

AIRCRAFT MISC VARIABLES

The tables below indicate the properties for the [Simulation Variables](#) that can be used to get and set properties various miscellaneous properties related to the aircraft. For information on the units listed for each variable, please see here: [Simulation Variable Units](#)

NOTE: When Microsoft Flight Simulator is running in multiplayer mode, only a small number of variables are communicated between aircraft. Those variables that are available will say so in the description as being either for "All Aircraft" or for "Shared Cockpit".

You can find a complete index of all available SimVars here: [SimVar Index](#)

Aircraft States

Simulation Variable	Description	Units	Settable
<code>AMBIENT IN CLOUD</code>	True if the aircraft is in a cloud.	Bool	
<code>CONTRAILS CONDITIONS MET</code>	True if the aircraft has met the conditions required to spawn the contrail VFX.	Bool	
<code>IS SLEW ACTIVE</code>	True if slew is active.	Bool	
<code>IS SLEW ALLOWED</code>	True if slew is enabled.	Bool	
<code>IS USER SIM</code>	Is this the user loaded aircraft.	Bool	
<code>ON ANY RUNWAY</code>	Whether or not the plane is currently on a runway.	Bool	

PLANE IN PARKING STATE	Whether or not the plane is currently parked (true) or not (false).	Bool	
SURFACE CONDITION	The state of the surface directly under the aircraft.	Enum: 0 = Normal 1 = Wet 2 = Icy 3 = Snow	
SURFACE INFO VALID	True indicates that the SURFACE CONDITION return value is meaningful.	Bool	
SURFACE TYPE	The type of surface under the aircraft.	Enum: 0 = Concrete 1 = Grass 2 = Water 3 = Grass_bumpy 4 = Asphalt 5 = Short_grass 6 = Long_grass 7 = Hard_turf 8 = Snow 9 = Ice 10 = Urban 11 = Forest 12 = Dirt 13 = Coral 14 = Gravel 15 = Oil_treated 16 = Steel_mats 17 = Bituminus 18 = Brick 19 = Macadam 20 = Planks 21 = Sand 22 = Shale 23 = Tarmac 24 = Wright flyer track	

STRUCTURAL ICE PCT	Amount of ice on aircraft structure. 100 is fully iced.	<i>Percent Over 100</i>	
TITLE	Title from aircraft.cfg .	String (max 128 chars)	
TOW CONNECTION	True if a towline is connected to both tow plane and glider.	Bool	
WINDSHIELD RAIN EFFECT AVAILABLE	Is visual effect available on this aircraft.	Bool	

Aircraft Position, Direction And Speed

Simulation Variable	Description	Units	Settable
ACCELERATION BODY X	Acceleration relative to aircraft X axis, in east/west direction.	Feet (<i>ft</i>) per second squared	
ACCELERATION BODY Y	Acceleration relative to aircraft Y axis, in vertical direction.	Feet (<i>ft</i>) per second squared	
ACCELERATION BODY Z	Acceleration relative to aircraft Z axis, in north/south direction.	Feet (<i>ft</i>) per second squared	
ACCELERATION WORLD X	Acceleration relative to the earth X axis, in east/west direction.	Feet (<i>ft</i>) per second squared	
ACCELERATION WORLD Y	Acceleration relative to the earth Y axis, in vertical direction.	Feet (<i>ft</i>) per	

		second squared	
<u>ACCELERATION</u> <u>WORLD Z</u>	Acceleration relative to the earth Z axis, in north/south direction.	Feet (<i>ft</i>) per second squared	
<u>SURFACE</u> <u>RELATIVE</u> <u>GROUND SPEED</u>	The speed of the aircraft relative to the speed of the first surface directly underneath it. Use this to retrieve, for example, an aircraft's taxiing speed while it is moving on a moving carrier. It also applies to airborne aircraft, for example when a helicopter is successfully hovering above a moving ship, this value should be zero. The returned value will be the same as <u>GROUND VELOCITY</u> if the first surface beneath it is not moving.	Feet per second	
<u>GROUND</u> <u>VELOCITY</u>	Speed relative to the earth's surface. <div>NOTE: This is available in multiplayer to all far aircraft. See here for more information: Note On SimVars In Multiplayer.</div>	<i>Knots</i>	
<u>PLANE</u> <u>ALTITUDE</u>	Altitude of aircraft.	Feet (<i>ft</i>)	
<u>PLANE ALT</u> <u>ABOVE GROUND</u>	Altitude above the surface.	Feet (<i>ft</i>)	
<u>PLANE ALT</u> <u>ABOVE GROUND</u> <u>MINUS CG</u>	Altitude above the surface minus CG.	Feet (<i>ft</i>)	
<u>PLANE BANK</u> <u>DEGREES</u>	Bank angle, although the name mentions degrees the units used are radians.	Radians	

PLANE HEADING DEGREES GYRO	Heading indicator taken from the aircraft gyro.	Degrees	
PLANE HEADING DEGREES MAGNETIC	Heading relative to magnetic north - although the name mentions degrees the units used are radians.	Radians	
PLANE HEADING DEGREES TRUE	Heading relative to true north - although the name mentions degrees the units used are radians.	Radians	
PLANE LATITUDE	Latitude of aircraft, North is positive, South negative.	Radians	
PLANE LONGITUDE	Longitude of aircraft, East is positive, West negative.	Radians	
PLANE PITCH DEGREES	Pitch angle, although the name mentions degrees the units used are radians.	Radians	
PLANE TOUCHDOWN BANK DEGREES	This float represents the bank of the player's plane from the last touchdown.	Degrees	
PLANE TOUCHDOWN HEADING DEGREES MAGNETIC	This float represents the magnetic heading of the player's plane from the last touchdown.	Degrees	
PLANE TOUCHDOWN HEADING DEGREES TRUE	This float represents the true heading of the player's plane from the last touchdown.	Degrees	
PLANE TOUCHDOWN LATITUDE	This float represents the plane latitude for the last touchdown.	Radians	
PLANE TOUCHDOWN LONGITUDE	This float represents the plane longitude for the last touchdown.	Radians	

PLANE TOUCHDOWN NORMAL VELOCITY	This float represents the player's plane speed according to ground normal from the last touchdown.	Feet (<i>ft</i>) per second	
PLANE TOUCHDOWN PITCH DEGREES	This float represents the pitch of the player's plane from the last touchdown.	Degrees	
RELATIVE WIND VELOCITY BODY X	Lateral (X axis) speed relative to wind.	Feet (<i>ft</i>) per second	
RELATIVE WIND VELOCITY BODY Y	Vertical (Y axis) speed relative to wind.	Feet (<i>ft</i>) per second	
RELATIVE WIND VELOCITY BODY Z	Longitudinal (Z axis) speed relative to wind.	Feet (<i>ft</i>) per second	
ROTATION ACCELERATION BODY X	Rotation acceleration relative to aircraft X axis.	Radians per second squared	
ROTATION ACCELERATION BODY Y	Rotation acceleration relative to aircraft Y axis.	Radians per second squared	
ROTATION ACCELERATION BODY Z	Rotation acceleration relative to aircraft Z axis.	Radians per second squared	
ROTATION VELOCITY BODY X	Rotation velocity relative to aircraft X axis.	Feet (<i>ft</i>) per second	
ROTATION VELOCITY BODY Y	Rotation velocity relative to aircraft Y axis.	Feet (<i>ft</i>) per second	
ROTATION VELOCITY BODY	Rotation velocity relative to aircraft Z axis.	Feet (<i>ft</i>) per	

Z		second	
SLOPE TO ATC RUNWAY	The slope between the plane and the expected landing position of the runway. Returns 0 if no runway is assigned.	Radians	
VELOCITY BODY X	True lateral speed, relative to aircraft X axis.	Feet (<i>ft</i>) per second	
VELOCITY BODY Y	True vertical speed, relative to aircraft Y axis.	Feet (<i>ft</i>) per second	
VELOCITY BODY Z	True longitudinal speed, relative to aircraft Z axis.	Feet (<i>ft</i>) per second	
VERTICAL SPEED	The current indicated vertical speed for the aircraft.	Feet (<i>ft</i>) per second	

Aircraft Structs

Simulation Variable	Description	Units	Settable
EYEPOINT POSITION	The eyepoint position relative to the reference datum position for the aircraft.	<u>SIMCONNECT_DATA_XYZ</u> feet	
STRUC AIRSPEED HOLD PID CONSTS	Returns the various airspeed <i>PID</i> constants. This is generally only used for AI controlled aircraft and boats, although it may be useful when	<u>PID_STRUCT</u>	

	working with RTCs and the user aircraft.		
STRUC HEADING HOLD PID CONSTS	Returns the various airspeed PID constants. This is generally only used for AI controlled aircraft and boats, although it may be useful when working with RTCs and the user aircraft.	PID_STRUCT	
STRUCT BODY ROTATION ACCELERATION	The body rotation acceleration.	<u>SIMCONNECT_DATA_XYZ</u> radians per second	
STRUCT BODY ROTATION VELOCITY	The body rotation velocity.	<u>SIMCONNECT_DATA_XYZ</u> radians per second	
STRUCT BODY VELOCITY	The object body velocity.	<u>SIMCONNECT_DATA_XYZ</u> feet per second	
STRUCT ENGINE POSITION:index	The position of the indexed engine relative to the Datum Reference Point for the aircraft.	<u>SIMCONNECT_DATA_XYZ</u> feet.	
STRUCT EYEPOINT DYNAMIC ANGLE	The angle of the eyepoint view. Zero, zero, zero is straight ahead.	<u>SIMCONNECT_DATA_XYZ</u> radians	
STRUCT EYEPOINT DYNAMIC OFFSET	A variable offset away from the EYEPOINT POSITION.	<u>SIMCONNECT_DATA_XYZ</u> feet	

STRUCT LATLONALT	Returns the latitude, longitude and altitude of the user aircraft.	<u>SIMCONNECT_DATA_LATLONALT</u>	
STRUCT LATLONALTTPBH	Returns the latitude, longitude, altitude, pitch, bank and heading of the user aircraft.	Returns a struct with 6 values: lat, lon, alt, pitch, bank, heading	

Airspeed

Simulation Variable	Description	Units	Settable
AIRCRAFT WIND X	Wind component in aircraft lateral (X) axis.	<i>Knots</i>	
AIRCRAFT WIND Y	Wind component in aircraft vertical (Y) axis.	<i>Knots</i>	
AIRCRAFT WIND Z	Wind component in aircraft longitudinal (Z) axis.	<i>Knots</i>	
AIRSPEED BARBER POLE	Redline airspeed (dynamic on some aircraft).	<i>Knots</i>	
AIRSPEED INDICATED	Indicated airspeed.	<i>Knots</i>	
AIRSPEED MACH	Current mach.	<i>Mach</i>	
AIRSPEED SELECT INDICATED OR TRUE	The airspeed, whether true or indicated airspeed has been selected.	<i>Knots</i>	
AIRSPEED TRUE	True airspeed.	<i>Knots</i>	

AIRSPEED TRUE RAW	Equivalent to AIRSPEED TRUE , but does not account for wind when used to Set Airspeed value	<i>Knots</i>	
BARBER POLE MACH	Mach associated with maximum airspeed.	<i>Mach</i>	
TOTAL VELOCITY	Velocity regardless of direction. For example, if a helicopter is ascending vertically at 100 fps, getting this variable will return 100.	Feet (<i>ft</i>) per second	
WINDSHIELD WIND VELOCITY	Longitudinal speed of wind on the windshield.	Feet (<i>ft</i>) per second	

Temperature

Simulation Variable	Description	Units	Settable
STANDARD ATM TEMPERATURE	Outside temperature on the standard ATM scale.	<i>Rankine</i>	
TOTAL AIR TEMPERATURE	Total air temperature is the air temperature at the front of the aircraft where the ram pressure from the speed of the aircraft is taken into account.	Celsius	

Ornithopter

Simulation Variable	Description	Units	Settable
ORNITHOPTER CONTROL LEVERS X	The deflection control left / right, usually used for animation.	Position 16k	

ORNITHOPTER CONTROL LEVERS Y	The deflection control fore / aft, usually used for animation.	Position 16k	
ORNITHOPTER DIVE MODE ENABLED	Returns whether the ornithopter dive mode is enabled (TRUE) or not (FALSE).	Boolean	
ORNITHOPTER GLIDE MODE ENABLED	Returns whether the ornithopter glide mode is enabled (TRUE) or not (FALSE).	Boolean	
ORNITHOPTER WINGS BRAKE ENABLED	Returns whether the ornithopter wing brake is enabled (TRUE) or not (FALSE).	Boolean	
ORNITHOPTER WINGS BRAKE ACTIVE	Returns whether the ornithopter wing brake is active (TRUE) or not (FALSE).	Boolean	
ORNITHOPTER WING HORIZONTAL TILT:index	The horizontal tilt of the indexed wing expressed as a value between 0 and 1.	<i>Percent Over 100</i>	
ORNITHOPTER WING PITCH:index	The pitch of the indexed wing expressed as a value between 0 and 1.	<i>Percent Over 100</i>	
ORNITHOPTER WING VERTICAL TILT:index	The vertical tilt of the indexed wing expressed as a value between 0 and 1.	<i>Percent Over 100</i>	
ORNITHOPTER WINGS BLUR	The current amount of blur applied to the animation of the ornithopter wings	<i>Percent Over 100</i>	

	when flapping, expressed as a value between 0 (none) and 1 (maximum).		
ORNITHOPTER WINGS CLUTCH STATE	The current progress of engaging/disengaging the clutch on the wings when entering or leaving glide mode, expressed as a value between 0 and 1.	<i>Percent Over 100</i>	
	Returns a value that defines the current folding operation of the wings, where: <div>0 - stand by 1 - parking (slow</div>		