



Using Custom Indicators in a VTS System

Calling the **iCustom** MQL Function from the Visual Trader Studio

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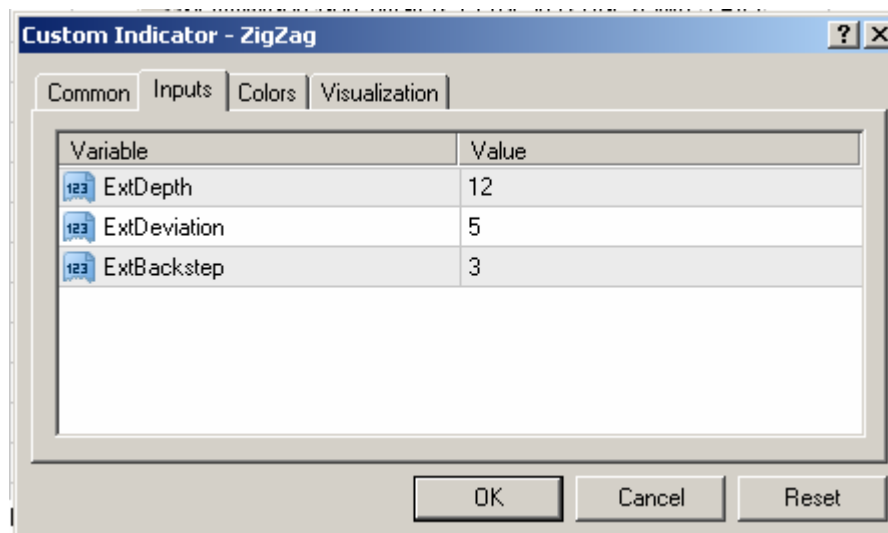
Adding a Custom Indicator to VTS

- The minimum VTS version to support custom indicators is 1.0.0.3. To view the VTS version, select Help->About from the VTS application.
- VTS will automatically search for custom indicators in the MetaTrader platform's *custom indicator folder*.
- The *custom indicator folder* is usually something like:
C:\Program File\MetaTrader4\experts\indicators
This depends on where you chose to install MetaTrader.
- Any indicator found in the *custom indicator folder* will be available for selection from the VTS Function's Toolbox under the menu "Custom Indicators".
- NOTE: If the folder "Custom Indicators" is not shown from within the VTS Functions Toolbox tab, it most likely because the MetaTrader tools directory has not yet been configured. The best way to configure the MetaTrader tools directory is to build a VTS system: From the Welcome Page, click Start New -> QuickStart EA and press "Build". If the MetaTrader tools directory is not set you will be prompted.
- To make your custom indicator available for selection from the VTS Toolbox, simply copy the custom indicator file into the *custom indicator folder*.
- The first time a custom indicator is dragged from the VTS Toolbox to the VTS drawing pad, the user will be prompted to define the custom indicator's Input Variables and Output Lines.
- Many VTS users do not have the MQL source code for their custom indicators; therefore it is necessary to manually enter the custom indicator's Input Variables and Output Lines.

Using a Custom Indicator – The ZigZag Example

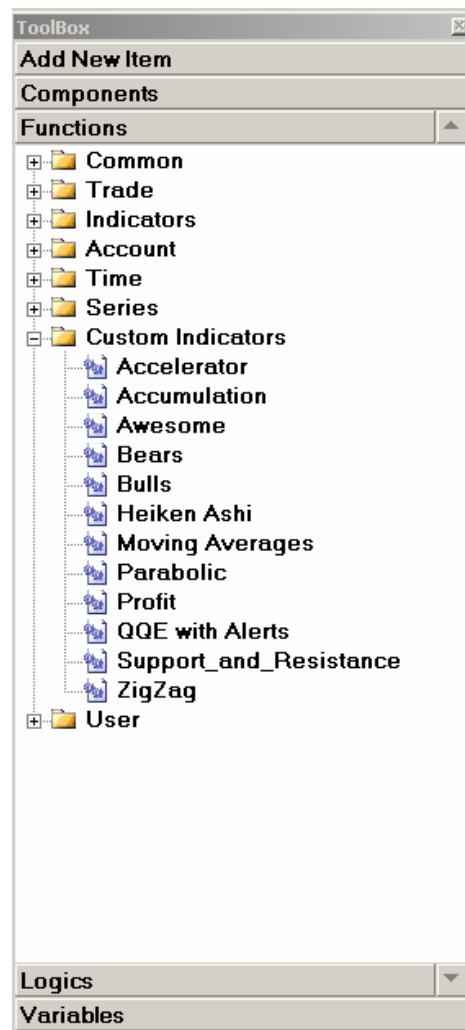
As an example, we'll define the Input Variables and Output Lines for the custom indicator "ZigZag". The custom indicator "ZigZag" is included with the MetaTrader platform.

- Open the MetaTrader platform and attach the custom indicator ZigZag to any price chart. (From the Navigator window of the MetaTrader platform, expand "Custom Indicators" menu and double-click "ZigZag".)
- When the indicator is attached to the price chart the following window, called the "Indicator Configuration" window, will appear. Leave this window open to help when entering the custom indicator's Input Variables and Output Lines into VTS.
- This is the "Indicator Configuration" window:



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- Start a new Trading System in VTS.
- Select the Functions Toolbox Tab and expand the “Custom Indicators” menu.
- This is the Toolbox with the “Custom Indicators” menu expanded:



- NOTE: If the folder “Custom Indicators” is not shown from within the VTS Functions Toolbox tab, it most likely because the MetaTrader tools directory has not yet been configured. The best way to configure the MetaTrader tools directory is to build a VTS system: From the Welcome Page, click Start New -> QuickStart EA and press “Build”. If the MetaTrader tools directory is not set you will be prompted.

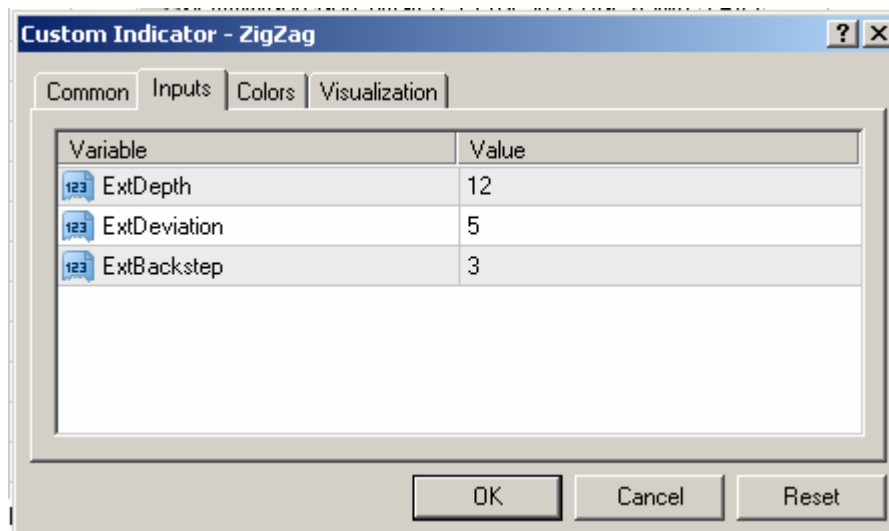
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- Select the “ZigZag” custom indicator and drag it onto the VTS drawing pad.
- The first time the “ZigZag” custom indicator is dragged onto the drawing pad, the “Custom Indicator Definition” window is shown.
- The “Custom Indicator Definition” allows entry of the indicators Input Variables and Output Lines.

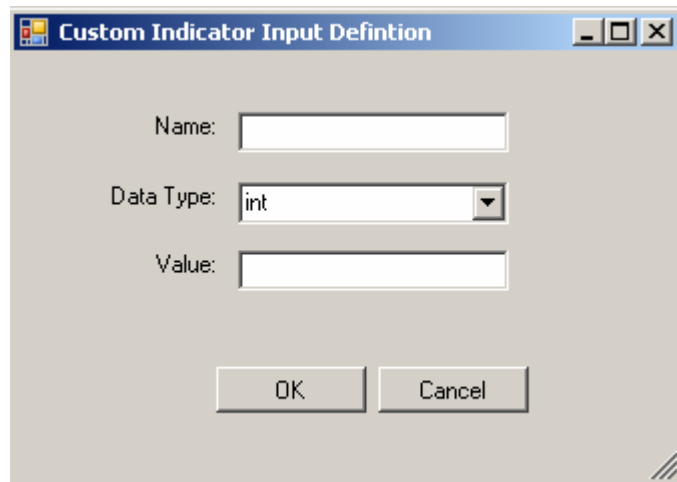
The screenshot shows a dialog box titled "ZigZag Custom Indicator Definition". It features two main input areas. On the left is a table with three columns: "Name", "Data Type", and "Value". Below this table is a button labeled "Add Input Variable". On the right is a list box labeled "Line Name". Below this list box is a button labeled "Add Output Line". At the bottom center of the dialog are two buttons: "OK" and "Cancel".

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- To add an input variable, select the “Add Input Variable” button.
- Note, the input variables for your custom indicator are best identified from the “Indicator Configuration” window shown when attaching the indicator to a MetaTrader price chart. Select the “Inputs” tab to view the inputs.
- The “Indicator Configuration” window for the “ZigZag” indicator shows three input variables: ExtDepth, ExtDeviation and ExtBackstep.
- The data type of all three variables is “Integer”, as identified by the “123” symbol to the far left.
- The default value for ExtDepth is 12.
- The default value for ExtDeviation is 5.
- The default value for ExtBackstep is 3.



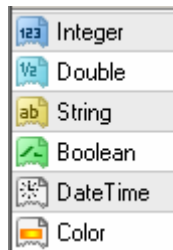
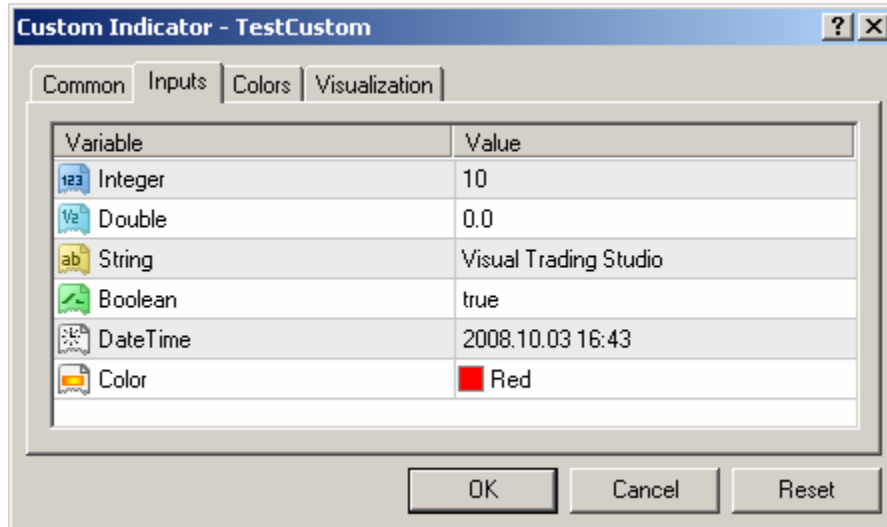
- Return to the “Custom Indicator Definition” window and select the “Add Input Variable” button. The “Custom Indicator Input Definition” window will be shown.



- Enter the values to define the Input variable “ExtDepth”:
- Enter the Name as *ExtDepth*.
- Select the Data Type as *int*.
- Enter the Value as *12*.
- Select OK to save the values.
- Repeat this procedure for the other input variables “ExtDeviation” and “ExtBackstep”.

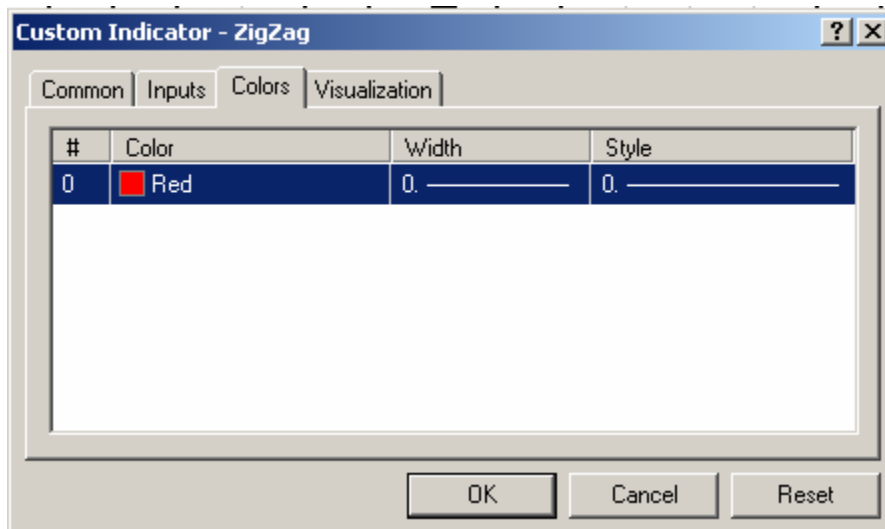
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- To identify the various MQL data types, use the example below. Note the icon to the far left that defines the data type. In this example, the name of the data type is shown as the name of the variable.

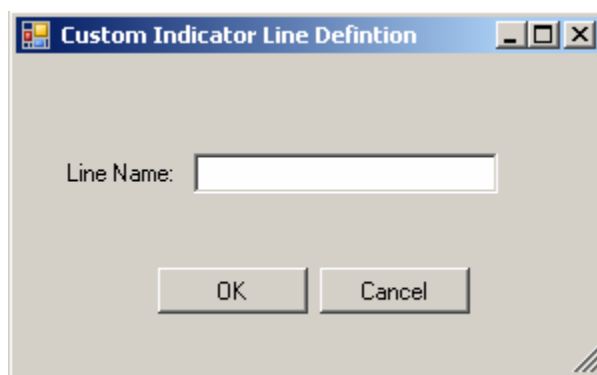


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- To enter the output lines for the ZigZag indicator, refer back to the “Indicator Configuration” window.
- Select the “Colors” tab to view the output lines.
- The “Indicator Configuration” window for the “ZigZag” indicator shows one output line: “Red”.



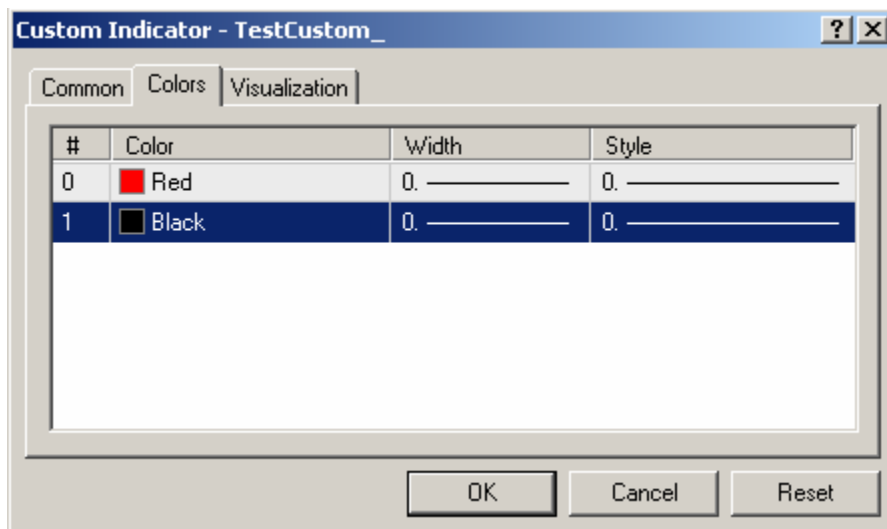
- To define the “Red” output line in VTS, return to the “Custom Indicator Definition” window and select the “Add Output Line” button. The “Custom Indicator Line Definition” window will be shown.



- Enter the value Red into the Line Name field and select OK.

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- If entering values for a custom indicator with more than one output line, be sure to enter the values in the same order as shown in the “Indicator Configuration” window. Note the number to the far left of the Color name.



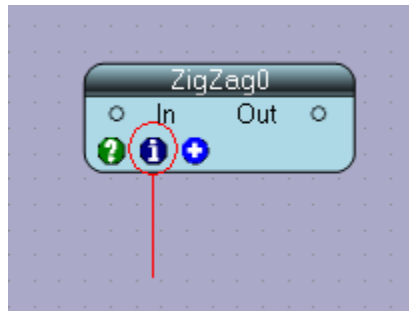
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- The ZigZag indicator can now be dragged from the VTS Toolbox onto the VTS Drawing Pad just like any other indicator. The information entered through the previous windows is used to prompt the user for the correct configuration information for the custom indicator.
- The “Input Variables” appear as input parameters.
- The “Output Lines” appear as selection items for the “mode” parameter.

The image shows a software dialog box titled "ZigZag Parameters:". It contains several rows of input fields, each with a "Help" button to its right. The fields are: "symbol" (dropdown menu showing "CHART"), "timeframe" (dropdown menu showing "CHART"), "name" (dropdown menu showing "ZigZag"), "EXTDEPTH" (dropdown menu showing "12"), "EXTDEVIATION" (dropdown menu showing "5"), "EXTBACKSTEP" (dropdown menu showing "3"), "mode" (dropdown menu showing "THE_RED_LINE"), and "shift" (dropdown menu showing "0"). The "EXTDEPTH", "EXTDEVIATION", and "EXTBACKSTEP" fields are circled in red, and the "mode" field is circled in green. At the bottom of the dialog are "Save" and "Cancel" buttons.

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- If a mistake was made when entering any of the values, select the “i” button from the bottom center of the ZigZag element to return to the “Custom Indicator Definition” window.
- Note, after making changes to the custom indicator definition, remove the element from the drawing and drag and drop another copy to view the new changes.





The iCustom MQL Function

The information for the iCustom function is in the following table.

```
double iCustom(string symbol, int timeframe, string name, ..., int mode, int shift)
```

Calculates the specified custom indicator and returns its value. The custom indicator must be compiled (*.EX4 file) and be in the *terminal_directory\experts\indicators* directory.

Parameters:

symbol	- Symbol the data of which should be used to calculate indicator. NULL means current symbol.
timeframe	- Timeframe. It can be any of Timeframe enumeration values. 0 means the current chart timeframe.
name	- Custom indicator compiled program name.
...	- Parameters set (if necessary). The passed parameters and their order must correspond with the declaration order and the type of extern variables of the custom indicator.
mode	- Line index. Can be from 0 to 7 and must correspond with the index used by one of SetIndexBuffer functions.
shift	- Index of the value taken from the indicator buffer (shift relative to the current bar the given amount of periods ago).

Sample:

```
double val=iCustom(NULL, 0, "SampleInd",13,1,0);
```

- What makes the iCustom function difficult to use is the fourth parameter. The ellipsis (...) indicates there can be zero to N number of parameters defined. The number depends on the specific custom indicator.
- The mode parameter is used to get the value of the specific line output of the custom indicator. Many indicators have more than one line drawn on the chart. This value must be defined correctly to receive the value of the correct line.
- The remaining parameters are straightforward.
- Note: An indicator does not need to be drawn on a price chart to be used by an Expert Advisor.