earth relative to the prime meridian.

Source: GPS
Range: ± 180 deg
Orientation: + east of the prime meridian
- west of the prime meridian

GPS time

Time - GMT.

Source: GPS
Range: 00:00:00.000 to 23:59:59.999 HMS

ground speed

Ground speed - The aircraft's speed over the ground.

Source: NNIS
Range: 0 to 2,000 kts

H20 sat vp

Saturation vapor pressure with respect to water - The Pressure exerted by water vapor in equilibrium with water when the air mass is over a plane surface of water at the same temperature and pressure.

Source: Calculated from: stat air tmp
Range: 0.00004 to 125 mb

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H20 sat vp-i — Saturation vapor pressure with respect to ice - The pressure exerted by water vapor in equilibrium with ice when the air mass is over a plane surface of ice at the same temperature and pressure.

Source: Calculated from: stat air tmp
Range: 0.00002 to 200 mb

ind air spd — Indicated air speed - Indicated air speed corrected for air speed indicator instrument error and static pressure source.

Source: ADC
Range: 30 to 510 kts

IR surf temp — IR surface temperature - The infrared temperature of the surface of the earth or cloud top beneath the aircraft.

Source: Barnes Engineering Co. PRT-5 nadir viewing, infrared radiometer
Range: -65° to 55° C

1st — Local sidereal time - The time defined by the daily rotation of the earth with respect to the equinox. Uses the local meridian as the terrestrial reference.

Source: Calculated from: year
day
time
longitude
Range: 0 to 2π rad

lunar zenith — Lunar zenith - The angular distance of the moon from zenith.

Source: Calculated from: moon el-ea
Range: 0 to 180 deg

Mach # — Mach number - The aircraft's air speed as a ratio to the speed of sound.

Source: ADC
Range: 0.1 to 0.99

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moon az-ac — Moon azimuth relative to aircraft - The moon azimuth relative to the nose of the aircraft.

Source: Calculated from: 1st
ra moon
dec moon
latitude
pitch
roll
true heading
Range: ± 180 deg
Orientation: + right of the nose of the aircraft
- left of the nose of the aircraft

moon az-ea — Moon azimuth relative to earth - The moon azimuth relative to true north.

Source: Calculated from: 1st
ra
moon
dec moon
latitude
Range: 0 to 360 deg

moon az-left — Moon azimuth relative to left of aircraft - The moon azimuth relative to the left side of the aircraft.

Source: Calculated from: moon az-ac
Range: ± 180 deg,
Orientation: + right of the left side of the aircraft
- left of the left side of the aircraft

moon az-rt — Moon azimuth relative to right of aircraft - The moon azimuth relative to the right side of the aircraft.

Source: Calculated from: moon az-ac
Range: ± 180 deg
Orientation: + right of the right side of the aircraft
- left of the right side of the aircraft

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moon el-ac — Moon elevation relative to aircraft - The moon elevation relative to the horizontal plane of the aircraft.

Source: Calculated from: 1st
ra moon
dec moon
latitude
pitch
roll
true heading
Range: ± 90 deg
Orientation: + above the horizontal plane of the aircraft
- below the horizontal plane of the aircraft

moon el-ea — Moon elevation relative to earth - The moon elevation relative to the horizontal plane of the earth.

Source: Calculated from: 1st
ra moon
dec moon
latitude
Range: ± 90 deg
Orientation: + above the horizontal plane of the earth
- below the horizontal plane of the earth

moon el-rf/ac — Moon elevation - corrected for refraction - relative to aircraft - The moon elevation - corrected for refraction - relative to the horizontal plane of the aircraft.

Source: Calculated from: moon el-ac pressure stat air tmp
Range: ± 90 deg
Orientation: + above the horizontal plane of the aircraft
- below the horizontal plane of the aircraft

moon el-rf/ea — Moon elevation - corrected for refraction - relative to earth - The moon elevation - corrected for refraction – relative to the horizontal plane of the earth.

Source: Calculated from: moon el-ea
pressure
stat air temp
Range: ± 90 deg
Orientation: + above the horizontal plane of the earth
- below the horizontal plane of the earth

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NMS latitude

Latitude - The aircraft's present latitudinal position over the surface of the earth relative to the equator.

Source: NMS Range: ± 90 deg
Orientation: + north of the equator
- south of the equator

NMS long

Longitude - The aircraft's present longitudinal position over the surface of the earth relative to the prime meridian.

Source: NMS
Range: ± 180 deg
Orientation: + east of the prime meridian
- west of the prime meridian

NS velocity

North-south vector velocity - The north-south vector velocity component of the aircraft's around speed.

Source: NMS
Range: ± 2,000 kts
Orientation: + north
- south

partpres H20

Partial pressure of water vapor - The pressure of water vapor as a component of the total atmospheric pressure.

Source: Calculated from: selectable d/f point
(d/f point 3 is default)
Range: 0.0012 to 388 mb

pitch

Pitch - The angle between the longitudinal reference axis of the aircraft and the horizontal plane of the earth.

Source: Delco Carousel IVA-3 INS
Range: ± 90 deg
Orientation: + up
- down

poten temp

Potential temperature - The temperature that a dry air parcel would have if lowered adiabatically to a level of 1,000 mb pressure.

Source: Calculated from: sat computed pressure
Range: 171.7° to 601° K

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pressure

Pressure - Ambient atmospheric pressure at aircraft's present position as calculated from pressure altitude.

Source: Calculated from: pressure alt
Range: 114 to 1,050 mb

pressure alt

Pressure altitude - Aircraft pressure altitude in feet corresponding to U.S. Standard Atmosphere, 1962.

Source: ADC
Range: -1,871 to 57,343 ft

radar alt

Radar altitude - Aircraft altitude in feet above land or water as measured by radar.

Source: Honeywell APN-222 electronic altimeter system
Range: 0 to 70,000 ft

ra moon

Moon right ascension - The arc of the celestial equator measured eastward from the vernal equinox to the foot of the great circle passing through the celestial poles and the moon.

Source: Calculated from: year
day
time
Range: 0 to 2π rad

ra sun

Sun right ascension - The arc of the celestial equator measured eastward from the vernal equinox to the foot of the great circle passing through the celestial poles and the sun.

Source: Calculated from: year
day
time
Range: 0 to 2π rad

rel hum-ice

Relative humidity with respect to ice - Ambient relative humidity - with respect to ice - at aircraft's present position.

Source: Calculated from: partpres H2O
H2O sat vp-i
Range: 0 to 100 %

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rel hum-watr

Relative humidity with respect to water - Ambient relative humidity - with respect to water - at aircraft's present position.

Source: Calculated from: partpres H20
H20 sat vp
Range: 0 to 100 %

roll

Roll - The angle between the aircraft lateral axis and a horizontal plane measured about the aircraft's longitudinal axis.

Source: Delco Carousel IVA-3 INS
Range: ± 180 deg
Orientation: + right
- left

sat computed

Static air temperature computed - Ambient all, temperature at aircraft's present position as calculated from total air temperature corrected for aircraft speed.

Source: Calculated from: tot air temp
Mach #
Range: -99° to 33° C

solar zenith

Solar zenith - The angular distance of the sun from zenith.

Source: Calculated from: sun el-ea
Range: 0 to 180 deg

specific hum

Specific humidity - Ambient specific humidity at aircraft's present position as calculated from partial pressure of water vapor and atmospheric pressure.

Source: Calculated from: partpres H2O
pressure
Range: 0 to 20 g H_2O/kg air

stat air tmp

Static air temperature - Ambient air temperature at aircraft's present position.

Source: ADC
Range: -99° to 60° C

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sun az-ac

Sun azimuth relative to aircraft - The sun azimuth relative to the nose of the aircraft.

Source: Calculated from: 1st
ra sun
dec sun
latitude
pitch
roll
true heading
Range: ± 180 deg
Orientation: + right from nose of aircraft
- left from nose of aircraft

sun az-earth

Sun azimuth relative to earth - The sun azimuth relative to true north.

Source: Calculated from: 1st
ra sun
dec sun
latitude
Range: 0 to 360 deg

sun az-left

Sun azimuth relative to left of aircraft - The sun azimuth relative to the left side of the aircraft.

Source: Calculated from: sun az-ac
Range: ± 180 deg
Orientation: + right from left of aircraft
- left from left of aircraft

sun az-right

Sun azimuth relative to right of aircraft - The sun azimuth relative to the right side of the aircraft.

Source: Calculated from: sun az-ac
Range: ± 180 deg
Orientation: + right from right of aircraft
- left from right of aircraft

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sun el-ac

Sun elevation relative to aircraft - The sun elevation relative to the horizontal plane of the aircraft.

Source: Calculated from: 1st
ra sun
dec sun
latitude
pitch
roll
true heading

Range: ± 90 deg

Orientation: + above the horizontal plane of the aircraft
- below the horizontal plane of the aircraft

sun el-earth

Sun elevation relative to earth - The sun elevation relative to the horizontal plane of the earth.

Source: Calculated from: 1st
ra sun
dec Sun
latitude

Range: ± 90 dec

Orientation: + above the horizontal plane of the earth
- below the horizontal plane of the earth

sun el-rf/ac

Sun elevation - corrected for refraction - relative to aircraft - The sun elevation - corrected for refraction - relative to the horizontal plane of the aircraft.

Source: Calculated from: sun el-ac
pressure
stat air tmp

Range: ± 90 deg

Orientation: + above the horizontal plane of the aircraft
- below the horizontal plane of the aircraft

sun el-rf/ea

Sun elevation - corrected for refraction - relative to earth - The sun elevation - corrected for refraction - relative to the horizontal plane of the earth.

Source: Calculated from: sun el-ea
pressure
stat air tmp

Range: ± 90 deg

Orientation: + above the horizontal plane of the earth
- below the horizontal plane of the earth

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time

Time - GMT.

Source: Datum Model 9110-633 TCG
DADS internal System clock (if TCG invalid)
Range: 00:00:00.000 to 23:59:59.999 HMS

time to go

Time to go - The time to go from aircraft's present position to the next selected waypoint based on present ground speed along desired track.

Source: Calculated from: distance to go
ground speed
Range: ± 399.9 min
Orientation: + to selected waypoint
- from selected waypoint

tot air temp

Total air temperature - Temperature of the air after it has been compressed by impact with the aircraft.

Source: Rosemount 102 AH2AF system
Range: -65° to 35° C

track angle

Track angle - The actual path of the aircraft over the surface of the earth -measured with respect to true north through 360 degrees.

Source: NMS
Range: 0 to 360 deg

trk ang err

Track angle error - The angle that the aircraft track angle is to the left or right of the desired track.

Source: Calculated from track angle & desired track
Range: ± 180 deg
Orientation: + right of desired track
- left of desired track

true air spd

True air speed - The actual speed of the aircraft through the air - computed air speed corrected for density altitude.

Source: ADC
Range: 100 to 600 kts

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true heading

True heading - The angle between true north and the longitudinal axis of the aircraft.

Source: NMS
Range: 0 to 360 deg

vertical spd

Vertical air speed - Vertical climb rate of the aircraft measured in feet per minute.

Source: ADC
Range: ± 20,480 ft/min
Orientation: + ascending
- descending

waypt lat

Waypoint latitude - The latitude of waypoint 'waypt num'.

Source: NMS
Range: ± 90 deg
Orientation: + north of the equator
- south of the equator

waypt lon

Waypoint longitude - The longitude of waypoint 'waypt num'.

Source: NMS
Range: ± 180 deg
Orientation: + east of the prime meridian
- west of the prime meridian

waypt num

Waypoint number - Has no meaning except for indicating the sequence of waypoints: FROM (= 1) and TO (=2).

Source: Calculated from NMS flight plan data
Range: 1 to 2

wind dir

Wind direction - The direction the wind is coming from as measured from true north.

Source: NMS
Range: 0 to 360 deg

wind speed

Wind speed - The horizontal velocity of the air mass at aircraft's present position.

Source: NMS
Range: 0 to 256 kts

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x track dist — Cross track distance - The distance left or right from the desired track to the aircraft's present position measured perpendicular to the desired track.

Source: NMS
Range: ± 128 nm
Orientation: + right of desired track
- left of desired track

year — Year - Year as measured from GMT.

Source: IRIG-B
DADS internal system clock (if IRIG-B year invalid)
Range: 1987 to 2100

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Notes:

Parameters listed are those currently available from the DADS. See DADS Serial Outputs to Experiments for the set of these parameters actually transmitted by the DADS.

Key:

ADC	- ADS-8S Air Data Computer (Collins)
C	- Centigrade
Deg	- degrees
ft	- feet
g	- gram
GMT	- Greenwich Mean Time Zone time at the Greenwich (0°) meridian, often called Universal Time (UT)
GPS	- CMA-3012 Global Positioning System Receiver (Canadian Marioni)
HMS	- Hours, Minutes, Seconds time format
INS	- Inertial Navigation System
K	- Kelvin
kg	- kilogram
kts	- knots - nautical miles per hour
mb	- millibars
min	- minutes
nm	- nautical miles
NMS	- UNS- 1B Navigational Management System (UNC)
TCG	- Time Code Generator
rad	- radians

References:

Bowditch, Nathaniel. American Practical Navigator. 2 vols. Defense Mapping Agency Hydrographic/Topographic Center, 1977.