Version 9.0

VisSim/Serial User's Guide

By Altair Engineering, Inc.

Altair Engineering, Inc.
Altair Engineering User's Guides for VisSim Products - Version 9.0

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Introduction

VisSim/Serial add-on module interfaces with a standard COMM port on a PC that can be connected to any other serial device. Using VisSim/Serial, you can exchange data between VisSim and any serial device.

The VisSim product family

The VisSim product family includes several base products and product suites, as well as a comprehensive set of targeted add-on modules that address specific problems in areas such as data communications, data acquisition, linearization and analysis, and digital signal processing.

Base products and product suites

Product	Function
Professional VisSim	Model-based design, simulation, testing, and validation of dynamic systems. A personal version, VisSim PE, is also available. VisSim PE limits diagram size to 100 blocks.
VisSim/Comm Suite	Simulates end-to-end communication systems at the signal level using 200+ communications, signal processing, and RF blocks. Includes Professional VisSim and VisSim/Comm blockset. A personal version, VisSim/Comm Suite PE, is also available. VisSim/Comm PE limits diagram size to 100 blocks and limits the Communication blockset. See the VisSim/Comm datasheet for details. VisSim/Comm Suite add-on modules are available for real-time data acquisition (Red Rapids digital tuner card); modeling PCCC turbo codes, including UMTS specification; and for support of Bluetooth, 802.11 a/b/g (Wi-Fi), and ultrawideband wireless designs.
VisSim/Embedded Controls Developer Suite	Rapidly prototypes and creates embedded controls for DSPs, DSCs, and MSP430 microcontrollers. You can simulate and generate scaled, fixed-point ANSI C code, as well as code for on-chip peripherals.

	Includes Professional VisSim, VisSim/C-Code, VisSim/Fixed-Point, and one user-specified target support. A personal version, VisSim/Embedded Controls Developer PE, is also available. VisSim/Embedded Controls Developer PE limits diagram size to 100.
VisSim Viewer (free)	Lets you share VisSim models with colleagues and clients not licensed to use VisSim.

Add-on modules

Add-On Module	Function
VisSim/Analyze	Performs frequency domain analysis of a linearized nonlinear subsystem.
VisSim/CAN	Interfaces with a USB CAN device to read and write CAN messages on the CAN bus.
VisSim/C-Code	Generates highly-optimized, ANSI C code that can be compiled and run on any platform that supports an ANSI C compiler.
VisSim/C-Code Support Library Source	Provides source code for the Support Library.
VisSim/Comm blockset	Simulates end-to-end communication systems at the signal level using 200+ communications, signal processing, and RF blocks. A personal version, VisSim/Comm PE, is also available. VisSim/Comm PE is a subset of the Communication blockset. See the VisSim/Comm datasheet for details. You can purchase VisSim/Comm add-on modules for real-time data acquisition (Red Rapids digital tuner cards); for modeling PCCC turbo codes, including UMTS specification; for support of Bluetooth, 802.11 a/b/g (Wi-Fi), and ultrawideband wireless designs.
VisSim/Digital Power Designer	Simulates the behavior of fixed-point algorithms prior to code generation and implementation of the algorithm on the fixed-point target.
VisSim/Fixed-Point	Simulates the behavior of fixed-point algorithms prior to code generation and implementation of the algorithm on the fixed-point target.
VisSim/Knobs and Gauges	Provides dynamic gauges, meters, and knobs for process control, and measurement and validation systems.
VisSim/Model-Wizard	Generates transfer function model from historic or real-time data.
VisSim/Motion	Simulates motor control systems with customizable amplifiers, controllers, filters, motors, sensors, sources, tools, and transforms.
VisSim/Neural-Networks	Performs nonlinear system identification, problem diagnosis, decision-making prediction, and other problems where pattern recognition is important.
VisSim/OPC	Connects to any OPC server and log data or run a virtual plant in VisSim for offline tuning.
VisSim/OptimizePRO	Performs generalized reduced gradient method of

	parameter optimization.
VisSim/Real-TimePRO	Performs real-time data acquisition and signal generation using I/O cards, PLCs, and DCSs.
VisSim/Serial	Performs serial I/O with other computers.
VisSim/State Charts	Creates, edits, and executes event-based systems.
VisSim/UDP	Performs data exchange over the internet using UDP.
VisSim Viewer (free)	Lets you share VisSim models with colleagues and clients not licensed to use VisSim.

Resources for learning VisSim/Serial

For those of you that are new to VisSim, we have provided several free services to make your transition to VisSim fast, smooth, and easy:

Interactive webinars

Interactive webinars offer you the opportunity to meet with Altair product specialists who will introduce and demonstrate our software products live on your computer and answer any questions you have. Each webinar is approximately 45 minutes long. To learn more about our interactive webinars, go to http://www.vissim.com/webinars/webinars.html.

Sample diagrams

VisSim 9.0 includes a directory of fully documented sample diagrams. These diagrams illustrate both simple and complex models spanning a broad range of engineering disciplines, including aerospace, biophysics, chemical engineering, control design, dynamic systems, electromechanical systems, environmental systems, HVAC, motion control, process control, and signal processing.

To access sample diagrams

Click on the **Diagrams** menu in VisSim.

Click on **Examples** > **Applications**.

Training

Altair offers training sessions for learning and gaining expertise in VisSim and the VisSim family of add-on products. Training sessions are conducted at Altair training facility in Westford, MA, as well as at customer sites and as online webinars.

For information on setting up a training session, contacts sales@vissol.com.

Installing VisSim/Serial

This section contains…

Installation procedure

To install VisSim/Serial

- Run **setupVisSimSerial90.exe**.

At the completion of the installation the VisSim/Serial add-on will appear in the Addons window for the Edit > Preferences > Addons command, and the VisSim/Serial blocks will appear in the Blocks > Real-Time menu.

Serial device driver

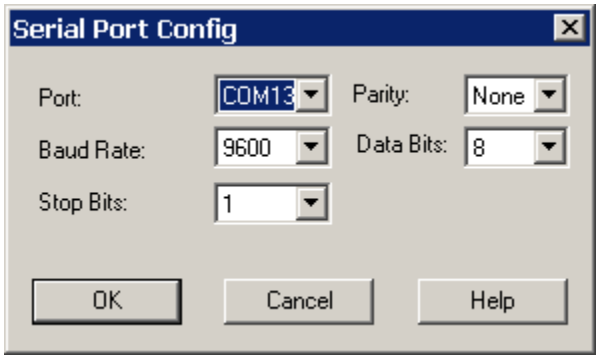
VisSim/Serial works with the standard PC RS232 serial device. It uses the native PC drivers. No additional driver installation is required.

Using VisSim/Serial

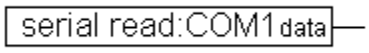
VisSim/Serial add-on interfaces with a standard COMM port on a PC that can be connected to any other serial device. Using VisSim/Serial, you can exchange data between VisSim and any serial device using the Serial Read and Serial Write blocks.

Serial Config command

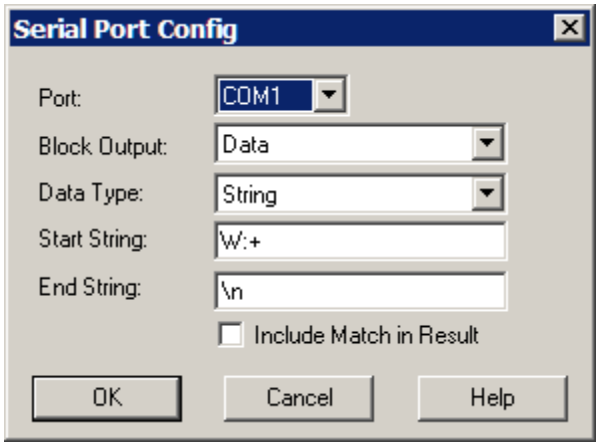
The Serial Config is used to set the Serial bit rate, parity, byte size and port.



Serial Read block



The Serial Read block reads data from the serial bus.



Port: Specifies port to be used.

Block Output: Specifies the information being supplied. There are three possibilities:

- **Data** - The current data byte from the receive queue.
- **Receive Queue Length** - The current count of bytes in the receive queue.
- **Transmit Queue Length** - The current count of bytes in the receive queue.

Data Type: If the block output is "Data", then this controls the data type read. There are 4 possibilities:

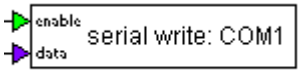
- **char** – read one byte
- **short** – read 2 bytes resulting in a 16 bit integer result
- **long** – read 4 bytes resulting in a 32 bit integer result
- **string**– read n bytes resulting in a variable length string result

  If "Start String" is specified, characters are ignored until a match with the start string is found.

  If "End String" is specified, the string will be terminated at the last character before the match.

  If "Include Match in Result" is specified, the matched portions of the string will be included in the result; otherwise, they will not be included.

Serial Write block



The Serial Write block writes data to the Serial bus. The top "enable" pin must have the value 1 in order for the block to send data. The 2nd pin is the data pin. The values presented on the data pins sent to the serial port. If you connect a string type (that is, a quoted constant in the const block), the Serial Write block will transmit all characters in the string for each enable pulse; otherwise, a single byte is sent.

Port: Specifies the serial port to which data is written.

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