



**The Direct Excel Connection plugin
PRINTED MANUAL**

Direct Excel Connection plugin

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Printed: 4/17/2018

Publisher

AGG Software

Production

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<http://www.aggsoft.com>

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1 Introduction

The "Direct Excel Connection" data export module for our software is designed to send data received by the main program (core) and single out from the byte flow by the parser to Microsoft Excel without using additional tools and technologies (DDE, ODBC, etc.), but using the method of direct access to Microsoft Excel.

This module has the following features:

- Data can be written in Microsoft Excel by rows or by columns beginning from any row or any column;
- You can specify the number of table cells that you want to fill;
- The module can use several algorithms to fill tables and they will allow you to: move old data (the FIFO method) and fill the free space with new data, clear the column or the row with data when the specified number of cells is exceeded and start filling cells from the beginning;
- It is possible to simultaneously send several variables set up on the configuration stage. Besides, separate export parameters can be specified for each variable;
- Once started, the module can: use an already prepared workbook template, connect to the already running Microsoft Excel application and use a previously opened book and also combine the above variants;
- When a date or a float number is sent, the user can specify custom data representation formats;
- All connection settings are saved when the program is closed and restored when it is started next time.

These features allow you to:

- Monitor changes in the data received via the port both in the tabular form and as diagrams in real time using the entire well-known power of Microsoft Excel;
- Statistically analyze the data being received as fast and effectively as possible.

All that will be done in the way as convenient and easy for you as possible because of the well thought-out and wide functionality of our module!

2 System requirements

The following requirements must be met for "Direct Excel Connection" to be installed:

Operating system: Windows 2000 SP4 and above, including both x86 and x64 workstations and servers. A latest service pack for the corresponding OS is required.

Free disk space: Not less than 5 MB of free disk space is recommended.

Special access requirements: You should log on as a user with Administrator rights in order to install this module.

The main application (core) must be installed, for example, Advanced Serial Data Logger.

Notes for Microsoft Vista and above:

Since our software saves data to the registry and installs to the Program Files folder, the following requirements must be met:

1. You need Administrator rights to run and install our software
2. The shortcut icon of our software will be located on the desktop;
3. Windows Vista will ask for your confirmation to continue the installation.

NOTE: You can configure the user account only once in order not to see the above dialog box any more. Search Google for the solution of this problem.

3 Installing Direct Excel Connection

1. Close the main application (for example, Advanced Serial Data Logger) if it is running;
2. Copy the program to your hard drive;
3. Run the module installation file with a double click on the file name in Windows Explorer;
4. Follow the instructions of the installation software. Usually, it is enough just to click the "Next" button several times;
5. Start the main application. The name of the module will appear on the "Modules" tab of the "Settings" window if it is successfully installed.

If the module is compatible with the program, its name and version will be displayed in the module list. You can see examples of installed modules on fig.1-2. Some types of modules require additional configuration. To do it, just select a module from the list and click the "Setup" button next to the list. The configuration of the module is described below.

You can see some types of modules on the "Log file" tab. To configure such a module, you should select it from the "File type" list and click the "Advanced" button.

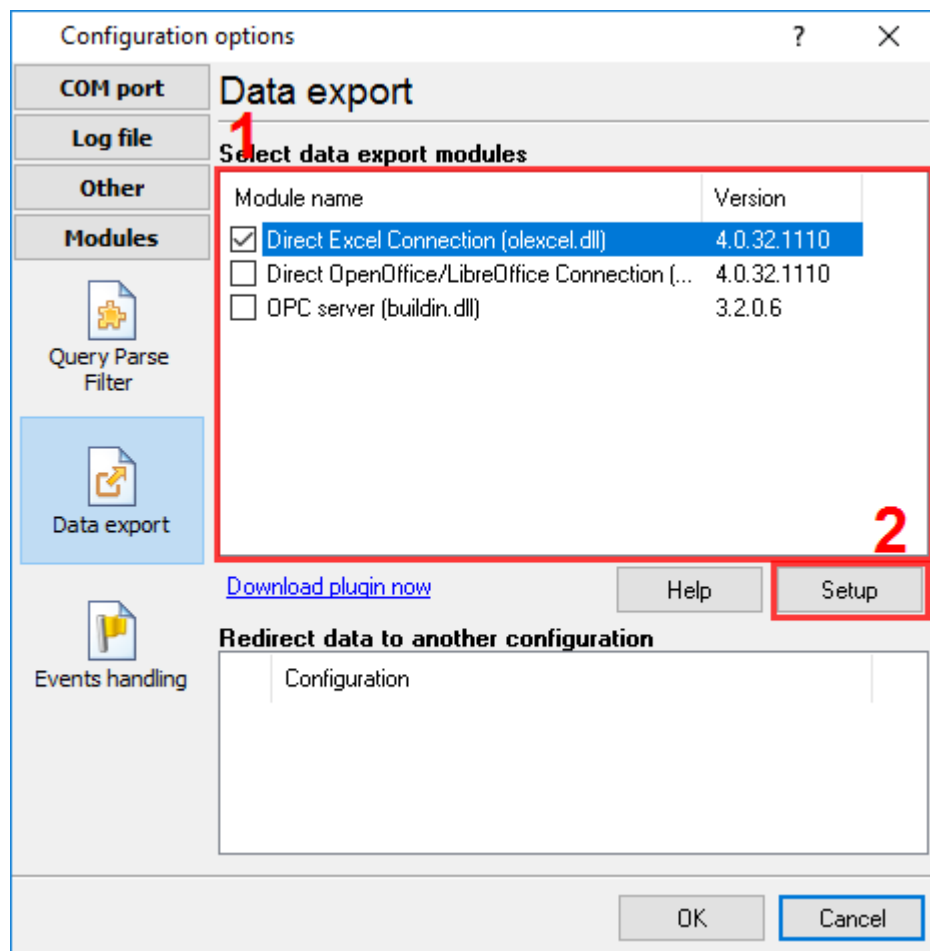


Fig.1. Example of installed module

4 Glossary

Plug-in - module

Main program – the program shell that uses this module. For example: Advanced Serial Data Logger

Parser – the module that processes the data flow singling out data packets from it and variables from data packets. These variables are used in data export modules after that.

Core - see "Main program".

5 User guide

5.1 Configuring Microsoft Excel startup parameters

To enable data export, you should configure Microsoft Excel startup parameters. The connection parameters define how the main Microsoft Excel window will be opened, whether a new workbook will be created or an existing one will be opened, what worksheet data will be written to. To open these settings, you should:

1. Start the main program if it is not running yet (for example, Advanced Serial Data Logger);
2. Open the "Modules-Data export" tab in the program options;
3. Select the module named "Direct Excel Connection" in the list of data export modules on this tab. If the module with this name does not exist, make sure the module is installed correctly;
4. Click the "Setup" button;
5. Select the "Connection" tab in the dialog box that appears on the screen (fig.1).

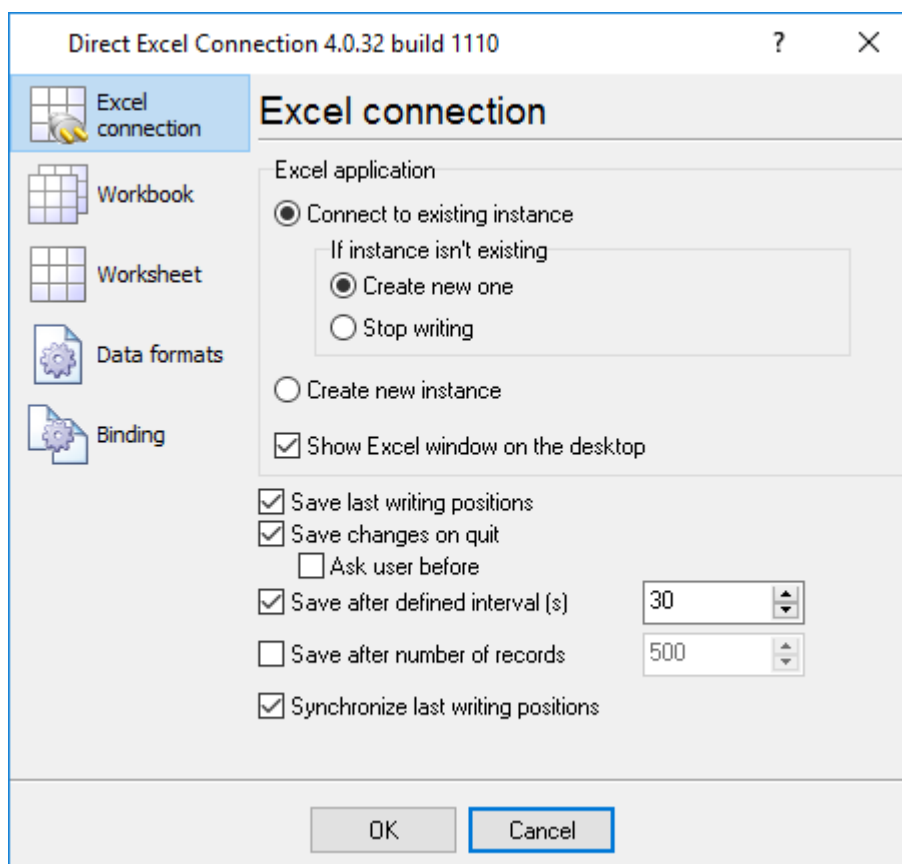


Fig.1 Microsoft Excel startup parameters

Workbook

The Microsoft Excel application can be started in the following modes:

1. The program can connect to an already running instance of Microsoft Excel. To do it, you should select the "Connect to existing instance" option. In this mode, the module will determine whether

at least one instance of Microsoft Excel is running. If there is a running instance, the program will try to connect to it. If no connection is established, one of the following actions will be performed: an attempt to run a new Microsoft Excel instance (Create new one) will be made or sending data to Microsoft Excel will be stopped (Stop writing) depending on what you select in the "If instance doesn't exist" group.

2. The program can run a new Microsoft Excel instance. For it to do it, you should select the "Create new instance" option. A new Microsoft Excel window will be opened in this mode once the program is started. A new Microsoft Excel instance will be created each time the program is started.

If you want to monitor how data is sent to Microsoft Excel during the process, select the "Display Excel window on Windows desktop" checkbox. In this case, you will see the Microsoft Excel window, otherwise the window will remain hidden and it will be impossible to access it.

In case the attempt to start a new Microsoft Excel instance or the attempt to connect to a running instance fails, the corresponding message will be written to the log of the program and data will not be sent to Microsoft Excel until the configuration of the module is changed.

After you specify how to run a Microsoft Excel instance, it is time to specify how a workbook and a worksheet will be created and used. To do it, switch to the "Workbook" tab (fig.2).

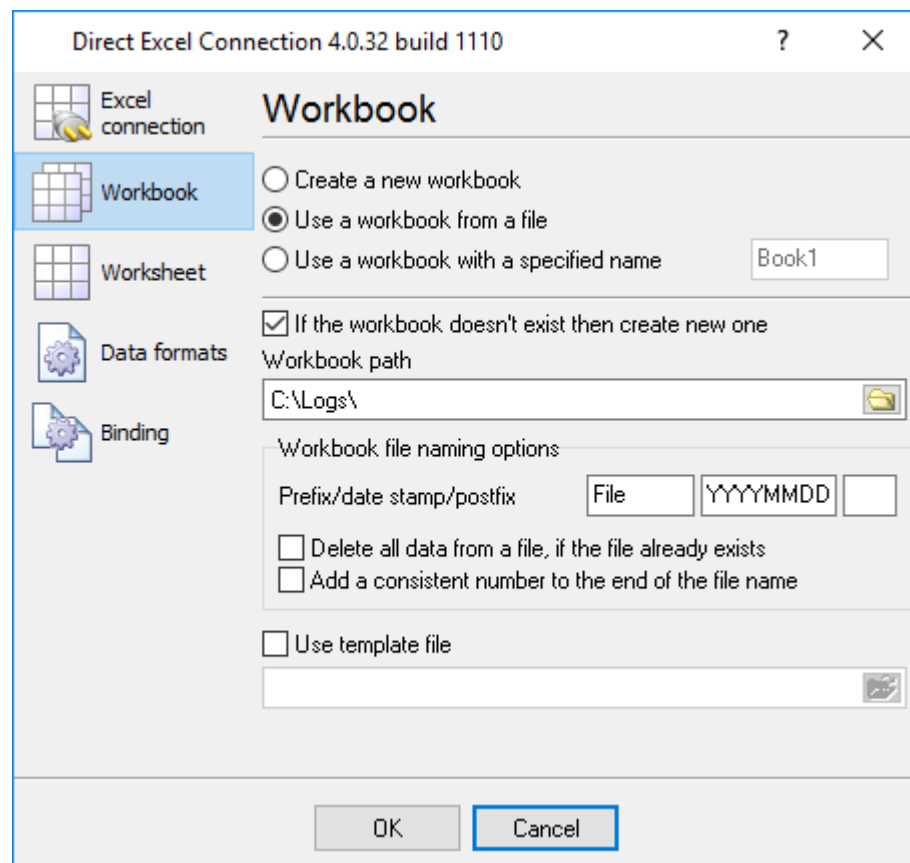


Fig.2 Workbook options

There are several variants to create a workbook:

1. **Create new workbook** – a new workbook is created in this mode, the default Microsoft Excel parameters will be used. You can specify the name of the file the workbook will be saved to in the "Workbook file" field;
2. **Load workbook from a file** – the module tries to load the workbook from a file. The name is specified in the additional "Workbook file" input field. To make it easier to type the full path and the name of the file, you can use the dialog box that is opened with a click on the button to the right from the input field. But if the module cannot load the specified workbook (for example, the file does not exist) and you select the "If the workbook does not exist, create a new one" checkbox, the module will try to create a new workbook. The new workbook will be saved to the file with the name specified in the "Workbook file" field. The workbook file can be used in this mode as the template new files must be based on. To do it, just select the "Use this file as a template and rename it" checkbox. The module does the following in this case:
 - generates the name of the file using the "Rename workbooks" group;
 - Checks whether the file with this name already exists;
 - If the file exists, the existing file is used;
 - If the file does not exist, the file with the generated name is created and used.
3. **Use workbook with a specified name** – this mode is used if the program tries to connect to an already running Microsoft Excel instance. Some workbook may be already open in the program in this case and the program will search for the specified workbook name. If the workbook with this name is found, it will be activated, if it is not found, the module will do what is described above for a similar situation.
4. **Ask user before** - the program will ask an user about the file name. This mode is not possible in the service mode because an user will not see a dialog window.

Rename workbooks

If the workbook specified in the "Workbook file" field is used as a template, this group of options allows you to specify what the name of the final file with data will be like.

- **Prefix** – allows you to specify the prefix for the filename;
- **Date** – allows you to include the current date and/or time in the filename. It allows you to create a new file each hour, day, month, etc. Use this field to specify the date/time template. The template format is the same as the one used in the main program for log files (see the help file of the main program). If you leave the template empty, neither date nor time will be added to the filename;
- **Postfix** – the postfix of the filename;
- **Delete all data from the file if the file exists** – if the file with this name already exists, it will be overwritten, i.e. all data in it will be lost;
- **Append the ordinal number at the end of the filename** – if the file with this name exists, the old file will be kept and the ordinal number will be appended at the end of the new filename.

If neither of the two checkboxes above is selected, data will be appended to the existing file. New data may overwrite the data existing in the file. To prevent it, select the "Keep the last position" checkbox. In this case, the module will save the coordinates of the last filled cell to one of the cells in the workbook and start writing data from this last coordinate.

Sometimes you may need to save the data written to the Microsoft Excel file. You should select the "Save changes on exist" checkbox in this case. If you need a confirmation from the user before the file is saved, select the "Ask the user for confirmation" checkbox.

In case the attempt to create a new workbook or the attempt to use one of the existing workbooks fails, the corresponding message will be written to the log of the program and sending data to Microsoft Excel will be stopped until the module configuration is changed.

Worksheet

Operations with the worksheet are configured in the same way (fig.3). You can also:

1. **Create a new worksheet in the current workbook** (Create new sheet);
2. Select the **"Use sheet with specified number"** option and specify the number in the corresponding field. For the data export module, the worksheet number means its number in Microsoft Excel if you count worksheet tabs at the bottom of the workbook from left to right.
3. **Use the list with the specified name** -
 - **Prefix** – allows you to specify the prefix for the worksheet name;
 - **Date** – allows you to include the current date and/or time in the worksheet name. It allows you to create a new worksheet each hour, day, month, etc. Use this field to specify the date/time template. The template format is the same as the one used in the main program for log files (see the help file of the main program). If you leave the template empty, neither date nor time will be added to the worksheet name;
 - **Postfix** – the postfix of the worksheet name;

If the worksheet with the specified name/number does not exist, the selected "If sheet doesn't exist then create new one" checkbox allows you to try to create a new worksheet.

In case the attempt to create a new worksheet fails, the corresponding message will be written to the log of the program and sending data to Microsoft Excel will be stopped until the module configuration is changed.

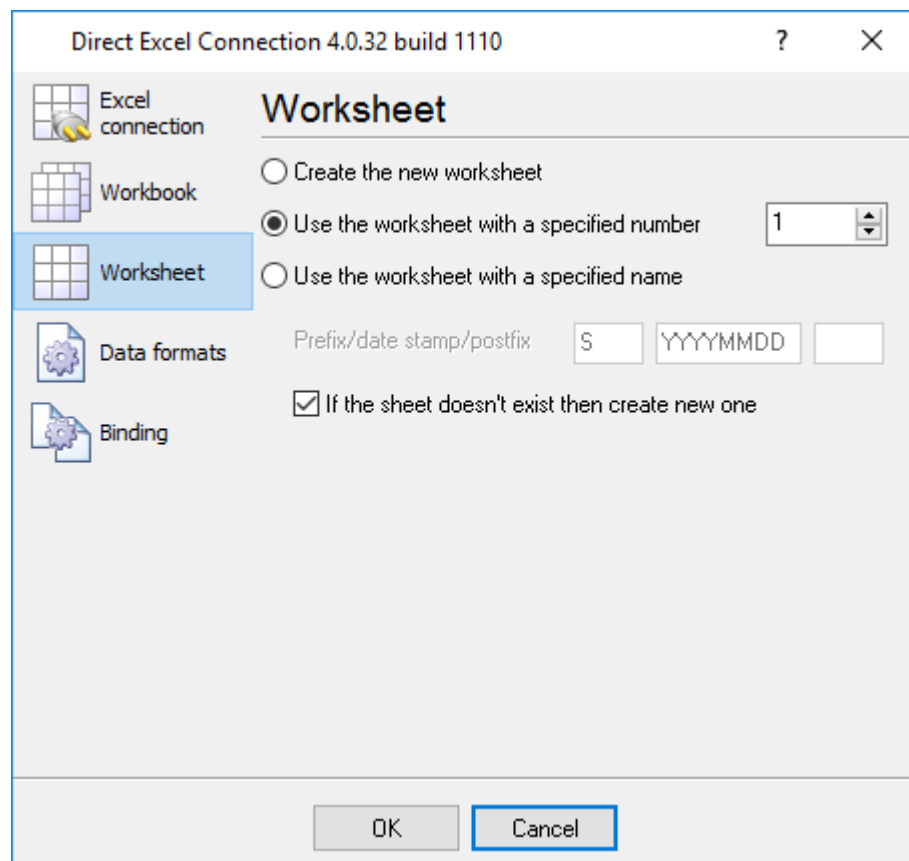


Fig.3 Worksheet options

5.2 Data presentation formats

Sometimes the parser can create variables of the Float type or of the DateTime type. These data types may have various representation formats. You can use the "Data format" tab (fig. 1) to specify which format should be used – the system one, i.e. the one that is used on your computer by default or the custom one that you will specify in the "**User format**" field of the corresponding group.

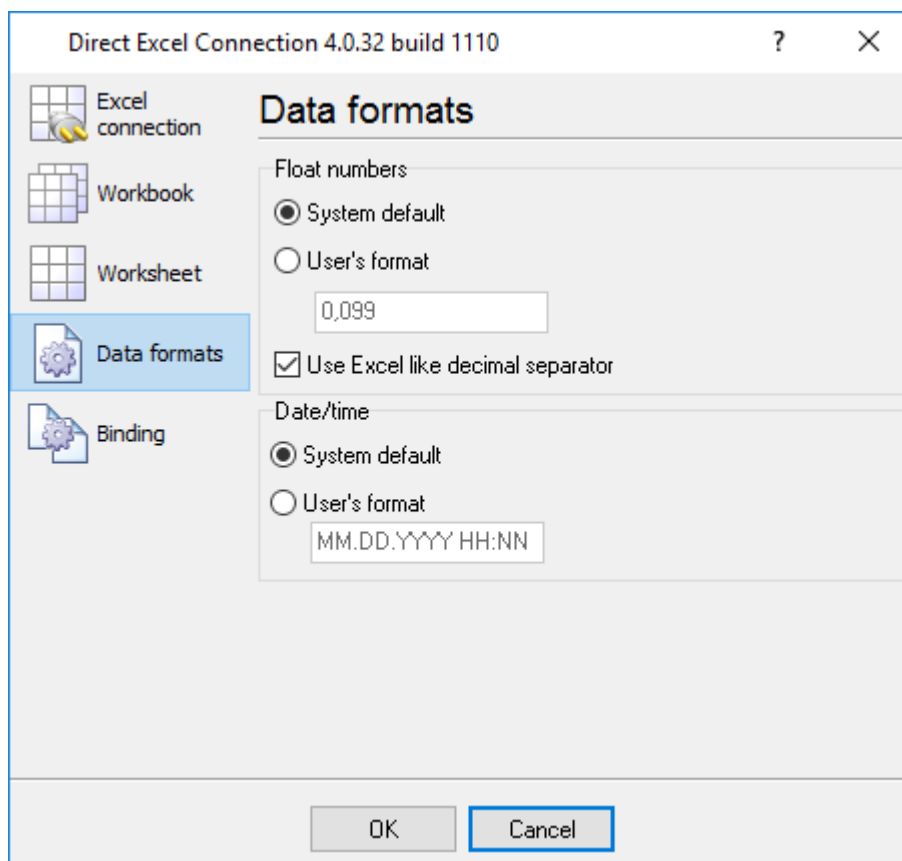


Fig.1 Data format

Date and time format

You can specify the custom date and time representation format in the following way:

- d** - day, without a leading zero (1 - 31);
- dd** - day, with a leading zero (01 - 31);
- ddd** - weekday, in the text format (Mon-Sun) specified on this computer;
- dddd** - weekday, in the full text format (Monday-Sunday) specified on this computer;
- m** - month, without a leading zero (1 - 12);
- mm** - month, with a leading zero (01 - 12);
- mmm** - month, in the text format (Jan-Dec) specified on this computer;
- mmm** - month, in the full text format (January-December) specified on this computer;
- yy** - year, two last digits (00 - 99);

yyyy - year, four digits (0000 - 9999);
h - hours, without a leading zero (0 - 23);
hh - hours, with a leading zero (00 - 23);
n - minutes, without a leading zero (0 - 59);
nn - minutes, with a leading zero (00 - 59);
s - seconds, without a leading zero (0 - 59);
ss - seconds, with a leading zero (00-59);

Example: The following format is specified on fig.1: MM.DD.YYYY HH:NN. The date looks like this according to this format: 10.29.2003 23:59.

Number format

You can use the following special characters to specify the custom representation format for float numbers:

0 – number position. If the number being formatted by the mask contains a number in this position of the format mask, this number will be copied to the result. If there is no number in this position of the number being formatted, this position will be replaced with 0 in the result.

- number position. If the number being formatted by the mask contains a number in this position of the format mask, this number will be copied to the result. If there is no number in this position of the number being formatted, this position will be empty in the result.

. – decimal symbol. The first '.' character will be considered as a decimal symbol. The rest of characters in the format mask will be ignored. In the result, the '.' character will be replaced with the system value of the variable defining the decimal symbol. The default value of this symbol is set in the Windows Control Panel under "Regional Options" - "Number"

, - digit grouping symbol. If the format mask contain one or more ',' characters, this digit grouping symbol will be displayed in the specified positions of the format mask in the result. The default value of this symbol is set in the Windows Control Panel under "Regional Options" - "Number".

E+ - scientific representation. If any of these strings 'E+', 'E-', 'e+', or 'e-' is present in the format mask, this number will be represented in the scientific format in the result, where a positive exponent will be displayed after the 'E+' or 'e+' string and the negative exponent will be displayed after the 'E-' or 'e-' string.

'xx'/'xx' – a sequence of characters enclosed in single or double quotation marks will be displayed in the result without any changes.

5.3 Binding

Binding will allow you to specify what operations should the module perform with this or that variable that will be passed from the parser to the data export module.

To configure it, you should switch to the "Binding" tab that contains the list of the variables being exported and the export parameters of each variable, as well as the buttons that you can use to add or remove variables being exported (fig. 1).

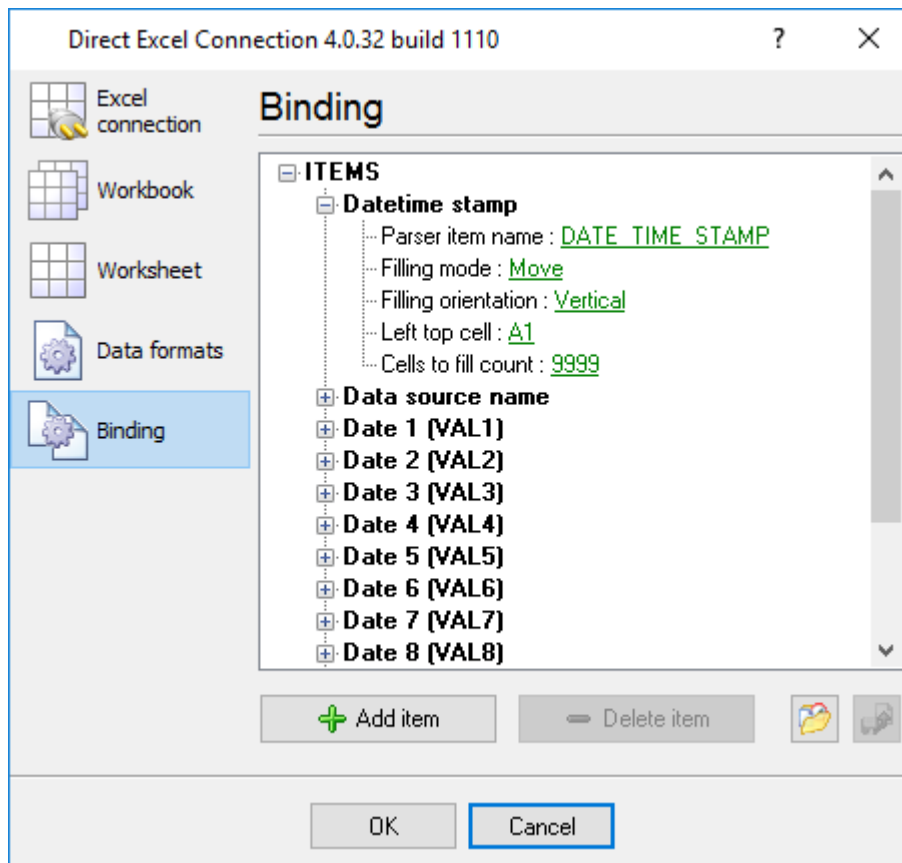


Fig.1 List of variables being exported

The window represents the current configuration in the form of a tree. Where the top level of the tree contains the variables being exported. Each variable has several options that are located one level lower in the tree.

To add a new exported variable, you should click the "Add item" button or select the corresponding item in the context menu. After you click the button, you will see the dialog box that will offer you to enter the description of the variable.

After you enter its name and click "OK", an item with the default parameters will be created in the tree. Click the green link (see fig. 1) in the configuration window and you will be able to change the value of the corresponding parameter the way you need it. See the detailed description of variable parameters below:

- **Parser's item name** – here you should specify the name of the parser item that will be exported. The dialog box that appears after a click on the link offers you to select the variable name from the list. If the parser is not configured or if it is configured incorrectly, the list of available variables will be empty. If you select the name of a variable from the list, you will let the module know that the data of this very variable should be exported;
- **Filling mode** – here you can select one of the following values:
 - Clear – data is sent to Microsoft Excel in this mode in such a way that if the number of cells for filling is exceeded, the column or the row is cleared and the data is written from the first specified column;
 - Move – data is sent to Microsoft Excel in this mode in such a way that if the number of cells for filling is exceeded, data is moved upwards (if it is filled by columns) or to the left (if it is

filled by rows) and new data is written to the position that becomes unoccupied after data is moved. Thus, the FIFO filling method is used;

- **Stop** – data is sent to Microsoft Excel in this mode in such a way that if the number of cells for filling is exceeded, data is no longer sent till the program is started next time.
- **Filling orientation** – here you can select how data will be sent to Microsoft Excel, by columns (Vertically) or by rows (Horizontally);
- **Left top cell** – here you should specify the coordinates of the upper-left cell starting from which data will be sent to Microsoft Excel. The format the coordinates are specified in should comply with the standard accepted in Microsoft Excel. For example, a record like A1 will mean the coordinates of the top left cell on the worksheet.

You may also select the "Current active cell" value from the drop down list. In this case the program will get the select cell from the opened workbook and use it as a start position. If the the selected cell will change the program changes the start position accordingly.

You may use macros In the "Left top cell" field to dynamically define the left top cell. Macros are strings between the { } characters. When processing data, the program will evaluate the specified expression and expects to receive the value with the cell coordinates like A1. You may use any parser variable in the expression. Also you may define custom variables in the "Expression" plugin.

Example:

A{DEVICE_ID} - may return A1 - A10 if data contains the "DEVICE_ID" parser value with numbers 1-10.

- **Cells to fill count** – here you can specify the maximum number of cells in a column or in a row that will be filled when data is sent to Microsoft Excel. Note that Excel has an internal limit for the number of rows equal to 65535. I.e. one Excel worksheet cannot contain more than 65535 rows.

To remove an unnecessary item from the configuration, you should select the name of this item in the tree and click the "Delete item" button or use the corresponding item in the context menu.

Also, the window has two buttons that you can use to save the current configuration to a file and later load it on this computer or on another computer.

After you finish configuring the module, you should close the dialog box with a click on the "OK" button. After that the current configuration will be saved and it will be automatically loaded next time you start the program.

If you want to cancel ALL changes, click the "Cancel" button in the dialog box.

6 Troubles?

6.1 Possible problems

No data for publication/exporting – no data is passed for exporting. Solution: configure the parser, make sure that one or more variables are declared in the parser.

Error on binding variable with name %s [%s] – the error usually occurs if data does not correspond to the specified format. For example, the date and time format does not correspond to the data.

Unable to disconnect from the database [%s] and **Unable to connect to a database [%s]** – it is impossible to connect/disconnect to/from the database. You should check the parameters of the database connection. The analysis of the additional information will help you locate the error.

Database access error [%s]. Stop operations with the database? – the message appears if an error occurs during an attempt to execute an SQL query if the second variant of reacting to errors is selected. The message implies a "Yes" or "No" answer. The analysis of the additional information will help you locate the error.

Unable to verify your SQL script [%s] – the message appears when an attempt to analyze your SQL query fails. Check if the syntax of your SQL query is correct.

Tested successfully – the message appears if your database connection is successfully tested. It requires no additional actions.

Database isn't used – the message appears if the module is temporarily disabled (the "Temporarily disabled" check box is selected) or the database name field is empty. Check the connection parameters.

Database isn't selected - the message appears if the database type is not selected. Check the connection parameters.

Database: %s – %s contains the database name. The message appears if the database connection is successful. Usually, you see it when you call the module for the first time. It requires no additional actions.

Invalid data block length (columns=%d,length=%d) – an internal application error. It means that the data sent by the parser is in an invalid format. Perhaps, you are using the module incompatible with the version of the Advanced Serial Data Logger kernel. Update the versions of both the kernel and the module.

The time of connection is not due yet (%d,%d) – the message appears during an attempt to connect to the database after the connection to it has been lost and the "Reconnect after" option is enabled. No additional actions are required.

Invalid procedure call. Bad arguments – an attempt to call the module using invalid parameters. Perhaps, you are using the module incompatible with the version of the Advanced Serial Data Logger kernel. Update the versions of both the kernel and the module.

Writing to the database is complete - the message appears if your queue of SQL queries is successfully executed. It requires no additional actions.

Writing to the database is complete with errors – the message appears if the executing your queue of SQL queries was interrupted by an error. It requires no additional actions.

Your SQL is empty. Please, specify some SQL text first – the message appears if you do not enter the text for your SQL query. Check if the options on the "SQL queue" tab are configured correctly.

Invalid temporary path – the path to the temporary file specified by you does not exist. Enter a new path in the "Temporary folder" field on the "Errors handling" tab.

%s, %d – will be replaced by additional information.