Welcome to Tibbo OPC Server Manual!

This Manual consists of three parts:

- **Technical Specification** describes the supported operating systems and the data types;
- **Configuring the Server** describes how to set up the server to receive data from different data sources;
- **Using the Server** part shows the OPC server interaction with the client.
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Technical Specification

Tibbo OPC Server is fully compatible with Windows XP/2003 or later (Microsoft Visual C++ 2013 redistributable is required - installed automatically).

Supported DA Asynchronous I/O 2.0 and Synchronous I/O with COM/DCOM technology.

Tibbo OPC server has built-in AggreGate network protocol and can interact with any Tibbo devices by AggreGate agent protocol as well as it can connect to AggreGate server. The OPC Server sends the OPC Client applications the information on the Value, Quality and Timestamp of an item (tag). These fields are read from the AggreGate variables.

If OPC Server loses communication with their data source (AggreGate Server or AggreGate Agent), the process values are set to Bad [Configuration Error] quality. If the AggreGate variable value is empty, the quality is set to Uncertain [Non-Specific].

Concordance table of the AggreGate variables and the OPC data types are represented in the following chart:

<table>
<thead>
<tr>
<th>AggreGate Data Type</th>
<th>OPC Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTEGER</td>
<td>VT_I4</td>
</tr>
<tr>
<td>STRING</td>
<td>VT_BSTR</td>
</tr>
<tr>
<td>BOOLEAN</td>
<td>VT_BOOL</td>
</tr>
<tr>
<td>LONG</td>
<td>VT_I8</td>
</tr>
<tr>
<td>FLOAT</td>
<td>VT_R4</td>
</tr>
<tr>
<td>DOUBLE</td>
<td>VT_R8</td>
</tr>
<tr>
<td>DATE</td>
<td>VT_DATE</td>
</tr>
<tr>
<td>DATATABLE</td>
<td>VT_BSTR (by default)</td>
</tr>
<tr>
<td>COLOR</td>
<td>VT_I4</td>
</tr>
<tr>
<td>DATA</td>
<td>VT_BSTR</td>
</tr>
</tbody>
</table>

It supports arrays of simple data types listed above (VT_ARRAY). If the table for DATATABLE variable is given the field Value field in the configuration (Learn more about Configuring the Server), it is taken as the value of this field. Otherwise the table is converted to a string.
Configuring the Server

The OPC server can retrieve data from the AggreGate server and the AggreGate agent.

**Configuring the AggreGate agent**

First, let's consider for example the agent configuration as a data source. For this, use any TPS based on TiOS. Upload the firmware [Official TPS Demo Application](#) with the help of TIDE application.

When the firmware is uploaded, set a password and adjust the IP address if necessary. If you have any difficulties, please refer to the documentation for [Official TPS Demo Application](#).

Using your favorite browser, go to TPS IP address and enter your password:
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Please Enter Password

Login
Go to the *AggreGate* tab and set the connection settings (your PC IP address and port 6481 as a default for agents in the OPC Server):
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IO CONTROL
Password
Ethernet
AggreGate
Serial Ports (UARTs)
SNTP
Device Actions...
Log out

AggreGate Server Configuration

<table>
<thead>
<tr>
<th>Setting name</th>
<th>Setting value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server connection</td>
<td>Enabled</td>
</tr>
<tr>
<td>Owner name (User account)</td>
<td>admin</td>
</tr>
<tr>
<td>Device name (Device account)</td>
<td>TPS</td>
</tr>
<tr>
<td>Server port</td>
<td>6431</td>
</tr>
<tr>
<td>Server IP</td>
<td>192.168.75.141</td>
</tr>
<tr>
<td>Connection timeout (minutes, 0 to disable)</td>
<td>5</td>
</tr>
</tbody>
</table>

Save Reload
Press Save, then Reload.

After that, press Start —> All Programs —> Tibbo OPC Server —> Tibbo OPC Server Configurator. Press the button Add Agent..., enter agent parameters and press OK:

If the connection is successful, the left panel displays the tree of the agent variables.
Add the necessary variables using the «drag-and-drop» feature, double-click on the tab or Add This Tag in the tag context menu in the tree panel:
The *Alias* is the name of the tag in OPC. *Value field* applies only to the variables in the table. The scalar value of the specified column is transferred to OPC. Otherwise, the entire table is converted to a string.

In the above-mentioned example, the I/O variables have the table value. For the variable *I0* we get the *Enabled field*, for the variable *I1* we get the *Set Low field*. The variable *I10* is converted into the string.

The *Polling* parameter sets the frequency of data updates (in milliseconds).
If Sync option is activated (set to True), data update occurs when changes come from the data source asynchronously. However, data is pushed to the OPC clients only once in a polling period.

In a synchronous mode, the OPC server automatically requests data once in a polling period.

The Path, R, W and Type shows respectively the AggreGate variable context path, read/write modes and the data type. These fields are for information only and are not intended for editing. Other parameters can be edited (double click on the tag or select Properties in the tag context menu):

To remove the tag, you can use the Delete hot button or context menu.

To save any changes, press the Save Project button.

The Settings button allows to set default parameters and establish the incoming port for agents connection:
Configuring the AggreGate server

Now let’s consider for example adding the AggreGate server as a data source. To add the AggreGate server variables, press the button Add Agent..., enter server parameters and press OK:

Rules for adding server variables adding and tags manipulation are similar to the functionality of the agent described above:
DCOM fine-tuning

Some OPC clients require the server to run with a specific system user, or need some additional security settings. For fine-tuning DCOM security, use Windows Management console (press Win+R and enter `dcomcnfg` in Windows x32 or `mmc comexp.msc /32` in Windows x64 bit edition):
Choose one by one: Console Root --> Component Service --> Computers --> My Computer --> DCOM Config --> AggreGate OPC Server --> Properties:
Set up the settings needed:

![Screen shot of AggreGate OPC Server Properties dialog box]

Which user account do you want to use to run this application?

- The interactive user.
- The launching user.
- This user.

User: VITALIY-PC\opc
Password:
Confirm password:

The system account (services only).

Learn more about setting these properties.
Using the Server

The Tibbo OPC Server is started automatically by COM or DCOM interface once any client requests its tags:
Configurator binds a port for agents, not to forget to close it before server starts preventing agents connection problems.
If AggreGate variable is available for writing, you can set a new value for an OPC item via any OPC client.
If the server is started by DCOM the graphical user interface is not present.
To view GUI, Tibbo OPC Server manually (Start —> Tibbo OPC Server —> Tibbo OPC Server) before any client connections:
The log file is located in the server installation directory (if the server is run by an administrator).
Manual Update History

20OCT2016
- Initial release

01DEC2016
- Screenshots updated
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