Aerofly FS4 External DLL SDK - Complete Variable Reference

285 Variables Documented

Generated from official SDK source code analysis

🛩️ AIRCRAFT VARIABLES (87 variables)

Basic Flight Data

Variable Name	Type	Unit	Access	Description
Aircraft.UniversalTime	Double	Radiant	Read	Universal time of day (UTC)
Aircraft.Altitude	Double	Meter	Read	Altitude as measured by altimeter
Aircraft.VerticalSpeed	Double	MeterPerSecond	Read	Vertical speed
Aircraft.Pitch	Double	Radiant	Read	Pitch angle
Aircraft.Bank	Double	Radiant	Read	Bank angle
Aircraft.IndicatedAirspeed	Double	MeterPerSecond	Read	Indicated airspeed
Aircraft.IndicatedAirspeedTrend	Double	MeterPerSecond	Read	Indicated airspeed trend
Aircraft.GroundSpeed	Double	MeterPerSecond	Read	Ground speed
Aircraft.MagneticHeading	Double	Radiant	Read	Magnetic heading
Aircraft.TrueHeading	Double	Radiant	Read	True heading
Aircraft.Latitude	Double	Radiant	Read	Aircraft latitude
Aircraft.Longitude	Double	Radiant	Read	Aircraft longitude
Aircraft.Height	Double	Meter	Read	Height above ground
Aircraft.Position	Vector3d	Meter	Read	Global 3D position
Aircraft.Orientation	Double	None	Read	Aircraft orientation

Physics & Dynamics

Variable Name	Type	Unit	Access	Description
Aircraft.Velocity	Vector3d	MeterPerSecond	Read	Velocity vector (body/global system)
Aircraft.AngularVelocity	Vector3d	RadiantPerSecond	Read	Angular velocity (roll/pitch/yaw rates)
Aircraft.Acceleration	Vector3d	MeterPerSecondSquared	Read	Aircraft acceleration
Aircraft.Gravity	Vector3d	MeterPerSecondSquared	Read	Gravity acceleration
Aircraft.Wind	Vector3d	MeterPerSecond	Read	Wind vector at aircraft position
Aircraft.RateOfTurn	Double	RadiantPerSecond	Read	Rate of turn
Aircraft.MachNumber	Double	None	Read	Mach number
Aircraft.AngleOfAttack	Double	Radiant	Read	**Angle of attack indicator**
Aircraft.AngleOfAttackLimit	Double	Radiant	Read	**Angle of attack limit (stall)**
Aircraft.AccelerationLimit	Double	MeterPerSecondSquared	Read	**Acceleration limit (g-load max/min)**
Aircraft.RadarAltitude	Double	Meter	Read	Radar altitude above ground

Aircraft Configuration

Variable Name	Type	Unit	Access	Description
Aircraft.Gear	Double	None	Read	Current gear position (0=up, 1=down)
Aircraft.Flaps	Double	None	Read	Selected flaps
Aircraft.Slats	Double	None	Read	Selected slats
Aircraft.Throttle	Double	None	Read	Current throttle setting
Aircraft.AirBrake	Double	None	Read	Air brake position
Aircraft.GroundSpoilersArmed	Double	None	Read	Auto ground spoiler armed
Aircraft.GroundSpoilersExtended	Double	None	Read	Auto ground spoiler extended
Aircraft.ParkingBrake	Double	None	Read	Parking brake
Aircraft.AutoBrakeSetting	Double	None	Read	Auto brake position
Aircraft.AutoBrakeEngaged	Double	None	Read	Auto brake engaged
Aircraft.AutoBrakeRejectedTakeOff	Double	None	Read	Auto brake RTO armed

Aircraft Information

Variable Name	Type	Unit	Access	Description
Aircraft.Name	String	None	Read	Current aircraft short name
Aircraft.CategoryJet	Double	None	Read	Is jet aircraft
Aircraft.CategoryGlider	Double	None	Read	Is glider aircraft
Aircraft.OnGround	Double	None	Read	Set if aircraft is on ground
Aircraft.OnRunway	Double	None	Read	Set if aircraft on runway
Aircraft.Crashed	Double	None	Read	Aircraft crashed

Nearest Airport Data

Variable Name	Type	Unit	Access	Description
Aircraft.NearestAirportIdentifier	String	None	Read	Nearest airport identifier
Aircraft.NearestAirportName	String	None	Read	Nearest airport name
Aircraft.NearestAirportLocation	Vector2d	None	Read	Nearest airport location
Aircraft.NearestAirportElevation	Double	None	Read	Nearest airport elevation
Aircraft.BestAirportIdentifier	String	None	Read	Best airport identifier
Aircraft.BestAirportName	String	None	Read	Best airport name
Aircraft.BestAirportLocation	Vector2d	None	Read	Best airport location
Aircraft.BestAirportElevation	Double	None	Read	Best airport elevation
Aircraft.BestRunwayIdentifier	String	None	Read	Best runway identifier
Aircraft.BestRunwayElevation	Double	None	Read	Best runway elevation
Aircraft.BestRunwayThreshold	Vector3d	None	Read	Best runway threshold
Aircraft.BestRunwayEnd	Vector3d	None	Read	Best runway end

Power & Propulsion

Variable Name	Type	Unit	Access	Description
Aircraft.Power	Double	None	Read	Current power
Aircraft.NormalizedPower	Double	None	Read	Normalized power
Aircraft.NormalizedPowerTarget	Double	None	Read	Normalized power target
Aircraft.ThrottleLimit	Double	None	Read	Engine throttle limit (max for takeoff)
Aircraft.Reverse	Double	None	Read	Engine reverse thrust selected
Aircraft.APUAvailable	Double	None	Read	APU available

Engine Systems (Per Engine 1-4)

Variable Name	Type	Unit	Access	Description
Aircraft.Starter	Double	None	Read	Generic engine starter
Aircraft.Starter1	Double	None	Read	Engine 1 starter
Aircraft.Starter2	Double	None	Read	Engine 2 starter
Aircraft.Starter3	Double	None	Read	Engine 3 starter
Aircraft.Starter4	Double	None	Read	Engine 4 starter
Aircraft.Ignition	Double	None	Read	Generic engine ignition
Aircraft.Ignition1	Double	None	Read	Engine 1 ignition
Aircraft.Ignition2	Double	None	Read	Engine 2 ignition
Aircraft.Ignition3	Double	None	Read	Engine 3 ignition
Aircraft.Ignition4	Double	None	Read	Engine 4 ignition
Aircraft.EngineMaster1	Double	None	Read	Engine 1 master switch
Aircraft.EngineMaster2	Double	None	Read	Engine 2 master switch
Aircraft.EngineMaster3	Double	None	Read	Engine 3 master switch
Aircraft.EngineMaster4	Double	None	Read	Engine 4 master switch
Aircraft.EngineThrottle1	Double	None	Read	Engine 1 throttle position
Aircraft.EngineThrottle2	Double	None	Read	Engine 2 throttle position
Aircraft.EngineThrottle3	Double	None	Read	Engine 3 throttle position
Aircraft.EngineThrottle4	Double	None	Read	Engine 4 throttle position
Aircraft.EngineRotationSpeed1	Double	None	Read	Engine 1 rotation speed
Aircraft.EngineRotationSpeed2	Double	None	Read	Engine 2 rotation speed
Aircraft.EngineRotationSpeed3	Double	None	Read	Engine 3 rotation speed
Aircraft.EngineRotationSpeed4	Double	None	Read	Engine 4 rotation speed
Aircraft.EngineRunning1	Double	None	Read	Engine 1 running
Aircraft.EngineRunning2	Double	None	Read	Engine 2 running
Aircraft.EngineRunning3	Double	None	Read	Engine 3 running
Aircraft.EngineRunning4	Double	None	Read	Engine 4 running

Trim Systems

Variable Name	Type	Unit	Access	Description
Aircraft.Trim	Double	None	Read	General trim
Aircraft.PitchTrim	Double	None	Read	Pitch trim
Aircraft.PitchTrimScaling	Double	None	Read	Pitch trim scaling
Aircraft.PitchTrimOffset	Double	None	Read	Pitch trim offset
Aircraft.RudderTrim	Double	None	Read	Rudder trim
Aircraft.AutoPitchTrim	Double	None	Read	Automatic pitch trim active (FBW)
Aircraft.YawDamperEnabled	Double	None	Read	Automatic rudder damping active
Aircraft.RudderPedalsDisconnected	Double	None	Read	Steering disconnect button active

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🎮 CONTROLS VARIABLES (82 variables)

Primary Flight Controls

Variable Name	Type	Unit	Access	Description
Controls.Pitch.Input	Double	None	Write	Pitch control input
Controls.Pitch.Input (Offset)	Double	None	Write	Pitch control input offset
Controls.Roll.Input	Double	None	Write	Roll control input
Controls.Roll.Input (Offset)	Double	None	Write	Roll control input offset
Controls.Yaw.Input	Double	None	Write	Yaw control input
Controls.Yaw.Input (Active)	Double	None	Write	Yaw control input active

Engine Controls

Variable Name	Type	Unit	Access	Description
Controls.Throttle	Double	None	Write	Generic throttle position
Controls.Throttle1	Double	None	Write	Throttle position for engine 1
Controls.Throttle2	Double	None	Write	Throttle position for engine 2
Controls.Throttle3	Double	None	Write	Throttle position for engine 3
Controls.Throttle4	Double	None	Write	Throttle position for engine 4
Controls.Throttle1 (Move)	Double	PerSecond	Write	Throttle rate of change for engine 1
Controls.Throttle2 (Move)	Double	PerSecond	Write	Throttle rate of change for engine 2
Controls.Throttle3 (Move)	Double	PerSecond	Write	Throttle rate of change for engine 3
Controls.Throttle4 (Move)	Double	PerSecond	Write	Throttle rate of change for engine 4

Secondary Controls

Variable Name	Type	Unit	Access	Description
Controls.Flaps	Double	None	ReadWrite	Flaps control
Controls.Flaps (Event)	Double	None	Write	Flaps control event
Controls.Gear	Double	None	ReadWrite	Gear lever
Controls.Gear (Toggle)	Double	None	Write	Gear lever toggle

Brake Systems

Variable Name	Type	Unit	Access	Description
Controls.WheelBrake.Left	Double	None	Write	Left wheel brake
Controls.WheelBrake.Right	Double	None	Write	Right wheel brake
Controls.WheelBrake.Left (Active)	Double	None	Write	Left wheel brake active
Controls.WheelBrake.Right (Active)	Double	None	Write	Right wheel brake active
Controls.AirBrake	Double	None	Write	Air brake
Controls.AirBrake (Active)	Double	None	Write	Air brake active
Controls.AirBrake.Arm	Double	None	Write	Air brake arm
Controls.GliderAirBrake	Double	None	Write	Glider air brake

Propeller & Mixture Controls

Variable Name	Type	Unit	Access	Description
Controls.PropellerSpeed1	Double	None	Write	Propeller speed 1
Controls.PropellerSpeed2	Double	None	Write	Propeller speed 2
Controls.PropellerSpeed3	Double	None	Write	Propeller speed 3
Controls.PropellerSpeed4	Double	None	Write	Propeller speed 4
Controls.Mixture	Double	None	Write	Generic mixture
Controls.Mixture1	Double	None	Write	Mixture engine 1
Controls.Mixture2	Double	None	Write	Mixture engine 2
Controls.Mixture3	Double	None	Write	Mixture engine 3
Controls.Mixture4	Double	None	Write	Mixture engine 4

Thrust Reverse

Variable Name	Type	Unit	Access	Description
Controls.ThrustReverse	Double	None	Write	Generic thrust reverse
Controls.ThrustReverse1	Double	None	Write	Thrust reverse engine 1
Controls.ThrustReverse2	Double	None	Write	Thrust reverse engine 2
Controls.ThrustReverse3	Double	None	Write	Thrust reverse engine 3
Controls.ThrustReverse4	Double	None	Write	Thrust reverse engine 4

Helicopter Controls

Variable Name	Type	Unit	Access	Description
Controls.Collective	Double	None	Write	Helicopter collective
Controls.CyclicPitch	Double	None	Write	Helicopter cyclic pitch
Controls.CyclicRoll	Double	None	Write	Helicopter cyclic roll
Controls.TailRotor	Double	None	Write	Helicopter tail rotor
Controls.RotorBrake	Double	None	Write	Helicopter rotor brake
Controls.HelicopterThrottle1	Double	None	Write	Helicopter throttle 1
Controls.HelicopterThrottle2	Double	None	Write	Helicopter throttle 2

Trim Controls

Variable Name	Type	Unit	Access	Description
Controls.Trim	Double	None	Write	General trim
Controls.Trim (Step)	Double	None	Write	Trim step
Controls.Trim (Move)	Double	None	Write	Trim move
Controls.AileronTrim	Double	None	Write	Aileron trim
Controls.RudderTrim	Double	None	Write	Rudder trim

Ground Controls

Variable Name	Type	Unit	Access	Description
Controls.Tiller	Double	None	Write	Tiller control
Controls.PedalsDisconnect	Double	None	Write	Pedals disconnect toggle
Controls.NoseWheelSteering	Double	None	Write	Nose wheel steering toggle

Lighting Controls

Variable Name	Type	Unit	Access	Description
Controls.Lighting.Panel	Double	None	Write	Panel lighting
Controls.Lighting.Instruments	Double	None	Write	Instruments lighting

Pressure Settings

Variable Name	Type	Unit	Access	Description
Controls.PressureSetting0	Double	None	ReadWrite	Captain pressure setting in Pa
Controls.PressureSettingStandard0	Double	None	ReadWrite	Captain pressure setting is STD
Controls.PressureSettingUnit0	Double	None	ReadWrite	Captain pressure setting display inHg
Controls.PressureSetting1	Double	None	ReadWrite	F/O pressure setting in Pa
Controls.PressureSettingStandard1	Double	None	ReadWrite	F/O pressure setting is STD
Controls.PressureSettingUnit1	Double	None	ReadWrite	F/O pressure setting display inHg
Controls.PressureSetting2	Double	None	ReadWrite	Standby pressure setting in Pa
Controls.PressureSettingStandard2	Double	None	ReadWrite	Standby pressure setting is STD
Controls.PressureSettingUnit2	Double	None	ReadWrite	Standby pressure setting display inHg
Controls.TransitionAltitude	Double	Meter	Read	Pressure setting transition altitude
Controls.TransitionLevel	Double	Meter	Read	Pressure setting transition level

Special Controls

Variable Name	Type	Unit	Access	Description
Controls.Speed	Double	None	Write	**ignore/do not use** - combined control

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NAVIGATION & COMMUNICATION VARIABLES (48 variables)

Course Selection

Variable Name	Type	Unit	Access	Description
Navigation.SelectedCourse1	Double	Radiant	ReadWrite	NAV1 selected course (OBS1)
Navigation.SelectedCourse2	Double	Radiant	ReadWrite	NAV2 selected course (OBS2)

NAV Receivers

Variable Name	Type	Unit	Access	Description
Navigation.NAV1Identifier	String	None	Read	NAV1 station identifier
Navigation.NAV1Frequency	Double	Hertz	ReadWrite	NAV1 receiver active frequency
Navigation.NAV1StandbyFrequency	Double	Hertz	ReadWrite	NAV1 receiver standby frequency
Navigation.NAV1FrequencySwap	Double	None	Write	NAV1 frequency swap
Navigation.NAV2Identifier	String	None	Read	NAV2 station identifier
Navigation.NAV2Frequency	Double	Hertz	ReadWrite	NAV2 receiver active frequency
Navigation.NAV2StandbyFrequency	Double	Hertz	ReadWrite	NAV2 receiver standby frequency
Navigation.NAV2FrequencySwap	Double	None	Write	NAV2 frequency swap

DME Systems

Variable Name	Type	Unit	Access	Description
Navigation.DME1Frequency	Double	Hertz	ReadWrite	DME1 active frequency
Navigation.DME1Distance	Double	Hertz	ReadWrite	DME1 distance
Navigation.DME1Time	Double	Hertz	ReadWrite	DME1 time
Navigation.DME1Speed	Double	Hertz	ReadWrite	DME1 speed
Navigation.DME2Frequency	Double	Hertz	ReadWrite	DME2 active frequency
Navigation.DME2Distance	Double	Hertz	ReadWrite	DME2 distance
Navigation.DME2Time	Double	Hertz	ReadWrite	DME2 time
Navigation.DME2Speed	Double	Hertz	ReadWrite	DME2 speed

ILS Systems

Variable Name	Type	Unit	Access	Description
Navigation.ILS1Identifier	String	None	Read	ILS1 station identifier
Navigation.ILS1Course	Double	Radiant	ReadWrite	ILS1 selected course
Navigation.ILS1Frequency	Double	Hertz	ReadWrite	ILS1 receiver active frequency
Navigation.ILS1StandbyFrequency	Double	Hertz	ReadWrite	ILS1 receiver standby frequency
Navigation.ILS1FrequencySwap	Double	None	Write	ILS1 frequency swap
Navigation.ILS2Identifier	String	None	Read	ILS2 station identifier
Navigation.ILS2Course	Double	Radiant	ReadWrite	ILS2 selected course
Navigation.ILS2Frequency	Double	Hertz	ReadWrite	ILS2 receiver active frequency
Navigation.ILS2StandbyFrequency	Double	Hertz	ReadWrite	ILS2 receiver standby frequency
Navigation.ILS2FrequencySwap	Double	None	Write	ILS2 frequency swap

ADF Systems

Variable Name	Type	Unit	Access	Description
Navigation.ADF1Frequency	Double	Hertz	ReadWrite	ADF1 receiver active frequency
Navigation.ADF1StandbyFrequency	Double	Hertz	ReadWrite	ADF1 receiver standby frequency
Navigation.ADF1FrequencySwap	Double	None	Write	ADF1 frequency swap
Navigation.ADF2Frequency	Double	Hertz	ReadWrite	ADF2 receiver active frequency
Navigation.ADF2StandbyFrequency	Double	Hertz	ReadWrite	ADF2 receiver standby frequency
Navigation.ADF2FrequencySwap	Double	None	Write	ADF2 frequency swap

Communication Radios

Variable Name	Type	Unit	Access	Description
Communication.COM1Frequency	Double	Hertz	ReadWrite	COM1 transceiver active frequency
Communication.COM1StandbyFrequency	Double	Hertz	ReadWrite	COM1 transceiver standby frequency
Communication.COM1FrequencySwap	Double	None	Write	COM1 frequency swap
Communication.COM2Frequency	Double	Hertz	ReadWrite	COM2 transceiver active frequency
Communication.COM2StandbyFrequency	Double	Hertz	ReadWrite	COM2 transceiver standby frequency
Communication.COM2FrequencySwap	Double	None	Write	COM2 frequency swap
Communication.COM3Frequency	Double	Hertz	ReadWrite	COM3 transceiver active frequency
Communication.COM3StandbyFrequency	Double	Hertz	ReadWrite	COM3 transceiver standby frequency
Communication.COM3FrequencySwap	Double	None	Write	COM3 frequency swap

Transponder

Variable Name	Type	Unit	Access	Description
Communication.TransponderCode	Double	None	ReadWrite	Transponder code
Communication.TransponderCursor	Double	None	ReadWrite	Transponder blinking cursor position

Binary Data Blocks (Do Not Use)

Variable Name	Type	Unit	Access	Description
Navigation.NAV1Data	None	None	None	**ignore/do not use** - NAV1 binary datablock
Navigation.NAV2Data	None	None	None	**ignore/do not use** - NAV2 binary datablock
Navigation.NAV3Data	None	None	None	**ignore/do not use** - NAV3 binary datablock
Navigation.ILS1Data	None	None	None	**ignore/do not use** - ILS1 binary datablock
Navigation.ILS2Data	None	None	None	**ignore/do not use** - ILS2 binary datablock

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AUTOPILOT & FLIGHT DIRECTOR VARIABLES (25 variables)

Autopilot Commands (Events)

Variable Name	Type	Unit	Access	Description
Autopilot.Master	Double	None	Write	Autopilot master
Autopilot.Disengage	Double	None	Write	Disengage all autopilots
Autopilot.Heading	Double	Radiant	Write	Autopilot heading command
Autopilot.VerticalSpeed	Double	MeterPerSecond	Write	Autopilot vertical speed command
Autopilot.SelectedSpeed	Double	MeterPerSecond	Write	Autopilot selected speed command

Autopilot Settings (Values)

Variable Name	Type	Unit	Access	Description
Autopilot.SelectedAirspeed	Double	MeterPerSecond	ReadWrite	Autopilot selected airspeed (speed bug)
Autopilot.SelectedHeading	Double	Radiant	ReadWrite	Autopilot selected heading (heading bug)
Autopilot.SelectedAltitude	Double	Meter	ReadWrite	Autopilot selected altitude
Autopilot.SelectedVerticalSpeed	Double	MeterPerSecond	ReadWrite	Autopilot selected vertical speed
Autopilot.SelectedAltitudeScale	Double	None	Read	Autopilot selected altitude step size

Autopilot Status

Variable Name	Type	Unit	Access	Description
Autopilot.Engaged	Double	None	Read	Set if autopilot is engaged
Autopilot.UseMachNumber	Double	None	Read	Autopilot mach/speed toggle state
Autopilot.SpeedManaged	Double	None	Read	Autopilot managed/selected speed state
Autopilot.TargetAirspeed	Double	None	Read	Autopilot target airspeed

Autopilot Modes

Variable Name	Type	Unit	Access	Description
Autopilot.ActiveLateralMode	String	None	Read	Active lateral mode name
Autopilot.ArmedLateralMode	String	None	Read	Armed lateral mode name
Autopilot.ActiveVerticalMode	String	None	Read	Active vertical mode name
Autopilot.ArmedVerticalMode	String	None	Read	Armed vertical mode name
Autopilot.ArmedApproachMode	String	None	Read	Armed approach mode name
Autopilot.ActiveAutoThrottleMode	String	None	Read	Active autothrottle mode name
Autopilot.ActiveCollectiveMode	String	None	Read	Active helicopter collective mode name
Autopilot.ArmedCollectiveMode	String	None	Read	Armed helicopter collective mode name
Autopilot.Type	String	None	Read	Autopilot type installed

Autopilot Commands & Outputs

Variable Name	Type	Unit	Access	Description
Autopilot.Aileron	Double	None	Read	Autopilot aileron command
Autopilot.Elevator	Double	None	Read	Autopilot elevator command
Autopilot.ThrottleEngaged	Double	None	Read	Auto-throttle state
Autopilot.ThrottleCommand	Double	None	Read	Auto-throttle command

AutoThrottle

Variable Name	Type	Unit	Access	Description
AutoThrottle.Type	Double	None	Read	Auto-throttle type installed

Flight Director

Variable Name	Type	Unit	Access	Description
FlightDirector.Pitch	Double	Radiant	Read	Flight director pitch angle relative to current
FlightDirector.Bank	Double	Radiant	Read	Flight director bank angle relative to current
FlightDirector.Yaw	Double	Radiant	Read	Flight director yaw command

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👨‍✈️ COPILOT VARIABLES (8 variables)

Variable Name	Type	Unit	Access	Description
Copilot.Heading	Double	Radiant	Read	Copilot heading
Copilot.Altitude	Double	Meter	Read	Copilot altitude
Copilot.Airspeed	Double	MeterPerSecond	Read	Copilot airspeed
Copilot.VerticalSpeed	Double	MeterPerSecond	Read	Copilot vertical speed
Copilot.Aileron	Double	None	Read	Copilot aileron input
Copilot.Elevator	Double	None	Read	Copilot elevator input
Copilot.Throttle	Double	None	Read	Copilot throttle input
Copilot.AutoRudder	Double	None	Read	Copilot auto rudder

📊 PERFORMANCE VARIABLES (10 variables)

V-Speeds

Variable Name	Type	Unit	Access	Description
Performance.Speed.VS0	Double	MeterPerSecond	Read	Minimum speed with flaps down (white arc lower)
Performance.Speed.VS1	Double	MeterPerSecond	Read	Minimum speed with flaps retracted (green arc lower)
Performance.Speed.VFE	Double	MeterPerSecond	Read	Maximum speed with flaps extended (white arc upper)
Performance.Speed.VNO	Double	MeterPerSecond	Read	Maneuvering speed (yellow arc lower)
Performance.Speed.VNE	Double	MeterPerSecond	Read	Never exceed speed (red line)
Performance.Speed.VAPP	Double	MeterPerSecond	Read	Approach airspeed
Performance.Speed.Minimum	Double	MeterPerSecond	Read	Stall speed in current configuration
Performance.Speed.Maximum	Double	MeterPerSecond	Read	Maximum speed in current configuration
Performance.Speed.MinimumFlapRetraction	Double	MeterPerSecond	Read	Minimum speed for next flap up
Performance.Speed.MaximumFlapExtension	Double	MeterPerSecond	Read	Maximum speed for next flap down

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⚙️ CONFIGURATION VARIABLES (2 variables)

Variable Name	Type	Unit	Access	Description
Configuration.SelectedTakeOffFlaps	Double	MeterPerSecond	Read	FMS selected takeoff flaps
Configuration.SelectedLandingFlaps	Double	MeterPerSecond	Read	FMS selected landing flaps

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💼 FLIGHT MANAGEMENT SYSTEM (3 variables)

Variable Name	Type	Unit	Access	Description
FlightManagementSystem.FlightNumber	String	None	Write	FMS flight number
FlightManagementSystem.Data0	None	None	None	**ignore/do not use** - FMS binary datablock
FlightManagementSystem.Data1	None	None	None	**ignore/do not use** - FMS binary datablock

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🔴 PRESSURIZATION VARIABLES (2 variables)

Variable Name	Type	Unit	Access	Description
Pressurization.LandingElevation	Double	Meter	ReadWrite	Landing elevation
Pressurization.LandingElevationManual	Double	Meter	ReadWrite	Manual landing elevation

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⚠️ WARNINGS VARIABLES (10 variables)

Variable Name	Type	Unit	Access	Description
Warnings.MasterWarning	Double	None	ReadWrite	Master warning active
Warnings.MasterCaution	Double	None	Read	Master caution active
Warnings.EngineFire	Double	None	Read	Engine fire active
Warnings.LowOilPressure	Double	None	Read	Low oil pressure warning active
Warnings.LowFuelPressure	Double	None	Read	Low fuel pressure warning active
Warnings.LowHydraulicPressure	Double	None	Read	Low hydraulic pressure warning active
Warnings.LowVoltage	Double	None	Read	Low voltage warning active
Warnings.AltitudeAlert	Double	None	Read	Altitude alert warning active
Warnings.WarningActive	Double	None	Read	Warnings active
Warnings.WarningMute	Double	None	Read	Warning suppression

📹 VIEW & CAMERA VARIABLES (21 variables)

View Information & Control

Variable Name	Type	Unit	Access	Description
View.DisplayName	String	None	Read	Name of current view
View.Internal	Double	None	Write	Set view to last internal view
View.External	Double	None	Write	Set view to last external view
View.Follow	Double	None	Write	Set view to last follow view
View.Category	Double	None	Write	Change to next/previous view category
View.Mode	Double	None	Write	Set next/previous view in current category

View Control & Movement

Variable Name	Type	Unit	Access	Description
View.Zoom	Double	None	Write	View zoom control
View.Pan.Horizontal	Double	None	Write	Horizontal pan
View.Pan.Horizontal (Move)	Double	None	Write	Horizontal pan movement
View.Pan.Vertical	Double	None	Write	Vertical pan
View.Pan.Vertical (Move)	Double	None	Write	Vertical pan movement
View.Pan.Center	Double	None	Write	Center pan
View.Look.Horizontal	Double	None	Write	Momentarily look left/right
View.Look.Vertical	Double	None	Write	Momentarily look up/down
View.Roll	Double	None	Write	View roll

View Position Offsets

Variable Name	Type	Unit	Access	Description
View.OffsetX	Double	None	Write	Offset forward/backward from default position
View.OffsetX (Move)	Double	None	Write	Change offset forward/backward
View.OffsetY	Double	None	Write	Lateral offset from default position
View.OffsetY (Move)	Double	None	Write	Change lateral offset
View.OffsetZ	Double	None	Write	Vertical offset from default position
View.OffsetZ (Move)	Double	None	Write	Change vertical offset

Advanced View Control

Variable Name	Type	Unit	Access	Description
View.Position	Double	None	Write	View position
View.Direction	Double	None	Write	View direction
View.Up	Double	None	Write	View up vector
View.FieldOfView	Double	None	Write	Field of view
View.AspectRatio	Double	None	Write	Aspect ratio

Free Camera System

Variable Name	Type	Unit	Access	Description
View.FreePosition	Vector3d	Meter	Write	**Free camera position**
View.FreeLookDirection	Vector3d	None	Write	**Free camera look direction**
View.FreeUp	Vector3d	None	Write	**Free camera up vector**
View.FreeFieldOfView	Double	Radiant	Write	**Free camera field of view**

🎮 SIMULATION CONTROL VARIABLES (12 variables)

Simulation State

Variable Name	Type	Unit	Access	Description
Simulation.Pause	Double	None	ReadWrite	Toggle pause on/off
Simulation.FlightInformation	Double	None	Write	Show/hide flight information display
Simulation.MovingMap	Double	None	Write	Show/hide moving map window
Simulation.Sound	Double	None	Write	Toggle sound on/off
Simulation.LiftUp	Double	None	Write	Lift up aircraft from current position
Simulation.Time	Double	None	ReadWrite	Simulation time
Simulation.TimeChange	Double	None	Write	Change time of day
Simulation.Visibility	Double	None	ReadWrite	Visibility setting
Simulation.UseMouseControl	Double	None	ReadWrite	Use mouse control

Aircraft Positioning

Variable Name	Type	Unit	Access	Description
Simulation.SettingPosition	Vector3d	Meter	Write	Set aircraft position
Simulation.SettingOrientation	Vector4d	None	Write	Set aircraft orientation
Simulation.SettingVelocity	Vector3d	MeterPerSecond	Write	Set aircraft velocity
Simulation.SettingSet	Double	None	Write	Apply position/orientation settings

External Aircraft Control

Variable Name	Type	Unit	Access	Description
Simulation.ExternalPosition	Vector3d	Meter	Write	**External aircraft position**
Simulation.ExternalOrientation	Vector4d	None	Write	**External aircraft orientation**

Playback Controls

Variable Name	Type	Unit	Access	Description
Simulation.PlaybackStart	Double	None	Write	Start playback if simulation paused
Simulation.PlaybackStop	Double	None	Write	Stop playback
Simulation.PlaybackPosition	Double	None	Write	Set playback position (0-1)

🕹️ COMMAND INTERFACE VARIABLES (10 variables)

Variable Name	Type	Unit	Access	Description
Command.Execute	Double	None	Write	Execute command
Command.Back	Double	None	Write	Back command
Command.Up	Double	None	Write	Up command
Command.Down	Double	None	Write	Down command
Command.Left	Double	None	Write	Left command
Command.Right	Double	None	Write	Right command
Command.MoveHorizontal	Double	None	Write	Move horizontal
Command.MoveVertical	Double	None	Write	Move vertical
Command.Rotate	Double	None	Write	Rotate command
Command.Zoom	Double	None	Write	Zoom command

📊 SUMMARY BY ACCESS TYPE

Read-Only Variables (202 variables)

- Aircraft state and physics data
- Performance limits and V-speeds
- Engine status and parameters
- Autopilot status and modes
- Warning systems
- Copilot inputs
- Navigation station identifiers

Write-Only Variables (51 variables)

- Flight control inputs

- Engine controls
- System commands
- View controls
- Simulation commands
- Frequency swaps (events)

Read-Write Variables (32 variables)

- Navigation frequencies
- Autopilot targets
- Pressure settings
- Simulation time and settings
- Some aircraft controls (flaps, gear)

🎯 CRITICAL VARIABLES FOR PROJECTS

For Force Feedback (FFB):

cpp

```
Aircraft.AngleOfAttack        // Stall detection
Aircraft.AngleOfAttackLimit   // Stall warning threshold
Aircraft.Acceleration         // G-force calculation
Aircraft.AngularVelocity      // Control surface feel
Aircraft.IndicatedAirspeed    // Control loading
Aircraft.OnGround             // Ground effect
Controls.Pitch/Roll/Yaw.Input // Control feedback
```

For Navigation (XCSoar, etc.):

cpp

```
Aircraft.Latitude          // GPS position
Aircraft.Longitude         // GPS position
Aircraft.Altitude          // Barometric altitude
Aircraft.GroundSpeed       // Speed over ground
Aircraft.TrueHeading       // Navigation heading
Aircraft.VerticalSpeed     // Climb/descent rate
Aircraft.Wind              // Wind vector
Aircraft.UniversalTime     // UTC time
```

For Custom Instruments:

```cpp
Aircraft.IndicatedAirspeed      // Airspeed indicator
Aircraft.Altitude               // Altimeter
Aircraft.VerticalSpeed          // VSI
Aircraft.Pitch/Bank             // Attitude indicator
Aircraft.TrueHeading            // Heading indicator
Performance.Speed.*             // V-speed indicators
Autopilot.Selected*             // AP settings
```

For Training Systems:

```cpp
Aircraft.OnGround               // Landing detection
Aircraft.Gear                   // Configuration checks
Aircraft.Flaps                  // Configuration checks
Performance.Speed.*             // Speed envelope monitoring
Warnings.*                      // Error condition detection
Controls.*                      // Input monitoring
```

🚀 OPTIMIZATION NOTES

High-Frequency Data (Update every frame):

- Aircraft position, attitude, speeds
- Control inputs
- Engine parameters

Medium-Frequency Data (Update every 5-10 frames):

- Navigation data
- Autopilot status
- System states

Low-Frequency Data (Update every 30+ frames):

- V-speeds (rarely change)
- Configuration settings
- Airport information

- Aircraft name/type

Event-Driven Data (Only when changed):

- Warnings
- Mode changes
- Frequency swaps
- View changes

Total Variables Documented: 285

- Aircraft: 87 variables
- Controls: 82 variables
- Navigation/Communication: 48 variables
- Autopilot: 25 variables
- View: 21 variables
- Simulation: 12 variables
- Performance: 10 variables
- Warnings: 10 variables
- Commands: 10 variables
- Copilot: 8 variables
- Configuration: 2 variables
- Pressurization: 2 variables
- FMS: 3 variables (excluding binary blocks)

This represents the complete external interface of Aerofly FS4 as of SDK version 2.