

OPC Toolbox 2

Read, write, and log data from OPC servers

The OPC Toolbox extends MATLAB® and Simulink® with tools for interacting with OPC servers. You can read, write, and log OPC data from devices that conform to the OPC Foundation Data Access standard, such as distributed control systems, supervisory control and data acquisition systems, and programmable logic controllers. The toolbox enables MATLAB and Simulink to respond to an OPC server- or OPC Toolbox-initiated event, such as a shutdown, server error, or item value change.

Engineers in chemical, pharmaceutical, power generation, and other continuous process industries can use the toolbox to import plant data into MATLAB for analysis, visualization, simulation, and rapid prototyping of algorithms. It lets you use Simulink models in online supervisory control and controller testing (hardware-in-the-loop) applications.

Working with the OPC Toolbox

The OPC Toolbox provides three ways to implement an OPC Data Access Client. You can:

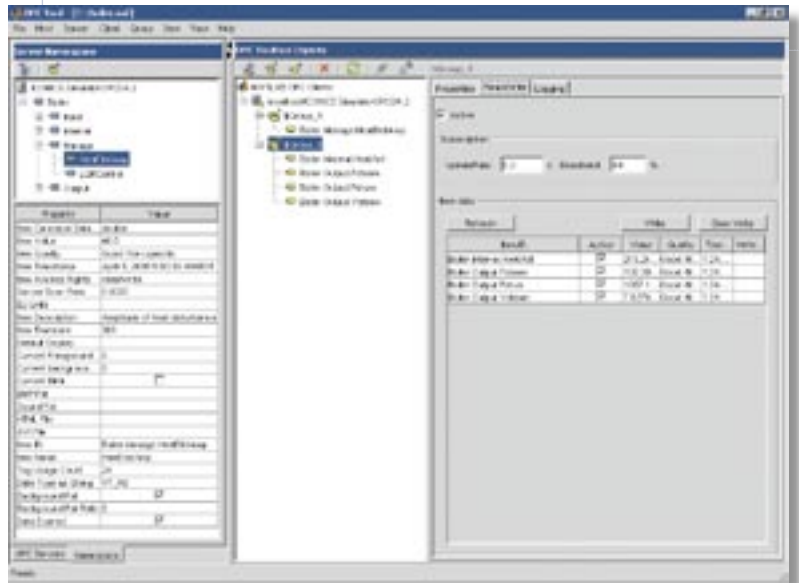
- Execute all OPC Toolbox functions directly from the MATLAB command line or incorporate them into your own MATLAB applications
- Use the graphical user interface (GUI) to rapidly connect to OPC servers, create and configure OPC Toolbox objects, and read, write, and log data
- Use the Simulink Blockset library to read and write data to and from an OPC server while simulating a system

Using the Hierarchical OPC Data Access Object

When used in MATLAB, the toolbox employs an intuitive, hierarchical object structure to help you manage connections to OPC servers and collections of server items, or tags. You create an OPC Data Access Client object to connect to an OPC server. This connection lets you browse the server namespace and

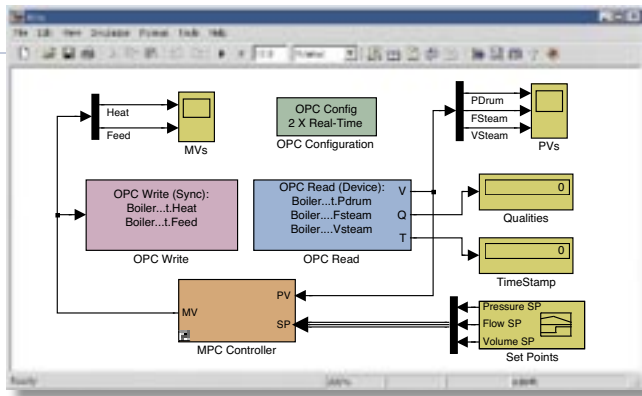
KEY FEATURES

- Supports the OPC Foundation Data Access standard v2.05a
- Enables MATLAB and Simulink to read from and write to OPC servers using synchronous or asynchronous operations
- Supports simultaneous data logging and numerical processing
- Supports simultaneous connections to multiple OPC servers



OPCTool enables easy browsing of server namespace, configuring of objects, and reading and writing of OPC data. It also lets you log OPC data into MATLAB for analysis and plotting.

The OPC Toolbox includes the Simulink Blockset library which lets you communicate data directly to and from Simulink and your process system.



Required Products

MATLAB
Simulink

Related Products

Control System Toolbox. Design and analyze controllers for dynamic closed-loop systems

Model Predictive Control Toolbox. Develop model predictive controllers in MATLAB and Simulink

Optimization Toolbox. Solve standard and large-scale optimization problems

Statistics Toolbox. Apply statistical algorithms and probability models

System Identification Toolbox. Create linear dynamic models from measured input-output data

Platform and System Requirements

For platform information and system requirements, visit

www.mathworks.com/products/opc ■

retrieve properties of each item stored on the server. You create Data Access Group objects to control sets of Data Access Item objects, which represent server items. The toolbox lets you configure and control all client, group, and item objects by modifying their properties.

In Simulink, the toolbox uses a configuration block to specify the OPC clients to use in the model, define the behavior for OPC errors and events, and set the real-time behavior. During simulation, the model executes in pseudo real-time, matching the system clock as closely as possible by automatically slowing the simulation. You can use the configuration block to define the toolbox's behavior should the simulation run more slowly than the system clock.

Reading and Writing OPC Data

Once you create a group object containing item objects, you can read from or write to individual items or all the items in the group simultaneously. In MATLAB, read and write operations can occur either synchronously

(MATLAB execution is blocked until the operation is complete) or asynchronously (MATLAB can continue processing while the operation is in progress).

In Simulink, read and write blocks retrieve and transmit data synchronously or asynchronously to and from the OPC server. The blocks contain a client manager that lets you specify and manage the OPC server, select items, and define block sample times.

Logging OPC Data

The toolbox enables you to log data as it changes over time. Data can be logged to memory or disk.

You can use MATLAB and add-on toolboxes to analyze and visualize the time series data to design control systems and optimize plant performance.

Creating Callback Functions

The OPC Toolbox enables you to create callback functions that are automatically executed by MATLAB whenever an event occurs. These events can be generated by the OPC Toolbox itself or by the OPC server to which the client is connected. Supported events include:

- Value or quality of an item changed
- OPC server shut down
- Specified amount of data logged
- Specified amount of time passed
- Error occurred

The OPC Read Block for Simulink lets you choose items from an OPC server and read online plant data directly into your Simulink model.



For demos, application examples, tutorials, user stories, and pricing:

- Visit www.mathworks.com

- Contact The MathWorks directly

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