Aerospace Blockset Release Notes

These Release Notes introduce the new Aerospace Blockset.

Note The Aerospace Blockset 1.0.1 is the first release of this blockset as part of a MathWorks release CD. The Aerospace Blockset 1.0 was released in Web-downloadable form after Release 12.1, but before Release 13. There are no significant changes in the Aerospace Blockset between Version 1.0 and Version 1.0.1.

If you would like to print the Release Notes, you can link to a PDF version.

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Introduction to the Aerospace Blockset

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The Aerospace Blockset brings the full power of Simulink® to aerospace system design, integration, and simulation by providing key aerospace subsystems and components in the adaptable Simulink block format. From environmental models to equations of motion, from gain scheduling to animation, the blockset gives you the core components to rapidly and efficiently assemble a broad range of large aerospace system architectures.

Use the Aerospace Blockset and Simulink to develop your aerospace system concepts, and to efficiently revise and test throughout the life cycle of your design. Use the Aerospace Blockset together with Real-Time Workshop® to automatically generate code for real-time execution in rapid prototyping and for hardware-in-the-loop systems.

The Aerospace Blockset is a collection of block libraries for use with Simulink. The blockset extends Simulink by providing core components for large aerospace systems. You can use blocks from the Aerospace Blockset in the same way that you would use any other Simulink blocks, combining them with blocks from other libraries to create sophisticated aerospace systems.

The Aerospace Blockset libraries are designed specifically for aerospace applications and include such key operations as environmental modeling, modeling equations of motion, gain scheduling, unit conversion, and more.

You will find that the blockset can be put to work rapidly. The blocks implement mathematical representations from textbooks and references and the experience of the engineers at The MathWorks.

Requirements

You must have the following products installed to use the Aerospace Blockset:

- MATLAB 6.5
- Control System Toolbox 5.2
- Simulink 5.0

Virtual Reality-Based Visualization

The optional virtual reality-based visualization blocks in the Aerospace Blockset require the Virtual Reality Toolbox Version 3.0:

- The Virtual Reality Toolbox includes a default viewer, which works on all platforms.
- You can also install the blaxxun Contact plug-in viewer, version 4.4, for Web browsers. This plug-in is included with the Virtual Reality Toolbox and works on Windows platforms only. It requires Java-enabled Microsoft Internet Explorer 4.0, Netscape Navigator 4.0, or later version Web browser.

Known Software and Documentation Problems

Known Errors in Military Specification MIL-F-8785C

There are known errors in the Military Specification MIL-F-8785C. The following blocks implement the mathematical representation in the Military Specification MIL-F-8785C so any errors in the specification will be propogated in the implementation.

Block	Library
Discrete Wind Gust Model	Environental/Wind Library
Dryden Wind Turbulence Model	Environental/Wind Library
Wind Shear Model	Environental/Wind Library

Real-Time Workshop and Real-Time Workshop Embedded Coder Support

Most blocks in the Aerospace Blockset library support the Simulink Accelerator mode, as well as code generation with Real-Time Workshop and Real-Time Workshop Embedded Coder. The following blocks are exceptions.

Blocks Not Supported by Real-Time Workshop

Block	Library
3DoF Animation	Animation
6DoF Animation	Animation

Blocks Not Supported by Real-Time Workshop Embedded Coder

Block	Library
Second Order Linear Actuator	Actuator
Second Order Nonlinear Actuator	Actuator
3DoF Animation	Animation
6DoF Animation	Animation
COESA Atmosphere Model	Environment/Atmosphere
WGS84 Gravity Model	Environment/Gravity
Discrete Wind Gust Model	Environment/Wind
Dryden Wind Turbulence Model	Environment/Wind
Equations of Motion	Equations of Motion/3DoF
6DoF (Euler Angles)	Equations of Motion/6DoF
6DoF (Quaternion)	Equations of Motion/6DoF
1D Controller [A(v),B(v),C(v),D(v)]	GNC
1D Controller Blend u=(1-L).K1.y+L.K2.y	GNC
1D Observer Form [A(v),B(v),C(v),F(v),H(v)]	GNC
1D Self-Conditioned [A(v),B(v),C(v),D(v)]	GNC
2D Controller [A(v),B(v),C(v),D(v)]	GNC
2D Controller Blend	GNC
2D Observer Form [A(v),B(v),C(v),F(v),H(v)]	GNC
2D Self-Conditioned [A(v),B(v),C(v),D(v)]	GNC
3D Controller [A(v),B(v),C(v),D(v)]	GNC
3D Observer Form [A(v),B(v),C(v),F(v),H(v)]	GNC
3D Self-Conditioned [A(v),B(v),C(v),D(v)]	GNC

Blocks Not Supported by Real-Time Workshop Embedded Coder (Continued)

Gain Scheduled Lead-Lag	GNC
Self-Conditioned [A,B,C,D]	GNC
Turbofan Engine System	Propulsion